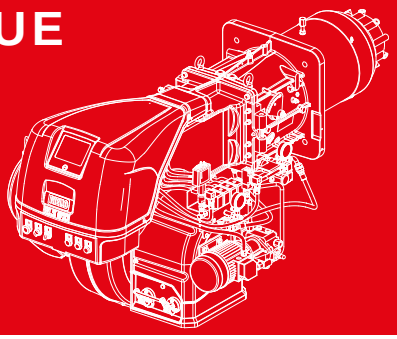
INTERNATIONAL

TECHNICAL SALES CATALOGUE

BURNERS AND PROCESS BURNERS



2025 | 1

Africa | Asia | Europe | Oceania | South America

A Carrier Company | www.riello.com

RIELLO
Energy For Life

1922

2022

2024

RIELLO

RIELLO is an Italian brand, world leader in the combustion technology and a key player in the production of heating and air conditioning systems and technologies for the residential and commercial sectors.

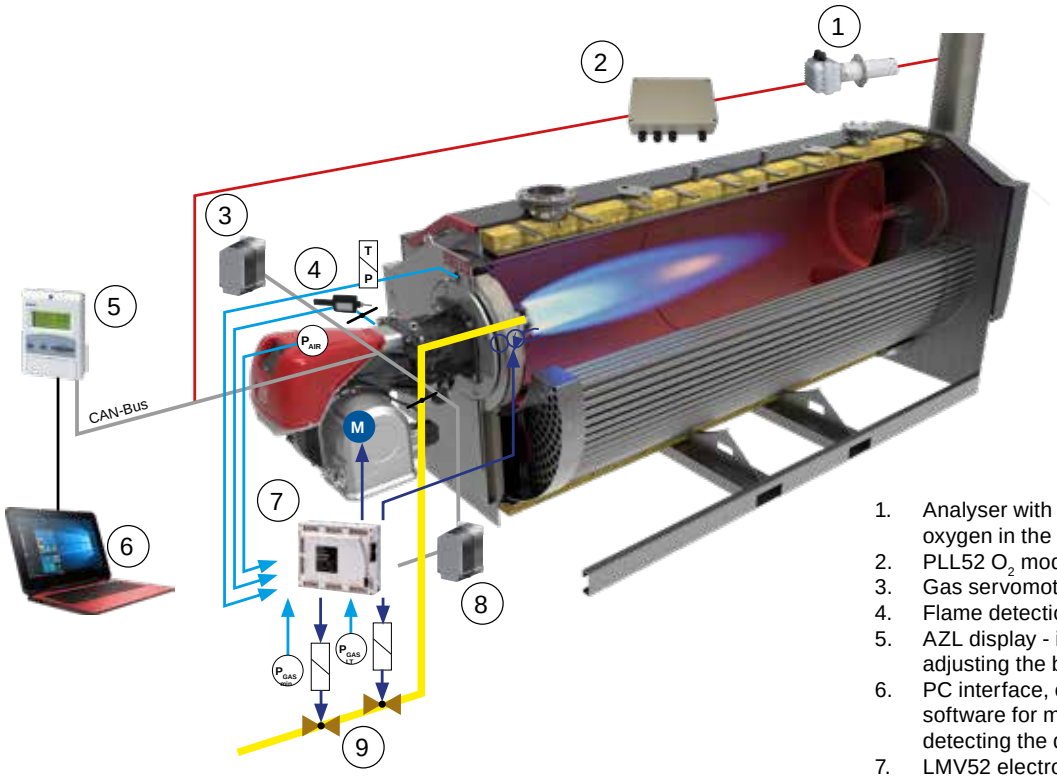
MONOBLOC BURNERS WITH COMBUSTION CONTROL SYSTEM AND OXYGEN CONTROL

RS/E-EV O_2

Riello has developed a range of Commercial and Industrial burners, the RS/E-EV O2 series, capable to constantly optimize the combustion parameters based on the detection of O2 content in the exhaust. The Digital Burner Management System, based on the constant surveillance and the feedback of the O2 probe, activates the combustion regulation and the continuous search for the optimal working point of the burner, which is maintained by independent servomotors that manage the air-fuel ratio to obtain a perfect output control, a correct low polluting combustion and a safe operation on all modulation range.
High performance over time and reduced polluting emissions can thus be obtained by acting against the `disturbing factors' which inevitably influence the composition of the comburent air/fuel mixture, such as, for example, changes in temperature and pressure of air and fuel, variation in the calorific value of the fuel, variation of the pressure in the combustion chamber, mechanical hysteresis and so on.

Having energy savings and reduction of the air pollution as primary targets, these advanced burners are very flexible as they can be applied to various combustion systems, both within civil and industrial applications, furthermore, this burner series is suitable for existing installations, resulting in a considerable improvement and modernization of the system.

This system can be completed with inverter technology to obtain energy savings and combustion optimization, whilst ensuring total operating safety.
To help its customers obtain that competitive advantage, RIELLO provides a consultancy service, supplying personalised technical solutions that adapt the combustion system to a wide variety of applications.
For information about burners with the combustion control system, please contact your Riello sales network dealer.



1. Analyser with probe, to control the residual oxygen in the combustion products
2. PLL52 O_2 module
3. Gas servomotor
4. Flame detection probe
5. AZL display - interface for controlling and adjusting the burner
6. PC interface, consisting of an adapter and software for making the adjustments and detecting the diagnostic function signals
7. LMV52 electronic cam
8. Air servomotor
9. Gas valves

RIELLO

HIGH TECHNOLOGY FROM RIELLO

SERVICES DEDICATED TO **BURNERS**

Riello has set up a wide range of services, directly managed by its own professionals, to provide customers with specialised technical support that begins in the product installation phase and continues throughout the working life of the system.

This package of services helps ensure reliable operation and constant performance over time, maximising energy efficiency and minimising the environmental impact during the whole lifespan of the product.

- Consultancy during installation
- Initial set-up and adjustments
- Performance checks
- O_2 checks
- Regular operating checks
- Regular maintenance
- Interventions upon request
- Maintenance schedule and repairs
- Package covering initial set-up, adjustments and first regular maintenance intervention



RIELLO

A **WORLDWIDE** PRESENCE



With operational branches and commercial partnerships organized in a well-structured and efficient sales network, Riello is present in over 120 countries. Riello's strength is the result of its technological innovation capacities and the experience it has acquired during the years, based upon the reliability of a team of technicians, professionals and collaborators who are called upon every day to make thier own contribution in terms of hard work, skill and creativity.

Riello Burners
a world of experience in every burner we sell

RIELLO

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199 RS 810/M BLU
204 RS 310-610/E BLU
210 RS 810/E BLU
215 RS 310-610/EV BLU
221 RS 810/EV BLU
226 RS 1000-1200/M BLU
230 RS 1000-1200/E BLU
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239 RS 1000-1200/EV BLU
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471 RL 70-190/M
475 PRESS GV
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487 PRESS P/G

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493 RLS 68-160/M MX
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GAS BURNERS

LIGHT OIL BURNERS

DUAL FUEL BURNERS

HEAVY OIL BURNERS

GAS BURNERS

ULTRA LOW NOx

Ultra Low NOx emissions, lower than Class 5 of European Standard EN 676 (NOx lower than 56 mg/kWh)

TWO STAGE



RS 25-35/C05
RS 25 C05 (70/125-340 kW)
RS 35 C05 (82/200-440 kW)

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RS 45 C05

RS 45 C05 (90/190-570 kW)

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MODULATING



RS 25-35/M C05

RS 25/M C05 (70/125-340 kW)
RS 35/M C05 (82/200-440 kW)

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RS 45/M C05

RS 45/M C05 (90/190-570 kW)

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RS 25-35/E C05

RS 25/E C05 (70/125-340 kW)
RS 35/E C05 (82/200-440 kW)

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RS 45/E C05

RS 45/E C05 (90/190-570 kW)

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GAS BURNERS

ULTRA LOW NOx

Ultra Low NOx emissions (NOx lower than 30 mg/kWh)

MODULATING PROPORTIONAL VARIABLE SPEED



RX 180-360 S/PV ULN

RX 180 S/PV ULN (30-160 kW)
RX 250 S/PV ULN(40-225 kW)
RX 360 S/PV ULN (60-325 kW)

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RX 500 S/PV ULN (80-440 kW)
RX 700 S/PV ULN (140-630 kW)
RX 850 S/PV ULN (170-790 kW)
RX 1000 S/PV ULN (180-970 kW)

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MODULATING ELECTRONIC CAM



RX 1500 S/E ULN

RX 1500 S/E ULN (270-1650 kW)

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RX 1800-3000 S/E ULN

RX 1800 S/E ULN(300-1940 kW)
RX 2500 S/E ULN (375-2485 kW)
RX 3000 S/E ULN (640-3210 kW)

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MODULATING ELECTRONIC CAM



RS 410-610/E FGR

RS 410/E FGR (595-1210/3820 kW)
RS 510/E FGR (660-1800/4800 kW)
RS 610/E FGR (912-2200/5850 kW)

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RS 810/E FGR

RS 810/E FGR (1100-3500/6990 kW)

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RS 1000-1200/E FGR

RS 1000/E FGR (1100-4000/10100 kW)
RS 1200/E FGR (1500-5500/11100 kW)

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RS 1300-2000/E FGR

RS 1300/E FGR (1350-7500/12000 kW)
RS 1600/E FGR (3065-9503/15560 kW)
RS 2000/E FGR (4000-12000/19500 kW)

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MODULATING ELECTRONIC CAM VARIABLE SPEED



RS 410-610/EV FGR

RS 410/EV FGR (595-1210/3820 kW)
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RS 810/EV FGR

RS 810/EV FGR (1100-3500/6990 kW)

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RS 1000-1200/EV FGR

RS 1000/EV FGR (1100-4000/10100 kW)
RS 1200/EV FGR (1500-5500/11100 kW)

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RS 1300-2000/EV FGR

RS 1300/EV FGR (1350-7500/12000 kW)
RS 1600/EV FGR (3065-9503/15560 kW)
RS 2000/EV FGR (4000-12000/19500 kW)

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GAS BURNERS

ULTRA LOW NOx

Ultra Low NOx emissions (NOx lower than 30 mg/kWh)

MODULATING ELECTRONIC CAM



RS 68-200/E ULX

RS 68/E ULX TL FS1 (150/350-1050 kW)
RS 120/E ULX TL FS1 (200/610-1400 kW)
RS 160/E ULX TL FS1 (290/950-1950 kW)
RS 200/E ULX TL FS1 (375/1360-2400 kW)

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RS 310-610/E ULX

RS 310/E ULX TL FS1 (370/1250-3700 kW)
RS 510/E ULX TL FS1 (570/1900-4600 kW)
RS 610/E ULX TL FS1 (750/2080-6000 kW)

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RS 810/E ULX

RS 810/E ULX TL FS1 (970/3350-8100 kW)

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MODULATING ELECTRONIC CAM
VARIABLE SPEED



RS 68-200/EV ULX

RS 68/EV ULX TL FS1 (150/350-1050 kW)
RS 120/EV ULX TL FS1 (200/610-1400 kW)
RS 160/EV ULX TL FS1 (290/950-1950 kW)
RS 200/EV ULX TL FS1 (375/1360-2400 kW)

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RS 310-610/EV ULX

RS 310/EV ULX TL FS1 (370/1250-3700 kW)
RS 510/EV ULX TL FS1 (570/1900-4600 kW)
RS 610/EV ULX TL FS1 (750/2080-6000 kW)

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RS 810/EV ULX

RS 810/EV ULX TL FS1 (970/3350-8100 kW)

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Ultra Low NOx gas burners

RS 25-35 C05



- Progressive two-stage gas burners with low NOx emissions according to Class 5 of European standard EN 676 (NOx lower than 56 mg/kWh*)

RS 25-35 C05 series represents Riello's ultimate step of innovation in therms of Low NOx technology applied to gas fueled burners in the low-medium power segment. The series includes three models, working in two stage operation, with an output ranging from 70 to 440 kW.
The combustion head has been re-designed in order to achieve very low values of NOx emissions (< 56 mg/kWh), for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. RS 25-35 C05 burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The exclusive design ensures reduced dimensions, simple use and maintenance.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. A wide range of accessories guarantees elevated working flexibility.

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.

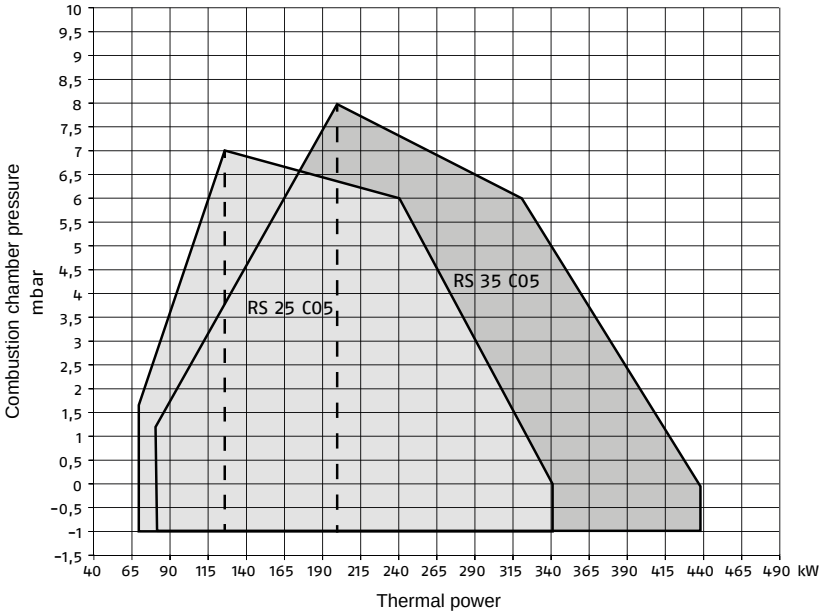
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 25 C05 TC FS1	70/125-340	7/12.5-34	0.6	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159225**
RS 25 C05 TL FS1	70/125-340	7/12.5-34	0.6	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159226**
RS 35 C05 TC FS1	82/200-440	8.2/20-44	0.7	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159227**
RS 35 C05 TL FS1	82/200-440	8.2/20-44	0.7	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159229**

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) Model with plug and socket.
(2) Model with CMG control box.

FIRING RATES

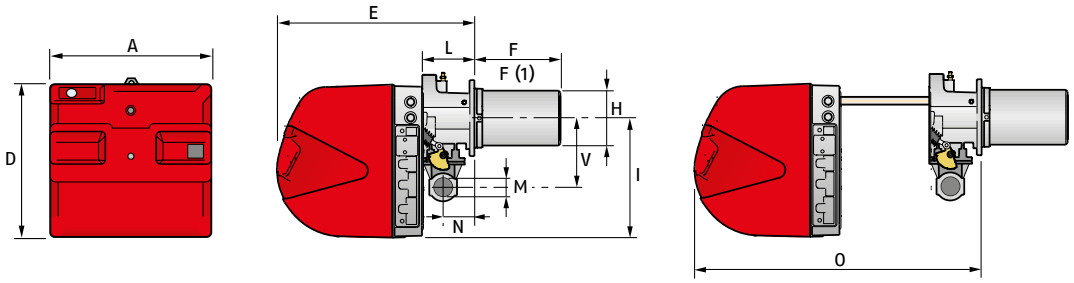


Useful firing rates for choosing the burner

Modulation range

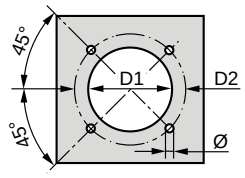
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

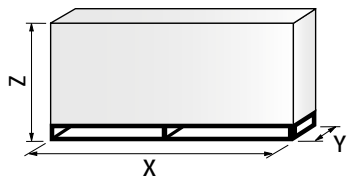


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 25 C05	442	422	508	230-365	140	305	138	1”½	84	780-/	-	177
RS 35 C05	442	422	508	192-327	152	305	138	1”½	84	780-/	-	177

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 25 C05	160	224	M8
RS 35 C05	160	224	M8

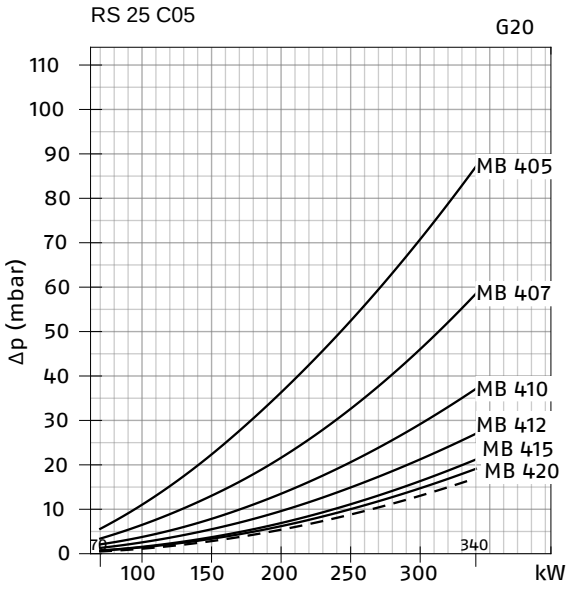


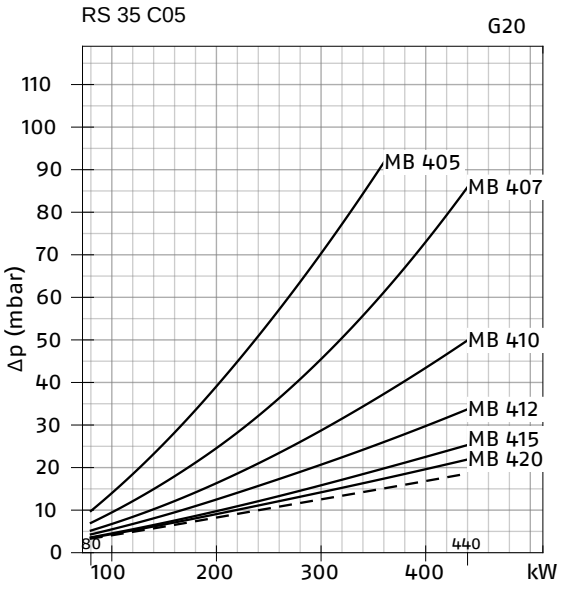
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 25 C05	1000	485	500	39
RS 35 C05	1000	485	500	40

(1) Dimension with standard and extended head.

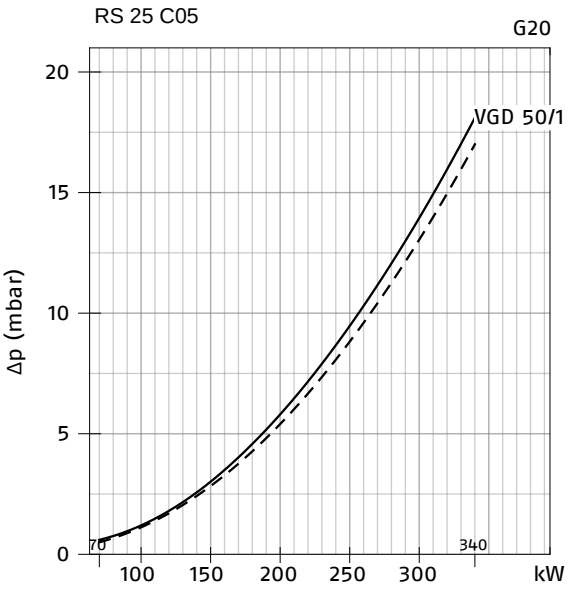
PRESSURE LOSS DIAGRAMS

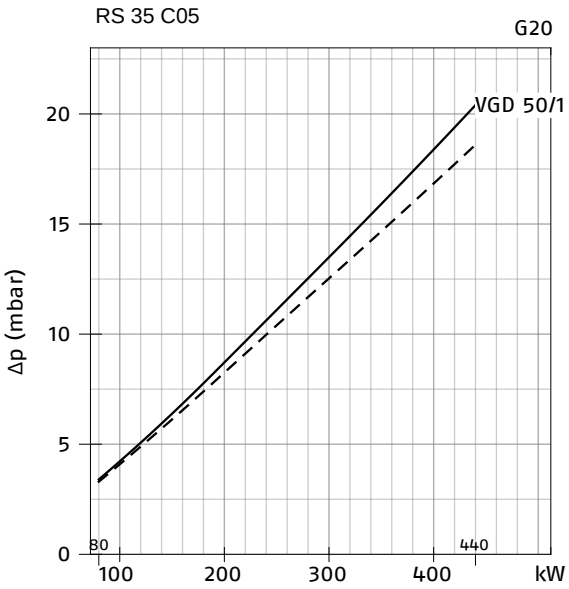
MB SERIES GAS TRAIN





VGD 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

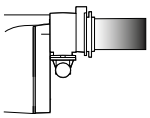
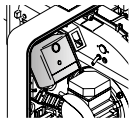
Description (1)	Code	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
					RS 25 C05	RS 35 C05
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RT 20	**3970500***	Rp ¾"	-	3010123	3000824	
MB 407/1-RT 20	**3970553***	Rp ¾"	-	3010123	3000824	
MB 407/1-RT 52	**3970599***	Rp ¾"	-	3010123	3000824	
MB 407/1-RSM 20	**3970229***	Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970258***	Rp 1" ¼	-	3010123	3010124	
MB 410/1-RT 20	**3970554***	Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970600***	Rp ¾"	-	3010123	3000824	

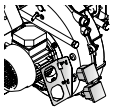
Description (1)	Code	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
					RS 25 C05	RS 35 C05
MB 410/1-RSM 20	**3970230***	Rp ¾"	-	3010123	3000824	
MB 412/1-RT 52	**3970256***	Rp 1" ½	-	3010123	□	□
MB 412/1-RT 20	**3970144***	Rp 1" ½	-	3010123	□	□
MB 412/1 CT RT 20	**3970197****	Rp 1" ½	♦	♦	□	□
MB 412/1-RSM 20	**3970231***	Rp 1" ½	-	3010123	□	□
MB 415/1-RT 30	**3970180***	Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 30	**3970198****	Rp 1" ½	♦	♦	□	□
MB 415/1-RT 52	**3970250***	Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 52	**3970253****	Rp 1" ½	♦	♦	□	□
MB 415/1-RSM 30	**3970232***	Rp 1" ½	-	3010123	□	□
MB 420/1-RT 30	**3970181***	Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 30	**3970182****	Rp 2"	♦	♦	3000822	
MB 420/1-RT 52	**3970257***	Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 52	**3970252****	Rp 2"	♦	♦	3000822	
MB 420/1-RSM 30	**3970233***	Rp 2"	-	3010123	3000822	
MB 420/1 CT RSM 30	**3970234****	Rp 2"	♦	♦	3000822	
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	**20137718***	Rp 2"	-	3010123+ 20186306	3000822	
VGD 50/1 CT RT 122	**20169190****	Rp 2"	♦	♦	3000822	

(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) Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Code
		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.	
	RS 25 C05	Standard head length = 230 mm - Extended head length = 365 mm	**20177160**
	RS 35 C05	Standard head length = 192 mm - Extended head length = 327 mm	**20177164**
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm	**3010095**
	RS 25-35 C05	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**3010449**
	RS 25-35 C05	POST-VENTILATION KIT To prolong ventilation after opening of thermostats chain, a special kit is available. Post-ventilation time = 20 sec.	**3010452**
	RS 25-35 C05	CONNECTION FLANGE KIT A kit is available for use where the burner opening on the boiler is of excessive diameter.	**3010138**

Drawing	Burner model	Specification	Code
	RS 25-35 C05	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**
	RS 25-35 C05	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.	**3010448**
	RS 25-35 C05	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.	**3010418**
	RS 25-35 C05	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.	**3010419**
	RS 25-35 C05	HOURS COUNTER KIT To measure the burner working time a hours counter kit is available.	**3010450**
	RS 25-35 C05	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
	RS 25-35 C05	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

STATE OF SUPPLY

Monoblock forced draught Low Nox gas burner, with two stage operation, fully automatic, made up of:
Air suction circuit with sound proofing material
High performance fan
– Air damper for air flow setting and butterfly valve for regulating fuel output on 1st and 2nd stage controlled by a servomotor with variable cam
– Newly designed combustion head, for Low Nox emissons (< 56mg/kWh), fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Burner on/off selection switch
– Microprocessor-based burner safety control box, with diagnostic functions
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– 1st - 2nd stage manual switch
– Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
– Plug and socket for electrical connections accessible from the external of the cover
– IP40 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

Ultra Low NOx gas burners

RS 45 C05



- Progressive two-stage gas burners with low NOx emissions according to Class 5 of European standard EN 676 (NOx lower than 56 mg/kWh*)

RS 45 C05 series represents Riello's ultimate step of innovation in therms of Low NOx technology applied to gas fueled burners in the low-medium power segment.
The series includes three models, working in Two Stage operation, with an output ranging from 90 to 570 kW.
The combustion head has been re-designed in order to achieve very low values of NOx emissions (< 56 mg/kWh), for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. RS 45 C05 burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The exclusive design ensures reduced dimensions, simple use and maintenance.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. A wide range of accessories guarantees elevated working flexibility.

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.

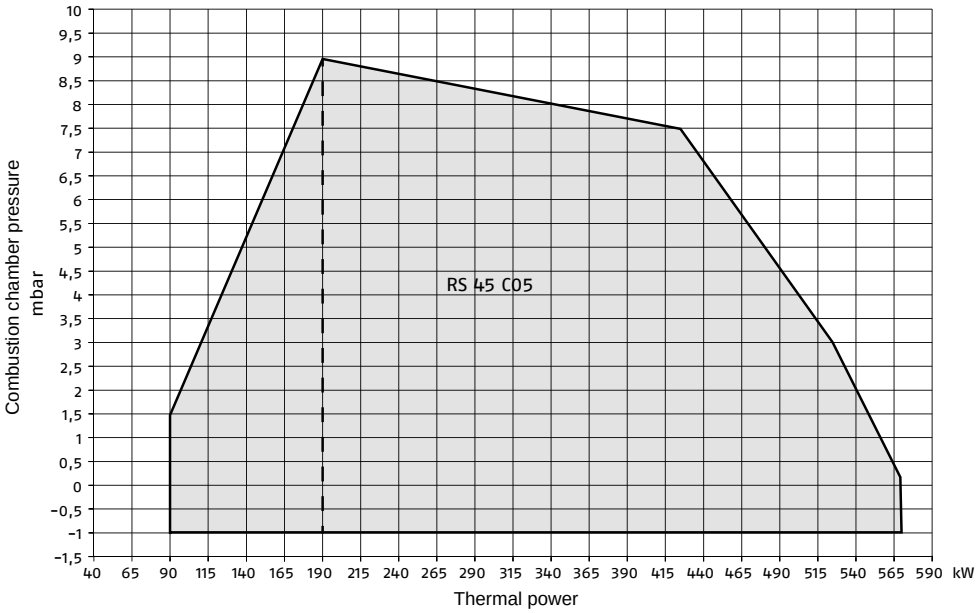
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 45 C05 TC FS1	90/190-570	9/19-57	0.76	1/220-230/50-60	230/50-60	CE-0123CT1607	(1)(2)	**20159233**
RS 45 C05 TL FS1	90/190-570	9/19-57	0.76	1/220-230/50-60	230/50-60	CE-0123CT1607	(1)(2)	**20159234**

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) Model with plug and socket.
(2) Model with CMG control box.

FIRING RATES

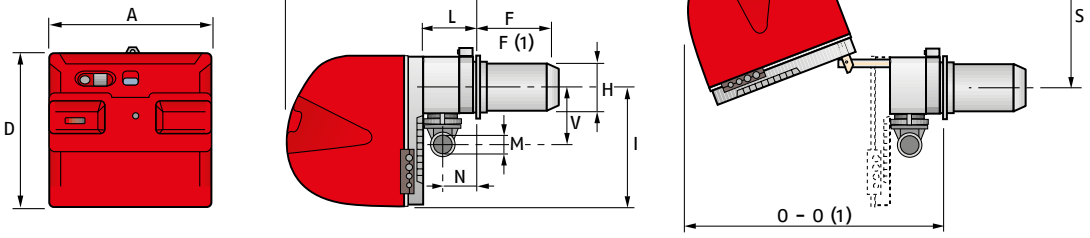


Useful firing rates for choosing the burner

Modulation range

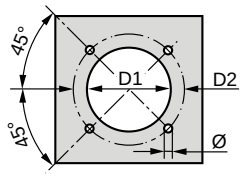
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

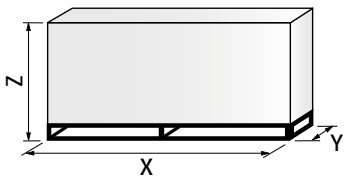


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 45 C05	476	474	580	192-327	160	352	164	1”½	108	810-810	367	168

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 45 C05	165	224	M8

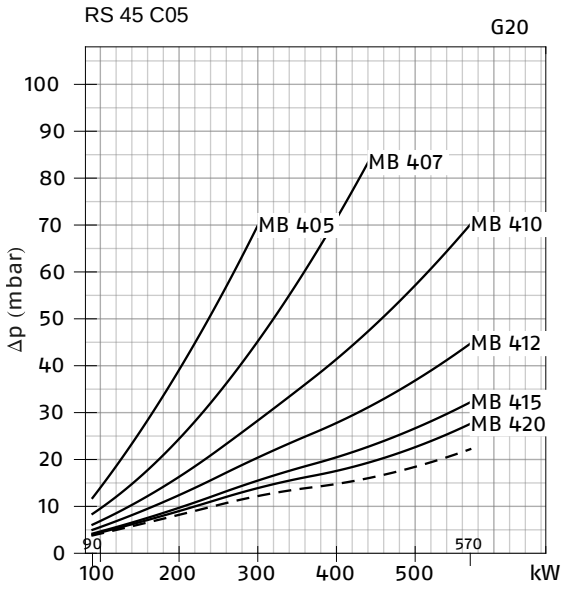


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 45 C05	1015	500	630	48

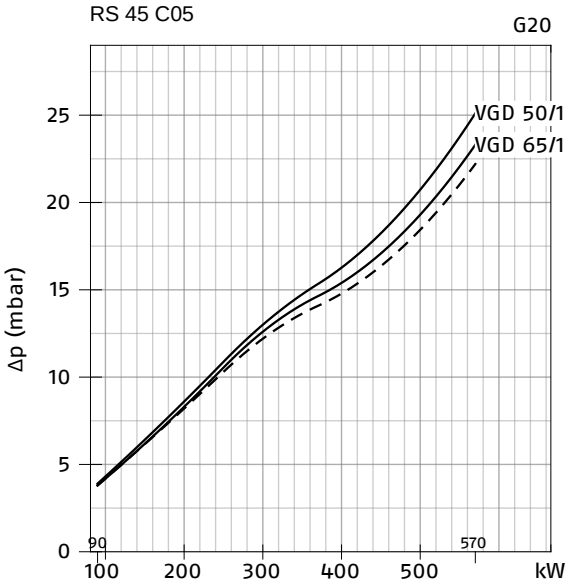
(1) Dimension with standard and extended head.

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN



VGD 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

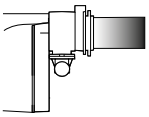
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)
						RS 45 C05
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RT 20	3970500*		Rp ¾"	-	3010123	3000824
MB 407/1-RT 20	3970553*		Rp ¾"	-	3010123	3000824
MB 407/1-RT 52	3970599*		Rp ¾"	-	3010123	3000824
MB 407/1-RSM 20	3970229*		Rp ¾"	-	3010123	3000824
MB 410/1-RT 52	3970258*		Rp 1" ¼	-	3010123	3010124
MB 410/1-RT 20	3970554*		Rp ¾"	-	3010123	3000824
MB 410/1-RT 52	3970600*		Rp ¾"	-	3010123	3000824
MB 410/1-RSM 20	3970230*		Rp ¾"	-	3010123	3000824

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)
						RS 45 C05
MB 412/1-RT 52	3970256*		Rp 1" ½	-	3010123	□
MB 412/1-RT 20	3970144*		Rp 1" ½	-	3010123	□
MB 412/1 CT RT 20	3970197**		Rp 1" ½	♦	♦	□
MB 412/1-RSM 20	3970231*		Rp 1" ½	-	3010123	□
MB 415/1-RT 30	3970180*		Rp 1" ½	-	3010123	□
MB 415/1 CT RT 30	3970198**		Rp 1" ½	♦	♦	□
MB 415/1-RT 52	3970250*		Rp 1" ½	-	3010123	□
MB 415/1 CT RT 52	3970253**		Rp 1" ½	♦	♦	□
MB 415/1-RSM 30	3970232*		Rp 1" ½	-	3010123	□
MB 420/1-RT 30	3970181*		Rp 2"	-	3010123	3000822
MB 420/1 CT RT 30	3970182**		Rp 2"	♦	♦	3000822
MB 420/1-RT 52	3970257*		Rp 2"	-	3010123	3000822
MB 420/1 CT RT 52	3970252**		Rp 2"	♦	♦	3000822
MB 420/1-RSM 30	3970233*		Rp 2"	-	3010123	3000822
MB 420/1 CT RSM 30	3970234**		Rp 2"	♦	♦	3000822
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	20137718*		Rp 2"	-	3010123+ 20186306	3000822
VGD 50/1 CT RT 122	20169190**		Rp 2"	♦	♦	3000822
VGD 65/1-FT 122	20140762*	(5)	DN65	-	3010123	3000826+3000822
VGD 65/1 CT FT 122	20169191**	(5)	DN65	♦	♦	3000826+3000822

(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) Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 45 C05	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 = 192 mm - Extended head length = 327 mm	**20177165**
	RS 45 C05	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm	**3010095**
	RS 45 C05	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**3010094**
	RS 45 C05	CONNECTION FLANGE KIT A kit is available for use where the burner opening on the boiler is of excessive diameter.	**3010138**
	RS 45 C05	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**

Drawing	Burner model	Specification	Code
	RS 45 C05	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.	**3010321**
	RS 45 C05	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.	**3010493**
	RS 45 C05	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.	**3010419**
	RS 45 C05	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
	RS 45 C05	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

STATE OF SUPPLY

Monoblock forced draught Low Nox gas burner, with two stage operation, fully automatic, made up of:
Air suction circuit with sound proofing material
High performance fan
– Air damper for air flow setting and butterfly valve for regulating fuel output on 1st and 2nd stage controlled by a servomotor with variable cam
– Newly designed combustion head, for Low Nox emissons (< 56mg/kWh), fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Burner on/off selection switch
– Microprocessor-based burner safety control box, with diagnostic functions
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– 1^{st} - 2^{nd} stage manual switch
– Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
– Plug and socket for electrical connections accessible from the external of the cover
– IP40 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

Ultra Low NOx gas burners

RS 25-35/M C05



- Progressive two-stage or modulating gas burners with low NOx emissions according to Class 5 of European standard EN 676 (NOx lower than 56 mg/kWh*)

RS 25-35/M C05 burners series covers a firing range from 70 to 440 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
\design ensures reduced dimensions, simple use and maintenance.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. A wide range of accessories guarantees elevated working flexibility.

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.

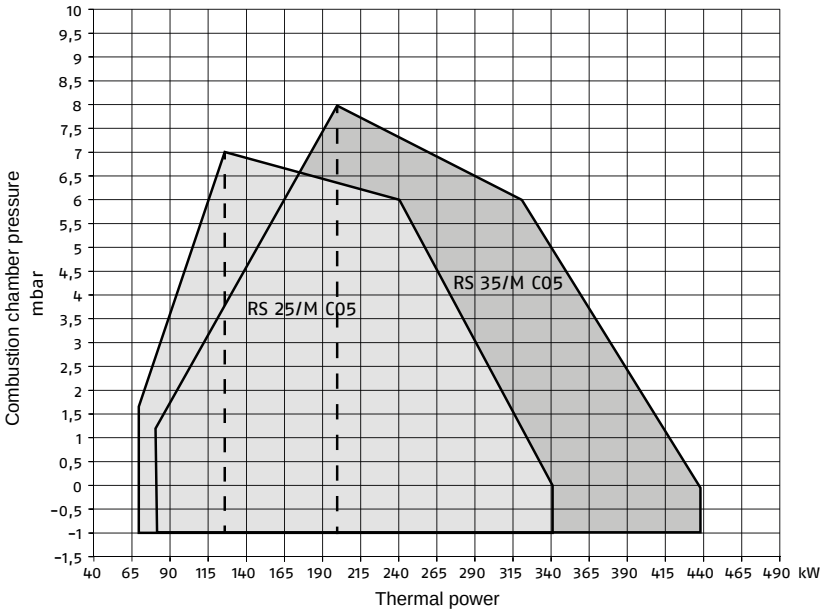
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 25/M C05 TC FS1	70/125-340	7/12.5-34	0.6	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159191**
RS 25/M C05 TL FS1	70/125-340	7/12.5-34	0.6	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159192**
RS 35/M C05 TC FS1	82/200-440	8.2/20-44	0.7	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159193**
RS 35/M C05 TL FS1	82/200-440	8.2/20-44	0.7	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159194**

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) Model with plug and socket.
(2) Model with CMG control box.

FIRING RATES

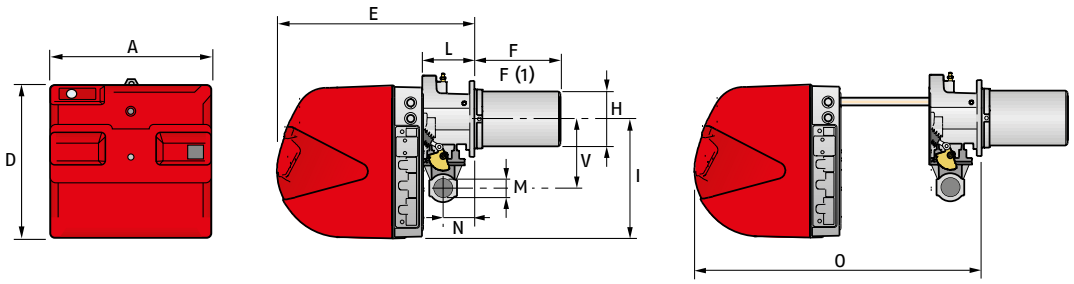


Useful firing rates for choosing the burner

Modulation range

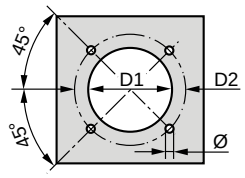
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

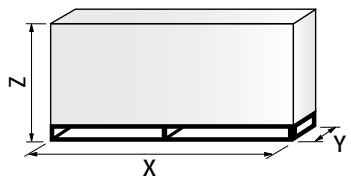


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 25/M C05	442	422	508	230-365	140	305	138	1"½	84	780-/	-	177
RS 35/M C05	442	422	508	198-333	152	305	138	1"½	84	780-/	-	177

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 25/M C05	160	224	M8
RS 35/M C05	160	224	M8

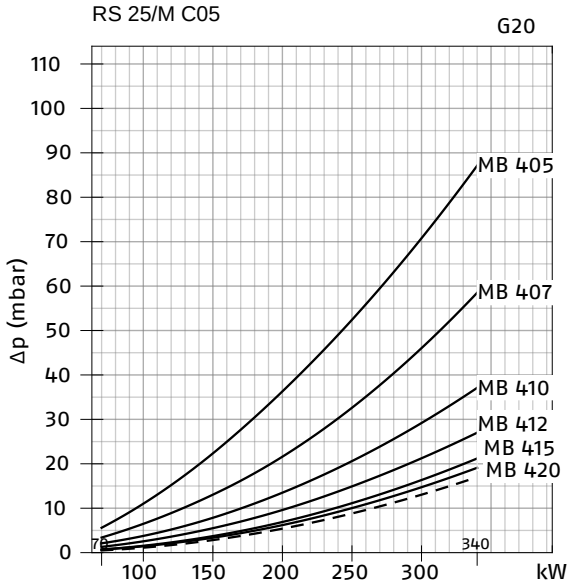


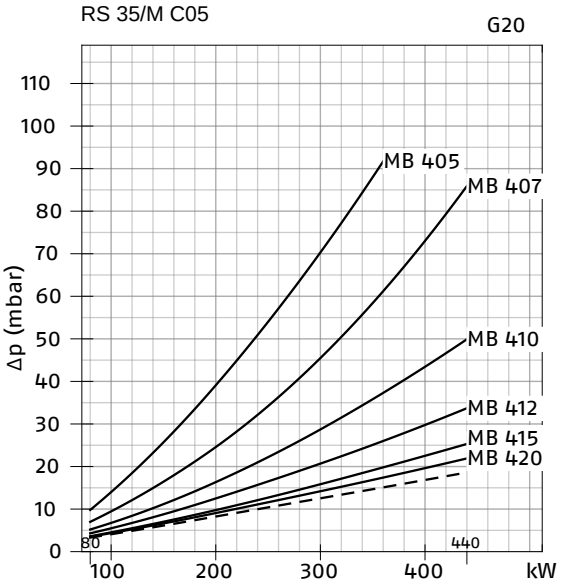
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 25/M C05	1000	485	500	39
RS 35/M C05	1000	485	500	40

(1) Dimension with standard and extended head.

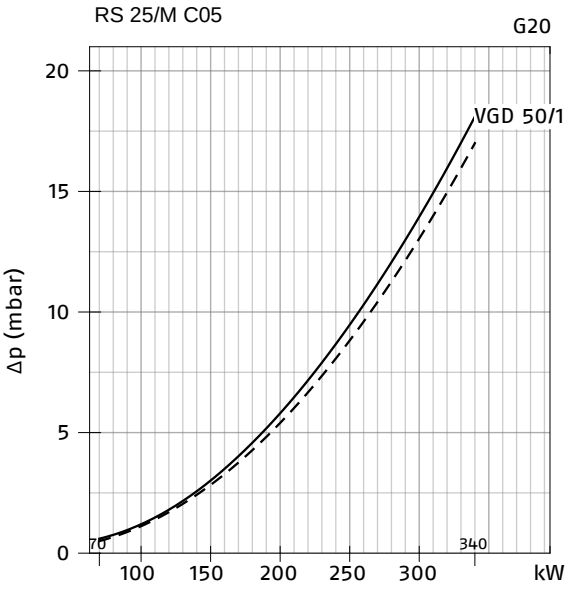
PRESSURE LOSS DIAGRAMS

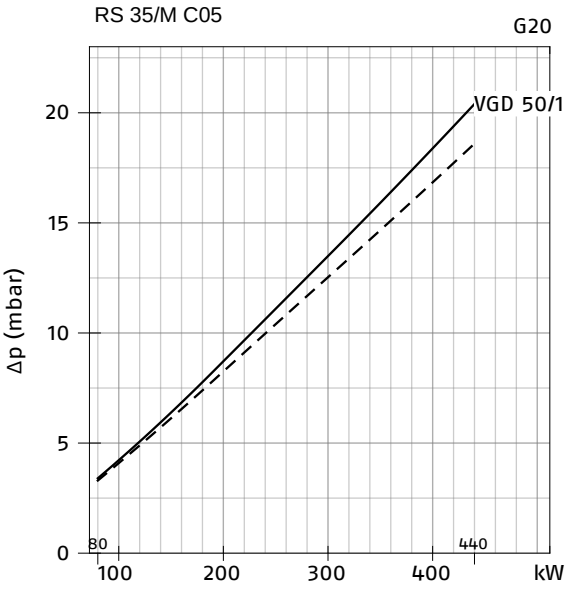
MB SERIES GAS TRAIN





VGD 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

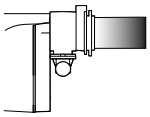
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 25/M C05	RS 35/M C05
MB SERIES ONE STAGE GAS TRAIN							
MB 405/1-RT 20	**3970500***		Rp ¾"	-	3010123	3000824	
MB 407/1-RT 20	**3970553***		Rp ¾"	-	3010123	3000824	
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3010123	3000824	
MB 407/1-RSM 20	**3970229***		Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3010124	
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123	3000824	
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123	3000824	

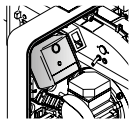
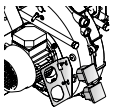
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 25/M C05	RS 35/M C05
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	□	□
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	□	□
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	□	□
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	□	□
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	□	□
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	□	□
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	□	□
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	3000822	
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	3000822	
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	3000822	
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	3000822	
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	3000822	

(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) Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Code
		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.	
	RS 25/M C05	Standard head length = 230 mm - Extended head length = 365 mm	**20177160**
	RS 35/M C05	Standard head length = 192 mm - Extended head length = 327 mm	**20177164**
	RS 25-35/M C05	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm	**3010095**
	RS 25-35/M C05	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**3010449**
	RS 25-35/M C05	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).	**3010410**
	RS 25-35/M C05	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**

Drawing	Burner model	Specification	Code
	RS 25-35/M C05	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.	
		RWF 50.2 - Standard version; 3-point outlet.	**20083339**
		RWF 55.5 - Plus version; complete with RS-485 interface.	**20098541**
	RS 25-35/M C05	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 25-35/M C05	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RS 25-35/M C05	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.	**3010420**
	RS 25-35/M C05	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.	**3010448**
	RS 25-35/M C05	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.	**3010418**
	RS 25-35/M C05	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.	**3010419**
	RS 25-35/M C05	POST-VENTILATION KIT To prolong ventilation after opening of thermostats chain, a special kit is available. Post-ventilation time = 20 sec.	**3010451**
	RS 25-35/M C05	HOURS COUNTER KIT To measure the burner working time a hours counter kit is available.	**3010450**
	RS 25-35/M C05	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
	RS 25-35/M C05	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

(1) On demand.

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner, two stage progressive or modulating operation with a kit, made up of:
- Air suction circuit with sound proofing material
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by a servomotor with variable cam
- Low emissions combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Burner on/off selection switch
- Manual or automatic output increase/decrease switch
- Microprocessor-based burner safety control box, with diagnostic functions
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- High performance fan with forward curve blades
- Starting motor at 2800 rpm, single-phase / 220-230V / 50-60Hz or three-phase / 380-400V / 50-60Hz
- Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
- Plug and socket for electrical connections accessible from the external of the cover
- 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 (RS 25-35/M C05 single-phase)
- 4 plugs for electrical connection (RS 35/M C05 three-phase)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Ultra Low NOx gas burners

RS 45/M C05



- Progressive two-stage or modulating gas burners with low NOx emissions according to Class 5 of European standard EN 676 (NOx lower than 56 mg/kWh*)

RS 45/M C05 burners series covers a firing range from 90 to 570 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS 45/M C05 burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs. The exclusive design ensures reduced dimensions, simple use and maintenance.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. A wide range of accessories guarantees elevated working flexibility.

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.

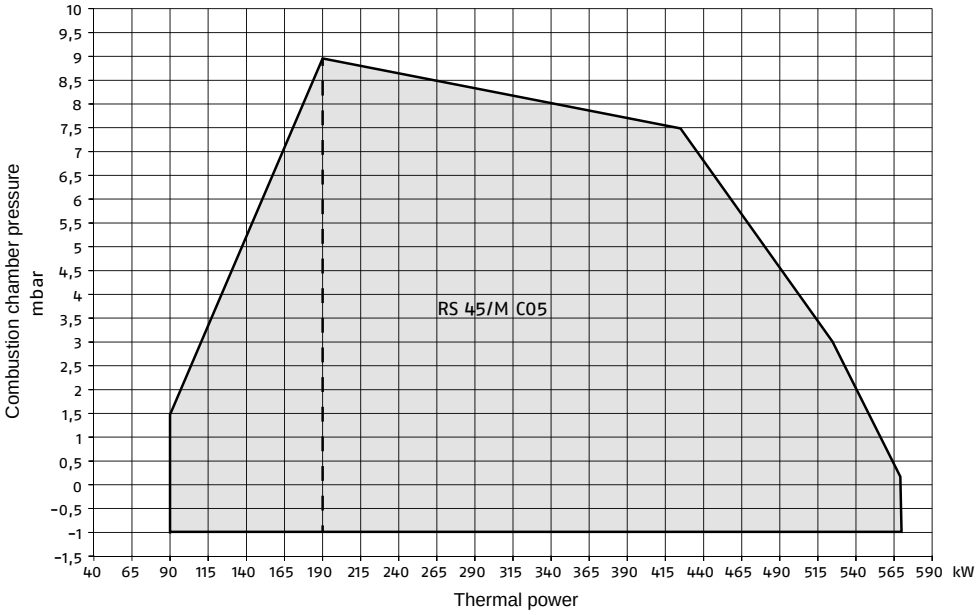
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 45/M C05 TC FS1	90/190-570	9/19-57	0.6	1/230/50	230/50-60	CE-0123CT1607	(1) (2)	**20159209**
RS 45/M C05 TL FS1	90/190-570	9/19-57	0.6	1/230/50	230/50-60	CE-0123CT1607	(1) (2)	**20159210**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

(1) Model with plug and socket.
(2) Model with CMG control box.

FIRING RATES

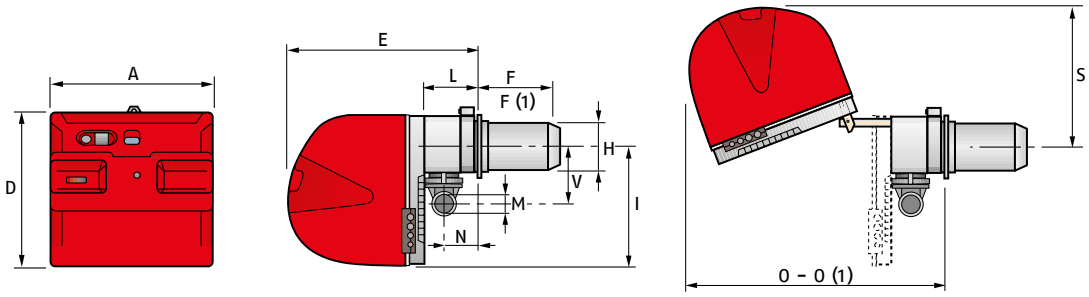


Useful firing rates for choosing the burner

Modulation range

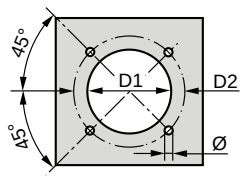
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

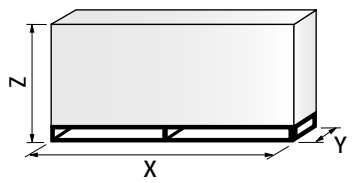


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 45/M C05	476	474	580	192-327	160	352	164	1"½	108	810-810	367	168

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 45/M C05	165	224	M8

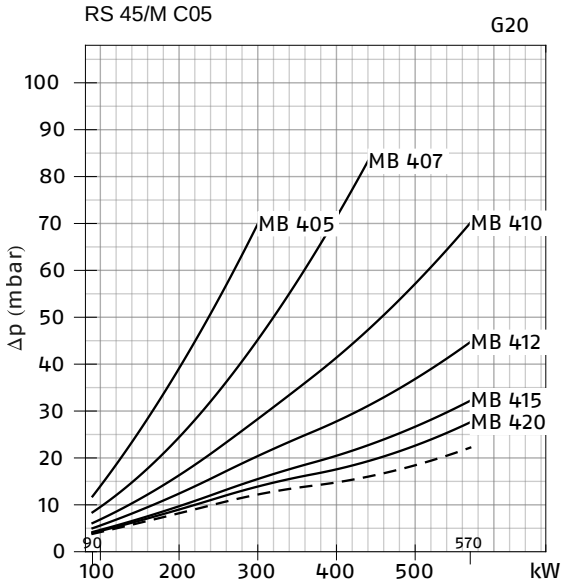


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 45/M C05	1015	500	630	48

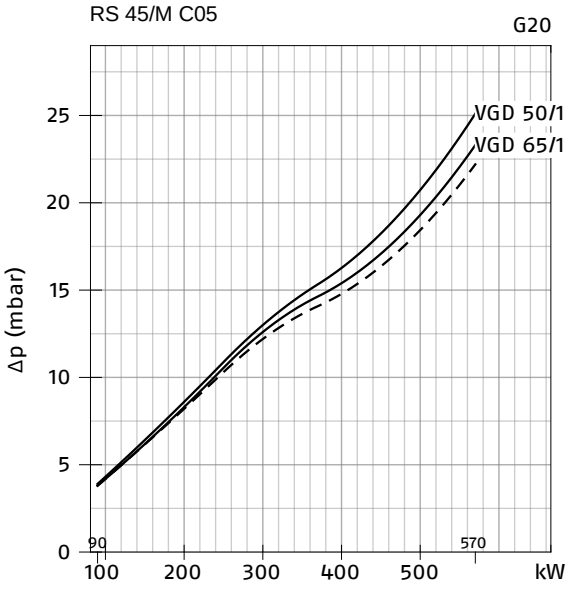
(1) Dimension with standard and extended head.

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN



VGD 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

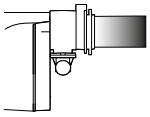
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)
						RS 45/M C05
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RT 20	**3970500***		Rp ¾"	-	3010123	3000824
MB 407/1-RT 20	**3970553***		Rp ¾"	-	3010123	3000824
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3010123	3000824
MB 407/1-RSM 20	**3970229***		Rp ¾"	-	3010123	3000824
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3010124
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123	3000824
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123	3000824

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)
						RS 45/M C05
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	□
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	□
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	□
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	□
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	□
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	□
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	□
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	□
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	□
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	3000822
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	3000822
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	3000822
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	3000822
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	3000822
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	3000822
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	3000822
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	3000822
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826+3000822
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826+3000822

(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) Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 45/M C05	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 = 192 mm - Extended head length = 327 mm	**20177165**
	RS 45/M C05	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm	**3010095**
	RS 45/M C05	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**3010094**
	RS 45/M C05	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).	**3010390**
	RS 45/M C05	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**

Drawing	Burner model	Specification	Code
	RS 45/M C05	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.	
		RWF 50.2 - Standard version; 3-point outlet.	**20082208**
		RWF 55.5 - Plus version; complete with RS-485 interface.	**20099657**
	RS 45/M C05	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 45/M C05	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RS 45/M C05	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.	**3010109**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

(1) On demand.

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner, two stage progressive or modulating operation with a kit, made up of:
– Air suction circuit with sound proofing material
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by a servomotor with variable cam
– Low emissions combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Burner on/off selection switch
– Manual or automatic output increase/decrease switch
– Microprocessor-based burner safety control box, with diagnostic functions
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– Fan with reverse curve blades
– Sound-proofing material on air suction circuit
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz (single-phase, 230V, 50Hz)
– IP 44 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
– Fairleads for the electrical connection
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Ultra Low NOx gas burners

RS 25-35/E C05 - H2 Ready 20%



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 5 of European standard EN 676 (NOx lower than 56 mg/kWh*)
- Operation with natural gas or blends of natural gas and hydrogen up to 20%

RS 25-35/E C05 burners series covers a firing range from 70 to 440 kW, and it is based on a new Digital Burner Management System, Riello REC27, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
The RS 25-35/E C05 range include dedicated burners tested and certified for operation with blends of natural gas and hydrogen up to a 20%vol of hydrogen, making them ready for possible hydrogen injection and fluctuation in the gas distribution grid.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS 25-35/E C05 burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.

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.

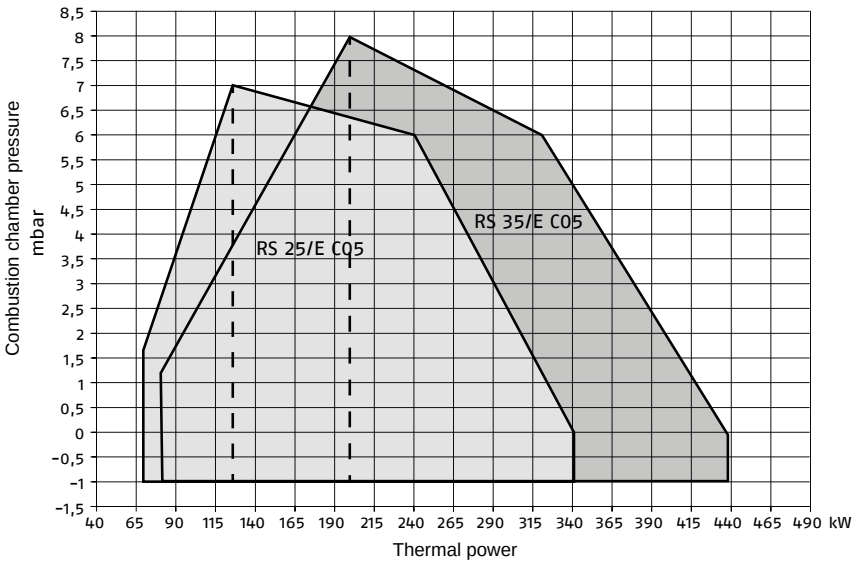
TECHNICAL DATA

Description	Heat output natural gas (1)		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 25/E C05 TC FS1	70/125-340	7/12.5-34	0.6	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159211**
RS 25/E C05 TL FS1	70/125-340	7/12.5-34	0.6	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159212**
RS 35/E C05 TC FS1	82/200-440	8.2/20-44	0.7	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159213**
RS 35/E C05 TL FS1	82/200-440	8.2/20-44	0.7	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	**20159214**
MODELS FOR OPERATION WITH BELND OF NATURAL GAS AND HYDROGEN UP TO 20% (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 25/E C05 TC FS1	70/125-340	7/12.5-34	0.6	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(2)(3)(4)	**20212733**
RS 35/E C05 TC FS1	82/200-440	8.2/20-44	0.7	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(2)(3)(4)	**20212751**

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) Power range referred to a Low NOx performance conformingto the Class 5 of EN676 European Standard with 100% natural gas. When operating with 20%vol hydrogen the max power will be reduced by 15% due to a lower volumetric calorific value of the hydrogen compared to natural gas
(2) Model with plug and socket.
(3) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train.In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.
(4) Certified for natural gas use only or blend of natural gas and hydrogen up to 20%.

FIRING RATES

When operating with 20%vol hydrogen the maximum power will be reduced by 15% due to a lower volumetric calorific value of the hydrogen compared to natural gas.

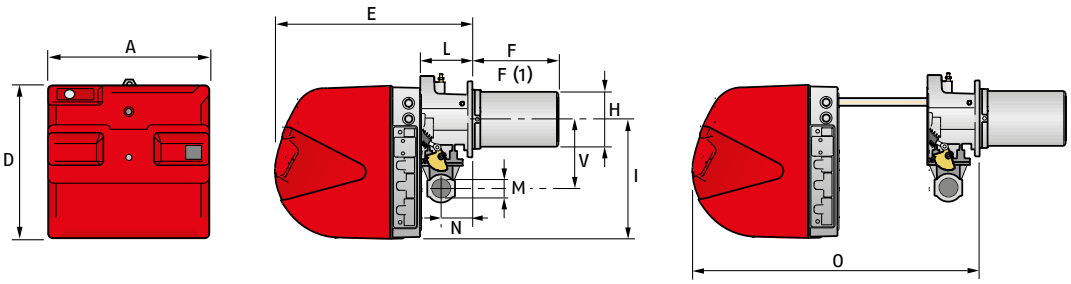


Useful firing rates for choosing the burner

Modulation range

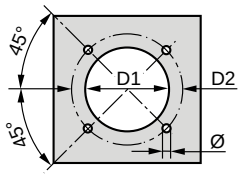
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

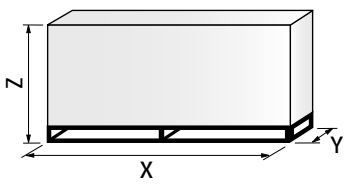


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 25/E C05	442	422	508	230-365	140	305	138	1"½	84	780-/	177
RS 35/E C05	442	422	508	198-333	152	305	138	1"½	84	780-/	177

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 25/E C05	160	224	M8
RS 35/E C05	160	224	M8

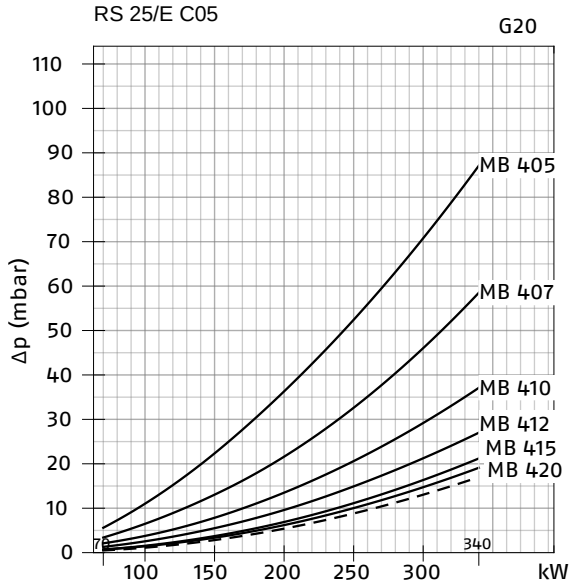


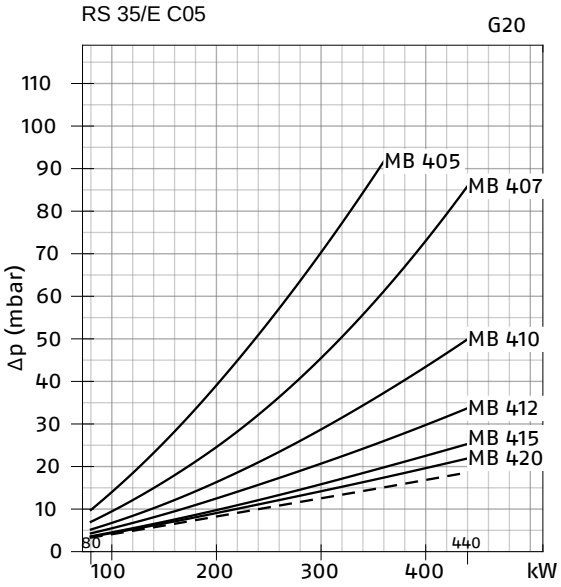
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 25/E C05	1000	485	500	39
RS 35/E C05	1000	485	500	40

(1) Dimension with standard and extended head.

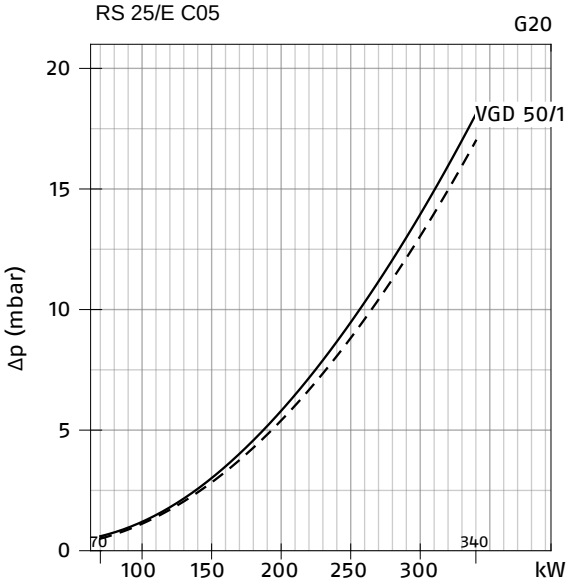
PRESSURE LOSS DIAGRAMS

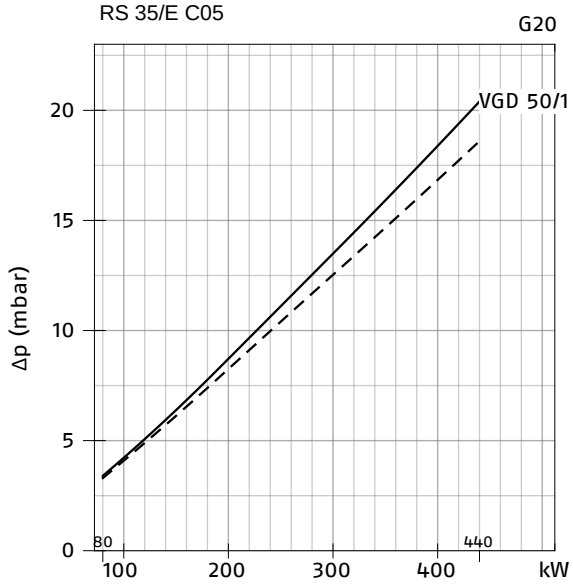
MB SERIES GAS TRAIN





VGD 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

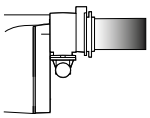
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 25/E C05	RS 35/E C05
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RSM 20	**20065553***	(4)	Rp ¾”	-	3000824	
MB 407/1-RT 52	**3970599***		Rp ¾”	-	3000824	
MB 410/1-RT 52	**3970258***		Rp 1” ¼	-	□	□
MB 412/1-RT 52	**3970256***		Rp 1” ½	-	□	□
MB 415/1-RT 52	**3970250***		Rp 1” ½	-	□	□
MB 420/1-RT 52	**3970257***		Rp 2”	-	3000822	

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 25/E C05	RS 35/E C05
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	**20137718***	(5)	Rp 2”	-	3000822	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) This gas train code is not compatible with the gas valve seal control management function integrated in the burner control box.
(5) Additional flange kit code 20185515 needed for seal control function code 3010344.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
☐ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 25/E C05	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 = 230 mm - Extended head length = 365 mm	**20177160**
	RS 35/E C05	Standard head length = 192 mm - Extended head length = 327 mm	**20177164**
	RS 25-35/E C05	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm	**3010095**
	RS 25-35/E C05	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**3010449**
	RS 25-35/E C05	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**
	RS 25-35/E C05	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. RWF 50.2 - Standard version; 3-point outlet.	**20083339**
		RWF 55.5 - Plus version; complete with RS-485 interface.	**20098541**
	RS 25-35/E C05	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 25-35/E C05	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RS 25-35/E C05	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.	**3010448**
	RS 25-35/E C05	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.	**3010418**
	RS 25-35/E C05	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.	**3010419**

Drawing	Burner model	Specification	Code
	RS 25-35/E C05	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.	**3010437**
	RS 25-35/E C05	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3010436**

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner qualified for operation with blends of natural gas and hydrogen up to 20% with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Microprocessor-based Digital Burner Management System (RS/E models)
- Display Interface operating unit to adjust the system
- Air suction circuit with sound proofing material
- High performance fan with straight blades
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Starting motor at 2800 rpm, single-phase/220-230V/50-60Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Plugs and sockets for electrical connection, accessible from the external of the cover
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- 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 (RS 25-35/E C05 single-phase)
- 4 plugs for electrical connection (RS 35/E C05 three-phase)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Ultra Low NOx gas burners

RS 45/E C05



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 5 of European standard EN 676 (NOx lower than 56 mg/kWh*)

RS 45/E C05 burners series covers a firing range from 90 to 550 kW, and it is based on a new Digital Burner Management System, Riello REC27, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS 45/E C05 burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.

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.

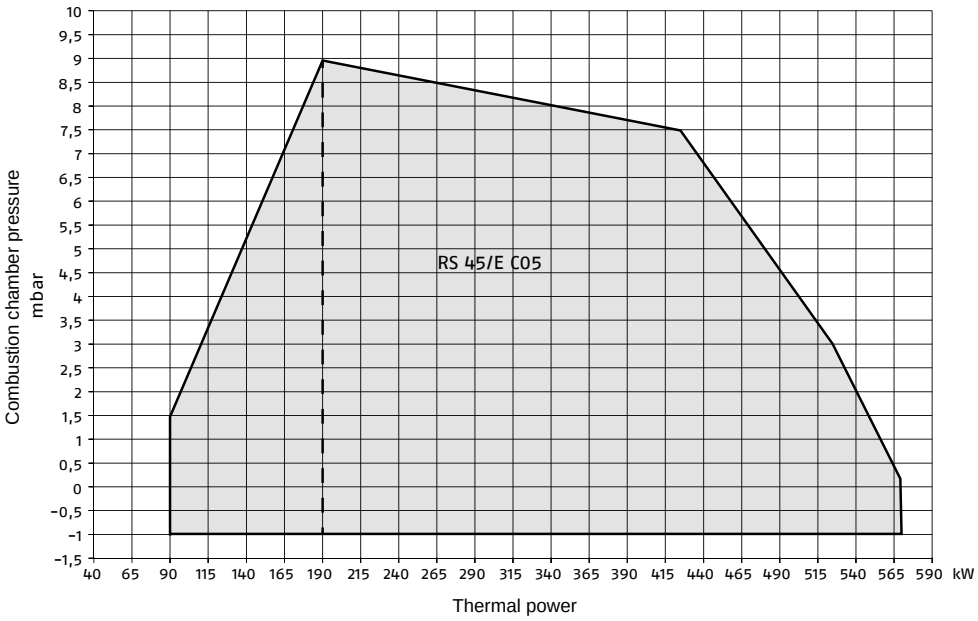
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 45/E C05 TC FS1	90/190-550	9/19-55	0.7	1/230/50	230/50-60	CE-0085BS0380	(1)(2)	**20159218**
RS 45/E C05 TL FS1	90/190-550	9/19-55	0.7	1/230/50	230/50-60	CE-0085BS0380	(1)(2)	**20159219**

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) Model with plug and socket.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train.In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.

FIRING RATES

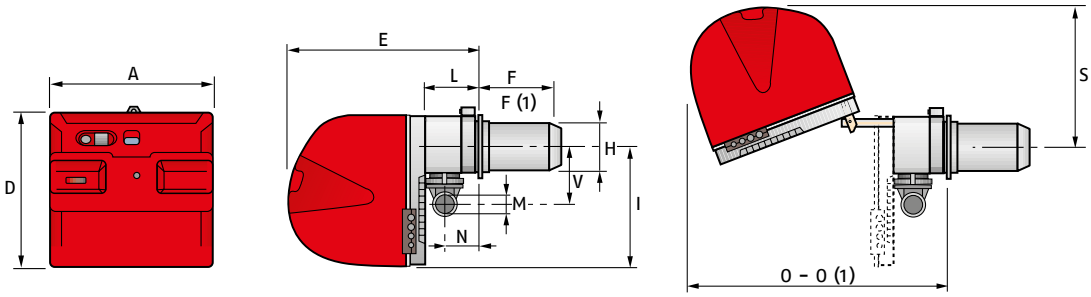


Useful firing rates for choosing the burner

Modulation range

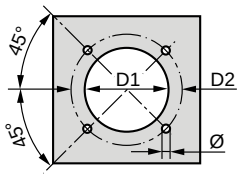
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

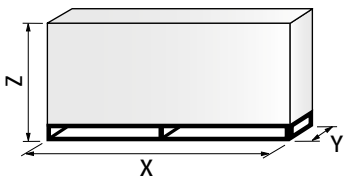


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 45/E C05	476	474	580	192-327	160	352	164	1"½	108	810-810	367	168

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 45/E C05	165	224	M8

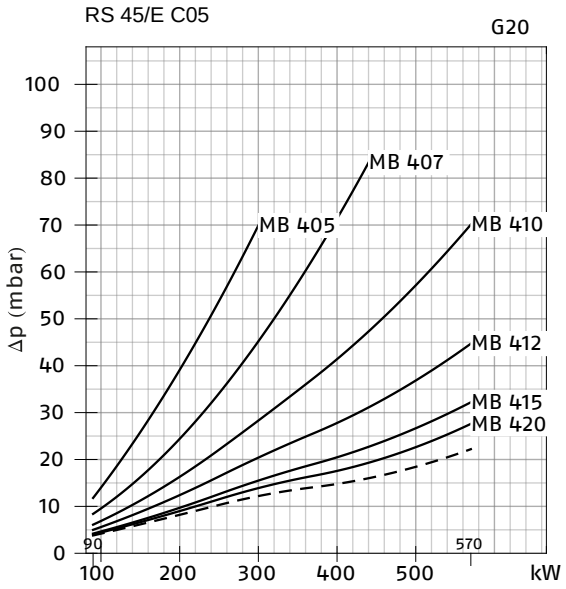


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 45/E C05	1015	500	630	48

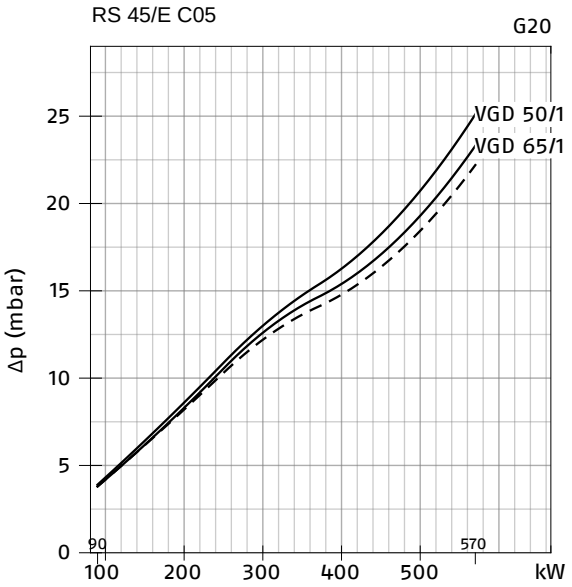
(1) Dimension with standard and extended head.

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN



VGD 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

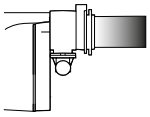
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)
					RS 45/E C05
MB SERIES ONE STAGE GAS TRAIN					
MB 405/1-RSM 20	**20065553***	(4)	Rp ¾"	-	3000824
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3000824
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	□
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	□
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	□
MB 420/1-RT 52	**3970257***		Rp 2"	-	3000822

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)
					RS 45/E C05
VGD SERIES ONE STAGE GAS TRAIN					
VGD 50/1-RT 122	**20137718***	(5)	Rp 2”	-	3000822
VGD 65/1-FT 122	**20140762***	(6)	DN65	-	3000826+3000822

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) This gas train code is not compatible with the gas valve seal control management function integrated in the burner control box.
(5) Additional flange kit code 20185515 needed for seal control function code 3010344.
(6) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
☐ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 45/E C05	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 = 192 mm - Extended head length = 327 mm	**20177165**
	RS 45/E C05	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm	**3010095**
	RS 45/E C05	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**3010094**
	RS 45/E C05	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**
	RS 45/E C05	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. RWF 50.2 - Standard version; 3-point outlet. RWF 55.5 - Plus version; complete with RS-485 interface.	 **20083339** **20098541**
	RS 45/E C05	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 45/E C05	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output. Pressure (0-16 bar) with 4-20 mA output. Pressure (0-25 bar) with 4-20 mA output.	 **3010213** **3010214** **3090873**
	RS 45/E C05	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.	**20098335**
	RS 45/E C05	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.	**3010437**
	RS 45/E C05	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3010436**

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Microprocessor-based Digital Burner Management System (RS/E models)
- Display Interface operating unit to adjust the system
- Air suction circuit lined with sound-proofing material
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- - Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz (single-phase, 230V and 50Hz)
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 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
- Wiring loom fittings for the electrical connection
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Modulating Premix Ultra Low NOx gas burners

RX 180-360 S/PV ULN - H2 Ready 20%



- Premix gas burners
- Ultra Low NOx emissions (NOx ≤ 30 mg/Nm^3)
  Compact flame (Riello patented combustion head with metal fiber mesh)
- Modulation with variable rpm brushless motor
- N. 3 models, from 30 to 360 kW
- Turn-down ratio up to 1:6
- Firing with pilot flame
- Operation with natural gas or blend of natural gas and hydrogen up to 20%
- Operation with natural gas and LPG

The gas burners in the Riello RX S/PV ULN range have been designed and developed by Riello with premix combustion technology. They represent the best solutions for low polluting emissions and develop high modulation ratios.
The RX 180-360 S/PV ULN models of the RX series, in addition to the operation with natural gas or LPG, have been tested and certified for operation with blends of natural gas and hydrogen up to a 20%vol of hydrogen, making them ready for possible hydrogen injection and fluctuation in the gas distribution grid.
In the RX S/PV ULN burners, the perfect mixture of air and gas is created inside the burner suction line circuit. The air/gas mixture is distributed in the combustion head or “support”. It consists of a metal cylinder with dedicated surface holes for mixture outlet.
Thanks to this premix technology, combustion occurs close to the metal mesh and the support, resulting in a very compact flame.
It also reduces the probability of contact between the flame and the walls of the combustion chamber. The result is that this head type can be combined with a variety of combustion chambers and is highly flexible when matching equipment.
The function can be either “two-stage progressive” or “modulating”. Specifically, RX S/PV burners have an exclusive brushless motor, designed by Riello which controls the fan speed, and proportional gas valves. These combine to provide perfect control of the output.
The air-gas mixture efficiency and output control, combined with the premix combustion head, guarantees low polluting emissions, high combustion efficiency, and high turn-down ratios (up to 6:1). Furthermore, the burner is fired by pilot flame to guarantee regular start up even under conditions with excess air.
The combustion heads of all RX S/PV ULN models are equipped with the RRD (Resonance Reduction Device) that minimizes all possible resonance phenomena.
The output hole shape has been specifically designed to optimize the air/gas mixture speed to avoid any potential hazard due to flame return across the entire modulating range.

IMPORTANT NOTE:
During the installation of a Riello premix burner in the RX S/PV ULN range, a number of parameters must be taken into consideration. These include the boiler type the burner will be installed on, the boiler door thickness, the type of gas used, the frequence of maintenance and service interventions, the stack pressure, etc.
Any order that includes the Riello RX S/PV ULN range of burners is the product an in-depth preliminary study of the future of the installation. It is accompanied by a detailed quotation prepared by Riello sales offices and/or technicians.

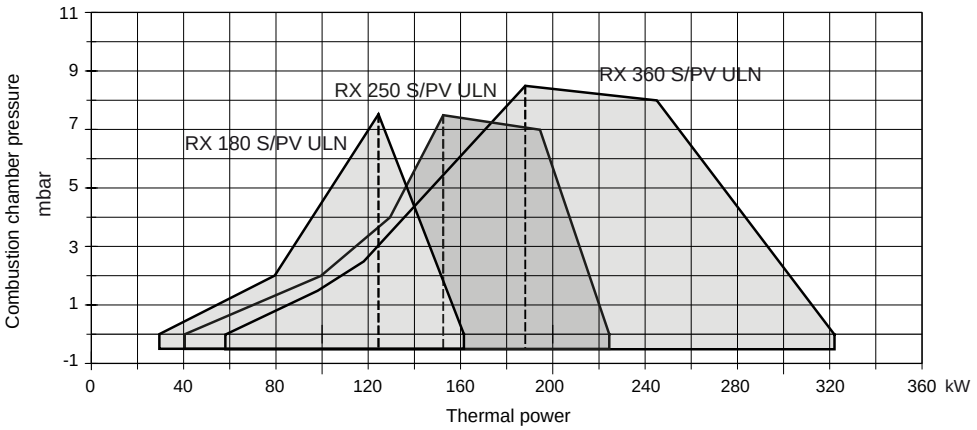
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW (1)	kW (2)	kW	V/Ph/Hz	V/Hz			
RX 180 S/PV ULN	30-160	30-180	0.51	230/1/50-60	230/50-60	CE-0123CT1618	(3)(4)(5)(6)(7)	**20160021**
RX 250 S/PV ULN	40-225	40-250	0.51	230/1/50-60	230/50-60	CE-0123CT1618	(3)(4)(5)(6)(7)	**20160022**
RX 360 S/PV ULN	60-325	60-360	0.51	230/1/50-60	230/50-60	CE-0123CT1618	(3)(4)(5)(6)(7)	**20148871**
RX 360 S/PV ULN	60-325	60-360	0.51	230/1/50-60	230/50-60	CE-0123CT1618	(3)(4)(5)(6)(8)	**20171627**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Power range referred to an Ultra Low NOx performance of 30 mg/Nm3 with 100% natural gas. When operating with 20%vol hydrogen the max power will be reduced by 15% due to a lower volumetric calorific value of the hydrogen compared to natural gas.
(2) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard with 100% natural gas. When operating with 20%vol hydrogen the max power will be reduced by 15% due to a lower volumetric calorific value of the hydrogen compared to natural gas.
(3) The burners cannot be used on inversion flame boilers.
(4) Modulation input factory setting is 3 Points; to change the external modulation parameter to analogue signal it is necessary to access the password-protected list of parameters using the AZL 21 display kit.
(5) Gas train included.
(6) Model with plug and socket.
(7) Certified for natural gas use only or blend of natural gas and hydrogen up to 20%.
(8) Compatible with LPG use only.

FIRING RATES

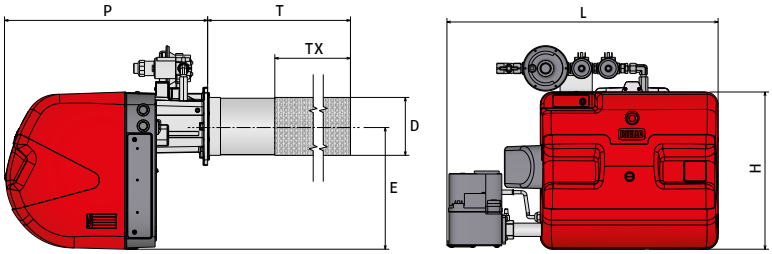
Please note: it is important to be aware that in order to achieve an Ultra Low NOx emission performance, it is required to work with a high excess air; as consequence the combustion chamber back pressure could increase up to roughly 30% more.
When operating with 20%vol hydrogen the max power will be reduced by 15% due to a lower volumetric calorific value of the hydrogen compared to natural gas



Useful firing rates for choosing the burner

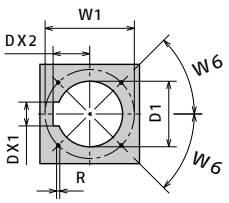
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

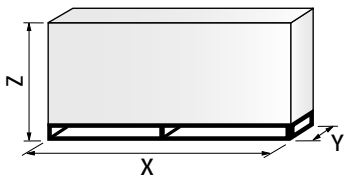


Description	H mm	L mm	P mm	T mm	TX mm	D mm	E mm
RX 180 S/PV ULN	390	640	503	465	320	119	306
RX 250 S/PV ULN	390	640	503	465	320	119	306
RX 360 S/PV ULN	390	675	503	635	442	144	306

TX Flame zone length; the non combustion area (T-TX) must be greater than the thickness of the boiler door complete with refractory.



Description	D1 mm	DX1 mm	DX2 mm	R mm	W1 mm	W6 mm
RX 180 S/PV ULN	163	68	94	M8	224	45°
RX 250 S/PV ULN	163	68	94	M8	224	45°
RX 360 S/PV ULN	163	68	94	M8	224	45°



Description	X mm	Y mm	Z mm	Net weight kg
RX 180 S/PV ULN	730	530	550	33
RX 250 S/PV ULN	730	530	550	33
RX 360 S/PV ULN	1190	530	550	35

ACCESSORIES

Drawing	Burner model	Specification	Code
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. RWF 50.2 - Standard version; 3-point outlet.	**20086840**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**

STATE OF SUPPLY

Monoblock forced draught Premix Ultra Low NOx gas burner, qualified for operation with blends of natural gas and hydrogen up to 20%, with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Cylindrical flame shape premix combustion heads fitted with:
  - highly heat resistant cylinder
  - special metallic fiber mesh resistant to thermal stress
  - ignition electrodes
  - ionization probe
- Variable speed fan with Brushless Motors
- Pneumatic proportioning gas train integrated in the burner, which supply the correct gas quantity in proportion to the airflow produced by the fan
- Air/gas mixer (venturi) in the suction line circuit to support Gas and air mixing
- Airtight ventilation structures for air and gas mixing
- Pilot Ignition system to assure a high ignition reliability
- Microprocessor-based LME 71 burner safety control box
  - manages the variable speed of the fan and all safety phases of the burner
  - allows to modify the operation point of the burner
  - with diagnostic functions for operational state and fault state messages, based on multicolor indication via 3-colored LED
- Burner on/off selection switch
- Flame inspection window
- IP 2XD electric protection level
- AZL 21 LCD display connected to the LME 71 control box to get indication of the operating status, to activate the diagnostic functions and to change the password-protected parameters

STANDARD EQUIPMENT

- Insulating screen and gasket
- Screws, nuts and washers for burner assembly
- Gas valve
- Flange for gas valve
- Valve fixing screws
- Electrical plugs
- Gas train for pilot ignition system
- Instruction booklet
- Spare parts list

Modulating Premix Ultra Low NOx gas burners

RX 500-1000 S/PV ULN



- Premix gas burners
- Ultra Low NOx emissions (NOx ≤ 30 mg/Nm^3)
- Compact flame (Riello patented combustion head with metal fiber mesh)
- Modulation with variable rpm brushless motor
- N. 3 models, from 80 to 1.080 kW
- Turn-down ratio up to 1:6
- Firing with pilot flame
- Operation with natural gas and LPG
- Operation with blend of natural gas and hydrogen up to 20% (only for RX 500–700–850)

The gas burners in the Riello RX S/PV ULN range have been designed and developed by Riello with premix combustion technology. They represent the best solutions for low polluting emissions and develop high modulation ratios.
The RX 500-700-850 S/PV ULN models of the RX series, in addition to the operation with natural gas or LPG, have been tested and certified for operation with blends of natural gas and hydrogen up to a 20%vol of hydrogen, making them ready for possible hydrogen injection and fluctuation in the gas distribution grid.
In the RX S/PV ULN burners, the perfect mixture of air and gas is created inside the burner suction line circuit. The air/gas mixture is distributed in the combustion head or “support”. It consists of a metal cylinder with dedicated surface holes for mixture outlet.
Thanks to this premix technology, combustion occurs close to the metal mesh and the support, resulting in a very compact flame.
It also reduces the probability of contact between the flame and the walls of the combustion chamber. The result is that this head type can be combined with a variety of combustion chambers and is highly flexible when matching equipment.
The function can be either “two-stage progressive” or “modulating”. Specifically, RX S/PV burners have an exclusive brushless motor, designed by Riello which controls the fan speed, and proportional gas valves. These combine to provide perfect control of the output.
The air-gas mixture efficiency and output control, combined with the premix combustion head, guarantees low polluting emissions, high combustion efficiency, and high turn-down ratios (up to 6:1). Furthermore, the burner is fired by pilot flame to guarantee regular start up even under conditions with excess air.
The combustion heads of all RX S/PV ULN models are equipped with the RRD (Resonance Reduction Device) that minimizes all possible resonance phenomena.
The output hole shape has been specifically designed to optimize the air/gas mixture speed to avoid any potential hazard due to flame return across the entire modulating range.

IMPORTANT NOTE:
During the installation of a Riello premix burner in the RX S/PV ULN range, a number of parameters must be taken into consideration. These include the boiler type the burner will be installed on, the boiler door thickness, the type of gas used, the frequence of maintenance and service interventions, the stack pressure, etc.
Any order that includes the Riello RX S/PV ULN range of burners is the product an in-depth preliminary study of the future of the installation. It is accompanied by a detailed quotation prepared by Riello sales offices and/or technicians.

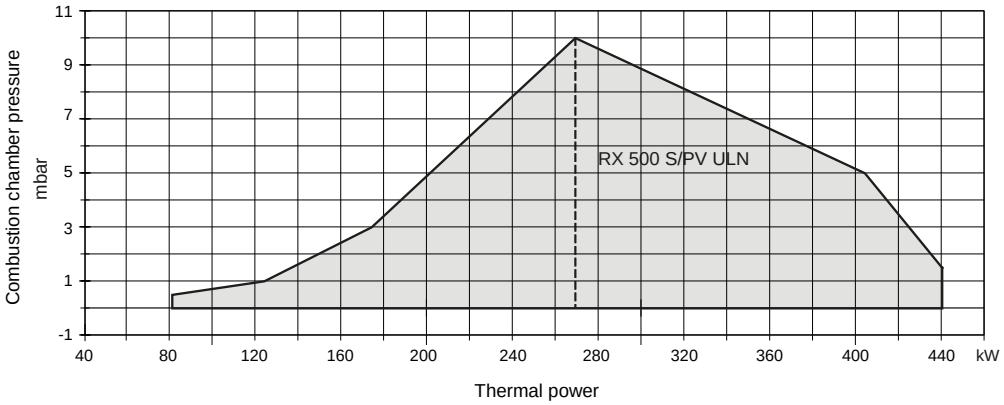
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW (1)	kW (2)	kW	V/Ph/Hz	V/Hz			
RX 500 S/PV ULN	80-440	80-490	1.0	230/1/50-60	230/50-60	CE-0123CT1618	(3)(4)(5)(6)(7)	**20148872**
RX 700 S/PV ULN	140-630	140-700	1.2	230/1/50-60	230/50-60	CE-0123CT1618	(3)(4)(5)(6)(7)	**20148874**
RX 850 S/PV ULN	170-790	170-880	1.2	230/1/50-60	230/50-60	CE-0123CT1618	(3)(4)(5)(6)(7)	**20148875**
RX 1000 S/PV ULN	180-970	180-1080	2.7	400/3/50-60	230/50-60	CE-0123CT1618	(3)(4)(5)(6)	**20148877**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Power range referred to an Ultra Low NOx performance of 30 mg/Nm3 with 100% natural gas. When operating with 20%vol hydrogen the max power will be reduced by 15% due to a lower volumetric calorific value of the hydrogen compared to natural gas.
(2) Power range referred to a Low NOx performance conformingto the Class 3 of EN676 European Standard with 100% natural gas. When operating with 20%vol hydrogen the max power will be reduced by 15% due to a lower volumetric calorific value of the hydrogen compared to natural gas.
(3) The burners cannot be used on inversion flame boilers.
(4) Modulation input factory setting is 3 Points; to change the external modulation parameter to analogue signal it is necessary to access the password-protected list of parameters using the AZL 21 display kit.
(5) Gas train included.
(6) Model with terminal board.
(7) Certified for natural gas use only or blend of natural gas and hydrogen up to 20%.

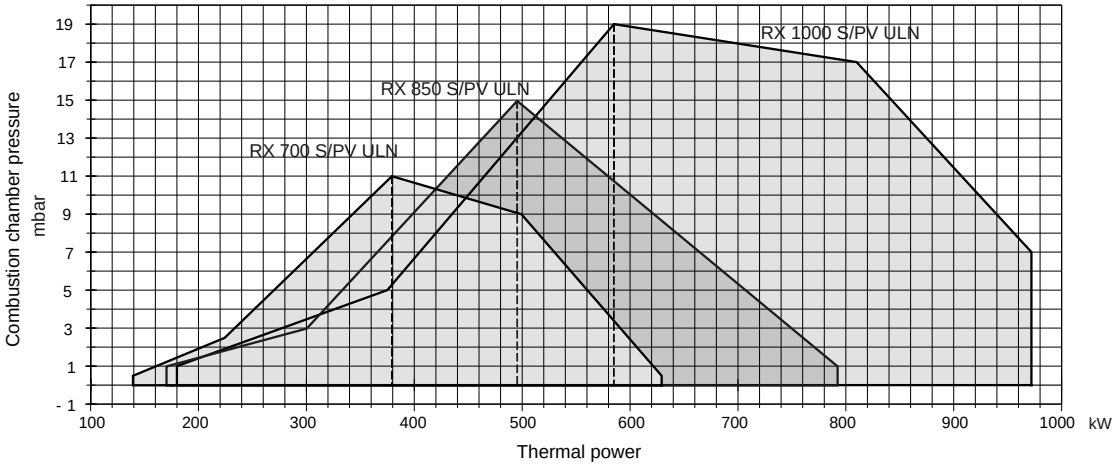
FIRING RATES

Please note: it is important to be aware that in order to achieve an Ultra Low NOx emission performance, it is required to work with a high excess air; as consequence the combustion chamber back pressure could increase up to roughly 30% more. When operating with 20%vol hydrogen the max power will be reduced by 15% due to a lower volumetric calorific value of the hydrogen compared to natural gas



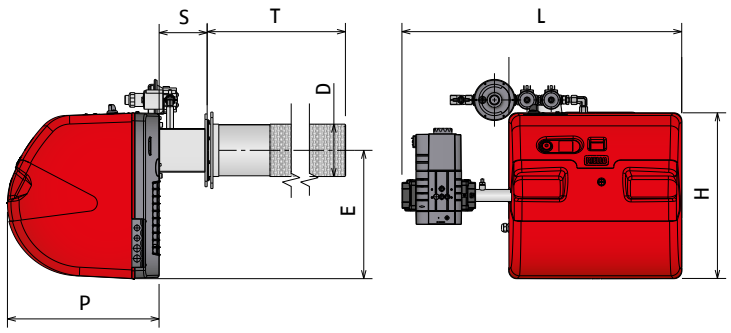
Useful firing rates for choosing the burner

Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.



OVERALL DIMENSIONS

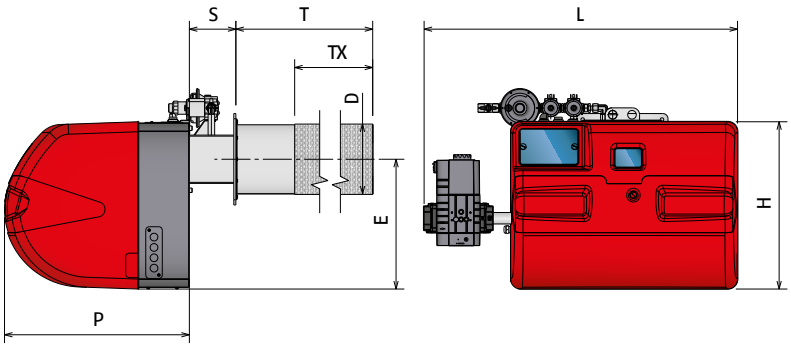
RX 500 S/PV ULN



Description	H mm	L mm	P mm	T mm	TX mm	D mm	E mm	S mm
RX 500 S/PV ULN	456	770	550	635	442	144	353	-

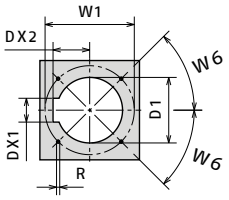
TX Flame zone length; the non combustion area (T-TX) must be greater than the thickness of the boiler door complete with refractory.

RX 700-850-1000 S/PV ULN

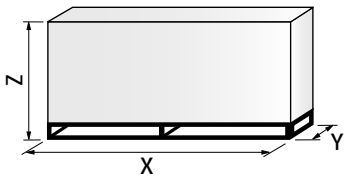


Description	H mm	L mm	P mm	T mm	TX mm	D mm	E mm	S mm
RX 700 S/PV ULN	490	910	520	540	367	200	370	135
RX 850 S/PV ULN	490	910	520	660	460	200	370	135
RX 1000 S/PV ULN	490	910	520	660	460	200	370	135

TX Flame zone length; the non combustion area (T-TX) must be greater than the thickness of the boiler door complete with refractory.



Description	D1 mm	DX1 mm	DX2 mm	R mm	W1 mm	W6 mm
RX 500 S/PV ULN	163	68	100	M8	224	45°
RX 700 S/PV ULN	240	75	135	M10	75-325	45°
RX 850 S/PV ULN	240	75	135	M10	75-325	45°
RX 1000 S/PV ULN	240	75	135	M10	75-325	45°



Description	X mm	Y mm	Z mm	Net weight kg
RX 500 S/PV ULN	1280	530	565	43
RX 700 S/PV ULN	1420	580	695	50
RX 850 S/PV ULN	1420	580	695	50
RX 1000 S/PV ULN	1420	580	695	60

ACCESSORIES

Drawing	Burner model	Specification	Code
		POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range.	
	RX 500 S/PV ULN	RWF 50.2 - Standard version; 3-point outlet.	**20095185**
	RX 700-850-1000 S/PV ULN	RWF 50.2 -Standard version; 3-point outlet.	**20094733**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**

STATE OF SUPPLY

Monoblock forced draught Premix Ultra Low NOx gas burner qualified for operation with blends of natural gas and hydrogen up to 20%, with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Cylindrical flame shape premix combustion heads fitted with:
  - highly heat resistant cylinder
  - special metallic fiber mesh resistant to thermal stress
  - ignition electrodes
  - ionization probe
- Variable speed fan with Brushless Motors
- Pneumatic proportioning gas train integrated in the burner, which supply the correct gas quantity in proportion to the airflow produced by the fan
- Air/gas mixer (venturi) in the suction line circuit to support Gas and air mixing
- Airtight ventilation structures for air and gas mixing
- Pilot Ignition system to assure a high ignition reliability
- Microprocessor-based LME 71 burner safety control box
  - manages the variable speed of the fan and all safety phases of the burner
  - allows to modify the operation point of the burner
  - with diagnostic functions for operational state and fault state messages, based on multicolor indication via 3-colored LED
- Burner on/off selection switch
- Flame inspection window
- IP 2XD electric protection level
- AZL 21 LCD display connected to the LME 71 control box to get indication of the operating status, to activate the diagnostic functions and to change the password-protected parameters

STANDARD EQUIPMENT

- Insulating screen and gasket
- Screws, nuts and washers for burner assembly
- Gas valve
- Flange for gas valve
- Valve fixing screws
- Gas train for pilot ignition system
- Instruction booklet
- Spare parts list

Premix Ultra Low NOx gas burners

RX 1500 S/E ULN



- Premix gas burners
- Ultra Low NOx emissions (NOx ≤ 30 mg/Nm^3)
- Compact flame (Riello patented combustion head with metal fiber mesh)
- Electronic cam modulation
- Maximum output 1.830 kW
- Average turn-down ratio 1:6
- Firing with pilot flame
- Natural gas operation

The gas burners in the Riello RX S/E ULN range have been designed and developed by Riello with premix combustion technology. They represent the best solutions for low polluting emissions and develop high modulation ratios.
In the RX S/PV ULN burners, the perfect mixture of air and gas is created inside the pipe coupling, upstream of the combustion head. The air/gas mixture is distributed in the combustion head or “support”. It consists of a metal cylinder with dedicated surface holes for mixture outlet.
Thanks to this premix technology, combustion occurs close to the metal mesh and the support, resulting in a very compact flame. It also reduces the probability of contact between the flame and the walls of the combustion chamber. The result is that this head type can be combined with a variety of combustion chambers and is highly flexible when matching equipment.
RX S/E ULN burners offer electronic cam modulating operation (model REC 27.1) for high-precision fuel and combustion air adjustment, thanks to the use of dedicated servo motors.
Maximum air-gas mixture efficiency and output control, guaranteed by the RXS/ ULN burners, combined with the premix combustion head, guarantees low polluting emissions, high combustion efficiency, and high turn-down ratios (on average 7:1). Furthermore, the burner is fired by pilot flame to guarantee regular start up even under conditions with excess air.
The combustion heads of all RX S/E ULN models are equipped with the RRD (Resonance Reduction Device) that minimizes all possible resonance phenomena. The output hole shape has been specifically designed to optimize the air/gas mixture speed to avoid any potential hazard due to flame return across the entire modulating range.

IMPORTANT NOTE:
During the installation of a Riello premix burner in the RX S/E ULN range, a number of parameters must be taken into consideration. These include the boiler type the burner will be installed on, the boiler door thickness, the type of gas used, the frequence of maintenance and service interventions, the stack pressure, etc.
Any order that includes the Riello RX S/E ULN range of burners is the product an in-depth preliminary study of the future of the installation. It is accompanied by a detailed quotation prepared by Riello sales offices and/or technicians.

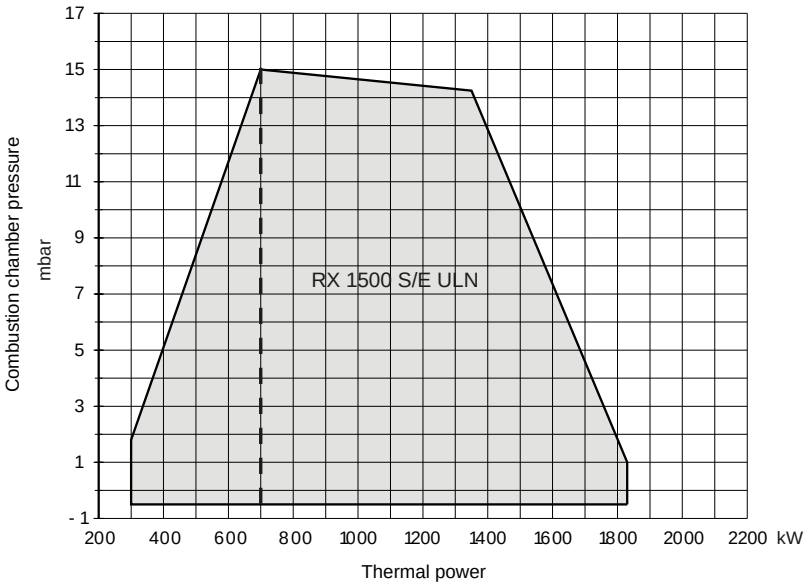
TECHNICAL DATA

Description	Combustion head	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
		kW (1)	kW (2)	kW	V/Ph/Hz			
RX 1500 S/E ULN	Included	270-1650	270-1830	6.65	400/3/50	CE-0085CT0448	(3)(4)(5)(6)(7)	**20148878**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Power range referred to an Ultra Low NOx performance of 30 mg/Nm^3
(2) Power range referred to a Low NOx performance conformingto the Class 3 of EN676 European Standard.
(3) The burners cannot be used on inversion flame boilers.
(4) Gas train must be ordered separately (please see Gas Trains paragraph).
(5) Seal control function is included on Burner Digital Management System, by connection to the dedicated pressure switch included as standard equipment on the gas train.
(6) Direct starter fan motor.
(7) Model with terminal board.

FIRING RATES

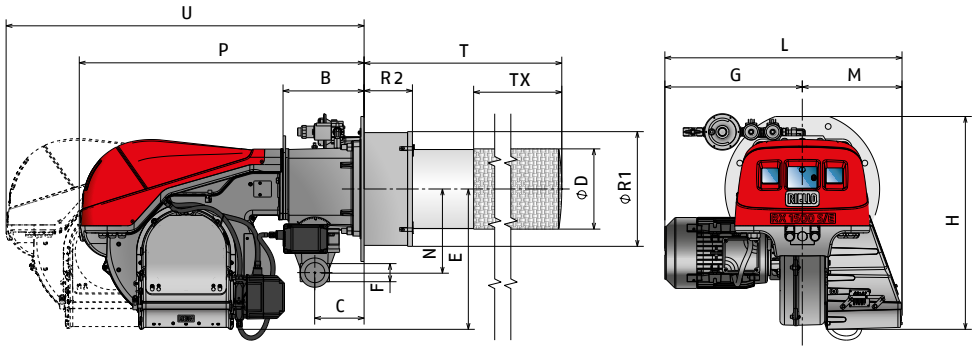
Please note: it is important to be aware that in order to achieve an Ultra Low NOx emission performance, it is required to work with a high excess air; as consequence the combustion chamber back pressure could increase up to roughly 30% more.



Useful firing rates for choosing the burner

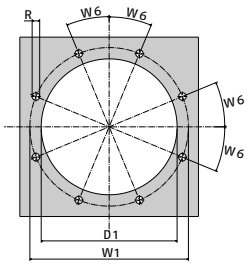
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

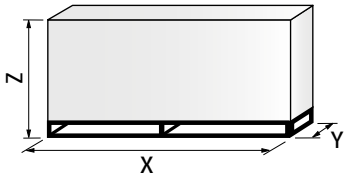


Description	B mm	C mm	D mm	E mm	F mm	G mm	H mm	L mm	M mm	N mm	P mm	R1 mm	R2 mm	T mm	TX mm	U mm
RX 1500 S/E ULN	250	154	250	440	2"	426	660	734	308	260	885	360	150	950	590	1060

TX flame zone length; the non combustion area (T-TX) must be greater than the thickness of the boiler door complete with refractory.



Description	D1 mm	R mm	W1 mm	W6
RX 1500 S/E ULN	370	M16	470	22,5°



Description	X mm	Y mm	Z mm	Net weight kg
RX 1500 S/E ULN	1930	910	940	130

NOTA: Combustion head is included in the burner box.

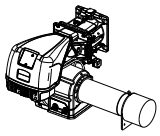
GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Flange kit for gas pressure switch (4)	Burner-gas train adapter (5)
						RX 1500 S/E ULN
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	**20137718**		Rp 2”	(3)	20185515	□
VGD 65/1-FT 122	**20140762**	(6)	DN65	(3)	▲	●

(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) A gas pressure switch is supplied with the burner for the valve seal control function (to be installed on the gas train and to be connected to the control box of the burner).
(4) Necessary for interface between the gas train and the pressure switch kit supplied with the burner.
(5) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(6) Ø in = DN65; Ø out = DN80.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/Gas train matching not available.
▲ Flange kit not required. The gas train can be connected directly to the pressure switch kit supplied with the burner.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RX 1500 S/E ULN	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**3010094**
	RX 1500 S/E ULN	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. RWF 50.2 - Standard version; 3-point outlet.	**20099869**
		RWF 55.5 - Plus version; complete with RS-485 interface.	**20099905**
	RX 1500 S/E ULN	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RX 1500 S/E ULN	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RX 1500 S/E ULN	AIR FILTER When burner is used in dusty environment, in order to prevent the possible ingress of foreign elements in the air circuit, a filter is available as accessory to be installed in the air intake side of the burner. Because the RIELLO combustion head is made by mesh, and not fiber, the grade of filtration can be lower, allowing to lengthen filter cleaning time, so reducing cost and to fully exploit the potential of the ventilating structure, assuring in the meantime a correct combustion. The air filter specifically studied for RIELLO RX S/E ULN burners is easily cleanable with compressed air in order to avoid the need to change it each time the maintenance is required. The use of air filter involves a working field reduction, please refer to the instruction manual for detailed info.	**20164652**
	RX 1500 S/E ULN	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3010436**

STATE OF SUPPLY

Monoblock forced draught Premix Ultra Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Cylindrical flame shape premix combustion heads fitted with:
  - highly heat resistant cylinder
  - special metallic fiber mesh resistant to thermal stress
  - ignition electrodes
- Double combustion control devices, made up of:
  - temperature probe which controls the temperature inside the combustion head to prevent damage tothe combustion head
  - UV flame sensor
- Pilot Ignition system to assure a high ignition reliability
- Microprocessor-based Digital Burner Management System
  - manages all the safety phases of the burner
  - allows to modify the operation point of the burner
  - with diagnostic functions for operational status and fault messages
- AZL display Interface, operating unit to adjust the system
- Fan with asynchronous motor
- Air suction circuit lined with sound-proofing material
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Burner on/off selection switch
- Low gas pressure switch to cause controlled safety shut-down when the supply pressure falls below a pre-determined value
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- No. 2 air pressure switches, light indicators, relays and fuses that set up the air intake filter (air filter is an accessory to be ordered separately)
- Relays with clean contacts for signaling the burner is operating or the burner's lock-out
- Fixing flange with insulating panel
- Flame inspection window
- Slide bars for easier installation and maintenance
- Electric protection level IP44

STANDARD EQUIPMENT

- Insulating screen
- Gas train adapter
- Gas train for pilot ignition system
- Instruction booklet
- Spare parts list

Premix Ultra Low NOx gas burners

RX 1800-3000 S/E ULN



- Premix gas burners
- Ultra Low NOx emissions (NOx ≤ 30 mg/Nm^3)
- Compact flame (Riello patented combustion head with metal fiber mesh)
- Electronic cam modulation
- N. 3 models, from 30 to 3.560 kW
- Average turn-down ratio 1:7
- Firing with pilot flame
- Natural gas operation

The gas burners in the Riello RX S/E ULN range have been designed and developed by Riello with premix combustion technology. They represent the best solutions for low polluting emissions and develop high modulation ratios.
In the RX S/PV ULN burners, the perfect mixture of air and gas is created inside the pipe coupling, upstream of the combustion head. The air/gas mixture is distributed in the combustion head or “support”. It consists of a metal cylinder with dedicated surface holes for mixture outlet.
Thanks to this premix technology, combustion occurs close to the metal mesh and the support, resulting in a very compact flame. It also reduces the probability of contact between the flame and the walls of the combustion chamber. The result is that this head type can be combined with a variety of combustion chambers and is highly flexible when matching equipment.
RX S/E ULN burners offer electronic cam modulating operation (model REC 27.1) for high-precision fuel and combustion air adjustment, thanks to the use of dedicated servo motors.
Maximum air-gas mixture efficiency and output control, guaranteed by the RXS/ ULN burners, combined with the premix combustion head, guarantees low polluting emissions, high combustion efficiency, and high turn-down ratios (on average 7:1). Furthermore, the burner is fired by pilot flame to guarantee regular start up even under conditions with excess air.
The combustion heads of all RX S/E ULN models are equipped with the RRD (Resonance Reduction Device) that minimizes all possible resonance phenomena. The output hole shape has been specifically designed to optimize the air/gas mixture speed to avoid any potential hazard due to flame return across the entire modulating range.

IMPORTANT NOTE:
During the installation of a Riello premix burner in the RX S/E ULN range, a number of parameters must be taken into consideration. These include the boiler type the burner will be installed on, the boiler door thickness, the type of gas used, the frequence of maintenance and service interventions, the stack pressure, etc.
Any order that includes the Riello RX S/E ULN range of burners is the product an in-depth preliminary study of the future of the installation. It is accompanied by a detailed quotation prepared by Riello sales offices and/or technicians.

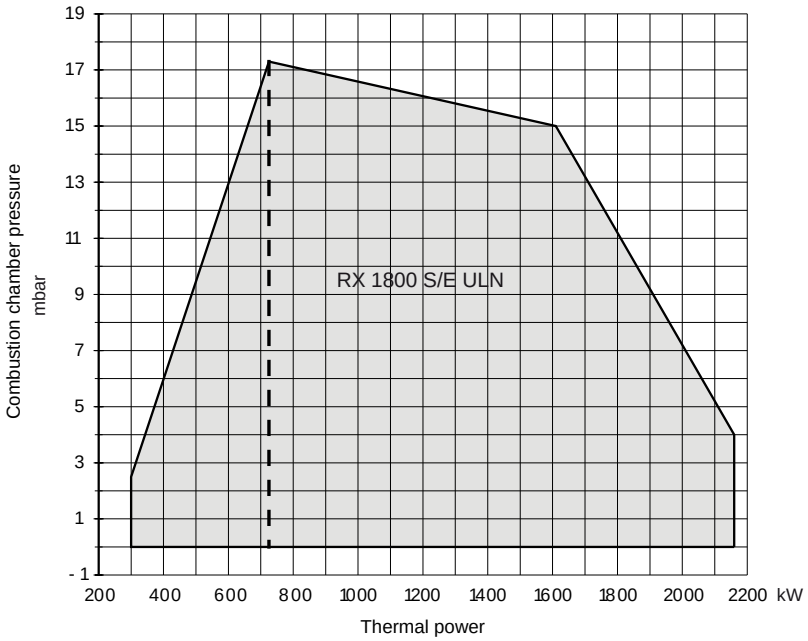
TECHNICAL DATA

Description	Combustion head code (1)	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
		kW (2)	kW (3)	kW	V/Ph/Hz			
RX 1800 S/E ULN	20151520	300-1940	300-2155	5.56	400/3/50	CE-0085CT0448	(4)(5)(6)(7)(8)	**20148880**
RX 2500 S/E ULN	20151274	375-2485	375-2765	6.65	400/3/50	CE-0085CT0448	(4)(5)(6)(7)(8)	**20148881**
RX 3000 S/E ULN	20151483	640-3210	640-3560	8.50	400/3/50	CE-0085CT0448	(4)(5)(6)(7)(8)	**20148882**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) The combustion head is supplied separated from the burner and must be ordered with the specific code.
(2) Power range referred to an Ultra Low NOx performance of 30 mg/Nm^3
(3) Power range referred to a Low NOx performance conformingto the Class 3 of EN676 European Standard.
(4) The burners cannot be used on inversion flame boilers.
(5) Gas train must be ordered separately (please see Gas Trains paragraph).
(6) Seal control function is included on Burner Digital Management System, by connection to the dedicated pressure switch included as standard equipment on the gas train.
(7) Direct starter fan motor.
(8) Model with terminal board.

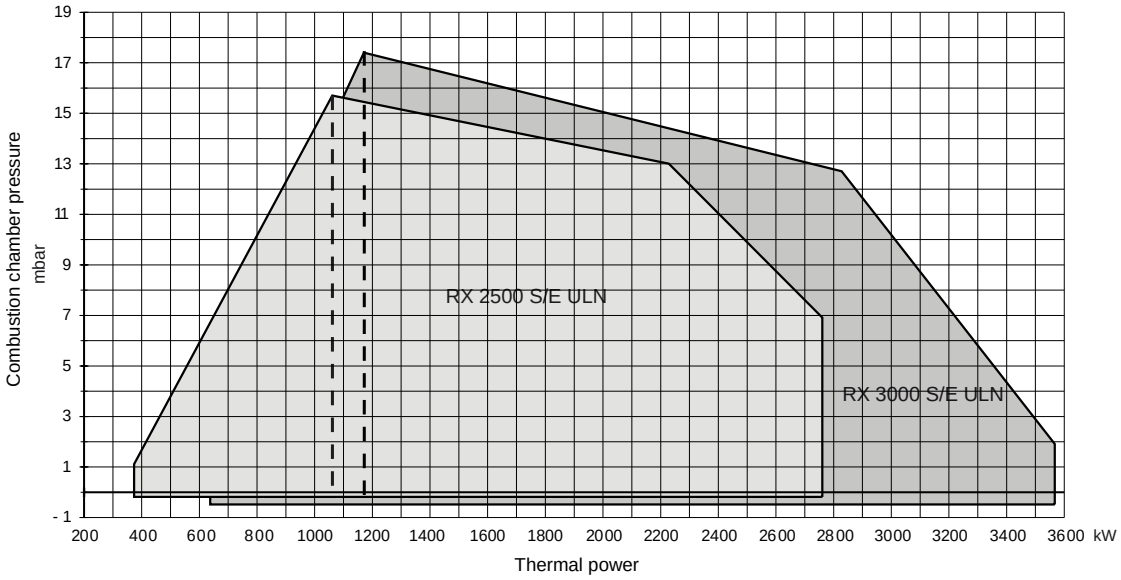
FIRING RATES

Please note: it is important to be aware that in order to achieve an Ultra Low NOx emission performance, it is required to work with a high excess air; as consequence the combustion chamber back pressure could increase up to roughly 30% more.

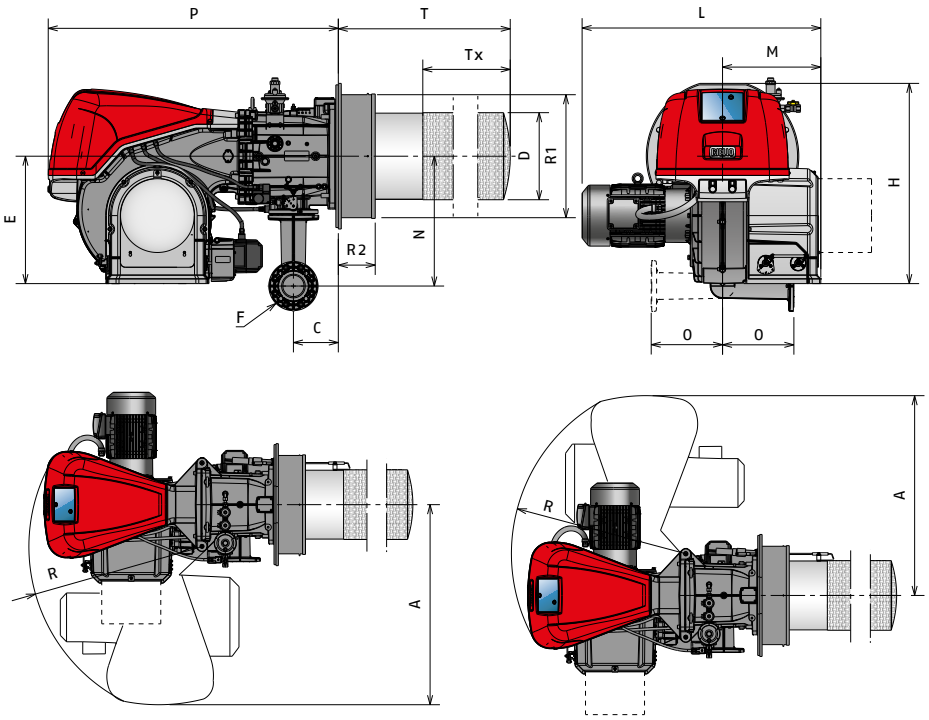


Useful firing rates for choosing the burner

Test conditions
conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

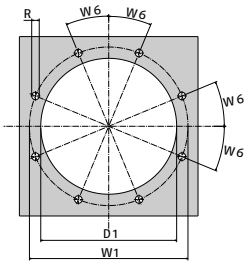


OVERALL DIMENSIONS

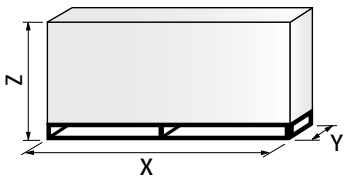


Description	A mm	B mm	C mm	D mm	E mm	F mm	H mm	L mm	M mm	N mm	O mm	P mm	R mm	R1 mm	R2 mm	T mm	TX mm
RX 1800 S/E ULN	1015	352	178	250	520	DN65*	790	830	606	400	290	1178	890	506	150	1080	352
RX 2500 S/E ULN	1015	344	178	354	520	DN65*	790	878	400	400	290	1178	890	506	150	1200	344
RX 3000 S/E ULN	1015	344	178	354	520	DN65*	790	970	606	400	290	1178	890	506	150	1530	344

TX Flame zone length; the non combustion area (T-TX) must be greater than the thickness of the boiler door complete with refractory.
* The gas adaptor is set also for DN 80 bore.



Description	D1 mm	R mm	W1 mm	W6
RX 1800 S/E ULN	520	M18	560	22,5°
RX 2500 S/E ULN	520	M18	560	22,5°
RX 3000 S/E ULN	520	M18	560	22,5°



Description Burner	X mm	Y mm	Z mm	Net weight kg
RX 1800 S/E ULN	1650	1260	1075	200
RX 2500 S/E ULN	1650	1260	1075	220
RX 3000 S/E ULN	1650	1260	1075	220

Description Combustion head	X mm	Y mm	Z mm	Net weight kg
RX 1800 S/E ULN	1310	650	800	80
RX 2500 S/E ULN	1700	650	800	80
RX 3000 S/E ULN	1700	650	800	100

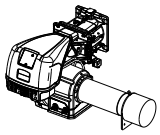
GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Flange kit for gas pressure switch (4)	Burner-gas train adapter (5)		
						RX 1800 S/E ULN	RX 2500 S/E ULN	RX 3000 S/E ULN
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***		Rp 2”	(3)	20185515	3000826+20042324	●	●
VGD 65/1-FT 122	**20140762***	(6)	DN65	(3)	▲	●	□	□

(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) A gas pressure switch is supplied with the burner for the valve seal control function (to be installed on the gas train and to be connected to the control box of the burner).
(4) Necessary for interface between the gas train and the pressure switch kit supplied with the burner.
(5) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(6) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- - Gas train not equipped with leak detection control device.
- □ Additional adapter not necessary, the gas train may be connected directly to the burner.
- ● Burner/Gas train matching not available.
- ▲ Flange kit not required. The gas train can be connected directly to the pressure switch kit supplied with the burner.

ACCESSORIES

Drawing	Burner model	Specification	Code
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**20074542**
	All models	OCI412 INTERFACE KIT Interface kit between the REC27.100A2 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.	**3010437**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.	
		RWF 50.2 - Standard version; 3-point outlet.	**20085417**
		RWF 55.5 - Plus version; complete with RS-485 interface.	**20074441**
		RWF 55.6 - Plus version; complete with RS-485 profibus interface.	**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RX 1800-2500 S/E ULN	AIR FILTER When burner is used in dusty environment, in order to prevent the possible ingress of foreign elements in the air circuit, a filter is available as accessory to be installed in the air intake side of the burner. Because the RIELLO combustion head is made by mesh, and not fiber, the grade of filtration can be lower, allowing to lengthen filter cleaning time, so reducing cost and to fully exploit the potential of the ventilating structure, assuring in the meantime a correct combustion. The air filter specifically studied for RIELLO RX S/E ULN burners is easily cleanable with compressed air in order to avoid the need to change it each time the maintenance is required. The use of air filter involves a working field reduction, please refer to the instruction manual for detailed info. Kit code for special air filter.	**20156978**
	RX 3000 S/E ULN	Kit code for special air filter.	**20141720**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3010436**

STATE OF SUPPLY

Monoblock forced draught Premix Ultra Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Cylindrical flame shape premix combustion heads fitted with:
  - highly heat resistant cylinder
  - special metallic fiber mesh resistant to thermal stress
  - ignition electrodes
- Double combustion control devices, made up of:
  - temperature probe which controls the temperature inside the combustion head to prevent damage tothe combustion head
  - UV flame sensor
- Pilot Ignition system to assure a high ignition reliability
- Microprocessor-based Digital Burner Management System
  - manages all the safety phases of the burner
  - allows to modify the operation point of the burner
  - with diagnostic functions for operational status and fault messages
- AZL display Interface, operating unit to adjust the system
- Fan with asynchronous motor
- Air suction circuit lined with sound-proofing material
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Burner on/off selection switch
- Low gas pressure switch to cause controlled safety shut-down when the supply pressure falls below a pre-determined value
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- No. 2 air pressure switches, light indicators, relays and fuses that set up the air intake filter (air filter is an accessory to be ordered separately)
- Relays with clean contacts for signaling the burner is operating or the burner's lock-out
- Fixing flange with insulating panel
- Flame inspection window
- Hinge opening for easier installation and maintenance
- Electric protection level IP 54

STANDARD EQUIPMENT

- Insulating screen
- Gas train adapter
- Instruction booklet
- Spare parts list

Ultra Low NOx gas burners

RS 410-610/E FGR



- Modulating gas burners with electronic cam
- Ultra Low NOx emissions (NOx emissions lower than 30 mg/Nm^3)
- Suitable for new installations or replacements
- Operation as standard air draught burners

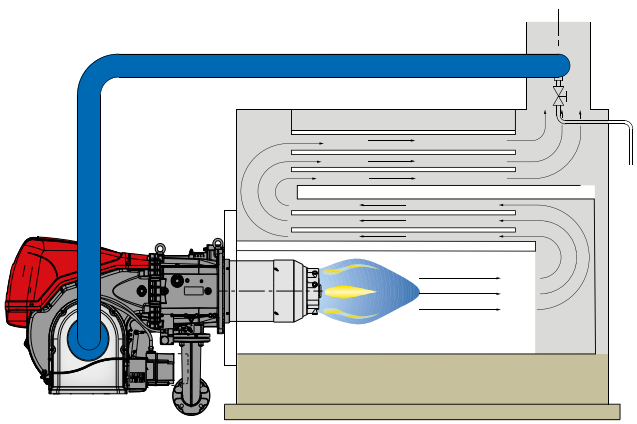
Due to the significant increase of pollutants in these last years, attention to performance, energy efficiency and emission reduction is becoming more important all around the world, in particular in all the highly industrialized countries.
In order to comply the increasing demand of very low NOx emissions, Riello has developed a new range of Monoblock burners, based on FGR (Flue gas Recirculation) low emission technology, suitable to achieve 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; an integrated Digital Burner Management System, trough 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 of operation.
All the components are integrated in a compact size, in order to facilitate and make extremely easy the installation and maintenance.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	V/Ph/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)							
RS 410/E FGR TC FS1/FS2	595/1210-3820	50/150-445	10.6	400/3/50	CE-0123CU1034	(1)(2)(4)	**20162643**
RS 510/E FGR TC FS1/FS2	660/1800-4800	68/180-525	13.9	400/3/50	CE-0123CU1034	(1)(3)(4)	**20162646**
RS 610/E FGR TC FS1/FS2	912/2220-5850	100/220-625	16.9	400/3/50	CE-0123CU1034	(1)(3)(4)	**20162647**

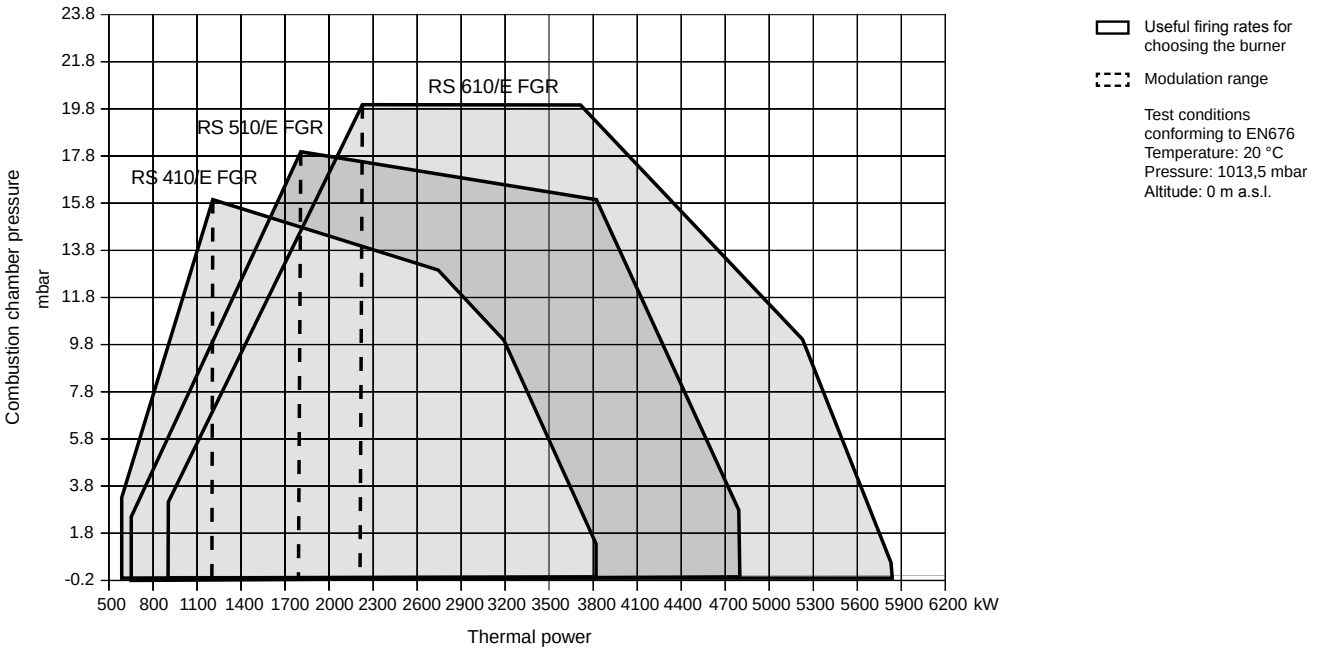
Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
(2) Direct starter fan motor.
(3) Star delta fan motor starter.
(4) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

NOTE: for more information about product codes, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

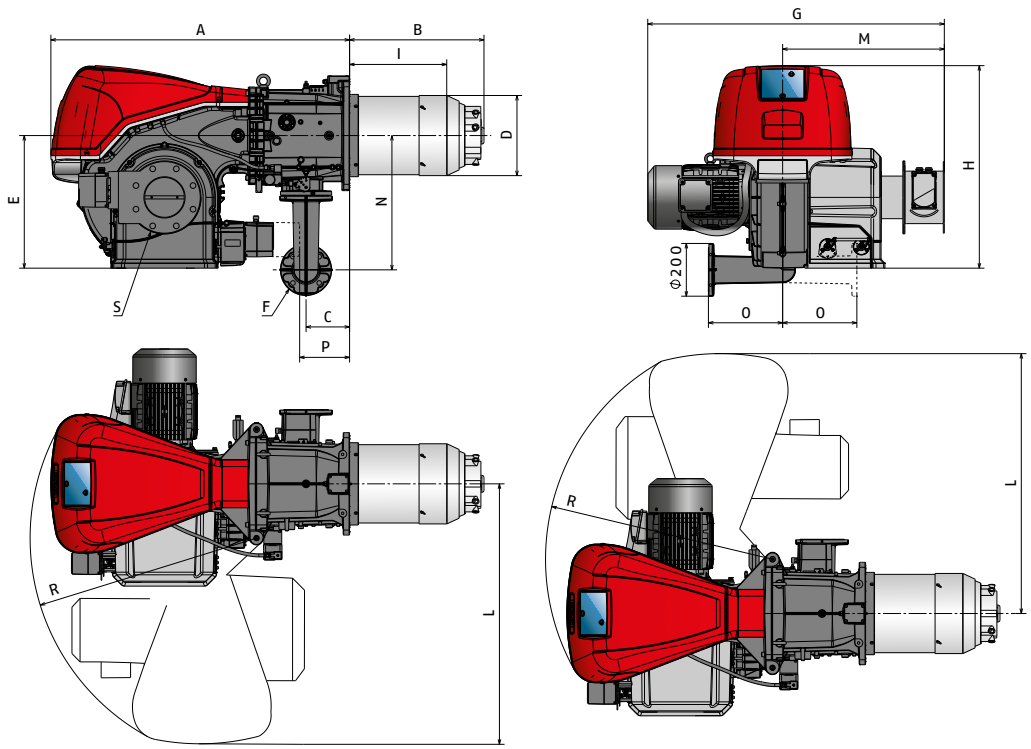


FIRING RATES

Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen concentration. The shown firing rates are obtained in special test boilers, according to EN 676 regulation and referred to a Low NOx performance conforming to the Class 3 of EN676, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced. A Flue Gas Recirculation % needed to obtain an Ultra Low NOx performance of 30 mg/Nm^3 will involve a maximum output reduction of at list 20%.

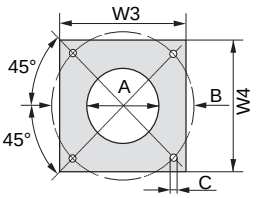


OVERALL DIMENSIONS

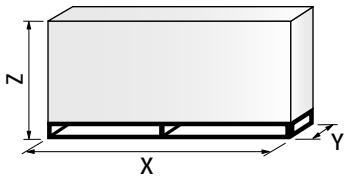


Description	A mm	B mm	C mm	D mm	E mm	F (*) mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P (**) mm	R mm	S mm
RS 410/E FGR	1178	517	178	313	520	DN65	1140	790	340	1015	615	528	290	177	890	DN100
RS 510/E FGR	1260	517	178	313	520	DN65	1140	790	360	1015	620	528	290	177	890	DN125
RS 610/E FGR	1260	517	178	336	520	DN65	1215	790	365	1015	632	528	290	177	890	DN150

(*) The gas adaptor is set also for DN 80 bore.
(**) Maximum position for the extraction of the servomotor cover.



Description	A mm	B mm	C mm	W3 mm	W4 mm
RS 410/E FGR	335	452	M18	400	430.5
RS 510/E FGR	335	452	M18	400	430.5
RS 610/E FGR	350	452	M18	400	430.5



Description	X mm	Y mm	Z mm	Net weight kg
RS 410/E FGR	2040	1280	1125	265
RS 510/E FGR	2040	1280	1125	265
RS 610/E FGR	2040	1280	1125	295

GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (4)		
					RS 410/E FGR	RS 510/E FGR	RS 610/E FGR
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***		Rp 2”	(3)	3000826+20042324		●
VGD 65/1-FT 122	**20140762***	(5)	DN65	(3)	□	□	□
VGD 80/1-FT 122	**20140763***		DN80	(3)	□	□	□
VGD 100/1-FT 122	**20169193***		DN100	(3)	3010370		
VGD 125/1-FT 122	**20169195***		DN125	(3)	3010224		

(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) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with a seal control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 410-610/E FGR	TEMPERATURE PROBE The control box of RS/E-EV FGR burners includes the three point PID regulator to obtainthe modulating operation. The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 410-610/E FGR	PRESSURE PROBE The control box of RS/E-EV FGR burners includes the three point PID regulator to obtain the modulating operation. The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RS 410-610/E FGR	INTERFACCIA SOFTWARE PC PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.	**(1)**

(1) On demand.

STATE OF SUPPLY

Monoblock forced draught, Ultra Low NOx gas burner with Flue Gas Recirculation (FGR) system, with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions
- Air suction circuit
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Three-phase fan starting motor
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Flue gas recirculation butterfly valve controlled by a high precision servomotor
- Flue gas recirculation temperature probe to prevent condensation in burner intake
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of excess pressure on the fuel supply line
- LMV51.300 Digital Burner Management System
  - for control of air, fuel and exhaust gas proportion in every working point
  - for output modulation with incorporated PID control of temperature or pressure of the heat generator
  - with indication of operating status and parameters, error messages and diagnosis of fault causes
- Operator panel with LCD Display Interface, for combustion system commissioning and monitoring
- Burner safety control included on Electronic Cam device
- UV sensor for flame detection
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Clean contacts relay
- Burner failure led signal and lighted release button
- Hinge for opening the burner and inspecting the combustion head
- Lifting rings

STANDARD EQUIPMENT

- Thermal insulation screen
- Screws to fix the burner flange to the boiler
- Screws to fix the gas train flange
- Gasket for gas train flange
- Pressure switch for leak detection control of gas train
- Spare parts catalogue
- Instruction handbook for installation, use and maintenance

Ultra Low NOx gas burners

RS 410-610/EV FGR



- Modulating gas burners with electronic cam
- Ultra Low NOx emissions (NOx emissions lower than 30 mg/Nm^3)
- Suitable for new installations or replacements
- Operation as standard air draught burners

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 Monoblock burners, based on FGR (Flue gas Recirculation) low emission technology, suitable to achieve 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; an integrated Digital Burner Management System, trough 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 of operation.
All the components are integrated in a compact size, in order to facilitate and make extremely easy the installation and maintenance.

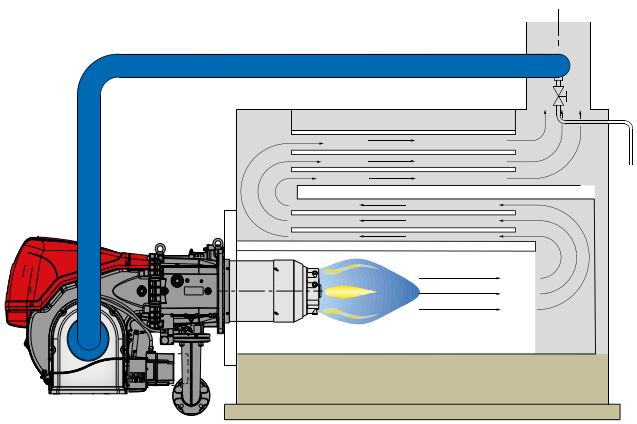
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	V/Ph/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52)							
RS 410/EV FGR TC FS1/FS2	595/1210-3820	50/150-445	10.6	400/3/50	CE-0123CU1034	(1)(2)	**20162652**
RS 510/EV FGR TC FS1/FS2	660/1800-4800	68/180-525	13.9	400/3/50	CE-0123CU1034	(1)(2)	**20162653**
RS 610/EV FGR TC FS1/FS2	912/2220-5850	100/220-625	16.9	400/3/50	CE-0123CU1034	(1)(2)	**20162655**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

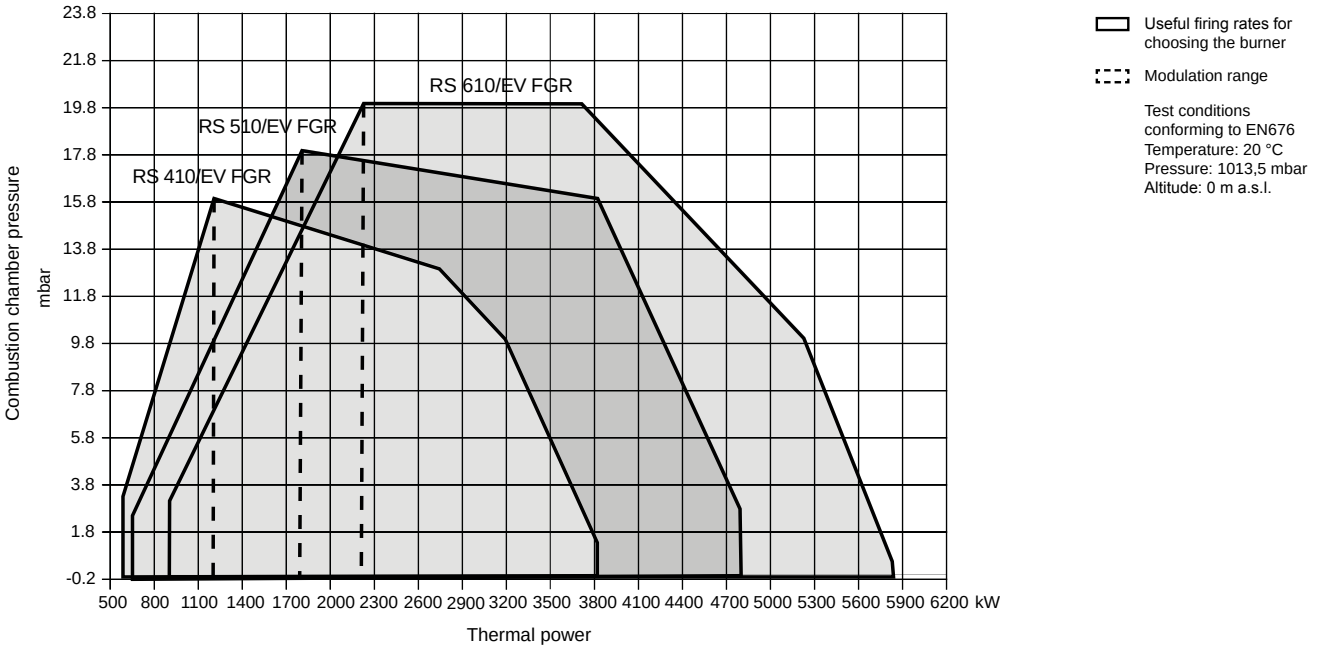
(1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
(2) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

NOTE: for more information about product codes, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

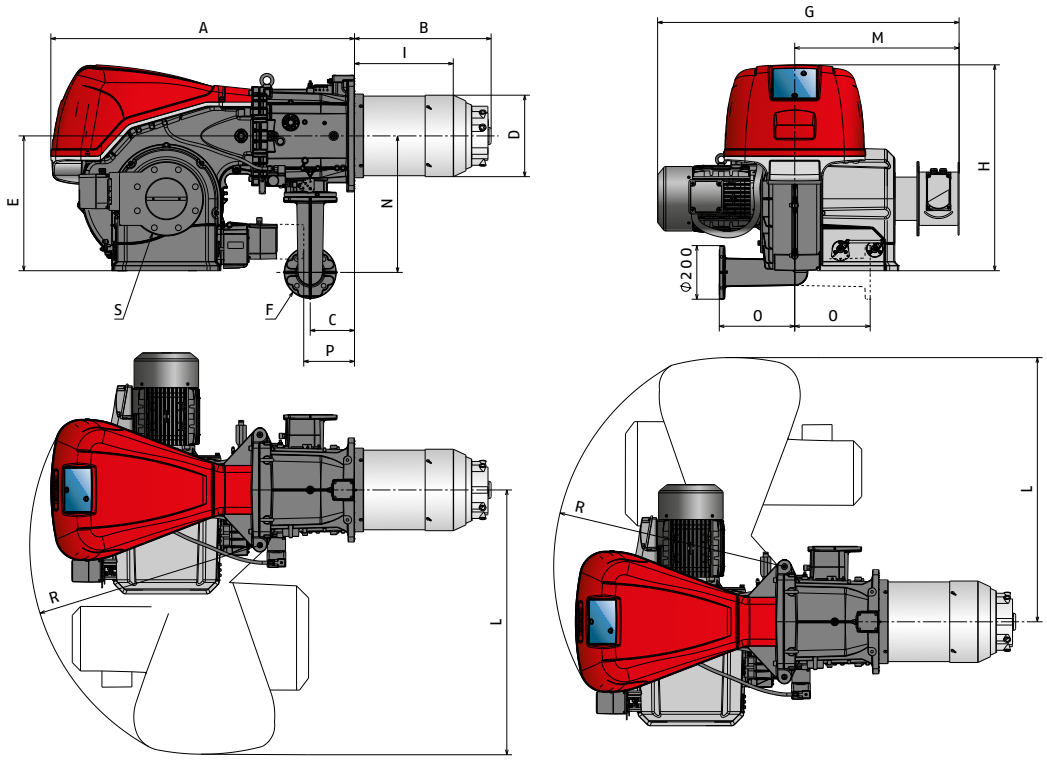


FIRING RATES

Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen concentration. The shown firing rates are obtained in special test boilers, according to EN 676 regulation and referred to a Low NOx performance conforming to the Class 3 of EN676, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced. A Flue Gas Recirculation % needed to obtain an Ultra Low NOx performance of 30 mg/Nm^3 will involve a maximum output reduction of at list 20%.

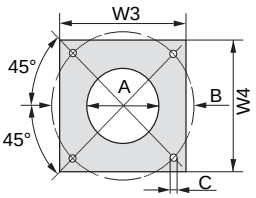


OVERALL DIMENSIONS

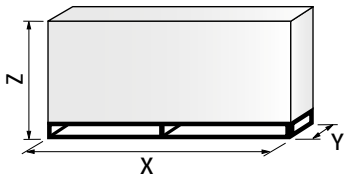


Description	A mm	B mm	C mm	D mm	E mm	F (*) mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P (**) mm	R mm	S mm
RS 410/EV FGR	1178	517	178	313	520	DN65	1140	790	340	1015	615	528	290	177	890	DN100
RS 510/EV FGR	1260	517	178	313	520	DN65	1140	790	360	1015	620	528	290	177	890	DN125
RS 610/EV FGR	1260	517	178	336	520	DN65	1215	790	365	1015	632	528	290	177	890	DN150

(*) The gas adaptor is set also for DN 80 bore.
(**) Maximum position for the extraction of the servomotor cover.



Description	A mm	B mm	C mm	W3 mm	W4 mm
RS 410/EV FGR	335	452	M18	400	430.5
RS 510/EV FGR	335	452	M18	400	430.5
RS 610/EV FGR	350	452	M18	400	430.5



Description	X mm	Y mm	Z mm	Net weight kg
RS 410/EV FGR	2040	1280	1125	265
RS 510/EV FGR	2040	1280	1125	265
RS 610/EV FGR	2040	1280	1125	295

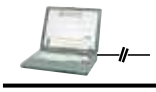
GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (4)		
					RS 410/EV FGR	RS 510/EV FGR	RS 610/EV FGR
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***		Rp 2”	(3)	3000826+20042324		●
VGD 65/1-FT 122	**20140762***	(5)	DN65	(3)	□	□	□
VGD 80/1-FT 122	**20140763***		DN80	(3)	□	□	□
VGD 100/1-FT 122	**20169193***		DN100	(3)	3010370		
VGD 125/1-FT 122	**20169195***		DN125	(3)	3010224		

(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) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with a seal control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 410-610/EV FGR	TEMPERATURE PROBE The control box of RS/E-EV FGR burners includes the three point PID regulator to obtainthe modulating operation. The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 410-610/EV FGR	PRESSURE PROBE The control box of RS/E-EV FGR burners includes the three point PID regulator to obtain the modulating operation. The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RS 410-610/EV FGR	INTERFACCIA SOFTWARE PC PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.	**(1)**

(1) On demand.

STATE OF SUPPLY

Monoblock forced draught, Ultra Low NOx gas burner with Flue Gas Recirculation (FGR) system, with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions
- Air suction circuit
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Three-phase fan starting motor
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Flue gas recirculation butterfly valve controlled by a high precision servomotor
- Flue gas recirculation temperature probe to prevent condensation in burner intake
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of excess pressure on the fuel supply line
- LMV51.300 Digital Burner Management System
  - for control of air, fuel and exhaust gas proportion in every working point
  - for output modulation with incorporated PID control of temperature or pressure of the heat generator
  - with indication of operating status and parameters, error messages and diagnosis of fault causes
- Operator panel with LCD Display Interface, for combustion system commissioning and monitoring
- Burner safety control included on Electronic Cam device
- UV sensor for flame detection
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Clean contacts relay
- Burner failure led signal and lighted release button
- Hinge for opening the burner and inspecting the combustion head
- Lifting rings

STANDARD EQUIPMENT

- Thermal insulation screen
- Screws to fix the burner flange to the boiler
- Screws to fix the gas train flange
- Gasket for gas train flange
- Pressure switch for leak detection control of gas train
- Spare parts catalogue
- Instruction handbook for installation, use and maintenance

Ultra Low NOx gas burners

RS 810/E FGR



- Modulating gas burners with electronic cam
- Ultra Low NOx emissions (NOx emissions lower than 30 mg/Nm^3)
- Suitable for new installations or replacements
- Operation as standard air draught burners

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 Monoblock burners, based on FGR (Flue gas Recirculation) low emission technology, suitable to achieve 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; an integrated Digital Burner Management System, trough 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 of operation.
All the components are integrated in a compact size, in order to facilitate and make extremely easy the installation and maintenance.

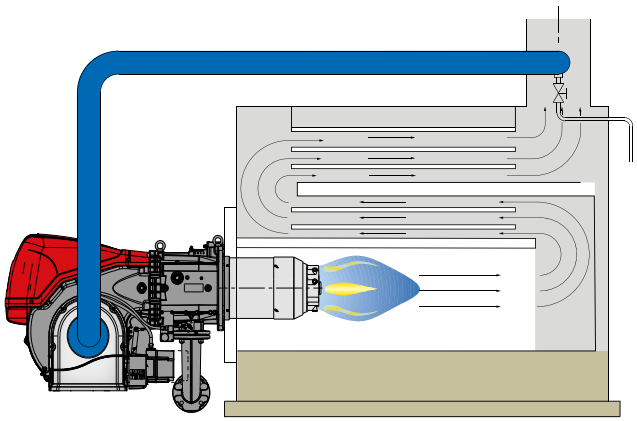
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	V/Ph/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)							
RS 810/E FGR TC FS1/FS2	1100/3500-6990	120/350-700	24	400/3/50	CE-0123CU1078	(1)(2)(3)	**20160290**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

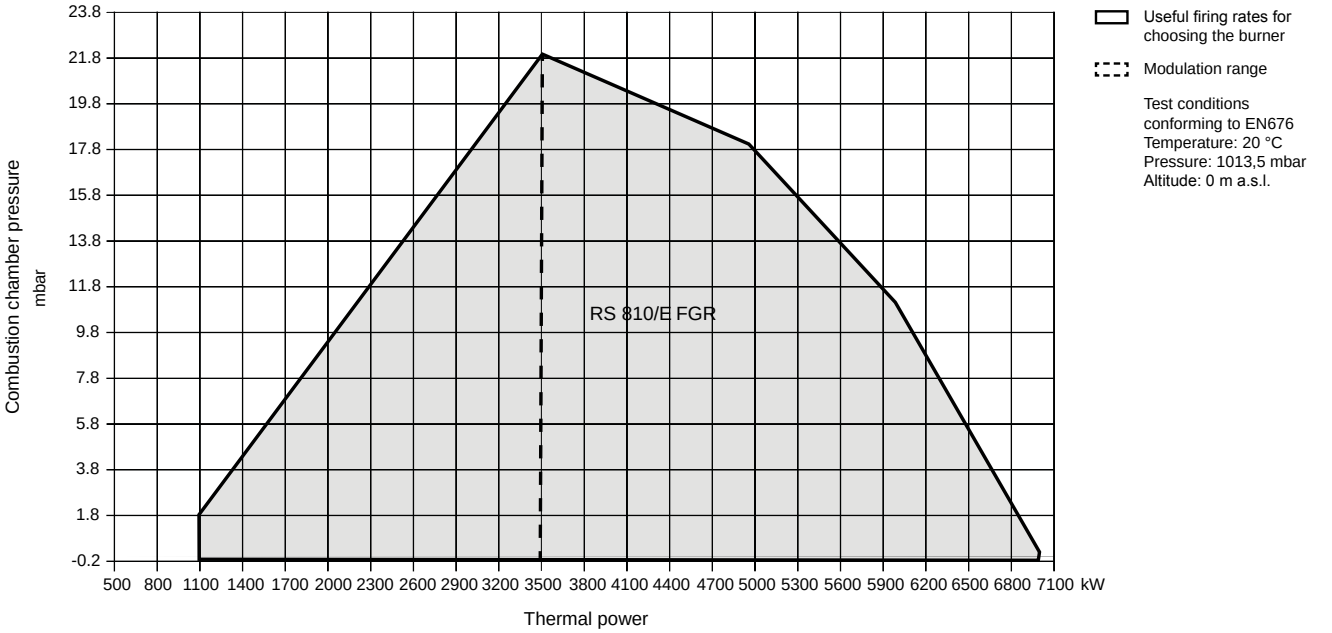
(1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
(2) Star delta fan motor starter.
(3) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

NOTE: for more information about product codes, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

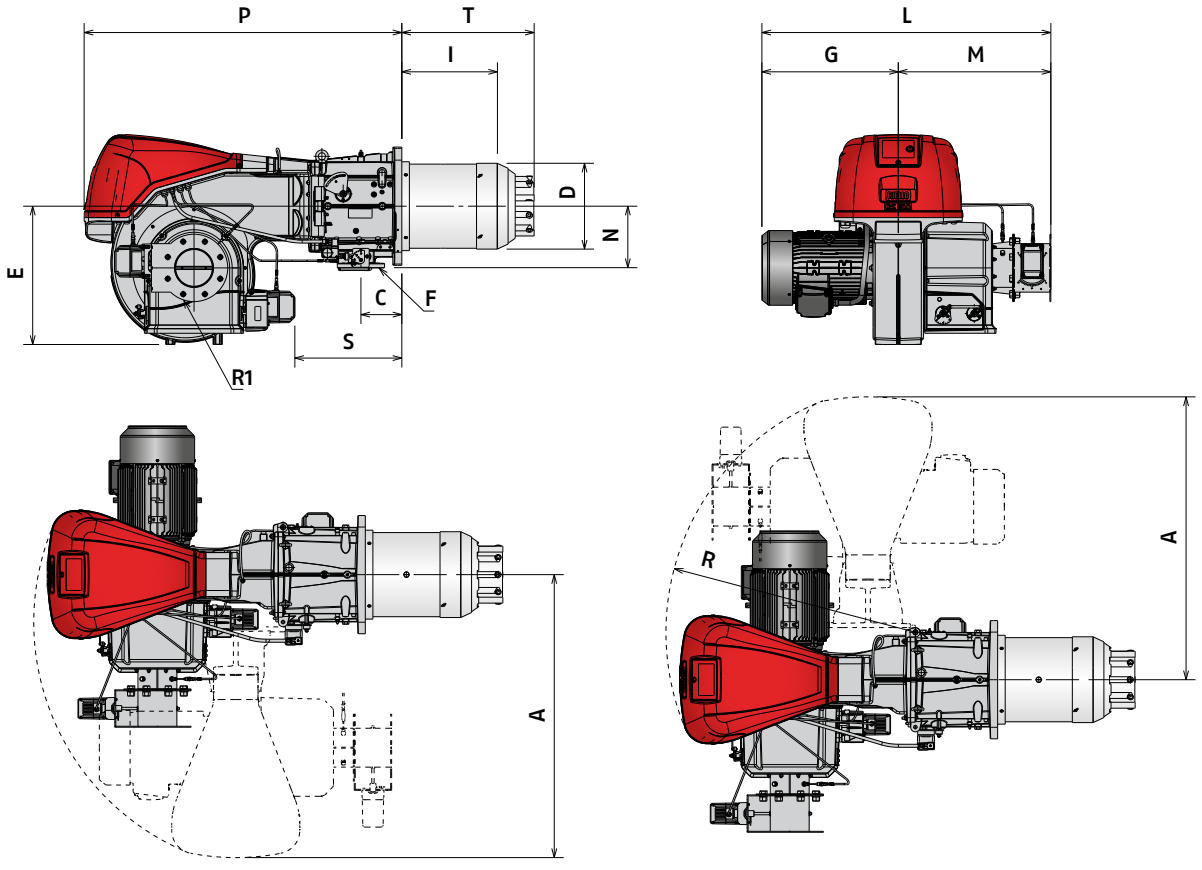


FIRING RATES

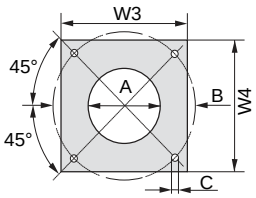
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen concentration. The shown firing rates are obtained in special test boilers, according to EN 676 regulation and referred to a Low NOx performance conforming to the Class 3 of EN676, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced. A Flue Gas Recirculation % needed to obtain an Ultra Low NOx performance of 30 mg/Nm^3 will involve a maximum output reduction of at list 20%.



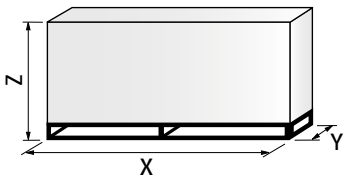
OVERALL DIMENSIONS



Description	A mm	C mm	D mm	E mm	F mm	G mm	I mm	L mm	M mm	N mm	P mm	R mm	R1 mm	S mm	T mm
RS 810/E FGR	1197	173	363	585	DN80	577	405	1222	645	260	1345	1055	6"-DN150	450	558



Description	A mm	B mm	C mm	W3 mm	W4 mm
RS 810/E FGR	400	495	M18	530	530



Description	X mm	Y mm	Z mm	Net weight kg
RS 810/E FGR	2150	1070	1425	320

GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (4)
					RS 810/E FGR
VGD SERIES ONE STAGE GAS TRAIN					
VGD 65/1-FT 122	**20140762***	(5)	DN65	(3)	20059331/(3010222+20059331) (6)
VGD 80/1-FT 122	**20140763***		DN80	(3)	20059331/(3010222+20059331) (6)
VGD 100/1-FT 122	**20169193***		DN100	(3)	20059332/(3010223+20059331) (6)
VGD 125/1-FT 122	**20169195***		DN125	(3)	20059333/(3010224+20059331) (6)

(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) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch, supplied with the burner.
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 810/E FGR	TEMPERATURE PROBE The control box of RS/E FGR burners includes the three point PID regulator to obtainthe modulating operation. The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 810/E FGR	PRESSURE PROBE The control box of RS/E-EV FGR burners includes the three point PID regulator to obtain the modulating operation. The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RS 810/E FGR	INTERFACCIA SOFTWARE PC PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.	**(1)**

(1) On demand.

STATE OF SUPPLY

Monoblock forced draught, Ultra Low NOx gas burner with Flue Gas Recirculation (FGR) system, with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions
- Air suction circuit
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Three-phase fan starting motor
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Flue gas recirculation butterfly valve controlled by a high precision servomotor
- Flue gas recirculation temperature probe to prevent condensation in burner intake
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of excess pressure on the fuel supply line
- LMV51.300 Digital Burner Management System
  - for control of air, fuel and exhaust gas proportion in every working point
  - for output modulation with incorporated PID control of temperature or pressure of the heat generator
  - with indication of operating status and parameters, error messages and diagnosis of fault causes
- Operator panel with LCD Display Interface, for combustion system commissioning and monitoring
- Burner safety control included on Electronic Cam device
- UV sensor for flame detection
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Clean contacts relay
- Burner failure led signal and lighted release button
- Hinge for opening the burner and inspecting the combustion head
- Lifting rings

STANDARD EQUIPMENT

- Thermal insulation screen
- Screws to fix the burner flange to the boiler
- Screws to fix the gas train flange
- Gasket for gas train flange
- Pressure switch for leak detection control of gas train
- Spare parts catalogue
- Instruction handbook for installation, use and maintenance

Ultra Low NOx gas burners

RS 810/EV FGR



- Modulating gas burners with electronic cam
- Ultra Low NOx emissions (NOx emissions lower than 30 mg/Nm^3)
- Suitable for new installations or replacements
- Operation as standard air draught burners

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 Monoblock burners, based on FGR (Flue gas Recirculation) low emission technology, suitable to achieve 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; an integrated Digital Burner Management System, trough 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 of operation.
All the components are integrated in a compact size, in order to facilitate and make extremely easy the installation and maintenance.

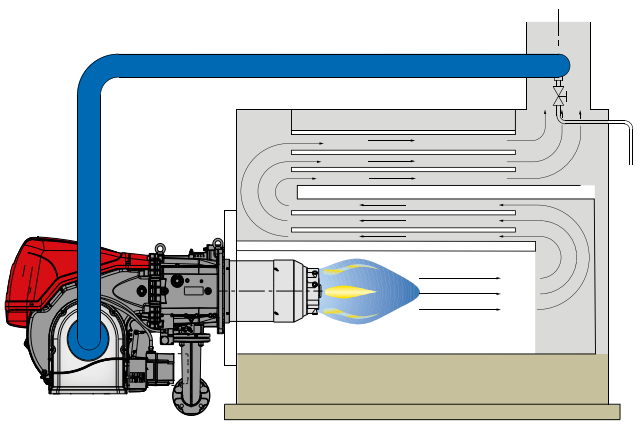
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	V/Ph/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52)							
RS 810/EV FGR TC FS1/FS2	1100/3500-6990	120/350-700	24	400/3/50	-	(1)(2)	**(3)**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

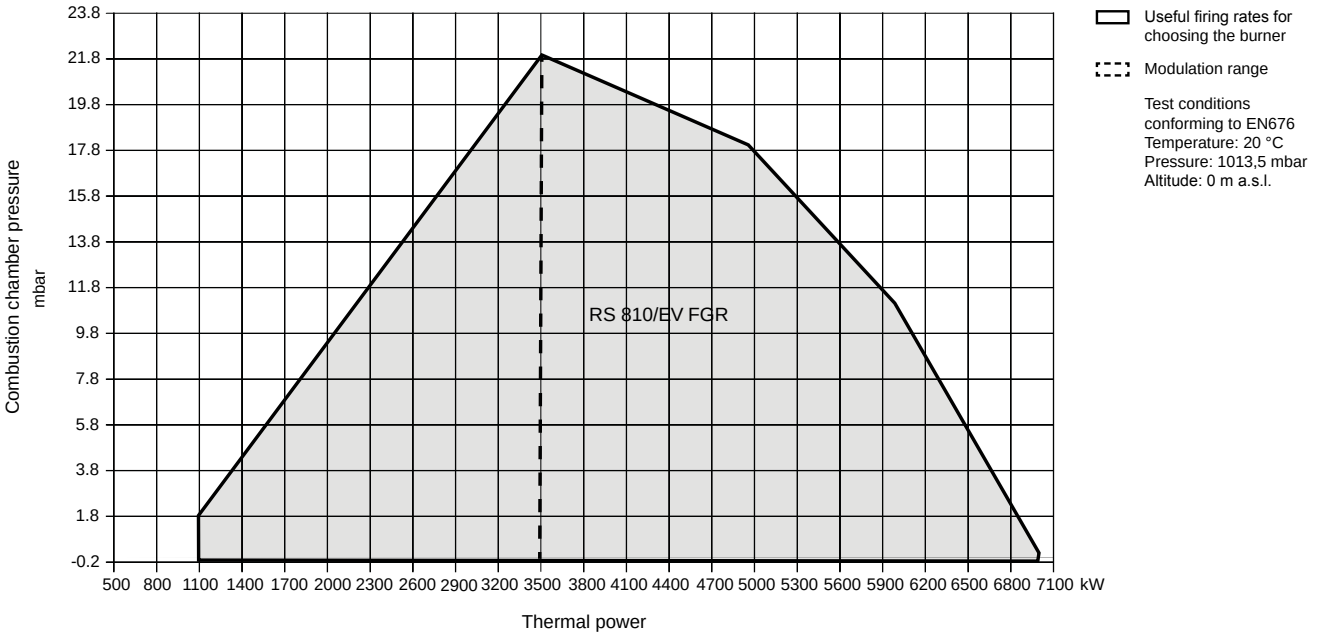
(1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
(2) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(3) On demand.

NOTE: for more information about product codes, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

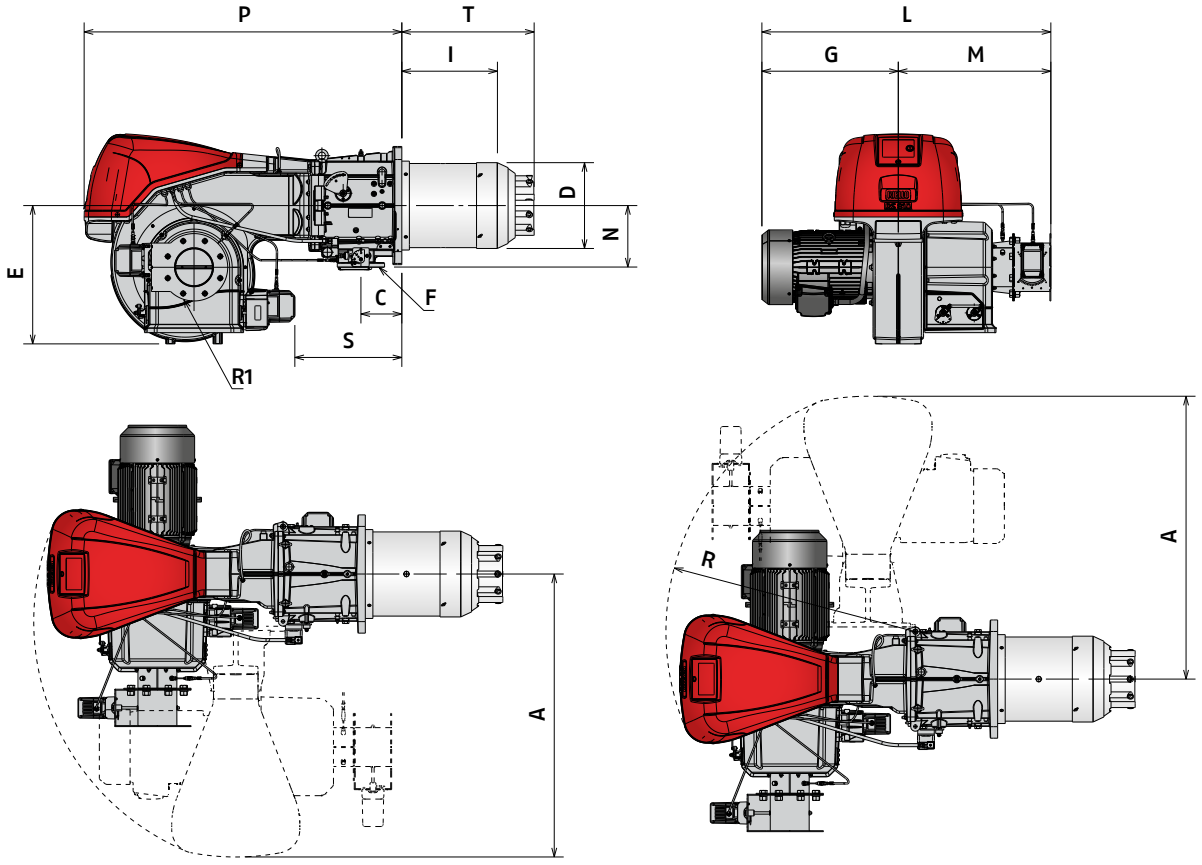


FIRING RATES

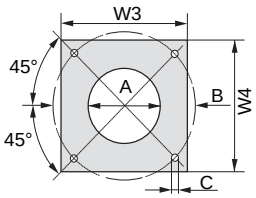
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen concentration. The shown firing rates are obtained in special test boilers, according to EN 676 regulation and referred to a Low NOx performance conforming to the Class 3 of EN676, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced. A Flue Gas Recirculation % needed to obtain an Ultra Low NOx performance of 30 mg/Nm^3 will involve a maximum output reduction of at list 20%.



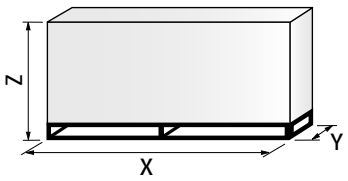
OVERALL DIMENSIONS



Description	A mm	C mm	D mm	E mm	F mm	G mm	I mm	L mm	M mm	N mm	P mm	R mm	R1 mm	S mm	T mm
RS 810/EV FGR	1197	173	363	585	DN80	577	405	1222	645	260	1345	1055	6"-DN150	450	558



Description	A mm	B mm	C mm	W3 mm	W4 mm
RS 810/EV FGR	400	495	M18	530	530



Description	X mm	Y mm	Z mm	Net weight kg
RS 810/EV FGR	2150	1070	1425	320

GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (4)
					RS 810/EV FGR
VGD SERIES ONE STAGE GAS TRAIN					
VGD 65/1-FT 122	**20140762***	(5)	DN65	(3)	20059331/(3010222+20059331) (6)
VGD 80/1-FT 122	**20140763***		DN80	(3)	20059331/(3010222+20059331) (6)
VGD 100/1-FT 122	**20169193***		DN100	(3)	20059332/(3010223+20059331) (6)
VGD 125/1-FT 122	**20169195***		DN125	(3)	20059333/(3010224+20059331) (6)

(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) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch, supplied with the burner.
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 810/EV FGR	TEMPERATURE PROBE The control box of RS/E-EV FGR burners includes the three point PID regulator to obtainthe modulating operation. The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 810/EV FGR	PRESSURE PROBE The control box of RS/E-EV FGR burners includes the three point PID regulator to obtain the modulating operation. The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RS 810/EV FGR	INTERFACCIA SOFTWARE PC PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.	**(1)**

(1) On demand.

STATE OF SUPPLY

Monoblock forced draught, Ultra Low NOx gas burner with Flue Gas Recirculation (FGR) system, with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions
- Air suction circuit
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Three-phase fan starting motor
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Flue gas recirculation butterfly valve controlled by a high precision servomotor
- Flue gas recirculation temperature probe to prevent condensation in burner intake
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of excess pressure on the fuel supply line
- LMV51.300 Digital Burner Management System
  - for control of air, fuel and exhaust gas proportion in every working point
  - for output modulation with incorporated PID control of temperature or pressure of the heat generator
  - with indication of operating status and parameters, error messages and diagnosis of fault causes
- Operator panel with LCD Display Interface, for combustion system commissioning and monitoring
- Burner safety control included on Electronic Cam device
- UV sensor for flame detection
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Clean contacts relay
- Burner failure led signal and lighted release button
- Hinge for opening the burner and inspecting the combustion head
- Lifting rings

STANDARD EQUIPMENT

- Thermal insulation screen
- Screws to fix the burner flange to the boiler
- Screws to fix the gas train flange
- Gasket for gas train flange
- Pressure switch for leak detection control of gas train
- Spare parts catalogue
- Instruction handbook for installation, use and maintenance

Ultra Low NOx gas burners

RS 1000-1200/E FGR



- Modulating gas burners with electronic cam
- Ultra Low NOx emissions (NOx emissions lower than 30 mg/Nm^3)
- Suitable for new installations or replacements
- Operation as standard air draught burners

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 Monoblock burners, based on FGR (Flue gas Recirculation) low emission technology, suitable to achieve 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; an integrated Digital Burner Management System, trough 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 of operation.
All the components are integrated in a compact size, in order to facilitate and make extremely easy the installation and maintenance.

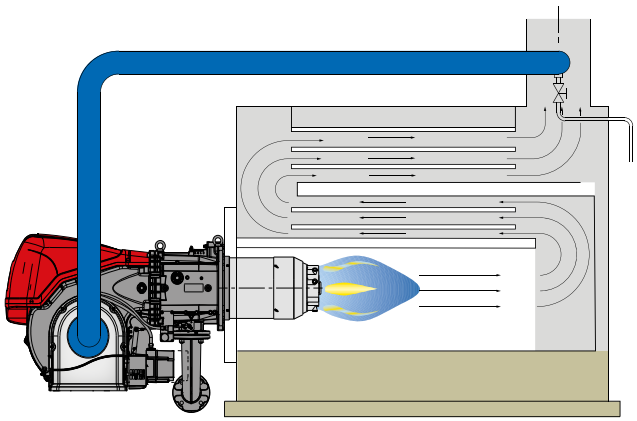
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	V/Ph/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)							
RS 1000/E FGR TC FS1/FS2	1100/4000-10100	110/400-1010	25,7	400/3/50	-	(1)(2)(3)	**(4)**
RS 1200/E FGR TC FS1/FS2	1500/5500-11100	150/550-1110	28,7	400/3/50	-	(1)(2)(3)	**(4)**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

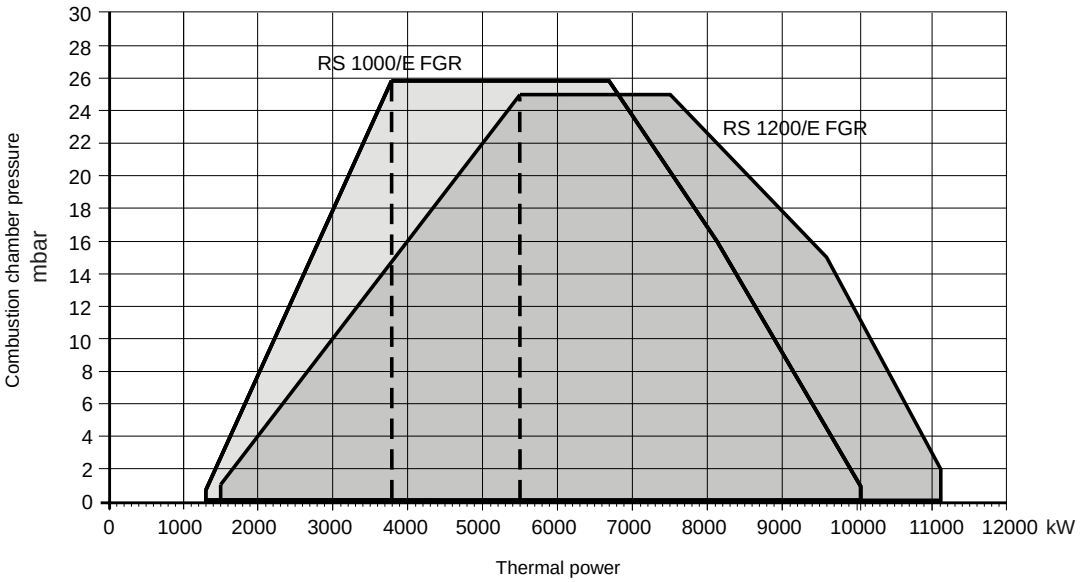
(1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
(2) Star delta fan motor starter.
(3) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(4) On demand.

NOTE: for more information about product codes, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

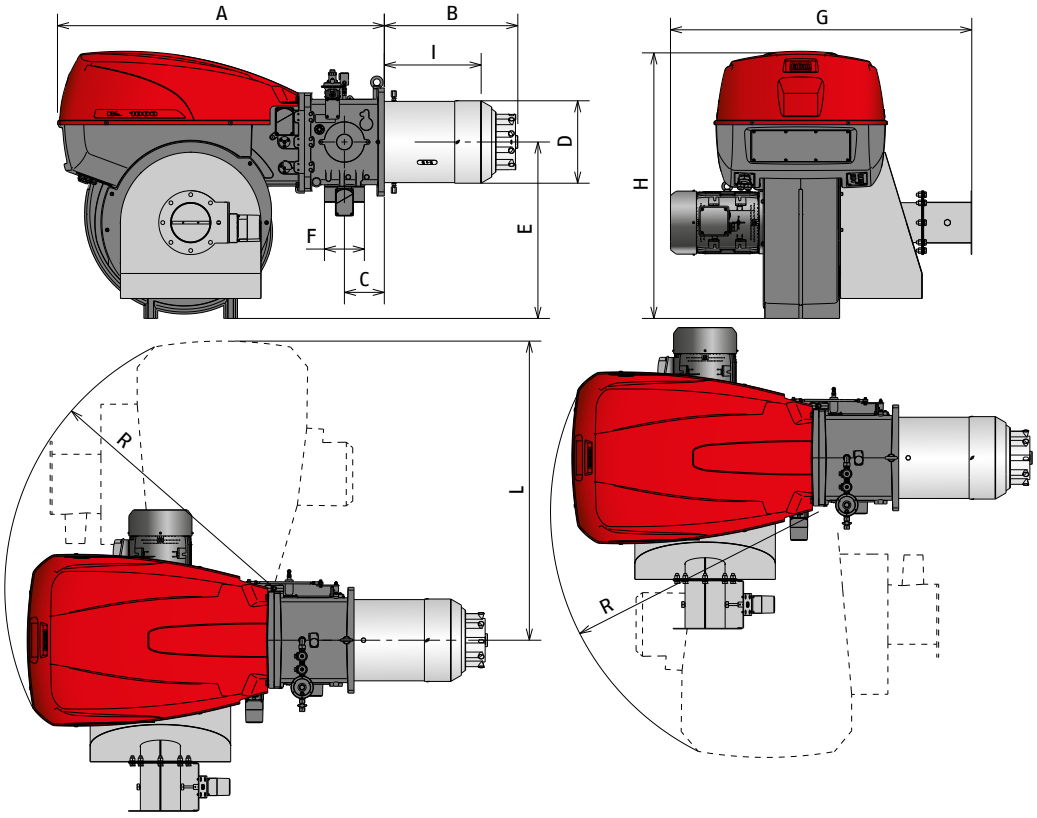


FIRING RATES

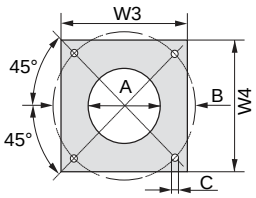
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen concentration. The shown firing rates are obtained in special test boilers, according to EN 676 regulation and referred to a Low NOx performance conforming to the Class 3 of EN676, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced. A Flue Gas Recirculation % needed to obtain an Ultra Low NOx performance of 30 mg/Nm^3 will involve a maximum output reduction of at list 20%.



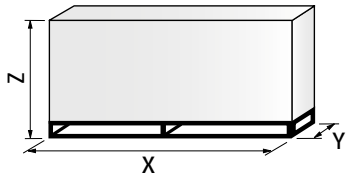
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	R mm
RS 1000/E FGR	1637	669	200	413	885	DN80	1510	1338	485	1493	1350
RS 1200/E FGR	1637	670	200	456	885	DN80	1630	1338	463	1493	1350



Description	A mm	B mm	C mm	W3 mm	W4 mm
RS 1000/E FGR	460	608	M20	530	530
RS 1200/E FGR	500	608	M20	530	530



Description	X mm	Y mm	Z mm	Net weight kg
RS 1000/E FGR	2640	1700	1750	450
RS 1200/E FGR	2640	1700	1750	470

GAS TRAINS

Description (1)	Code	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (4)	
				RS 1000/E FGR	RS 1200/E FGR
VGD SERIES ONE STAGE GAS TRAIN					
VGD 80/1-FT 122	**20140763***	DN80	(3)	20066268/(3010222+20066268) (5)	
VGD 100/1-FT 122	**20169193***	DN100	(3)	20066278/(3010223+20066268) (5)	
VGD 125/1-FT 122	**20169195***	DN125	(3)	20066284/(3010224+20066268) (5)	

(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) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch, supplied with the burner.
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 1000-1200/E FGR	TEMPERATURE PROBE The control box of FGR burners includes the three point PID regulator to obtain the modulating operation. The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 1000-1200/E FGR	PRESSURE PROBE The control box of FGR burners includes the three point PID regulator to obtain the modulating operation. The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RS 1000-1200/E FGR	INTERFACCIA SOFTWARE PC PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.	**(1)**

(1) On demand.

STATE OF SUPPLY

Monoblock forced draught, Ultra Low NOx gas burner with Flue Gas Recirculation (FGR) system, with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions
- Air suction circuit
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Three-phase fan starting motor
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Burner pilot ignition system, with dedicated gas train to assure a high ignition reliability
- Flue gas recirculation butterfly valve controlled by a high precision servomotor
- Flue gas recirculation temperature probe to prevent condensation in burner intake
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of excess pressure on the fuel supply line
- LMV51.300 Digital Burner Management System
  - for control of air, fuel and exhaust gas proportion in every working point
  - for output modulation with incorporated PID control of temperature or pressure of the heat generator
  - with indication of operating status and parameters, error messages and diagnosis of fault causes
- Operator panel with LCD Display Interface, for combustion system commissioning and monitoring
- Burner safety control included on Electronic Cam device
- UV sensor for flame detection
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Clean contacts relay
- Burner failure led signal and lighted release button
- Hinge for opening the burner and inspecting the combustion head
- Lifting rings

STANDARD EQUIPMENT

- Thermal insulation screen
- Screws to fix the burner flange to the boiler
- Screws to fix the gas train flange
- Gasket for gas train flange
- Pressure switch for leak detection control of gas train
- Spare parts catalogue
- Instruction handbook for installation, use and maintenance

Ultra Low NOx gas burners

RS 1000-1200/EV FGR



- Modulating gas burners with electronic cam
- Ultra Low NOx emissions (NOx emissions lower than 30 mg/Nm^3)
- Suitable for new installations or replacements
- Operation as standard air draught burners

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 Monoblock burners, based on FGR (Flue gas Recirculation) low emission technology, suitable to achieve 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; an integrated Digital Burner Management System, trough 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 of operation.
All the components are integrated in a compact size, in order to facilitate and make extremely easy the installation and maintenance.

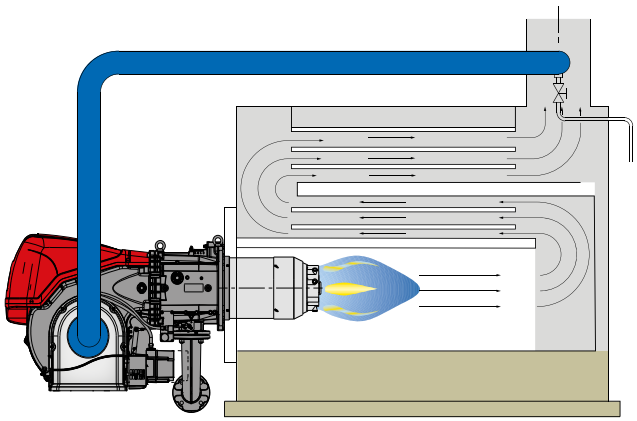
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	V/Ph/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52)							
RS 1000/EV FGR TC FS1/FS2	1100/4000-10100	110/400-1010	25,7	400/3/50	-	(1)(2)	**20166096**
RS 1200/EV FGR TC FS1/FS2	1500/5500-11100	150/550-1110	28,7	400/3/50	-	(1)(2)	**20166097**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

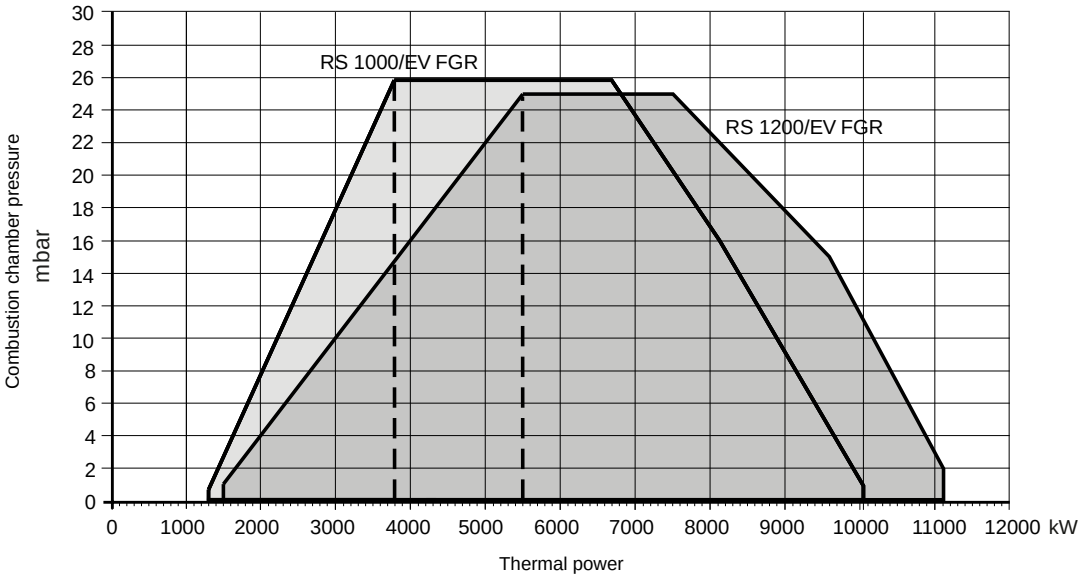
(1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
(2) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

NOTE: for more information about product codes, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

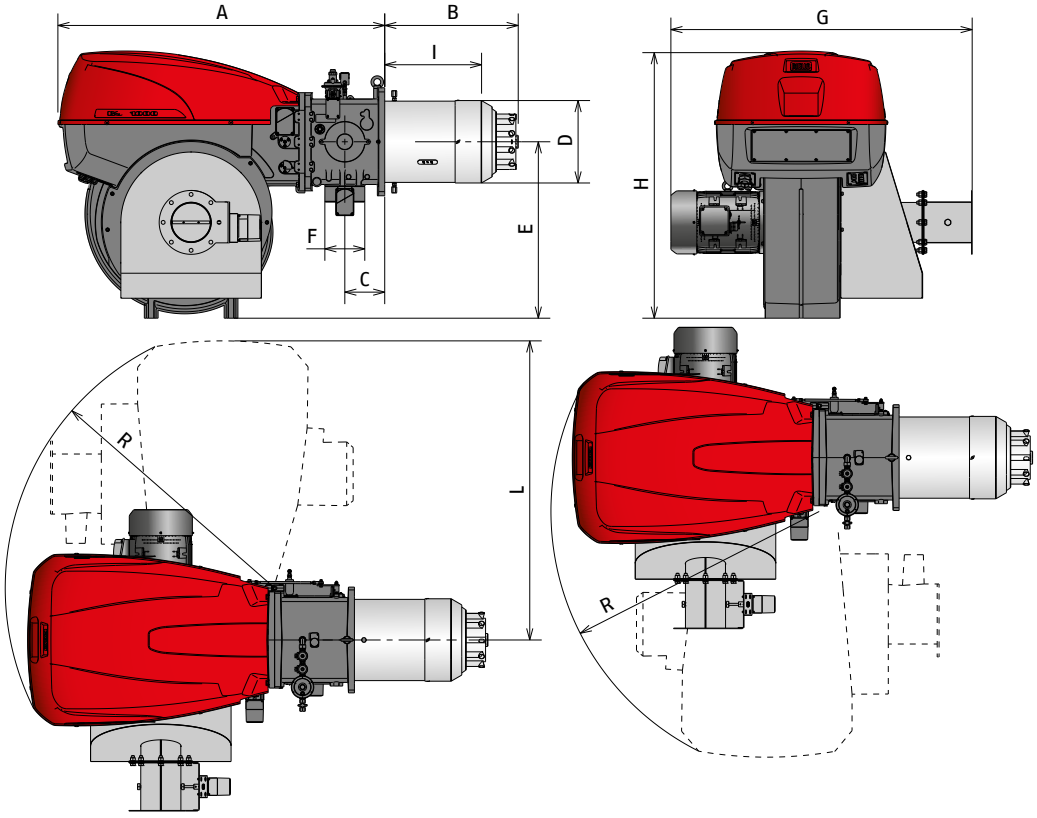


FIRING RATES

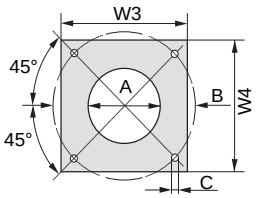
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen concentration. The shown firing rates are obtained in special test boilers, according to EN 676 regulation and referred to a Low NOx performance conforming to the Class 3 of EN676, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced. A Flue Gas Recirculation % needed to obtain an Ultra Low NOx performance of 30 mg/Nm^3 will involve a maximum output reduction of at list 20%.



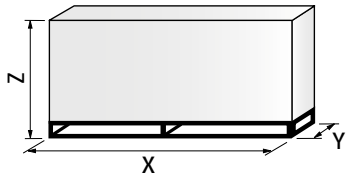
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	R mm
RS 1000/EV FGR	1637	669	200	413	885	DN80	1510	1338	485	1493	1350
RS 1200/EV FGR	1637	670	200	456	885	DN80	1630	1338	463	1493	1350



Description	A mm	B mm	C mm	W3 mm	W4 mm
RS 1000/EV FGR	460	608	M20	530	530
RS 1200/EV FGR	500	608	M20	530	530



Description	X mm	Y mm	Z mm	Net weight kg
RS 1000/EV FGR	2640	1700	1750	450
RS 1200/EV FGR	2640	1700	1750	470

GAS TRAINS

Description (1)	Code	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (4)	
				RS 1000/EV FGR	RS 1200/EV FGR
VGD SERIES ONE STAGE GAS TRAIN					
VGD 80/1-FT 122	**20140763***	DN80	(3)	20066268/(3010222+20066268) (5)	
VGD 100/1-FT 122	**20169193***	DN100	(3)	20066278/(3010223+20066268) (5)	
VGD 125/1-FT 122	**20169195***	DN125	(3)	20066284/(3010224+20066268) (5)	

(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) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch, supplied with the burner.
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 1000-1200/EV FGR	TEMPERATURE PROBE The control box of RS/EV FGR burners includes the three point PID regulator to obtainthe modulating operation. The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 1000-1200/EV FGR	PRESSURE PROBE The control box of RS/EV FGR burners includes the three point PID regulator to obtain the modulating operation. The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RS 1000-1200/EV FGR	INTERFACCIA SOFTWARE PC PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.	**(1)**

(1) On demand.

STATE OF SUPPLY

Monoblock forced draught, Ultra Low NOx gas burner with Flue Gas Recirculation (FGR) system, with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions
- Air suction circuit
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Three-phase fan starting motor
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Burner pilot ignition system, with dedicated gas train to assure a high ignition reliability
- Flue gas recirculation butterfly valve controlled by a high precision servomotor
- Flue gas recirculation temperature probe to prevent condensation in burner intake
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of excess pressure on the fuel supply line
- LMV51.300 Digital Burner Management System
  - for control of air, fuel and exhaust gas proportion in every working point
  - for output modulation with incorporated PID control of temperature or pressure of the heat generator
  - with indication of operating status and parameters, error messages and diagnosis of fault causes
- Operator panel with LCD Display Interface, for combustion system commissioning and monitoring
- Burner safety control included on Electronic Cam device
- UV sensor for flame detection
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Clean contacts relay
- Burner failure led signal and lighted release button
- Hinge for opening the burner and inspecting the combustion head
- Lifting rings

STANDARD EQUIPMENT

- Thermal insulation screen
- Screws to fix the burner flange to the boiler
- Screws to fix the gas train flange
- Gasket for gas train flange
- Pressure switch for leak detection control of gas train
- Spare parts catalogue
- Instruction handbook for installation, use and maintenance

Ultra Low NOx gas burners

RS 1300-2000/E FGR



- Modulating gas burners with electronic cam
- Ultra Low NOx emissions (NOx emissions lower than 30 mg/Nm^3)
- Suitable for new installations or replacements
- Operation as standard air draught burners

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 Monoblock burners, based on FGR (Flue gas Recirculation) low emission technology, suitable to achieve 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; an integrated Digital Burner Management System, trough 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 of operation.
All the components are integrated in a compact size, in order to facilitate and make extremely easy the installation and maintenance.

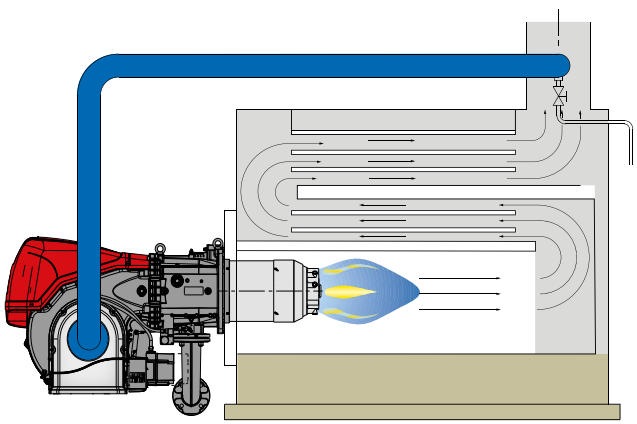
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	V/Ph/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)							
RS 1300/E FGR TC FS1/FS2	1350-7500/12000	250/750-1300	34.7	400/3/50	-	(1)(2)(3)	**20130195**
RS 1600/E FGR TC FS1/FS2	3065/9503-15560	307/950-1556	41.5	400/3/50	-	(1)(2)(3)	**20130194**
RS 2000/E FGR TC FS1/FS2	4000/12000-19500	400/1200-1950	49.3	400/3/50	-	(1)(2)(3)	**20130193**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

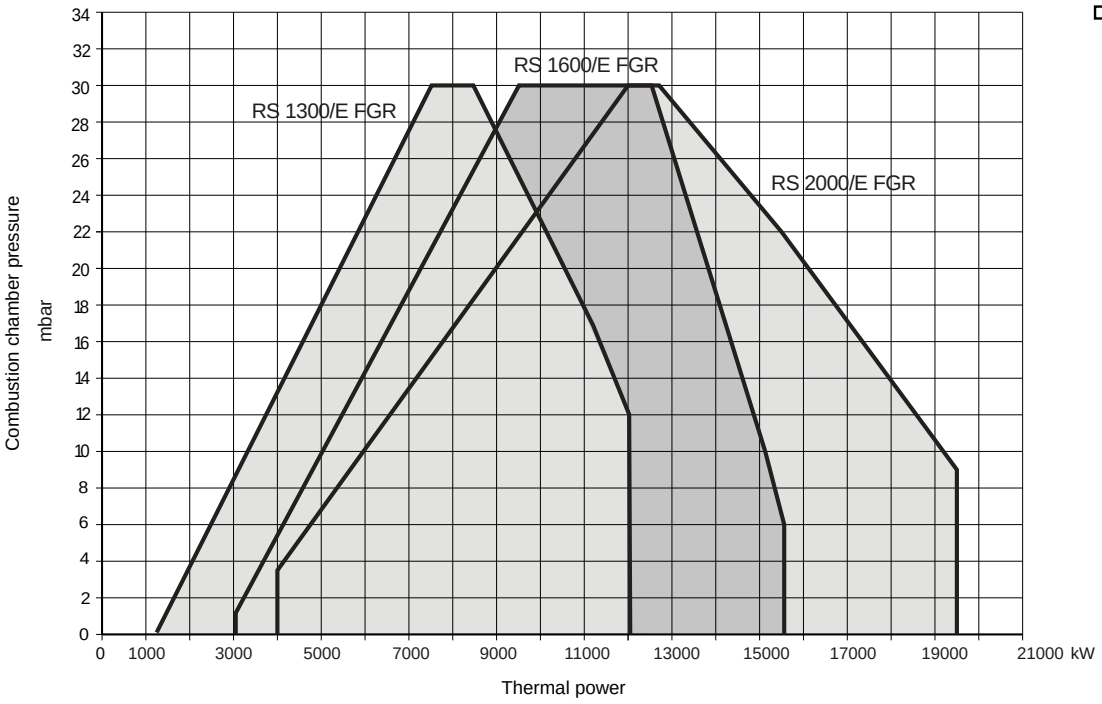
(1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
(2) Star delta fan motor starter.
(3) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

NOTE: for more information about product codes, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

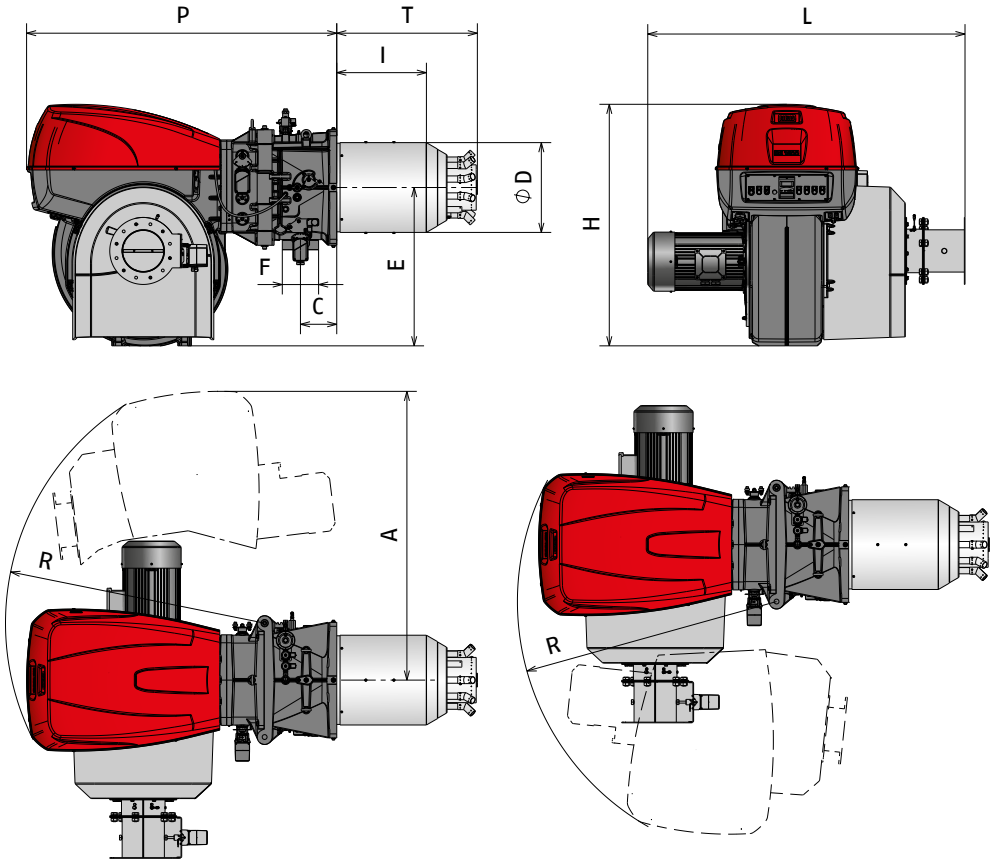


FIRING RATES

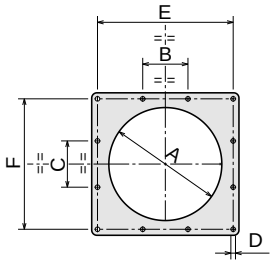
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen concentration. The shown firing rates are obtained in special test boilers, according to EN 676 regulation and referred to a Low NOx performance conforming to the Class 3 of EN676, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced. A Flue Gas Recirculation % needed to obtain an Ultra Low NOx performance of 30 mg/Nm^3 will involve a maximum output reduction of at list 20%.



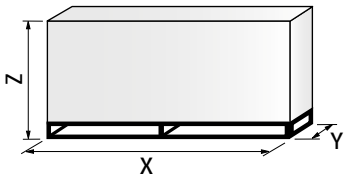
OVERALL DIMENSIONS



Description	A mm	C mm	D mm	E mm	F mm	H mm	I mm	L mm	P mm	R mm	T mm
RS 1300/E FGR	1782	220	544	960	DN80	1463	383	1928	1880	1565	613
RS 1600/E FGR	1785	220	544	960	DN100	1463	544	1922	1880	1565	852
RS 2000/E FGR	1782	220	590	960	DN100	1463	562	1922	1880	1565	852



Description	A mm	B mm	C mm	D mm	E mm	F mm
RS 1300/E FGR	580	215	220	M20	645	620
RS 1600/E FGR	580	215	220	M20	645	620
RS 2000/E FGR	580	215	220	M20	645	620



Description	X mm	Y mm	Z mm	Net weight kg
RS 1300/E FGR	2960	1750	1800	1180
RS 1600/E FGR	2960	1750	1800	1180
RS 2000/E FGR	2960	1750	1800	1220

GAS TRAINS

Description (1)	Code	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (4)		
				RS 1300/E FGR	RS 1600/E FGR	RS 2000/E FGR
VGD SERIES ONE STAGE GAS TRAIN						
VGD 100/1-FT 122	**20169193***	DN100	(3)	20130602	20130616	
VGD 125/1-FT 122	**20169195***	DN125	(3)	20130606	20130617	

(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) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch, supplied with the burner.
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 1300-2000/E FGR	TEMPERATURE PROBE The control box of RS/E FGR burners includes the three point PID regulator to obtainthe modulating operation. The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 1300-2000/E FGR	PRESSURE PROBE The control box of RS/E FGR burners includes the three point PID regulator to obtain the modulating operation. The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RS 1300-2000/E FGR	INTERFACCIA SOFTWARE PC PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.	**(1)**

(1) On demand.

STATE OF SUPPLY

Monoblock forced draught, Ultra Low NOx gas burner with Flue Gas Recirculation (FGR) system, with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions
- Air suction circuit
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Three-phase fan starting motor
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Flue gas recirculation butterfly valve controlled by a high precision servomotor
- Flue gas recirculation temperature probe to prevent condensation in burner intake
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of excess pressure on the fuel supply line
- LMV51.300 Digital Burner Management System
  - for control of air, fuel and exhaust gas proportion in every working point
  - for output modulation with incorporated PID control of temperature or pressure of the heat generator
  - with indication of operating status and parameters, error messages and diagnosis of fault causes
- Operator panel with LCD Display Interface, for combustion system commissioning and monitoring
- Burner safety control included on Electronic Cam device
- UV sensor for flame detection
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Clean contacts relay
- Burner failure led signal and lighted release button
- Hinge for opening the burner and inspecting the combustion head
- Lifting rings

STANDARD EQUIPMENT

- Thermal insulation screen
- Screws to fix the burner flange to the boiler
- Screws to fix the gas train flange
- Gasket for gas train flange
- Pressure switch for leak detection control of gas train
- Spare parts catalogue
- Instruction handbook for installation, use and maintenance

Ultra Low NOx gas burners

RS 1300-2000/EV FGR



- Modulating gas burners with electronic cam
- Ultra Low NOx emissions (NOx emissions lower than 30 mg/Nm^3)
- Suitable for new installations or replacements
- Operation as standard air draught burners

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 Monoblock burners, based on FGR (Flue gas Recirculation) low emission technology, suitable to achieve 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; an integrated Digital Burner Management System, trough 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 of operation.
All the components are integrated in a compact size, in order to facilitate and make extremely easy the installation and maintenance.

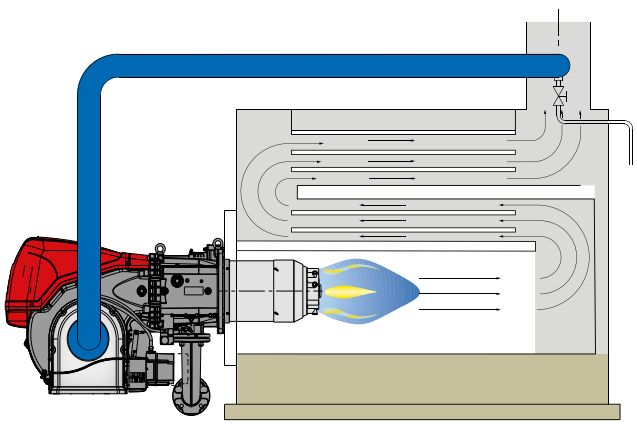
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	V/Ph/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52)							
RS 1300/EV FGR TC FS1/FS2	1350-7500/12000	250/750-1300	34.7	400/3/50	-	(1)(2)	**(3)**
RS 1600/EV FGR TC FS1/FS2	3065/9503-15560	307/950-1556	41.5	400/3/50	-	(1)(2)	**(3)**
RS 2000/EV FGR TC FS1/FS2	4000/12000-19500	400/1200-1950	49.3	400/3/50	-	(1)(2)	**(3)**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

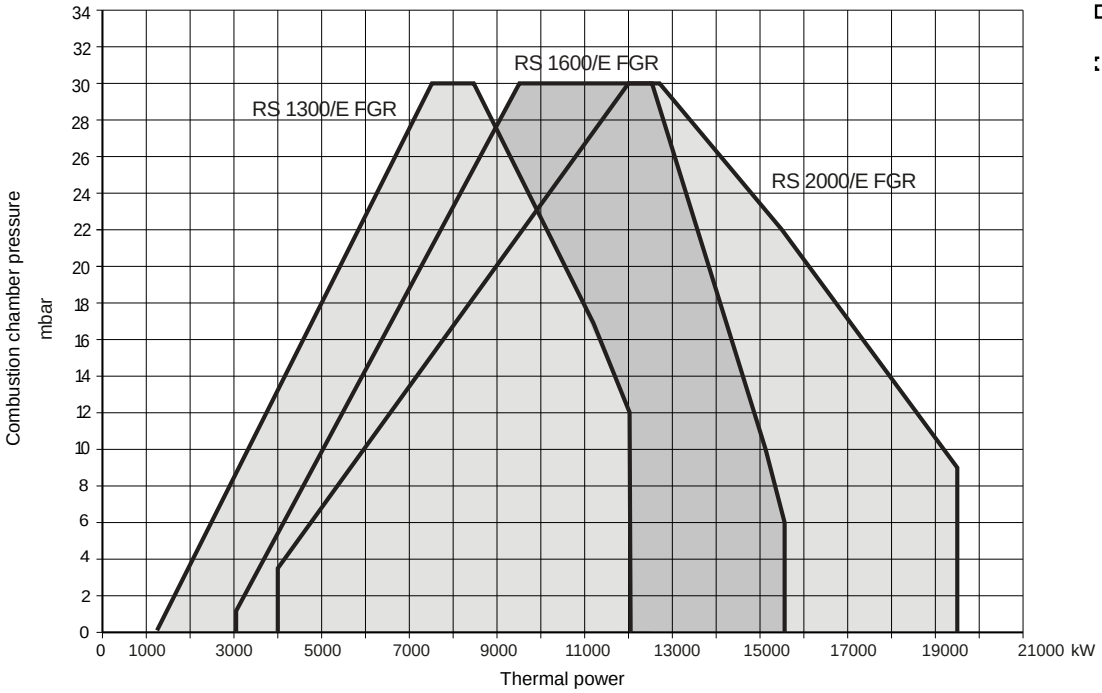
(1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
(2) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(3) On demand.

NOTE: for more information about product codes, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

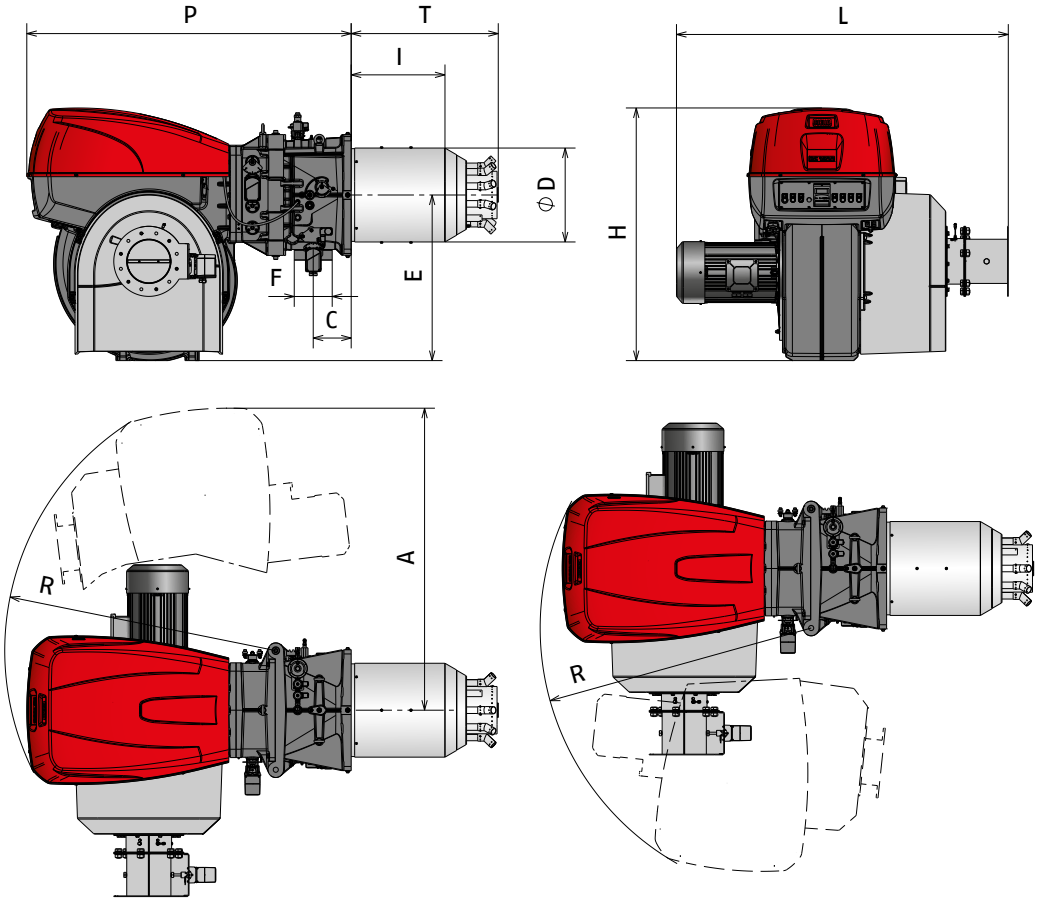


FIRING RATES

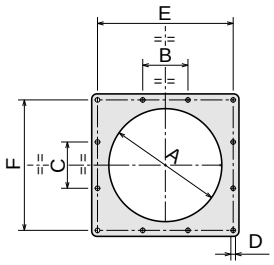
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen concentration. The shown firing rates are obtained in special test boilers, according to EN 676 regulation and referred to a Low NOx performance conforming to the Class 3 of EN676, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced. A Flue Gas Recirculation % needed to obtain an Ultra Low NOx performance of 30 mg/Nm^3 will involve a maximum output reduction of at list 20%.



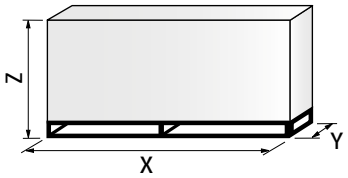
OVERALL DIMENSIONS



Description	A mm	C mm	D mm	E mm	F mm	H mm	I mm	L mm	P mm	R mm	T mm
RS 1300/EV FGR	1782	220	544	960	DN80	1463	383	1928	1880	1565	613
RS 1600/EV FGR	1785	220	544	960	DN100	1463	544	1922	1880	1565	852
RS 2000/EV FGR	1782	220	590	960	DN100	1463	562	1922	1880	1565	852



Description	A mm	B mm	C mm	D mm	E mm	F mm
RS 1300/EV FGR	580	215	220	M20	645	620
RS 1600/EV FGR	580	215	220	M20	645	620
RS 2000/EV FGR	580	215	220	M20	645	620



Description	X mm	Y mm	Z mm	Net weight kg
RS 1300/EV FGR	2960	1750	1800	1180
RS 1600/EV FGR	2960	1750	1800	1180
RS 2000/EV FGR	2960	1750	1800	1220

GAS TRAINS

Description (1)	Code	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (4)		
				RS 1300/EV FGR	RS 1600/EV FGR	RS 2000/EV FGR
VGD SERIES ONE STAGE GAS TRAIN						
VGD 100/1-FT 122	**20169193***	DN100	(3)	20130602	20130616	
VGD 125/1-FT 122	**20169195***	DN125	(3)	20130606	20130617	

(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) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch, supplied with the burner.
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 1300-2000/E FGR	TEMPERATURE PROBE The control box of RS/E FGR burners includes the three point PID regulator to obtainthe modulating operation. The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RS 1300-2000/E FGR	PRESSURE PROBE The control box of RS/E FGR burners includes the three point PID regulator to obtain the modulating operation. The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	RS 1300-2000/E FGR	INTERFACCIA SOFTWARE PC PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.	**(1)**

(1) On demand.

STATE OF SUPPLY

Monoblock forced draught, Ultra Low NOx gas burner with Flue Gas Recirculation (FGR) system, with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions
- Air suction circuit
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Three-phase fan starting motor
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Flue gas recirculation butterfly valve controlled by a high precision servomotor
- Flue gas recirculation temperature probe to prevent condensation in burner intake
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of excess pressure on the fuel supply line
- LMV51.300 Digital Burner Management System
  - for control of air, fuel and exhaust gas proportion in every working point
  - for output modulation with incorporated PID control of temperature or pressure of the heat generator
  - with indication of operating status and parameters, error messages and diagnosis of fault causes
- Operator panel with LCD Display Interface, for combustion system commissioning and monitoring
- Burner safety control included on Electronic Cam device
- UV sensor for flame detection
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Clean contacts relay
- Burner failure led signal and lighted release button
- Hinge for opening the burner and inspecting the combustion head
- Lifting rings

STANDARD EQUIPMENT

- Thermal insulation screen
- Screws to fix the burner flange to the boiler
- Screws to fix the gas train flange
- Gasket for gas train flange
- Pressure switch for leak detection control of gas train
- Spare parts catalogue
- Instruction handbook for installation, use and maintenance

Ultra Low NOx modulating gas burners

RS 68-200/E ULX



- Progressive two-stage or modulating gas burners with electronic cam, with Ultra-low NOx emissions, without FGR system, with proper combustion chamber dimensions
- High reliability of operation and ignition; With operation and maintenance in line with standard diffusive flame burners
- Combustion optimization based on the residual O2 content in the exhaust fumes with burner models equipped with LMV52 control box

Thanks to many years of experience in the design and manufacture of Burners, Riello has developed a new range of medium power burners, the New RS ULX Series, based on the patented ULX (Internal gas Recirculation) low emission technology, suitable to achieve NOx emissions lower than class 4 of the EN 676, without any need of FGR system, with proper combustion chamber dimensions.

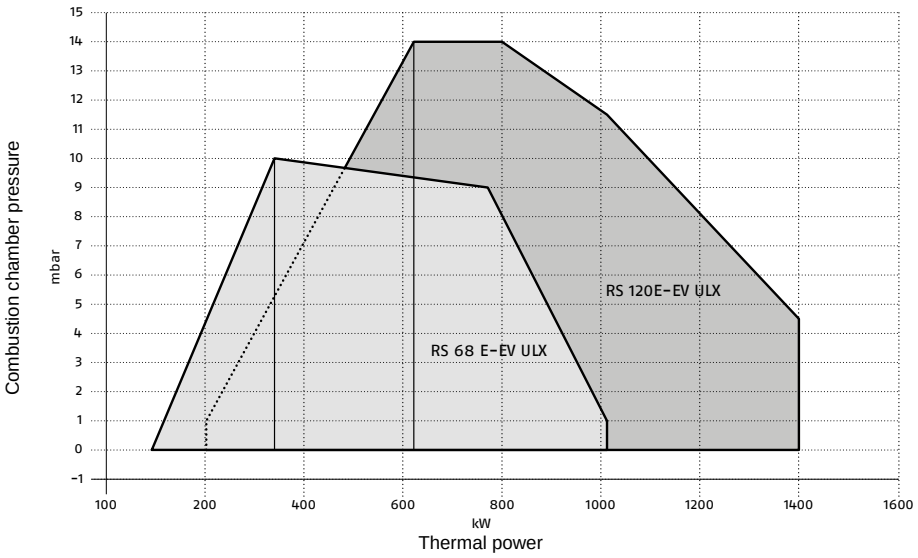
RS 68-200/E ULX burner series covers a firing range from 150 to 2400 kW, and it is based on the Digital Burner Management System Riello REC27 or Siemens LMV52, which can manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of the dedicated probe (with burner models equipped with REC27 control box, an additional PID logic regulator is required).
RS 68-200/E ULX burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
Finally, RS 68-200/E ULX burner models, equipped with Siemens LMV52 control box and compatible with combustion optimization based on the residual O2 content in the exhaust fumes, are now available.
The new RS/E ULX range combines exceptional Ultra Low NOx combustion performance to the consolidated features of robustness and reliability of the RS series.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 68/E ULX TL FS1	150/350-1050	15/35-105	2.1	3/230-400-50	230/50-60	CE-0123DN1089	(1)(2)(3)	**20204446**
RS 120/E ULX TL FS1	200/610-1400	20/61-140	2.9	3/230-400-50	230/50-60	CE-0123DN1089	(1)(3)(4)	**20204447**
RS 160/E ULX TL FS1	290/950-1950	29/95-195	5.5	3/400/50	230/50-60	CE-0123DN1089	(1)(3)(4)	**20205279**
RS 200/E ULX TL FS1	375/1360-2400	38/136-240	6.5	3/400/50	230/50-60	CE-0123DN1089	(1)(3)(4)	**20204448**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O_2 CONTROL READY								
RS 68/E O_2 ULX TL FS1/FS2	150/350-1050	15/35-105	2.1	3/400/50	1N/230/50	CE-0123DN1089	(1)(3)(4)	**20205457**
RS 120/E O_2 ULX TL FS1/FS2	200/610-1400	20/61-140	2.9	3/400/50	1N/230/50	CE-0123DN1089	(1)(3)(4)	**20205459**
RS 160/E O_2 ULX TL FS1/FS2	290/950-1950	29/95-195	5.5	3/400/50	1N/230/50	CE-0123DN1089	(1)(3)(4)	**20205460**
RS 200/EV O_2 ULX TL FS1/ FS2	375/1360-2400	38/136-240	6.5	3/400/50	1N/230/50	CE-0123DN1089	(1)(3)(4)	**20205462**

Net calorific value of natural gas (G20): 10 kWh/Nm3.
Power range referred to a Low NOx performance conforming to class 4 EN 676
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours). The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Model with terminal board.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories)
(3) Frequency Inverter, to be ordered as separated accessory; please refer to “Burner Accessories” paragraph.
(4) Seal control function is included on Burner Digitai Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train. In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.

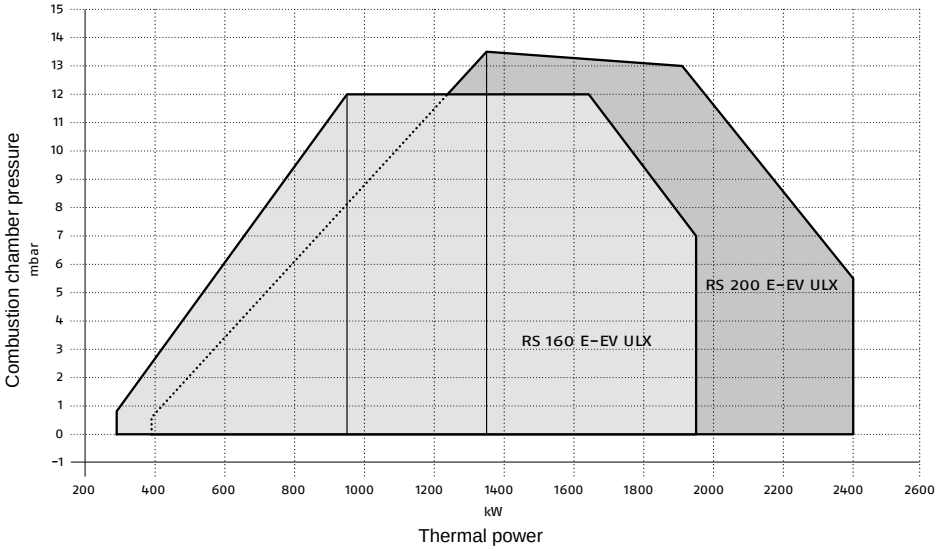
FIRING RATES



Useful firing rates for choosing the burner

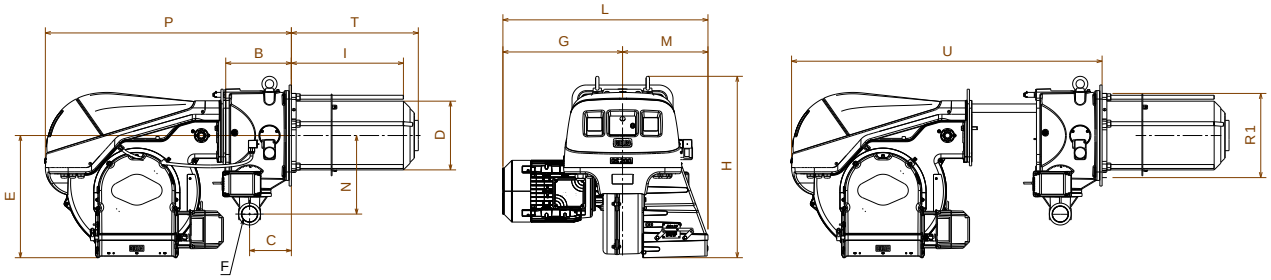
Modulation range

Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.



OVERALL DIMENSIONS

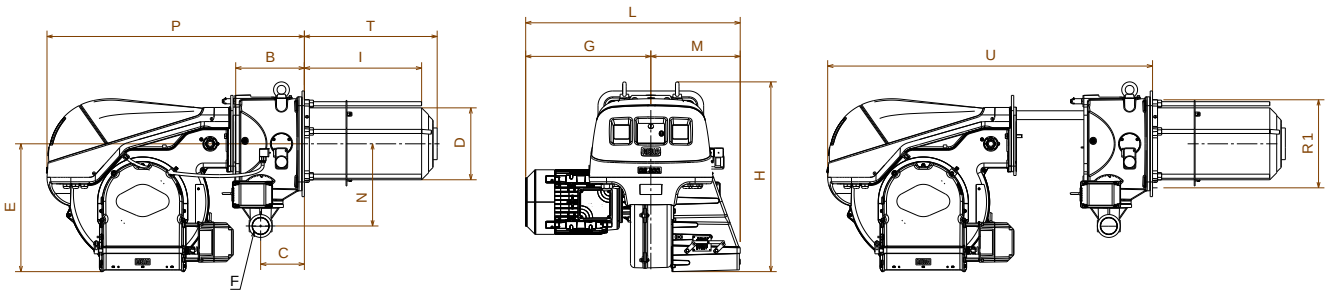
RS 68-200/E ULX WITH REC27 CONTROL BOX



Model	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	P mm	R1 mm	T mm	U mm
RS 68/E ULX	234	149	189	425	2"	303	607	330	539	236	260	861	240	374	1245
RS 120/E ULX	234	149	189	425	2"	329	607	330	565	236	260	861	240	374	1245
RS 160/E ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446
RS 200/E ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446

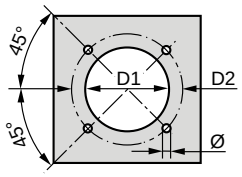
(1) Length with extended combustion head.
(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

RS 68-200/E ULX WITH LMV52 CONTROL BOX

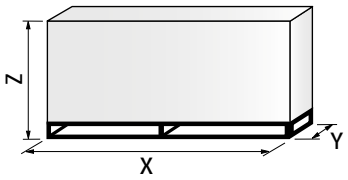


Model	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	P mm	R1 mm	T mm	U mm
RS 68/E O_2 ULX	234	149	189	425	2"	303	607	330	539	236	260	861	240	374	1245
RS 120/E O_2 ULX	234	149	189	425	2"	329	607	330	565	236	260	861	240	374	1245
RS 160/E O_2 ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446
RS 200/E O_2 ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446

(1) Length with extended combustion head.
(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



Description	D1 mm	D2 mm	Ø mm
RS 68/E ULX	260	325	M16
RS 120/E ULX	260	325	M16
RS 160/E ULX	320	368	M16
RS 200/E ULX	320	368	M16



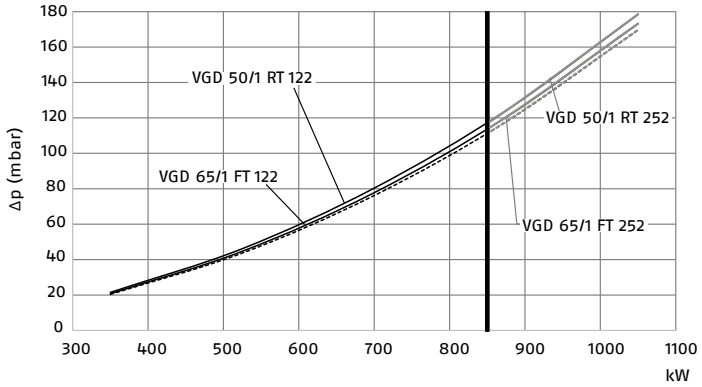
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 68/E ULX	1400	700	810	90
RS 120/E ULX	1400	700	810	100
RS 160/E ULX	1500	1000	810	130
RS 200/E ULX	1500	1000	810	130

(1) Dimension with standard and extended head.

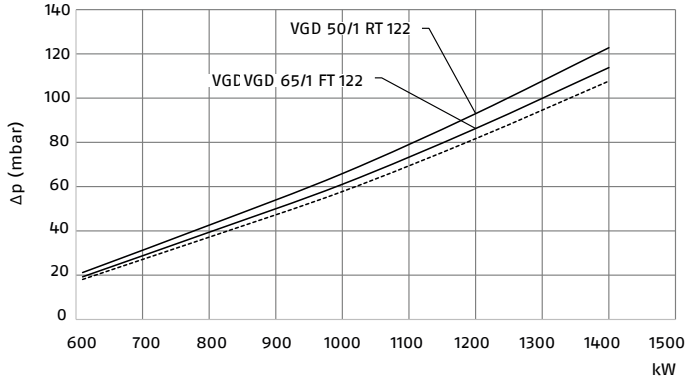
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

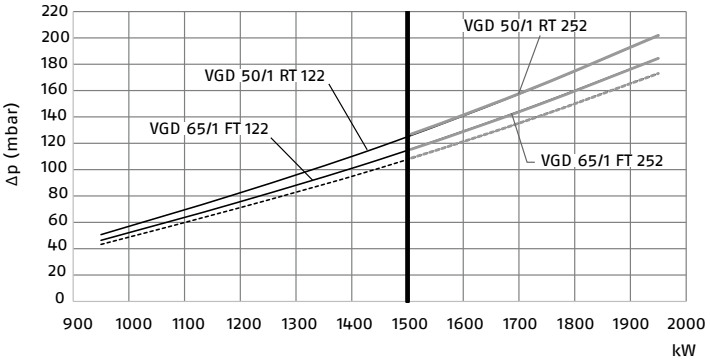
RS 68 ULX (VGD) G20



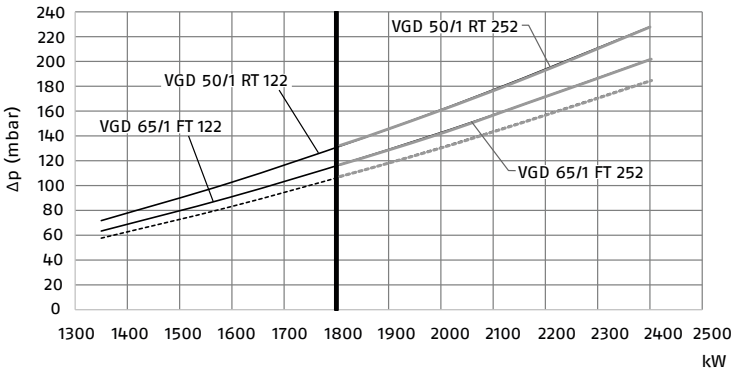
RS 120 ULX (VGD) G20



RS 160 ULX (VGD) G20



RS 200 ULX (VGD) G20



The gas train suitable for the application must be chosen starting from the maximum burner output to use.
If the maximum output is to the right of the vertical diagram line, you choose the gas train type on the right side.
Vice versa if the output is on the left side or above the line.

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

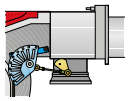
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)			
					RS 68	RS 120	RS 160	RS 200
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(3)	Rp 2”	-	□			
VGD 65/1-FT 122	**20140762***	(4)	DN65	-	3000826			
VGD 50/1-RT 252	**20210155***		DN80	-	□			
VGD 65/1-FT 252	**20210156***		DN100	-	3000826			

(1) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
(2) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(3) Additional flange kit code 20185515 needed for seal control function code 3010344.
(4) Ø in = DN65; Ø out = DN80.

* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	(1)	**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models equipped with REC37 control box	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20099869**
		RWF 55.5 - Plus version.		**20099905**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**20098337**
	All models	DN80 GAS FLANGE KIT To modify the standard Rp 2” burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO2) FOR BURNERS The QGO2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(3)	**20045187**
	All models equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**

Drawing	Burner model	Specification	Note	Code
	All models equipped with REC27 control box	PC INTERFACE KIT To connect the control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**
	All models equipped with LMV52 control box	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Note: the Post-ventilation function is obtainable by modification of the Digital Burner Management System parameters. (See burner instruction manual).
(2) Installation outside the burner cover.
NOTE: An additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

BURNER MODELS EQUIPPED WITH REC27 CONTROL BOX

– Monoblock forced draught Ultra Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
– Microprocessor-based Digital Burner Management System with Variable Speed Drive technology for the control of a Frequency Inverter
– Display Interface operating unit to adjust the system
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (straight blades on the RS 160-200/E ULX model) high performance with low sound emissions
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
– Ultra Low emission combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Burner on/off selection switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 electric protection level.

BURNER MODELS EQUIPPED WITH LMV52 CONTROL BOX

– Monoblock forced draught Ultra Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (straight blades on the 160-200/E ULX model) high performance with low sound emissions
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
– LMV52 Digital Burner management system for air/fuel setting and O2 Control Ready; with output PID modulation control included (RS 68-120-160-200/E O2 ULX)
– AZL Display Interface, for combustion system commissioning and monitoring
– Ultra Low emission combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Burner on/off selection switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 electric protection level.

STANDARD EQUIPMENT

– 1 gas train flange
– 1 flange gasket for gas train flange
– 4 screws for fixing the gas train flange
– 1 thermal screen
– 4 screws for fixing the burner flange to the boiler
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Ultra Low NOx modulating gas burners

RS 68-200/EV ULX



- Progressive two-stage or modulating gas burners with electronic cam, with Ultra-low NOx emissions, without FGR system, with proper combustion chamber dimensions
- High reliability of operation and ignition; With operation and maintenance in line with standard diffusive flame burners
- Combustion optimization based on the residual O2 content in the exhaust fumes with burner models equipped with LMV52 control box

Thanks to many years of experience in the design and manufacture of Burners, Riello has developed a new range of medium power burners, the New RS ULX Series, based on the patented ULX (Internal gas Recirculation) low emission technology, suitable to achieve NOx emissions lower than class 4 of the EN 676, without any need of FGR system, with proper combustion chamber dimensions.

RS 68-200/EV ULX burner series covers a firing range from 150 to 2400 kW, and it is based on the Digital Burner Management System Riello REC37 or Siemens LMV52, which can manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of the dedicated probe (with burner models equipped with REC37 control box, an additional PID logic regulator is required).
RS 68-200/EV ULX burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs; such models operate with Variable Speed Drive technology base on the control of a Frequency Inverter that modifies the air flow through the motor speed variation. Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
Finally, RS 68-200/EV ULX burner models, equipped with Siemens LMV52 control box and compatible with combustion optimization based on the residual O2 content in the exhaust fumes, are now available.
The new RS/EV ULX range combines exceptional Ultra Low NOx combustion performance to the consolidated features of robustness and reliability of the RS series.

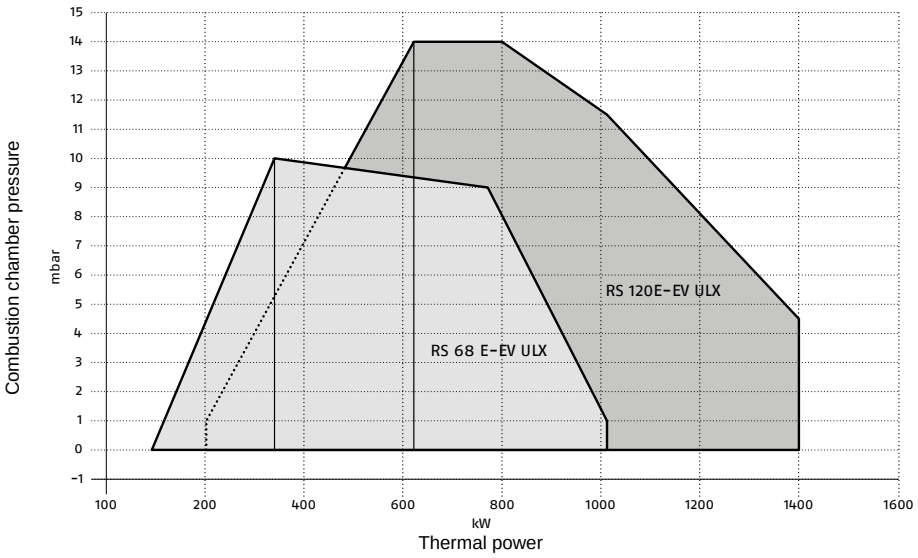
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (REC 37) - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 68/EV ULX TL FS1/FS2	150/350-1050	15/35-105	2.1	3/230-400-50	230/50-60	CE-0123DN1089	(1)(2)(3)	**20205444**
RS 120/EV ULX TL FS1/FS2	200/610-1400	20/61-140	2.9	3/230-400-50	230/50-60	CE-0123DN1089	(1)(3)(4)	**20205447**
RS 160/EV ULX TL FS1/FS2	290/950-1950	29/95-195	5.5	3/400/50	230/50-60	CE-0123DN1089	(1)(3)(4)	**20205450**
RS 200/EV ULX TL FS1/FS2	375/1360-2400	38/136-240	6.5	3/400/50	230/50-60	CE-0123DN1089	(1)(3)(4)	**20205451**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O_2 CONTROL READY - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 68/EV O2 ULX TL FS1/FS2	150/350-1050	15/35-105	2.1	3/400/50	1N/230/50	CE-0123DN1089	(1)(3)(4)	**20205437**
RS 120/EV O2 ULX TL FS1/FS2	200/610-1400	20/61-140	2.9	3/400/50	1N/230/50	CE-0123DN1089	(1)(3)(4)	**20205438**
RS 160/EV O2 ULX TL FS1/FS2	290/950-1950	29/95-195	5.5	3/400/50	1N/230/50	CE-0123DN1089	(1)(3)(4)	**20205439**
RS 200/EV O2 ULX TL FS1/FS2	375/1360-2400	38/136-240	6.5	3/400/50	1N/230/50	CE-0123DN1089	(1)(3)(4)	**20205441**

Net calorific value of natural gas (G20): 10 kWh/Nm3.
Power range referred to a Low NOx performance conforming to class 4 EN 676
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours). The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Model with terminal board.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories)
(3) Frequency Inverter, to be ordered as separated accessory; please refer to “Burner Accessories” paragraph.
(4) Seal control function is included on Burner Digitai Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train. In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.

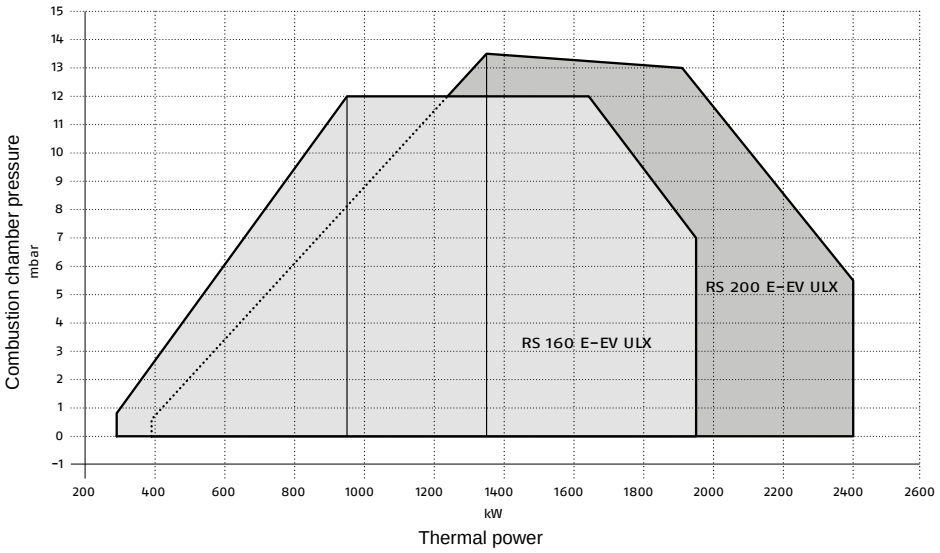
FIRING RATES



Useful firing rates for choosing the burner

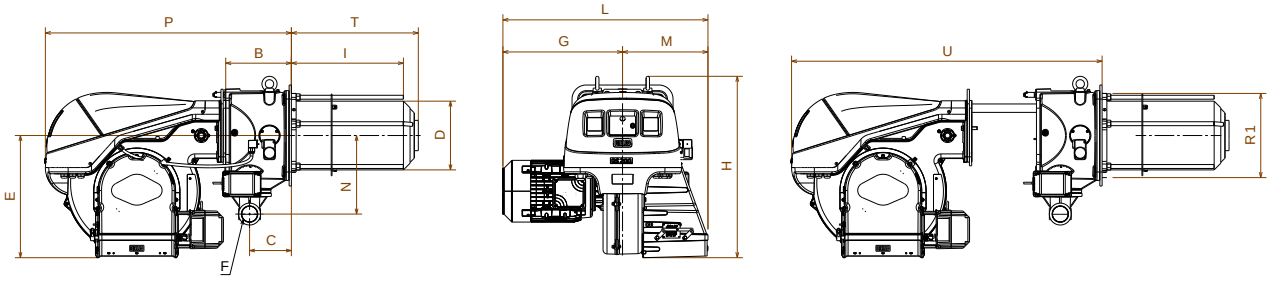
Modulation range

Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.



OVERALL DIMENSIONS

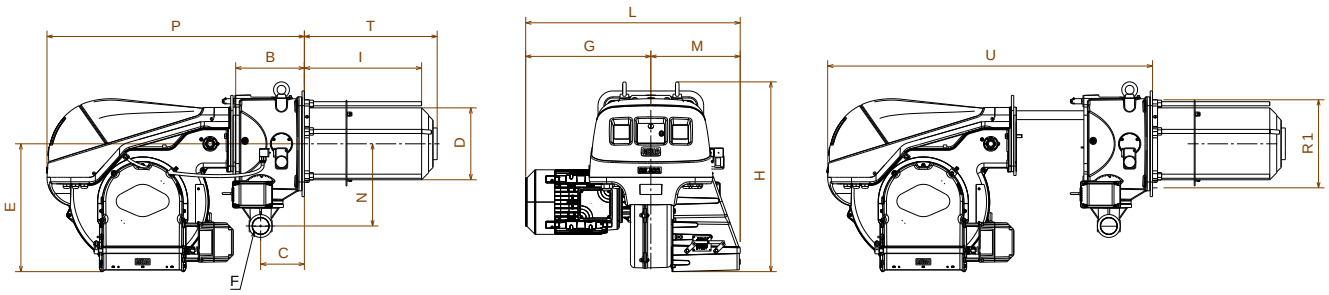
RS 68-200/EV ULX WITH REC37 CONTROL BOX



Model	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	P mm	R1 mm	T mm	U mm
RS 68/EV ULX	234	149	189	425	2"	303	607	330	539	236	260	861	240	374	1245
RS 120/EV ULX	234	149	189	425	2"	329	607	330	565	236	260	861	240	374	1245
RS 160/EV ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446
RS 200/EV ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446

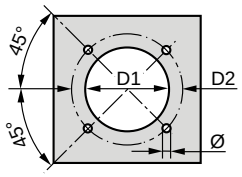
(1) Length with extended combustion head.
(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

RS 68-200/EV ULX WITH LMV52 CONTROL BOX

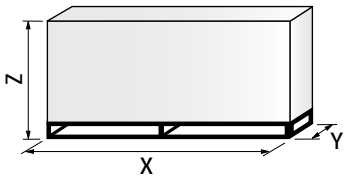


Model	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	P mm	R1 mm	T mm	U mm
RS 68/EV O_2 ULX	234	149	189	425	2"	303	607	330	539	236	260	861	240	374	1245
RS 120/EV O_2 ULX	234	149	189	425	2"	329	607	330	565	236	260	861	240	374	1245
RS 160/EV O_2 ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446
RS 200/EV O_2 ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446

(1) Length with extended combustion head.
(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



Description	D1 mm	D2 mm	Ø mm
RS 68/E ULX	260	325	M16
RS 120/E ULX	260	325	M16
RS 160/E ULX	320	368	M16
RS 200/E ULX	320	368	M16



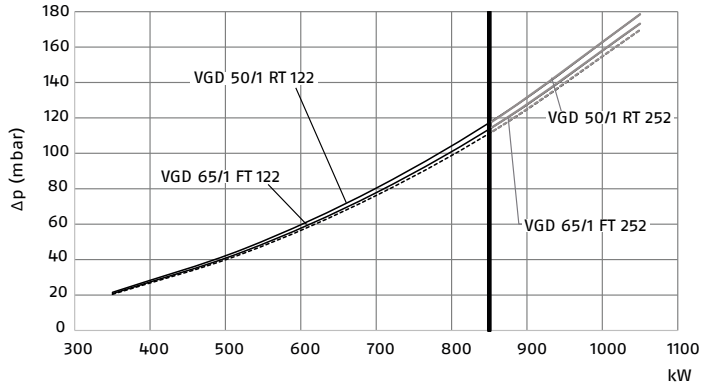
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 68/E ULX	1400	700	810	90
RS 120/E ULX	1400	700	810	100
RS 160/E ULX	1500	1000	810	130
RS 200/E ULX	1500	1000	810	130

(1) Dimension with standard and extended head.

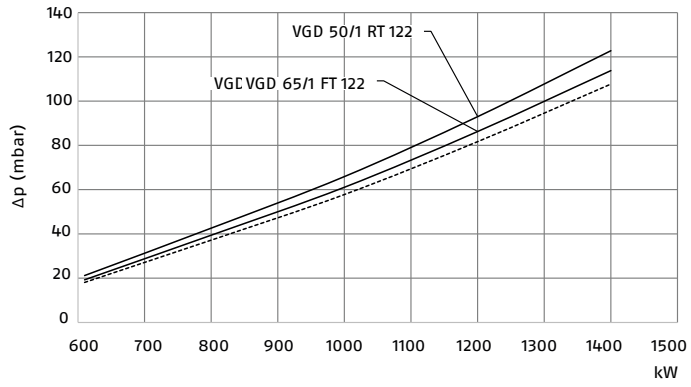
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

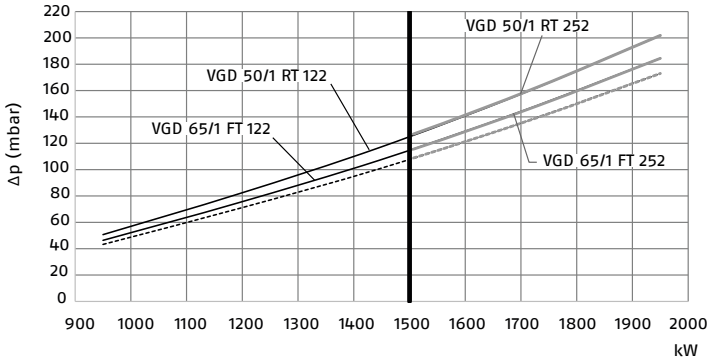
RS 68 ULX (VGD) G20



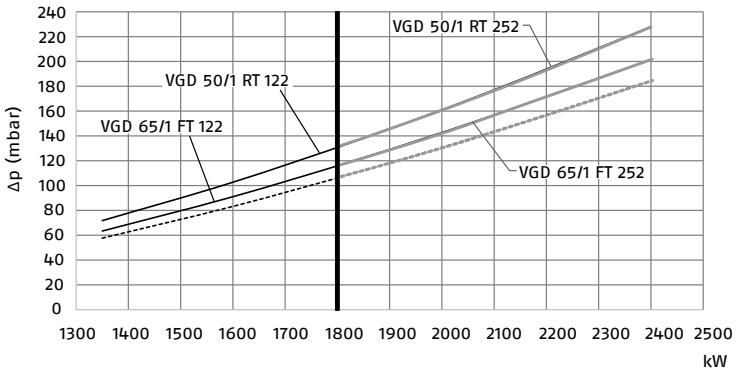
RS 120 ULX (VGD) G20



RS 160 ULX (VGD) G20



RS 200 ULX (VGD) G20



The gas train suitable for the application must be chosen starting from the maximum burner output to use.
If the maximum output is to the right of the vertical diagram line, you choose the gas train type on the right side.
Vice versa if the output is on the left side or above the line.

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

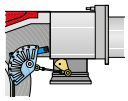
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)			
					RS 68	RS 120	RS 160	RS 200
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(3)	Rp 2”	-	□			
VGD 65/1-FT 122	**20140762***	(4)	DN65	-	3000826			
VGD 50/1-RT 252	**20210155***		DN80	-	□			
VGD 65/1-FT 252	**20210156***		DN100	-	3000826			

(1) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
(2) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(3) Additional flange kit code 20185515 needed for seal control function code 3010344.
(4) Ø in = DN65; Ø out = DN80.

* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	(1)	**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models equipped with REC37 control box	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. RWF 50.2 - Standard version.		**20099869**
		RWF 55.5 - Plus version.		**20099905**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**20098337**
	All models	DN80 GAS FLANGE KIT To modify the standard Rp 2” burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO2) FOR BURNERS The QGO2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(3)	**20045187**
	All models equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**

Drawing	Burner model	Specification	Note	Code
	All models equipped with REC27 control box	PC INTERFACE KIT To connect the control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**
	All models equipped with LMV52 control box	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Note: the Post-ventilation function is obtainable by modification of the Digital Burner Management System parameters. (See burner instruction manual).
(2) Installation outside the burner cover.
NOTE: An additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

BURNER MODELS EQUIPPED WITH REC37 CONTROL BOX

– Monoblock forced draught Ultra Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
– Microprocessor-based Digital Burner Management System with Variable Speed Drive technology for the control of a Frequency Inverter
– Display Interface operating unit to adjust the system
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (straight blades on the RS 160-200/EV ULX model) high performance with low sound emissions
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
– Ultra Low emission combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Burner on/off selection switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 electric protection level.

BURNER MODELS EQUIPPED WITH LMV52 CONTROL BOX

– Monoblock forced draught Ultra Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (straight blades on the 160-200/EV ULX model) high performance with low sound emissions
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
– LMV52 Digital Burner management system for air/fuel setting, O2 Control Ready and Operation with Variable Speed Drive (VSD); with output PID modulation control included (RS 68-120-160-200/EV O2 ULX)
– AZL Display Interface, for combustion system commissioning and monitoring
– Ultra Low emission combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Burner on/off selection switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 electric protection level.

STANDARD EQUIPMENT

– 1 gas train flange
– 1 flange gasket for gas train flange
– 4 screws for fixing the gas train flange
– 1 thermal screen
– 4 screws for fixing the burner flange to the boiler
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Ultra Low NOx modulating gas burners

RS 310-610/E ULX



- Progressive two-stage or modulating gas burners with electronic cam, with Ultra-low NOx emissions, without FGR system, with proper combustion chamber dimensions
- High reliability of operation and ignition; With operation and maintenance in line with standard diffusive flame burners
- Combustion optimization based on the residual O2 content in the exhaust fumes with burner models equipped with LMV52 control box

Thanks to many years of experience in the design and manufacture of Burners, Riello has developed a new range of medium power burners, the New RS ULX Series, based on the patented ULX (Internal gas Recirculation) low emission technology, suitable to achieve NOx emissions lower than class 4 of the EN 676, without need of FGR system, with proper combustion chamber dimensions.

RS 310-610/E ULX burner series covers a firing range from 370 to 6000 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. It is based on the Digital Burner Management System (Riello REC27 or Siemens LMV52), which can manage the air-fuel ratio by independent servomotors to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of the dedicated probes (with burner models equipped with REC27 control box, an additional PID logic regulator is required).
RS 310-610/E ULX burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The combustion head engineered with advanced simulation devices, guarantees reduced polluting emissions.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility. Finally, RS 310-610/E ULX burner models, equipped with Siemens LMV52 control box, are compatible with combustion optimization based on the residual O2 content in the exhaust fumes.
The new RS/E ULX range combines exceptional Ultra Low NOx combustion performance to the consolidated features of robustness and reliability of the RS series.

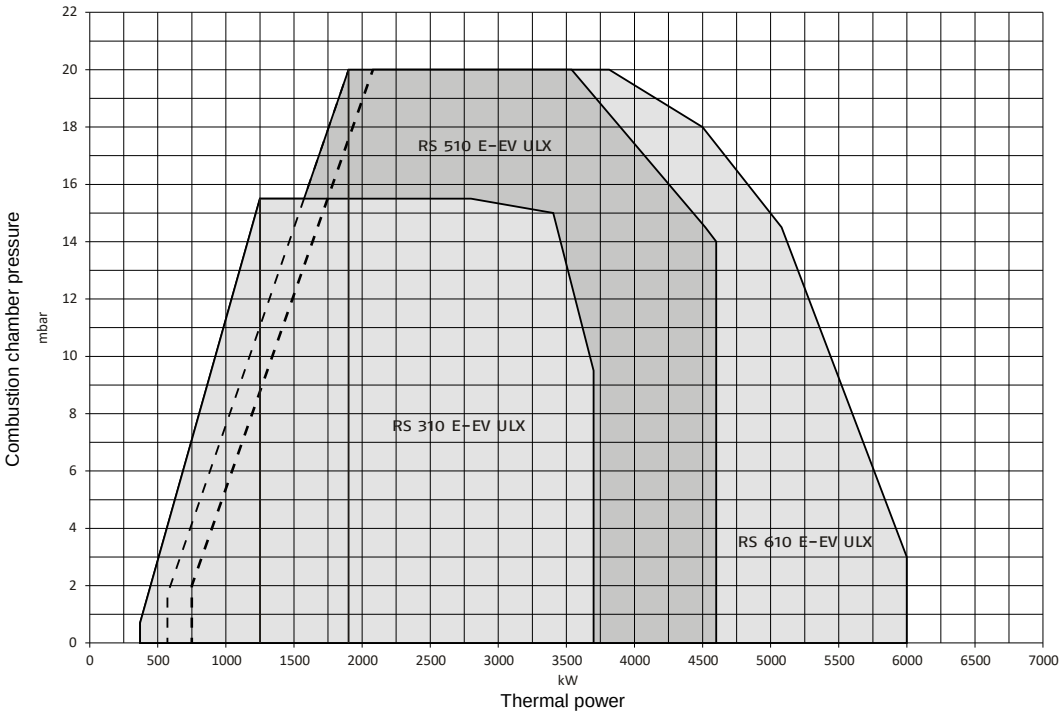
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 310/E ULX TL FS1	370/1250-3700	37/125-370	9.1	3/400/50	230/50-60	CE-0123DN1089	(1)(2)	**20204449**
RS 510/E ULX TL FS1	570/1900-4600	57/190-460	14.0	3/400/50	230/50-60	CE-0123DN1089	(1)(2)	**20204450**
RS 610/E ULX TL FS1	750/2080-6000	75/208-600	17.0	3/400/50	230/50-60	CE-0123DN1089	(1)(2)	**20216082**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52 - O_2 CONTROL READY)								
RS 310/E O_2 ULX TL FS1/FS2	370/1250-3700	37/125-370	9.1	3/400/50	230/50-60	CE-0123DN1089	(1)(2)(3)	**20205464**
RS 510/E O_2 ULX TL FS1/FS2	570/1900-4600	57/190-460	13.9	3/400/50	230/50-60	CE-0123DN1089	(1)(2)(3)	**20205466**
RS 610/E O_2 ULX TL FS1/FS2	750/2080-6000	75/208-600	17.0	3/400/50	230/50-60	CE-0123DN1089	(1)(2)(3)	**20216084**

Net calorific value of natural gas (G20): 10 kWh/Nm3.
Power range referred to a Low NOx performance conforming to class 4 EN 676
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours).
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Frequency Inverter to be ordered as separated accessory; please refer to “Accessories” paragraph.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories).
(3) The QGO2 oxygen analizer with relevant probe must be ordered as Accessory (see Accessories paragraph)..

FIRING RATES

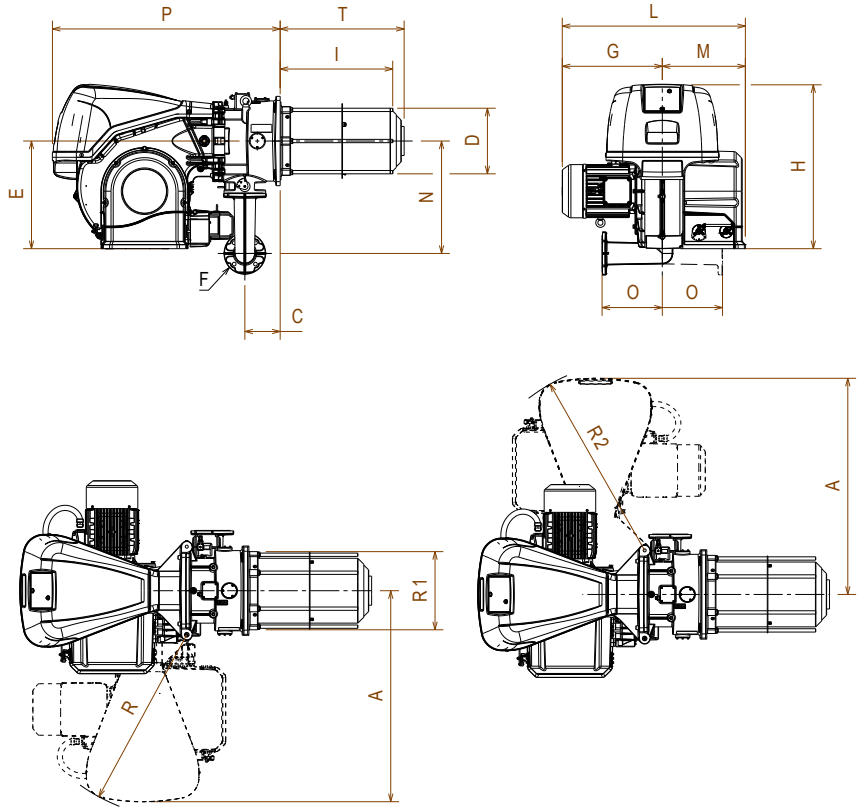


Useful firing rates for choosing the burner

Modulation range

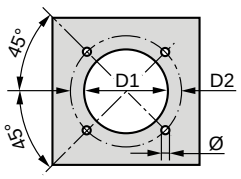
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

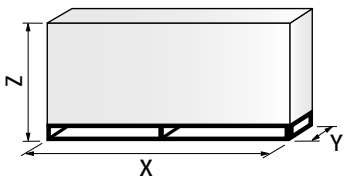


Description	A mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	R mm	R1 mm	R2 mm	T mm
MODELS WITH ELECTRONIC CAM (REC 27-37)																	
RS 310/E ULX	1015	176	312	518	DN65-DN80	480	790	525	880	400	541	290	1104	886	376	886	590
RS 510/E ULX	1015	176	312	518	DN65-DN80	527	790	525	927	400	541	290	1104	886	376	886	590
RS 610/E ULX	1015	181	344	518	DN65-DN80	580	790	533	980	400	597	290	1160	886	460	886	620
MODELS WITH ELECTRONIC CAM (LMV 52) - O2 CONTROL READY																	
RS 310/E O_2 ULX	1015	176	312	518	DN65-DN80	480	790	525	880	400	541	290	1104	886	376	886	590
RS 510/E O_2 ULX	1015	176	312	518	DN65-DN80	527	790	525	927	400	541	290	1104	886	376	886	590
RS 610/E O_2 ULX	1015	181	344	518	DN65-DN80	580	790	533	980	400	597	290	1160	886	460	886	620

(*) Maximum position for the extraction of the servomotor cover.



Description	D1 mm	D2 mm	Ø mm
RS 310/E ULX	390	452	M18
RS 510/E ULX	390	452	M18
RS 610/E ULX	480	608	M18

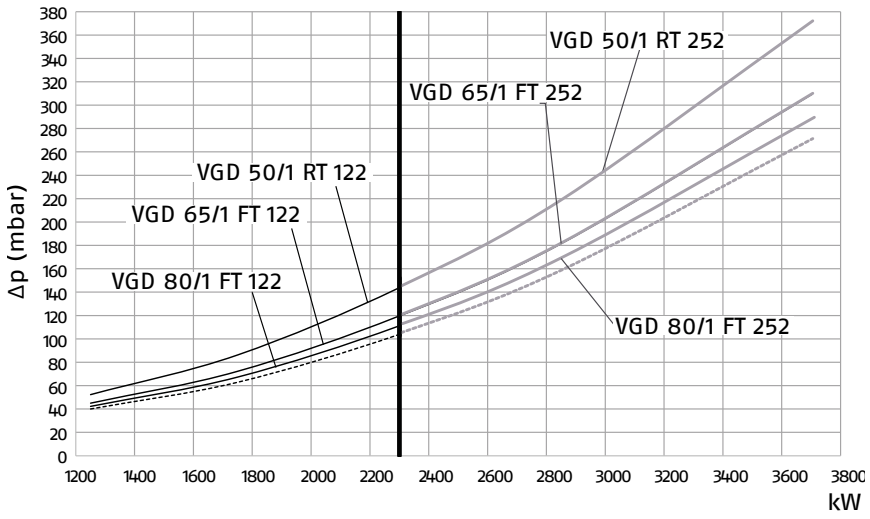


Description	X mm	Y mm	Z mm	Net weight kg
RS 310/E ULX	2040	1280	1120	250
RS 510/E ULX	2040	1280	1120	250
RS 610/E ULX	2040	1280	1120	280

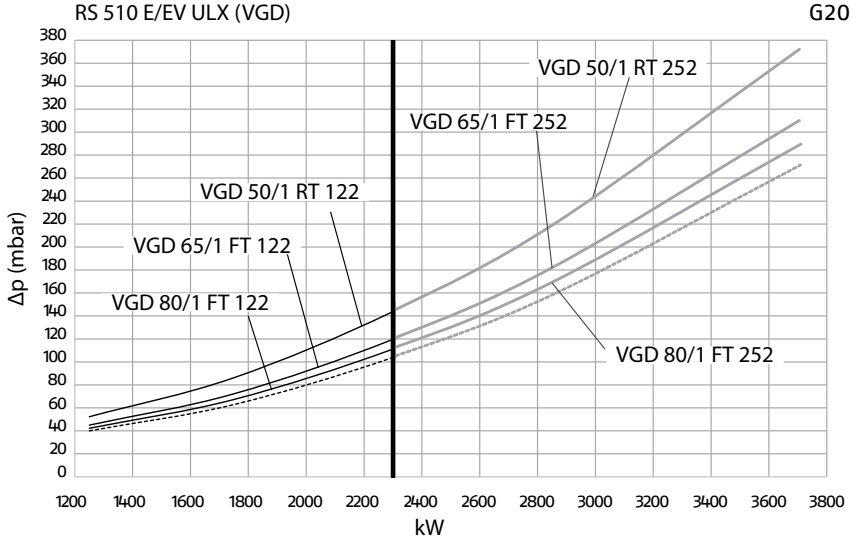
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

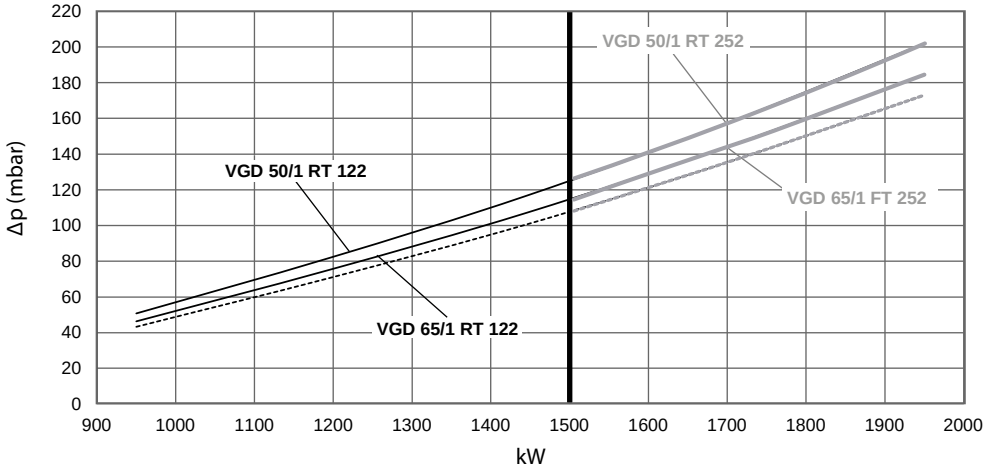
RS 310 E/EV ULX (VGD) G20



RS 510 E/EV ULX (VGD) G20



RS 610 E/EV ULX (VGD) **G20**



The gas train suitable for the application must be chosen starting from the maximum burner output to use.
If the maximum output is to the right of the vertical diagram line, you choose the gas train type on the right side.
Vice versa if the output is on the left side or above the line.

Combustion head + gas train
Combustion head
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.

GAS TRAINS

Description (1)	Code	Note	Ø Gas train	VPS kit code (2)	Burner-gas train adapter (3)		
					RS 310	RS 510	RS 610
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***	(3)	Rp 2”		3000826 + 20042324		
VGD 65/1-FT 122	**20140762***	(4)	DN65		□	□	□
VGD 80/1-FT 122	**20140763***		DN80		□	□	□
VGD 50/1-RT 252	**20210155***	(3)	Rp 2”		3000826 + 20042324		
VGD 65/1-FT 252	**20210156***	(4)	DN65		□	□	□
VGD 80/1-FT 252	**20210157***		DN80		□	□	□
VGD 100/1-FT 252	**20210159***		DN100		3010370		

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function.
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm, E = 1345 mm		**3010376**
	All models equipped with REC27-37 control box	POWER CONTROLLER To obtain modulating operation, RS/E BLU burners equipped with REC27-37 control box require a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. In the RS/E BLU burners equipped with Siemens LMV52, the PID regulator s integrated inside the control box. RWF 50.2 - Basic version with 3 position output		**20085417**
		RWF 55.5 - Complete with RS-485 interface		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface		**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO_2) FOR BURNERS The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	All models equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**

Drawing	Burner model	Specification	Note	Code
	All models equipped with REC27-37 control box	PC INTERFACE KIT To connect the control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**
	All models equipped with LMV52 control box	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
NOTE: an additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught Ultra Low NOx gas burners with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

– Air suction circuit lined with sound-proofing material
– High performance fan with low sound emissions, forward curve blades
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Fan starting motor at 2900 rpm, three-phase with neutral, 50 Hz
– Ultra low emission combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes; ionisation sensor for flame detection
  • flame stability disk
– Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
– REC27 Digital Burner Management System for air/fuel setting with output PID modulation control as accessory (RS 310-610/E ULX FS1)
– LMV52 Digital Burner Management System for air/fuel setting, O2 Control Ready with output PID modulation control included (RS 310-610/E O2 ULX)

– AZL Display Interface, for combustion system commissioning and monitoring
– Main electrical supply terminal board
– Burner on/off switch
– Manual or automatic output increase/decrease switch
– Contacts motor and thermal relay with release button
– Burner failure led signal and lighted release button
– Burner opening hinge
– Lifting rings
– IP 54 electric protection level

STANDARD EQUIPMENT

– Gasket for gas train adaptor
– Adaptor for gas train
– Screws for fixing the gas train adaptor: M16x70
– Thermal insulation screen
– M18x60 screws to secure the burner flange to the boiler
– Cable grommets kit for optional electrical wiring input
– M16x6 studs for fixing the gas elbow to the pipe coupling
– M16 nuts to fix the gas elbow to the pipe coupling
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Ultra Low NOx modulating gas burners

RS 810/E ULX



- Progressive two-stage or modulating gas burners with electronic cam, with Ultra-low NOx emissions, without FGR system, with proper combustion chamber dimensions
- High reliability of operation and ignition; With operation and maintenance in line with standard diffusive flame burners
- Combustion optimization based on the residual O2 content in the exhaust fumes with burner models equipped with LMV52 control box

Thanks to many years of experience in the design and manufacture of Burners, Riello has developed a new range of medium power burners, the New RS ULX Series, based on the patented ULX (Internal gas Recirculation) low emission technology, suitable to achieve NOx emissions lower than class 4 of the EN 676, without need of FGR system, with proper combustion chamber dimensions.

RS 810/E ULX burner series covers a firing range from 970 to 8100 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. It is based on the Digital Burner Management System (Riello REC27 or Siemens LMV52), which can manage the air-fuel ratio by independent servomotors to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of the dedicated probes (with burner models equipped with REC27 control box, an additional PID logic regulator is required).
RS 810/E ULX burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The combustion head engineered with advanced simulation devices, guarantees reduced polluting emissions.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility. Finally, RS 810/E ULX burner models, equipped with Siemens LMV52 control box, are compatible with combustion optimization based on the residual O2 content in the exhaust fumes.
The new RS/E ULX range combines exceptional Ultra Low NOx combustion performance to the consolidated features of robustness and reliability of the RS series.

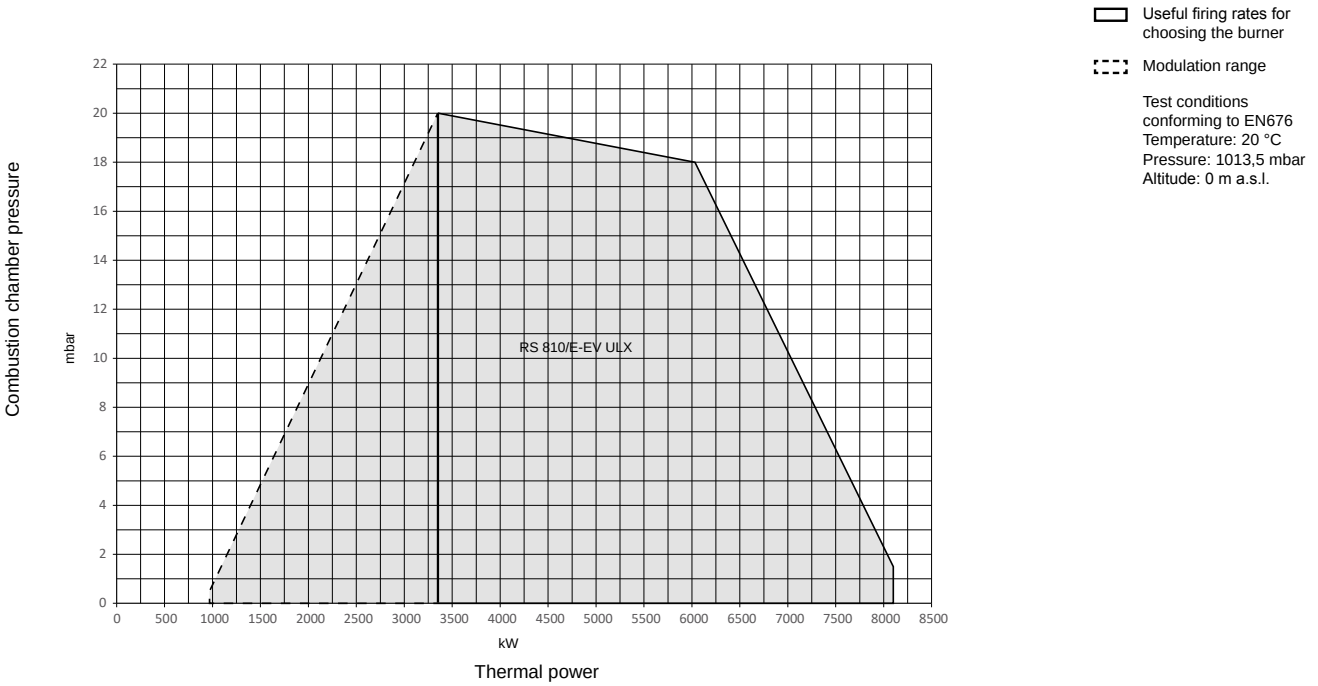
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 810/E ULX TL FS1	970/3350-8100	97/335-810	24.5	3/400/50	230/50-60	CE-0123DN1089	(1)(2)	**20216076**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52 - O2 CONTROL READY)								
RS 810/E O2 ULX TL FS1/FS2	970/3350-8100	97/335-810	24.5	3/400/50	230/50-60	CE-0123DN1089	(1)(2)(3)	**20216078**

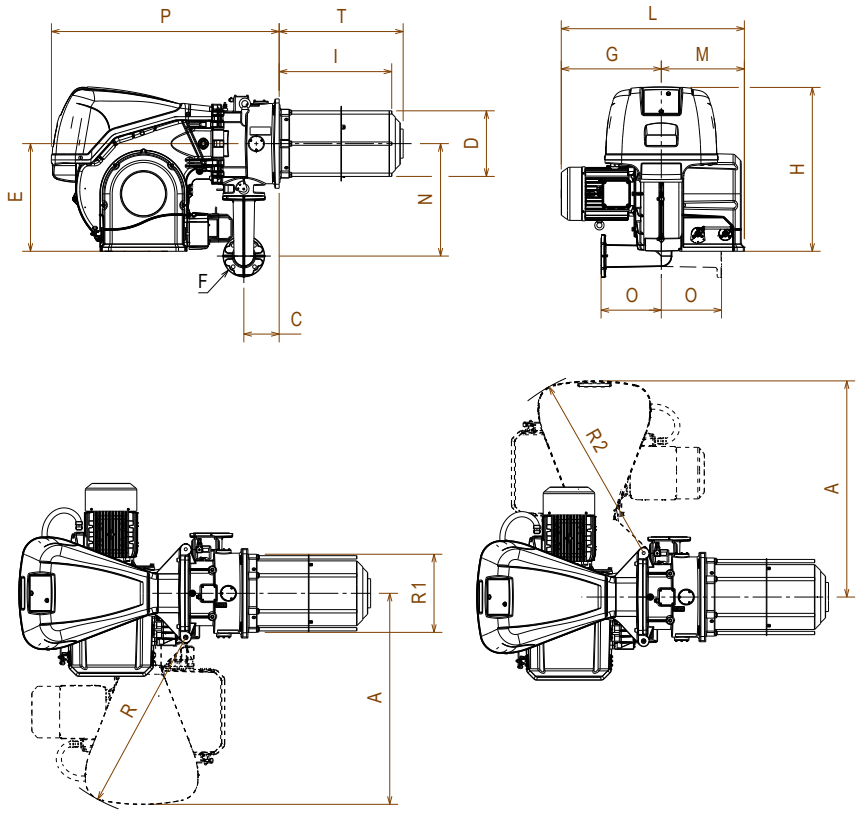
Net calorific value of natural gas (G20): 10 kWh/Nm3.
Power range referred to a Low NOx performance conforming to class 4 EN 676
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours).
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Frequency Inverter to be ordered as separated accessory; please refer to “Accessories” paragraph.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories).
(3) The QGO2 oxygen analizer with relevant probe must be ordered as Accessory (see Accessories paragraph).

FIRING RATES

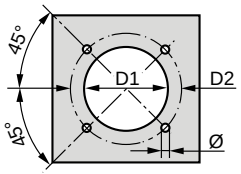


OVERALL DIMENSIONS

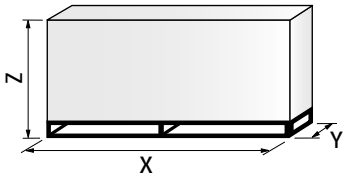


Description	A mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	R mm	R1 mm	R2 mm	T mm
MODELS WITH ELECTRONIC CAM (REC 37)																	
RS 810/E ULX	1200	181	379	537	DN65-DN80	575	890	530	990	415	597	290	1345	1055	460	1055	620
MODELS WITH ELECTRONIC CAM (LMV 52) - O_2 CONTROL READY																	
RS 810/E O_2 ULX	1285	181	379	537	DN65-DN80	575	890	530	990	415	597	290	1345	1135	460	1055	620

(*) Maximum position for the extraction of the servomotor cover.
(**) The adaptor for gas train is not included as standard equipment



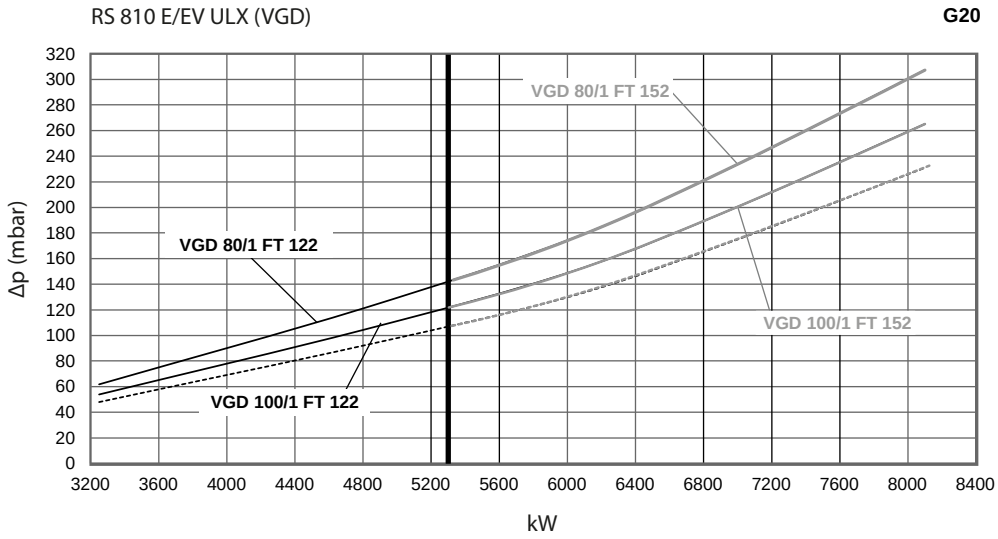
Description	D1 mm	D2 mm	Ø mm
RS 810/E ULX	480	608	M18



Description	X mm	Y mm	Z mm	Net weight kg
RS 810/E ULX	2160	1300	1166	300

PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN



The gas train suitable for the application must be chosen starting from the maximum burner output to use.
If the maximum output is to the right of the vertical diagram line, you choose the gas train type on the right side.
Vice versa if the output is on the left side or above the line.

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	VPS kit code (2)	Burner-gas train adapter (3)
					RS 810/E BLU
VGD SERIES ONE STAGE GAS TRAIN					
VGD 65/1-FT 122	**20140762***	(3)	DN65		□
VGD 80/1-FT 122	**20140763***		DN80		□
VGD 65/1-FT 252	**20210156***	(3)	DN65		□
VGD 80/1-FT 252	**20210157***		DN80		□
VGD 100/1-FT 252	**20210159***		DN100		3010370

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) On demand.
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models equipped with REC27 control box	OCI412 INTERFACE KIT Interface kit between the REC27 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	RS 810/E ULX	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7		**20177776**
	All models equipped with REC27 control box	**POWER CONTROLLER** To obtain modulating operation, RS/EV ULX burners equipped with REC27 control box require a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. In the RS/E ULX burners equipped with Siemens LMV52, the PID regulator s integrated inside the control box. RWF 50.2 - Basic version with 3 position output		**20085417**
		RWF 55.5 - Complete with RS-485 interface		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface		**20074442**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO2) FOR BURNERS The QGO2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	All models equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**
	All models equipped with REC27 control box	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available. All models equipped with REC27 control box.		**3010436**
	All models equipped with LMV52 control box	**PC INTERFACE SOFTWARE (ACS 450)** PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
NOTE: an additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.
(2) On demand.

STATE OF SUPPLY

– Monoblock forced draught Ultra Low NOx gas burners with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
– Air suction circuit lined with sound-proofing material
– High performance fan with low sound emissions, forward curve blades
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Fan starting motor at 2900 rpm, three-phase with neutral, 50 Hz
– Ultra low emission combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes; ionisation sensor for flame detection
  • flame stability disk
– Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
– REC27 Digital Burner Management System for air/fuel setting with output PID modulation control as accessory (RS 810/E ULX FS1)
– LMV52 Digital Burner Management System for air/fuel setting, O2 Control Ready with output PID modulation control included (RS 810/E O2 ULX)
– AZL Display Interface, for combustion system commissioning and monitoring
– Main electrical supply terminal board
– Burner on/off switch
– Manual or automatic output increase/decrease switch
– Contacts motor and thermal relay with release button
– Burner failure led signal and lighted release button
– Burner opening hinge
– Lifting rings
– IP 54 electric protection level

STANDARD EQUIPMENT

– Gasket for gas train adaptor
– Adaptor for gas train
– Screws for fixing the gas train adaptor: M16x70
– Thermal insulation screen
– M18x60 screws to secure the burner flange to the boiler
– Cable grommets kit for optional electrical wiring input
– M16x6 studs for fixing the gas elbow to the pipe coupling
– M16 nuts to fix the gas elbow to the pipe coupling
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Ultra Low NOx modulating gas burners

RS 310-610/EV ULX



- Progressive two-stage or modulating gas burners with electronic cam, with Ultra-low NOx emissions, without FGR system, with proper combustion chamber dimensions
- High reliability of operation and ignition; With operation and maintenance in line with standard diffusive flame burners
- Combustion optimization based on the residual O2 content in the exhaust fumes with burner models equipped with LMV52 control box

Thanks to many years of experience in the design and manufacture of Burners, Riello has developed a new range of medium power burners, the New RS ULX Series, based on the patented ULX (Internal gas Recirculation) low emission technology, suitable to achieve NOx emissions lower than class 4 of the EN 676, without any need of FGR system, with proper combustion chamber dimensions.

RS 310-610/EV ULX burner series covers a firing range from 370 to 6000 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. It is based on the Digital Burner Management System (Riello REC37 or Siemens LMV52), which can manage the air-fuel ratio by independent servomotors to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of the dedicated probes (with burner models equipped with REC37 control box, an additional PID logic regulator is required).
RS 310-610/EV ULX burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs; such models operate with Variable Speed Drive technology base on the control of a Frequency Inverter that modifies the air flow through the motor speed variation.
The combustion head engineered with advanced simulation devices, guarantees reduced polluting emissions.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility. Finally, RS 310-610/EV ULX burner models, equipped with Siemens LMV52 control box, are compatible with combustion optimization based on the residual O2 content in the exhaust fumes.
The new RS/EV ULX range combines exceptional Ultra Low NOx combustion performance to the consolidated features of robustness and reliability of the RS series.

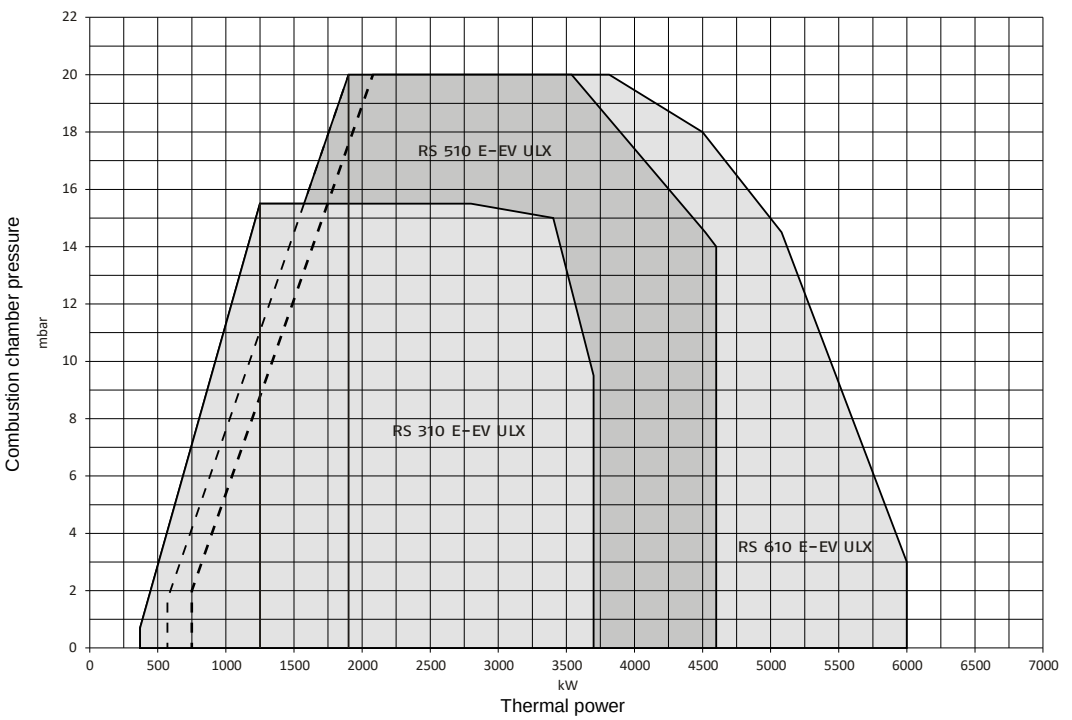
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (REC 37) - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 310/EV ULX TL FS1/FS2	370/1250-3700	37/125-370	9.1	3/400/50	230/50-60	CE-0123DN1089	(1)(2)	**20205452**
RS 510/EV ULX TL FS1/FS2	570/1900-4600	57/190-460	14.0	3/400/50	230/50-60	CE-0123DN1089	(1)(2)	**20205455**
RS 610/EV ULX TL FS1/FS2	750/2080-6000	75/208-600	17.0	3/400/50	230/50-60	CE-0123DN1089	(1)(2)	**20216083**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52 - O2 CONTROL READY) - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 310/EV O_2 ULX TL FS1/FS2	370/1250-3700	37/125-370	9.1	3/400/50	230/50-60	CE-0123DN1089	(1)(2)(3)	**20205442**
RS 510/EV O_2 ULX TL FS1/FS2	570/1900-4600	57/190-460	13.9	3/400/50	230/50-60	CE-0123DN1089	(1)(2)(3)	**20205443**
RS 610/EV O_2 ULX TL FS1/FS2	750/2080-6000	75/208-600	17.0	3/400/50	230/50-60	CE-0123DN1089	(1)(2)(3)	**20216085**

Net calorific value of natural gas (G20): 10 kWh/Nm3.
Power range referred to a Low NOx performance conforming to class 4 EN 676
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours).
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Frequency Inverter to be ordered as separated accessory; please refer to “Accessories” paragraph.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories).
(3) The QGO2 oxygen analizer with relevant probe must be ordered as Accessory (see Accessories paragraph).

FIRING RATES

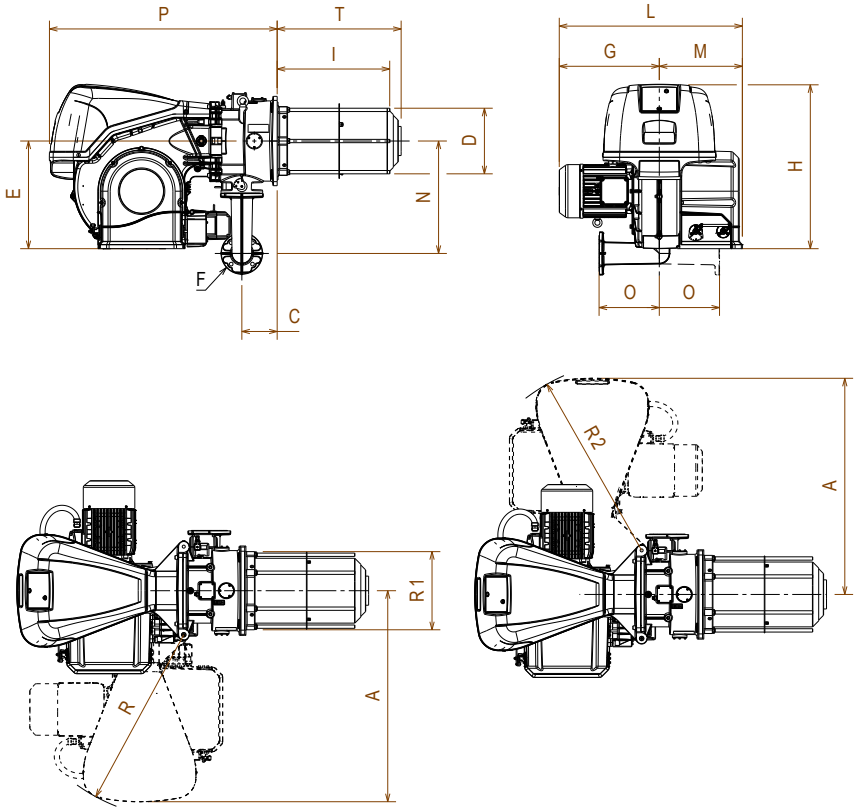


Useful firing rates for choosing the burner

Modulation range

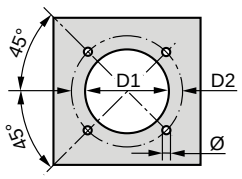
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

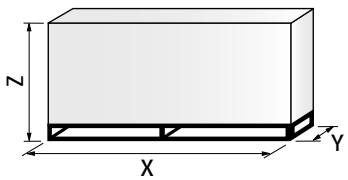


Description	A mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	R mm	R1 mm	R2 mm	T mm
MODELS WITH ELECTRONIC CAM (REC 27-37)																	
RS 310/EV ULX	1015	176	312	518	DN65-DN80	511	790	525	911	400	541	290	1186	966	376	966	590
RS 510/EV ULX	1015	176	312	518	DN65-DN80	559	790	525	959	400	541	290	1186	966	376	966	590
RS 610/EV ULX	1015	181	344	518	DN65-DN80	610	790	533	1010	400	597	290	1250	966	460	966	620
MODELS WITH ELECTRONIC CAM (LMV 52) - O2 CONTROL READY																	
RS 310/EV O_2 ULX	1015	176	312	518	DN65-DN80	511	790	525	911	400	541	290	1186	966	376	966	590
RS 510/EV O_2 ULX	1015	176	312	518	DN65-DN80	559	790	525	959	400	541	290	1186	966	376	966	590
RS 610/EV O_2 ULX	1015	181	344	518	DN65-DN80	610	790	533	1010	400	597	290	1250	966	460	966	620

(*) Maximum position for the extraction of the servomotor cover.



Description	D1 mm	D2 mm	Ø mm
RS 310/EV ULX	390	452	M18
RS 510/EV ULX	390	452	M18
RS 610/EV ULX	480	608	M18

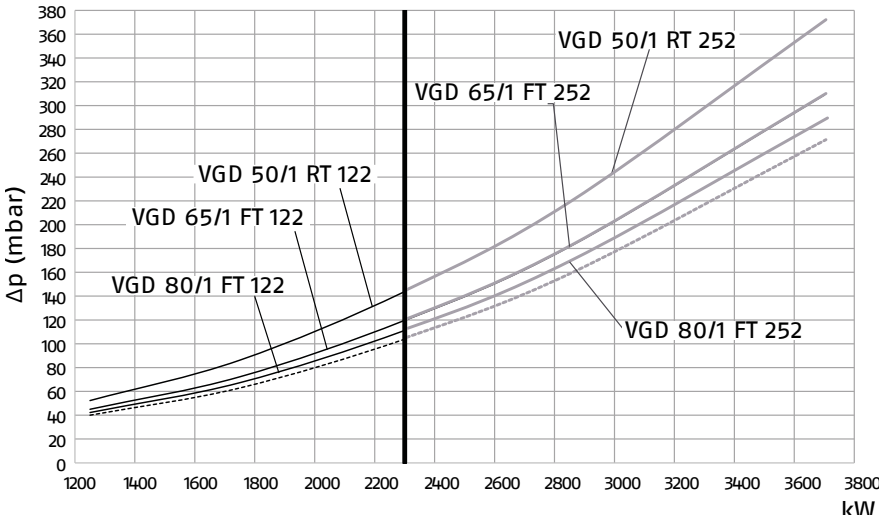


Description	X mm	Y mm	Z mm	Net weight kg
RS 310/EV ULX	2040	1280	1120	250
RS 510/EV ULX	2040	1280	1120	250
RS 610/EV ULX	2040	1280	1120	280

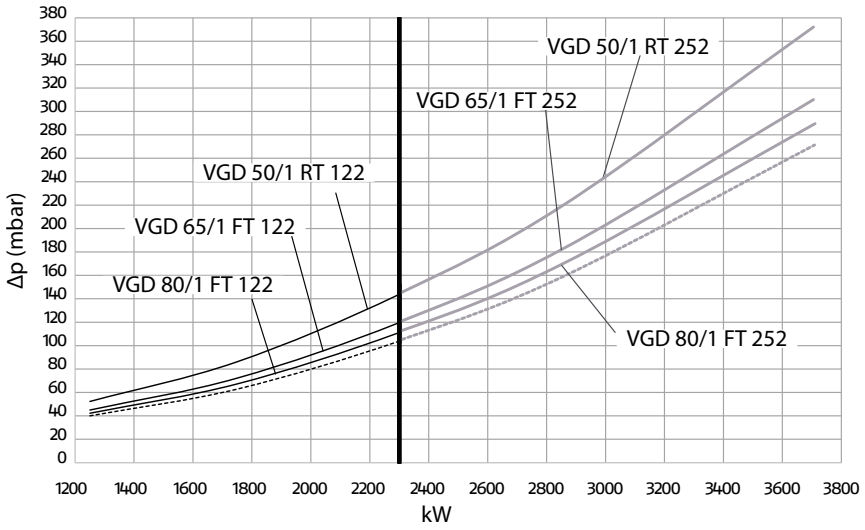
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

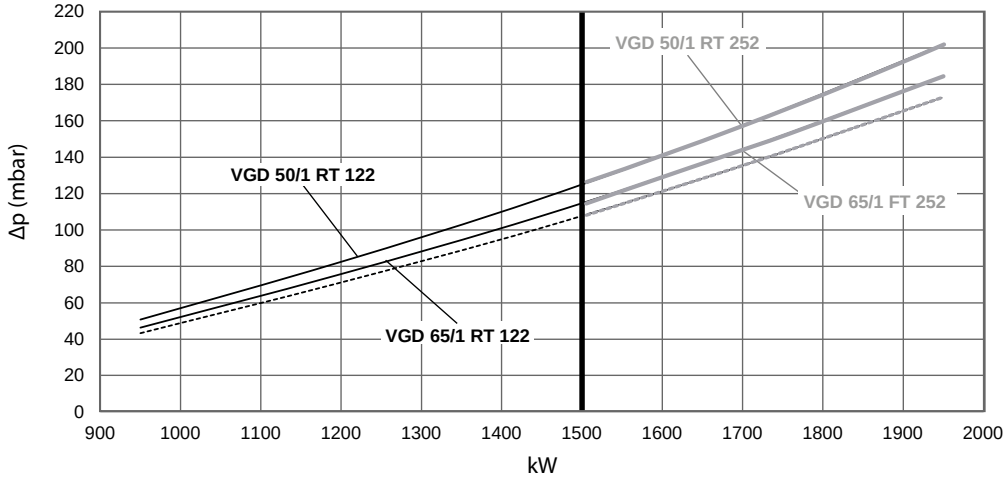
RS 310 E/EV ULX (VGD) G20



RS 510 E/EV ULX (VGD) G20



RS 610 E/EV ULX (VGD) **G20**



The gas train suitable for the application must be chosen starting from the maximum burner output to use.
If the maximum output is to the right of the vertical diagram line, you choose the gas train type on the right side.
Vice versa if the output is on the left side or above the line.

Combustion head + gas train
Combustion head
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.

GAS TRAINS

Description (1)	Code	Note	Ø Gas train	VPS kit code (2)	Burner-gas train adapter (3)		
					RS 310	RS 510	RS 610
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***	(3)	Rp 2”		3000826 + 20042324		
VGD 65/1-FT 122	**20140762***	(4)	DN65		□	□	□
VGD 80/1-FT 122	**20140763***		DN80		□	□	□
VGD 50/1-RT 252	**20210155***	(3)	Rp 2”		3000826 + 20042324		
VGD 65/1-FT 252	**20210156***	(4)	DN65		□	□	□
VGD 80/1-FT 252	**20210157***		DN80		□	□	□
VGD 100/1-FT 252	**20210159***		DN100		3010370		

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function.
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models equipped with REC37 control box	**OCI412 INTERFACE KIT** Interface kit between the REC37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	RS 310-610/EV ULX	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1140 mm, E = 1345 mm		**3010376**
	All models equipped with REC27-37 control box	POWER CONTROLLER To obtain modulating operation, RS/E BLU burners equipped with REC27-37 control box require a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. In the RS/E BLU burners equipped with Siemens LMV52, the PID regulator s integrated inside the control box.		
		RWF 50.2 - Basic version with 3 position output		**20085417**
		RWF 55.5 - Complete with RS-485 interface		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface		**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO_2) FOR BURNERS The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	All models equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**

Drawing	Burner model	Specification	Note	Code
	RS 310/EV ULX	VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series. Inverter power 7.5 kW - Electrical supply 400V - 50/60Hz		**20163074**
	RS 510-610/EV ULX	Inverter power 15 kW - Electrical supply 400V - 50/60Hz		**20163096**
	All models equipped with REC37 control box	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available. All models equipped with REC37 control box.		**3010436**
	All models equipped with LMV52 control box	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.

NOTE: an additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

(2) On demand.

STATE OF SUPPLY

Monoblock forced draught Ultra Low NOx gas burners with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Air suction circuit lined with sound-proofing material
- High performance fan with low sound emissions, forward curve blades
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Fan starting motor at 2900 rpm, three-phase with neutral, 50 Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes; ionisation sensor for flame detection
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- REC37 Digital Burner Management System for air/fuel setting and Operation with Variable Speed Drive (VSD) with output PID modulation control as accessory (RS 310-610/EV ULX)
- LMV52 Digital Burner Management System for air/fuel setting, O2 Control Ready and Operation with Variable Speed Drive (VSD) with output PID modulation control included (RS 310-610/EV O2 ULX)
- AZL Display Interface, for combustion system commissioning and monitoring
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Burner failure led signal and lighted release button
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- Gasket for gas train adaptor
- Adaptor for gas train
- Screws for fixing the gas train adaptor: M16x70
- Thermal insulation screen
- M18x60 screws to secure the burner flange to the boiler
- Cable grommets kit for optional electrical wiring input
- M16x6 studs for fixing the gas elbow to the pipe coupling
- M16 nuts to fix the gas elbow to the pipe coupling
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Ultra Low NOx modulating gas burners

RS 810/EV ULX



- Progressive two-stage or modulating gas burners with electronic cam, with Ultra-low NOx, without FGR system, with proper combustion chamber dimensions
- High reliability of operation and ignition; With operation and maintenance in line with standard diffusive flame burners
- Combustion optimization based on the residual O2 content in the exhaust fumes with burner models equipped with LMV52 control box

Thanks to many years of experience in the design and manufacture of Burners, Riello has developed a new range of medium power burners, the New RS ULX Series, based on the patented ULX (Internal gas Recirculation) low emission technology, suitable to achieve NOx emissions lower than class 4 of the EN 676, without need of FGR system, with proper combustion chamber dimensions.

RS 810/EV ULX burner series covers a firing range from 970 to 8100 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. It is based on the Digital Burner Management System (Riello REC37 or Siemens LMV52), which can manage the air-fuel ratio by independent servomotors to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of the dedicated probes (with burner models equipped with REC37 control box, an additional PID logic regulator is required).
RS 810/EV ULX burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The combustion head engineered with advanced simulation devices, guarantees reduced polluting emissions.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility. Finally, RS 810/EV ULX burner models, equipped with Siemens LMV52 control box, are compatible with combustion optimization based on the residual O2 content in the exhaust fumes.
The new RS/EV ULX range combines exceptional Ultra Low NOx combustion performance to the consolidated features of robustness and reliability of the RS series.

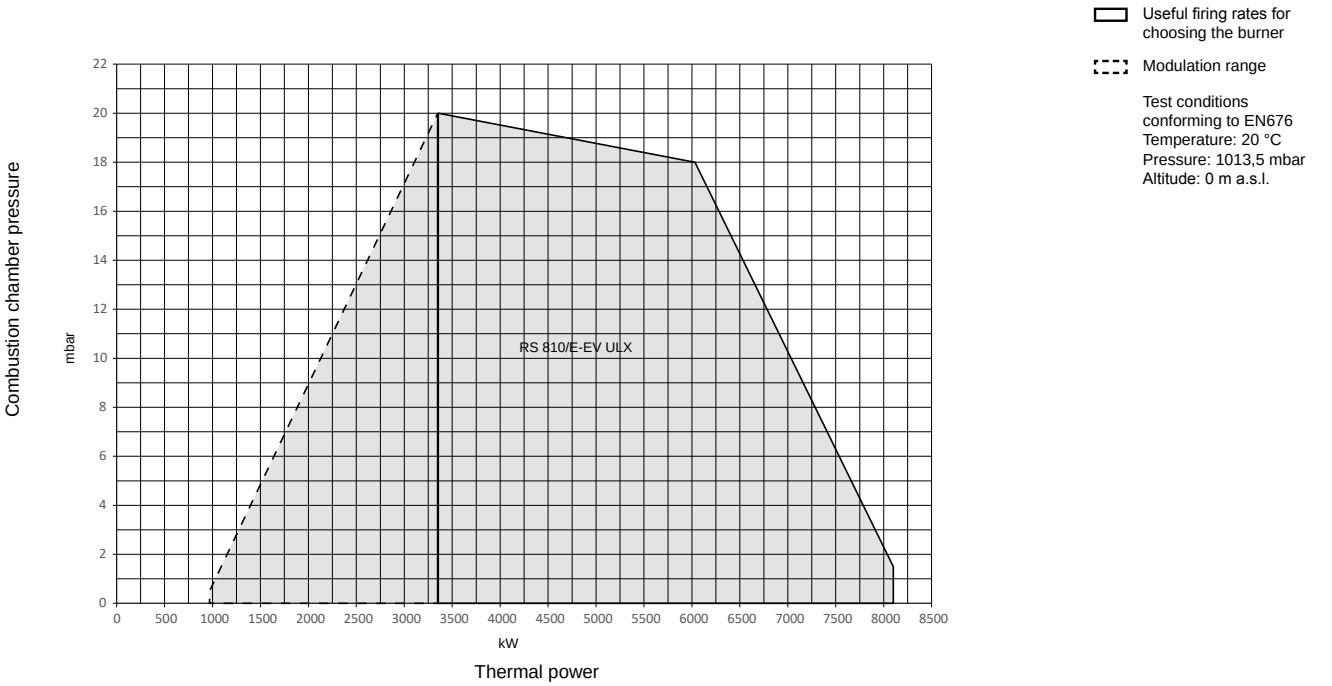
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (REC 37) - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 810/EV ULX TL FS1	970/3350-8100	97/335-810	24.5	3/400/50	230/50-60	CE-0123DN1089	(1)(2)	**20216077**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52 - O2 CONTROL READY)								
RS 810/EV O_2 ULX TL FS1/ FS2	970/3350-8100	97/335-810	24.5	3/400/50	230/50-60	CE-0123DN1089	(1)(2)(3)	**20216079**

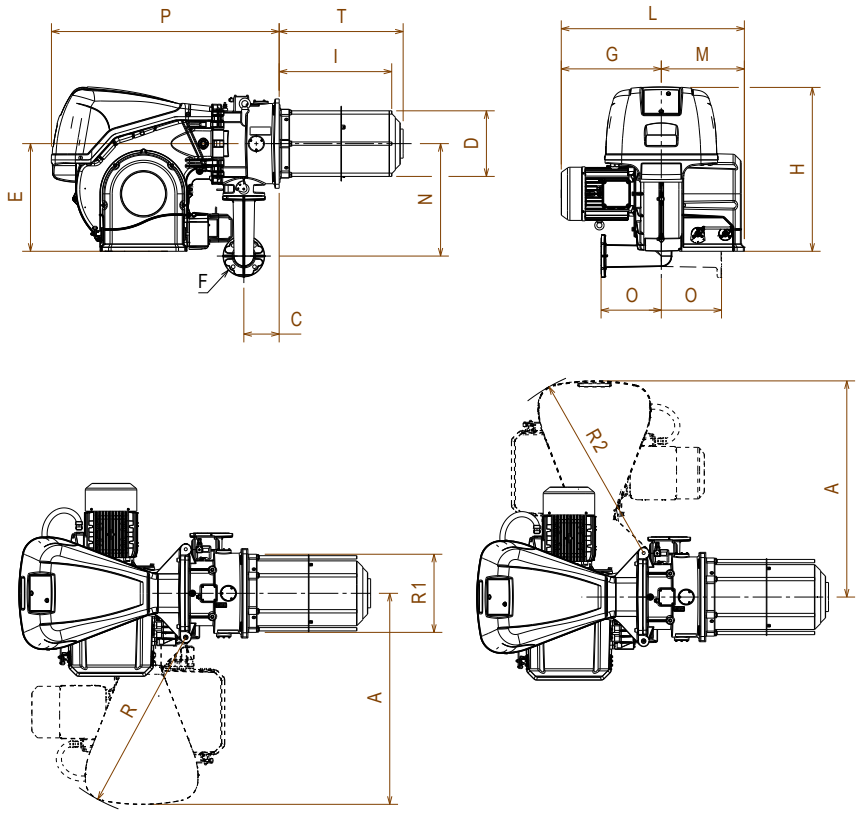
Net calorific value of natural gas (G20): 10 kWh/Nm3.
Power range referred to a Low NOx performance conforming to class 4 EN 676
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours).
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Frequency Inverter to be ordered as separated accessory; please refer to “Accessories” paragraph.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories).
(3) The QGO2 oxygen analizer with relevant probe must be ordered as Accessory (see Accessories paragraph).

FIRING RATES

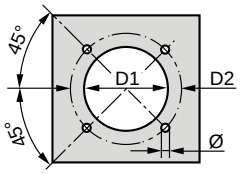


OVERALL DIMENSIONS

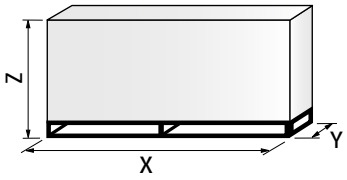


Description	A mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	R mm	R1 mm	R2 mm	T mm
RS 810/EV ULX	1200	181	379	537	DN65-DN80	605	890	530	1020	415	597	290	1435	1135	460	1135	620
RS 810/EV O_2 ULX	1200	181	379	537	DN65-DN80	605	890	530	1020	415	597	290	1435	1135	460	1135	620

(*) Maximum position for the extraction of the servomotor cover.
(**) The adaptor for gas train is not included as standard equipment



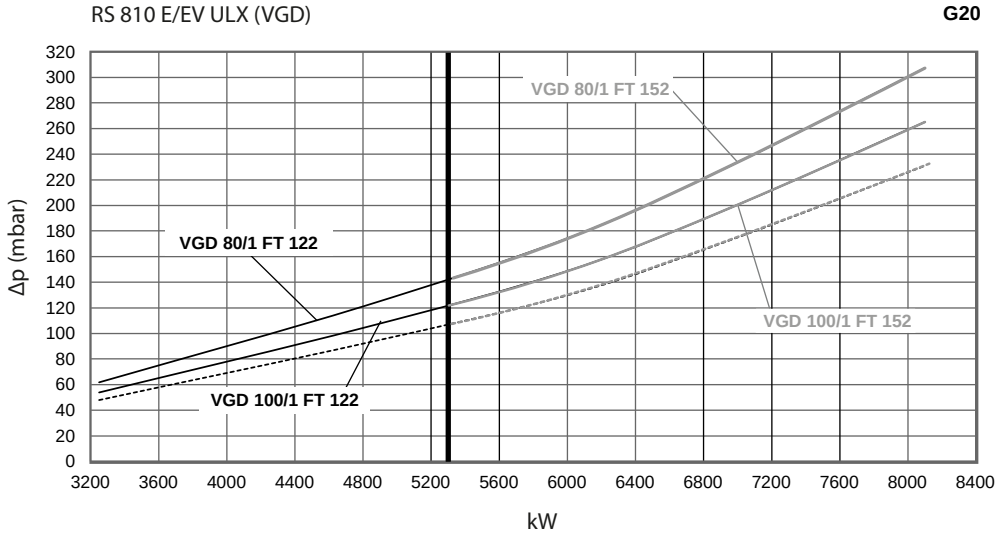
Description	D1 mm	D2 mm	Ø mm
RS 810/EV ULX	480	608	M18



Description	X mm	Y mm	Z mm	Net weight kg
RS 810/EV ULX	2160	1300	1166	300

PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN



The gas train suitable for the application must be chosen starting from the maximum burner output to use.
If the maximum output is to the right of the vertical diagram line, you choose the gas train type on the right side.
Vice versa if the output is on the left side or above the line.

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	VPS kit code (2)	Burner-gas train adapter (3)
					RS 810/E BLU
VGD SERIES ONE STAGE GAS TRAIN					
VGD 65/1-FT 122	**20140762***	(3)	DN65		□
VGD 80/1-FT 122	**20140763***		DN80		□
VGD 65/1-FT 252	**20210156***	(3)	DN65		□
VGD 80/1-FT 252	**20210157***		DN80		□
VGD 100/1-FT 252	**20210159***		DN100		3010370

(1) Valve leak detection control device is supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(2) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(3) Ø in = DN65; Ø out = DN80.

230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
• Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models equipped with REC37 control box	OCI412 INTERFACE KIT Interface kit between the REC37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	RS 810/EV ULX	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7		**20177776**
	All models equipped with REC37 control box	**POWER CONTROLLER** To obtain modulating operation, RS/EV ULX burners equipped with REC27 control box require a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. In the RS/E ULX burners equipped with Siemens LMV52, the PID regulator s integrated inside the control box. RWF 50.2 - Basic version with 3 position output		**20085417**
		RWF 55.5 - Complete with RS-485 interface		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface		**20074442**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO2) FOR BURNERS The QGO2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	All models equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**
	RS 810/EV ULX	**VARIABLE SPEED DRIVE (VSD)** The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series. Inverter power 22 kW - Electrical supply 400V - 50/60Hz		**20163099**
	All models equipped with REC27 control box	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available. All models equipped with REC27 control box.		**3010436**
	All models equipped with LMV52 control box	**PC INTERFACE SOFTWARE (ACS 450)** PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
NOTE: an additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.
(2) On demand.

STATE OF SUPPLY

Monoblock forced draught Ultra Low NOx gas burners with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- High performance fan with low sound emissions, forward curve blades
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Fan starting motor at 2900 rpm, three-phase with neutral, 50 Hz
- Ultra low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes; ionisation sensor for flame detection
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- REC37 Digital Burner Management System for air/fuel setting with output PID modulation control as accessory (RS 810/EV ULX FS1)
- LMV52 Digital Burner Management System for air/fuel setting, O2 Control Ready with output PID modulation control included (RS 810/EV O2 ULX)
- AZL Display Interface, for combustion system commissioning and monitoring
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Burner failure led signal and lighted release button
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- Gasket for gas train adaptor
- Adaptor for gas train
- Screws for fixing the gas train adaptor: M16x70
- Thermal insulation screen
- M18x60 screws to secure the burner flange to the boiler
- Cable grommets kit for optional electrical wiring input
- M16x6 studs for fixing the gas elbow to the pipe coupling
- M16 nuts to fix the gas elbow to the pipe coupling
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

GAS BURNERS

LOW NOx

Low NOx emissions, lower than Class 3 of European Standard EN 676 (NOx lower than 80 mg/kWh)

ONE STAGE



GULLIVER BS

BS1 (16-52 kW)
BS2 (35-91 kW)
BS3 (65-200 kW)
BS4 (110-250 kW)

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TWO STAGE



GULLIVER BSD

BS1D (16/19-52 kW)
BS2D (35/40-91 kW)
BS3D (65/80-200 kW)
BS4D (110/140-250 kW)

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MODULATING



GULLIVER BS/M

BS2/M (26/49-91 kW)
BS3/M (48/79-195 kW)
BS4/M (68/140-250 kW)

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MODULATING MECHANICAL CAM



RS 25-35/M BLU

RS 25/M BLU (44/125-370 kW)
RS 35/M BLU (70/200-480 kW)

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RS 45-55/M BLU

RS 45/M BLU (90/190-550 kW)
RS 55/M BLU (100/300-680 kW)

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RS 68-200/M BLU

RS 68/M BLU (150/350-860 kW)
RS 120/M BLU (300/600-1300 kW)
RS 160/M BLU (300/930-1860 kW)
RS 200/M BLU (570/1375-2400 kW)

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RS 310-610/M BLU

RS 310/M BLU (400/1200-3600 kW)
RS 410/M BLU (500/1500-4450 kW)
RS 510/M BLU (680/1800-5250 kW)
RS 610/M BLU (1000/2200-6250 kW)

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RS 810/M BLU

RS 810/M BLU (1200/3500-8010 kW)

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RS 1000-1200/M BLU

RS 1000/M BLU (1100/4000-10100 kW)
RS 1200/M BLU (1500/5500-11100 kW)

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GAS BURNERS

LOW NOx

Low NOx emissions, lower than Class 3 of European Standard EN 676 (NOx lower than 80 mg/kWh)

MODULATING ELECTRONIC CAM



RS 25-35/E BLU

RS 25/E BLU (44/125-370 kW)
RS 35/E BLU (70/200-480 kW)

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RS 45-55/E BLU

RS 45/E BLU (90/190-550 kW)
RS 55/E BLU (100/300-680 kW)

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RS 68-200/E BLU

RS 68/E BLU (150/350-860 kW)
RS 120/E BLU (300/600-1300 kW)
RS 160/E BLU (300/930-1860 kW)
RS 200/E BLU (570/1375-2400 kW)

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RS 310-610/E BLU

RS 310/E BLU (400/1200-3600 kW)
RS 410/E BLU (500/1500-4450 kW)
RS 510/E BLU (680/1800-5250 kW)
RS 610/E BLU (1000/2200-6250 kW)

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RS 810/E BLU

RS 810/E BLU (1200/3500-8010 kW)

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RS 1000-1200/E BLU

RS 1000/E BLU (1100/4000-10100 kW)
RS 1200/E BLU (1500/5500-11100 kW)

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RS 1300-2000/E BLU

RS 1300/E BLU (1350-7500/12000 kW)
RS 1600/E BLU (3065/9503-15560 kW)
RS 2000/E BLU (4000/12000-19500 kW)

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MODULATING ELECTRONIC CAM VARIABLE SPEED



RS 68-200/EV BLU

RS 68/EV BLU (150/350-860 kW)
RS 120/EV BLU (300/600-1300 kW)
RS 160/EV BLU (300/930-1860 kW)
RS 200/EV BLU (570/1375-2400 kW)

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RS 310-610/EV BLU

RS 310/EV BLU (400/1200-3600 kW)
RS 410/EV BLU (500/1500-4450 kW)
RS 510/EV BLU (680/1800-5250 kW)
RS 610/EV BLU (1000/2200-6250 kW)

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RS 810/EV BLU

RS 810/EV BLU (1200/3500-8010 kW)

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RS 1000-1200/EV BLU

RS 1000/EV BLU (1100/4000-10100 kW)
RS 1200/EV BLU (1500/5500-11100 kW)

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RS 1300-2000/EV BLU

RS 1300/EV BLU (1350-7500/12000 kW)
RS 1600/EV BLU (3065/9503-15560 kW)
RS 2000/EV BLU (4000/12000-19500 kW)

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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.

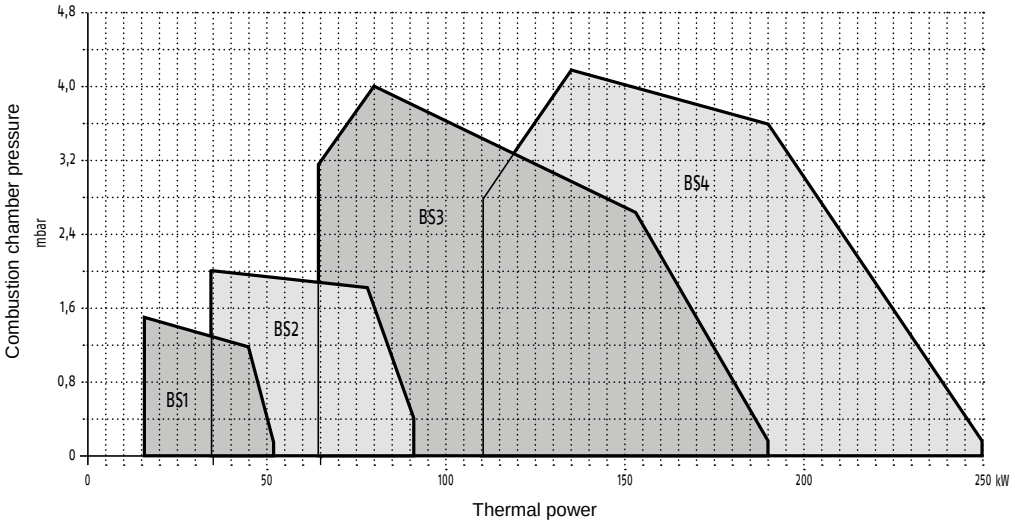
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Electric power supply	Total electrical power	Certification	Note	Code
	kW	Nm^3/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/Nm^3.
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.

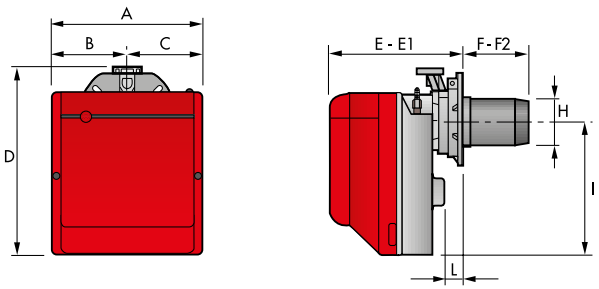
FIRING RATES



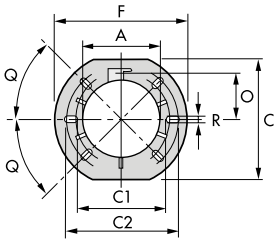
Useful firing rates for choosing the burner

Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

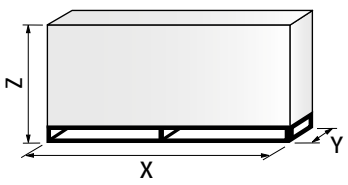
OVERALL DIMENSIONS



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



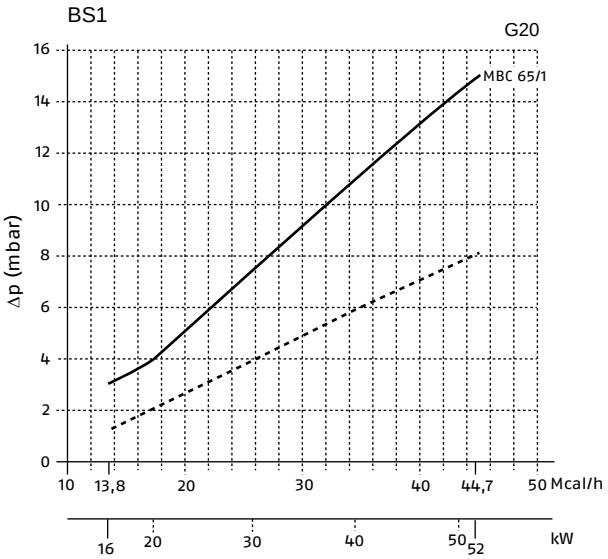
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
BS1	89	167	140	170	192	66	45°	11
BS2 - BS2 TL	106	167	140	170	192	66	45°	11
BS3 - BS3 TL	129	201	160	190	216	76.5	45°	11
BS4 - BS4 TL	137	203	170	200	218	80.5	45°	11



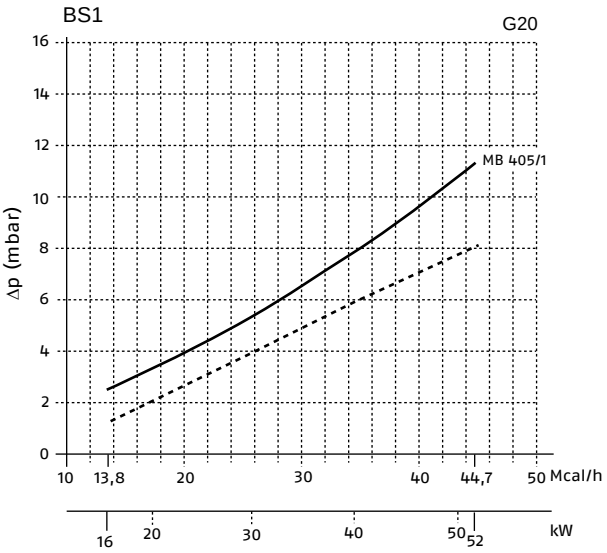
Description	X mm	Y mm	Z mm	Net weight kg
BS1	395	278	350	10
BS2	405	298	375	11
BS2 TL	583	290	370	11-13
BS3	450	345	440	15
BS3 TL	703	335	435	15-17
BS4	510	345	440	16.5
BS4 TL	703	335	435	16.5-18.5

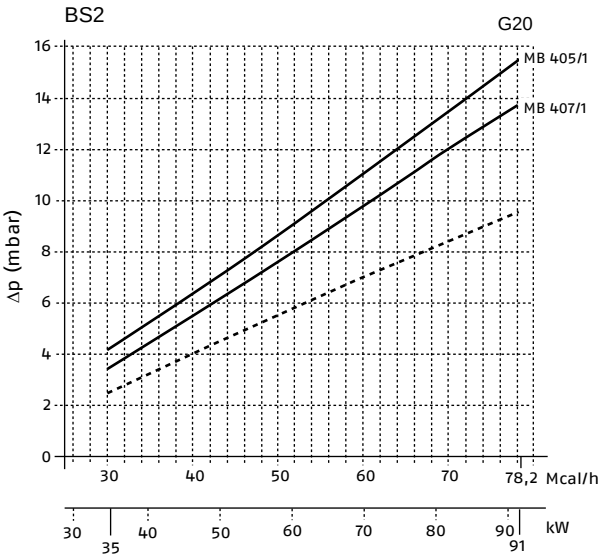
PRESSURE LOSS DIAGRAMS

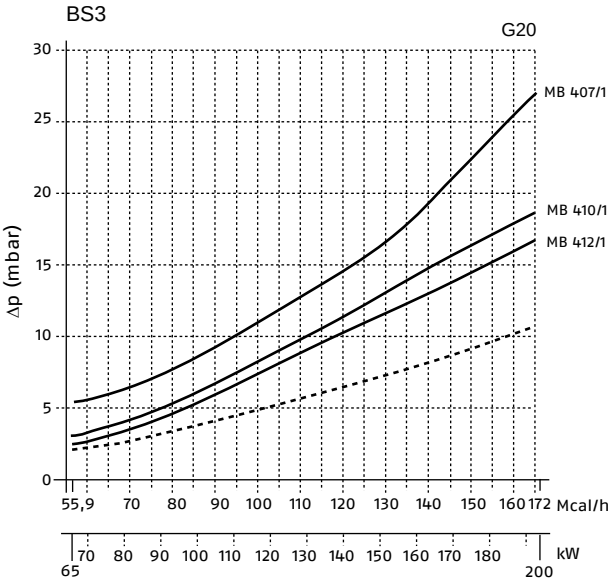
MBC SERIES GAS TRAIN

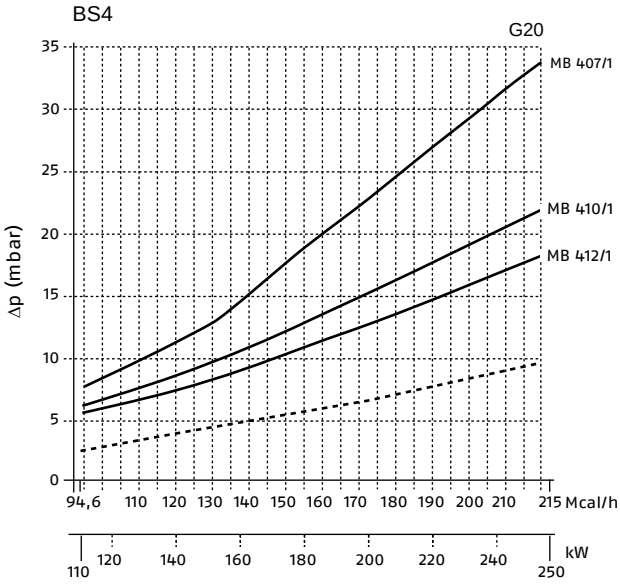


MB SERIES GAS TRAIN









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.

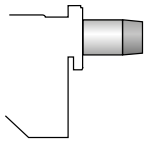
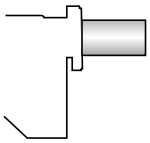
——— Combustion head + gas train
- - - - Combustion head

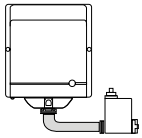
GAS TRAINS

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
		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.		
	BS1	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**
		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.		
	BS1	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**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	BS1	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**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.		
	BS1	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

Low NOx two stage gas burners

GULLIVER BSD



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

Gulliver BSD series of two 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 microprocessorbased 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.
Two stage working guarantees high level performance from the thermal unit. 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 BSD 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.

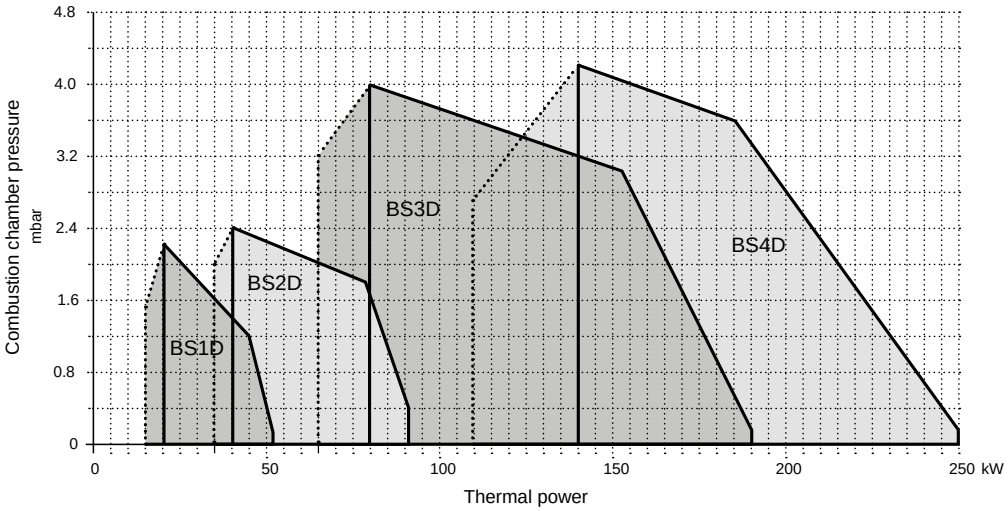
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Electric power supply	Total electrical power	Certification	Note	Code
	kW	Nm^3/h	Ph/V/Hz	kW			
BS1D	16/19-52	1.6/1.9-5.2	1/230/50	0.15	CE-0085 AQ0409	(1)	**3761558**
BS2D	35/40-92	3.5/4-9	1/230/50	0.18	CE-0085 AQ0409	(1)	**3761658**
BS2D TL	35/40-92	3.5/4-9	1/230/50	0.18	CE-0085 AQ0409	(1)	**3761618**
BS3D	65/80-197	6.5/8-20	1/230/50	0.35	CE-0085 AQ0409	(1)	**3761758**
BS3D TL	65/80-197	6.5/8-20	1/230/50	0.35	CE-0085 AQ0409	(1)	**3761718**
BS4D	110/140-249	11/14-25	1/230/50	0.53	CE-0085 AQ0409	(1)	**3761858**
BS4D TL	110/140-249	11/14-25	1/230/50	0.53	CE-0085 AQ0409	(1)	**3761818**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with plug and socket.

FIRING RATES

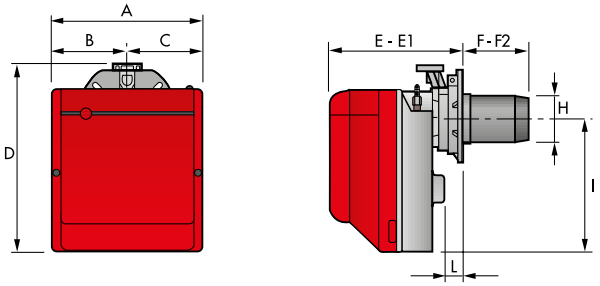


Useful firing rates for choosing the burner

1st stage operation range

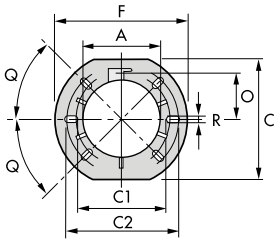
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

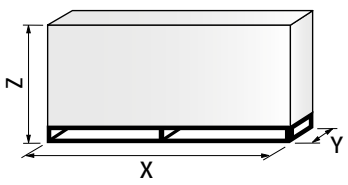


Description	A mm	B mm	C mm	D mm	E mm	E1 mm	F-F(1) mm	F2-F2(1) mm	H mm	I mm	L mm
BS1D	234	122	112	295	230	276	116	70	89	210	41
BS2D	255	125,5	125,5	325	238	252	114-270	100-280	106	230	45
BS3D	300	150	150	391	262	280	128-267	110-282	129	285	45
BS4D	300	150	150	392	278	301	168-302	145-317	137	286	45

(1) Dimension with extended head.



Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
BS1D	89	167	140	170	192	66	45°	11
BS2D	106	167	140	170	192	66	45°	11
BS3D	129	201	160	190	216	76,5	45°	11
BS4D	137	203	170	200	218	80.5	45°	11



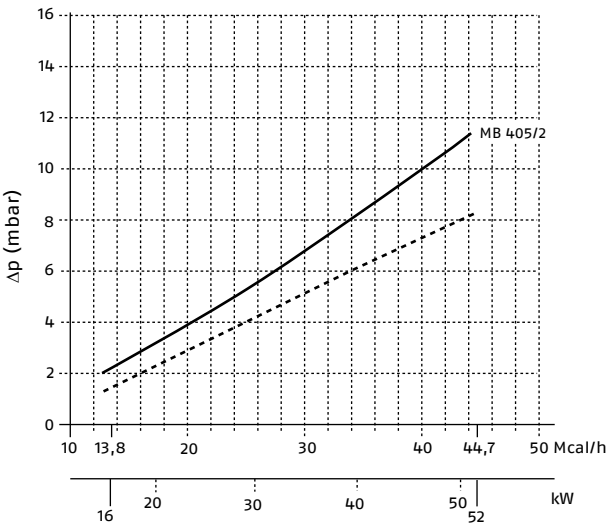
Description	X-X(1) mm	Y-Y(1) mm	Z-Z(1) mm	Net weight kg (1)
BS1D	395	278	350	11
BS2D	405-593	298-300	375-380	12-14
BS3D	450-713	345	440-445	16-18
BS4D	510-713	345	440-445	18-20

(1) Dimension with extended head.

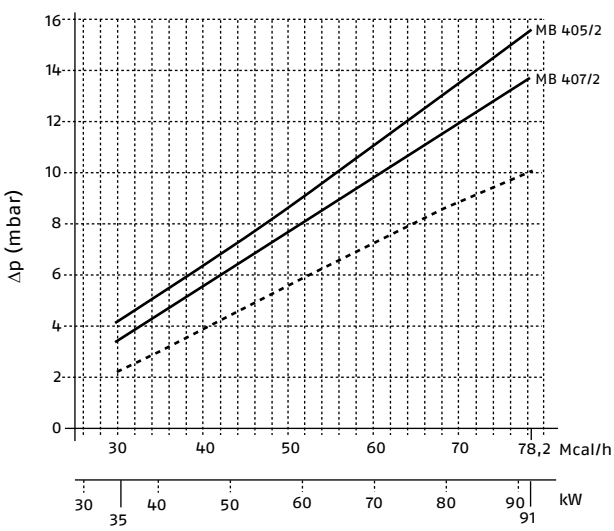
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

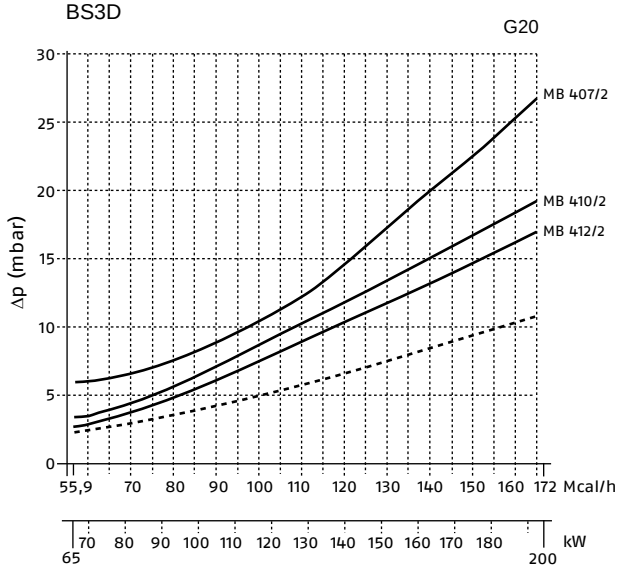
BS1D



BS2D

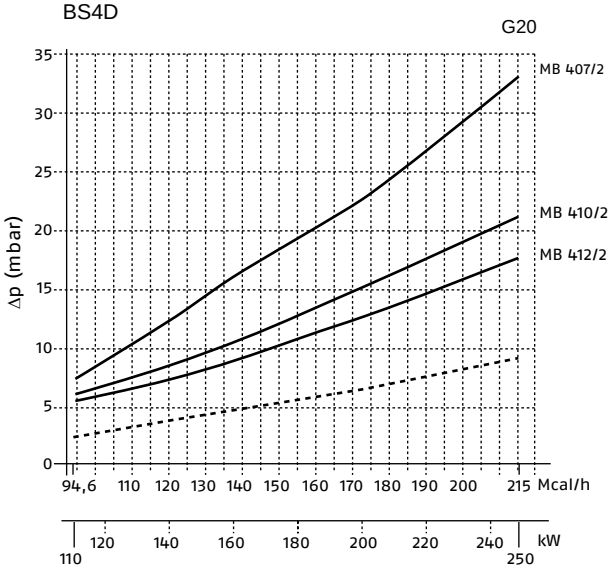


BS3D



(*) Limite a 150 kW

BS4D



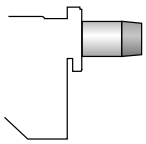
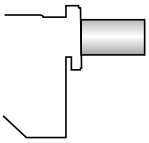
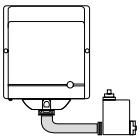
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added 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
MB SERIES TWO STAGE GAS TRAIN					
MB 405/2-F1SD 20	**3970539***	(3)	Rp ½"	3010123	BS1D
MB 405/2-F2SD 20	**3970540***	(3)	Rp ¾"	3010123	BS2D
MB 407/2-F2SD 20	**3970538***	(3)	Rp ¾"	3010123	BS2D
MB 407/2-F3SD 20	**3970541***	(3)	Rp ¾"	3010123	BS3D-BS4D
MB 410/2-F3SD 20	**3970542***		Rp 1" ¼	3010123	BS3D-BS4D
MB 412/2-F3SD 20	**3970543***		Rp 1" ¼	3010123	BS3D-BS4D

(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.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	BS1D	Standard head length = 70-116 mm - Extended head length = 150-160 mm		**20031875**
	BS2D (long)	Standard head length = 100-114 mm - Extended head length = 170-180 mm		**3001007**
	BS2D (extra long)	Standard head length = 100-114 mm - Extended head length = 270-280 mm		**3001008**
	BS3D	Standard head length = 110-128 mm - Extended head length = 267-282 mm		**3001009**
	BS4D	Standard head length = 145-168 mm - Extended head length = 302-317 mm		**3001016**
		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.		
	BS1D	Kit code for alternative combustion head.	(1)	**3001059**
	BS2D	Kit code for alternative combustion head.	(1)	**3001064**
	BS3D	Kit code for alternative combustion head.	(1)	**3001060**
	BS4D	Kit code for alternative combustion head.	(1)	**3001070**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	BS1D	Kit code for standard and extended head.		**3001003**
	BS1D	Kit for LPG with Butane amount over 30%.	(2)	**3002734**
	BS2D	Kit code for standard and extended head.		**3001004**
	BS2D	Kit for LPG with Butane amount over 30%.	(2)	**3002735**
	BS3D	Kit code for standard and extended head.		**3001005**
	BS3D	Kit for LPG with Butane amount over 30%.	(2)	**3002736**
	BS4D	Kit code for standard and extended head.		**3001011**
	BS4D	Kit for LPG with Butane amount over 30%.	(2)	**3002737**
		TOWN GAS KIT For burning Town Gas, a special kit is available to be fitted to the combustion head on the burner.		
	BS1D	Kit code for only standard head.	(2)	**3002727**
	BS2D	Kit code for standard and extended head.	(2)	**3002728**
	BS3D	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**
		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.		
	BS1D	Kit code for multibloc rotation kit.		**3001179**
	BS2D	Kit code for multibloc rotation kit.		**3001177**
	BS3D-BS4D	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, driven by an electric servomotor
– Air damper with 1st and 2nd stage adjustment (2nd stage 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

– Sliding flange
– Flange insulation screen
– Screws and nuts for fixing the flange to the boiler
– 7-pin plug
– 4-pin plug
– Remote control release kit
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Low NOx two stage progressive and modulating gas burners

GULLIVER BS/M



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

Gulliver BS/M series of two stage, progressive or modulating 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 three different models with an output ranging from 49 to 250 kW, divided in three different structures. All the models use the same components designed by Riello for the Gulliver series. The high quality level guarantees safe working. 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.
Two stage operation guarantees high level performance from the thermal unit. All the models are approved by the EN 676 European Standard, conform to European Directives, Gas Appliance, EMC, Low Voltage, Boiler Efficiency.
All Gulliver BS/M 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.

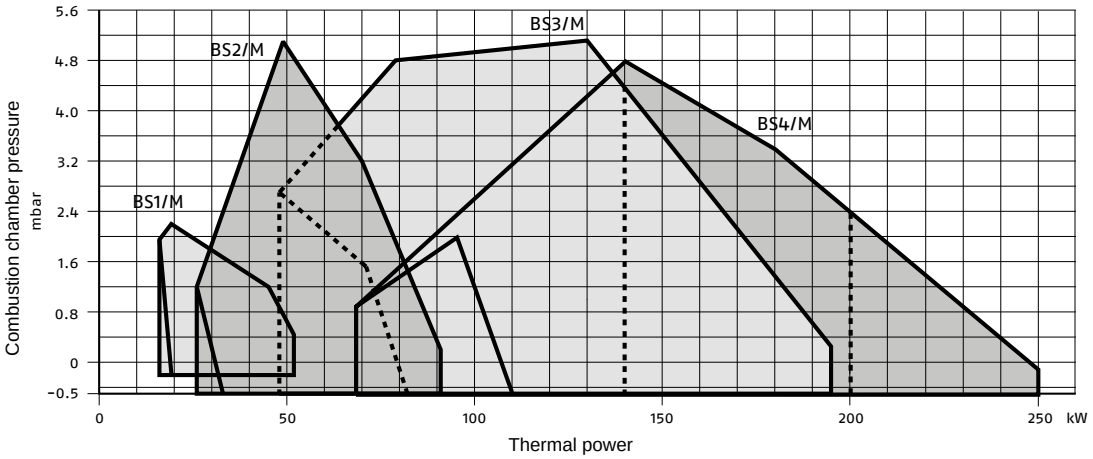
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm3/h	kW	Ph/V/Hz			
BS1/M	16/19-52	1.6/1.9-5.2	0.14	1/230/50	CE-0085BN0609	(1)	**20096670**
BS2/M	26/49-91	2.6/4.9-9.1	0.18	1/230/50	CE-0085BN0609	(1)	**3762250**
BS2/M TL	26/49-91	2.6/4.9-9.1	0.18	1/230/50	CE-0085BN0609	(1)(2)	**20052610**
BS3/M	48/79-195	4.8/7.9-19.5	0.35	1/230/50	CE-0085BN0609	(1)	**3762350**
BS3/M TL	48/79-195	4.8/7.9-19.5	0.35	1/230/50	CE-0085BN0609	(1)(2)	**3762370**
BS4/M	68/140-250	6.8/14-25	0.53	1/230/50	CE-0085BN0609	(1)	**3762450**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with plug and socket.
(2) Head length: see quote F-F2 in the Overall imensions table.

FIRING RATES

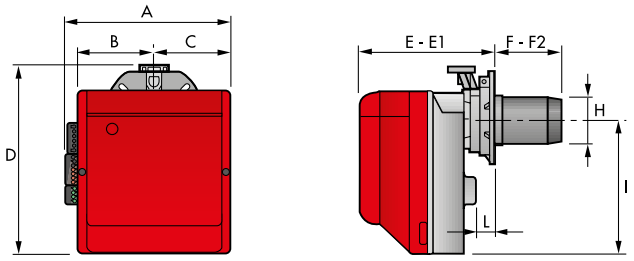


Useful firing rates for choosing the burner

Modulation range

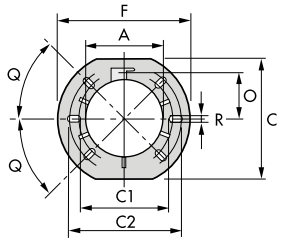
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

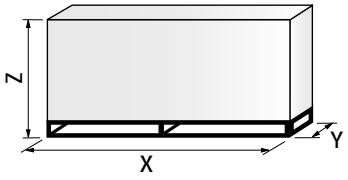


Description	A mm	B mm	C mm	D mm	E mm	E1 mm	F mm	F2 mm	H mm	I mm	L mm
BS1/M	285	125.5	125.5	316	234.5	-	116.5	-	89.5	230	8
BS2/M	285	125.5	125.5	325	238	252	114	100	106	230	18
BS2/M TL	285	125.5	125.5	325	238	252	184	170	106	230	18
BS3/M	330	150	150	391	262	280	128	110	129	285	21
BS3/M TL	330	150	150	391	262	270	285	267	129	285	21
BS4/M	330	150	150	392	278	301	168	145	137	286	21
BS4/M TL	330	150	150	392	278	301	325	302	137	286	21

(1) Dimension with extended head.



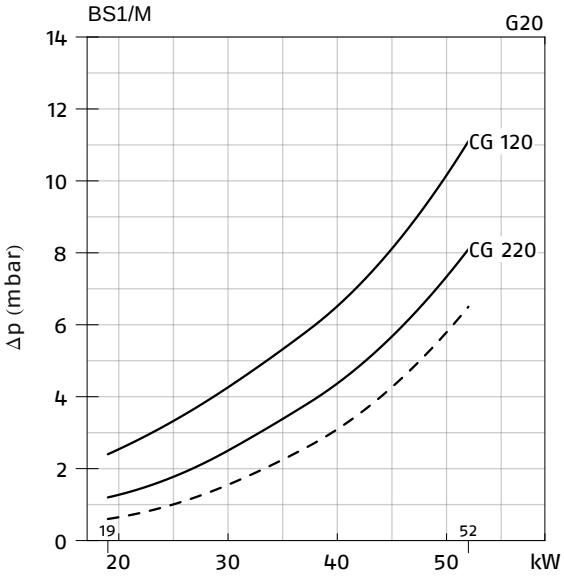
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
BS1/M	89.5	167	140	170	192	66	45°	11
BS2/M	106	167	140	170	192	66	45°	11
BS2/M TL	106	167	140	170	192	66	45°	11
BS3/M	129	201	160	190	216	76.5	45°	11
BS3/M TL	129	201	160	190	216	76.5	45°	11
BS4/M	137	203	170	200	218	80.5	45°	11
BS4/M TL	137	203	170	200	218	80.5	45°	11

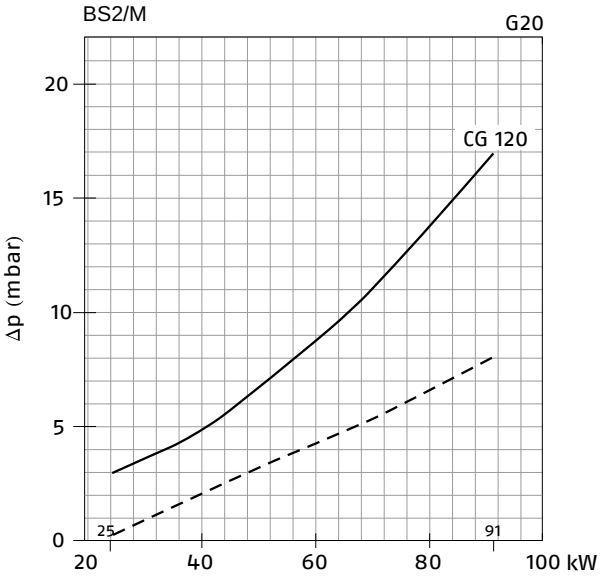


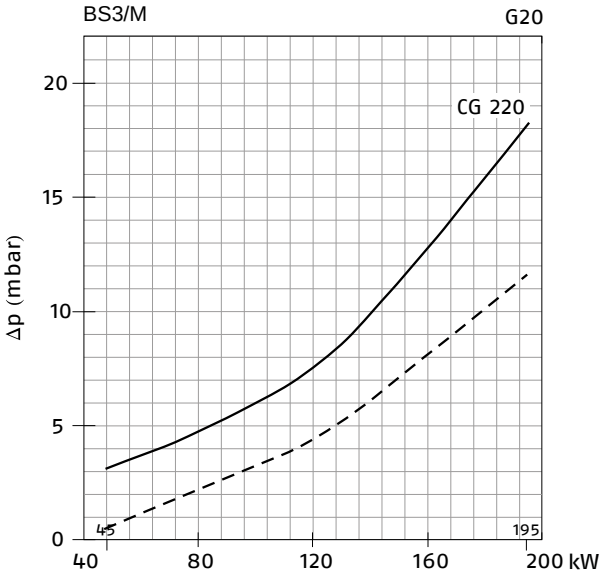
Description	X mm	Y mm	Z mm	Net weight kg
BS1/M	405	328	375	12
BS2/M	405	328	375	12
BS2/M TL	583	318	365	14
BS3/M	450	375	440	16
BS3/M TL	510	375	440	18
BS4/M	510	375	440	18
BS4/M TL	610	383	367	20

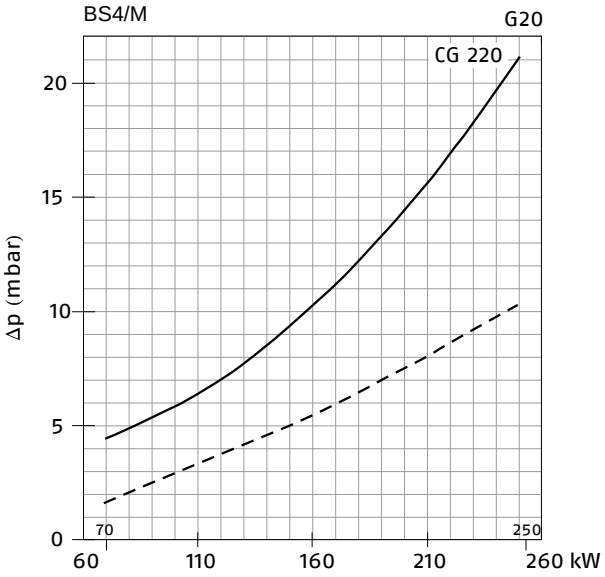
PRESSURE LOSS DIAGRAMS

CG SERIES GAS TRAIN









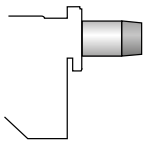
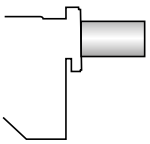
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner
CG SERIES PROPORTIONAL GAS TRAIN					
CG 120/P-FS2D 00	**20105417***	(3)(4)	Rp ¾"	20185149	BS1/M
CG 120/P-F2SD 00	**3970587***	(3)(4)	Rp ¾"	20185149	BS2/M
CG 220/P-F3SD 00	**3970588***	(3)(4)	Rp ¾"	20185149	BS3/M-BS4/M

(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) Gas maximum inlet pressure 100 mbar.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	BS1/M (long)	Standard head length = 70-116 mm - Extended head length = 114-160 mm		**20097850**
	BS2/M (long)	Standard head length = 100-114 mm - Extended head length = 170-180 mm		**3002722**
	BS2/M (extra long)	Standard head length = 100-114 mm - Extended head length = 270-280 mm		**3002723**
	BS3/M	Standard head length = 110-128 mm - Extended head length = 267-282 mm		**3002724**
	BS4/M	Standard head length = 145-168 mm - Extended head length = 302-317 mm		**3002725**
		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/M 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.		
	BS1/M	Kit code for alternative combustion head.	(1)	**3001059**
	BS2/M	Kit code for alternative combustion head.	(1)	**3001064**
	BS3/M	Kit code for alternative combustion head.	(1)	**3001060**
	BS4/M	Kit code for alternative combustion head.	(1)	**3001070**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	BS1/M	Kit code for standard and extended head.		**3001003**
	BS2/M	Kit code for standard and extended head.		**3002711**
	BS3/M	Kit code for standard and extended head.		**3002712**
	BS4/M	Kit code for standard and extended head.		**3001011**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20102002**
		RWF 55.5 - Plus version.		**20101966**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**3010109**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω)		**3091380**
	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
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**
	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.

STATE OF SUPPLY

Monobloc, gas burners, completely automatic, high/low progressive operation mode or fully modulating by using a regulator:
- Fan with forward curve blades
- Cover lined with sound proofing material
- Microprocessor-based burner safety control box, with diagnostic and remote reset functions
- Servomotor to drive the air damper to fully closed position at stand by, low and high fire position
- 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
- Protection filter against radio interference
- IP X0D (IP 40) electric protection level.

STANDARD EQUIPMENT

- Flange with insulating gasket
- Screws and nuts for flange to be fixed to boiler
- Screw and nut for flange
- Blue plastic tube
- G 1/8 union elbow
- 4-pin plug
- 7-pin plug
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Low NOx modulating gas burners

RS 25-35/M BLU



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

RS 25-35/M BLU burner series covers a firing range from 44 to 480 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes. RS 25-35/M BLU burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs. The exclusive design ensures reduced dimensions, simple use and maintenance. Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. A wide range of accessories guarantees elevated working flexibility.

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.

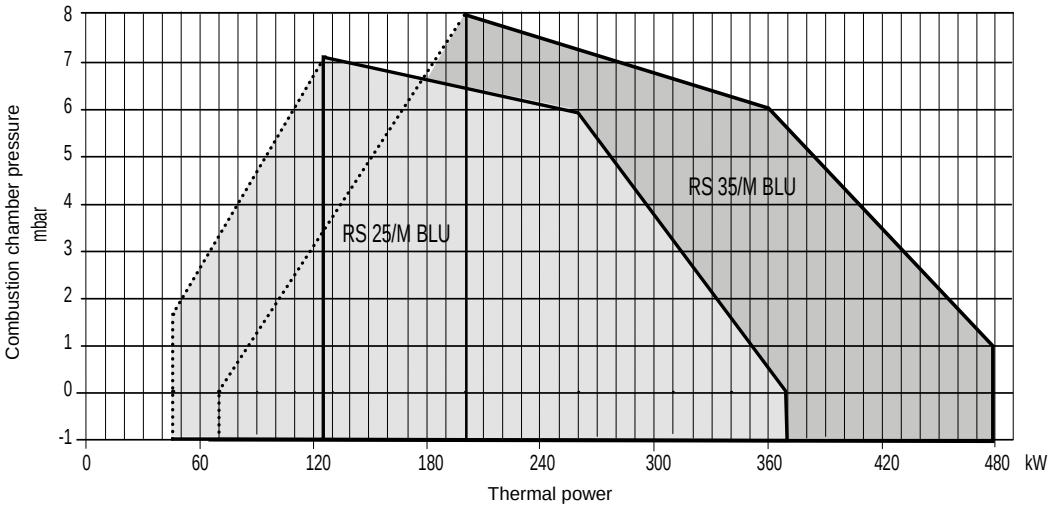
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 25/M BLU TC FS1	44/125-370	4.5/13-37	0.6	1/220-230/50-60	220-230/50-60	CE-0476DP3335	(1)(2)	**3910510**
RS 25/M BLU TL FS1	44/125-370	4.5/13-37	0.6	1/220-230/50-60	220-230/50-60	CE-0476DP3335	(1)(2)	**3910511**
RS 35/M BLU TC FS1	70/200-480	7/20-48	0.7	1/220-230/50-60	220-230/50-60	CE-0476DP3335	(1)(2)	**3910610**
RS 35/M BLU TL FS1	70/200-480	7/20-48	0.7	1/220-230/50-60	220-230/50-60	CE-0476DP3335	(1)(2)	**3910611**

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.
Models for continuous operation (FS2: one stop every 72 hours) are available on request
(1) Model with plug and socket.
(2) Model with CMG control box.

FIRING RATES

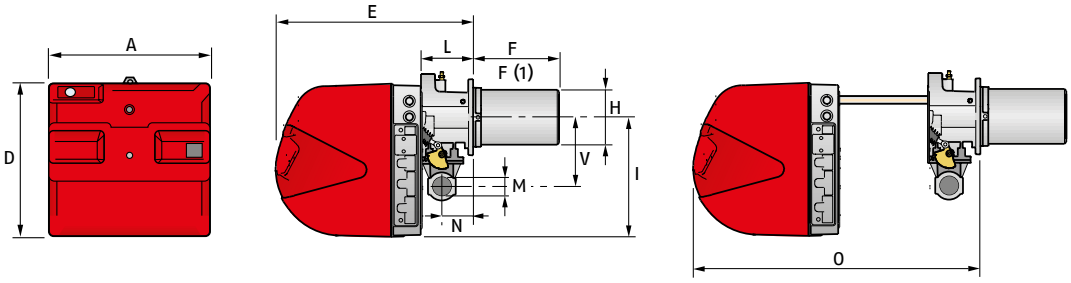


Useful firing rates for choosing the burner

Modulation range

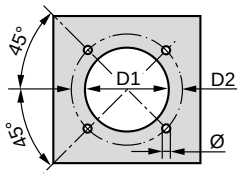
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

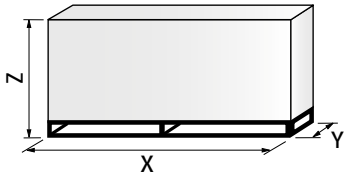


Description	A mm	D mm	E mm	F-F(1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 25/M BLU	442	422	508	230-365	140	305	138	1"½	84	780-/	177
RS 35/M BLU	442	422	508	230-365	152	305	138	1"½	84	780-/	177

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 25/M BLU	160	224	M8
RS 35/M BLU	160	224	M8

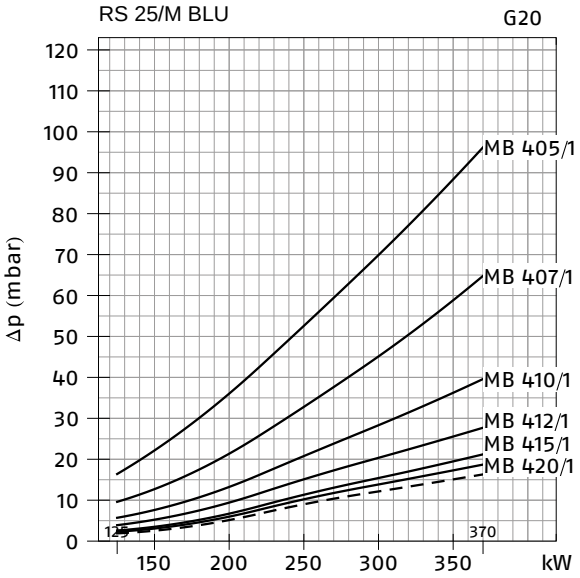


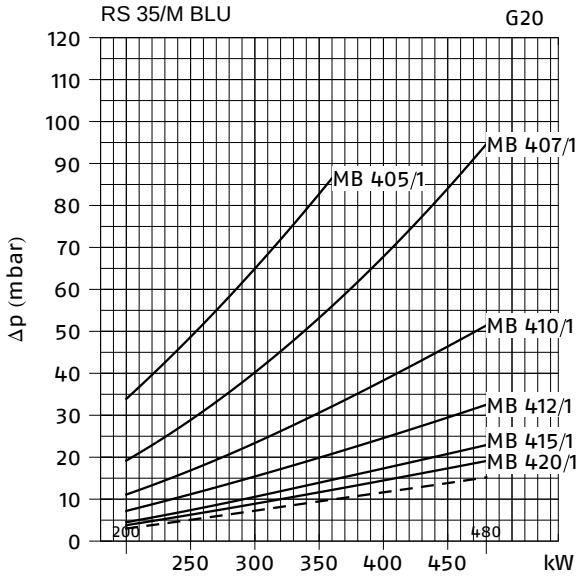
Description	X(1) mm	Y mm	Z mm	Net weight kg
RS 25/M BLU	1000	485	500	39
RS 35/M BLU	1000	485	500	40

(1) Dimension with standard and extended head.

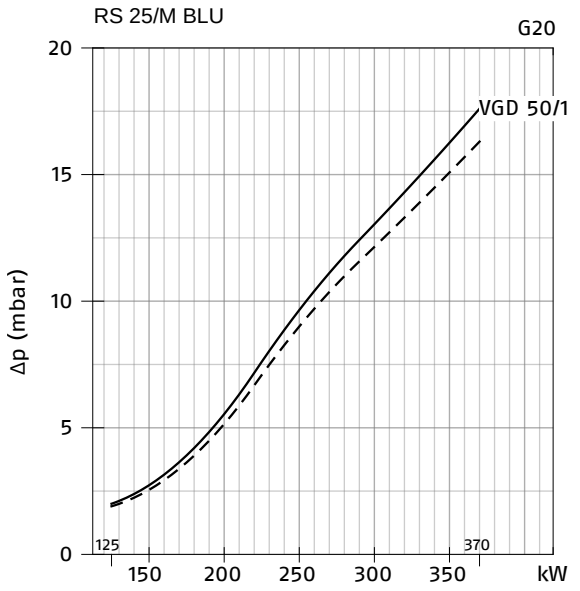
PRESSURE LOSS DIAGRAMS

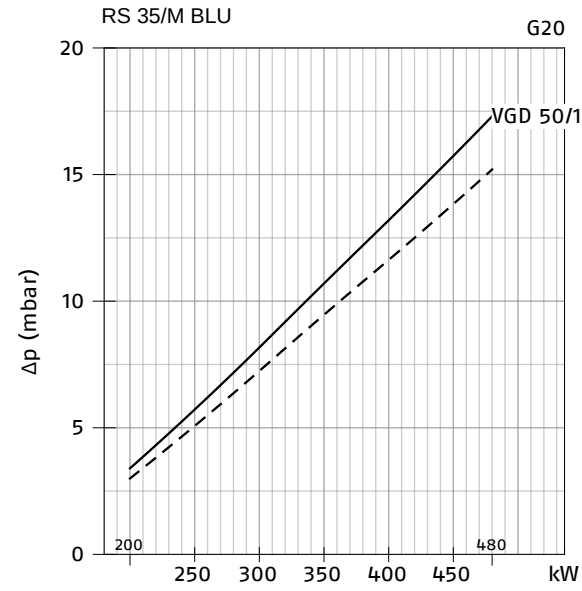
MB SERIES GAS TRAIN





VGD 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

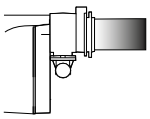
GAS TRAINS

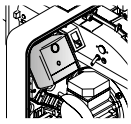
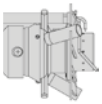
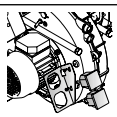
Description (1)	Code	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
					RS 25/M BLU	RS 35/M BLU
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RT 20	**3970500***	Rp ¾"	-	3010123	3000824	
MB 407/1-RT 20	**3970553***	Rp ¾"	-	3010123	3000824	
MB 407/1-RT 52	**3970599***	Rp ¾"	-	3010123	3000824	
MB 407/1-RSM 20	**3970229***	Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970258***	Rp 1" ¼	-	3010123	3010124	
MB 410/1-RT 20	**3970554***	Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970600***	Rp ¾"	-	3010123	3000824	
MB 410/1-RSM 20	**3970230***	Rp ¾"	-	3010123	3000824	
MB 412/1-RT 52	**3970256***	Rp 1" ½	-	3010123	□	□
MB 412/1-RT 20	**3970144***	Rp 1" ½	-	3010123	□	□
MB 412/1 CT RT 20	**3970197****	Rp 1" ½	♦	♦	□	□
MB 412/1-RSM 20	**3970231***	Rp 1" ½	-	3010123	□	□
MB 415/1-RT 30	**3970180***	Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 30	**3970198****	Rp 1" ½	♦	♦	□	□
MB 415/1-RT 52	**3970250***	Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 52	**3970253****	Rp 1" ½	♦	♦	□	□
MB 415/1-RSM 30	**3970232***	Rp 1" ½	-	3010123	□	□
MB 420/1-RT 30	**3970181***	Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 30	**3970182****	Rp 2"	♦	♦	3000822	
MB 420/1-RT 52	**3970257***	Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 52	**3970252****	Rp 2"	♦	♦	3000822	
MB 420/1-RSM 30	**3970233***	Rp 2"	-	3010123	3000822	
MB 420/1 CT RSM 30	**3970234****	Rp 2"	♦	♦	3000822	
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	**20137718***	Rp 2"	-	3010123+ 20186306	3000822	
VGD 50/1 CT RT 122	**20169190****	Rp 2"	♦	♦	3000822	

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 25/M BLU	Standard head length = 230 mm - Extended head length = 365 mm		**3010430**
	RS 35/M BLU	Standard head length = 230 mm - Extended head length = 365 mm		**3010431**
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm		**3010095**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010449**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010448**

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20083339**
		RWF 55.5 - Plus version.		**20098541**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**3010420**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**3010410**
	All models	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.		**3010418**
	All models	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.		**3010419**
	All models	POST-VENTILATION KIT To prolong ventilation after opening of thermostats chain, a special kit is available. Post-ventilation time = 20 sec.		**3010451**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 25/M BLU	Kit code for standard and extended head.		**3010423**
	RS 35/M BLU	Kit code for standard and extended head.		**3010424**
	All models	HOURS COUNTER KIT To measure the burner working time a hours counter kit is available.		**3010450**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner, two stage progressive or modulating operation with a kit, made up of:
- Air suction circuit with sound proofing material
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by a servomotor with variable cam
- Low emissions combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures

  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Burner on/off selection switch
- Manual or automatic output increase/decrease switch
- Microprocessor-based burner safety control box, with diagnostic functions
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- High performance fan with forward curve blades
- Starting motor at 2800 rpm, single-phase / 220-230V / 50-60Hz or three-phase / 380-400V / 50-60Hz
- Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
- Plug and socket for electrical connections accessible from the external of the cover
- 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
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating gas burners

RS 45-55/M BLU



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

RS 45-55/M BLU burner series covers a firing range from 90 to 680 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS 45-55/M BLU burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs. The exclusive design ensures reduced dimensions, simple use and maintenance. Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
A wide range of accessories guarantees elevated working flexibility.

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.

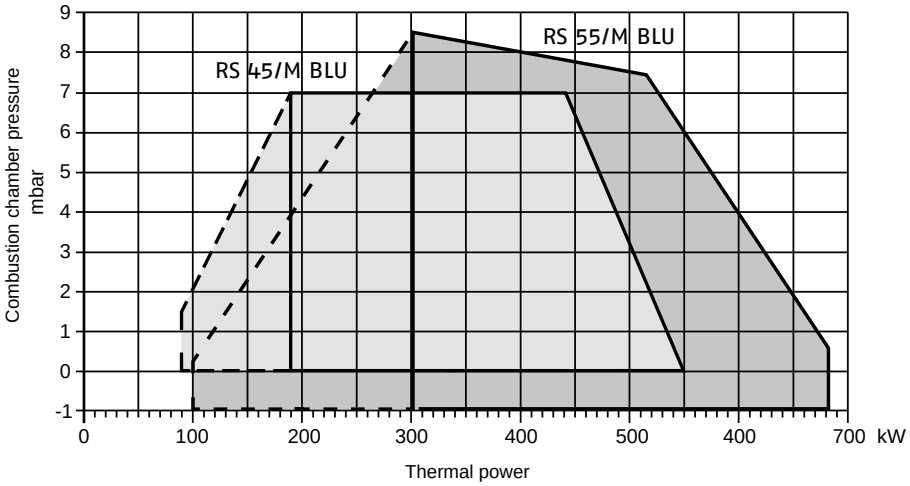
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 45/M BLU TC FS1	90/190-550	9/19-55	0.6	1/230/50	230/50-60	CE-0476DP3335	(1)	**3897306**
RS 45/M BLU TL FS1	90/190-550	9/19-55	0.6	1/230/50	230/50-60	CE-0476DP3335	(1)	**3897307**
RS 55/M BLU TC FS1	100/300-680	10/30-68	1.5	3/400/50	230/50-60	CE-0476DP3335	(1)	**20038484**
RS 55/M BLU TL FS1	100/300-680	10/30-68	1.5	3/400/50	230/50-60	CE-0476DP3335	(1)	**20038486**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with plug and socket.

FIRING RATES

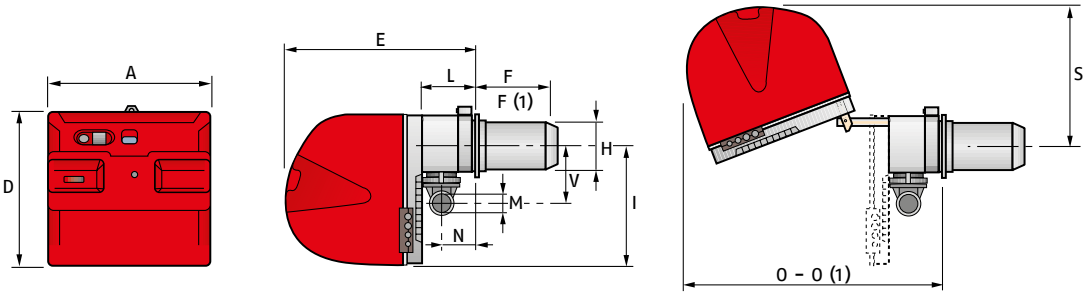


Useful firing rates for choosing the burner

Modulation range

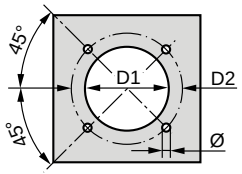
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

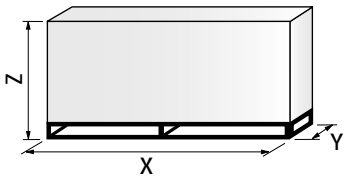


Description	A mm	B mm	D mm	E mm	F-F(1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 45/M BLU	476	-	474	580	229-354	160	352	164	Rp 1" ½	108	810-810	367	168
RS 55/M BLU	533	300	490	640	255-390	189	352	222	Rp 2"	134	870-/	-	221

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 45/M BLU	165	224	M8
RS 55/M BLU	195	275-325	M12

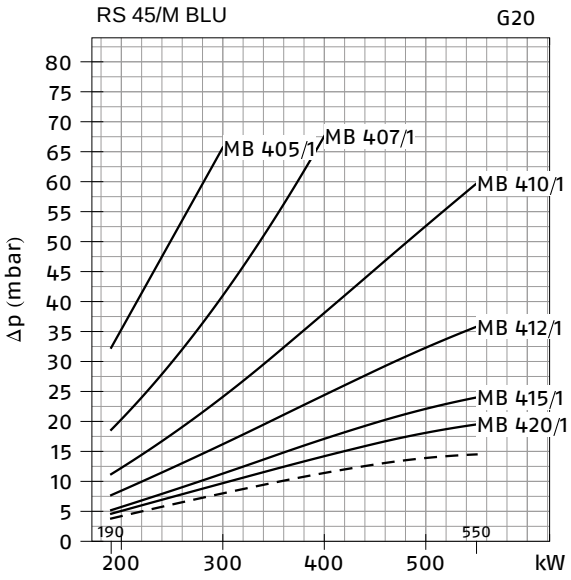


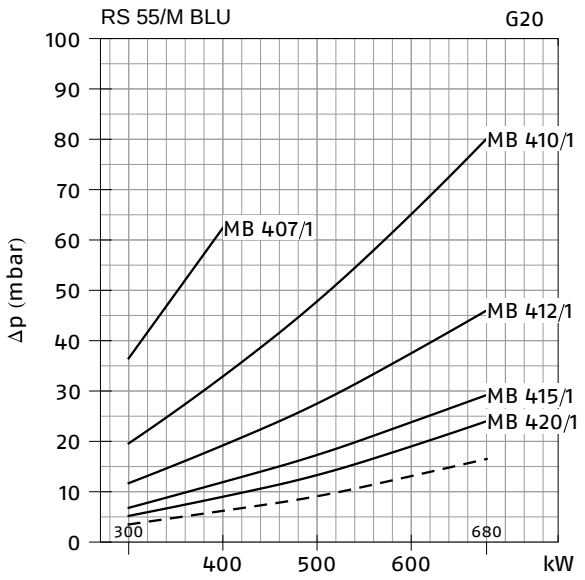
Description	X(1) mm	Y mm	Z mm	Net weight kg
RS 45/M BLU	1015	500	630	48
RS 55/M BLU	1405	700	660	44

(1) Dimension with standard and extended head.

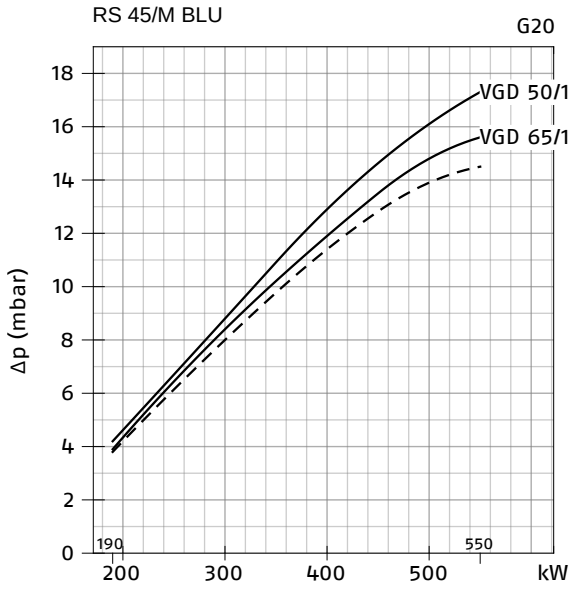
PRESSURE LOSS DIAGRAMS

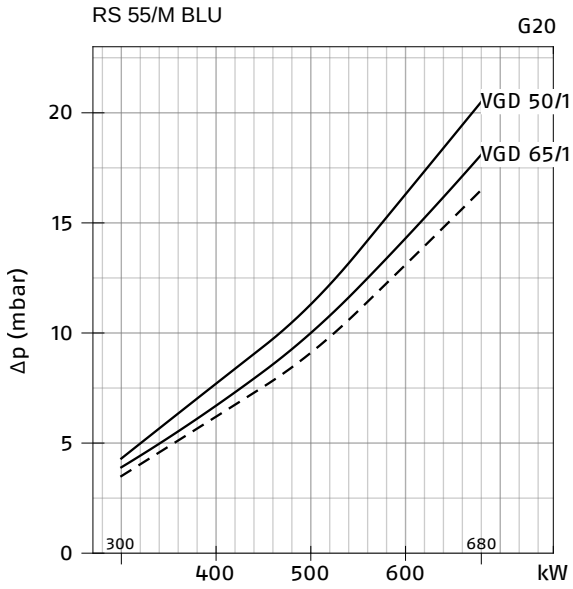
MB SERIES GAS TRAIN





VGD 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

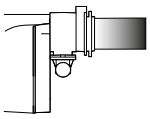
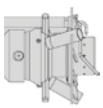
GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 45/M BLU	RS 55/M BLU
MB SERIES ONE STAGE GAS TRAIN							
MB 405/1-RT 20	**3970500***		Rp ¾"	-	3010123	3000824	●
MB 407/1-RT 20	**3970553***		Rp ¾"	-	3010123	3000824	3000824+ 3000843
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3010123	3000824	
MB 407/1-RSM 20	**3970229***		Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3010124	3010126
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824	3000824+ 3000843
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123	3000824	
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123	3000824	
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	□	3000843
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	□	3000843
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	□	3000843
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	□	3000843
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	□	3000843
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	□	3000843
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	□	3000843
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	□	3000843
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	□	3000843
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	3000822	□
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	3000822	□
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	3000822	□
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	3000822	□
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	3000822	□
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	3000822	□
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	3000822	□
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	3000822	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826+3000822	
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826+3000822	

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 45/M BLU	Standard head length = 229 mm - Extended head length = 354 mm		**3010240**
	RS 55/M BLU	Standard head length = 255 mm - Extended head length = 390 mm		**20040373**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 45/M BLU	Spacer thickness S = 110 mm		**3010095**
	RS 55/M BLU	Spacer thickness S = 135 mm		**3010129**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20082208**
		RWF 55.5 - Plus version.		**20099657**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**3010390**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**3010109**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010329**
	RS 55/M BLU	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.		**3010419**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 45/M BLU	Kit code for standard and extended head.	(1)	**3010432**
	RS 55/M BLU	Kit code for standard head.	(1)	**20161511**
	RS 55/M BLU	Kit code for extended head.	(1)	**20144368**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**

Drawing	Burner model	Specification	Note	Code
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) CE approval on field is required.

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner, two stage progressive or modulating operation with a kit, made up of:
– Air suction circuit with sound proofing material
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by a servomotor with variable cam
– Low emissions combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Burner on/off selection switch
– Manual or automatic output increase/decrease switch
– Microprocessor-based burner safety control box, with diagnostic functions
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– Fan with reverse curve blades
– Sound-proofing material on air suction circuit
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
– Maximum gas pressure switch (on RS 55/M BLU models)
– IP 44 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
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Low NOx modulating gas burners

RS 68-200/M BLU



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

RS 68-200/M BLU burner series covers a firing range from 150 to 2400 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS 68-200/M BLU burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs. The exclusive design ensures reduced dimensions, simple use and maintenance. Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
A wide range of accessories guarantees elevated working flexibility.

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.

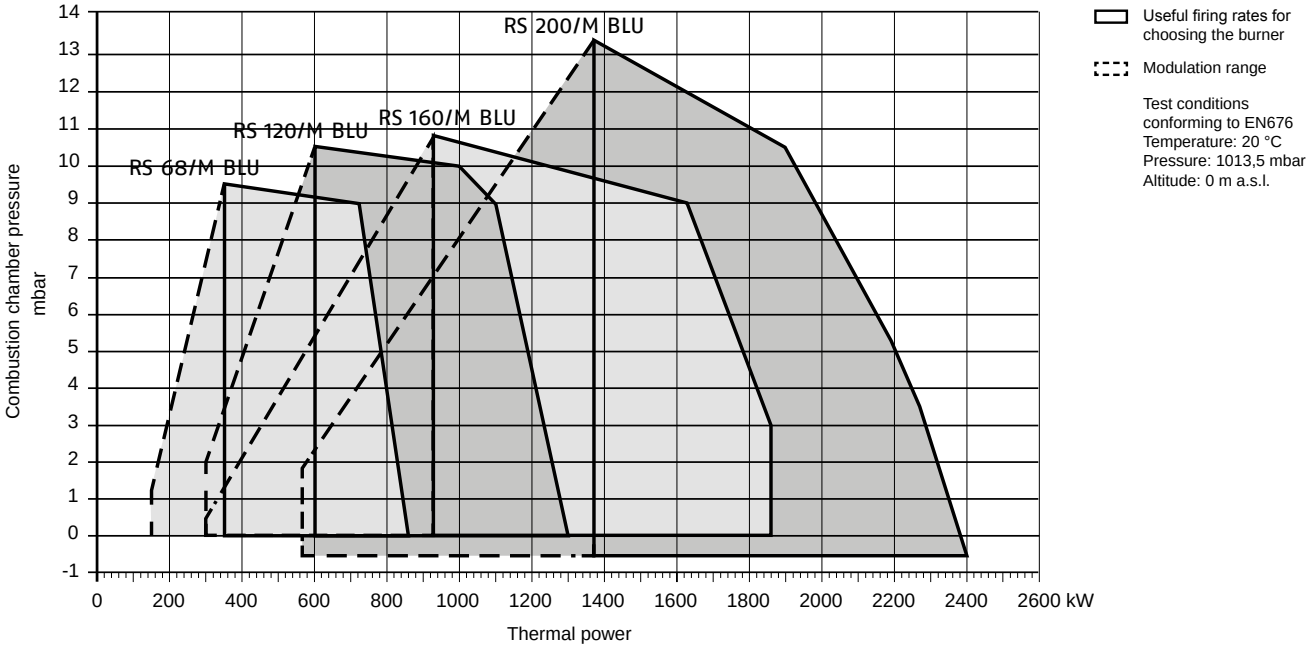
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 68/M BLU TC FS1	150/350-860	15/35-86	1.8	3/400/50	230/50-60	CE-0476DP3335	(2)(3)	**3897406**
RS 68/M BLU TL FS1	150/350-860	15/35-86	1.8	3/400/50	230/50-60	CE-0476DP3335	(2)(3)	**3897407**
RS 68/M BLU TC FS1	150/350-860	15/35-86	1.8	3/400/50	230/50-60	CE-0476DP3335	(1)(3)	**3866211**
RS 68/M BLU TL FS1	150/350-860	15/35-86	1.8	3/400/50	230/50-60	CE-0476DP3335	(1)(3)	**3866212**
RS 120/M BLU TC FS1	300/600-1300	30/60-130	2.6	3/400/50	230/50-60	CE-0476DP3335	(2)(3)	**3897606**
RS 120/M BLU TL FS1	300/600-1300	30/60-130	2.6	3/400/50	230/50-60	CE-0476DP3335	(2)(3)	**3897607**
RS 120/M BLU TC FS1	300/600-1300	30/60-130	2.6	3/400/50	230/50-60	CE-0476DP3335	(1)(3)	**3866213**
RS 120/M BLU TL FS1	300/600-1300	30/60-130	2.6	3/400/50	230/50-60	CE-0476DP3335	(1)(3)	**(5)**
RS 120/M BLU TL FS1	300/600-1300	30/60-130	2.6	3/380/60	230/50-60	-	(2)(3)	**20009506**
RS 160/M BLU TC FS1	300/930-1860	30/93-186	4.8	3/400/50	230/50-60	CE-0476DP3335	(2)(3)	**3788006**
RS 160/M BLU TL FS1	300/930-1860	30/93-186	4.8	3/400/50	230/50-60	CE-0476DP3335	(2)(3)	**3788007**
RS 160/M BLU TC FS1	300/930-1860	30/93-186	4.8	3/400/50	230/50-60	CE-0476DP3335	(1)(3)	**3866214**
RS 160/M BLU TL FS1	300/930-1860	30/93-186	4.8	3/400/50	230/50-60	CE-0476DP3335	(1)(3)	**(5)**
RS 160/M BLU TC FS1	300/930-1860	30/93-186	4.8	3/380/60	230/50-60	-	(2)(3)	**20006048**
RS 160/M BLU TL FS1	300/930-1860	30/93-186	4.8	3/380/60	230/50-60	-	(2)(3)	**20006069**
RS 200/M BLU TC FS1	570/1375-2400	57/138-240	8.2	3/400/50	230/50-60	CE-0476DP3335	(1)(2)	**3899710**

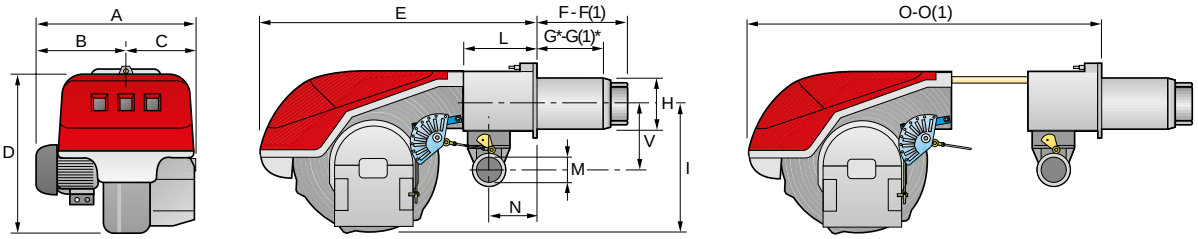
Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
RS 200/M BLU TL FS1	570/1375-2400	57/138-240	8.2	3/400/50	230/50-60	CE-0085BT0414	(1)(2)	**3899711**

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.
Models for continuous operation (FS2: one stop every 72 hours) are available on request.
(1) Model with terminal board.
(2) Model with CMG control box.

FIRING RATES

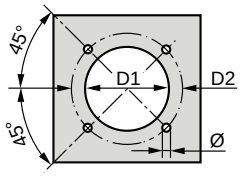


OVERALL DIMENSIONS

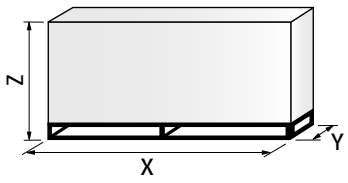


Description	A mm	B mm	C mm	D mm	E mm	F-F(1) mm	G*-G(1)* mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 68/M BLU	527	312	215	555	840	255-390	200-335	189	430	214	Rp 2”	134	1161-1296	221
RS 120/M BLU	553	338	215	555	840	255-390	200-335	189	430	214	Rp 2”	134	1161-1296	221
RS 160/M BLU	671	366	305	555	863	373-503	272-402	221	436	237	Rp 2”	141	1442-1587	264
RS 200/M BLU	737	432	305	555	863	373-503	272-402	221	436	237	Rp 2”	141	1442-1587	264

(1) Length with extended combustion head.
* Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



Description	D1 mm	D2 mm	Ø mm
RS 68/M BLU	195	275-325	M12
RS 120/M BLU	195	275-325	M12
RS 160/M BLU	230	325-368	M16
RS 200/M BLU	230	325-368	M16

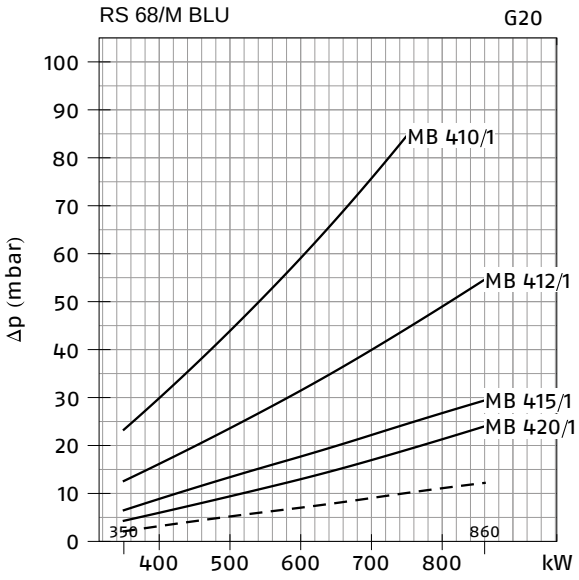


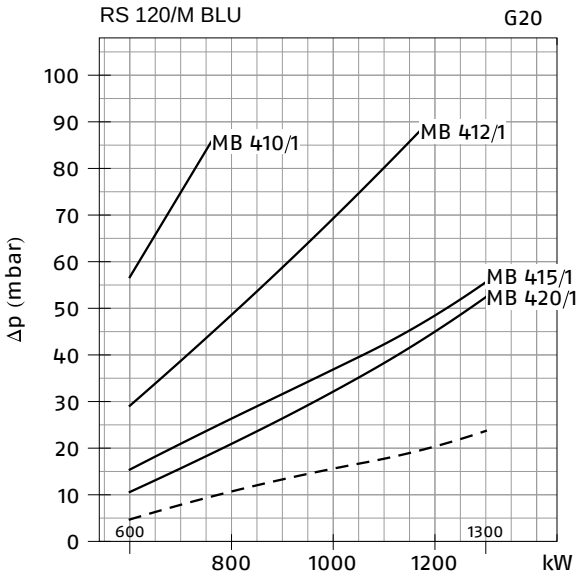
Description	X(1) mm	Y mm	Z mm	Net weight kg
RS 68/M BLU	1405	700	660	78
RS 120/M BLU	1405	700	660	84
RS 160/M BLU	1405-1420	1000	660	89
RS 200/M BLU	1405-1420	1000	660	125

(1) Dimension with standard and extended head.

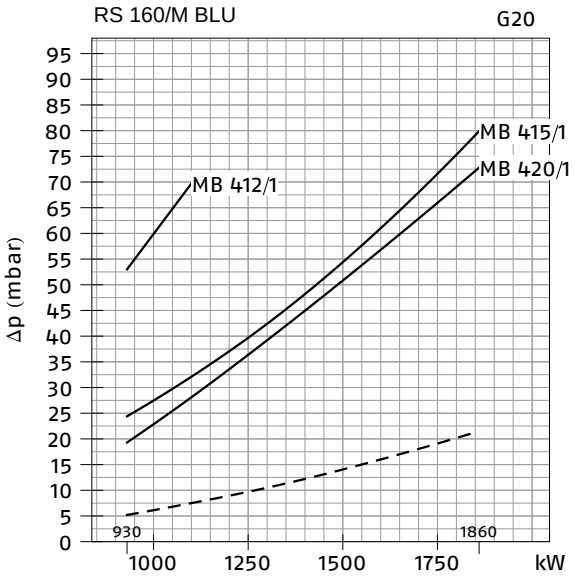
PRESSURE LOSS DIAGRAMS

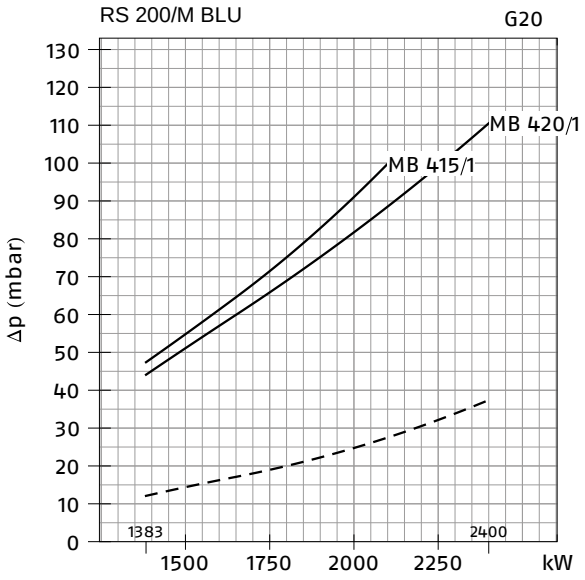
MB SERIES GAS TRAIN



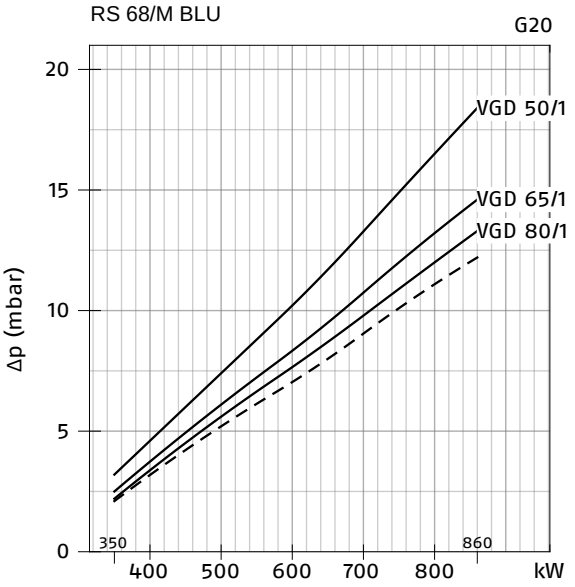


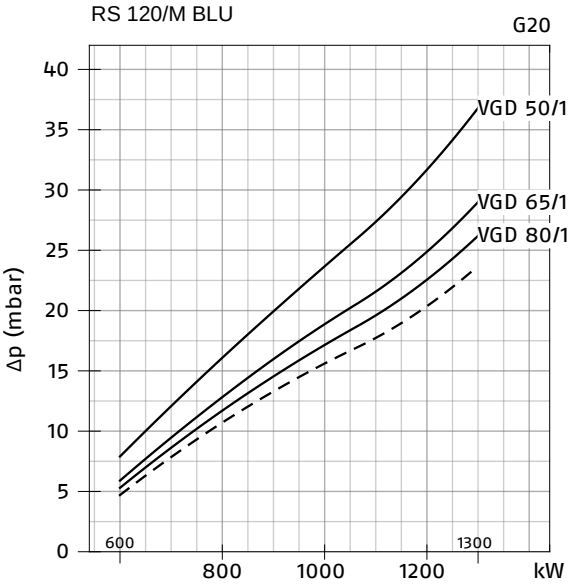
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

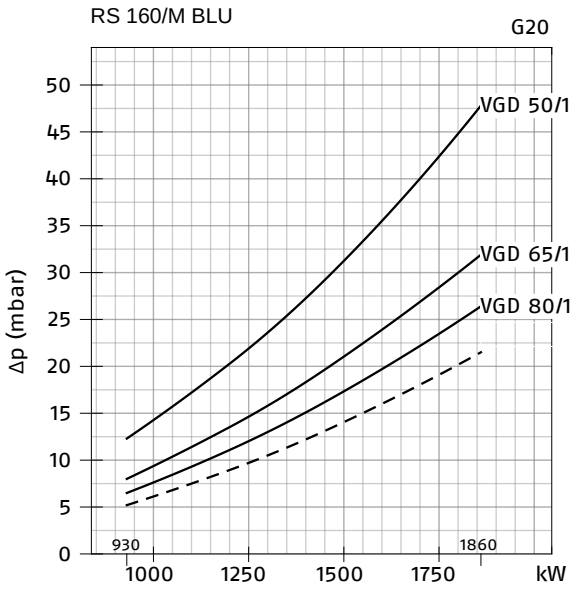


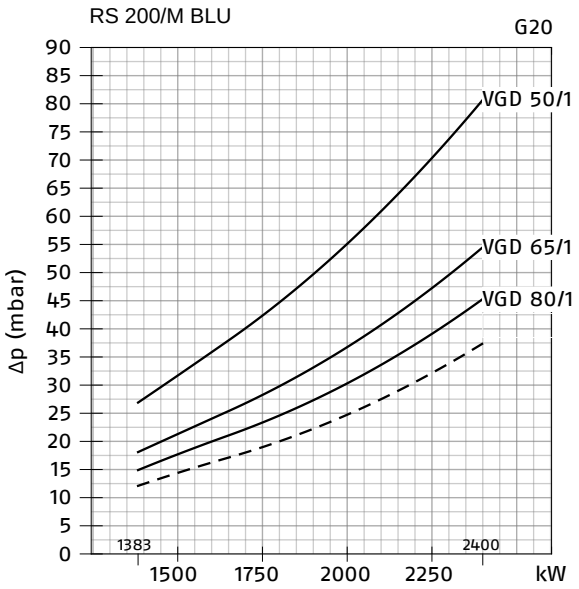


VGD SERIES GAS TRAIN









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

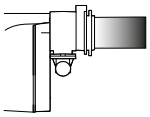
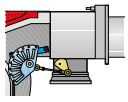
GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)			
						RS 68/M BLU	RS 120/M BLU	RS 160/M BLU	RS 200/M BLU
MB SERIES ONE STAGE GAS TRAIN									
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3010126		●	●
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824+3000843		●	●
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123	3000824+3000843		●	●
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123	3000824+3000843		●	●
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	3000843			●
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	3000843			●
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	3000843			●
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	3000843			●
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	3000843			
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	3000843			
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	3000843			
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	3000843			
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	3000843			
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	□	□	□	□
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	□	□	□	□
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	□	□	□	□
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	□	□	□	□
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	□	□	□	□
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	□	□	□	□
VGD SERIES ONE STAGE GAS TRAIN									
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	□	□	□	□
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	□	□	□	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826			
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826			
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	3000826			
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	3000826			
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	●	●	3010370+3000826	
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	●	●	3010370+3000826	

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 68-120/M BLU	Standard head length = 255 mm - Extended head length = 390 mm		**3010177**
	RS 160/M BLU	Standard head length = 373 mm - Extended head length = 503 mm	(1)	**3010442**
	RS 200/M BLU	Standard head length = 373 mm - Extended head length = 503 mm		**3010474**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 68-120/M BLU	Spacer thickness S = 135 mm		**3010129**
	RS 160-200/M BLU	Spacer thickness S = 102 mm		**3000722**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
		POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
	RS 68-120/M BLU	RWF 50.2 - Standard version.		**20082208**
		RWF 55.5 - Plus version.		**20099657**
	RS 160-200/M BLU	RWF 50.2 - Standard version.		**20099869**
		RWF 55.5 - Plus version.		**20099905**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
		PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
	All models	Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
		SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position.		
	RS 68-120/M BLU	Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**20091960**
	RS 160-200/M BLU	Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**3010415**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**3010416**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010329**
		HEAD KIT FOR “REVERSE FLAME CHAMBER” In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional pipes kit.		
	RS 68/M BLU	Steel gas tubes kit for combustion head.	(2)	**3010247**
	RS 120/M BLU	Steel gas tubes kit for combustion head.	(2)	**3010248**
	RS 160/M BLU	Steel gas tubes kit for combustion head.	(2)	**3010249**
	RS 200/M BLU	Steel gas tubes kit for combustion head.	(2)	**20035848**
	All models	DN80 GAS FLANGE KIT To modify the standard Rp 2” burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**

Drawing	Burner model	Specification	Note	Code
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 68/M BLU	Kit code for standard head.	(2)	**3010433**
	RS 68/M BLU	Kit code for extended head.	(2)	**20092589**
	RS 120/M BLU	Kit code for standard and extended head.	(2)	**20085367**
	RS 160/M BLU	Kit code for standard and extended head.	(2)	**20008971**
	RS 200/M BLU	Kit code for standard and extended head.	(2)	**3010491**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) Kit to be used on burners recognizable by a serial number that is over or equal to 02426XXXXXX, for burners with a serial number that is under or equal to 02416XXXXXX please use the Kit coded 3010193.
(2) CE approval on field is required.

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner, two stage progressive or modulating operation with a kit, made up of:
– Air suction circuit with sound proofing material
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by a servomotor with variable cam
– Low emissions combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Burner on/off selection switch
– Manual or automatic output increase/decrease switch
– Microprocessor-based burner safety control box, with diagnostic functions
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– Fan with reverse curve blades (RS 68-120/M BLU models) or forward curve blades (RS 160-200/M BLU models)
– Sound-proofing material on air suction circuit
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz (single-phase, 230V, 50Hz for the RS 45/M - 45/M C05 models)
– Maximum gas pressure switch
– IP 44 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
– 2 slide bar extensions (for extended head models and RS 160-200/M BLU models)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Low NOx modulating gas burners

RS 25-35/E BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)

RS 25-35/E BLU burner series covers a firing range from 44 to 480 kW, and it is based on a new Digital Burner Management System, Riello REC27, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS 25-35/E BLU burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.

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.

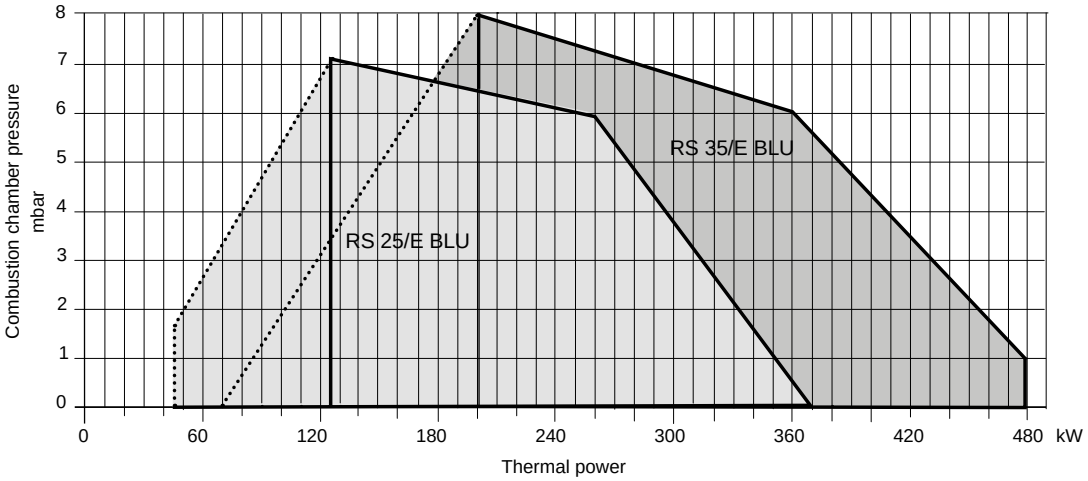
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

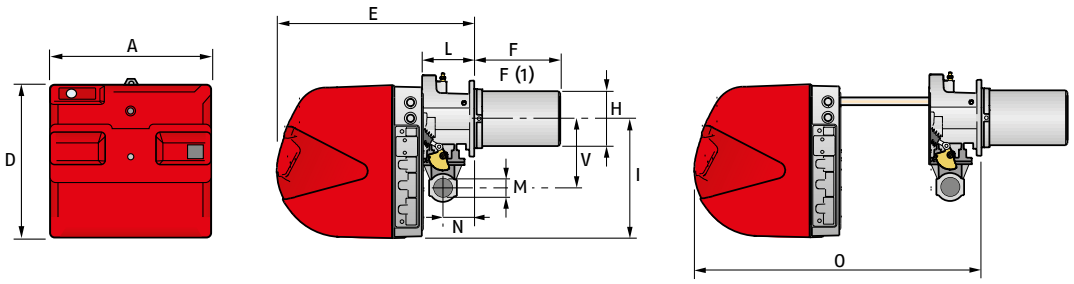
Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 25/E BLU TC FS1	44/125-370	4.5/13-37	0.6	1/220-230/50-60	220-230/50-60	CE-0085BS0379	(1)(2)	**3910710**
RS 25/E BLU TL FS1	44/125-370	4.5/13-37	0.6	1/220-230/50-60	220-230/50-60	CE-0085BS0379	(1)(2)	**3910711**
RS 35/E BLU TC FS1	70/200-480	7/20-48	0.7	1/220-230/50-60	220-230/50-60	CE-0085BS0379	(1)(2)	**3910810**
RS 35/E BLU TL FS1	70/200-480	7/20-48	0.7	1/220-230/50-60	220-230/50-60	CE-0085BS0379	(1)(2)	**3910811**

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) Model with plug and socket.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as accessory (see Gas Train Accessories).

FIRING RATES

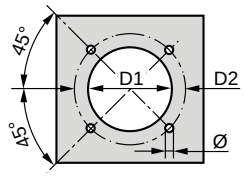


OVERALL DIMENSIONS

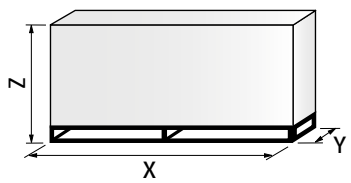


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 25/E BLU	442	422	508	230-365	140	305	138	1"½	84	780-/	177
RS 35/E BLU	442	422	508	198-333	152	305	138	1"½	84	780-/	177

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 25/E BLU	160	224	M8
RS 35/E BLU	160	224	M8

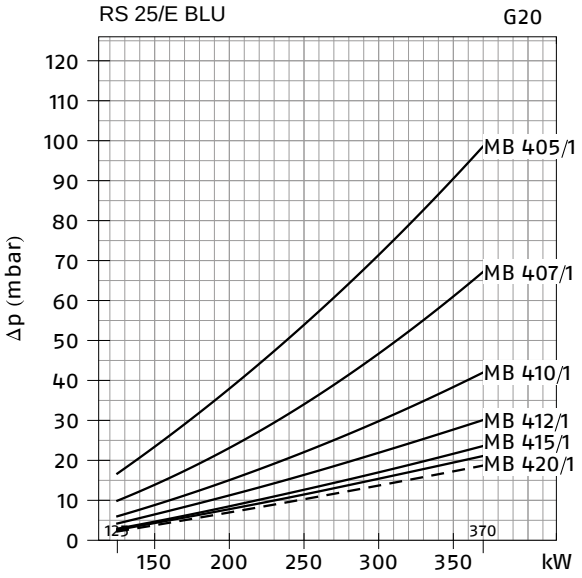


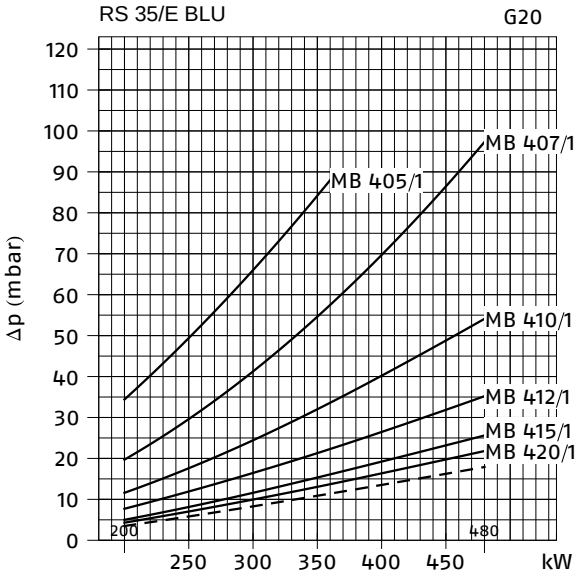
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 25/E BLU	1000	485	500	39
RS 35/E BLU	1000	485	500	40

(1) Dimension with standard and extended head.

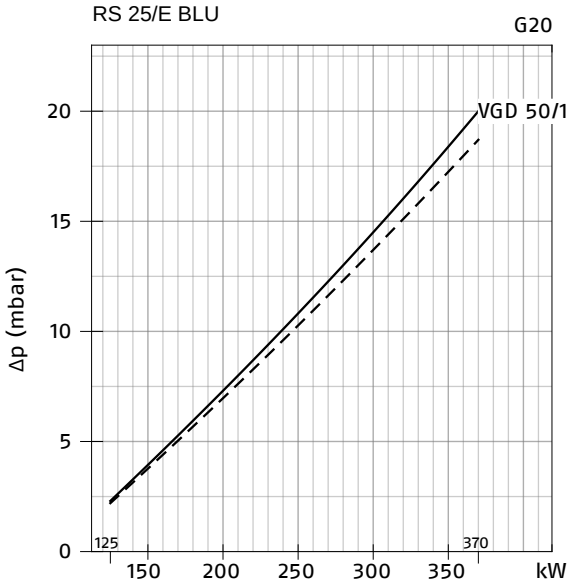
PRESSURE LOSS DIAGRAMS

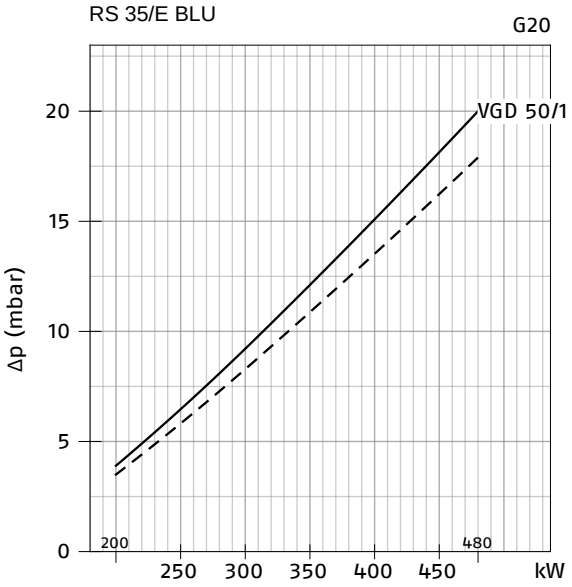
MB SERIES GAS TRAIN





VGD 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

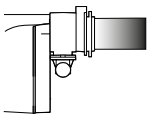
GAS TRAINS

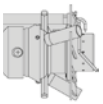
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 25/E BLU	RS 35/E BLU
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RSM 20	**20065553***	(4)	Rp ¾"	-	3000824	
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3000824	
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010124	
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3000824	
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	□	□
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	□	□
MB 420/1-RT 52	**3970257***		Rp 2"	-	3000822	
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	**20137718***	(5)	Rp 2"	-	3000822	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) This gas train code is not compatible with the gas valve seal control management function integrated in the burner control box.
(5) Additional flange kit code 20185515 needed for seal control function code 3010344.
(6) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 25/E BLU	Standard head length = 230 mm - Extended head length = 365 mm		**3010430**
	RS 35/E BLU	Standard head length = 230 mm - Extended head length = 365 mm		**3010431**
	RS 25-35/E BLU	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm		**3010095**
	RS 25-35/E BLU	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	(1)	**3010449**
	RS 25-35/E BLU	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	RS 25-35/E BLU	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20083339**
		RWF 55.5 - Plus version.		**20098541**
	RS 25-35/E BLU	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	RS 25-35/E BLU	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**

Drawing	Burner model	Specification	Note	Code
	RS 25-35/E BLU	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010448**
	RS 25/E BLU	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.		**3010423**
	RS 35/E BLU	Kit code for standard and extended head.		**3010424**
	RS 25-35/E BLU	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.		**3010419**
	RS 25-35/E BLU	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	RS 25-35/E BLU	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**

(1) Note: the Post-ventilation function is obtainable by modification of the Digital Burner Management System parameters. (See burner instruction manual).

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Microprocessor-based Digital Burner Management System (RS/E models)
- Display Interface operating unit to adjust the system
- Air suction circuit with sound proofing material
- High performance fan with straight blades
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Starting motor at 2800 rpm, single-phase/220-230V/50-60Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Plugs and sockets for electrical connection, accessible from the external of the cover
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- 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
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating gas burners

RS 45-55/E BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)

RS 45-55/E BLU burner series covers a firing range from 90 to 680 kW, and it is based on a new Digital Burner Management System, Riello REC27, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS 45-55/E BLU burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.

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.

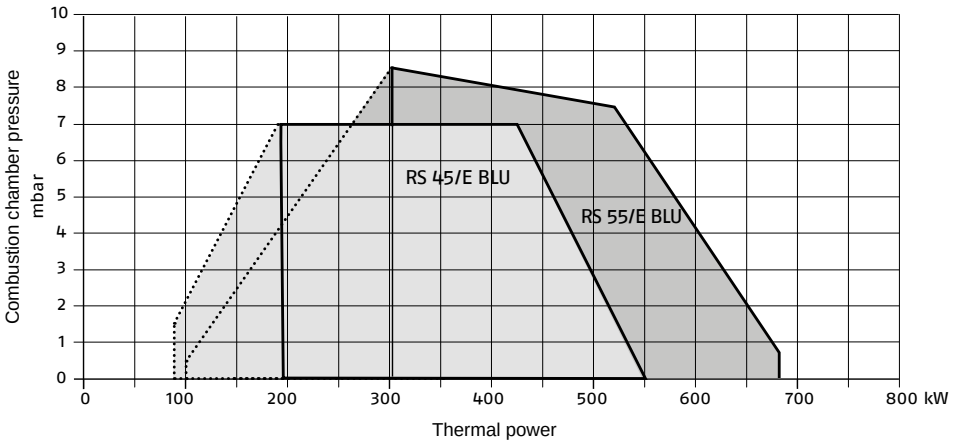
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 45/E BLU TC FS1	90/190-550	9/19-55	0.7	1/230/50	230/50-60	CE-0085BS0380	(1)(2)	**3897332**
RS 45/E BLU TL FS1	90/190-550	9/19-55	0.7	1/230/50	230/50-60	CE-0085BS0380	(1)(2)	**3897333**
RS 55/E BLU TC FS1	100/300-680	10/30-68	1.5	3/400/50	230/50-60	CE-0085CM0293	(1)(2)	**20038491**
RS 55/E BLU TL FS1	100/300-680	10/30-68	1.5	3/400/50	230/50-60	CE-0085CM0293	(1)(2)	**20038492**

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) Model with plug and socket.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train. In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.

FIRING RATES

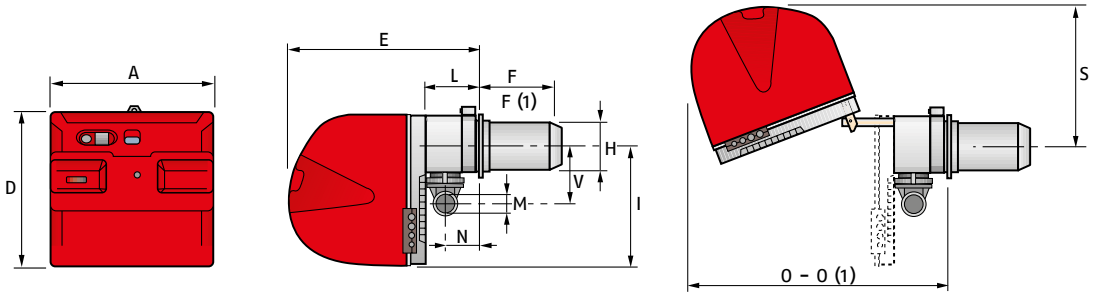


Useful firing rates for choosing the burner

Modulation range

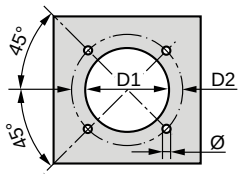
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

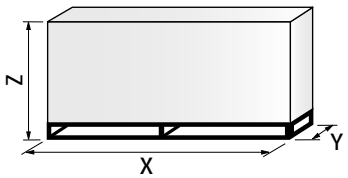


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 45/E BLU	476	474	580	229-354	160	352	164	1"½	108	810-810	367	168
RS 55/E BLU	533	490	640	255-390	189	352	222	Rp 2"	134	870-/	-	221

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 45/E BLU	165	224	M12
RS 55/E BLU	195	275-325	M12

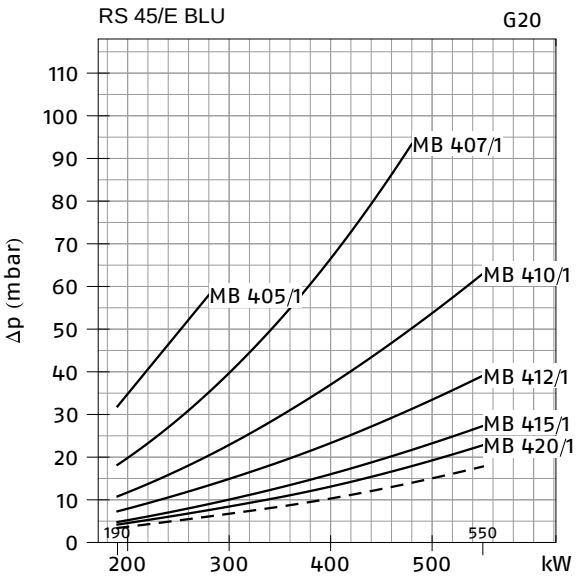


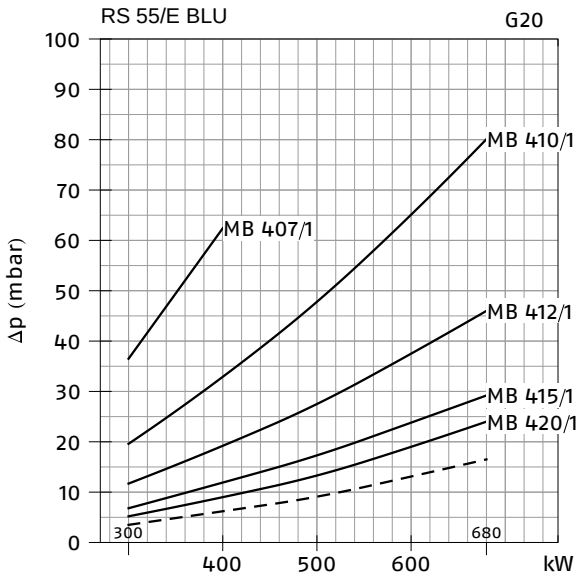
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 45/E BLU	1015	500	630	48
RS 55/E BLU	1405	700	660	44

(1) Dimension with standard and extended head.

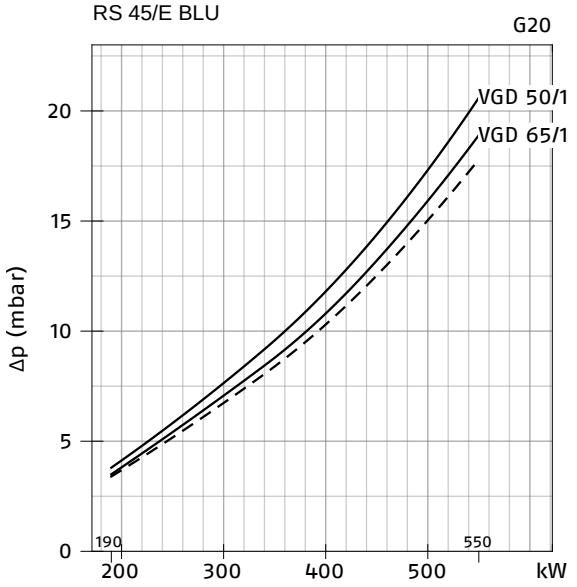
PRESSURE LOSS DIAGRAMS

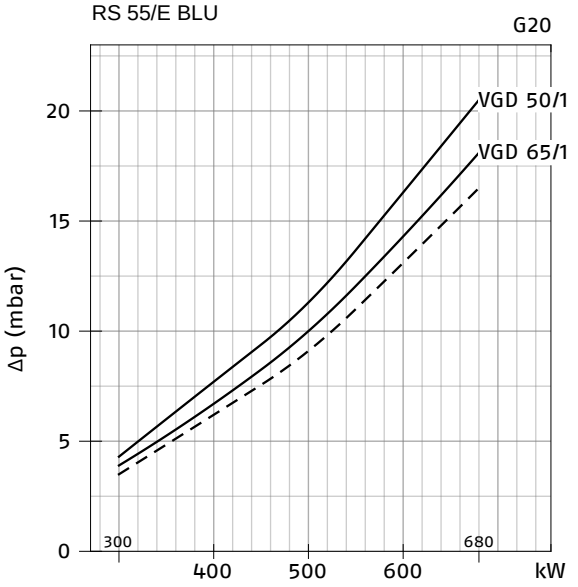
MB SERIES GAS TRAIN





VGD 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

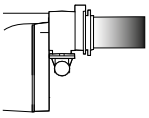
GAS TRAINS

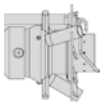
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 45/E BLU	RS 55/E BLU
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RSM 20	**20065553***	(4)	Rp ¾"	-	3000824	●
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3000824	3000824+3000843
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010124	3010126
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3000824	3000824+3000843
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	□	3000843
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	□	3000843
MB 420/1-RT 52	**3970257***		Rp 2"	-	3000822	□
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	**20137718***	(5)	Rp 2"	-	3000822	□
VGD 65/1-FT 122	**20140762***	(6)	DN65	-	●	3000826
VGD 80/1-FT 122	**20140763***		DN80	-	●	3000826

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) This gas train code is not compatible with the gas valve seal control management function integrated in the burner control box.
(5) Additional flange kit code 20185515 needed for seal control function code 3010344.
(6) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 45/E BLU	Standard head length = 229 mm - Extended head length = 354 mm		**20006586**
	RS 55/E BLU	Standard head length = 255 mm - Extended head length = 390 mm		**20040373**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 45/E BLU	Spacer thickness S = 110 mm		**3010095**
	RS 55/E BLU	Spacer thickness S = 135 mm		**3010129**
	RS 45-55/E BLU	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	(1)	**3010094**
	RS 45-55/E BLU	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	RS 45-55/E BLU	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20083339**
		RWF 55.5 - Plus version.		**20098541**
	RS 45-55/E BLU	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	RS 45-55/E BLU	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**

Drawing	Burner model	Specification	Note	Code
	RS 45-55/E BLU	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**20098335**
	RS 45-55/E BLU	OCI412 INTERFACE KIT Interface kit between the and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	RS 45/E BLU	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.	(2)	**20156901**
	RS 55/E BLU	Kit code for standard head.	(2)	**20161511**
		Kit code for extended head.	(2)	**20144368**
	RS 45-55/E BLU	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**

(1) Note: the Post-ventilation function is obtainable by modification of the Digital Burner Management System parameters. (See burner instruction manual).
(2) CE approval on field is required.

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Microprocessor-based Digital Burner Management System
- Display Interface operating unit to adjust the system
- Air suction circuit lined with sound-proofing material
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz (single-phase, 230V and 50Hz for the RS 45/E BLU model)
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line (on RS 55/E BLU model)
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 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
- Wiring loom fittings for the electrical connection (for RS 45/E BLU model)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Low NOx modulating gas burners

RS 68-200/E BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)
- Combustion optimization based on the residual O_2 content in the exhaust fumes with burner models equipped with LMV52 control box
- Operation with natural gas or blends of natural gas and hydrogen up to 20% (only for RS 68/E BLU)

RS 68-200/E BLU burner series covers a firing range from 150 to 2400 kW, and it is based on a new Digital Burner Management System, Riello REC27 or Siemens LMV52, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range. Operation can be "two stage progressive" or, alternatively, "modulating" with the installation of the dedicated probe (with burner models equipped with REC27 control box, an additional PID logic regulator is required).
RS 68-200/E BLU burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
Finally, new RS 68-200/E BLU burner models, equipped with Siemens LMV52 control box and compatible with combustion optimization based on the residual O_2 content in the exhaust fumes, are now available.
The RS 68/E BLU burner has been tested and certified for operation with blends of natural gas and hydrogen up to a 20%vol of hydrogen, making them ready for possible hydrogen injection and fluctuation in the gas distribution grid.

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		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 68/E BLU TC FS1	150/350-860	15/35-86	2.0	3/400/50	230/50-60	CE-0085BS0267	(1)(2)	**3897432**
RS 68/E BLU TL FS1	150/350-860	15/35-86	2.0	3/400/50	230/50-60	CE-0085BS0267	(1)(2)	**3897433**
RS 120/E BLU TC FS1	300/600-1300	30/60-130	2.8	3/400/50	230/50-60	CE-0085BS0268	(1)(3)	**3897632**
RS 120/E BLU TL FS1	300/600-1300	30/60-130	2.8	3/400/50	230/50-60	CE-0085BS0268	(1)(3)	**3897633**
RS 160/E BLU TC FS1	300/930-1860	30/93-186	5.3	3/400/50	230/50-60	CE-0085BS0266	(1)(3)	**3788032**
RS 160/E BLU TL FS1	300/930-1860	30/93-186	5.3	3/400/50	230/50-60	CE-0085BS0266	(1)(3)	**3788033**
RS 200/E BLU TC FS1	570/1375-2400	57/138-240	6.5	3/400/50	230/50-60	CE-0085BT0419	(1)(3)	**3899810**
RS 200/E BLU TL FS1	570/1375-2400	57/138-240	6.5	3/400/50	230/50-60	CE-0085BT0419	(1)(3)	**3899811**
MODELS FOR OPERATION WITH BELND OF NATURAL GAS AND HYDROGEN UP TO 20% (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 68/E BLU TC FS1	150/350-860	15/35-86	2.0	3/230-400/50	230/50-60	CE-0085BS0267	(1)(2)(4)	**20212766**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O_2 CONTROL READY								

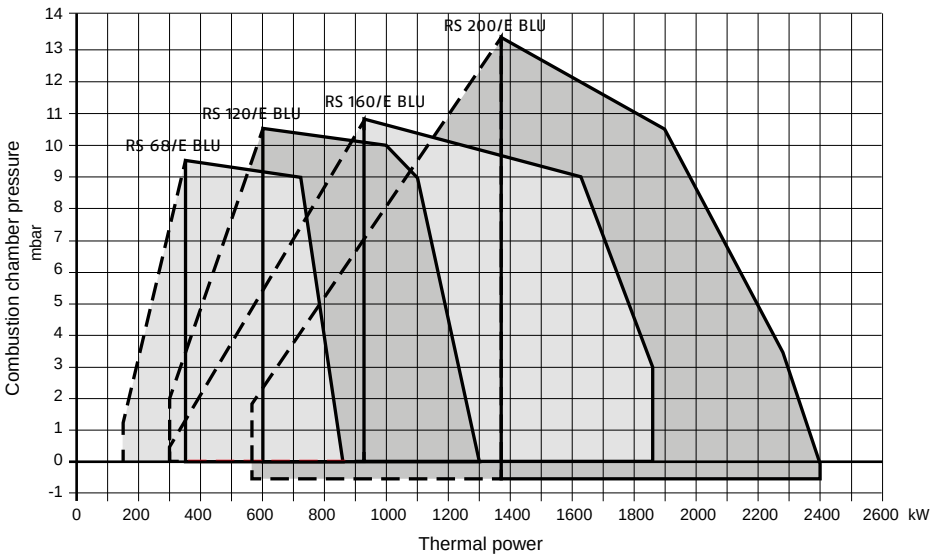
Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
RS 68/E O_2 BLU TC FS1/FS2	150/350-860	15/35-86	2.0	3/400/50	1N/230/50	CE-0085BS0267	(1)(3)	**20174458**
RS 68/E O_2 BLU TL FS1/FS2	150/350-860	15/35-86	2.0	3/400/50	1N/230/50	CE-0085BS0267	(1)(3)	**20174463**
RS 120/E O_2 BLU TC FS1/FS2	300/600-1300	30/60-130	2.8	3/400/50	1N/230/50	CE-0085BS0268	(1)(3)	**20165996**
RS 120/E O_2 BLU TL FS1/FS2	300/600-1300	30/60-130	2.8	3/400/50	1N/230/50	CE-0085BS0268	(1)(3)	**20174465**
RS 160/E O_2 BLU TC FS1/FS2	300/930-1860	30/60-130	5.3	3/400/50	1N/230/50	CE-0085BS0266	(1)(3)	**20166113**
RS 160/E O_2 BLU TL FS1/FS2	300/930-1860	30/60-130	5.3	3/400/50	1N/230/50	CE-0085BS0266	(1)(3)	**20164535**
RS 200/E O_2 BLU TC FS1/FS2	570/1375-2400	30/93-186	6.5	3/400/50	1N/230/50	CE-0085BT0419	(1)(3)	**20171269**
RS 200/E O_2 BLU TL FS1/FS2	570/1375-2400	30/93-186	6.5	3/400/50	1N/230/50	CE-0085BT0419	(1)(3)	**20166368**

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.

FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours).The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Model with terminal board.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories).
(3) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train. In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.
(4) Certified for natural gas use only or blend of natural gas and hydrogen up to 20%.

FIRING RATES

When operating with 20%vol hydrogen the max power will be reduced by 15% due to a lower volumetric calorific value of the hydrogen compared to natural gas.



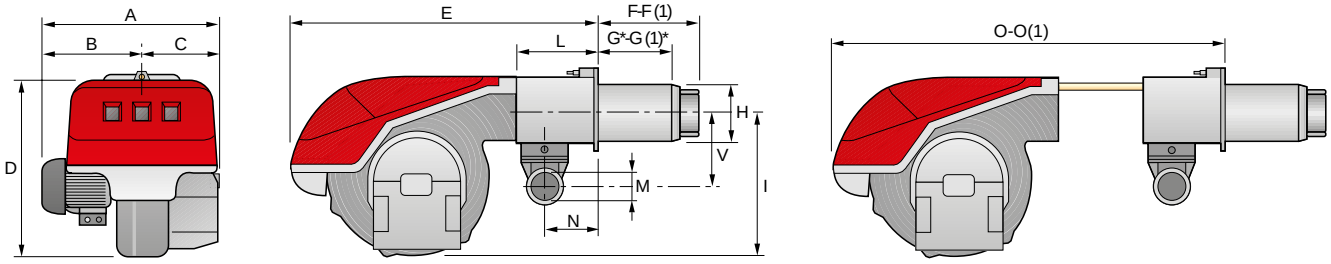
Useful firing rates for choosing the burner

Modulation range

Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

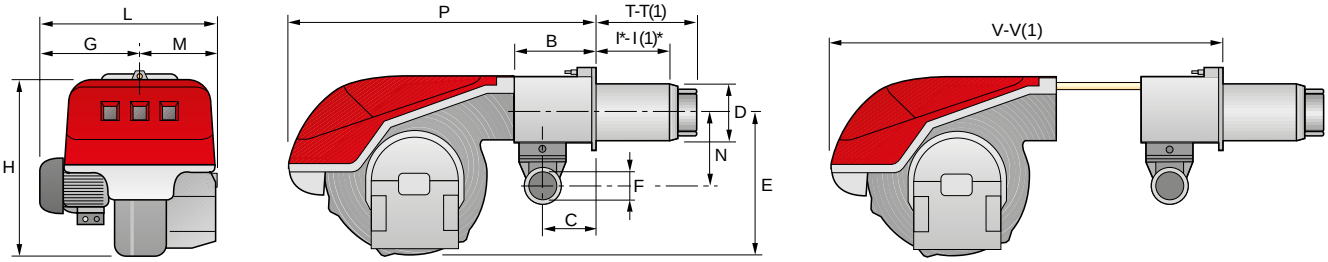
RS 68-200/E BLU WITH REC27 CONTROL BOX



Model	A mm	B mm	C mm	D mm	E mm	F-F(1) mm	G*-G(1)* mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 68/E BLU	527	312	215	555	840	255-390	200-335	189	430	214	Rp 2”	134	1161-1296	221
RS 120/E BLU	553	338	215	555	840	255-390	200-335	189	430	214	Rp 2”	134	1161-1296	221
RS 160/E BLU	671	366	305	555	863	373-503	272-402	221	436	221	Rp 2”	141	1442-1587	264
RS 200/E BLU	737	432	305	555	863	373-503	272-402	221	436	221	Rp 2”	141	1442-1587	264

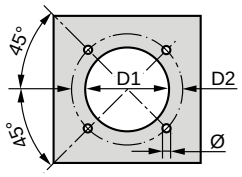
(1) Length with extended combustion head.
(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

RS 68-200/E BLU WITH LMV52 CONTROL BOX

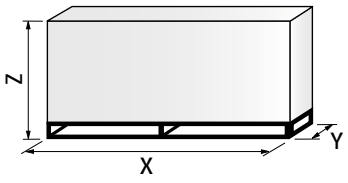


Model	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I* - I (1)* mm	L mm	M mm	N mm	P mm	T - T(1) mm	V - V(1) mm
RS 68/E BLU	217	137	189	425	Rp 2”	305	640	200-335	575	270	221	1010	255-390	1350-1485
RS 120/E BLU	217	137	189	425	Rp 2”	330	640	200-335	600	270	221	1010	255-390	1350-1485
RS 160/E BLU	230	141	222	435	Rp 2”	366	650	272-402	681	315	260	1035	373-503	1442-1589
RS 200/E BLU	230	141	222	435	Rp 2”	427	650	272-402	742	315	260	1035	373-503	1442-1589

(1) Length with extended combustion head.
(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



Description	D1 mm	D2 mm	Ø mm
RS 68/E BLU	195	275-325	M12
RS 120/E BLU	195	275-325	M12
RS 160/E BLU	230	325-368	M16
RS 200/E BLU	230	325-368	M16

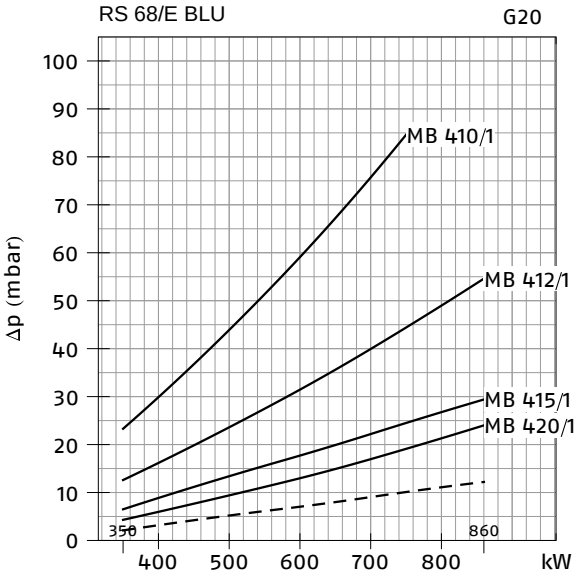


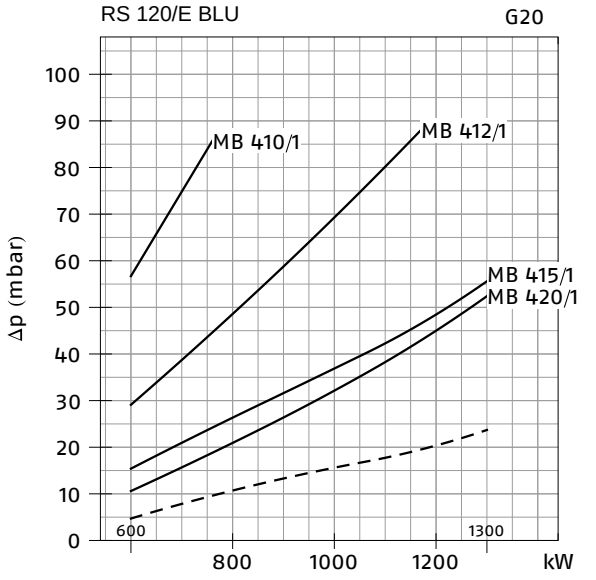
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 68/E BLU	1405	700	660	78
RS 120/E BLU	1405	700	660	84
RS 160/E BLU	1405-1420	1000	660	89
RS 200/E BLU	1405-1420	1000	660	125

(1) Dimension with standard and extended head.

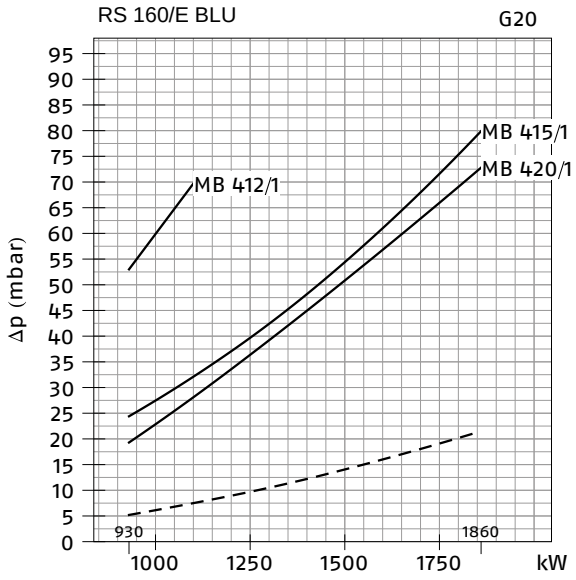
PRESSURE LOSS DIAGRAMS

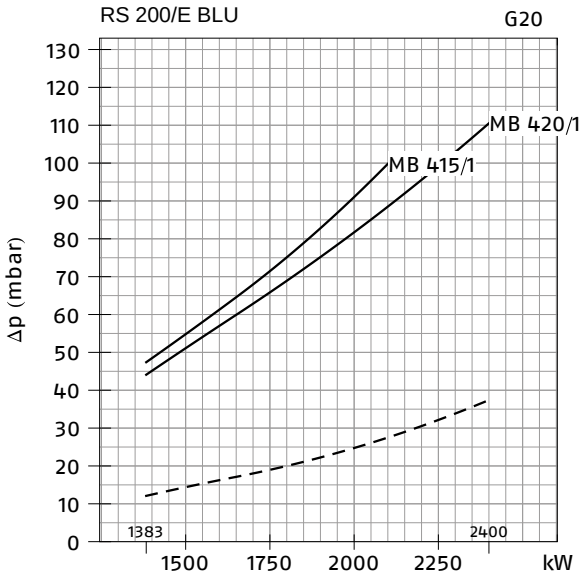
MB SERIES GAS TRAIN



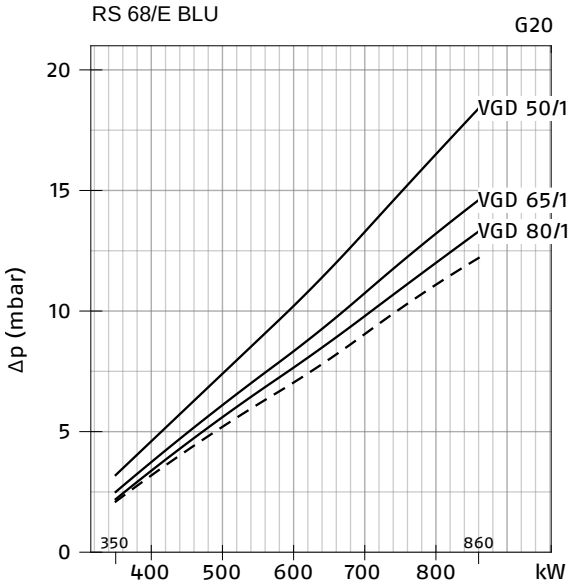


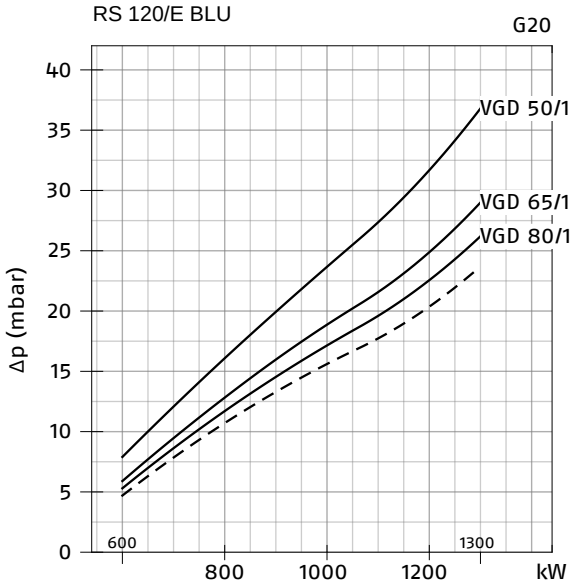
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

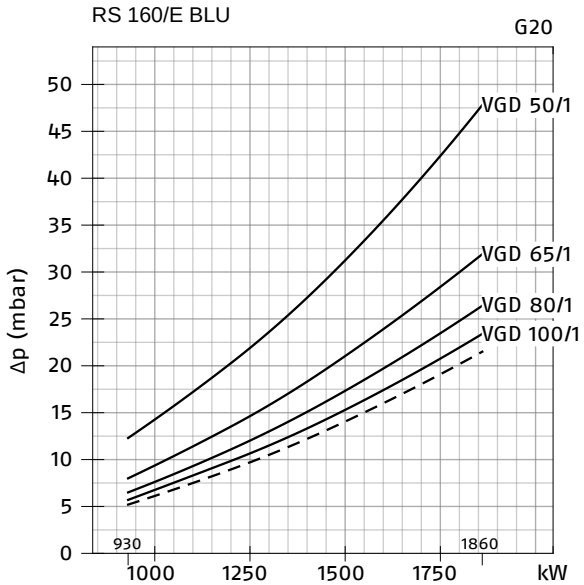


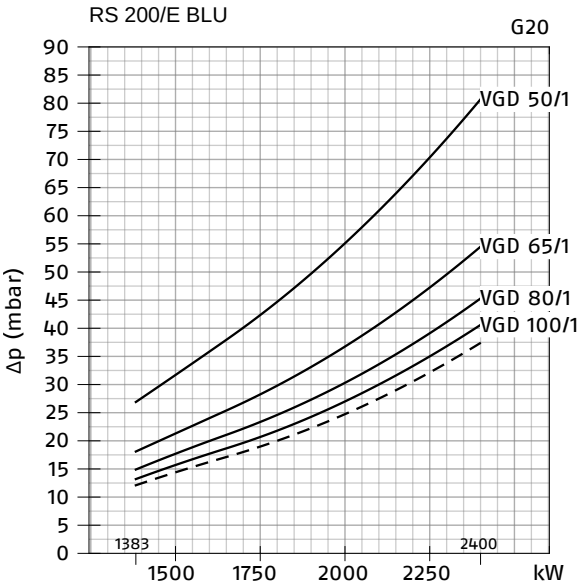


VGD SERIES GAS TRAIN









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

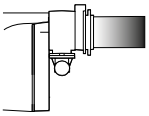
GAS TRAINS

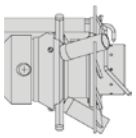
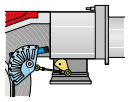
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)			
					RS 68/E BLU	RS 120/E BLU	RS 160/E BLU	RS 200/E BLU
MB SERIES ONE STAGE GAS TRAIN								
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010126		●	●
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3000824+3000843		●	●
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3000843			●
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3000843			
MB 420/1-RT 52	**3970257***		Rp 2"	-	□	□	□	□
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(4)	Rp 2"	-	□	□	□	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3000826			
VGD 80/1-FT 122	**20140763***		DN80	-	3000826			
VGD 100/1-FT 122	**20169193***		DN100	-	●	●	30100370+3000826	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function code 3010344.
(5) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 68-120/E BLU	Standard head length = 255 mm - Extended head length = 390 mm		**3010177**
	RS 160/E BLU	Standard head length = 373 mm - Extended head length = 503 mm		**3010442**
	RS 200/E BLU	Standard head length = 373 mm - Extended head length = 503 mm		**3010474**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 68-120/E BLU	Spacer thickness S = 135 mm		**3010129**
	RS 160-200/E BLU	Spacer thickness S = 102 mm		**3000722**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	(1)	**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models equipped with REC37 control box	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20099869**
		RWF 55.5 - Plus version.		**20099905**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**

Drawing	Burner model	Specification	Note	Code
	All models	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**20098337**
		HEAD KIT FOR “REVERSE FLAME CHAMBER” In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional pipes kit.		
	RS 68/E BLU	Steel gas tubes kit for combustion head.	(2)	**3010247**
	RS 120/E BLU	Steel gas tubes kit for combustion head.	(2)	**3010248**
	RS 160/E BLU	Steel gas tubes kit for combustion head.	(2)	**3010249**
	RS 200/E BLU	Steel gas tubes kit for combustion head.	(2)	**20035848**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 68/E BLU	Kit code for standard head.	(2)	**3010433**
	RS 68/E BLU	Kit code for extended head.	(2)	**20092589**
	RS 120/E BLU	Kit code for standard and extended head.	(2)	**20085367**
	RS 160/E BLU	Kit code for standard and extended head.	(2)	**20008971**
	RS 200/E BLU	Kit code for standard and extended head.	(2)	**3010491**
	All models	DN80 GAS FLANGE KIT To modify the standard Rp 2” burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO2) FOR BURNERS The QGO2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(3)	**20045187**
	All models equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**
	All models equipped with REC27 control box	PC INTERFACE KIT To connect the control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**
	All models equipped with LMV52 control box	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Note: the Post-ventilation function is obtainable by modification of the Digital Burner Management System parameters. (See burner instruction manual).
(2) CE approval on field is required except with RS 200/E BLU model.
(3) Installation outside the burner cover.
NOTE: An additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

BURNER MODELS H2 READY 20% - EQUIPPED WITH REC27 CONTROL BOX

Monoblock forced draught Low NOx gas burner qualified for operation with blends of natural gas and hydrogen up to 20%, with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Microprocessor-based Digital Burner Management System
- Display Interface operating unit to adjust the system
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades (straight blades on the RS 160-200/E BLU model) high performance with low sound emissions
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference

IP 44 ELECTRIC PROTECTION LEVEL BURNER MODELS EQUIPPED WITH REC27 CONTROL BOX

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Microprocessor-based Digital Burner Management System
- Display Interface operating unit to adjust the system
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades (straight blades on the RS 160-200/E BLU model) high performance with low sound emissions
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level.

BURNER MODELS EQUIPPED WITH LMV52 CONTROL BOX

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades (straight blades on the 160-200/E BLU model) high performance with low sound emissions
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- LMV52 Digital Burner management system for air/fuel setting and O2 Control Ready; with output PID modulation control included (RS 68-120-160-200/E O2 BLU)
- AZL Display Interface, for combustion system commissioning and monitoring
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 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
- 2 slide bar extensions (for extended head models and RS 160-200/E BLU)
- Pressure switch for valve proofing system (RS 120-160-200/E BLU models)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Low NOx modulating gas burners

RS 68-200/EV BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)
- Combustion optimization based on the residual O2 content in the exhaust fumes with burner models equipped with LMV52 control box

RS 68-200/EV BLU burner series covers a firing range from 150 to 2400 kW, and it is based on a new Digital Burner Management System, Riello REC37 or Siemens LMV52, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of the dedicated probe (with burner models equipped with REC37 control box, an additional PID logic regulator is required).
RS 68-200/EV BLU burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs; such models operate with Variable Speed Drive technology base on the control of a Frequency Inverter that modifies the air flow through the motor speed variation.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
Finally, RS 68-200/EV BLU burner models, equipped with Siemens LMV52 control box and compatible with combustion optimization based on the residual O_2 content in the exhaust fumes, are now available.

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.

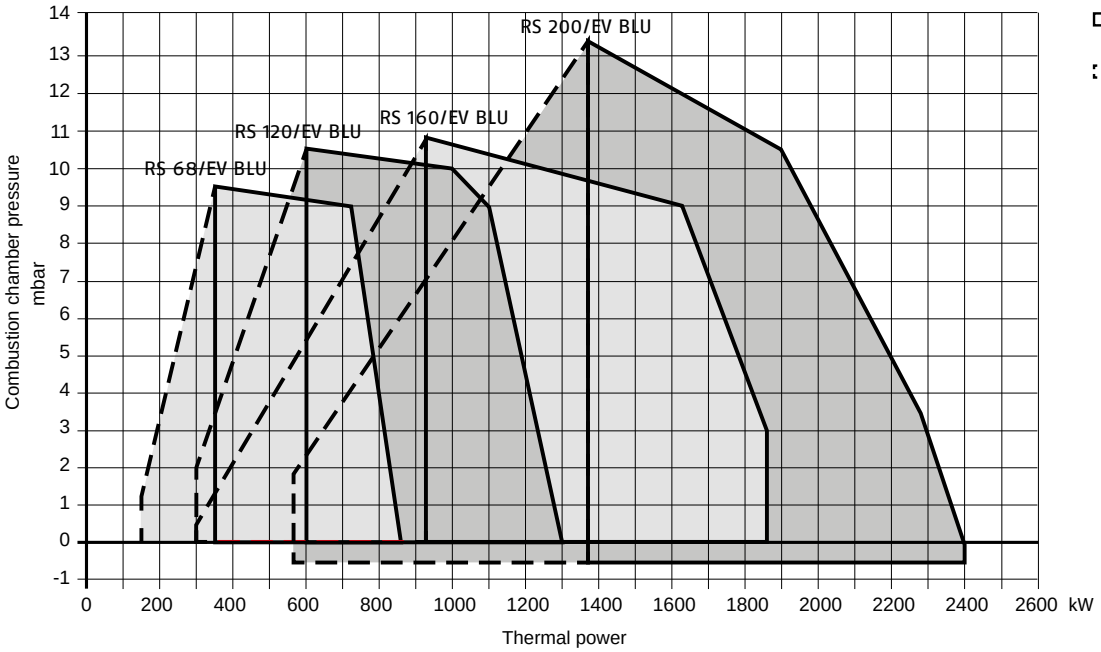
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (REC 37) - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 68/EV BLU TC FS1/FS2	150/350-860	15/35-86	2.0	3/400-50	230/50-60	CE-0085BS0267	(1)(2)(3)	**20013995**
RS 120/EV BLU TC FS1/FS2	300/600-1300	30/60-130	2.8	3/400-50	230/50-60	CE-0085BS0268	(1)(3)(4)	**20010976**
RS 120/EV BLU TL FS1/FS2	300/600-1300	30/60-130	2.8	3/400-50	230/50-60	CE-0085BS0268	(1)(3)(4)	**20014609**
RS 160/EV BLU TC FS1/FS2	300/930-1860	30/93-186	5.3	3/400/50	230/50-60	CE-0085BS0266	(1)(3)(4)	**20010988**
RS 200/EV BLU TC FS1/FS2	570/1375-2400	57/138-240	6.5	3/400/50	230/50-60	CE-0085BT0419	(1)(3)(4)	**20006982**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O_2 CONTROL READY - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 68/EV O_2 BLU TC FS1/FS2	150/350-860	15/35-86	2.0	3/400/50	1N/230/50	CE-0085BS0267	(1)(3)(4)	**20172153**
RS 68/EV O_2 BLU TL FS1/FS2	150/350-860	15/35-86	2.0	3/400/50	1N/230/50	CE-0085BS0267	(1)(3)(4)	**20172154**
RS 120/EV O_2 BLU TC FS1/FS2	300/600-1300	30/60-130	2.8	3/400/50	1N/230/50	CE-0085BS0268	(1)(3)(4)	**20154943**
RS 120/EV O_2 BLU TL FS1/FS2	300/600-1300	30/60-130	2.8	3/400/50	1N/230/50	CE-0085BS0268	(1)(3)(4)	**20172155**
RS 160/EV O2 BLU TL FS1/FS2	300/930-1860	30/60-130	5.3	3/400/50	1N/230/50	CE-0085BS0266	(1)(3)(4)(5)	**20085770**
RS 160/EV O_2 BLU TC FS1/FS2	300/930-1860	30/60-130	5.3	3/400/50	1N/230/50	CE-0085BS0266	(1)(3)(4)	**20158956**
RS 160/EV O_2 BLU TL FS1/FS2	300/930-1860	30/60-130	5.3	3/400/50	1N/230/50	CE-0085BS0266	(1)(3)(4)	**20172156**

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz			
RS 200/EV O_2 BLU TC FS1/FS2	570/1375-2400	30/93-186	6.5	3/400/50	1N/230/50	CE-0085BT0419	(1)(3)(4)	**20172159**
RS 200/EV O_2 BLU TL FS1/FS2	570/1375-2400	30/93-186	6.5	3/400/50	1N/230/50	CE-0085BT0419	(1)(3)(4)	**20156077**

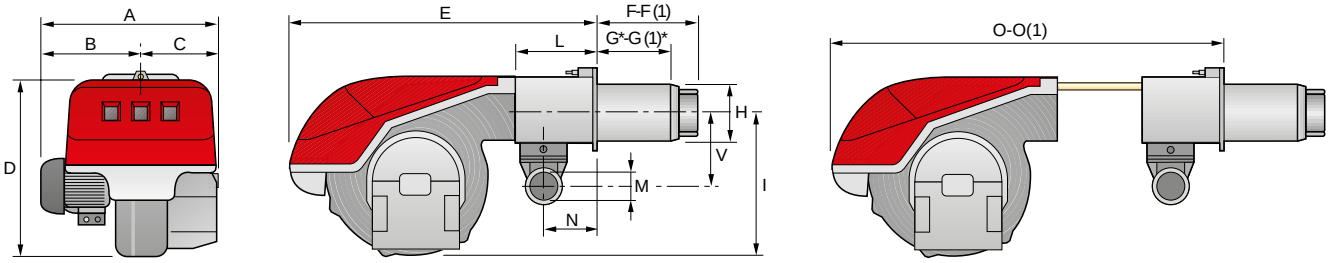
Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2014/68/EU Pressure Equipment Directive (FS2 version only).
FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours). The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Model with terminal board.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories)
(3) Frequency Inverter, to be ordered as separated accessory; please refer to “Burner Accessories” paragraph.
(4) Seal control function is included on Burner Digitai Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train. In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.
5) With AZL display included as burner standard equipment.

FIRING RATES



OVERALL DIMENSIONS

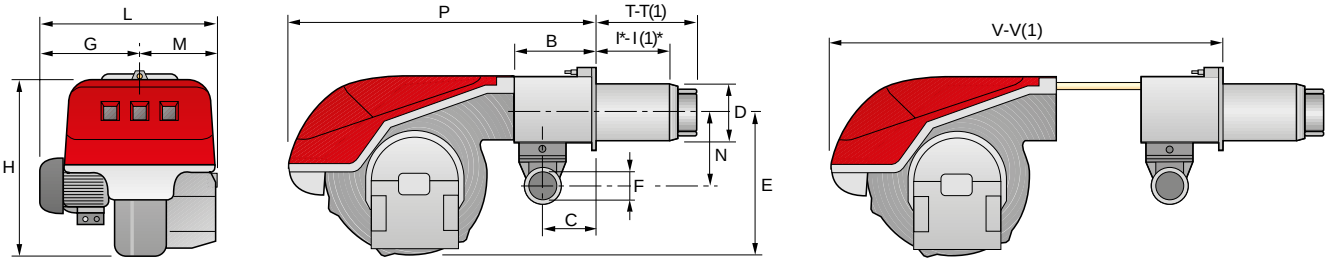
RS 68-200/EV BLU WITH REC37 CONTROL BOX



Model	A mm	B mm	C mm	D mm	E mm	F-F(1) mm	G*-G(1)* mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 68/EV BLU	527	312	215	555	840	255-390	200-335	189	430	214	Rp 2”	134	1161-1296	221
RS 120/EV BLU	553	338	215	555	840	255-390	200-335	189	430	214	Rp 2”	134	1161-1296	221
RS 160/EV BLU	671	366	305	555	863	373-503	272-402	221	436	221	Rp 2”	141	1442-1587	264
RS 200/EV BLU	737	432	305	555	863	373-503	272-402	221	436	221	Rp 2”	141	1442-1587	264

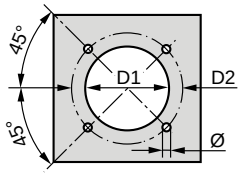
(1) Length with extended combustion head.
(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

RS 68-200/EV BLU WITH LMV52 CONTROL BOX

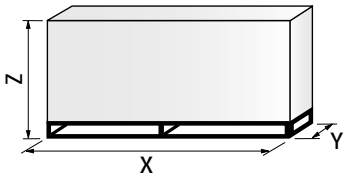


Model	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I* - I (1)* mm	L mm	M mm	N mm	P mm	T - T(1) mm	V - V(1) mm
RS 68/EV BLU	217	137	189	425	Rp 2”	305	640	200-335	575	270	221	1010	255-390	1350-1485
RS 120/EV BLU	217	137	189	425	Rp 2”	330	640	200-335	600	270	221	1010	255-390	1350-1485
RS 160/EV BLU	230	141	222	435	Rp 2”	366	650	272-402	681	315	260	1035	373-503	1442-1589
RS 200/EV BLU	230	141	222	435	Rp 2”	427	650	272-402	742	315	260	1035	373-503	1442-1589

(1) Length with extended combustion head.
(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



Description	D1 mm	D2 mm	Ø mm
RS 68/EV BLU	195	275-325	M12
RS 120/EV BLU	195	275-325	M12
RS 160/EV BLU	230	325-368	M16
RS 200/EV BLU	230	325-368	M16

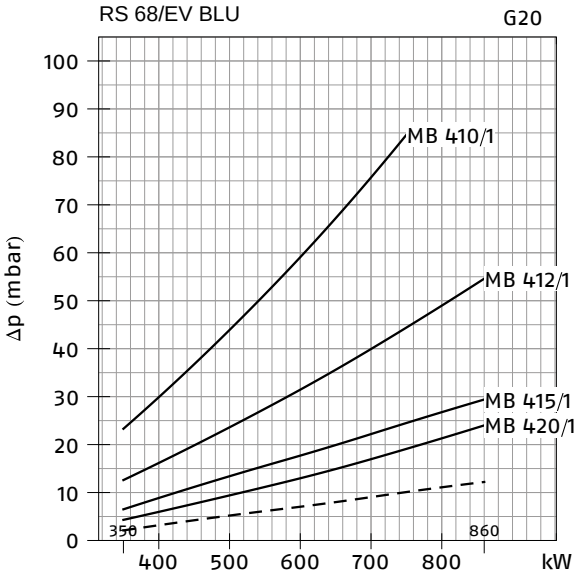


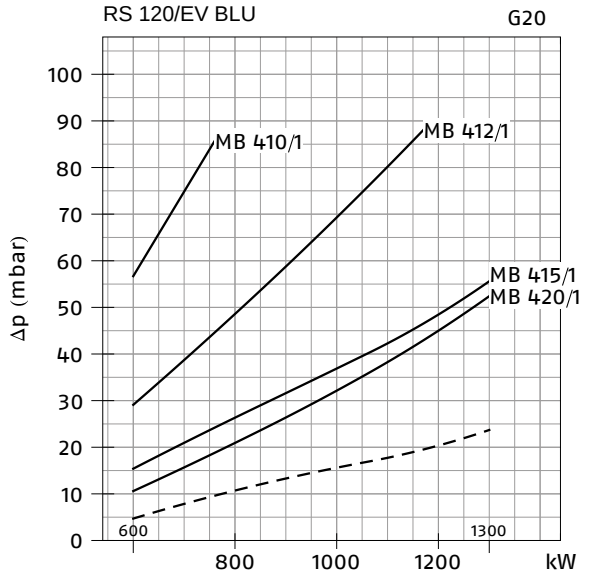
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 68/EV BLU	1405	700	660	78
RS 120/EV BLU	1405	700	660	84
RS 160/EV BLU	1405-1420	1000	660	89
RS 200/EV BLU	1405-1420	1000	660	125

(1) Dimension with standard and extended head.

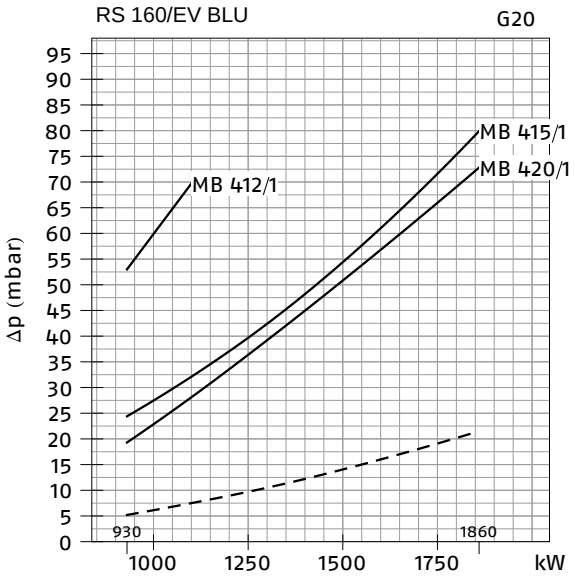
PRESSURE LOSS DIAGRAMS

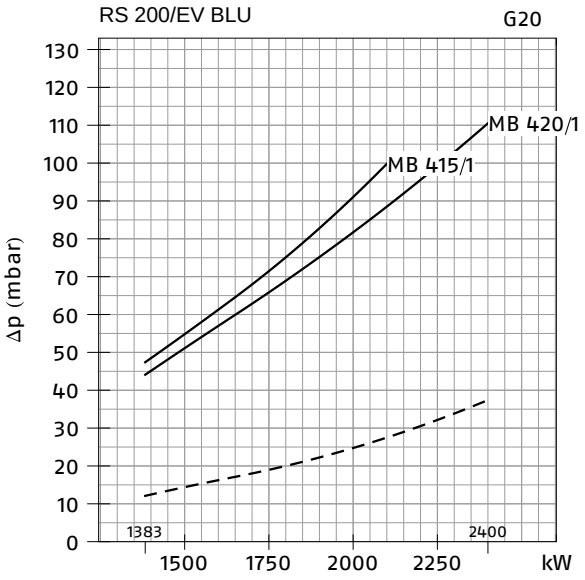
MB SERIES GAS TRAIN



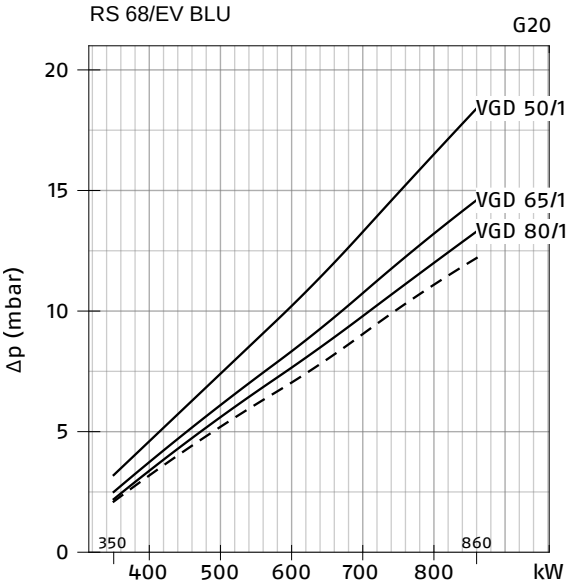


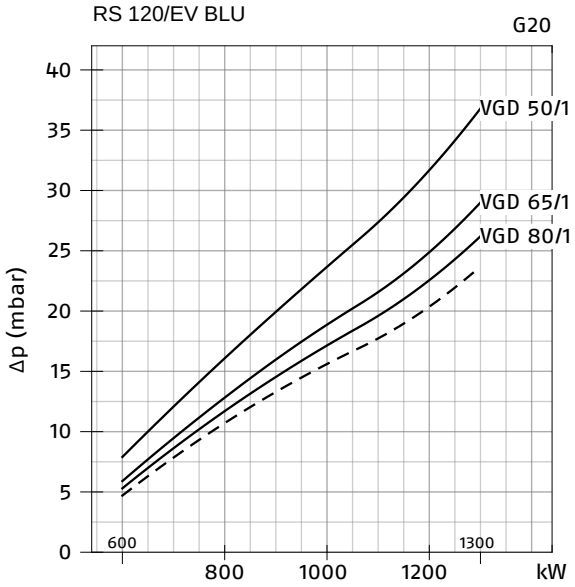
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

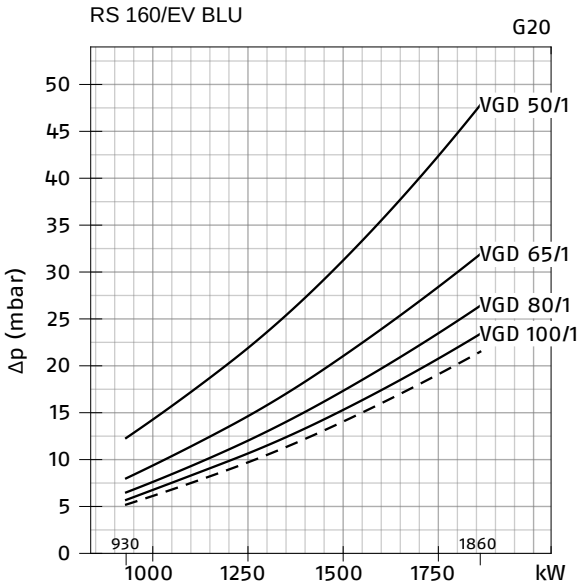


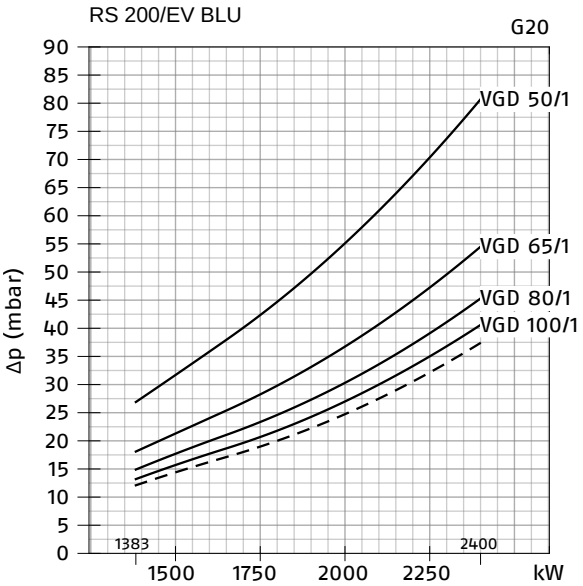


VGD SERIES GAS TRAIN









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

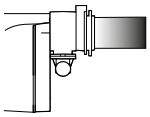
GAS TRAINS

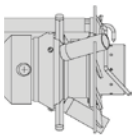
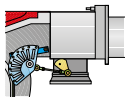
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)			
					RS 68/EV BLU	RS 120/EV BLU	RS 160/EV BLU	RS 200/EV BLU
MB SERIES ONE STAGE GAS TRAIN								
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010126		●	●
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3000824+3000843		●	●
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3000843			●
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3000843			
MB 420/1-RT 52	**3970257***		Rp 2"	-	□	□	□	□
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(4)	Rp 2"	-	□	□	□	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3000826			
VGD 80/1-FT 122	**20140763***		DN80	-	3000826			
VGD 100/1-FT 122	**20169193***		DN100	-	●	●	30100370+3000826	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function code 3010344.
(5) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 68-120/EV BLU	Standard head length = 255 mm - Extended head length = 390 mm		**3010177**
	RS 160/EV BLU	Standard head length = 373 mm - Extended head length = 503 mm		**3010442**
	RS 200/EV BLU	Standard head length = 373 mm - Extended head length = 503 mm		**3010474**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 68-120/EV BLU	Spacer thickness S = 135 mm		**3010129**
	RS 160-200/EV BLU	Spacer thickness S = 102 mm		**3000722**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	(1)	**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models equipped with REC37 control box	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20099869**
		RWF 55.5 - Plus version.		**20099905**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**

Drawing	Burner model	Specification	Note	Code
	All models	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**20098337**
		HEAD KIT FOR “REVERSE FLAME CHAMBER” In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional pipes kit.		
	RS 68/EV BLU	Steel gas tubes kit for combustion head.	(2)	**3010247**
	RS 120/EV BLU	Steel gas tubes kit for combustion head.	(2)	**3010248**
	RS 160/EV BLU	Steel gas tubes kit for combustion head.	(2)	**3010249**
	RS 200/EV BLU	Steel gas tubes kit for combustion head.	(2)	**20035848**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 68/EV BLU	Kit code for standard head.	(2)	**3010433**
	RS 68/EV BLU	Kit code for extended head.	(2)	**20092589**
	RS 120/EV BLU	Kit code for standard and extended head.	(2)	**20085367**
	RS 160/EV BLU	Kit code for standard and extended head.	(2)	**20008971**
	RS 200/EV BLU	Kit code for standard and extended head.	(2)	**3010491**
	All models	DN80 GAS FLANGE KIT To modify the standard Rp 2” burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
		VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series.		
	RS 68/EV BLU	Inverter power 1.5 kW - Electrical supply 400V - 50/60Hz		**20163060**
	RS 120/EV BLU	Inverter power 3.0 kW - Electrical supply 400V - 50/60Hz		**20163064**
	RS 160-200/EV BLU	Inverter power 5.5 kW - Electrical supply 400V - 50/60Hz		**20163071**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO2) FOR BURNERS The QGO2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(3)	**20045187**
	All models equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**
	All models equipped with REC37 control box	PC INTERFACE KIT To connect the control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**
	All models equipped with LMV52 control box	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Note: the Post-ventilation function is obtainable by modification of the Digital Burner Management System parameters. (See burner instruction manual).
(2) CE approval on field is required.
(3) Installation outside the burner cover.
NOTE: An additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

BURNER MODELS EQUIPPED WITH REC37 CONTROL BOX

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Microprocessor-based Digital Burner Management System with Variable Speed Drive technology for the control of a Frequency Inverter
- Display Interface operating unit to adjust the system
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades (straight blades on the RS 160-200/EV BLU model) high performance with low sound emissions
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level.

BURNER MODELS EQUIPPED WITH LMV52 CONTROL BOX

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades (straight blades on the 160-200/EV BLU model) high performance with low sound emissions
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- LMV52 Digital Burner management system for air/fuel setting, O2 Control Ready and Operation with Variable Speed Drive (VSD); with output PID modulation control included (RS 68-120-160-200/EV O2 BLU)
- AZL Display Interface, for combustion system commissioning and monitoring
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 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
- 2 slide bar extensions (for extended head models and RS 160-200/EV BLU)
- Pressure switch for valve proofing system (RS 120-160-200/EV BLU models)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Low NOx modulating gas burners

RS 310-610/M BLU



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

RS 310-610/M BLU burner series covers a firing range from 400 to 6250 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator or by external 4-20 mA/0-10 V signal. The mechanical cam device of regulation allows to catch up a high modulation ratio on all firing rates range.
The burners can, therefore, supply with precision the demanded power, guaranteeing a high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction. The combustion head, engineered with advanced simulation devices, guarantees reduced polluting emissions.
FS1 versions are available for intermittent and continuous operation applications. The exclusive design ensures reduced dimensions, simple use and maintenance.
A wide range of accessories guarantees elevated working flexibility.

* 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.

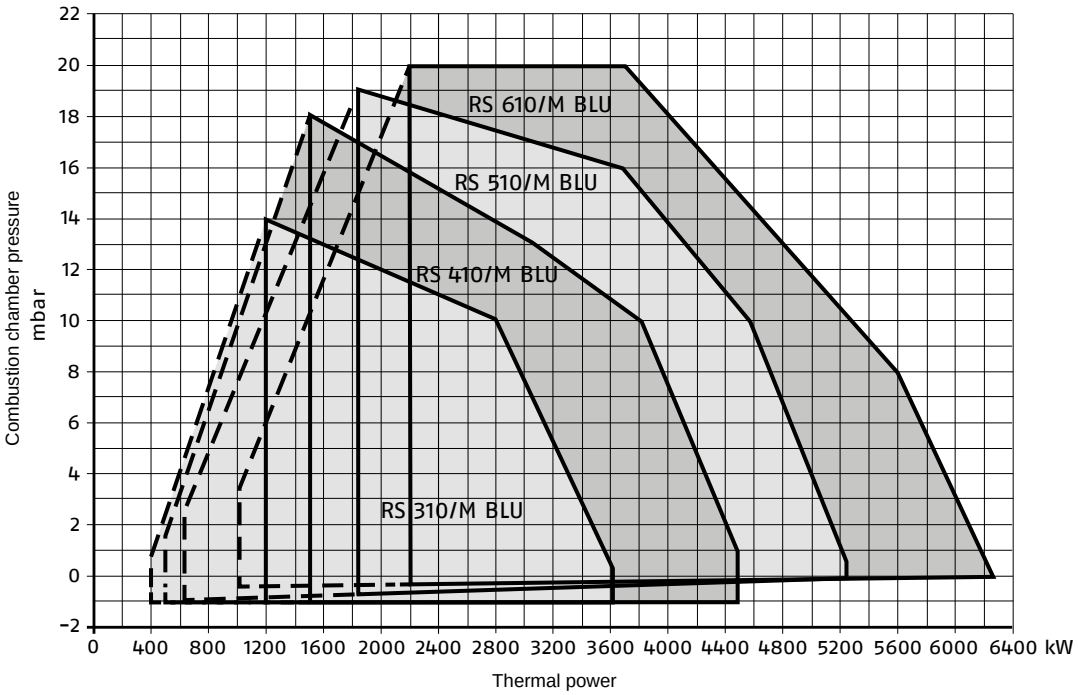
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 310/M BLU TC FS1	400/1200-3630	40/120-363	8.8	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20067964**
RS 310/M BLU TC FS1	400/1200-3630	40/120-363	9.1	3/400/50	230/50-60	CE-0085CP0166	(1)(4)	**20068245**
RS 410/M BLU TC FS1	500/1500-4450	50/150-445	10.6	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20069841**
RS 410/M BLU TC FS1	500/1500-4450	50/150-445	10.8	3/400/50	230/50-60	CE-0085CP0166	(1)(4)	**20068284**
RS 510/M BLU TC FS1	680/1800-5250	68/180-525	14.0	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20069845**
RS 610/M BLU TC FS1	1000/2200-6250	100/220-625	16.9	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20069847**
RS 410/M BLU TC FS1	500/1500-4450	50/150-445	10.8	3/400/50	230/50-60	CE-0085CP0166	(2)(3)	**20210938**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
FS1: Models for standard operation (one stop every 24 hours).
Models for continuous operation (FS2: one stop every 72 hours) are available on request.

(1) Model with CMG/M control box.
(2) Model with LFL control box.
(3) Star/delta starter.
(4) Direct starter.

FIRING RATES

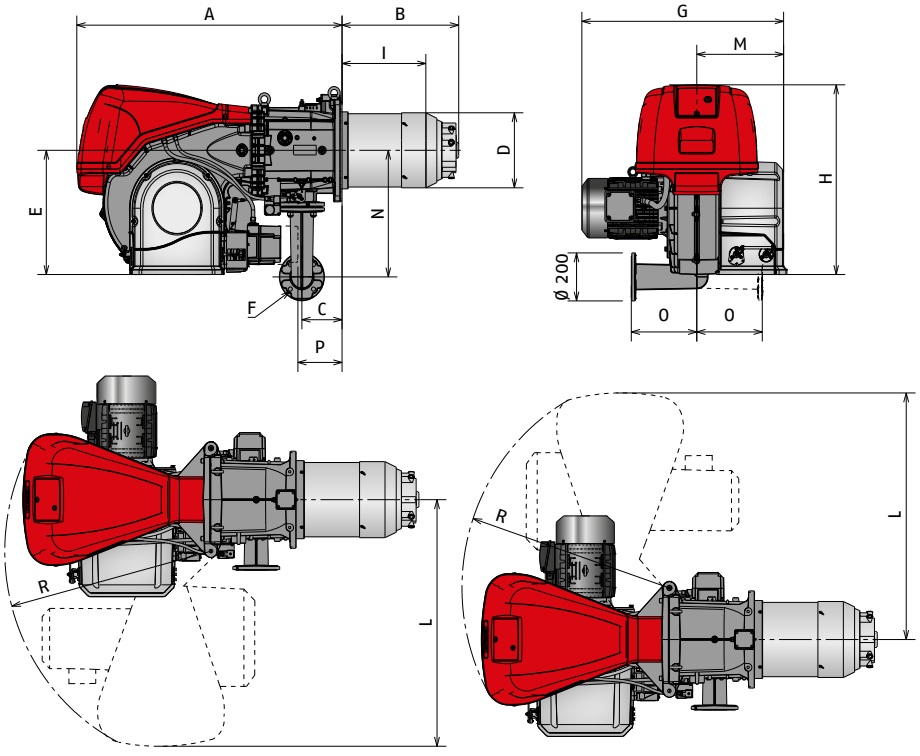


Useful firing rates for choosing the burner

Modulation range

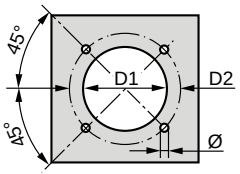
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

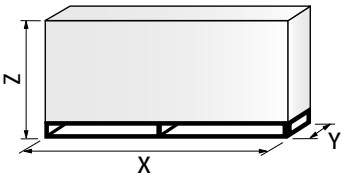


Description	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P(*) mm	R mm
RS 310/M BLU	1178	465	178	306	520	DN65	890	790	346	1015	400	528	290	177	890
RS 410/M BLU	1178	517	178	313	520	DN65	908	790	365	930	400	528	290	177	890
RS 510/M BLU	1178	517	178	313	520	DN65	908	790	365	930	400	528	290	177	890
RS 610/M BLU	1178	517	178	334	520	DN65	980	790	360	1015	400	528	290	177	890

(*) Maximum position for the extraction of the servomotor cover.



Description	D1 mm	D2 mm	Ø mm
RS 310/M BLU	335	452	M18
RS 410/M BLU	335	452	M18
RS 510/M BLU	335	452	M18
RS 610/M BLU	350	452	M18

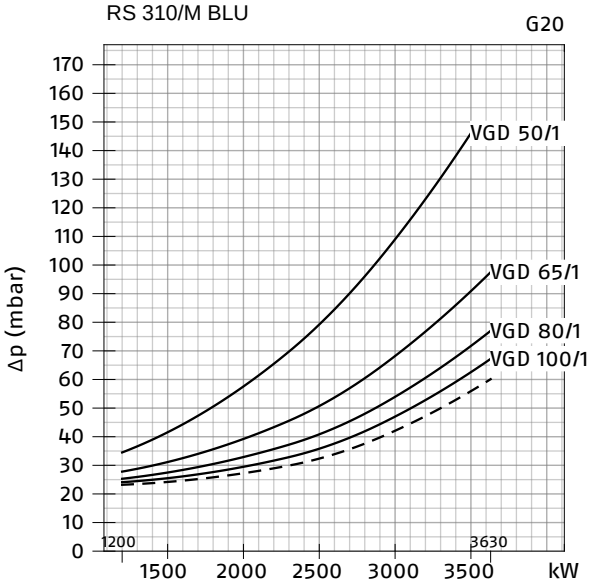


Description	X mm	Y mm	Z mm	Net weight kg
RS 310/M BLU	2040	1180	1125	250
RS 410/M BLU	2040	1180	1125	250
RS 510/M BLU	2040	1180	1125	250
RS 610/M BLU	2040	1180	1125	280

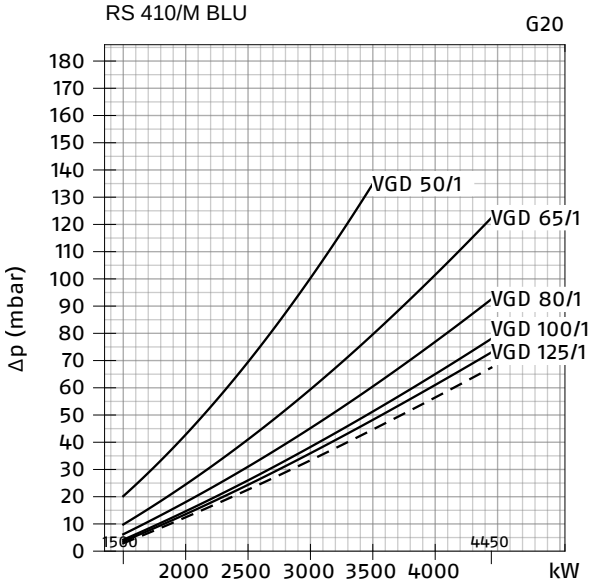
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

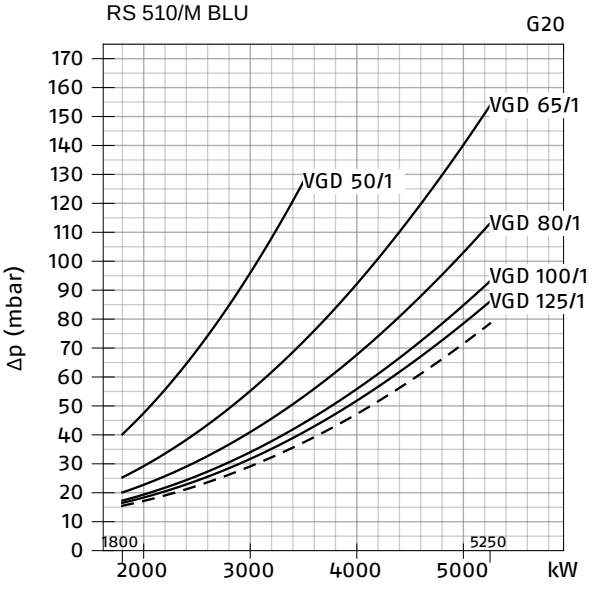
RS 310/M BLU



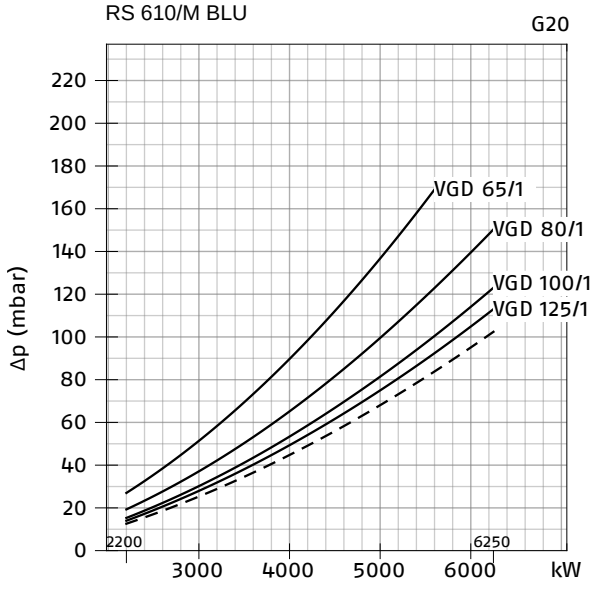
RS 410/M BLU



RS 510/M BLU



RS 610/M BLU



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)	VPS kit code (3)	Burner-gas train adapter (4)			
						RS 310/M BLU	RS 410/M BLU	RS 510/M BLU	RS 610/M BLU
VGD SERIES ONE STAGE GAS TRAIN									
VGD 50/1-RT 122	**20137718***		Rp 2”	-	3010123+ 20186306	(3000826+20042324)/20068062 (6)			●
VGD 50/1 CT RT 122	**20169190****		Rp 2”	♦	♦	(3000826+20042324)/20068062 (6)			●
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	□	□	□	□
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	□	□	□	□
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	□	□	□	□
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	□	□	□	□
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	3010370			
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	3010370			
VGD 125/1-FT 122	**20169195***		DN125	-	(7)	●	3010224		

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm, E = 1345 mm		**3010376**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Basic version with 3 position output.		**20073595**
		RWF 55.5 - Complete with RS-485 interface.		**20074441**
		RWF 55.6 - Complete with RS-485/PROFIBUS interface.		**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**20074479**

Drawing	Burner model	Specification	Note	Code
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**20074487**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

STATE OF SUPPLY

Monoblock forced draught gas burners with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions, forward curve blades.
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50 Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes; ionisation sensor for flame detection
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Burner safety control box for controlling the system safety: CMG/M or LFL for FS1 intermittent operation
- Star/delta starter for the fan motor (Direct starter fan motor for RS 310-410 models)
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Burner failure led signal and lighted release button
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- Gasket for gas train adaptor
- Adaptor for gas train
- Screws for fixing the gas train adaptor: M16x70
- Thermal insulation screen
- M18x60 screws to secure the burner flange to the boiler
- Cable grommets kit for optional electrical wiring input
- M16x6 studs for fixing the gas elbow to the pipe coupling
- M16 nuts to fix the gas elbow to the pipe coupling
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

AVAILABLE ACCESSORIES TO BE ORDERED SEPARATELY
- Power controller
- Probe
- Analog control signal converter
- Potentiometer
- Continuous ventilation kit
- PC interface kit
- Sound proofing box
- Spacer kit
- Adapters
- Seal Control kit
- Stabiliser spring.

Low NOx modulating gas burners

RS 810/M BLU



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

RS 810/M BLU burner series covers a firing range from 1200 to 8010 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator or by external 4-20 mA/0-10 V signal.
The mechanical cam device of regulation allows to catch up a high modulation ratio on all firing rates range.
The burners can, therefore, supply with precision the demanded power, guaranteeing a high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The combustion head, engineered with advanced simulation devices, guarantees reduced polluting emissions.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.

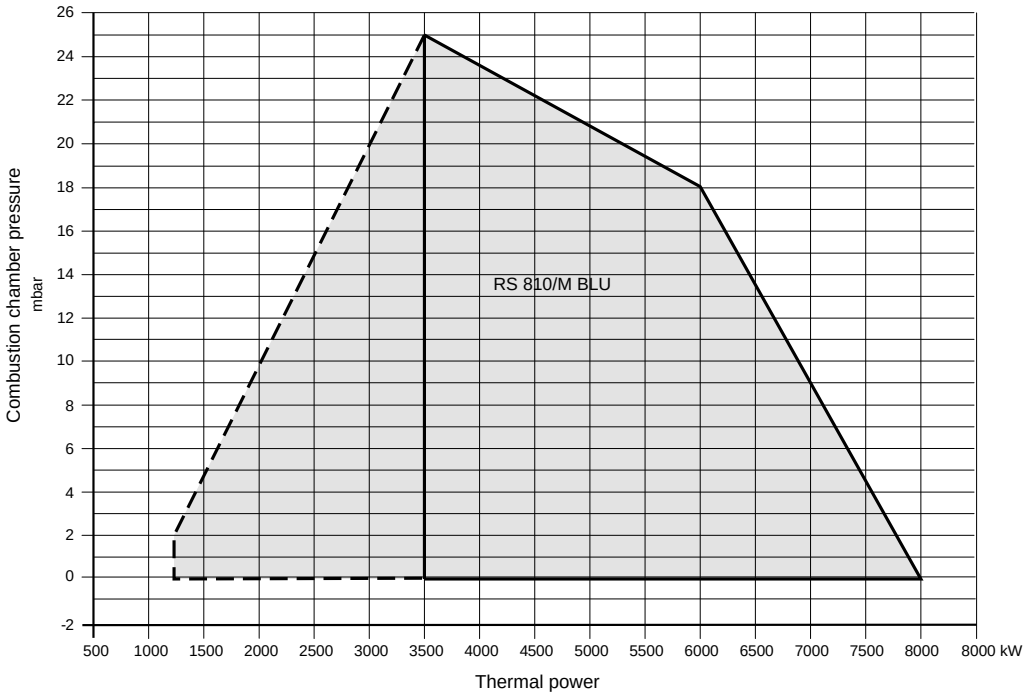
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 810/M BLU TC FS1	1200/3500-8010	120/350-801	24.5	3/400/50	230/50-60	CE-0123CU1067	(1)(2)	**20155846**

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.
Models for continuous operation (FS2: one stop every 72 hours) are available on request.
(1) Model with CMG/M control box.
(2) Star/delta starter.

FIRING RATES

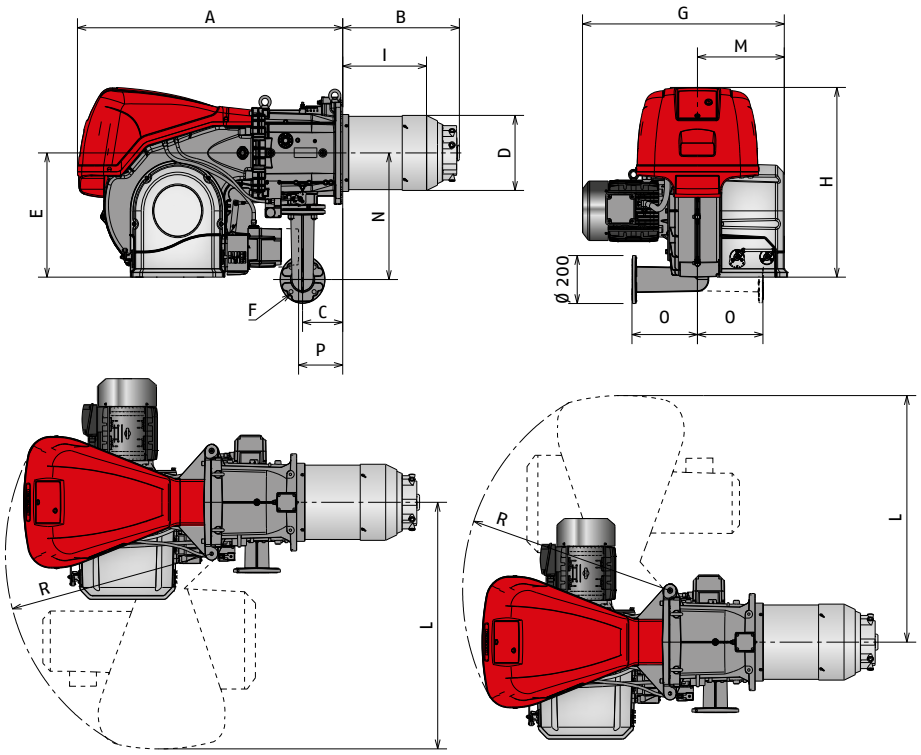


Useful firing rates for choosing the burner

Modulation range

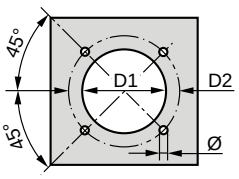
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

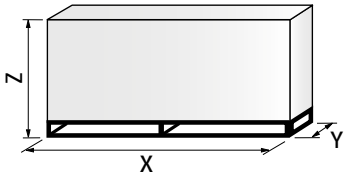


Description	A mm	B mm	C mm	D mm	E mm	F(**) mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P(*) mm	R mm
RS 810/M BLU	1345	558	173	363	585	DN80	980	790	405	1197	413	528	290	177	1055

(*) Maximum position for the extraction of the servomotor cover.
(**) The adaptor for gas train is not included as standard equipment.



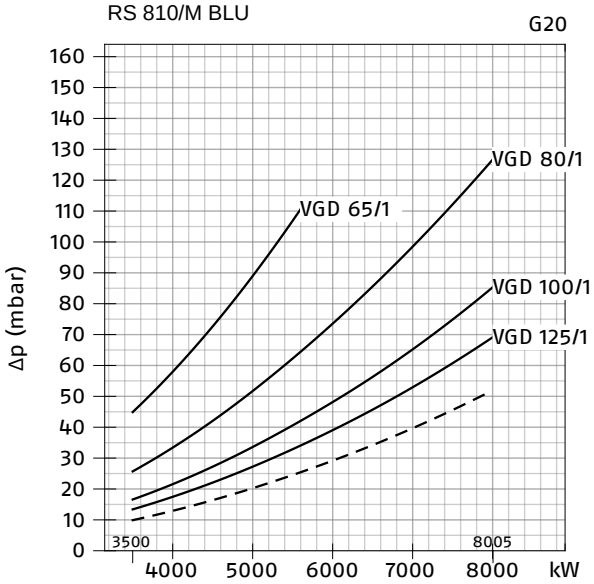
Description	D1 mm	D2 mm	Ø mm
RS 810/M BLU	400	495	M18



Description	X mm	Y mm	Z mm	Net weight kg
RS 810/M BLU	2190	1110	1446	300

PRESSURE LOSS DIAGRAMS

VGD 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)	VPS kit code (3)	Burner-gas train adapter (4)
						RS 810/M BLU
VGD SERIES ONE STAGE GAS TRAIN						
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	20059331/(3010222+20059331)(6)
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	20059331/(3010222+20059331)(6)
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	20059331/(3010222+20059331)(6)
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	20059331/(3010222+20059331)(6)
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	20059332/(3010223+20059331)(6)
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	20059332/(3010223+20059331)(6)
VGD 125/1-FT 122	**20169195***		DN125	-	(7)	20059333/(3010224+20059331)(6)

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	RS 810/M BLU	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	RS 810/M BLU	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	RS 810/M BLU	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Basic version with 3 position output.		**20073595**
		RWF 55.5 - Complete with RS-485 interface.		**20074441**
		RWF 55.6 - Complete with RS-485/PROFIBUS interface.		**20074442**
	RS 810/M BLU	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	RS 810/M BLU	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	RS 810/M BLU	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**20074479**
	RS 810/M BLU	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**20074487**
	RS 810/M BLU	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

STATE OF SUPPLY

Monoblock forced draught gas burners with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions, forward curve blades.
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50 Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes; ionisation sensor for flame detection
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Burner safety control box for controlling the system safety: CMG/M for FS1 intermittent operation
- Star/delta starter for the fan motor (Direct starter fan motor for RS 310-410 models)
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Burner failure led signal and lighted release button
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- Gasket for gas train adaptor
- Adaptor for gas train
- Screws for fixing the gas train adaptor: M16x70

– Thermal insulation screen
– M18x60 screws to secure the burner flange to the boiler
– Cable grommets kit for optional electrical wiring input
– M16x6 studs for fixing the gas elbow to the pipe coupling
– M16 nuts to fix the gas elbow to the pipe coupling
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

AVAILABLE ACCESSORIES TO BE ORDERED SEPARATELY
– Power controller
– Probe
– Analog control signal converter
– Potentiometer
– Continuous ventilation kit
– PC interface kit
– Sound proofing box
– Spacer kit
– Adapters
– Seal Control kit
– Stabiliser spring.

Low NOx modulating gas burners

RS 310-610/E BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)

RS 310-610/E BLU burner series covers a firing range from 400 to 6250 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. It is based on a new Digital Burner Management System (Riello REC27-37 or Siemens LMV52), which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating”with the installation of the dedicated probes (with burner models equipped with REC27-37 control box, an additional PID logic regulator is required).
RS 310-610/E BLU burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The combustion head engineered with advanced simulation devices, guarantees reduced polluting emissions.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.
Finally, new RS 310-610/E BLU burner models, equipped with Siemens LMV52 control box and compatible with combustion optimization based on the residual O_2 content in the exhaust fumes, are now available.

* 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.

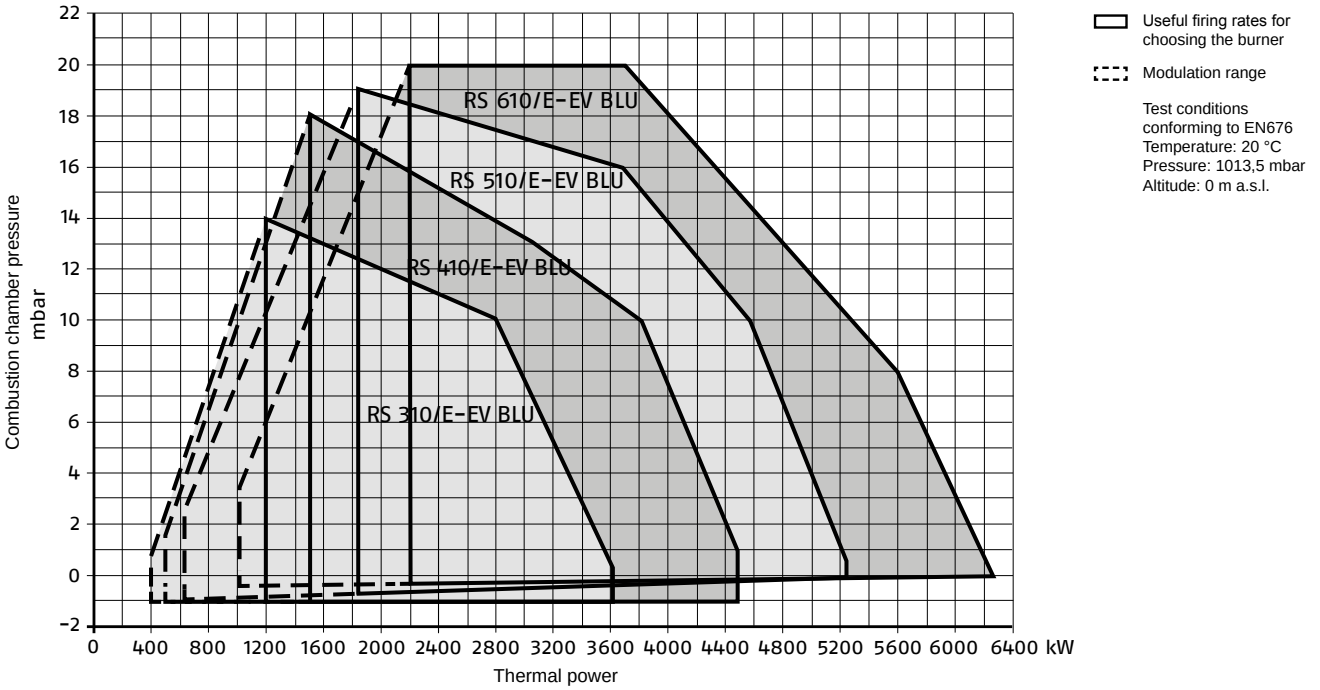
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 310/E BLU TC FS1	400/1200-3630	40/120-363	8.8	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20065783**
RS 310/E BLU TC FS1	400/1200-3630	40/120-363	9.1	3/400/50	230/50-60	CE-0085CP0166	(2)(3)	**20068261**
RS 410/E BLU TC FS1	500/1500-4450	50/150-445	10.6	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20056927**
RS 410/E BLU TC FS1	500/1500-4450	50/150-445	10.6	3/400/50	230/50-60	CE-0085CP0166	(2)(3)	**20068294**
RS 510/E BLU TC FS1	680/1800-5250	68/180-525	13.9	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20056930**
RS 610/E BLU TC FS1	1000/2200-6250	100/220-625	16.9	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20056932**
MODELS FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (REC 37)								
RS 310/E BLU TC FS2	400/1200-3630	40/120-363	8.8	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20074257**
RS 310/E BLU TC FS2	400/1200-3630	40/120-363	9.1	3/400/50	230/50-60	CE-0085CP0166	(2)(3)	**20074254**
RS 410/E BLU TC FS2	500/1500-4450	50/150-445	10.6	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20074258**
RS 410/E BLU TC FS2	500/1500-4450	50/150-445	10.6	3/400/50	230/50-60	CE-0085CP0166	(2)(3)	**20074256**
RS 510/E BLU TC FS2	680/1800-5250	68/180-525	13.9	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20074259**
RS 610/E BLU TC FS2	1000/2200-6250	100/220-625	16.9	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20074252**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O_2 CONTROL READY								
RS 310/E O_2 BLU TC FS1/FS2	400/1200-3630	40/120-363	9.1	3/400/50	230/50-60	CE-0085CP0166	(2)(3)	**20166002**
RS 310/E O_2 BLU TL FS1/FS2	400/1200-3630	40/120-363	9.1	3/400/50	230/50-60	CE-0085CP0166	(3)	**(4)**
RS 410/E O_2 BLU TC FS1/FS2	500/1500-4450	50/150-445	10.6	3/400/50	230/50-60	CE-0085CP0166	(2)(3)	**20174926**
RS 410/E O_2 BLU TC FS1/FS2	500/1500-4450	50/150-445	10.6	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20179072**

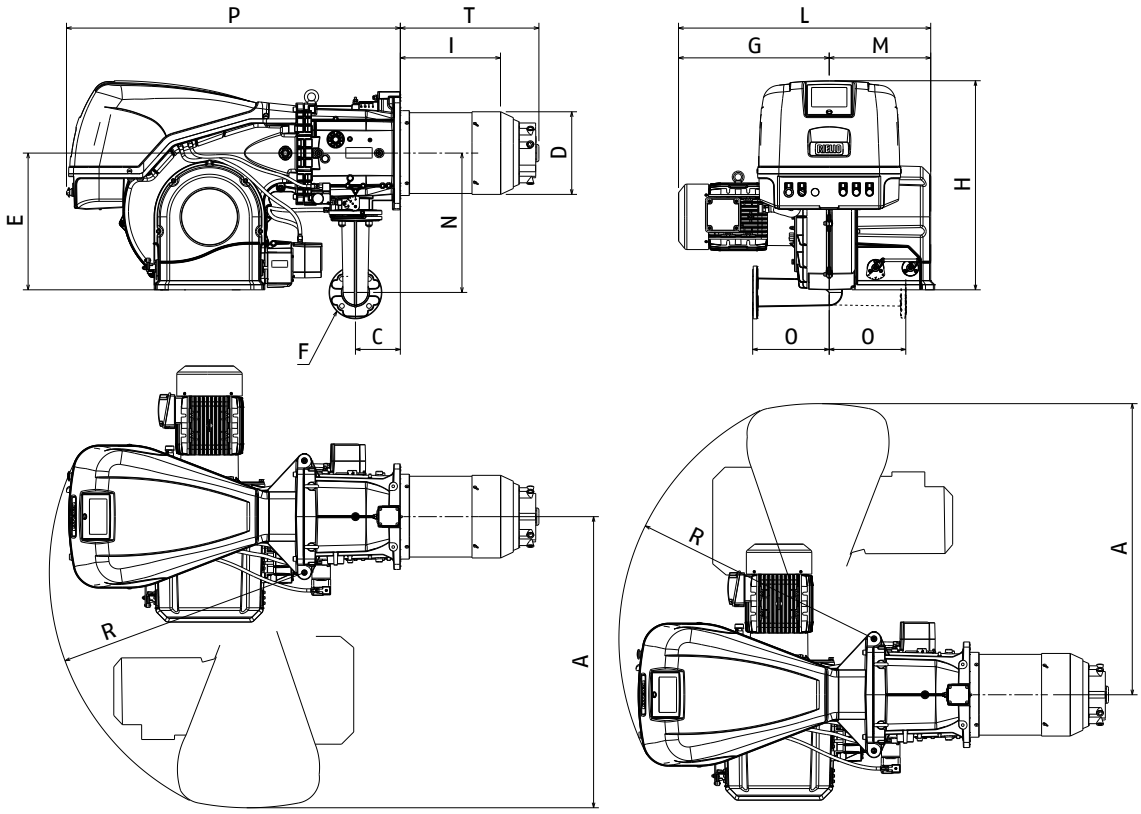
Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
RS 410/E O_2 BLU TL FS1/FS2	500/1500-4450	50/150-445	10.6	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20158157**
RS 510/E O_2 BLU TC FS1/FS2	680/1800-5250	68/180-525	13.9	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20174930**
RS 510/E O_2 BLU TL FS1/FS2	680/1800-5250	68/180-525	13.9	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20156791**
RS 610/E O_2 BLU TC FS1/FS2	1000/2200-6250	100/220-625	16.9	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**20174931**
RS 610/E O_2 BLU TL FS1/FS2	1000/2200-6250	100/220-625	16.9	3/400/50	230/50-60	CE-0085CP0166	(1)(3)	**(4)**

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.
FS1: Models for standard operation (one stop every 24 hours).
FS2: Models for continuous operation (one stop every 72 hours).
FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours). The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Star/delta starter.
(2) Direct starter.
(3) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories).
(4) On demand.

FIRING RATES

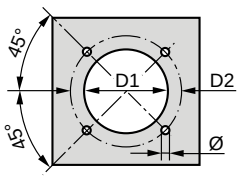


OVERALL DIMENSIONS

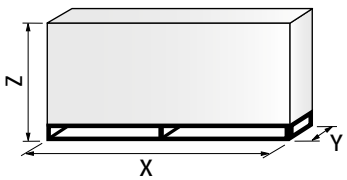


Description	A mm	C(*) mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	R mm	T mm
MODELS WITH ELECTRONIC CAM (REC 27-37)															
RS 310/E BLU	1015	178	306	520	DN65-DN80	500	790	346	900	400	528	290	1178	890	465
RS 410/E BLU	1015	178	313	520	DN65-DN80	540	790	365	940	400	528	290	1178	890	517
RS 510/E BLU	1015	178	313	520	DN65-DN80	540	790	365	940	400	528	290	1178	890	517
RS 610/E BLU	1015	178	334	520	DN65-DN80	545	790	360	945	400	528	290	1178	890	517
MODELS WITH ELECTRONIC CAM (LMV 52) - O2 CONTROL READY															
RS 310/E O_2 BLU	1090	178	306	520	DN65-DN80	500	790	346	900	400	528	290	1260	966	465
RS 410/E O_2 BLU	1090	178	313	520	DN65-DN80	540	790	365	940	400	528	290	1260	966	517
RS 510/E O_2 BLU	1090	178	313	520	DN65-DN80	540	790	365	940	400	528	290	1260	966	517
RS 610/E O_2 BLU	1090	178	334	520	DN65-DN80	545	790	360	945	400	528	290	1260	966	517

(*) Maximum position for the extraction of the servomotor cover.



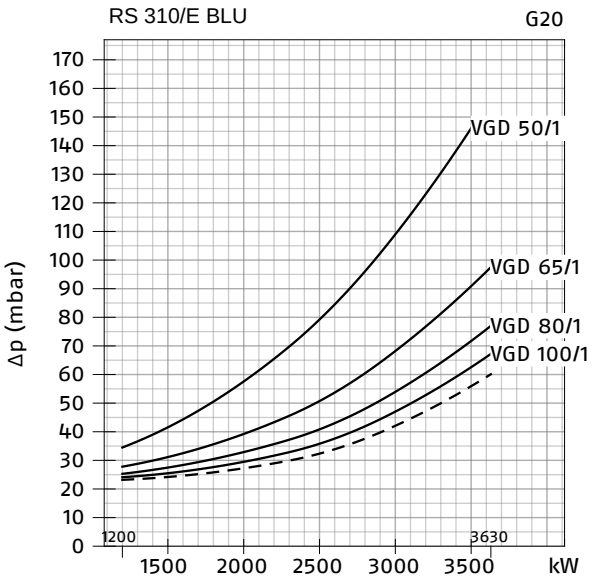
Description	D1 mm	D2 mm	Ø mm
RS 310/E BLU	335	452	M18
RS 410/E BLU	335	452	M18
RS 510/E BLU	335	452	M18
RS 610/E BLU	350	452	M18

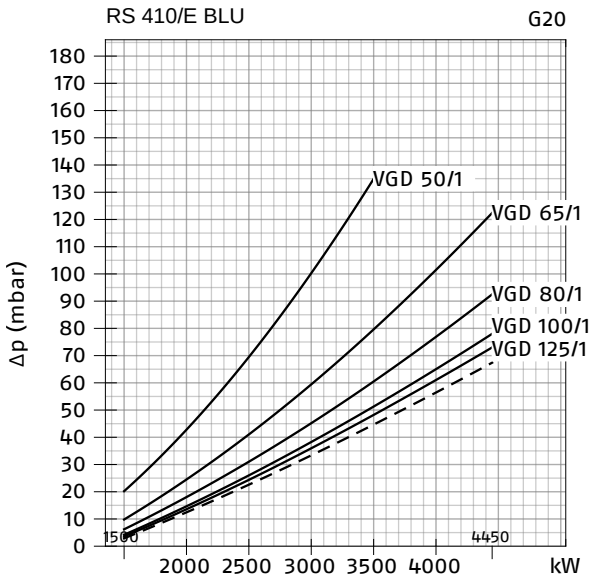


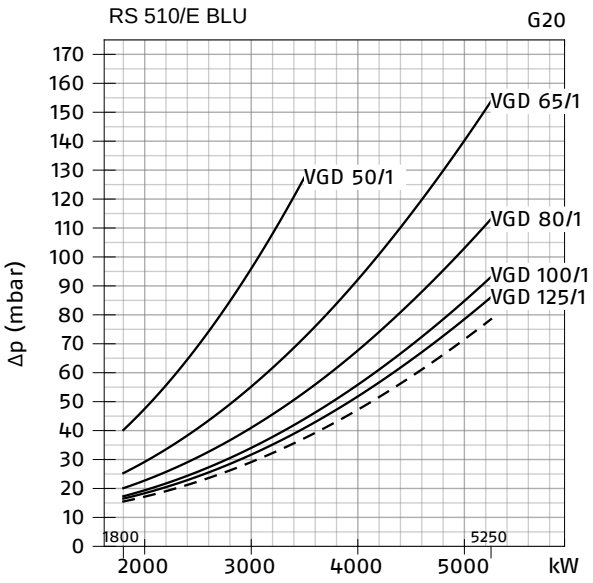
Description	X mm	Y mm	Z mm	Net weight kg
RS 310/E BLU	2040	1180	1125	250
RS 410/E BLU	2040	1180	1125	250
RS 510/E BLU	2040	1180	1125	250
RS 610/E BLU	2040	1180	1125	280

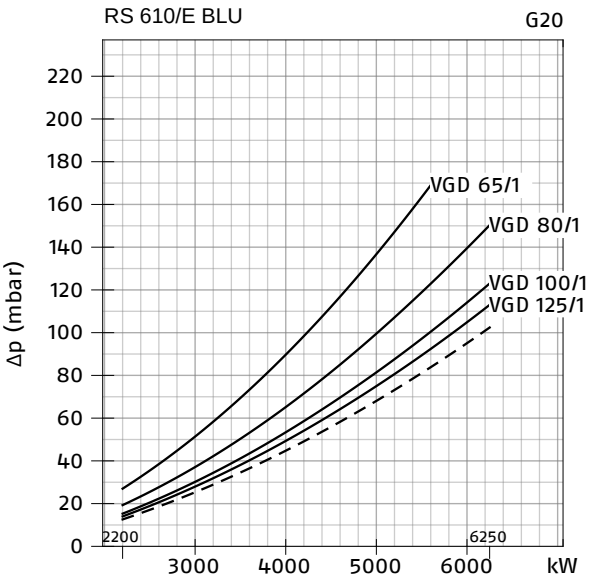
PRESSURE LOSS DIAGRAMS

VGD 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	VPS kit code (2)	Burner-gas train adapter (3)			
					RS 310/E BLU	RS 410/E BLU	RS 510/E BLU	RS 610/E BLU
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(4)	Rp 2”	3010123+ 20186306	(3000826+20042324)/20068062(6)			●
VGD 65/1-FT 122	**20140762***	(5)	DN65	3010123	□	□	□	□
VGD 80/1-FT 122	**20140763***		DN80	3010123	□	□	□	□
VGD 100/1-FT 122	**20169193***		DN100	3010123	3010370			
VGD 125/1-FT 122	**20169195***		DN125	(7)	●	3010224		

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function.
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm, E = 1345 mm		**3010376**
	All models	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models equipped with REC27-37 control box	POWER CONTROLLER To obtain modulating operation, RS/E BLU burners equipped with REC27-37 control box require a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. In the RS/E BLU burners equipped with Siemens LMV52, the PID regulator s integrated inside the control box. RWF 50.2 - Basic version with 3 position output		**20085417**
		RWF 55.5 - Complete with RS-485 interface		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface		**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO_2) FOR BURNERS The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**

Drawing	Burner model	Specification	Note	Code
	All models equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**
	All models equipped with REC27-37 control box	PC INTERFACE KIT To connect the control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**
	All models equipped with LMV52 control box	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
NOTE: an additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burners with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
– Air suction circuit lined with sound-proofing material
– High performance fan with low sound emissions, forward curve blades
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
– Air pressure switch
– Fan starting motor at 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50 Hz
– Combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes; ionisation sensor for flame detection (or UV sensor on demand)
  • flame stability disk
– Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
– Star/delta starter for the fan motor (direct starter fan motor for RS 310-410/E BLU models)
– REC27 Digital Burner Management System for air/fuel setting with output PID modulation control as accessory (RS 310-610/E BLU FS1)
– REC37 Digital Burner Management System for air/fuel setting with output PID modulation control as accessory (RS 310-610/E BLU FS2)
– LMV52 Digital Burner Management System for air/fuel setting and O_2 Control Ready with output PID modulation control included (RS 310-610/E O_2 BLU)
– AZL Display Interface, for combustion system commissioning and monitoring
– Main electrical supply terminal board
– Burner on/off switch
– Manual or automatic output increase/decrease switch
– Contacts motor and thermal relay with release button
– Burner failure led signal and lighted release button
– Burner opening hinge
– Lifting rings
– IP 54 electric protection level

STANDARD EQUIPMENT

– Gasket for gas train adaptor
– Adaptor for gas train
– Screws for fixing the gas train adaptor: M16x70
– Thermal insulation screen
– M18x60 screws to secure the burner flange to the boiler
– Cable grommets kit for optional electrical wiring input
– M16x6 studs for fixing the gas elbow to the pipe coupling
– M16 nuts to fix the gas elbow to the pipe coupling
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Low NOx modulating gas burners

RS 810/E BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)

RS 810/E BLU burner series covers a firing range from 1200 to 8010 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. It is based on a new Digital Burner Management System (Riello REC37 or Siemens LMV52), which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range. Operation can be “two stage progressive” or, alternatively, “modulating”with the installation of the dedicated probes (with burner models equipped with REC37 control box, an additional PID logic regulator is required).
RS 810/E BLU burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The combustion head engineered with advanced simulation devices, guarantees reduced polluting emissions.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.
Finally, RS 810/E BLU burner model equipped with Siemens LMV52 control box and compatible with combustion optimization based on the residual O_2 content in the exhaust fumes, is now available.

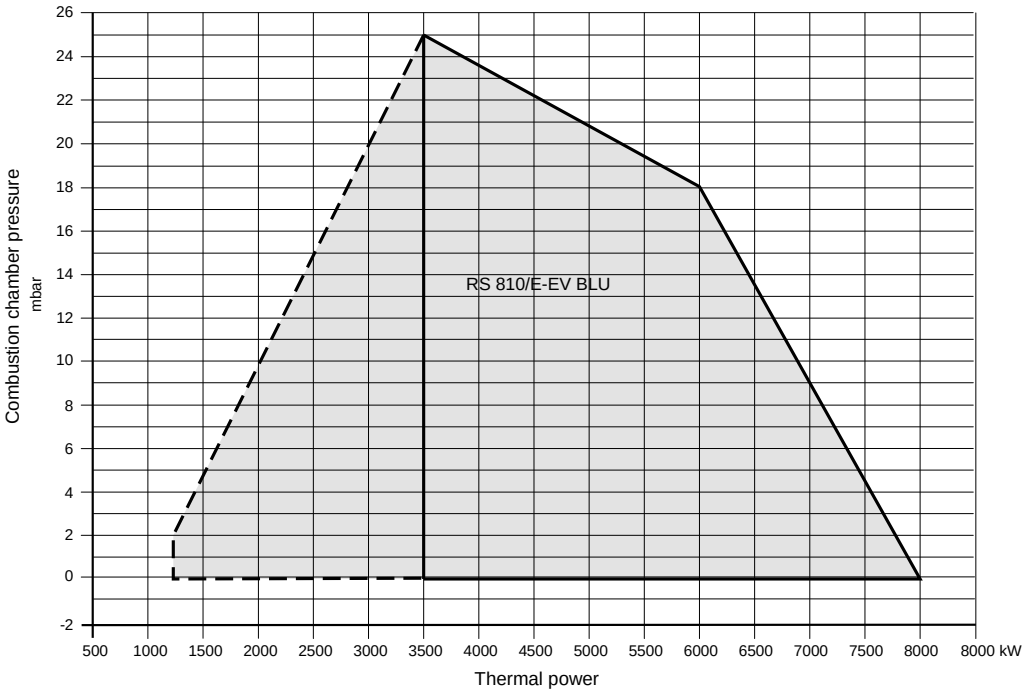
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (ONE STOP EVERY 24 HOURS) AND CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (REC 37)								
RS 810/E BLU TC FS1/FS2	1200/3500-8010	120/350-801	24.5	3/400/50	230/50-60	CE-0123CU1067	(1)(2)(3)	**20160126**
MODELS FOR STANDARD OPERATION (ONE STOP EVERY 24 HOURS) AND CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)								
RS 810/E BLU TC FS1/FS2	1200/3500-8010	120/350-801	24.5	3/400/50	230/50-60	CE-0123CU1067	(1)(2)(3)	**20160291**
MODELS FOR STANDARD OPERATION (ONE STOP EVERY 24 HOURS) AND CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O2 CONTROL READY								
RS 810/E O_2 BLU TC FS1/FS2	1200/3500-8010	120/350-801	24.5	3/400/50	230/50-60	CE-0123CU1067	(1)(2)(3)	**20194684**

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.
FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours).
(1) Star/delta starter.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories).
(3) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES

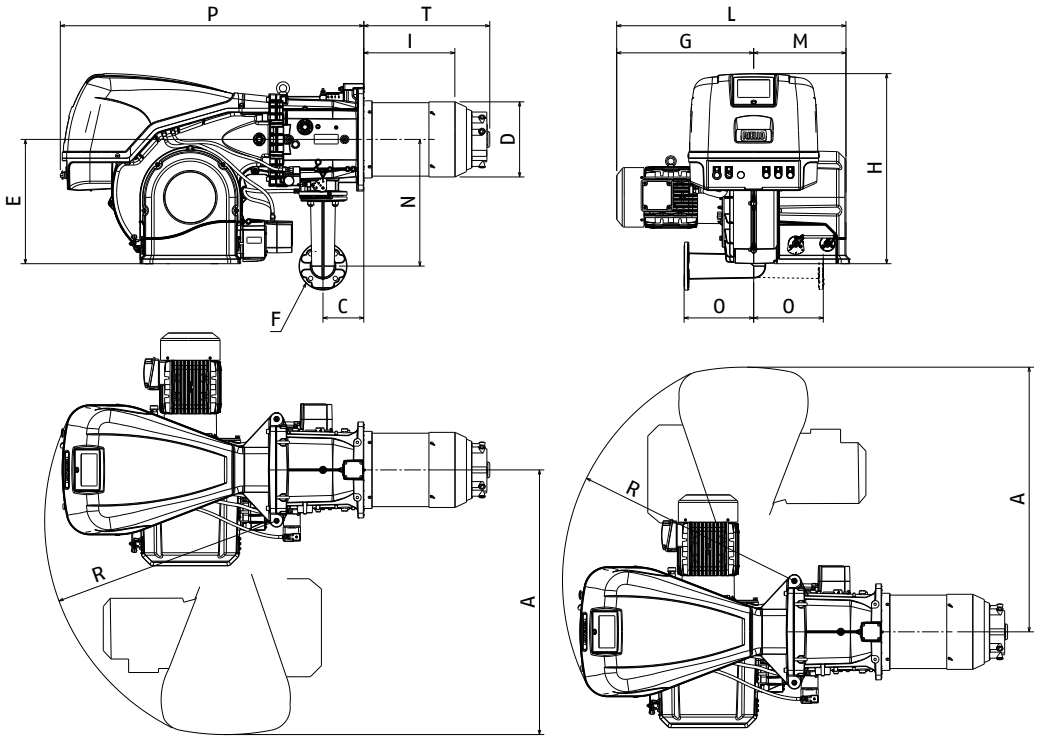


Useful firing rates for choosing the burner

Modulation range

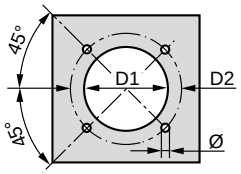
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

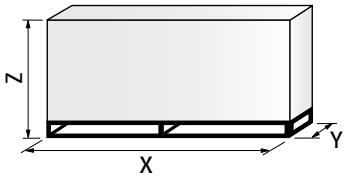


Description	A mm	C(*) mm	D mm	E mm	F(**) mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	R mm	T mm
MODELS WITH ELECTRONIC CAM (REC 37)															
RS 810/E BLU	1197	173	363	585	DN80	577	890	405	990	413	260	290	1345	1055	558
MODELS WITH ELECTRONIC CAM (LMV 52) - O_2 CONTROL READY															
RS 810/E 0_2 BLU	1285	173	363	585	DN80	577	890	405	990	413	260	290	1440	1140	558

(*) Maximum position for the extraction of the servomotor cover.
(**) The adaptor for gas train is not included as standard equipment



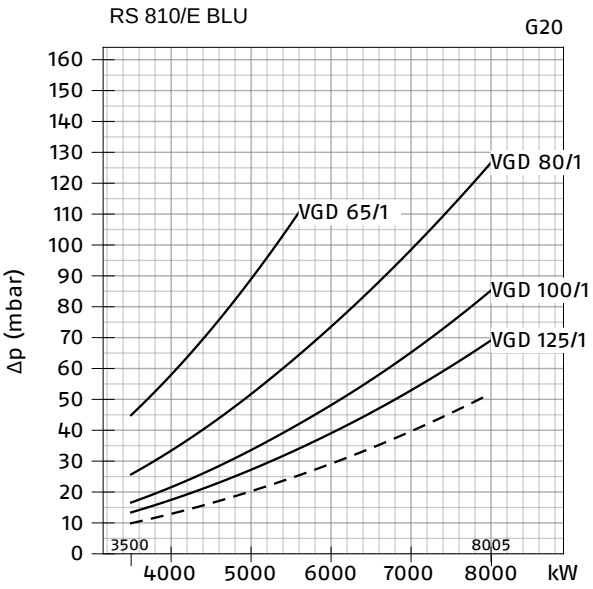
Description	D1 mm	D2 mm	Ø mm
RS 810/E BLU	400	495	M18



Description	X mm	Y mm	Z mm	Net weight kg
RS 810/E BLU	2140	1200	1346	300

PRESSURE LOSS DIAGRAMS

VGD 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	VPS kit code (2)	Burner-gas train adapter (3)
					RS 810/E BLU
VGD SERIES ONE STAGE GAS TRAIN					
VGD 65/1-FT 122	**20140762***	(5)	DN65	3010123	20059331/(3010222+20059331)(6)
VGD 80/1-FT 122	**20140763***		DN80	3010123	20059331/(3010222+20059331)(6)
VGD 100/1-FT 122	**20169193***		DN100	3010123	20059332/(3010223 +20059331)(6)
VGD 125/1-FT 122	**20169195***		DN125	(4)	20059333/(3010224 +20059331)(6)

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) On demand.
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	RS 810/E BLU	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	RS 810/E BLU	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	RS 810/E BLU	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C7 Dimensions: A = 1310 mm, B (min-max) = 160-960 mm, C = 110 mm, D = 1600 mm, E = 1350 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**20177776**
	RS 810/E BLU equipped with REC37 control box	OCI412 INTERFACE KIT Interface kit between the REC37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	RS 810/E BLU equipped with REC37 control box	POWER CONTROLLER To obtain modulating operation, RS/E BLU burners equipped with REC37 control box require a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. In the RS/E BLU burners equipped with Siemens LMV52, the PID regulator s integrated inside the control box.		
		RWF 50.2 - Basic version with 3 position output		**20085417**
		RWF 55.5 - Complete with RS-485 interface		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface		**20074442**
	RS 810/E BLU	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	RS 810/E BLU	**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO_2) FOR BURNERS The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	RS 810/E BLU equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**
	RS 810/E BLU equipped with REC37 control box	PC INTERFACE KIT To connect the control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**
	RS 810/E BLU equipped with LMV52 control box	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
NOTE: an additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burners with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- High performance fan with low sound emissions, forward curve blades
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50 Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes; ionisation sensor for flame detection (or UV sensor on demand)
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- REC37 Digital Burner management system for air/fuel setting with output PID modulation control as accessory
- LMV52 Digital Burner Management System for air/fuel setting and O_2 Control Ready with output PID modulation control included
- AZL Display Interface, for combustion system commissioning and monitoring
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Burner failure led signal and lighted release button
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- Gasket for gas train adaptor
- Adaptor for gas train
- Screws for fixing the gas train adaptor: M16x70
- Thermal insulation screen
- M18x60 screws to secure the burner flange to the boiler
- Cable grommets kit for optional electrical wiring input
- M16x6 studs for fixing the gas elbow to the pipe coupling
- M16 nuts to fix the gas elbow to the pipe coupling
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating gas burners

RS 310-610/EV BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)

RS 310-610/EV BLU burner series covers a firing range from 400 to 6250 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. It is based on a new Digital Burner Management System (Riello REC37 or Siemens LMV52), which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range. Operation can be “two stage progressive” or, alternatively, “modulating”with the installation of the dedicated probes (with burner models equipped with REC37 control box, an additional PID logic regulator is required).
RS 310-610/EV BLU burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs; specific versions are available to operate with Variable Speed Drive technology base on the control of a Frequency Inverter that modifies the air flow through the motor speed variation.
The combustion head engineered with advanced simulation devices, guarantees reduced polluting emissions.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.
Finally, RS 310-610/EV BLU burner models, equipped with Siemens LMV52 control box and compatible with combustion optimization based on the residual O_2 content in the exhaust fumes, are now available.

* 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.

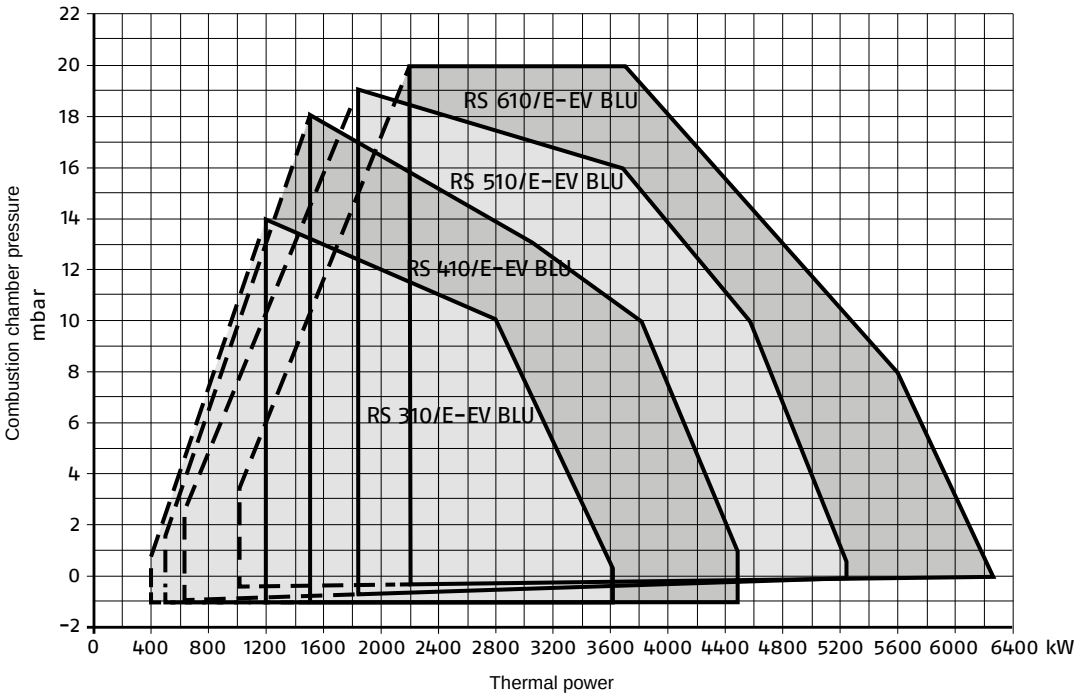
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (REC 37) - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 310/EV BLU TC FS1/FS2	400/1200-3630	40/120-363	9.1	3/400/50	230/50-60	CE-0085CP0166	(1)(2)	**20074269**
RS 410/EV BLU TC FS1/FS2	500/1500-4450	50/150-445	10.8	3/400/50	230/50-60	CE-0085CP0166	(1)(2)	**20074271**
RS 510/EV BLU TC FS1/FS2	680/1800-5250	68/180-525	14.0	3/400/50	230/50-60	CE-0085CP0166	(1)(2)	**20074272**
RS 610/EV BLU TC FS1/FS2	1000/2200-6250	100/220-625	17.0	3/400/50	230/50-60	CE-0085CP0166	(1)(2)	**20074273**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52 - O_2 CONTROL READY) - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 310/EV O_2 BLU TC FS1/FS2	400/1200-3630	40/120-363	9.1	3/400/50	230/50-60	CE-0085CP0166	(1)(2)(3)	**20166004**
RS 410/EV O_2 BLU TC FS1/FS2	500/1500-4450	50/150-445	10.6	3/400/50	230/50-60	CE-0085CP0166	(1)(2)(3)	**20174935**
RS 410/EV O2 BLU TL FS1/FS2	500/1500-4450	50/150-445	10.6	3/400/50	230/50-60	CE-0085CP0166	(1)(2)(3)	**20147938**
RS 510/EV O_2 BLU TC FS1/FS2	680/1800-5250	68/180-525	13.9	3/400/50	230/50-60	CE-0085CP0166	(1)(2)(3)	**20174936**
RS 510/EV O_2 BLU TL FS1/FS2	680/1800-5250	68/180-525	13.9	3/400/50	230/50-60	CE-0085CP0166	(1)(2)(3)	**20150327**
RS 610/EV O_2 BLU TC FS1/FS2	1000/2200-6250	100/220-625	16.9	3/400/50	230/50-60	CE-0085CP0166	(1)(2)(3)	**20174937**

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.

FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours).
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Frequency Inverter to be ordered as separated accessory; please refer to “Accessories” paragraph.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories).
(3) The QGO_2 oxygen analizer with relevant probe must be ordered as Accessory (see Accessories paragraph).

FIRING RATES

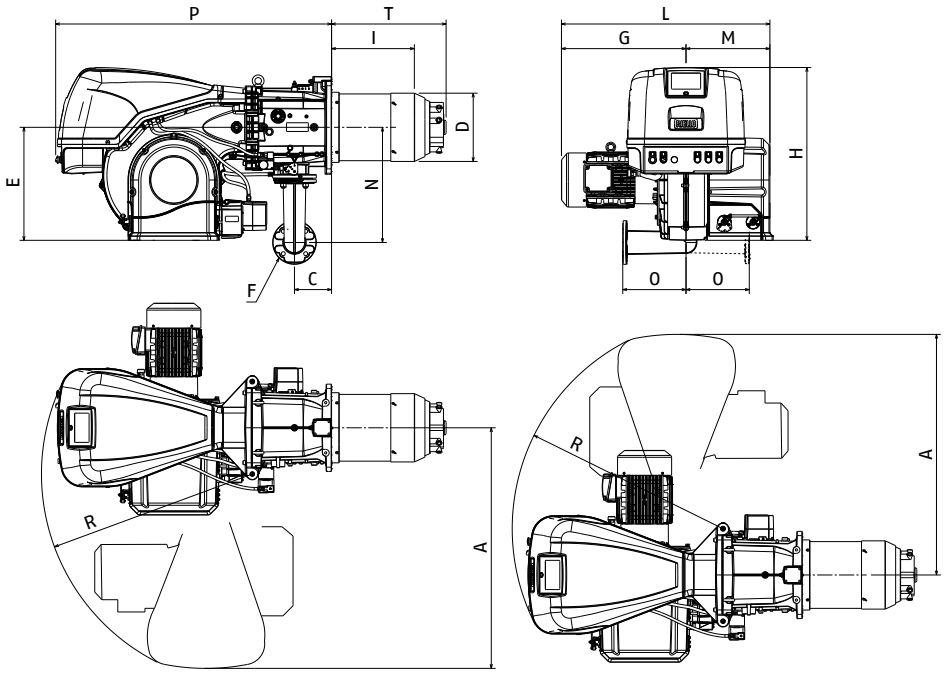


Useful firing rates for choosing the burner

Modulation range

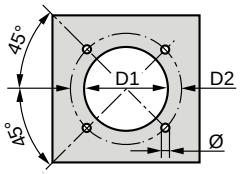
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

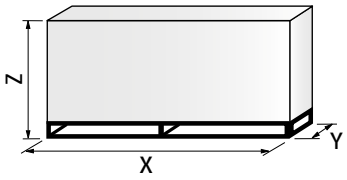


Description	A mm	C(*) mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	R mm	T mm
MODELS WITH ELECTRONIC CAM (REC 27-37)															
RS 310/EV BLU	1015	178	306	520	DN65-DN80	500	790	346	900	400	528	290	1178	890	465
RS 410/EV BLU	1015	178	313	520	DN65-DN80	540	790	365	940	400	528	290	1178	890	517
RS 510/EV BLU	1015	178	313	520	DN65-DN80	540	790	365	940	400	528	290	1178	890	517
RS 610/EV BLU	1015	178	334	520	DN65-DN80	545	790	360	945	400	528	290	1178	890	517
MODELS WITH ELECTRONIC CAM (LMV 52) - O2 CONTROL READY															
RS 310/EV O_2 BLU	1090	178	306	520	DN65-DN80	500	790	346	900	400	528	290	1260	966	465
RS 410/EV O_2 BLU	1090	178	313	520	DN65-DN80	540	790	365	940	400	528	290	1260	966	517
RS 510/EV O_2 BLU	1090	178	313	520	DN65-DN80	540	790	365	940	400	528	290	1260	966	517
RS 610/EV O_2 BLU	1090	178	334	520	DN65-DN80	545	790	360	945	400	528	290	1260	966	517

(*) Maximum position for the extraction of the servomotor cover.



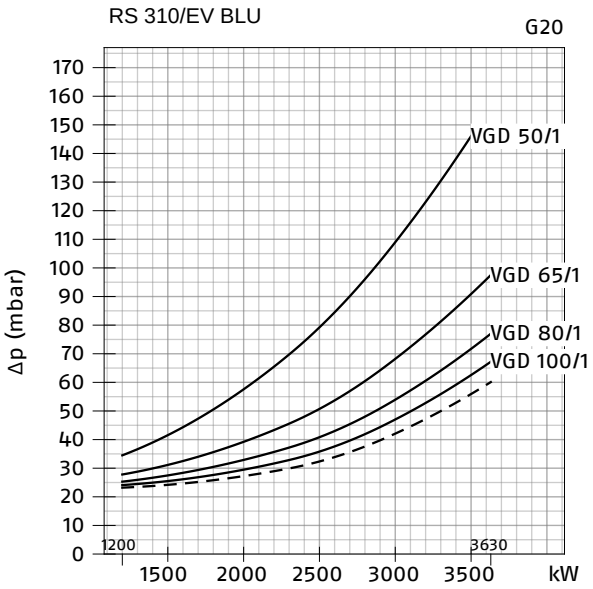
Description	D1 mm	D2 mm	Ø mm
RS 310/EV BLU	335	452	M18
RS 410/EV BLU	335	452	M18
RS 510/EV BLU	335	452	M18
RS 610/EV BLU	350	452	M18

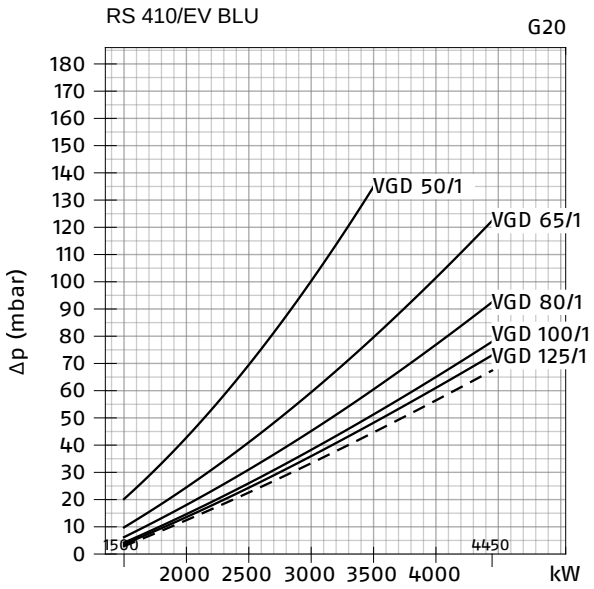


Description	X mm	Y mm	Z mm	Net weight kg
RS 310/EV BLU	2040	1180	1125	250
RS 410/EV BLU	2040	1180	1125	250
RS 510/EV BLU	2040	1180	1125	250
RS 610/EV BLU	2040	1180	1125	280

PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

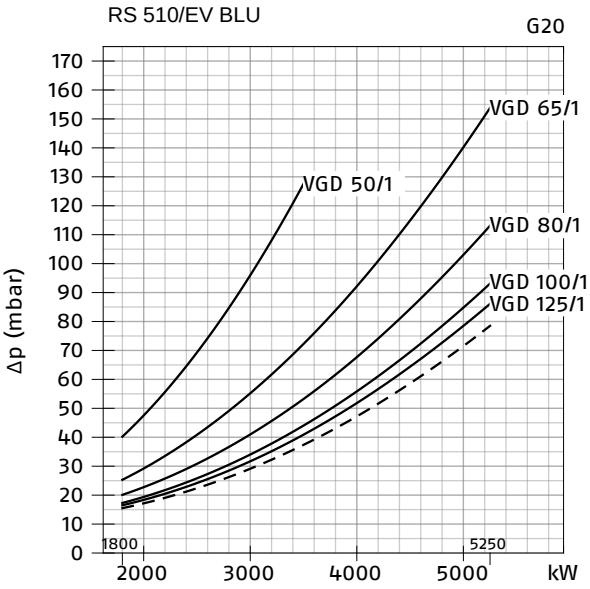


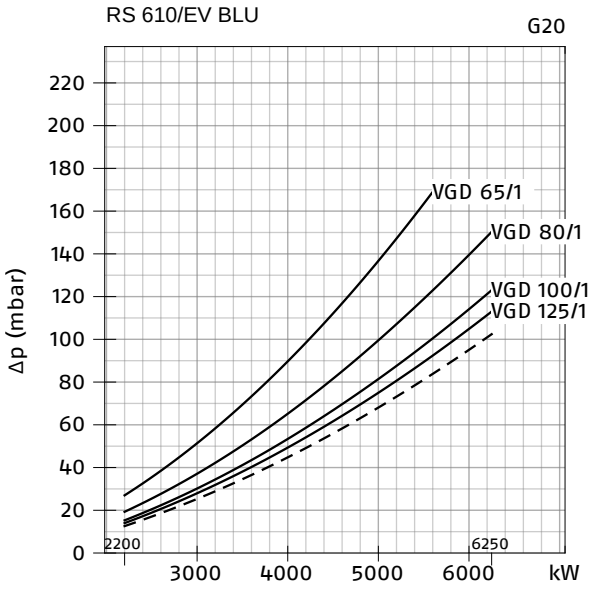


Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

——— Combustion head + gas train

- - - - Combustion head





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	VPS kit code (2)	Burner-gas train adapter (3)			
					RS 310/EV BLU	RS 410/EV BLU	RS 510/EV BLU	RS 610/EV BLU
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(4)	Rp 2”	3010123+ 20186306	(3000826+20042324)/20068062(6)			●
VGD 65/1-FT 122	**20140762***	(5)	DN65	3010123	□	□	□	□
VGD 80/1-FT 122	**20140763***		DN80	3010123	□	□	□	□
VGD 100/1-FT 122	**20169193***		DN100	3010123	3010370			
VGD 125/1-FT 122	**20169195***		DN125	(7)	●	3010224		

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function.
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models equipped with REC37 control box	OCI412 INTERFACE KIT Interface kit between the REC37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models equipped with LMV52 control box	INFRARED FLAME DETECTOR (IFD) The models, equipped with LMV52 control, can be equipped with infrared flame detector.		**20181871**

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm, E = 1345 mm		**3010376**
	All models equipped with REC37 control box	POWER CONTROLLER To obtain modulating operation, RS/EV BLU burners equipped with REC37 control box require a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. In the RS/EV BLU burners equipped with Siemens LMV52, the PID regulator s integrated inside the control box.		
		RWF 50.2 - Basic version with 3 position output		**20085417**
		RWF 55.5 - Complete with RS-485 interface		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface		**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO_2) FOR BURNERS The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	All models equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**
		VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series.		
	RS 310/EV BLU	Inverter power 7.5 kW - Electrical supply 400V - 50/60Hz		**20163074**
	RS 410/EV BLU	Inverter power 11 kW - Electrical supply 400V - 50/60Hz		**20163093**
	RS 510-610/EV BLU	Inverter power 15 kW - Electrical supply 400V - 50/60Hz		**20163096**
	All models equipped with REC37 control box	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available. All models equipped with REC37 control box.		**3010436**
	All models equipped with LMV52 control box	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
NOTE: an additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.
(2) On demand.

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burners with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- High performance fan with low sound emissions, forward curve blades
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50 Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes; ionisation sensor for flame detection (or UV sensor on demand)
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- REC37 Digital Burner Management System for air/fuel setting and Operation with Variable Speed Drive (VSD) with output PID modulation control as accessory (RS 310-610/EV BLU)
- LMV52 Digital Burner Management System for air/fuel setting, O_2 Control Ready and Operation with Variable Speed Drive (VSD) with output PID modulation control included (RS 310-610/EV O_2 BLU)
- AZL Display Interface, for combustion system commissioning and monitoring
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Burner failure led signal and lighted release button
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- Gasket for gas train adaptor
- Adaptor for gas train
- Screws for fixing the gas train adaptor: M16x70
- Thermal insulation screen
- M18x60 screws to secure the burner flange to the boiler
- Cable grommets kit for optional electrical wiring input
- M16x6 studs for fixing the gas elbow to the pipe coupling
- M16 nuts to fix the gas elbow to the pipe coupling
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating gas burners

RS 810/EV BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)

RS 810/EV BLU burner series covers a firing range from 1200 to 8010 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. It is based on a new Digital Burner Management System (Riello REC37 or Siemens LMV52), which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range. Operation can be “two stage progressive” or, alternatively, “modulating”with the installation of the dedicated probes (with burner models equipped with REC37 control box, an additional PID logic regulator is required).
RS 810/EV BLU burner series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs; specific versions are available to operate with Variable Speed Drive technology base on the control of a Frequency Inverter that modifies the air flow through the motor speed variation.
The combustion head engineered with advanced simulation devices, guarantees reduced polluting emissions.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.
Finally, RS 810/EV BLU burner model equipped with Siemens LMV52 control box and compatible with combustion optimization based on the residual O_2 content in the exhaust fumes, is now available.

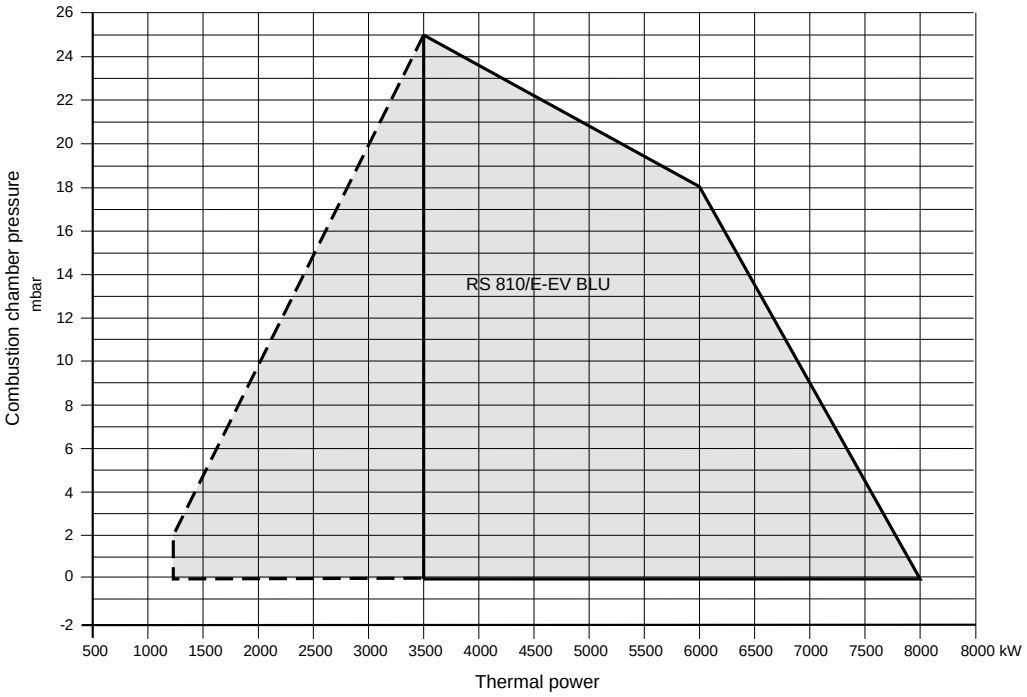
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (REC 37) - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 810/EV BLU TC FS1/FS2	1200/3500-8010	120/350-801	24.5	3/400/50	230/50-60	CE-0123CU1067	(1)(2)	**20160292**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52 - O_2 CONTROL READY) - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 810/EV O_2 BLU TC FS1/FS2	1200/3500-8010	120/350-801	24.5	3/400/50	230/50-60	CE-0123CU1067	(1)(2)	**20160293**

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.
FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours).
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Frequency Inverter to be ordered as separated accessory; please refer to “Accessories” paragraph.
(2) Seal control function is included on Burner Digitai Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train. In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.

FIRING RATES

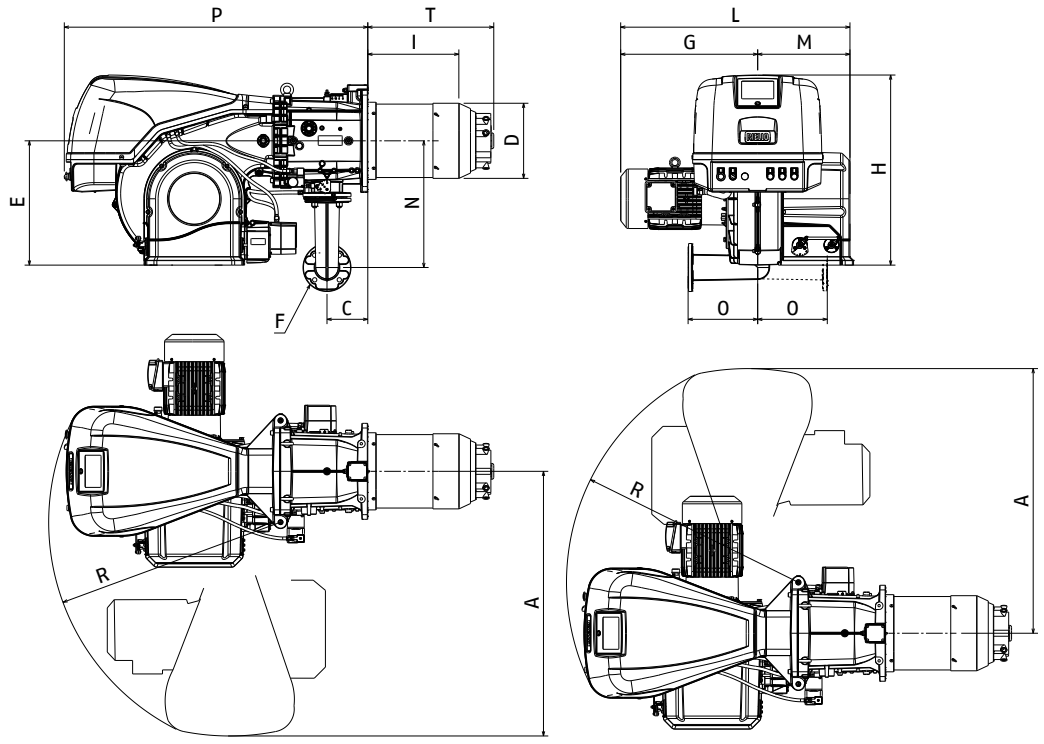


Useful firing rates for choosing the burner

Modulation range

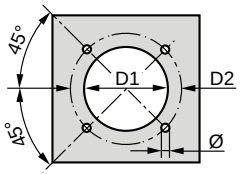
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

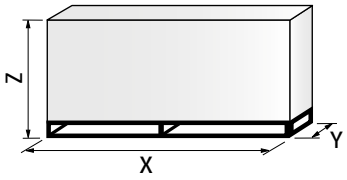


Description	A mm	C(*) mm	D mm	E mm	F(**) mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	R mm	T mm
MODELS WITH ELECTRONIC CAM (REC 37)															
RS 810/EV BLU	1197	173	363	585	DN80	637	890	1050	1050	413	260	290	1345	1055	558
MODELS WITH ELECTRONIC CAM (LMV 52) - O_2 CONTROL READY															
RS 810/EV 0_2 BLU	1285	173	363	585	DN80	637	890	405	1050	413	260	290	1440	1140	558

(*) Maximum position for the extraction of the servomotor cover.
(**) The adaptor for gas train is not included as standard equipment



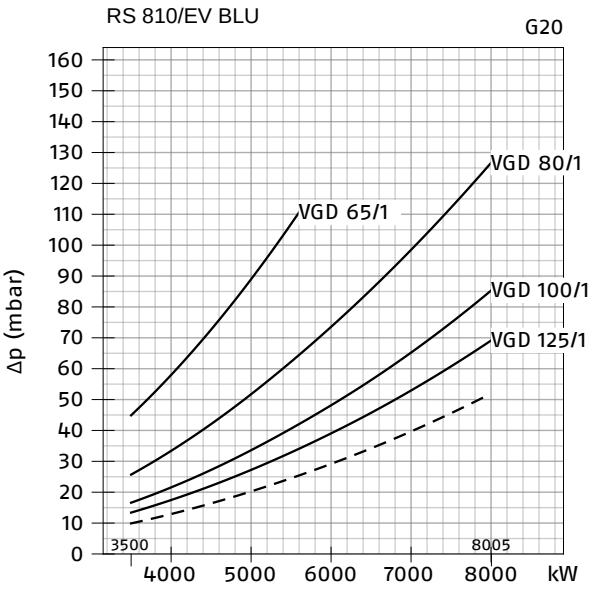
Description	D1 mm	D2 mm	Ø mm
RS 810/EV BLU	400	495	M18



Description	X mm	Y mm	Z mm	Net weight kg
RS 810/EV BLU	2140	1200	1346	300

PRESSURE LOSS DIAGRAMS

VGD 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	VPS kit code (2)	Burner-gas train adapter (3)
					RS 810/EV BLU
VGD SERIES ONE STAGE GAS TRAIN					
VGD 65/1-FT 122	**20140762***	(5)	DN65	3010123	20059331/(3010222+20059331)(6)
VGD 80/1-FT 122	**20140763***		DN80	3010123	20059331/(3010222+20059331)(6)
VGD 100/1-FT 122	**20169193***		DN100	3010123	20059332/(3010223 +20059331)(6)
VGD 125/1-FT 122	**20169195***		DN125	(4)	20059333/(3010224 +20059331)(6)

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) On demand.
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	RS 810/EV BLU	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	RS 810/EV BLU	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	RS 810/EV BLU	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C7 Dimensions: A = 1310 mm, B 160-960 mm, C = 110 mm, D = 1600 mm, E = 1350 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**20177776**
	All models equipped with REC37 control box	POWER CONTROLLER To obtain modulating operation, RS/EV BLU burners equipped with REC37 control box require a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. In the RS/EV BLU burners equipped with Siemens LMV52, the PID regulator s integrated inside the control box. RWF 50.2 - Basic version with 3 position output		**20085417**
		RWF 55.5 - Complete with RS-485 interface		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface		**20074442**
	RS 810/EV BLU	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	RS 810/EV BLU	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	RS 810/EV BLU equipped with REC37 control box	OCI412 INTERFACE KIT Interface kit between the REC37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	RS 810/EV BLU equipped with LMV52 control box	INFRARED FLAME DETECTOR (IFD) The models, equipped with LMV52 control, can be equipped with infrared flame detector.		**20181871**
	RS 810/EV BLU equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO_2) FOR BURNERS The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	RS 810/EV BLU equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**
	RS 810/EV BLU	VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series. Inverter power 22 kW - Electrical supply 400V - 50/60Hz		**20163099**
	RS 810/EV BLU equipped with REC37 control box	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available. All models equipped with REC37 control box.		**3010436**
	RS 810/EV BLU equipped with LMV52 control box	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
NOTE: an additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burners with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- High performance fan with low sound emissions, forward curve blades
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50 Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes; ionisation sensor for flame detection (or UV sensor on demand)
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- REC37 Digital Burner Management System for air/fuel setting and Operation with Variable Speed Drive (VSD) with output PID modulation control as accessory
- LMV52 Digital Burner Management System for air/fuel setting, O_2 Control Ready and Operation with Variable Speed Drive (VSD) with output PID modulation control included
- AZL Display Interface, for combustion system commissioning and monitoring
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Burner failure led signal and lighted release button
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- Gasket for gas train adaptor
- Adaptor for gas train
- Screws for fixing the gas train adaptor: M16x70
- Thermal insulation screen
- M18x60 screws to secure the burner flange to the boiler
- Cable grommets kit for optional electrical wiring input
- M16x6 studs for fixing the gas elbow to the pipe coupling
- M16 nuts to fix the gas elbow to the pipe coupling
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating gas burners

RS 1000-1200/M BLU



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

RS 1000-1200/M BLU burners are characterised by a monoblock structure which means that all necessary components are combined in a single unit, making installation easier and faster. The burners cover a firing range from 4000 to 11100 kW, and they have been designed for use in hot water boilers or industrial steam generators. Operation can be “two stage progressive” or alternatively “modulating” with the installation of a PID logic regulator or by external 4-20 mA/0-10 V signal. The mechanical cam device of regulation allows to catch up a high modulation ratio on all firing rates range.
The burners can, therefore, supply with precision the demanded power, guaranteeing a high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The combustion head, engineered with advanced simulation devices, guarantees reduced polluting emissions (NOx < 80 mg/kWh).
An exclusive design, guarantees low sound emissions, low electrical consumption, easy use and maintenance.

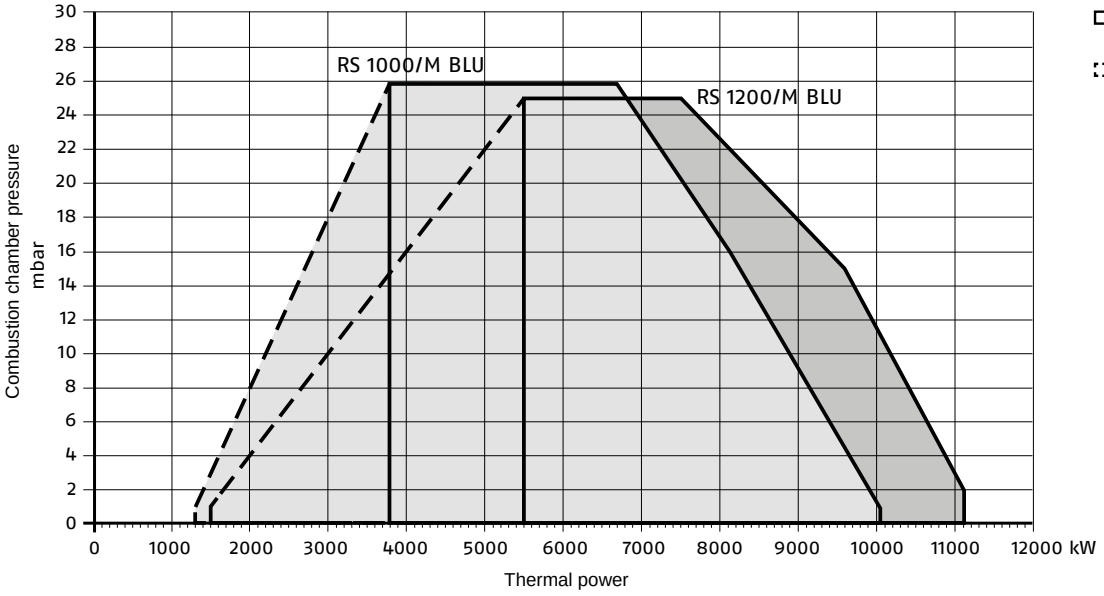
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 1000/M BLU TC FS1	1100/4000-10100	130/380-940	24.0	3/400/50	230/50-60	CE-0085CN0119	(1)(2)	**20205814**
RS 1200/M BLU TC FS1	1500/5500-11100	150/550-1150	27.2	3/400/50	230/50-60	CE-0085CN0120	(1)(2)	**20208727**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with LFL control box.
(2) Model with UV photocell.

FIRING RATES

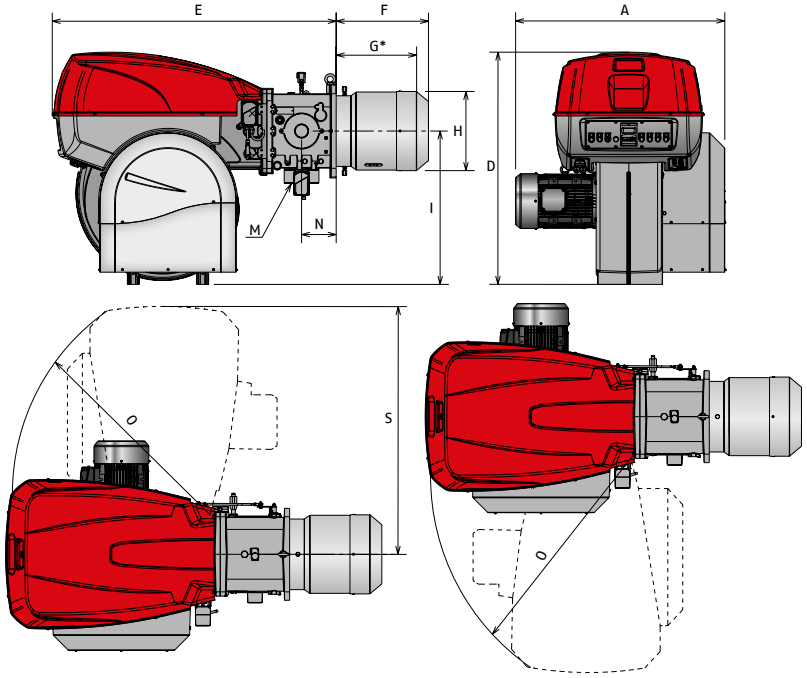


Useful firing rates for choosing the burner

Modulation range

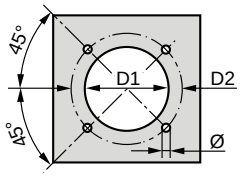
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

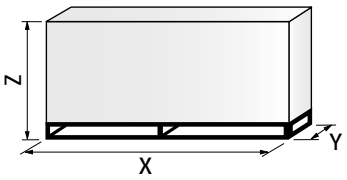


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/M BLU	1206	1338	1637	669	485	413	885	DN80	200	1350	1493
RS 1200/M BLU	1250	1338	1637	670	454	456	885	DN80	200	1350	1493

(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



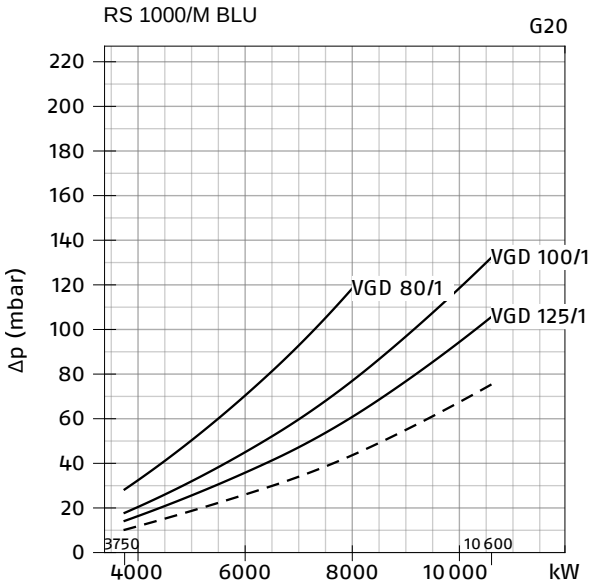
Description	D1 mm	D2 mm	Ø mm
RS 1000/M BLU	460	608	M20
RS 1200/M BLU	500	608	M20

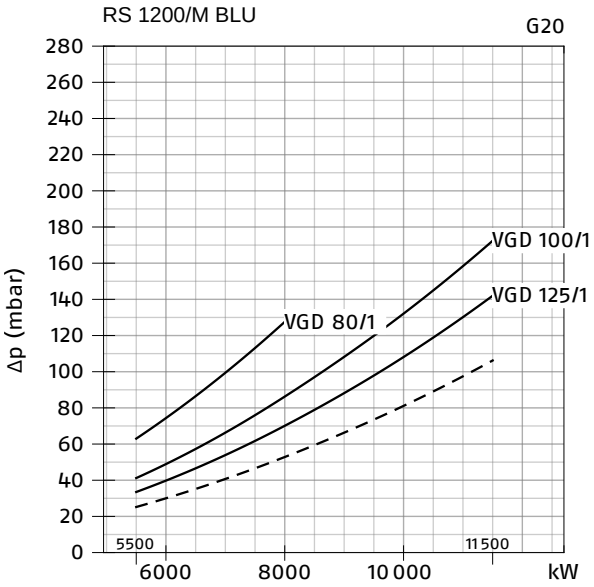


Description	X mm	Y mm	Z mm	Net weight kg
RS 1000/M BLU	2400	1400	1595	500
RS 1200/M BLU	2400	1400	1595	550

PRESSURE LOSS DIAGRAMS

VGD 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	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
					RS 1000/M BLU	RS 1200/M BLU
VGD SERIES ONE STAGE GAS TRAIN						
VGD 80/1-FT 122	**20140763***	DN80	-	3010123	20066268/(3010222+20066268)(6)	
VGD 80/1 CT FT 122	**20169192****	DN80	♦	♦	20066268/(3010222+20066268)(6)	
VGD 100/1-FT 122	**20169193***	DN100	-	3010123	20066278/(3010223+20066268)(6)	
VGD 100/1 CT FT 122	**20169194****	DN100	♦	♦	20066278/(3010223+20066268)(6)	
VGD 125/1-FT 122	**20169195***	DN125	-	(5)	20066284/(3010224+20066268)(6)	

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) On demand.
(6) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C8 Dimensions: A = 1425 mm, B 285-1000 mm, C = 110 mm, D = 1500 mm, E = 1800 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010401**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. RWF 55.5 - Complete with RS-485 interface.	**20101191**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output. Pressure (0-16 bar) with 4-20 mA output. Pressure (0-25 bar) with 4-20 mA output.	 **3010213** **3010214** **3090873**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).	**3010390**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.	**3010402**

STATE OF SUPPLY

Monoblock forced draught gas burners with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions, reverse curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50 Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes; or UV sensor for flame detection
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- LFL control box for controlling the system safety
- UV photocell or ionisation probe for flame detection
- Star/delta starter for the fan motor
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Manual or automatic output increase/decrease switch
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Led signal for correct rotation direction of fan motor
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- 1 flange gasket
- 8 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Low NOx modulating gas burners

RS 1000-1200/E BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)

RS 1000-1200/E series burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The burners, with modulating operation, cover a firing range from 1300 to 11100 kW, and they have been designed for use in hot water boilers or industrial steam generators.
The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates range.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction. The burner operation can be intermittent or continuous by menu setting.
The innovative combustion head, adjustment system ensures perfect movement during modulation as well as reducing noise and pollutants.

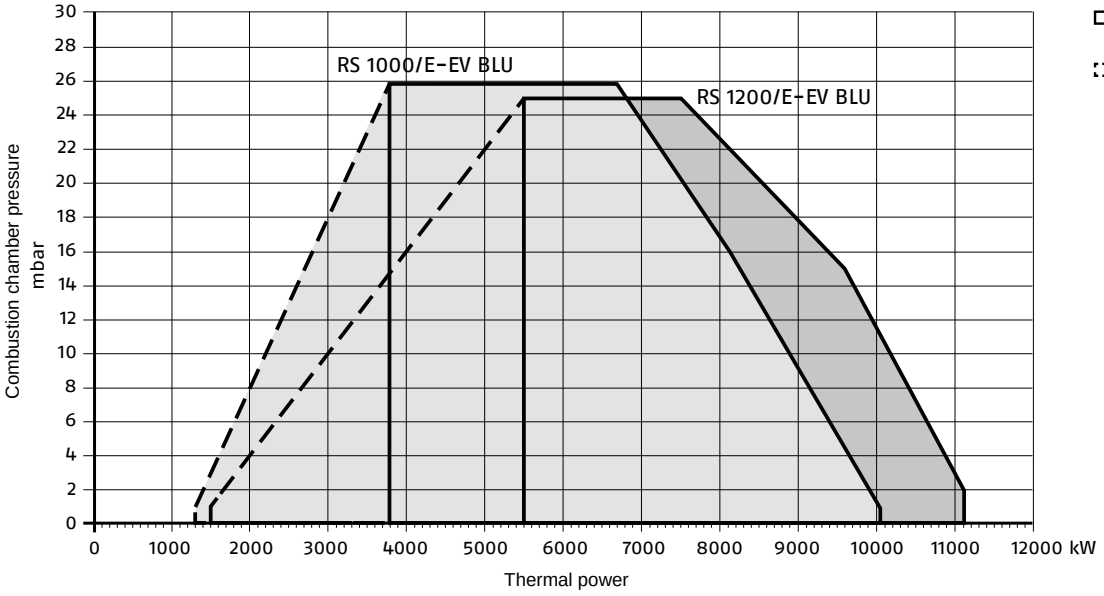
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (ONE STOP EVERY 24 HOURS) AND CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)								
RS 1000/E BLU TC FS1/FS2	1300/3800-10100	130/380-940	24.0	3/400/50	230/50-60	CE-0085CN0119	(1)(2)	**20057514**
RS 1200/E BLU TC FS1/FS2	1500/5500-11100	150/550-1150	27.2	3/400/50	230/50-60	CE-0085CN0120	(1)(2)	**20057515**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with IRD sensor.
(2) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES

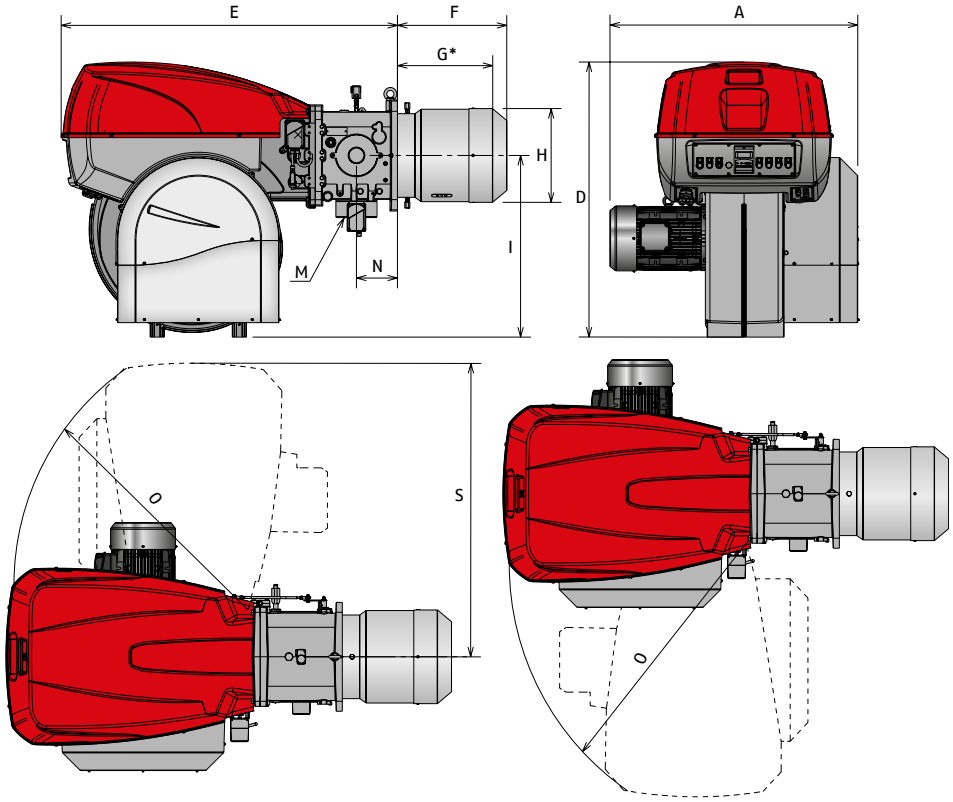


Useful firing rates for choosing the burner

Modulation range

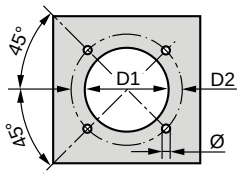
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

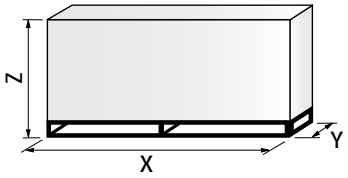


Description	A mm	D mm	E mm	Fv	G(*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/E BLU	1206	1338	1637	669	485	413	885	DN80	200	1350	1493
RS 1200/E BLU	1250	1338	1637	670	485	456	885	DN80	200	1350	1493

(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



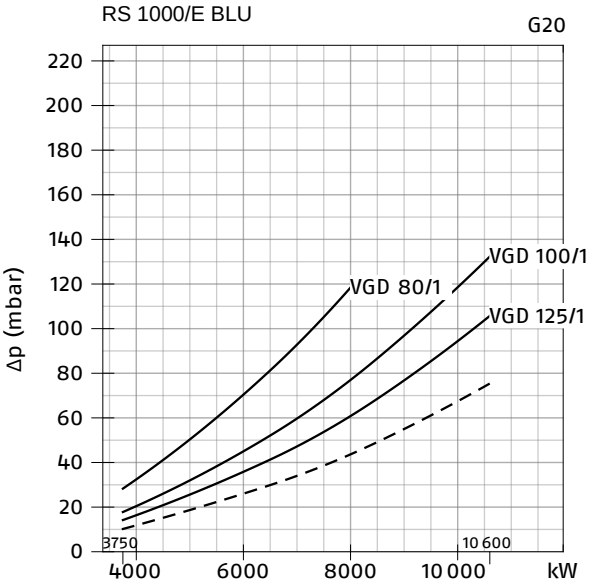
Description	D1 mm	D2 mm	Ø mm
RS 1000/E BLU	460	608	M20
RS 1200/E BLU	500	608	M20

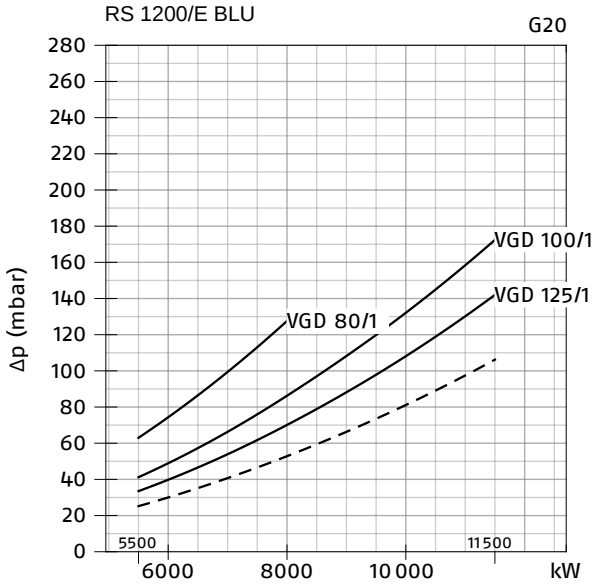


Description	X mm	Y mm	Z mm	Net weight kg
RS 1000/E BLU	2400	1400	1595	500
RS 1200/E BLU	2400	1400	1595	550

PRESSURE LOSS DIAGRAMS

VGD 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	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
				RS 1000/E BLU	RS 1200/E BLU
VGD SERIES ONE STAGE GAS TRAIN					
VGD 80/1-FT 122	**20140763***	DN80	(4)	20066268/(3010222+20066268)(5)	
VGD 100/1-FT 122	**20169193***	DN100	(4)	20066278/(3010223+20066268)(5)	
VGD 125/1-FT 122	**20169195***	DN125	(4)	20066284/(3010224+20066268)(5)	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
(5) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Code
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C8 Dimensions: A = 1425 mm, B (min-max) = 285-1000 mm, C = 110 mm, D = 1500 mm, E = 1800 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010401**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	All models	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.	**3010388**

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions, reverse curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Low emission mobile combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator
- AZL Display Interface, for combustion system commissioning and monitoring,
- Burner safety control included on Electronic Cam device
- IRD sensor
- Star/delta starter for the fan motor
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Manual or automatic output increase/decrease switch
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- 1 flange gasket
- 1 thermal screen
- Screws for fixing the flange
- Screws for fixing the burner flange to the boiler
- Seal control pressure switch (for installation on gas train)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Low NOx modulating gas burners

RS 1300-2000/E BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)

RS 1300-2000/E BLU series burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The burners, with modulating operation, cover a firing range from 2500 to 19500 kW, and they have been designed for use in hot water boilers or industrial steam generators.
The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates range.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction. The burner operation can be intermittent or continuous by menu setting.
The innovative combustion head, adjustment system ensures perfect movement during modulation as well as reducing noise and pollutants.

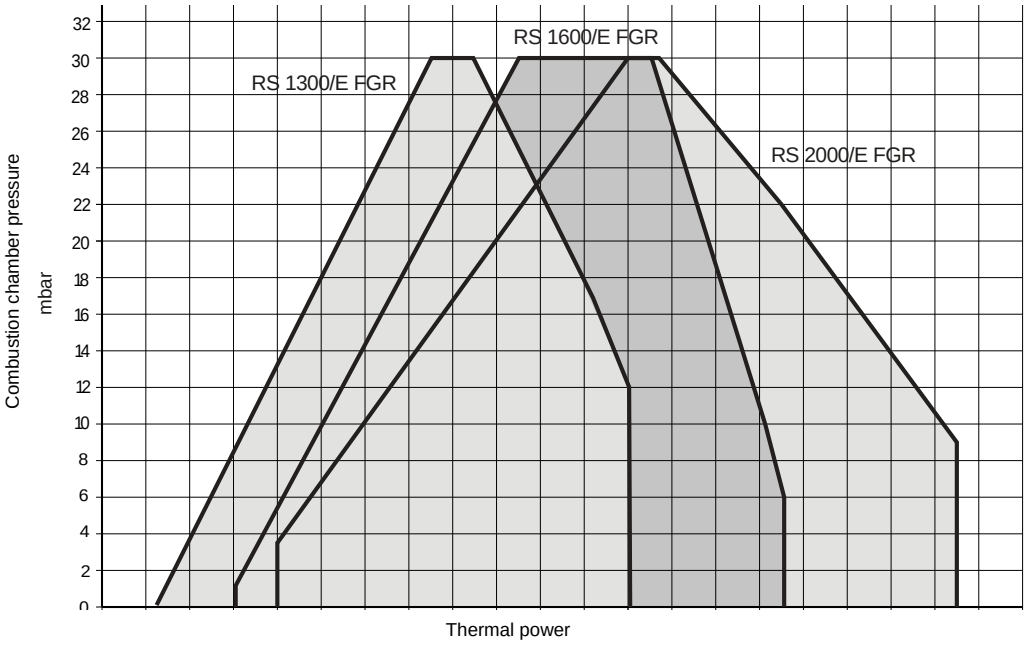
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)								
RS 1300/E BLU TC FS1/FS2	1350-7500/12000	250/750-1300	34.5	3/400/50	230/50-60	-	(1)(2)	**20124422**
RS 1600/E BLU TC FS1/FS2	3065/9503-15560	307/951-1556	41.5	3/400/50	230/50-60	-	(1)(2)	**20124358**
RS 2000/E BLU TC FS1/FS2	4000/12000-19500	400/135-1950	49.3	3/400/50	230/50-60	-	(1)(2)	**20104154**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(2) Model with IRD sensor.

FIRING RATES

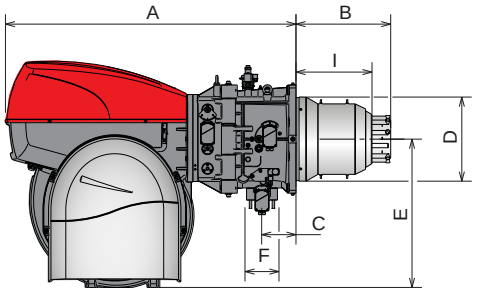


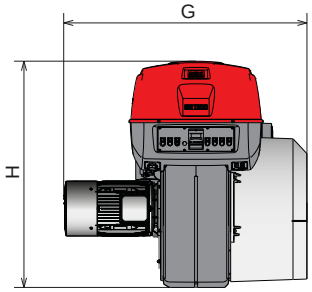
Useful firing rates for choosing the burner

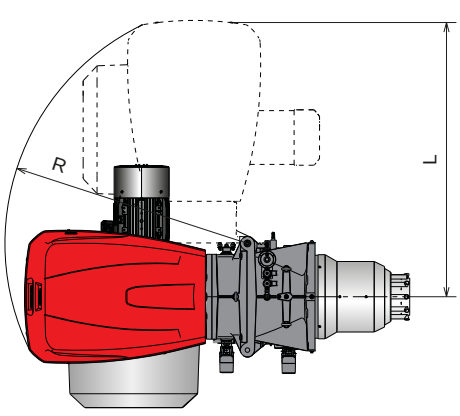
Modulation range

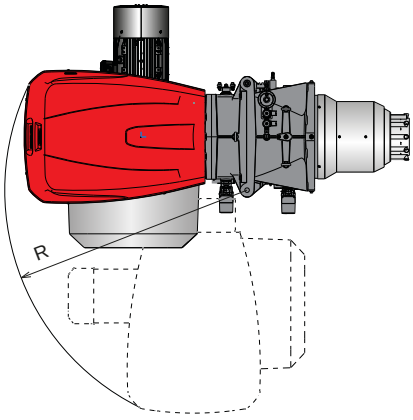
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

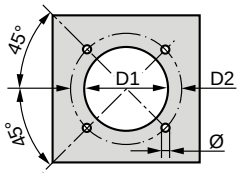




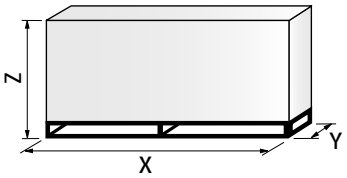




Model	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	R mm
RS 1300/E BLU	1880	613	220	544	960	DN 80	1585	1463	383	1782	1565
RS 1600/E BLU	1880	852	220	544	960	DN 100	1530	1463	544	1785	1565
RS 2000/E BLU	1880	852	220	590	960	DN 100	1560	1463	562	1782	1565



Description	D1 mm	D2 mm	Ø mm
RS 1300/E BLU	580	645	M20
RS 1600/E BLU	580	645	M20
RS 2000/E BLU	580	645	M20

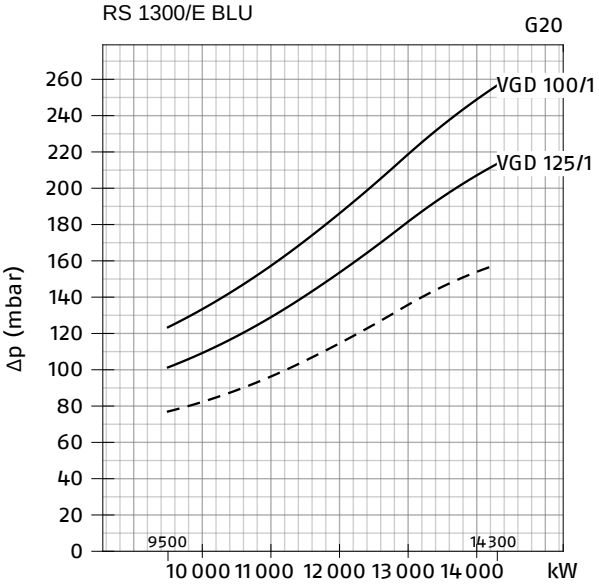


Description	X mm	Y mm	Z mm	Net weight kg
RS 1300/E BLU	3000	1800	1750	1180
RS 1600/E BLU	3000	1800	1750	1180
RS 2000/E BLU	3000	1800	1750	1180

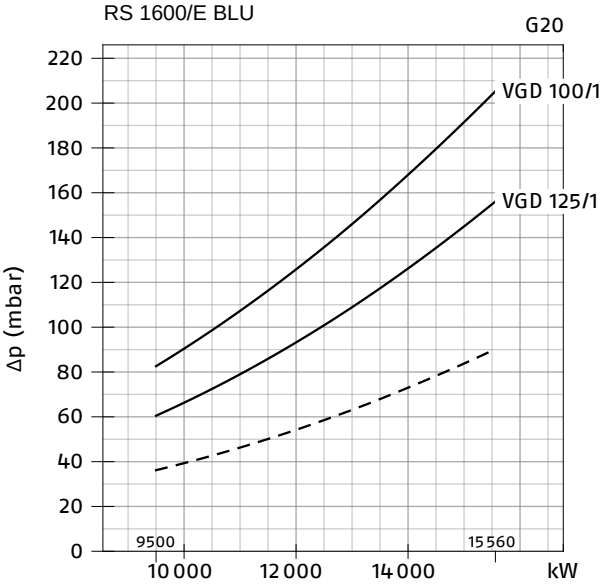
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

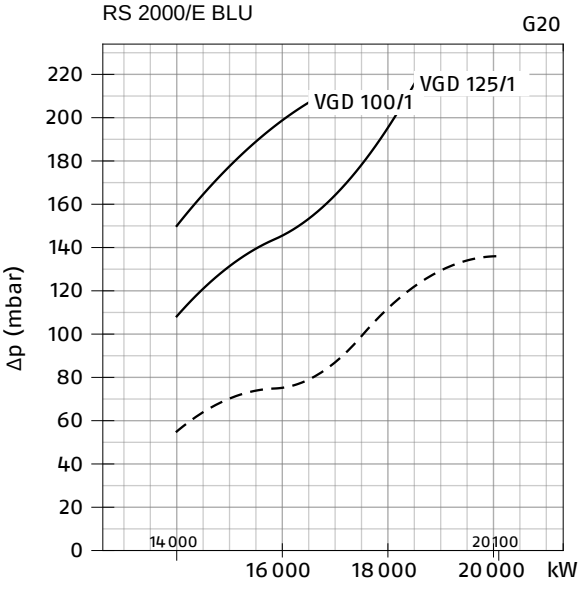
RS 1300/E BLU



RS 1600/E BLU



RS 2000/E BLU



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	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)		
				RS 1300/E BLU	RS 1600/E BLU	RS 2000/E BLU
VGD SERIES ONE STAGE GAS TRAIN						
VGD 100/1-FT 122	**20169193***	DN100	(4)	20130602	20130616	
VGD 125/1-FT 122	**20169195***	DN125	(4)	20130606	20130617	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Code
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C9 Dimensions: A = 1690 mm, C = 110 mm, D = 1920 mm, E = 1605 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**20108736**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	All models	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.	**3010388**

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
– High performance fan with low sound emissions, forward curve blades
– Air suction circuit lined with sound-proofing material
– Air damper for air setting controlled by a high precision servomotor
– Air pressure switch
– Fan starting motor at 2900 rpm, three-phase 400/690 V with neutral, 50Hz
– Low emission mobile combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • flame stability disk
  • Ignition pilot burner
– Automatic regulator for gas delivery, controlled by a high precision servomotor
– Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
– Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator
– AZL Display Interface, for combustion system commissioning and monitoring, included
– Burner safety control included on Electronic Cam device
– IRD sensor flame detector
– Star/delta starter for the fan motor
– Main terminal supply board
– Volt-free contacts output relay
– Stop/emergency push-button
– Off-automatic selector
– Light signalling of main fuel valve open
– Light signalling of mains live state
– Fan motor lockout warning lamp
– Burner lockout warning lamp and reset switch
– Heat request signal
– Fan motor contactor and thermal relay
– Burner opening hinge
– Lifting rings
– IP 54 electric protection level

STANDARD EQUIPMENT

– 1 flange gasket
– 1 thermal screen
– Screws for fixing the flange
– Screws for fixing the burner flange to the boiler
– Seal control pressure switch (for installation on gas train)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Low NOx modulating gas burners

RS 1000-1200/EV BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)

RS 1000-1200/EV series burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The burners cover a firing range from 1300 to 11100 kW, and they have been designed for use in hot water boilers or industrial steam generators.
Operation is modulating with variable speed drive.
The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates range.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction. The burner operation can be intermittent or continuous by menu setting.
The innovative combustion head, adjustment system ensures perfect movement during modulation as well as reducing noise and pollutants.

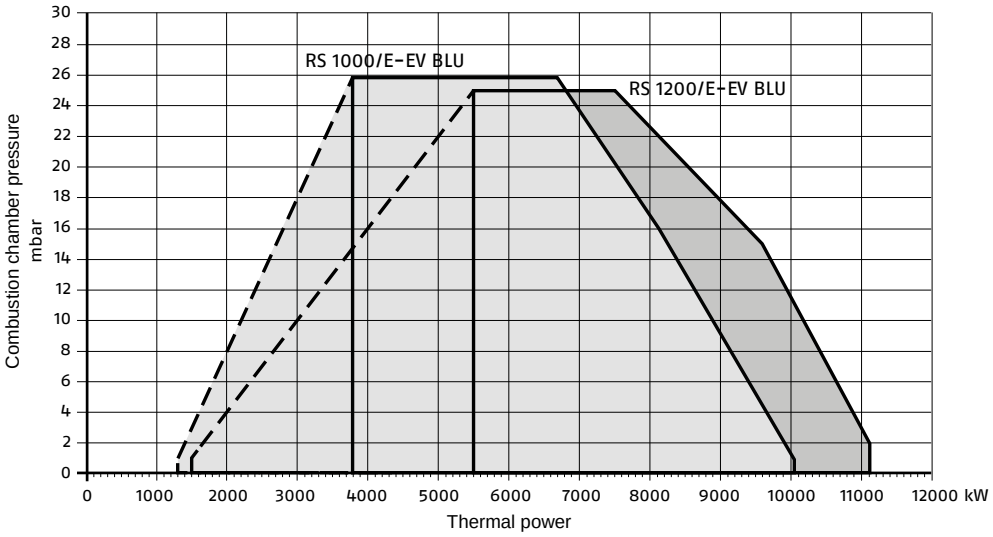
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O2 CONTROL READY - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 1000/EV BLU TC FS1/FS2	1300/3800-10100	130/380-940	24.0	3/400/50	230/50-60	CE-0085CN0119	(1)	**20057519**
RS 1200/EV BLU TC FS1/FS2	1500/5500-11100	150/550-1150	27.2	3/400/50	230/50-60	CE-0085CN0120	(1)	**20057520**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(1) Model with IRD sensor.

FIRING RATES

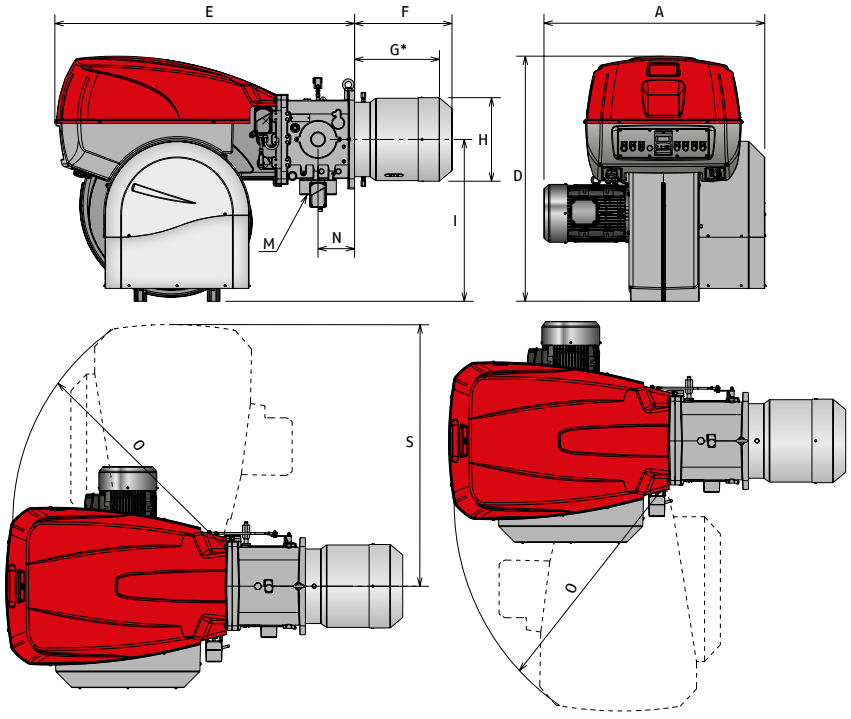


Useful firing rates for choosing the burner

Modulation range

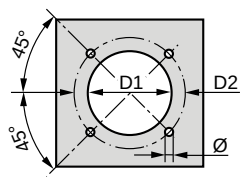
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

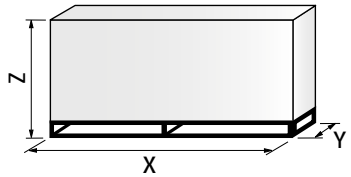


Description	A mm	D mm	E mm	Fv	G(*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/EV BLU	1206	1338	1637	669	485	413	885	DN80	200	1350	1493
RS 1200/EV BLU	1250	1338	1637	670	485	456	885	DN80	200	1350	1493

(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



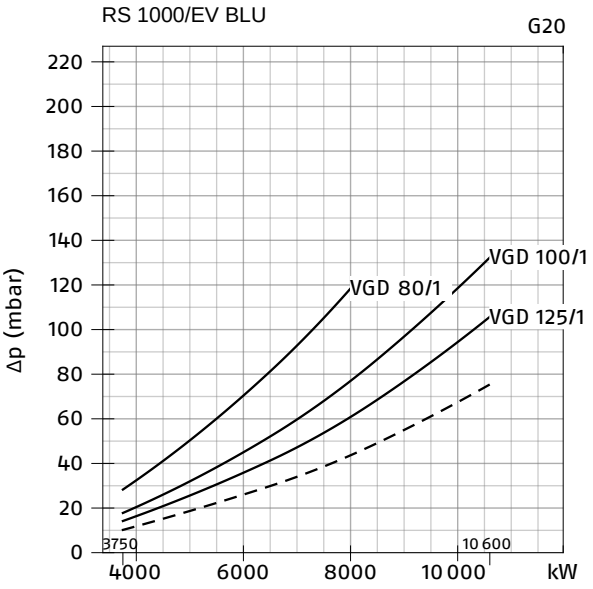
Description	D1 mm	D2 mm	Ø mm
RS 1000/EV BLU	460	608	M20
RS 1200/EV BLU	500	608	M20

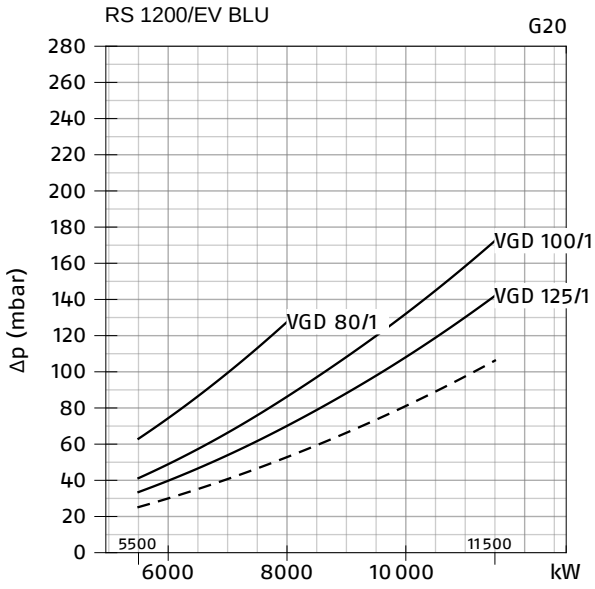


Description	X mm	Y mm	Z mm	Net weight kg
RS 1000/EV BLU	2400	1400	1595	500
RS 1200/EV BLU	2400	1400	1595	550

PRESSURE LOSS DIAGRAMS

VGD 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	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
				RS 1000/EV BLU	RS 1200/EV BLU
VGD SERIES ONE STAGE GAS TRAIN					
VGD 80/1-FT 122	**20140763***	DN80	(4)	20066268/(3010222+20066268)(5)	
VGD 100/1-FT 122	**20169193***	DN100	(4)	20066278/(3010223+20066268)(5)	
VGD 125/1-FT 122	**20169195***	DN125	(4)	20066284/(3010224+20066268)(5)	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
(5) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C8 Dimensions: A = 1425 mm, B (min-max) = 285-1000 mm, C = 110 mm, D = 1500 mm, E = 1800 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010401**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**

Drawing	Burner model	Specification	Note	Code
	All models	OXYGEN CONTROL KIT (QGO2) The QGO2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	All models	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**
	RS 1000/EV BLU	VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series. Inverter power 22 kW - Electrical supply 400V - 50/60Hz		**20163099**
	RS 1200/EV BLU	Inverter power 30 kW - Electrical supply 400V - 50/60Hz		**20163100**
	All models	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
An additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions, reverse curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Low emission mobile combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator
- AZL Display Interface, for combustion system commissioning and monitoring,
- Burner safety control included on Electronic Cam device
- IRD sensor
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Manual or automatic output increase/decrease switch
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- 1 flange gasket
- 1 thermal screen
- Screws for fixing the flange
- Screws for fixing the burner flange to the boiler
- Seal control pressure switch (for installation on gas train)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Low NOx modulating gas burners

RS 1300-2000/EV BLU



- Progressive two-stage or modulating gas burners with electronic cam, with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)

RS 1300-2000/EV series burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The burners cover a firing range from 2500 to 19500 kW, and they have been designed for use in hot water boilers or industrial steam generators.
Operation is modulating with variable speed drive.
The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates range.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction. The burner operation can be intermittent or continuous by menu setting.
The innovative combustion head, adjustment system ensures perfect movement during modulation as well as reducing noise and pollutants.

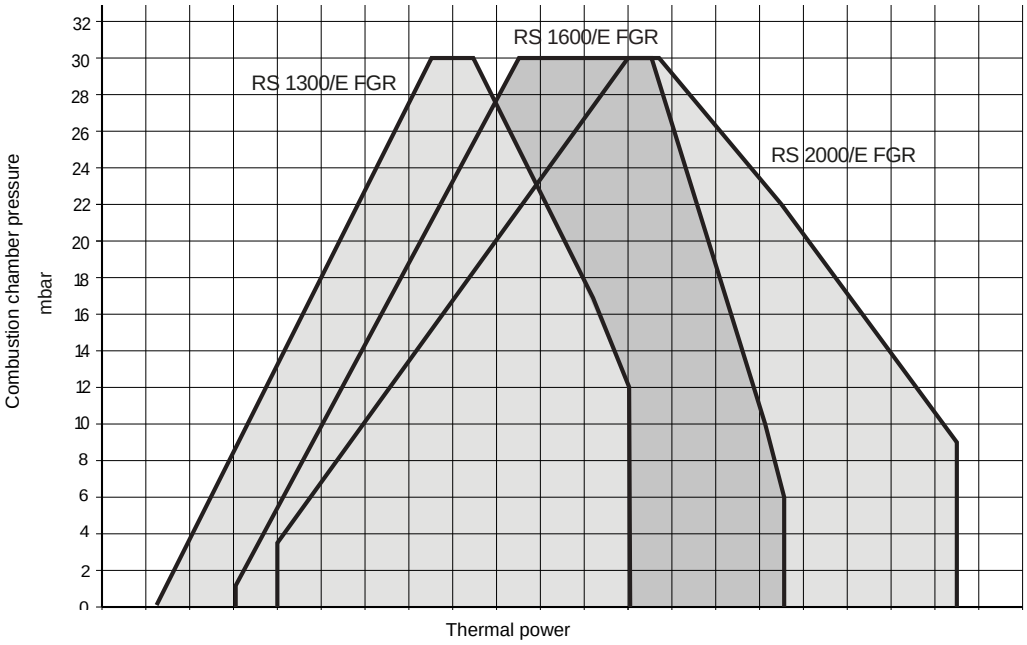
* The emission value is determined, according to the provisions of standard EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O2 CONTROL READY - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RS 1300/EV BLU TC FS1/FS2	1350-7500/12000	250/750-1300	34.5	3/400/50	230/50-60	-	(1)(2)	**20127213**
RS 1600/EV BLU TC FS1/FS2	3065/9503-15560	307/951-1556	41.5	3/400/50	230/50-60	-	(1)(2)	**20104142**
RS 2000/EV BLU TC FS1/FS2	4000/12000-19500	400/135-1950	49.3	3/400/50	230/50-60	-	(1)(2)	**20093706**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.
(2) Model with IRD sensor.

FIRING RATES

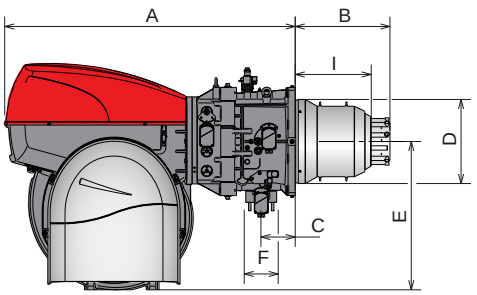


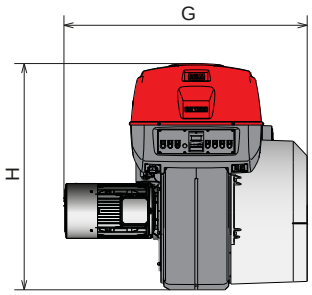
Useful firing rates for choosing the burner

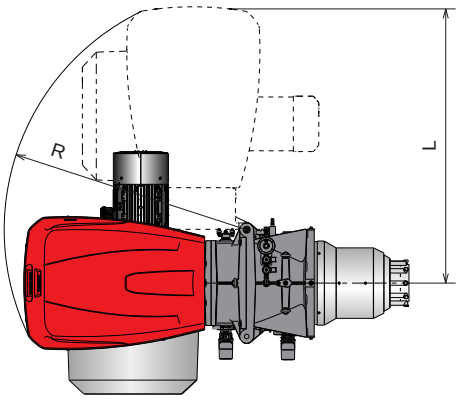
Modulation range

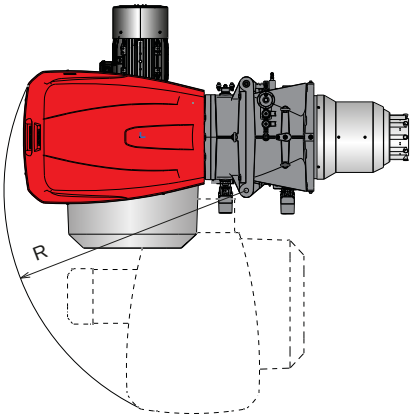
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

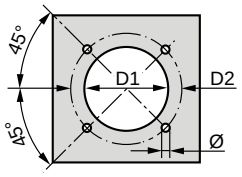




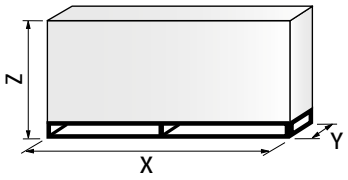




Model	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	R mm
RS 1300/EV BLU	1880	613	220	544	960	DN 80	1585	1463	383	1782	1565
RS 1600/EV BLU	1880	852	220	544	960	DN 100	1530	1463	544	1785	1565
RS 2000/EV BLU	1880	852	220	590	960	DN 100	1560	1463	562	1782	1565



Description	D1 mm	D2 mm	Ø mm
RS 1300/EV BLU	580	645	M20
RS 1600/EV BLU	580	645	M20
RS 2000/EV BLU	580	645	M20

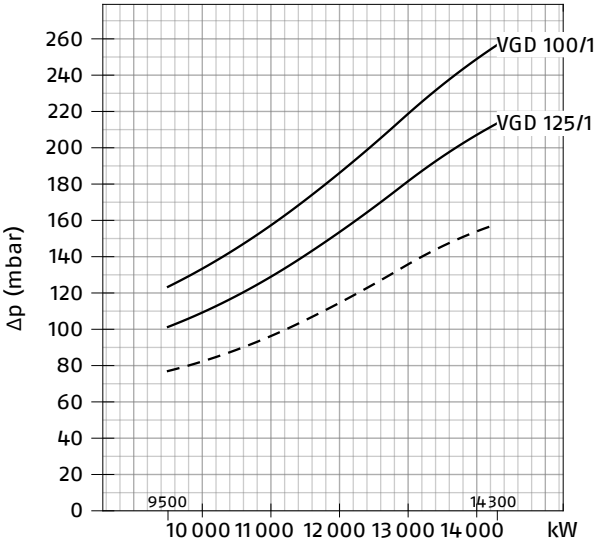


Description	X mm	Y mm	Z mm	Net weight kg
RS 1300/EV BLU	3000	1800	1750	1180
RS 1600/EV BLU	3000	1800	1750	1180
RS 2000/EV BLU	3000	1800	1750	1180

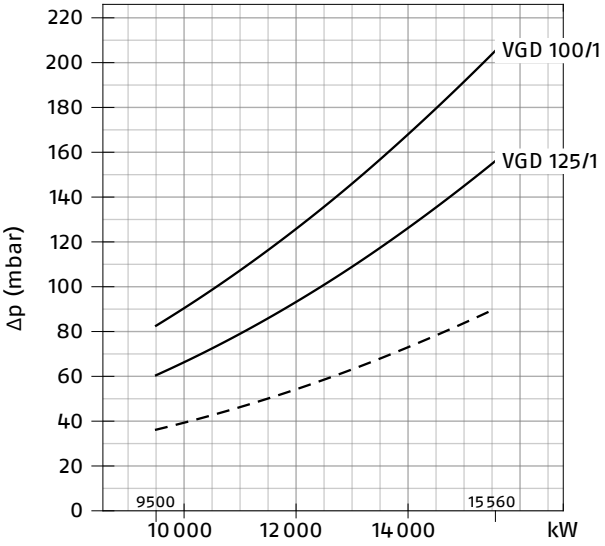
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

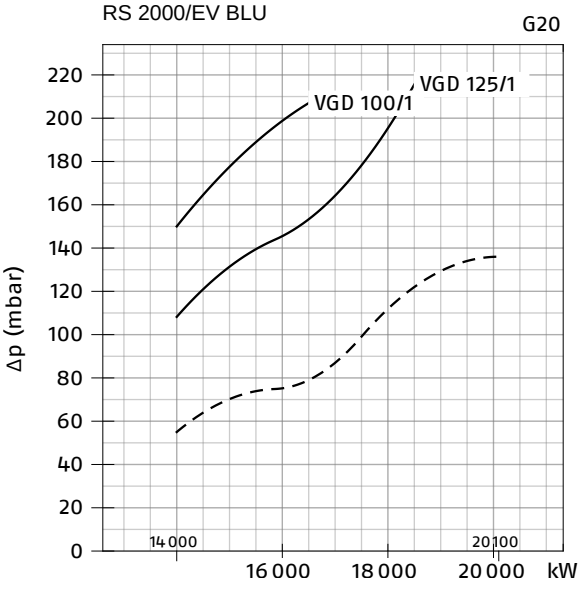
RS 1300/EV BLU



RS 1600/EV BLU



RS 2000/EV BLU



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	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)		
				RS 1300/EV BLU	RS 1600/EV BLU	RS 2000/EV BLU
VGD SERIES ONE STAGE GAS TRAIN						
VGD 100/1-FT 122	**20169193***	DN100	(4)	20130602	20130616	
VGD 125/1-FT 122	**20169195***	DN125	(4)	20130606	20130617	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C9 Dimensions: A = 1690 mm, C = 110 mm, D = 1920 mm, E = 1605 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**20108736**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	OXYGEN CONTROL KIT (QGO_2) FOR BURNERS The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	All models	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**
		VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series.		
	RS 1300/EV BLU	Inverter power 30 kW - Electrical supply 400V - 50/60Hz		**20163100**
	RS 1600/EV BLU	Inverter power 37 kW - Electrical supply 400V - 50/60Hz		**20163105**
	RS 2000/EV BLU	Inverter power 45 kW - Electrical supply 400V - 50/60Hz		**20164366**
	All models	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
An additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
– High performance fan with low sound emissions, forward curve blades
– Air suction circuit lined with sound-proofing material
– Air damper for air setting controlled by a high precision servomotor
– Air pressure switch
– Fan starting motor at 2900 rpm, three-phase 400/690 V with neutral, 50Hz
– Low emission mobile combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • flame stability disk
  • Ignition pilot burner
– Automatic regulator for gas delivery, controlled by a high precision servomotor
– Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
– Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator
– AZL Display Interface, for combustion system commissioning and monitoring, included
– Burner safety control included on Electronic Cam device
– IRD sensor flame detector
– Star/delta starter for the fan motor
– Main terminal supply board
– Volt-free contacts output relay
– Stop/emergency push-button
– Off-automatic selector
– Light signalling of main fuel valve open
– Light signalling of mains live state
– Fan motor lockout warning lamp
– Burner lockout warning lamp and reset switch
– Heat request signal
– Fan motor contactor and thermal relay
– Burner opening hinge
– Lifting rings
– IP 54 electric protection level

STANDARD EQUIPMENT

– 1 flange gasket
– 1 thermal screen
– Screws for fixing the flange
– Screws for fixing the burner flange to the boiler
– Seal control pressure switch (for installation on gas train)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

GAS BURNERS

STANDARD

Standard NOx emissions, lower than Class 1 of European Standard EN 676 (NOx lower than 170 mg/kWh) or, with MZ burner models, lower than Class 2 of European Standard EN 676 (NOx lower than 120 mg/kWh)

ONE STAGE



RIELLO 40 GS

GS3 (11-35 kW)
GS5 (18-58 kW)
GS10 (42-116 kW)
GS20 (81-220 kW)

page 250



GULLIVER RS

RS5 (160-330 kW)

page 264



RS 34-44/1

RS 34/1 MZ (70-390 kW)
RS 44/1 MZ (100-550 kW)

page 272



GAS

GAS 3 (130-350 kW)
GAS 4 (185-465 kW)
GAS 5 (325-660 kW)
GAS 6 (525-1050 kW)

page 377

TWO STAGE



RIELLO 40 GSD

GS10D (29/41-106 kW)
GS20D (58/81-220 kW)

page 256



GULLIVER RS

RS5D (160/208-345 kW)

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RS 34-44

RS 34 MZ (45/125-390 kW)
RS 44 MZ (80/203-550 kW)

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RS 50-64

RS 50 (115/290-600 kW)
RS 64 MZ (150/400-850 kW)

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RS 70-190

RS 70 (192/465-814 kW)
RS 100 (232/698-1163 kW)
RS 130 (372/930-1512 kW)
RS 150 (300/900-1850 kW)
RS 190 (470/1279-2290 kW)

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GAS/2

GAS 3/2 (80/130-350 kW)
GAS 4/2 (120/180-470 kW)
GAS 5/2 (155/320-660 kW)
GAS 6/2 (300/520-1050 kW)
GAS 7/2 (400/800-1760 kW)
GAS 9/2 (1000/1750-3200 kW)

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MODULATING MECHANICAL CAM



RS 34-44/M MZ

RS 34/M MZ (45/125-390 kW)
RS 44/M MZ (80/203-550 kW)

page 298



RS 50-64/M

RS 50/M MZ (80/285-630 kW)
RS 64/M MZ (150/400-850 kW)

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RS 70-250/M

RS 70/M (150/470-930 kW)
RS 100/M (150/700-1340 kW)
RS 130/M (254/920-1600 kW)
RS 150/M (300/900-1850 kW)
RS 190/M (470/1279-2290 kW)
RS 250/M MZ (600/1250-2650 kW)

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RS 310-610/M MZ

RS 310/M MZ (600/1300-3900 kW)
RS 410/M MZ (800/2000-4900 kW)
RS 510/M MZ (800/2200-5520 kW)
RS 610/M MZ (820/2400-6300 kW)

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RS 1000-1200/M C01

RS 1000/M C01 (1100/4000-10100 kW)
RS 1200/M C01 (1500/5500-11100 kW)

page 355



GAS P/M

GAS 3 P/M (80/130-350 kW)
GAS 4 P/M (120/180-470 kW)
GAS 5 P/M (155/320-660 kW)
GAS 6 P/M (300/520-1050 kW)
GAS 7 P/M (400/800-1760 kW)
GAS 8 P/M (640/1163-2210 kW)
GAS 9 P/M (870/1744-3488 kW)

page 392

GAS BURNERS

STANDARD

Standard NOx emissions, lower than Class 1 of European Standard EN 676 (NOx lower than 170 mg/kWh) or, with MZ burner models, lower than Class 2 of European Standard EN 676 (NOx lower than 120 mg/kWh)

MODULATING ELECTRONIC CAM



RS 34-44/E MZ

RS 34/E MZ (44/130-390 kW)
RS 44/E MZ(80/200-550 kW)

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RS 50-64/E

RS 50/E MZ (85/290-580 kW)
RS 64/E MZ (150/400-850 kW)

page 323



RS 70-250/E

RS 70/E (135/465-814 kW)
RS 100/E (150/698-1163 kW)
RS 130/E (254/920-1600 kW)
RS 190/E (470/1279-2290 kW)
RS 250/E MZ (600/1250-2650 kW)

page 328



RS 310-610/E MZ

RS 310/E MZ (600/1300-3900 kW)
RS 410/E MZ (800/2000-4900 kW)
RS 510/E MZ (800/2200-5520 kW)
RS 610/E MZ (820/2400-6300 kW)

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RS 1000-1200/E C01

RS 1000/E C01 (1100/4000-10100 kW)
RS 1200/E C01 (1500/5500-11100 kW)

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RS 1300-2000/E C01

RS 1300/E C01 (1350-7500/12000 kW)
RS 1600/E C01 (3065/9503-15560 kW)
RS 2000/E C01 (4000/12000-19500 kW)

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MODULATING ELECTRONIC CAM VARIABLE SPEED



RS 70-250/EV

RS 190/EV (470/1279-2290 kW)
RS 250/EV MZ (600/1250-2650 kW)

page 335



RS 310-610/EV MZ

RS 310/EV MZ (600/1300-3900 kW)
RS 410/EV MZ (800/2000-4900 kW)
RS 510/EV MZ (800/2200-5520 kW)
RS 610/EV MZ (820/2400-6300 kW)

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RS 1000-1200/EV C01

RS 1000/E C01 (1100/4000-10100 kW)
RS 1200/E C01 (1500/5500-11100 kW)

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RS 1300-2000/EV C01

RS 1300/EV C01 (1350-7500/12000 kW)
RS 1600/EV C01 (3065/9503-15560 kW)
RS 2000/EV C01 (4000/12000-19500 kW)

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One stage gas burners

RIELLO 40 GS



- One stage gas burners

Riello 40 GS series of one stage gas burners, is a complete range of products developed to respond to any request for home heating. The Riello 40 GS series is available in four different models, with an output ranging from 11 to 220 kW, divided in four different structures.
All the models use the same components designed by Riello for the Riello 40 GS series. The high quality level guarantees safe working. The Riello 40 GS burners are fitted with a microprocessor based control box with diagnostic functions.
In developing these burners, special attention was paid to reducing noise, to 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 for EMC, Low Voltage, Machinery and Boiler Efficiency.
All the Riello 40 GS burners are tested before leaving the factory.

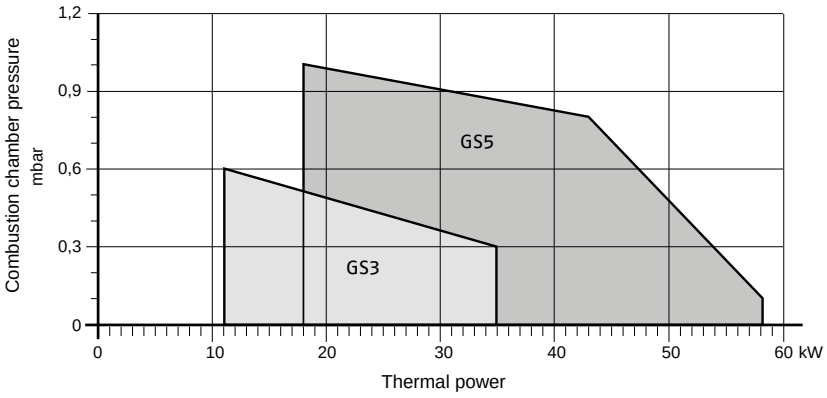
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz			
GS3	11-35	1.1-3.5	0.10	1/230/50	CE-0476CT2714	(1)(4)	**3755119**
GS5	18-58	1.8-5.8	0.11	1/230/50	CE-0476CT2714	(1)(4)	**3755219**
GS5	23-65	2.3-6.5	0.18	1/220/60	-	(2)(3)	**3755281**
GS10	42-116	4.2-11.6	0.13	1/230/50	CE-0476CT2714	(1)(4)	**3755426**
GS10	42-116	4.2-11.6	0.20	1/220/60	-	(2)(3)	**3755483**
GS10	42-116	4.2-11.6	0.20	1/220/60	-	(1)(3)	**20007527**
GS20	81-220	8.1-22	0.25	1/230/50	CE-0476CT2714	(1)(4)	**3755616**
GS20	81-220	8.1-22	0.43	1/220/60	-	(2)(3)	**3755683**

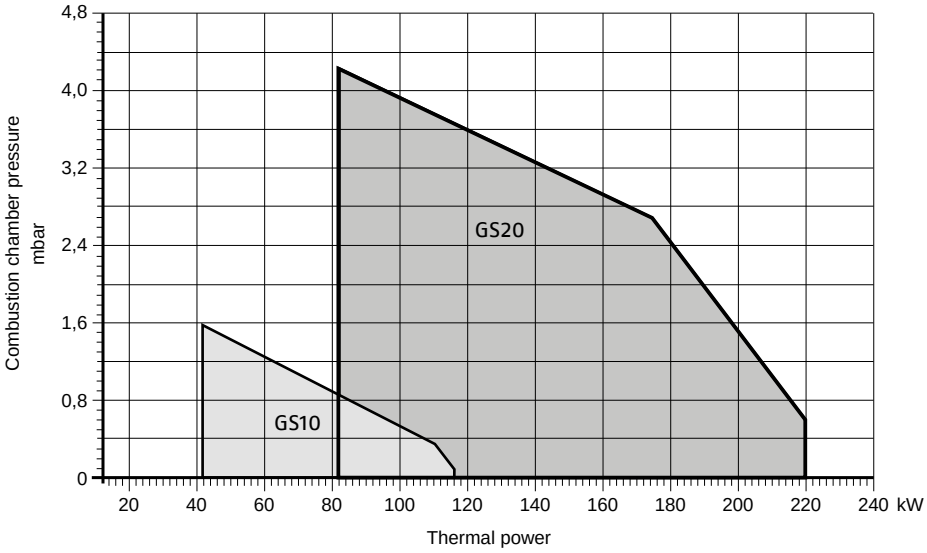
Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with plug and socket.
(2) Model with terminal board.
(3) Fixed air damper always open in stand by.
(4) Model with air damper opening motor.

FIRING RATES

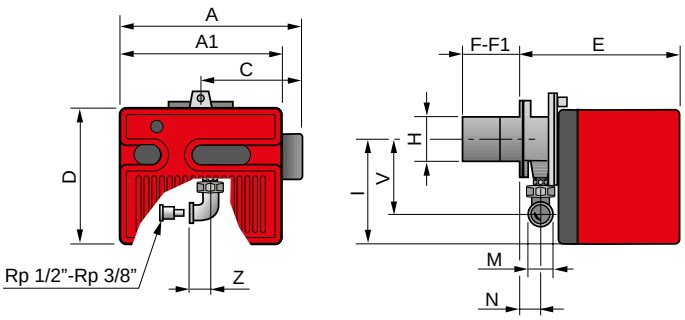


Useful firing rates for choosing the burner

Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.



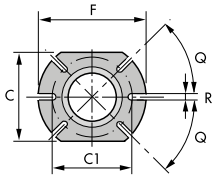
OVERALL DIMENSIONS



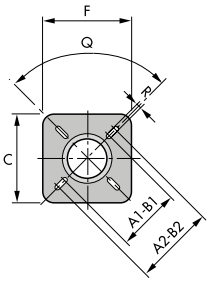
Description	A mm	A1 mm	C mm	D mm	E mm	F-F1 (1) mm	H mm	I mm	M mm	N mm	V mm	Z mm
GS3	-	252	-	215	230	100	91	165	Rp 3/8"*	37	132	25
GS5	-	272	-	233	295	100	91	180	Rp 1/ Rp 2"	48	138	28
GS10	341	-	188,5	262	346	110	105	204	Rp 3/4"	61	142	33
GS10 **	-	305	-	262	346	110-170	105	204	Rp 3/4"	61	142	33
GS20	387	-	212	298	389	120-280	125	230	Rp 3/4"	67	152	33
GS20 **	-	350	-	298	389	120	125	230	Rp 3/4"	67	152	33

(1) Dimension with extended head
* With reduction nipple, standard equipment on GS3 only.
** Versions with air damper opening motor inside the cover.

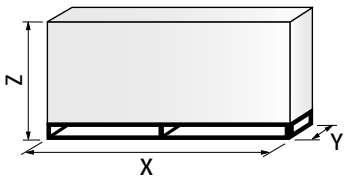
GS3-GS5-GS10



GS20



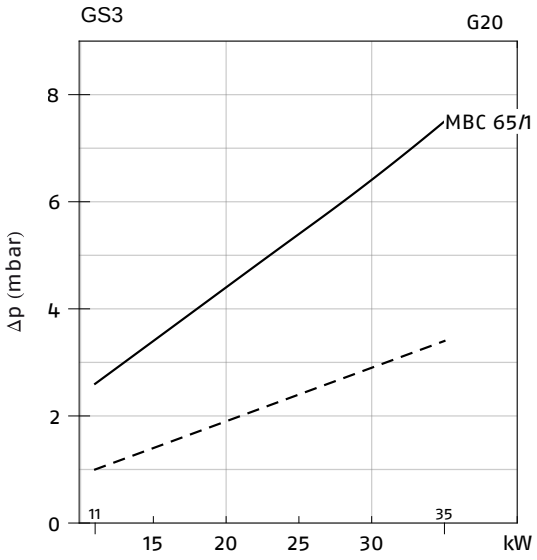
Description	A1 mm	A2 mm	B1 mm	B2 mm	C mm	C1 mm	F mm	Q	R mm
GS3	-	-	-	-	140	130	170	45°	10
GS5	-	-	-	-	140	130	170	45°	10
GS10	-	-	-	-	160	130	185	45°	11
GS20	155	200	155	200	170	-	170	90°	11

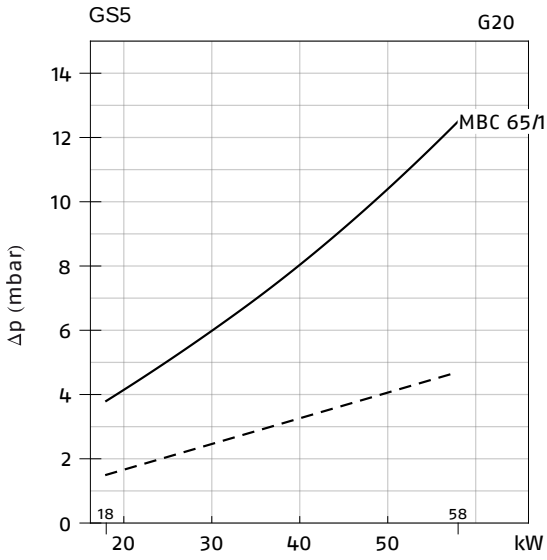


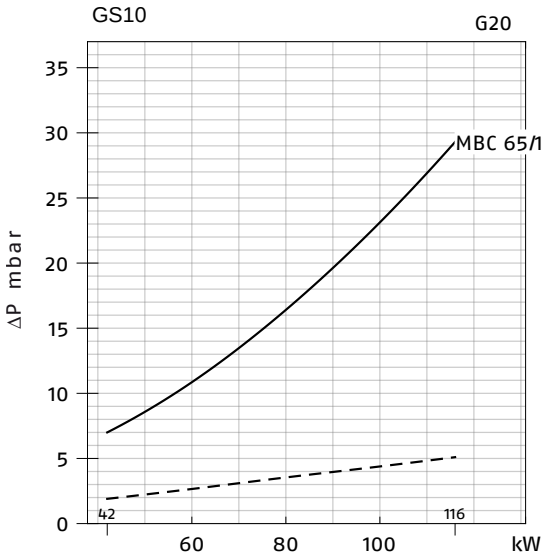
Description	X mm	Y mm	Z mm	Net weight kg
GS3	375	335	310	11
GS5	445	355	325	11
GS10	483	423	330	15
GS20	535	463	375	21

PRESSURE LOSS DIAGRAMS

MBC SERIES GAS TRAIN

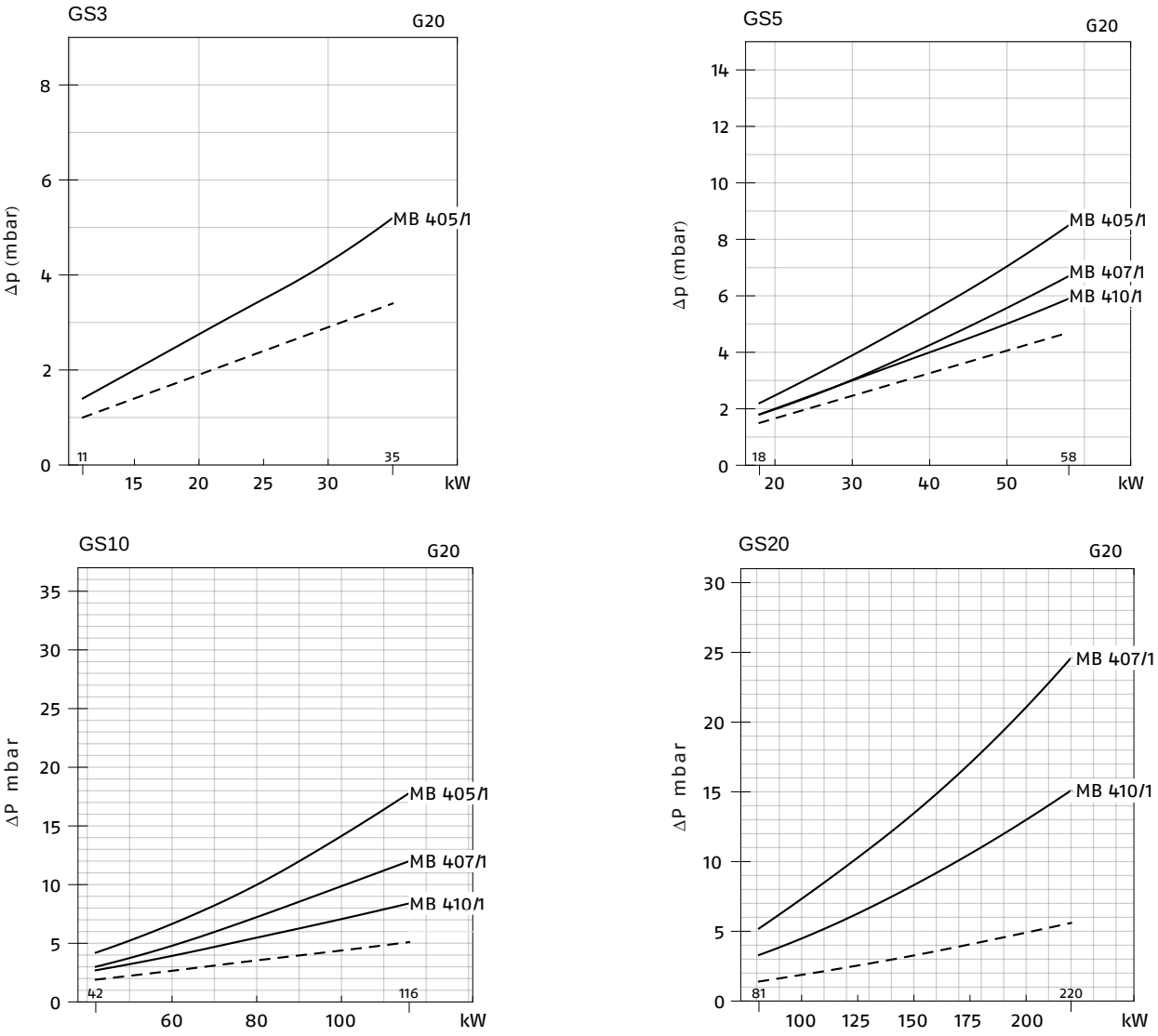






Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

MB SERIES GAS TRAIN



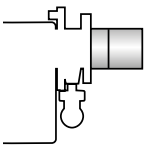
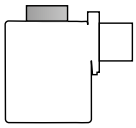
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added 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	**3970569***	(3)	Rp ½"	(4)	GS3-GS5-GS10**
MB SERIES ONE STAGE GAS TRAIN					
MB 405/1-RSD 20	**3970530***	(3)	Rp ½"	3010123	GS3-GS5-GS10**
MB 407/1-RSD 20	**3970531***	(3)	Rp ¾"	3010123	GS5-GS10**-GS20***
MB 410/1-RSD 20	**3970532**	(3)	Rp 1"	3010123	GS5-GS10*-GS20***

(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 (if the plug is not necessary, remove it in accordance with gas train instruction manual indication).
(4) Not available.
* 230V/50Hz - 220V/60Hz electrical supply.
** GS10 ≤ 80 kW with natural gas
*** GS20 ≤ 180 kW with natural gas
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

ACCESSORIES

Drawing	Burner model	Specification	Code
		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.	
	GS3-GS5	Standard head length = 100 mm - Extended head length = 125 mm	**3000820**
	GS10	Standard head length = 110 mm - Extended head length = 170 mm	**3001064**
	GS20	Standard head length = 120 mm - Extended head length = 280 mm	**3000873**
	GS3-GS5	REMOTE RESET CONTROL KIT FOR MG 557 CONTROL BOX The MG 557 control box can be remotely released using an electric command kit. This kit must be installed in conformity with current regulations in force.	**3002750**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.	
	GS3	Kit code for standard and extended head.	**3000881**
	GS5	Kit code for standard and extended head.	**3000882**
	GS10	Kit code for standard and extended head.	**3000884**
	GS20	Kit code for standard and extended head.	**3000886**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.	
	GS3	Kit code for only standard head.	**3000888**
	GS5	Kit code for only standard head.	**3000889**
	GS10	Kit code for only standard head.	**3000891**
	GS20	Kit code for only standard head.	**3000893**
		INLET AIR ASPIRATION KIT This kit allows to channel the external air directly into the burner.	
	GS3	Inlet air aspiration kit.	**20027571**
	GS5	Inlet air aspiration kit.	**20027576**
	GS10	Inlet air aspiration kit.	**20027578**
	GS20	Inlet air aspiration kit.	**20027581**
		END CONE WITH TURBULATOR DISK The end cone turbolator disk reduces the flame lenght. It is suitable for hoven application (CO emissions) and short boiler chamber.	
	GS5	Projection + 15 mm	**3000916**
	GS10	Projection + 18 mm	**3000918**
	GS20	Projection + 23 mm	**3000919**
	GS10 - GS20	CONTINUOUS VENTILATION KIT FOR CMG CONTROL BOX If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**3010094**
	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**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).	**3000945**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

STATE OF SUPPLY

Monoblock, gas burners, completely automatic, with one stage settings fitted with:
- Fan with forward curve blades
- Cover lined with sound-proofing material
- Air damper, completely closed in stand by, with adjustment inside 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
- 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 MG 557 (with diagnostic, remote reset, continuous purge integrated, recycle, post-purge)
- IP X0D (IP 40) electric protection level.

STANDARD EQUIPMENT

– Flange insulation screen
– Screws and nuts for fixing the flange to the boiler
– 7-pole socket
– Hinge
– Reduction nipple Rp 1/Rp 2” - Rp 3/8” (for R40 GS3 only)
– Grommet
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Two stage gas burners

RIELLO 40 GSD



- Two stage gas burners

Riello 40 GSD series of two stage gas burners, is a complete range of products developed to respond to any request for home heating. The Riello 40 GSD series is available in two different models, with an output ranging from 41 to 220 kW, divided in two different structures.
All the models use the same components designed by Riello for the Riello 40 GSD series. The high quality level guarantees safe working.
In developing these burners, special attention was paid to reducing noise, to 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 for EMC, Low Voltage, Gas Appliance and Boiler Efficiency.
All the Riello 40 GSD burners are tested before leaving the factory.

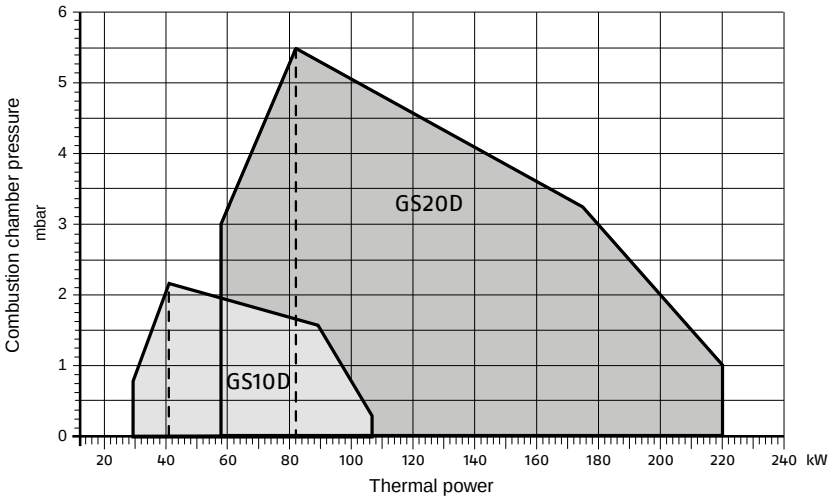
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz			
GS10D	29/41-106	2,9/4,1-10.6	0,13	1/230/50	CE-0476CT2714	(1)	**3757615**
GS20D	58/81-220	5,8/8,1-22.0	0,25	1/230/50	CE-0476CT2714	(1)	**3757714**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with plug and socket.

FIRING RATES

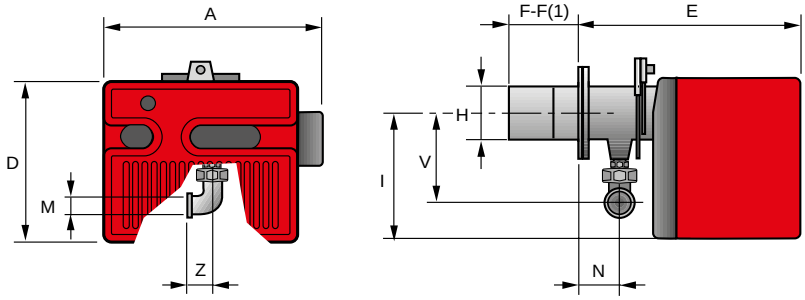


Useful firing rates for choosing the burner

1st stage operation range

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

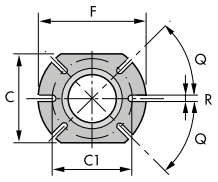
OVERALL DIMENSIONS



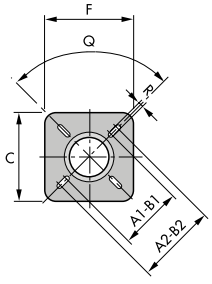
Description	A mm	D mm	E mm	F-F1 (1) mm	H mm	I mm	M mm	N mm	V mm	Z mm
GS10D	368	262	346	110	105	204	Rp 3/4”	61	142	33
GS20D	413	298	389	120-280	125	230	Rp 3/4”	67	152	33

(1) Dimension with extended head

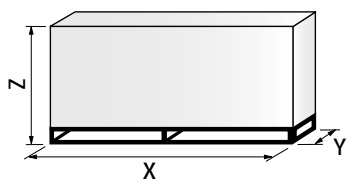
GS10D



GS20D



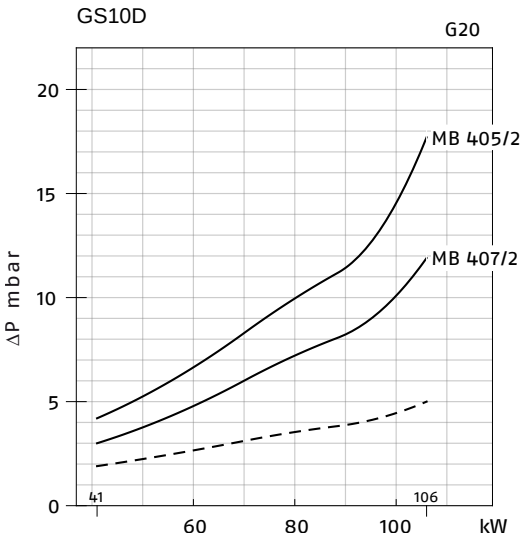
Description	A1 mm	A2 mm	B1 mm	B2 mm	C mm	C1 mm	F mm	Q	R mm
GS10D	-	-	-	-	160	130	185	45°	11
GS20D	155	200	155	200	170	-	170	90°	11

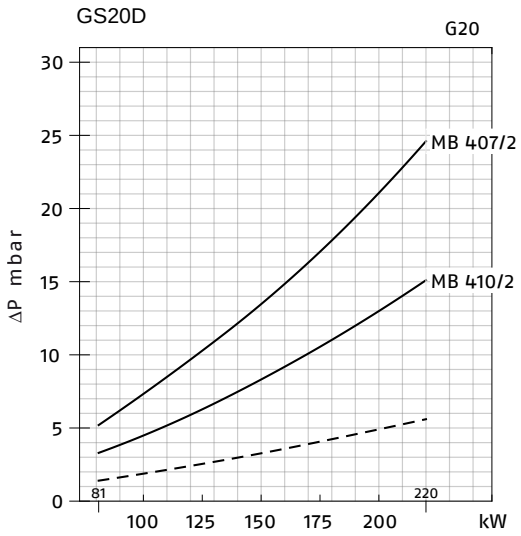


Description	X mm	Y mm	Z mm	Net weight kg
GS10D	495	483	330	16
GS20D	535	535	375	22

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN





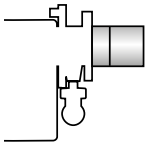
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Burner
MB SERIES TWO STAGE GAS TRAIN				
MB 405/2-RSD 20	**3970084***	(2)(3)	Rp ½"	GS10D
MB 407/2-RSD 20	**3970537****	(2)(4)	Rp ¾"	GS10D-GS20D
MB 410/2-RSD 20	**3970534**	(2)	Rp 1"	GS20D

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Model with installed plug.
(3) GS10D ≤ 80 kW with natural gas.
(4) GS20D ≤ 180 kW with natural gas.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

ACCESSORIES

Drawing	Burner model	Specification	Code
		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.	
	GS10D	Standard head length = 110 mm - Extended head length = 170 mm	**3001064**
	GS20D	Standard head length = 120 mm - Extended head length = 280 mm	**3000873**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.	
	GS10D	Kit code for standard and extended head.	**3000884**
	GS20D	Kit code for standard and extended head.	**3000886**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.	
	GS10D	Kit code for only standard head.	**3000891**
	GS20D	Kit code for only standard head.	**3000893**
		END CONE WITH TURBULATOR DISK The end cone turbolator disk reduces the flame lenght. It is suitable for hoven application (CO emissions) and short boiler chamber.	
	GS10D	Projection + 18 mm	**3000918**
	GS20D	Projection + 23 mm	**3000919**
	GS10 - GS20D	CONTINUOUS VENTILATION KIT FOR CMG CONTROL BOX If the burner requires continuous ventilation in the stages without flame, a special kit is available	**3010094**

Drawing	Burner model	Specification	Code
	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**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).	**3000945**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

STATE OF SUPPLY

Monoblock, gas burners, completely automatic, with two stage settings fitted with:
- Fan with forward curve blades
- Cover lined with sound-proofing material
- Air damper, completely closed in stand by, driven by an electric servomotor
- Air damper with 1st and 2nd stage adjustement
- 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
- Protection filter against radio interference
- IP X0D (IP 40) electric protection level.

STANDARD EQUIPMENT

- Flange insulation screen
- Screws and nuts for fixing the flange to the boiler
- 7-pole socket
- 4-pole socket
- Hinge
- Grommet
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Two stage progressive and modulating gas burners

RIELLO 40 GS/M



- Two stage progressive and modulating gas burners

Riello 40 GS/M series of two stage progressive or modulating gas burners, is a complete range of products developed to respond to any request of gas burners for hot air generator according to EN 1020. These new models complete the Riello 40 gas series which prides itself on many years of experience in all the world in the field of residential heating and soft industrial applications.
This series of burners is available in two different models with an output ranging from 42 to 194 kW, divided in two different structures. Basic version of these models has two stage progressive operation. A simple modification, adding a component, permits obtaining modulating operation with a rate 1:4. The burners are supplied air fuel ratio control gas trains.
This more advanced version can better satisfy market needs for applications where modulation is requested to obtain highest plant efficiency. In developing these burners, special attention was paid to the ease of installation and adjustment, to maintaining the smallest size possible and obtaining high performance for modulating operation to fit into any sort of application available on the market.
All the models are approved by the EN 676 European Standard and they conform to European Directives: Gas Appliances, EMC, Low Voltage and Boiler Efficiency.

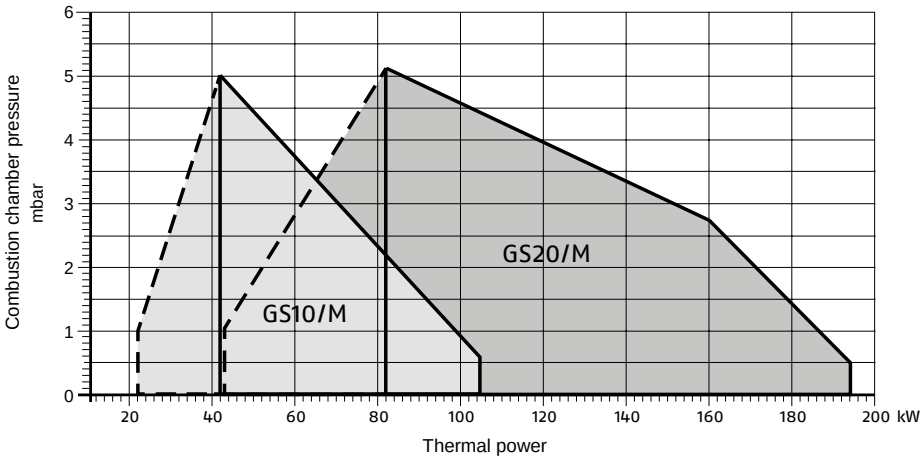
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz			
GS10/M	22/42-105	2.2/4.2-10.5	0.13	1/230/50	CE-0085BM0453	(1)	**3755556**
GS20/M	43/82-194	4.3/8.2-19.4	0.25	1/230/50	CE-0085BM0453	(1)	**3755756**
GS10/M	22/42-105	2.2/4.2-10.5	0.13	1/220/60	-	(1)	**20066426**
GS20/M	43/82-194	4.3/8.2-19.4	0.25	1/220/60	-	(1)	**3091960**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with installed plug.

FIRING RATES

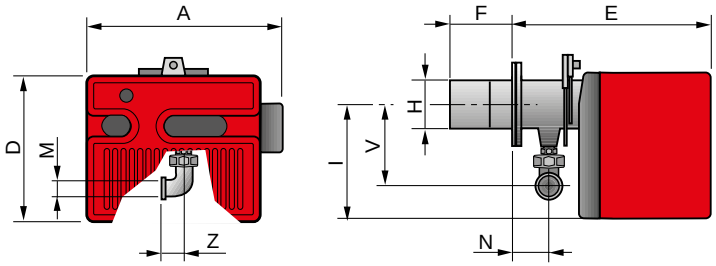


Useful firing rates for choosing the burner

Modulation range

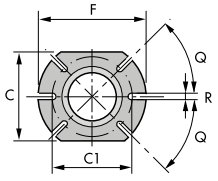
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

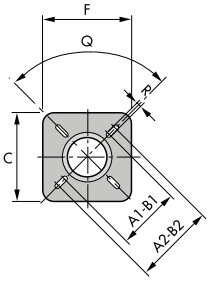


Description	A mm	D mm	E mm	F mm	H mm	I mm	M mm	N mm	V mm	Z mm
GS10/M	425	262	347	110	105	204	Rp 3/4”	61	142	33
GS20/M	488	298	389	120	125	230	Rp 3/4”	67	152	33

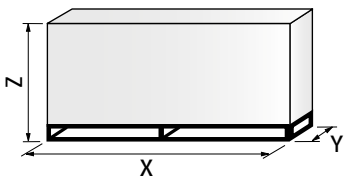
GS10/M



GS20/M



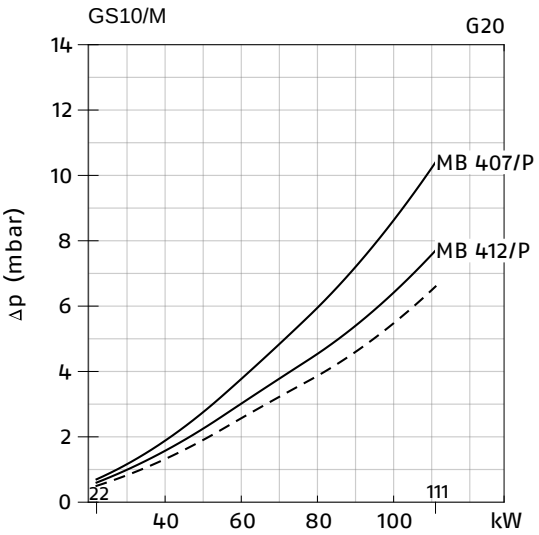
Description	A1 mm	A2 mm	B1 mm	B2 mm	C mm	C1 mm	F mm	Q	R mm
GS10/M	-	-	-	-	160	130	185	45°	11
GS20/M	155	200	155	200	170	-	170	90°	11

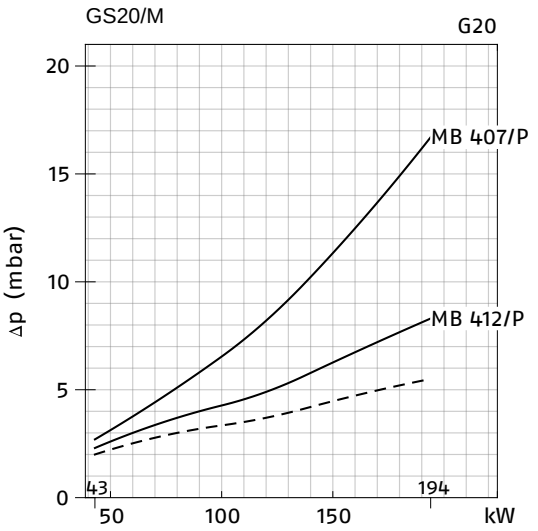


Description	X mm	Y mm	Z mm	Net weight kg
GS10/M	505	490	330	17
GS20/M	560	535	375	17

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN





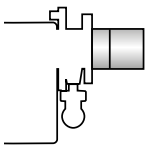
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Burner
MB SERIES PROPORTIONAL GAS TRAINS				
MB 407/P - RSD 00	**3970535**	(2)	Rp ¾"	GS10/M-GS20/M
MB 412/P - RSD 00	**3970536**	(2)(3)	Rp 1"	GS20/M

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Model with plug and socket.
(3) ≥120 kW with natural gas.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

ACCESSORIES

Drawing	Burner model	Specification	Code
		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.	
	GS10/M	Standard head length = 128 mm - Extended head length = 170 mm	**3001064**
	GS20/M	Standard head length = 120 mm - Extended head length = 280 mm	**3000873**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.	
	GS10/M	Kit code for standard and extended head.	**3000884**
	GS20/M	Kit code for standard and extended head.	**3000886**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator.	
		RWF 50.2 - Standard version.	**20105193**
		RWF 55.5 - Plus version.	**20105274**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**

Drawing	Burner model	Specification	Code
	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**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).	**3000945**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

STATE OF SUPPLY

Monoblock, gas burners, completely automatic, two stage progressive or modulating operation with a kit, made up of:
- Ratio air/fuel controlled by checking both the air and the gas flows
- Two pressure switches on the burner, to make sure the burner operation, detecting both the fan and the chimney functions
- Remote reset available
- Servomotor to drive the air damper to fully closed position at stand-by, low and high fire position
- Turn down fire 1:4
- Fan with forward curve blades
- 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
  - additional device, to keep short the flame shape
- Protection filter against radio interference
- Microprocessor-based flame control box, with diagnostic functions
- IP X0D (IP 40) electric protection level.

STANDARD EQUIPMENT

- Hinge to turn the burner left-side or right-side for the maintenance position
- Flange insulation screen
- Screws and nuts for fixing the flange to the boiler
- 7-pin plug with capacitor for EMC
- 4-pin plug to connect the high-low thermostat
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

One stage gas burners

GULLIVER RS



- One stage gas burners

Riello Gulliver RS5 is a new model of the series of one stage gas burners, characterized for its small dimensions in spite of its high combustion performance. It has been developed to respond to any request for home heating, conforming to current regulations in force.
This model uses the same components designed by Riello for the 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 this burner, 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.
This model is approved by the EN 676 European Standard and European Directives, Gas Appliance, EMC, Low Voltage, Boiler Efficiency.
The Gulliver RS5 burner is tested before leaving the factory.

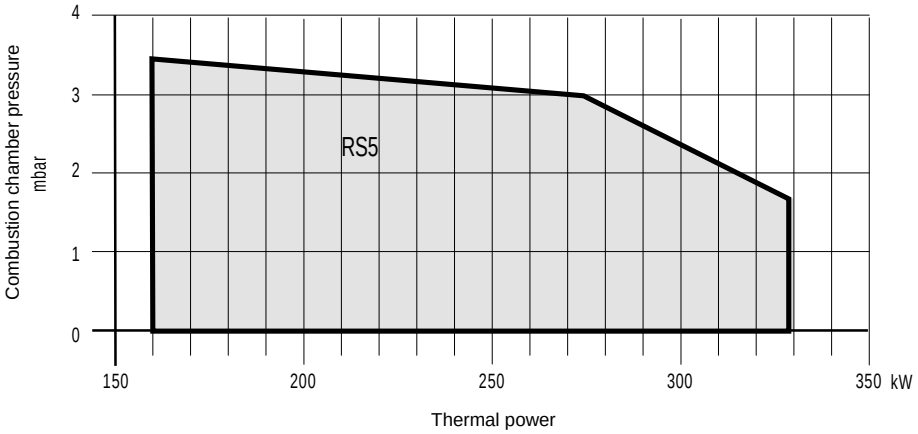
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz			
RS5	160-330	16-33	1/230/50	0,43	CE-0085BM0114	(1)	**3761958**
RS5 TL	160-330	16-33	1/230/50	0,43	CE-0085BM0114	(1)	**20052614**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with plug and socket.

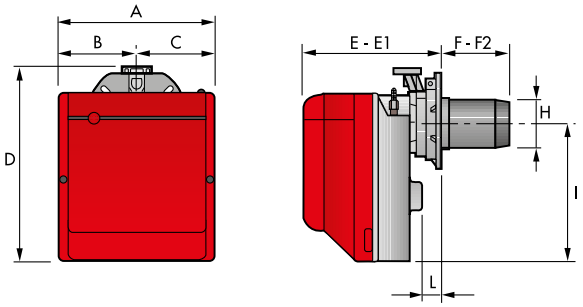
FIRING RATES



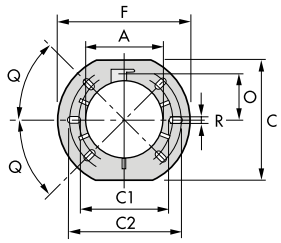
Useful firing rates for choosing the burner

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

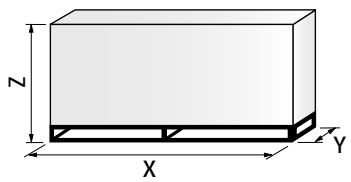
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	E1 mm	F mm	F2 mm	H mm	I mm	L mm
RS5	300	150	150	392	278	300	225	203	137	286	45
RS5 TL	300	150	150	392	278	300	382	360	137	286	45



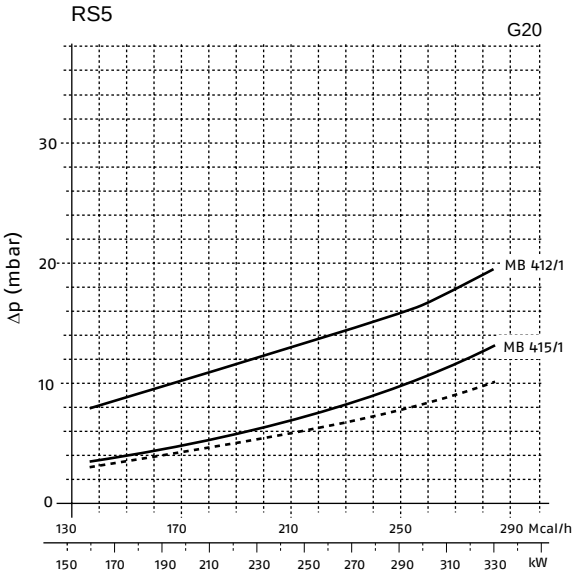
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q mm	R mm
RS5	137	203	170	200	218	80.5	45°	11
RS5 TL	137	203	170	200	218	80.5	45°	11



Description	X mm	Y mm	Z mm	Net weight kg
RS5	600	345	430	18
RS5 TL	703	335	435	20

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN



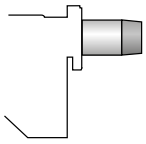
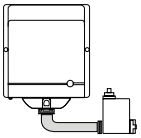
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner
MB SERIES ONE STAGE GAS TRAIN					
MB 412/1-F3SD 20*	**3970550**	(3)(5)	Rp 1" ¼	3010123	RS5
MB 415/1-F3SD 30*	**3970558**	(3)	Rp 1" ½	3010123	RS5

(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) Model with installed plug.
(4) RS5 ≤ 200 kW with natural gas.
(5) RS5 ≤ 300 kW with natural gas.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	RS5	EXTENDED HEAD KIT Burners standard head can be transformed into "extended head" versions by using the special kit. Standard head length = 203-225 mm - Extended head length = 357-372 mm		**3001016**
	RS5	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 head.		**3001011**
		Kit for LPG with butane amount over 30%.	(1)	**3002737**
	RS5	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**
	RS5	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.		**3001178**
	RS5	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		**3000945**

(1) Kit without CE certification.

STATE OF SUPPLY

Monoblock, gas burner, 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

– Sliding flange
– Flange insulation screen
– Screws and nuts for fixing the flange to the boiler
– 7-pin plug
– Remote control release kit
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Two stage gas burners

GULLIVER RSD



- Two stage gas burners

Riello Gulliver RS5D is a new model of the series of two stage gas burners, characterized for its small dimensions in spite of its high combustion performance. It has been developed to respond to any request for home heating, conforming to current regulations in force. This models uses the same components designed by Riello for the 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 this burner, 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.
This model is approved by the EN 676 European Standard and European Directives, Gas Appliance, EMC, Low Voltage, Boiler Efficiency.
The Gulliver RS5D burner is tested before leaving the factory.

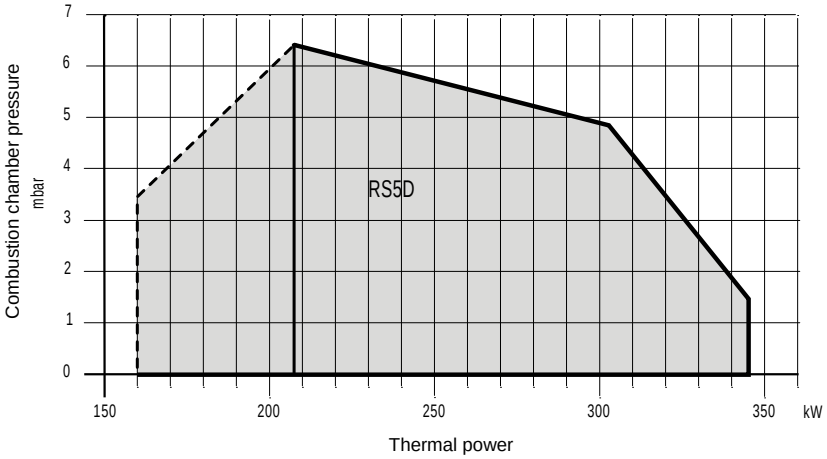
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz			
RS5D	160/208-345	16/20.8-34.5	1/230/50	0,45	CE-0085BN0325	(1)	**3762058**
RS5D TL	160/208-345	16/20.8-34.5	1/230/50	0,45	CE-0085BN0325	(1)	**20052615**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with plug and socket.

FIRING RATES

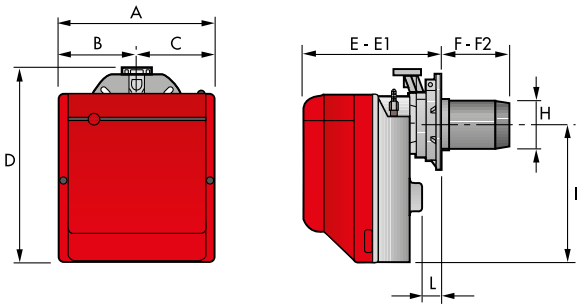


Useful firing rates for choosing the burner

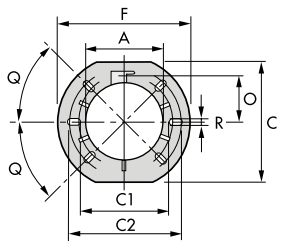
1st stage operation range

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

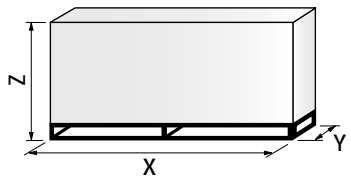
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	E1 mm	F mm	F2 mm	H mm	I mm	L mm
RS5D	300	150	150	392	278	300	203	225	137	286	45
RS5D TL	300	150	150	392	278	300	382	360	137	286	45



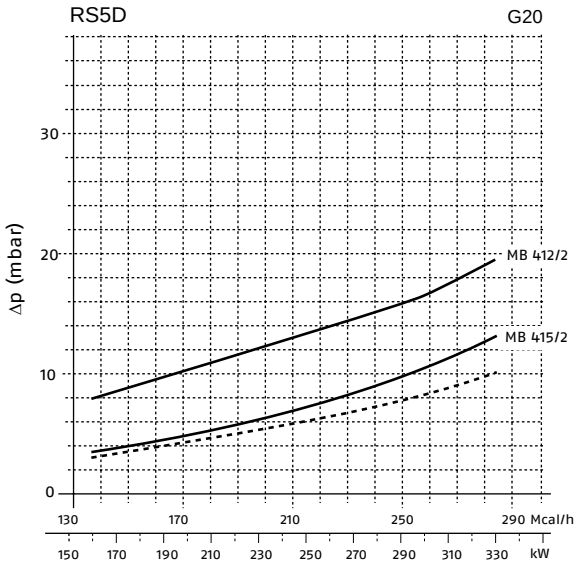
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q mm	R mm
RS5D	137	203	170	200	218	80.5	45°	11
RS5D TL	137	203	170	200	218	80.5	45°	11



Description	X mm	Y mm	Z mm	Net weight kg
RS5D	600	345	430	18
RS5D TL	703	335	435	20

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN



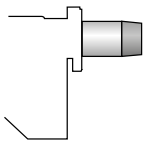
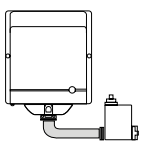
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner
MB SERIES TWO STAGE GAS TRAIN					
MB 412/2-F3SD 20*	**3970543**	(3)(5)	1" ¼	3010123	RS5D
MB 415/2-F3SD 20*	**3970582**	(3)	Rp 1" ½	3010123	RS5D

(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) Model with installed plug.
(4) RS5D ≤ 200 kW with natural gas.
(5) RS5D ≤ 300 kW with natural gas.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	RS5D	EXTENDED HEAD KIT Burners standard head can be transformed into “extended head” versions by using the special kit. Standard head length = 203-225 mm - Extended head length = 357-372 mm		**3001016**
	RS5D	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 head.		**3001011**
		Kit for LPG with butane amount over 30%.	(1)	**3002737**
	RS5D	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**
	RS5	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.		**3001178**
	RS5D	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		**3000945**

(1) Kit without CE certification.

STATE OF SUPPLY

Monoblock, gas burner, completely automatic, with two stage settings fitted with:
– Fan with forward curve blades
– Cover lined with sound - proofing material
– Air damper, with 1st and 2nd stage adjustment, driven by an electric servomotor
– 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

– Sliding flange
– Flange insulation screen
– Screws and nuts for fixing the flange to the boiler
– 7-pin plug
– 4-pin plug
– Remote control release kit
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

One stage gas burners

RS 34-44/1



- One stage gas burners

RS 34-44/1 series of burners covers a firing range from 70 to 550 kW, and they have been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Operation is “one stage”; the burners are fitted with a microprocessor-based burner safety control box which supplies indication of operation and diagnosis of fault cause. Optimisation of sound emissions is guaranteed by the special design of the air suction circuit.
The elevated performance of the fans and combustion head, guarantee flexibility of use and excellent working at all firing rates.
The exclusive design ensures reduced dimensions, simple use and maintenance. Optimisation of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
A wide range of accessories guarantees elevated working flexibility.

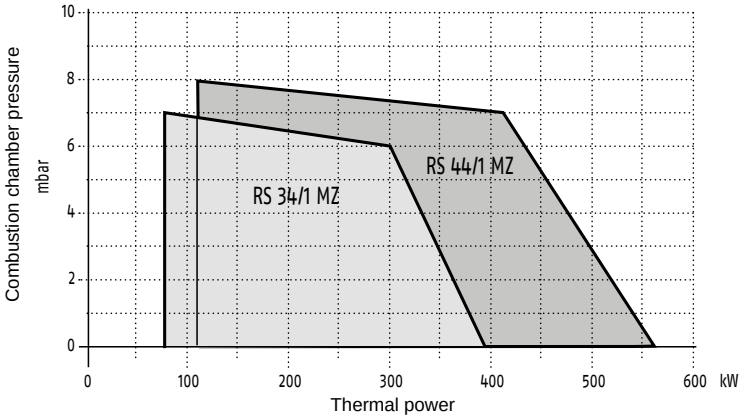
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)							
RS 34/1 MZ TC FS1	70-390	7-39	0.6	1/230/50-60	230/50-60	CE-0085BR0380	**3788510**
RS 34/1 MZ TL FS1	70-390	7-39	0.6	1/230/50-60	230/50-60	CE-0085BR0380	**3788511**
RS 44/1 MZ TC FS1	100-550	10-55	0.7	1/230/50-60	230/50-60	CE-0085BR0380	**3788610**
RS 44/1 MZ TL FS1	100-550	10-55	0.7	1/230/50-60	230/50-60	CE-0085BR0380	**3788611**

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.

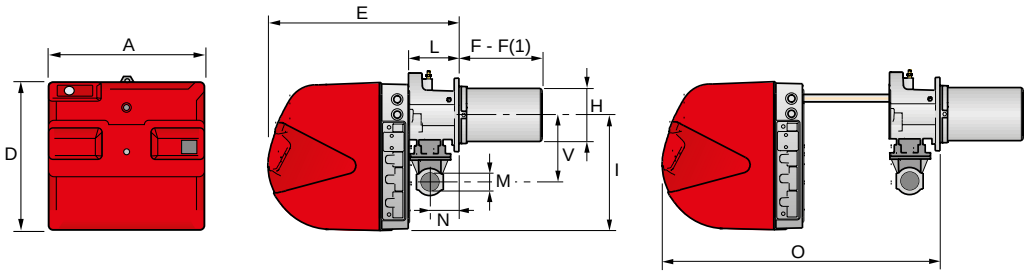
FIRING RATES



Useful firing rates for choosing the burner

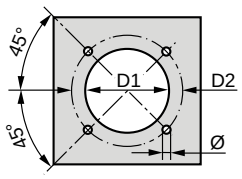
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

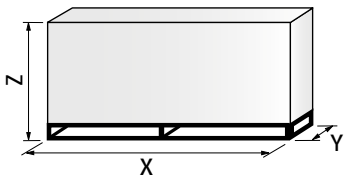


Description	A mm	D mm	E mm	F-F(1) mm	H mm	I mm	L mm	M mm	N mm	O mm	V mm
RS 34/1 MZ	442	422	508	216-351	140	305	138	1”1/2	84	780	177
RS 44/1 MZ	442	422	508	216-351	152	305	138	1”1/2	84	780	177

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 34/1 MZ	160	224	M8
RS 44/1 MZ	160	224	M8

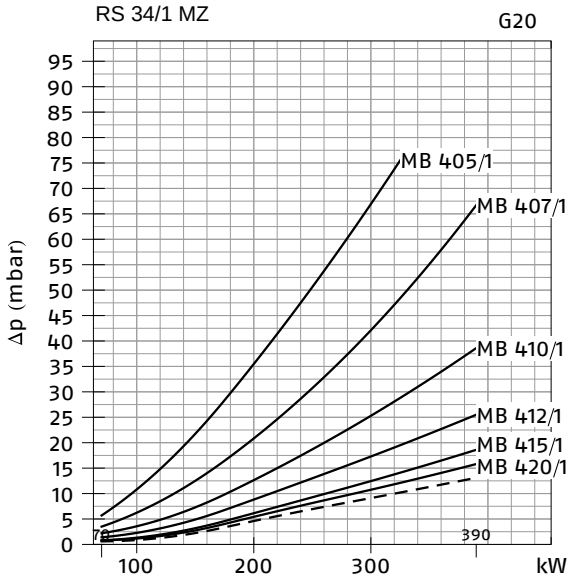


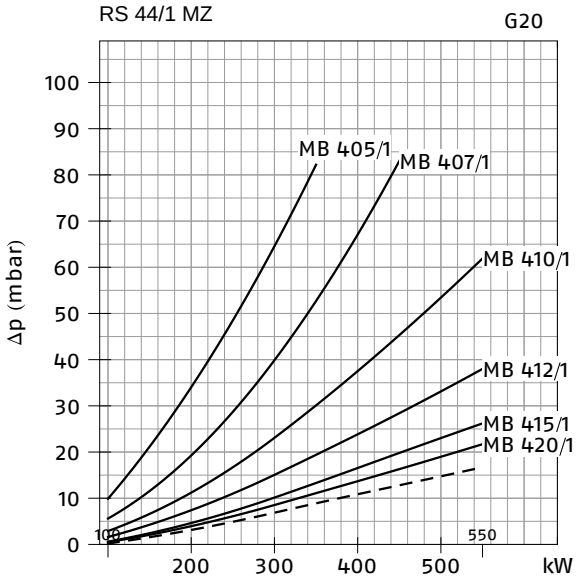
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 34/1 MZ	1000	485	500	32
RS 44/1 MZ	1000	485	500	33

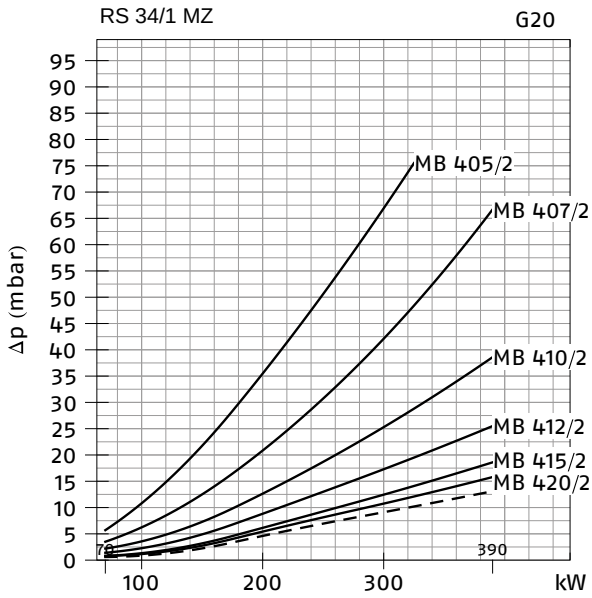
(1) Dimension with standard and extended head.

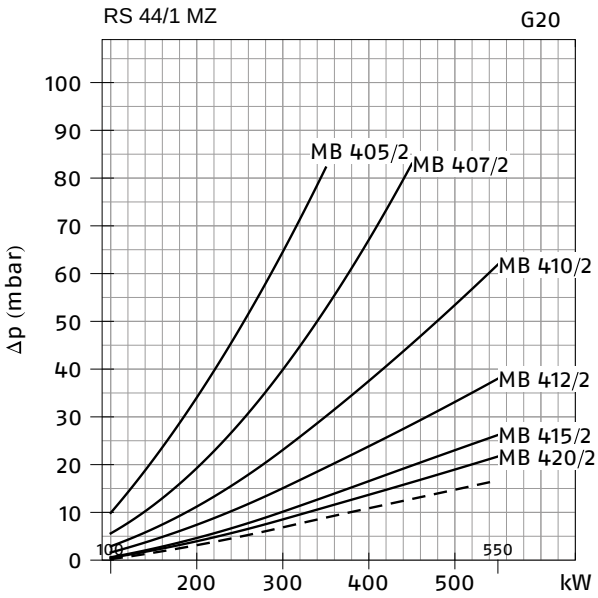
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN







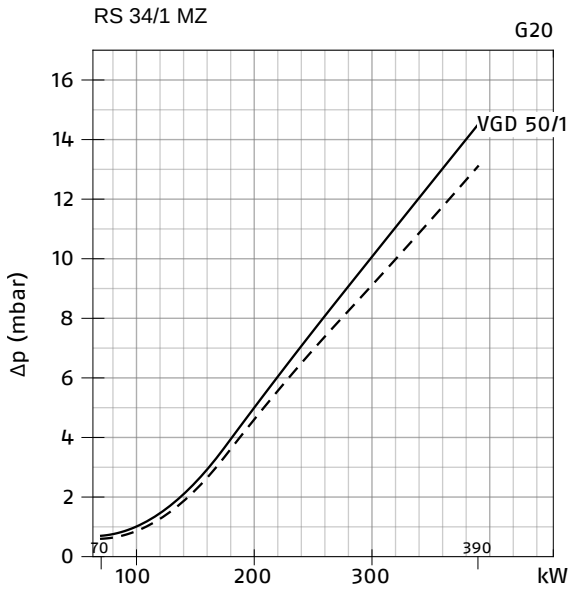


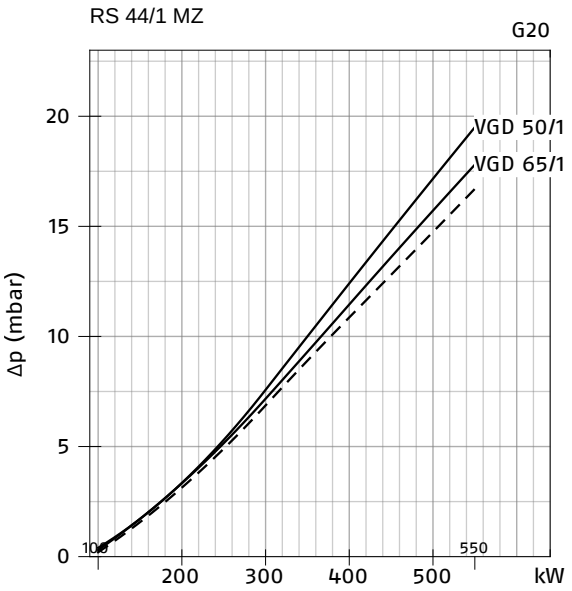
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

——— Combustion head + gas train

- - - - Combustion head

VGD 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

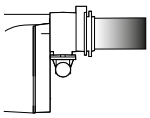
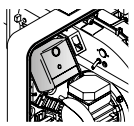
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 34/1 MZ	RS 44/1 MZ
MB SERIES ONE STAGE GAS TRAIN							
MB 405/1-RT 20	**3970500***		Rp ¾”	-	3010123	3000824	
MB 407/1-RT 20	**3970553***		Rp ¾”	-	3010123	3000824	
MB 407/1-RT 52	**3970599***		Rp ¾”	-	3010123	3000824	
MB 407/1-RSM 20	**3970229***		Rp ¾”	-	3010123	3000824	
MB 410/1-RT 52	**3970258***		Rp 1” ¼	-	3010123	3010124	
MB 410/1-RT 20	**3970554***		Rp ¾”	-	3010123	3000824	
MB 410/1-RT 52	**3970600***		Rp ¾”	-	3010123	3000824	
MB 410/1-RSM 20	**3970230***		Rp ¾”	-	3010123	3000824	
MB 412/1-RT 52	**3970256***		Rp 1” ½	-	3010123	□	□
MB 412/1-RT 20	**3970144***		Rp 1” ½	-	3010123	□	□
MB 412/1 CT RT 20	**3970197****		Rp 1” ½	♦	♦	□	□
MB 412/1-RSM 20	**3970231***		Rp 1” ½	-	3010123	□	□
MB 415/1-RT 30	**3970180***		Rp 1” ½	-	3010123	□	□
MB 415/1 CT RT 30	**3970198****		Rp 1” ½	♦	♦	□	□
MB 415/1-RT 52	**3970250***		Rp 1” ½	-	3010123	□	□
MB 415/1 CT RT 52	**3970253****		Rp 1” ½	♦	♦	□	□
MB 415/1-RSM 30	**3970232***		Rp 1” ½	-	3010123	□	□
MB 420/1-RT 30	**3970181***		Rp 2”	-	3010123	3000822	
MB 420/1 CT RT 30	**3970182****		Rp 2”	♦	♦	3000822	
MB 420/1-RT 52	**3970257***		Rp 2”	-	3010123	3000822	
MB 420/1 CT RT 52	**3970252****		Rp 2”	♦	♦	3000822	
MB 420/1-RSM 30	**3970233***		Rp 2”	-	3010123	3000822	
MB 420/1 CT RSM 30	**3970234****		Rp 2”	♦	♦	3000822	
MB SERIES TWO STAGE GAS TRAIN							
MB 405/2 - RSD 20	**3970084***		Rp ½”	-	3010123	20044756	
MB 407/2 - RSD 20	**3970537***		Rp ¾”	-	3010123	3000824	
MB 407/2 - RT 20	**3970556***		Rp ¾”	-	3010123	3000824	
MB 410/2 - RSD 20	**3970534***		Rp ¾”	-	3010123	3000824	
MB 410/2 - RT 20	**3970557***		Rp ¾”	-	3010123	3000824	

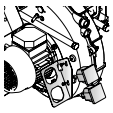
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 34/1 MZ	RS 44/1 MZ
MB 412/2 - RT 20	**3970152***		Rp 1" ½	-	3010123	□	□
MB 415/2 - RT 20	**3970183***		Rp 1" ½	-	3010123	□	□
MB 420/2 - RT 20	**3970184***		Rp 2"	-	3010123	3000822	
MB 420/2 CT RT 20	**3970185****		Rp 2"	-	3010123	3000822	
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	3000822	
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	3000822	
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	●	3000826+ 3000822
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	●	3000826+ 3000822

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 34/1 MZ	Standard head length = 216 mm - Extended head length = 351 mm		**3010428**
	RS 44/1 MZ	Standard head length = 216 mm - Extended head length = 351 mm		**3010429**
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm		**3010095**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010449**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010448**
	All models	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.		**3010418**
	All models	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.		**3010419**
	All models	POST-VENTILATION KIT To prolong ventilation after opening of thermostats chain, a special kit is available. Post-ventilation time = 20 sec.		**3010452**

Drawing	Burner model	Specification	Note	Code
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 34/1 MZ	Kit code for standard and extended head.		**3010423**
	RS 44/1 MZ	Kit code for standard and extended head.		**3010424**
		TOWN GAS KIT For burning Town Gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 34/1 MZ	Kit code for standard and extended head.	(1)	**3010502**
	RS 44/1 MZ	Kit code for standard and extended head.	(1)	**3010503**
		VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate.		
	RS 34/1 MZ	Natural gas version.	(2)	**20098750**
	RS 34/1 MZ	LPG version.	(3)	**20098753**
	RS 44/1 MZ	Natural gas version.	(2)	**20098746**
	All models	HOURS COUNTER KIT To measure the burner working time a hours counter kit is available.		**3010450**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

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

STATE OF SUPPLY

Monoblock forced draught gas burner with one stage operation, fully automatic, made up of:
– Air suction circuit with sound proofing material
– High performance fan with straight blades
– Air damper for air flow setting
– Starting motor at 2800 rpm, single-phase / 220-230V / 50-60Hz
– Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Microprocessor-based burner safety control box, with diagnostic functions
– Plug and socket for electrical connections accessible from the external of the cover
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– 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.

Two stage progressive gas burners

RS 34-44 MZ



- Two stage progressive gas burners

RS 34-44 MZ burners series covers a firing range from 44 to 550 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Operation is “two stage progressive”; the burners are fitted with a microprocessor-based burner safety control box which supplies indication of operation and diagnosis of fault cause.
The elevated performance of the fans and combustion head, guarantee flexibility of use and excellent working at all firing rates.
The exclusive design ensures reduced dimensions, simple use and maintenance. Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. A wide range of accessories guarantees elevated working flexibility.

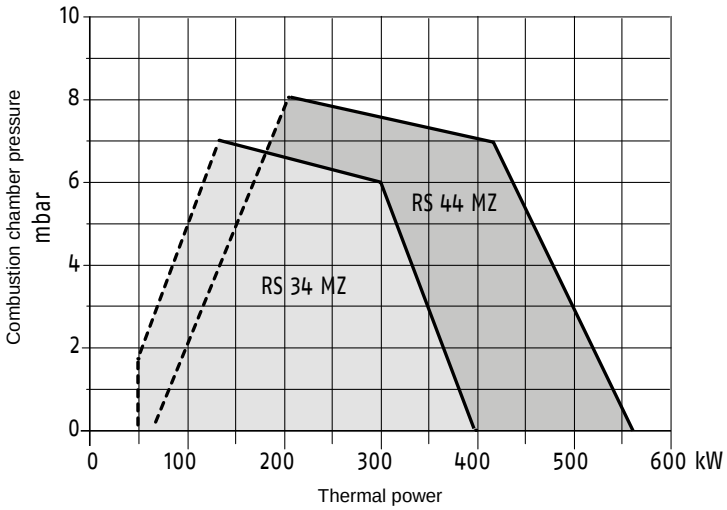
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 34 MZ TC FS1	44/130-390	4.5/13-39	0.6	1/230/50-60	230/50-60	CE-0085BR0381	(1)	**3789010**
RS 34 MZ TL FS1	44/130-390	4.5/13-39	0.6	1/230/50-60	230/50-60	CE-0085BR0381	(1)	**3789011**
RSP 34 TC FS1	44/130-390	4.5/13-39	0.6	1/230/50-60	230/50-60	CE-0085BR0381	(1)	**20008266**
RS 44 MZ TC FS1	80/200-550	8/20-55	0.7	1/230/50-60	230/50-60	CE-0085BR0381	(1)	**3789110**
RS 44 MZ TL FS1	80/200-550	8/20-55	0.7	1/230/50-60	230/50-60	CE-0085BR0381	(1)	**3789111**
RS 44 MZ TC FS1	80/200-550	8/20-55	0.8	3/400/50-60	230/50-60	CE-0085BR0381	(1)	**3789140**
RS 44 MZ TL FS1	80/200-550	8/20-55	0.8	3/400/50-60	230/50-60	CE-0085BR0381	(1)	**3789141**

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) Model with plug and socket.

FIRING RATES

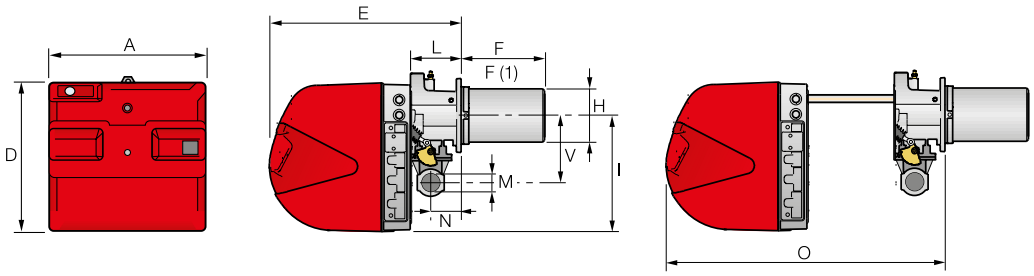


Useful firing rates for choosing the burner

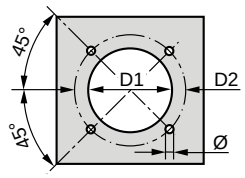
1st stage operation range

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

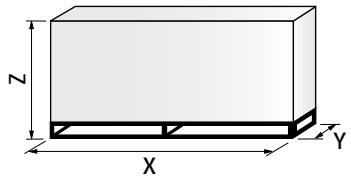
OVERALL DIMENSIONS



Description	A mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M mm	N mm	O mm	V mm
RS 34 MZ	442	422	508	216-351	140	305	138	1"½	84	780	177
RS 44 MZ	442	422	508	216-351	152	305	138	1"½	84	780	177



Description	D1 mm	D2 mm	Ø mm
RS 34 MZ	160	224	M8
RS 44 MZ	160	224	M8

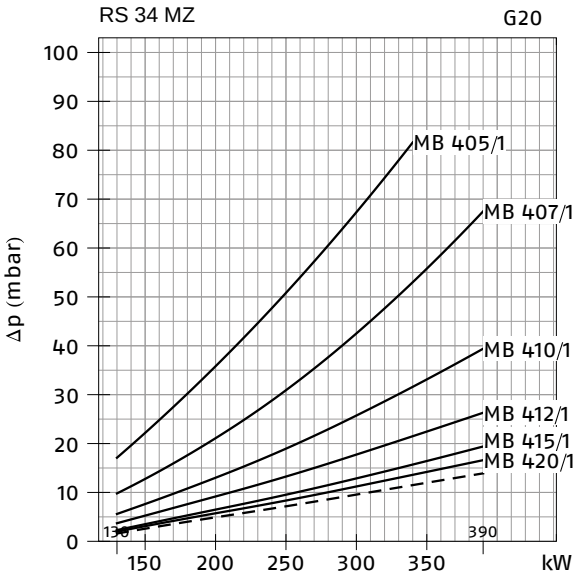


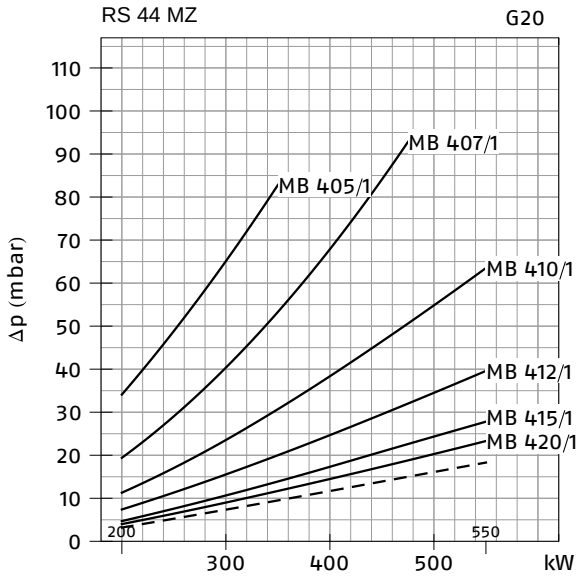
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 34 MZ	1000	485	500	32
RS 44 MZ	1000	485	500	33

(1) Dimension with standard and extended head.

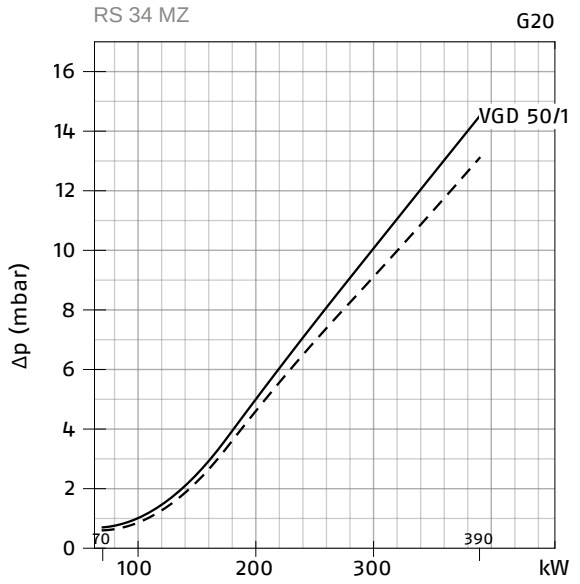
PRESSURE LOSS DIAGRAMS

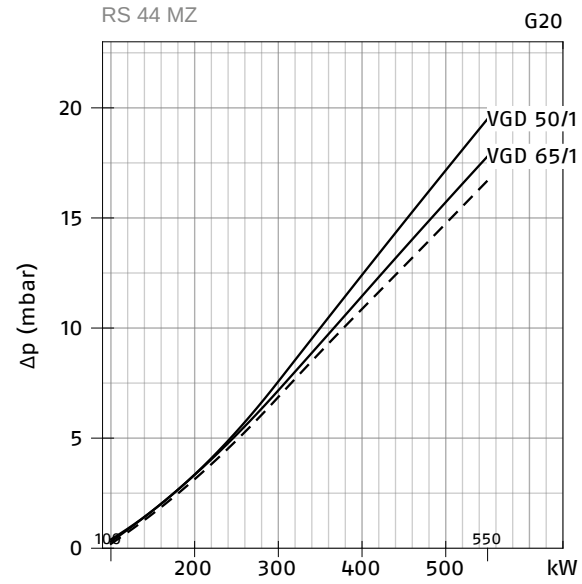
MB SERIES GAS TRAIN





VGD 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

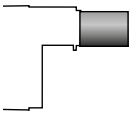
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 34 MZ	RS 44 MZ
MB SERIES ONE STAGE GAS TRAIN							
MB 405/1-RT 20	**3970500***		Rp ¾"	-	3010123	3000824	
MB 407/1-RT 20	**3970553***		Rp ¾"	-	3010123	3000824	
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3010123	3000824	
MB 407/1-RSM 20	**3970229***		Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3010124	
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123	3000824	

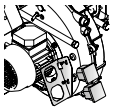
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 34 MZ	RS 44 MZ
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123	3000824	
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	□	□
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	□	□
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	□	□
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	□	□
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	□	□
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	□	□
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	□	□
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	3000822	
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	3000822	
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	3000822	
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	3000822	
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	3000822	
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	●	3000826+ 3000822
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	●	3000826+ 3000822

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 34 MZ	Standard head length = 216 mm - Extended head length = 351 mm		**3010428**
	RS 44 MZ	Standard head length = 216 mm - Extended head length = 351 mm		**3010429**
	All models	CONNECTION FLANGE KIT A kit is available for use where the burner opening on the boiler is of excessive diameter.		**3010138**
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm		**3010095**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010449**
	All models	POST-VENTILATION KIT To prolong ventilation after opening of thermostats chain, a special kit is available. Post-ventilation time 20s.		**3010452**

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010448**
	All models	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.		**3010419**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 34 MZ	Kit code for standard and extended head.		**3010423**
	RS 44 MZ	Kit code for standard and extended head.		**3010424**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 34 MZ	Kit code for standard and extended head.	(1)	**3010502**
	RS 44 MZ	Kit code for standard and extended head.	(1)	**3010503**
		VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate.		
	RS 34 MZ	Natural gas version.	(2)	**20098750**
	RS 34 MZ	LPG version.	(3)	**20098753**
	RS 44 MZ	Natural gas version.	(2)	**20098746**
	All models	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.	(4)	**3010418**
	All models	HOURS COUNTER KIT To measure the burner working time a hours counter kit is available.		**3010450**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) Without CE certification.
(2) CE approved.
(3) CE approval on field is required.
(4) Connectable to the burner electrical wiring through plugs and sockets system.

STATE OF SUPPLY

Monoblock forced draught gas burner with two stage operation, fully automatic, made up of:
- Air suction circuit with sound proofing material
- High performance fan with straight blades
- Air damper for air flow setting and butterfly valve for regulating fuel output on 1st and 2nd stage controlled by a servomotor with variable cam
- Starting motor at 2800 rpm, single-phase / 220-230V / 50-60Hz or three-phase / 380-400V / 50-60Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Microprocessor-based burner safety control box, with diagnostic functions
- Plug and socket for electrical connections accessible from the external of the cover
- Burner on/off selection switch
- 1st - 2nd stage manual switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- 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 (RS 34-44 MZ single-phase)
- 4 plugs for electrical connection (RS 44 MZ three-phase)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Two stage progressive gas burners

RS 50-64



- Two stage progressive gas burners

RS 50-64 burners series covers a firing range from 115 to 850 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Operation is “two stage progressive”; the burners are fitted with a microprocessor-based burner safety control box which supplies indication of operation and diagnosis of fault cause.
The elevated performance of the fans and combustion head, guarantee flexibility of use and excellent working at all firing rates.
The exclusive design ensures reduced dimensions, simple use and maintenance. Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. A wide range of accessories guarantees elevated working flexibility.

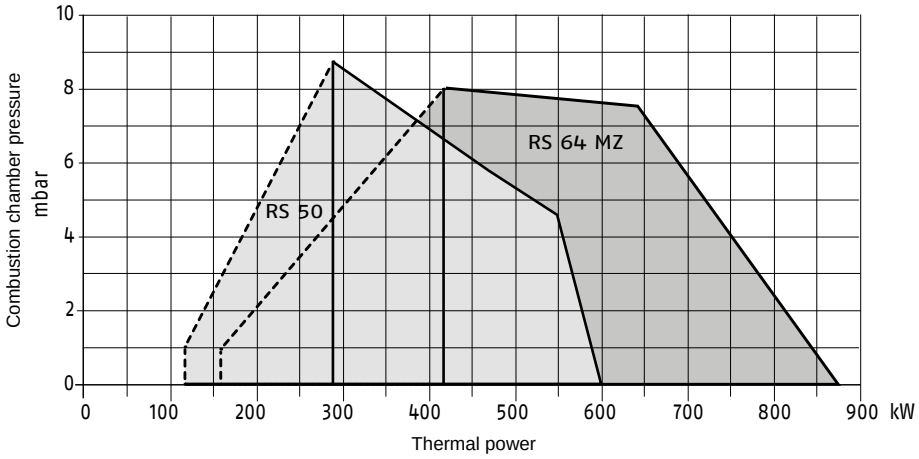
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 50 TC FS1	115/290-600	12/29-58	0.75	3/400/50	230/50-60	CE-0085AP0735	(1)	**3784702**
RS 50 TL FS1	115/290-600	12/29-58	0.75	3/400/50	230/50-60	CE-0085AP0735	(1)	**3784703**
RS 50 TC FS1	115/290-600	12/29-58	0.75	3/380/60	230/50-60	-	(1)	**3784720**
RS 50 TL FS1	115/290-600	12/29-58	0.75	3/380/60	230/50-60	-	(1)	**3784721**
RS 64 MZ TC FS1	150/400-850	15/40-85	1.50	3/400/50	230/50-60	CE-0085BR0558	(1)	**3789310**
RS 64 MZ TL FS1	150/400-850	15/40-85	1.50	3/400/50	230/50-60	CE-0085BR0558	(1)	**3789311**
RS 64 MZ TC FS1	150/400-850	15/40-85	1.50	3/380/60	230/50-60	-	(1)	**3789380**

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) Model with plug and socket.

FIRING RATES



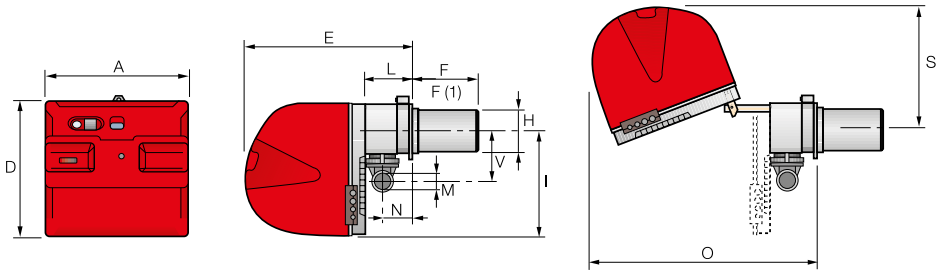
Useful firing rates for choosing the burner

1st stage operation range

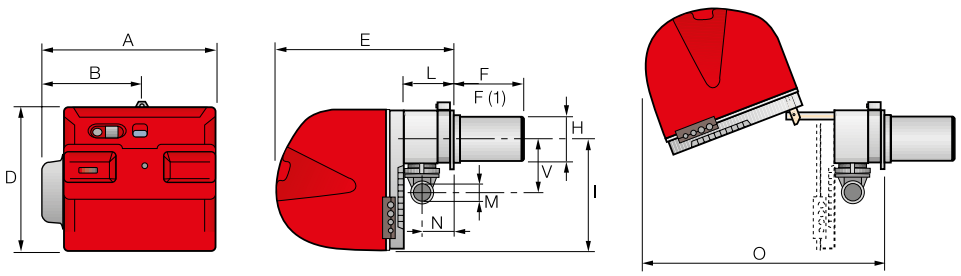
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

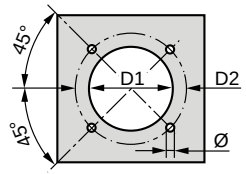
RS 50



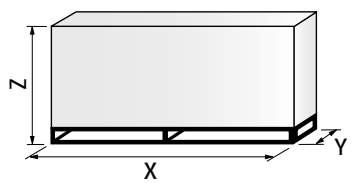
RS 64 MZ



Description	A mm	B mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M mm	N mm	O mm	S mm	V mm
RS 50	476	-	474	580	216 - 351	152	352	164	1”½	108	810	367	168
RS 64 MZ	533	300	490	640	250 - 385	179	352	222	Rp 2”	134	870	-	221



Description	D1 mm	D2 mm	Ø mm
RS 50	160	224	M8
RS 64 MZ	185	275-325	M12

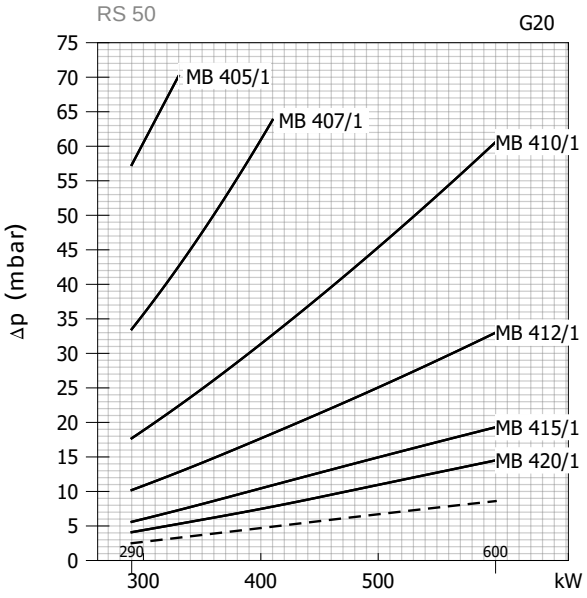


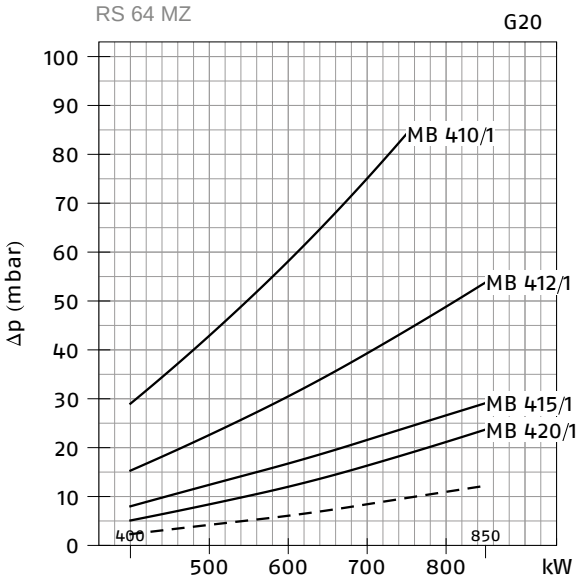
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 50	1200	502	520	41
RS 64 MZ	1200	580	520	42

(1) Dimension with standard and extended head.

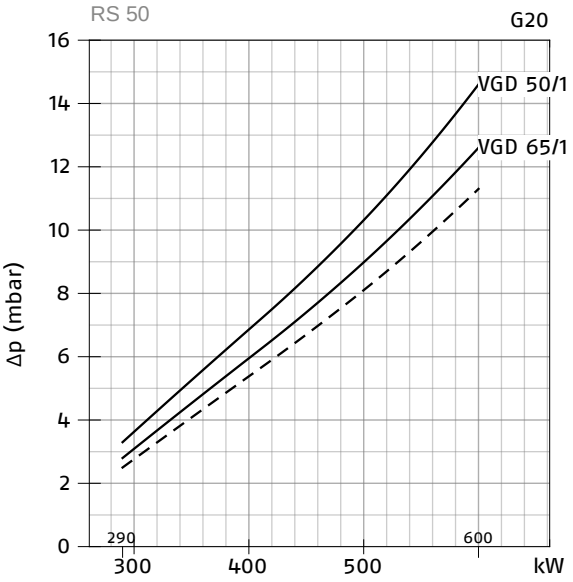
PRESSURE LOSS DIAGRAMS

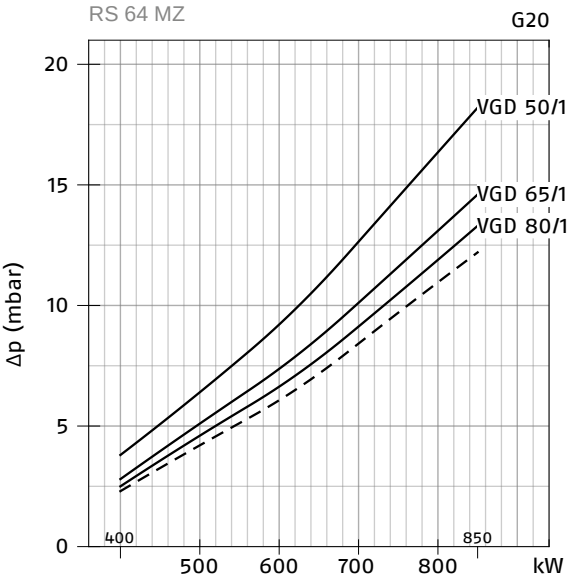
MB SERIES GAS TRAIN





VGD 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

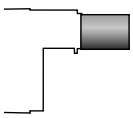
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 50	RS 64 MZ
MB SERIES ONE STAGE GAS TRAIN							
MB 405/1-RT 20	**3970500***		Rp ¾"	-	3010123	3000824	●
MB 407/1-RT 20	**3970553***		Rp ¾"	-	3010123	3000824	●
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3010123	3000824	●
MB 407/1-RSM 20	**3970229***		Rp ¾"	-	3010123	3000824	●
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3010124	3000843
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824	3000824+ 3000843
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123	3000824	
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123	3000824	

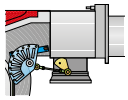
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 50	RS 64 MZ
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	□	3000843
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	□	3000843
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	□	3000843
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	□	3000843
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	□	3000843
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	□	3000843
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	□	3000843
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	□	3000843
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	□	3000843
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	3000822	□
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	3000822	□
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	3000822	□
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	3000822	□
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	3000822	□
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	3000822	□
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	3000822	□
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	3000822	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826+ 3000822	3000826
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826+ 3000822	3000826
VGD 80/1-FT 122	**20140763***		DN 80	-	3010123	●	3000826
VGD 80/1 CT FT 122	**20169192****		DN 80	♦	♦	●	3000826

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 50	Standard head length = 216 mm - Extended head length = 351 mm		**3010078**
	RS 64 MZ	Standard head length = 250 mm - Extended head length = 385 mm		**3010427**
	RS 50	CONNECTION FLANGE KIT A kit is available for use where the burner opening on the boiler is of excessive diameter.		**3010138**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 50	Spacer thickness S = 110 mm		**3010095**
	RS 64 MZ	Spacer thickness S = 135 mm		**3010129**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010321**

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	RS 64 MZ	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.		**3010419**
	RS 50	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.		**20008173**
	RS 64 MZ	Kit code for standard head.		**3010434**
	RS 64 MZ	Kit code for extended head.		**3010435**
	RS 50	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 and extended head.	(1)	**3010285**
	RS 50 TC/TL	VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate.	(2)	**3010200**
	All models	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.		**3010493**
	RS 64 MZ	DN80 GAS FLANGE KIT To modify the standard Rp 2” burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) Without CE certification.
(2) CE approved.

STATE OF SUPPLY

Monoblock forced draught gas burner with two stage operation, fully automatic, made up of:
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (RS 50 models) or straight blades (RS 64 MZ models)
– Air damper for air flow setting and butterfly valve for regulating fuel output on 1st and 2nd stage controlled by a servomotor with variable cam
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
– Combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Microprocessor-based burner safety control box, with diagnostic functions
– Plug and socket for electrical connections (RS 50-64 models)
– Burner on/off selection switch
– 1st - 2nd stage manual switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 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
– Wiring loom fittings for the electrical connection
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Two stage progressive gas burners

RS 70-190



- Two stage progressive gas burners

RS 70-190 burners series covers a firing range from 192 to 2290 kW. and it has been designed for use in low or medium temperature hot water boilers. hot air or steam boilers. diathermic oil boilers.
Operation is “two stage progressive”; the burners are fitted with a microprocessor-based burner safety control box which supplies indication of operation and diagnosis of fault cause.
The elevated performance of the fans and combustion head. guarantee flexibility of use and excellent working at all firing rates.
The exclusive design ensures reduced dimensions. simple use and maintenance. Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. A wide range of accessories guarantees elevated working flexibility.

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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 70 TC FS1	192/465-814	19/46.5-81	1.4	3/400/50	230/50-60	CE-0085AP0944	(2)	**20194283**
RS 70 TL FS1	192/465-814	19/46.5-81	1.4	3/400/50	230/50-60	CE-0085AP0944	(2)	**20194356**
RS 70 TC FS1	192/465-814	19/46.5-81	1.4	3/400/50	230/50-60	CE-0085AP0944	(1)	**20194286**
RS 70 TL FS1	192/465-814	19/46.5-81	1.4	3/400/50	230/50-60	CE-0085AP0944	(1)	**20194878**
RS 70 TC FS1	192/465-814	19/46.5-81	1.4	3/380/60	230/50-60	-	(2)	**20195084**
RS 70 TL FS1	192/465-814	19/46.5-81	1.4	3/380/60	230/50-60	-	(2)	**20195085**
RS 100 TC FS1	232/698-1163	23/70-116	1.8	3/400/50	230/50-60	CE-0085AP0945	(2)	**20194281**
RS 100 TL FS1	232/698-1163	23/70-116	1.8	3/400/50	230/50-60	CE-0085AP0945	(2)	**20194293**
RS 100 TC FS1	232/698-1163	23/70-116	1.8	3/400/50	230/50-60	CE-0085AP0945	(1)(2)	**20194881**
RS 100 TL FS1	232/698-1163	23/70-116	1.8	3/400/50	230/50-60	CE-0085AP0945	(1)(2)	**20194884**
RS 100 TC FS1	232/698-1163	23/70-116	1.8	3/380-460/60	230/50-60	-	(2)	**20195086**
RS 100 TL FS1	232/698-1163	23/70-116	1.8	3/380-460/60	230/50-60	-	(2)	**20195087**
RS 130 TC FS1	372/930-1512	37/93-151	2.6	3/400/50	230/50-60	CE-0085AP0946	(2)	**20194288**
RS 130 TL FS1	372/930-1512	37/93-151	2.6	3/400/50	230/50-60	CE-0085AP0946	(2)	**20194295**
RS 130 TC FS1	372/930-1512	37/93-151	2.6	3/400/50	230/50-60	CE-0085AP0946	(1)(2)	**20194885**
RS 130 TL FS1	372/930-1512	37/93-151	2.6	3/400/50	230/50-60	CE-0085AP0946	(1)(2)	**20194887**
RS 130 TC FS1	372/930-1512	37/93-151	2.6	3/380-460/60	230/50-60	-	(2)	**20195088**
RS 130 TL FS1	372/930-1512	37/93-151	2.6	3/380-460/60	230/50-60	-	(2)	**20195089**

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
RS 150 TC FS1	300/900-1850	30/90-185	3.5	400/50	230/50-60	CE-0085CS0428	(2)	**20044636**
RS 150 TL FS1	300/900-1850	30/90-185	3.5	400/50	230/50-60	CE-0085CS0428	(2)	**20044637**
RS 190 TC FS1	470/1279-2290	47/128-229	5.5	3/400/50	230/50-60	CE-0085AT0042	(2)	**3785813**
RS 190 TL FS1	470/1279-2290	47/128-229	5.5	3/400/50	230/50-60	CE-0085AT0042	(2)	**20030087**
RS 190 TC FS1	470/1279-2290	47/128-229	5.5	3/400/50	230/50-60	CE-0085AT0042	(1)(2)	**3785814**
RS 190 TC FS1	470/1279-2290	47/128-229	5.5	3/380/60	230/50-60	-	(2)	**3785820**
RS 190 TC FS1	470/1279-2290	47/128-229	5.5	3/220/60	220/60	-	(2)	**20011699**

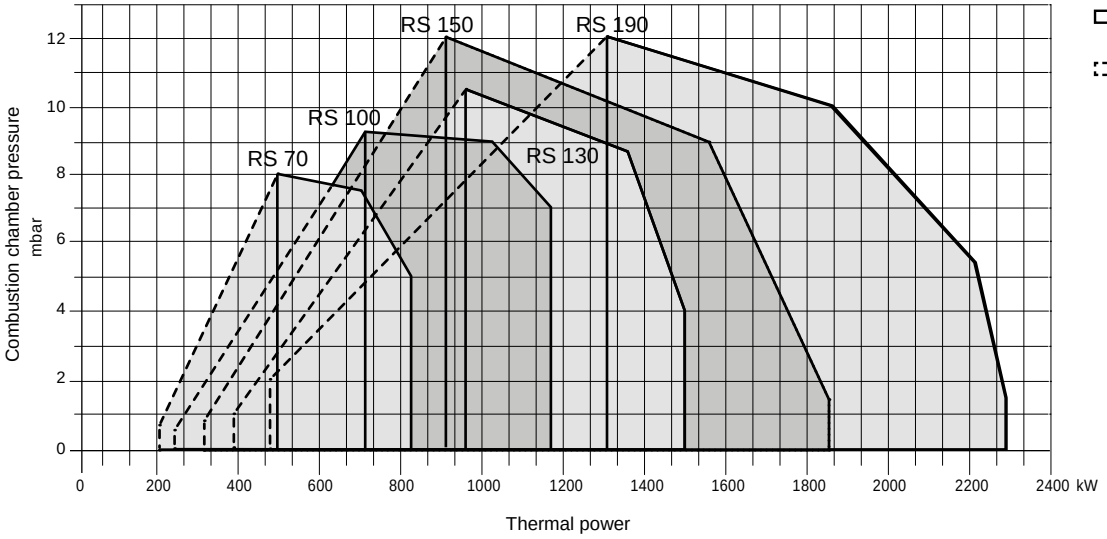
Net calorific value of natural gas (G20): 10 kWh/Nm³.
The burners comply with 2016/426/EU Regulation. 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with plug and socket.
(2) Model with terminal board.

NOTE: due to the improvement of the technical specification of some products, some burner codes have been changed. For correspondence between new and previous code, see the Tab below.

Description		NEW CODE	Note	OLD CODE	Note
RS 70 TC FS1 3/230-400/50	230/50-60	20194283	(3)	3785102	(4)
RS 70 TL FS1 3/230-400/50	230/50-60	20194356	(3)	3785103	(4)
RS 70 TC FS1 3/230-400/50	230/50-60	20194286	(3)	3785104	(4)
RS 70 TL FS1 3/230-400/50	230/50-60	20194878	(3)	3785105	(4)
RS 70 TC FS1 3/220-380/60	230/50-60	20195084	(3)	3785120	(4)
RS 70 TL FS1 3/220-380/60	230/50-60	20195085	(3)	3785121	(4)
RS 100 TC FS1 3/230-400/50	230/50-60	20194281	(3)	3785302	(4)
RS 100 TL FS1 3/230-400/50	230/50-60	20194293	(3)	3785303	(4)
RS 100 TC FS1 3/230-400/50	230/50-60	20194881	(3)	3785304	(4)
RS 100 TL FS1 3/230-400/50	230/50-60	20194884	(3)	3785305	(4)
RS 100 TC FS1 3/220/380-460/60	230/50-60	20195086	(3)	3785320	(4)
RS 100 TL FS1 3/220/380-460/60	230/50-60	20195087	(3)	3785321	(4)
RS 130 TC FS1 3/230-400/50	230/50-60	20194288	(3)	3785502	(4)
RS 130 TL FS1 3/230-400/50	230/50-60	20194295	(3)	3785503	(4)
RS 130 TC FS1 3/230-400/50	230/50-60	20194885	(3)	3785504	(4)
RS 130 TL FS1 3/230-400/50	230/50-60	20194887	(3)	3785505	(4)
RS 130 TC FS1 3/220/380-460/60	230/50-60	20195088	(3)	3785520	(4)
RS 130 TL FS1 3/220/380-460/60	230/50-60	20195089	(3)	3785521	(4)

(3) With SQN73
(4) With LKS

FIRING RATES

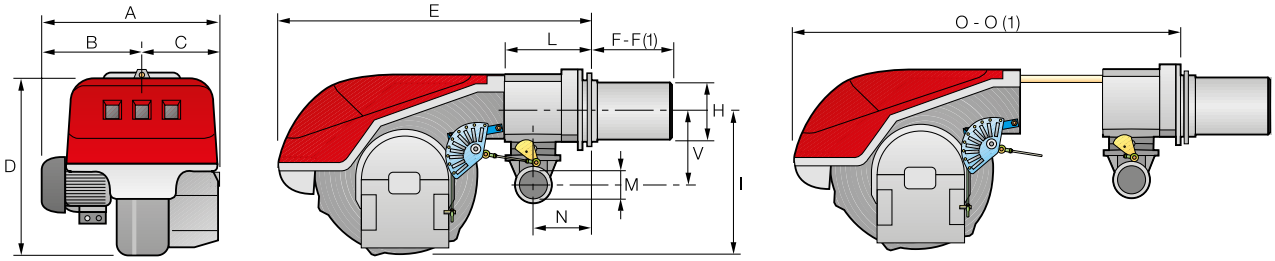


Useful firing rates for choosing the burner

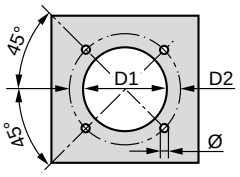
1st stage operation range

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

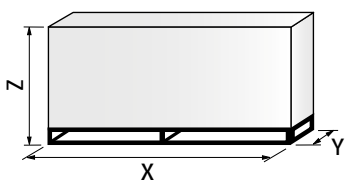
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	F-F(1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 70	511	296	215	555	840	250-385	179	430	214	Rp 2”	134	1161-1296	221
RS 100	527	312	215	555	840	250-385	179	430	214	Rp 2”	134	1162-1296	221
RS 130	553	338	215	555	840	280-415	189	430	214	Rp 2”	134	1163-1296	221
RS 150	675	370	305	590	840	280-415	189	435	214	Rp 2”	134	1180-1315	221
RS 190	681	366	315	555	872	370-520	222	430	246	Rp 2”	150	1328-/	262



Description	D1 mm	D2 mm	Ø mm
RS 70	185	275-325	M12
RS 100	185	275-325	M12
RS 130	195	275-325	M12
RS 150	195	275-325	M12
RS 190	230	325-368	M16

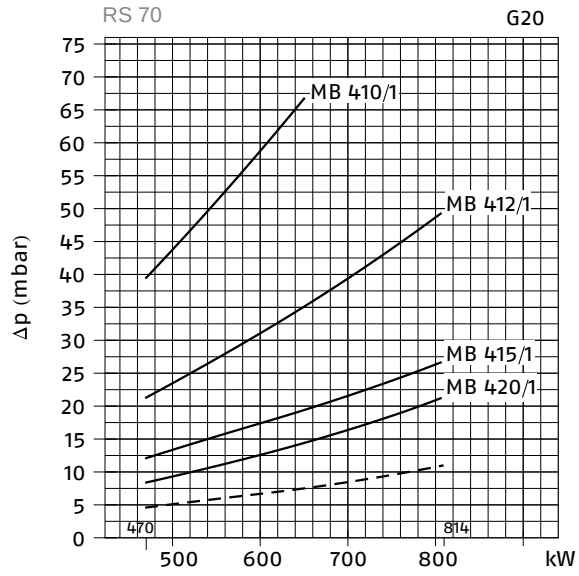


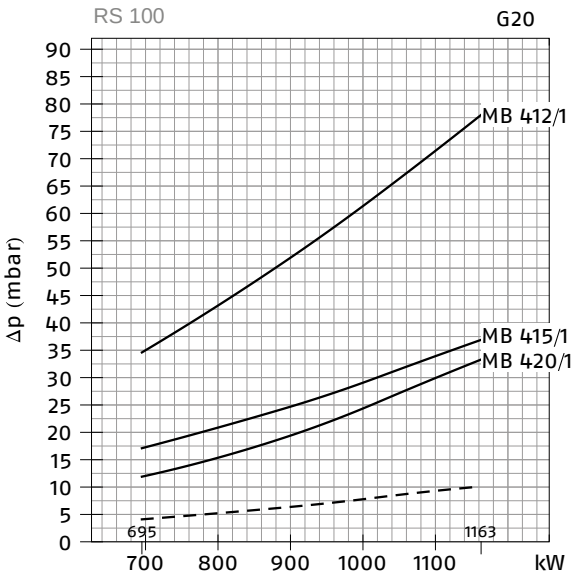
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 70	1405	700	660	70
RS 100	1405	700	660	73
RS 130	1400	700	660	76
RS 150	1400-1420	1000	660	110
RS 190	1400-1420	1000	660	115

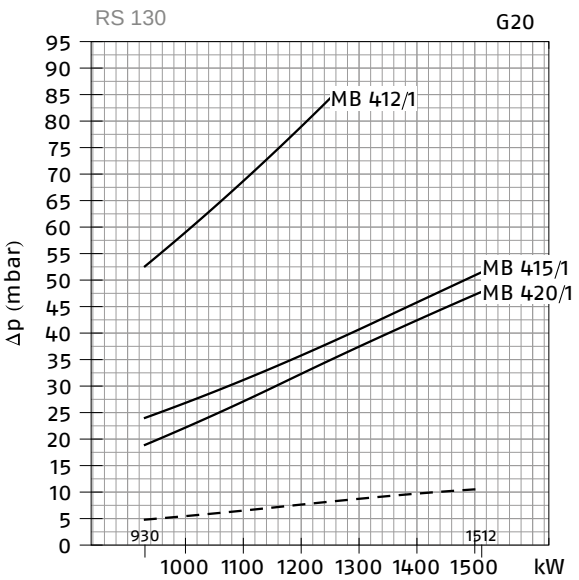
(1) Dimension with standard and extended head.

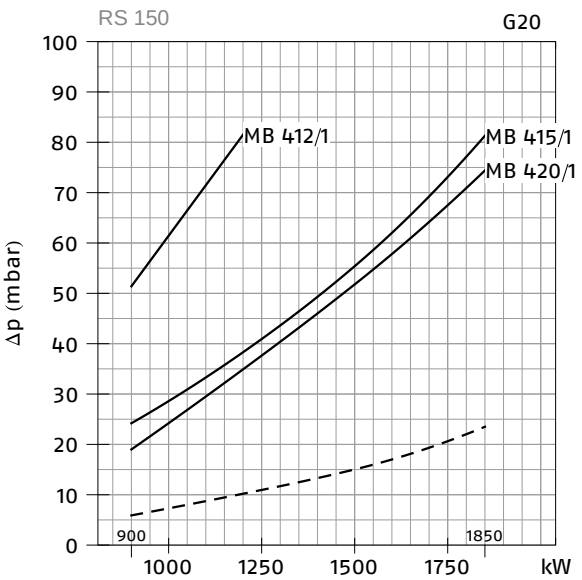
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN





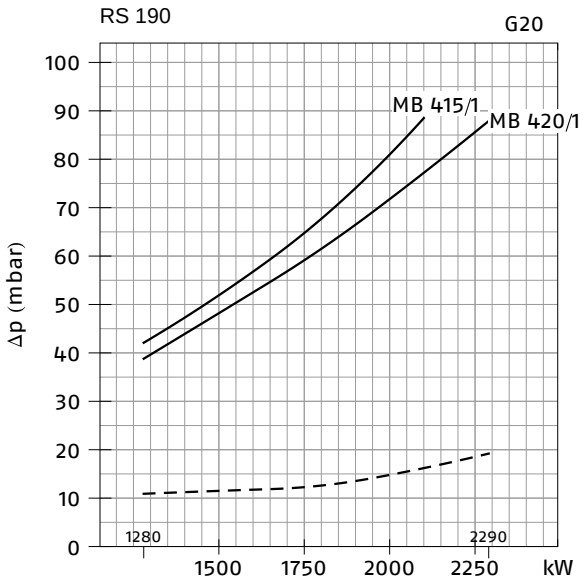




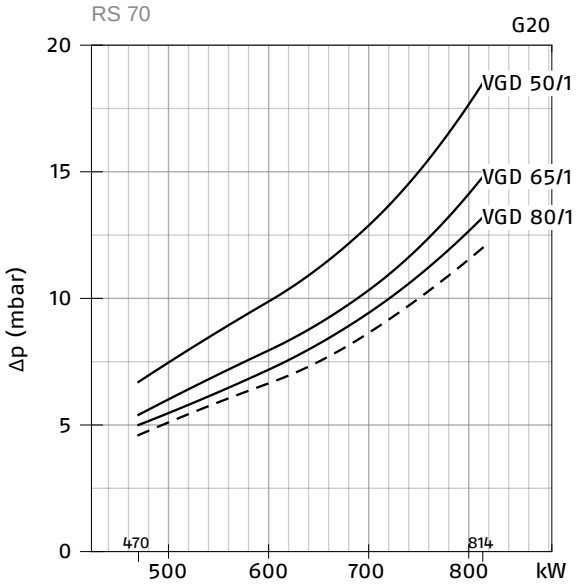
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

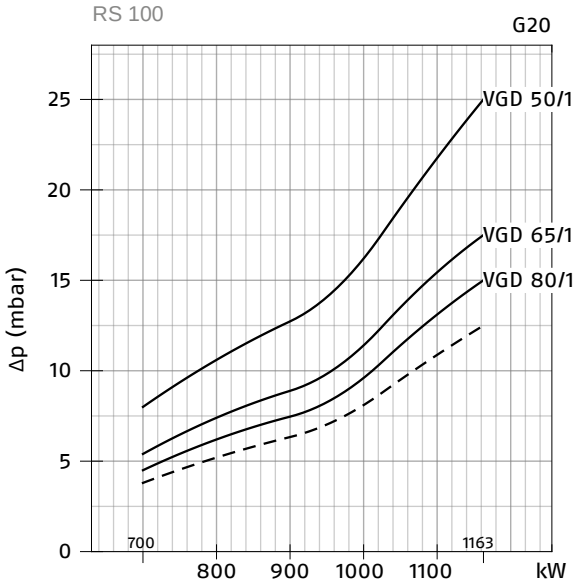
——— Combustion head + gas train

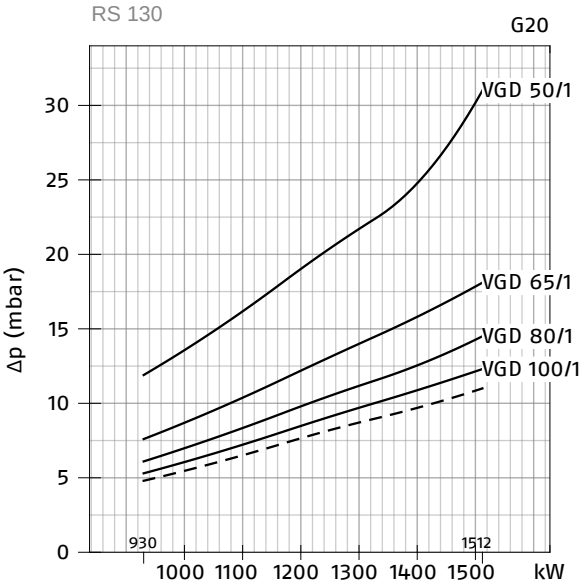
- - - - Combustion head

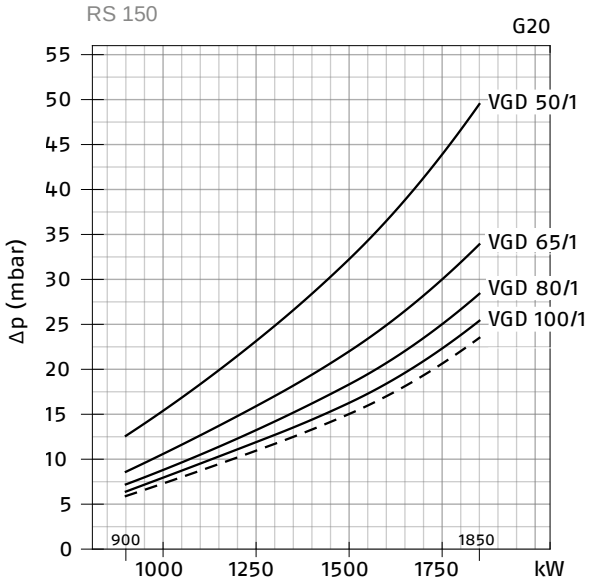


VGD SERIES GAS TRAIN

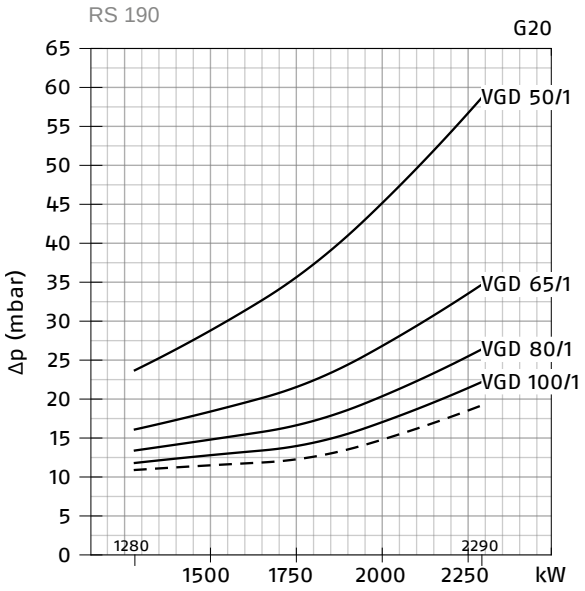








Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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



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

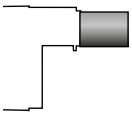
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)				
						RS 70	RS 100	RS 130	RS 150	RS 190
MB SERIES ONE STAGE GAS TRAIN										
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3000843	●	●	●	●
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824+ 3000843	●	●	●	●
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123		●	●	●	●
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123		●	●	●	●
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	3000843				
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	3000843				
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	3000843				
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	3000843				
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	3000843				
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	3000843				
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	3000843				
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	3000843				
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	3000843				
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	□	□	□	□	□
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	□	□	□	□	□
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	□	□	□	□	□
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	□	□	□	□	□
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	□	□	□	□	□
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	□	□	□	□	□
VGD SERIES ONE STAGE GAS TRAIN										
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	□	□	□	□	□
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	□	□	□	□	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826				
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826				
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	3000826				
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	3000826				
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	●	●	3000826+3010223		

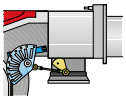
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)				
						RS 70	RS 100	RS 130	RS 150	RS 190
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	●	●	3000826+3010223		

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 70	Standard head length = 250 mm - Extended head length = 385 mm		**3010117**
	RS 100	Standard head length = 250 mm - Extended head length = 385 mm		**3010118**
	RS 130	Standard head length = 280 mm - Extended head length = 415 mm		**3010119**
	RS 150	Standard head length = 280 mm - Extended head length = 415 mm		**20052186**
	RS 190	Standard head length = 370 mm - Extended head length = 520 mm	(1)	**3010443**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 70-150	Spacer thickness S = 135 mm		**3010129**
	RS 190	Spacer thickness S = 102 mm		**3000722**
	RS 70-130	CLEAN CONTACTS KIT Each burner can be equipped with a single kit.		**20123294**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010329**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 70	Kit code for standard head.		**20008175**
	RS 70	Kit code for extended head.		**20008176**
	RS 100	Kit code for standard head.		**20008177**
	RS 100	Kit code for extended head.		**20008178**
	RS 130	Kit code for standard head.		**20008179**
	RS 130	Kit code for extended head.		**20008180**
	RS 150	Kit code for standard head.		**20050064**
	RS 150	Kit code for extended head.		**20050065**
	RS 190	Kit code for standard and extended head.		**3010166**
	All models	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.		**3010493**

Drawing	Burner model	Specification	Note	Code
		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 and extended head.		
	RS 70	Kit code for standard and extended head.	(2)	**3010286**
	RS 100	Kit code for standard and extended head.	(2)	**3010287**
	RS 130	Kit code for standard and extended head.	(2)	**3010288**
	RS 190	Kit code for standard and extended head.	(2)	**3010297**
		VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate.		
	RS 70 TC-TL	Kit code for standard and extended head.	(3)	**3010201**
	RS 100 TC- TL	Kit code for standard and extended head.	(3)	**3010202**
	RS 130 TC	Kit code for standard head.	(3)	**3010373**
	RS 130 TL	Kit code for extended head.	(3)	**3010374**
	RS 190 TC	Kit code for standard head.	(3)	**3010375**
	All models	DN80 GAS FLANGE KIT To modify the standard Rp 2" burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	RS 190	HEAD KIT FOR "REVERSE FLAME CHAMBER" In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional cylinder. Standard head length with cylinder 493 mm.	(4)	**3010241**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) Kit to be used on burners recognizable by a serial number that is over or equal to 02426XXXXXX, for burners with a serial number that is under or equal to 02416XXXXXX please use the Kit coded 3010196.
(2) Without CE certification.
(3) CE approved.
(4) CE approval on field is required.

STATE OF SUPPLY

Monoblock forced draught gas burner with two stage operation, fully automatic, made up of:
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (RS 70-100-130 models) or straight blades (RS 150-190 models)
– Air damper for air flow setting and butterfly valve for regulating fuel output on 1st and 2nd stage controlled by a servomotor with variable cam
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
– Combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Microprocessor-based burner safety control box, with diagnostic functions
– Burner on/off selection switch
– 1st - 2nd stage manual switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 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
– 2 slide bar extensions (for extended head models and RS 150-190 model)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Modulating gas burners

RS 34-44/M



- Modulating gas burners

RS 34-44/M burners series covers a firing range from 45 to 550 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS/M burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The exclusive design ensures reduced dimensions, simple use and maintenance. Optimisation of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
A wide range of accessories guarantees elevated working flexibility.

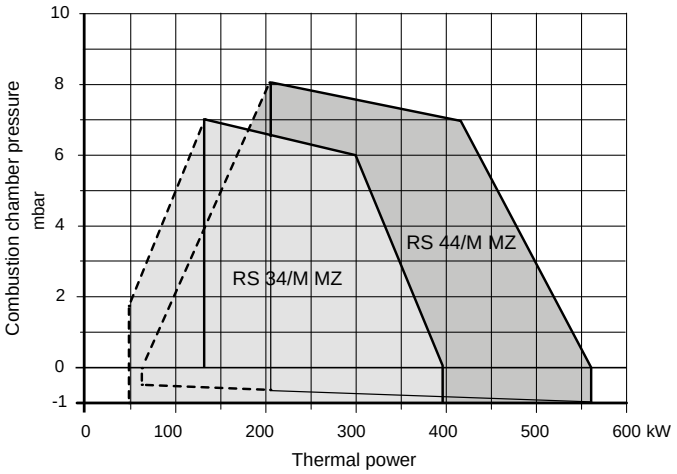
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 34/M MZ TC FS1	45/125-390	4.5/12.5-39	0.6	1/230/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788710**
RS 34/M MZ TL FS1	45/125-390	4.5/12.5-39	0.6	1/230/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788711**
RS 44/M MZ TC FS1	80/203-550	8/20.3-55	0.7	1/230/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788810**
RS 44/M MZ TL FS1	80/203-550	8/20.3-55	0.7	1/230/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788811**
RS 44/M MZ TC FS1	80/203-550	8/20.3-55	0.75	3/400/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788840**
RS 44/M MZ TL FS1	80/203-550	8/20.3-55	0.75	3/400/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788841**

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) Model with plug and socket.
(2) Model with CMG/M control box.

FIRING RATES

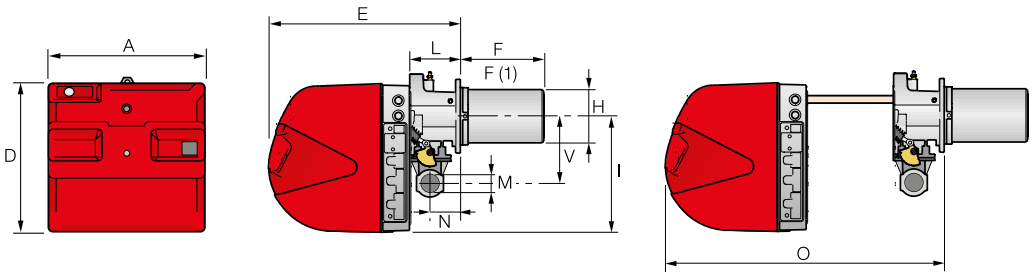


Useful firing rates for choosing the burner

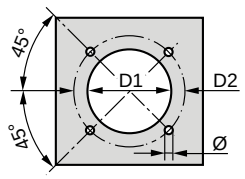
Modulation range

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

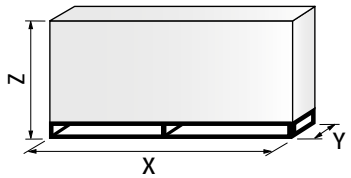
OVERALL DIMENSIONS



Description	A mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M mm	N mm	O mm	V mm
RS 34/M MZ	442	422	508	216-351	140	305	138	1"½	84	780	177
RS 44/M MZ	442	422	508	216-351	152	305	138	1"½	84	780	177



Description	D1 mm	D2 mm	Ø mm
RS 34/M MZ	160	224	M8
RS 44/M MZ	160	224	M8

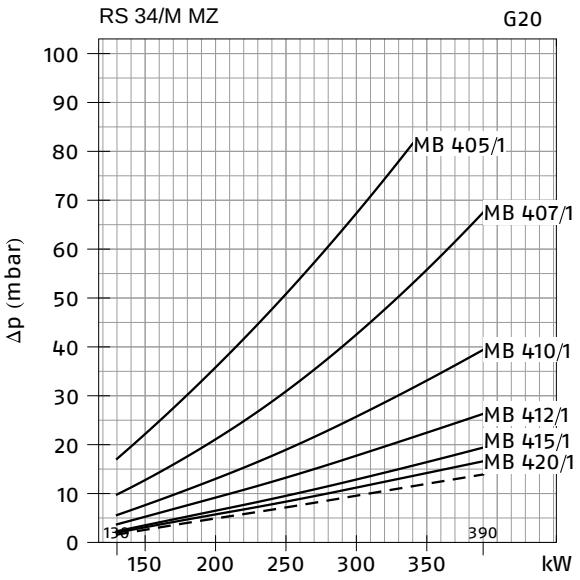


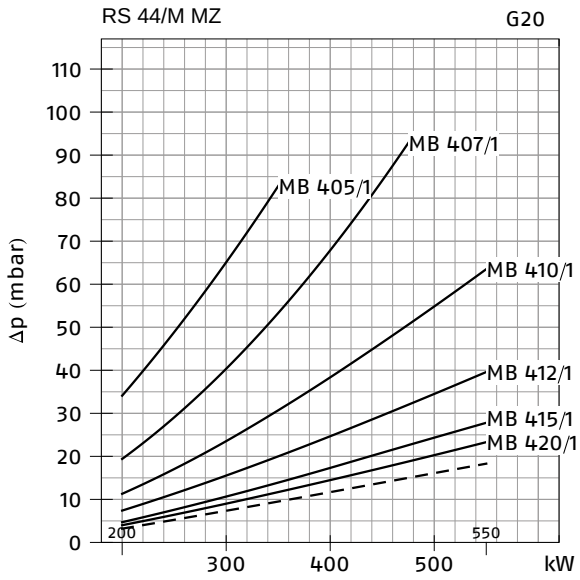
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 34/M MZ	1000	485	500	32
RS 44/M MZ	1000	485	500	33

(1) Dimension with standard and extended head.

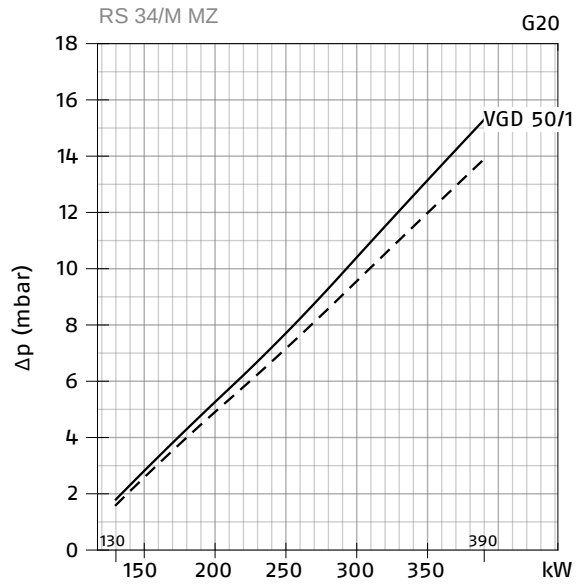
PRESSURE LOSS DIAGRAMS

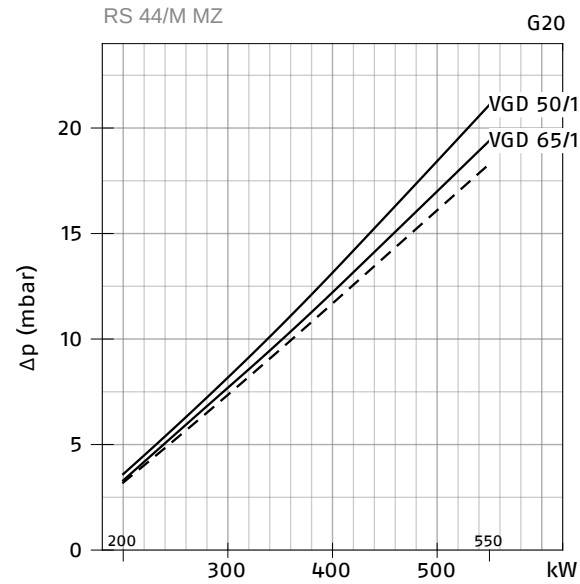
MB SERIES GAS TRAIN





VGD 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

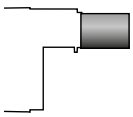
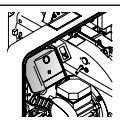
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 34/M MZ	RS 44/M MZ
MB SERIES ONE STAGE GAS TRAIN							
MB 405/1-RT 20	**3970500***		Rp ¾"	-	3010123	3000824	
MB 407/1-RT 20	**3970553***		Rp ¾"	-	3010123	3000824	
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3010123	3000824	
MB 407/1-RSM 20	**3970229***		Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3010124	
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123	3000824	
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123	3000824	

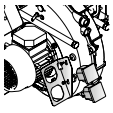
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 34/M MZ	RS 44/M MZ
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	□	□
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	□	□
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	□	□
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	□	□
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	□	□
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	□	□
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	□	□
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	3000822	
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	3000822	
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	3000822	
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	3000822	
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	3000822	
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	●	3000826+ 3000822
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	●	3000826+ 3000822

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 34/M MZ	Standard head length = 216 mm - Extended head length = 351 mm		**3010428**
	RS 44/M MZ	Standard head length = 216 mm - Extended head length = 351 mm		**3010429**
	All models	CONNECTION FLANGE KIT A kit is available for use where the burner opening on the boiler is of excessive diameter.		**3010138**
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm		**3010095**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010449**
	All models	POST-VENTILATION KIT To prolong ventilation after opening of thermostats chain, a special kit is available. Post-ventilation time 20s.		**3010451**

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, ,E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20083339**
		RWF 55.5 - Plus version.		**20098541**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**3010410**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**3010420**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010448**
	All models	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.		**3010419**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 34/M MZ	Kit code for standard and extended head.		**3010423**
	RS 44/M MZ	Kit code for standard and extended head.		**3010424**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 34/M MZ	Kit code for standard and extended head.	(1)	**3010502**
	RS 44/M MZ	Kit code for standard and extended head.	(1)	**3010503**
		VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate.		
	RS 34/M MZ	Natural gas version.	(2)	**20098750**
	RS 34/M MZ	LPG version.	(3)	**20098753**
	RS 44/M MZ	Natural gas version.	(2)	**20098746**
	All models	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.		**3010418**
	All models	HOURS COUNTER KIT To measure the burner working time a hours counter kit is available.		**3010450**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**

Drawing	Burner model	Specification	Note	Code
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

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

STATE OF SUPPLY

Monoblock forced draught gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
– Air suction circuit with sound proofing material
– High performance fan with straight blades
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by a servomotor with variable cam
– Starting motor at 2800 rpm, single-phase / 230V / 50-60Hz or three-phase / 230-400V / 50-60Hz
– Combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Microprocessor-based burner safety control box, with diagnostic functions
– Plugs and Sockets for electrical connection, accessible from the external of the cover
– Burner on/off selection switch
– Manual or automatic output increase/decrease selection switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– 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 (RS 34-44/M MZ single-phase)
– 4 plugs for electrical connection (RS 44/M MZ three-phase)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Modulating gas burners

RS 50-64/M



- Modulating gas burners

RS 50-64/M burners series covers a firing range from 80 to 850 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS/M burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The exclusive design ensures reduced dimensions, simple use and maintenance. Optimisation of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
A wide range of accessories guarantees elevated working flexibility.

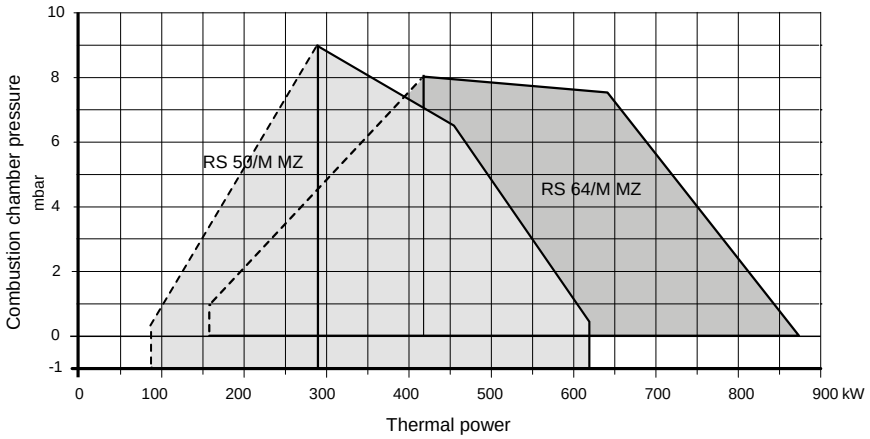
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 50/M MZ TC FS1	80/285-630	8/29-63	0.75	3/400/50	230/50-60	CE-0085AQ0709	(1)(2)	**3781622**
RS 50/M MZ TL FS1	80/285-630	8/29-63	0.75	3/400/50	230/50-60	CE-0085AQ0709	(1)(2)	**3781623**
RS 50/M MZ TC FS1	80/285-630	8/29-63	0.66	3/380/60	230/50-60	-	(1)(2)	**3781682**
RS 50/M MZ TL FS1	80/285-630	8/29-63	0.66	3/380/60	230/50-60	-	(1)(2)	**3781683**
RS 64/M MZ TC FS1	150/400-850	15/40-85	1.5	3/400/50	230/50-60	CE-0085BR0558	(1)(2)	**3788910**
RS 64/M MZ TL FS1	150/400-850	15/40-85	1.5	3/400/50	230/50-60	CE-0085BR0558	(1)(2)	**3788911**
RS 64/M MZ TC FS1	150/400-850	15/40-85	1.5	3/380/60	230/50-60	-	(1)(2)	**3788980**

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) Model with plug and socket.
(2) Model with CMG/M control box.

FIRING RATES



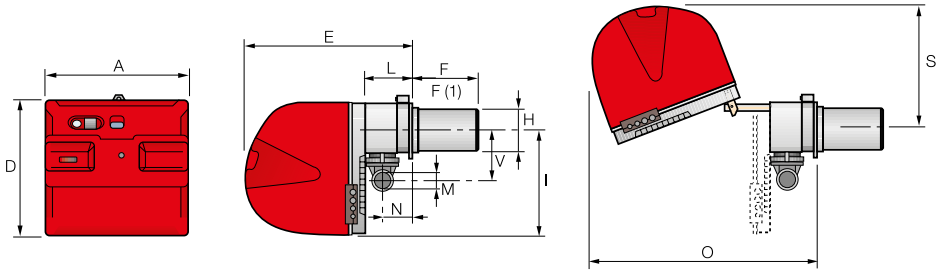
Useful firing rates for choosing the burner

Modulation range

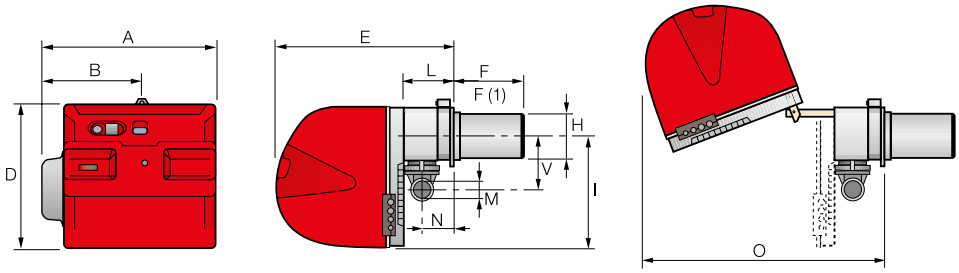
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

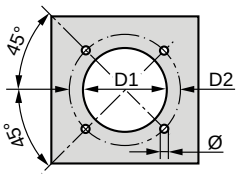
RS 50/M MZ



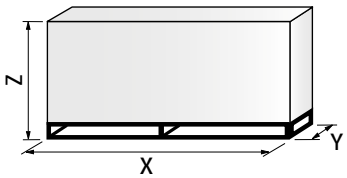
RS 64/M MZ



Description	A mm	B mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M mm	N mm	O mm	S mm	V mm
RS 50/M MZ	476	-	474	580	216-351	152	352	164	1”½	108	810	367	168
RS 64/M MZ	533	300	490	640	250-385	179	352	222	Rp 2”	134	870	-	221



Description	D1 mm	D2 mm	Ø mm
RS 50/M MZ	160	224	M8
RS 64/M MZ	185	275-325	M12

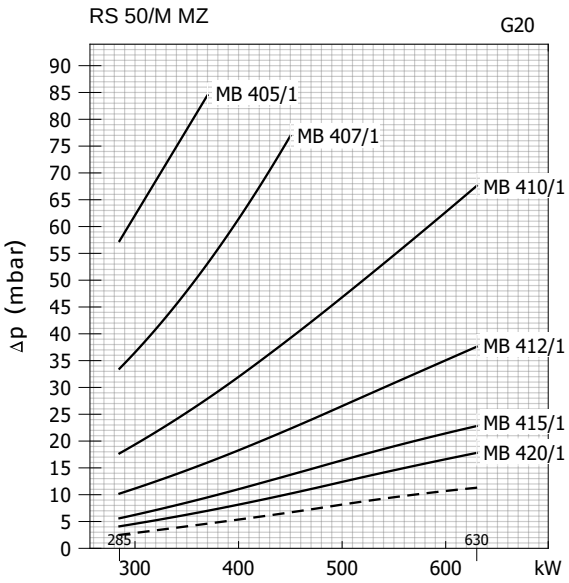


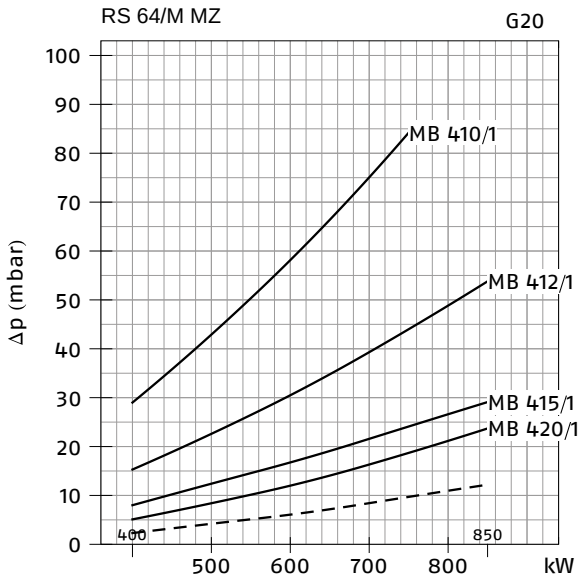
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 50/M MZ	1200	502	520	41
RS 64/M MZ	1200	580	520	42

(1) Dimension with standard and extended head.

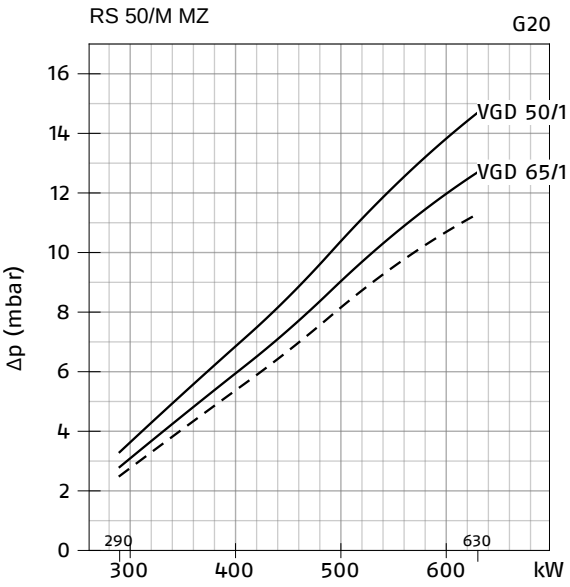
PRESSURE LOSS DIAGRAMS

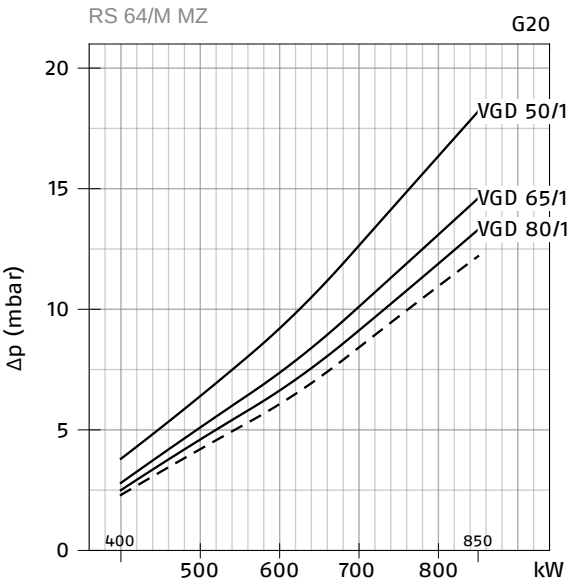
MB SERIES GAS TRAIN





VGD 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

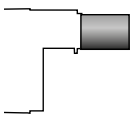
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 50/M MZ	RS 64/M MZ
MB SERIES ONE STAGE GAS TRAIN							
MB 405/1-RT 20	**3970500***		Rp ¾"	-	3010123	3000824	●
MB 407/1-RT 20	**3970553***		Rp ¾"	-	3010123	3000824	●
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3010123	3000824	●
MB 407/1-RSM 20	**3970229***		Rp ¾"	-	3010123	3000824	●
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3010124	3000843
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824	3000824+ 3000843
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123	3000824	
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123	3000824	

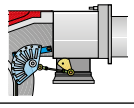
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 50/M MZ	RS 64/M MZ
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	□	3000843
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	□	3000843
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	□	3000843
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	□	3000843
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	□	3000843
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	□	3000843
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	□	3000843
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	□	3000843
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	□	3000843
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	3000822	□
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	3000822	□
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	3000822	□
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	3000822	□
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	3000822	□
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	3000822	□
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	3000822	□
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	3000822	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826+ 3000822	3000826
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826+ 3000822	3000826
VGD 80/1-FT 122	**20140763***		DN 80	-	3010123	●	3000826
VGD 80/1 CT FT 122	**20169192****		DN 80	♦	♦	●	3000826

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 50/M MZ	Standard head length = 216 mm - Extended head length = 351 mm		**3010078**
	RS 64/M MZ	Standard head length = 250 mm - Extended head length = 385 mm		**3010427**
	RS 50/M MZ	CONNECTION FLANGE KIT A kit is available for use where the burner opening on the boiler is of excessive diameter.		**3010138**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 50/M MZ	Spacer thickness S = 110 mm		**3010095**
	RS 64/M MZ	Spacer thickness S = 135 mm		**3010129**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20082208**
		RWF 55.5 - Plus version.		**20099657**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010321**
	All models	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.		**3010419**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 50/M MZ	Kit code for standard and extended head.		**20008173**
	RS 64/M MZ	Kit code for standard head.		**3010434**
	RS 64/M MZ	Kit code for extended head.		**3010435**
	RS 50/M MZ	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 and extended head.	(1)	**3010285**
	RS 50/M MZ TC/TL	VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate.	(2)	**3010200**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**3010390**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**3010109**
	RS 64/M MZ	DN80 GAS FLANGE KIT To modify the standard Rp 2” burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) Without CE certification
(2) CE approved.

STATE OF SUPPLY

Monoblock forced draught gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades (RS 50/M MZ models) or straight blades (RS 64/M MZ models)
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by a servomotor with variable cam
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Microprocessor-based burner safety control box, with diagnostic functions
- Burner on/off selection switch
- Manual or automatic output increase/decrease selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 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
- Wiring loom fittings for the electrical connection
- 2 slide bar extensions (for extended head models)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Modulating gas burners

RS 70-250/M



- Modulating gas burners

RS 70-250/M burners series covers a firing range from 150 to 2650 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS/M burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The exclusive design ensures reduced dimensions, simple use and maintenance. Optimisation of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
A wide range of accessories guarantees elevated working flexibility.

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.

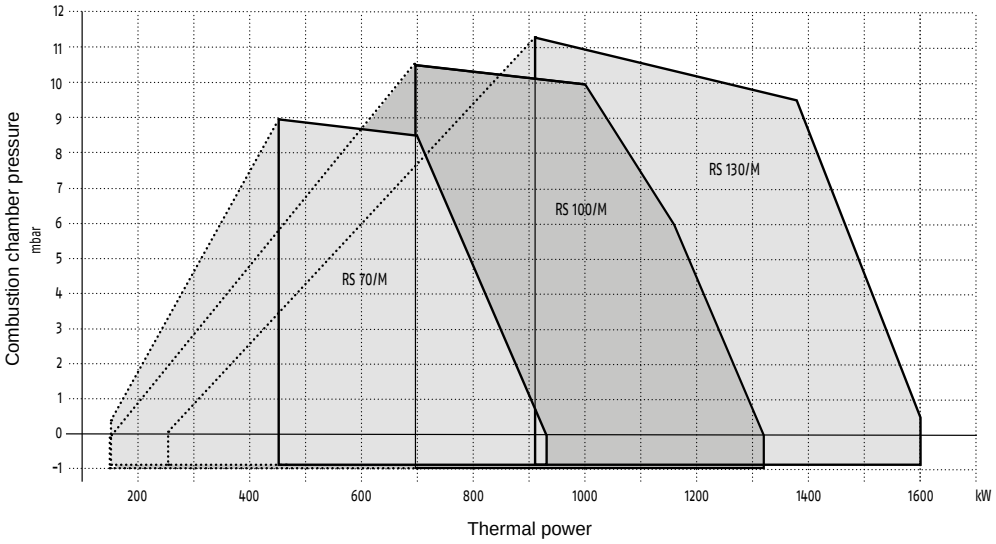
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 70/M TC FS1	150/470-930	15/47-93	1.4	3/400/50	230/50-60	CE-0085AQ0708	(2)(5)	**3789610**
RS 70/M TL FS1	150/470-930	15/47-93	1.4	3/400/50	230/50-60	CE-0085AQ0708	(2)(5)	**3789611**
RS 70/M TC FS1	150/470-930	15/47-93	1.4	3/380/60	230/50-60	-	(2)(5)	**3787082**
RS 70/M TL FS1	150/470-930	15/47-93	1.4	3/380/60	230/50-60	-	(2)(5)	**3787083**
RS 100/M TC FS1	150/700-1340	15/70-134	1.8	3/400/50	230/50-60	CE-0085AQ0708	(2)(5)	**3789710**
RS 100/M TL FS1	150/700-1340	15/70-134	1.8	3/400/50	230/50-60	CE-0085AQ0708	(2)(5)	**3789711**
RS 100/M TC FS1	150/700-1340	15/70-134	2.1	3/380-460/60	230/50-60	-	(2)(5)	**3787282**
RS 100/M TL FS1	150/700-1340	15/70-134	2.1	3/380-460/60	230/50-60	-	(2)(5)	**3787283**
RS 130/M TC FS1	254/920-1600	24/92-160	2.6	3/400/50	230/50-60	CE-0085AQ0708	(2)(5)	**3789810**
RS 130/M TL FS1	254/920-1600	24/92-160	2.6	3/400/50	230/50-60	CE-0085AQ0708	(2)(5)	**3789811**
RS 130/M TC FS1	254/920-1600	24/92-160	2.6	3/380-460/60	230/50-60	-	(2)(5)	**3787482**
RS 130/M TL FS1	254/920-1600	24/92-160	2.6	3/380-460/60	230/50-60	-	(2)(5)	**3787483**
RS 150/M TC FS1	300/900-1850	30/90-185	3.5	3/400/50	230/50-60	CE-0085CS0427	(2)(5)	**20044638**
RS 150/M TL FS1	300/900-1850	30/90-185	3.5	3/400/50	230/50-60	CE-0085CS0427	(2)(5)	**20044639**
RS 190/M TC FS1	470/1279-2290	47/128-229	5.5	3/400/50	230/50-60	CE-0085AT0042	(2)(5)	**3787623**
RS 190/M TL FS1	470/1279-2290	47/128-229	5.5	3/400/50	230/50-60	CE-0085AT0042	(1)(5)	**20052616**
RS 190/M TC FS1	470/1279-2290	47/128-229	5.5	3/380/60	220/60	-	(2)(5)	**3787682**
RS 190/M TC FS1	470/1279-2290	47/128-229	5.5	3/220/60	220/60	-	(2)(5)	**3787681**

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
RS 250/M MZ TC FS1	600/1250-2650	60/125-265	6.5	3/400/50	230/50-60	CE-0085BS0114	(2)(5)	**3788410**
RS 250/M MZ TL FS1	600/1250-2650	60/125-265	6.5	3/400/50	230/50-60	CE-0085BS0114	(2)(5)	**3788411**
RS 250/M MZ TC FS1	600/1250-2650	60/125-265	6.5	3/230-380/60	220/60	-	(2)(3)(6)	**20205748**

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.
Models for continuous operation (FS2: one stop every 72 hours) are available on request.
(1) Model with plug and socket.
(2) Model with terminal board.
(3) Model with LFL control box.
(5) Model with CMG/M control box.

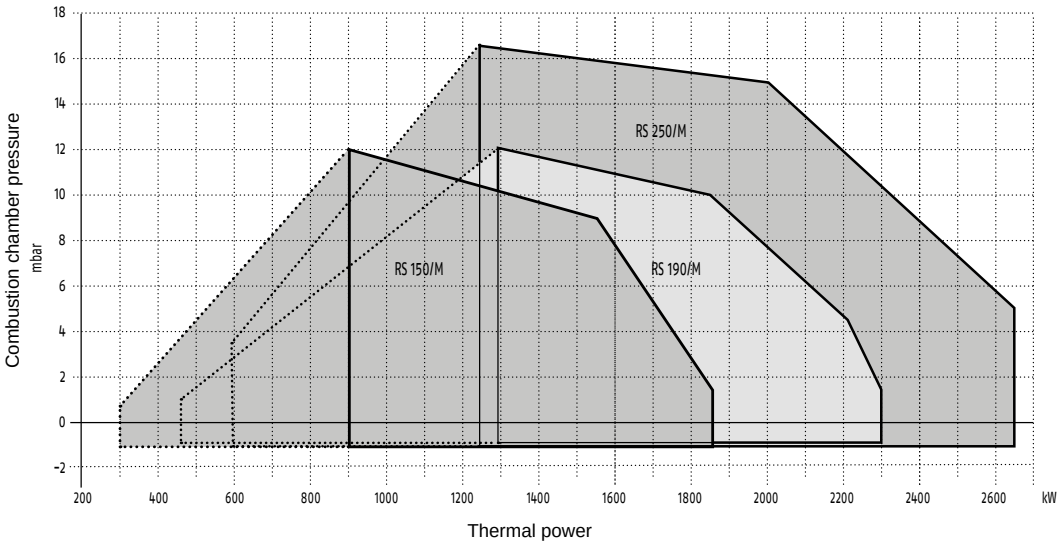
FIRING RATES



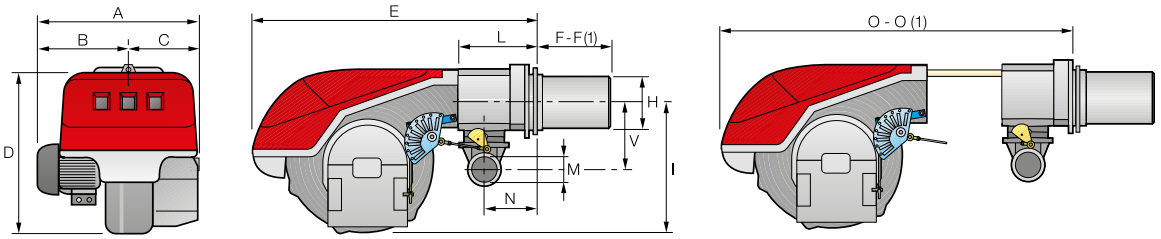
Useful firing rates for choosing the burner

Modulation range

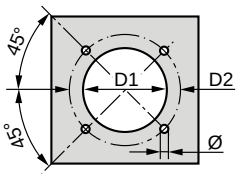
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.



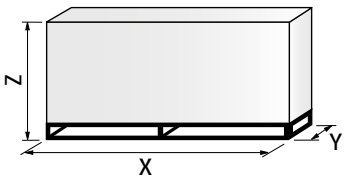
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	F-F(1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 70/M	511	296	215	555	840	250-385	179	430	214	Rp 2”	134	1161-1296	221
RS 100/M	527	312	215	555	840	250-385	179	430	214	Rp 2”	134	1162-1296	221
RS 130/M	553	338	215	555	840	280-415	189	430	214	Rp 2”	134	1163-1296	221
RS 150/M	675	370	305	590	840	280-415	189	435	214	Rp 2”	134	1180-1315	221
RS 190/M	681	366	315	555	872	370-520	222	430	230	Rp 2”	150	1328-/	221
RS 250/M MZ	732	427	305	555	872	370-520	222	430	230	Rp 2”	150	1328-/	262



Description	D1 mm	D2 mm	Ø mm
RS 70/M	185	275-325	M12
RS 100/M	185	275-325	M12
RS 130/M	195	275-325	M12
RS 150/M	195	275-325	M12
RS 190/M	230	325-368	M16
RS 250/M MZ	230	325-368	M16



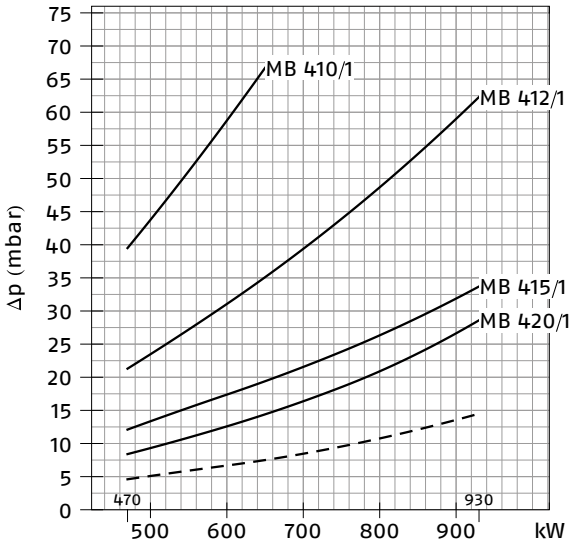
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 70/M	1405	700	660	70
RS 100/M	1405	700	660	73
RS 130/M	1405	700	660	76
RS 150/M	1400-1420	1000	660	110
RS 190/M	1400-1420	1000	660	115
RS 250/M MZ	1400-1420	1040	725	117

(1) Dimension with standard and extended head.

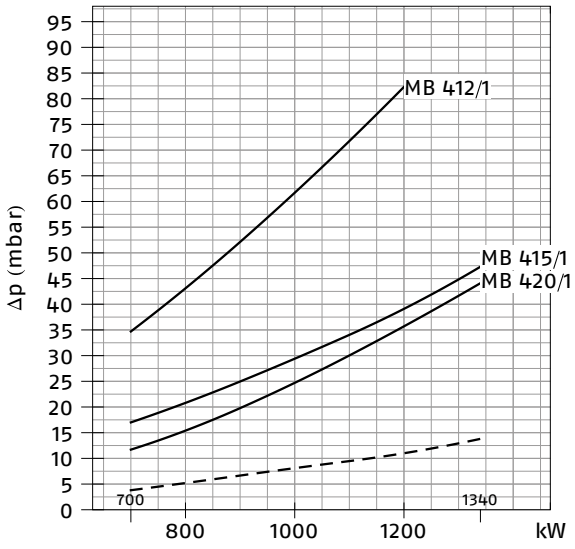
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

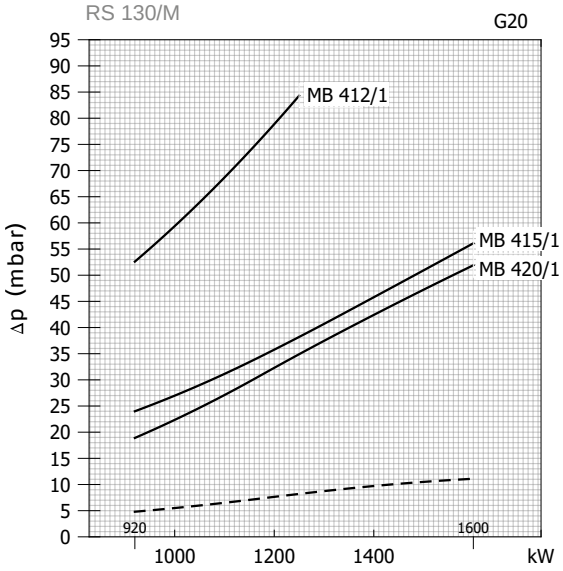
RS 70/M G20



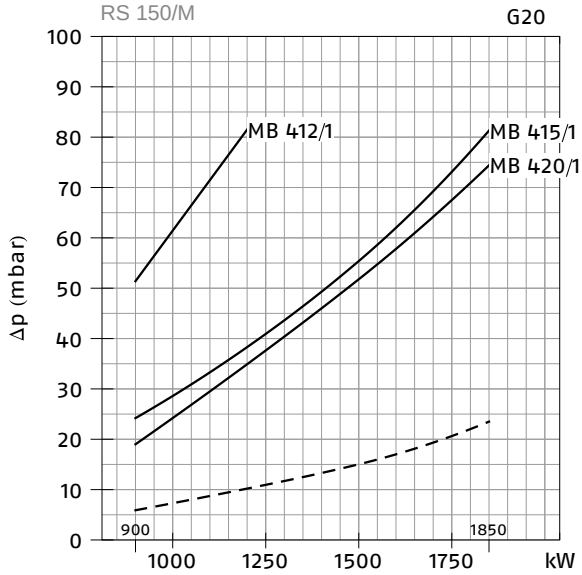
RS 100/M G20



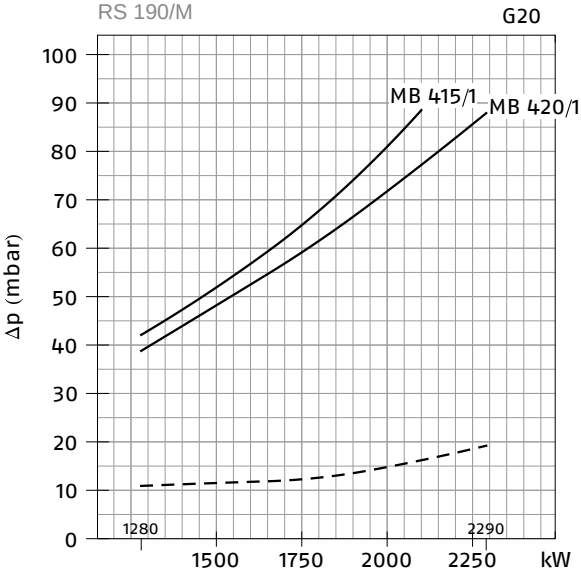
RS 130/M G20



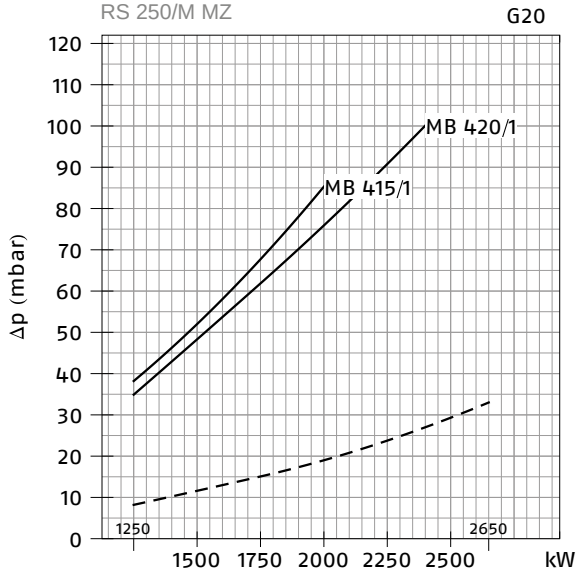
RS 150/M G20



RS 190/M G20



RS 250/M MZ G20



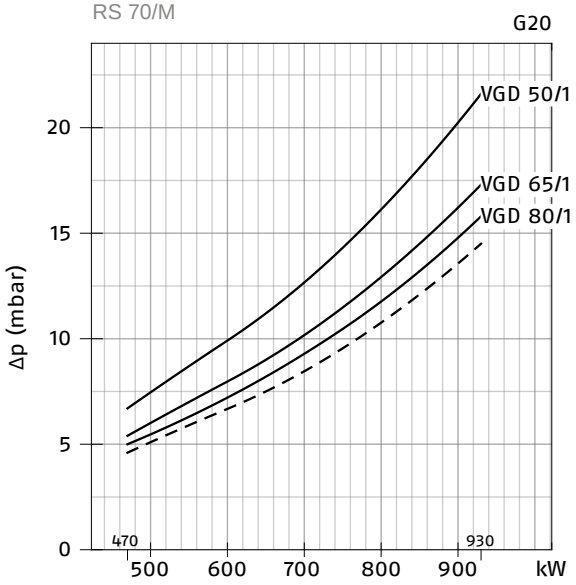
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

——— Combustion head + gas train

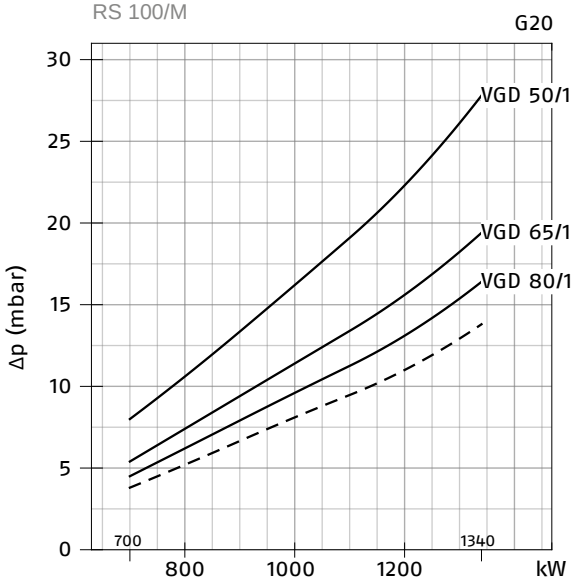
- - - - Combustion head

VGD SERIES GAS TRAIN

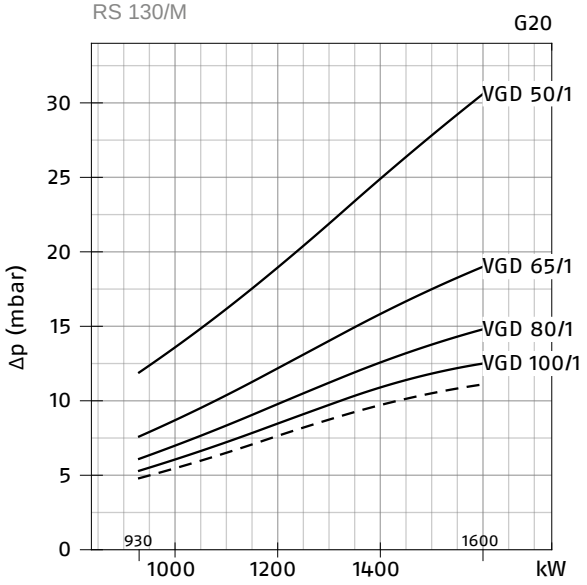
RS 70/M



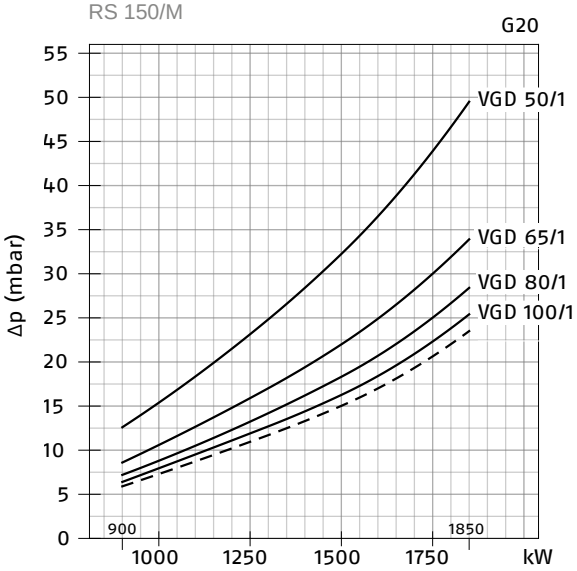
RS 100/M



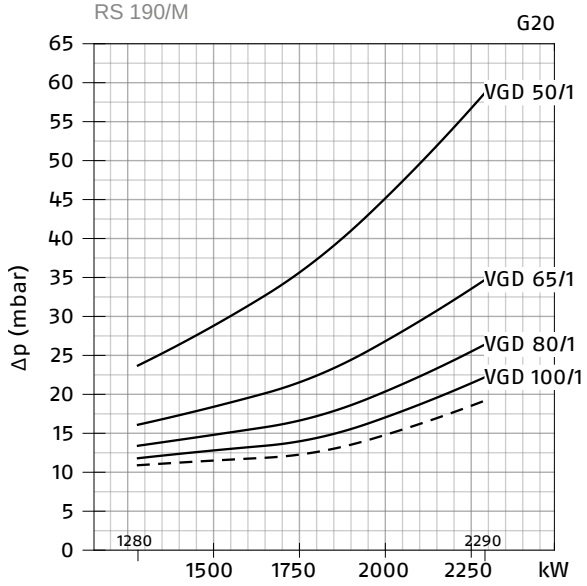
RS 130/M



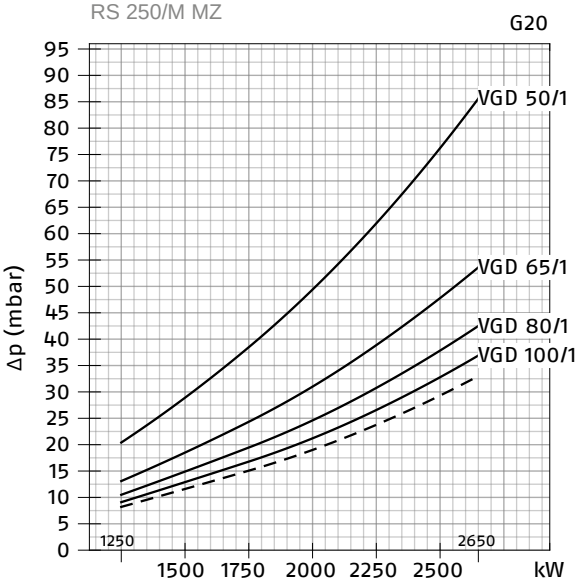
RS 150/M



RS 190/M



RS 250/M MZ



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

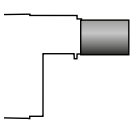
GAS TRAINS

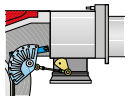
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)					
						RS 70/M	RS 100/M	RS 130/M	RS 150/M	RS 190/M	RS 250/M MZ
MB SERIES ONE STAGE GAS TRAIN											
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3000843	●	●	●	●	●
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824+ 3000843	●	●	●	●	●
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123		●	●	●	●	●
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123		●	●	●	●	●
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	3000843					
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	3000843					
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	3000843					
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	3000843					
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	3000843					
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	3000843					
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	3000843					
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	3000843					
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	3000843					
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	□	□	□	□	□	□
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	□	□	□	□	□	□
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	□	□	□	□	□	□
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	□	□	□	□	□	□
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	□	□	□	□	□	□
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	□	□	□	□	□	□
VGD SERIES ONE STAGE GAS TRAIN											
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	□	□	□	□	□	□
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	□	□	□	□	□	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826					
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826					
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	3000826					
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	3000826					
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	●	●	3000826+3010223			
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	●	●	3000826+3010223			

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 70/M	Standard head length = 250 mm - Extended head length = 385 mm		**3010117**
	RS 100/M	Standard head length = 250 mm - Extended head length = 385 mm		**3010118**
	RS 130/M	Standard head length = 280 mm - Extended head length = 415 mm		**3010119**
	RS 150/M	Standard head length = 280 mm - Extended head length = 415 mm		**20052186**
	RS 190/M	Standard head length = 370 mm - Extended head length = 520 mm	(1)	**3010443**
	RS 250/M MZ	Standard head length = 370 mm - Extended head length = 520 mm		**3010412**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**

Drawing	Burner model	Specification	Note	Code
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 70-150/M	Spacer thickness S = 135 mm		**3010129**
	RS 190-250/M	Spacer thickness S = 102 mm		**3000722**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20099869**
		RWF 55.5 - Plus version.		**20099905**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**3010415**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**3010416**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010329**
	All models	DN80 GAS FLANGE KIT To modify the standard Rp 2” burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 70/M	Kit code for standard head.		**20008175**
	RS 70/M	Kit code for extended head.		**20008176**
	RS 100/M	Kit code for standard head.		**20008177**
	RS 100/M	Kit code for extended head.		**20008178**
	RS 130/M	Kit code for standard head.		**20008179**
	RS 130/M	Kit code for extended head.		**20008180**
	RS 150/M	Kit code for standard head.		**20050064**
	RS 150/M	Kit code for extended head.		**20050065**
	RS 190/M	Kit code for standard and extended head.		**3010166**
	RS 250/M MZ	Kit code for standard and extended head.		**3010411**
		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 and extended head.		
	RS 70/M	Kit code for standard and extended head.	(2)	**3010286**
	RS 100/M	Kit code for standard and extended head.	(2)	**3010287**
	RS 130/M	Kit code for standard and extended head.	(2)	**3010288**
	RS 190/M	Kit code for standard and extended head.	(2)	**3010297**
	RS 250/M MZ	Kit code for standard and extended head.	(2)	**3010472**

Drawing	Burner model	Specification	Note	Code
		VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate.		
	RS 70/M TC-TL	Kit code for standard and extended head.	(3)	**3010201**
	RS 100/M TC-TL	Kit code for standard and extended head.	(3)	**3010202**
	RS 130/M TC	Kit code for standard head.	(3)	**3010373**
	RS 130/M TL	Kit code for extended head.	(3)	**3010374**
	RS 190/M TC	Kit code for standard head.	(3)	**3010375**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	RS 190/M	HEAD KIT FOR “REVERSE FLAME CHAMBER” In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional cylinder. Standard head length with cylinder 493 mm.	(4)	**3010241**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) Kit to be used on burners recognizable by a serial number that is over or equal to 02426XXXXXX, for burners with a serial number that is under or equal to 02416XXXXXX please use the Kit coded 3010196.
(2) Without CE certification.
(3) CE approved.
(4) CE approval on field is required.

STATE OF SUPPLY

Monoblock forced draught gas burner with two stage operation, fully automatic, made up of:
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (RS 70-100-130/M models) or straight blades (RS 150-190/M and RS 250/M MZ models)
– Air damper for air flow setting and butterfly valve for regulating fuel output on 1st and 2nd stage controlled by a servomotor with variable cam
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
– Combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Microprocessor-based burner safety control box, with diagnostic functions
– Burner on/off selection switch
– 1st - 2nd stage manual switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 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
– 2 slide bar extensions (for extended head models and RS 150-190 model)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Modulating gas burners

RS 34-44/E



- Modulating gas burners

RS 34-44/E MZ burners series covers a firing range from 44 to 550 kW, and it is based on a new Digital Burner Management System, Riello REC27, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes. RS 34-44/E MZ burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
Optimisation of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.

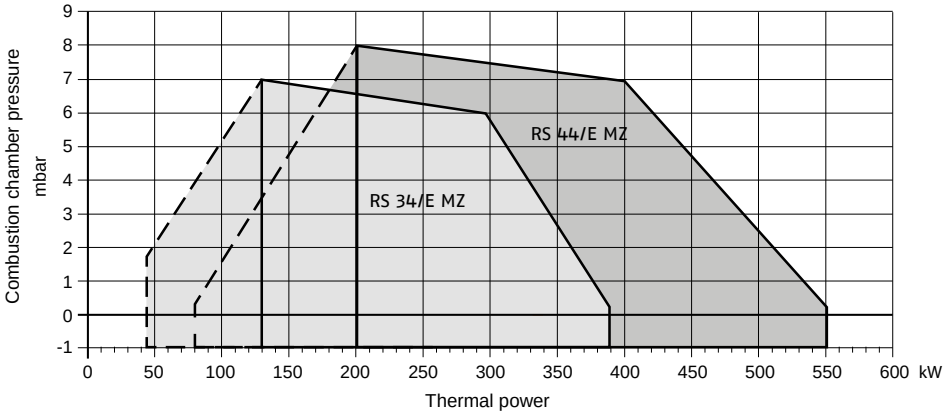
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 34/E MZ TC FS1	44/130- 390	4,5/13-39	0.6	1/220-230/50-60	220-230/50-60	CE-0085BS0378	(1)(2)	**3789410**
RS 34/E MZ TL FS1	44/130- 390	4,5/13-39	0.6	1/220-230/50-60	220-230/50-60	CE-0085BS0378	(1)(2)	**3789411**
RS 44/E MZ TC FS1	80/200-550	8/20-55	0.7	1/220-230/50-60	220-230/50-60	CE-0085BS0378	(1)(2)	**3789510**
RS 44/E MZ TL FS1	80/200-550	8/20-55	0.7	1/220-230/50-60	220-230/50-60	CE-0085BS0378	(1)(2)	**3789511**
RS 44/E MZ TC FS1	80/200-550	8/20-55	0.75	3/400/50-60	220-230/50-60	CE-0085BS0378	(1)(2)	**3789540**
RS 44/E MZ TL FS1	80/200-550	8/20-55	0.75	3/400/50-60	220-230/50-60	CE-0085BS0378	(1)(2)	**3789541**

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) Model with plug and socket.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories paragraph).

FIRING RATES

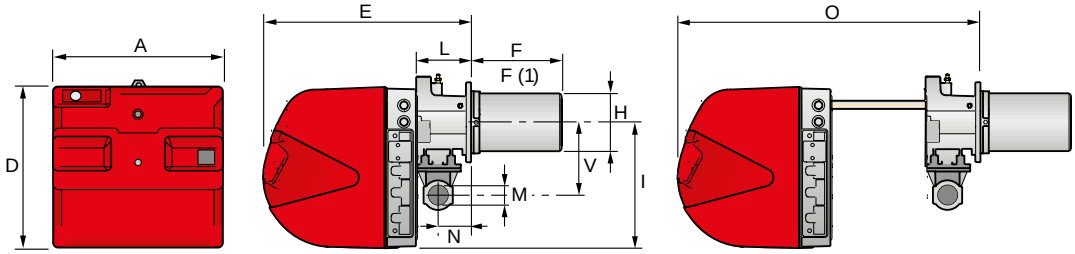


Useful firing rates for choosing the burner

Modulation range

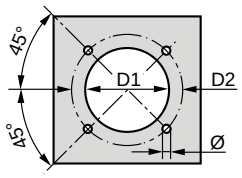
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

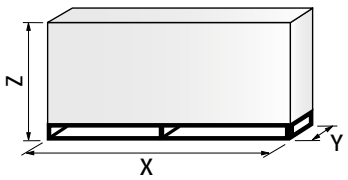


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O mm	V mm
RS 34/E MZ	442	422	508	216 - 351	140	305	138	1”1/2	84	780	177
RS 44/E MZ	442	422	508	216 - 351	152	305	138	1”1/2	84	780	177

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
RS 34/E MZ	160	224	M8
RS 44/E MZ	160	224	M8

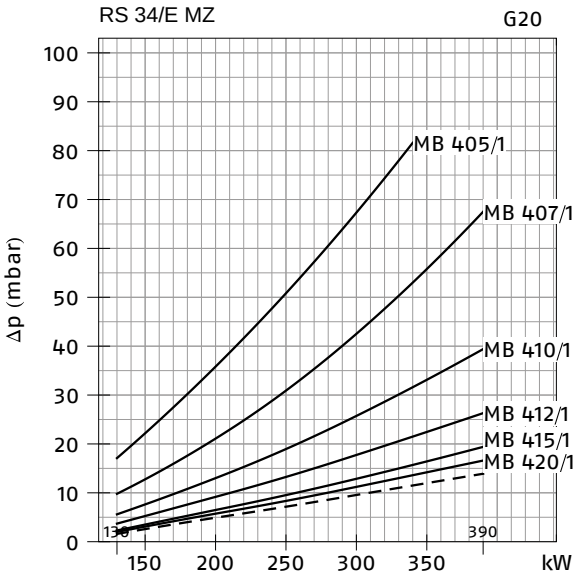


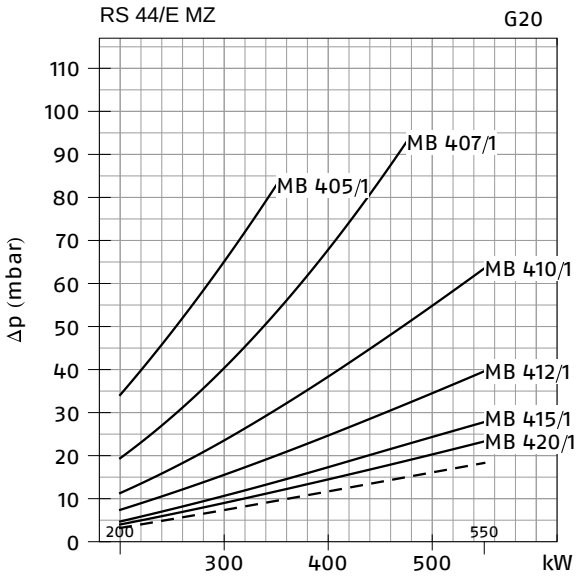
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 34/E MZ	1000	485	500	39
RS 44/E MZ	1000	485	500	40

(1) Dimension with standard and extended head.

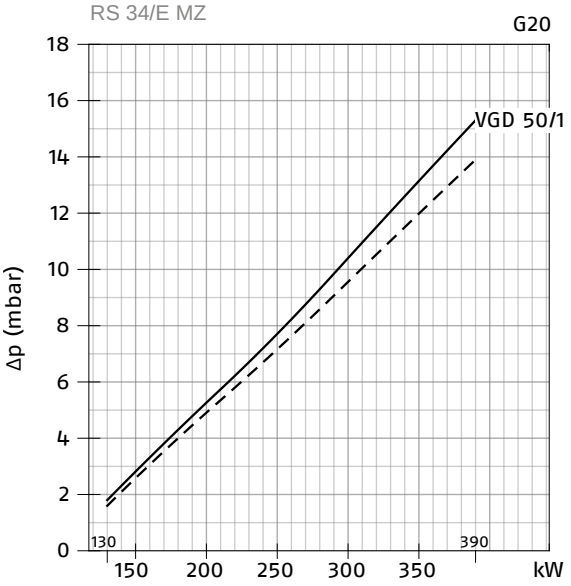
PRESSURE LOSS DIAGRAMS

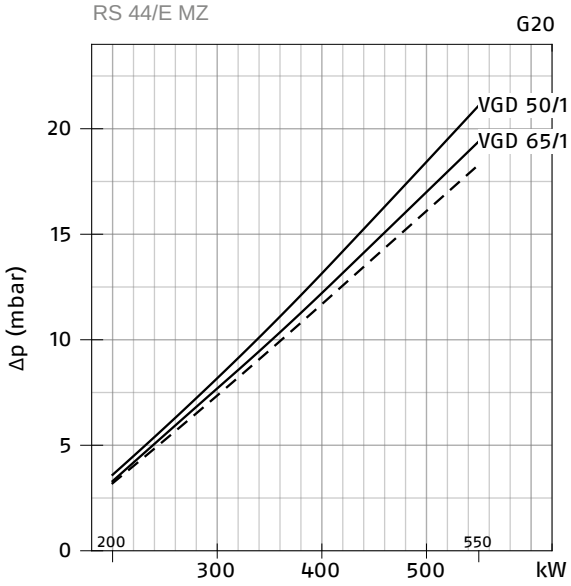
MB SERIES GAS TRAIN





VGD 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

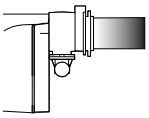
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 34/E MZ	RS 44/E MZ
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RT 20	**3970500***	(4)	Rp ¾”	-	3000824	
MB 407/1-RT 52	**3970599***		Rp ¾”	-	3000824	
MB 410/1-RT 52	**3970258***		Rp 1” ¼	-	3010124	
MB 410/1-RT 52	**3970600***		Rp ¾”	-	3000824	
MB 412/1-RT 52	**3970256***		Rp 1” ½	-	□	□
MB 415/1-RT 52	**3970250***		Rp 1” ½	-	□	□
MB 420/1-RT 52	**3970257***		Rp 2”	-	3000822	

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 34/E MZ	RS 44/E MZ
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	**20137718***	(5)	Rp 2”	-	3000822	
VGD 65/1-FT 122	**20140762***	(6)	DN65	-	●	3000822+3000826

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) This gas train code is not compatible with the gas valve seal control management function integrated in the burner control box.
(5) Additional flange kit code 20185515 needed for seal control function code 3010344.
(6) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
☐ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 34/E MZ	Standard head length = 216 mm - Extended head length = 351 mm		**3010428**
	RS 44/E MZ	Standard head length = 216 mm - Extended head length = 351 mm		**3010429**
	All models	CONNECTION FLANGE KIT A kit is available for use where the burner opening on the boiler is of excessive diameter.		**3010138**
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm		**3010095**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010449**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20083339**
		RWF 55.5 - Plus version.		**20098541**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 34/E MZ	Kit code for standard and extended head.	(1)	**3010423**
	RS 44/E MZ	Kit code for standard and extended head.	(1)	**3010424**

Drawing	Burner model	Specification	Note	Code
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 34/E MZ	Kit code for standard and extended head.	(2)	**3010502**
	RS 44/E MZ	Kit code for standard and extended head.	(2)	**3010503**
		VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate.		
	RS 34/E MZ	Natural gas version.	(3)	**20098750**
	RS 34/E MZ	LPG version.	(1)	**20098753**
	RS 44/E MZ	Natural gas version.	(3)	**20098746**
	All models	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.		**3010418**
	All models	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.		**3010419**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010448**
	All models	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**

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

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
– Microprocessor-based Digital Burner Management System (Electronic Cam)
– Display Interface operating unit to adjust the system
– Air suction circuit with sound proofing material
– High performance fan with straight blades
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
– Starting motor at 2800 rpm, single-phase/220-230V/50-60Hz or three-phase/380-400V/50-60Hz
– Low emission combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Plugs and sockets for electrical connection, accessible from the external of the cover
– Burner on/off selection switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– 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 (RS 34-44/E MZ single-phase)
– 4 plugs for electrical connection (RS 44/E MZ three-phase)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Modulating gas burners

RS 50-64/E



- Modulating gas burners

RS 50-64/E MZ burners series covers a firing range from 85 to 850 kW, and it is based on a new Digital Burner Management System, Riello REC27, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes. RS 50-64/E MZ burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
Optimisation of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.

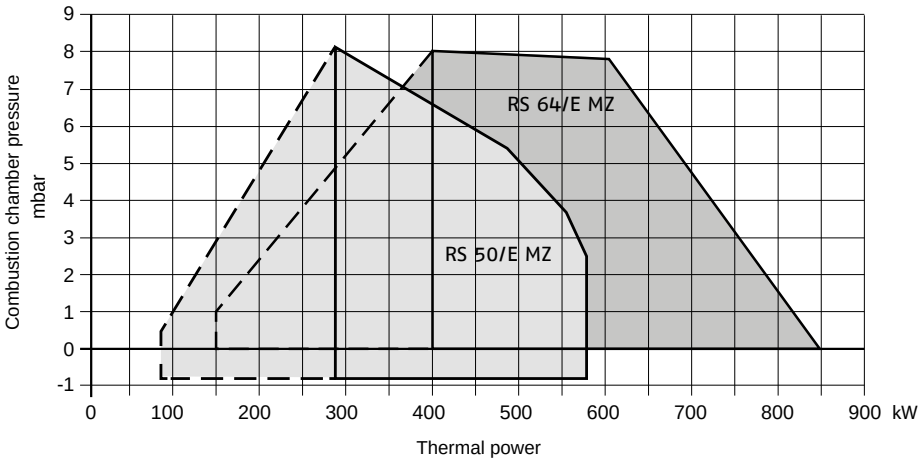
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 50/E MZ TC FS1	85/290-580	8,5/29-58	0.75	3/400/50	230/50-60	CE-0085AQ0709	(1)(2)	**3781632**
RS 50/E MZ TL FS1	85/290-580	8.5/29-58	0.75	3/400/50	230/50-60	CE-0085AQ0709	(1)(2)	**3781633**
RS 64/E MZ TC FS1	150/400-850	15/40-85	1.2	3/400/50	230/50-60	CE-0085BT0022	(1)(2)	**3789910**
RS 64/E MZ TL FS1	150/400-850	15/40-85	1.2	3/400/50	230/50-60	CE-0085BT0022	(1)(2)	**3789911**

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) Model with plug and socket.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories paragraph).

FIRING RATES



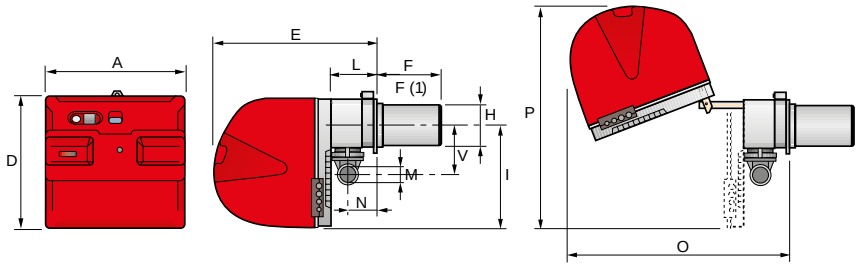
Useful firing rates for choosing the burner

Modulation range

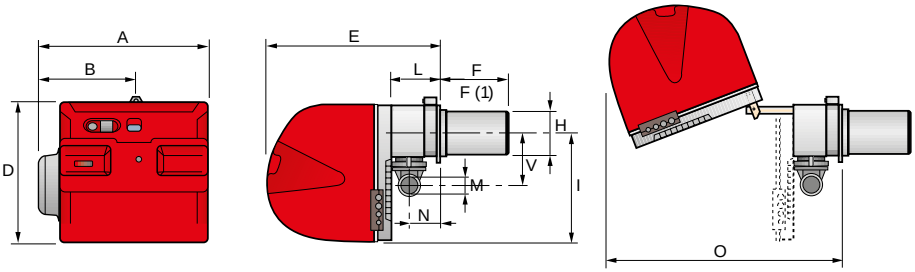
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

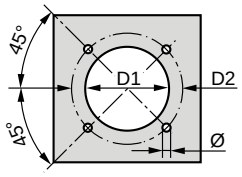
RS 50/E MZ



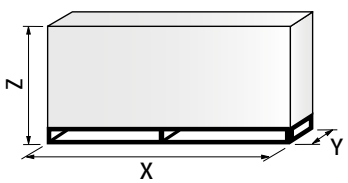
RS 64/E MZ



Description	A mm	B mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	V mm
RS 50/E MZ	476	-	474	580	216-351	152	352	164	1”½	108	810	719	168
RS 64/E MZ	533	300	490	640	250-385	179	352	222	Rp 2”	134	870	-	221



Description	D1 mm	D2 mm	Ø mm
RS 50/E MZ	160	224	M8
RS 64/E MZ	185	275-325	M12

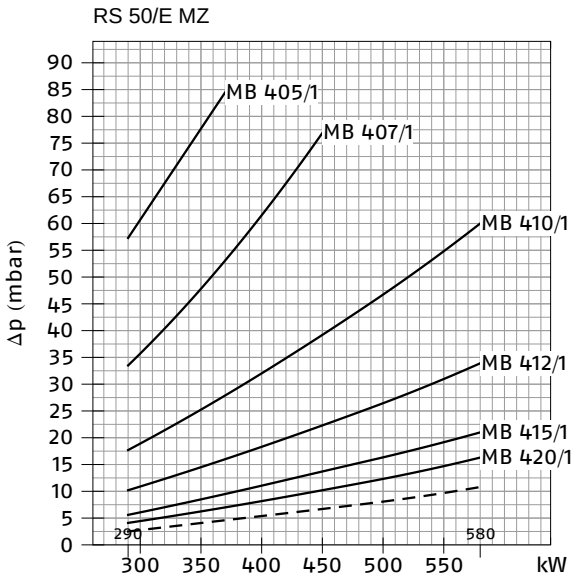


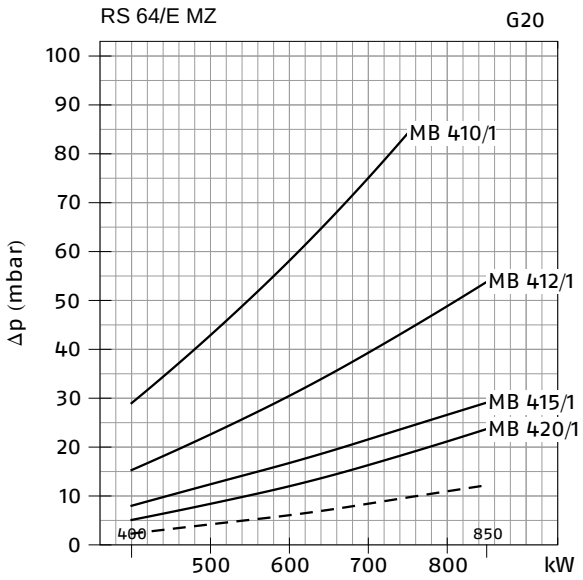
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 50/E MZ	1200	502	520	48
RS 64/E MZ	1200	580	520	50

(1) Dimension with standard and extended head.

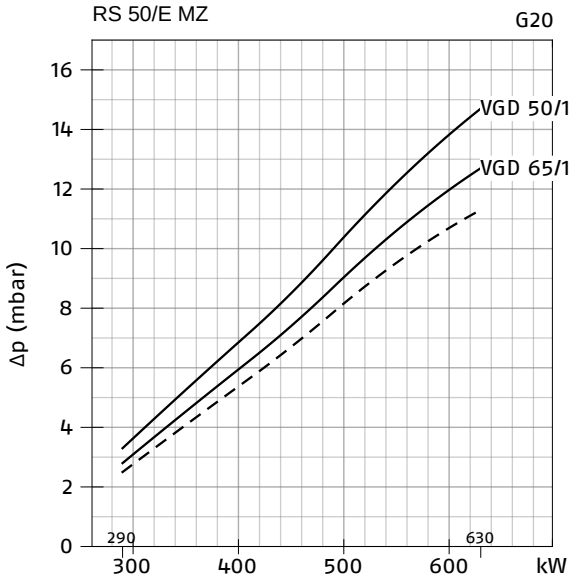
PRESSURE LOSS DIAGRAMS

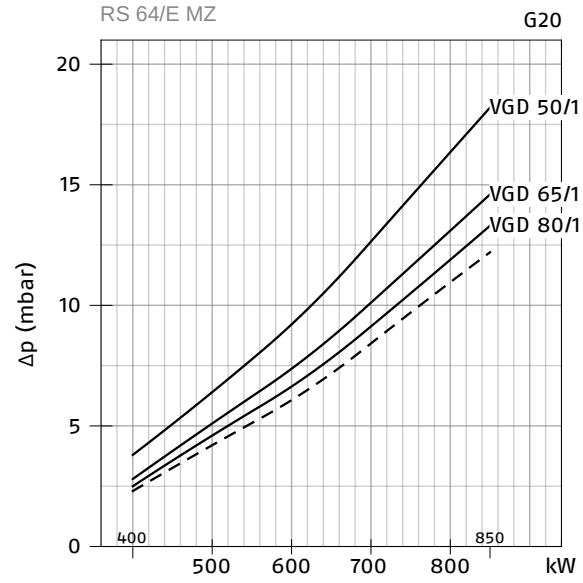
MB SERIES GAS TRAIN





VGD 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

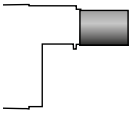
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 50/E MZ	RS 64/E MZ
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RT 20	**3970500***	(4)	Rp ¾"	-	3000824	●
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3000824	●
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010124	3000843
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3000824	3000824+3000843
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	□	3000843
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	□	3000843
MB 420/1-RT 52	**3970257***		Rp 2"	-	3000822	□

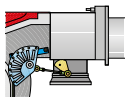
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 50/E MZ	RS 64/E MZ
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	**20137718***	(5)	Rp 2”	-	3000822	□
VGD 65/1-FT 122	**20140762***	(6)	DN65	-	3000822+3000826	3000826
VGD 80/1-FT 122	**20140763***		DN80	-	●	3000826

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) This gas train code is not compatible with the gas valve seal control management function integrated in the burner control box.
(5) Additional flange kit code 20185515 needed for seal control function code 3010344.
(6) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 50/E MZ	Standard head length = 216 mm - Extended head length = 351 mm		**20008182**
	RS 64/E MZ	Standard head length = 250 mm - Extended head length = 385 mm		**3010427**
	RS 50/E MZ	CONNECTION FLANGE KIT A kit is available for use where the burner opening on the boiler is of excessive diameter.		**3010138**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 50/E MZ	Spacer thickness S = 110 mm		**3010095**
	RS 64/E MZ	Spacer thickness S = 135 mm		**3010129**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20083339**
		RWF 55.5 - Plus version.		**20098541**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**20098335**

Drawing	Burner model	Specification	Note	Code
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 50/E MZ	Kit code for standard and extended head.		**20008173**
	RS 64/E MZ	Kit code for standard head.		**3010434**
	RS 64/E MZ	Kit code for extended head.		**3010435**
	RS 50/E MZ	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 and extended head.	(1)	**3010285**
	RS 64/E MZ	DN80 GAS FLANGE KIT To modify the standard Rp 2" burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
	All models	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**

(1) Without CE certification.

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Microprocessor-based Digital Burner Management System (Electronic Cam)
- Display Interface operating unit to adjust the system
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades (straight blades on the RS 64/E MZ models) high performance with low sound emissions
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 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
- Wiring loom fittings for the electrical connection
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Modulating gas burners

RS 70-250/E



- Modulating gas burners

RS 70-250/E MZ burners series covers a firing range from 135 to 2650 kW, and it is based on a new Digital Burner Management System, Riello REC27, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes. RS/E MZ burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
Optimisation of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.

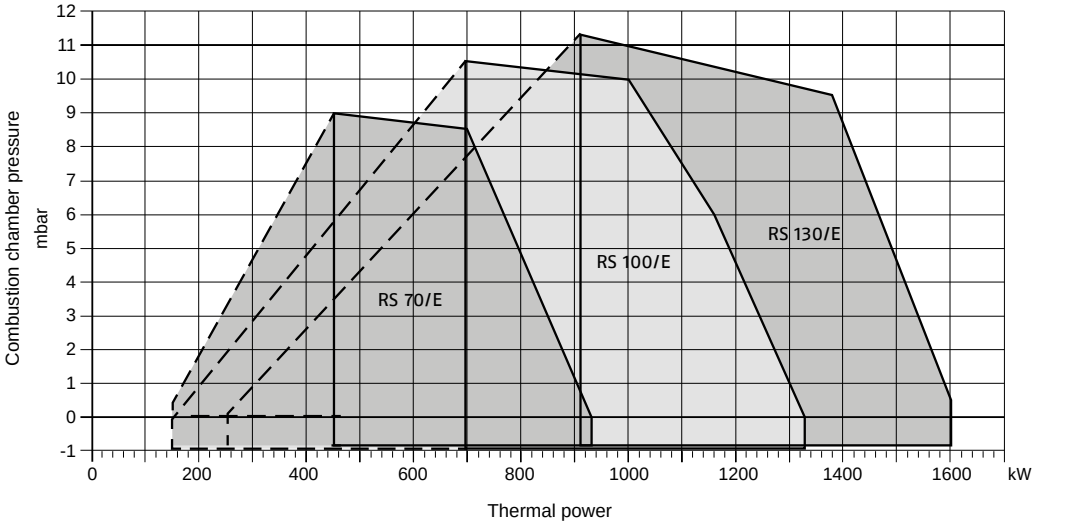
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

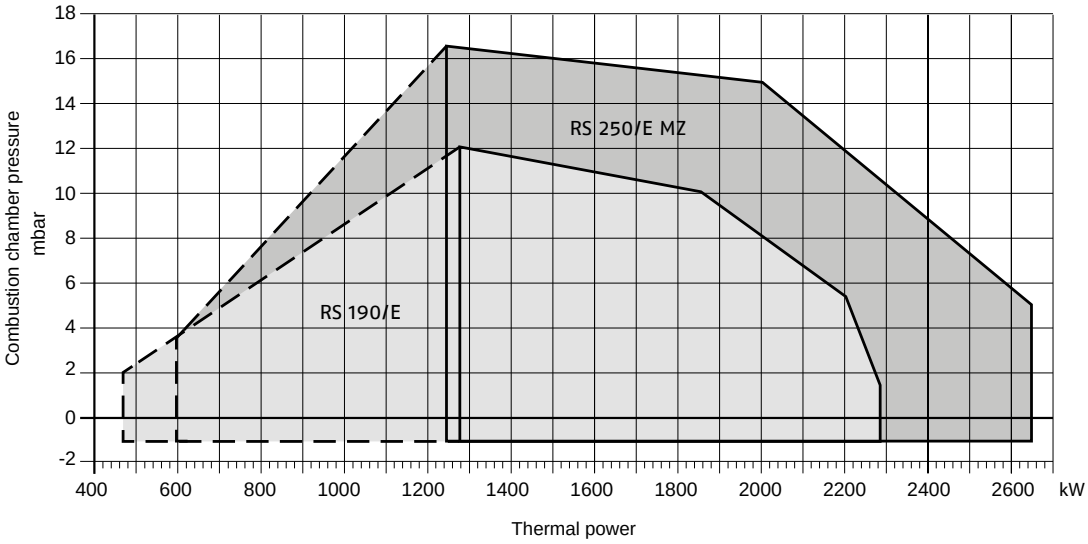
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 70/E TC FS1	135/465-814	13,5/46,5-81	1.6	3/400/50	230/50-60	CE-0085AQ0708	(2)(3)	**3787032**
RS 70/E TL FS1	135/465-814	13,5/46,5-81	1.6	3/400/50	230/50-60	CE-0085AQ0708	(2)(3)	**3787033**
RS 100/E TC FS1	150/698-1163	15/70-116	2.0	3/400/50	230/50-60	CE-0085AQ0708	(2)(3)	**3787232**
RS 100/E TL FS1	150/698-1163	15/70-116	2.0	3/400/50	230/50-60	CE-0085AQ0708	(2)(3)	**3787233**
RS 130/E TC FS1	160/930-1512	16/93-151	2.8	3/400/50	230/50-60	CE-0085AQ0708	(2)(4)	**3787432**
RS 130/E TL FS1	160/930-1512	16/93-151	2.8	3/400/50	230/50-60	CE-0085AQ0708	(2)(4)	**3787433**
RS 190/E TC FS1	470/1279-2290	47/128-229	5.3	3/400/50	230/50-60	CE-0085BT0657	(2)(4)	**3787632**
RS 190/E TL FS1	470/1279-2290	47/128-229	5.3	3/400/50	230/50-60	CE-0085BT0657	(2)(4)	**20052617**
RS 250/E MZ TC FS1	600/1250-2650	60/125-265	6.5	3/400/50	230/50-60	CE-0085BT0061	(2)(4)	**3789210**
RS 250/E MZ TL FS1	600/1250-2650	60/125-265	6.5	3/400/50	230/50-60	CE-0085BT0061	(2)(4)	**3789211**
RS 250/E MZ TC FS1	600/1250-2650	60/125-265	6.5	3/380/60	220/60	-	(2)(4)	**20010541**

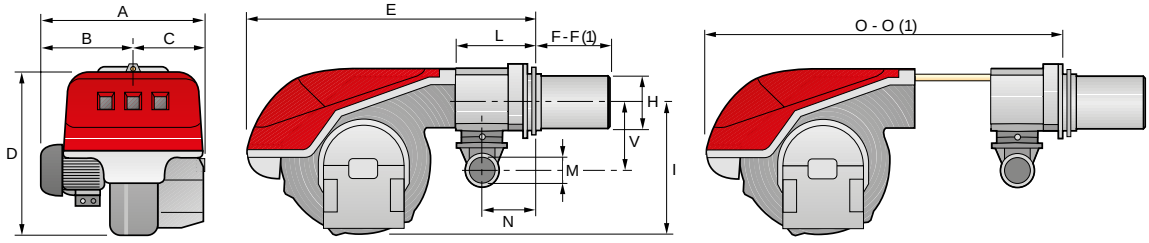
Net calorific value of natural gas (G20): 10 kWh/Nm³.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(2) Model with terminal board.
(3) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories paragraph).
(4) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train. In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.

FIRING RATES

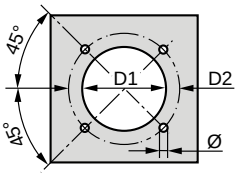




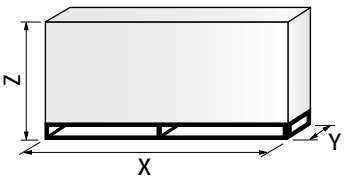
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	F-F(1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 70/E	527	312	215	555	840	250 - 385	179	430	214	Rp 2”	134	1161-1296	221
RS 100/E	527	312	215	555	840	250 - 385	179	430	214	Rp 2”	134	1161-1296	221
RS 130/E	553	338	215	555	840	280 - 415	189	430	214	Rp 2”	134	1161	221
RS 190/E	675	370	305	555	856	372 - 530	222	436	230	Rp 2”	150	1328-/	264
RS 250/E MZ	732	427	305	555	872	370 - 520	222	436	230	Rp 2”	150	1322-1467	264



Description	D1 mm	D2 mm	Ø mm
RS 70/E	185	275-325	M12
RS 100/E	185	275-325	M12
RS 130/E	195	275-325	M12
RS 190/E	230	325-368	M16
RS 250/E MZ	230	325-368	M16



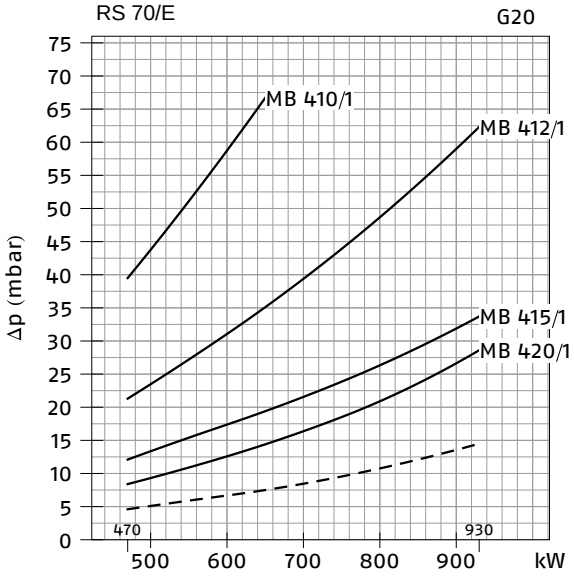
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 70/E	1405	700	660	78
RS 100/E	1405	700	660	81
RS 130/E	1405	700	660	84
RS 190/E	1405	1000	660	89
RS 250/E MZ	1405-1420	1000	660	125

(1) Dimension with standard and extended head.

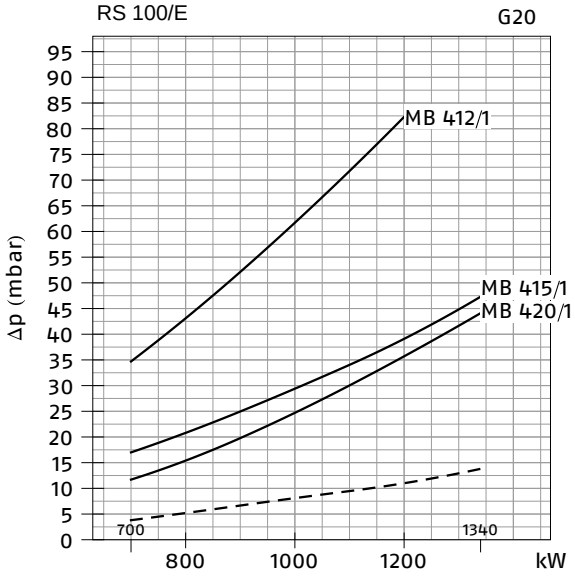
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

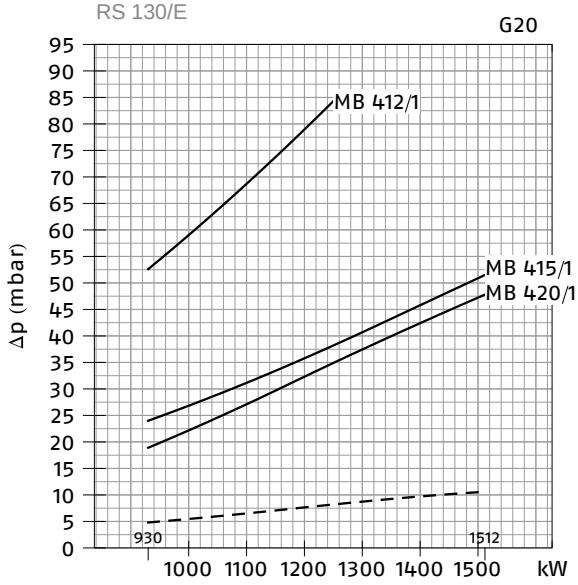
RS 70/E



RS 100/E



RS 130/E

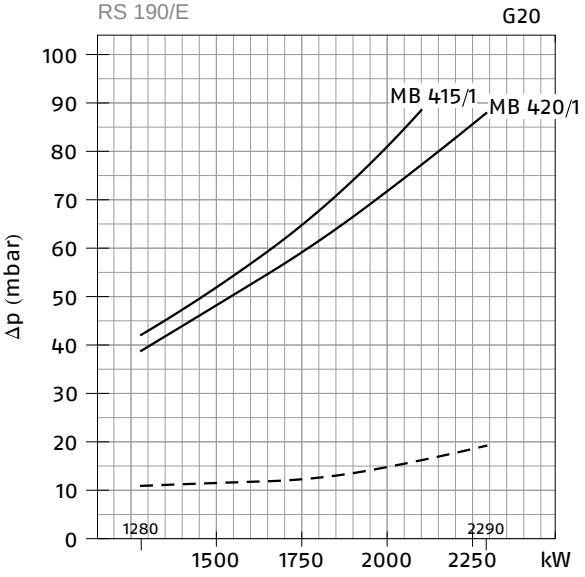


Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

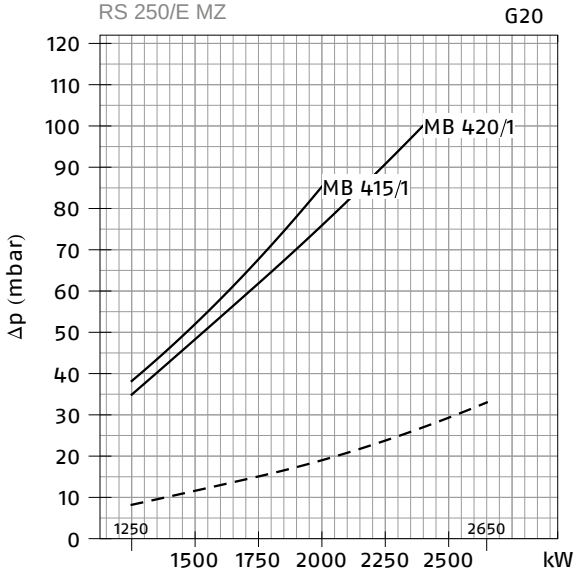
——— Combustion head + gas train

- - - - Combustion head

RS 190/E

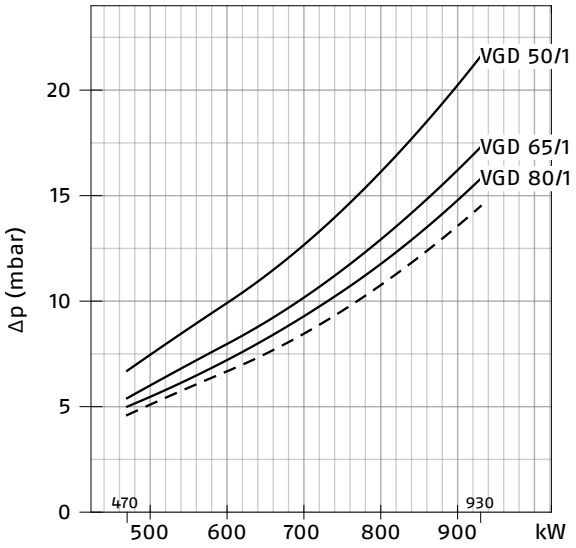


RS 250/E MZ

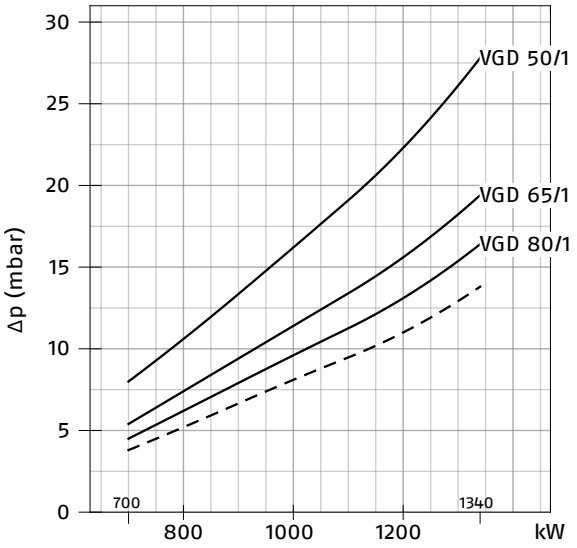


VGD SERIES GAS TRAIN

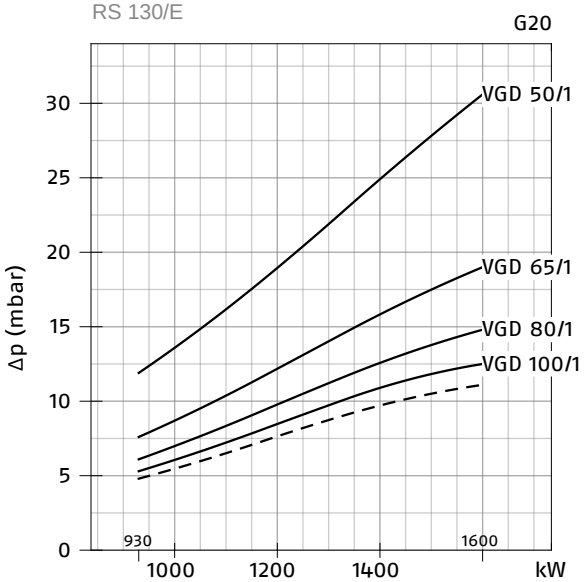
RS 70/E



RS 100/E

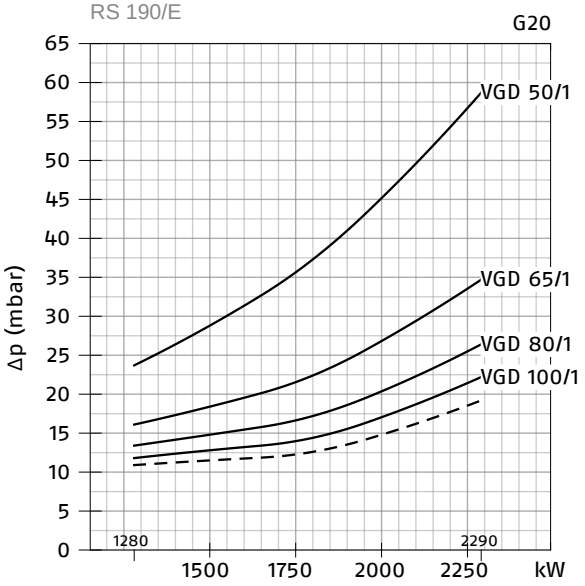


RS 130/E

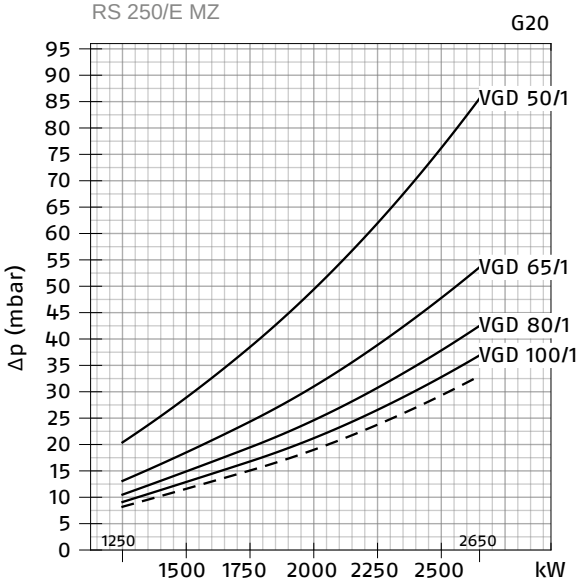


Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

RS 190/E



RS 250/E MZ



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

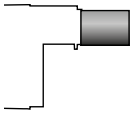
GAS TRAINS

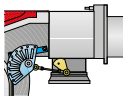
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)				
					RS 70/E	RS 100/E	RS 130/E	RS 190/E	RS 250/E MZ
MB SERIES ONE STAGE GAS TRAIN									
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3000843	●	●	●	●
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3000824+ 3000843	●	●	●	●
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3000843			●	●
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3000843				
MB 420/1-RT 52	**3970257***		Rp 2"	-	□	□	□	□	□
VGD SERIES ONE STAGE GAS TRAIN									
VGD 50/1-RT 122	**20137718***	(4)	Rp 2"	-	□	□	□	□	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3000826				
VGD 80/1-FT 122	**20140763***		DN80	-	3000826				
VGD 100/1-FT 122	**20169193***		DN100	-	●	3000826+3010223			

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function code 3010344.
(5) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 70/E	Standard head length = 250 mm - Extended head length = 385 mm		**3010117**
	RS 100/E	Standard head length = 250 mm - Extended head length = 385 mm		**3010118**
	RS 130/E	Standard head length = 280 mm - Extended head length = 415 mm		**3010119**
	RS 190/E	Standard head length = 372 mm - Extended head length = 530 mm		**3010443**
	RS 250/E MZ	Standard head length = 370 mm - Extended head length = 520 mm		**3010412**

Drawing	Burner model	Specification	Note	Code
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 70-130/E	Spacer thickness S = 135 mm		**3010129**
	RS 190-250/E	Spacer thickness S = 102 mm		**3000722**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version; 3-point outlet.		**20099869**
		RWF 55.5 - Plus version.		**20099905**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**20098337**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 70/E	Kit code for standard head.		**20008175**
	RS 70/E	Kit code for extended head.		**20008176**
	RS 100/E	Kit code for standard head.		**20008177**
	RS 100/E	Kit code for extended head.		**20008178**
	RS 130/E	Kit code for standard head.		**20008179**
	RS 130/E	Kit code for extended head.		**20008180**
	RS 190/E	Kit code for standard and extended head.		**3010166**
	RS 250/E MZ	Kit code for standard and extended head.		**3010411**
		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 and extended head.		
	RS 70/E	Kit code for standard and extended head.	(1)	**3010286**
	RS 100/E	Kit code for standard and extended head.	(1)	**3010287**
	RS 130/E	Kit code for standard and extended head.	(1)	**3010288**
	RS 190/E	Kit code for standard and extended head.	(1)	**3010297**
	All models	DN80 GAS FLANGE KIT To modify the standard Rp 2” burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
	All models	OCI412 INTERFACE KIT Interface kit between the control box and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	RS 190/E	HEAD KIT FOR “REVERSE FLAME CHAMBER” In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional cylinder. Standard head length with cylinder 493 mm.	(2)	**3010241**

Drawing	Burner model	Specification	Note	Code
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**

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

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
– Microprocessor-based Digital Burner Management System (Electronic Cam)
– Display Interface operating unit to adjust the system
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (straight blades on the RS 190/E and RS 250/E MZ models) high performance with low sound emissions
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
– Low emission combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Burner on/off selection switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 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
– Wiring loom fittings for the electrical connection
– 2 slide bar extensions (for extended head models RS 190/E and RS 250/E MZ models)
– Pressure switch for valve proofing system (RS 130/E, RS 190/E and RS 250/E MZ models)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Modulating gas burners

RS 190-250/EV



- Modulating gas burners

RS 190-250/EV burners series covers a firing range from 470 to 2650 kW, and it is based on a new Digital Burner Management System, Riello REC27, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes. RS 190-250/EV burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The RS 250/EV MZ model, equipped with REC37, is available to operate with Variable Speed Drive technology base on the control of a Frequency Inverter that modifies the air flow through the motor speed variation.
Optimisation of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.

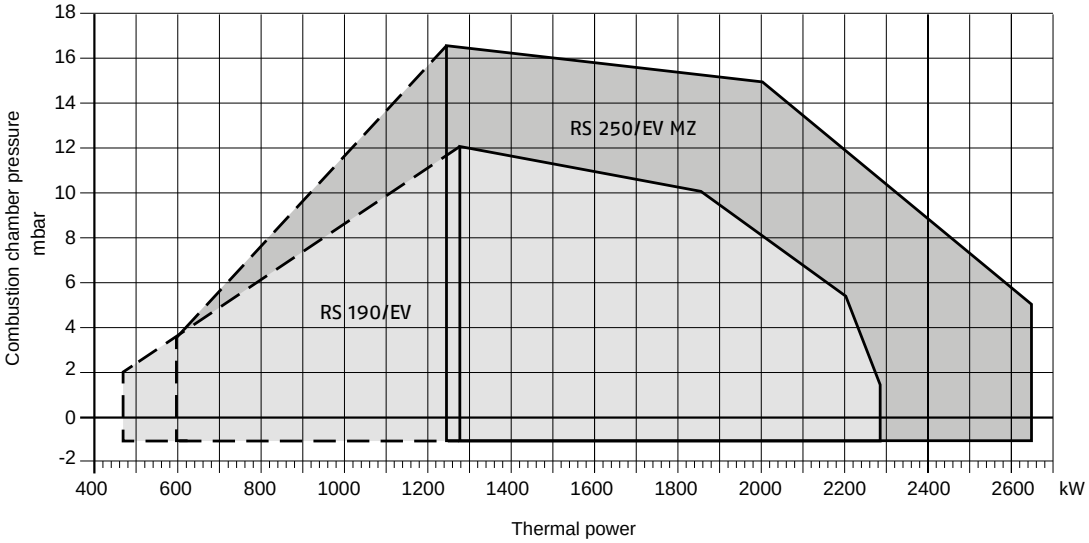
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 190/EV TC FS1	470/1279-2290	47/128-229	5.3	3/400/50	230/50-60	-	(1)(2)	**20142732**
RS 250/EV MZ TC FS1	600/1250-2650	60/125-265	6.5	3/400/50	230/50-60	CE-0085BT0061	(1)(2)	**20014098**

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) Model with terminal board.
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train. In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.

FIRING RATES

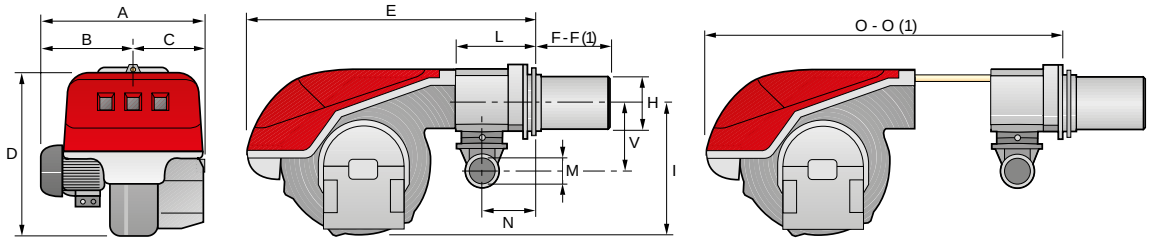


Useful firing rates for choosing the burner

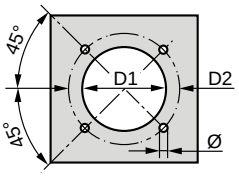
Modulation range

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

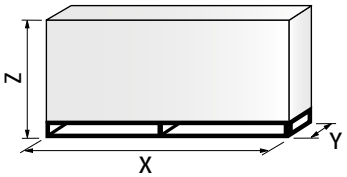
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	F-F(1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 190/EV	675	370	305	555	856	372 - 530	222	436	230	Rp 2”	150	1328-/	264
RS 250/E MZ	732	427	305	555	872	370 - 520	222	436	230	Rp 2”	150	1322-1467	264



Description	D1 mm	D2 mm	Ø mm
RS 190/EV	230	325-368	M16
RS 250/EV MZ	230	325-368	M16

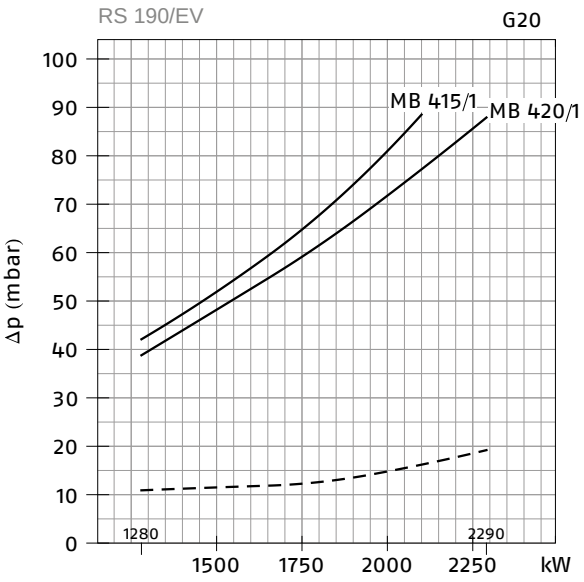


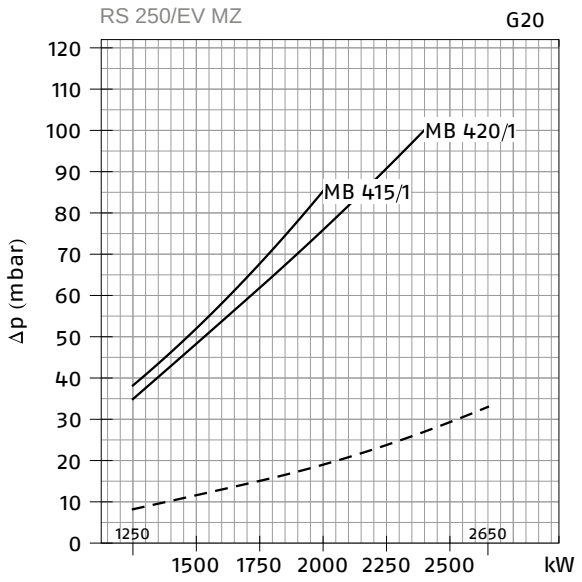
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 190/EV	1405	1000	660	89
RS 250/EV MZ	1405-1420	1000	660	125

(1) Dimension with standard and extended head.

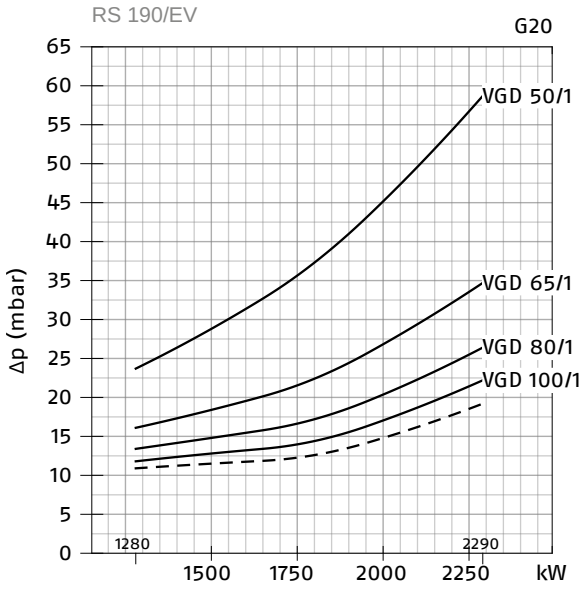
PRESSURE LOSS DIAGRAMS

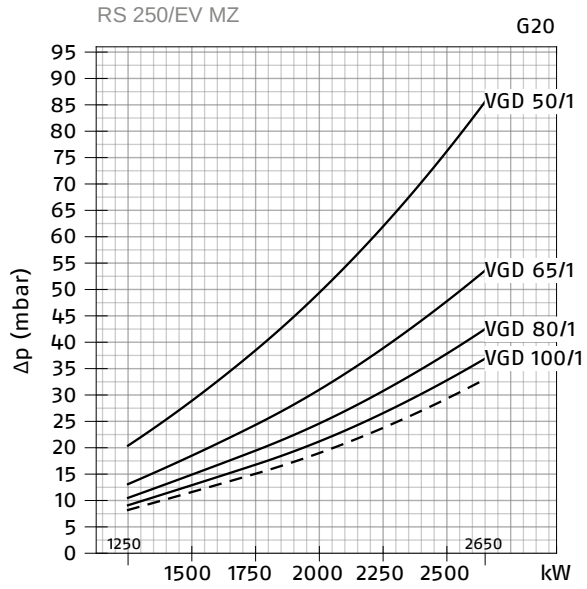
MB SERIES GAS TRAIN





VGD 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

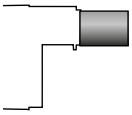
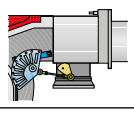
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 190/EV	RS 250/EV MZ
MB SERIES ONE STAGE GAS TRAIN						
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3000843	
MB 420/1-RT 52	**3970257***		Rp 2"	-	□	□
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	**20137718***	(4)	Rp 2"	-	□	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3000826	
VGD 80/1-FT 122	**20140763***		DN80	-	3000826	

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 190/EV	RS 250/EV MZ
VGD 100/1-FT 122	**20169193***		DN100	-	3000826+3010223	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function code 3010344.
(5) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
☐ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RS 190/EV	Standard head length = 372 mm - Extended head length = 530 mm		**3010443**
	RS 250/EV MZ	Standard head length = 370 mm - Extended head length = 520 mm		**3010412**
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 102 mm.		**3000722**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version; 3-point outlet.		**20099869**
		RWF 55.5 - Plus version; complete with RS-485 interface.		**20099905**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**20098337**
	All models	DN80 GAS FLANGE KIT To modify the standard Rp 2” burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 190/EV	Kit code for standard and extended head.		**3010166**
	RS 250/EV MZ	Kit code for standard and extended head.		**3010411**

Drawing	Burner model	Specification	Note	Code
	RS 190/EV	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 and extended head. Kit code for standard and extended head.	(1)	**3010297**
	All models	VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series. Inverter power 5.5 kW - Electrical supply 400V - 50/60Hz		**20163071**
	All models	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	RS 190/EV	HEAD KIT FOR “REVERSE FLAME CHAMBER” In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional cylinder. Standard head length with cylinder 493 mm.	(2)	**3010241**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**

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

STATE OF SUPPLY

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Microprocessor-based Digital Burner Management System (Electronic Cam)
- Display Interface operating unit to adjust the system
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades (straight blades on the RS 190/EV and RS 250/EV MZ models) high performance with low sound emissions
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ionisation probe
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 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
- Wiring loom fittings for the electrical connection
- 2 slide bar extensions (for extended head models and RS 190/EV and RS 250/EV MZ models)
- Pressure switch for valve proofing system (RS 190/EV and RS 250/EV MZ models models)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Modulating gas burners

RS 310-610/M MZ



- Modulating gas burners

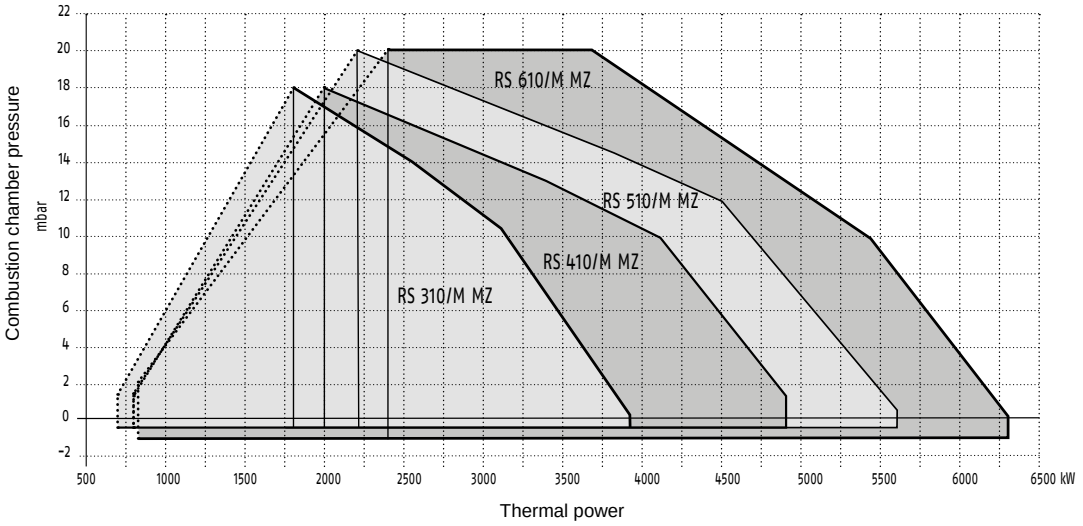
RS 310-610/M MZ burners series covers a firing range from 600 to 6300 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator or by external 4-20 mA/0-10 V signal.
The mechanical cam device of regulation allows to catch up a high modulation ratio on all firing rates range.
The burners can, therefore, supply with precision the demanded power, guaranteeing a high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
FS1 and FS2 versions are available for intermittent and continuous operation applications.
The exclusive design ensures reduced dimensions, simple use and maintenance.
A wide range of accessories guarantees elevated working flexibility.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 310/M MZ TC FS1	600/1300-3900	60/130-390	8.8	3/400/50	-	CE-0085CP0166	(1)(2)	**20061373**
RS 310/M MZ TC FS1	600/1300-3900	60/130-390	9.1	3/400/50	-	CE-0085CP0166	(1)(3)	**20068351**
RS 410/M MZ TC FS1	800/2000-4900	80/200-490	10.6	3/400/50	-	CE-0085CP0166	(1)(2)	**20067141**
RS 410/M MZ TC FS1	800/2000-4900	80/200-490	10.8	3/400/50	-	CE-0085CP0166	(1)(3)	**20068361**
RS 510/M MZ TC FS1	800/2200-5520	80.2/220-552	14.0	3/400/50	-	CE-0085CP0166	(1)(2)	**20068027**
RS 610/M MZ TC FS1	820/2400-6300	82/240-630	16.9	3/400/50	-	CE-0085CP0166	(1)(2)	**20066706**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with CMG control box.
(2) Star/delta starter.
(3) Direct starter

FIRING RATES

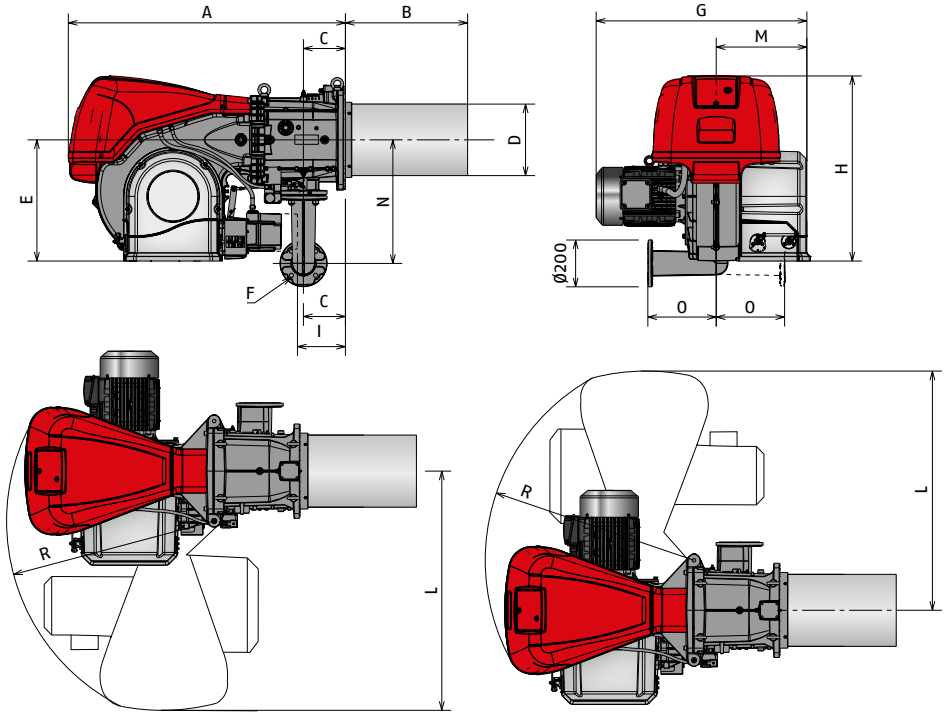


Useful firing rates for choosing the burner

Modulation range

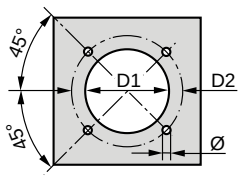
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

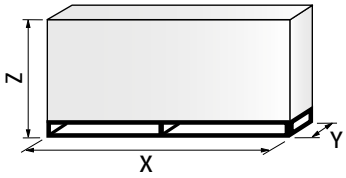


Description	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I (*) mm	L mm	M mm	N mm	O mm	P mm	R mm
RS 310/M MZ	1178	519	178	306	520	DN65	890	790	177	1015	400	528	290	177	890
RS 410/M MZ	1178	519	178	306	520	DN65	908	790	177	1015	400	528	290	177	890
RS 510/M MZ	1178	519	178	306	520	DN65	908	790	177	1015	400	528	290	177	890
RS 610/M MZ	1178	519	178	330	520	DN65	980	790	177	1015	400	528	290	177	890

(*) Maximum position for the extraction of the servomotor cover in mechanical cam models.



Description	D1 mm	D2 mm	Ø mm
RS 310/M MZ	335	452	M18
RS 410/M MZ	335	452	M18
RS 510/M MZ	335	452	M18
RS 610/M MZ	350	452	M18

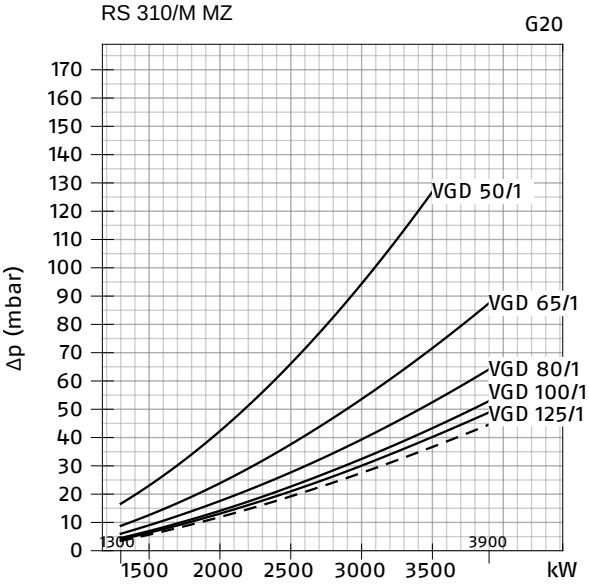


Description	X mm	Y mm	Z mm	Net weight kg
RS 310/M MZ	2040	1180	1125	250
RS 410/M MZ	2040	1180	1125	250
RS 510/M MZ	2040	1180	1125	250
RS 610/M MZ	2040	1180	1125	280

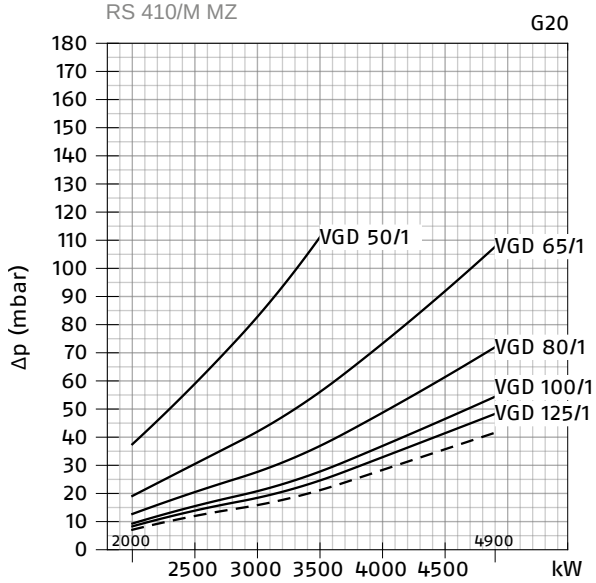
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

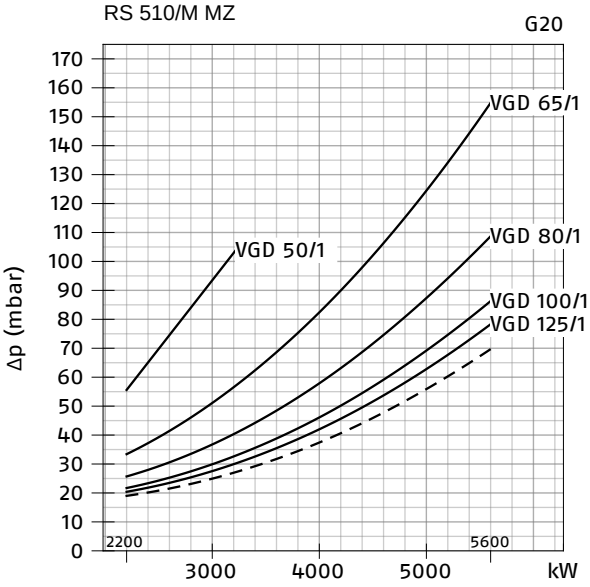
RS 310/M MZ



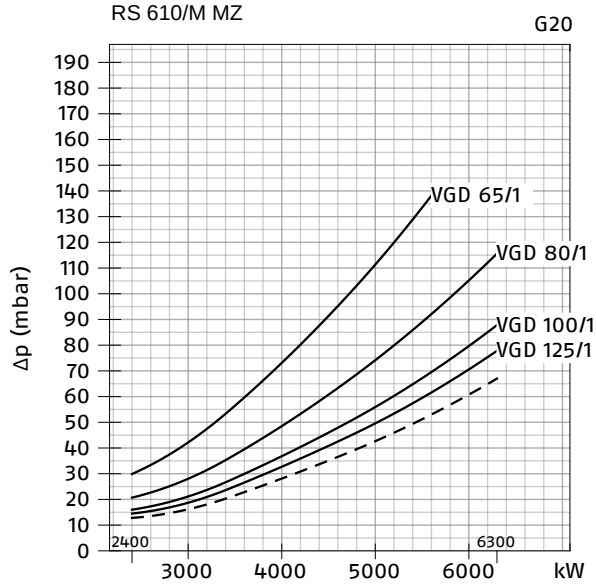
RS 410/M MZ



RS 510/M MZ



RS 610/M MZ



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

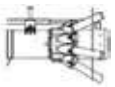
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)			
						RS 310/M MZ	RS 410/M MZ	RS 510/M MZ	RS 610/M MZ
VGD SERIES ONE STAGE GAS TRAIN									
VGD 50/1-RT 122	**20137718***		Rp 2”	-	3010123+ 20186306	(3000826+20042324)/20068062 (6)			●
VGD 50/1 CT RT 122	**20169190****		Rp 2”	♦	♦	(3000826+20042324)/20068062 (6)			●
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	□	□	□	□
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	□	□	□	□
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	□	□	□	□
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	□	□	□	□
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	3010370			
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	3010370			
VGD 125/1-FT 122	**20169195***		DN125	-	(7)	3010224			

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm, E = 1345 mm		**3010376**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. RWF 50.2 - Basic version with 3 position output.		**20073595**
		RWF 55.5 - Complete with RS-485 interface.		**20074441**
		RWF 55.6 - Complete with RS-485/PROFIBUS interface.		**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**20074479**

Drawing	Burner model	Specification	Note	Code
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**20074487**
	All models	PC INTERFACE KIT To connect the control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 310/M MZ	Kit code for standard head.	(1)	**20204055**
	RS 410/M MZ	Kit code for extended head.	(1)	**20204056**
	RS 510/M MZ	Kit code for standard head.	(1)	**20204057**
	RS 610/M MZ	Kit code for extended head.	(1)	**20204058**

(1) Without CE certification, approval on field could be required.

STATE OF SUPPLY

Monoblock forced draught gas burners with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions, forward curve blades.
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50 Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes; ionisation sensor for flame detection
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Burner safety control box for controlling the system safety: CMG/M and LFL for FS1 intermittent operation and LGK for FS2 continuous operation for RS 310-610/M models;
- Star/delta starter for the fan motor (Direct starter fan motor for RS 310-410 models)
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Burner failure led signal and lighted release button
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- Gasket for gas train adaptor
- Adaptor for gas train
- Screws for fixing the gas train adaptor: M16x70
- Thermal insulation screen
- M18x60 screws to secure the burner flange to the boiler
- Cable grommets kit for optional electrical wiring input
- M16x6 studs for fixing the gas elbow to the pipe coupling
- M16 nuts to fix the gas elbow to the pipe coupling
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

AVAILABLE ACCESSORIES TO BE ORDERED SEPARATELY
- Power controller
- Probe
- Analog control signal converter
- Potentiometer
- Continuous ventilation kit
- PC interface kit
- Sound proofing box
- Spacer kit
- Adapters
- Seal Control kit
- Stabiliser spring

Modulating gas burners

RS 310-610/E MZ



- Modulating gas burners

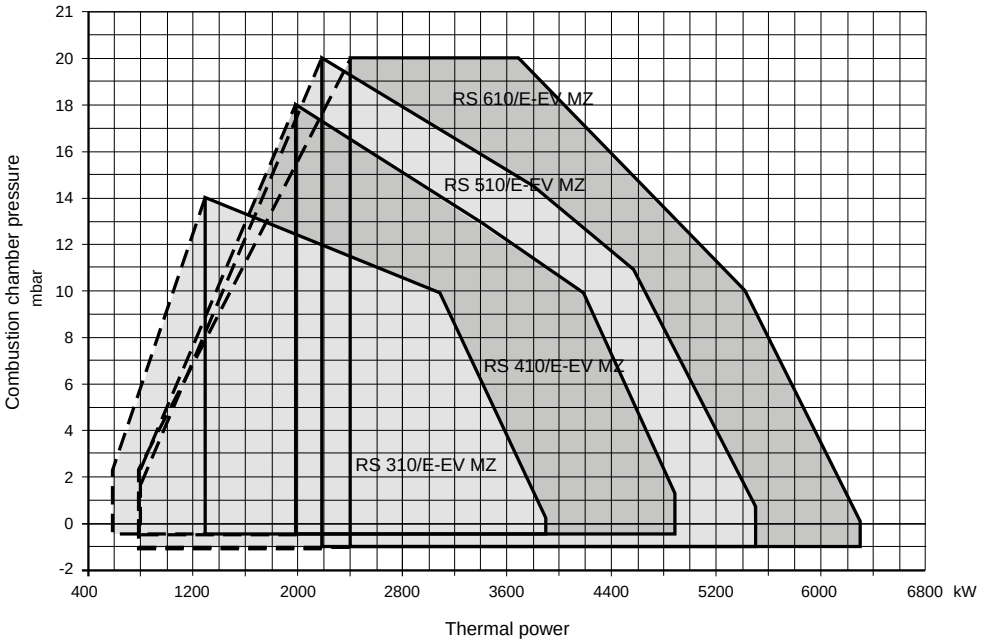
RS 310-610/E MZ burners series covers a firing range from 600 to 6300 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
It is based on the Digital Burner Management System, Riello REC27-37, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS/E MZ burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs; specifics versions are available to operate with Variable Speed Drive technology base on the control of a Frequency Inverter that modifies the air flow through the motor speed variation.
The exclusive design ensures reduced dimensions, simple use and maintenance.
A wide range of accessories guarantees elevated working flexibility.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 310/E MZ TC FS1	600/1300-3900	40/120-363	9.1	3/400/50	-	CE-0085CP0166	(2)	**20068353**
RS 310/E MZ TC FS1	600/1300-3900	40/120-363	8.8	3/400/50	-	CE-0085CP0166	(1)	**20068026**
RS 410/E MZ TC FS1	800/2000-4900	50/150-445	10.6	3/400/50	-	CE-0085CP0166	(2)	**20068363**
RS 410/E MZ TC FS1	800/2000-4900	50/150-445	10.6	3/400/50	-	CE-0085CP0166	(1)	**20067961**
RS 510/E MZ TC FS1	800/2200-5520	68/180-525	13.9	3/400/50	-	CE-0085CP0166	(1)	**20068028**
RS 610/E MZ TC FS1	820/2400-6300	100/220-625	16.9	3/400/50	-	CE-0085CP0166	(1)	**20067963**
MODELS FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (REC 37)								
RS 310/E MZ TC FS2	600/1300-3900	40/120-363	9.1	3/400/50	-	CE-0085CP0166	(2)	**20074261**
RS 310/E MZ TC FS2	600/1300-3900	40/120-363	9.1	3/400/50	-	CE-0085CP0166	(1)	**20074264**
RS 410/E MZ TC FS2	800/2000-4900	50/150-445	10.6	3/400/50	-	CE-0085CP0166	(2)	**20074263**
RS 410/E MZ TC FS2	800/2000-4900	50/150-445	10.6	3/400/50	-	CE-0085CP0166	(1)	**20074265**
RS 510/E MZ TC FS2	800/2200-5520	68/180-525	13.9	3/400/50	-	CE-0085CP0166	(1)	**20074266**
RS 610/E MZ TC FS2	820/2400-6300	100/220-625	16.9	3/400/50	-	CE-0085CP0166	(1)	**20074267**

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) Star/delta starter.
(2) Direct starter.

FIRING RATES

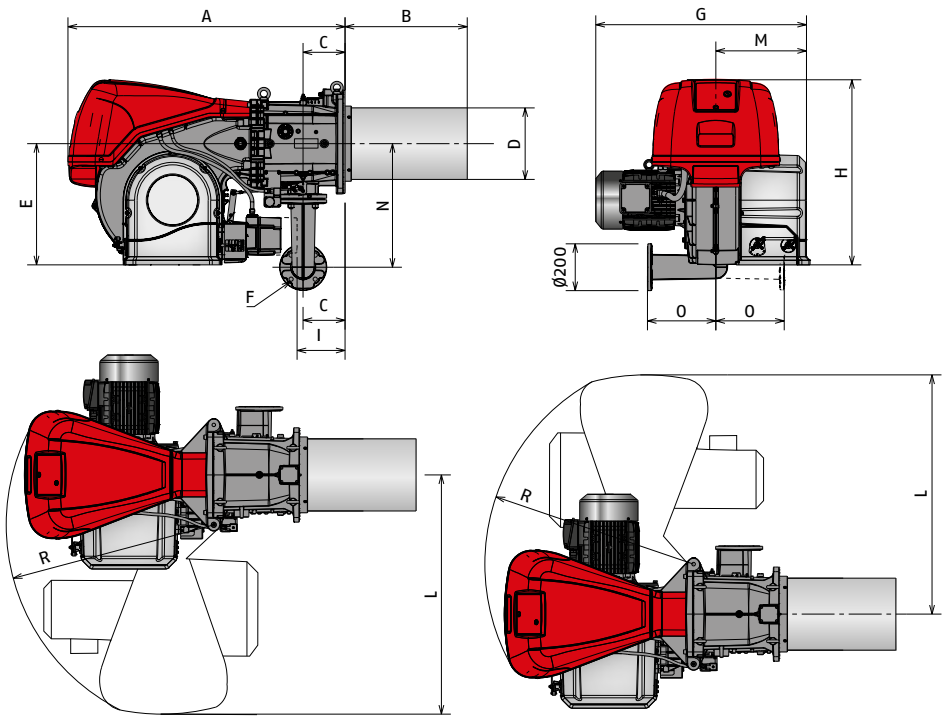


Useful firing rates for choosing the burner

Modulation range

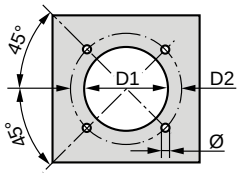
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

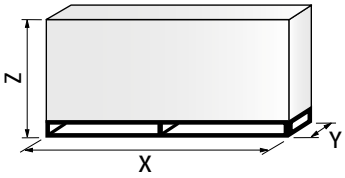


Description	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I (*) mm	L mm	M mm	N mm	O mm	P mm	R mm
RS 310/E MZ	1178	519	178	306	520	DN65	890	790	177	1015	400	528	290	177	890
RS 410/E MZ	1178	519	178	306	520	DN65	908	790	177	1015	400	528	290	177	890
RS 510/E MZ	1178	519	178	306	520	DN65	908	790	177	1015	400	528	290	177	890
RS 610/E MZ	1178	519	178	330	520	DN65	980	790	177	1015	400	528	290	177	890

(*) Maximum position for the extraction of the servomotor cover in mechanical cam models.



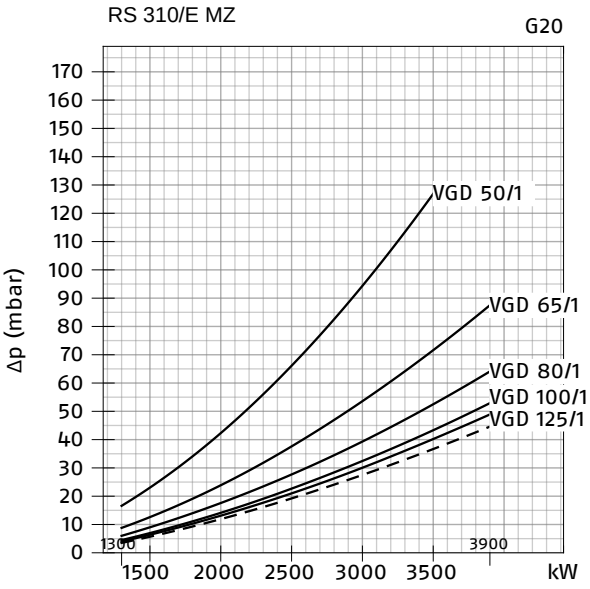
Description	D1 mm	D2 mm	Ø mm
RS 310/E MZ	335	452	M18
RS 410/E MZ	335	452	M18
RS 510/E MZ	335	452	M18
RS 610/E MZ	350	452	M18

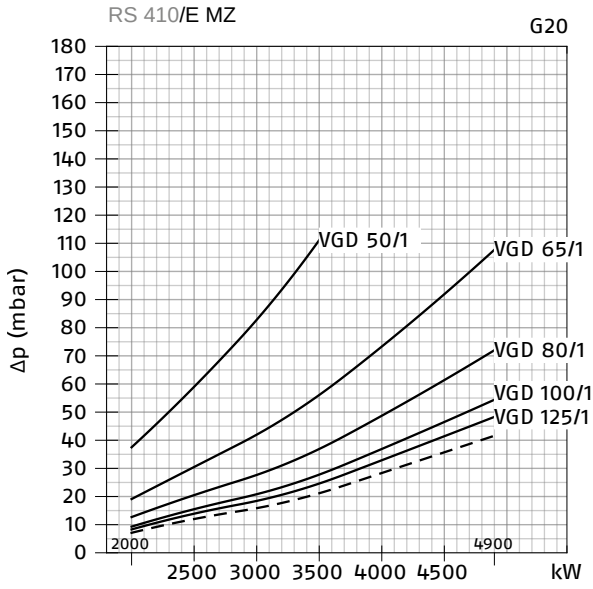


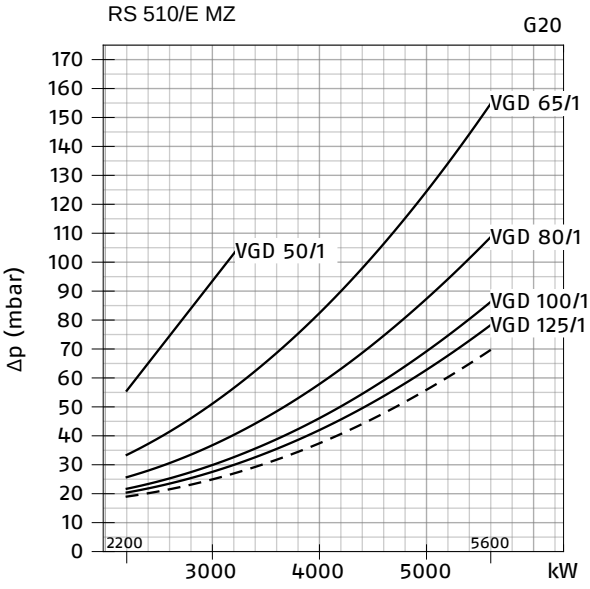
Description	X mm	Y mm	Z mm	Net weight kg
RS 310/E MZ	2040	1180	1125	250
RS 410/E MZ	2040	1180	1125	250
RS 510/E MZ	2040	1180	1125	250
RS 610/E MZ	2040	1180	1125	280

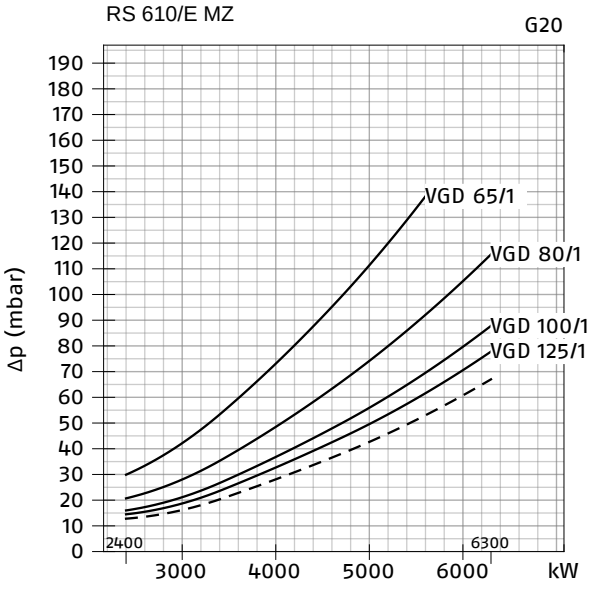
PRESSURE LOSS DIAGRAMS

VGD 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

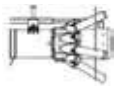
Description (1)	Code	Note	Ø Gas train	VPS kit code (2)	Burner-gas train adapter (3)			
					RS 310/E MZ	RS 410/E MZ	RS 510/E MZ	RS 610/E MZ
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(4)	Rp 2”	3010123+ 20186306	(3000826+20042324)/20068062(6)			●
VGD 65/1-FT 122	**20140762***	(5)	DN65	3010123	□	□	□	□
VGD 80/1-FT 122	**20140763***		DN80	3010123	□	□	□	□
VGD 100/1-FT 122	**20169193***		DN100	3010123	3010370			
VGD 125/1-FT 122	**20169195***		DN125	(7)	3010224			

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function.
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm, E = 1345 mm		**3010376**
	All models	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models equipped with REC27-37 control box	POWER CONTROLLER To obtain modulating operation, RS/E BLU burners equipped with REC27-37 control box require a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. RWF 50.2 - Basic version with 3 position output		**20073595**
		RWF 55.5 - Complete with RS-485 interface		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface		**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	PC INTERFACE KIT To connect the control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**

Drawing	Burner model	Specification	Note	Code
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 310/E MZ	Kit code for standard head.	(1)	**20204055**
	RS 410/E MZ	Kit code for extended head.	(1)	**20204056**
	RS 510/E MZ	Kit code for standard head.	(1)	**20204057**
	RS 610/E MZ	Kit code for extended head.	(1)	**20204058**

(1) Without CE certification, approval on field could be required.

STATE OF SUPPLY

Monoblock forced draught burners with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Microprocessor-based Digital Burner Management System
- Display Interface operating unit to adjust the system
- Air suction circuit lined with sound-proofing material
- High performance fan with low sound emissions, forward curve blades
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper
- motor actuators
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 400/690 V with neutral, 50 Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes; ionisation sensor for flame detection (or UV sensor on demand)
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Star/delta starter for the fan motor (Direct starter fan motor for RS 310-410 models)
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Burner failure led signal and lighted release button
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- Gasket for gas train adaptor
- Adaptor for gas train
- Screws for fixing the gas train adaptor: M16x70
- Thermal insulation screen
- M18x60 screws to secure the burner flange to the boiler
- Cable grommets kit for optional electrical wiring input
- M16x6 studs for fixing the gas elbow to the pipe coupling
- M16 nuts to fix the gas elbow to the pipe coupling
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

AVAILABLE ACCESSORIES TO BE ORDERED SEPARATELY
- Power controller
- Probe
- Continuous ventilation kit
- UV cell kit
- PC interface kit
- OCI412 Interface kit
- Sound proofing box
- Spacer kit
- Adapters
- PVP (Pressure Proving System)
- Stabiliser spring.

Modulating gas burners

RS 310-610/EV MZ



- Modulating gas burners

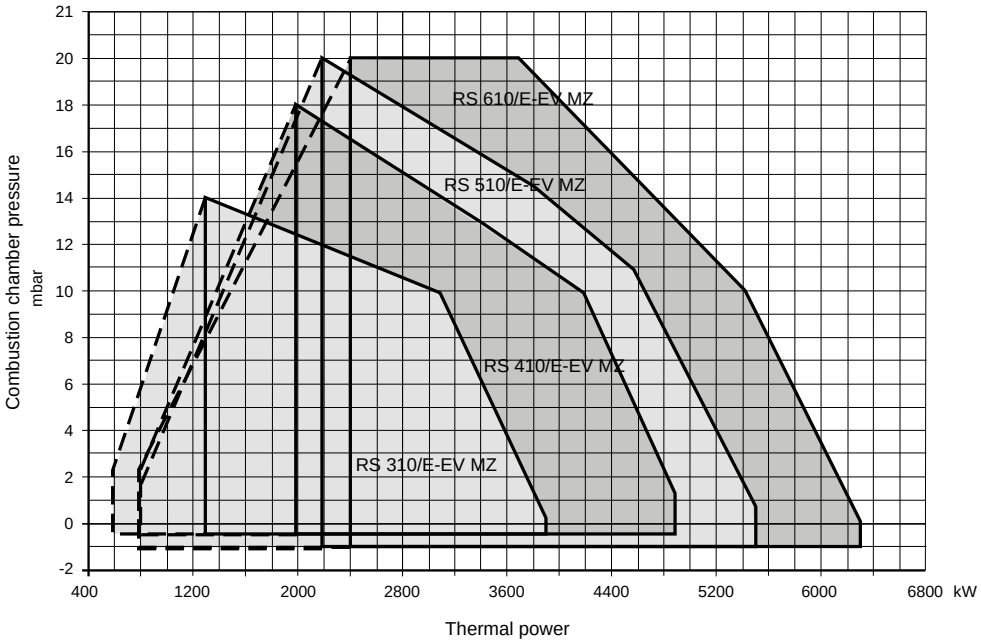
RS 310-610/EV MZ burners series covers a firing range from 600 to 6300 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
It is based on the Digital Burner Management System, Riello REC27-37, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS/EV MZ burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs; specifics versions are available to operate with Variable Speed Drive technology base on the control of a Frequency Inverter that modifies the air flow through the motor speed variation.
The exclusive design ensures reduced dimensions, simple use and maintenance.
A wide range of accessories guarantees elevated working flexibility.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply	Certification	Code
	kW	Nm^3/h	kW	Ph/V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (REC 37)						
RS 310/EV MZ TC FS1/FS2	600/1300-3900	40/120-363	9.1	3/400/50	CE-0085CP0166	**20074275**
RS 410/EV MZ TC FS1/FS2	800/2000-4900	50/150-445	10.8	3/400/50	CE-0085CP0166	**20074277**
RS 510/EV MZ TC FS1/FS2	800/2200-5520	68/180-525	14	3/400/50	CE-0085CP0166	**20074278**
RS 610/EV MZ TC FS1/FS2	820/2400-6300	100/220-625	17	3/400/50	CE-0085CP0166	**20074279**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES

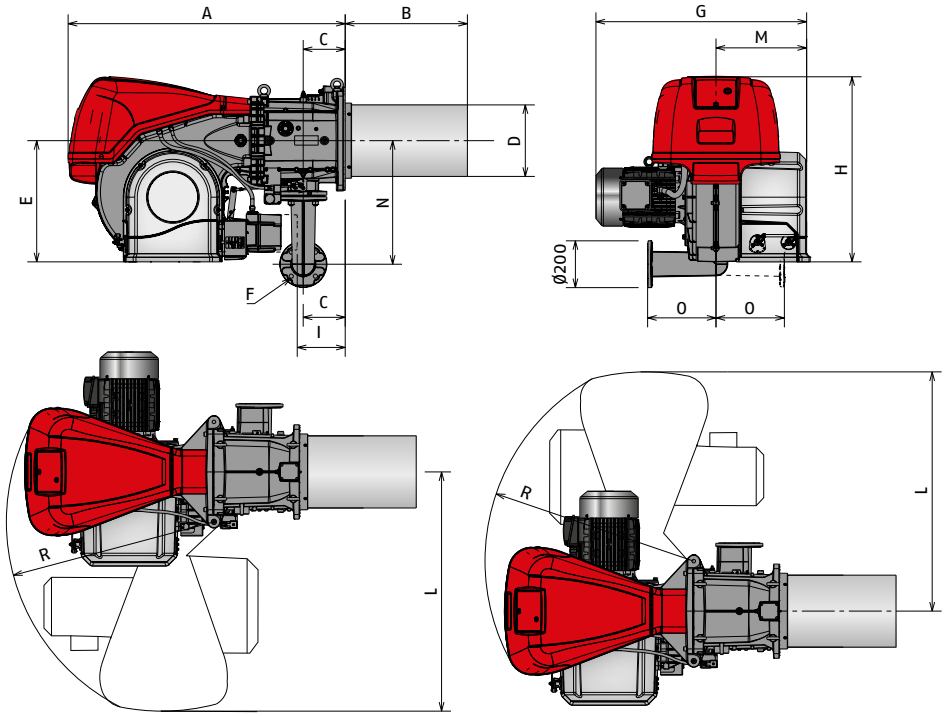


Useful firing rates for choosing the burner

Modulation range

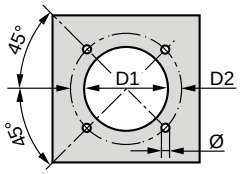
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

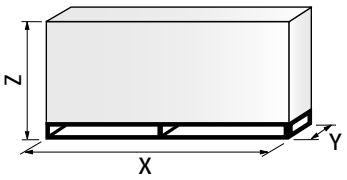


Description	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I (*) mm	L mm	M mm	N mm	O mm	P mm	R mm
RS 310/EV MZ	1178	519	178	306	520	DN65	890	790	177	1015	400	528	290	177	890
RS 410/EV MZ	1178	519	178	306	520	DN65	908	790	177	1015	400	528	290	177	890
RS 510/EV MZ	1178	519	178	306	520	DN65	908	790	177	1015	400	528	290	177	890
RS 610/EV MZ	1178	519	178	330	520	DN65	980	790	177	1015	400	528	290	177	890

(*) Maximum position for the extraction of the servomotor cover in mechanical cam models.



Description	D1 mm	D2 mm	Ø mm
RS 310/EV MZ	335	452	M18
RS 410/EV MZ	335	452	M18
RS 510/EV MZ	335	452	M18
RS 610/EV MZ	350	452	M18

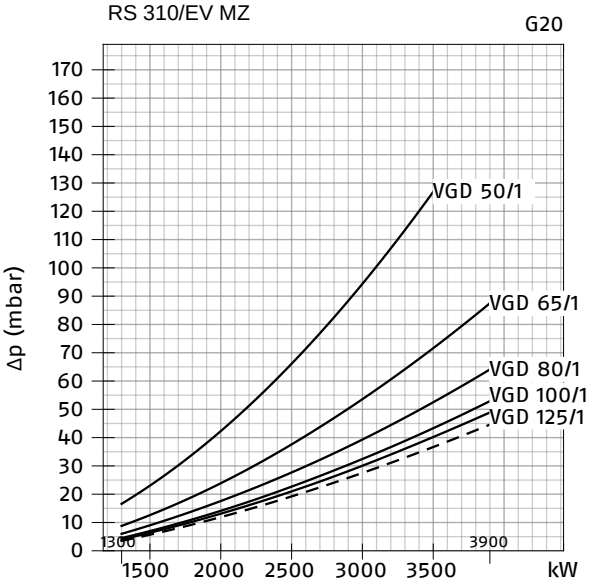


Description	X mm	Y mm	Z mm	Net weight kg
RS 310/EV MZ	2040	1180	1125	250
RS 410/EV MZ	2040	1180	1125	250
RS 510/EV MZ	2040	1180	1125	250
RS 610/EV MZ	2040	1180	1125	280

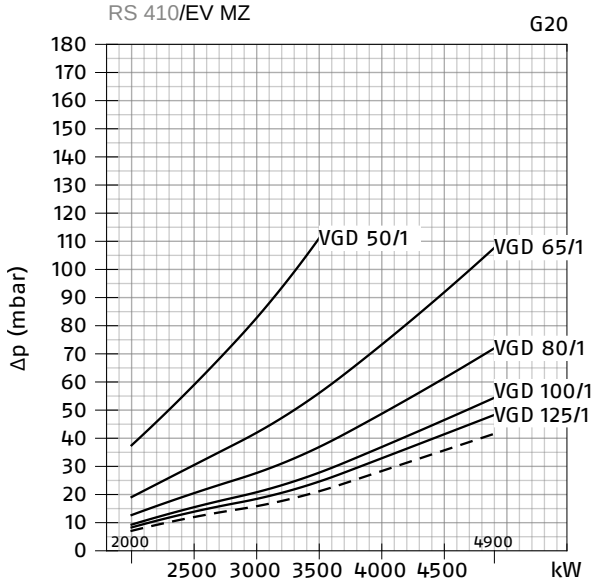
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

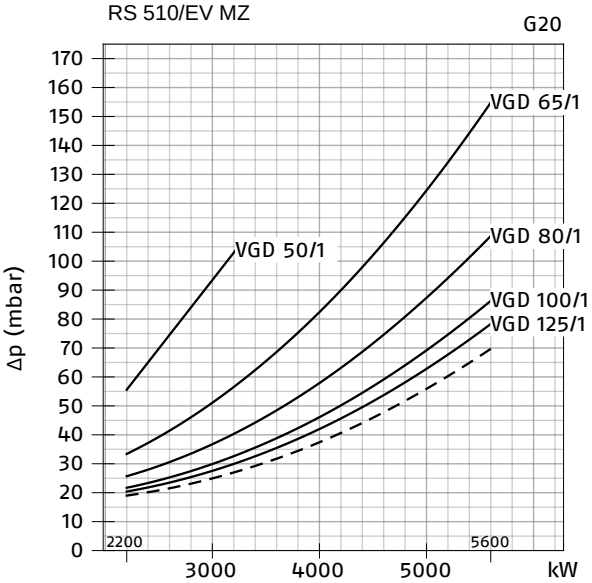
RS 310/EV MZ



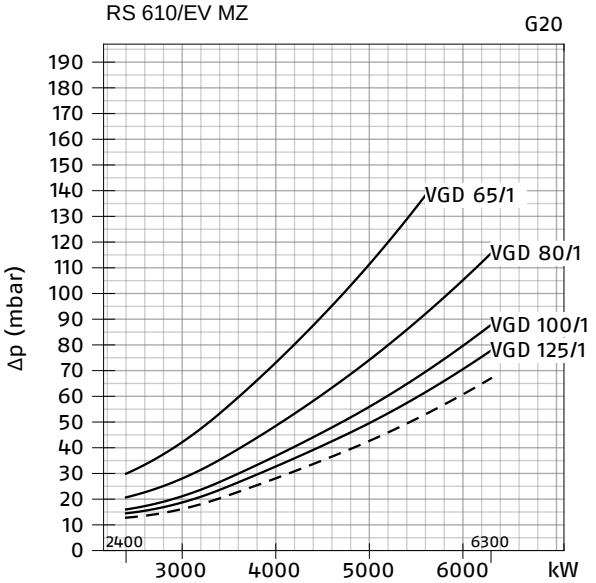
RS 410/EV MZ



RS 510/EV MZ



RS 610/EV MZ



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

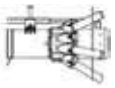
Description (1)	Code	Note	Ø Gas train	VPS kit code (2)	Burner-gas train adapter (3)			
					RS 310/E MZ	RS 410/E MZ	RS 510/E MZ	RS 610/E MZ
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(4)	Rp 2”	3010123+ 20186306	(3000826+20042324)/20068062(6)			●
VGD 65/1-FT 122	**20140762***	(5)	DN65	3010123	□	□	□	□
VGD 80/1-FT 122	**20140763***		DN80	3010123	□	□	□	□
VGD 100/1-FT 122	**20169193***		DN100	3010123	3010370			
VGD 125/1-FT 122	**20169195***		DN125	(7)	3010224			

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function.
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm, E = 1345 mm		**3010376**
	All models	OCI412 INTERFACE KIT Interface kit between the REC27-37 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models	POWER CONTROLLER To obtain modulating operation, RS/E BLU burners equipped with REC27-37 control box require a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Basic version with 3 position output		**20073595**
		RWF 55.5 - Complete with RS-485 interface		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface		**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**

Drawing	Burner model	Specification	Note	Code
		VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series.		
	RS 310/EV MZ	Inverter power 7.5 kW - Electrical supply 400V - 50/60Hz		**20163074**
	RS 410/EV MZ	Inverter power 11 kW - Electrical supply 400V - 50/60Hz		**20163093**
	RS 510-610/EV MZ	Inverter power 15 kW - Electrical supply 400V - 50/60Hz		**20163096**
	All models	PC INTERFACE KIT To connect the control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 310/EV MZ	Kit code for standard head.	(1)	**20204055**
	RS 410/EV MZ	Kit code for extended head.	(1)	**20204056**
	RS 510/EV MZ	Kit code for standard head.	(1)	**20204057**
	RS 610/EV MZ	Kit code for extended head.	(1)	**20204058**

(1) Without CE certification, approval on field could be required.

STATE OF SUPPLY

Monoblock forced draught burners with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Microprocessor-based Digital Burner Management System with Variable Speed Drive technology for the control of a Frequency Inverter
- Display Interface operating unit to adjust the system
- Air suction circuit lined with sound-proofing material
- High performance fan with low sound emissions, forward curve blades
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper
- motor actuators
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400V - 400/690V with neutral, 50Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes; ionisation sensor for flame detection (or UV sensor on demand)
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Star/delta starter for the fan motor (Direct starter fan motor for RS 310-410 models)
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Burner failure led signal and lighted release button
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- Gasket for gas train adaptor
- Adaptor for gas train
- Screws for fixing the gas train adaptor: M16x70
- Thermal insulation screen
- M18x60 screws to secure the burner flange to the boiler
- Cable grommets kit for optional electrical wiring input
- M16x6 studs for fixing the gas elbow to the pipe coupling
- M16 nuts to fix the gas elbow to the pipe coupling
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

AVAILABLE ACCESSORIES TO BE ORDERED SEPARATELY
- Power controller
- Probe
- Continuous ventilation kit
- UV cell kit
- Variable speed drive (VSD) kit
- PC interface kit
- OCI412 Interface kit
- Sound proofing box
- Spacer kit
- Adapters
- PVP (Pressure Proving System)
- Stabiliser spring.

Modulating gas burners

RS 1000-1200/M C01



- Modulating gas burners

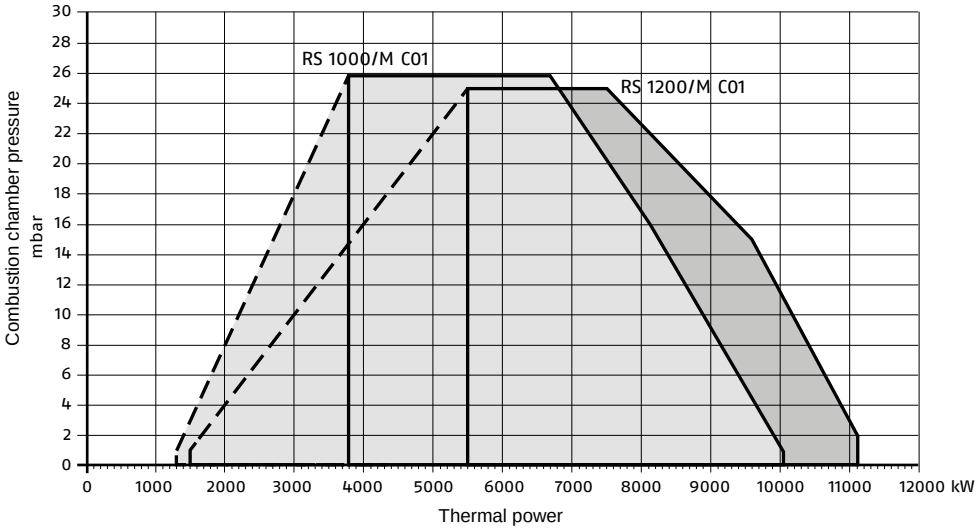
The well-known RS 1000-1200/M C01 Burner Series, has been upgraded with two new powerful burner models, the RS 1000-1200/M C01 models that extend his max output up to 12 MW and make the Burner Series even more complete and suitable for matching with the various Heat and Steam Generators in today's market. The New Burner Models take the reliability of combustion and the solidity typical of Riello's Burners and match them with the most advanced solutions on Power Output Control and Ventilation Technology; as result a 12 MW output is supplied with a User Friendly monoblock machine assuring easiness of installation and servicing, and safe operation. An easy access to internal components is ensured by the burner opening hinge.
The New Gas Models are available with Modulating operation managed through Mechanical Cam, for a simple commissioning and to supply with precision the demanded power, guaranteeing high efficiency and setting stability, obtaining fuel consumption and operating costs reduction.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Note	Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz		
INTERMITTENT OPERATION (FS1: ONE STOP EVERY 24 HOURS)							
RS 1000/M C01 TC FS1	1100/4000-10100	130/380-940	24.0	3/400/50	230/50-60	(1)(2)	**20212532**
RS 1200/M C01 TC FS1	1500/5500-11100	150/550-1150	27.2	3/400/50	230/50-60	(1)(2)	**20212531**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with LFL control box.
(2) Model with UV photocell flame sensor.

FIRING RATES

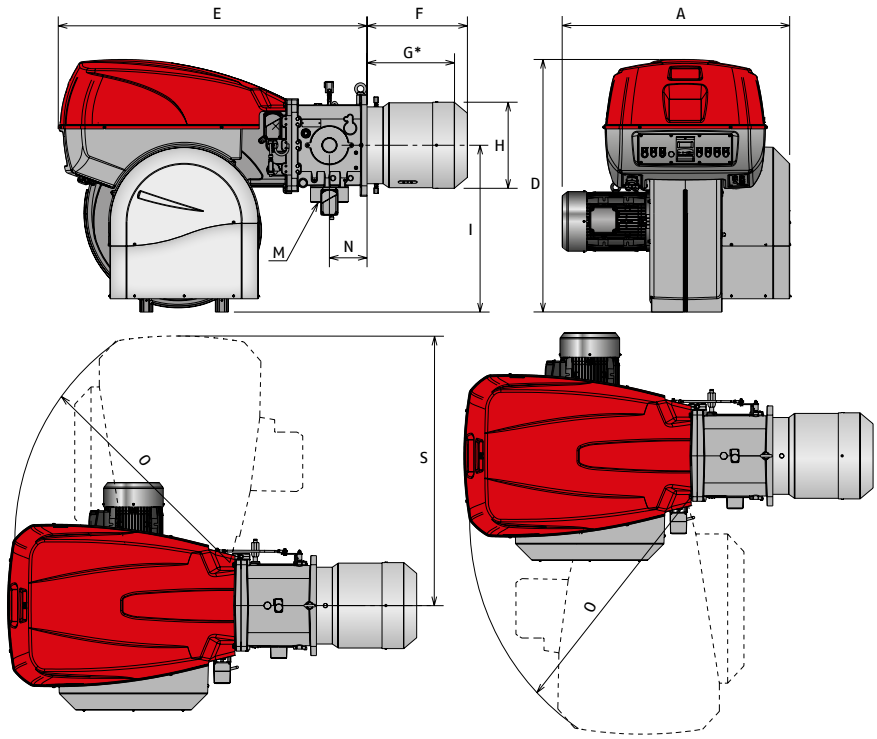


Useful firing rates for choosing the burner

Modulation range

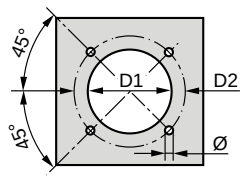
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

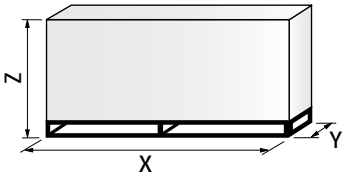


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/M C01	1206	1338	1637	538	485	413	885	DN80	200	1350	1493
RS 1200/M C01	1250	1338	1637	539	485	456	885	DN80	200	1350	1493

(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



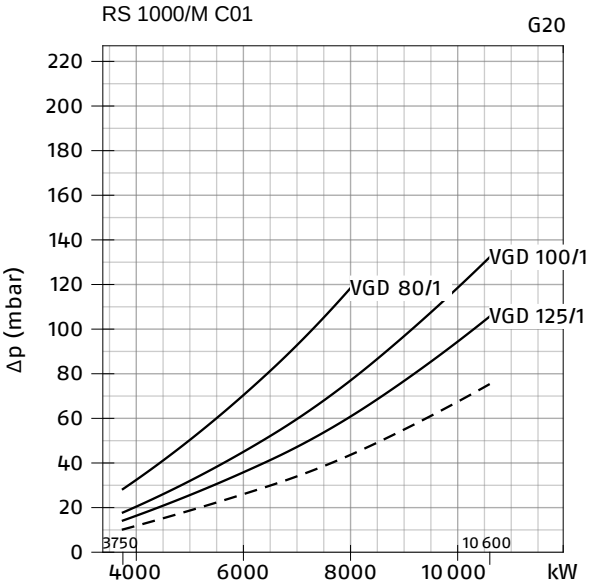
Description	D1 mm	D2 mm	Ø mm
RS 1000/M C01	460	608	M20
RS 1200/M C01	500	608	M20

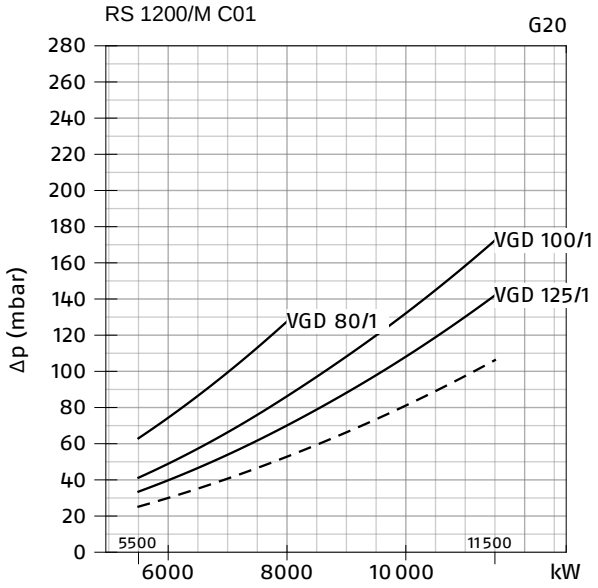


Description	X mm	Y mm	Z mm	Net weight kg
RS 1000/M C01	2400	1400	1595	500
RS 1200/M C01	2400	1400	1595	550

PRESSURE LOSS DIAGRAMS

VGD 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)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 1000/M C01	RS 1200/M C01
VGD SERIES ONE STAGE GAS TRAIN							
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	20066268/(3010222+20066268)(6)	
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	20066268/(3010222+20066268)(6)	
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	20066278/(3010223+20066268)(6)	
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	20066278/(3010223+20066268)(6)	
VGD 125/1-FT 122	**20169195***		DN125	-	(7)	20066284/(3010224+20066268)(6)	

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C8 Dimensions: A = 1425 mm, B 285-1000 mm, C = 110 mm, D = 1500 mm, E = 1800 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010401**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. RWF 55.5 - Complete version.	**20101191**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output. Pressure (0-16 bar) with 4-20 mA output. Pressure (0-25 bar) with 4-20 mA output.	 **3010213** **3010214** **3090873**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).	**3010390**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.	**3010402**

(1) On demand.

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
- Fan with reverse curve blades high performance
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 400/690 V with neutral, 50 Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition by gas pilot with gas train
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on
- the fuel supply line
- Burner safety control box for controlling the system safety (LFL for FS1 intermittent operation LGK16 for FS2 continuous operation)
- UV photocell for flame detection
- Star/delta starter for the fan motor
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Manual or automatic output increase/decrease switch
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Led signal for correct rotation direction of fan motor
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- 1 flange gasket
- 8 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- DN 80 gas supply connector for gas train connection
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Modulating gas burners

RS 1000-1200/E C01



- Modulating gas burners

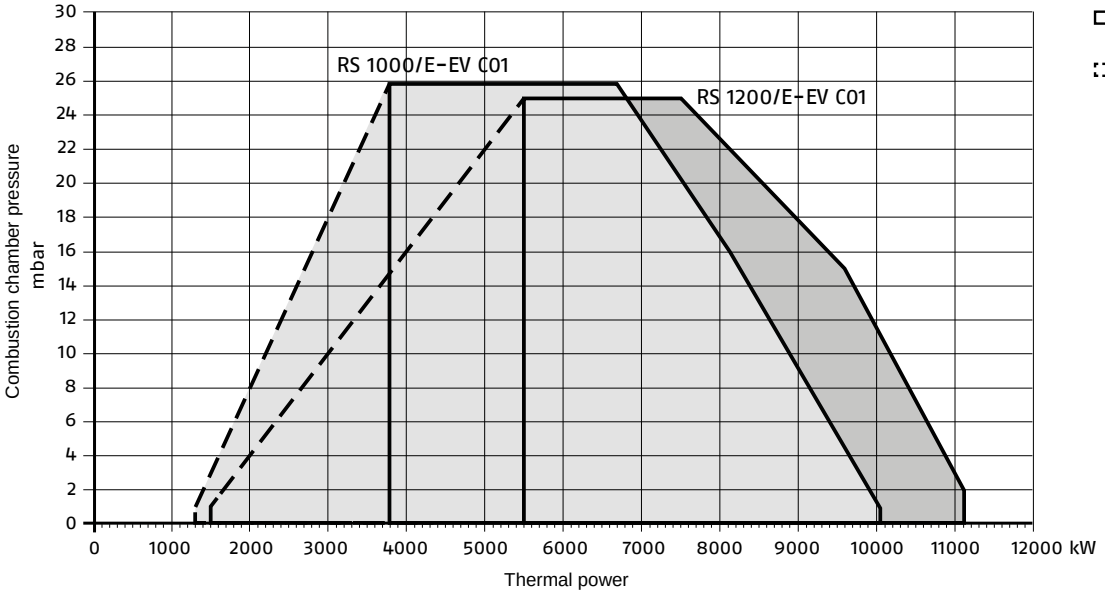
RS 1000-1200/E C01 burners series is characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The burners, with modulating operation, cover a firing range from 1300 to 11100 kW, and they have been designed for use in hot water boilers or industrial steam generators. The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates range.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The burner operation can be intermittent or continuous by menu setting.
The innovative combustion head, adjustment system ensures perfect movement during modulation.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz		
MODELS FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)							
RS 1000/E C01 TC FS1-FS2	1300/3800-10100	130/380-940	24	3/400/50	230/50-60	-	**20062014**
RS 1200/E C01 TC FS1-FS2	1500/5500-11100	150/550-1150	27.2	3/400/50	230/50-60	-	**20061950**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES

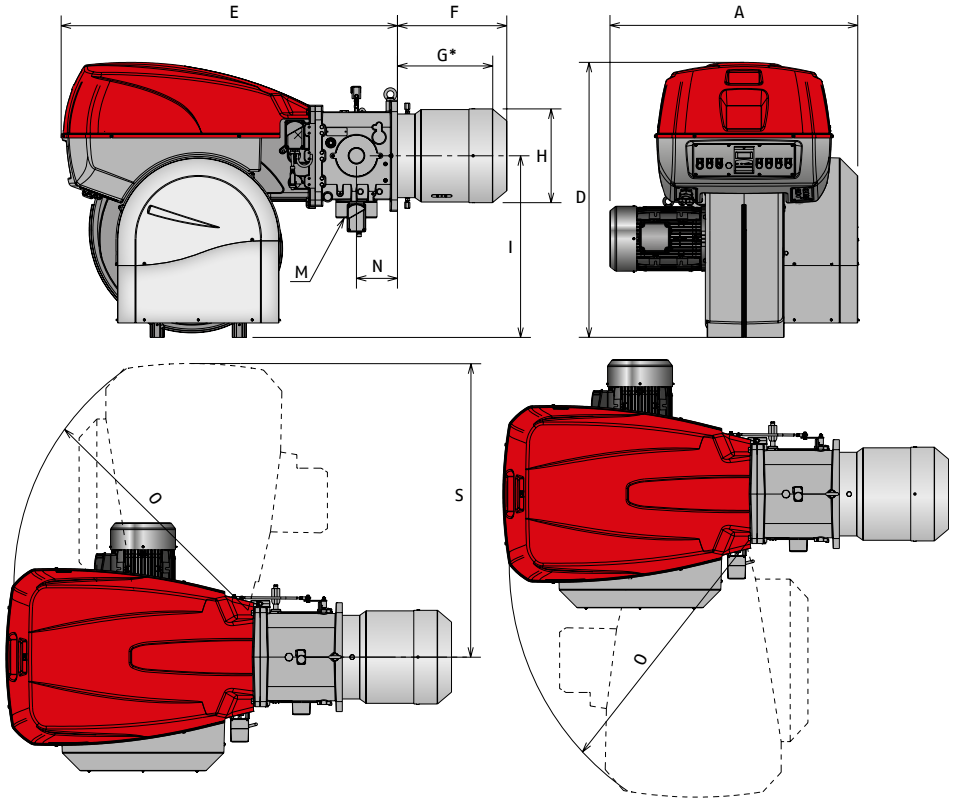


Useful firing rates for choosing the burner

Modulation range

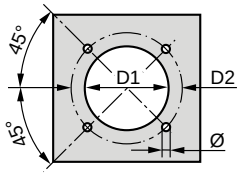
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

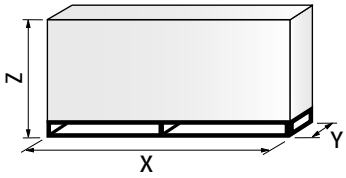


Description	A mm	D mm	E mm	F mm	G(*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/E C01	1206	1338	1637	538	485	413	885	DN80	200	1350	1493
RS 1200/E C01	1250	1338	1637	539	485	456	885	DN80	200	1350	1493

(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



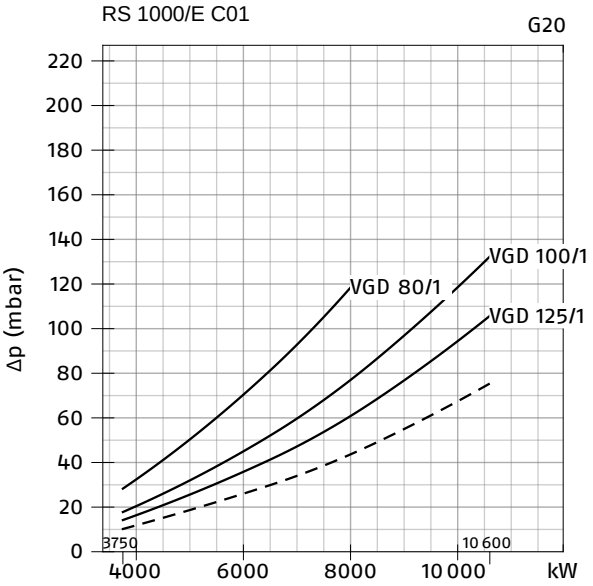
Description	D1 mm	D2 mm	Ø mm
RS 1000/E C01	460	608	M20
RS 1200/E C01	500	608	M20

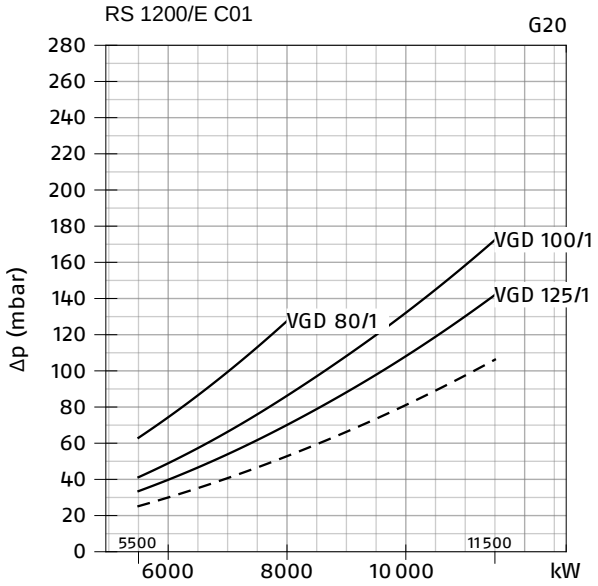


Description	X mm	Y mm	Z mm	Net weight kg
RS 1000/E C01	2400	1400	1595	500
RS 1200/E C01	2400	1400	1595	550

PRESSURE LOSS DIAGRAMS

VGD 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	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
				RS 1000/E C01	RS 1200/E C01
VGD SERIES ONE STAGE GAS TRAIN					
VGD 80/1-FT 122	**20140763***	DN80	(4)	20066268/(3010222+20066268)(5)	
VGD 100/1-FT 122	**20169193***	DN100	(4)	20066278/(3010223+20066268)(5)	
VGD 125/1-FT 122	**20169195***	DN125	(4)	20066284/(3010224+20066268)(5)	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
(5) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C8 Dimensions: A = 1425 mm, B (min-max) = 285-1000 mm, C = 110 mm, D = 1500 mm, E = 1800 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010401**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
	All models	DISPLAY AND OPERATING UNIT (AZL) This tool is needed for combustion system commissioning and monitoring.	(1)	**3010469**
	All models	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) For Russian language only.

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
- High performance fan with reverse curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 400/690 V with neutral, 50Hz
- Mobile combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition by gas pilot with gas train
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator (LMV 51.100)
- AZL Display Interface, for combustion system commissioning and monitoring
- Burner safety control included on Electronic Cam device
- IRD sensor for flame detector
- Star/delta starter for the fan motor
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- 1 flange gasket
- 1 thermal screen
- Screws for fixing the flange
- Screws for fixing the burner flange to the boiler
- Seal control pressure switch (for installation on gas train)
- DN 80 gas supply connector for gas train connection
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Modulating gas burners

RS 1300-2000/E C01



- Modulating gas burners

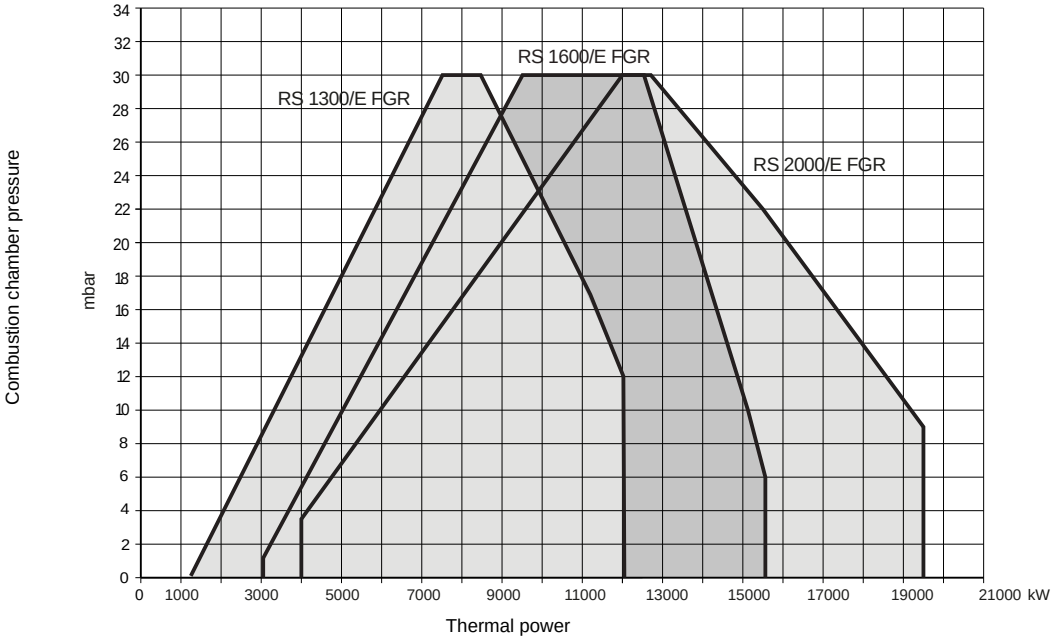
RS 1300-2000/E C01 burners series is characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The burners, with modulating operation, cover a firing range from 2500 to 19500 kW, and they have been designed for use in hot water boilers or industrial steam generators. The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates range.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The burner operation can be intermittent or continuous by menu setting.
The innovative combustion head, adjustment system ensures perfect movement during modulation.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Code
	kW	Nm^3/h	kW	Ph/V/Hz	V/Hz	
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)						
RS 1300/E C01 TC FS1/FS2	1350-7500/12000	250/750-1300	34.5	3/400/50	230/50-60	**20081191**
RS 1600/E C01 TC FS1/FS2	3065/9503-15560	307/951-1556	41.5	3/400/50	230/50-60	**20080872**
RS 2000/E C01 TC FS1/FS2	4000/12000-19500	400/135-1950	49.3	3/400/50	230/50-60	**20080867**
RS 2000/E C01 TL FS1/FS2	4000/12000-19500	400/135-1950	49.3	3/400/50	230/50-60	**20110674**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES

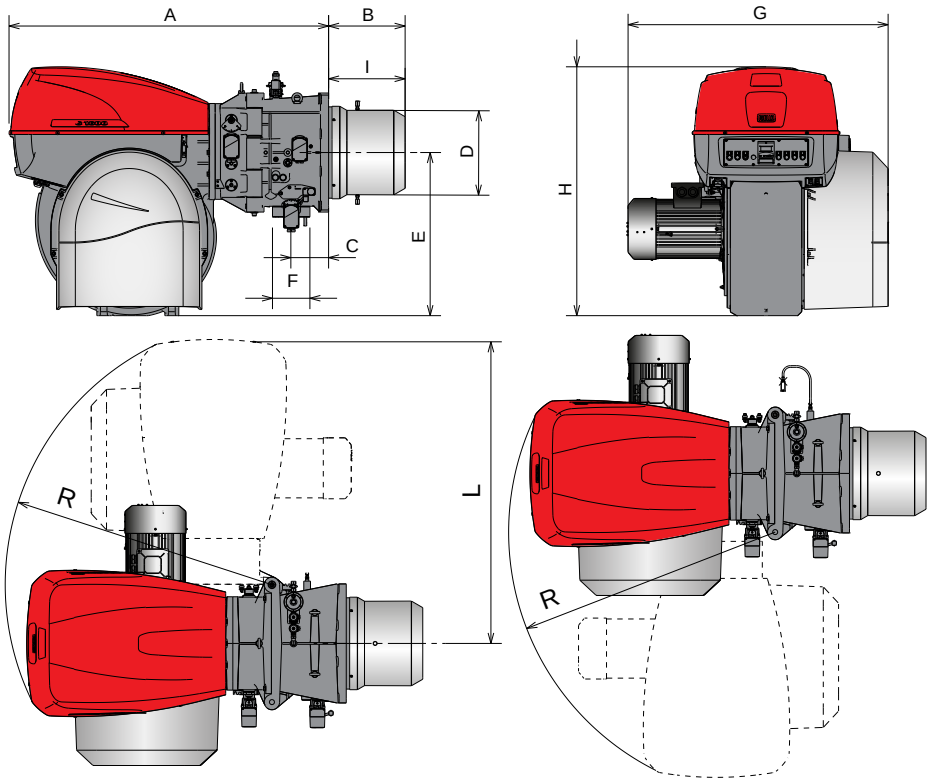


Useful firing rates for choosing the burner

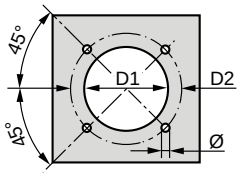
Modulation range

Test conditions
conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

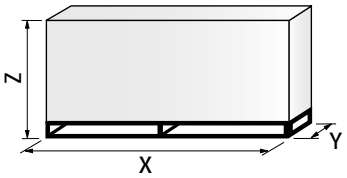
OVERALL DIMENSIONS



Model	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	R mm
RS 1300/E C01	1880	450	220	544	960	DN80	1585	1463	383	1782	1565
RS 1600/E C01	1880	450	220	544	960	DN80	1530	1463	383	1785	1565
RS 2000/E C01	1880	450-610	220	544	960	DN80	1560	1463	383-543	1782	1565



Description	D1 mm	D2 mm	Ø mm
RS 1300/E C01	580	645	M20
RS 1600/E C01	580	645	M20
RS 2000/E C01	580	645	M20

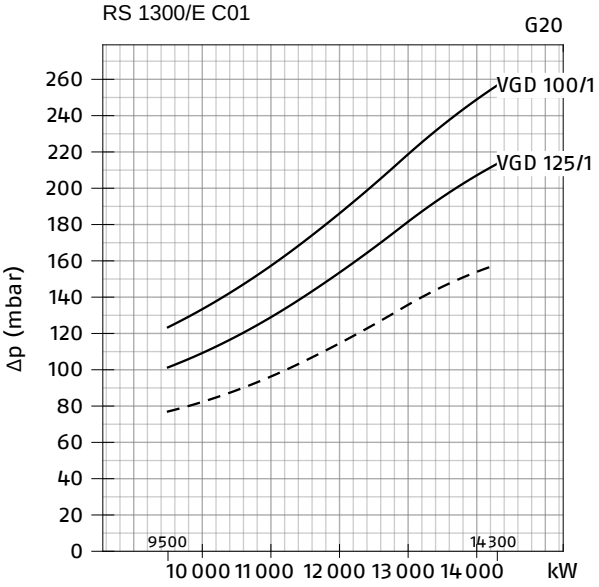


Description	X mm	Y mm	Z mm	Net weight kg
RS 1300/E C01	3000	1800	1750	1180
RS 1600/E C01	3000	1800	1750	1180
RS 2000/E C01	3000	1800	1750	1180

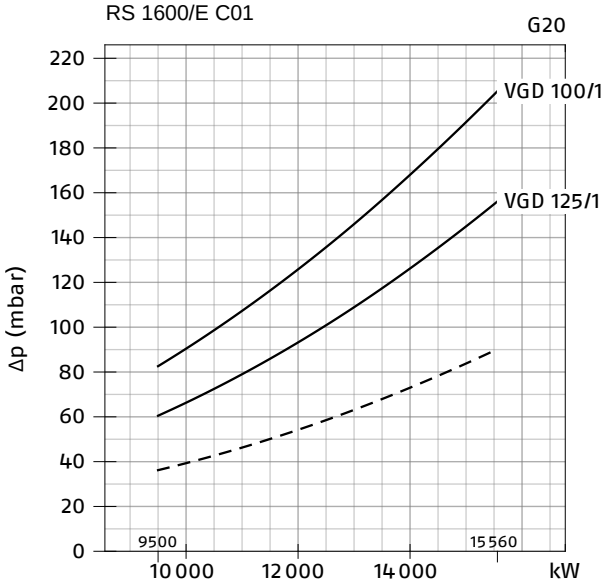
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

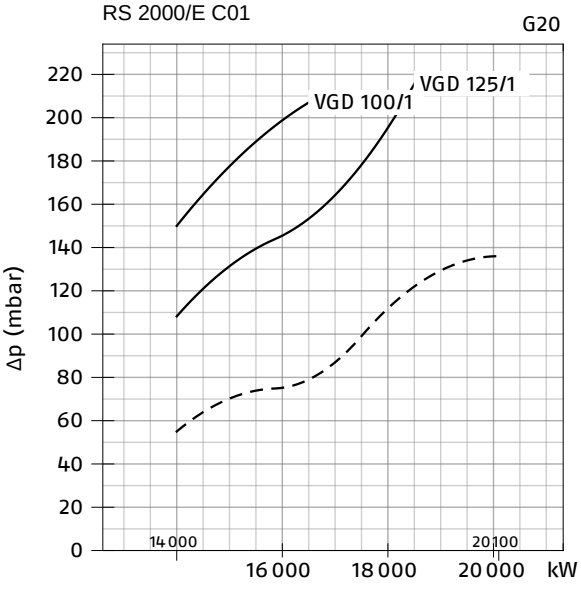
RS 1300/E C01



RS 1600/E C01



RS 2000/E C01



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	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)		
				RS 1300/E C01	RS 1600/E C01	RS 2000/E C01
VGD SERIES ONE STAGE GAS TRAIN						
VGD 100/1-FT 122	**20169193***	DN100	(4)	20130602	20130616	
VGD 125/1-FT 122	**20169195***	DN125	(4)	20130606	20130617	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C9 Dimensions: A = 1690 mm, C = 110 mm, D = 1920 mm, E = 1605 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**20108736**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
	All models	DISPLAY AND OPERATING UNIT (AZL) This tool is needed for combustion system commissioning and monitoring.	(1)	**3010469**
	All models	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) For Russian language only.

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
– High performance fan with forward curve blades
– Air suction circuit lined with sound-proofing material
– Air damper for air setting controlled by a high precision servomotor
– Air pressure switch
– Fan starting motor at 2900 rpm, three-phase 400/690 V with neutral, 50Hz
– Mobile combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition by gas pilot with gas train
  • flame stability disk
– Automatic regulator for gas delivery, controlled by a high precision servomotor
– Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
– Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator (LMV 51.100)
– AZL Display Interface, for combustion system commissioning and monitoring
– Burner safety control included on Electronic Cam device
– IRD sensor for flame detector
– Star/delta starter for the fan motor
– Main electrical supply terminal board
– Burner on/off switch
– Auxiliary voltage led signal
– Burner working led signal
– Contacts motor and thermal relay with release button
– Motor internal thermal protection
– Motor failure led signal
– Burner failure led signal and lighted release button
– Emergency button
– Coded connection plugs-sockets
– Burner opening hinge
– Lifting rings
– IP 54 electric protection level

STANDARD EQUIPMENT

– 1 flange gasket
– 1 thermal screen
– Screws for fixing the flange
– Screws for fixing the burner flange to the boiler
– Seal control pressure switch (for installation on gas train)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Modulating gas burners

RS 1000-1200/EV C01



- Modulating gas burners

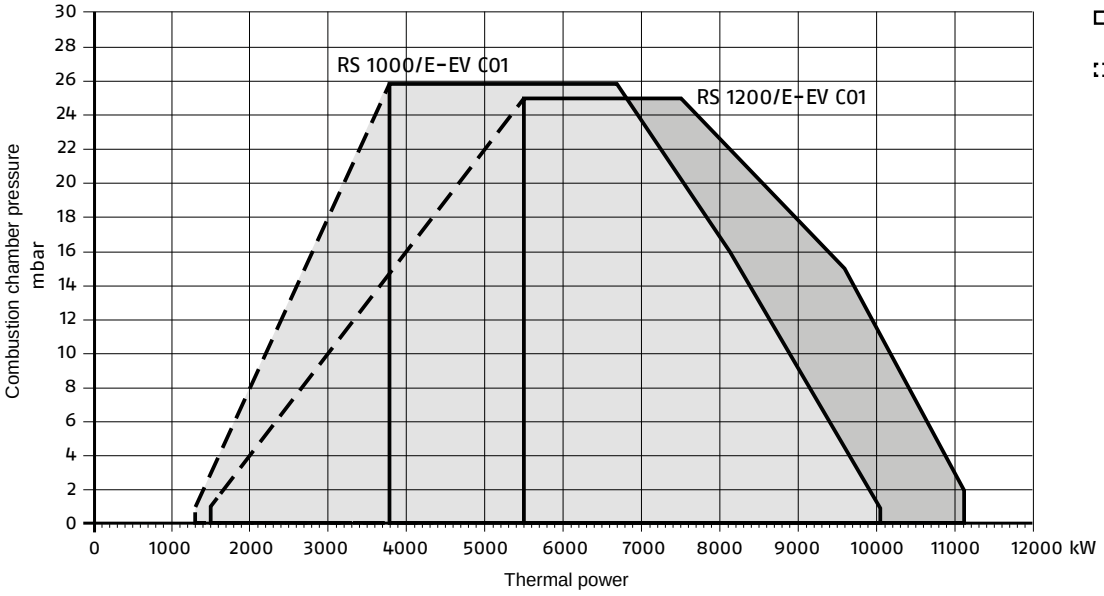
RS 1000-1200/EV C01 burners series is characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The burners, with modulating with variable speed drive operation, cover a firing range from 1300 to 11100 kW, and they have been designed for use in hot water boilers or industrial steam generators.
The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates range.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The burner operation can be intermittent or continuous by menu setting.
The innovative combustion head, adjustment system ensures perfect movement during modulation.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz	
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O2 CONTROL READY - OPERATION WITH VARIABLE SPEED DRIVE (VSD)						
RS 1000/EV C01 TC FS1-FS2	1300/3800-10100	130/380-940	24	3/400/50	230/50-60	**20062128**
RS 1200/EV C01 TC FS1-FS2	1500/5500-11100	150/550-1150	27	3/400/50	230/50-60	**20062129**

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.
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES

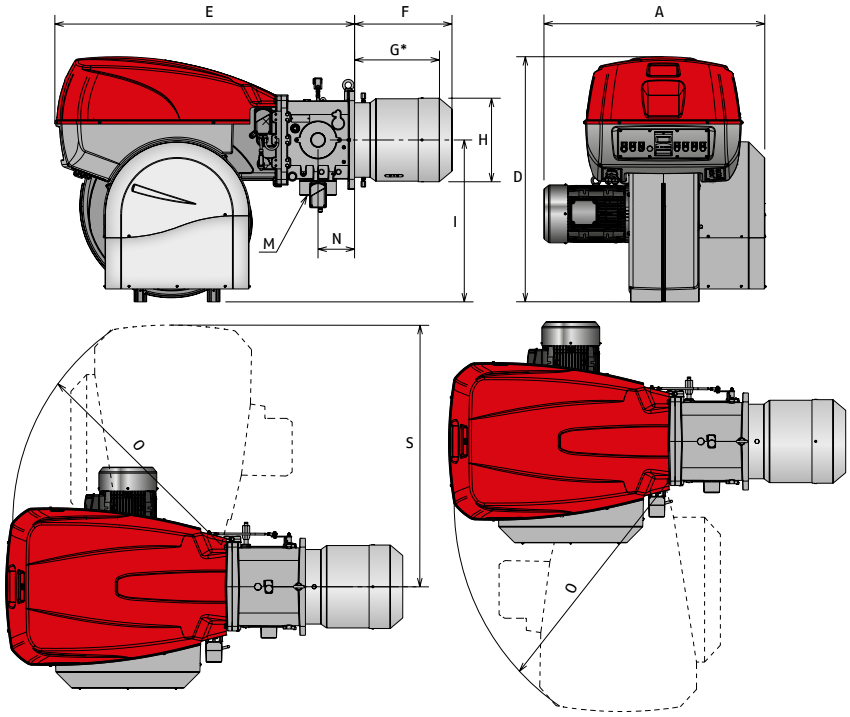


Useful firing rates for choosing the burner

Modulation range

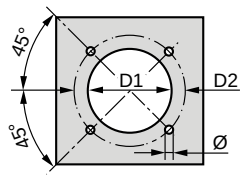
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

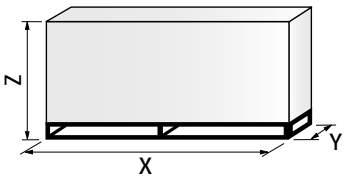


Description	A mm	D mm	E mm	Fv	G(*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/EV C01	1206	1338	1637	538	485	413	885	DN80	200	1350	1493
RS 1200/EV C01	1250	1338	1637	539	485	456	885	DN80	200	1350	1493

(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



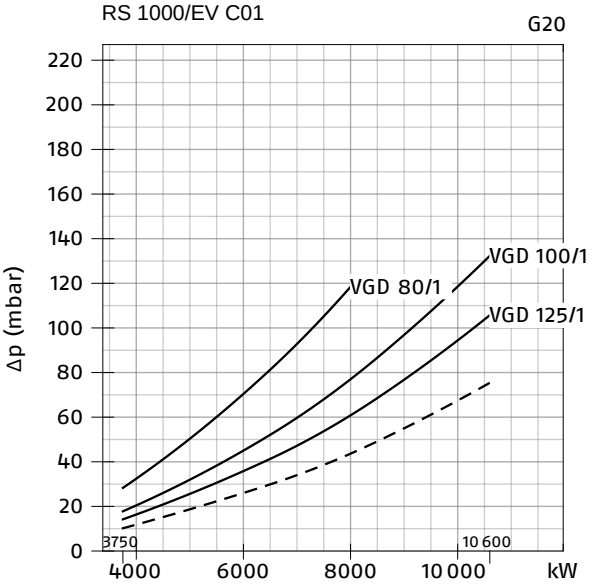
Description	D1 mm	D2 mm	Ø mm
RS 1000/EV C01	460	608	M20
RS 1200/EV C01	500	608	M20

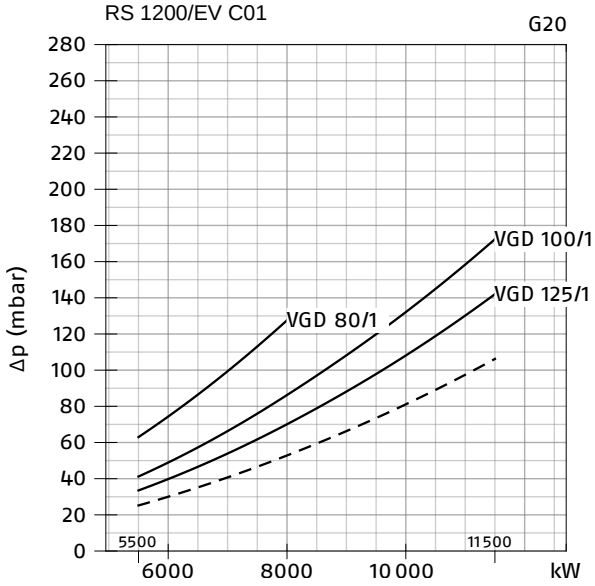


Description	X mm	Y mm	Z mm	Net weight kg
RS 1000/EV C01	2400	1400	1595	500
RS 1200/EV C01	2400	1400	1595	550

PRESSURE LOSS DIAGRAMS

VGD 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	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
				RS 1000/EV C01	RS 1200/EV C01
VGD SERIES ONE STAGE GAS TRAIN					
VGD 80/1-FT 122	**20140763***	DN80	(4)	20066268/(3010222+20066268)(5)	
VGD 100/1-FT 122	**20169193***	DN100	(4)	20066278/(3010223+20066268)(5)	
VGD 125/1-FT 122	**20169195***	DN125	(4)	20066284/(3010224+20066268)(5)	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
(5) To be used with gas train and burner opening on the left (fan motor side).
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C8 Dimensions: A = 1425 mm, B (min-max) = 285-1000 mm, C = 110 mm, D = 1500 mm, E = 1800 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010401**

Drawing	Burner model	Specification	Note	Code
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
	All models	KIT EFFICIENCY WITH OXYGEN CONTROL KIT FOR BURNERS WITH LMV52 CONTROL BOX ONLY The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display. All models equipped with LMV52 control box		**3010377**
	All models	OXYGEN CONTROL KIT (QGO2) The QGO2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	RS 1000/EV C01	VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series. Inverter power 22 kW - Electrical supply 400V - 50/60Hz		**20163099**
	RS 1200/EV C01	Inverter power 30 kW - Electrical supply 400V - 50/60Hz		**20163100**
	All models	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
An additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
- High performance fan with reverse curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Mobile combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition by gas pilot with gas train
  - flame stability disk
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on
- the fuel supply line
- Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator (LMV 52)
- AZL Display Interface, for combustion system commissioning and monitoring
- Burner safety control included on Electronic Cam device
- IRD sensor for flame detector
- Star/delta starter for the fan motor
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- 1 flange gasket
- 1 thermal screen
- Screws for fixing the flange
- Screws for fixing the burner flange to the boiler
- Seal control pressure switch (for installation on gas train)
- DN 80 gas supply connector for gas train connection
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Modulating gas burners

RS 1300-2000/EV C01



- Modulating gas burners

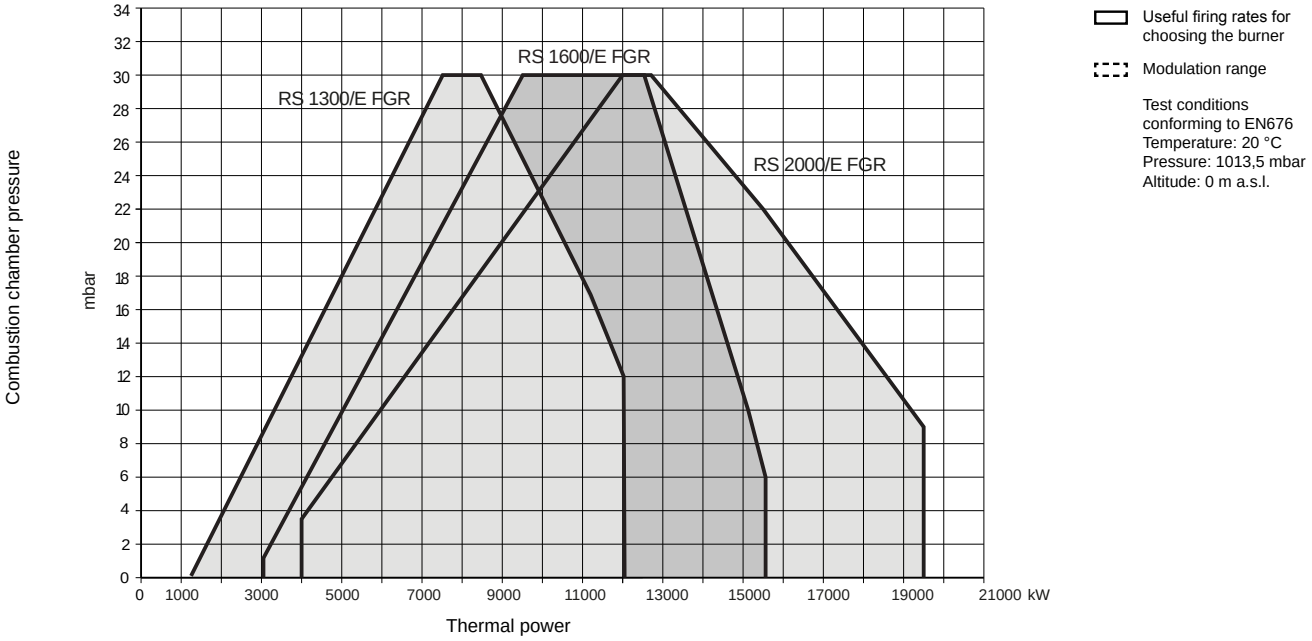
RS 1300-2000/EV C01 burners series is characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The burners, with modulating with variable speed drive operation, cover a firing range from 2500 to 19500 kW, and they have been designed for use in hot water boilers or industrial steam generators.
The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates range.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The burner operation can be intermittent or continuous by menu setting.
The innovative combustion head, adjustment system ensures perfect movement during modulation.

TECHNICAL DATA

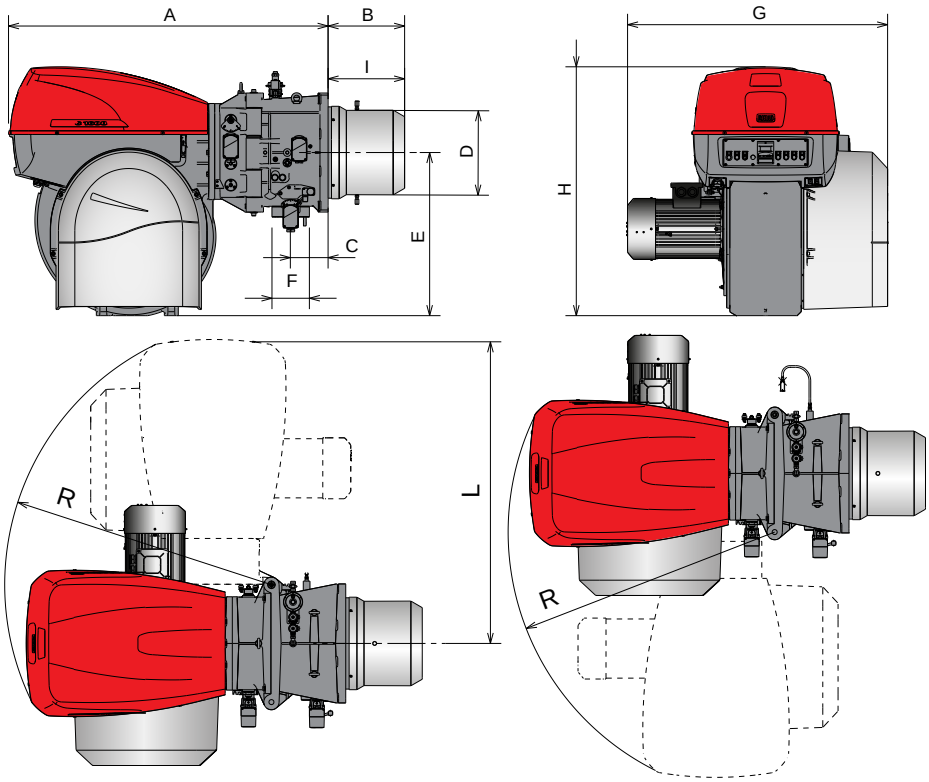
Description	Heat output natural gas		Total electrical power	Electric power supply		Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz	
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O2 CONTROL READY - OPERATION WITH VARIABLE SPEED DRIVE (VSD)						
RS 1300/EV C01 TC FS1/FS2	1350-7500/12000	250/750-1300	34.5	3/400/50	230/50-60	**20081190**
RS 1600/EV C01 TC FS1/FS2	3065/9503-15560	307/951-1556	41.5	3/400/50	230/50-60	**20080871**
RS 2000/EV C01 TC FS1/FS2	4000/12000-19500	400/135-1950	49.3	3/400/50	230/50-60	**20070919**

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.
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

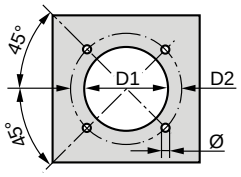
FIRING RATES



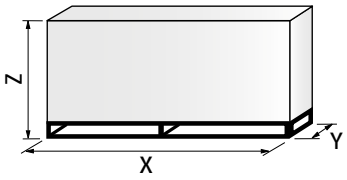
OVERALL DIMENSIONS



Model	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	R mm
RS 1300/EV C01	1880	450	220	544	960	DN80	1585	1463	383	1782	1565
RS 1600/EV C01	1880	450	220	544	960	DN80	1530	1463	383	1785	1565
RS 2000/EV C01	1880	450-610	220	544	960	DN80	1560	1463	383-543	1782	1565



Description	D1 mm	D2 mm	Ø mm
RS 1300/EV C01	580	645	M20
RS 1600/EV C01	580	645	M20
RS 2000/EV C01	580	645	M20

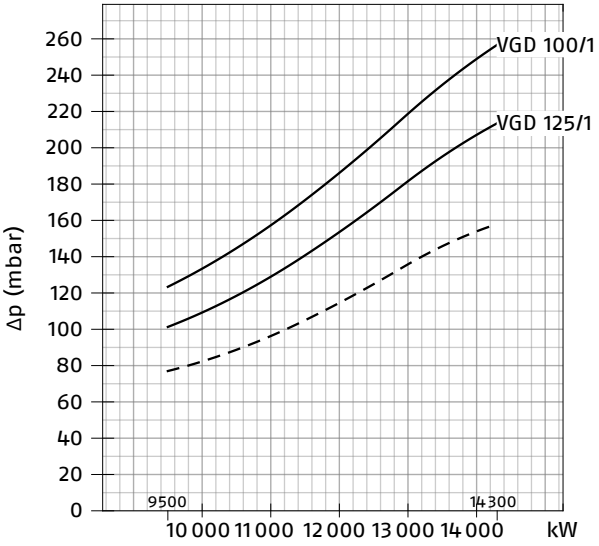


Description	X mm	Y mm	Z mm	Net weight kg
RS 1300/EV C01	3000	1800	1750	1180
RS 1600/EV C01	3000	1800	1750	1180
RS 2000/EV C01	3000	1800	1750	1180

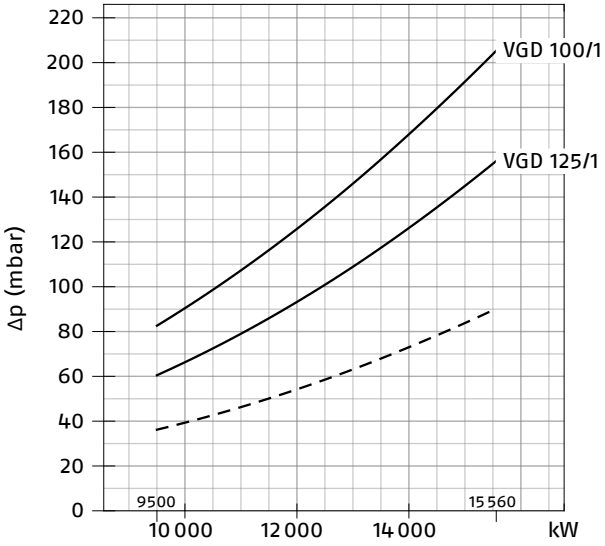
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

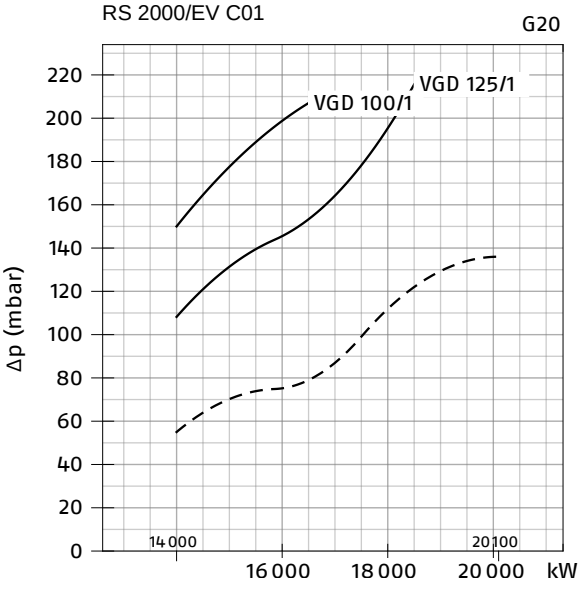
RS 1300/EV C01



RS 1600/EV C01



RS 2000/EV C01



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	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)		
				RS 1300/EV C01	RS 1600/EV C01	RS 2000/EV C01
VGD SERIES ONE STAGE GAS TRAIN						
VGD 100/1-FT 122	**20169193***	DN100	(4)	20130602	20130616	20130616
VGD 125/1-FT 122	**20169195***	DN125	(4)	20130606	20130617	20130617

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C9 Dimensions: A = 1690 mm, C = 110 mm, D = 1920 mm, E = 1605 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**20108736**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
	All models	OXYGEN CONTROL KIT (QGO2) The QGO2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
		VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RS/EV series.		
	RS 1300/EV C01	Inverter power 30 kW - Electrical supply 400V - 50/60Hz		**20163100**
	RS 1600/EV C01	Inverter power 37 kW - Electrical supply 400V - 50/60Hz		**20163105**
	RS 2000/EV C01	Inverter power 45 kW - Electrical supply 400V - 50/60Hz		**20164366**
	All models	KIT EFFICIENCY WITH OXYGEN CONTROL KIT FOR BURNERS WITH LMV52 CONTROL BOX ONLY The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display. All models equipped with LMV52 control box		**3010377**
	All models	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
An additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
– High performance fan with forward curve blades
– Air suction circuit lined with sound-proofing material
– Air damper for air setting controlled by a high precision servomotor
– Air pressure switch
– Mobile combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition by gas pilot with gas train
  • flame stability disk
– Automatic regulator for gas delivery, controlled by a high precision servomotor
– Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
– Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator (LMV 52)
– AZL Display Interface, for combustion system commissioning and monitoring
– Burner safety control included on Electronic Cam device
– IRD sensor for flame detector
– Star/delta starter for the fan motor
– Main electrical supply terminal board
– Burner on/off switch

- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

STANDARD EQUIPMENT

- 1 flange gasket
- 1 thermal screen
- Screws for fixing the flange
- Screws for fixing the burner flange to the boiler
- Seal control pressure switch (for installation on gas train)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

One stage gas burners

GAS



- One stage gas burners

GAS series of burners cover a firing range from 130 to 1050 kW. Operation is “one stage”; the combustion head, that can be set on the basis of required output, allows optimal performance ensuring good combustion and reducing fuel consumption.
The GAS series are extremely reliable burners, featured by a simple use and an operation without particular maintenance intervention. Simplified maintenance is achieved by the slide bar system, which allows easy access to all of the essential components of the combustion head.
All electrical components are easily accessible only by dismounting a protection panel, thus guaranteeing a quick and simple intervention on components.

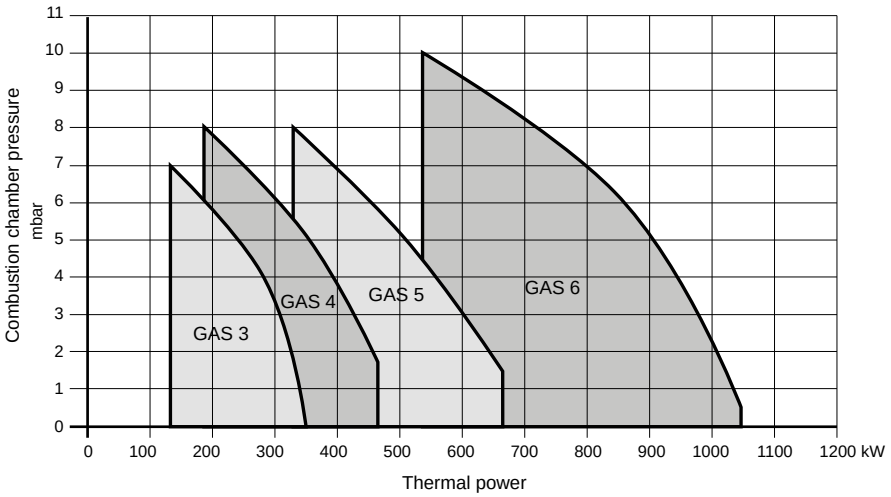
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)							
GAS 3 TC FS1	130-350	13-34	0.4	1/220/60	220/60	-	**3751982**
GAS 3 TC FS1	130-350	13-35	0.4	1/230/50	230/50	CE-0085AQ0707	**3751918**
GAS 3 TC FS1	130-350	13-35	0.4	1/240/50	240/50	-	**3751960**
GAS 3 TL FS1	130-350	13-36	0.4	1/240/50	240/50	-	**3751961**
GAS 4 TC FS1	185-465	18,5-46,5	0.54	1/230/50	230/50	-	**3751617**
GAS 4 TC FS1	180-470	18-47	0.6	3/380/60	220/60	-	**3751682**
GAS 5 TC FS1	320-660	32-66	0.85	3/200/50-60	200/50-60	-	**3751787**
GAS 5 TC FS1	320-660	32-66	1.1	3/380/60	220/60	-	**3751782**
GAS 5 TC FS1	325-660	32,5-66	0.85	3/400/50	230/50	-	**3751717**
GAS 6 TC FS1	525-1050	52,5-105	1.7	3/400/50	230/50	-	**3751817**

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.

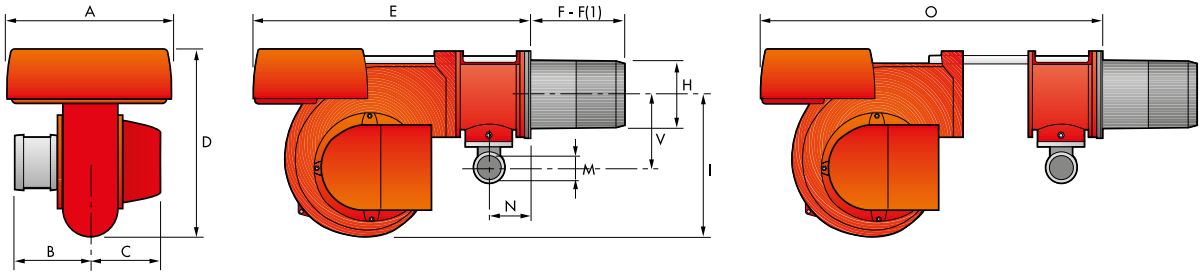
FIRING RATES



Useful firing rates for choosing the burner

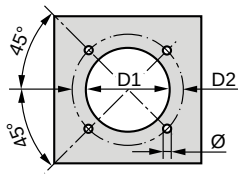
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

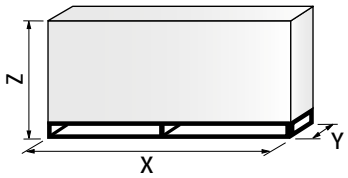


Description	A mm	B mm	C mm	D mm	E mm	F - mm	F (1) mm	H mm	I mm	M mm	N mm	O mm	V mm
GAS 3	410	205	205	397	610	185 -	320	140	292	1”1/2	97	775	165
GAS 4	410	205	205	397	610	187 -	320	150	292	1”1/2	97	775	165
GAS 5	431	226	205	437	645	207 -	365	155	332	1”1/2	97	810	165
GAS 6	463	258	205	485	770	227 -	360	175	370	Rp 2”	131	966	195

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
GAS 3	155	226	M10
GAS 4	165	226	M10
GAS 5	165	226	M10
GAS 6	185	276	M12



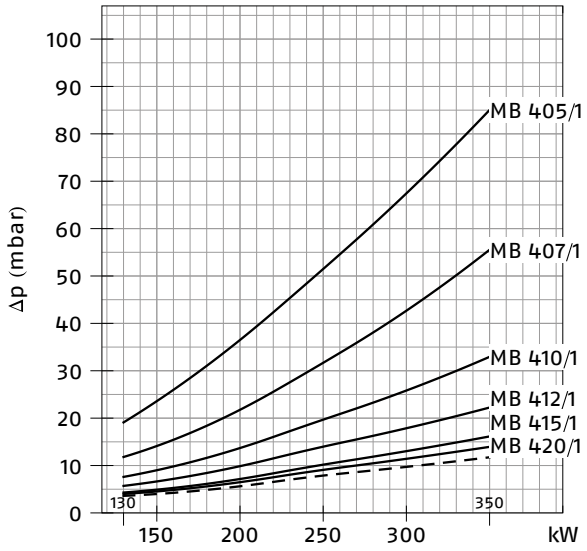
Description	X (1) mm	Y mm	Z mm	Net weight kg
GAS 3	850	545	473	32
GAS 4	850	545	473	38
GAS 5	895	543	520	41
GAS 6	1045	543	555	58

(1) Dimension with standard and extended head.

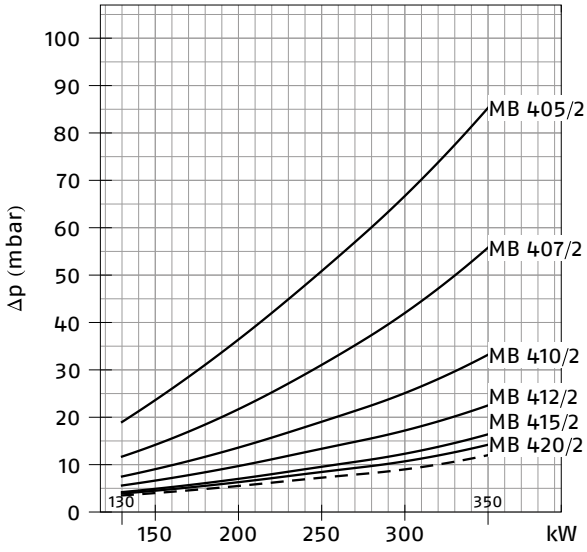
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

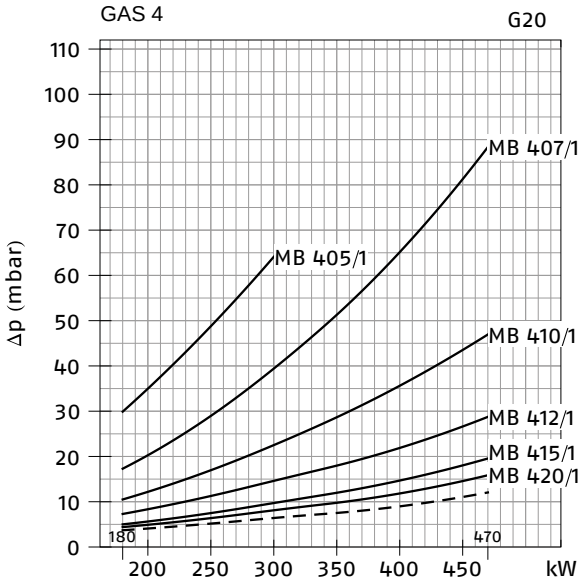
GAS 3 G20



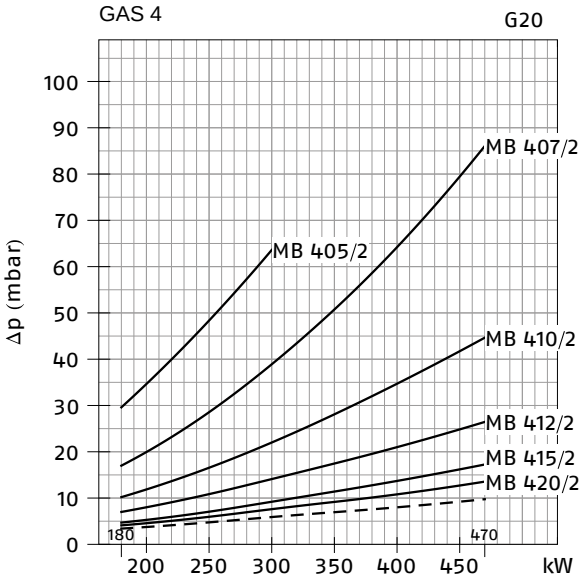
GAS 3 G20



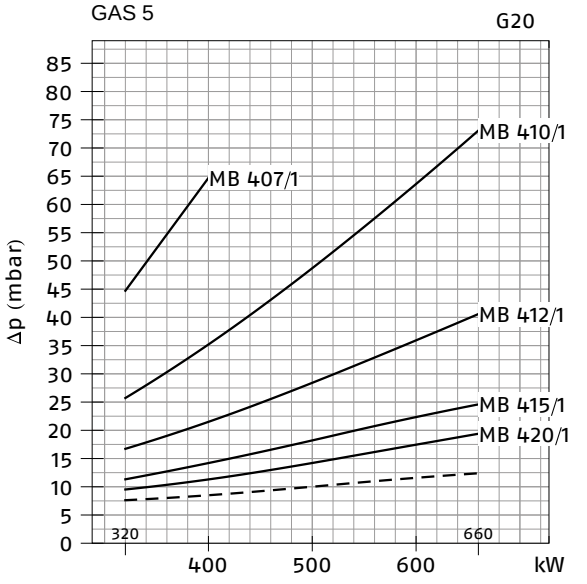
GAS 4 G20



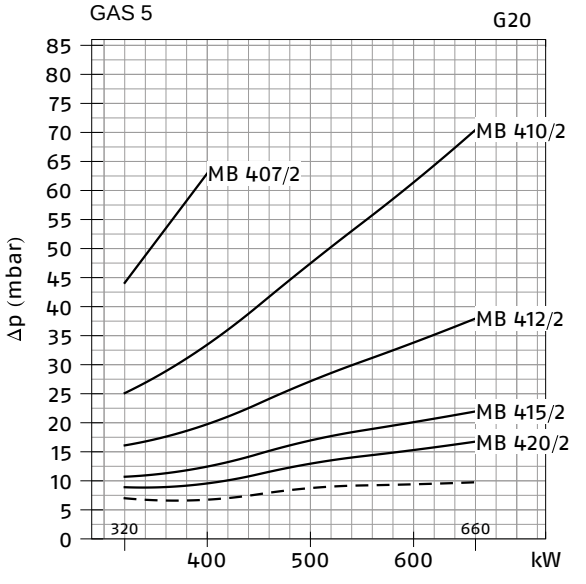
GAS 4 G20



GAS 5 G20



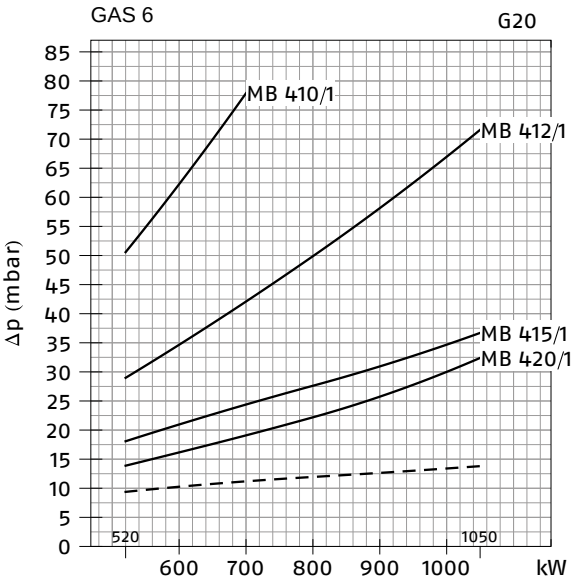
GAS 5 G20

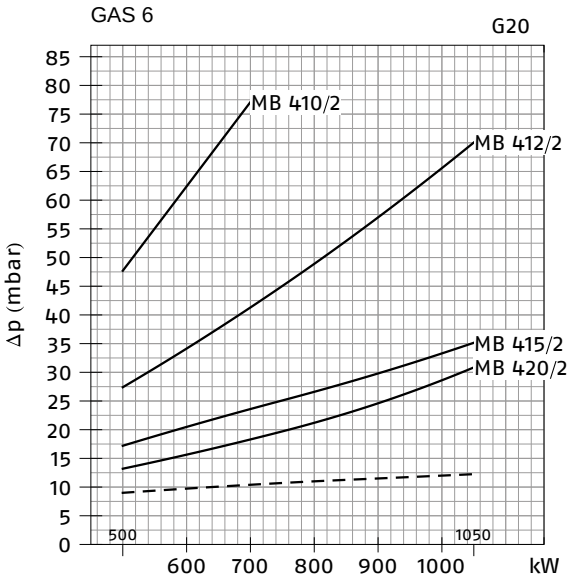


Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

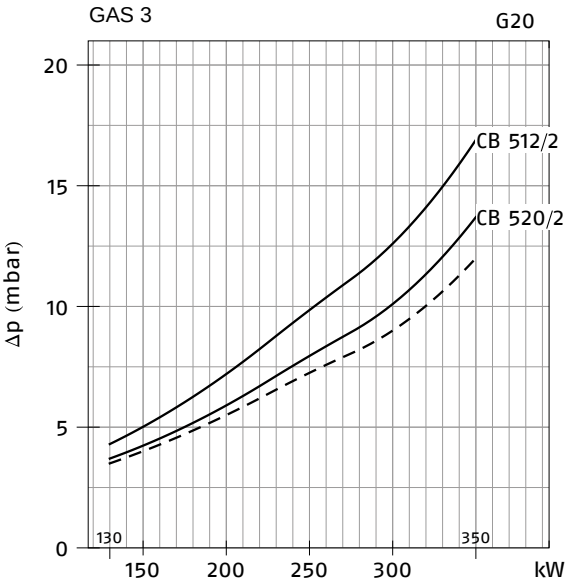
——— Combustion head + gas train

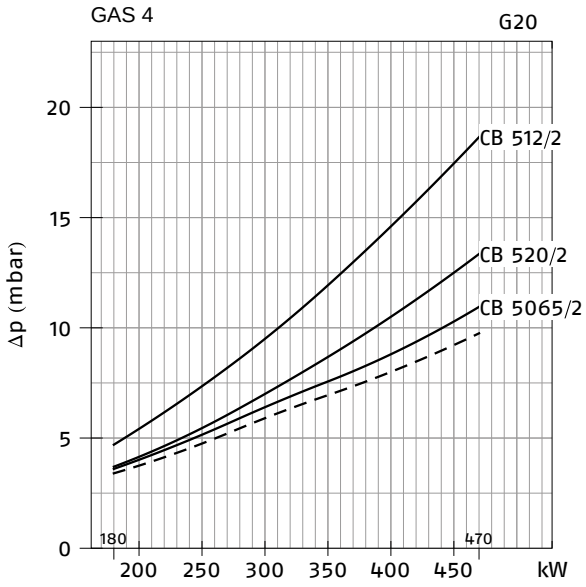
- - - - Combustion head

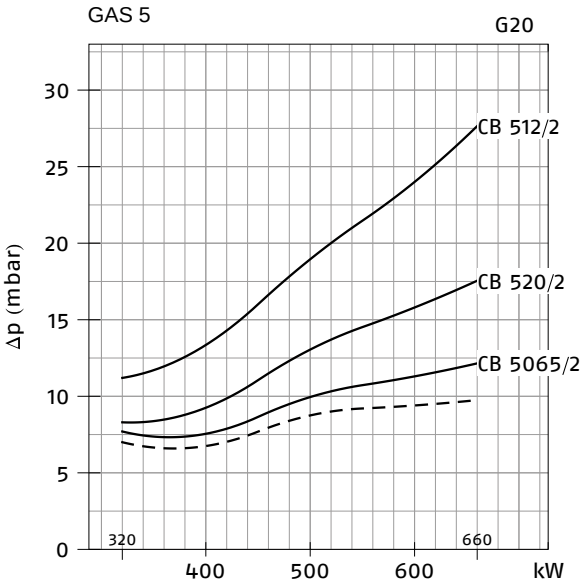


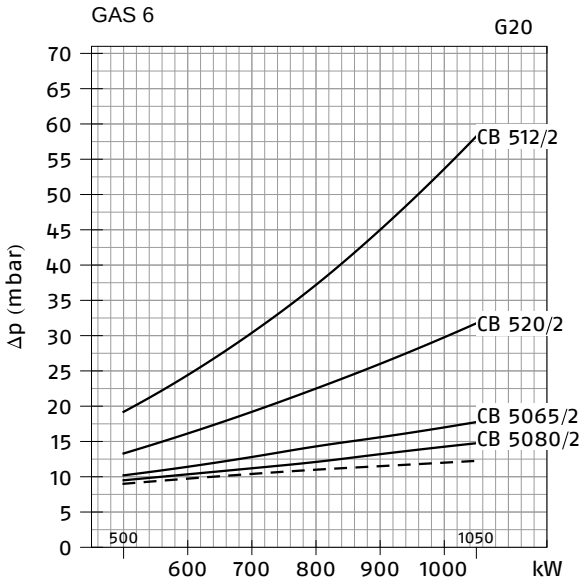


CB SERIES GAS TRAIN



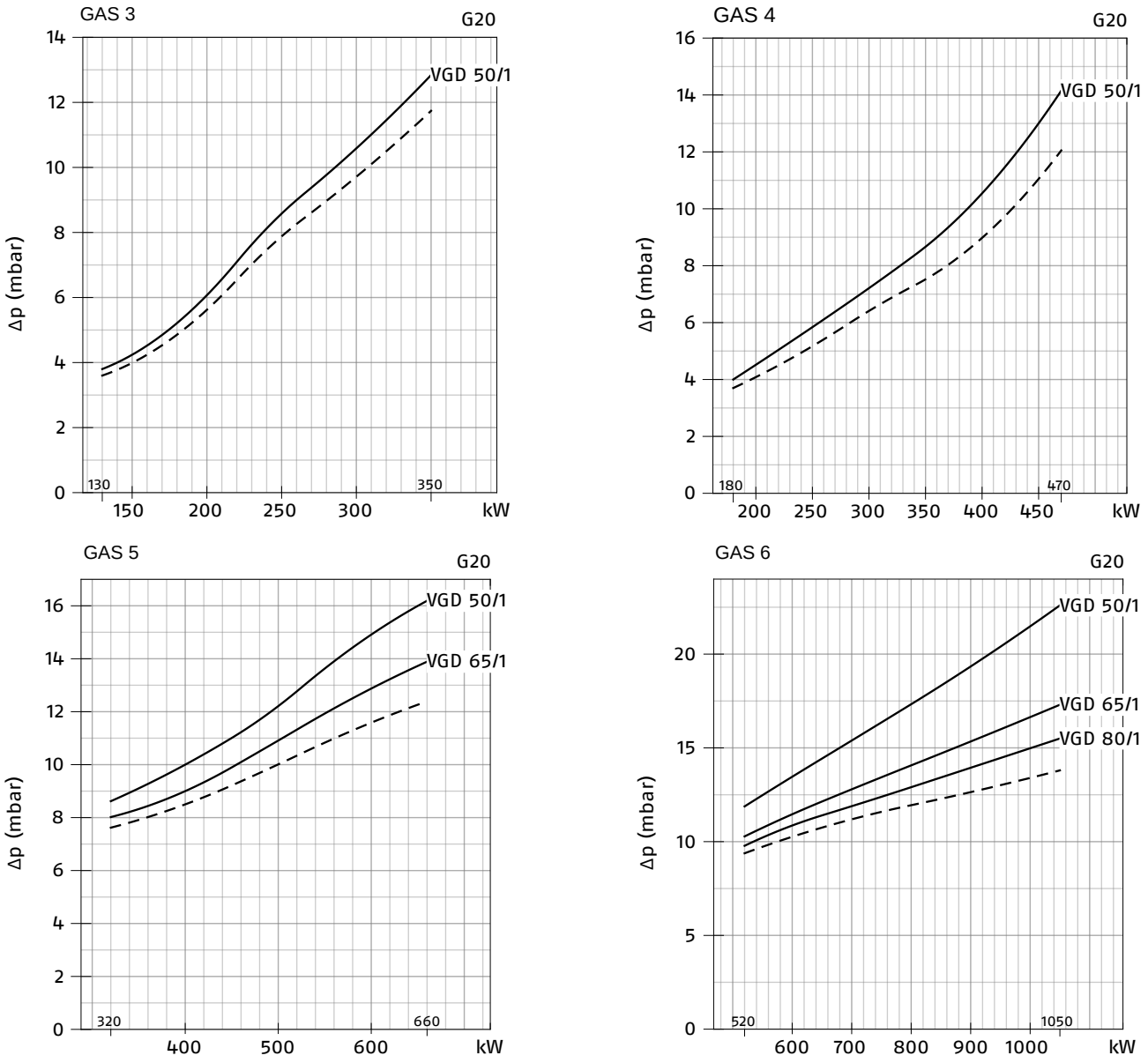






Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

VGD 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

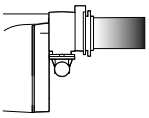
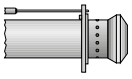
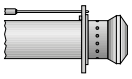
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)			
						GAS 3	GAS 4	GAS 5	GAS 6
MB SERIES ONE STAGE GAS TRAIN									
MB 405/1-RT 20	**3970500***		Rp ¾"	-	3010123	3000824		●	●
MB 407/1-RT 20	**3970553***		Rp ¾"	-	3010123	3000824			●
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3010123	3000824			●
MB 407/1-RSM 20	**3970229***		Rp ¾"	-	3010123	3000824			●
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	□	□	□	3000843
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824			3000824+ 3000843
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123	3000824			
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123	3000824			
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	□	□	□	3000843
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	□	□	□	
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	□	□	□	
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	□	□	□	

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)			
						GAS 3	GAS 4	GAS 5	GAS 6
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	□	□	□	3000843
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	□	□	□	
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	□	□	□	
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	□	□	□	
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	□	□	□	
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	3000822			□
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	3000822			□
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	3000822			□
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	3000822			□
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	3000822			□
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	3000822			□
MB SERIES TWO STAGE GAS TRAIN									
MB 405/2-RSD 20	**3970084***		Rp ½"	-	3010123	20044756		●	●
MB 407/2-RSD 20	**3970537***		Rp ¾"	-	3010123	3000824			●
MB 407/2-RT 20	**3970556***		Rp ¾"	-	3010123	3000824			●
MB 410/2-RSD 20	**3970534***		Rp ¾"	-	3010123	3000824			3000824+ 3000843
MB 410/2-RT 20	**3970557***		Rp ¾"	-	3010123	3000824			
MB 412/2-RT 20	**3970152***		Rp 1" ½	-	3010123	□	□	□	3000843
MB 415/2-RT 20	**3970183***		Rp 1" ½	-	3010123	□	□	□	
MB 420/2-RT 20	**3970184***		Rp 2"	-	3010123	3000822			□
MB 420/2 CT RT 20	**3970185****		Rp 2"	♦	♦	3000822			□
CB SERIES TWO STAGE GAS TRAIN									
CB 512/2-RT 32	**3970153***		Rp 1" ½	-	3010125	□	□	□	3000843
CB 520/2-RT 32	**3970154***		Rp 2"	-	3010125	3000822			□
VGD SERIES ONE STAGE GAS TRAIN									
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	3000822			□
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	3000822			□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826+3000822			3000826
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826+3000822			3000826
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	3000826+3000822			3000826
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	3000826+3000822			3000826

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	GAS 3	Standard head length = 185 mm - Extended head length = 320 mm		**3000605**
	GAS 4	Standard head length = 187 mm - Extended head length = 320 mm		**3000606**
	GAS 5	Standard head length = 207 mm - Extended head length = 365 mm		**3000607**
	GAS 6	Standard head length = 227 mm - Extended head length = 360 mm		**3000608**
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 142 mm		**3000755**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010030**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	GAS 3	Kit code for standard head.	(1)	**3000657**
	GAS 3	Kit code for extended head.	(1)	**3000807**
	GAS 4	Kit code for standard head.	(1)	**3000658**
	GAS 4	Kit code for extended head.	(1)	**3000808**
	GAS 5	Kit code for standard head.	(1)	**3000659**
	GAS 5	Kit code for extended head.	(1)	**3000809**
	GAS 6	Kit code for standard head.	(1)	**3000753**
	GAS 6	Kit code for extended head.	(1)	**3000810**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.		
	GAS 3	Kit code for standard head.	(1)	**3000742**
	GAS 4	Kit code for standard head.	(1)	**3000754**
	GAS 5	Kit code for standard head.	(1)	**3000759**
	GAS 6	Kit code for standard head.	(1)	**3000768**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) Without CE certification.

STATE OF SUPPLY

Monoblock forced draught gas burner, one stage operation, made up of:
– Air suction circuit
– Fan with forward curved blades
– Air damper for air setting
– Combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • flame stability disk
– Minimum air pressure switch
– Single phase or three phases electrical motor
– Microprocessor-based burner safety control box, with diagnostic function
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP X0D (IP 40) protection level.

STANDARD EQUIPMENT

– 1 gas train gasket
– 1 flange gasket
– 4 screws for fixing the flange
– 1 thermal screen
– 4 screws for fixing the burner flange to the boiler
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Two stage gas burners

GAS/2



- Two stage gas burners

GAS/2 series of burners covers a firing range from 130 to 1760 kW and they have been designed for use in civil installations of average dimensions, like building areas and large apartment groups or for use in industrial applications, like small or medium plants.
Operation is two stage; the combustion head, that can be set on the basis of required output, allows optimal performance ensuring good combustion and reducing fuel consumption.
The main feature of these burners is their reliability due to a simple and strong construction, which permits operation without particular maintenance intervention. Simplified maintenance is achieved by the slide bar system, which allows easy access to all of the essential components of the combustion head. All electrical components are easily accessible only by dismounting a protection panel, thus guaranteeing a quick and simple intervention on components.

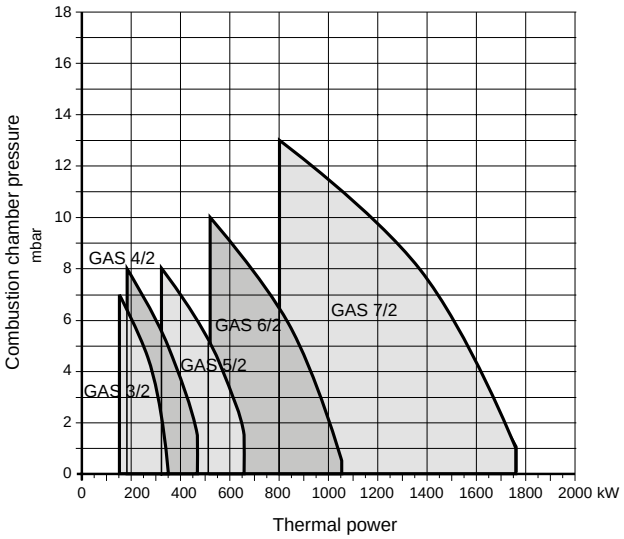
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
GAS 3/2 TC FS1	80/130-350	8/13-35	0,4	1/230/50	230/50	CE-0085AQ0707		**20199089**
GAS 4/2 TC FS1	120/180-470	12/18-47	0.54	1/230/50	230/50	CE-0085AQ0707		**20199257**
GAS 4/2 TC FS1	115/180-470	11,5/18-47	0,6	3/380/60	220/60	-		**20201456**
GAS 5/2 TC FS1	155/320-660	15,5/32-66	1,1	3/380/60	220/60	-		**20200881**
GAS 5/2 TC FS1	155/320-660	15,5/32-66	0,85	3/400/50	230/50	CE-0085AQ0707		**20199325**
GAS 6/2 TC FS1	300/520-1050	30/52-105	1,9	3/380/60	220/60	-		**20200992**
GAS 6/2 TC FS1	300/520-1050	30/52-105	1,7	3/400/50	230/50	CE-0085AQ0707		**20199326**
GAS 7/2 TC FS1	400/800-1760	40/80-176	3,8	3/380/60	220/60	-		**20201125**
GAS 7/2 TC FS1	400/800-1760	40/80-176	3,4	3/400/50	230/50	CE-0085AQ0707		**20199327**

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.

FIRING RATES

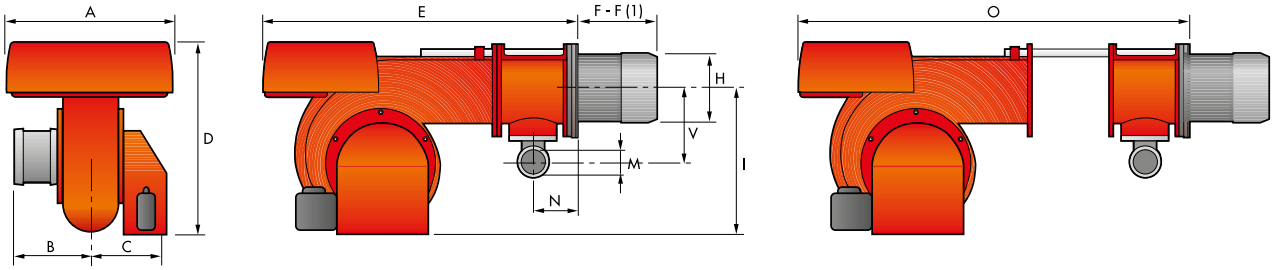


Useful firing rates for choosing the burner

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

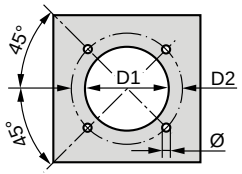
OVERALL DIMENSIONS

GAS 3/2 - 4/2 - 5/2 - 6/2 - 7/2

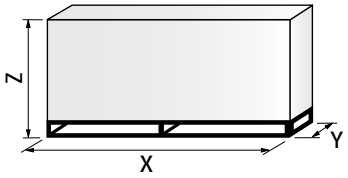


Description	A mm	B mm	C mm	D mm	E mm	F-F(1) mm	H mm	I mm	M mm	N mm	O mm	V mm
GAS 3/2	410	205	205	397	610	185-320	140	292	1”1/2	97	775	165
GAS 4/2	410	205	205	397	610	187-320	150	292	1”1/2	97	775	165
GAS 5/2	431	226	205	437	645	207-365	155	332	1”1/2	97	810	165
GAS 6/2	463	258	205	485	770	227-360	175	370	Rp 2”	131	966	195
GAS 7/2	606	358	248	590	920	240-400	220	445	Rp 2”	140	1142	245

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
GAS 3/2	155	226	M10
GAS 4/2	165	226	M10
GAS 5/2	165	226	M10
GAS 6/2	185	276	M12
GAS 7/2	230	325	M12

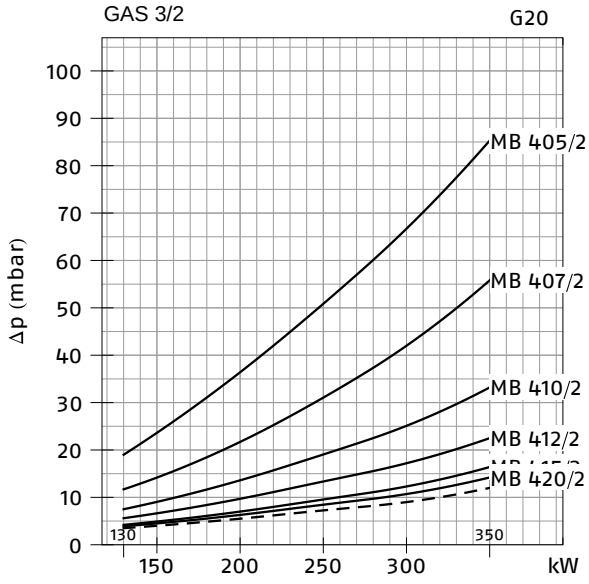


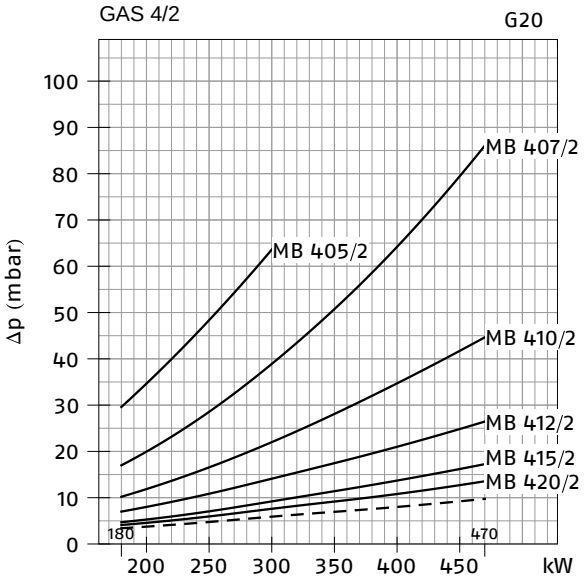
Description	X (1) mm	Y mm	Z mm	Net weight kg
GAS 3/2	850	545	473	34
GAS 4/2	850	545	473	40
GAS 5/2	895	543	520	43
GAS 6/2	1045	543	555	60
GAS 7/2	1400	850	650	98

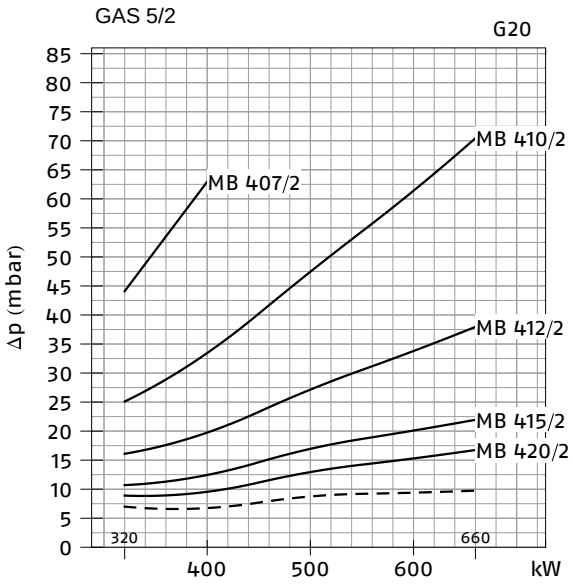
(1) Dimension with standard and extended head.

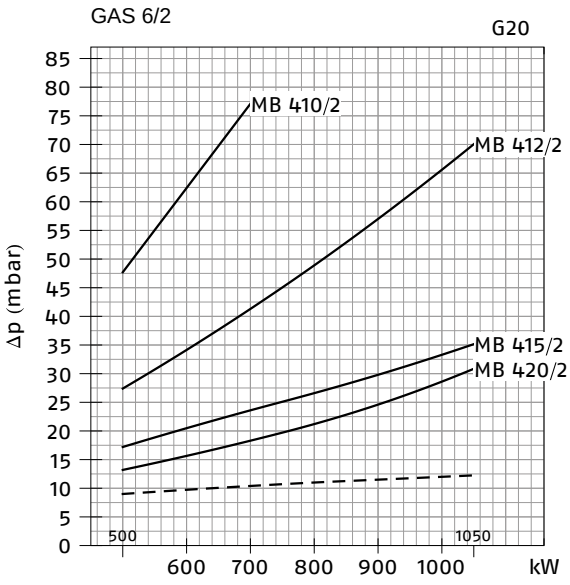
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

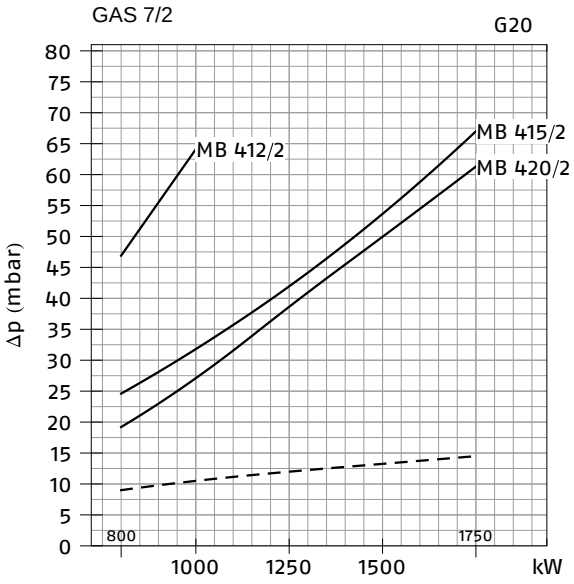




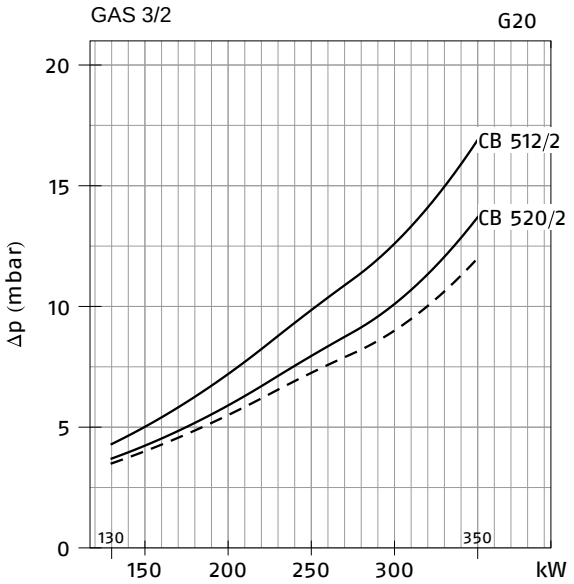


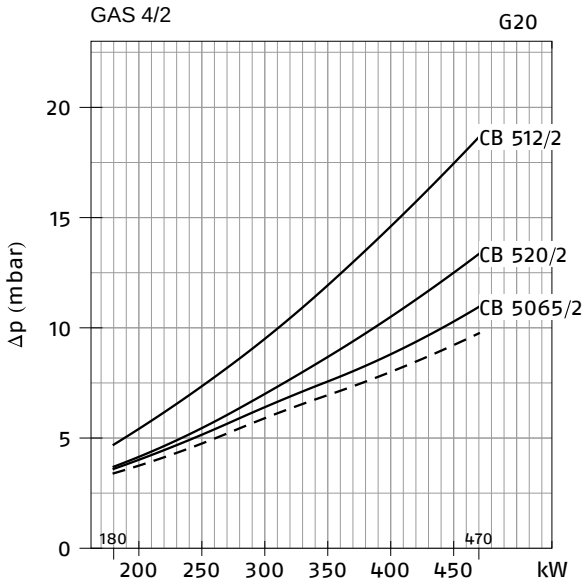


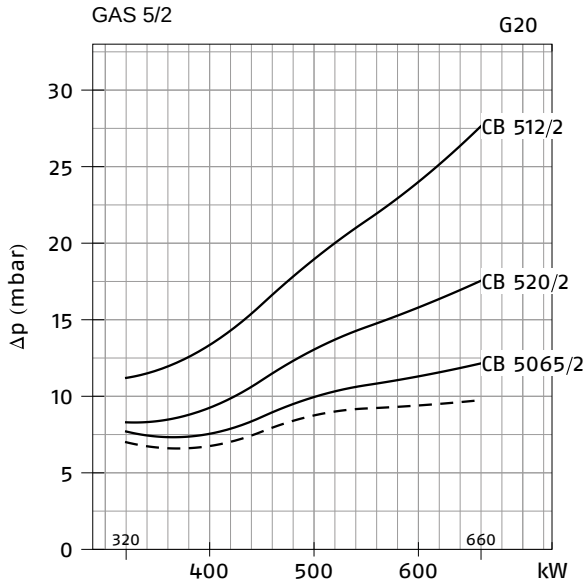
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

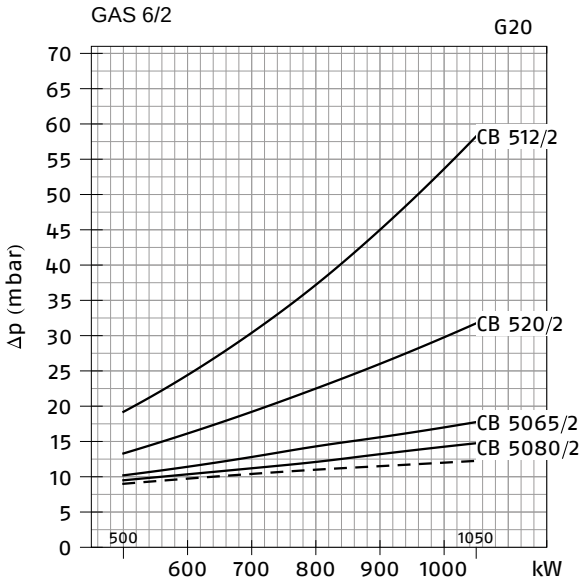


CB SERIES GAS TRAIN

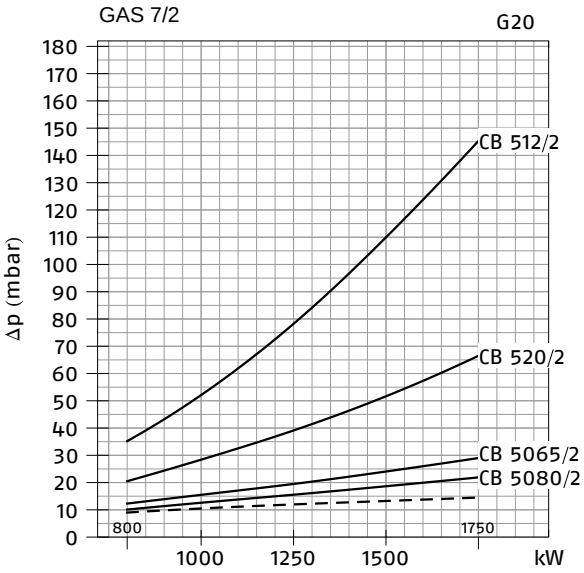








Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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



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

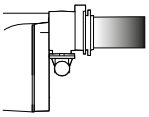
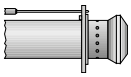
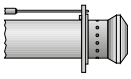
GAS TRAINS

Description (1)	Code	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)				
					GAS 3/2	GAS 4/2	GAS 5/2	GAS 6/2	GAS 7/2
MB SERIES TWO STAGE GAS TRAIN									
MB 405/2-RSD 20	**3970084***	Rp ½"	-	3010123	20044756		●	●	●
MB 407/2-RSD 20	**3970537***	Rp ¾"	-	3010123	3000824			●	●
MB 407/2-RT 20	**3970556***	Rp ¾"	-	3010123	3000824			●	●
MB 410/2-RSD 20	**3970534***	Rp ¾"	-	3010123	3000824			3000824+ 3000843	●
MB 410/2-RT 20	**3970557***	Rp ¾"	-	3010123	3000824				
MB 412/2-RT 20	**3970152***	Rp 1" ½	-	3010123	□	□	□	3000843	●
MB 415/2-RT 20	**3970183***	Rp 1" ½	-	3010123	□	□	□		
MB 420/2-RT 20	**3970184***	Rp 2"	-	3010123	3000822			□	□
MB 420/2 CT RT 20	**3970185****	Rp 2"	♦	♦	3000822			□	□
CB SERIES TWO STAGE GAS TRAIN									
CB 512/2-RT 32	**3970153***	Rp 1" ½	-	3010125	□	□	□	3000843	
CB 520/2-RT 32	**3970154***	Rp 2"	-	3010125	3000822			□	□

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	GAS 3/2	Standard head length = 185 mm - Extended head length = 320 mm		**3000605**
	GAS 4/2	Standard head length = 187 mm - Extended head length = 320 mm		**3000606**
	GAS 5/2	Standard head length = 207 mm - Extended head length = 365 mm		**3000607**
	GAS 6/2	Standard head length = 227 mm - Extended head length = 360 mm		**3000608**
	GAS 7/2	Standard head length = 240 mm - Extended head length = 400 mm		**3000678**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	GAS 3-6/2	Spacer thickness S = 142 mm		**3000755**
	GAS 7/2	Spacer thickness S = 102 mm		**3000722**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010030**
		SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		
	GAS 3-6/2	Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm E = 770 mm		**3010403**
	GAS 7/2	Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm E = 930 mm		**3010404**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	GAS 3/2	Kit code for standard head.	(1)	**3000657**
	GAS 3/2	Kit code for extended head.	(1)	**3000807**
	GAS 4/2	Kit code for standard head.	(1)	**3000658**
	GAS 4/2	Kit code for extended head.	(1)	**3000808**
	GAS 5/2	Kit code for standard head.	(1)	**3000659**
	GAS 5/2	Kit code for extended head.	(1)	**3000809**
	GAS 6/2	Kit code for standard head.	(1)	**3000753**
	GAS 6/2	Kit code for extended head.	(1)	**3000810**
	GAS 7/2	Kit code for standard head.	(1)	**3000806**
	GAS 7/2	Kit code for extended head.	(1)	**3000811**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.		
	GAS 3/2	Kit code for standard head.	(1)	**3000742**
	GAS 4/2	Kit code for standard head.	(1)	**3000754**
	GAS 5/2	Kit code for standard head.	(1)	**3000759**
	GAS 6/2	Kit code for standard head.	(1)	**3000768**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) Without CE certification.

STATE OF SUPPLY

Monoblock forced draught gas burner, two stage operation, made up of:
– Air suction circuit
– Fan with forward curved blades
– Air damper for air setting

– Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
– Minimum air pressure switch
– Single phase or three phases electrical motor
– Microprocessor-based burner safety control box, with diagnostic function
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP X0D (IP 40) protection level.

STANDARD EQUIPMENT

– 1 gas train flange
– 1 flange gasket
– 1 insulating screen
– 8 screws for fixing the burner flange to the boiler
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Modulating gas burners

GAS P/M



- Modulating gas burners

GAS P/M series covers a firing range from 130 to 4885 kW. Operation is featured by progressive two stage operation or full modulation, with an advanced modulating control system and probes. The burners of GAS P/M series are well suited for applications requiring versatility of control (process, steam, refrigerating absorption) where a variable output is needed. Due to their metal sheet structures, they are specifically suitable for process applications where plastic materials could be easily damaged or deformed.
Simplified maintenance is achieved by sliding bars which permit the access to the combustion head without need of removing the burner from the boiler.

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.

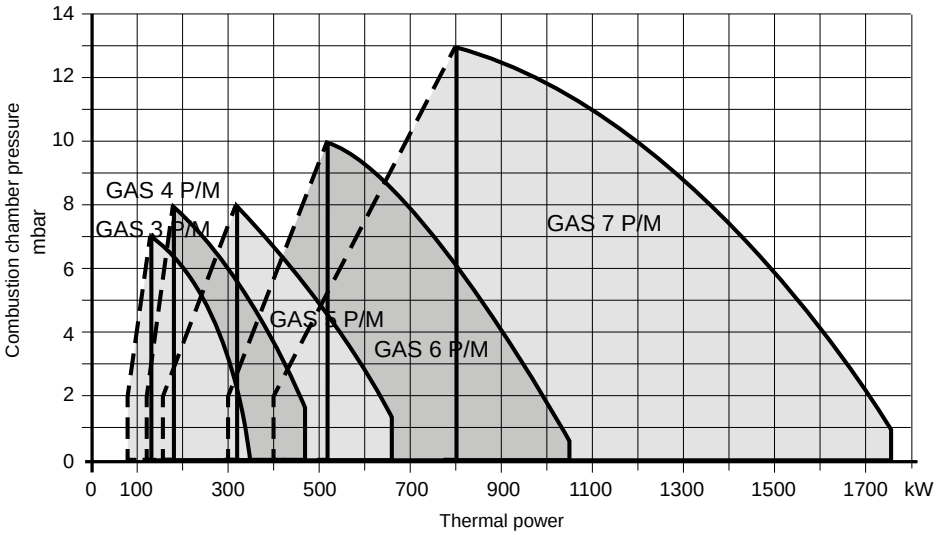
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR INTERMITTENT OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
GAS 3 P/M TC FS1	80/130-350	8/13-35	0,4	1/230/50	230/50-60	CE 0085AQ0710	(2)	**20206280**
GAS 4 P/M TC FS1	120/180-470	12/18-47	0,54	1/230/50	230/50-60	CE 0085AQ0710	(2)	**20205666**
GAS 5 P/M TC FS1	155/320-660	15,5/32-66	0,85	3/400/50	230/50-60	CE 0085AQ0710	(2)	**20213787**
GAS 6 P/M TC FS1	300/520-1050	30/52-105	1,9	3/400/50	230/50-60	CE 0085AQ0710	(2)	**20213788**
GAS 7 P/M TC FS1	400/800-1760	40/80-176	4,5	3/400/50	230/50-60	CE 0085AQ0710	(2)	**20213789**
GAS 8 P/M TC FS1	640/1163-2210	64/116-221	5.0	3/400/50	230/50-60	CE 0085AP0941	(2)	**20205990**
GAS 8 P/M TL FS1	640/1163-2210	64/116-221	5.0	3/400/50	230/50-60	CE 0085AP0941	(2)	**20213790**
GAS 9 P/M TC FS1	870/1744-3488	87/174-349	16,9	3/400/50	230/50-60	CE 0085AP0942	(2)	**20213791**
GAS 9 P/M TC FS1	870/1744-3488	87/174-349	16,9	3/400/50	230/50-60	CE 0085AP0942	(1)(2)	**20213792**
GAS 9 P/M TL FS1	870/1744-3488	87/174-349	16,9	3/400/50	230/50-60	CE 0085AP0942	(2)	**20205585**
GAS 10 P/M TC FS1	1140/2441-4885	114/244-489	16,9	3/400/50	230/50-60	CE 0085AP0943	(1)(2)	**20206138**

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
GAS 10 P/M TL FS1	1140/2441-4885	114/244-489	16,9	3/400/50	230/50-60	CE 0085AP0943	(1)(2)	**20205654**

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) Star/delta starter.
(2) Model with LFL control box.

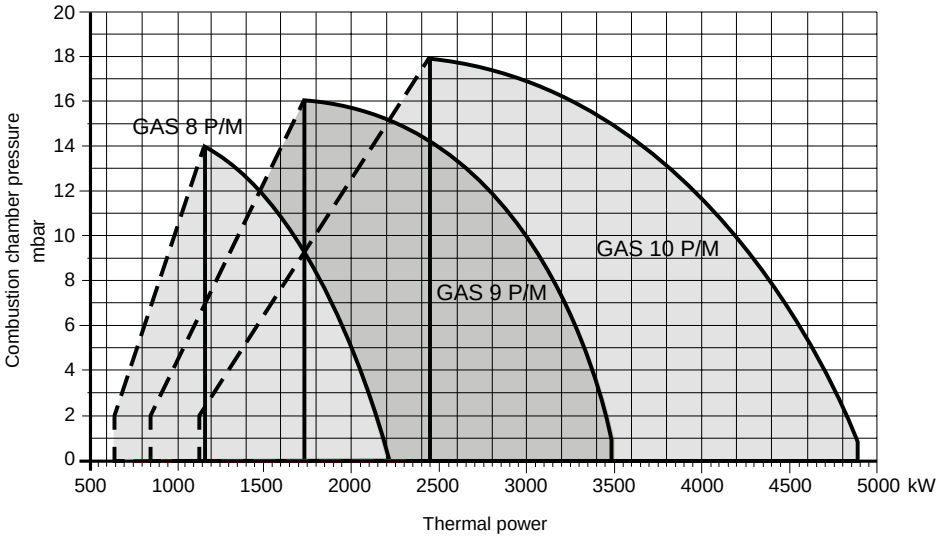
FIRING RATES



Useful firing rates for choosing the burner

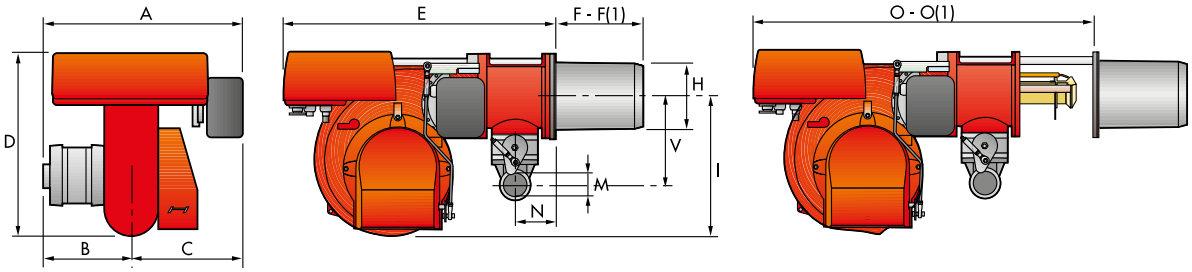
Modulation range

Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

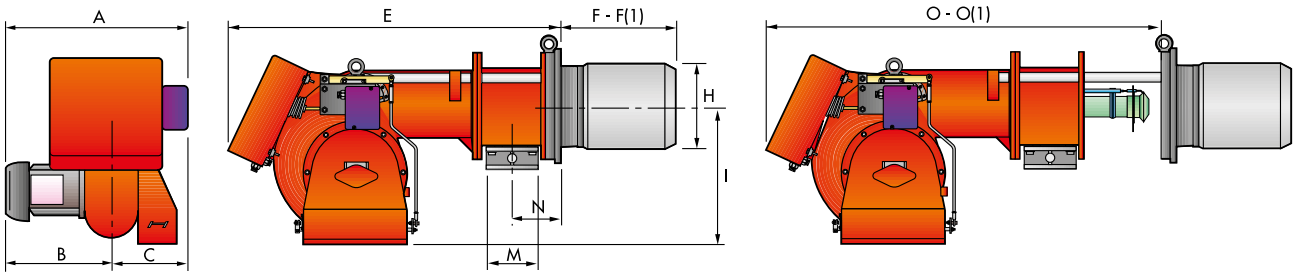


OVERALL DIMENSIONS

GAS 3-4-5-6-7 P/M

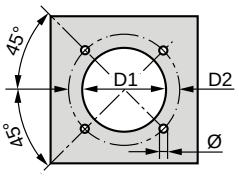


GAS 8-9-10 P/M

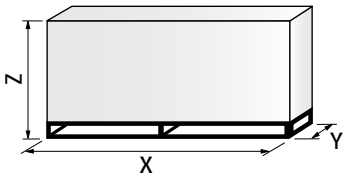


Description	A mm	B mm	C mm	D mm	E mm	F-F(1)	H mm	I mm	M mm	N mm	O-O(1) mm	V mm
GAS 3 P/M	585	205	380	397	610	185	140	292	1”1/2	97	775	225
GAS 4 P/M	585	205	380	397	610	187	150	292	1”1/2	97	775	225
GAS 5 P/M	581	226	355	437	645	207	155	332	1”1/2	97	810	225
GAS 6 P/M	628	258	370	485	770	227	175	370	Rp 2”	131	966	250
GAS 7 P/M	758	358	400	590	920	240	220	445	Rp 2”	140	1142	305
GAS 8 P/M	755	396	359	-	1090	391	260	467	DN 80	158	1541-1644	-
GAS 9 P/M	817	447	370	-	1200	444	295	496	DN 80	168	1627-1757	-
GAS 10 P/M	917	508	409	-	1320	476	336	525	DN 80	203	1730-1860	-

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
GAS 3 P/M	155	226	M10
GAS 4 P/M	165	226	M10
GAS 5 P/M	165	226	M10
GAS 6 P/M	185	276	M12
GAS 7 P/M	230	325	M12
GAS 8 P/M	265	368	M16
GAS 9 P/M	300	368	M18
GAS 10 P/M	350	438	M20



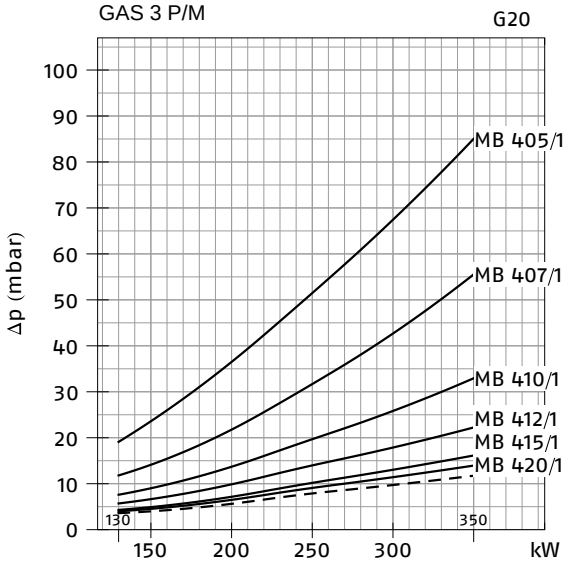
Description	X (1) mm	Y mm	Z mm	Net weight kg
GAS 3 P/M	930	705	555	37
GAS 4 P/M	930	705	555	43
GAS 5 P/M	930	705	555	46
GAS 6 P/M	1045	705	555	63
GAS 7 P/M	1400	850	650	101
GAS 8 P/M	1740	990	950	195
GAS 9 P/M	2040	1180	1125	240
GAS 10 P/M	2040	1180	1125	310

(1) Dimension with standard and extended head.

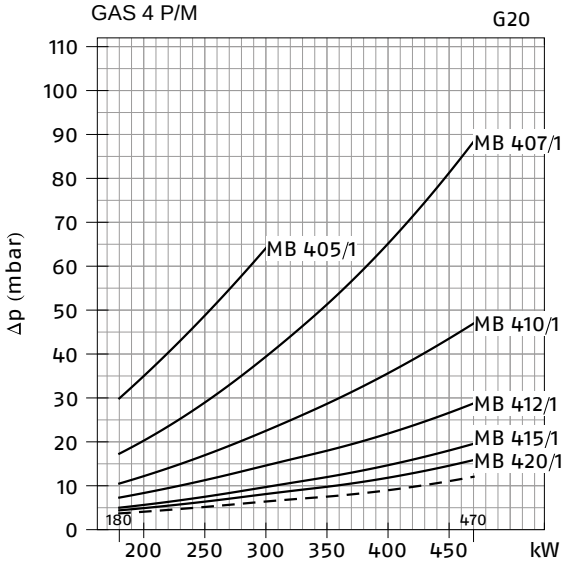
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

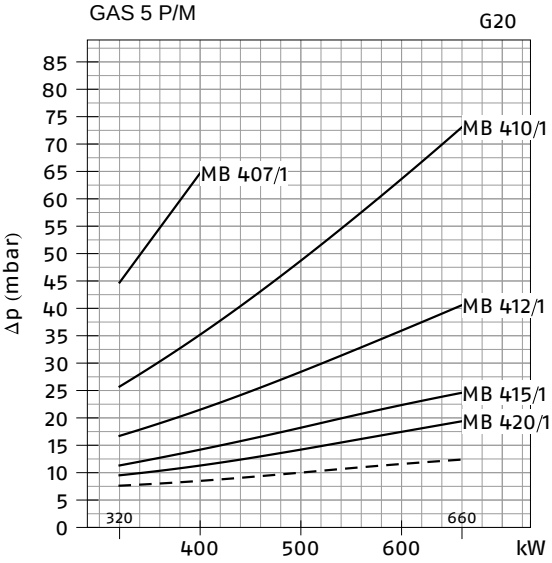
GAS 3 P/M



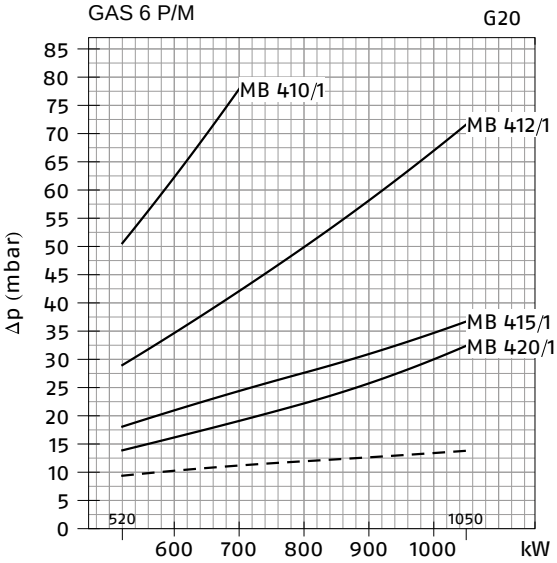
GAS 4 P/M



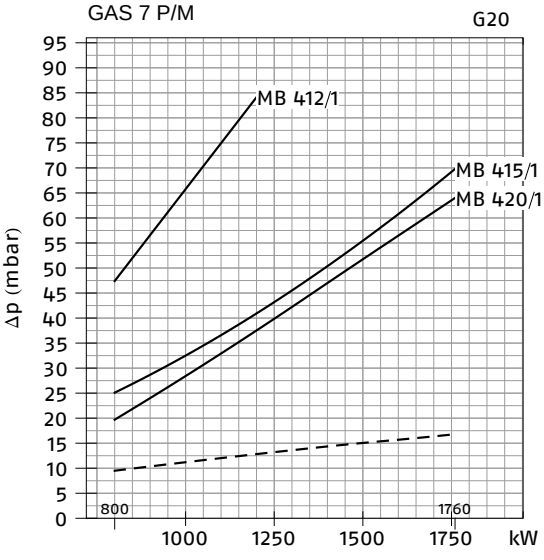
GAS 5 P/M



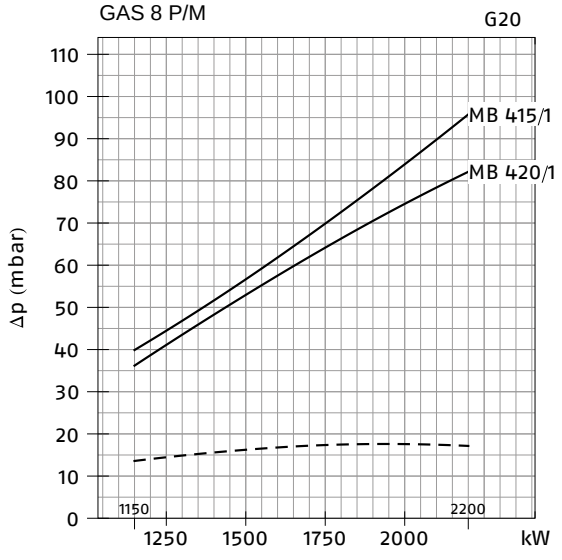
GAS 6 P/M



GAS 7 P/M



GAS 8 P/M

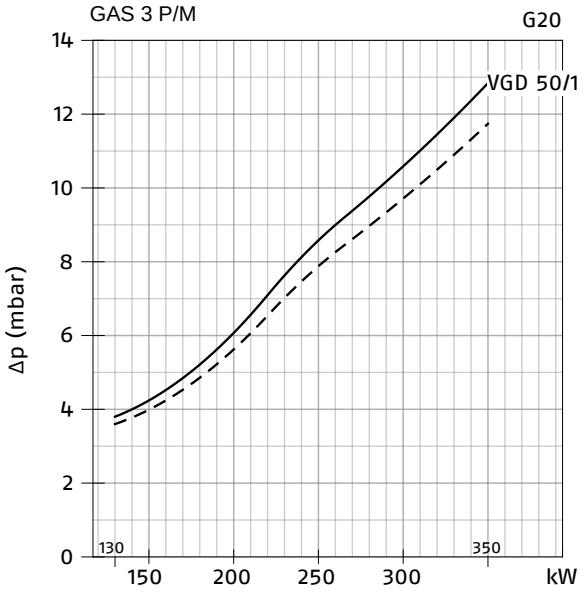


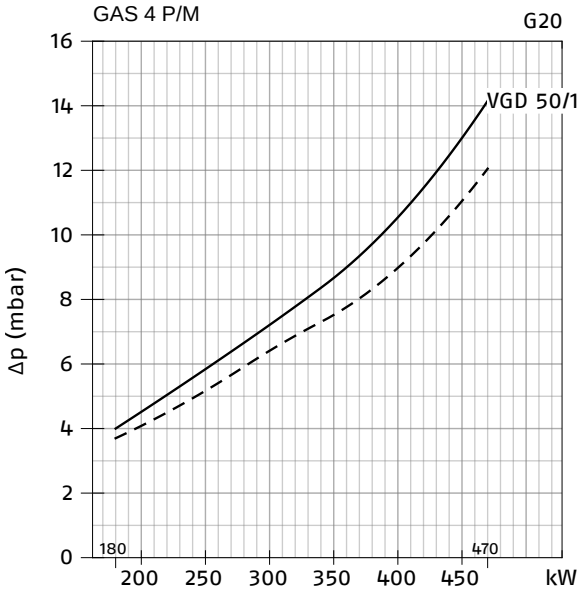
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

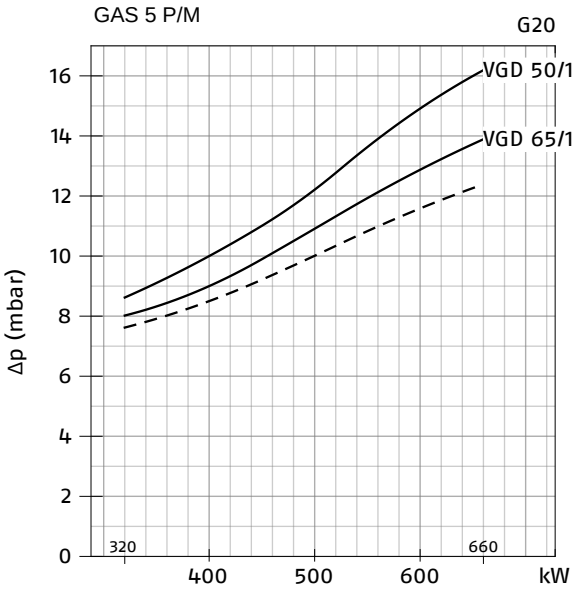
——— Combustion head + gas train

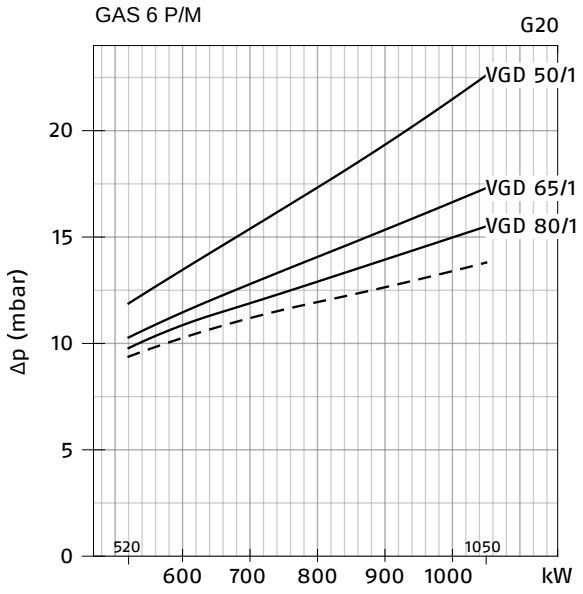
- - - - Combustion head

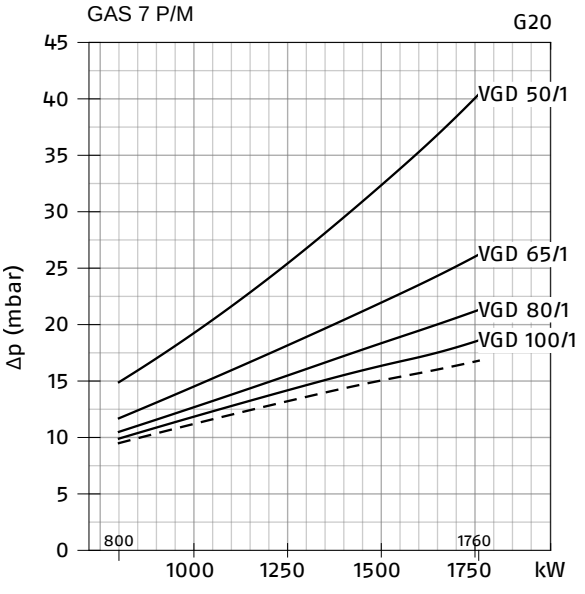
VGD SERIES GAS TRAIN

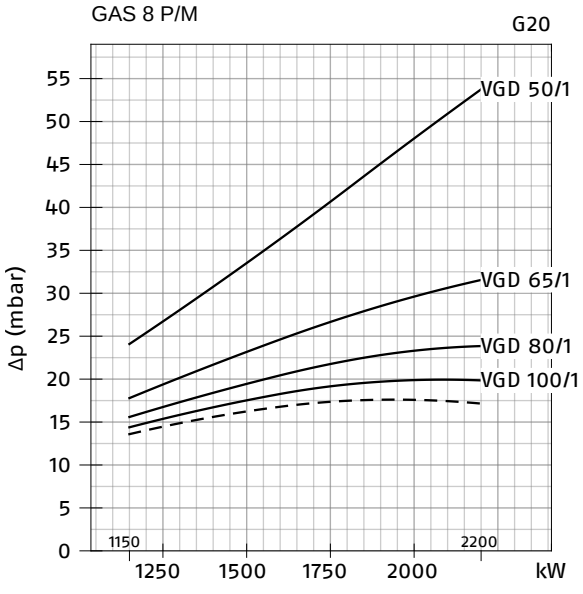








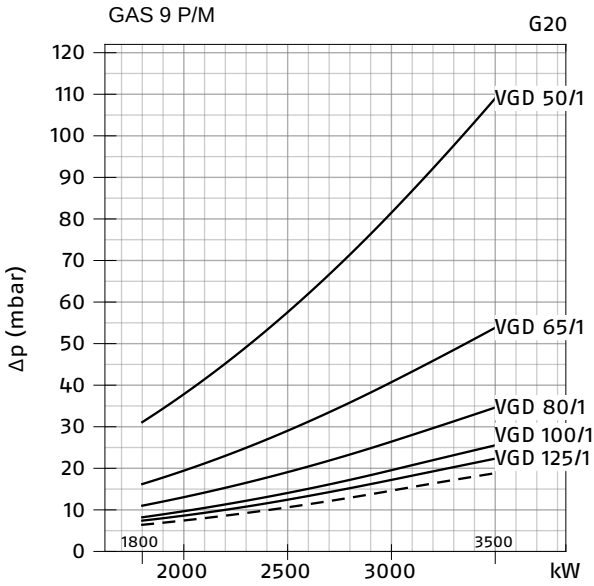


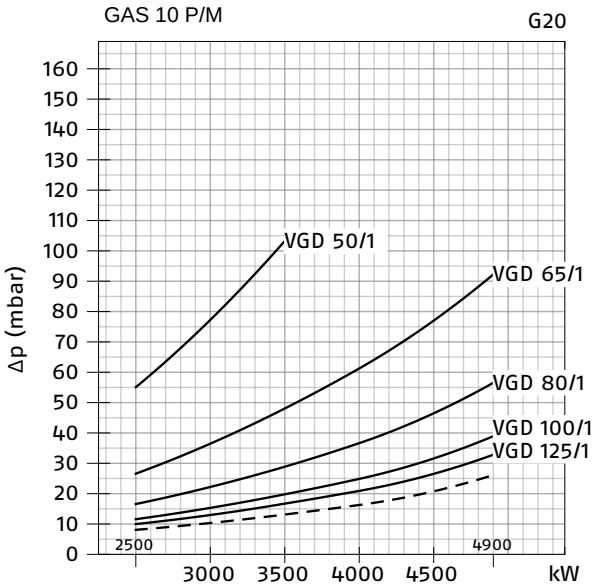


Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

——— Combustion head + gas train

- - - - Combustion head





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

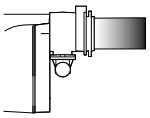
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)							
						GAS 3 P/M	GAS 4 P/M	GAS 5 P/M	GAS 6 P/M	GAS 7 P/M	GAS 8 P/M	GAS 9 P/M	GAS 10 P/M
MB SERIES ONE STAGE GAS TRAIN													
MB 405/1-RT 20	**3970500***		Rp ¾”	-	3010123	3000824		●	●	●	●	●	●
MB 407/1-RT 20	**3970553***		Rp ¾”	-	3010123	3000824			●	●	●	●	●
MB 407/1-RT 52	**3970599***		Rp ¾”	-	3010123	3000824			●	●	●	●	●
MB 407/1-RSM 20	**3970229***		Rp ¾”	-	3010123	3000824			●	●	●	●	●
MB 410/1-RT 52	**3970258***		Rp 1” ¼	-	3010123	3010124			3010126	●	●	●	●
MB 410/1-RT 20	**3970554***		Rp ¾”	-	3010123	3000824			3000824+ 3000843	●	●	●	●
MB 410/1-RT 52	**3970600***		Rp ¾”	-	3010123	3000824				●	●	●	●
MB 410/1-RSM 20	**3970230***		Rp ¾”	-	3010123	3000824				●	●	●	●
MB 412/1-RT 52	**3970256***		Rp 1” ½	-	3010123	□	□	□	3000843		●	●	●
MB 412/1-RT 20	**3970144***		Rp 1” ½	-	3010123	□	□	□			●	●	●
MB 412/1 CT RT 20	**3970197****		Rp 1” ½	♦	♦	□	□	□	3000843		●	●	●
MB 412/1-RSM 20	**3970231***		Rp 1” ½	-	3010123	□	□	□			●	●	●
MB 415/1-RT 30	**3970180***		Rp 1” ½	-	3010123	□	□	□	3000843		3000843+ 3010495+ 3000826	●	●
MB 415/1 CT RT 30	**3970198****		Rp 1” ½	♦	♦	□	□	□				●	●
MB 415/1-RT 52	**3970250***		Rp 1” ½	-	3010123	□	□	□	3000843			●	●
MB 415/1 CT RT 52	**3970253****		Rp 1” ½	♦	♦	□	□	□				●	●
MB 415/1-RSM 30	**3970232***		Rp 1” ½	-	3010123	□	□	□				●	●
MB 420/1-RT 30	**3970181***		Rp 2”	-	3010123	3000822			□	□	3010495+ 3000826	●	●
MB 420/1 CT RT 30	**3970182****		Rp 2”	♦	♦	3000822			□	□		●	●
MB 420/1-RT 52	**3970257***		Rp 2”	-	3010123	3000822			□	□		●	●
MB 420/1 CT RT 52	**3970252****		Rp 2”	♦	♦	3000822			□	□		●	●
MB 420/1-RSM 30	**3970233***		Rp 2”	-	3010123	3000822			□	□		●	●
MB 420/1 CT RSM 30	**3970234****		Rp 2”	♦	♦	3000822			□	□		●	●
VGD SERIES ONE STAGE GAS TRAIN													
VGD 50/1-RT 122	**20137718***		Rp 2”	-	3010123+ 20186306	3000822			□	□	3010495+3000826		
VGD 50/1 CT RT 122	**20169190****		Rp 2”	♦	♦	3000822			□	□	3010495+3000826		
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826+3000822			3000826		3000832		
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826+3000822			3000826		3000832		
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	3000826+3000822			3000826		3000832		
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	3000826+3000822			3000826		3000832		
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	●	●	●	●	●	3010127		

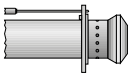
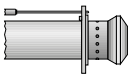
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)							
						GAS 3 P/M	GAS 4 P/M	GAS 5 P/M	GAS 6 P/M	GAS 7 P/M	GAS 8 P/M	GAS 9 P/M	GAS 10 P/M
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	●	●	●	●	●	3010127		
VGD 125/1-FT 122	**20169195***		DN125	-	(6)	●	●	●	●	●	(6)		

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
(6) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	GAS 3 P/M	Standard head length = 185 mm - Extended head length = 320 mm		**3000605**
	GAS 4 P/M	Standard head length = 187 mm - Extended head length = 320 mm		**3000606**
	GAS 5 P/M	Standard head length = 207 mm - Extended head length = 365 mm		**3000607**
	GAS 6 P/M	Standard head length = 227 mm - Extended head length = 360 mm		**3000608**
	GAS 7 P/M	Standard head length = 240 mm - Extended head length = 400 mm		**3000678**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	GAS 3-6 P/M	Spacer thickness S = 142 mm		**3000755**
	GAS 7-8 P/M	Spacer thickness S = 102 mm		**3000722**
	GAS 9 P/M	Spacer thickness S = 122 mm		**3000723**
	GAS 10 P/M	Spacer thickness S = 130 mm		**3000751**
	GAS 3-7 P/M	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010030**
		SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		
	GAS 3-6 P/M	Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm E = 770 mm		**3010403**
	GAS 7-8 P/M	Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm E = 930 mm		**3010404**
	All models	Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm E = 1345 mm		**3010376**
	GAS 8 P/M GAS 10 P/M	BURNER SUPPORT For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.		**3000731**
		POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
	GAS 3-7 P/M	RWF 50.2 - Basic version with 3 position output.		**20105445**
		RWF 55.5 - Complete with RS-485 interface.		**20105717**
	GAS 8-9-10 P/M	RWF 50.2 - Basic version with 3 position output.		**20100018**
		RWF 55.5 - Complete with RS-485 interface.		**20101965**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**

Drawing	Burner model	Specification	Note	Code
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
		POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		
	GAS 3-7 P/M	Three-pole potentiometer kit code.		**20096322**
	GAS 8-9-10 P/M	Three-pole potentiometer kit code.		**3010021**
	GAS 9 P/M	220-230 V CONVERSION KIT This kit is required to convert the 380-400 V models into the 220 or 230 V version.		**20163347**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	GAS 3 P/M	Kit code for standard head.	(1)	**3000657**
	GAS 3 P/M	Kit code for extended head.	(1)	**3000807**
	GAS 4 P/M	Kit code for standard head.	(1)	**3000658**
	GAS 4 P/M	Kit code for extended head.	(1)	**3000808**
	GAS 5 P/M	Kit code for standard head.	(1)	**3000659**
	GAS 5 P/M	Kit code for extended head.	(1)	**3000809**
	GAS 6 P/M	Kit code for standard head.	(1)	**3000753**
	GAS 6 P/M	Kit code for extended head.	(1)	**3000810**
	GAS 7 P/M	Kit code for standard head.	(1)	**3000806**
	GAS 7 P/M	Kit code for extended head.	(1)	**3000811**
	GAS 8 P/M	Kit code for standard head.	(1)	**3000875**
	GAS 8 P/M	Kit code for extended head.	(1)	**3010029**
	GAS 9 P/M	Kit code for standard head.	(1)	**3000876**
	GAS 9 P/M	Kit code for extended head.	(1)	**3010028**
	GAS 10 P/M	Kit code for standard head.	(1)	**3010152**
	GAS 10 P/M	Kit code for extended head.	(1)	**3010153**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.		
	GAS 3 P/M	Kit code for standard head.	(1)	**3000742**
	GAS 4 P/M	Kit code for standard head.	(1)	**3000754**
	GAS 5 P/M	Kit code for standard head.	(1)	**3000759**
	GAS 6 P/M	Kit code for standard head.	(1)	**3000768**
	GAS 7 P/M	Kit code for standard head.	(1)	**3000769**
	GAS 8 P/M	Kit code for standard head.	(2)	**(2)**
	GAS 9 P/M	Kit code for standard and extended head.	(1)	**3010298**
	GAS 10 P/M	Kit code for standard and extended head.	(1)	**3010300**

(1) Without CE certification.
(2) On demand.

STATE OF SUPPLY

Monoblock forced draught gas burner, two stage progressive operation or modulating with a kit, made up of:
- Air suction circuit
- Fan with forward curved blades
- Air damper for air setting controlled by a servomotor
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Servomotor for air and gas delivery regulation
- Maximum gas pressure switch (except for GAS 3 P/M model and GAS 6 P/M code 3753681)
- Minimum air pressure switch
- Single phase or three phases electrical motor
- Ionisation probe
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) protection level.

STANDARD EQUIPMENT

– 1 gas train flange
– 1 flange gasket
– 1 insulating screen
– 8 screws for fixing the burner flange to the boiler (12 for GAS 8 P/M - GAS 9 P/M and GAS 10 P/M)
– 4 wiring looms for electrical connections
– 1 Star/delta starter (for GAS 8 P/M - GAS 9 P/M and GAS 10 P/M)
– 2 wiring looms for electrical connections to the Star/delta starter (for GAS 8 P/M - GAS 9 P/M and GAS 10 P/M)
– 8 washers (for GAS 8 P/M - GAS 9 P/M and GAS 10 P/M)
– 2 bar extensions (only for extended head versions of GAS 8 P/M - GAS 9 P/M and GAS 10 P/M)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

LIGHT OIL BURNERS

LOW NOx

Low NOx emissions, lower than Class 3 of European Standard EN 267 (NOx lower than 120 mg/kWh)

ONE STAGE



RDB BG

RDB 2.2R BG BLU (18-35 kW)
RDB 3.2R BG BLU (35-70 kW)

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GULLIVER BGK

BGK0.1 (22.5-35.3 kW)
BGK1 (17.8-35.6 kW)
BGK2 (32-59.3 kW)
BGK3 (45-73 kW)

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RL 25/1 BLU

RL 25/1 BLU TC FS1 (115-260 kW)
RL 25/1 BLU TL FS1 (115-260 kW)

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TWO STAGE



GULLIVER BGD

BG6.1D (53,8/65,8-104 kW)
BG6.1D TL (53,8/65,8-104 kW)
BG7.1D (77,7/92-149,5 kW)

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RL 22-42 BLU

RL 22 BLU TC FS1 (89/116-261 kW)
RL 22 BLU TL FS1 (89/116-261 kW)
RL 32 BLU TC FS1 (166/228-356 kW)
RL 32 BLU TL FS1 (166/228-356 kW)
RL 42 BLU TC FS1 (191/323-598 kW)

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MODULATING MECHANICAL CAM



RL/M BLU

RL 55/M BLU TC FS1 (190/356-712 kW)
RL 85/M BLU TC FS1 (223/594-1023 kW)
RL 145/M BLU TC FS1 (450/949 - 1637 kW)

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Low NOx one stage light oil burners

RDB BG



- One-stage light oil burners with low NOx emissions according to Class 3 of European standard EN 267 (NOx lower than 120 mg/kWh*)

RDB BG BLU series offers a new technical solutions for gasoil residential applications, developed to reduce the emissions level below the new limits set by the latest European environmental regulation, the Energy-related Product Directive 2018 (ErP).
The new RDB BG is developed on two platforms , the 2.2R and the 3.2R, covering a power range from 18 up to 70 kW with a complete blue flame combustion.
Thanks to their compact size and great ventilation performance, the RDB BG represent the ideal matching with compact, high efficiency heating boilers.
Moreover, the burners have been developed on a flexible platform , allowing a complete customization for the specific need of any customer. All the most critical combustion parameters can be tailor-fitted to the peculiar boiler characteristics
The RDB BG BLU are available also for kerosene fuel.

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 267, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

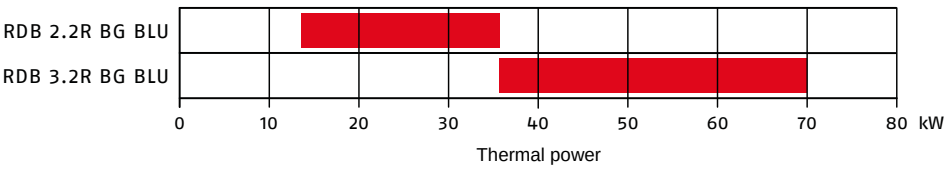
TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
RDB 2.2R BG BLU	18-35	1.52-2.95	0.16	1/230/50	230/50	(1)	**(2)**
RDB 3.2R BG BLU	35-70	3-5.9	0.24	1/230/50	230/50	(1)	**(2)**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) All burner models are OEM's customized.
(2) Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

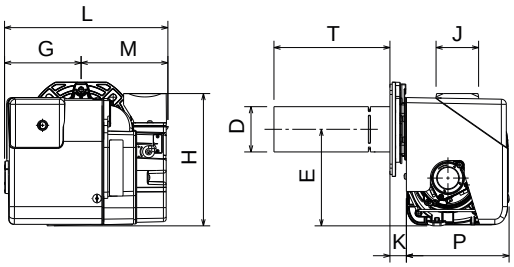
FIRING RATES

The RDB BG BLU burner, depending on the backpressure available, can be set at the specific power output required by the customer's boiler.

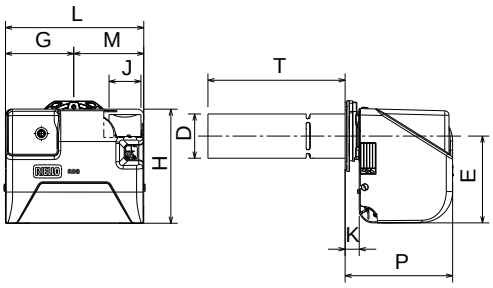


OVERALL DIMENSIONS

RDB 2.2R BG BLU

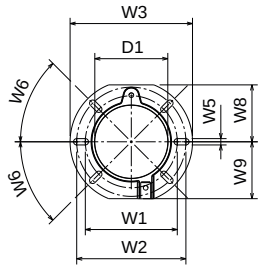


RDB 3.2R BG BLU

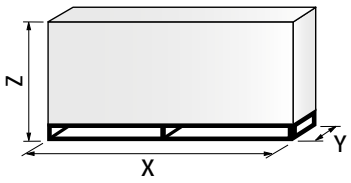


Description	D * mm	E mm	G mm	H mm	K mm	L mm	M mm	P mm	T * mm	J mm
RDB 2.2R BG BLU	80	170	135	235	29	288	153	210	204	75
RDB 3.2R BG BLU	97	204	160	268	33	325	165	253	258	75

(*) Head dimensions could vary depending on performance required by the matching with the boiler.



Description	D1 mm	W1 mm	W2 mm	W3 mm	W5 mm	W8 mm	W9 mm
RDB 2.2R BG BLU	106	150	156	189	11	83	83
RDB 3.2R BG BLU	105	146	160	190	11	83	83



Description	X mm	Y mm	Z mm	Net weight kg
RDB 2.2R BG BLU	465	300	315	10
RDB 3.2R BG BLU	670	365	370	13

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	**BALANCED-CONVENTIONAL FLUE CONVERSION KIT** All the RDB series models are easily converted from conventional flue to balanced flue, by replacing the plastic screen on the air intake with the connector for the air supply pipe.	(1)	**(2)**
	All models	**LIGHT OIL FILTER** For cleaning light oil from dirty particles and impurities filters with the following features are available. Filtering degree 60 µm (filter made up of aluminium body and stainless steel filtering cartridge).	(3)	**3006561**
	All models	Filtering degree 60 µm (filter made up of aluminium cover, plastic tank and nylon filtering cartridge).	(4)	**3075011**
	All models	**LIGHT OIL FILTER/DEGASSING UNIT** To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.		**3000926**

(1) Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.
(2) On demand.
(3) Available singularly.
(4) Available in packaging of 50 pieces.

STATE OF SUPPLY

Completely automatic monobloc light oil one stage operation burner, made up of:
– Fan with forward inclined blades
– Air damper with external adjustment, with no need to remove the cover
– Air-tight air circuit
– BG Low NOx Combustion head
– Geared pump for fuel supply, fitted with filter
– Pressure regulator
– Fuel pre-heater
– Fuel feed solenoid valve incorporated in the pump
– UV sensor for flame detection
– Digital equipment for flame control
– Light oil nozzle
– Stop-drop hydraulic system
– IP 20 electrical protection level

STANDARD EQUIPMENT

(to be customized according to customer needs):
– Flexible pipes for connection to the light oil supply line
– Nipples for connection to the pump
– Flange, screws and nuts for fixing
– Thermal screen
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Low NOx one stage light oil and biofuel burners

GULLIVER BGK



- Low NOx one stage light oil and biofuel burners with low NOx emissions according to Class 3 of European standard EN 267 (NOx lower than 120 mg/kWh*)

Riello Gulliver BGK series of one stage light oil burners, suitable also for combustion of biofuel up to 100%, is a complete range of Low NOx products developed to respond to any request for home heating, conforming to the strictest standards regarding the reduction of polluting emissions.
The BGK series is available in four models with an output ranging from 17.8 to 73 kW, divided in two different structures.
All the models use the same components designed by Riello for the Gulliver series.
The high quality level guarantees safe working. The Gulliver BGK burners are fitted with a microprocessor-based control box, with diagnostic functions.
In developing these burners, special attention was paid to reducing noise, to 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 European EN 267 Standard and conform to European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.
All the Gulliver BGK series of burners are fired 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.

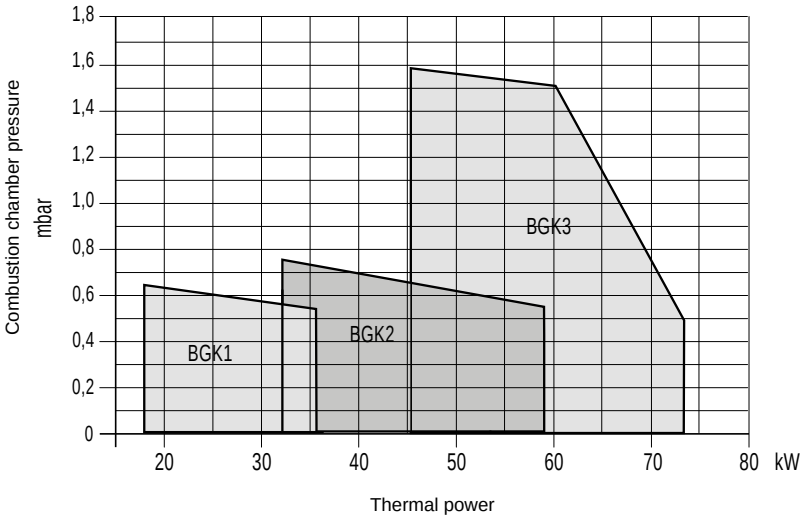
* The emission value is determined, according to the provisions of standard EN 267, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
BURNERS MODELS FOR COMBUSTION OF LIGHT OIL							
BGK0.1	22.5-35.3	1.9-2.95	0.250	1/230/50	230/50	(1)	**3737512**
BGK1	17.8-35.6	1.5-3	0.250	1/230/50	230/50	(1)	**3737066**
BGK2	32-59.3	2.7-5	0.250	1/230/50	230/50	(1)	**3737456**
BGK3	45-73	3.8-6.15	0.460	1/230/50	230/50	(1)	**20012189**
BURNERS MODELS FOR COMBUSTION OF BIOFUEL UP TO 100%							
BGK1 B100	17.8-35.6	1.5-3	0.250	1/230/50	230/50	(2)	**20204457**
BGK2 B100	32-59.3	2.7-5	0.250	1/230/50	230/50	(2)	**20204458**
BGK3 B100	45-73	3.8-6.15	0.460	1/230/50	230/50	(2)	**20204459**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) For combustion of Light Oil
(2) For combustion of Biodiesel up to 100% (B100) or of Light Oil /Biodiesel blends (it is permitted the use of FAME Biodiesel according to EN 14214 or HVO according to EN 15940).
The burner is also suitable for the combustion of Light Oil only.
Blend with a FAME percentage higher than 7% in the HVO is not permitted.

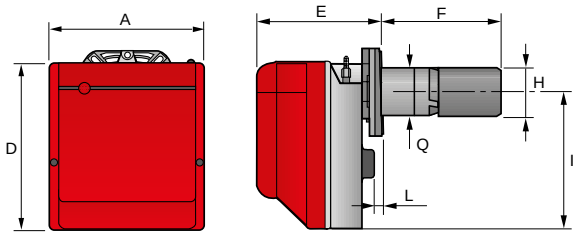
FIRING RATES



Useful working field for choosing the burner

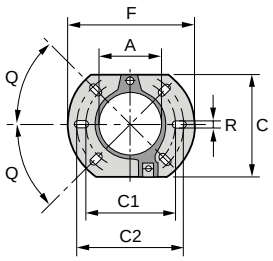
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

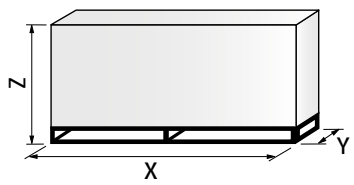


Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm	Q mm
BGK1	255	280	202	192	87	230	10	89
BGK2	255	280	202	197	90	230	10	89
BGK3	300	345	230	222	90	285	12	89

NOTE: boiler door must have a max. thickness of 70 mm for BGK1 and 90 mm for BGK2 and BGK3, refractory lining included.



Description	A mm	C mm	C1 mm	C2 mm	F mm	Q mm	R mm
BGK1	106	166	140	168	189	45°	11
BGK2	106	166	140	168	189	45°	11
BGK3	106	166	140	168	189	45°	11



Description	X mm	Y mm	Z mm	Net weight kg
BGK1	533	288	340	13
BGK2	533	288	340	13
BGK3	430	345	430	16,5

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	**LIGHT OIL FILTER** For cleaning light oil from dirty particles and impurities filters with the following features are available. Filtering degree 60 µm (filter made up of aluminium body and stainless steel filtering cartridge).	(1)	**3006561**
	All models	Filtering degree 60 µm (filter made up of aluminium cover, plastic tank and nylon filtering cartridge).	(2)	**3075011**
	All models	**LIGHT OIL FILTER/DEGASSING UNIT** To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.		**3000926**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		**3000945**

(1) Available singularly.
(2) Available in packaging of 50 pieces.

STATE OF SUPPLY

Completely automatic monobloc light oil burners, with one stage operation fitted with:
– Fan with forward inclined blades
– Sound deadening cover
– Air damper with external adjustment, with no need to remove the cover
– Single phase electric motor 230 V, 50 Hz
– Combustion head, fitted with:
  • stainless steel end cone resistant to high temperatures
  • ignition electrodes
  • flame stability disk
– Geared pump for fuel supply, fitted with:
  • filter
  • pressure regulator
  • connectors for installing a pressure gauge and vacuometer
  • internal by-pass for preparing for single pipe installation
– Post-ignition of 3 seconds after safety time
– Fuel feed solenoid incorporated in the pump
– Photocell for flame detection with optical fibre
– Protection filter against radio interference (included into burner safety control box)
– Light oil nozzle
– IP X0D (IP 40) electric protection level
– PTC fuel heater

STANDARD EQUIPMENT

– Flange with insulating gasket
– Screws and nuts for flange
– Recirculating pipe
– Four screws and nuts for flange to be fixed to boiler
– Remote control release kit
– Two flexible oil pipes with nipples
– 7-pin plug kit
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Low NOx two stage light oil and biofuel burners

GULLIVER BGD



- Two stage light oil and biofuel burners with low NOx emissions according to Class 3 of European standard EN 267 (NOx lower than 120 mg/kWh*)

Riello Gulliver BGD series of two stage light oil burners, suitable also for combustion of biofuel up to 100%, is a complete range of Low NOx products, developed to respond to any request for home heating, conforming to the strictest standards governing the reduction of polluting emissions. The Gulliver BGD series is available in two different models, with an output ranging from 53,8 to 149,5 kW, divided in two different structures.
All the models use the same components designed by Riello for the Gulliver series. The high quality level guarantees safe working. The Gulliver BGD burners are fitted with a microprocessor-based control box, with diagnostic functions.
In developing these burners, special attention was paid to reducing noise, to the ease of installation and adjustment, to obtaining the smallest size possible to fit into any sort of boiler available on the market.
The two stage operation guarantees high level of thermal unit efficiency.
All the models are approved by the EN 267 European Standard and conform to European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency. All the Gulliver BGD burners are fired 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.

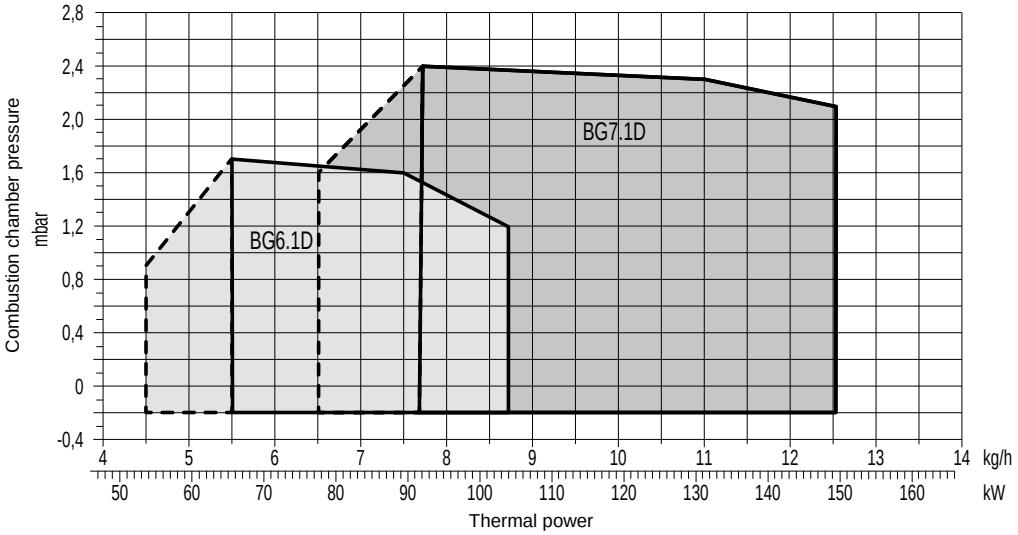
* The emission value is determined, according to the provisions of standard EN 267, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
BURNERS MODELS FOR COMBUSTION OF LIGHT OIL							
BG6.1D	53.8/65.8-104	4.5/5.5-8.7	0.39	1/230/50	230/50	(1)	**20015693**
BG7.1D	77.7/92-149.5	6.5/7.7-12.5	0.47	1/230/50	230/50	(1)	**20015696**
BURNERS MODELS FOR COMBUSTION OF BIOFUEL UP TO 100%							
BG6.1D B100	53.8/65.8-104	4.5/5.5-8.7	0.39	1/230/50	230/50	(2)	**20204460**
BG7.1D B100	77.7/92-149.5	6.5/7.7-12.5	0.47	1/230/50	230/50	(2)	**20204461**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) For combustion of Light Oil
(2) For combustion of Biodiesel up to 100% (B100) or of Light Oil /Biodiesel blends (it is permitted the use of FAME Biodiesel according to EN 14214 or HVO according to EN 15940).
The burner is also suitable for the combustion of Light Oil only.
Blend with a FAME percentage higher than 7% in the HVO is not permitted.

FIRING RATES

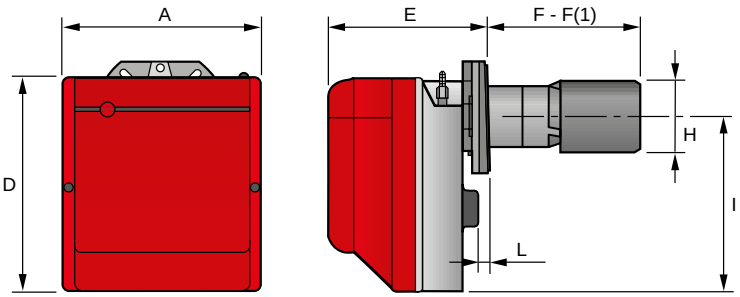


Useful working field for choosing the burner

1st stage operation range

Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

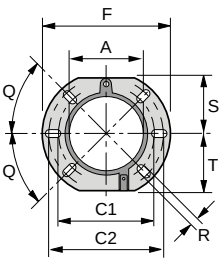
OVERALL DIMENSIONS



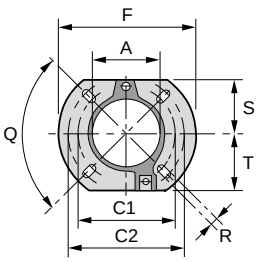
Description	A mm	D mm	E mm	F mm	F (1) mm	H mm	I mm	L mm
BG6.1D	300	345	228	284	363	131	285	12
BG7.1D	300	345	247	394	-	165	285	12

(1) Length with extended combustion head.

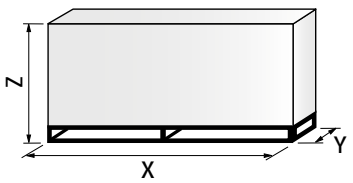
BG6.1D



BG7.1D



Description	A mm	C1 mm	C2 mm	F mm	Q mm	R mm	S mm	T mm
BG6.1D	106	140	170	189	45°	11	83	83
BG7.1D	127	160	190	213	90°	11	99	99



Description	X mm	Y mm	Z mm	Net weight kg
BG6.1D	600	345	430	20
BG7.1D	600	345	430	20

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	**LIGHT OIL FILTER** For cleaning light oil from dirty particles and impurities filters with the following features are available. Filtering degree 60 µm (filter made up of aluminium body and stainless steel filtering cartridge).	(1)	**3006561**
	All models	Filtering degree 60 µm (filter made up of aluminium cover, plastic tank and nylon filtering cartridge).	(2)	**3075011**
	All models	**LIGHT OIL FILTER/DEGASSING UNIT** To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.		**3000926**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		**3000945**

(1) Available singularly.
(2) Available in packaging of 50 pieces.

STATE OF SUPPLY

Completely automatic monobloc light oil burners, two stage operation, made up of:
– Fan with forward curve blades
– Cover lined with sound-proofing material
– Air damper completely closed in stand by
– Air damper, with 1st and 2nd stage adjustment (2nd stage adjustment without removing the casing)
– Single phase electric motor 230 V, 50 Hz
– Combustion head fitted with:
  • stainless steel head cone, resistant to high temperatures
  • ignition electrodes
  • flame stability disk
– Geared pump for fuel supply, fitted with:
  • filter
  • pressure regulator
  • attachments for fitting a pressure gauge and vacuum meter
  • internal by-pass for preparing for single-pipe installations
– Fuel feed solenoid valve incorporated in the pump
– IRD for flame detection
– Microprocessor-based burner safety control box MO 550, with diagnostic and remote control release functions
– Protection filter against radio interference (included into burner safety control box)
– Light oil nozzle
– IP X0D (IP 40) protection level

STANDARD EQUIPMENT

– Two flexible pipes for connection to the light oil supply line
– Two nipples for connection to the pump
– Flange, screws and nuts for fixing
– Thermal screen
– 4-pin plug
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Low NOx one stage light oil burners

RL 25/1 BLU



- One-stage light oil burners with low NOx emissions according to Class 3 of European standard EN 267 (NOx lower than 120 mg/kWh*)

RL/1 BLU series represents Riello's last step of innovation in terms of Low NOx technology applied to light oil burners.
The series includes one model, with an output ranging from 115 to 260 kW. This new burner has been re-designed for use in hot or superheated water boilers, hot air , steam generators or diathermic oil boilers. The burners are fitted with a microprocessor-based control panel, which supplies indication of burner status and fault causes.
A new , more compact and handable case has been designed , keeping overall dimensions compact in order to ensure an easier servicing and maintenance.
The elevated performance of the forward-blades fan, together with a new innovative combustion head, guarantee flexibility of use and excellent working at all firing rates always with Low NOx emissions.

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.

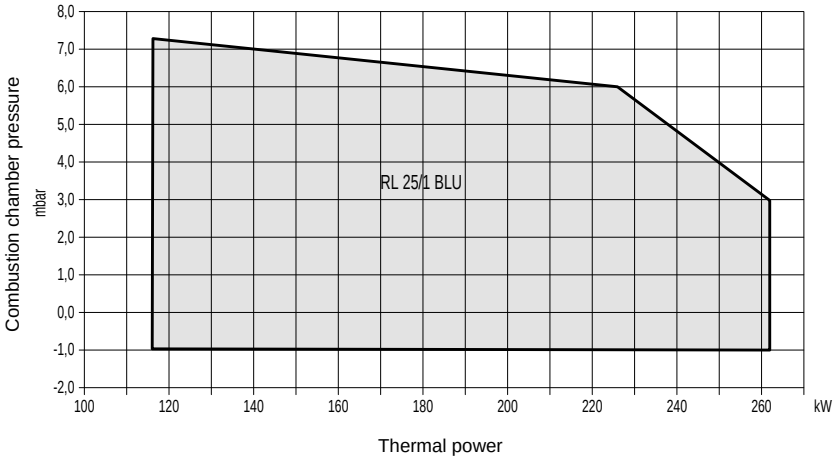
* The emission value is determined, according to the provisions of standard EN 267, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz	
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)						
RL 25/1 BLU TC FS1	115-260	10-22	0,6	1/230/50	230/50	**20156024**
RL 25/1 BLU TL FS1	115-260	10-22	0,6	1/230/50	230/50	**20157095**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

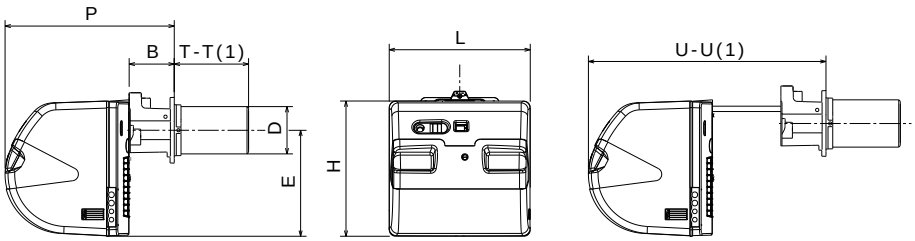
FIRING RATES



Useful working field for choosing the burner

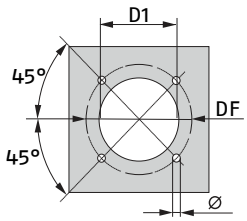
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

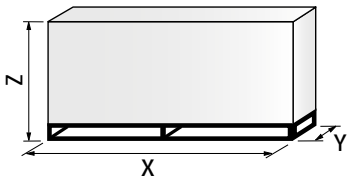


Description	B mm	D mm	E mm	L mm	H mm	P mm	U mm	T mm	T (1) mm	U (1) mm
RL 25/1 BLU	130	140	305	442	416	508	788	200	280	788

(1) Length with extended combustion head.



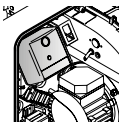
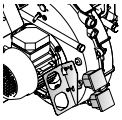
Description	D1 mm	DF mm	Ø mm
RL 25/1 BLU	160	224	M8



Description	X mm	Y mm	Z mm	Net weight kg
RL 25/1 BLU	1190	492	510	40

ACCESSORIES

Drawing	Burner model	Specification	Code
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**

Drawing	Burner model	Specification	Code
	All models	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm.	**3010055**
	All models	**CONNECTION FLANGE KIT** A kit is available for use where the burner opening on the boiler is of excessive diameter. Internal diameter = 170 mm; external diameter = 300 mm.	**3010138**
	All models	**VOLT FREE CONTACT KIT** A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit to remote the flame presence signal and the burner lockout indication.	**3010419**
	All models	**POST-VENTILATION KIT** To have 20 s ventilation after opening of thermostats chain, a special kit is available.	**3010453**
	All models	**HOURS COUNTER KIT** To measure the burner working time a hours counter kit is available.	**3010450**
	All models	**GROUND FAULT INTERRUPTER KIT** A “Ground fault interrupter kit” is available as a safety device for electrical system fault.	**3010448**
	All models	**PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES)** When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

NOZZLES

The nozzles of RL 25/1 BLU burners are chosen on the basis of the maximum output required from the application.

Drawing	Burner model	Specification			Note	Code	
		GPH	Rated delivery (kg/h)			DELAVAN TYPE 60°A	MONARCH TYPE 60°PLP
			8 bar	20 bar			
	All models	2.25	7.4	11.9	(1)	**3042134**	**3041132**
		2.50	8.2	13.4	(1)	**3042144**	**3041142**
		3.00	9.9	16.1	(1)	**3042148**	**3041152**
		3.50	11.5	18.8	(1)	**3042164**	**3041162**
		4.00	13.2	21.5	(1)	**3042174**	**3041172**
		4.50	14.8	24.0	(1)	**3042184**	**3041182**
		5.00	16.5	26.8	(1)	**3042194**	**3041192**
		5.50	18.1	29.5	(1)	**3042204**	**3041202**
		6.00	19.8	32.2	(1)	**3042214**	**3041212**

(1) Each burner needs N° 1 nozzle.

STATE OF SUPPLY

Monoblock forced draught Low NOx oil burner with one stage operation, made up of:
– Air suction circuit lined with sound-proofing material
– High performance fan with forward blades
– New Low NOx combustion head technology
– Gears pump for high pressure fuel supply
– UV sensor for flame detection
– Microprocessor-based burner safety control box, with diagnostic function
– Burner on/off switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP X0D (IP 40) electric protection level

STANDARD EQUIPMENT

– 2 flexible pipes for connection to the oil supply network
– 2 gaskets for the flexible pipes
– 2 nipples for connection to the pump
– 1 thermal screen
– 4 screws for fixing the burner flange to the boiler
– Wiring loom fittings for electrical connections
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Low NOx two stage light oil burners

RL 22-42 BLU



- Two-stage light oil burners with low NOx emissions according to Class 3 of European standard EN 267 (NOx lower than 120 mg/kWh*)

RL 22-42 BLU series represents Riello's last step of innovation in terms of Low NOx technology applied to light oil burners.
The series includes three models, with an output ranging from 116 to 598 kW. Those burners have been e-designed for use in hot or superheated water boilers, hot air, steam generators or diathermic oil boilers.
A servomotor with three adjustable positions guarantees correct air output and air damper closing when the burner is turned off. The burners are fitted with a microprocessor-based control panel, which supplies indication of burner status and fault causes.
A new, more compact and handable case has been designed, keeping overall dimensions compact in order to ensure an easier servicing and maintenance.
The elevated performance of the forward-blades fan, together with a new innovative combustion head, guarantee flexibility of use and excellent working at all firing rates always with Low NOx emissions.

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.

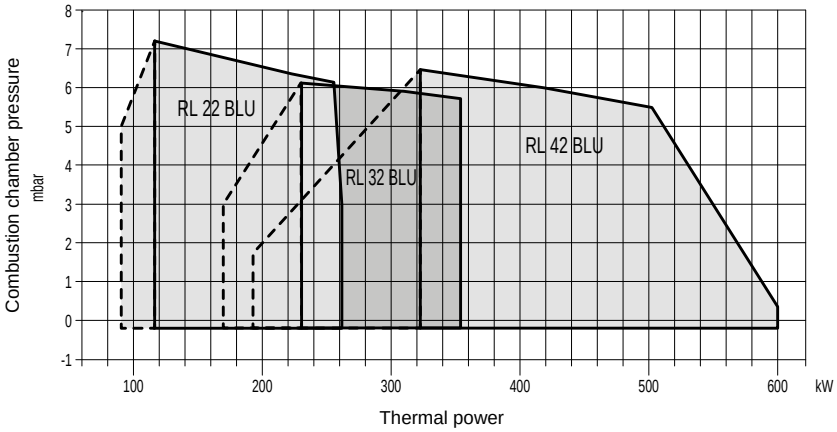
* The emission value is determined, according to the provisions of standard EN 267, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz	
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)						
RL 22 BLU TC FS1	89/116-261	7.5/9.8-22	0.6	1/230/50	230/50-60	**20027479**
RL 22 BLU TL FS1	89/116-261	7.5/9.8-22	0.6	1/230/50	230/50-60	**20029408**
RL 32 BLU TC FS1	166/228-356	14/19.2-30	0.6	1/230/50	230/50-60	**20027481**
RL 32 BLU TL FS1	166/228-356	14/19.2-30	0.6	1/230/50	230/50-60	**20029415**
RL 42 BLU TC FS1	191/323-598	16.1/27.2-50.6	1.4	3/400/50	230/50-60	**20027567**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

FIRING RATES



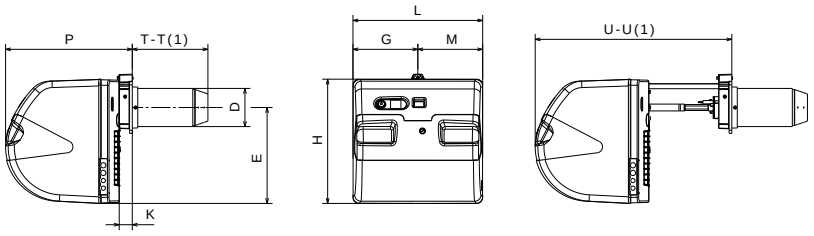
Useful working field for choosing the burner

1st stage operation range

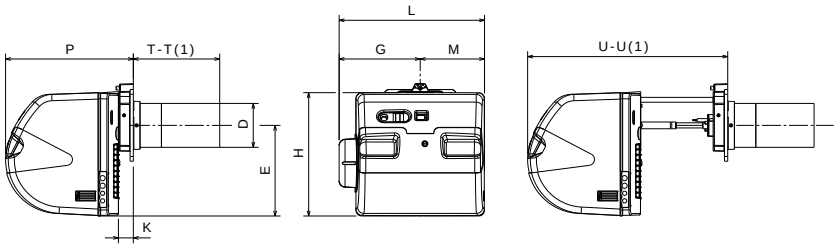
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

RL 22-32 BLU

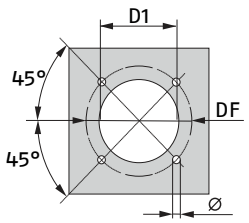


RL 42 BLU

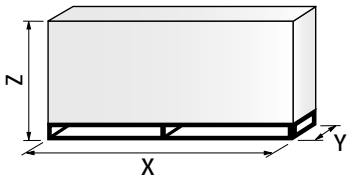


Description	D mm	E mm	G mm	K mm	L mm	M mm	H mm	P mm	T mm	T (1) mm	U (1) mm
RL 22 BLU	140	352	238	52	476	238	474	468	197	276	604-739
RL 32 BLU	140	352	238	52	476	238	474	468	217	293	604-739
RL 42 BLU	163	335	300	60	533	238	490	680	291	430	680-815

(1) Length with extended combustion head.

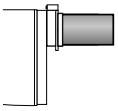


Description	D1 mm	DF mm	Ø mm
RL 22 BLU	160	224	M8
RL 32 BLU	160	224	M8
RL 42 BLU	185	275-325	M12



Description	X mm	Y mm	Z mm	Net weight kg
RL 22 BLU	850	540	550	40
RL 32 BLU	850	540	550	41
RL 42 BLU	1200	560	520	42

ACCESSORIES

Drawing	Burner model	Specification	Code
		**EXTENDED HEAD KIT** “Standard head” burners can be transformed into “extended head” versions, by using the special kit.	
	RL 22 BLU	Standard head length = 197 mm - Extended head length = 276 mm	**3010204**
	RL 32 BLU	Standard head length = 217 mm - Extended head length = 293 mm	**3010205**
	RL 42 BLU	Standard head length = 295 mm - Extended head length = 430 mm	**20024155**
		**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use.	
	RL 22-32 BLU	Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**
	RL 42 BLU	Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010404**
		**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner.	
	All models	Kit code with filter; filtering degree 50 - 75 µm.	**3010055**
	All models	**CONNECTION FLANGE KIT** A kit is available for use where the burner opening on the boiler is of excessive diameter. Internal diameter = 170 mm - External diameter = 300 mm.	**3010138**

NOZZLES

The nozzles of RL 22-42 BLU burners are chosen on the basis of the maximum output required from the application.

Drawing	Burner model	Specification			Note	Code	
		GPH	Rated delivery (kg/h)			DELAVAN TYPE 60°A	MONARCH TYPE 60°PLP
			8 bar	20 bar			
	RL 22 BLU RL 32 BLU	2.25	7.4	11.9	(1)	**3042134**	**3041132**
		2.50	8.2	13.4	(1)	**3042144**	**3041142**
		3.00	9.9	16.1	(1)	**3042148**	**3041152**
		3.50	11.5	18.8	(1)	**3042164**	**3041162**
		4.00	13.2	21.5	(1)	**3042174**	**3041172**
		4.50	14.8	24.0	(1)	**3042184**	**3041182**
		5.00	16.5	26.8	(1)	**3042194**	**3041192**
		5.50	18.1	29.5	(1)	**3042204**	**3041202**
		6.00	19.8	32.2	(1)	**3042214**	**3041212**

(1) Each burner needs N° 1 nozzle.

Drawing	Burner model	Specification			Note	Code
		GPH	Rated delivery (kg/h)			DELAVAN TYPE 45°A
			8 bar	20 bar		
	RL 42 BLU	6.00	20.4	31.7	(1)	**20011679**
		6.50	22.1	34.5	(1)	**20024162**
		7.00	23.8	37.1	(1)	**20024163**
		7.50	25.5	40.0	(1)	**20024164**
		8.00	27.2	42.5	(1)	**20024165**
		8.50	28.9	45.5	(1)	**20024166**
		9.00	30.6	48.0	(1)	**20024167**
		9.50	32.3	51.0	(1)	**20024168**
		10.00	34.0	53.5	(1)	**20024169**

(1) Each burner needs N° 1 nozzle.

STATE OF SUPPLY

Monoblock forced draught Low NOx oil burner with completely automatic two stage operation, made up of:
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (RL 22-32 BLU models) or forward blades (RL 42 BLU model)
– Air damper for air setting, driven by the adjustable servomotor
– Low emission combustion head, that can be set on the basis of required output
– Gears pump for high pressure fuel supply
– Two oil valves fitted directly on to the pump
– UV sensor for flame detection
– Microprocessor-based burner safety control box, with diagnostic function
– Burner on/off switch
– Manual high/low flame switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 electric protection level

STANDARD EQUIPMENT

– 2 flexible pipes for connection to the oil supply network
– 2 gaskets for the flexible pipes
– 2 nipples for connection to the pump
– 1 thermal screen
– 4 screws for fixing the burner flange to the boiler
– Wiring loom fittings for electrical connections
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Low NOx modulating light oil burners

RL/M BLU



- Progressive two-stage or modulating light oil burners with low NOx emissions according to Class 3 of European standard EN 267 (NOx lower than 120 mg/kWh*)

RL 55-145/M BLU burners series covers a firing range from 190 to 1637 kW, and it has been designed for use in hot or superheated water boilers, hot air or steam generators and diathermic oil boilers. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RL 55-145/M BLU burners series guarantees high efficiency levels in all applications, thus reducing fuel consumption and running costs.
Sound emissions optimisation is guaranteed by the use of fans with reverse curve blades and sound deadening material incorporated in the air suction circuit.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.

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.

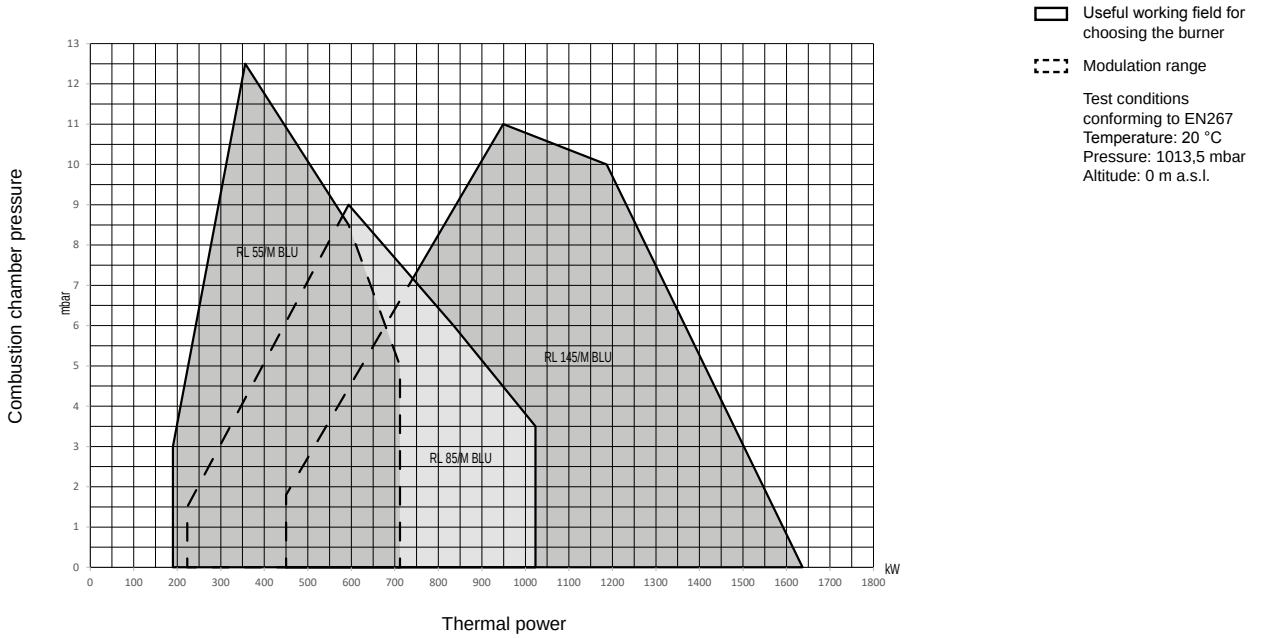
* The emission value is determined, according to the provisions of standard EN 267, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)							
RL 55/M BLU TC FS1	190/356-712	16/30-60	2.2	3/400/50	230/50-60	(1)	**20208592**
RL 85/M BLU TC FS1	223/594-1023	18.8/50-86.2	2.6	3/400/50	230/50-60	(1)	**20208590**
RL 145/M BLU TC FS1	450/949 - 1637	38/80-138	5.5	3/400/50	230/50-60	(1)	**20216780**

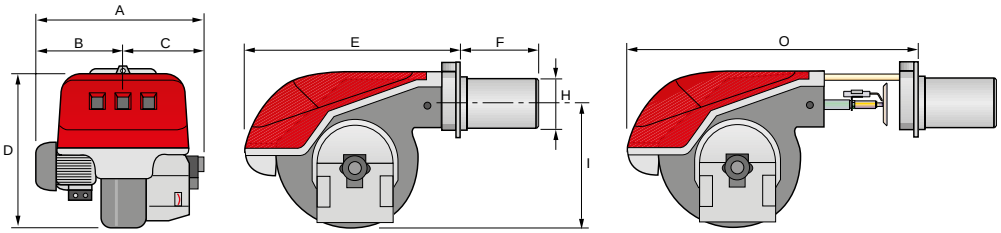
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Model with LAL control box.

FIRING RATES

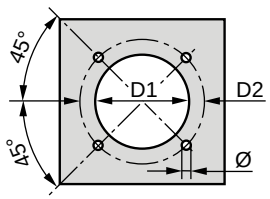


NOTE: the RL 55-85/M BLU burners are designed exclusively for combustion chambers with flue gas outlet from the bottom, for example three flue gas passes (not reverse flame boilers) accessible through the door. Maximum thickness of the frontal boiler wall: 250 mm.
Exhaust gases ducts must be always and exclusively directed upwards; change in directions must be realized only by bent elements; the angle between the axis of the stroke coming out of the combustion chamber and the axis of the chimney must be smaller than 45°.

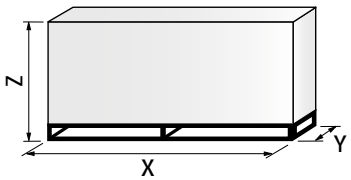
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	F mm	H mm	I mm	O mm
RL 55/M BLU	663	296	367	555	680	365	189	430	951
RL 85/M BLU	705	338	367	555	680	365	189	430	951
RL 145/M BLU	813	370	443	560	712	440	218	435	1160



Description	D1 mm	D2 mm	Ø mm
RL 55/M BLU	195	275-325	M12
RL 85/M BLU	195	275-325	M12
RL 145/M BLU	230	325-368	M16



Description	X mm	Y mm	Z mm	Net weight kg
RL 55/M BLU	1270	745	885	65
RL 85/M BLU	1270	745	885	70
RL 145/M BLU	1270	745	885	85

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	RL 55-85/M BLU	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 135 mm		**3010129**
	RL 145/M BLU	Spacer thickness S = 102 mm		**3000722**
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm.	(1)	**3010055**
	All models	**POWER CONTROLLER** To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20082208**
		RWF 55.5 - Plus version.		**20099657**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
	All models	Pressure (0-16 bar) with 4-20 mA output.		**3010214**
	All models	**POTENTIOMETER** Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**3010021**

(1) For burner deliveries higher than 80 kg/h, install two parallel degasing units

NOZZLES

The return nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Note	Code
		Rated delivery (kg/h)		BERGONZO TYPE A3 60°
	RL 55-85/M BLU	30	(1)	**3009867**
		40	(1)	**3009868**
		50	(1)	**3009869**
		60	(1)	**3009870**
		80	(1)	**3009872**
		90	(1)	**3009871**

(1) Nozzle rated delivery is referred to atomised pressure.

STATE OF SUPPLY

Monoblock forced draught oil burner with two stage progressive or modulating setting, with a specific kit, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades high performance with low sound emissions
- Air damper for air setting and automatic oil output regulator controlled by a servomotor with variable cam
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
  - valve unit with a double oil safety valve on the output circuit and safety valve on the return circuit; double safety valve on the return circuit
- Safety oil pressure switch for stop the burner in case of problems in the return circuit
- Photocell for flame detection
- Microprocessor-based burner safety control box, with diagnostic functions
- Burner on/off switch
- Flame inspection window
- Manual or automatic output increase/decrease switch
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level

STANDARD EQUIPMENT

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- Wiring loom fittings for electrical connections
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

LIGHT OIL BURNERS

STANDARD

Standard NOx emissions, lower than Class 1 of European Standard EN 267 (NOx lower than 250 mg/kWh) or, with MZ burner models, lower than Class 2 of European Standard EN 267 (NOx lower than 185 mg/kWh)

ONE STAGE



RDB

RDB1 (16.8-26.3 kW)
RDB1R (21.6-40.6 kW)
RDB2 (24-38.3 kW)
RDB2R (29.6-59.3 kW)
RDB2R (33.2-46.2 kW)
RDB2.1 (21.5-42 kW)
RDB2.1R (33-54 kW)
RDB2.2 (21-41.5 kW)
RDB2.2R (33.5-51 kW)
RDB2.2 GKD (20-26 kW)
RDB3 (35.6-68.7 kW)
RDB3.2 (41-120 kW)
RDB4 (47.45-120 kW)

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RC

RC2-26R (17-26 kW)
RC2-38 (24-38 kW)
RC2-46R (33-46 kW)
RC2.1-46 (33-46 kW)

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GULLIVER RG

RG0.R (16.6-27.3 kW)
RG0.1 (22.5-35.6 kW)
RG0.1R (21.3-36.7 kW)
RG1 (32-60 kW)
RG1R (20-60 kW)
RG1RK (15-60 kW)
RG2 (47-119 kW)
RG3 (83-178 kW)
RG4S (118.5-237 kW)
RG5S (160-309.5 kW)

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RIELLO 40 G

G3 (23.8-35.5 kW)
G5 (28-60 kW)
G7 (29-69 kW)
G10 (54-120 kW)
G20 (95-213 kW)
G20S (95-240 kW)

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RL 34/1

RL 34/1 MZ FS1 (107-398 kW)

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PRESS GV

PRESS G24 TC FS1 (140/237 kW)
PRESS GV FS1 (178/356 kW)

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TWO STAGE



GULLIVER RGD

RG1RKD (14/17-60 kW)
RG2D (42/49-118 kW)
RG3D (65/83-178 kW)
RG4D (106/130-237 kW)
RG5D (95/142-296 kW)

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RIELLO 40 GD

G10I (44/54-120 kW)
G10D (44/54-120 kW)
G20D (71/95-240 kW)

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RL 34-44

RL 34 MZ FS1 (97/154-395 kW)
RL 44 MZ FS1 (155/235-485 kW)

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RL 50-64

RL 50 FS1 (148/296-593 kW)
RL 64 MZ FS1 (206/391-830 kW)

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RL 70-250

RL 70 FS1 (255/474-830 kW)
RL 100 FS1 (356/711-1186 kW)
RL 130 FS1 (486/948-1540 kW)
RL 190 FS1 (759/1423-2443 kW)
RL 250 MZ FS1 (600/1250-2700 kW)

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PRESS G

PRESS GBW FS1 (107/178-356 kW)
PRESS GW FS1 (107/178-356 kW)
PRESS 1G FS1 (130/190-534 kW)
PRESS 2G FS1 (214/356-712 kW)
PRESS 3G FS1 (273/534-1186 kW)
PRESS 4G FS1 (415/830-1660 kW)

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LIGHT OIL BURNERS

STANDARD

Standard NOx emissions, lower than Class 1 of European Standard EN 267 (NOx lower than 250 mg/kWh) or, with MZ burner models, lower than Class 2 of European Standard EN 267 (NOx lower than 185 mg/kWh)

THREE STAGE



PRESS T/G

PRESS 140 T/G (380/830-1660 kW)
PRESS 200 T/G (557/1186-2372 kW)
PRESS 300 T/G (712/1779-3560 kW)
PRESS 450 T/G (890/2670-5340 kW)

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MODULATING MECHANICAL CAM



RL 28-50/M

RL 28/M FS1 (90/166-332 kW)
RL 38/M FS1 (101/237-450 kW)
RL 50/M FS1 (130/296-593 kW)

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RL 70-190/M

RL 70/M FS1 (261/474-1043 kW)
RL 100/M FS1 (332/711-1482 kW)
RL 130/M FS1 (498/948-1779 kW)
RL 190/M FS1 (534/1423-2431 kW)

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PRESS P/G

PRESS 300 P/G (890/1780-3560 kW)
PRESS 450 P/G (1190/2670-5340 kW)

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One stage light oil and kerosene burners

RDB



- One stage light oil and kerosene burners

Riello RDB series of one stage light oil and kerosene burners is available in eleven basic models, with an output ranging from 16.8 to 120 kW, in three different structures. The models are available in light oil and kerosene versions, conventional flue and balanced flue, with or without the fuel pre-heater fitted. A new model has been specifically designed to meet the increasing trends towards high pressure working field demand.
These models are distinguished by their compact size. All the models use the same components designed by Riello for the RDB series.
The high quality level guarantees safe working. The RDB burners are equipped with a geared pump suitable for Kerosene, Low Sulphur Kerosene and ultra low sulphur diesel oil (ULSD). In developing these burners, special attention was paid to reducing noise, to 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 267 European Standard and conform to European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.
All the RDB burners are fired before leaving the factory.

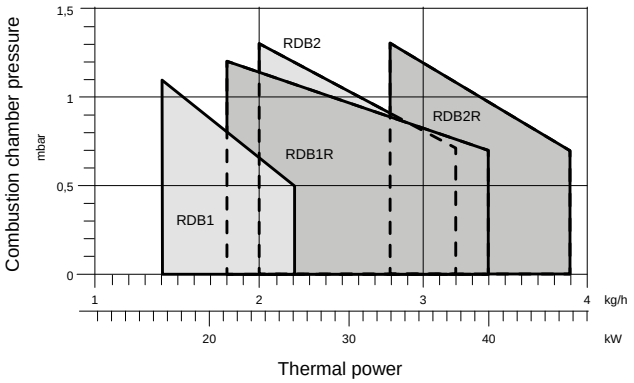
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply	Note	Code
	kW	kg/h	kW	Ph/V/Hz		
RDB1	16.8-26.3	1.4-2.2	0.115	1/230/50	(1)(2)	**(3)**
RDB1R	21.6-40.6	1.8-3.4	0.170	1/230/50	(1)	**(3)**
RDB2	24-38.3	2-3.2	0.125	1/230/50	(1)	**(3)**
RDB2R	29.6-59.3	2.5-5	0.125	1/230/50	(1)	**(3)**
RDB2R	33.2-46.2	2.8-3.9	0.175	1/230/50	(1)	**(3)**
RDB2.1	21.5-42	1.8-3.5	0.160	1/230/50	(1)	**(3)**
RDB2.1R	33-54	2.8-4.5	0.230	1/230/50	(1)	**(3)**
RDB2.2	21-41.5	1.8-3.5	0.160	1/230/50	(1)	**(3)**
RDB2.2R	33.5-51	2.9-4.3	0.230	1/230/50	(1)	**(3)**
RDB2.2 GKD	20-26	1.73-2.2	0.180	1/230/50	(1)	**(3)**
RDB3	35.6-68.7	3-5.8	0.160	1/230/50	(1)	**(3)**
RDB3.2	41-120	3.5-10	0.160	1/230/50	(1)	**(3)**
RDB4	47.45-120	4-10	0.160	1/230/50	(1)	**(3)**

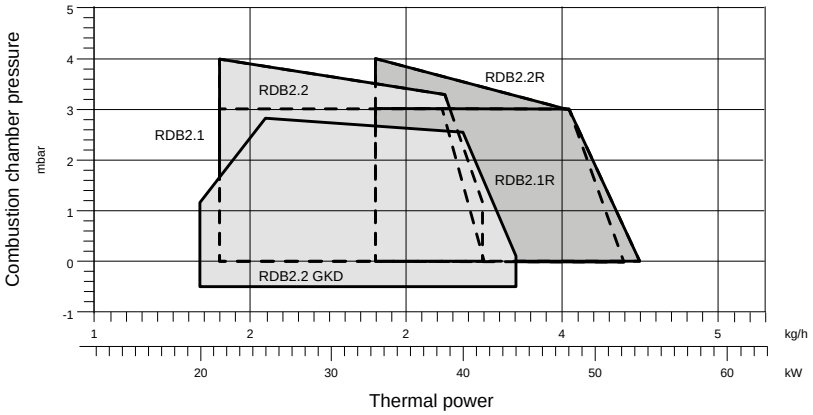
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
Net calorific value of kerosene: 11.97 kWh/kg - Viscosity at 20 °C: 1.5-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) All burner models are OEM's customized.
(2) This code is unprovided with thermal screen.
(3) Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

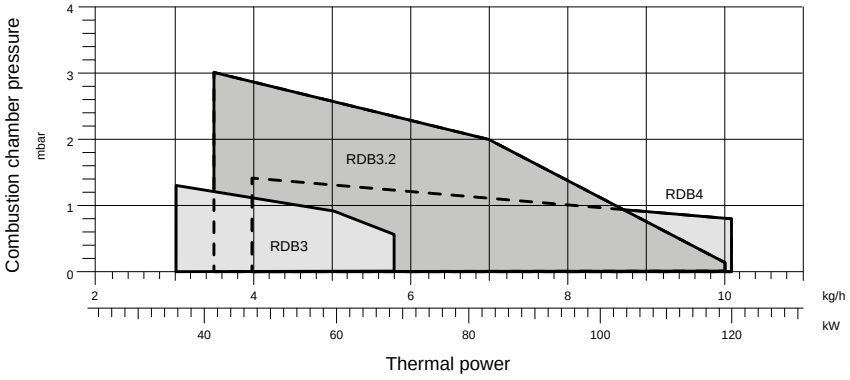
FIRING RATES



Useful working field for choosing the burner

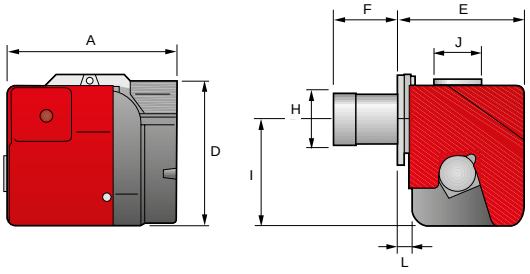
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.



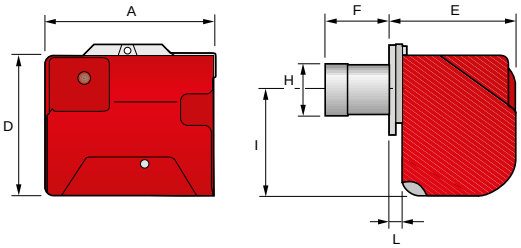


OVERALL DIMENSIONS

RDB1-1R - RDB2-2R - RDB2.1-2.1R - RDB2.2-2.2R - RDB2.2 GKD

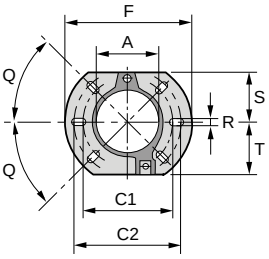


RDB3 - RDB3.2 - RDB4

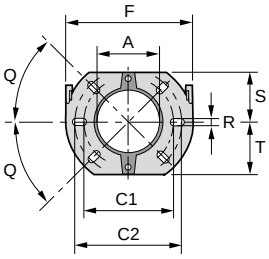


Description	A mm	D mm	E mm	F mm	H mm	I mm	J mm	L mm
RDB1 - 1R	276	230	202	76-86	89-90	168	75	20
RDB2 - 2R	276	230	202	76-86	89-90	168	75	20
RDB2.1 - 2.1R	286	230	202	77	85	168	75	20
RDB2.2 - 2.2R	286	230	202	77	85	168	75	20
RDB2.2 GKD	286	232	200	203	103	171	75	18
RDB3	325	268	253	78	88	204	75	30
RDB3.2	325	268	253	69,5	95	204	75	30
RDB4	325	268	253	111	105	204	75	30

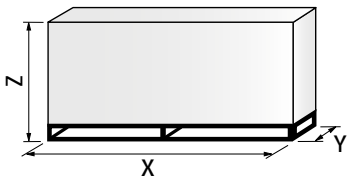
RDB1-1R - RDB2-2R - RDB2.1-2.1R - RDB2.2-2.2R - RDB2.2 GKD



RDB3 - RDB3.2 - RDB4



Description	A mm	C1 mm	C2 mm	F mm	Q mm	R mm	S mm	T mm
RDB1 - 1R	91	130	150	180	45°	11	72	72
RDB2 - 2R	91	130	150	180	45°	11	72	72
RDB2.1 - 2.1R	91	130	150	180	45°	11	72	72
RDB2.2 - 2.2R - 2.2 GKD	91	130	150	180	45°	11	72	72
RDB3	106	140	168	189	45°	11	83	83
RDB3.2	106	140	168	189	45°	11	83	83
RDB4	106	140	168	189	45°	11	83	83



Description	X mm	Y mm	Z mm	Net weight kg
RDB1 - 1R	395	305	295	11
RDB2 - 2R	395	305	295	11
RDB2.1 - 2.1R	395	305	295	11
RDB2.2 - 2.2R - 2.2 GKD	395	305	295	11
RDB3	435	360	355	15
RDB3.2	435	360	355	15
RDB4	435	360	355	15

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	RDB1-1R-RDB2-2R RDB2.1-2.1R- RDB2.2-2.2R RDB2.2 GKD	**BALANCED-CONVENTIONAL FLUE CONVERSION KIT** All the RDB series models are easily converted from conventional flue to balanced flue, by replacing the plastic screen on the air intake with the connector for the air supply pipe. Balanced flue conversion kit.		**20186506**
		Conventional flue kit.		**3062775**
	RDB3 - RDB4	Balanced flue conversion kit.		**20186506**
		Conventional flue kit.		**3062876**
	All models	**LIGHT OIL FILTER** For cleaning light oil from dirty particles and impurities filters with the following features are available. Filtering degree 60 µm (filter made up of aluminium body and stainless steel filtering cartridge).	(1)	**3006561**
	All models	Filtering degree 60 µm (filter made up of aluminium cover, plastic tank and nylon filtering cartridge).	(2)	**3075011**
	All models	**LIGHT OIL FILTER/DEGASSING UNIT** To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.		**3000926**

(1) Available singularly.
(2) Available in packaging of 50 pieces.

STATE OF SUPPLY

Completely automatic monobloc light oil and kerosene burners, one stage operation, made up of:
– Fan with forward inclined blades
– Air damper with external adjustment, with no need to remove the cover
– Air-tight air circuit, also available in the balanced flue version
– Single phase electric motor 230 V, 50 Hz
– Combustion head fitted with:
  • stainless steel head cone, resistant to high temperatures
  • ignition electrodes
  • flame stability disk
– Geared pump (specific version for kerosene) for fuel supply, fitted with filter:
  • pressure regulator
  • attachments for fitting a pressure gauge and vacuum meter
  • internal by-pass for preparing for single-pipe installations
– Fuel feed solenoid valve incorporated in the pump
– Photocell for flame detection
– Electronic flame control equipment available with MO 535 (on demand)
– Light oil nozzle
– IP X0D (IP 40) protection level
– Fuel pre-heater (optional)

STANDARD EQUIPMENT

– Two flexible pipes for connection to the light oil supply line
– Two nipples for connection to the pump
– Flange, screws and nuts for fixing
– Thermal screen
– Air intake protection grill exagonal key
– Instruction handbook for installation, use and maintenance
– Spare parts list

One stage light oil burners

RC



- One stage light oil burners

Riello RC2-R is synonymous with highly compact size. The new burners in the light oil series are one stage with an output ranging from 17 to 46 kW.
These burners have been specifically designed to meet the increasing trends towards direct connection to outside air for combustion and high pressure working field demand. They are also flexible enough to suit both conventional and balanced flue versions, only changing the plastic screen to the snorkel in the air intake. These burners come with or without the cover. This designed marks Riello entry into many applications in the market which require both high performance and compact size. All RC2-R burners are fired 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.

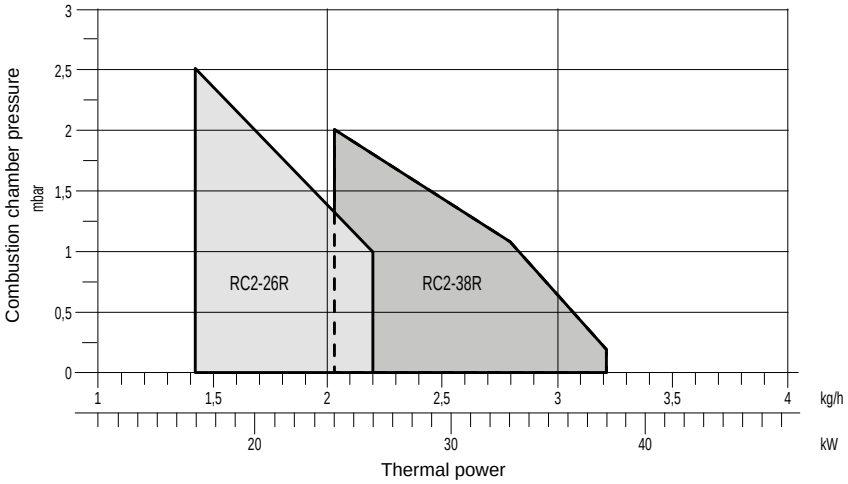
TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply	Code
	kW	kg/h	kW	Ph/V/Hz	
RC2-26R	17-26	1.4-2.2	0.15	1/230/50	**(1)**
RC2-38R	24-38	2.0-3.2	0.15	1/230/50	**(1)**
RC2-38	24-38	2.0-3.2	0.15	1/230/50	**(1)**
RC2-46R	33-46	2.8-3.9	0.15	1/230/50	**(1)**
RC2.1-46	33-46	2.8-3.9	0.15	1/230/50	**(1)**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

FIRING RATES

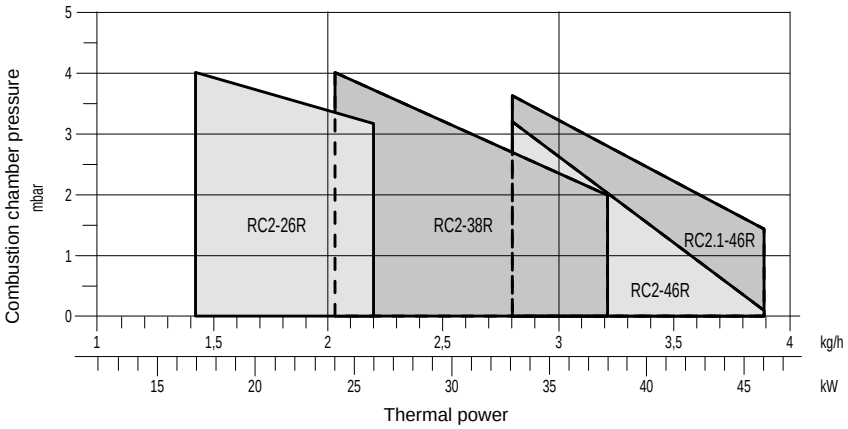
WITHOUT BAFFLE PLATE FOR BF/CF VERSION



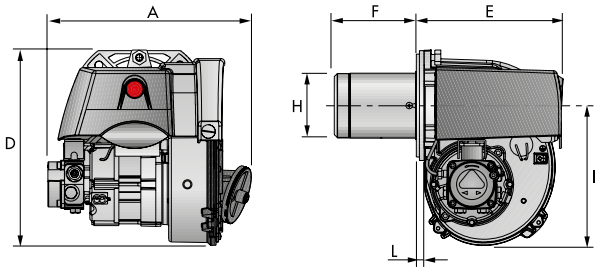
Useful working field for choosing the burner

Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

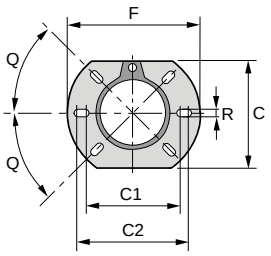
WITH BAFFLE PLATE FOR BF/CF VERSION



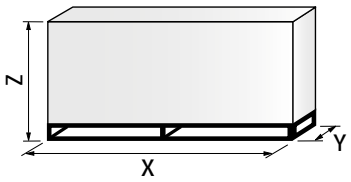
OVERALL DIMENSIONS



Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm
RC2-26R	267	256	192	109	85	183	10
RC2-38	267	256	192	109	85	183	10
RC2-38R	267	256	192	109	85	183	10
RC2-46R	267	256	192	109	85	183	10
RC2.1-46	267	256	192	109-177	85	183	10
RC2.1-46R	267	256	192	109	85	183	10



Description	C mm	C1 mm	C2 mm	F mm	Q mm	R mm
RC2-26R	144	130	150	180	45°	11
RC2-38 / RC2-38R	144	130	150	180	45°	11
RC2-46R	144	130	150	180	45°	11
RC2.1-46 / RC2.1-46R	144	130	150	180	45°	11



Description	X mm	Y mm	Z mm	Net weight kg
RC2-26R	363	295	310	10
RC2-38 / RC2-38R	363	295	310	10
RC2-46R	363	295	310	10
RC2.1-46 / RC2.1-46R	363	295	310	10

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	**LIGHT OIL FILTER** For cleaning light oil from dirty particles and impurities filters with the following features are available. Filtering degree 60 µm (filter made up of aluminium body and stainless steel filtering cartridge).	(1)	**3006561**
	All models	Filtering degree 60 µm (filter made up of aluminium cover, plastic tank and nylon filtering cartridge).	(2)	**3075011**
	All models	**LIGHT OIL FILTER/DEGASSING UNIT** To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.		**3000926**
	RC2-26R-38R-46R	**BALANCED FLUE CONVERSION KIT** The RC2-R models are easily converted from conventional flue to balanced flue version, by replacing the plastic air intake with the connector for the air supply pipe. kit code for balanced flue.		**3002721**
	RC2.1-46R	kit code for balanced flue.		**3020132**
	All models	**HOUR COUNTER KIT FOR 530 SE AND 531 SE CONTROL BOXES** To measure the burner working time a hour counter kit is available.		**3000904**

(1) Available singularly.
(2) Available in packaging of 50 pieces.

STATE OF SUPPLY

Completely automatic monobloc light oil burners, with single stage operation made up of:
– Forward blades fan and airtight fan house for high performance
– Air damper with adjustment for conventional flue version
– Single phase electric motor 230 V, 50 Hz
– Combustion head made up of:
  • stainless steel end cone resistant to high temperatures
  • ignition electrodes
  • flame stability disk
– Geared pump for fuel supply, fitted with:
  • filter
  • pressure regulator
  • connectors for installing a pressure gauge and vacuometer
  • inner by-pass for preparing for single pipe installation
– Fuel feed solenoid incorporated in the pump
– Photocell for flame detection
– Electronic flame control equipment
– IP X0D (IP 40) protection level

STANDARD EQUIPMENT

– Two flexible pipes and two connectors
– Flange, screen screws and nuts for fixing
– Cable with 6-pole socket
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

One stage light oil and biofuel burners

GULLIVER RG



- One stage light oil and biofuel burners

Riello Gulliver RG one stage light oil burners series, is a complete range of products developed to respond to any request for home heating.
The Gulliver RG series is available in ten different models, with an output ranging from 16,6 to 309,5 kW, divided in five different structures.
All the models use the same components designed by Riello for the Gulliver series. The high quality level guarantees safe working.
In developing these burners, special attention was paid to reducing noise, to the easiness 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 267 European Standard and conform to European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.
All the Gulliver RG burners are fired 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.

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

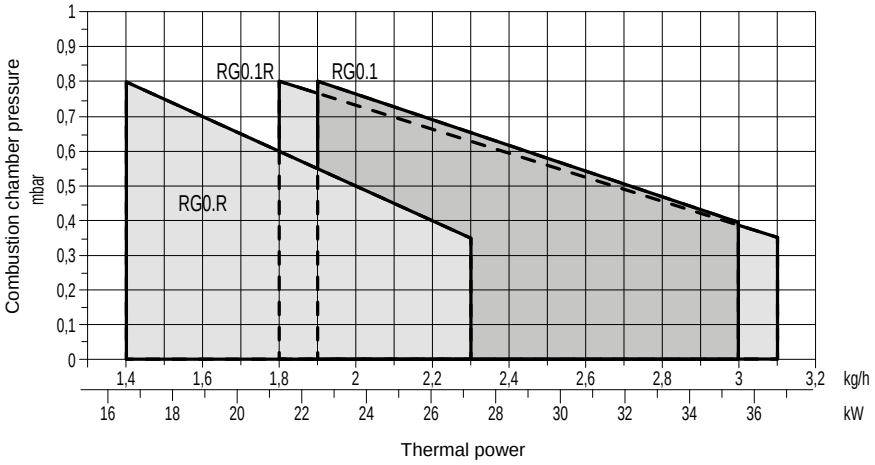
TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
BURNERS MODELS FOR COMBUSTION OF LIGHT OIL - WITH ANALOG CONTROL BOX							
RG0.R	16.6-27.3	1.4-2.3	0.290	1/230/50	230/50	(1)	**3736550**
RG0.1	22.5-35.6	1.9-3.0	0.170	1/230/50	230/50	(1)	**3736850**
RG0.1R	21.3-36.7	1.8-3.1	0.290	1/230/50	230/50	(1)	**3736750**
RG1	32-60	2.7-5	0.170	1/230/50	230/50	(1)	**3736350**
RG1R	20-60	1.7-5	0.290	1/230/50	230/50	(1)	**3736450**
RG1RK	15-60	1.3-5	0.290	1/230/50	230/50	(1)	**3736250**
RG2	47-119		0.180	1/230/50	230/50	(1)	**3737750**
RG2 TL	47-119		0.180	1/230/50	230/50	(1)	**20052619**
RG3	83-178		0.390	1/230/50	230/50	(1)	**3739350**
RG4S	118.5-237		0.390	1/230/50	230/50	(1)	**3739650**
RG4S TL	118.5-237		0.390	1/230/50	230/50	(1)	**20052623**
RG5S	160-309.5	13.5-26.1	0.470	1/230/50	230/50	(1)	**3739950**
RG5S TL	160-309.5	13.5-26.1	0.470	1/230/50	230/50	(1)	**20052625**
BURNERS MODELS FOR COMBUSTION OF LIGHT OIL - WITH DIGITAL CONTROL BOX							
RG1RK	15-60	1.3-5	0.290	1/230/50	230/50	(1)	**3736254**
RG2	47-119		0.180	1/230/50	230/50	(1)	**3737754**
BURNERS MODELS FOR COMBUSTION OF BIOFUEL UP TO 100% - WITH DIGITAL CONTROL BOX							
RG0.R TC B100	16.6-27.3	1.4-2.3	0.290	1/230/50	230/50	(2)	**20206782**
RG0.R TL B100	16.6-27.3	1.4-2.3	0.290	1/230/50	230/50	(2)	**20206783**
RG1RK B100	15-60	1.3-5	0.290	1/230/50	230/50	(2)	**20206781**

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
RG2 B100	47-119		0.180	1/230/50	230/50	(2)	**20206784**
RG3 B100	83-178		0.390	1/230/50	230/50	(2)	**20206786**
RG4S B100	118.5-237		0.390	1/230/50	230/50	(2)	**20206787**

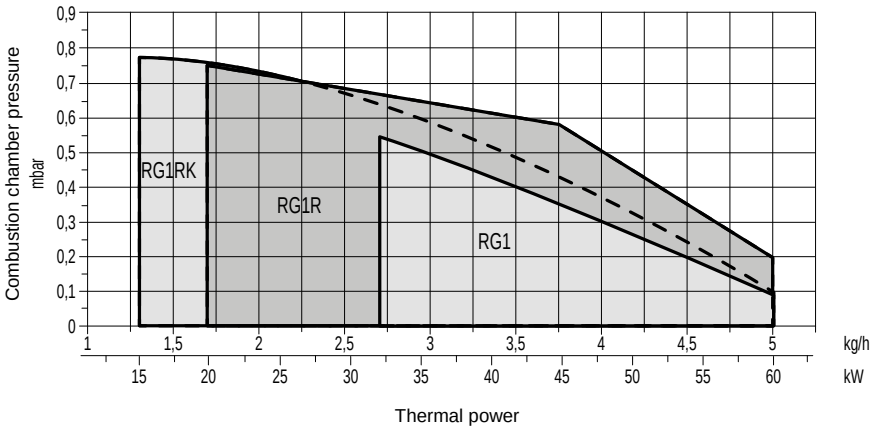
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) For combustion of Light Oil
(2) For combustion of Biodiesel up to 100% (B100) or of Light Oil /Biodiesel blends (it is permitted the use of FAME Biodiesel according to EN 14214 or HVO according to EN 15940). The burner is also suitable for the combustion of Light Oil only.
Blend with a FAME percentage higher than 7% in the HVO is not permitted.

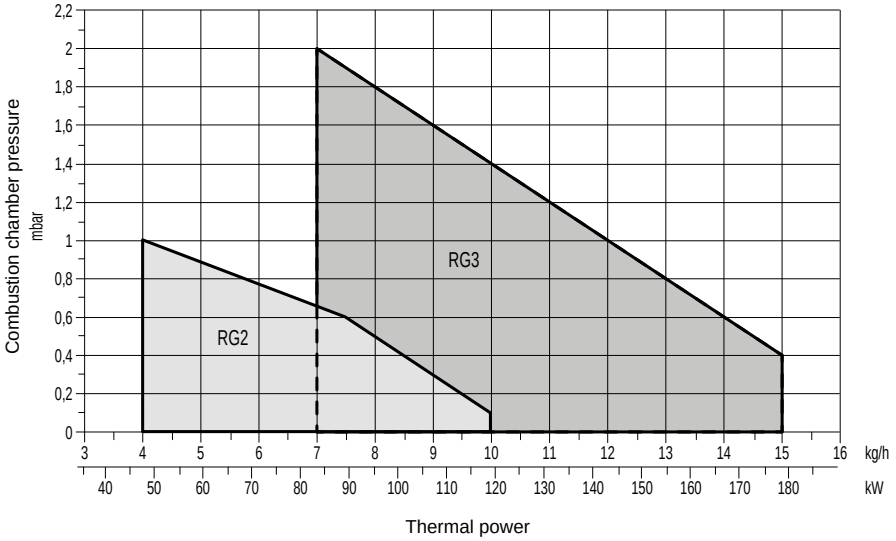
FIRING RATES



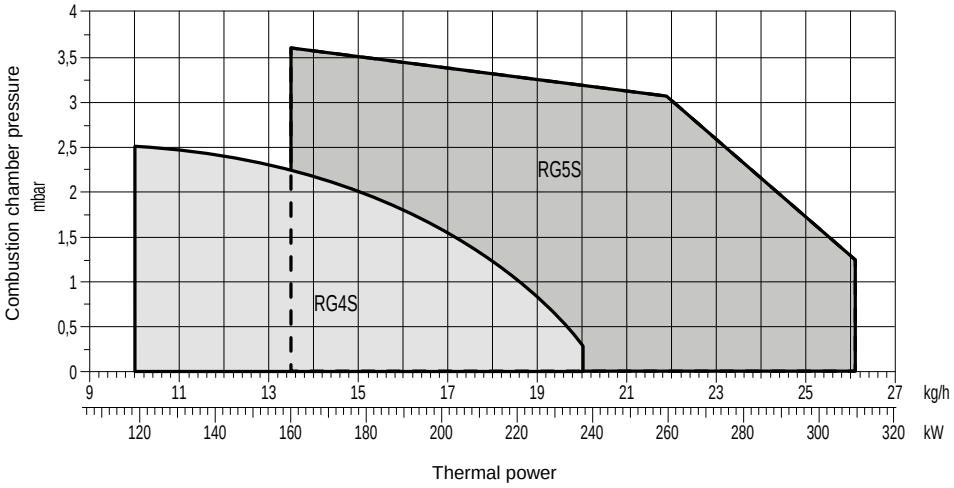
Useful working field for choosing the burner

Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.





FIRING RATES

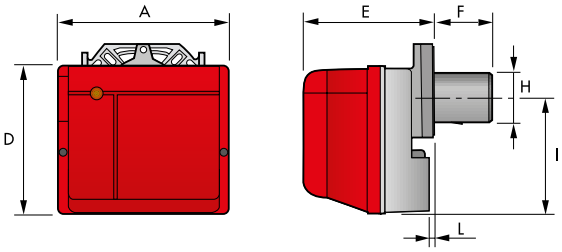


Useful working field for choosing the burner

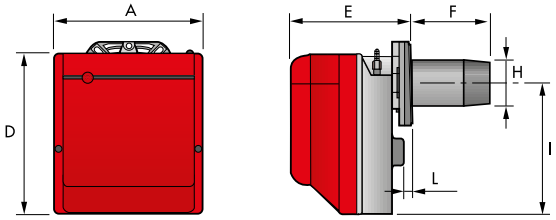
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

GULLIVER RG0

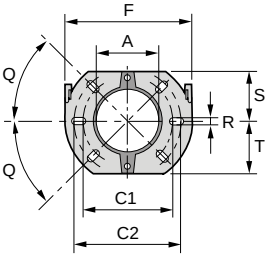


GULLIVER RG

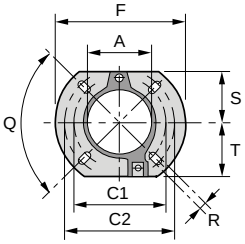


Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm
RG0.R	255	210	205	93	84	168	5
RG0.1R	255	210	205	93	84	168	5
RG0.1	255	210	205	93	84	168	5
RG1	234	254	196	93	84	210	4
RG1R	234	254	196	93	84	210	4
RG1RK	234	254	196	111	84	210	4
RG2	255	280	202	115-180	95	230	10
RG3	300	345	228	142-300	123	285	12
RG4S	300	345	228	142-212	123	285	12
RG5S	300	345	247	155-395	125	285	12,5

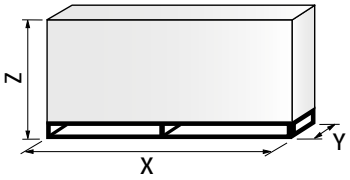
RG0.R-RG0.1R-RG0.1
RG1-RG1R-RG1RK-RG2



RG3-RG4S-RG5S

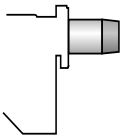
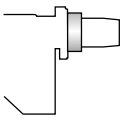


Description	A mm	C1 mm	C2 mm	F mm	Q mm	R mm	S mm	T mm
RG0.R-RG0.1R RG0.1-RG1 RG1R RG1RK	91	130	150	180	45°	11	72	72
RG2	106	140	168	189	45°	11	83	83
RG3-RG4S-RG5S	127	160	190	213	90°	11	99	99



Description	X mm	Y mm	Z mm	Net weight kg
RG0.R	358	300	300	9
RG0.1R	358	300	300	9
RG0.1	358	300	300	11
RG1	353	278	320	13
RG1R	353	278	320	13
RG1RK	353	278	320	13
RG2	363	298	350	13
RG3	430	345	430	15
RG4S	430	345	430	18
RG5S	510	345	430	18

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	RG1-RG1R	**EXTENDED HEAD KIT** Kits of extended heads are available. Standard head length = 93 mm - Extended head length = 163 mm		**3000963**
	RG1RK	Standard head length = 111 mm - Extended head length = 181 mm		**3000982**
	RG2	Standard head length = 115 mm - Extended head length = 180 mm		**3000964**
	RG2	Standard head length = 115 mm - Extended head length = 300 mm		**3000967**
	RG3	Standard head length = 142 mm - Extended head length = 210 mm		**3000965**
	RG3	Standard head length = 142 mm - Extended head length = 300 mm		**3000968**
	RG4S	Standard head length = 142 mm - Extended head length = 210 mm		**3000966**
	RG4S	Standard head length = 142 mm - Extended head length = 300 mm		**3000969**
	RG5S	Standard head length = 155 mm - Extended head length = 300 mm		**3001068**
	RG0.R-RG0.1R RG0.1-RG1 RG1R-RG1RK	**SPACER KIT** By using the special accessories, the burner can be with-drawn to reduce head penetration into the combustion chamber. Spacer thickness S = 15 mm		**3007931**
	RG3-RG4S-RG5S	Spacer thickness S = 15 mm		**20103452**
	RG1	**PRE-HEATER KIT** This kit is used only for Gulliver RG1 burner. It can be installed in particular weather conditions and with viscous oil.		**3001083**
	All models	**LIGHT OIL FILTER** For cleaning light oil from dirty particles and impurities filters with the following features are available. Filtering degree 60 µm (filter made up of aluminium body and stainless steel filtering cartridge).	(1)	**3006561**
	All models	Filtering degree 60 µm (filter made up of aluminium cover, plastic tank and nylon filtering cartridge).	(2)	**3075011**
	All models	**LIGHT OIL FILTER/DEGASSING UNIT** To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.		**3000926**
	All models	**7-PIN PLUG KIT** If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		**3000945**

(1) Available singularly.
(2) Available in packaging of 50 pieces.

STATE OF SUPPLY

Completely automatic monobloc light oil burners, 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, without 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
  • flame stability disk
– Geared pump for fuel supply, fitted with:
  • filter
  • pressure regulator
  • attachments for fitting a pressure gauge and vacuum meter
  • internal by-pass for preparing for single-pipe installations
– Fuel feed solenoid valve incorporated in the pump
– Photocell for flame detection
– Electronic flame control equipment
– Light oil nozzle
– IP X0D (IP 40) protection level
– PTC fuel pre-heater (optional)
– Reduced output ignition mechanism (optional)

STANDARD EQUIPMENT

– Two flexible pipes for connection to the light oil supply line
– Two nipples for connection to the pump
– Flange, screws and nuts for fixing
– Thermal screen
– 7-pin plug (not included in models with digital control box MO 550)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Two stage light oil burners

GULLIVER RGD



- Two stage light oil burners

Riello Gulliver RGD series of two stage light oil burners, is a complete range of products developed to respond to any request for home heating. The Gulliver RGD series is available in five different models, with an output ranging from 14 to 296 kW, divided in four different structures.
All the models use the same components designed by Riello for the Gulliver series. The high quality level guarantees safe working.
In developing these burners, special attention was paid to reducing noise, to the ease of installation and adjustment, to obtaining the smallest size possible to fit into any sort of boiler available on the market.
The two stage operation guarantees high level of thermal unit efficiency.
All the models are approved by the EN 267 European Standard and conform to European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.
All the Gulliver RGD burners are fired before leaving the factory.

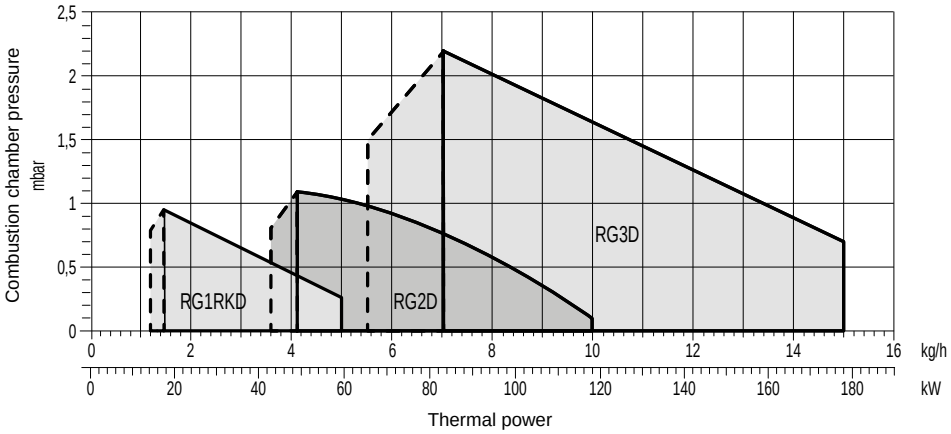
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
BURNERS MODELS FOR COMBUSTION OF LIGHT OIL - WITH ANALOG CONTROL BOX							
RG1RKD	14/17-60	1.2/1.45-5	0.290	1/230/50	230/50	(1)	**3736650**
RG2D	42/49-118	3.6/4.1-10	0.180	1/230/50	230/50	(1)	**3738050**
RG3D	65/83-178	5.5/7-15	0.390	1/230/50	230/50	(1)	**3739450**
RG4D	106/130-237	09/11/2020	0.390	1/230/50	230/50	(1)	**3739750**
RG5D	95/142-296	08/12/2025	0.470	1/230/50	230/50	(1)	**3739850**
BURNERS MODELS FOR COMBUSTION OF LIGHT OIL - WITH DIGITAL CONTROL BOX							
RG1RKD	14/17-60	1.2/1.45-5	0.290	1/230/50	230/50	(1)	**3736654**
RG2D	42/49-118	3.6/4.1-10	0.180	1/230/50	230/50	(1)	**3738054**
RG3D	65/83-178	5.5/7-15	0.390	1/230/50	230/50	(1)	**3739454**
RG4D	106/130-237	09/11/2020	0.390	1/230/50	230/50	(1)	**3739754**
RG5D	95/142-296	08/12/2025	0.470	1/230/50	230/50	(1)	**3739854**
BURNERS MODELS FOR COMBUSTION OF BIOFUEL UP TO 100% - WITH DIGITAL CONTROL BOX							
RG3D B100	65/83-178	5.5/7-15	0.390	1/230/50	230/50	(2)	**20206791**
RG4D B100	106/130-237	09/11/2020	0.390	1/230/50	230/50	(2)	**20206793**
RG5D B100	95/142-296	08/12/2025	0.470	1/230/50	230/50	(2)	**20206803**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) For combustion of Light Oil
(2) For combustion of Biodiesel up to 100% (B100) or of Light Oil /Biodiesel blends (it is permitted the use of FAME Biodiesel according to EN 14214 or HVO according to EN 15940).
The burner is also suitable for the combustion of Light Oil only.
Blend with a FAME percentage higher than 7% in the HVO is not permitted.

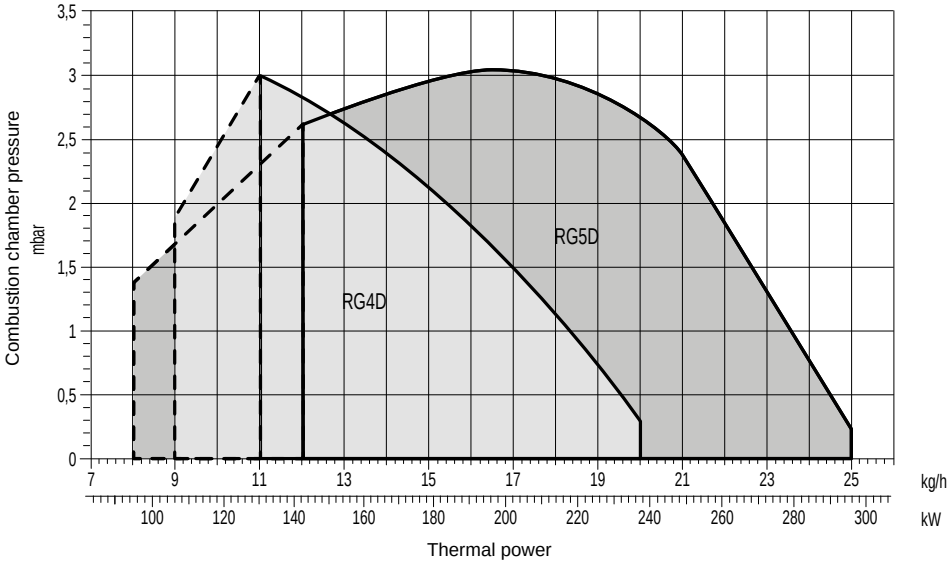
FIRING RATES



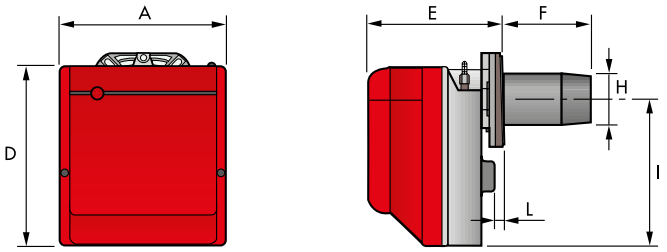
Useful working field for choosing the burner

1st stage operation range

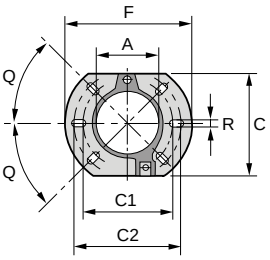
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.



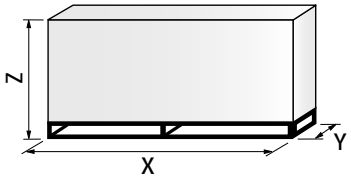
OVERALL DIMENSIONS



Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm
RG1RKD	234	254	196	111	84	210	4
RG2D	255	280	202	115-185	95	230	10
RG3D	300	345	228	142-212	123	285	12
RG4D	300	345	228	142-212	123	285	12
RG5D	300	345	247	159-300	125	285	12,5

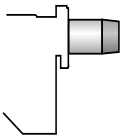
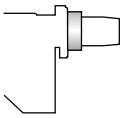


Description	A mm	C mm	C1 mm	C2 mm	F mm	Q mm	R mm
RG1RKD	91	144	130	150	180	45°	11
RG2D	106	166	140	168	189	45°	11
RG3D	127	198	160	190	213	45°	11
RG4D	127	198	160	190	213	45°	11
RG5D	127	198	160	190	213	45°	11



Description	X mm	Y mm	Z mm	Net weight kg
RG1RKD	353	278	320	12
RG2D	363	298	350	13
RG3D	430	345	430	13
RG4D	430	345	430	13
RG5D	510	345	440	18

ACCESSORIES

Drawing	Burner model	Specification		Code
		EXTENDED HEAD KIT Kits of extended heads are available.		
	RG1RKD	Standard head length = 111 mm - Extended head length = 181 mm		**3000982**
	RG2D	Standard head length = 115 mm - Extended head length = 180 mm		**3000964**
	RG2D	Standard head length = 115 mm - Extended head length = 300 mm		**3000967**
	RG3D	Standard head length = 142 mm - Extended head length = 210 mm		**3000965**
	RG3D	Standard head length = 142 mm - Extended head length = 300 mm		**3000968**
	RG4D	Standard head length = 142 mm - Extended head length = 210 mm		**3000966**
	RG4D	Standard head length = 142 mm - Extended head length = 300 mm		**3000969**
	RG5D	Standard head length = 159 mm - Extended head length = 300 mm		**3000981**
		**SPACER KIT** By using the special accessories, the burner can be with-drawn to reduce head penetration into the combustion chamber.		
	RG1RKD	Spacer thickness S = 15 mm		**3007931**
	RG3D-RG4D-RG5D	Spacer thickness S = 15 mm		**20103452**
		**LIGHT OIL FILTER** For cleaning light oil from dirty particles and impurities filters with the following features are available.		
	All models	Filtering degree 60 µm (filter made up of aluminium body and stainless steel filtering cartridge).	(1)	**3006561**
	All models	Filtering degree 60 µm (filter made up of aluminium cover, plastic tank and nylon filtering cartridge).	(2)	**3075011**
	All models	**LIGHT OIL FILTER/DEGASSING UNIT** To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.		**3000926**
	All models	**7-PIN PLUG KIT** If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		**3000945**

(1) Available singularly.
(2) Available in packaging of 50 pieces.

STATE OF SUPPLY

Completely automatic monobloc light oil burners, two stage operation, made up of:
- Fan with forward curve blades
- Cover lined with sound-proofing material
- Air damper completely closed in stand by
- Air damper, with 1st and 2nd stage adjustment (2nd stage adjustment without removing the casing)
- Single phase electric motor 230 V, 50 Hz
- Combustion head fitted with:
  - stainless steel head cone, resistant to high temperatures
  - ignition electrodes
  - flame stability disk
- Geared pump for fuel supply, fitted with:
  - filter
  - pressure regulator
  - attachments for fitting a pressure gauge and vacuum meter
  - internal by-pass for preparing for single-pipe installations
- Fuel feed solenoid valve incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Light oil nozzle
- IP X0D (IP 40) protection level
- PTC fuel pre-heater (optional)

STANDARD EQUIPMENT

– Two flexible pipes for connection to the light oil supply line
– Two nipples for connection to the pump
– Flange, screws and nuts for fixing
– Thermal screen
– 7-pin plug (not included in models with digital control box MO 550)
– 4-pin plug
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

One stage light oil burners

RIELLO 40 G



- One stage light oil burners

Riello 40 G series of one stage light oil burners, is a complete range of products developed to respond to any request for home heating. The Riello 40 G series is available in ten different models, with an output ranging from 12 to 240 kW, divided into four different structures.
All the models use the same components designed by Riello for the Riello 40 G series.
The high quality level guarantees safe working.
In developing these burners, special attention was paid to reducing noise, to the ease of installation and adjustment, obtaining the smallest size possible to fit into any sort of boiler available on the market.
All the models are approved by the EN 267 European Standard and conform to European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.
All the Riello 40 G burners are fired before leaving the factory.

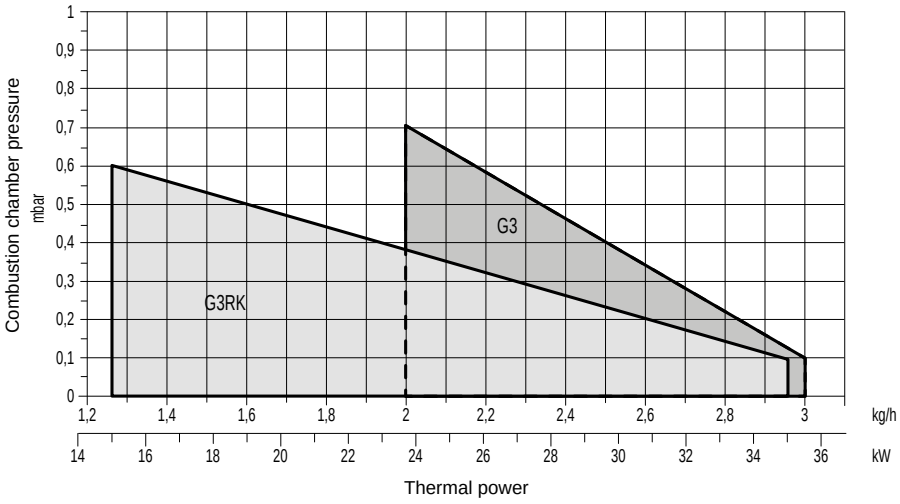
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

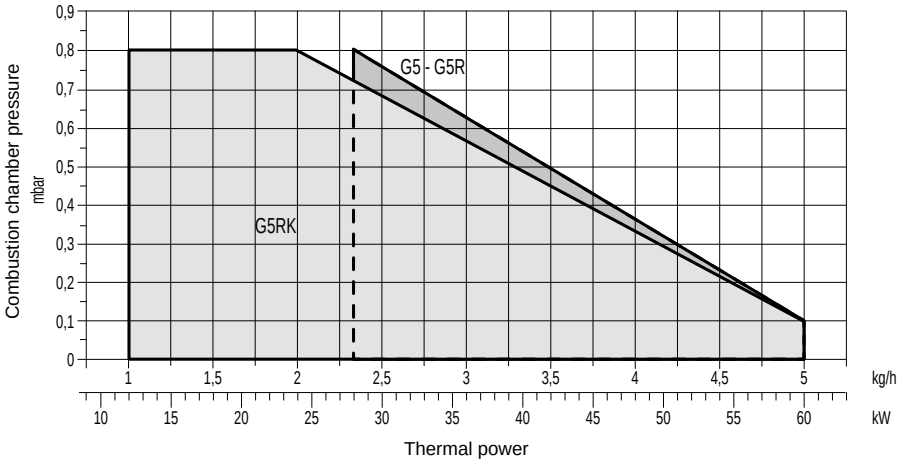
TECHNICAL DATA

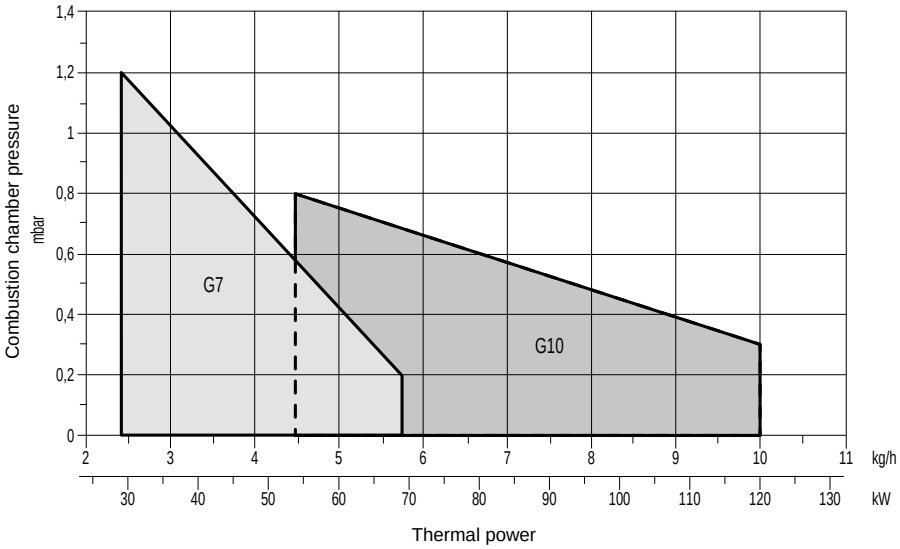
Description	Heat output		Total electrical power	Electric power supply	Note	Code
	kW	kg/h	kW	Ph/V/Hz		
G3	23.8-35.5	2-3	0.115	1/230/50		**3743125**
G5	28-60	2.3-5	0.130	1/230/50		**3744512**
G5R	28-60	2.3-5	0.185	1/230/50		**3744612**
G7	29-69	2.5-5.8	0.160	1/230/50	(1)	**3745959**
G10	54-120	4.5-10	0.170	1/230/50		**3746412**
G10	54-120	4.5-10	0.200	1/220/60		**3746464**
G10 TL	54-120	4.5-10	0.200	1/220/50		**20062977**
G20	95-213	8-18	0.320	1/230/50		**3747412**
G20	95-213	8-18	0.400	1/220/60		**3747459**
G20 TL	95-213	8-18	0.400	1/220/50		**20063100**
G20S	95-240	8-20	0.330	1/230/50		**3748212**
MODELS WITH 24V DC ELECTRICAL SUPPLY						
G7	29-69	2.45-5.8	0.3	24V DC		**20030878**
G10	54-120	4.5-10	0.3	24V DC		**20045709**
G20	95-201	8-17	0.3	24V DC		**20030873**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) UK version.

FIRING RATES

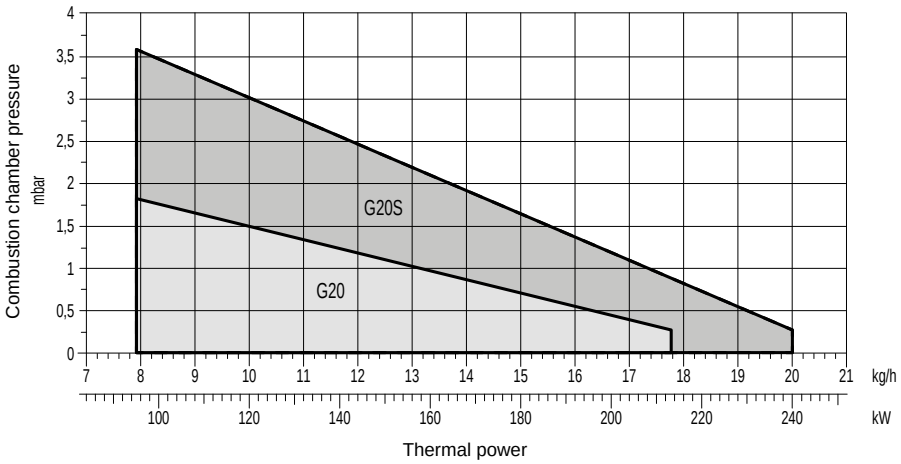






Useful working field for choosing the burner

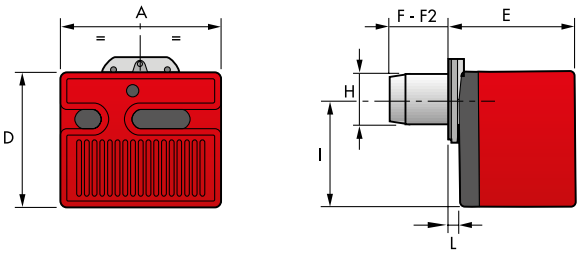
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.



Useful working field for choosing the burner

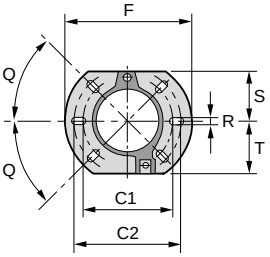
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

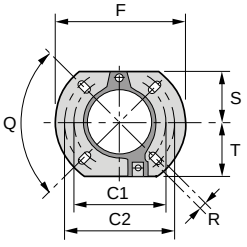


Description	A mm	D mm	E mm	F mm	F2 mm	H mm	I mm	L mm
G3	252	215	203	86	-	89	164	19
G3RK	252	215	203	97	115	89	164	19
G5	272	233	236	107-180	-	89	180	37
G5R	272	233	236	107	-	89	180	37
G5RK	272	233	236	94	112	89	180	37
G7	305	262	261	73	-	89	204	40
G10	305	262	261	108-250	-	105	204	40
G20	350	298	295	118-260	-	125	230	41
G20S	350	298	295	118	-	125	230	41

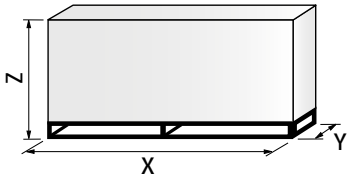
G3 - G3RK - G5 - G5R
G5RK - G7 - G10



G20 - G20S

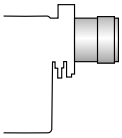
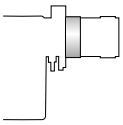


Description	C1 mm	C2 mm	F mm	Q mm	R mm	S mm	T mm
G3 - G3RK **G5 - G5R - G5RK**	130	150	180	45°	11	72	75
G7 - G10	140	170	189	45°	11	83	83
G20 - G20S	160	190	213	90°	11	99	99



Description	X mm	Y mm	Z mm	Net weight kg
G3	363	295	310	10
G3RK	363	295	310	10.5
G5	383	315	325	12
G5R	383	315	325	12
G5RK	383	315	325	12
G7	423	348	340	13
G10	423	348	340	13
G20	483	393	377	16
G20S	483	393	377	17,5

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		EXTENDED HEAD KIT Kits of extended heads are available.		
	G3	Standard head length = 107 mm - Extended head length = 121 mm		**3000686**
	G3	Standard head length = 107 mm - Extended head length = 121 mm	(1)	**3000687**
	G5-G5R	Standard head length = 107 mm - Extended head length = 121 mm		**3000686**
	G5-G5R	Standard head length = 107 mm - Extended head length = 121 mm	(1)	**3000687**
	G10	Standard head length = 108 mm - Extended head length = 168 mm		**3000643**
	G10	Standard head length = 108 mm - Extended head length = 250 mm		**3000770**
	G20-G20S	Standard head length = 118 mm - Extended head length = 178 mm		**3000644**
	G20-G20S	Standard head length = 118 mm - Extended head length = 260 mm		**3000771**
		**SPACER KIT** Using the special accessories, the burner can be pulled back to reduce head penetration into the combustion chamber.		
	G3-G3RK-G5 G5R-G5RK-G7	Spacer thickness S = 25 mm		**3000642**
	G20 - G20S	Spacer thickness S = 15 mm		**20103452**
		**INLET AIR ASPIRATION KIT** This kit allows to channel the external air directly into the burner and is available as accessory for models:		
	G3-G3RK	Inlet air aspiration kit is available.		**20027471**
	G5-G5R-G5RK	Inlet air aspiration kit is available.		**20027574**
	G7-G10	Inlet air aspiration kit is available.		**20027577**
	G20-G20S	Inlet air aspiration kit is available.		**20027580**
		**LIGHT OIL FILTER** For cleaning light oil from dirty particles and impurities filters with the following features are available.		
	All models	Filtering degree 60 µm (filter made up of aluminium body and stainless steel filtering cartridge).	(2)	**3006561**
	All models	Filtering degree 60 µm (filter made up of aluminium cover, plastic tank and nylon filtering cartridge).	(3)	**3075011**
	All models	**LIGHT OIL FILTER/DEGASSING UNIT** To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.		**3000926**
	All models	**HOUR COUNTER KIT FOR 530 SE AND 531 SE CONTROL BOXES** To measure the burner working time a hour counter kit is available.		**3000904**
	All models	**7-PIN PLUG KIT** If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		**3000945**
	All models	**7-POLE SOCKET KIT FOR 530 SE AND 531 SE CONTROL BOXES** For burner without pre installed socket a 7-pole socket kit with cable is available.		**3001065**

(1) Made up stainless steel.
(2) Available singularly.
(3) Available in packaging of 50 pieces.

STATE OF SUPPLY

Completely automatic monobloc light oil burners, one stage operation, made up of:

- Fan with forward curve blades
- Metallic cover lined with sound-proofing material
- Air damper, completely closed in stand by, with adjustment
- Single phase electric motor 230 V, 50 Hz
- Combustion head fitted with:
  - stainless steel head cone, resistant to high temperatures
  - ignition electrodes
  - flame stability disk
- Geared pump for fuel supply, fitted with:
  - filter
  - pressure regulator
  - attachments for fitting a pressure gauge and vacuum meter
  - internal by-pass for preparing for single-pipe installations
- Fuel feed solenoid valve incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Light oil nozzle
- IP X0D (IP 40) protection level
- Fuel pre-heater (optional)
- Reduced output ignition mechanism (optional)

STANDARD EQUIPMENT

- Two flexible pipes for connection to the light oil supply line
- Two nipples for connection to the pump
- Flange, screws and nuts for fixing
- Thermal gasket
- 7-pin plug (on request)
- Maintenance assembly
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Two stage light oil burners

RIELLO 40 GD



- Two stage light oil burners

Riello 40 GD series of two stage light oil burners, is a complete range of products developed to respond to any request for residential heating. The Riello 40 GD series is available in three different models, with an output ranging from 54 to 240 kW, divided in two different structures.
All the models use the same components designed by Riello for the Riello 40 GD series. The high quality level guarantees safe working.
In developing these burners, special attention was paid to reducing noise, to 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 267 European Standard and conform to European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.
All the Riello 40 GD burners are fired before leaving the factory.

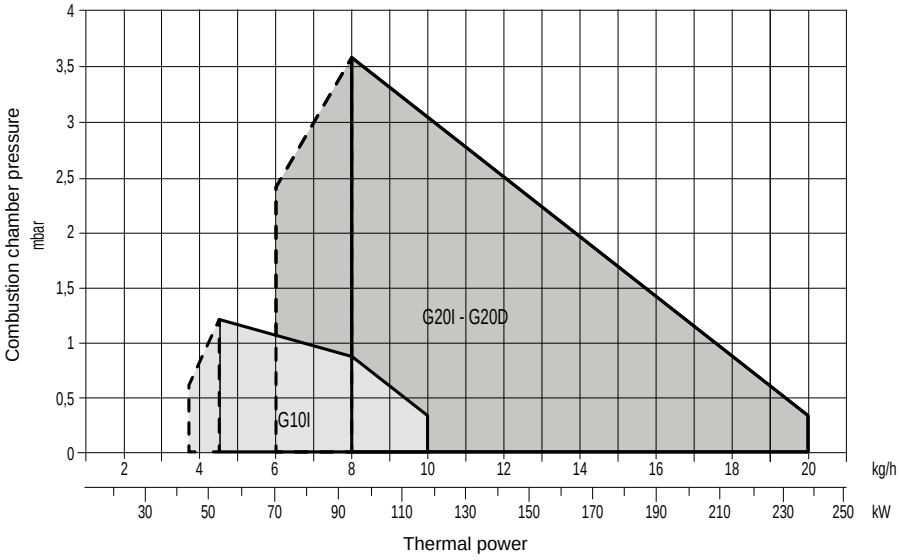
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply	Note	Code
	kW	kg/h	kW	Ph/V/Hz		
G10I	44/54-120	3.7/4.5-10	0.17	1/230/50		**3746613**
G20D	71/95-240	6/8-20	0.33	1/230/50		**3748414**
G20D	71/95-231	6/8-19.5	0.40	1/220/60	(1)	**3748415**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Philippines version.

FIRING RATES

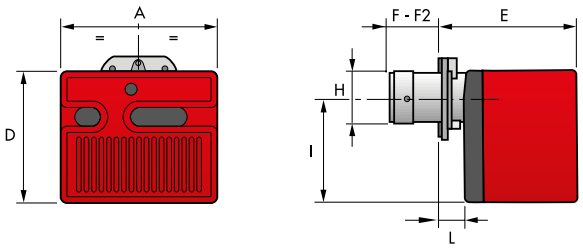


Useful working field for choosing the burner

1st stage operation range

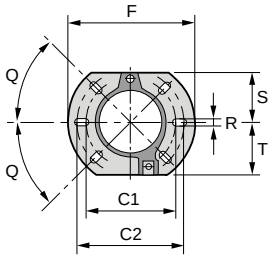
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

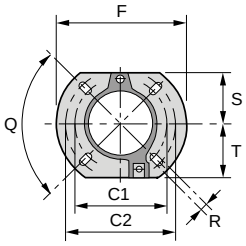


Description	A mm	D mm	E mm	F mm	F2 mm	H mm	I mm	L mm
G10I	305	262	261	108	-	105	204	40
G20I - G20D	350	298	295	118	-	125	230	41

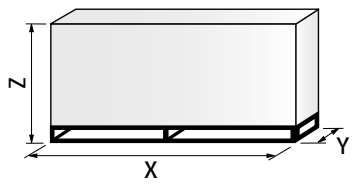
G10I



G20I - G20D

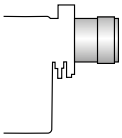
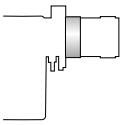


Description	C1 mm	C2 mm	F mm	Q mm	R mm	S mm	T mm
G10I	140	170	189	45°	11	83	83
G20I	160	190	213	90°	11	99	99
G20D	160	190	213	90°	11	99	99



Description	X mm	Y mm	Z mm	Net weight kg
G10I	423	348	340	13
G20I	483	393	377	15
G20D	483	393	377	16.3

ACCESSORIES

Drawing	Burner model	Specification		Code
		**EXTENDED HEAD KIT** Kits of extended heads are available.		
	G10I	Standard head length = 108 mm - Extended head length = 168 mm		**3000643**
	G20I	Standard head length = 118 mm - Extended head length = 178 mm		**3000644**
	G20D	Standard head length = 118 mm - Extended head length = 260 mm		**3000771**
		**SPACER KIT** Using the special accessories, the burner can be pulled back to reduce head penetration into the combustion chamber.		
	G20I - G20D	Spacer thickness S = 15 mm		**20103452**
	All models	**LIGHT OIL FILTER** For cleaning light oil from dirty particles and impurities filters with the following features are available. Filtering degree 60 µm (filter made up of aluminium body and stainless steel filtering cartridge).	(1)	**3006561**
	All models	Filtering degree 60 µm (filter made up of aluminium cover, plastic tank and nylon filtering cartridge).	(2)	**3075011**
	All models	**LIGHT OIL FILTER/DEGASSING UNIT** To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.		**3000926**
	All models	**HOUR COUNTER KIT FOR 530 SE AND 531 SE CONTROL BOXES** To measure the burner working time a hour counter kit is available.		**3000904**
	All models	**7-PIN PLUG KIT** If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		**3000945**

(1) Available singularly.
(2) Available in packaging of 50 pieces.

STATE OF SUPPLY

Completely automatic monobloc light oil burners, two stage operation, made up of:
- Fan with forward curve blades
- Cover lined with sound-proofing material
- Servomotor to drive the air damper to fully closed position at stand-by, low and high fire position
- Single phase electric motor 230 V, 50 Hz
- Combustion head fitted with:
  - stainless steel head cone, resistant to high temperatures
  - ignition electrodes
  - flame stability disk
- Geared pump for fuel supply, fitted with:
  - filter
  - pressure regulator
  - attachments for fitting a pressure gauge and vacuum meter
  - internal by-pass for preparing for single-pipe installations
- Fuel feed solenoid valves incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Light oil nozzle
- IP X0D (IP 40) protection level
- Reduced output ignition mechanism

STANDARD EQUIPMENT

- Two flexible pipes for connection to the light oil supply line
- Two nipples for connection to the pump
- Flange, screws and nuts for fixing
- Thermal screen
- 7-pin plug
- 4-pin plug
- External probe (for “I” versions only)
- Maintenance assembly
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

One stage light oil burners

RL 34/1



- One stage light oil burners

RL 34/1 burners series covers a firing range from 107 to 398 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
Special care has been paid to keeping overall dimensions compact and to easy servicing.
The elevated fans and combustion head performance guarantees flexibility of use and excellent operation at all firing rates. A wide range of accessories guarantees elevated working flexibility.

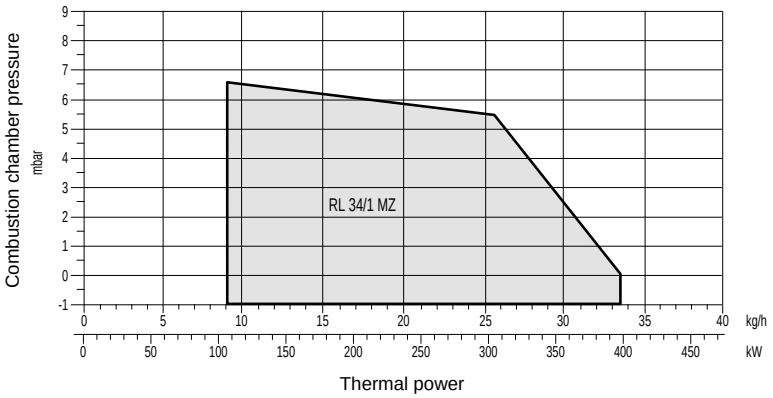
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz	
RL 34/1 MZ TC FS1	107-398	9-34	0.6	1/230/50-60	230/50-60	**3470110**
RL 34/1 MZ TL FS1	107-398	9-34	0.6	1/230/50-60	230/50-60	**3470111**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

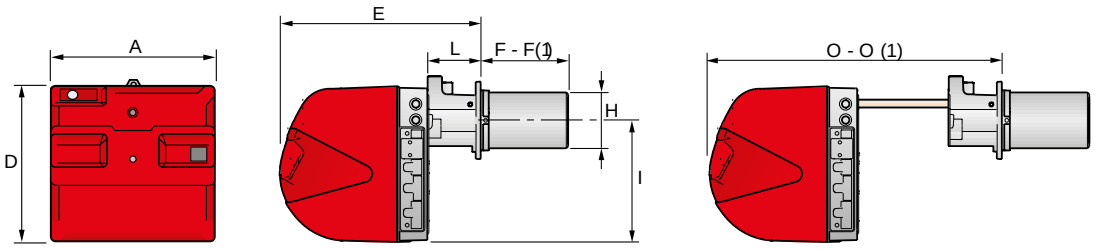
FIRING RATES



Useful working field for choosing the burner

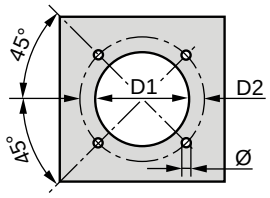
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

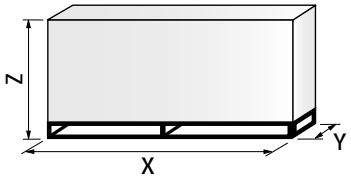


Description	A mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	O - O(1) mm
RL 34/1 MZ	442	422	508	216 - 351	140	305	138	780 - 915

(1) Dimension with extended head.



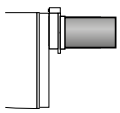
Description	D1 mm	D2 mm	Ø mm
RL 34/1 MZ	160	224	M8

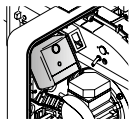
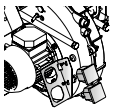


Description	X(1) mm	Y mm	Z mm	Net weight kg
RL 34/1 MZ	1000	485	500	32

(1) Length with short and extended head.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RL 34/1 MZ	**EXTENDED HEAD KIT** “Standard head” burners can be transformed into “extended head” versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below. Standard head length = 216 mm - Extended head length = 351 mm	**3010426**
	RL 34/1 MZ	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table: Spacer thickness S = 110 mm	**3010095**
	RL 34/1 MZ	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**
	RL 34/1 MZ	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm. Max capability 80 kg/h (more filters are needed for higher flow).	**3010055**
	RL 34/1 MZ	**CONNECTION FLANGE KIT** A kit is available for use where the burner opening on the boiler is of excessive diameter.	**3010138**
	RL 34/1 MZ	**VOLT FREE CONTACT KIT** A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit to remote the flame presence signal and the burner lockout indication.	**3010419**

Drawing	Burner model	Specification	Code
	RL 34/1 MZ	**GROUND FAULT INTERRUPTER KIT** A “Ground fault interrupter kit” is available as a safety device for electrical system fault.	**3010448**
	RL 34/1 MZ	**POST-VENTILATION KIT** To have 20 s ventilation after opening of thermostats chain, a special kit is available.	**3010453**
	RL 34/1 MZ	**HOURS COUNTER KIT** To measure the burner working time a hours counter kit is available.	**3010450**
	All models	**PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES)** When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
	RL 34/1	**HEAD KIT FOR “REVERSE FLAME CHAMBER”** In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional cylinder. Standard head length with cylinder 319 mm - Extended head length with cylinder 429 mm	**3010178**
	RL 34/1 MZ	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Type	Specification				Note	Code
			GPH	Rated delivery (kg/h)				
				10 bar	12 bar	14 bar		
	RL 34/1 MZ	60°A	1.00	4.1	4.5	4.9	(1)	**3042078**
		60°A	1.25	4.7	5.2	5.6	(1)	**3042094**
		60°A	1.50	5.7	6.3	6.8	(1)	**3042108**
		60°A	1.75	6.7	7.3	7.9	(1)	**3042114**
		60°A	2.00	7.7	8.5	9.2	(1)	**3042124**
		60°A	2.50	9.6	10.6	11.5	(1)	**3042144**
		60°A	3.00	11.5	12.7	13.8	(1)	**3042148**
		60°A	3.50	13.5	14.8	16.1	(1)	**3042164**
		60°A	4.00	15.4	17	18.4	(1)	**3042174**

(1) Each burner needs N° 2 nozzles.

STATE OF SUPPLY

Monoblock forced draught oil burner with one stage operation, fully automatic, made up of:
- Air suction circuit with sound proofing material
- High performance fan with forward curve blades
- Air damper for air setting
- Starting motor at 2800 rpm, single-phase, 230V / 50-60Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Fan pressure test point
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Valve unit with a double oil delivery valve on the output circuit
- Photocell for flame detection
- Microprocessor-based burner safety control box, with diagnostic function
- Plugs and socket for electrical connections, accessible from the external of the cover
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) electric protection level

STANDARD EQUIPMENT

– 2 flexible pipes for connection to the oil supply network
– 2 gaskets for the flexible pipes
– 2 nipples for connection to the pump
– 1 thermal screen
– 2 slide bar extensions (for model with long blast tube)
– 4 screws for fixing the burner flange to the boiler
– 1 7pin plug for electrical connection
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Two stage light oil burners

RL 34-44



- Two stage light oil burners

RL 34-44 series of burners covers a firing range from 97 to 485 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Operation is “two stage”; the burners are fitted with a microprocessor-based control panel, which supplies indication of burner status and fault causes.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. The elevated performance of the fans and combustion head, guarantee flexibility of use and excellent working at all firing rates.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.

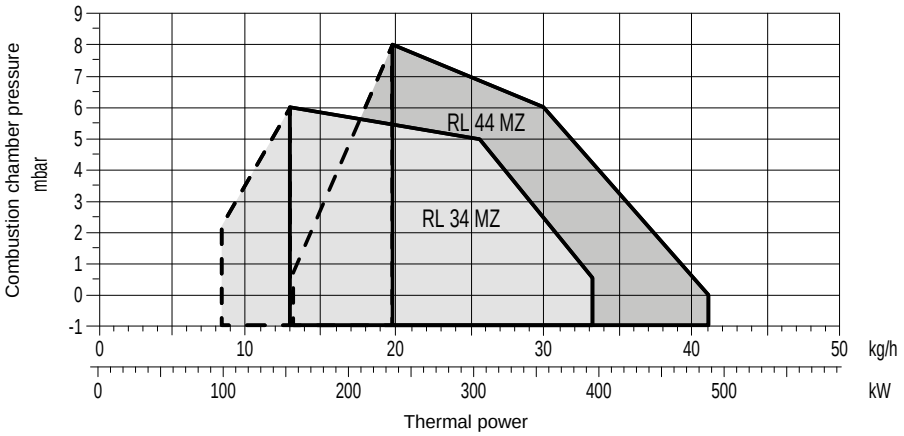
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
RL 34 MZ TC FS1	97/154-395	8,3/13-33,6	0,6	1/220-230/50-60	220-230/50-60	(1)	**3470210**
RL 34 MZ TL FS1	97/154-395	8,3/13-33,6	0,6	1/220-230/50-60	220-230/50-60	(1)	**3470211**
RL 44 MZ TC FS1	155/235-485	13/20-41	0,7	1/220-230/50-60	220-230/50-60	(1)	**3470310**
RL 44 MZ TL FS1	155/235-485	13/20-41	0,7	1/220-230/50-60	220-230/50-60	(1)	**3470311**
RL 44 MZ TC FS1	155/235-485	13/20-41	0,75	3/400/50-60	220-230/50-60	(1)	**3470340**
RL 44 MZ TL FS1	155/235-485	13/20-41	0,75	3/400/50-60	220-230/50-60	(1)	**3470341**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Model with plug and socket.
Attention: the nozzles are supplied as accessories which must be ordered separately; please refer to the "NOZZLES" section.

FIRING RATES

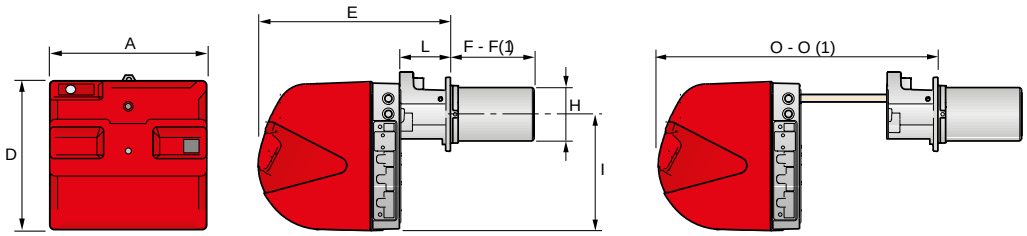


Useful working field for choosing the burner

Modulation range

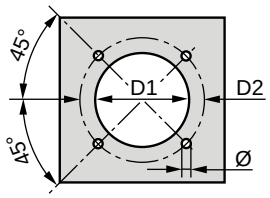
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

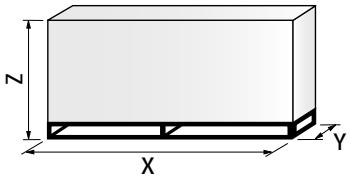


Description	A mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	O - O(1) mm
RL 34 MZ	442	422	508	216 - 351	140	305	138	780 - 915
RL 44 MZ	442	422	508	216 - 351	152	305	138	780 - 915

(1) Dimension with extended head.



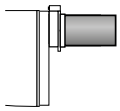
Description	D1 mm	D2 mm	Ø mm
RL 34 MZ	160	224	M8
RL 44 MZ	160	224	M8

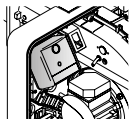
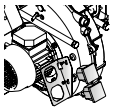


Description	X(1) mm	Y mm	Z mm	Net weight kg
RL 34 MZ	1010	520	510	32
RL 44 MZ	1010	520	510	33

(1) Length with short and extended head.

ACCESSORIES

Drawing	Burner model	Specification	Code
		**EXTENDED HEAD KIT** "Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.	
	RL 34 MZ	Standard head length = 216 mm - Extended head length = 351 mm	**3010426**
	RL 44 MZ	Standard head length = 216 mm - Extended head length = 351 mm	**3010425**
	All models	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table: Spacer thickness S = 110 mm	**3010095**

Drawing	Burner model	Specification	Code
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**
	All models	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm. Max capability 80 kg/h (more filters are needed for higher flow).	**3010055**
	All models	**CONNECTION FLANGE KIT** A kit is available for use where the burner opening on the boiler is of excessive diameter.	**3010138**
	All models	**VOLT FREE CONTACT KIT** A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit to remote the flame presence signal and the burner lockout indication.	**3010419**
	All models	**GROUND FAULT INTERRUPTER KIT** A “Ground fault interrupter kit” is available as a safety device for electrical system fault.	**3010448**
	All models	**POST-VENTILATION KIT** To have 20 s ventilation after opening of thermostats chain, a special kit is available.	**3010453**
	All models	**HOURS COUNTER KIT** To measure the burner working time a hours counter kit is available.	**3010450**
	All models	**PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES)** When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
		**HEAD KIT FOR “REVERSE FLAME CHAMBER”** In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional cylinder.	
	RL 34 MZ	Standard head length with cylinder 319 mm - Extended head length with cylinder 429 mm	**3010178**
	RL 44 MZ	Standard head length with cylinder 319 mm - Extended head length with cylinder 429 mm	**3010179**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Type	Specification				Note	Code
			GPH	Rated delivery (kg/h)				
				10 bar	12 bar	14 bar		
	RL 34 MZ	60°A	1.00	4.1	4.5	4.9	(1)	**3042078**
		60°A	1.25	4.7	5.2	5.6	(1)	**3042094**
		60°A	1.50	5.7	6.3	6.8	(1)	**3042108**
		60°A	1.75	6.7	7.3	7.9	(1)	**3042114**
		60°A	2.00	7.7	8.5	9.2	(1)	**3042124**
		60°A	2.50	9.6	10.6	11.5	(1)	**3042144**
		60°A	3.00	11.5	12.7	13.8	(1)	**3042148**
		60°A	3.50	13.5	14.8	16.1	(1)	**3042164**
		60°A	4.00	15.4	17	18.4	(1)	**3042174**
		60°A	4.50	17.3	19.1	20.7	(1)	**3042184**

Drawing	Burner model	Type	Specification				Note	Code
			GPH	Rated delivery (kg/h)				
				10 bar	12 bar	14 bar		
	RL 44 MZ	45°A	1.50	5.7	6.3	6.8	(1)	**20011655**
		45°A	1.75	6.7	7.3	7.9	(1)	**20011658**
		45°A	2.00	7.7	8.5	9.2	(1)	**20011662**
		45°A	2.50	9.6	10.6	11.5	(1)	**20011666**
		45°A	3.00	11.5	12.7	13.8	(1)	**20011669**
		45°A	3.50	13.5	14.8	16.1	(1)	**20011672**
		45°A	4.00	15.4	17	18.4	(1)	**20011674**
		45°A	4.50	17.3	19.1	20.7	(1)	**20009760**
		45°A	5.00	19.2	21.2	23	(1)	**20011677**
		45°A	5.50	21.1	23.3	25.3	(1)	**20011678**
		45°A	6.00	23.1	25.5	27.7	(1)	**20011679**

(1) Each burner needs N° 2 nozzles.

STATE OF SUPPLY

Monoblock forced draught oil burner with two stage operation, fully automatic, made up of:
- Air suction circuit with sound proofing material
- High performance fan with straight blades
- Air damper for air setting controlled by an adjustable hydraulic ram
- Starting motor at 2800 rpm, single-phase / 220-230V / 50-60Hz or three-phase 380-400V / 50-60Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Valve unit with an oil safety valve and two delivery oil valves on the output circuit
- Photocell for flame detection
- Microprocessor-based burner safety control box, with diagnostic function
- Plugs and Sockets for electrical connection, accessible from the external of the cover
- Burner on/off switch
- Flame inspection window
- 1st - 2nd stage manual switch
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level

STANDARD EQUIPMENT

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- 2 Plugs for electrical connection (RL 34-44 MZ single-phase)
- 3 Plugs for electrical connection (RL 44 MZ three-phase)
- 2 slide bar extensions (for the extended head models)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Two stage light oil burners

RL 50-64



- Two stage light oil burners

RL 50-64 series of burners covers a firing range from 148 to 830 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. Operation is “two stage”; the burners are fitted with a microprocessor-based control panel, which supplies indication of burner status and fault causes.
Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. The elevated performance of the fans and combustion head, guarantee flexibility of use and excellent working at all firing rates.
The exclusive design ensures reduced dimensions, simple use and maintenance.
A wide range of accessories guarantees elevated working flexibility.

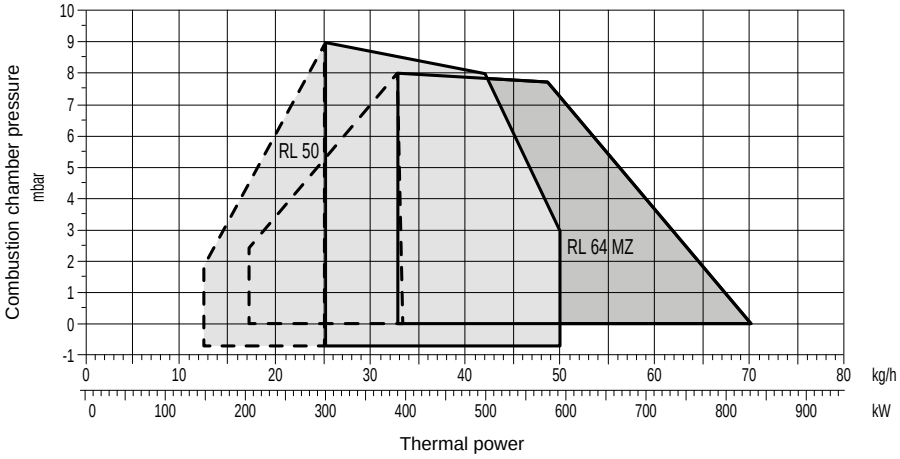
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
RL 50 TC FS1	148/296-593	12.5/25-50	0.75	3/400/50	230/50-60	(1)	**3474632**
RL 50 TL FS1	148/296-593	12.5/25-50	0.75	3/400/50	230/50-60	(1)	**3474633**
RL 50 TC FS1	148/296-593	12.5/25-50	0.75	3/380-460/60	230/50-60	(1)	**3474680**
RL 50 TL FS1	148/296-593	12.5/25-50	0.75	3/380-460/60	230/50-60	(1)	**3474681**
RL 64 MZ TC FS1	206/391-830	17.4/33-70	1.4	3/400/50	230/50-60	(1)	**3470410**
RL 64 MZ TL FS1	206/391-830	17.4/33-70	1.4	3/400/50	230/50-60	(1)	**3470411**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Model with plug and socket.
ATTENTION: the nozzles are supplied as accessories which must be ordered separately; please refer to the "NOZZLES" section.

FIRING RATES



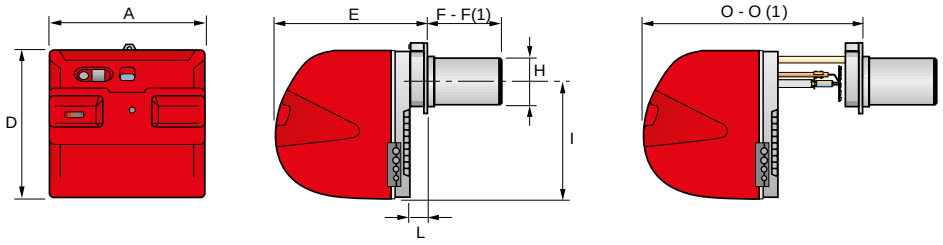
Useful working field for choosing the burner

Modulation range

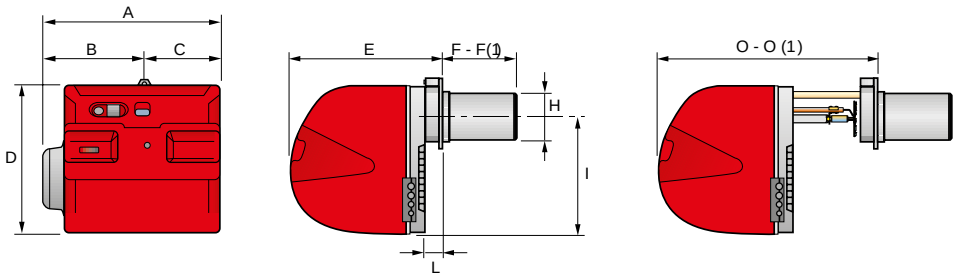
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

RL 50

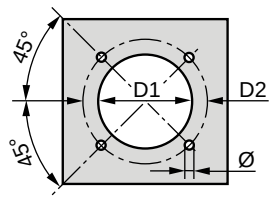


RL 64 MZ

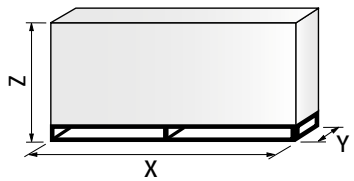


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	O - O(1) mm
RL 50	476	-	-	474	468	216 - 351	152	352	52	672 - 807
RL 64 MZ	538	300	238	490	477	250 - 385	179	335	60	680 - 815

(1) Dimension with extended head.



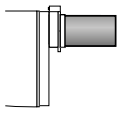
Description	D1 mm	D2 mm	Ø mm
RL 50	160	224	M8
RL 64 MZ	185	275-325	M12



Description	X(1) mm	Y mm	Z mm	Net weight kg
RL 50	1200	520	502	39
RL 64 MZ	1200	560	520	42

(1) Length with short and extended head.

ACCESSORIES

Drawing	Burner model	Specification	Code
		**EXTENDED HEAD KIT** "Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.	
	RL 50	Standard head length = 216 mm - Extended head length = 351 mm	**3010075**
	RL 64 MZ	Standard head length = 250 mm - Extended head length = 385 mm	**3010114**
		**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table.	
	RL 50	Spacer thickness S = 110 mm	**3010095**
	RL 64 MZ	Spacer thickness S = 135 mm	**3010129**
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**
	All models	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm. Max capability 80 kg/h (more filters are needed for higher flow).	**3010055**
	RL 50	**CONNECTION FLANGE KIT** A kit is available for use where the burner opening on the boiler is of excessive diameter.	**3010138**
	RL 64 MZ	**VOLT FREE CONTACT KIT** A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit to remote the flame presence signal and the burner lockout indication.	**3010419**
	All models	**PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES)** When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Type	Specification				Note	Code
			GPH	Rated delivery (kg/h)				
				10 bar	12 bar	14 bar		
	RL 50	60°B	3.00	11.5	12.7	13.8	(1)	**3042158**
		60°B	3.50	13.5	14.8	16.1	(1)	**3042162**
	RL 50 - 64 MZ	60°B	4.00	15.4	17	18.4	(1)	**3042172**
		60°B	4.50	17.3	19.1	20.7	(1)	**3042182**
		60°B	5.00	19.2	21.2	23	(1)	**3042192**
		60°B	5.50	21.1	23.3	25.3	(1)	**3042202**
		60°B	6.00	23.1	25.5	27.7	(1)	**3042212**
		60°B	6.50	25	27.6	30	(1)	**3042222**
	RL 64 MZ	60°B	7.00	26.9	29.7	32.3	(1)	**3042232**
		60°B	7.50	28.8	31.8	34.6	(1)	**3042242**
		60°B	8.00	30.8	33.9	36.9	(1)	**3042252**
		60°B	8.50	32.7	36.1	39.2	(1)	**3042262**
		60°B	9.50	36.5	40.3	43.8	(1)	**3042282**
		60°B	10.00	38.4	42.4	46.1	(1)	**3042292**
		60°B	11.00	42.3	46.7	50.7	(1)	**3042312**
		60°B	12.00	46.1	50.9	55.3	(1)	**3042322**
		60°B	13.00	50	55.1	59.9	(1)	**3042332**

Drawing	Burner model	Type	Specification				Note	Code
			GPH	Rated delivery (kg/h)				
				10 bar	12 bar	14 bar		
	RL 64 MZ	60°B	14.00	53.8	59.4	64.5	(1)	**3042352**
		60°B	15.00	57.7	63.6	69.2	(1)	**3042362**
		60°B	16.00	61.5	67.9	73.8	(1)	**3042382**
		60°B	17.00	65.4	72.1	78.4	(1)	**3042392**

(1) Each burner needs N° 2 nozzles.

STATE OF SUPPLY

Monoblock forced draught oil burner with two stage operation, fully automatic, made up of:
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (RL 50 models) or straight blades (RL 64 MZ models)
– Air damper for air setting controlled by an adjustable hydraulic ram
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
– Combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • flame stability disk
– Gears pump for high pressure fuel supply, fitted with:
  • filter
  • pressure regulator
  • connections for installing a pressure gauge and vacuometer
  • internal by-pass for single pipe installation
– Valve unit with an oil safety valve and two delivery oil valves on the output circuit
– Photocell for flame detection
– Microprocessor-based burner safety control box, with diagnostic function
– Burner on/off switch
– Flame inspection window
– 1st - 2nd stage manual switch
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 electric protection level

STANDARD EQUIPMENT

– 2 flexible pipes for connection to the oil supply network
– 2 gaskets for the flexible pipes
– 2 nipples for connection to the pump
– 4 screws for fixing the burner flange to the boiler
– 1 thermal screen
– Fairleads for electrical connections (RL 50 models)
– 2 slide bar extensions (for the extended head models)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Two stage light oil burners

RL 70-250



- Two stage light oil burners

RL 70÷250 series of burners covers a firing range from 255 to 2700 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. Operation is “two stage”; the burners are fitted with a microprocessor-based control panel, which supplies indication of burner status and fault causes. Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. The elevated performance of the fans and combustion head, guarantee flexibility of use and excellent working at all firing rates.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.

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.

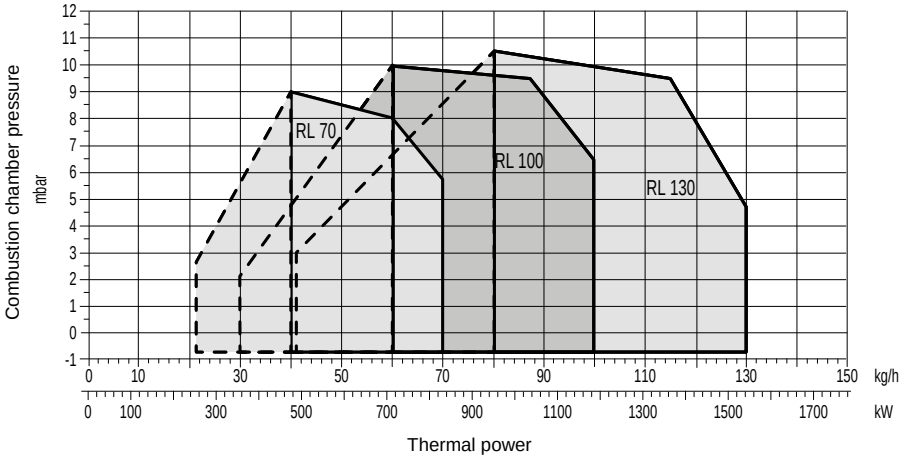
TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
RL 70 TC FS1	255/474-830	21.5/40-70	1.4	3/400/50	230/50-60	(2)	**3475032**
RL 70 TL FS1	255/474-830	21.5/40-70	1.4	3/400/50	230/50-60	(2)	**3475033**
RL 70 TC FS1	255/474-830	21.5/40-70	1.4	3/400/50	230/50-60	(1)(2)	**3475034**
RL 70 TL FS1	255/474-830	21.5/40-70	1.4	3/400/50	230/50-60	(1)(2)	**3475035**
RL 70 TC FS1	255/474-830	21.5/40-70	1.4	3/380/60	230/50-60	(2)	**3475080**
RL 70 TL FS1	255/474-830	21.5/40-70	1.4	3/380/60	230/50-60	(2)	**3475081**
RL 100 TC FS1	356/711-1186	30/60-100	1.8	3/400/50	230/50-60	(2)	**3475232**
RL 100 TL FS1	356/711-1186	30/60-100	1.8	3/400/50	230/50-60	(2)	**3475233**
RL 100 TC FS1	356/711-1186	30/60-100	1.8	3/400/50	230/50-60	(1)(2)	**3475234**
RL 100 TC FS1	356/711-1186	30/60-100	1.8	3/380-460/60	230/50-60	(2)	**3475280**
RL 100 TL FS1	356/711-1186	30/60-100	1.8	3/380-460/60	230/50-60	(2)	**3475281**
RL 130 TC FS1	486/948-1540	41/80-130	2.6	3/400/50	230/50-60	(2)	**3475432**
RL 130 TL FS1	486/948-1540	41/80-130	2.6	3/400/50	230/50-60	(2)	**3475433**
RL 130 TC FS1	486/948-1540	41/80-130	2.6	3/400/50	230/50-60	(1)(2)	**3475434**
RL 130 TL FS1	486/948-1540	41/80-130	2.6	3/400/50	230/50-60	(1)(2)	**3475435**
RL 130 TC FS1	486/948-1540	41/80-130	2.6	3/380-460/60	230/50-60	(2)	**20057368**
RL 130 TL FS1	486/948-1540	41/80-130	2.6	3/380-460/60	230/50-60	(2)	**3475481**
RL 190 TC FS1	759/1423-2443	64/120-206	5.87	3/400/50	230/50-60	(2)	**3475613**
RL 190 TL FS1	759/1423-2443	64/120-206	5.87	3/400/50	230/50-60	(2)	**20052627**
RL 190 TC FS1	759/1423-2443	64/120-206	5.87	3/400/50	230/50-60	(1)(2)	**3475614**

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
RL 190 TC FS1	759/1423-2443	64/120-206	5.87	3/380/60	220/60	(2)	**3475680**
RL 190 TC FS1	759/1423-2443	64/120-206	5.87	3/220/60	220/60	(2)	**20011009**
RL 250 MZ TC FS1	600/1250-2700	51/106-228	7.2	3/400/50	230/50-60	(2)	**20204865**
RL 250 MZ TL FS1	600/1250-2700	51/106-228	7.2	3/400/50	230/50-60	(2)	**20204871**
RL 250 MZ TC FS1	600/1250-2700	51/106-228	7.2	3/380/60	220/60	(2)	**20207008**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Model with plug and socket.
(2) Model with terminal board.
ATTENTION: the nozzles are supplied as accessories which must be ordered separately; please refer to the "NOZZLES" section.

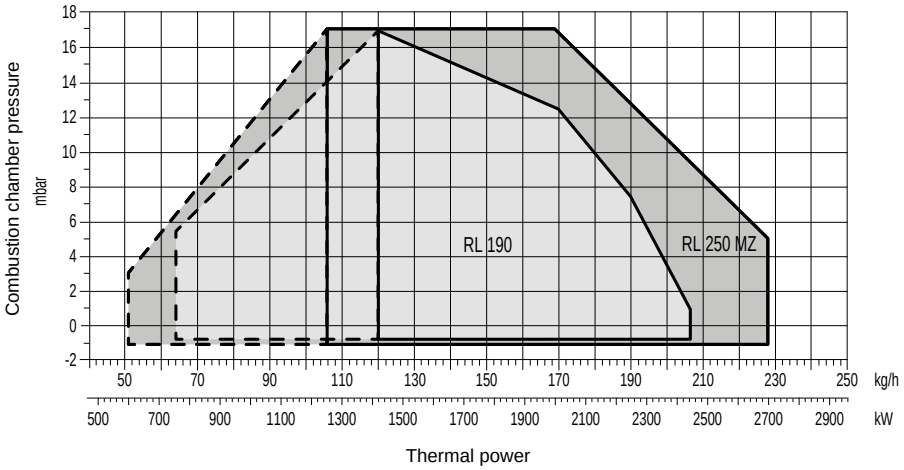
FIRING RATES



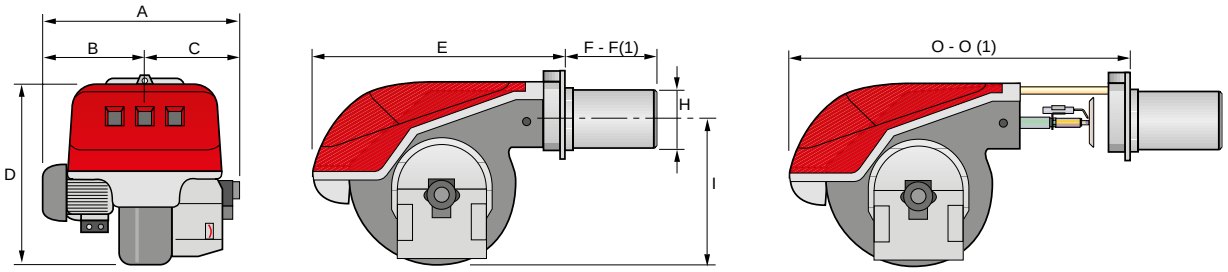
Useful working field for choosing the burner

Modulation range

Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

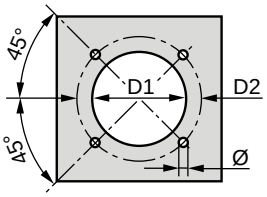


OVERALL DIMENSIONS

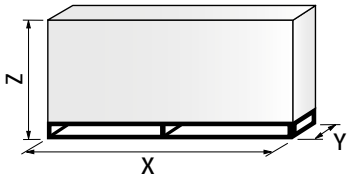


Description	A mm	B mm	C mm	D mm	E mm	F - F (1) mm	H mm	I mm	O - O (1) mm
RL 70	580	296	284	555	680	250 - 385	179	430	951 - 1086
RL 100	599	312	287	555	680	250 - 385	179	430	951 - 1086
RL 130	625	338	287	555	680	250 - 385	189	430	951 - 1086
RL 190	756	366	390	555	712	370 - 530*	222	430	1166 - -
RL 250 MZ	910	432	478	555	705	378 - 528*	222	436	1163 - -

(1) Dimension with extended head.
* By installation of extended head kit.



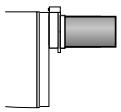
Description	D1 mm	D2 mm	Ø mm
RL 70	185	275-325	M12
RL 100	185	275-325	M12
RL 130	195	275-325	M12
RL 190	230	325-368	M16
RL 250 MZ	230	325-368	M16



Description	X(1) mm	Y mm	Z mm	Net weight kg
RL 70	1410	692	655	60
RL 100	1410	692	655	63
RL 130	1410	692	655	66
RL 190	1410	985	655	75
RL 250 MZ	1410	1040	655	140

(1) Length with short and extended head.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		**EXTENDED HEAD KIT** “Standard head” burners can be transformed into “extended head” versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.		
	RL 70	Standard head length = 250 mm - Extended head length = 385 mm		**3010114**
	RL 100	Standard head length = 250 mm - Extended head length = 385 mm		**3010115**
	RL 130	Standard head length = 250 mm - Extended head length = 385 mm		**3010116**
	RL 190	Standard head length = 370 mm - Extended head length = 530 mm	(1)	**3010444**
	RL 250 MZ	Standard head length = 378 mm - Extended head length = 528 mm		**3010422**
		**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table:		
	RL 70-100-130	Spacer thickness S = 135 mm		**3010129**
	RL 190-250 MZ	Spacer thickness S = 102 mm		**3000722**
	All models	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm. Max capability 80 kg/h (more filters are needed for higher flow).		**3010055**

Drawing	Burner model	Specification	Note	Code
	RL 70 - 100 - 130	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	RL 190	Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	RL 250 MZ	Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1140 mm, E = 1645 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010376**
	All models	**PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES)** When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) Kit to be used on burners recognizable by a serial number that is over or equal to 02426XXXXXX, for burners with a serial number that is under or equal to 02416XXXXXX please use the Kit coded 3010197.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Type	Specification				Note	Code
			GPH	Rated delivery (kg/h)				
				10 bar	12 bar	14 bar		
	RL 70	60°B	5.00	19.2	21.2	23	(1)	**3042192**
		60°B	5.50	21.1	23.3	25.3	(1)	**3042202**
		60°B	6.00	23.1	25.5	27.7	(1)	**3042212**
		60°B	6.50	25	27.6	30	(1)	**3042222**
	RL 70-100	60°B	7.00	26.9	29.7	32.3	(1)	**3042232**
		60°B	7.50	28.8	31.8	34.6	(1)	**3042242**
		60°B	8.00	30.8	33.9	36.9	(1)	**3042252**
		60°B	8.50	32.7	36.1	39.2	(1)	**3042262**
	RL 70-100-130	60°B	9.50	36.5	40.3	43.8	(1)	**3042282**
	RL 70-100-130-190	60°B	10.00	38.4	42.4	46.1	(1)	**3042292**
		60°B	11.00	42.3	46.7	50.7	(1)	**3042312**
	RL 100-130-190 RL 250 MZ	60°B	12.00	46.1	50.9	55.3	(1)	**3042322**
		60°B	13.00	50	55.1	59.9	(1)	**3042332**
		60°B	14.00	53.8	59.4	64.5	(1)	**3042352**
		60°B	15.00	57.7	63.6	69.2	(1)	**3042362**
		60°B	16.00	61.5	67.9	73.8	(1)	**3042382**
	RL 130-190 RL 250 MZ	60°B	17.00	65.4	72.1	78.4	(1)	**3042392**
		60°B	18.00	69.2	76.4	83	(1)	**3042412**
		60°B	19.00	73	80.6	87.6	(1)	**3042422**
		60°B	20.00	76.9	84.8	92.2	(1)	**3042442**
	RL 190 RL 250 MZ	60°B	22.00	84.6	93.3	101.4	(1)	**3042462**
		60°B	24.00	92.2	101.8	110.6	(1)	**3042472**
		60°B	26.00	99.9	110.3	119.9	(1)	**3042482**
		60°B	28.00	107.6	118.8	129.1	(1)	**20018051**
	RL 250 MZ	60°B	30.00	110.4	122	132.4	(1)	**3042502**
		60°B	32.00	117.8	130.1	150.1	(1)	**3042512**
		60°B	35.00	128.8	142.1	154.5	(1)	**3042522**

(1) Each burner needs N° 2 nozzles.

STATE OF SUPPLY

Monoblock forced draught oil burner with two stage operation, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades (RL 70 - 100 - 130 models) or straight blades (RL 190 - 250 MZ models)
- Air damper for air setting controlled by an adjustable hydraulic ram (or by a servomotor for the RL 250 MZ)
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Valve unit with an oil safety valve and two delivery oil valves on the output circuit
- Photocell for flame detection
- Microprocessor-based burner safety control box, with diagnostic function
- Burner on/off switch
- Flame inspection window
- 1^{st} - 2^{nd} stage manual switch
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level

STANDARD EQUIPMENT

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- 2 slide bar extensions (for the extended head models and the RL 190 - 250 MZ models)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Modulating light oil burners

RL 28-50/M



- Modulating light oil burners

RL 28-50/M series of burners covers a firing range from 90 to 593 kW, and they have been designed for use in hot or superheater water boilers, hot air or steam generators, diathermic oil boilers. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RL 28-50/M series burners guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs. Optimization of sound emissions is guaranteed by the use of fans with forward inclined blades and sound deadening material incorporated in the air suction circuit. The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.

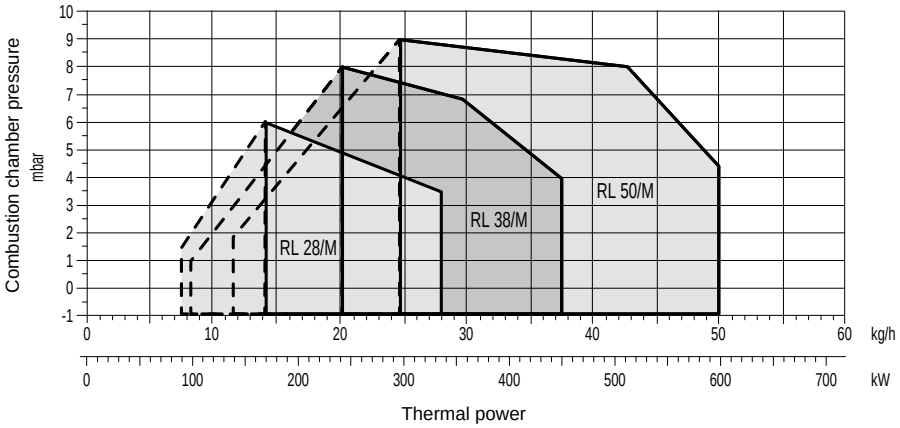
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
RL 28/M TC FS1	90/166-332	7.5/14-28	0.4	1/230/50	230/50-60	(1)	**20205675**
RL 28/M TL FS1	90/166-332	7.5/14-28	0.4	1/230/50	230/50-60	(1)	**20206107**
RL 28/M TC FS1	90/166-332	7.5/14-28	0.4	1/220-230/60	230/50-60	(1)	**20208689**
RL 38/M TC FS1	101/237-450	8.5/20-38	0.6	3/400/50	230/50-60	(1)	**20205653**
RL 38/M TL FS1	101/237-450	8.5/20-38	0.6	3/400/50	230/50-60	(1)	**20206288**
RL 38/M TC FS1	101/237-450	8.5/20-38	0.66	3/380-460/60	230/50-60	(1)	**20208691**
RL 50/M TC FS1	130/296-593	11/25-50	0.8	3/400/50	230/50-60	(1)	**20205656**
RL 50/M TL FS1	130/296-593	11/25-50	0.8	3/400/50	230/50-60	(1)	**20208625**
RL 50/M TC FS1	130/296-593	11/25-50	0.66	3/380-460/60	230/50-60	(1)	**20208692**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Model with LFL control box.

FIRING RATES

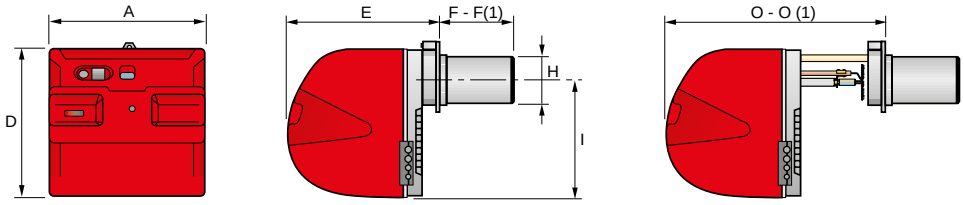


Useful working field for choosing the burner

Modulation range

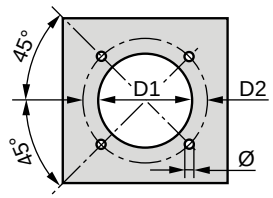
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

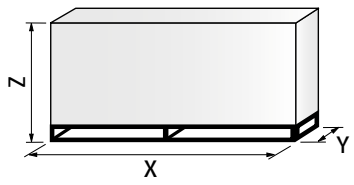


Description	A mm	D mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
RL 28/M	476	474	468	241 - 351	140	352	672 - 807
RL 38/M	476	474	468	241 - 351	140	352	672 - 807
RL 50/M	476	474	468	241 - 351	152	352	672 - 807

(1) Dimension with extended head.



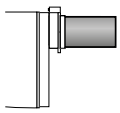
Description	D1 mm	D2 mm	Ø mm
RL 28/M	160	224	M8
RL 38/M	160	224	M8
RL 50/M	160	224	M8



Description	X(1) mm	Y mm	Z mm	Net weight kg
RL 28/M	872	540	550	39
RL 38/M	872	540	550	41
RL 50/M	872	540	550	42

(1) Length with extended combustion head.

ACCESSORIES

Drawing	Burner model	Specification	Code
		**EXTENDED HEAD KIT** “Standard head” burners can be transformed into “extended head” versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.	
	RL 28/M	Standard head length = 241 mm - Extended head length = 351 mm	**3010120**
	RL 38/M	Standard head length = 241 mm - Extended head length = 351 mm	**3010121**
	RL 50/M	Standard head length = 241 mm - Extended head length = 351 mm	**3010122**
	All models	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table: Spacer thickness S = 110 mm	**3010095**
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**
	All models	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm. Max capability 80 kg/h (more filters are needed for higher flow).	**3010055**
	All models	**POWER CONTROLLER** To obtain modulating operation, the burner requires a regulator. For remote setpoint use RWF 55.	
		RWF 50.2 - Standard version.	**20082208**
		RWF 55.5 - Plus version.	**20099657**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.,	**3090873**
		**HEAD KIT FOR “REVERSE FLAME CHAMBER”** In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional cylinder.	
	RL 28-38/M	Standard head length with cylinder 319 mm - Extended head length with cylinder 429 mm	**3010178**
	RL 50/M	Standard head length with cylinder 319 mm - Extended head length with cylinder 429 mm	**3010179**
	All models	**CONNECTION FLANGE KIT** A kit is available for use where the burner opening on the boiler is of excessive diameter.	**3010138**
	All models	**POTENTIOMETER KIT** Depending on the servomotor fitted to the burner, a three-pole potentiometer (0-1000Ω) can be installed to check the position of the servomotor.	**3010109**

NOZZLES

The following list shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Note	Code	
		Rated delivery (kg/h)		TYPE A3	TYPE A4
	RL 28-38/M	20	(1)	**3009851**	**-**
	RL 28-38-50/M	30	(1)	**3009852**	**-**
	RL 38-50/M	40	(1)	**3009853**	**20067277**
	RL 50/M	50	(1)	**3009854**	**20067279**

(1) Each burner needs N° 1 nozzle.

STATE OF SUPPLY

Monoblock forced draught oil burners, two stage progressive or modulating operation with a kit, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades
- Air damper for air setting and automatic oil output regulator controlled by a servomotor with variable cam
- Combustion head, that can be set on the basis of required output
- Gears pump for high pressure fuel supply
- Valve unit with a double oil safety valve on the output circuit and safety valve on the return circuit
- Safety oil pressure switch
- Photocell for flame detection
- Burner safety control box
- Burner on/off switch
- Flame inspection window
- Manual or automatic output increase/decrease switch
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level

STANDARD EQUIPMENT

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- Wiring loom fittings for electrical connections
- 2 slide bar extensions (for the extended head models)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Modulating light oil burners

RL 70-190/M



- Modulating light oil burners

RL 70-190/M series of burners covers a firing range from 261 to 2431 kW, and they have been designed for use in hot or superheater water boilers, hot air or steam generators, diathermic oil boilers. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes. RL 70-190/M series burners guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs. Optimization of sound emissions is guaranteed by the use of fans with forward inclined blades and sound deadening material incorporated in the air suction circuit. The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.

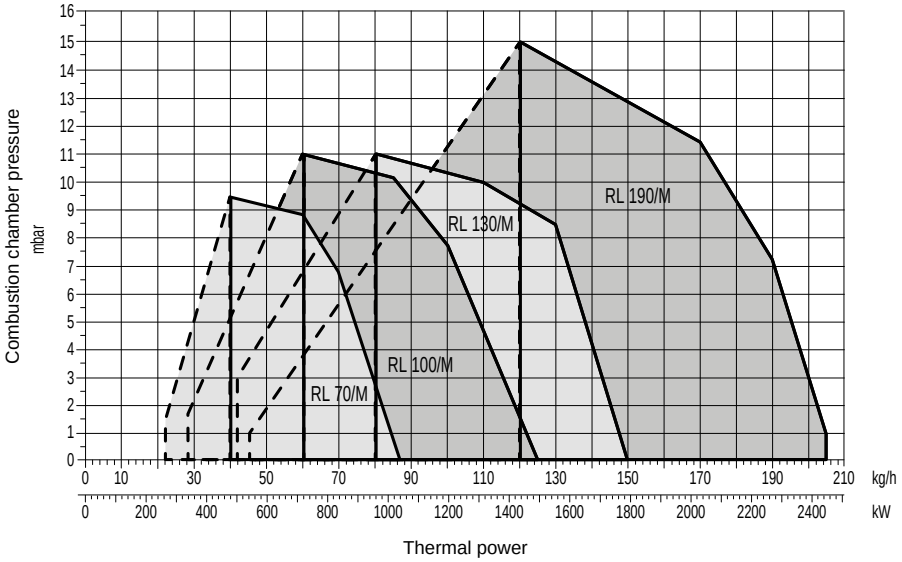
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
RL 70/MZ TC FS1	261/474-1043	22/40-88	1.4	3/400/50	230/50-60	(1)	**20205587**
RL 70/MZ TL FS1	261/474-1043	22/40-88	1.4	3/400/50	230/50-60	(1)	**20205576**
RL 100/MZ TC FS1	332/711-1482	28/60-125	2.1	3/400/50	230/50-60	(1)	**20205600**
RL 100/MZ TL FS1	332/711-1482	28/60-125	2.1	3/400/50	230/50-60	(1)	**20205603**
RL 100/MZ TC FS1	332/711-1482	28/60-125	2.1	3/380-460/60	230/50-60	(1)	**20205833**
RL 130/MZ TC FS1	498/948-1779	42/80-150	2.6	3/400/50	230/50-60	(1)	**20205645**
RL 130/MZ TL FS1	498/948-1779	42/80-150	2.6	3/400/50	230/50-60	(1)	**20205765**
RL 130/MZ TL FS1	498/948-1779	42/80-150	2.6	3/380-460/60	230/50-60	(1)	**20208634**
RL 190/MZ TC FS1	534/1423-2431	45/120-205	5.5	3/400/50	230/50-60	(1)	**20205588**
RL 190/MZ TC FS1	534/1423-2431	45/120-205	5.5	3/230/50	230/50-60	(1)	**20205799**
RL 190/MZ TC FS1	534/1423-2431	45/120-205	5.5	3/460/60	220/60	(1)	**20205826**
RL 190/MZ TL FS1	534/1423-2431	45/120-205	5.5	3/400/50	230/50-60	(1)	**20208601**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Model with LFL control box.

FIRING RATES

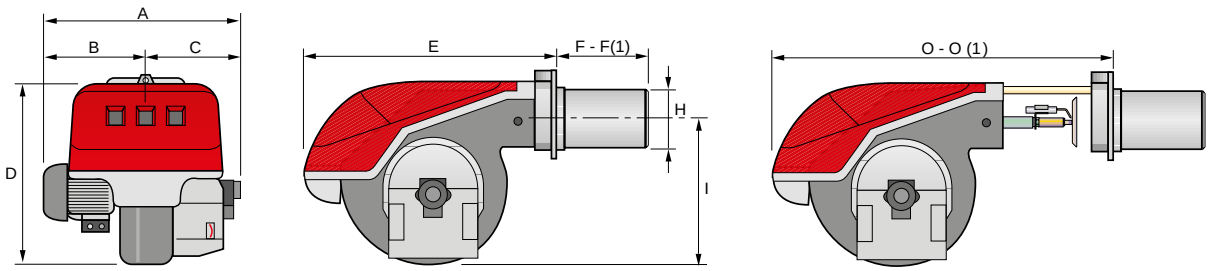


Useful working field for choosing the burner

Modulation range

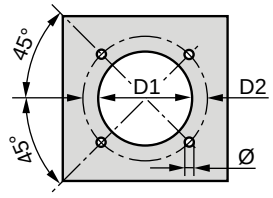
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

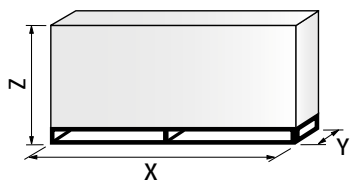


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
RL 70/M	663	296	367	555	680	272 - 385	179	430	951 - 1086
RL 100/M	679	312	367	555	680	272 - 385	179	430	951 - 1086
RL 130/M	705	338	367	555	680	272 - 385	189	430	951 - 1086
RL 190/M	813	366	447	555	712	370	222	430	1166

(1) Dimension with extended head.



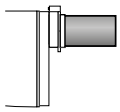
Description	D1 mm	D2 mm	Ø mm
RL 70/M	185	275 - 325	M12
RL 100/M	185	275 - 325	M12
RL 130/M	195	275 - 325	M12
RL 190/M	230	325 - 368	M16



Description	X(1) mm	Y mm	Z mm	Net weight kg
RL 70/M	1150	792	600	65
RL 100/M	1150	792	600	68
RL 130/M	1150	792	600	71
RL 190/M	1200	800	850	95

(1) Length with extended combustion head.

ACCESSORIES

Drawing	Burner model	Specification	Code
		**EXTENDED HEAD KIT** “Standard head” burners can be transformed into “extended head” versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.	
	RL 70/M	Standard head length = 272 mm - Extended head length = 385 mm	**3010159**
	RL 100/M	Standard head length = 272 mm - Extended head length = 385 mm	**3010160**
	RL 130/M	Standard head length = 272 mm - Extended head length = 385 mm	**3010161**
	RL 190/M	Standard head length = 370 mm - Extended head length = 526 mm	**20058084**
		**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table:	
	RL 70-100-130/M	Spacer thickness S = 135 mm	**3010129**
	RL 190/M	Spacer thickness S = 102 mm	**3000722**
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010404**
	RL 70-100/M	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm. Max capability 80 kg/h (more filters are needed for higher flow).	**3010055**
		**HEAD KIT FOR “REVERSE FLAME CHAMBER”** In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional cylinder.	
	RL 70-100/M	Standard head length with cylinder 375 mm - Extended head length with cylinder 488 mm	**3010180**
	RL 130/M	Standard head length with cylinder 375 mm - Extended head length with cylinder 488 mm	**3010183**
	RL 190/M	Standard head length with cylinder 493 mm.	**3010241**
	All models	**POWER CONTROLLER** To obtain modulating operation, the burner requires a regulator. For remote setpoint use RWF 55.	
		RWF 50.2 - Standard version.	**20082208**
		RWF 55.5 - Plus version.	**20099657**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.,	**3090873**
	All models	**POTENTIOMETER KIT** Depending on the servomotor fitted to the burner, a three-pole potentiometer (0-1000Ω) can be installed to check the position of the servomotor.	**3010416**

NOZZLES

The following list shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Note	Code	
		Rated delivery (kg/h)		TYPE A3	TYPE A4
	RL 70/M	40	(1)	**3009853**	**20067277**
	RL 70/M	50	(1)	**3009854**	**20067279**
	RL 70-100/M	60	(1)	**3009855**	**20067281**
	RL 70-100/M	70	(1)	**3009856**	**20067283**
	RL 100-130/M	80	(1)	**3009857**	**20067284**
	RL 100-130/M	90		**3009858**	**20067285**
	RL 100-130/M	100		**3009859**	**20067286**
	RL 130/M	110		**3009860**	**20067287**
	RL 130-190/M	120		**3009861**	**20067288**
	RL 130-190/M	130		**3009862**	**20067289**
	RL 190/M	140		**3009863**	**20067290**
	RL 190/M	150		**20059496 (*)**	**20067291**
	RL 190/M	160		**3009864**	**20067293**
	RL 190/M	180		**3009865**	**20067295**
	RL 190/M	200		**3009866**	**20067297**

(1) Each burner needs N° 1 nozzle.
(*) 60° angle.

STATE OF SUPPLY

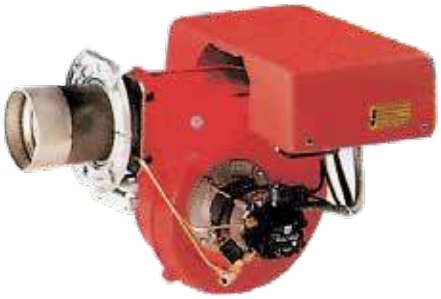
Monoblock forced draught oil burners, two stage progressive or modulating operation with a kit, made up of:
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (forward curve blades on the 190/M model)
– Air damper for air setting and automatic oil output regulator controlled by a servomotor with variable cam
– Combustion head, that can be set on the basis of required output
– Gears pump for high pressure fuel supply
– Valve unit with a double oil safety valve on the output circuit and safety valve on the return circuit; double safety valve on the return circuit for models RL 100/M, RL 130/M, RL 190/M and for all models in the TRD-72, NBN version
– Safety oil pressure switch
– Minimum oil pressure switch in the output circuit for the TRD-72, NBN versions
– Photocell for flame detection
– Burner safety control box
– Burner on/off switch
– Flame inspection window
– Manual or automatic output increase/decrease switch
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 electric protection level

STANDARD EQUIPMENT

– 2 flexible pipes for connection to the oil supply network
– 2 gaskets for the flexible pipes
– 2 nipples for connection to the pump
– 4 screws for fixing the burner flange to the boiler
– 1 thermal screen
– Wiring loom fittings for electrical connections
– 2 slide bar extensions (for the extended head models and the RL 190/M model)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

One stage light oil burners

PRESS GV



- One stage light oil burners

PRESS GV series of burners covers a firing range from 140 to 356 kW and they have been designed for use in civil installations of small dimensions or in industrial applications, like incinerators or dyer kilns. Operation is “One stage”; the burners are fitted with a microprocessor-based burner safety control box which supplies indication of operation and diagnosis of fault cause. The combustion head, that can be set on the basis of required output, allows optimal performance ensuring good combustion and reducing fuel consumption.
The main feature of these burners is their reliability due to a simple and strong construction, which permits operation without particular maintenance intervention. Simplified maintenance is achieved by the slide bar system, which allows easy access to all of the essential components of the combustion head. All electrical components are easily accessible only by dismounting a protection panel, thus guaranteeing a quick and simple intervention on components.

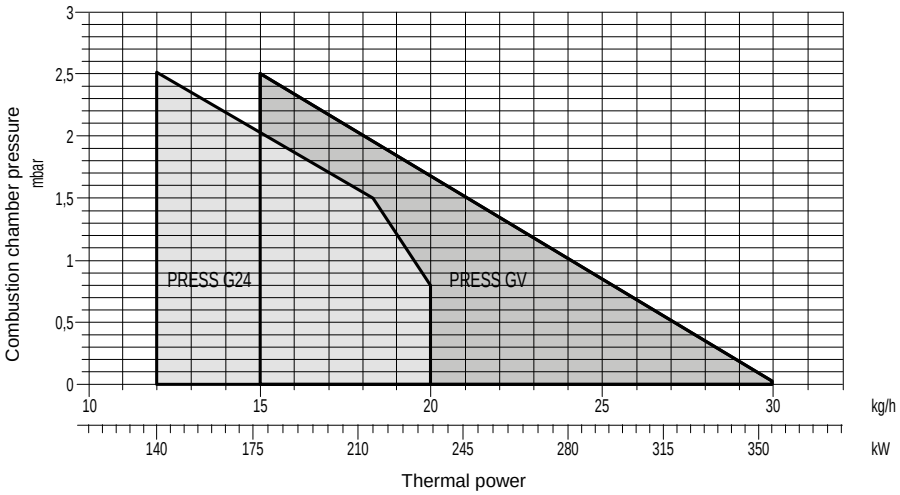
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
PRESS G24 TC FS1	140/237	12/20	0,4	1/230/50	230/50	(1)	**20096861**
PRESS GV TC FS1	178/356	15/30	0,43	1/230/50	230/50	(1)	**3473620**
PRESS GV TC FS1	178/356	15/30	0,43	1/220/60	220/60	(1)	**3808058**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Burner needs 1 nozzle (to order separately).

FIRING RATES

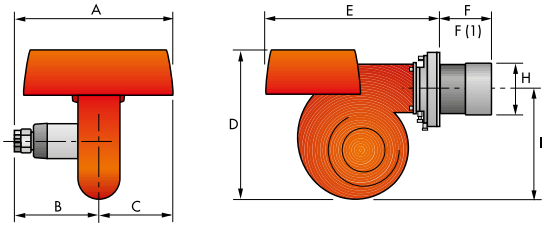


Useful working field for choosing the burner

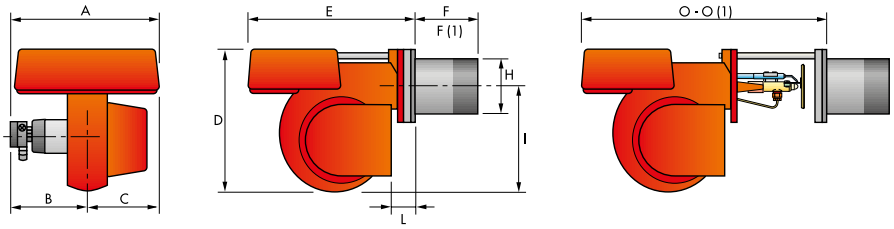
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

PRESS G24



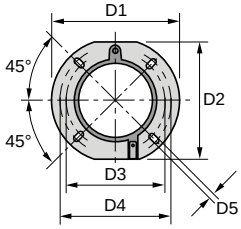
PRESS GV



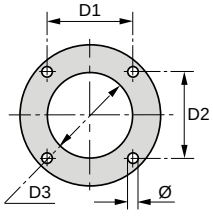
Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	O - O(1) mm
PRESS G24	425	222	203	397	485	118 - 253	125	290	-	-
PRESS GV	439	234	205	397	473	185 - 320	140	292	59	690 - 825

(1) Dimension with extended head.

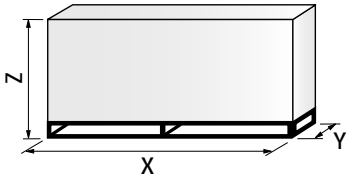
PRESS G24



PRESS GV



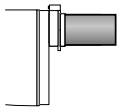
Description	D1 mm	D2 mm	D3 mm	D4 mm	D5 mm	Ø mm
PRESS G24	213	198	160	190	11	-
PRESS GV	160	160	170	-	-	M10



Description	X(1) mm	Y mm	Z mm	Net weight kg
PRESS G24	650	535	450	33
PRESS GV	680	535	450	33

(1) Length with extended combustion head.

ACCESSORIES

Drawing	Burner model	Specification	Code
	PRESS GV	**EXTENDED HEAD KIT** “Standard head” burners can be transformed into “extended head” versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below. Standard head length = 185 mm - Extended head length = 320 mm	**3000580**
	PRESS GV	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table: Spacer thickness S = 142 mm	**3000755**
	PRESS GV	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010403**
	PRESS GV	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm. Max capability 80 kg/h (more filters are needed for higher flow).	**3010055**
	All models	**PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES)** When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Type	Specification		Note	Code
			GPH	Rated delivery (kg/h) 12 bar		
	PRESS G24	60°B	1.50	6.3	(1)	**3042107**
	PRESS G24	60°B	1.75	7.3	(1)	**3042110**
	PRESS G24	60°B	2.00	8.5	(1)	**3042126**
	PRESS G24	60°B	2.50	10.6	(1)	**3042140**
	PRESS G24	60°B	3.00	12.7	(1)	**3042158**
	PRESS G24	60°B	3.50	14.8	(1)	**3042162**
	PRESS GV	60°B	4.00	17	(1)	**3042172**
	PRESS GV	60°B	4.50	19.1	(1)	**3042182**
	PRESS GV	60°B	5.00	21.2	(1)	**3042192**
	PRESS GV	60°B	5.50	23.3	(1)	**3042202**
	PRESS GV	60°B	6.00	25.5	(1)	**3042212**
	PRESS GV	60°B	6.50	27.6	(1)	**3042222**
	PRESS GV	60°B	7.00	29.7	(1)	**3042232**
	PRESS GV	60°B	7.50	31.8	(1)	**3042242**

(1) Burner needs 1 nozzle (to order separately).

STATE OF SUPPLY

Monoblock forced draught oil burner with one stage operation, fully automatic, made up of:
- Air suction circuit
- Fan with forward curve blades with high performance concerning pressure and air delivery
- Air damper for air setting
- Starting motor at 2850 rpm, single-phase, 230V, 50Hz
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Oil valves on the output circuit
- Photocell for flame detection
- Microprocessor-based burner safety control box, with diagnostic function
- Slide bars for easier installation and maintenance (for GV model)
- Protection filter against radio interference
- IP 44 electric protection level

STANDARD EQUIPMENT

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 2 Pipe fittings (for GV model)
- 2 Pipe fittings gasket (for GV model)
- 1 burner flange (for G24 model)
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Two stage light oil burners

PRESS G



- Two stage light oil burners

PRESS G series of burners covers a firing range from 107 to 1660 kW and they have been designed for use in civil installations of average dimensions, like building areas and large apartment groups or for use in industrial applications, like small or medium plants.
Operation is two stage; the burners are fitted with a microprocessor-based burner safety control box which supplies indication of operation and diagnosis of fault cause. The combustion head, that can be set on the basis of required output, allows optimal performance ensuring good combustion and reducing fuel consumption. The main feature of these burners is their reliability due to a simple and strong construction, that permits operation without particular maintenance intervention.
Simplified maintenance is achieved by the slide bar system, which allows easy access to all of the essential components of the combustion head. All electrical components are easily accessible only by dismounting a protection panel, thus guaranteeing a quick and simple intervention on components.

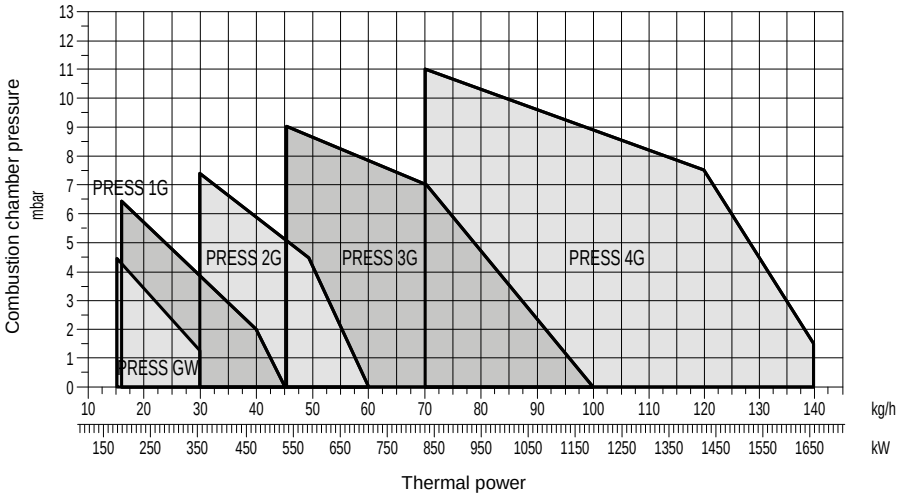
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
PRESS GBW TC FS1	107/178-356	9/15-30	0.43	1/230/50	230/50	(1)(2)	**20032930**
PRESS GW TC FS1	107/178-356	9/15-30	0.4	1/220/60	220/60	(1)	**3473784**
PRESS GW TC FS1	107/178-356	9/15-30	0.43	1/230/50	230/50	(1)	**3473720**
PRESS 1G TC FS1	130/190-534	11/16-45	0.6	3/380/60	220/60	(1)	**3474582**
PRESS 1G TC FS1	130/190-534	11/16-45	0.6	3/400/50	230/50	(1)	**3474520**
PRESS 2G TC FS1	214/356-712	18/30-60	0.85	3/380/60	220/60	(1)	**3474982**
PRESS 2G TC FS1	214/356-712	18/30-60	1.1	3/400/50	230/50	(1)	**3474920**
PRESS 3G TC FS1	273/534-1186	23/45-100	2.05	3/220-380/60	220/60	(1)	**3475982**
PRESS 3G TC FS1	273/534-1186	23/45-100	2.05	3/400/50	230/50	(1)	**3475920**
PRESS 4G TC FS1	415/830-1660	35/70-140	3.8	3/380/60	220/60	(1)	**3476582**
PRESS 4G TC FS1	415/830-1660	35/70-140	3.8	3/400/50	230/50	(1)	**3476520**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Air damper open during stop.
(2) Suitable for operation with Gasoil and Blends of gasoil and bio fuel (FAME in accordance with EN 14214) up to 10%.

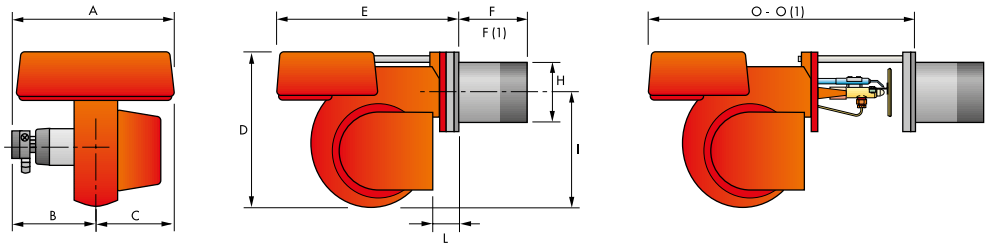
FIRING RATES



Useful working field for choosing the burner

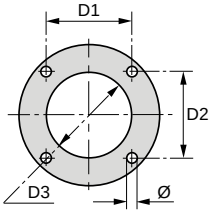
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

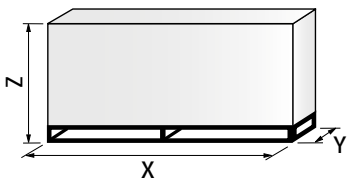


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	O - O(1) mm
PRESS GW	439	234	205	397	473	185 - 320	140	292	59	745 - 880
PRESS 1G	475	270	205	397	473	236 - 370	150	292	59	745 - 880
PRESS 2G	475	270	205	437	506	237 - 403	155	332	89	785 - 945
PRESS 3G	611	406	205	485	570	227 - 412	175	370	88	846 - 1006
PRESS 4G	675	354	316	590	720	266 - 426	205	445	175	999 - 1159

(1) Dimension with extended head.



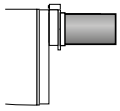
Description	D1 mm	D1 mm	D3 mm	Ø mm
PRESS GW	160	160	155	M10
PRESS 1G	160	160	165	M10
PRESS 2G	160	160	165	M10
PRESS 3G	195	195	185	M12
PRESS 4G	230	230	210	M12



Description	X(1) mm	Y mm	Z mm	Net weight kg
PRESS GW	695	542	468	37
PRESS 1G	745	542	468	44
PRESS 2G	800	542	515	44
PRESS 3G	1000	790	550	55
PRESS 4G	1200	790	650	95

(1) Length with extended combustion head.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		**EXTENDED HEAD KIT** “Standard head” burners can be transformed into “extended head” versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.		
	PRESS GW	Standard head length = 185 mm - Extended head length = 320 mm		**3000581**
	PRESS 2G	Standard head length = 245 mm - Extended head length = 403 mm		**3000538**
	PRESS 3G	Standard head length = 254 mm - Extended head length = 412 mm		**3000851**
	PRESS 4G	Standard head length = 266 mm - Extended head length = 426 mm		**3000555**
	All models	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table: Spacer thickness S = 142 mm		**3000755**
	PRESS GW PRESS 1-2-3G	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	PRESS 4G	Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm. Max capability 80 kg/h (more filters are needed for higher flow).	(1)	**3010055**
	All models	**PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES)** When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) Only for PRESS 3-4G: for oil flow larger than 80 kg/h install two degasing units in parallel in the oil supply line.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Type	Specification		Note	Code
			GPH	Rated delivery (kg/h) 12 bar		
	PRESS GW - 1G	60°B	2.00	8.5	(1)	**3042126**
	PRESS GW - 1G	60°B	2.50	10.6	(1)	**3042140**
	PRESS GW - 1G	60°B	3.00	12.7	(1)	**3042158**
	PRESS GW - 1G	60°B	3.50	14.8	(1)	**3042162**
	PRESS GW - 1G - 2G	60°B	4.00	17	(1)	**3042172**
	PRESS 1G - 2G	60°B	4.50	19.1	(1)	**3042182**
	PRESS 1G - 2G	60°B	5.00	21.2	(1)	**3042192**
	PRESS 1G - 2G	60°B	5.50	23.3	(1)	**3042202**
	PRESS 2G - 3G	60°B	6.00	25.5	(1)	**3042212**
	PRESS 2G - 3G	60°B	6.50	27.6	(1)	**3042222**
	PRESS 2G - 3G	60°B	7.00	29.7	(1)	**3042232**
	PRESS 3G	60°B	7.50	31.8	(1)	**3042242**
	PRESS 3G	60°B	8.00	33.9	(1)	**3042252**
	PRESS 3G	60°B	8.50	36.1	(1)	**3042262**
	PRESS 3G - 4G	60°B	9.50	40.3	(1)	**3042282**
	PRESS 3G - 4G	60°B	10.00	42.4	(1)	**3042292**

Drawing	Burner model	Type	Specification		Note	Code
			GPH	Rated delivery (kg/h) 12 bar		
	PRESS 3G - 4G	60°B	11.00	46.7	(1)	**3042312**
	PRESS 3G - 4G	60°B	12.00	50.9	(1)	**3042322**
	PRESS 4G	60°B	13.00	55.1	(1)	**3042332**
	PRESS 4G	60°B	14.00	59.4	(1)	**3042352**
	PRESS 4G	60°B	15.00	63.6	(1)	**3042362**
	PRESS 4G	60°B	16.00	67.9	(1)	**3042382**
	PRESS 4G	60°B	17.00	72.1	(1)	**3042392**
	PRESS 4G	60°B	18.00	76.4	(1)	**3042412**

(1) Each burner is equipped with N° 2 nozzles.

STATE OF SUPPLY

Monoblock forced draught oil burner with two stage operation, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with forward curve blades with high performance concerning pressure and air delivery
- Air damper for air setting
- Hydraulic ram for air damper control
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz (single-phase, 230V and 50Hz for the PRESS GW model)
- Combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Fan pressure test point
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Valve unit with two delivery oil valves on the output circuit
- Photocell for flame detection
- Microprocessor-based burner safety control box, with diagnostic function
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level

STANDARD EQUIPMENT

- 2 flexible pipes for connection to the oil supply network
- 2 gaskets for the flexible pipes
- 2 nipples for connection to the pump
- 4 screws for fixing the burner flange to the boiler
- 1 thermal screen
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Three stage light oil burners

PRESS T/G



- Three stage light oil burners

PRESS T/G series of burners covers a firing range from 380 to 5340 kW. Available in 4 different models, this burners are particularly well suited for matching with pressurized chamber boilers. For their characteristics, they find application in big civil plants for domestic heating or in industrial applications where thermal load is repetitive and predictable.
An hydraulic ram exclusive system, with 3 adjustable positions, regulates dampers opening, allowing air passage in relation to output required: in this way flame stability is optimized in every working point, with micro-regulation available.
The burners are fitted with a microprocessor-based burner safety control box which supplies indication of operation and diagnosis of fault cause.

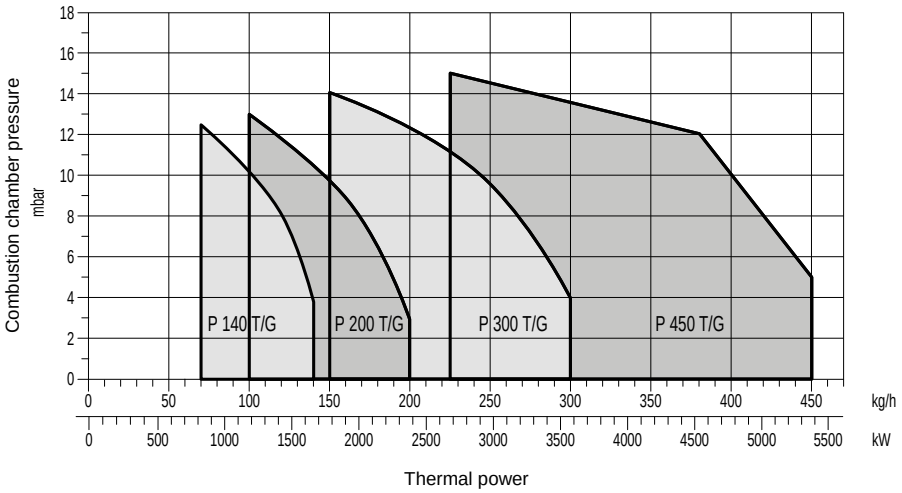
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
PRESS 140 T/G TC FS1	380/830-1660	32/70-140	5.2	3/400/50	230/50		**3476823**
PRESS 200 T/G TC FS1	557/1186-2372	47/100-200	5,3	3/400/50	230/50		**3477723**
PRESS 200 T/G TL FS1	557/1186-2372	47/100-200	5,3	3/400/50	230/50		**3477724**
PRESS 200 T/G TC FS1	557/1186-2372	47/100-200	5,3	3/380/60	220/60		**3477785**
PRESS 300 T/G TC FS1	712/1779-3560	60/150-300	10.9	3/400/50	230/50	(2)	**3478837**
PRESS 300 T/G TL FS1	712/1779-3560	60/150-300	10.9	3/400/50	230/50	(2)	**3478838**
PRESS 300 T/G TC FS1	712/1779-3560	60/150-300	10.6	3/400/50	230/50	(1)	**3478841**
PRESS 300 T/G TL FS1	712/1779-3560	60/150-300	10.6	3/400/50	230/50	(1)	**3478842**
PRESS 300 T/G TC FS1	712/1779-3560	60/150-300	10.7	3/380/60	220/60	(2)	**3478985**
PRESS 300 T/G TL FS1	712/1779-3560	60/150-300	10.7	3/380/60	220/60	(2)	**3478986**
PRESS 450 T/G TC FS1	890/2670-5340	75/225-450	16.9	3/400/50	230/50	(1)	**3479338**
PRESS 450 T/G TL FS1	890/2670-5340	75/225-450	16.9	3/400/50	230/50	(1)	**3479339**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Star/delta starting, as standard equipment.
(2) For the 3/230/50 or 3/220/60 version, use the 220 - 230V conversion kit.

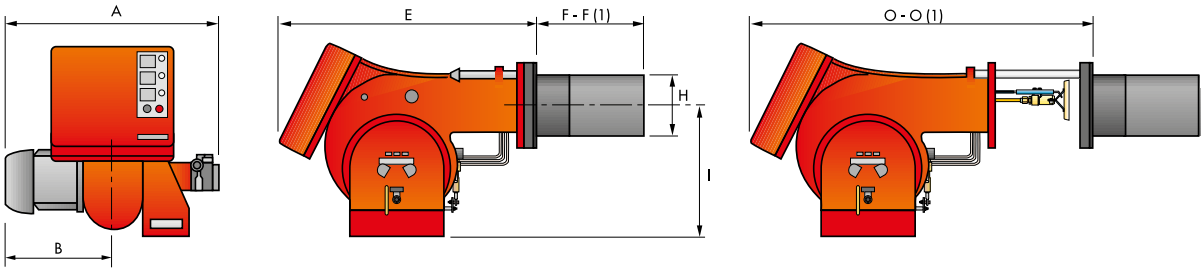
FIRING RATES



Useful working field for choosing the burner

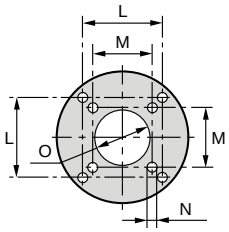
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

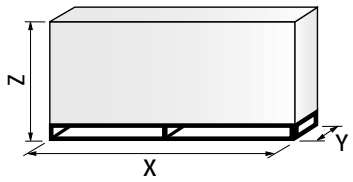


Description	A mm	B mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
P 140 T/G	765	365	890	363 - 473	222	467	1250 - 1360
P 200 T/G	796	396	890	391 - 501	250	467	1280 - 1390
P 300 T/G	858	447	1000	444 - 574	295	496	1440 - 1570
P 450 T/G	950	508	1070	476 - 606	336	525	1546 - 1676

(1) Dimension with extended head.



Description	L mm	M mm	N mm	O mm
P 140 T/G	260	230	M14	225
P 200 T/G	260	-	M16	255
P 300 T/G	260	-	M18	300
P 450 T/G	310	-	M20	340



Description	X(1) mm	Y mm	Z mm	Net weight kg
P 140 T/G	1740	990	950	130
P 200 T/G	1740	990	950	220
P 300 T/G	2040	1180	1125	238
P 450 T/G	2040	1180	1125	300

(1) Length with extended combustion head.

ACCESSORIES

Drawing	Burner model	Specification	Code
		**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table:	
	P 140-200 T/G	Spacer thickness S = 102 mm	**3000722**
	P 450 T/G	Spacer thickness S = 130 mm	**3000751**
	P 140-200 T/G	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010404**
	P 300-450 T/G	Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1140 mm, E = 1345 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010376**
	P 300-450 T/G	**BURNER SUPPORT** For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.	**3000731**
	P 300 T/G	**220-230 V CONVERSION KIT** This kit is required to convert the 380-400 V models into the 220 or 230 V version.	**20163347**
	All models	**PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES)** When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification				Note	Code
		GPH	Rated delivery (kg/h)				
			10 bar	12 bar	14 bar		
	P 140 T/G	3.50	13.5	14.8	16.1	(1)	**3042162**
	P 140 T/G	4.00	15.4	17	18.4	(1)	**3042172**
	P 140 T/G	4.50	17.3	19.1	20.7	(1)	**3042182**
	P 140 T/G - P 200 T/G	5.00	19.2	21.2	23	(1)	**3042192**
	P 140 T/G - P 200 T/G	5.50	21.1	23.3	25.3	(1)	**3042202**
	P 140 T/G - P 200 T/G	6.00	23.1	25.5	27.7	(1)	**3042212**
	P 140 T/G - P 200 T/G	6.50	25	27.6	30	(1)	**3042222**
	P 140 T/G - P 200 T/G	7.00	26.9	29.7	32.3	(1)	**3042232**
	P 140 T/G - P 200 T/G	7.50	28.8	31.8	34.6	(1)	**3042242**
	P 140 T/G - P 200 T/G	8.00	30.8	33.9	36.9	(1)	**3042252**
	P 140 T/G - P 200 T/G	8.50	32.7	36.1	39.2	(1)	**3042262**
	P 140 T/G - P 200 T/G	9.50	36.5	40.3	43.8	(1)	**3042282**
	P 140 T/G - P 200 T/G	10.00	38.4	42.4	46.1	(1)	**3042292**
	P 140 T/G - P 200 T/G	11.00	42.3	46.7	50.7	(1)	**3042312**
	P 200 T/G	12.00	46.1	50.9	55.3	(1)	**3042322**
	P 200 T/G	13.00	50	55.1	59.9	(1)	**3042332**
	P 200 T/G - P 300 T/G	14.00	53.8	59.4	64.5	(1)	**3042352**
	P 200 T/G - P 300 T/G	15.00	57.7	63.6	69.2	(1)	**3042362**
	P 300 T/G	16.00	61.5	67.9	73.8	(1)	**3042382**
	P 300 T/G	17.00	65.4	72.1	78.4	(1)	**3042392**
	P 300 T/G - P 450 T/G	18.00	69.2	76.4	83	(1)	**3042412**
	P 300 T/G - P 450 T/G	19.00	73	80.6	87.6	(1)	**3042422**
	P 300 T/G - P 450 T/G	20.00	76.9	84.8	92.2	(1)	**3042442**

Drawing	Burner model	Specification				Note	Code
		GPH	Rated delivery (kg/h)				
			10 bar	12 bar	14 bar		
	P 300 T/G - P 450 T/G	22.00	84.6	93.3	101.4	(1)	**3042462**
	P 300 T/G - P 450 T/G	24.00	92.2	101.8	110.6	(1)	**3042472**
	P 450 T/G	26.00	99.9	110.3	119.9	(1)	**3042482**
	P 450 T/G	28.00	107.6	118.8	129.1	(1)	**20018051**
	P 450 T/G	30.00	110.4	122	132.4	(1)	**3042502**
	P 450 T/G	32.00	117.8	130.1	150.1	(1)	**3042512**
	P 450 T/G	35.00	128.8	142.1	154.5	(1)	**3042522**

(1) Each burner is equipped with N° 3 nozzles.

STATE OF SUPPLY

Monoblock forced draught oil burner with three stage operation, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with forward curved blades high performance pressure levels
- Air dampers for air setting controlled by a three stage hydraulic ram
- Starting motor at 2850 rpm, three-phase 400 V with neutral, 50 Hz
- Combustion head, that can be set on the basis of the combustion output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Valve unit with a oil safety valve and three oil delivery valves on the output circuit;
- Photocell for flame detection
- Microprocessor based burner safety control box, with diagnostic function
- Burner on/off switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) electric protection level

STANDARD EQUIPMENT

- 2 flexible pipes for connection to the oil supply network
- 2 nipples for the connection to the pump
- 4 wiring looms fittings for electrical connections
- 4 screws for fixing the burner flange to the boiler
- 2 slide bar extensions (for the extended model of P 300 T/G and P 450 T/G)
- Gasket for flange
- 1 Star/delta starter (on models where provided)
- Diffuser disk (P 450 T/G)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Modulating light oil burners

PRESS P/G



- Modulating light oil burners

PRESS P/G series of burners covers a firing range from 890 to 5340 kW. Setting can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes, which guarantees a turn down ratio of 3:1. The versatility of this range makes the burner well suited for use on commercial or industrial applications where the load factor is subject to wide variations over a short period of time.
Simplified maintenance is achieved by Riello designed slide bar system, which allows easy access to all of the essential components of the combustion head.

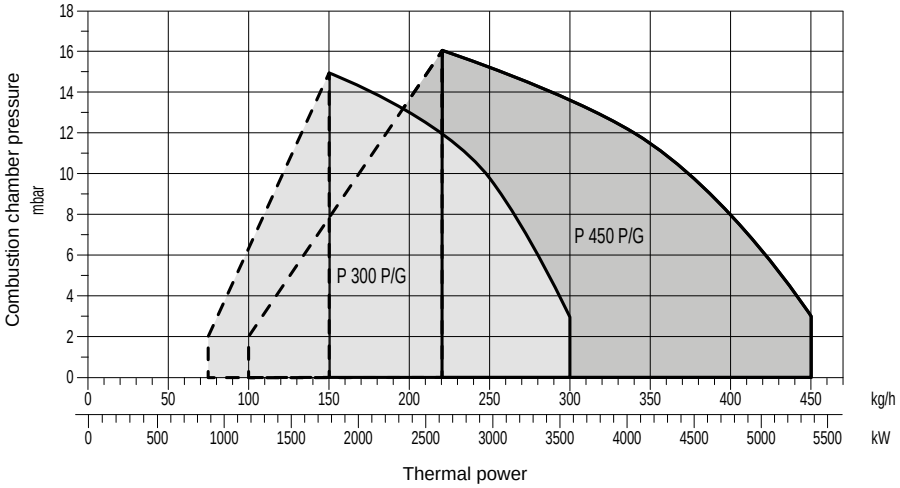
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
PRESS 300 P/G TC	890/1780-3560	75/150-300	10-6	3/400/50	230/50	(2)(3)	**20205717**
PRESS 300 P/G TC	890/1780-3560	75/150-300	10-6	3/400/50	230/50	(1)(3)	**20208700**
PRESS 300 P/G TL	890/1780-3560	75/150-300	10-6	3/400/50	230/50	(1)(3)	**20205643**
PRESS 450 P/G TC	1190/2670-5340	100/225-450	16-9	3/400/50	230/50	(1)(3)	**20205561**
PRESS 450 P/G TL	1190/2670-5340	100/225-450	16-9	3/400/50	230/50	(1)(3)	**20208702**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Star/delta starting, as standard equipment.
(2) For the 3/230/50 version use the 220 - 230 V conversion kit (see the burner accessories paragraph).
(3) Model with LFL control box.

FIRING RATES

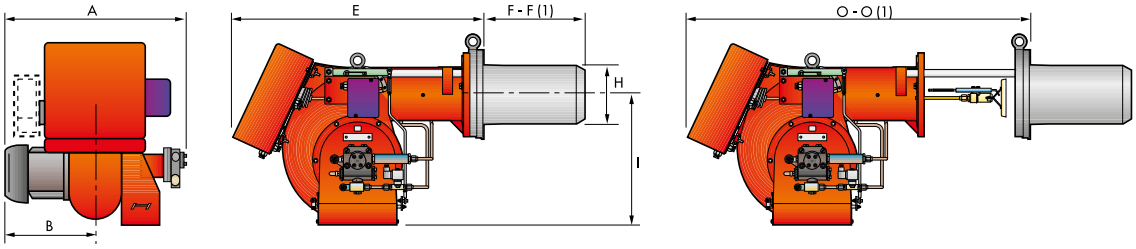


Useful working field for choosing the burner

Modulation range

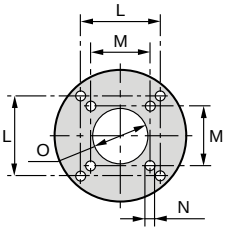
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Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

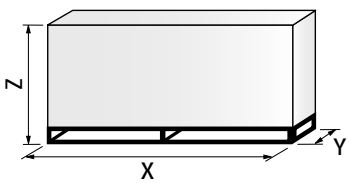


Description	A mm	B mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
P 300 P/G	858	447	1000	444 - 574	295	496	1440 - 1570
P 450 P/G	950	508	1070	476 - 606	336	525	1546 - 1676

(1) Dimension with extended head.



Description	L mm	M mm	N mm	O mm
P 300 P/G	260	-	M18	300
P 450 P/G	310	-	M20	340



Description	X(1) mm	Y mm	Z mm	Net weight kg
P 300 P/G	2040	1180	1125	238
P 450 P/G	2040	1180	1125	300

(1) Length with extended combustion head.

ACCESSORIES

Drawing	Burner model	Specification	Code
		**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table.	
	P 300 P/G	Spacer thickness S = 122 mm	**3000723**
	P 450 P/G	Spacer thickness S = 130 mm	**3000751**
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1140 mm, E = 1345 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010376**
	All models	**MODULATING OPERATION** To obtain modulating operation, the burner requires a regulator. For remote setpoint use RWF 55.	
		RWF 50.2 - Standard version.	**20100018**
		RWF 55.5 - Plus version.	**20101965**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	All models	**POTENTIOMETER KIT** Depending on the servomotor fitted to the burner, a three-pole potentiometer (0-1000Ω) can be installed to check the position of the servomotor.	**20096322**
	All models	**BURNER SUPPORT** For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.	**3000731**
	P 300 P/G	**220-230 V CONVERSION KIT** This kit is required to convert the 380-400 V models into the 220 or 230 V version.	**20163347**

NOZZLES

The following list shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Note	Code	Code
		Rated delivery (kg/h) (1)		BERGONZO B5 45° WITHOUT “SA” NEEDLE CODE	FLUIDICS N2 45° WITHOUT NEEDLE CODE
	P 300 P/G	150	(2)	**3009314**	**3045479**
	P 300 P/G	175	(2)	**3009316**	**3045481**
	P 300 P/G	200	(2)	**3009318**	**3045483**
	P 300-450 P/G	225	(2)	**3009320**	**3045485**
	P 300-450 P/G	250	(2)	**3009322**	**3045487**
	P 300-450 P/G	275	(2)	**3009324**	**3045489**
	P 300-450 P/G	300	(2)	**3009326**	**3045491**
	P 450 P/G	325	(2)	**3009328**	**3045493**
	P 450 P/G	350	(2)	**3009330**	**3045495**
	P 450 P/G	375	(2)	**3009332**	**3045497**
	P 450 P/G	400	(2)	**3009334**	**3045499**
	P 450 P/G	425	(2)	**3009336**	**3045500**
	P 450 P/G	450	(2)	**3009338**	**3045501**

(1) Nozzle rated delivery is referred to atomised pressure.
(2) Each burner needs N° 1 nozzle.

STATE OF SUPPLY

Monoblock forced draught oil burner, two stage progressive or modulating operation, with a kit, fully automatic, made up of:
- Air suction circuit
- Fan with forward curved blades high performance pressure levels
- Air damper for air setting and automatic oil output regulator controlled by a servomotor with variable cam
- Starting motor at 2850 rpm, three-phase 400V with neutral, 50Hz
- Combustion head, that can be set on the basis of the required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Valve unit with a double oil safety valve on the output circuit and double safety valve on the return circuit
- Safety oil pressure switch for stop the burner in the case of problems on return circuit
- Photocell for flame detection
- Burner safety control box, fitted with control functions for the correct positioning of the servomotor and possibility of post-ventilation by just changing the electric wiring
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) electric protection level

STANDARD EQUIPMENT

- 2 flexible pipes for connection to the oil supply network
- 2 nipples for the connection to the pump
- Wiring looms fittings for electrcial connections
- 4 screws for fixing the burner flange to the boiler
- 2 slide bar extensions (for the extended head models)
- 1 Star/delta starter (on models where provided)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

DUAL FUEL BURNERS

LOW NOx

Low NOx emissions, lower than Class 3 of European Standard EN 676 (NOx lower than 80 mg/kWh) and Class 2 of European Standard EN 267 (NOx lower than 185 mg/kWh)

MODULATING MECHANICAL CAM



RLS 68-160/M MX

RLS 68/M MX (200/350-860 kW)
RLS 120/M MX (300/600-1200 kW)
RLS 160/M MX (300/930-1840 kW)

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RLS 310-610/M MX

RLS 310/M MX (600/1200-3600 kW)
RLS 410/M MX (640/1500-4200 kW)
RLS 510/M MX (660/1800-5170 kW)
RLS 610/M MX (1000/2200-6155 kW)

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RLS 1000-1200/M MX

RLS 1000/M MX (1200/3750-10600 kW)
RLS 1200/M MX (1500/5500-11500 kW)

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MODULATING ELECTRONIC CAM



RLS 68-200/E MX

RLS 68/E MX (195/350-871 kW)
RLS 120/E MX (290/595-1224 kW)
RLS 160/E MX (421/947-1845 kW)
RLS 200/E MX (401/1400-2322 kW)

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RLS 310-610/E MX

RLS 310/E MX (600/1200-3600 kW)
RLS 410/E MX (640/1500-4200 kW)
RLS 510/E MX (660/1800-5170 kW)
RLS 610/E MX (1000/2200-6155 kW)

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RLS 810/E MX

RLS 810/E MX (780/3550-7700 kW)

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RLS 1000-1200/E MX

RLS 1000/E MX (1200/3750-10600 kW)
RLS 1200/E MX (1500/5500-11500 kW)

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MODULATING ELECTRONIC CAM VARIABLE SPEED



RLS 68-200/EV MX

RLS 68/EV MX (195/350-871 kW)
RLS 120/EV MX (290/595-1224 kW)
RLS 160/EV MX (421/947-1845 kW)
RLS 200/EV MX (401/1400-2322 kW)

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RLS 310-610/EV MX

RLS 310/EV MX (600/1200-3600 kW)
RLS 410/EV MX (640/1500-4200 kW)
RLS 510/EV MX (660/1800-5170 kW)
RLS 610/EV MX (1000/2200-6155 kW)

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RLS 810/EV O2 MX

RLS 810/EV O2 MX (780/3550-7700 kW)

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RLS 1000-1200/EV MX

RLS 1000/EV MX (1200/3750-10600 kW)
RLS 1200/EV MX (1500/5500-11500 kW)

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Low NOx modulating dual fuel burners

RLS 68-160/M MX



- Dual fuel burners
- Progressive two-stage or modulating operation on the gas side and two-stage operation on light oil side
- Low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh* on the gas side) and according to Class 2 of European standard EN 267 (NOx lower than 185 mg/kWh* on light oil side)

RLS 68-160/M MX series of burners covers a firing range from 200 to 1840 kW, and they have been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers. Operation is “two stage” at the oil side and “modulating” at the gas side with the installation of a PID logic regulator and respective probes. RLS 68-160/M MX series burners guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs. Optimisation of sound emissions is guaranteed by the special design of air suction circuit and the use of sound proofing material.
The exclusive design ensures reduced dimensions, simple use and maintenance.
A wide range of accessories guarantees elevated working flexibility.

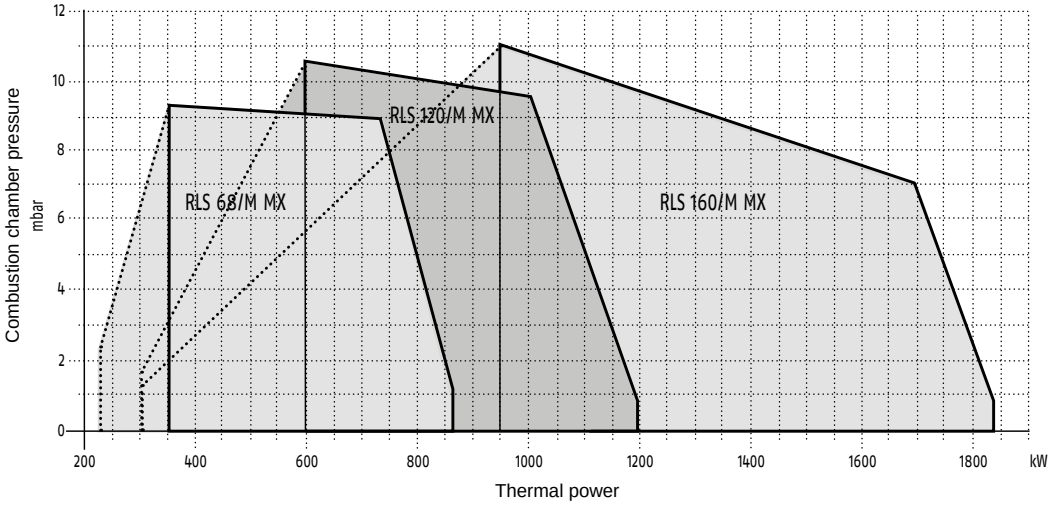
* The emission value is determined, according to the provisions of standard EN 267-EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	Nm^3/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)									
RLS 68/M MX TC FS1	200/350-860	17/30-73	27/40-100	2.2	3/400/50	230/50-60	CE 0085BP0175	(1)	**20205590**
RLS 68/M MX TL FS1	200/350-860	17/30-73	27/40-100	2.2	3/400/50	230/50-60	CE 0085BP0175	(1)	**20205707**
RLS 120/M MX TC FS1	300/600-1200	25/50-101	37/70-140	3.0	3/400/50	230/50-60	CE 0085BP0175	(1)	**20205592**
RLS 120/M MX TL FS1	300/600-1200	25/50-101	37/70-140	3.0	3/400/50	230/50-60	CE 0085BP0175	(1)	**20208605**
RLS 160/M MX TC FS1	300/930-1840	25/78-155	30/93-184	6.0	3/400/50	230/50-60	CE 0085BN0625	(1)	**20205611**
RLS 160/M MX TL FS1	300/930-1840	25/78-155	30/93-184	6.0	3/400/50	230/50-60	CE 0085BN0625	(1)	**20206124**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 - EN 676 Standards.
(1) Model with LFL control box.

FIRING RATES

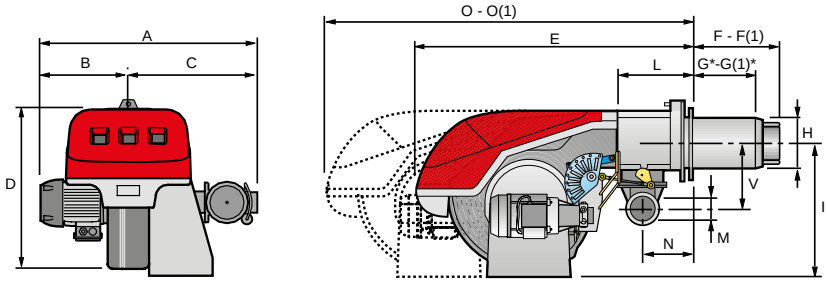


Useful firing rates for choosing the burner

Modulation range

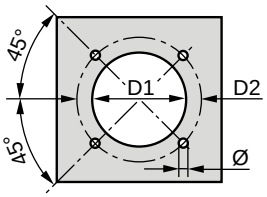
Test conditions conforming to EN267-676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

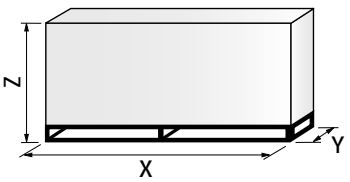


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	G* - G(1)* mm	H mm	I mm	L mm	M inch	N mm	O - O (1) mm	V mm
RLS 68/M MX	691	296	395	555	840	260 - 395	200 - 335	189	430	214	Rp 2”	134	1161 - 1300	221
RLS 120/M MX	733	338	395	555	840	260 - 395	200 - 335	189	430	214	Rp 2”	134	1161 - 1300	221
RLS 160/M MX	843	366	477	555	863	373 - 503	272 - 402	221	430	237	Rp 2”	141	1442 - 1589	186

(1) Length with extended combustion head.
* Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



Description	D1 mm	D2 mm	Ø mm
RLS 68/M MX	195	275 - 325	M12
RLS 120/M MX	195	275 - 325	M12
RLS 160/M MX	230	325 - 368	M16



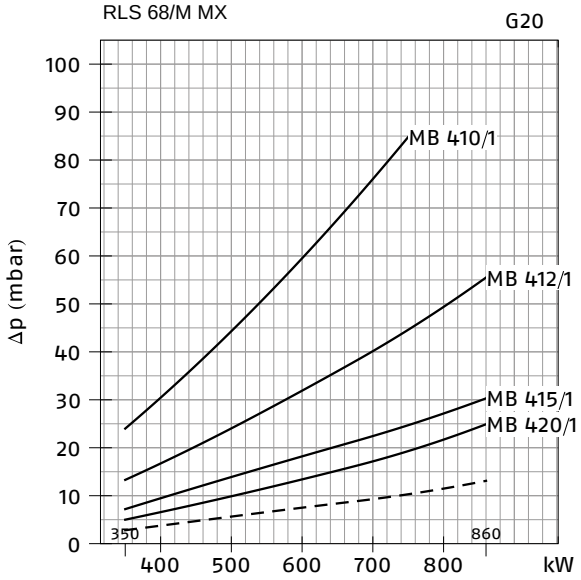
Description	X(1) mm	Y mm	Z mm	Net weight kg
RLS 68/M MX	1400	975	645	115
RLS 120/M MX	1400	975	645	120
RLS 160/M MX	1400	975	645	135

(1) Length with short and extended head.

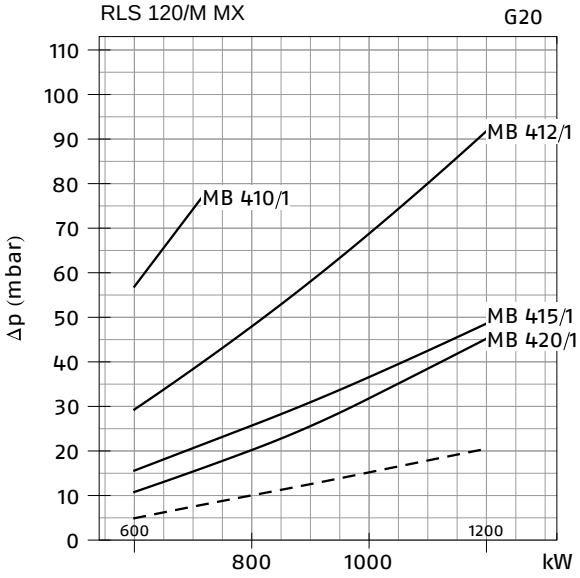
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

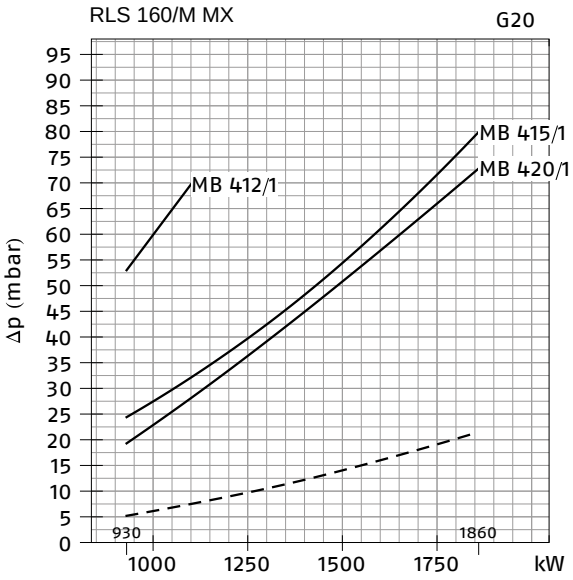
RLS 68/M MX



RLS 120/M MX



RLS 160/M MX

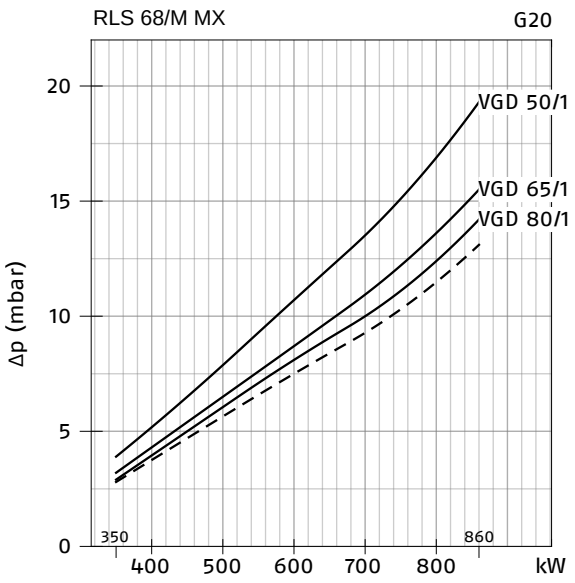


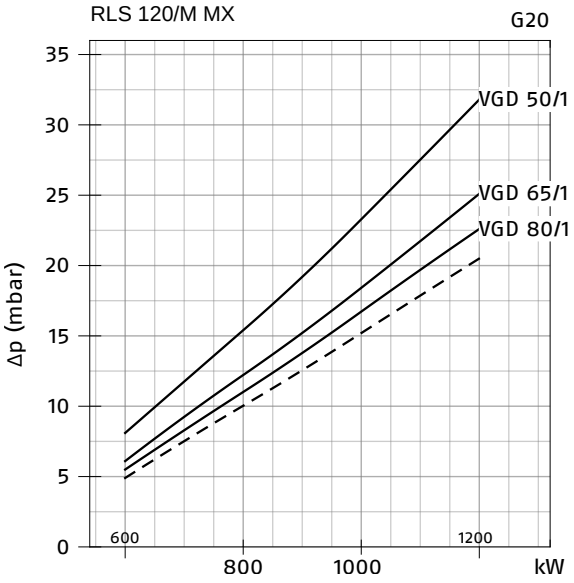
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

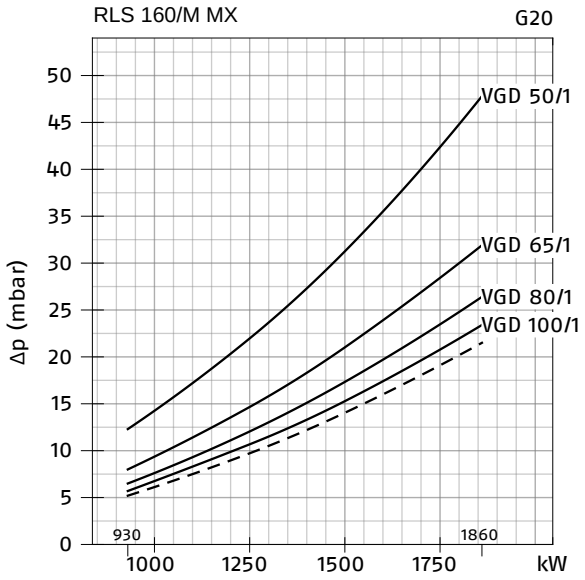
——— Combustion head + gas train

- - - - Combustion head

VGD 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

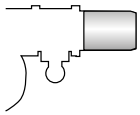
GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)		
						RLS 68/M	RLS 120/M	RLS 160/M
MB SERIES ONE STAGE GAS TRAIN								
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3010126		●
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824+3000843		●
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123			●
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123			●
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	3000843		
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	3000843		
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	3000843		
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	3000843		
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	3000843		
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	3000843		
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	3000843		
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	3000843		
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	3000843		
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	□	□	□
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	□	□	□
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	□	□	□
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	□	□	□
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	□	□	□
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	□	□	□
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	□	□	□
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	□	□	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826		
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826		
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	3000826		
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	3000826		

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		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.		
	RLS 68-120/M MX	Standard head length = 260 mm - Extended head length = 395 mm		**3010360**
	RLS 160/M MX	Standard head length = 373 mm - Extended head length = 503 mm	(1)	**3010441**
	All models	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 102 mm		**3000722**
	All models	**CONTINUOUS VENTILATION KIT** If the burner requires continuous ventilation in the stages without flame.		**3010094**

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	RLS 68-120/M MX	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20082208**
		RWF 55.5 - Plus version.		**20099657**
	RLS 160/M MX	RWF 50.2 - Standard version.		**20099869**
		RWF 55.5 - Plus version.		**20099905**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	RLS 68-120/M MX	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position.		
		Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**20091960**
	RLS 160/M MX	Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**3010415**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**3010416**
	RLS 68-120/M MX	CLEAN CONTACTS KIT Each burner can be equipped with a single kit.		**20123294**
	RLS 68/M MX	HEAD KIT FOR “REVERSE FLAME CHAMBER” In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional pipes kit.		
		Steel gas tubes kit for combustion head.	(2)	**20006401**
	RLS 120/M MX	Steel gas tubes kit for combustion head.	(2)	**20006402**
	RLS 160/M MX	Steel gas tubes kit for combustion head.	(2)	**3010249**

(1) Kit to be used on burners recognizable by a serial number that is over or equal to 02426XXXXXX, for burners with a serial number that is under or equal to 02416XXXXXX please use the Kit coded 3010340.
(2) CE approval on field is required.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification		Code
		GPH	Rated delivery (kg/h) (*)	DELAVAN 60°B
	RLS 68-120/M MX	5.00	21.2	**3042192**
		5.50	23.3	**3042202**
		6.00	25.5	**3042212**
		6.50	27.6	**3042222**
		7.00	29.7	**3042232**
		7.50	31.8	**3042242**
		8.00	33.9	**3042252**
		8.50	36.1	**3042262**
		9.00	38.2	**3042586**
		9.50	40.3	**3042282**

Drawing	Burner model	Specification		Code
		GPH	Rated delivery (kg/h) (*)	DELAVAN 60°B
	RLS 68-120-160/M MX	10.00	42.4	**3042292**
		11.00	46.7	**3042312**
		12.00	50.9	**3042322**
		13.00	55.1	**3042332**
		14.00	59.4	**3042352**
		15.00	63.6	**3042362**
		16.00	67.9	**3042382**
		17.00	72.1	**3042392**
		18.00	76.4	**3042412**
		19.00	80.6	**3042422**
		20.00	84.8	**3042442**
		22.00	93.3	**3042462**
		24.00	101.8	**3042472**
	RLS 160/M MX	26.00	110.3	**3042482**
		28.00	118.8	**20018051**

NOTE: each burner needs n. 2 nozzles.
(*) Nozzle rated delivery is reffered to atomized pressure.

STATE OF SUPPLY

Monoblock forced draught Low NOx dual fuel burner with two stage operation at the oil side and two stage progressive or modulating operation at the gas side, with a specific kit, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- Centrifugal fan with high performance and low sound emissions
- Air damper for air flow setting and butterfly valve for regulating gas output controlled by a servomotor with variable cam
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Two oil valves (1st and 2nd stage)
- Burner safety control box
- UV photocell for flame detection
- Burner on/off selection switch
- Manual or automatic output increase/decrease selection switch
- Oil/Gas selector
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 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
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating dual fuel burners

RLS 310-610/M MX



- Dual fuel burners
- Progressive two-stage or modulating operation on both gas and light oil side
- Low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh* on the gas side) and according to Class 2 of European standard EN 267 (NOx lower than 185 mg/kWh* on light oil side)

RLS 310-610/M MX series of burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The series covers a firing range from 1200 to 6155 kW, and it has been designed for use in hot water boilers, overheated water boilers as well as steam boilers.
Operation can be “two stage progressive” or alternatively “modulating”, for both fuels, light oil and gas, with the installation of a PID logic regulator .
The mechanical cam device of regulation allows to catch up a high modulation ratio on all firing rates range. The burners can, therefore, supply with precision the demanded power, guaranteeing a high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The combustion head guarantees reduced polluting emissions. An exclusive design guarantees low sound emissions, low electrical consumption, easy use and maintenance.

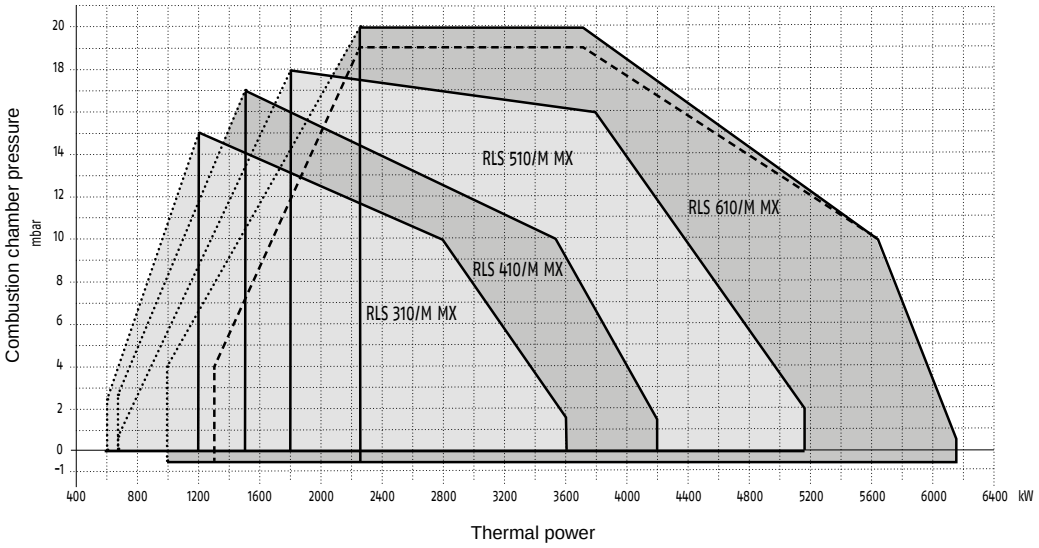
* The emission value is determined, according to the provisions of standard EN 267-EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)									
RLS 310/M MX TC FS1	600/1200-3600	50/100-305	60/120-360	10.9 (oil) 9.1 (gas)	3/400/50	-	CE 0085CQ0196	(1)(2)	**20205568**
RLS 310/M MX TC FS1	600/1200-3600	50/100-305	60/120-360	10.9 (oil) 9.1 (gas)	3/400/50	-	CE 0085CQ0196	(1)(3)	**20205664**
RLS 410/M MX TC FS1	640/1500-4200	55/126-352	64/150-420	12.6 (oil) 10.8 (gas)	3/400/50	-	CE 0085CQ0196	(1)(2)	**20205742**
RLS 410/M MX TC FS1	640/1500-4200	55/126-352	64/150-420	12.6 (oil) 10.8 (gas)	3/400/50	-	CE 0085CQ0196	(1)(3)	**20208593**
RLS 510/M MX TC FS1	660/1800-5170	55/195-435	66/180-517	15.8 (oil) 14 (gas)	3/400/50	-	CE 0085CQ0196	(1)(3)	**20205565**
RLS 610/M MX TC FS1	1000/2200-6155	86/185-516	100/220-615.5	18.8 (oil) 17 (gas)	3/400/50	-	CE 0085CQ0196	(1)(3)	**20205563**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.
(1) Model with LFL control box.
(2) Direct starter
(3) Start/delta starter

FIRING RATES



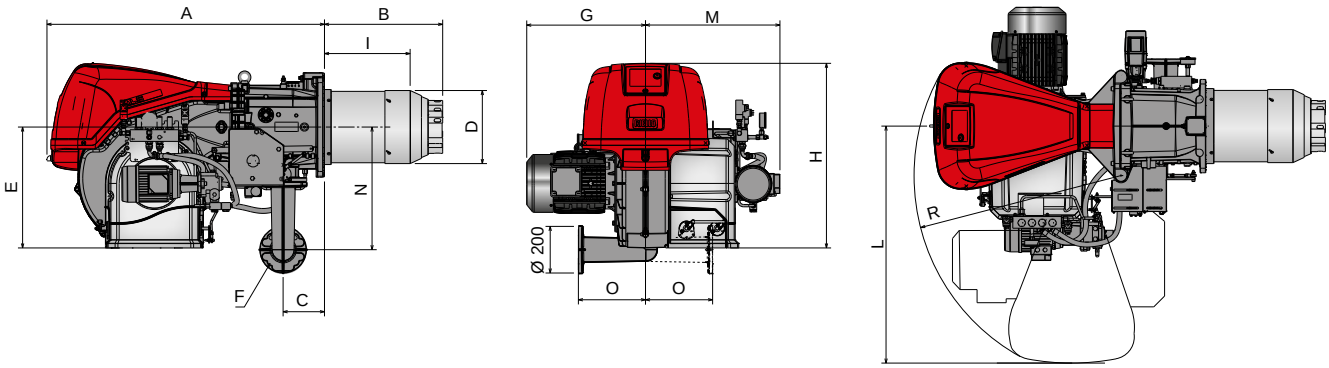
Useful firing rates for choosing the burner

Modulation range

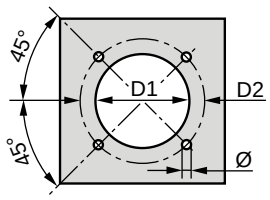
Test conditions conforming to EN267-676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

Light-oil firing rate for RLS 610 model (min. output 1.300 kW)

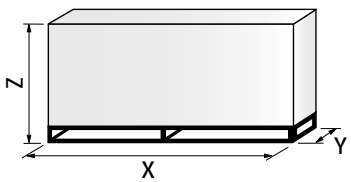
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	R mm
RLS 310/M MX	1190	507	178	313	520	DN65	571	790	365	1015	595	528	290	890
RLS 410/M MX	1190	507	178	313	520	DN65	530	790	365	1015	595	528	290	890
RLS 510/M MX	1190	507	178	313	520	DN65	530	790	365	1015	595	528	290	890
RLS 610/M MX	1190	510	178	336	520	DN65	580	790	351	1015	595	528	290	890



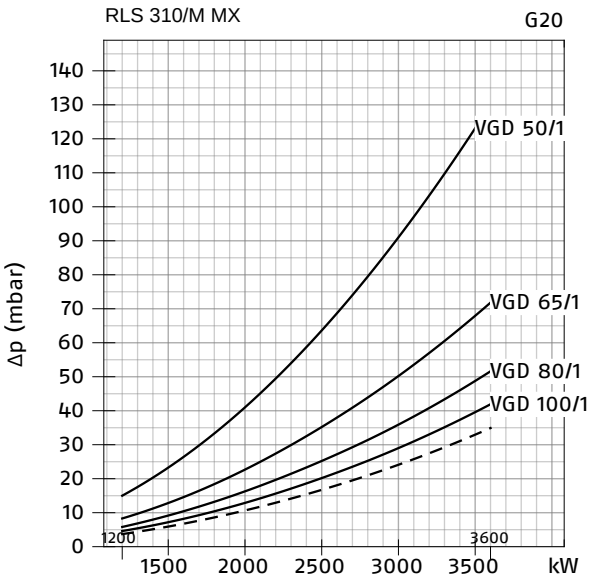
Description	D1 mm	D2 mm	Ø mm
RLS 310/M MX	335	452	M18
RLS 410/M MX	335	452	M18
RLS 510/M MX	335	452	M18
RLS 610/M MX	350	452	M18

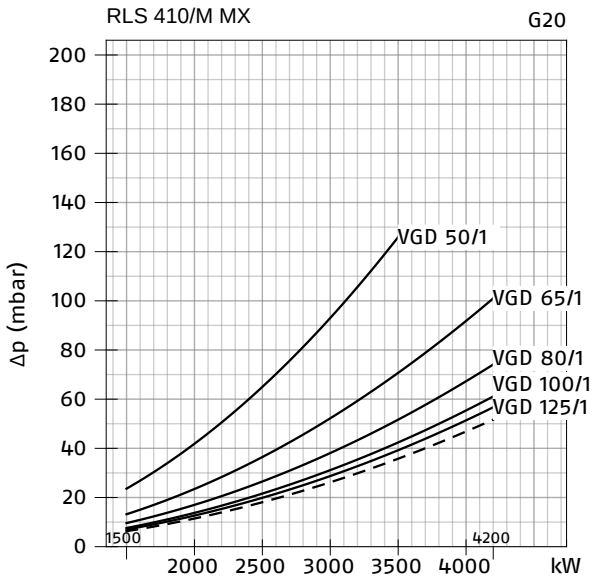


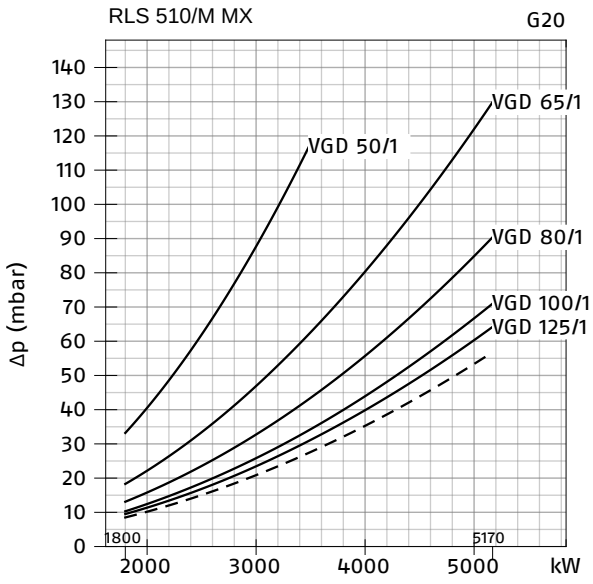
Description	X mm	Y mm	Z mm	Net weight kg
RLS 310/M MX	2040	1180	1125	300
RLS 410/M MX	2040	1180	1125	300
RLS 510/M MX	2040	1180	1125	300
RLS 610/M MX	2400	1400	1595	320

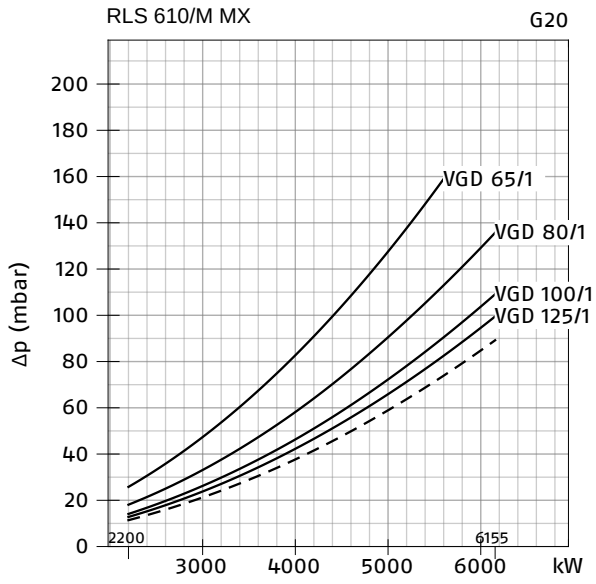
PRESSURE LOSS DIAGRAMS

VGD 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)	VPS kit code (3)	Burner-gas train adapter (4)			
						RLS 310/M MX	RLS 410/M MX	RLS 510/M MX	RLS 610/M MX
VGD SERIES ONE STAGE GAS TRAIN									
VGD 50/1-RT 122	**20137718***		Rp 2”	-	3010123+ 20186306	(3000826+20042324)/20068062 (6)			●
VGD 50/1 CT RT 122	**20169190****		Rp 2”	♦	♦	(3000826+20042324)/20068062 (6)			●
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	□	□	□	□
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	□	□	□	□
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	□	□	□	□
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	□	□	□	□
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	3010370			
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	3010370			
VGD 125/1-FT 122	**20169195***		DN125	-	(7)	●	3010224		

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm, E = 1345 mm		**3010376**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Basic version with 3 position output.		**20073595**
		RWF 55.5 - Complete with RS-485 interface.		**20074441**
		RWF 55.6 - Complete with RS-485/PROFIBUS interface.		**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**20074479**

Drawing	Burner model	Specification	Note	Code
	All models	POTENTIOMETER It is necessary for analogic control signal converter operation.		**20096322**

NOZZLES

Return nozzles without needle are used on RLS/M MX burners. The nozzle must be ordered as accessory. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Code	
		Rated delivery (kg/h)	BERGONZO TYPE B5 45° SA	FLUIDICS TYPE N2 45°
	RLS 310-410/M MX	150	**3009314**	**3045479**
		175	**3009316**	**3045481**
		200	**3009318**	**3045483**
		225	**3009320**	**3045485**
	RLS 310-410-510/M MX	250	**3009322**	**3045487**
		275	**3009324**	**3045489**
	RLS 310-410-510-610/M MX	300	**3009326**	**3045491**
		325	**3009328**	**3045493**
		350	**3009330**	**3045495**
		375	**3009332**	**3045497**
		400	**3009334**	**3045499**
		425	**3009336**	**3045500**
	RLS 510-610/M MX	450	**3009338**	**3045501**
	RLS 610/M MX	475	**3009340**	**-**
		500	**3009342**	**3045503**
		525	**3009344**	**-**
		550	**3009346**	**3045505**
		575	**3009348**	**-**
		600	**3009350**	**3045507**

For more information please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught dual fuel burners with modulating operation, fully automatic, made up of:
- High performance fan
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase, 400V, 50Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Mechanical cam with gas and oil modulator
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of over pressure on the fuel supply line
- Flame control panel for controlling the system safety - UV flame sensor
- Star/delta starter or direct starter (RLS 310-410/M) for the fan motor - Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Light oil gears pump for high pressure fuel supply
- Dedicated pump starting motor
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Maximum an minimum oil pressure switches
- Oil pressure gauges on supply and return oil lines
- Oil/Gas selector
- Flame inspection window

STANDARD EQUIPMENT

– 1 flange gasket for gas train adaptor
– 1 adaptor for gas train
– 4 screws for fixing the flange
– 1 thermal screen
– 4 screws for fixing the burner flange to the boiler
– 2 flexible pipes for connection to the oil supply network
– 2 nipples for connection to the pump with gaskets
– 8 gas nozzles (only for RLS 310/M)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Low NOx modulating dual fuel burners

RLS 1000-1200/M MX



- Dual fuel burners
- Progressive two-stage or modulating operation on both gas and light oil side
- Low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh* on the gas side) and according to Class 2 of European standard EN 267 (NOx lower than 185 mg/kWh* on light oil side)

RLS 1000-1200/M MX burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible. The series covers a firing range from 1200 to 11500 kW, and it has been designed for use in hot water boilers, overheated water boilers as well as steam boilers. Operation can be “two stage progressive” or alternatively “modulating”, for both fuels, light oil and gas, with the installation of a PID logic regulator. The mechanical cam device of regulation allows to catch up a high modulation ratio on all firing rates range. The burners can, therefore, supply with precision the demanded power, guaranteeing a high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction. The combustion head guarantees reduced polluting emissions (NOx < 80 mg/kWh on gas operation). An exclusive design guarantees low sound emissions, low electrical consumption, easy use and maintenance.

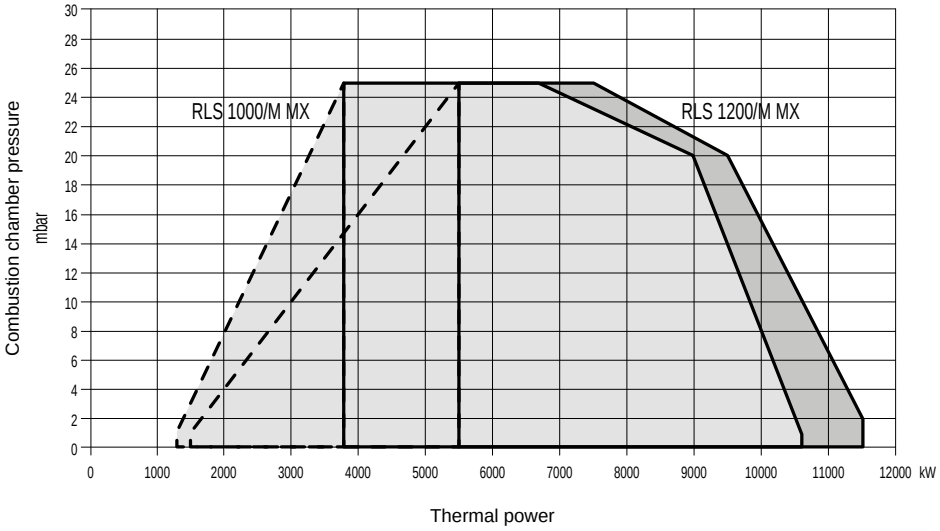
* The emission value is determined, according to the provisions of standard EN 267-EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Code
		Light oil	Natural Gas					
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RLS 1000/M MX TC FS1	1200/3750-10600	110/320-793	130/380-940	27 (oil) 24 (gas)	3/400/50	230/50-60	CE-0085CN0119	**20206345**
RLS 1200/M MX TC FS1	1500/5500-11500	126/464-970	150/550-1150	32 (oil) 27,2 (gas)	3/400/50	230/50-60	CE-0085CN0120	**20212536**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 - EN 676 Standards.

FIRING RATES

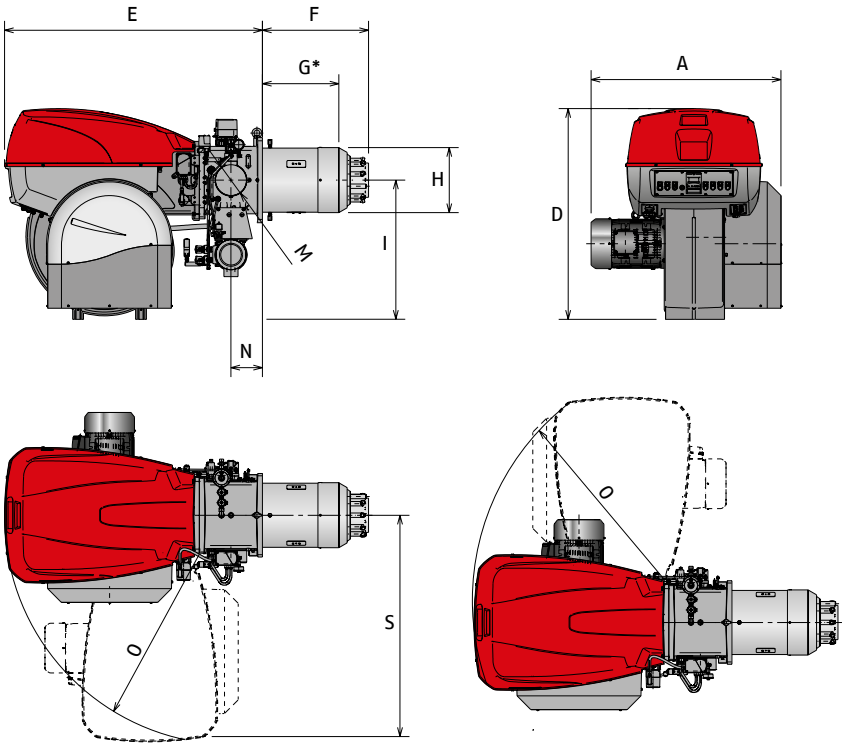


Useful working field for choosing the burner

Modulation range

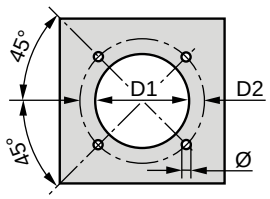
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

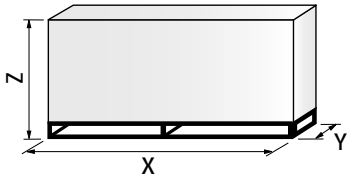


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M inch	N mm	O mm	S mm
RLS 1000/M MX	1206	1338	1637	674	484	413	885	DN80	200	1350	1425
RLS 1200/M MX	1250	1338	1637	658	465	456	885	DN80	200	1350	1425

(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



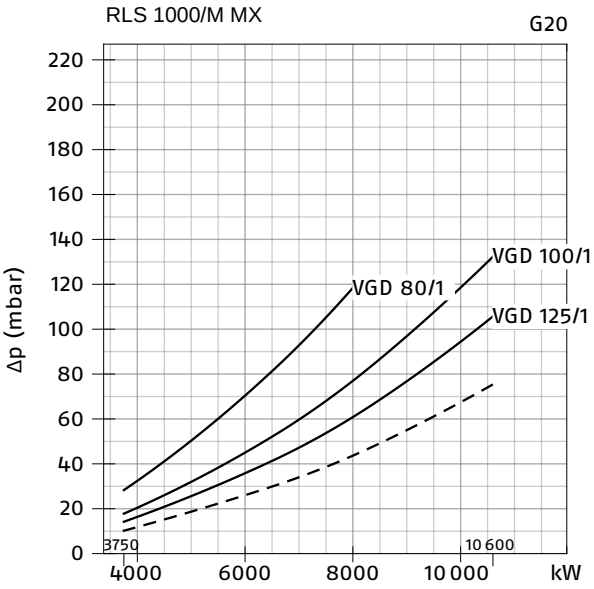
Description	D1 mm	D2 mm	Ø mm
RLS 1000/M MX	460	608	M20
RLS 1200/M MX	500	608	M20

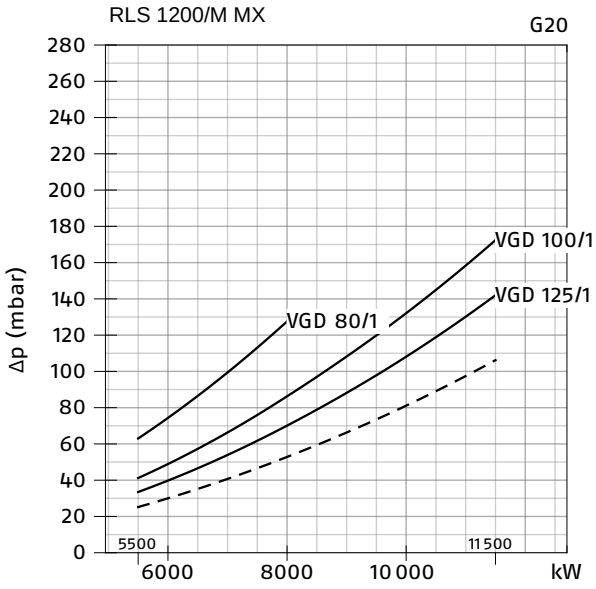


Description	X mm	Y mm	Z mm	Net weight kg
RLS 1000/M MX	2400	1400	1595	550
RLS 1200/M MX	2400	1400	1595	600

PRESSURE LOSS DIAGRAMS

VGD 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	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)
					RS 1000-1200/M MX
VGD SERIES ONE STAGE GAS TRAIN					
VGD 80/1-FT 122	**20140763***	DN80	-	3010123	□
VGD 80/1 CT FT 122	**20169192****	DN80	♦	♦	□
VGD 100/1-FT 122	**20169193***	DN100	-	3010123	3010370
VGD 100/1 CT FT 122	**20169194****	DN100	♦	♦	3010370
VGD 125/1-FT 122	**20169195***	DN125	-	(5)	3010224

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C8 Dimensions: A = 1425 mm, B 285-1000 mm, C = 110 mm, D = 1500 mm, E = 1800 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010401**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55. RWF 55.5 - Complete version.	**20101191**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output. Pressure (0-16 bar) with 4-20 mA output. Pressure (0-25 bar) with 4-20 mA output.	 **3010213** **3010214** **3090873**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).	**3010390**
	All models	POTENTIOMETER It is necessary for analogic control signal converter operation.	**(1)**

(1) On demand.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Code	
		Rated delivery (kg/h)	BERGONZO TYPE B5 60° AA	BERGONZO TYPE CT5 60°
	RLS 1000/M MX	350	**20047954**	-
		600	**20047978**	-
		750	**20047985**	-
		900	**20047994**	-
	RLS 1200/M MX	700	-	**20006479**
		700	-	**20006479**
		900	-	**20006482**
		1100	-	**20006484**

For more information please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught dual fuel burner with modulating operation, fully automatic, made up of:
- High performance fan
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase, 400V, 50Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ignition by gas pilot with gas train
  - flame stability disk
- Mechanical cam with gas and oil modulator
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of over pressure on the fuel supply line
- Flame control panel for controlling the system safety
- Infrared flame detector
- Star/delta starter for the fan motor
- Main electrical supply terminal board
- Burner on/off switch

- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Light oil gears pump for high pressure fuel supply
- Dedicated pump starting motor
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Maximum an minimum oil pressure switches
- Oil pressure gauges on supply and return oil lines
- Oil/Gas selector
- Flame inspection window.
- The gas train can only enter from the left side of the burner (fan motor side)
- Equipped with as spray lance for light oil, activated by compressed air.

STANDARD EQUIPMENT

- 1 flange gasket
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Seal control pressure switch (for installation on gas train)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating dual fuel burners

RLS 68-200/E MX



- Dual fuel burners
- Progressive two-stage or modulating operation on both gas and light oil side
- Low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh* on the gas side) and according to Class 2 of European standard EN 267 (NOx lower than 185 mg/kWh* on light oil side)

RLS 68-200/E MX series of burners covers a firing range from 350 to 2322 kW, and they have been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
They are equipped with Siemens LMV26, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RLS/E MX burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
Optimisation of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material..

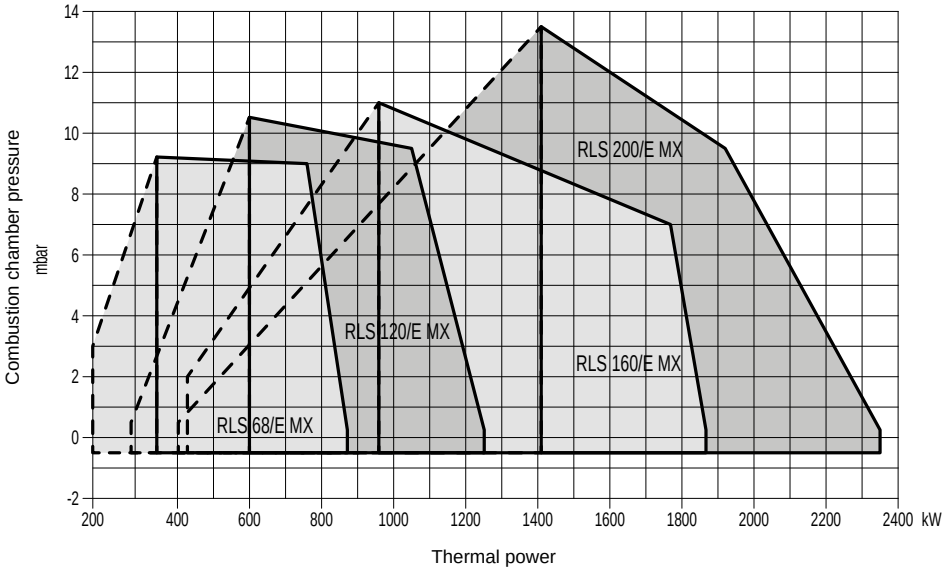
* The emission value is determined, according to the provisions of standard EN 267-EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)									
RLS 68/E MX TC FS1	195/350-871	16/29-73	20/35-87	1880 (oil) 1800 (gas)	3/400/50	230/50-60	CE 0085CS0238	(1)	**20073915**
RLS 120/E MX TC FS1	290/595-1224	24/50-95	29/60-123	2588 (oil) 2588 (gas)	3/400/50	230/50-60	CE 0085CS0238	(1)	**20073918**
RLS 160/E MX TC FS1	421/947-1845	35/80-155	42/95-185	6646 (oil) 5249 (gas)	3/400/50	230/50-60	CE 0085CS0238	(1)	**20073920**
RLS 200/E MX TC FS1	401/1400-2322	34/118-96	40/140-232	7705 (oil) 6638 (gas)	3/400/50	230/50-60	CE 0085CS0238	(1)	**20081721**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.
(1) Model with plug and socket.

FIRING RATES

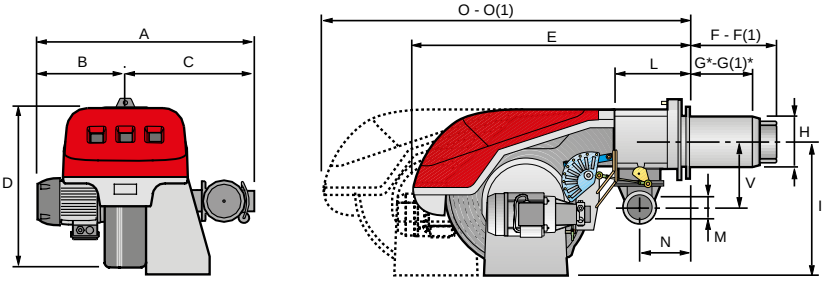


Useful working field for choosing the burner

Modulation range

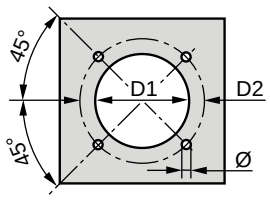
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

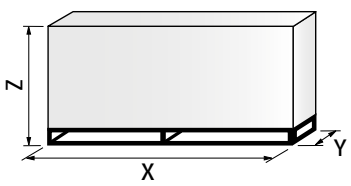


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	G* - G(1)* mm	H mm	I mm	L mm	M inch	N mm	O - O (1) mm	V mm
RLS 68/E MX	745	350	395	585	860	260 - 395	200 - 335	189	430	214	Rp 2”	134	1161 - 1300	221
RLS 120/E MX	765	370	395	585	860	260 - 395	200 - 335	189	430	214	Rp 2”	134	1161 - 1300	221
RLS 160/E MX	895	415	480	615	880	373 - 503	272 - 402	221	445	221	Rp 2”	141	1440 - 1575	262
RLS 200/E MX	935	455	480	615	880	373 - 503	272 - 402	221	445	221	Rp 2”	141	1440 - 1575	262

(1) Length with extended combustion head.
* Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



Description	D1 mm	D2 mm	Ø mm
RLS 68/E MX	195	275 - 325	M12
RLS 120/E MX	195	275 - 325	M12
RLS 160/E MX	230	325 - 368	M16
RLS 200/E MX	230	325 - 368	M16



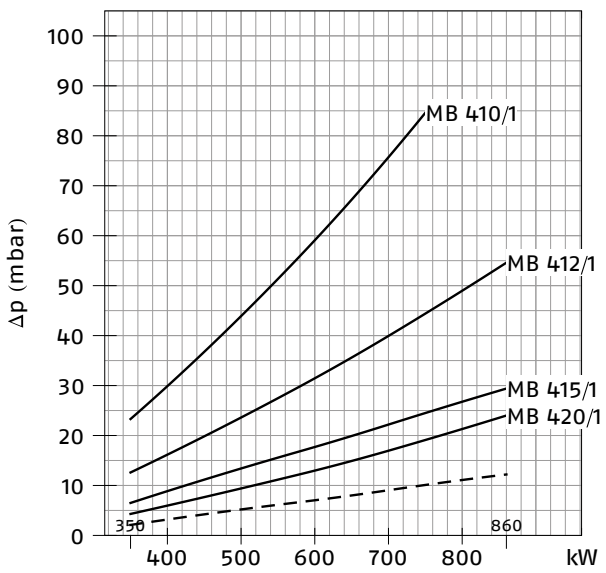
Description	X(1) mm	Y mm	Z mm	Net weight kg
RLS 68/E MX	1400	975	645	115
RLS 120/E MX	1400	975	645	120
RLS 160/E MX	1400 - 1500 (2)	975	645	135
RLS 200/E MX	1400 - 1500 (2)	975	645	135

(1) Length with standard and extended combustion head.
(2) Length with extended combustion head.

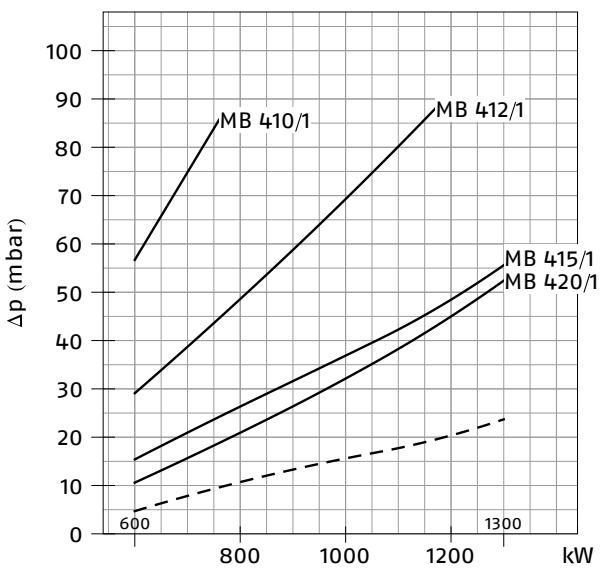
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

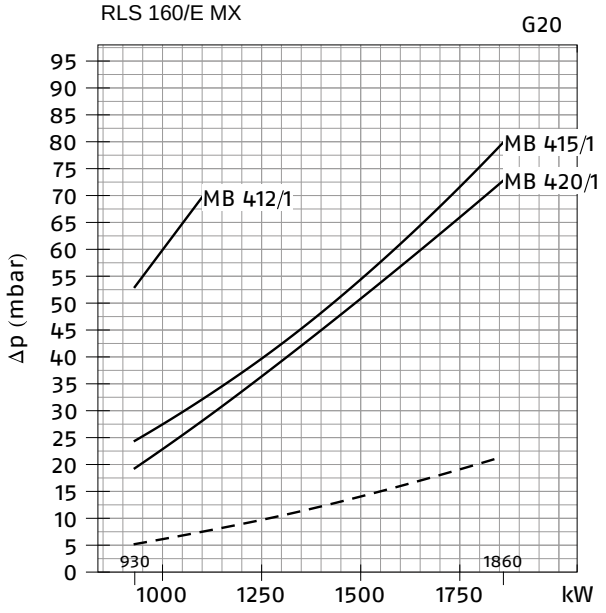
RLS 68/E MX



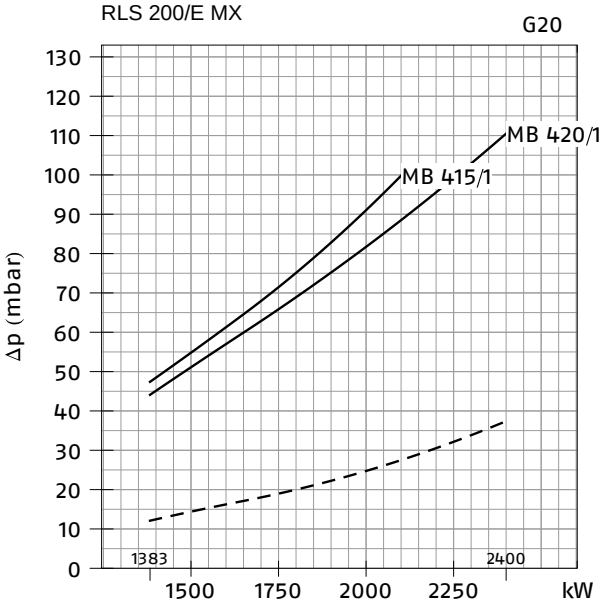
RLS 120/E MX



RLS 160/E MX



RLS 200/E MX



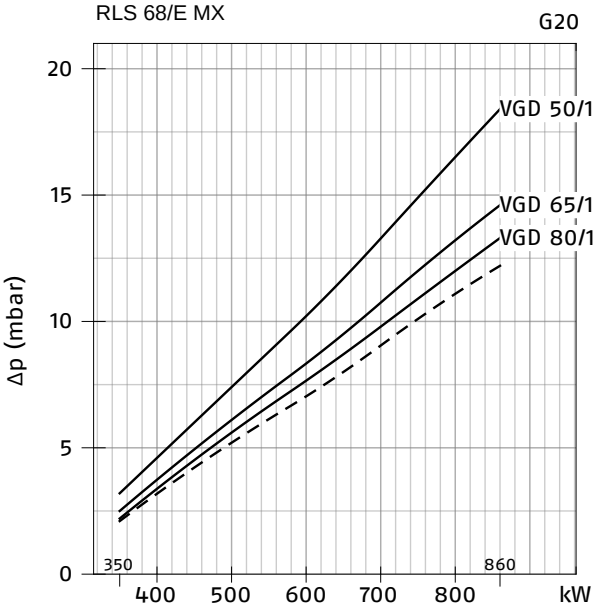
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

——— Combustion head + gas train

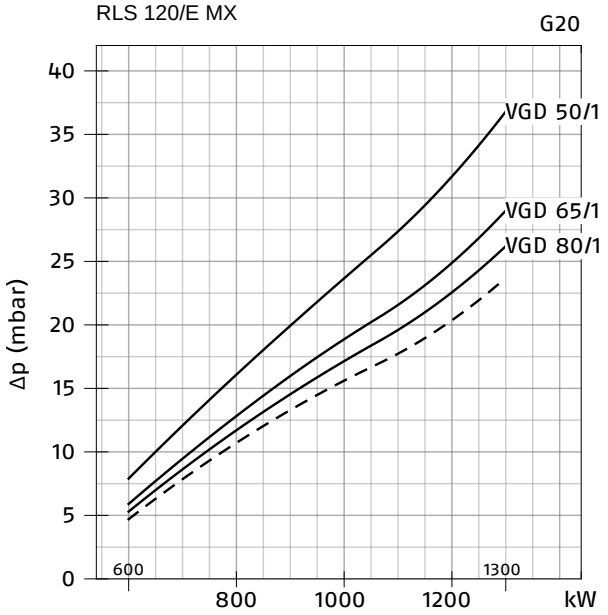
- - - - Combustion head

VGD SERIES GAS TRAIN

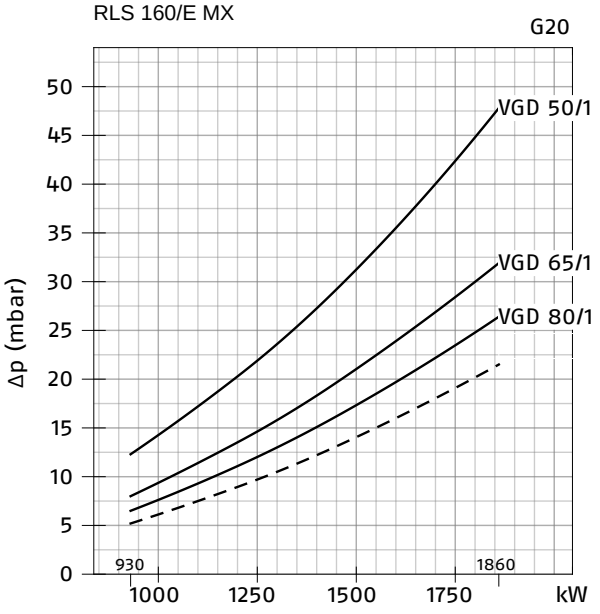
RLS 68/E MX



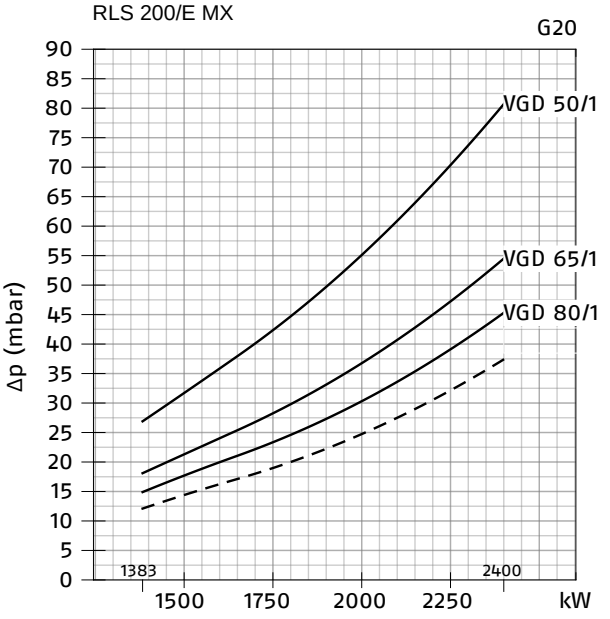
RLS 120/E MX



RLS 160/E MX



RLS 200/E MX



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

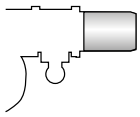
GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)			
					RLS 68/E MX	RLS 120/E MX	RLS 160/E MX	RLS 200/E MX
MB SERIES ONE STAGE GAS TRAIN								
MB 410/1-RT 52	**3970258***		Rp 1" ¼		3000824+3000843		●	●
MB 410/1-RT 20	**3970554***		Rp ¾"		3000824+3000843		●	●
MB 410/1-RT 52	**3970600***		Rp ¾"		3000824+3000843		●	●
MB 410/1-RSM 20	**3970230***		Rp ¾"		3000824+3000843		●	●
MB 412/1-RT 52	**3970256***		Rp 1" ½		3000843			●
MB 412/1-RT 20	**3970144***		Rp 1" ½		3000843			●
MB 412/1-RSM 20	**3970231***		Rp 1" ½		3000843			●
MB 415/1-RT 30	**3970180***		Rp 1" ½		3000843			●
MB 415/1-RT 52	**3970250***		Rp 1" ½		3000843			
MB 415/1-RSM 30	**3970232***		Rp 1" ½		3000843			
MB 420/1-RT 30	**3970181***		Rp 2"		□	□	□	□
MB 420/1-RT 52	**3970257***		Rp 2"		□	□	□	□
MB 420/1-RSM 30	**3970233***		Rp 2"		□	□	□	□
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(5)	Rp 2"		□	□	□	□
VGD 65/1-FT 122	**20140762***	(6)	DN65		3000826			
VGD 80/1-FT 122	**20140763***		DN80		3000826			

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) This gas train code is not compatible with the gas valve seal control management function integrated in the burner control box.
(5) Additional flange kit code 20185515 needed for seal control function code 3010344.
(6) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		**EXTENDED HEAD KIT** "Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.		
	RLS 68-120/E MX	Standard head length = 260 mm - Extended head length = 395 mm		**20198595**
	RLS 160/E MX	Standard head length = 373 mm - Extended head length = 503 mm		**(1)**
	RLS 200/E MX	Standard head length = 373 mm - Extended head length = 503 mm		**(1)**
	All models	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 102 mm		**3000722**
	All models	**CONTINUOUS VENTILATION KIT** If the burner requires continuous ventilation in the stages without flame.		**3010094**
	All models	**GROUND FAULT INTERRUPTER KIT** A "Ground fault interrupter kit" is available as a safety device for electrical system fault.		**20098337**
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**

Drawing	Burner model	Specification	Note	Code
	All models	**OCI412 INTERFACE KIT** Interface kit between the LMV 26 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models	**POWER CONTROLLER** To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version; 3-point outlet.		**20099869**
		RWF 55.5 - Plus version; 3-point outlet.		**20099905**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	RLS 68/E MX	**HEAD KIT FOR "REVERSE FLAME CHAMBER"** In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional Pipes Kit.		
		Steel gas tubes kit for combustion head.	(2)	**20006401**
	RLS 120/E MX	Steel gas tubes kit for combustion head.	(2)	**20006402**
	RLS 160/E MX	Steel gas tubes kit for combustion head.	(2)	**3010249**
	RLS 200/E MX	Steel gas tubes kit for combustion head.	(2)	**20035848**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**

(1) On demand.
(2) CE approval on field is required.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Code	
		Rated delivery (kg/h)	BERGONZO TYPE A3 45°	BERGONZO TYPE A4 45°
	RLS/E MX	40	**3009853**	**20067277**
	RLS/E MX	50	**3009854**	**20067279**
	RLS/E MX	60	**3009855**	**20067281**
	RLS/E MX	70	**3009856**	**20067283**
	RLS/E MX	80	**3009857**	**20067284**
	RLS/E MX	90	**3009858**	**20067285**
	RLS/E MX	100	**3009859**	**20067286**
	RLS/E MX	110	**3009860**	**20067287**
	RLS/E MX	120	**3009861**	**20067288**
	RLS/E MX	130	**3009862**	**20067289**
	RLS/E MX	140	**3009863**	**20067290**
	RLS/E MX	150	**20059496 (*)**	**20067291**
	RLS/E MX	160	**3009864**	**20067293**
	RLS/E MX	180	**3009865**	**20067295**
	RLS/E MX	200	**3009866**	**20067297**

(*) 60° Angle only for code 20059496.

STATE OF SUPPLY

Monoblock forced draught Low NOx dual fuel burner with two stage progressive or modulating operation at the gas and oil side, with a specific kit, fully automatic, made up of:

- Air suction circuit lined with sound-proofing material
- Centrifugal fan with high performance and low sound emissions
- Air damper for air flow setting controlled by a high precision servomotor
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Flame control panel
- UV photocell for flame detection
- Burner on/off selection switch
- Oil/gas selector
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level.
- Digital Burner management system for air/fuel setting; with output PID modulation control as accessory
- AZL Display Interface, for combustion system commissioning and monitoring
- Electronic cam for controlling the system safety
- Valve unit with double oil safety valve on the output circuit and a safety valve on the return circuit (RLS 68/E MX); double oil safety valve on the return circuit (RLS 120-160-200/E MX).

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
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating dual fuel burners

RLS 68-200/EVi MX



- Dual fuel burners
- Progressive two-stage or modulating operation on both gas and light oil side
- Low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh* on the gas side) and according to Class 2 of European standard EN 267 (NOx lower than 185 mg/kWh* on light oil side)

RLS 68-200/EVi MX series of burners covers a firing range from 350 to 2322 kW, and they have been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
They are equipped with Siemens LMV26, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RLS/EV MX burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The RLS/EV MX models, are available to operate with Variable Speed Drive technology based on the control of a Frequency Inverter that modifies the air flow through the motor speed variation; they leave the factory with the inverter installed on the fan motor, already settled for the startup and ready to operate correctly without any need of additional adjustments.
Optimisation of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.

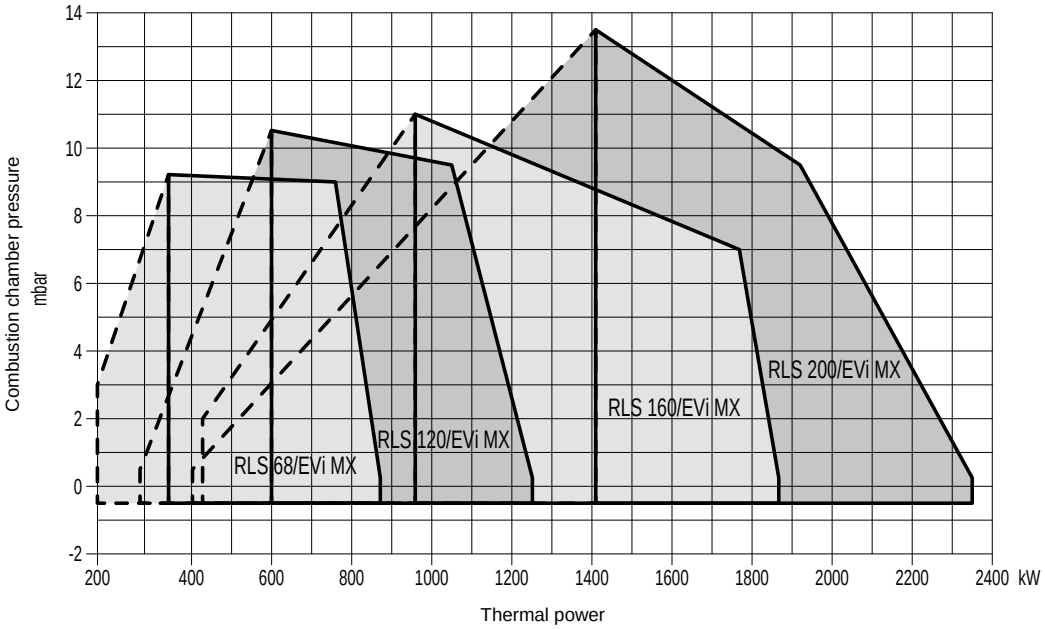
* The emission value is determined, according to the provisions of standard EN 267-EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)									
RLS 68/EVi MX TC FS1	195/350-871	16/29-73	20/35-87	1880 (oil) 1800 (gas)	3/400/50	230/50-60	CE 0085CS0238	(1)	**20070471**
RLS 120/EVi MX TC FS1	290/595-1224	24/50-95	29/60-123	2588 (oil) 2588 (gas)	3/400/50	230/50-60	CE 0085CS0238	(1)	**20070476**
RLS 160/EVi MX TC FS1	421/947-1845	35/80-155	42/95-185	6646 (oil) 5249 (gas)	3/400/50	230/50-60	CE 0085CS0238	(1)	**20070482**
RLS 200/EVi MX TC FS1	401/1400-2322	34/118-96	40/140-232	7705 (oil) 6638 (gas)	3/400/50	230/50-60	CE 0085CS0238	(1)	**20081715**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.
(1) Model with plug and socket.

FIRING RATES

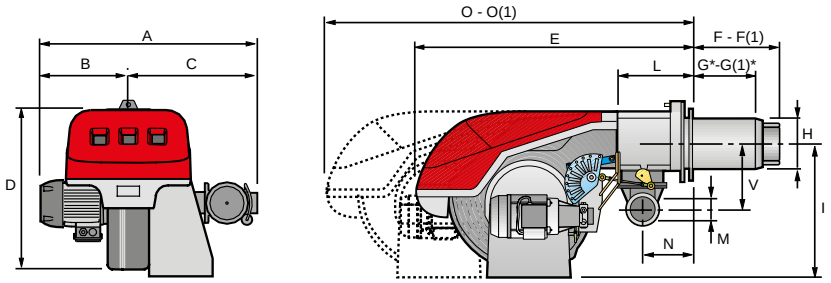


Useful working field for choosing the burner

Modulation range

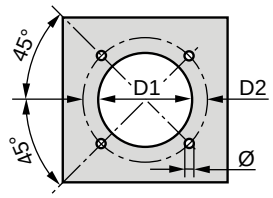
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

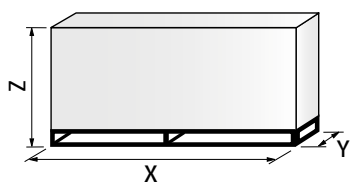


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	G* - G(1)* mm	H mm	I mm	L mm	M inch	N mm	O - O (1) mm	V mm
RLS 68/EVi MX	745	350	395	585	860	260 - 395	200 - 335	189	430	214	Rp 2”	134	1161 - 1300	221
RLS 120/EVi MX	765	370	395	585	860	260 - 395	200 - 335	189	430	214	Rp 2”	134	1161 - 1300	221
RLS 160/EVi MX	895	415	480	615	880	373 - 503	272 - 402	221	445	221	Rp 2”	141	1440 - 1575	262
RLS 200/EVi MX	935	455	480	615	880	373 - 503	272 - 402	221	445	221	Rp 2”	141	1440 - 1575	262

(1) Length with extended combustion head.
* Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



Description	D1 mm	D2 mm	Ø mm
RLS 68/EVi MX	195	275 - 325	M12
RLS 120/EVi MX	195	275 - 325	M12
RLS 160/EVi MX	230	325 - 368	M16
RLS 200/EVi MX	230	325 - 368	M16



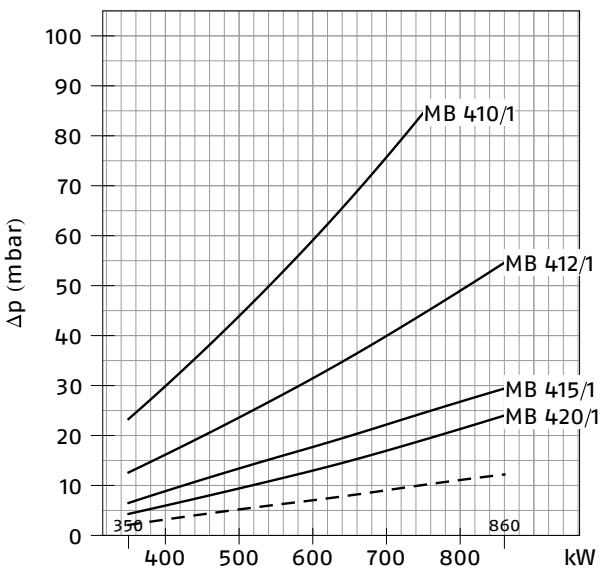
Description	X(1) mm	Y mm	Z mm	Net weight kg
RLS 68/EVi MX	1400	975	645	115
RLS 120/EVi MX	1400	975	645	120
RLS 160/EVi MX	1400 - 1500 (2)	975	645	135
RLS 200/EVi MX	1400 - 1500 (2)	975	645	135

(1) Length with standard and extended combustion head.
(2) Length with extended combustion head.

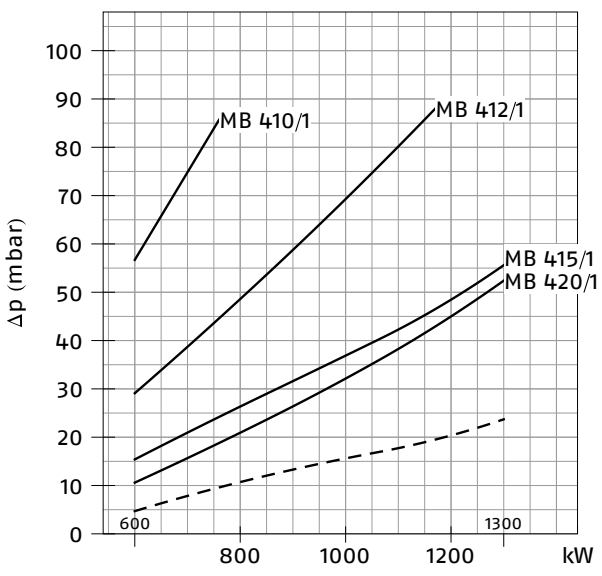
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

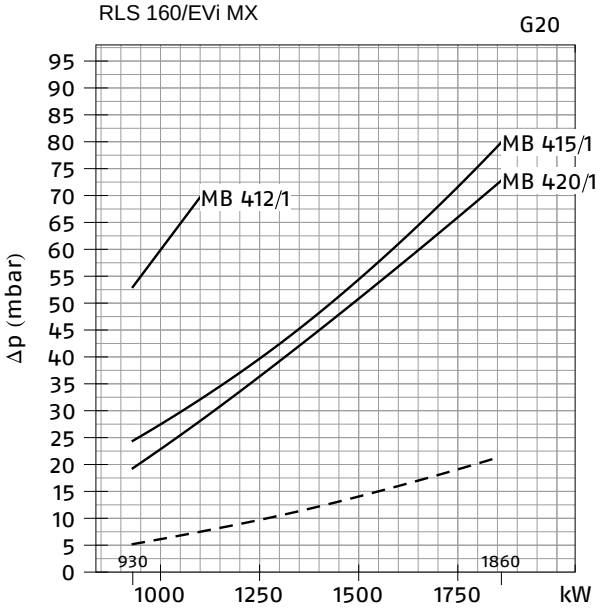
RLS 68/EVi MX



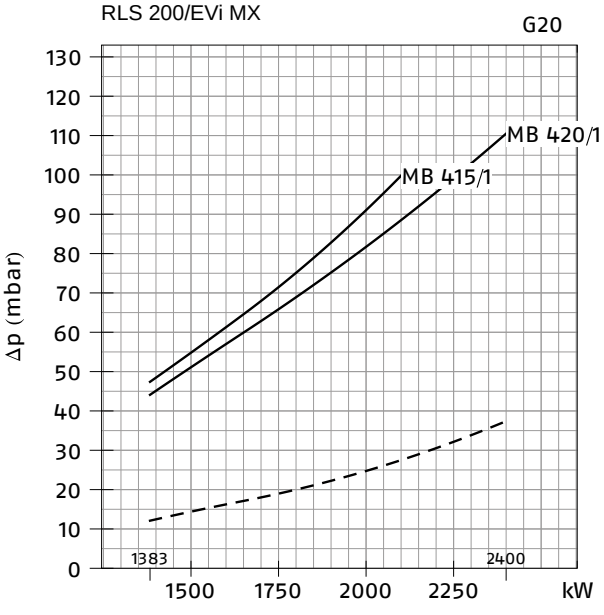
RLS 120/EVi MX



RLS 160/EVi MX



RLS 200/EVi MX



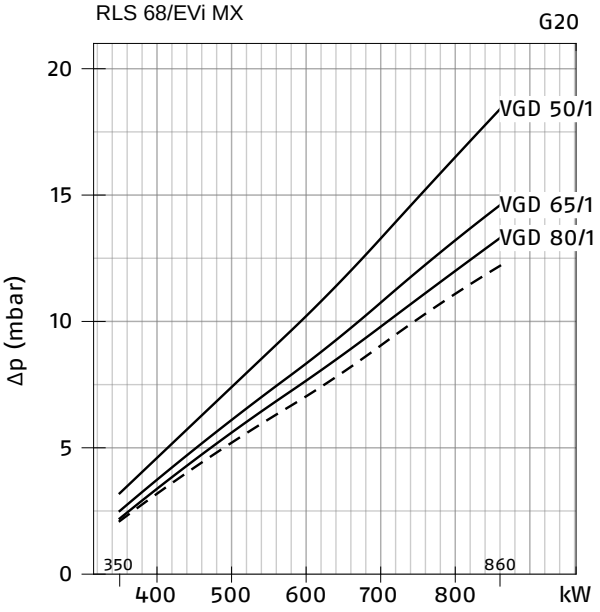
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

——— Combustion head + gas train

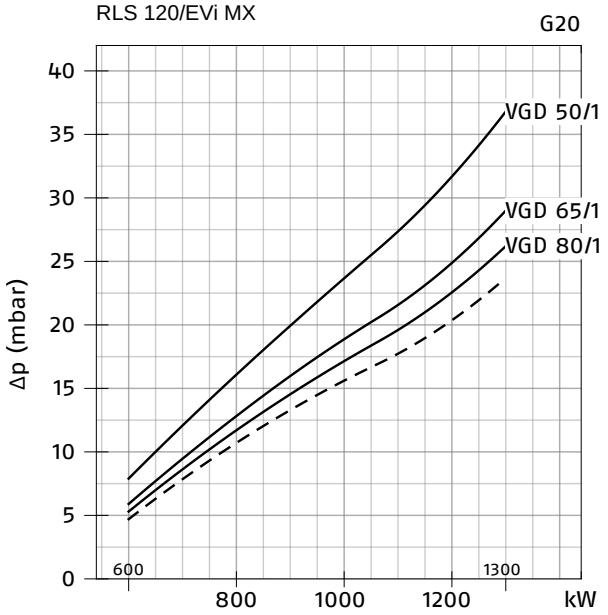
- - - - Combustion head

VGD SERIES GAS TRAIN

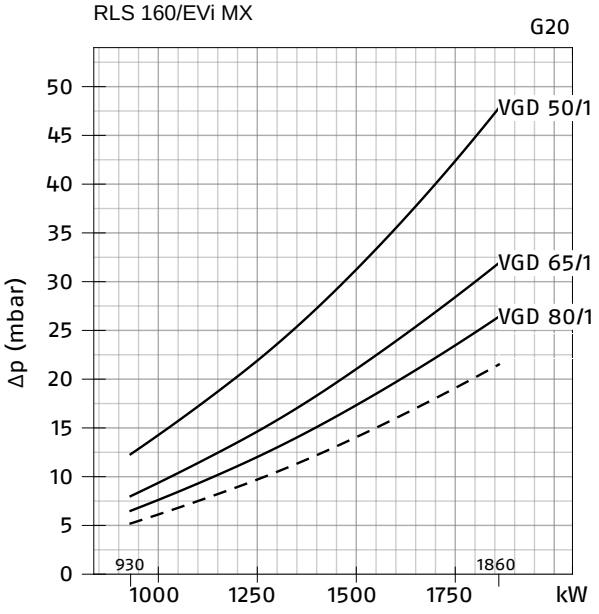
RLS 68/EVi MX



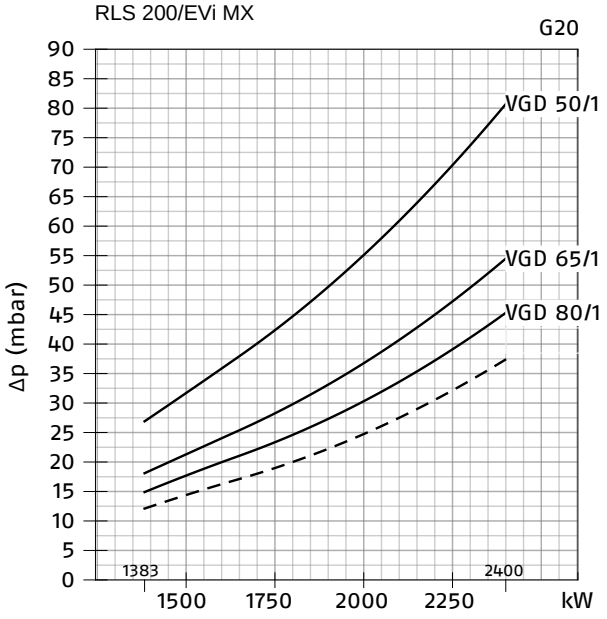
RLS 120/EVi MX



RLS 160/EVi MX



RLS 200/EVi MX



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

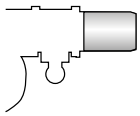
GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)			
					RLS 68/EVi MX	RLS 120/EVi MX	RLS 160/EVi MX	RLS 200/EVi MX
MB SERIES ONE STAGE GAS TRAIN								
MB 410/1-RT 52	**3970258***		Rp 1" ¼		3000824+3000843		●	●
MB 410/1-RT 20	**3970554***		Rp ¾"		3000824+3000843		●	●
MB 410/1-RT 52	**3970600***		Rp ¾"		3000824+3000843		●	●
MB 410/1-RSM 20	**3970230***		Rp ¾"		3000824+3000843		●	●
MB 412/1-RT 52	**3970256***		Rp 1" ½		3000843			●
MB 412/1-RT 20	**3970144***		Rp 1" ½		3000843			●
MB 412/1-RSM 20	**3970231***		Rp 1" ½		3000843			●
MB 415/1-RT 30	**3970180***		Rp 1" ½		3000843			●
MB 415/1-RT 52	**3970250***		Rp 1" ½		3000843			
MB 415/1-RSM 30	**3970232***		Rp 1" ½		3000843			
MB 420/1-RT 30	**3970181***		Rp 2"		□	□	□	□
MB 420/1-RT 52	**3970257***		Rp 2"		□	□	□	□
MB 420/1-RSM 30	**3970233***		Rp 2"		□	□	□	□
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(5)	Rp 2"		□	□	□	□
VGD 65/1-FT 122	**20140762***	(6)	DN65		3000826			
VGD 80/1-FT 122	**20140763***		DN80		3000826			

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) This gas train code is not compatible with the gas valve seal control management function integrated in the burner control box.
(5) Additional flange kit code 20185515 needed for seal control function code 3010344.
(6) Ø in = DN65; Ø out = DN80.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Burner/gas train matching not available.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		**EXTENDED HEAD KIT** "Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.		
	RLS 68-120/EVi MX	Standard head length = 260 mm - Extended head length = 395 mm		**20198595**
	RLS 160/EVi MX	Standard head length = 373 mm - Extended head length = 503 mm		**(1)**
	RLS 200/EVi MX	Standard head length = 373 mm - Extended head length = 503 mm		**(1)**
	All models	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 102 mm		**3000722**
	All models	**CONTINUOUS VENTILATION KIT** If the burner requires continuous ventilation in the stages without flame.		**3010094**
	All models	**GROUND FAULT INTERRUPTER KIT** A "Ground fault interrupter kit" is available as a safety device for electrical system fault.		**20098337**
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**

Drawing	Burner model	Specification	Note	Code
	All models	**OCI412 INTERFACE KIT** Interface kit between the LMV 26 and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models	**POWER CONTROLLER** To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version; 3-point outlet.		**20099869**
		RWF 55.5 - Plus version; 3-point outlet.		**20099905**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	RLS 68/EVi MX	**HEAD KIT FOR "REVERSE FLAME CHAMBER"** In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional Pipes Kit.		
		Steel gas tubes kit for combustion head.	(2)	**20006401**
	RLS 120/EVi MX	Steel gas tubes kit for combustion head.	(2)	**20006402**
	RLS 160/EVi MX	Steel gas tubes kit for combustion head.	(2)	**3010249**
	RLS 200/EVi MX	Steel gas tubes kit for combustion head.	(2)	**20035848**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**

(1) On demand.
(2) CE approval on field is required.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Code	
		Rated delivery (kg/h)	BERGONZO TYPE A3 45°	BERGONZO TYPE A4 45°
	RLS/EVi MX	40	**3009853**	**20067277**
	RLS/EVi MX	50	**3009854**	**20067279**
	RLS/EVi MX	60	**3009855**	**20067281**
	RLS/EVi MX	70	**3009856**	**20067283**
	RLS/EVi MX	80	**3009857**	**20067284**
	RLS/EVi MX	90	**3009858**	**20067285**
	RLS/EVi MX	100	**3009859**	**20067286**
	RLS/EVi MX	110	**3009860**	**20067287**
	RLS/EVi MX	120	**3009861**	**20067288**
	RLS/EVi MX	130	**3009862**	**20067289**
	RLS/EVi MX	140	**3009863**	**20067290**
	RLS/EVi MX	150	**20059496 (*)**	**20067291**
	RLS/EVi MX	160	**3009864**	**20067293**
	RLS/EVi MX	180	**3009865**	**20067295**
	RLS/EVi MX	200	**3009866**	**20067297**

(*) 60° Angle only for code 20059496.

STATE OF SUPPLY

Monoblock forced draught Low NOx dual fuel burner with two stage progressive or modulating operation at the gas and oil side, with a specific kit, fully automatic, made up of:

- Air suction circuit lined with sound-proofing material
- Centrifugal fan with high performance and low sound emissions
- Air damper for air flow setting controlled by a high precision servomotor
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Fan motor with installed Frequency Inverter to modify the air flow
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Flame control panel
- UV photocell for flame detection
- Burner on/off selection switch
- Oil/gas selector
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level.
- Digital Burner management system for air/fuel setting; with output PID modulation control as accessory
- AZL Display Interface, for combustion system commissioning and monitoring
- Electronic cam for controlling the system safety
- Valve unit with double oil safety valve on the output circuit and a safety valve on the return circuit (RLS 68/EVi MX); double oil safety valve on the return circuit (RLS 120-160-200/EVi MX).

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
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating dual fuel burners

RLS 310-610/E MX



- Dual fuel burners
- Progressive two-stage or modulating operation on both gas and light oil side
- Low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh* on the gas side) and according to Class 2 of European standard EN 267 (NOx lower than 185 mg/kWh* on light oil side)

RLS 310-610/E MX series of burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible. The series covers a firing range from 1200 to 6155 kW, these burners have been designed for use in hot water boilers, overheated water boilers as well as steam boilers. They are equipped with an Electronic Cam, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range. Operation can be "two stage progressive" or alternatively "modulating" for both fuels, light oil and gas. The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The combustion head guarantees reduced polluting emissions. An exclusive design guarantees low sound emissions, low electrical consumption, easy use and maintenance.

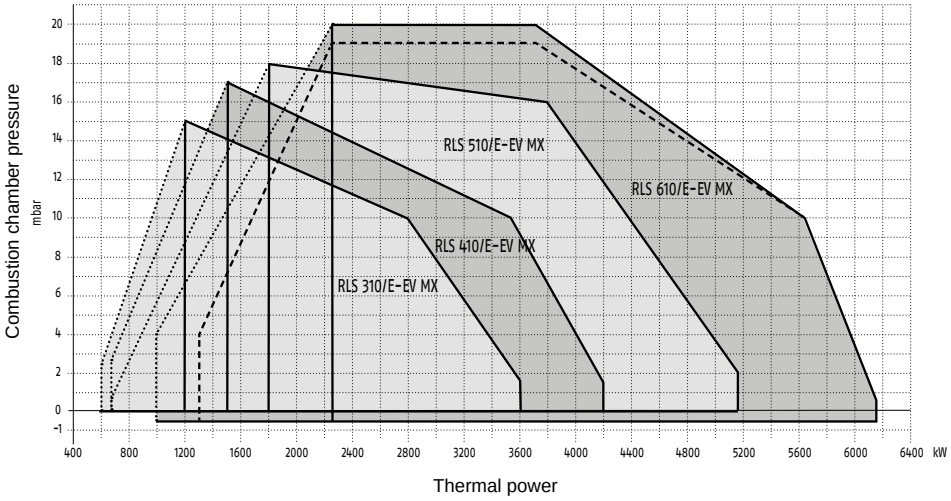
* The emission value is determined, according to the provisions of standard EN 267-EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (LMV 26)									
RLS 310/E MX TC FS1	600/1200-3600	50/100-305	60/120-360	10.9 (oil) 9.1 (gas)	3/400/50	-	CE 0085CQ0196	(1)	**20087644**
RLS 310/E MX TC FS1	600/1200-3600	50/100-305	60/120-360	10.9 (oil) 9.1 (gas)	3/400/50	-	CE 0085CQ0196	(2)	**20082946**
RLS 410/E MX TC FS1	640/1500-4200	55/126-352	64/150-420	12.6 (oil) 10.8 (gas)	3/400/50	-	CE 0085CQ0196	(1)	**20084376**
RLS 410/E MX TC FS1	640/1500-4200	55/126-352	64/150-420	12.6(oil) 10.8 (gas)	3/400/50	-	CE 0085CQ0196	(2)	**20087646**
RLS 510/E MX TC FS1	660/1800-5170	55/195-435	66/180-517	15.8 (oil) 14 (gas)	3/400/50	-	CE 0085CQ0196	(1)	**20083562**
RLS 610/E MX TC FS1	1000/2200-6155	86/185-516	100/220-615.5	18.8 (oil) 17 (gas)	3/400/50	-	CE 0085CQ0196	(1)	**20080180**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O_2 CONTROL READY									
RLS 310/E O_2 MX TC FS1	600/1200-3600	50/100-305	60/120-360	10.9 (oil) 9.1 (gas)	3/400/50	-	CE 0085CQ0196	(2)(3)(4)	**20182632**
RLS 410/E O_2 MX TC FS1	640/1500-4200	55/126-352	64/150-420	12.6 (oil) 10.8 (gas)	3/400/50	-	CE 0085CQ0196	(2)(3)(4)	**20182634**
RLS 510/E O_2 MX TC FS1	660/1800-5170	55/195-435	66/180-517	15.8 (oil) 14 (gas)	3/400/50	-	CE 0085CQ0196	(1)(3)(4)	**20182635**
RLS 610/E O_2 MX TC FS1	1000/2200-6155	86/185-516	100/220-615.5	18.8 (oil) 17 (gas)	3/400/50	-	CE 0085CQ0196	(1)(3)(4)	**20182636**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.
(1) Star/delta starter.
(2) Direct starter.
(3) The frequency converter for variable speed drive (VSD) operation must be ordered as Accessory (see Accessories paragraph).
(4) The QGO_2 oxygen analizer with relevant probe must be ordered as Accessory (see Accessories paragraph).
For more information, please contact Riello Burners Commercial and Technical Department.

FIRING RATES



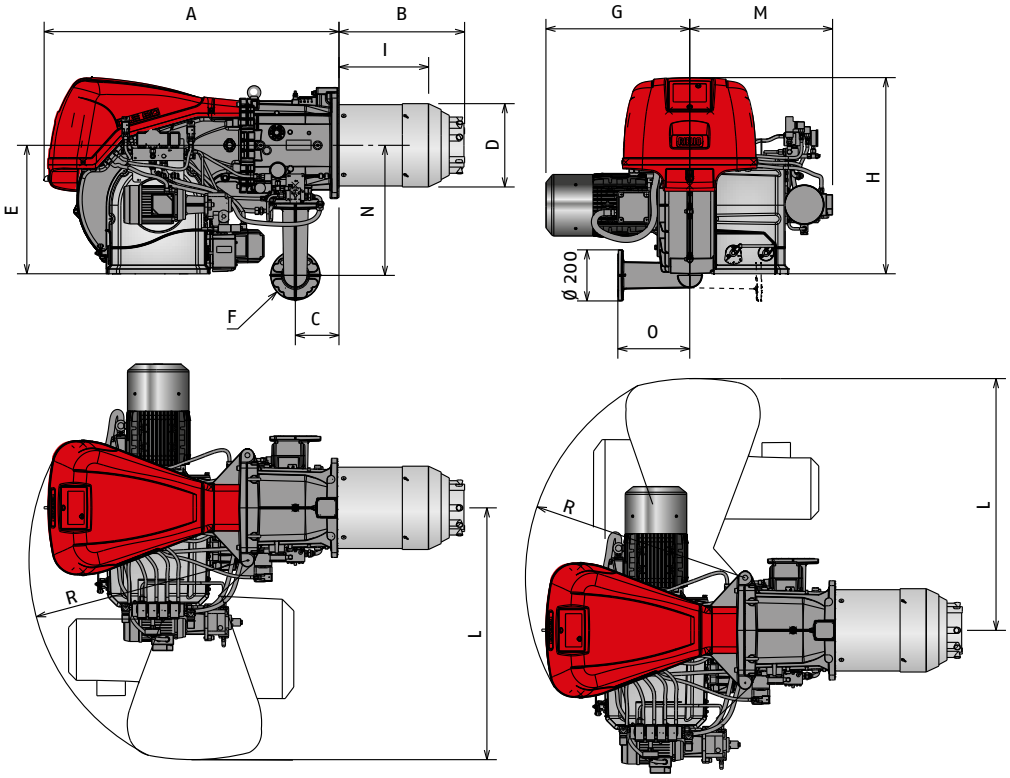
Useful working field for choosing the burner

Light-oil firing rate for RLS 610/E MX model

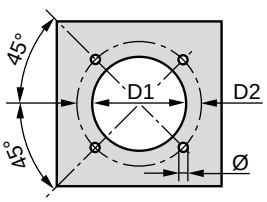
Modulation range

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

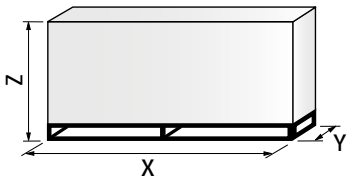
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M inch	N mm	O mm	R mm
RLS 310/E MX	1190	507	178	313	520	DN65	571	790	365	1015	595	528	290	890
RLS 410/E MX	1190	507	178	313	520	DN65	530	790	365	1015	595	528	290	890
RLS 510/E MX	1190	507	178	313	520	DN65	530	790	365	1015	595	528	290	890
RLS 610/E MX	1190	510	178	336	520	DN65	580	790	351	1015	595	528	290	890



Description	D1 mm	D2 mm	Ø mm
RLS 310/E MX	335	452	M18
RLS 410/E MX	335	452	M18
RLS 510/E MX	335	452	M18
RLS 610/E MX	350	452	M18

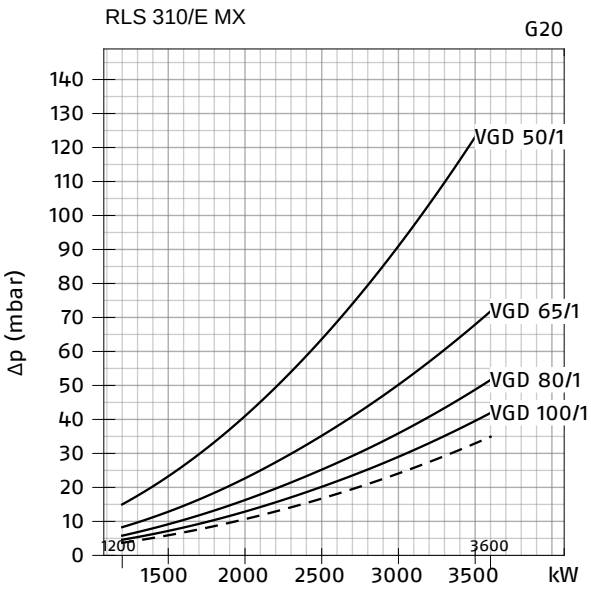


Description	X mm	Y mm	Z mm	Net weight kg
RLS 310/E MX	2040	1180	1125	300
RLS 410/E MX	2040	1180	1125	300
RLS 510/E MX	2040	1180	1125	300
RLS 610/E MX	2400	1400	1595	320

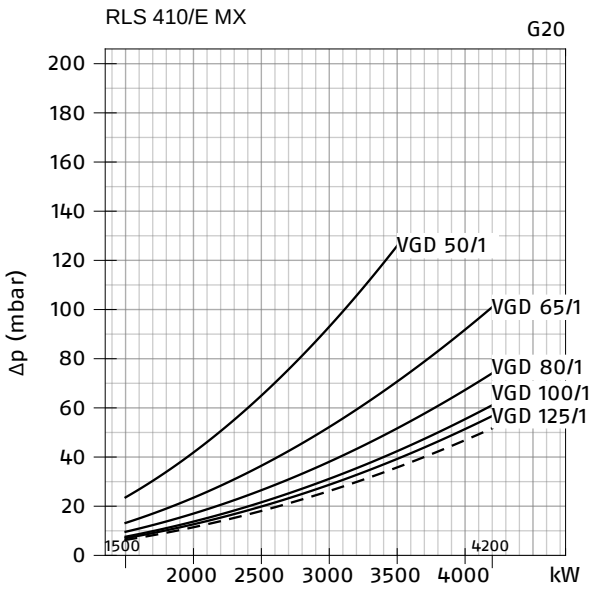
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

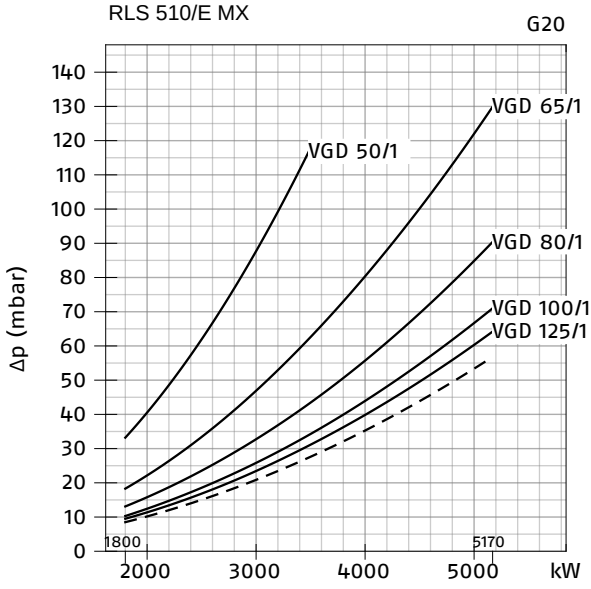
RLS 310/E MX



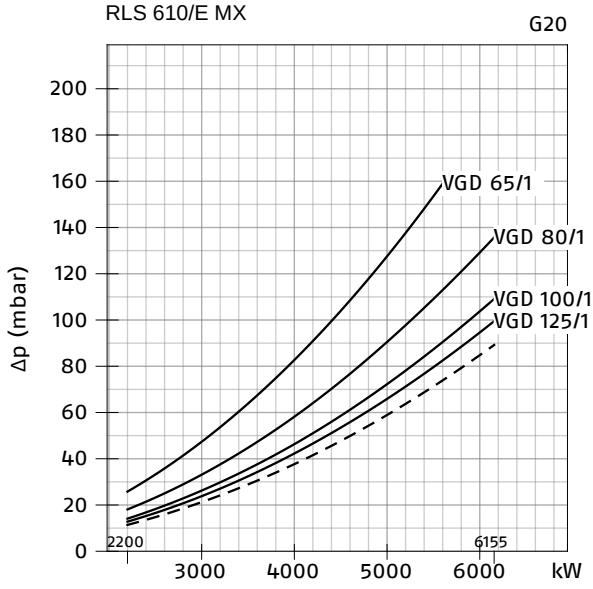
RLS 410/E MX



RLS 510/E MX



RLS 610/E MX



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	VPS kit code (2)	Burner-gas train adapter (3)			
					RLS 310/E MX	RLS 410/E MX	RLS 510/E MX	RLS 610/E MX
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(4)	Rp 2”	3010123+ 20186306	(3000826+20042324)/20068062(6)			●
VGD 65/1-FT 122	**20140762***	(5)	DN65	3010123	□	□	□	□
VGD 80/1-FT 122	**20140763***		DN80	3010123	□	□	□	□
VGD 100/1-FT 122	**20169193***		DN100	3010123	3010370			
VGD 125/1-FT 122	**20169195***		DN125	(7)	●	3010224		

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function.
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm, E = 1345 mm		**3010376**
	All models equipped with LMV26 control box	OCI412 INTERFACE KIT Interface kit between the control box and a Modbus system, such as a building automation and control system (BACS). The Modbus interface is based on the RS-485 standard.		**3010437**
	All models	POWER CONTROLLER To obtain modulating operation, the RLS/E MX series of burners, equipped with LMV26 control, requires a regulator. For remote setpoint use RWF 55.		
		RWF 50.2 - Basic version with 3 position output.		**20085417**
		RWF 55.5 - Complete with RS-485 interface.		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface.		**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models equipped with LMV52 control box	OXYGEN CONTROL KIT (QGO_2) The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	All models equipped with LMV52 control box	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**

Drawing	Burner model	Specification	Note	Code
	All models equipped with LMV26 control box	PC INTERFACE KIT To connect the control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3010436**
	All models equipped with LMV52 control box	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
NOTE: an additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Code	
		Rated delivery (kg/h)	BERGONZO TYPE B5 45° SA	FLUIDICS TYPE N2 45°
	RLS 310-410/E MX	150	**3009314**	**3045479**
	RLS 310-410/E MX	175	**3009316**	**3045481**
	RLS 310-410/E MX	200	**3009318**	**3045483**
	RLS 310-410/E MX	225	**3009320**	**3045485**
	RLS 310-410-510/E MX	250	**3009322**	**3045487**
	RLS 310-410-510/E MX	275	**3009324**	**3045489**
	RLS 310-410-510-610/E MX	300	**3009326**	**3045491**
	RLS 310-410-510-610/E MX	325	**3009328**	**3045493**
	RLS 310-410-510-610/E MX	350	**3009330**	**3045495**
	RLS 310-410-510-610/E MX	375	**3009332**	**3045497**
	RLS 310-410-510-610/E MX	400	**3009334**	**3045499**
	RLS 310-410-510-610/E MX	425	**3009336**	**3045500**
	RLS 510-610/E MX	450	**3009338**	**3045501**
	RLS 610/E MX	475	**3009340**	**-**
	RLS 610/E MX	500	**3009342**	**3045503**
	RLS 610/E MX	525	**3009344**	**-**
	RLS 610/E MX	550	**3009346**	**3045505**
	RLS 610/E MX	575	**3009348**	**-**
	RLS 610/E MX	600	**3009350**	**3045507**

For more information please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught dual fuel burners with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions, forward curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Separate light oil pump
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- LMV26 Digital Burner management system for air/fuel setting; with output PID modulation control as accessory
- LMV52 Digital Burner management system for air/fuel setting and O2 Control Ready; with output PID modulation control included
- AZL Display Interface, for combustion system commissioning and monitoring
- UV flame sensor
- Star/delta starter or direct starter
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings

- IP 54 electric protection level
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Oil/Gas selector
- Flame inspection window

STANDARD EQUIPMENT

- 1 flange gasket for gas train adaptor
- 1 adaptor for gas train
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- 8 gas nozzles (only for RLS 310/E)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating dual fuel burners

RLS 310-610/EV MX



- Dual fuel burners
- Modulating operation on both gas and light oil side
- Low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh* on the gas side) and according to Class 2 of European standard EN 267 (NOx lower than 185 mg/kWh* on light oil side)

RLS 310-610/EV MX series of burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible. The series covers a firing range from 1200 to 6155 kW, these burners have been designed for use in hot water boilers, overheated water boilers as well as steam boilers. They are equipped with an Electronic Cam, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range. Operation can be “two stage progressive” or alternatively “modulating” for both fuels, light oil and gas. The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The combustion head guarantees reduced polluting emissions. An exclusive design guarantees low sound emissions, low electrical consumption, easy use and maintenance.

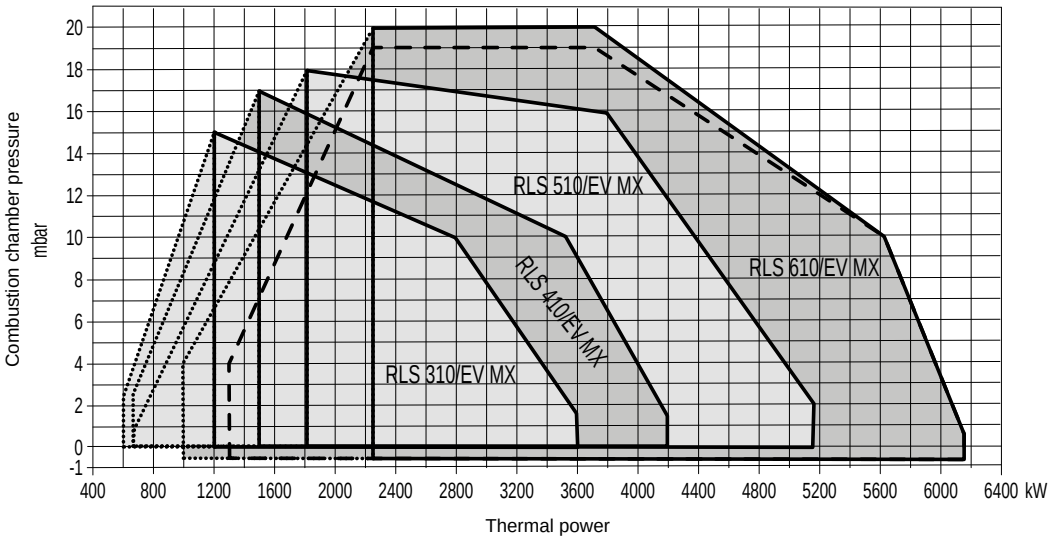
* The emission value is determined, according to the provisions of standard EN 267-EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O_2 CONTROL READY - OPERATION WITH VARIABLE SPEED DRIVE (VSD)									
RLS 310/EV O_2 MX TC FS1	600/1200-3600	50/100-305	60/120-360	10.9 (oil) 9.1 (gas)	3/400/50	-	CE 0085CQ0196	(1)(2)	**20182022**
RLS 410/EV O_2 MX TC FS1	640/1500-4200	55/126-352	64/150-420	12.6 (oil) 10.8 (gas)	3/400/50	-	CE 0085CQ0196	(1)(2)	**20182023**
RLS 510/EV O_2 MX TC FS1	660/1800-5170	55/195-435	66/180-517	15.8 (oil) 14 (gas)	3/400/50	-	CE 0085CQ0196	(1)(2)	**20182024**
RLS 610/EV O_2 MX TC FS1	1000/2200-6155	86/185-516	100/220-615.5	18.8 (oil) 17 (gas)	3/400/50	-	CE 0085CQ0196	(1)(2)	**20182026**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.
For more information, please contact Riello Burners Commercial and Technical Department.
(1) The frequency converter for variable speed drive (VSD) operation must be ordered as Accessory (see Accessories paragraph).
(2) The QGO_2 oxygen analizer with relevant probe must be ordered as Accessory (see Accessories paragraph).

FIRING RATES



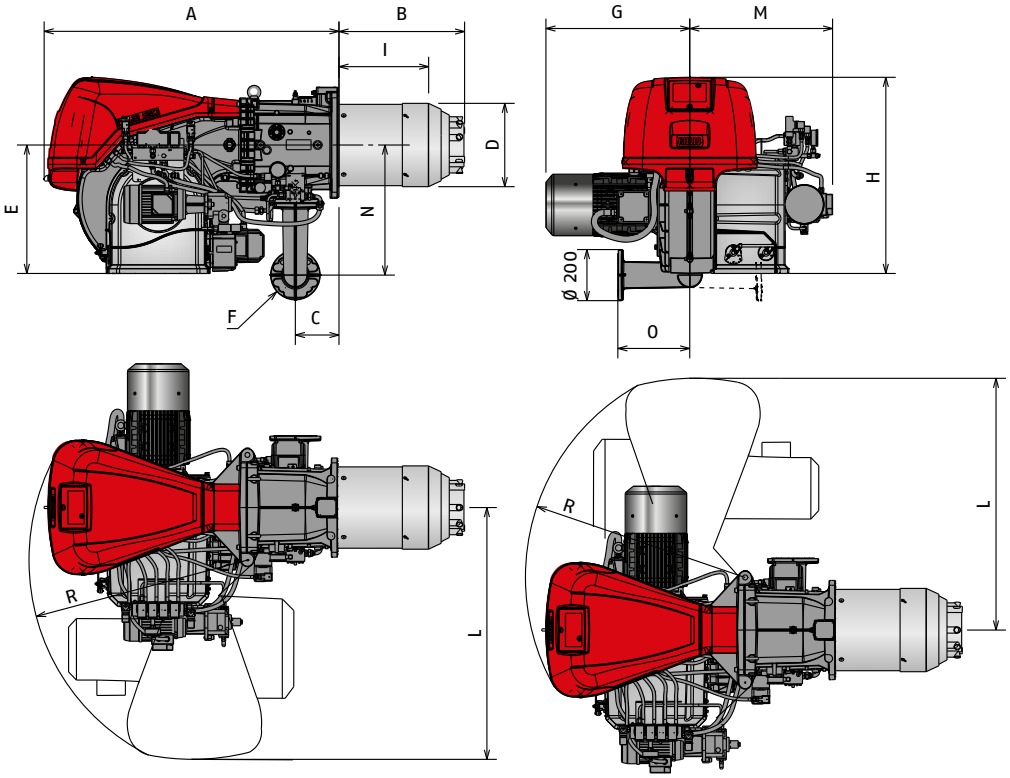
Useful working field for choosing the burner

Light-oil firing rate for RLS 610/E MX model

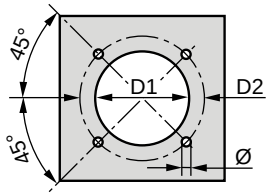
Modulation range

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

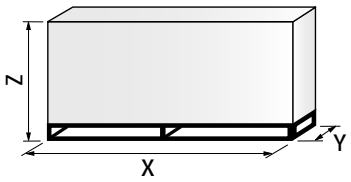
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M inch	N mm	O mm	R mm
RLS 310/EV MX	1190	507	178	313	520	DN65	571	790	365	1015	595	528	290	890
RLS 410/EV MX	1190	507	178	313	520	DN65	530	790	365	1015	595	528	290	890
RLS 510/EV MX	1190	507	178	313	520	DN65	530	790	365	1015	595	528	290	890
RLS 610/EV MX	1190	510	178	336	520	DN65	580	790	351	1015	595	528	290	890



Description	D1 mm	D2 mm	Ø mm
RLS 310/EV MX	335	452	M18
RLS 410/EV MX	335	452	M18
RLS 510/EV MX	335	452	M18
RLS 610/EV MX	350	452	M18

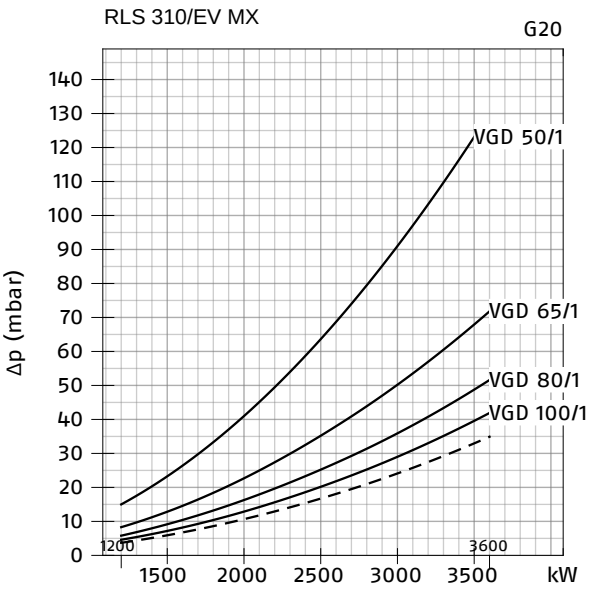


Description	X mm	Y mm	Z mm	Net weight kg
RLS 310/EV MX	2040	1180	1125	300
RLS 410/EV MX	2040	1180	1125	300
RLS 510/EV MX	2040	1180	1125	300
RLS 610/EV MX	2400	1400	1595	320

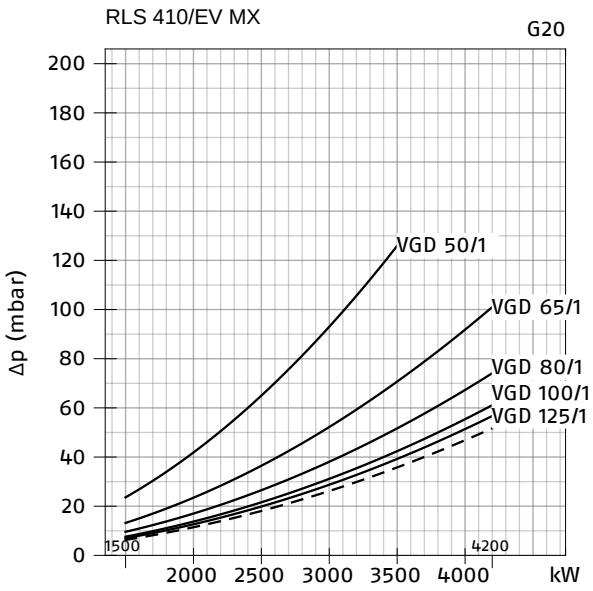
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

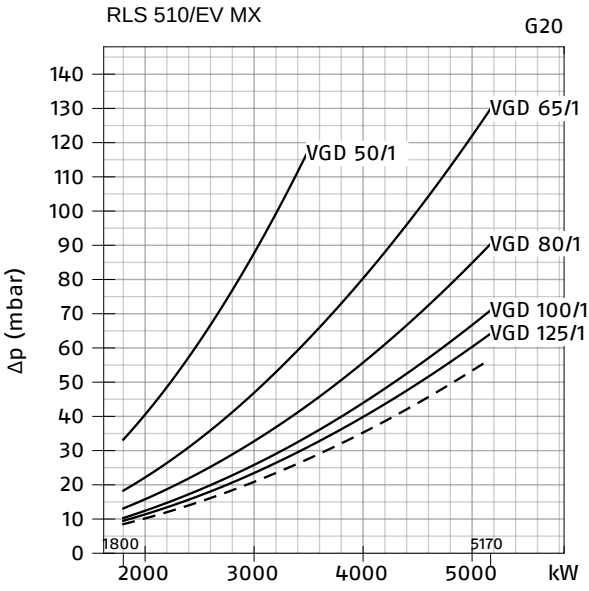
RLS 310/EV MX



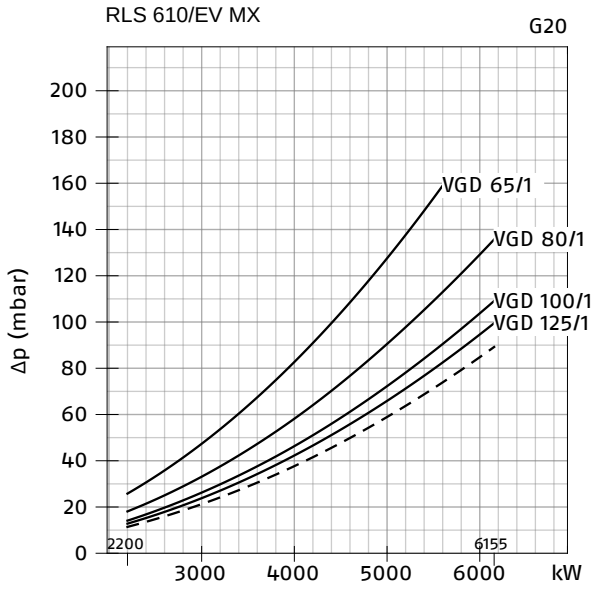
RLS 410/EV MX



RLS 510/EV MX



RLS 610/EV MX



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	VPS kit code (2)	Burner-gas train adapter (3)			
					RLS 310/EV MX	RLS 410/EV MX	RLS 510/EV MX	RLS 610/EV MX
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	**20137718***	(4)	Rp 2”	3010123+ 20186306	(3000826+20042324)/20068062 (6)			●
VGD 65/1-FT 122	**20140762***	(5)	DN65	3010123	□	□	□	□
VGD 80/1-FT 122	**20140763***		DN80	3010123	□	□	□	□
VGD 100/1-FT 122	**20169193***		DN100	3010123	3010370			
VGD 125/1-FT 122	**20169195***		DN125	(7)	●	3010224		

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) Additional flange kit code 20185515 needed for seal control function.
(5) Ø in = DN65; Ø out = DN80.
(6) To be used with gas train and burner opening on the left (fan motor side).
(7) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**20074542**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A). Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm, E = 1345 mm		**3010376**
	All models	POWER CONTROLLER To obtain modulating operation, the RLS/E MX series of burners, equipped with LMV26 control, requires a regulator. For remote setpoint use RWF 55. RWF 50.2 - Basic version with 3 position output.		**20085417**
		RWF 55.5 - Complete with RS-485 interface.		**20074441**
		RWF 55.6 - Complete with RS-485/ PROFIBUS interface.		**20074442**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	OXYGEN CONTROL KIT (QGO_2) The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	**20045187**
	All models	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**

Drawing	Burner model	Specification	Note	Code
		VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RLS/EV series.		
	RLS 310/EV BLU	Inverter power 7.5 kW - Electrical supply 400V - 50/60Hz		**20163074**
	RLS 410/EV BLU	Inverter power 11 kW - Electrical supply 400V - 50/60Hz		**20163093**
	RLS 510-610/EV BLU	Inverter power 15 kW - Electrical supply 400V - 50/60Hz		**20163096**
	All models	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
NOTE: an additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Code	
		Rated delivery (kg/h)	BERGONZO TYPE B5 45° SA	FLUIDICS TYPE N2 45°
	RLS 310-410/EV MX	150	**3009314**	**3045479**
	RLS 310-410/EV MX	175	**3009316**	**3045481**
	RLS 310-410/EV MX	200	**3009318**	**3045483**
	RLS 310-410/EV MX	225	**3009320**	**3045485**
	RLS 310-410-510/EV MX	250	**3009322**	**3045487**
	RLS 310-410-510/EV MX	275	**3009324**	**3045489**
	RLS 310-410-510-610/EV MX	300	**3009326**	**3045491**
	RLS 310-410-510-610/EV MX	325	**3009328**	**3045493**
	RLS 310-410-510-610/EV MX	350	**3009330**	**3045495**
	RLS 310-410-510-610/EV MX	375	**3009332**	**3045497**
	RLS 310-410-510-610/EV MX	400	**3009334**	**3045499**
	RLS 310-410-510-610/EV MX	425	**3009336**	**3045500**
	RLS 510-610/EV MX	450	**3009338**	**3045501**
	RLS 610/EV MX	475	**3009340**	**-**
	RLS 610/EV MX	500	**3009342**	**3045503**
	RLS 610/EV MX	525	**3009344**	**-**
	RLS 610/EV MX	550	**3009346**	**3045505**
	RLS 610/EV MX	575	**3009348**	**-**
	RLS 610/EV MX	600	**3009350**	**3045507**

For more information please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught dual fuel burners with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions, forward curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Separate light oil pump
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- LMV52 Digital Burner management system for air/fuel setting, O_2 Control Ready and Operation with Variable Speed Drive (VSD); with output PID modulation control included
- AZL Display Interface, for combustion system commissioning and monitoring
- UV flame sensor
- Star/delta starter or direct starter
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal

- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Oil/Gas selector
- Flame inspection window

STANDARD EQUIPMENT

- 1 flange gasket for gas train adaptor
- 1 adaptor for gas train
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating dual fuel burners

RLS 810/E MX



- Dual fuel burners
- Progressive two-stage or modulating operation on both gas and light oil side
- Low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh* on the gas side) and according to Class 2 of European standard EN 267 (NOx lower than 185 mg/kWh* on light oil side)

RLS 810/E MX series burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The series covers a firing range from 778 to7700 kW, and they have been designed for use in hot water boilers, overheated water boilers as well as steam boilers.
Operation can be “two stage progressive” or alternatively “modulating” for both fuels, light oil and gas, with the installation of a PID logic regulator.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The innovative combustion head, ensures reducing noise and pollutants.

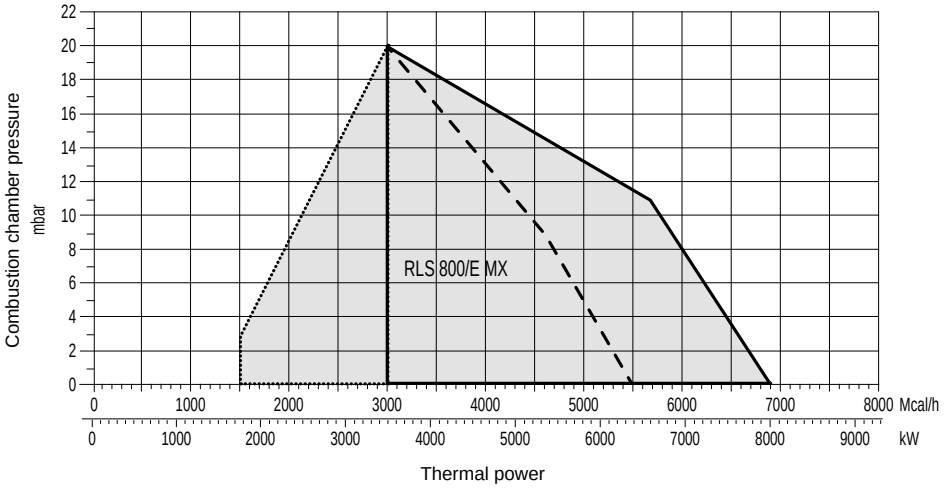
* The emission value is determined, according to the provisions of standard EN 267-EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (LMV 26)									
RLS 810/E MX TC FS1	780/3550-7700	125/300-650	78/355-770	22.8 (gas) 24.4 (oil)	3/400/50	230/50-60	CE-0123DN1078		**20160295**
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52)									
RLS 810/E O2 MX TC FS1/FS2	780/3550-7700	125/300-650	78/355-770	22.8 (gas) 24.4 (oil)	3/400/50	230/50-60	CE-0123DN1078	(1)	**20205400**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.
(1) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES

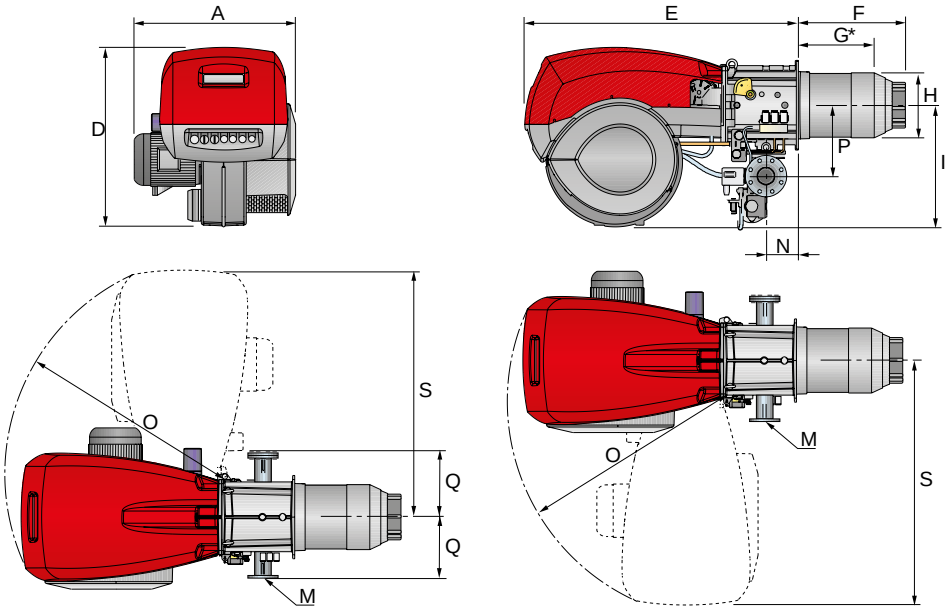


Useful working field for choosing the burner

Modulation range

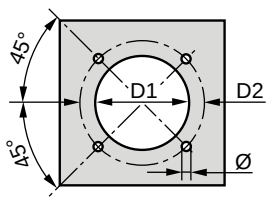
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

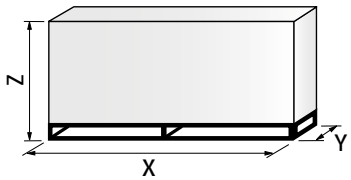


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M inch	N mm	O mm	P mm	Q mm	S mm
RLS 810/E MX	940	937	1325	558	382	428	630	DN80	164	1055	427	320	1190

(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



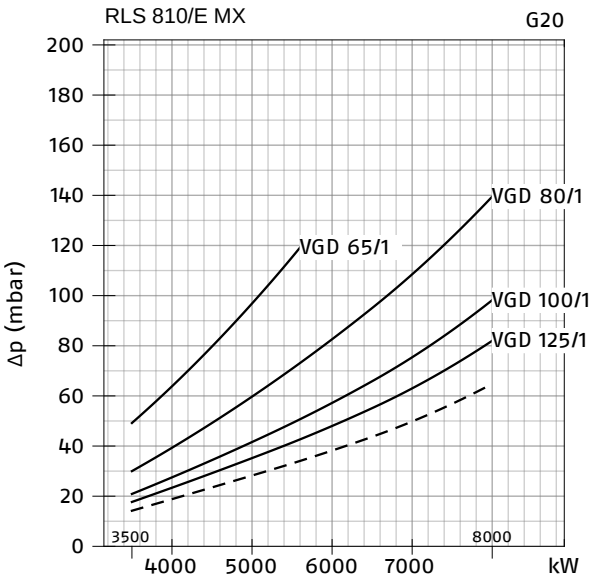
Description	D1 mm	D2 mm	Ø mm
RLS 810/E MX	440	495	M18



Description	X mm	Y mm	Z mm	Net weight kg
RLS 810/E MX	2190	1110	1450	320

PRESSURE LOSS DIAGRAMS

VGD 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)	VPS kit code (3)	Burner-gas train adapter (4)
						RLS 810/E MX
VGD SERIES ONE STAGE GAS TRAIN						
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	20059331 / (3010222+20059331)
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	20059331 / (3010222+20059331)
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	20059332 / (3010223+20059331)
VGD 125/1-FT 122	**20169195***		DN125	-	(6)	20059333 / (3010224+20059331)

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
(6) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RLS 810/E MX	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm	**20008903**
	RLS 810/E MX	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use.	**20190043**

Drawing	Burner model	Specification	Code
	RLS 810/E MX	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.	
		RWF 50.2 3-point outlet	**20085417**
		RWF 55.5 complete with RS-485 Interface	**20074441**
		RWF 55.6 complete with RS-485/Profibus Interface	**20074442**
	RLS 810/E MX	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	RLS 810/E MX	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3010436**

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions and forward curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Separate light oil pump
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ignition by gas pilot with gas train
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Digital Burner management system for air/fuel setting, with output PID modulation control available as accessory
- AZL Display Interface, for combustion system commissioning and monitoring
- Electronic cam for controlling the system safety
- UV flame sensor
- Star/delta starter for the fan motor
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Oil/Gas selector
- Flame inspection window
- The gas train can only enter from the right side of the burner

STANDARD EQUIPMENT

- 1 flange gasket
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating dual fuel burners

RLS 1000-1200/E MX



- Dual fuel burners
- Modulating operation on both gas and light oil side
- Low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh* on the gas side) and according to Class 2 of European standard EN 267 (NOx lower than 185 mg/kWh* on light oil side)

RLS 1000-1200/E MX series burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The series covers a firing range from 1200 to 11500 kW, and they have been designed for use in hot water boilers, overheated water boilers as well as steam boilers. Operation is fully "modulating" for both fuels, light oil and gas.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The innovative combustion head, adjustment system ensures perfect movement during modulation as well as reducing noise and pollutants.

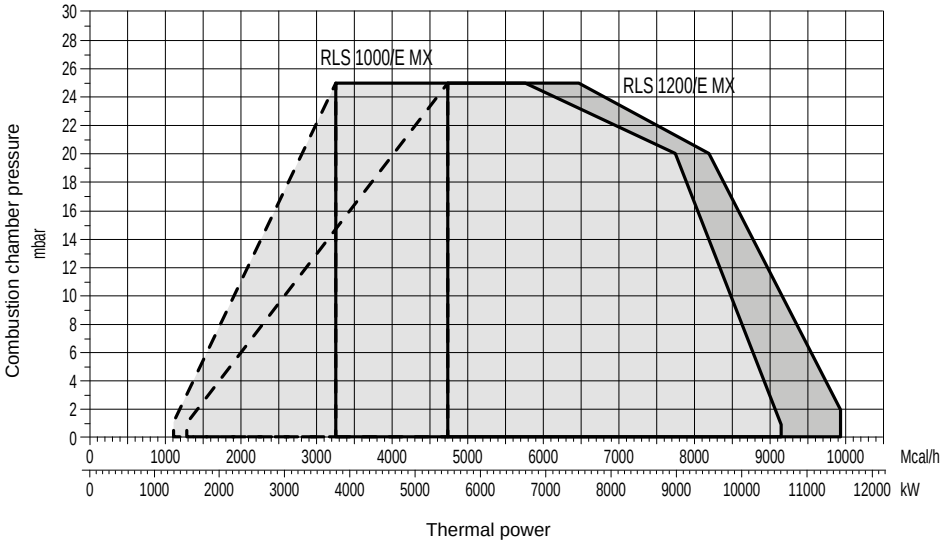
* The emission value is determined, according to the provisions of standard EN 267-EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Code
		Light oil	Natural Gas					
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (LMV 51)								
RLS 1000/E MX TC FS1	1200/3750-10600	110/320-793	130/380-940	27 (oil) 24 (gas)	3/400/50	230/50-60	CE-0085CN0119	**20057529**
RLS 1200/E MX TC FS1	1500/5500-11500	126/464-970	150/550-1150	32 (oil) 27.2 (gas)	3/400/50	230/50-60	CE-0085CN0120	**20057530**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.

FIRING RATES

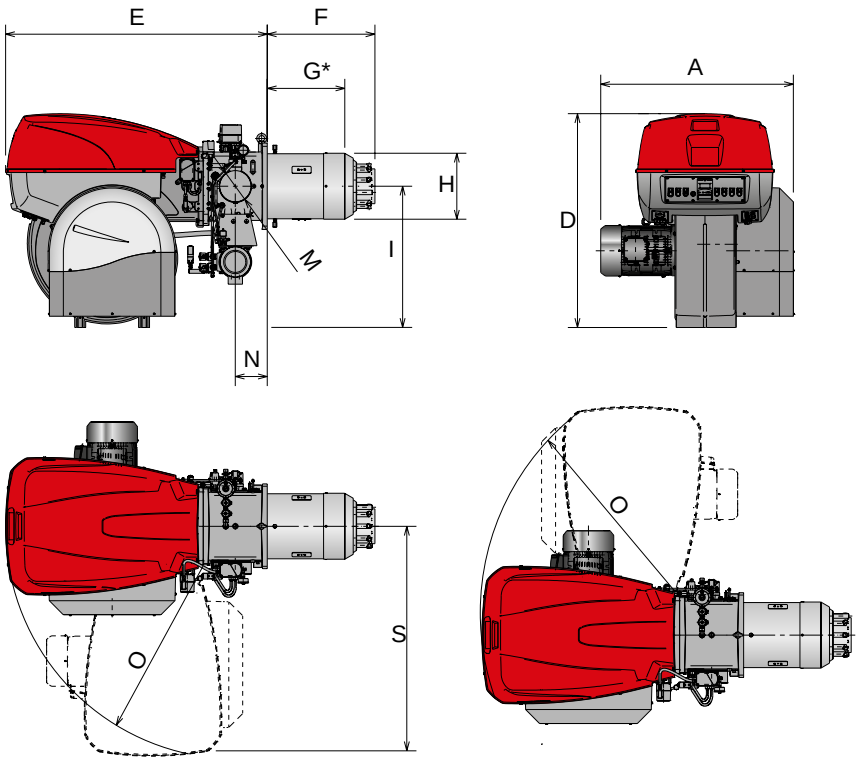


Useful working field for choosing the burner

Modulation range

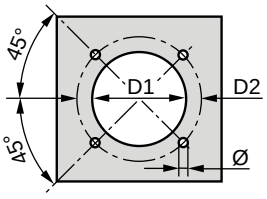
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

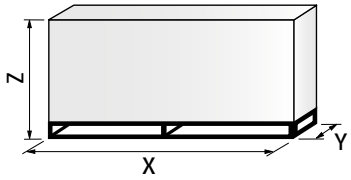


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M inch	N mm	O mm	S(1) mm
RLS 1000/E MX	1206	1338	1637	674	484	413	885	DN80	200	1350	1425
RLS 1200/E MX	1250	1338	1637	658	465	456	885	DN80	200	1350	1425

(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



Description	D1 mm	D2 mm	Ø mm
RLS 1000/E MX	460	608	M20
RLS 1200/E MX	500	608	M20

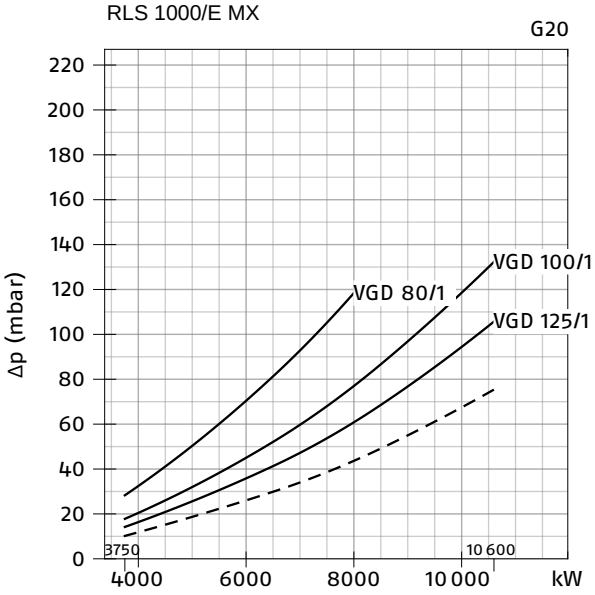


Description	X mm	Y mm	Z mm	Net weight kg
RLS 1000/E MX	2400	1400	1595	550
RLS 1200/E MX	2400	1400	1595	600

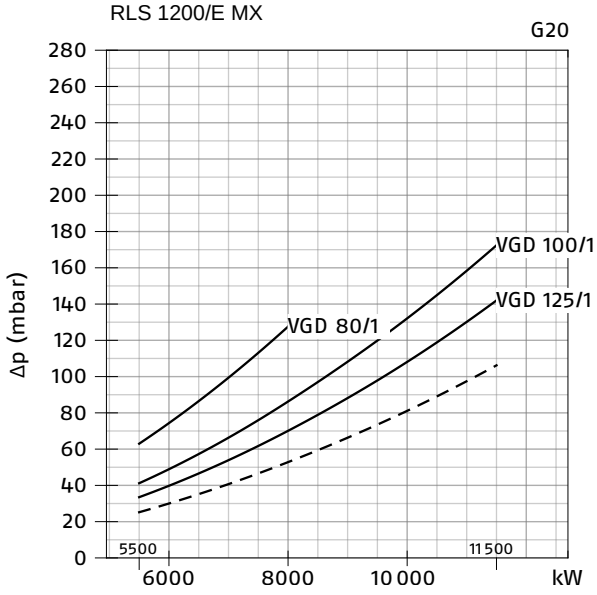
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

RLS 1000/E MX



RLS 1200/E MX



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	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
					RLS 1000/E MX	RLS 1200/E MX
VGD SERIES ONE STAGE GAS TRAIN						
VGD 80/1-FT 122	**20140763***	DN80	-	3010123	□	□
VGD 100/1-FT 122	**20169193***	DN100	-	3010123	3010370	3010370
VGD 125/1-FT 122	**20169195***	DN125	-	(5)	3010224	3010224

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Code
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C8 Dimensions: A = 1425 mm, B (min-max) = 285-1000 mm, C = 110 mm, D = 1500 mm, E = 1800 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010401**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	All models	**PC INTERFACE SOFTWARE (ACS 450)** PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.	**3010388**

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Code	
		Rated delivery (kg/h)	BERGONZO TYPE B5 60° AA	BERGONZO TYPE CT5 60°
	RLS 1000/E MX	350	**20047954**	**-**
		600	**20047978**	**-**
		750	**20047985**	**-**
		900	**20047994**	**-**
	RLS 1200/E MX	700	**-**	**20006479**
		900	**-**	**20006482**
		1100	**-**	**20006484**

For more information please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions and reverse curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Separate light oil pump
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ignition by gas pilot with gas train
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Digital Burner management system for air/fuel setting, with output PID modulation control included
- AZL Display Interface, for combustion system commissioning and monitoring
- Electronic cam for controlling the system safety
- Infrared flame detector
- Star/delta starter for the fan motor (burners with motor electrical power ≥ 7,5 kW)
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Gears pump for high pressure fuel supply

- Pump starting motor
- Oil safety valves
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Oil/Gas selector
- Flame inspection window
- The gas train can only enter from the right side of the burner
- Equipped with as spray lance for light oil, activated by compressed air

STANDARD EQUIPMENT

- 1 flange gasket
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Seal control pressure switch (for installation on gas train)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating dual fuel burners

RLS 810/EV O2 MX



- Dual fuel burners
- Progressive two-stage or modulating operation on both gas and light oil side
- Low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh* on the gas side) and according to Class 2 of European standard EN 267 (NOx lower than 185 mg/kWh* on light oil side)

RLS 810/EV O2 MX series burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The series covers a firing range from 778 to7700 kW, and they have been designed for use in hot water boilers, overheated water boilers as well as steam boilers.
Operation is fully "modulating" for both fuels, light oil and gas.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The innovative combustion head, ensures well as reducing noise and pollutants.

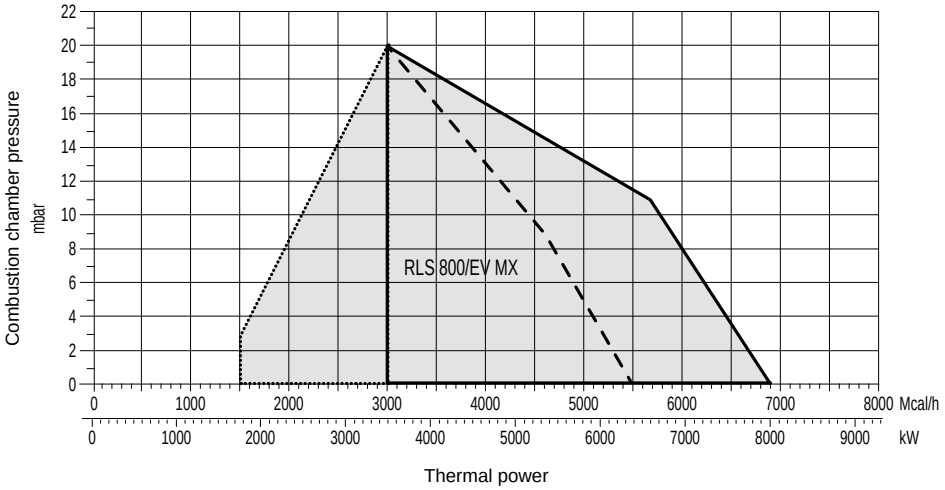
* The emission value is determined, according to the provisions of standard EN 267-EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	(Nm^3/h)	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52)									
RLS 810/EV O2 MX TC FS1/FS2	780/3550-7700	125/300-650	78/355-770	22.8 (gas) 24.4 (oil)	3/400/50	230/50-60	CE - 0123DN1078	(1)	**20160296**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 - EN 676 Standards.
(1) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES

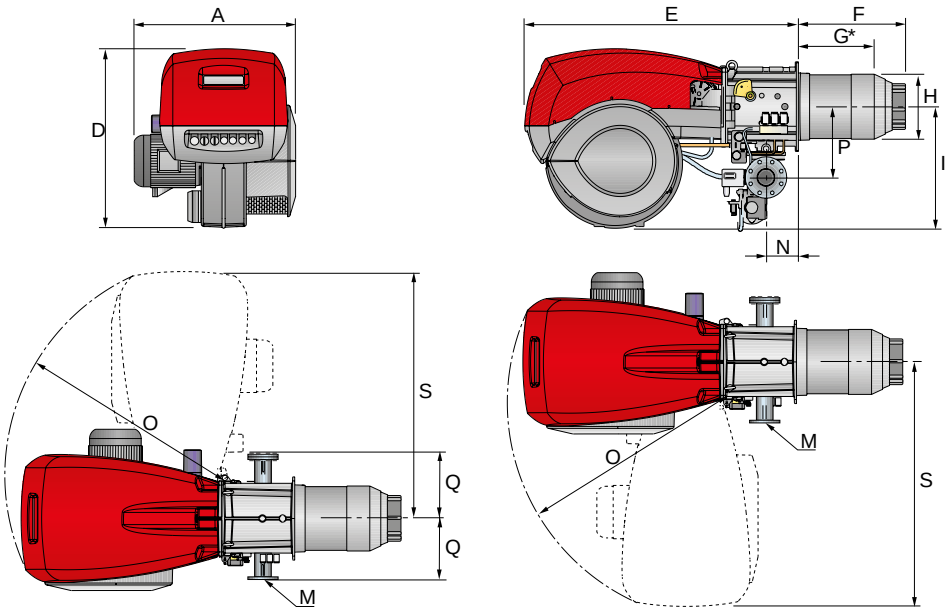


Useful working field for choosing the burner

Modulation range

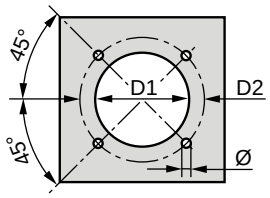
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

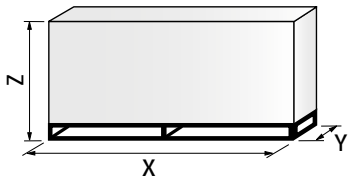


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M inch	N mm	O mm	P mm	Q mm	S mm
RLS 810/EV O2 MX	940	937	1325	558	382	428	630	DN80	164	1055	427	320	1190

(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



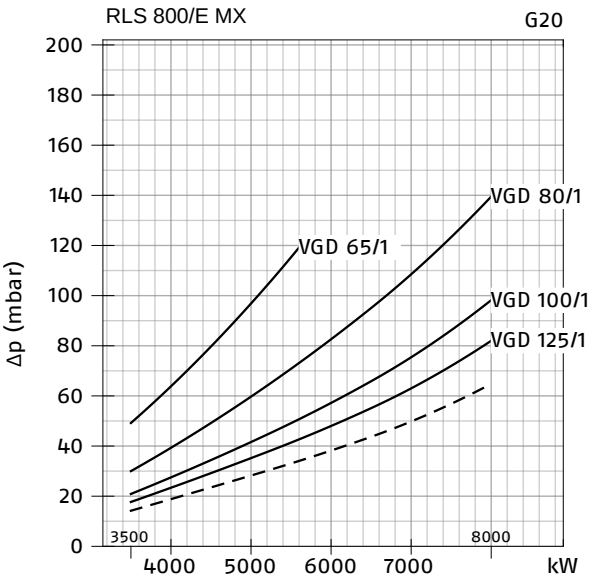
Description	D1 mm	D2 mm	Ø mm
RLS 810/EV O2 MX	440	495	M18



Description	X mm	Y mm	Z mm	Net weight kg
RLS 810/EV O2 MX	2190	1110	1450	320

PRESSURE LOSS DIAGRAMS

VGD 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

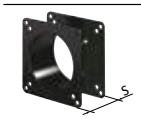
GAS TRAINS

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)
						RLS 810/EV O2 MX
VGD SERIES ONE STAGE GAS TRAIN						
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	20059331 / (3010222+20059331)
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	20059331 / (3010222+20059331)
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	20059332 / (3010223+20059331)
VGD 125/1-FT 122	**20169195***		DN125	-	(6)	20059333 / (3010224+20059331)

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80.
(6) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
☐ Additional adapter not necessary, the gas train may be connected directly to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	RLS 810/EV O2 MX	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		**20008903**
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm, E = 1645 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010376**
	RLS 810/EV O2 MX	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**

Drawing	Burner model	Specification	Note	Code
	RLS 810/EV O2 MX	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	RLS 810/EV O2 MX	VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RLS/EV series. Inverter power 22 kW - Electrical supply 400V - 50/60Hz		**20163099**
	RLS 810/EV O2 MX	OXYGEN CONTROL KIT (QGO_2) The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases. Oxygen control kit for installation outside the burner cover.	(1)	**20045187**
	RLS 810/EV MX	ADDITIONAL TRANSFORMER KIT An additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters.		**20044117**
	RLS 810/EV O2 MX	KIT EFFICIENCY WITH OXYGEN CONTROL KIT The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.		**3010377**
	RLS 810/EV MX	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions and forward curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Separate light oil pump
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ignition by gas pilot with gas train
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Digital Burner management system for air/fuel setting, with output PID modulation control included
- AZL Display Interface, for combustion system commissioning and monitoring
- Electronic cam for controlling the system safety
- Infrared flame detector
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Oil/Gas selector
- Flame inspection window
- The gas train can only enter from the right side of the burner

STANDARD EQUIPMENT

- 1 flange gasket
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx modulating dual fuel burners

RLS 1000-1200/EV MX



- Dual fuel burners
- Modulating operation on both gas and light oil side
- Low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh* on the gas side) and according to Class 2 of European standard EN 267 (NOx lower than 185 mg/kWh* on light oil side)

RLS 1000-1200/EV MX series burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.
The series covers a firing range from 1200 to 11500 kW, and they have been designed for use in hot water boilers, overheated water boilers as well as steam boilers. Operation is fully "modulating" for both fuels, light oil and gas.
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The innovative combustion head, adjustment system ensures perfect movement during modulation as well as reducing noise and pollutants.

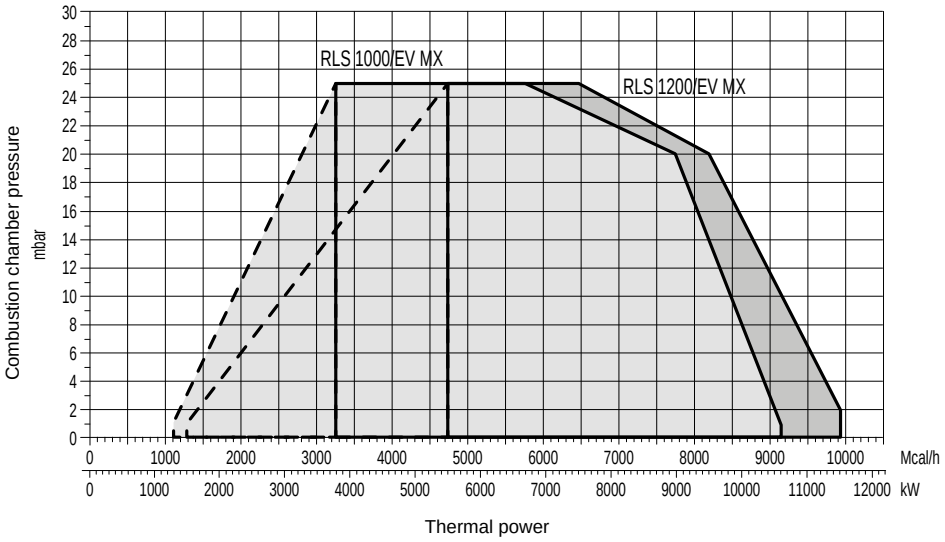
* The emission value is determined, according to the provisions of standard EN 267-EN 676, in a standardised combustion chamber, on the average of the firing rates and standardised at the reference conditions provided for by the standard.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Code
		Light oil	Natural Gas					
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (LMV 52)								
RLS 1000/EV MX TC FS1	1200/3750-10600	110/320-793	130/380-940	27 (oil) 24 (gas)	3/400/50	230/50-60	CE-0085CN0119	**20051416**
RLS 1200/EV MX TC FS1	1500/5500-11500	126/464-970	150/550-1150	32 (oil) 27.2 (gas)	3/400/50	230/50-60	CE-0085CN0120	**20047475**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm^2/s (cSt).
Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 - EN 676 Standards.

FIRING RATES

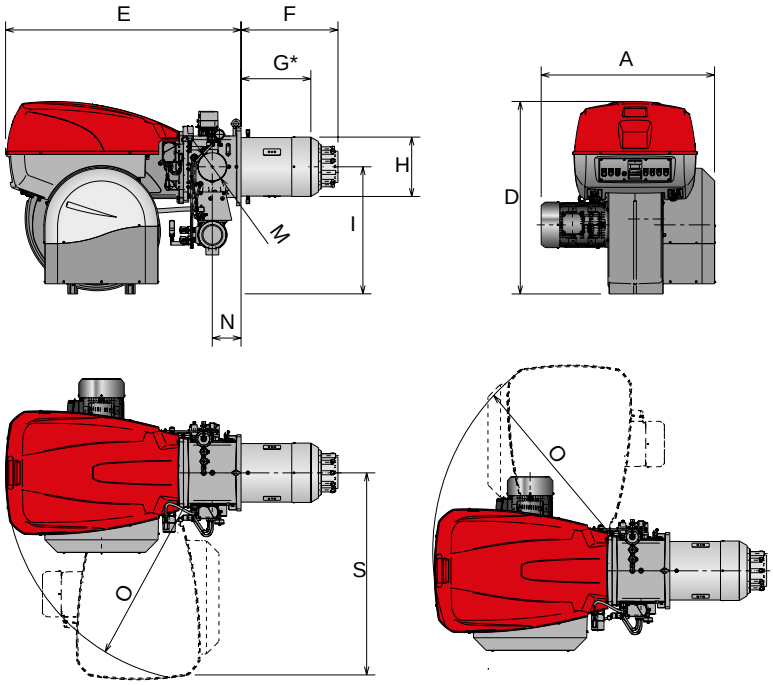


Useful working field for choosing the burner

Modulation range

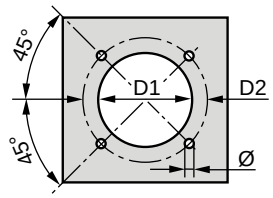
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

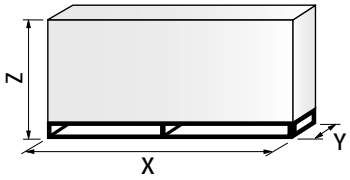


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M inch	N mm	O mm	S(1) mm
RLS 1000/EV MX	1206	1338	1637	674	484	413	885	DN80	200	1350	1425
RLS 1200/EV MX	1250	1338	1637	658	465	456	885	DN80	200	1350	1425

(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.



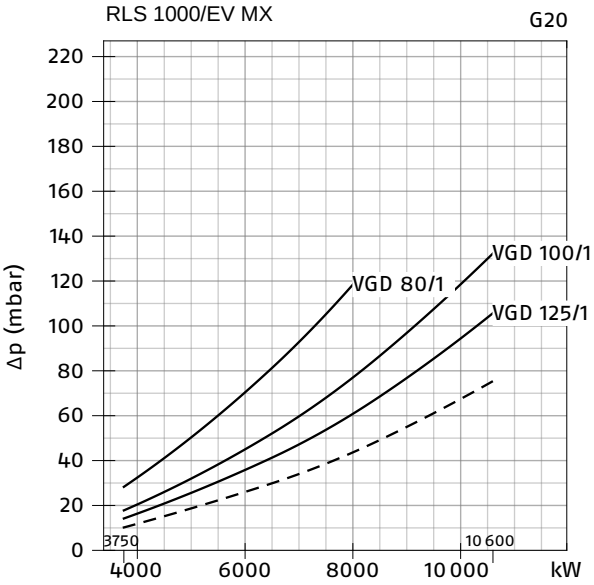
Description	D1 mm	D2 mm	Ø mm
RLS 1000/EV MX	460	608	M20
RLS 1200/EV MX	500	608	M20

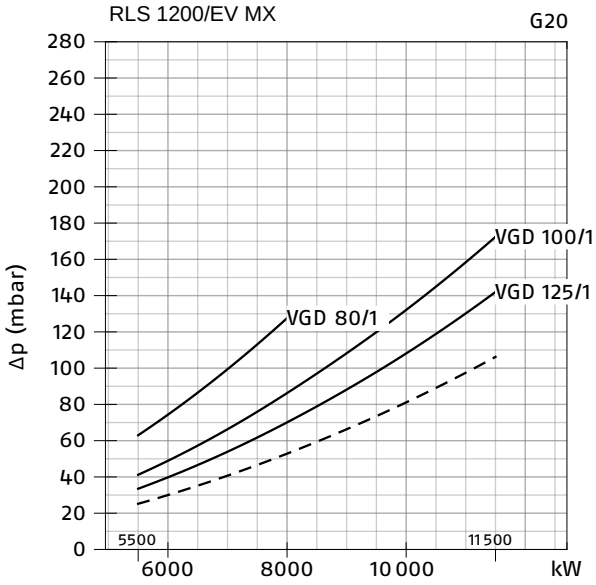


Description	X mm	Y mm	Z mm	Net weight kg
RLS 1000/EV MX	2400	1400	1595	550
RLS 1200/EV MX	2400	1400	1595	600

PRESSURE LOSS DIAGRAMS

VGD 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	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
					RLS 1000/EV MX	RLS 1200/EV MX
VGD SERIES ONE STAGE GAS TRAIN						
VGD 80/1-FT 122	**20140763***	DN80	-	3010123	□	□
VGD 100/1-FT 122	**20169193***	DN100	-	3010123	3010370	3010370
VGD 125/1-FT 122	**20169195***	DN125	-	(5)	3010224	3010224

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.

ACCESSORIES

Drawing	Burner model	Specification		Code
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C8 Dimensions: A = 1425 mm, B (min-max) = 285-1000 mm, C = 110 mm, D = 1500 mm, E = 1800 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010401**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	RLS 1000/EV MX	VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RLS/EV series. Inverter power 22 kW - Electrical supply 400V - 50/60Hz		**20163099**
	RLS 1200/EV MX	Inverter power 30 kW - Electrical supply 400V - 50/60Hz		**20163100**
	All models	OXYGEN CONTROL KIT (QGO_2) The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.		**3010378**
		Oxygen control kit for installation outside the burner cover.	(1)	**20045187**
	All models	**PC INTERFACE SOFTWARE (ACS 450)** PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) Installation outside the burner cover.
NOTE: an additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Code	
		Rated delivery (kg/h)	BERGONZO TYPE B5 60° AA	BERGONZO TYPE CT5 60°
	RLS 1000/EV MX	350	**20047954**	**-**
		600	**20047978**	**-**
		750	**20047985**	**-**
		900	**20047994**	**-**
	RLS 1200/EV MX	700	**-**	**20006479**
		900	**-**	**20006482**
		1100	**-**	**20006484**

For more information please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

STATE OF SUPPLY

Monoblock forced draught gas burner with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions and reverse curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Separate light oil pump
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - ignition by gas pilot with gas train
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Digital Burner management system for air/fuel setting, with output PID modulation control included
- AZL Display Interface, for combustion system commissioning and monitoring
- Electronic cam for controlling the system safety
- Infrared flame detector
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Oil/Gas selector
- Flame inspection window
- The gas train can only enter from the right side of the burner
- Equipped with as spray lance for light oil, activated by compressed air

STANDARD EQUIPMENT

- 1 flange gasket
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Seal control pressure switch (for installation on gas train)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

DUAL FUEL BURNERS

STANDARD

Standard NOx emissions
RLS: lower than Class 1 of European Standard EN 676 (NOx lower than 170 mg/kWh) and Class 1 of European Standard EN 267 (NOx lower than 250 mg/kWh)
RLS/M MZ: lower than Class 2 of European Standard EN 676 (NOx lower than 120 mg/kWh) and Class 2 of European Standard EN 267 (NOx lower than 185 mg/kWh)

TWO STAGE



RLS 28-50

RLS 28 (100/163-325 kW)
RLS 38 (116/232-442 kW)
RLS 50 (145/290-581 kW)

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RLS 70-130

RLS 70 (232/465-814 kW)
RLS 100 (349/698-1163 kW)
RLS 130 (465/930-1395 kW)

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MODULATING MECHANICAL CAM



RLS 190-250/M MZ

RLS 190/M MZ (550/1100-2150 kW)
RLS 250/M MZ (550/1230-2460 kW)

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GI/EMME 1400-4500

GI/EMME 1400 (407/820-1540 kW)
GI/EMME 2000 (581/1163-2325 kW)
GI/EMME 3000 (872/1744-3488 kW)
GI/EMME 4500 (1163/2350-4650 kW)

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MODULATING ELECTRONIC CAM



RLS 1300-2000/E C11

RLS 1300/E C11 (1100/7500-13000 kW)
RLS 1600/E C11 (3065/9503-15560 kW)
RLS 2000/E C11 (4000/12000-19500 kW)

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ENNE/EMME

ENNE/EMME 1400 (407/814-1628 kW)
ENNE/EMME 2000 (581/1163-2325 kW)
ENNE/EMME 3000 (872/1744-3488 kW)
ENNE/EMME 4500 (1163/2325-5000 kW)

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MODULATING ELECTRONIC CAM VARIABLE SPEED



RLS 1300-2000/EV C11

RLS 1300/EV C11 (1100/7500-13000 kW)
RLS 1600/EV C11 (3065/9503-15560 kW)
RLS 2000/EV C11 (4000/12000-19500 kW)

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Two stage dual fuel burners

RLS 28-50



- Dual fuel burners
- Two-stage operation on both gas and light oil side

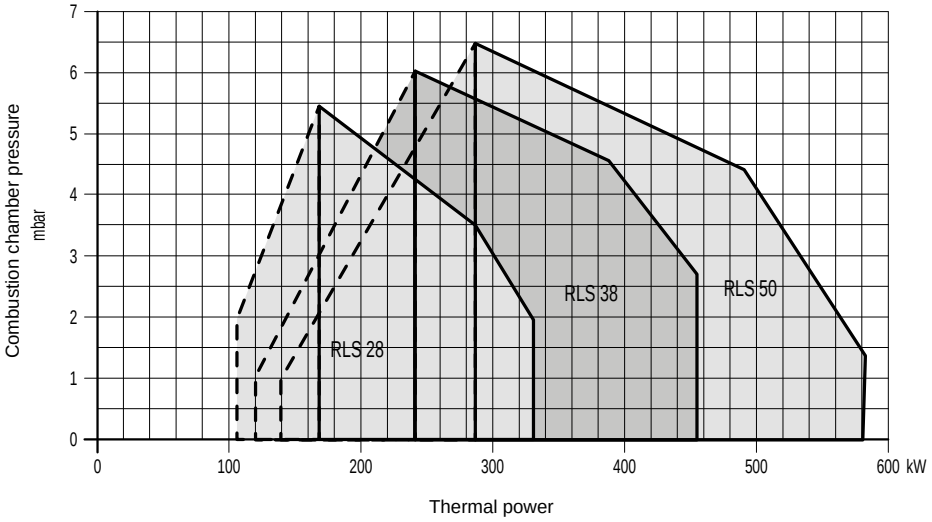
RLS 28-50 series of burners covers a firing range from 100 to 581 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam generators, diathermic oil boilers.
Operation is “two stage”; the burners are fitted with an electronic device LED PANEL, which supplies a diagnostic of burner status. Optimisation of sound emissions is guaranteed by the use of fans with reverse curve blades and sound deadening material incorporated in the air suction circuit. The elevated performance of the fans and combustion head guarantee flexibility of use and excellent working at all firing rates.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)									
RLS 28 TC LP FS1	100/163-325	8.5/13.7-27.4	10/16-33	0.53	1/230/50	230/50	CE-0085CT0269	(1)(2)	**20208945**
RLS 28 TC LP FS1	100/163-325	8.5/13.7-27.4	10/16-33	0.53	1/220/60	220/60	-	(1)(2)	**20208908**
RLS 28 TL LP FS1	100/163-325	8.5/13.7-27.4	10/16-33	0.53	1/230/50	230/50	CE-0085CT0269	(1)(2)	**20208944**
RLS 38 TC LP FS1	116/232-442	9.8/19.6-37.3	12/23-44	0.76	1/230/50	230/50	CE-0085CT0269	(1)(2)	**20208942**
RLS 38 TL LP FS1	116/232-442	9.8/19.6-37.3	12/23-44	0.76	1/230/50	230/50	CE-0085CT0269	(1)(2)	**20208941**
RLS 50 TC LP FS1	145/290-581	12.3/24.5-49	15/29-58	0.91	3/400/50	230/50	CE-0085CT0269	(1)(2)	**20208939**
RLS 50 TC LP FS1	145/290-581	12.3/24.5-49	15/29-58	0.91	3/380/60	220/60	-	(1)(2)	**20208738**
RLS 50 TL LP FS1	145/290-581	12.3/24.5-49	15/29-58	0.91	3/400/50	230/50	CE-0085CT0269	(1)(2)	**20208938**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.
(1) Model with plug and socket.
(2) Model with LFL control box.

FIRING RATES

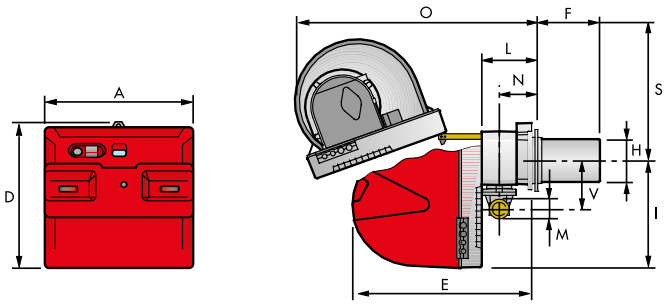


Useful working field for choosing the burner

Modulating range

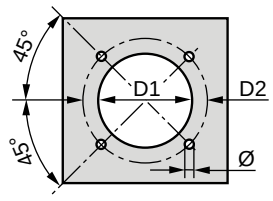
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

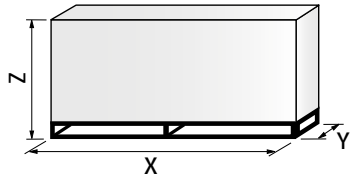


Description	A mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M inch	N mm	O - O (1) mm	S mm	V mm
RLS 28	476	474	580	191 - 326	140	352	164	1" ½	108	810 - 810	367	168
RLS 38	476	474	580	201 - 336	152	352	164	1" ½	108	810 - 810	367	168
RLS 50	476	474	580	216 - 351	152	352	164	1" ½	108	810 - 810	367	168

(1) Length with extended combustion head.



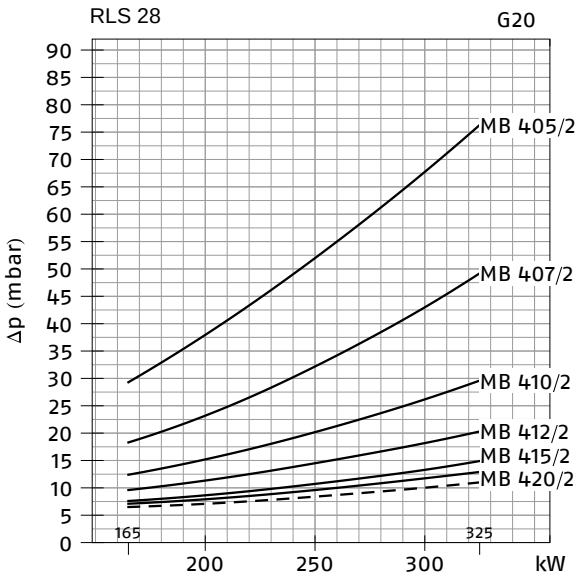
Description	D1 mm	D2 mm	Ø
RLS 28	160	224	M8
RLS 38	160	224	M8
RLS 50	160	224	M8

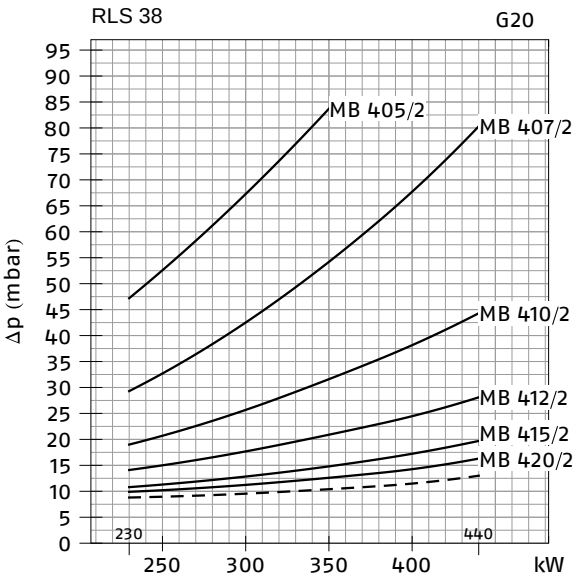


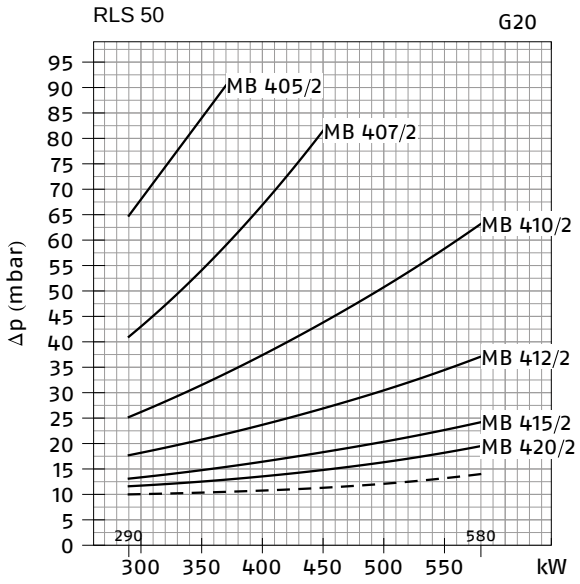
Description	X mm	Y mm	Z mm	Net weight kg
RLS 28	1190	492	510	43
RLS 38	1190	492	510	45
RLS 50	1190	492	510	46

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN





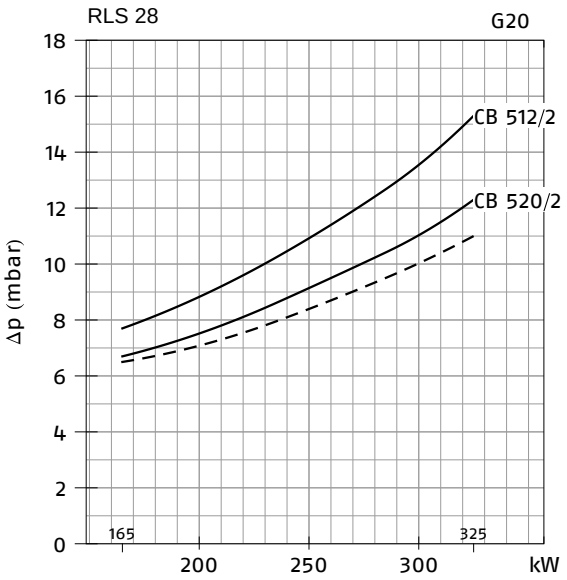


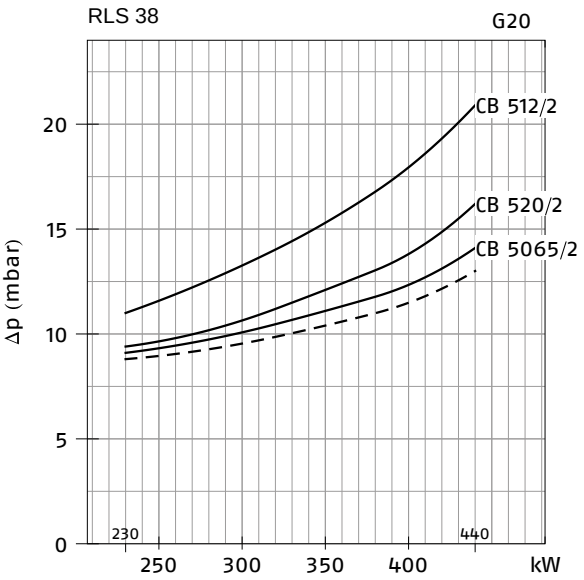
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

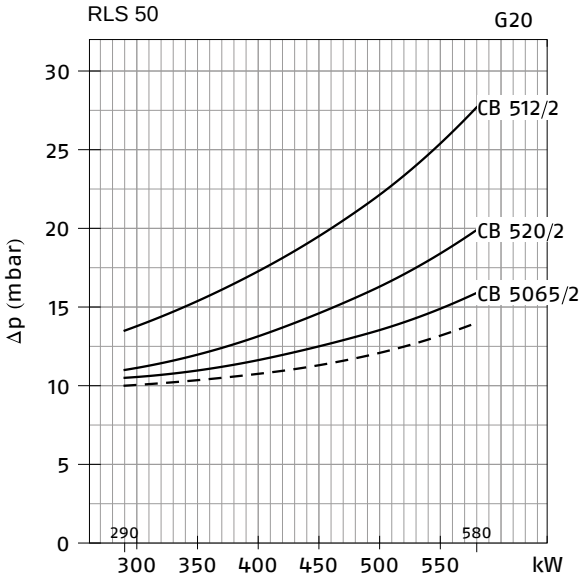
——— Combustion head + gas train

- - - - Combustion head

CB 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

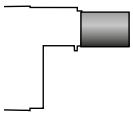
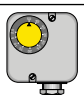
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)		
						RLS 28	RLS 38	RLS 50
MB SERIES TWO STAGE GAS TRAIN								
MB 405/2-RSD 20	**3970084***		½"	-	3010123	20044756		
MB 407/2-RSD 20	**3970537***		Rp ¾"	-	3010123	3000824		
MB 407/2-RT 20	**3970556***		Rp ¾"	-	3010123	3000824		
MB 410/2-RSD 20	**3970534***		Rp ¾"	-	3010123	3000824		
MB 410/2-RT 20	**3970557***		Rp ¾"	-	3010123	3000824		
MB 412/2-RT 20	**3970152***		Rp 1" ½	-	3010123	□	□	□
MB 415/2-RT 20	**3970183***		Rp 1" ½	-	3010123	□	□	□
MB 420/2-RT 20	**3970184***		Rp 2"	-	3010123	3000822		
MB 420/2 CT RT 20	**3970185****		Rp 2"	♦	♦	3000822		

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)		
						RLS 28	RLS 38	RLS 50
CB SERIES TWO STAGE GAS TRAIN								
CB 512/2-RT 32	**3970153***		Rp 1" ½	-	3010125	□	□	□
CB 520/2-RT 32	**3970154***		Rp 2"	-	3010125		3000822	

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		**EXTENDED HEAD KIT** "Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.		
	RLS 28	Standard head length = 191 mm - Extended head length = 326 mm		**20097840**
	RLS 38	Standard head length = 201 mm - Extended head length = 336 mm		**20097868**
	RLS 50	Standard head length = 216 mm - Extended head length = 351 mm		**20097869**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	All models	**LPG KIT** For burning LPG gas, a dedicated kit is available with RLS dual fuel burners as standard equipment, if necessary it is available also as accessory for standard extended head.		**3010304**
	All models	**CONNECTION FLANGE KIT** A kit is available for use where the burner opening on the boiler is of excessive diameter.		**3010138**
	All models	**GAS MAX PRESSURE SWITCH KIT** If necessary a gas max pressure switch kit is available.		**3010493**
	All models	**GROUND FAULT INTERRUPTER KIT** A "Ground fault interrupter kit" is available as a safety device for electrical system fault.		**3010321**
	All models	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm.	(1)	**3010055**

(1) Max capability 80 kg/h (more filters are needed for higher flow).

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Type	Specification				Note	Code
			GPH	Rated delivery (kg/h)				
				10 bar	12 bar	14 bar		
	RLS 28	60°B	2.00	7.7	8.5	9.2	(1)	**3042126**
	RLS 28-38	60°B	2.50	8.6	10.6	11.5	(1)	**3042140**
	RLS 28-38-50	60°B	3.00	11.5	12.7	13.8	(1)	**3042158**
	RLS 28-38-50	60°B	3.50	13.5	14.8	16.1	(1)	**3042162**
	RLS 38-50	60°B	4.00	15.4	17	18.4	(1)	**3042172**
	RLS 38-50	60°B	4.50	17.3	19.1	20.7	(1)	**3042182**
	RLS 38-50	60°B	5.00	19.2	21.2	23	(1)	**3042192**
	RLS 50	60°B	5.50	21.1	23.3	25.3	(1)	**3042202**
	RLS 50	60°B	6.00	23.1	25.5	27.7	(1)	**3042212**
	RLS 50	60°B	6.50	25	27.6	30	(1)	**3042222**

(1) Each burner needs N° 2 nozzles.

STATE OF SUPPLY

Monobloc forced draught dual fuel burner, two stage operation, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades
- Fan starting motor
- Air damper for air setting controlled by a servomotor
- Minimum air pressure switch
- Combustion head, that can be set on the basis of required output
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Two oil valves (1st and 2nd stage)
- Burner safety control box
- Electronic device to check all burners operational modes (Led Panel)
- UV photocell for flame detection
- Burner on/off switch
- Oil/Gas selector
- Manual 1st and 2nd stage switch
- Plugs for electrical connections
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 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
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Kit for transformation to LPG
- Fairleads for electrical connections
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Two stage dual fuel burners

RLS 70-130



- Dual fuel burners
- Two-stage operation on both gas and light oil side

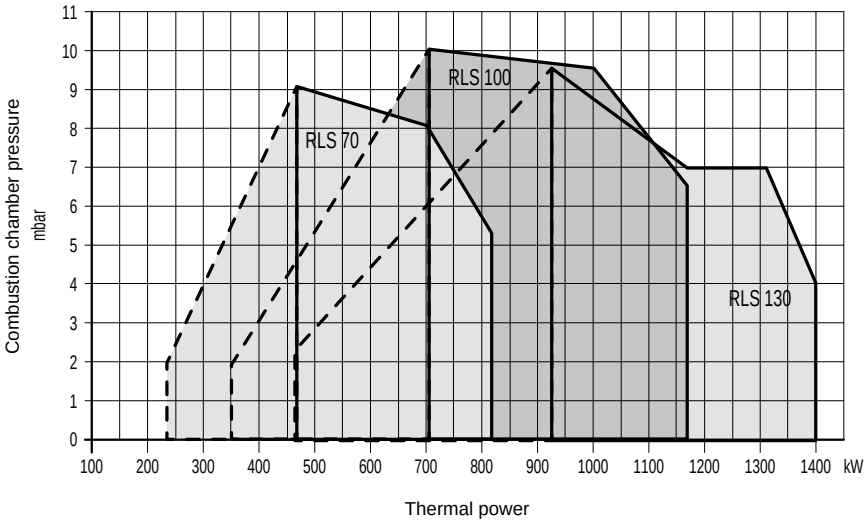
RLS 70-130 series of burners covers a firing range from 232 to 1395 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam generators, diathermic oil boilers. Operation is “two stage”; the burners are fitted with an electronic device LED PANEL, which supplies a diagnostic of burner status. Optimisation of sound emissions is guaranteed by the use of fans with reverse curve blades and sound deadening material incorporated in the air suction circuit. The elevated performance of the fans and combustion head guarantee flexibility of use and excellent working at all firing rates.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)									
RLS 70 TC LP FS1	232/465-814	19/39-69	23/47-81	2.0	3/400/50	230/50	CE-0085CT0269	(1)(2)	**20208897**
RLS 70 TC LP FS1	232/465-814	19/39-69	23/47-81	2.0	3/380/60	230/50-60	-	(1)(2)	**20208954**
RLS 70 TL LP FS1	232/465-814	19/39-69	23/47-81	2.0	3/400/50	230/50	CE-0085CT0269	(1)(2)	**20208900**
RLS 100 TC LP FS1	349/698-1163	29.5/59-98	35/70-116	2.4	3/400/50	230/50	CE-0085CT0269	(1)(2)	**20208902**
RLS 100 TC LP FS1	349/698-1163	29.5/59-98	35/70-116	2.5	3/220/60	230/50	-	(1)(2)	**20208953**
RLS 100 TL LP FS1	349/698-1163	29.5/59-98	35/70-116	2.4	3/400/50	230/50	CE-0085CT0269	(1)(2)	**20208904**
RLS 130 TC LP FS1	465/930-1395	39/78-118	47/93-140	3.2	3/400/50	230/50	CE-0085CT0269	(1)(2)	**20208905**
RLS 130 TC LP FS1	465/930-1395	39/78-118	47/93-140	3.2	3/380/60	230/50-60	-	(1)(2)	**20207026**
RLS 130 TL LP FS1	465/930-1395	39/78-118	47/93-140	3.2	3/400/50	230/50	CE-0085CT0269	(1)(2)	**20208933**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.
(1) Model with LFL control box.
(2) Electrical connections with terminal wiring.

FIRING RATES

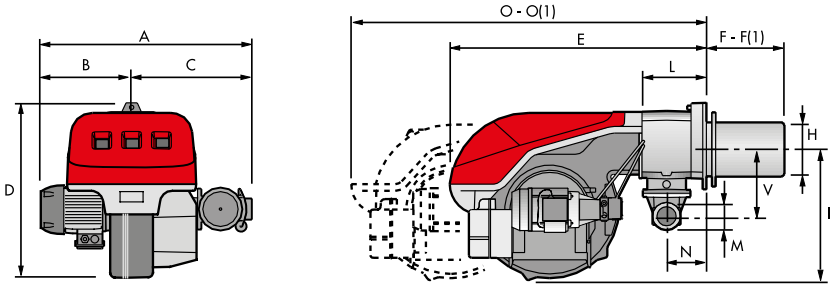


Useful working field for choosing the burner

Modulating range

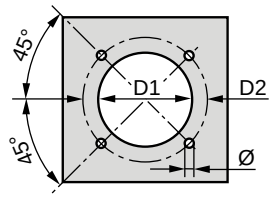
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

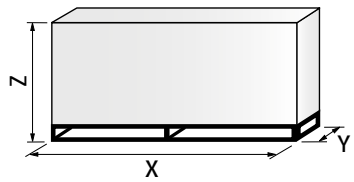


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M mm	N mm	O - O (1) mm	V mm
RLS 70	691	296	395	555	840	250 - 385	179	430	214	Rp 2”	134	1161 - 1361	221
RLS 100	707	312	395	555	840	250 - 385	189	430	214	Rp 2”	134	1161 - 1361	221
RLS 130	733	338	395	555	840	250 - 385	189	430	214	Rp 2”	134	1161 - 1361	221

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø
RLS 70	185	275-325	M12
RLS 100	195	275-325	M12
RLS 130	195	275-325	M12

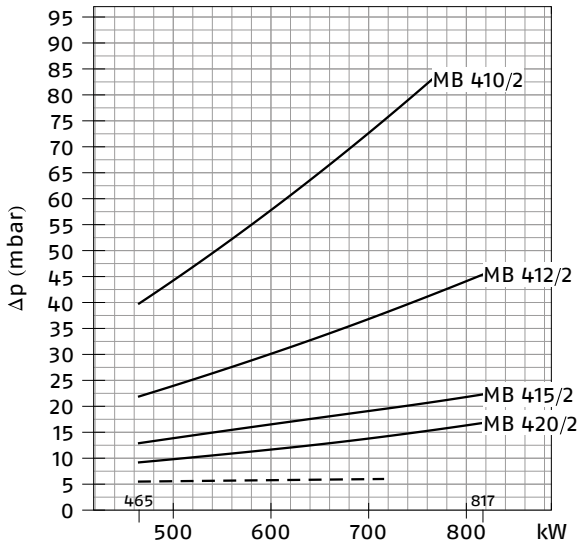


Description	X mm	Y mm	Z mm	Net weight kg
RLS 70	1405	1000	660	70
RLS 100	1405	1000	660	73
RLS 130	1405	1000	660	76

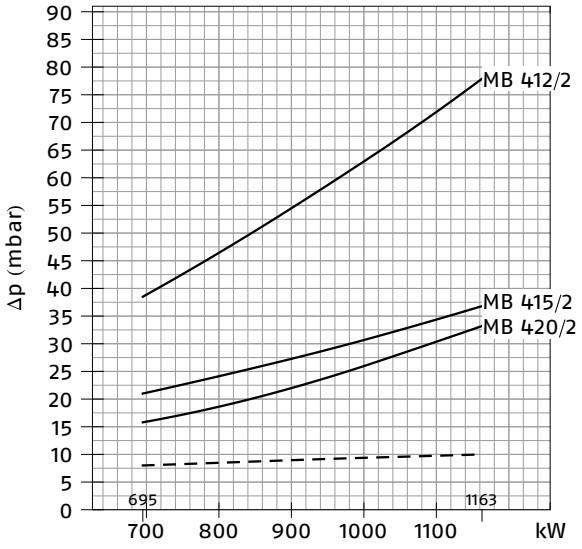
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

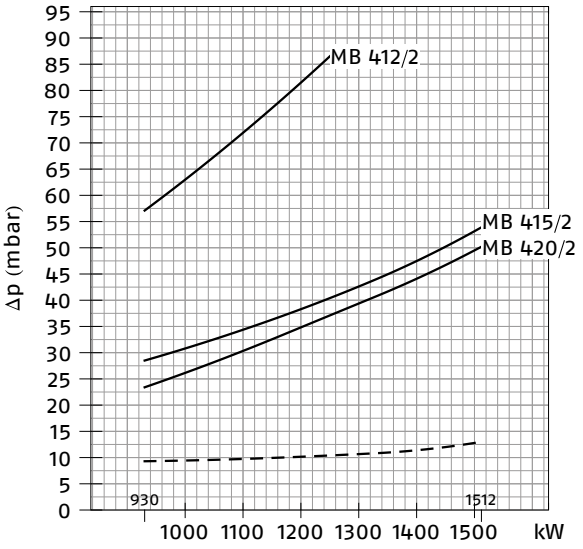
RLS 70 G20



RLS 100 G20



RLS 130 G20

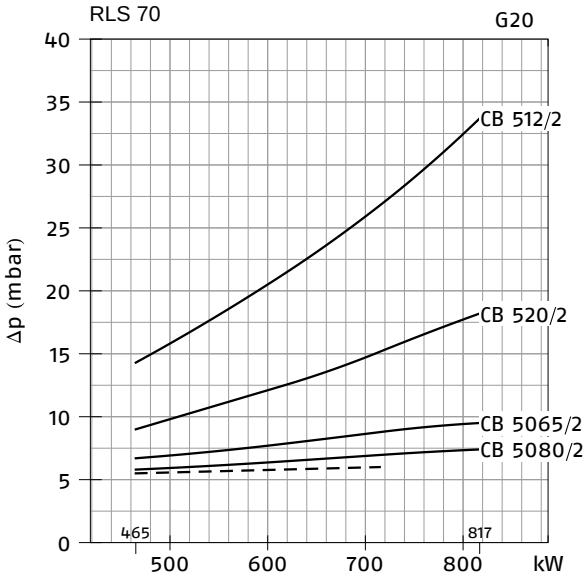


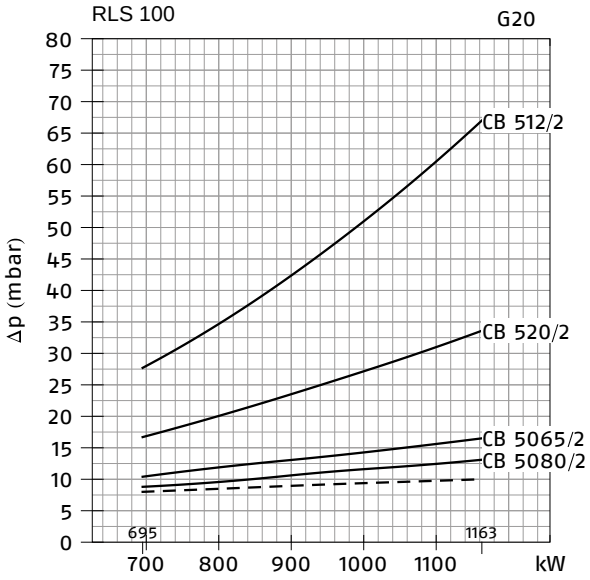
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

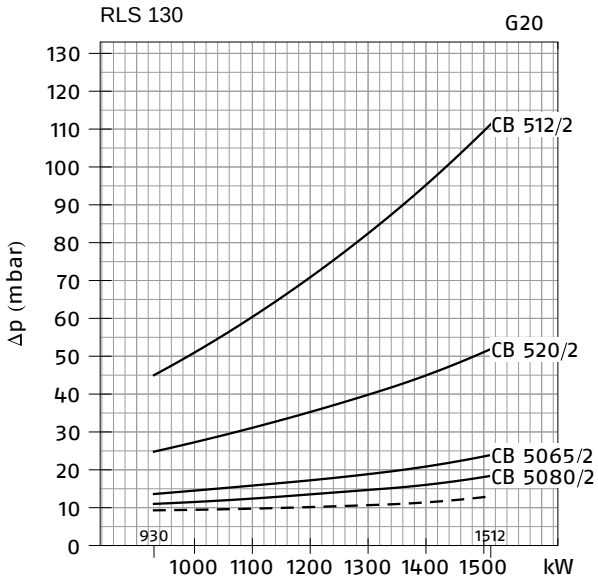
——— Combustion head + gas train

- - - - Combustion head

CB 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

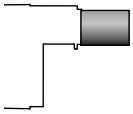
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)		
						RLS 70	RLS 100	RLS 130
MB SERIES TWO STAGE GAS TRAIN								
MB 410/2-RSD 20	**3970534***		Rp ¾”	-	3010123	3000824+ 3000843	•	•
MB 410/2-RT 20	**3970557***		Rp ¾”	-	3010123	3000824+ 3000843	•	•
MB 412/2-RT 20	**3970152***		Rp 1” ½	-	3010123	3000843		
MB 415/2-RT 20	**3970183***		Rp 1” ½	-	3010123	3000843		
MB 420/2-RT 20	**3970184***		Rp 2”	-	3010123	□	□	□
MB 420/2 CT RT 20	**3970185****		Rp 2”	♦	♦	□	□	□

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)		
						RLS 70	RLS 100	RLS 130
CB SERIES TWO STAGE GAS TRAIN								
CB 512/2-RT 32	**3970153***		Rp 1" ½	-	3010125	3000843		
CB 520/2-RT 32	**3970154***		Rp 2"	-	3010125	□	□	□

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		**EXTENDED HEAD KIT** "Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.		
	RLS 70	Standard head length = 250 mm - Extended head length = 385 mm		**3010345**
	RLS 100	Standard head length = 250 mm - Extended head length = 385 mm		**3010346**
	RLS 130	Standard head length = 250 mm - Extended head length = 385 mm		**3010347**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower "B" dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models	**LPG KIT** For burning LPG gas, a dedicated kit is available with RLS dual fuel burners as standard equipment, if necessary it is available also as accessory for standard extended head.		**3010305**
	All models	**GAS MAX PRESSURE SWITCH KIT** If necessary a gas max pressure switch kit is available.		**3010493**
	All models	**GROUND FAULT INTERRUPTER KIT** A "Ground fault interrupter kit" is available as a safety device for electrical system fault.		**20098337**
	All models	**DEGASING UNIT** With single pipe systems, you can find air in the oil sucked by the pump that comes from the oil itself due to negative pressure or to a faulty seal. To solve this problem, we recommend fitting a degasing unit near the burner. Kit code with filter; filtering degree 50 - 75 µm.	(1)	**3010055**

(1) Max capability 80 kg/h (more filters are needed for higher flow).

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Type	Specification				Note	Code
			GPH	Rated delivery (kg/h)				
				10 bar	12 bar	14 bar		
	RLS 70	60°B	5.00	19.2	21.2	23	(1)	**3042192**
	RLS 70	60°B	5.50	21.1	23.3	25.3	(1)	**3042202**
	RLS 70	60°B	6.00	23.1	25.5	27.7	(1)	**3042212**
	RLS 70	60°B	6.50	25	27.6	30	(1)	**3042222**
	RLS 70-100	60°B	7.00	26.9	29.7	32.3	(1)	**3042232**
	RLS 70-100	60°B	7.50	28.8	31.8	34.6	(1)	**3042242**
	RLS 70-100	60°B	8.00	30.8	33.9	36.9	(1)	**3042252**
	RLS 70-100	60°B	8.50	32.7	36.1	39.2	(1)	**3042262**
	RLS 70-100-130	60°B	9.50	36.5	40.3	43.8	(1)	**3042282**
	RLS 70-100-130	60°B	10.00	38.4	42.4	46.1	(1)	**3042292**
	RLS 70-100-130	60°B	11.00	42.3	46.7	50.7	(1)	**3042312**
	RLS 100-130	60°B	12.00	46.1	50.9	55.3	(1)	**3042322**
	RLS 100-130	60°B	13.00	50	55.1	59.9	(1)	**3042332**
	RLS 100-130	60°B	14.00	53.8	59.4	64.5	(1)	**3042352**
	RLS 100-130	60°B	15.00	57.7	63.6	69.2	(1)	**3042362**
	RLS 100-130	60°B	16.00	61.5	67.9	73.8	(1)	**3042382**
	RLS 130	60°B	17.00	65.4	72.1	78.4	(1)	**3042392**

(1) Each burner needs N° 2 nozzles.

STATE OF SUPPLY

Monobloc forced draught dual fuel burner, two stage operation, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades
- Fan starting motor
- Air damper for air setting controlled by a servomotor
- Minimum air pressure switch
- Combustion head, that can be set on the basis of required output
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Two oil valves (1st and 2nd stage)
- Burner safety control box
- Electronic device to check all burners operational modes (Led Panel)
- UV photocell for flame detection
- Burner on/off switch
- Oil/Gas selector
- Manual 1st and 2nd stage switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 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
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Kit for transformation to LPG
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Modulating dual fuel burners

RLS 190-250/M MZ



- Dual fuel burners
- Progressive two-stage or modulating operation on the gas side and two-stage operation on light oil side

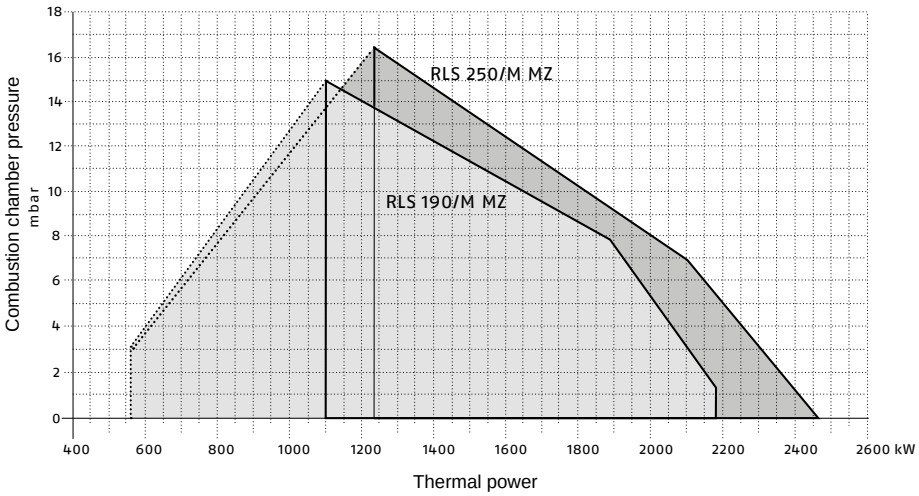
RLS 190-250/M MZ series of burners covers a firing range from 550 to 2460 kW, and they have been designed for use in hot or superheated water boilers, hot air or steam generators, diathermic oil boilers.
Operation is “two stage” at the oil side and “modulating” at the gas side with the installation of a PID logic regulator and respective probes.
RLS 190-250/M MZ series burners guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
Optimisation of sound emissions is guaranteed by the special design of air suction circuit and the use of sound proofing material.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)									
RLS 190/M MZ TC FS1	550/1100-2150	46/93-181	55/110-215	6.0	3/400/50	230/50-60	CE 0085BP0439	(1)	**20205672**
RLS 190/M MZ TL FS1	550/1100-2150	46/93-181	55/110-215	6.0	3/400/50	230/50-60	CE 0085BP0439	(1)	**20205751**
RLS 250/M MZ TC FS1	550/1230-2460	46/104-208	55/123-246	7.5 (oil) 6.0 (gas)	3/400/50	230/50-60	CE 0085CM0153	(1)	**20205746**
RLS 250/M MZ TL FS1	550/1230-2460	46/104-208	55/123-246	7.5 (oil) 6.0 (gas)	3/400/50	230/50-60	CE 0085CM0153	(1)	**20208628**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.
(1) Model with LFL control box.

FIRING RATES

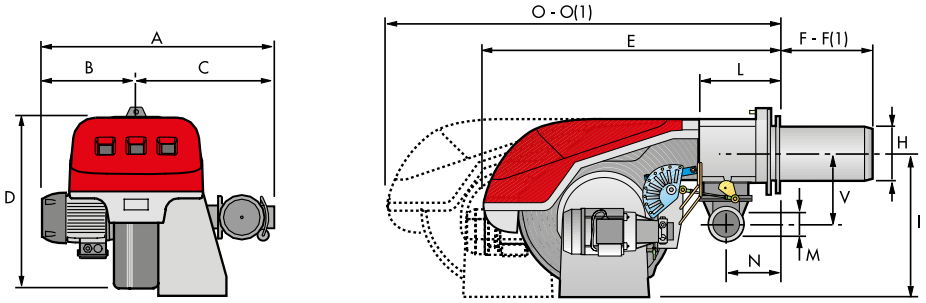


Useful working field for choosing the burner

Modulation range

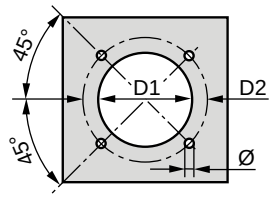
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

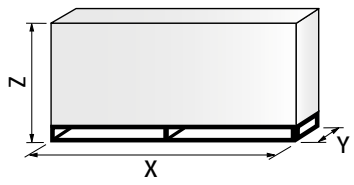


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M inch	N mm	O - O (1) mm	V mm
RLS 190/M MZ	843	366	477	555	863	412 - 542	222	430	237	Rp 2”	141	1442 - 1587	186
RLS 250/M MZ	904	427	477	555	863	412 - 542	222	435	237	Rp 2”	141	1442 - 1587	186

(1) Length with extended combustion head.



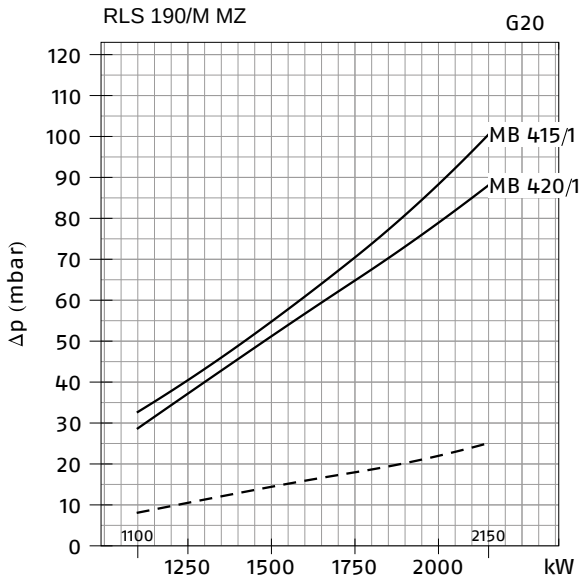
Description	D1 mm	D2 mm	Ø mm
RLS 190/M MZ	230	325 - 368	M16
RLS 250/M MZ	230	325 - 368	M16

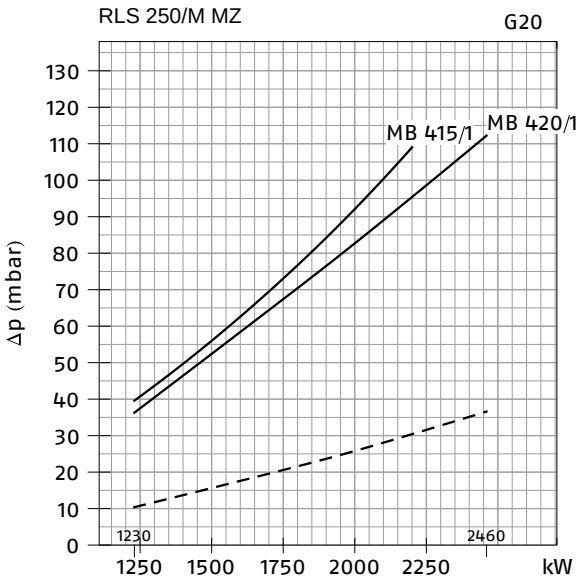


Description	X mm	Y mm	Z mm	Net weight kg
RLS 190/M MZ	1400	975	645	95
RLS 250/M MZ	1400	1000	765	100

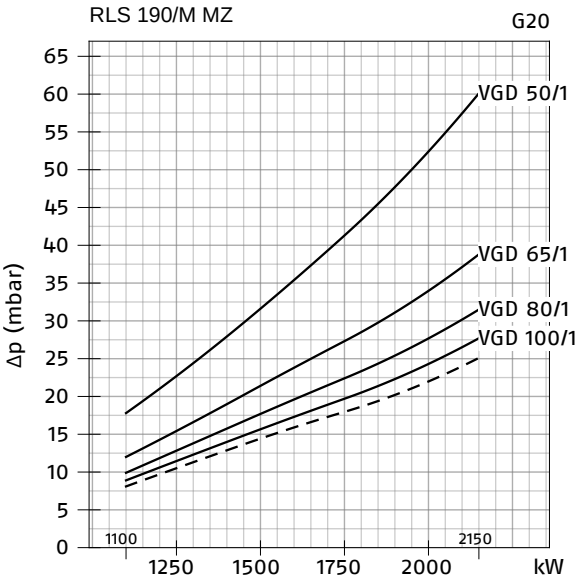
PRESSURE LOSS DIAGRAMS

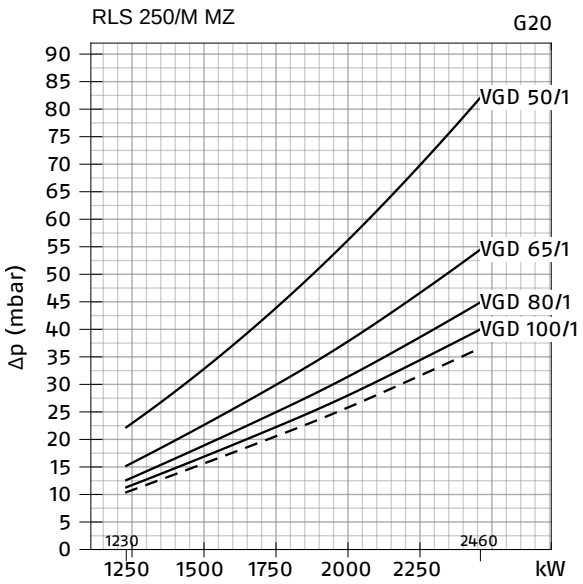
MB SERIES GAS TRAIN





VGD 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

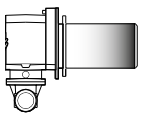
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 190/M	RS 250/M MZ
MB SERIES ONE STAGE GAS TRAIN							
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	3000843	
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	3000843	
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	3000843	
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	3000843	
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	3000843	
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	□	□
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	□	□

Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 190/M	RS 250/M MZ
MB 420/1-RT 52	**3970257***		Rp 2”	-	3010123	□	□
MB 420/1 CT RT 52	**3970252****		Rp 2”	♦	♦	□	□
MB 420/1-RSM 30	**3970233***		Rp 2”	-	3010123	□	□
MB 420/1 CT RSM 30	**3970234****		Rp 2”	♦	♦	□	□
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***		Rp 2”	-	3010123+ 20186306	□	□
VGD 50/1 CT RT 122	**20169190****		Rp 2”	♦	♦	□	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826	
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826	
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	3000826	
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	3000826	
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	3000826+3010223	
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	3000826 + 3010223	

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		**EXTENDED HEAD KIT** “Standard head” burners can be transformed into “extended head” versions, by using the special kit. The kit available, giving the original and the extended lengths, is listed below.		
	RLS 190/M MZ	Standard head length = 412 mm - Extended head length = 542 mm	(1)	**3010440**
	RLS 250/M MZ	Standard head length = 412 mm - Extended head length = 542 mm		**20029376**
	All models	**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 102 mm		**3000722**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models	**LPG KIT** For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner. The kit is available for standard head and extended head.	(2)	**3091796**
		**POWER CONTROLLER** To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
	All models	RWF 50.2 - Standard version; 3-point outlet.		**20099869**
		RWF 55.5 - Plus version; complete with RS-485 interface.		**20099905**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**

Drawing	Burner model	Specification	Note	Code
	All models	**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**3010415**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**3010416**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**20098337**

(1) Kit to be used on burners recognizable by a serial number that is over or equal to 02426XXXXXX, for burners with a serial number that is under or equal to 02416XXXXXX please use the kit coded 3010366.
(2) Without CE certification.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Type	Specification				Note	Code
			GPH	Rated delivery (kg/h) (*)				
				10 bar	12 bar	14 bar		
	RLS 190/M MZ	60°B	10.00	38.4	42.4	46.1	(1)	**3042292**
	RLS 190/M MZ	60°B	11.00	42.3	46.7	50.7	(1)	**3042312**
	RLS 190-250/M MZ	60°B	12.00	46.1	50.9	55.3	(1)	**3042322**
	RLS 190-250/M MZ	60°B	13.00	50.0	55.1	59.9	(1)	**3042332**
	RLS 190-250/M MZ	60°B	14.00	53.8	59.4	64.5	(1)	**3042352**
	RLS 190-250/M MZ	60°B	15.00	57.7	63.6	69.2	(1)	**3042362**
	RLS 190-250/M MZ	60°B	16.00	61.5	67.9	73.8	(1)	**3042382**
	RLS 190-250/M MZ	60°B	17.00	65.4	72.1	78.4	(1)	**3042392**
	RLS 190-250/M MZ	60°B	18.00	69.2	76.4	83.0	(1)	**3042412**
	RLS 190-250/M MZ	60°B	19.00	73.0	80.6	87.6	(1)	**3042422**
	RLS 190-250/M MZ	60°B	20.00	76.9	84.8	92.2	(1)	**3042442**
	RLS 190-250/M MZ	60°B	22.00	84.6	93.3	101.4	(1)	**3042462**
	RLS 190-250/M MZ	60°B	24.00	92.2	101.8	110.6	(1)	**3042472**
	RLS 190-250/M MZ	60°B	26.00	99.9	110.3	119.9	(1)	**3042482**
	RLS 190-250/M MZ	60°B	28.00	107.6	118.8	129.1	(1)	**20018051**
	RLS 250/M MZ	60°B	30.00	110.4	122.0	132.4	(1)	**3042502**
	RLS 250/M MZ	60°B	32.00	117.8	130.1	150.1	(1)	**3042512**
	RLS 250/M MZ	60°B	35.00	128.8	142.1	154.5	(1)	**3042522**

(*) Nozzle rated delivery is reffered to atomized pressure.
(1) Each burner needs N° 2 nozzles.

STATE OF SUPPLY

Monoblock forced draught dual fuel burner with two stage operation at the oil side and two stage progressive or modulating operation at the gas side, with a specific kit, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- Centrifugal fan with high performance and low sound emissions
- Air damper for air flow setting and butterfly valve for regulating gas output controlled by a servomotor with variable cam
- Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - gas distributor
  - flame stability disk
- Maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves

- Two oil valves (1st and 2nd stage)
- Burner safety control box
- UV photocell for flame detection
- Burner on/off selection switch
- Manual or automatic output increase/decrease selection switch
- Oil/Gas selector
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 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
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Modulating dual fuel burners

GI/EMME 1400-4500



- Modulating dual fuel burners

GI/EMME 1400-4500 series of burners covers a firing range from 820 to 4650 kW.
They have been designed for high output users and they are suitable for matching with every kind of boilers, with normal or pressurized combustion chamber.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
Two options of operation are available: only gas and only light oil, thus settable by a manual switch. Light oil circuit is fitted with his own electric motor: this permits pump stop during gas operation preventing danger of pumping seizure and avoiding oil circulation.
A wide range of accessories and gas trains suitable to the burners guarantee an elevated working flexibility.

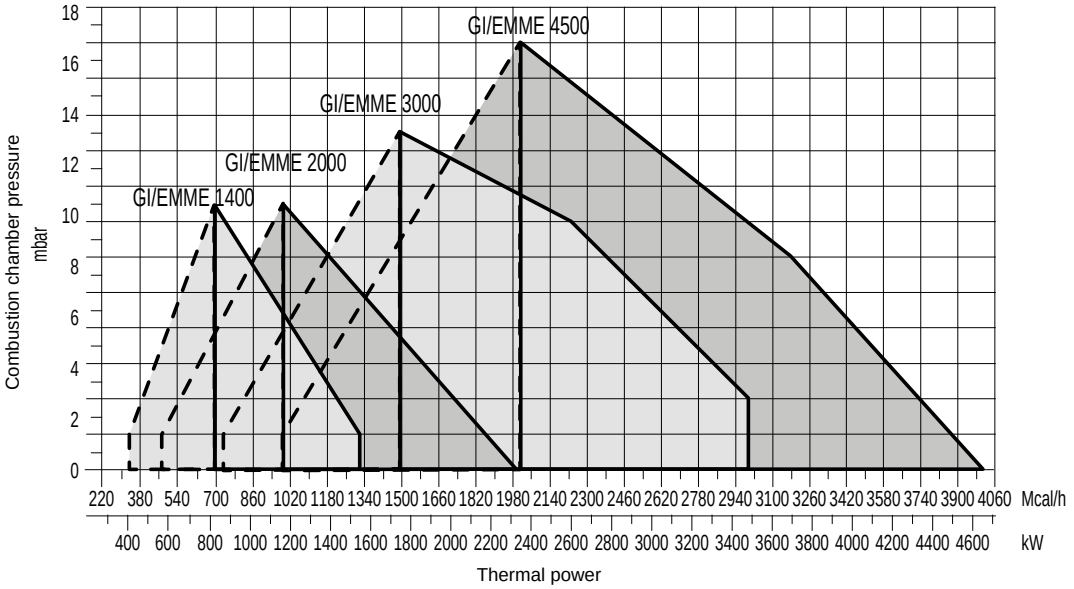
TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Certification	Note	Code
		Light oil	Natural Gas						
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)									
GI/EMME 1400 TC FS1	407/820-1540	34/69-130	41/82-154	5.0	3/400/50	230/50	CE-0085AQ0712	(1)	**20208729**
GI/EMME 2000 TC FS1	590/1163-2370	50/98-200	59/116-237	6.4	3/380/60	220/60	-	(1)	**20208737**
GI/EMME 2000 TC FS1	581/1163-2325	49/98-196	58/116-233	6.4	3/400/50	230/50	CE-0085AQ0712	(1)	**20206079**
GI/EMME 3000 TC FS1	872/1744-3488	74/147-294	87/174-349	10.7-12.5	3/400/50	230/50	CE-0085AQ0712	(1)(2)	**20205812**
GI/EMME 3000 TC FS1	872/1744-3488	74/147-294	87/174-349	10.7-12.5	3/400/50	230/50	CE-0085AQ0712	(1)(3)	**20208735**
GI/EMME 4500 TC FS1	1163/2350-4650	98/198-392	116/235-465	10.7-12.5	3/400/50	230/50	CE-0085AQ0712	(1)(3)	**20205991**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
Net calorific value of natural gas (G20): 10 kWh/Nm³.

(1) Model with LFL control box.
(2) For the 3/230/50 version use the 220 - 230 V conversion kit (see the burner accessories paragraph)
(3) Star/delta starter.

FIRING RATES

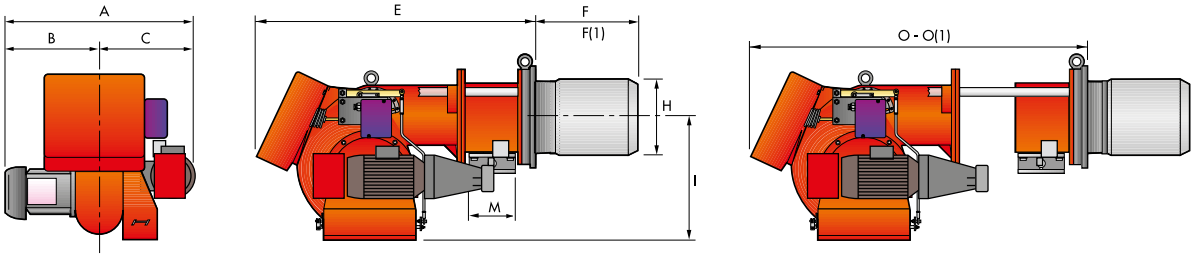


Useful working field for choosing the burner

Modulation range

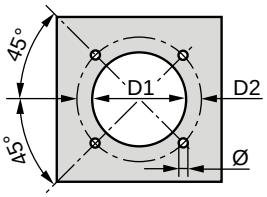
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

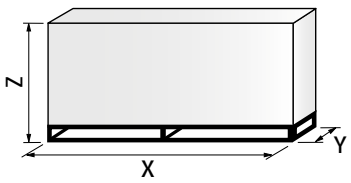


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	M	O - O (1) mm
GI/EMME 1400	858	376	482	1090	385	250	467	Rp 2”	1407 - 1585
GI/EMME 2000	878	396	482	1090	385	260	467	DN 80	1407 - 1585
GI/EMME 3000	985	447	538	1320	476	336	525	DN 80	1796 - 2000
GI/EMME 4500	1046	508	538	1320	476	336	525	DN 80	1796 - 1926

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø
GI/EMME 1400	255	368	M16
GI/EMME 2000	265	368	M16
GI/EMME 3000	340	438	M20
GI/EMME 4500	340	438	M20

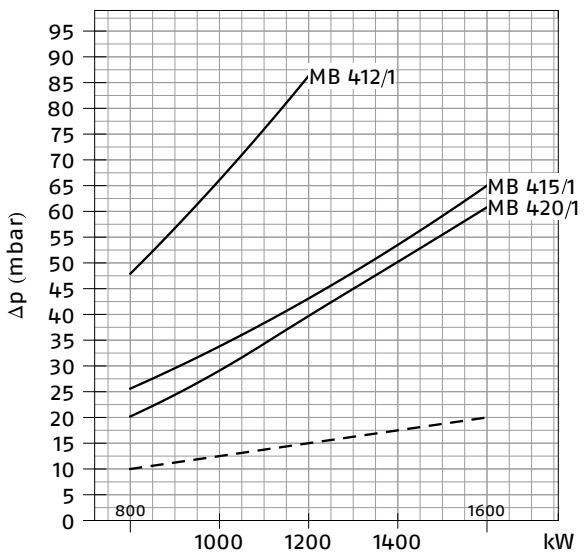


Description	X mm	Y mm	Z mm	Net weight kg
GI/EMME 1400	1740	990	950	190
GI/EMME 2000	1740	990	950	200
GI/EMME 3000	2040	1180	1125	280
GI/EMME 4500	2040	1180	1125	500

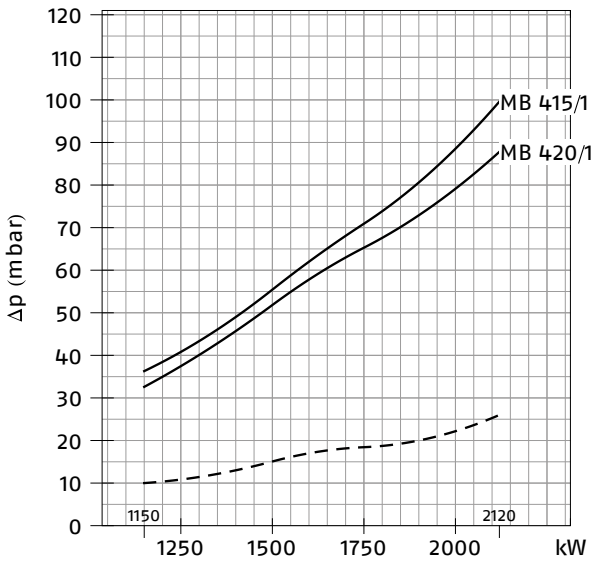
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

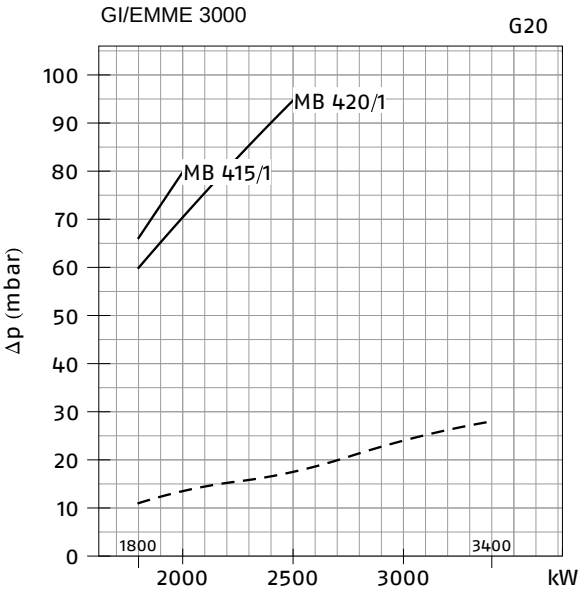
GI/EMME 1400



GI/EMME 2000



GI/EMME 3000



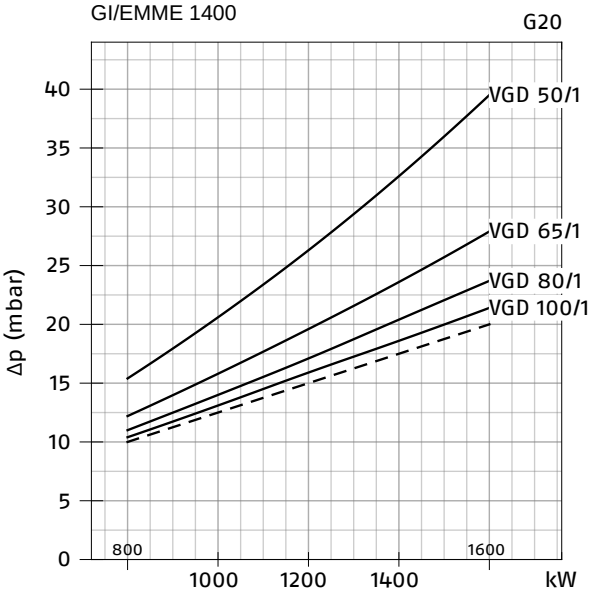
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

——— Combustion head + gas train

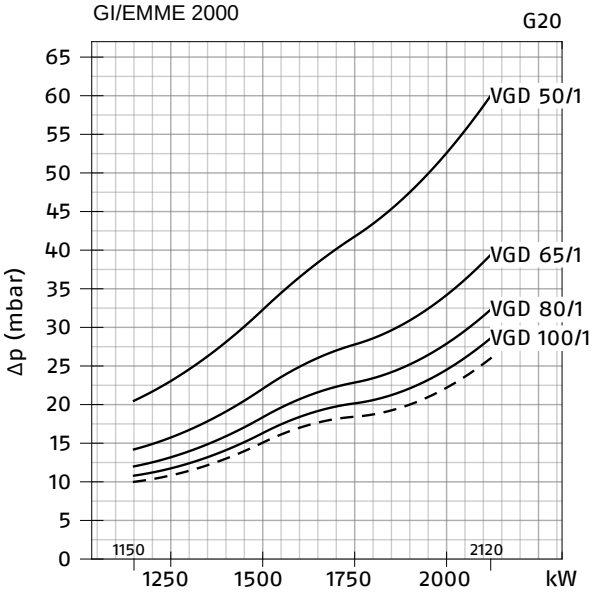
- - - - Combustion head

VGD SERIES GAS TRAIN

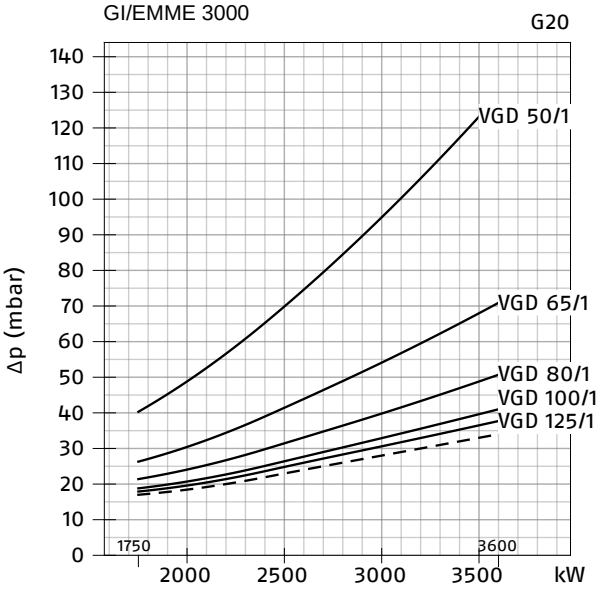
GI/EMME 1400



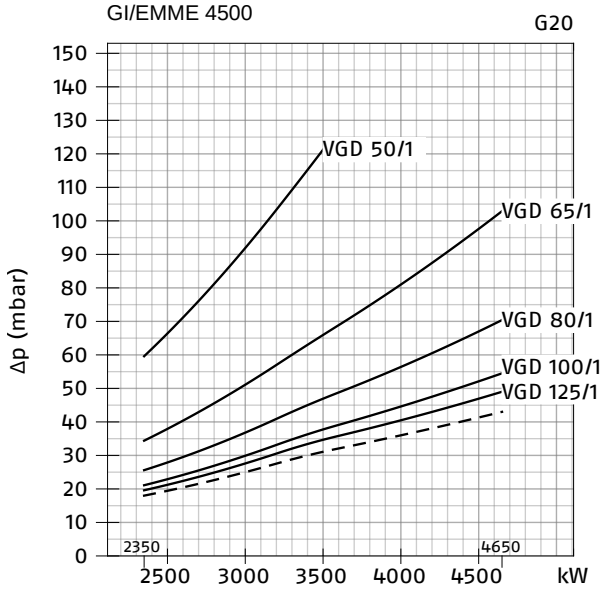
GI/EMME 2000



GI/EMME 3000



GI/EMME 4500



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)	VPS kit code (3)	Burner-gas train adapter (4)			
						G/M 1400	G/M 2000	G/M 3000	G/M 4500
MB SERIES ONE STAGE GAS TRAIN									
MB 415/1 - RT 30	**3970180***	(5)	Rp 1" ½	-	3010123	3000843	20064220+3010128		●
MB 415/1 CT RT 30	**3970198****	(6)	Rp 1" ½	♦	♦				●
MB 415/1 - RT 52	**3970250***	(5)	Rp 1" ½	-	3010123		20064220+3010128		●
MB 415/1 CT RT 52	**3970253****	(6)	Rp 1" ½	♦	♦				●
MB 415/1 - RSM 30	**3970232***	(5)	Rp 1" ½	-	3010123		20064220+3010128		●
MB 420/1 - RT 30	**3970181***	(5)	Rp 2"	-	3010123	□	20042324+3010128		●
MB 420/1 CT RT 30	**3970182****	(6)	Rp 2"	♦	♦	□			●
MB 420/1 - RT 52	**3970257***	(5)	Rp 2"	-	3010123	□	20042324+3010128		●
MB 420/1 CT RT 52	**3970252****	(6)	Rp 2"	♦	♦	□			●
MB 420/1 - RSM 30	**3970233***	(5)	Rp 2"	-	3010123	□	20042324+3010128		●
MB 420/1 CT RSM 30	**3970234****	(6)	Rp 2"	♦	♦	□			●
VGD SERIES ONE STAGE GAS TRAIN									
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	□	20042324+3010128		
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	□	20042324+3010128		
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826	3000832		
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826	3000832		
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	3000826	3000832		
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	3000826	3000832		
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	3010370+ 3000826	3010127		
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	3010370+ 3000826	3010127		
VGD 125/1 - FT 122	**20169195***		DN 125	-	(6)	●	●	(6)	

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
(6) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	GI/EMME 1400-2000	Spacer thickness S = 102 mm		**3000722**
	GI/EMME 3000-4500	Spacer thickness S = 130 mm		**3000751**
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1140 mm, E = 1645 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010376**
	All models	**POWER CONTROLLER** To obtain modulating operation, the burner requires a regulator. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20100018**
		RWF 55.5 - Plus version.		**20101965**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**

Drawing	Burner model	Specification	Note	Code
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	**POTENTIOMETER** Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**20096322**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	GI/EMME 1400-2000	Kit code for standard and extended head.	(1)	**3010063**
	GI/EMME 3000	Kit code for standard and extended head.	(1)	**3090223**
	GI/EMME 4500	Kit code for standard and extended head.	(1)	**3090937**
	All models	**BURNER SUPPORT** For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.		**3000731**
	GI/EMME 3000	**220-230 V CONVERSION KIT** This kit is required to convert the 380-400 V models into the 220 or 230 V version.		**20163347**

(1) Without CE certification.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Note	Code	
		Rated delivery (kg/h)		BERGONZO TYPE B5 45° (2)	FLUIDICS TYPE N2 45° (3)
	GI/EMME 1400	70	(1)	**3009303**	**3045471**
	GI/EMME 1400	80	(1)	**3009305**	**3045472**
	GI/EMME 1400	90	(1)	**3009307**	**3045473**
	GI/EMME 1400-2000	100	(1)	**3009310**	**3045475**
	GI/EMME 1400-2000	125	(1)	**3009312**	**3045477**
	GI/EMME 2000-3000	150	(1)	**3009314**	**3045479**
	GI/EMME 2000-3000	175	(1)	**3009316**	**3045481**
	GI/EMME 2000-3000-4500	200	(1)	**3009318**	**3045483**
	GI/EMME 3000-4500	225	(1)	**3009320**	**3045485**
	GI/EMME 3000-4500	250	(1)	**3009322**	**3045487**
	GI/EMME 3000-4500	275	(1)	**3009324**	**3045489**
	GI/EMME 3000-4500	300	(1)	**3009326**	**3045491**
	GI/EMME 4500	325	(1)	**3009328**	**3045493**
	GI/EMME 4500	350	(1)	**3009330**	**3045495**
	GI/EMME 4500	375	(1)	**3009332**	**3045497**
	GI/EMME 4500	400	(1)	**3009334**	**3045499**

(1) Each burner needs N° 1 nozzle.
(2) Without “SA” needle code.
(3) Without needle code.

STATE OF SUPPLY

Monoblock forced draught dual fuel burner, two stage progressive or modulating operation with a kit, made up of:
- Air suction circuit
- Fan with forward curved blades
- Air damper for setting and butterfly valve for regulating fuel output controlled by a servomotor
- Combustion head, that can be set on the basis of required output
- Maximum gas pressure switch
- Minimum air pressure switch
- Fan electrical motor
- Pump electrical motor
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and a vacuometer
  - internal by-pass for single pipe installation
- Valve unit with a double oil safety valve on the output circuit and safety valve on the return circuit
- UV photocell for flame detection

- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) protection level

STANDARD EQUIPMENT

- 1 flange (for GI/EMME 1400)
- 1 gas train flange
- 8 screws for fixing the burner flange to the boiler (for GI/EMME 1400)
- 12 screws for fixing the burner flange to the boiler
- 1 insulating screen
- 2 flexible hoses for connection to the oil supply circuit
- 2 nipples for connection to the pump
- 4 wiring looms fittings for electrical connections
- 2 pin extensions
- 8 washers (for GI/EMME 1400)
- 12 washers
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Modulating dual fuel burners

RLS 1300-2000/E C11



- Modulating dual fuel burners

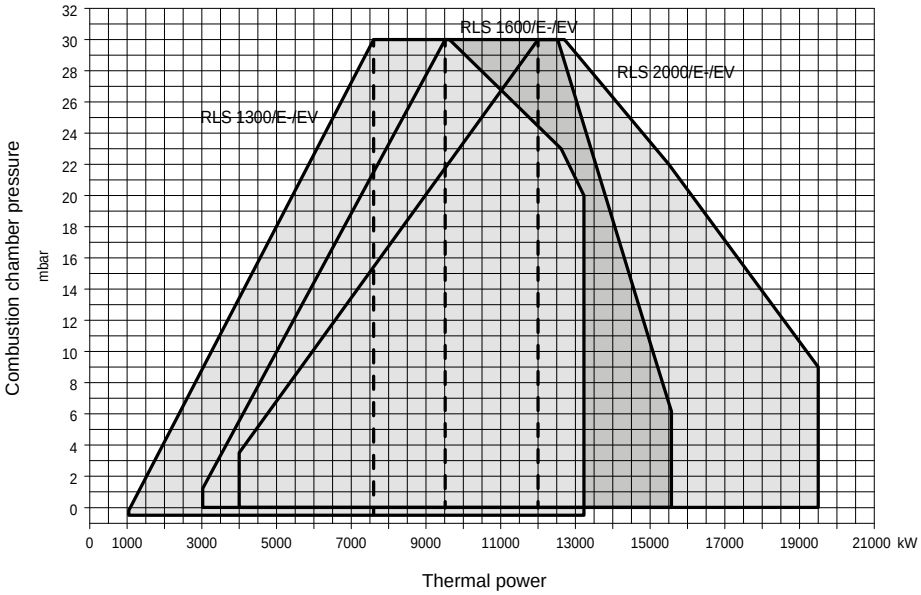
RLS 1300-2000/E C11 dual fuel burners series is characterized by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible. The burners cover a firing range from 7500 to 19500 kW and they have been designed for use in hot water boilers or industrial steam generators. Operation is modulating.
The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates range. The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction. The burner operation can be intermittent or continuous by menu setting. The innovative combustion head, adjustment system ensures perfect movement during modulation.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Note	Code
		Light oil	Natural Gas					
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)								
RLS 1300/E C11 TC FS1	1100/7500-13000	127/635-1102	110/750-1300	39.2 (oil) 34.5 (gas)	3/400/50	230/50-60	(1)(2)	**20081188**
RLS 1600/E C11 TC FS1	3065/9503-15560	259/802-1313	307/950-1556	48 (oil) 41.5 (gas)	3/400/50	230/50-60	(1)(2)	**20080870**
RLS 2000/E C11 TC FS1	4000/12000-19500	337/1013-1645	400/1200-1950	55.8 (oil) 49.3 (gas)	3/400/50	230/50-60	(1)(2)	**20080864**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.
(1) The maximum absorbed electric power is calculated considering the motor pump assembly.
(2) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES



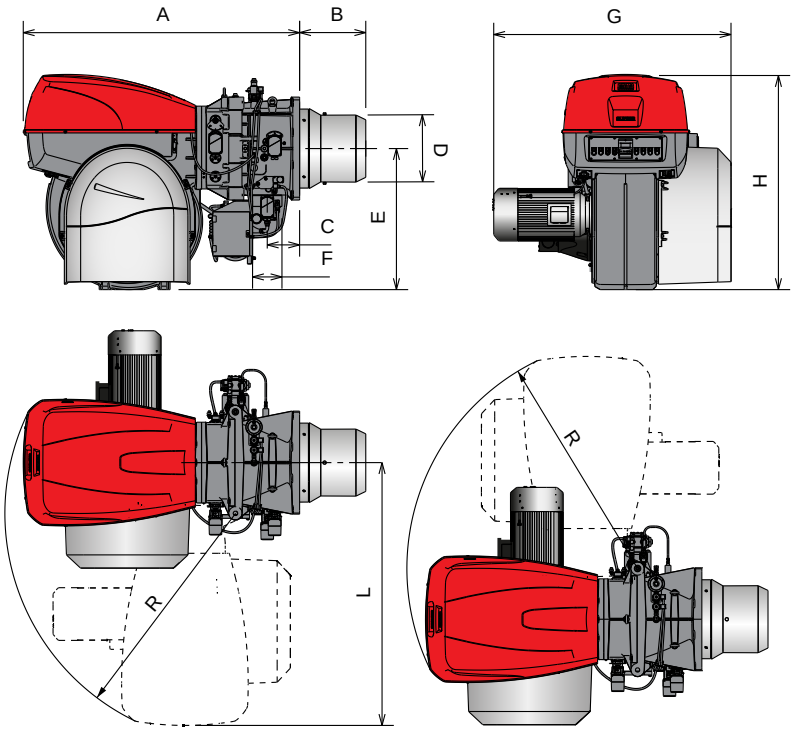
Useful working field for choosing the burner

Modulation range

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

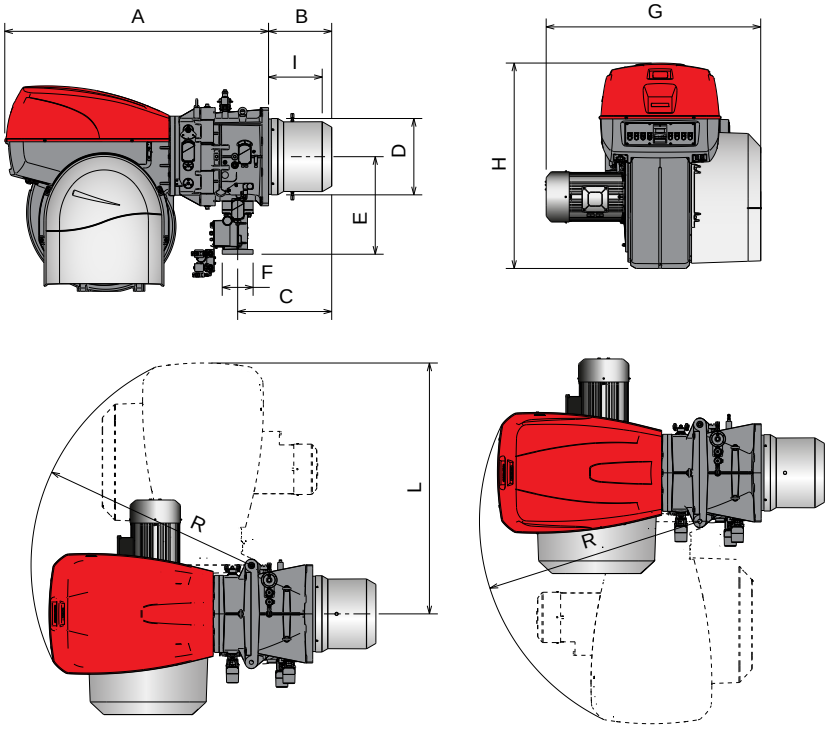
OVERALL DIMENSIONS

RLS 1300/E C11



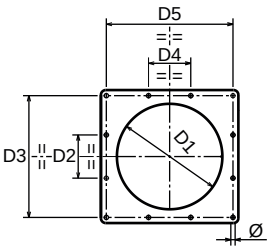
Description	A mm	B mm	C mm	D mm	E mm	F	G mm	H mm	I mm	L inch	R mm
RLS 1300/E C11	1880	450	220	544	459	DN80	1620	1463	380	1787	1564

RLS 1600-2000/E C11

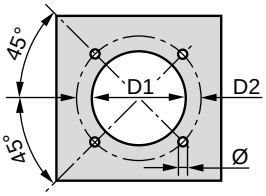


Description	A mm	B mm	C mm	D mm	E mm	F	G mm	H mm	I mm	L inch	R mm
RLS 1600/E C11	1880	450	220	544	960	DN100	1560	1464	383	1782	1564
RLS 2000/E C11	1880	450	220	544	960	DN100	1530	1464	383	1782	1564

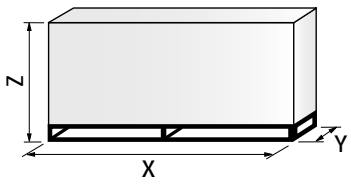
RLS 1300/E C11



RLS 1600-2000/E C11



Description	D1 mm	D2 mm	D3 mm	D4 mm	D5 mm	Ø mm
RLS 1300/E C11	580	220	620	215	645	M20
RLS 1600/E C11	580	645	-	-	-	M20
RLS 2000/E C11	580	645	-	-	-	M20

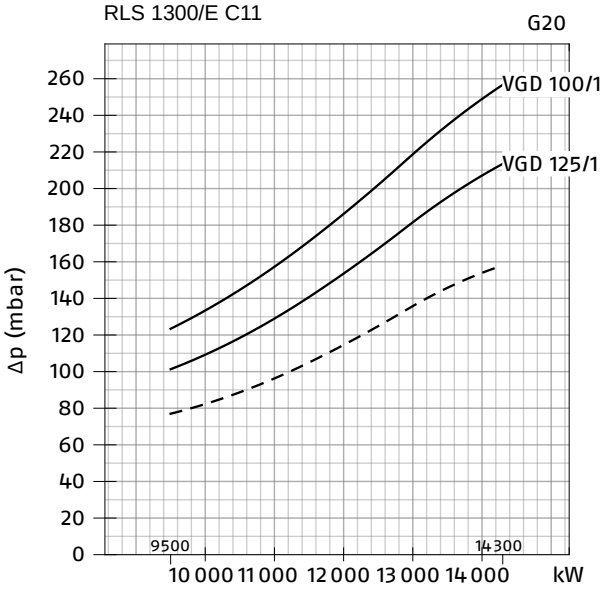


Description	X mm	Y mm	Z mm	Net weight kg
RLS 1300/E C11	3000	1800	1750	1000
RLS 1600/E C11	2600	1710	1700	1000
RLS 2000/E C11	2600	1710	1700	1000

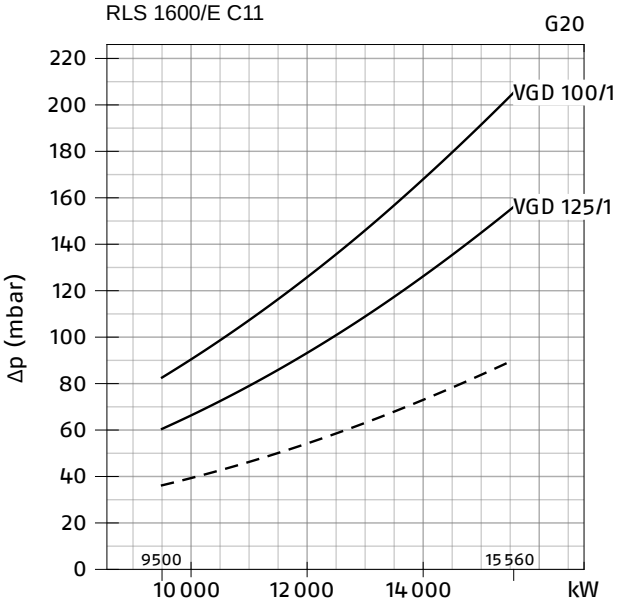
PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN

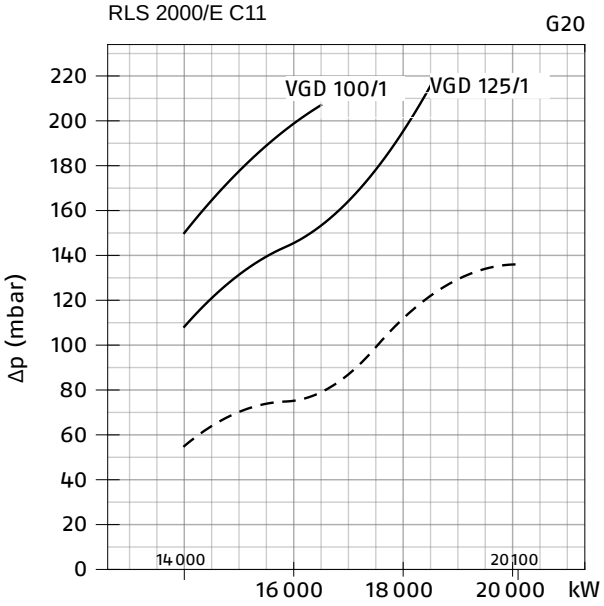
RLS 1300/E C11



RLS 1600/E C11



RLS 2000/E C11



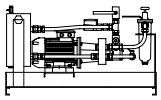
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

GAS TRAINS

Description (1)	Code	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)		
				RLS 1300/E C11	RLS 1600/E C11	RLS 2000/E C11
VGD SERIES ONE STAGE GAS TRAIN						
VGD 100/1-FT 122	**20169193***	DN100	(4)	20130602	20130616	
VGD 125/1-FT 122	**20169195***	DN125	(4)	20130606	20130617	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C9 Dimensions: A = 1690 mm, C = 110 mm, D = 1920 mm, E = 1605 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**20108736**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
	All models	DISPLAY AND OPERATING UNIT (AZL) This tool is needed for combustion system commissioning and monitoring.	(1)	**3010469**
	RLS 1600-200/E C11	**PUMP UNIT CONTROL BOX KIT** The RLS 1600-2000 burners must be combined with a pumping unit suitable for the output to be produced. The pump unit models available in combination with these burners are indicated in the table below. SG 1000 (Fuel = Light oil; Connection = 1"; Output at 30 bar = 2200 l/h; Motor = 4 kW; Burner max. output 900 kg/h)		**(2)**
		SG 1250 (Fuel = Light oil; Connection = 1"; Output at 30 bar = 3000 l/h; Motor = 4 kW; Burner max. output 1250 kg/h)		**(2)**
		SG 1500 (Fuel = Light oil; Connection = 1"; Output at 30 bar = 3600 l/h; Motor = 5.5 kW; Burner max. output 1500 kg/h)		**(2)**
		SG 2000 (Fuel = Light oil; Connection = 1"; Output at 30 bar = 4800 l/h; Motor = 7.5 kW; Burner max. output 2000 kg/h)		**(2)**
	All models	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) For Russian language only.
(2) On demand.

STATE OF SUPPLY

Monoblock forced draught dual fuel burner, suitable for gas and gasoil combustion, with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions, forward curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 400/690 V with neutral, 50Hz
- Mobile combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Ignition pilot burner
- Automatic regulator for gas and oil delivery, controlled by a high precision servomotor
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator
- Integrated light oil pump with dedicated motor on RLS 1300 model (separated pumping unit, to be ordered as accessory, for the RLS 1600 and RLS 2000 models)
- Oil delivery safety valves
- Maximum oil pressure switch
- Minimum oil pressure switch
- AZL Display Interface, for combustion system commissioning and monitoring, included
- Burner safety control included on Electronic Cam device
- IRD sensor flame detector
- Star/delta starter for the fan motor
- Main terminal supply board
- Volt-free contacts output relay
- Emergency button
- Fuel selector and enable signal to remote fuel selector
- Light signalling of main fuel valve open
- Voltage present warning lamp
- Light signalling fan motor and pump motor lockout
- Burner lockout warning lamp and reset switch
- Heat request light signalling
- Ventil motor contactor and thermal relay
- Star/Delta starter
- Off-automatic selector
- Pump motor contactor and thermal relay
- Burner opening hinge
- Lifting rings

– IP 55 electric protection level

STANDARD EQUIPMENT

– Gasket for gas train flange
– Gas flange fixing screws, M16 x 50
– Thermal insulation screen
– M20 x 70 for fixing the burner flange to the boiler
– M20 nuts to secure the burner to the boiler door
– Pressure switch (for leak detection control)
– Light oil flexible hoses
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Modulating dual fuel burners

RLS 1300-2000/EV C11



- Modulating dual fuel burners

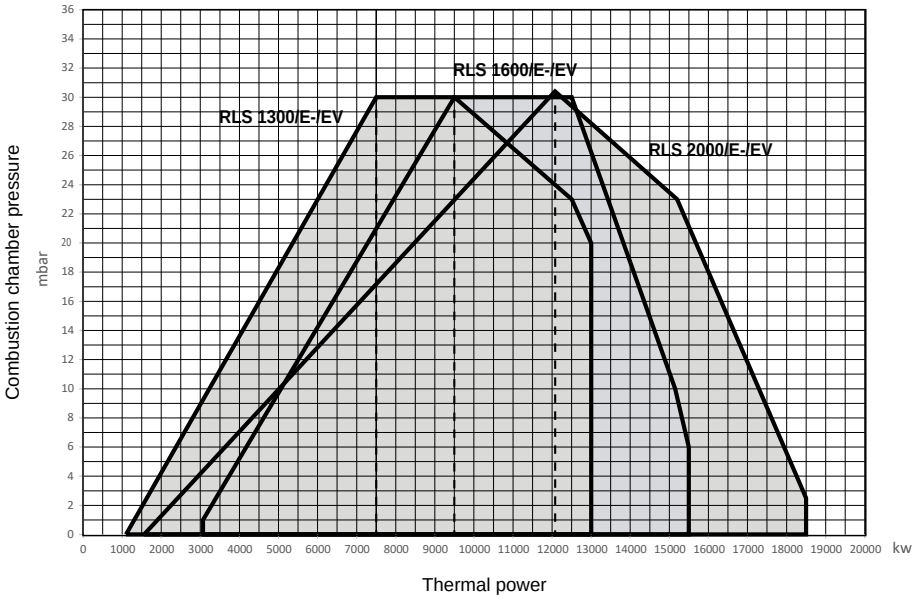
The RLS 1300-2000/EV C11 dual fuel burners series is characterized by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible. The burners cover a firing range from 7500 to 19500 kW and they have been designed for use in hot water boilers or industrial steam generators. Operation is modulating with variable speed drive operation.
The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates range. The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.
The burner operation can be intermittent or continuous by menu setting. The innovative combustion head, adjustment system ensures perfect movement during modulation.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Note	Code
		Light oil	Natural Gas					
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O2 CONTROL READY - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RLS 1300/EV C11 TC FS1	1100/7500-13000	127/635-1102	110/750-1300	39.2 (oil) 34.5 (gas)	3/400/50	230/50-60	(1)(2)	**20081187**
RLS 1600/EV C11 TC FS1	3070/9500-15500	259/802-1313	307/950-1556	48 (oil) 41.5 (gas)	3/400/50	230/50-60	(1)(2)	**20080869**
RLS 2000/EV C11 TC FS1	1560/12000-18500	337/1013-1645	400/1200-1950	55.8 (oil) 49.3 (gas)	3/400/50	230/50-60	(1)(2)	**20066055**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
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 267 - EN 676 Standards.
(1) The maximum absorbed electric power is calculated considering the motor pump assembly.
(2) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES



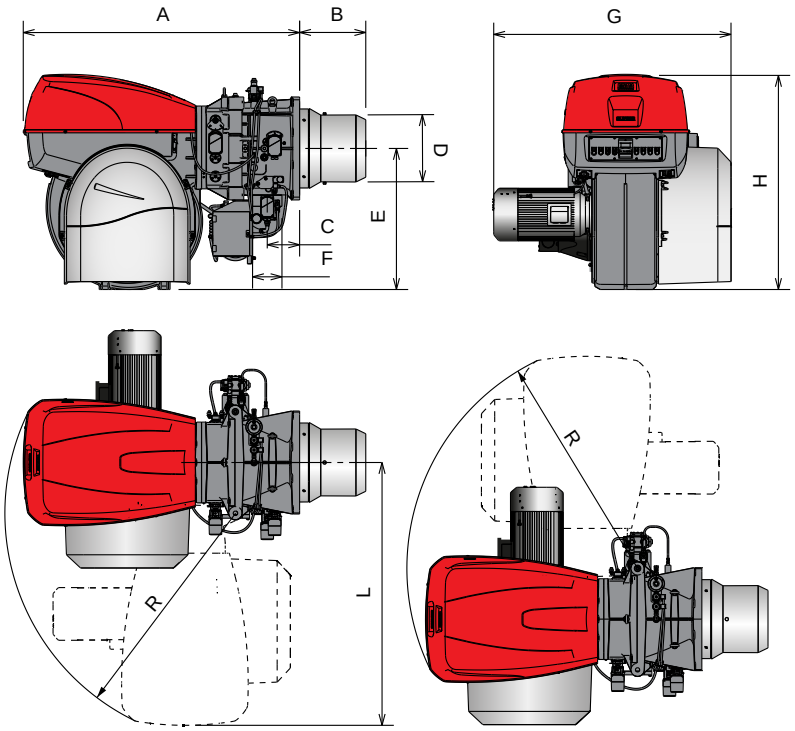
Useful working field for choosing the burner

Modulation range

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

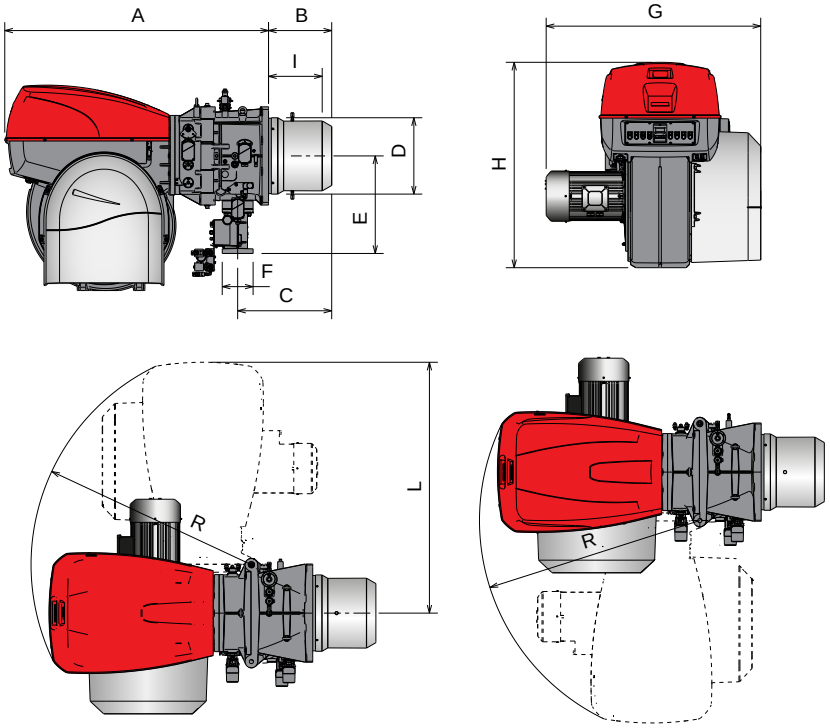
OVERALL DIMENSIONS

RLS 1300/EV C11



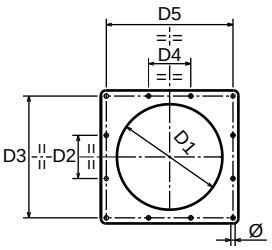
Description	A mm	B mm	C mm	D mm	E mm	F	G mm	H mm	I mm	L inch	R mm
RLS 1300/EV C11	1880	450	220	544	459	DN80	1620	1463	380	1787	1564

RLS 1600-2000/EV C11

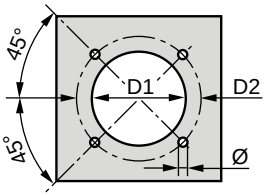


Description	A mm	B mm	C mm	D mm	E mm	F	G mm	H mm	I mm	L inch	R mm
RLS 1600/EV C11	1880	450	220	544	960	DN100	1560	1464	383	1782	1564
RLS 2000/EV C11	1880	450	220	544	960	DN100	1530	1464	383	1782	1564

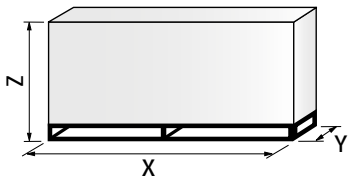
RLS 1300/EV C11



RLS 1600-2000/EV C11



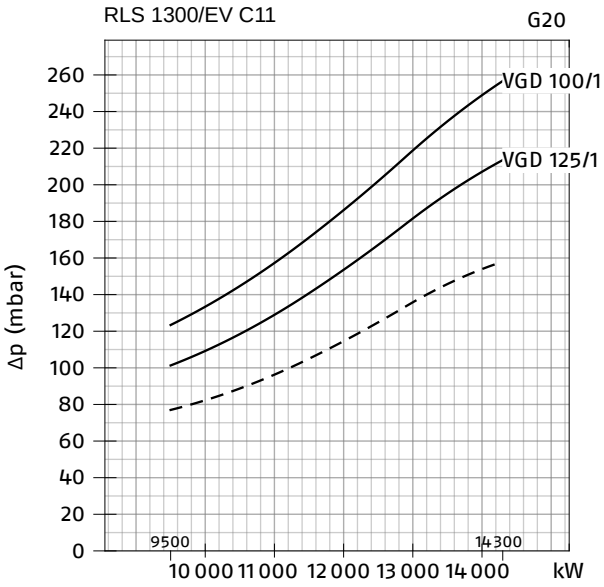
Description	D1 mm	D2 mm	D3 mm	D4 mm	D5 mm	Ø mm
RLS 1300/EV C11	580	220	620	215	645	M20
RLS 1600/EV C11	580	645	-	-	-	M20
RLS 2000/EV C11	580	645	-	-	-	M20

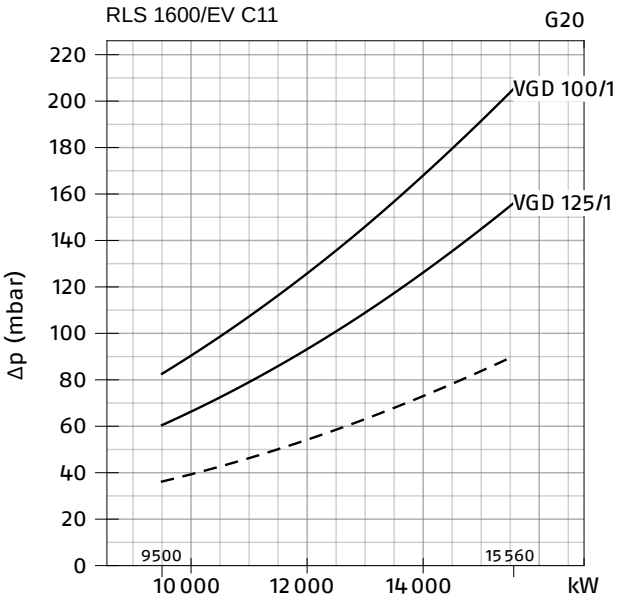


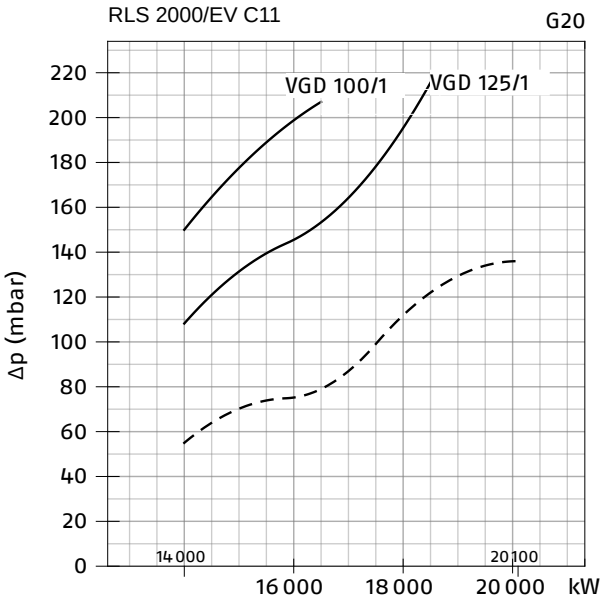
Description	X mm	Y mm	Z mm	Net weight kg
RLS 1300/EV C11	3000	1800	1750	1000
RLS 1600/EV C11	2600	1710	1700	1000
RLS 2000/EV C11	2600	1710	1700	1000

PRESSURE LOSS DIAGRAMS

VGD SERIES GAS TRAIN







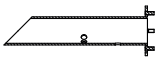
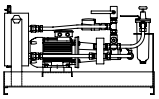
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

GAS TRAINS

Description (1)	Code	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)		
				RLS 1300/EV C11	RLS 1600/EV C11	RLS 2000/EV C11
VGD SERIES ONE STAGE GAS TRAIN						
VGD 100/1-FT 122	**20169193***	DN100	(4)	20130602	20130616	
VGD 125/1-FT 122	**20169195***	DN125	(4)	20130606	20130617	

(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) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(4) The seal control function is managed by LMV control box, by installation on gas train of a pressure switch.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C9 Dimensions: A = 1690 mm, C = 110 mm, D = 1920 mm, E = 1605 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**20108736**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application. Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
	All models	DISPLAY AND OPERATING UNIT (AZL) This tool is needed for combustion system commissioning and monitoring.	(1)	**3010469**
	All models	**OXYGEN CONTROL KIT (QGO_2)** The QGO_2 is an oxygen analizer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(2)	**20045187**
	All models	AIR/COMBUSTION FUME TEMPERATURE SENSOR The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV52 efficiency calculation. The value is showed on AZL display. Adjustment field: temperature - 100 ... +500 °C Probe type: PT 1000Ni1000		**3010377**
	RLS 1300/EV C11	VARIABLE SPEED DRIVE (VSD) The motor speed variation is obtained thanks to a frequency converter: variable speed drive (VSD), provided with a programming panel with start-up assistant. It always must be ordered with RLS/EV C11 series. Inverter power 30 kW - Electrical supply 400V - 50/60Hz		**20163100**
	RLS 1600/EV C11	Inverter power 37 kW - Electrical supply 400V - 50/60Hz		**20163105**
	RLS 2000/EV C11	Inverter power 45 kW - Electrical supply 400V - 50/60Hz		**20164366**
	All models	**FLUE GASES SENSOR BRACKET KIT** Available to be used as flue gas collector.		**20041585**
	RLS 1600-200/EV C11	**PUMP UNIT CONTROL BOX KIT** The RLS 1600-2000 burners must be combined with a pumping unit suitable for the output to be produced. The pump unit models available in combination with these burners are indicated in the table below. SG 1000 (Fuel = Light oil; Connection = 1"; Output at 30 bar = 2200 l/h; Motor = 4 kW; Burner max. output 900 kg/h).		**(3)**
		SG 1250 (Fuel = Light oil; Connection = 1"; Output at 30 bar = 3000 l/h; Motor = 4 kW; Burner max. output 1250 kg/h).		**(3)**
		SG 1500 (Fuel = Light oil; Connection = 1"; Output at 30 bar = 3600 l/h; Motor = 5.5 kW; Burner max. output 1500 kg/h).		**(3)**
		SG 2000 (Fuel = Light oil; Connection = 1"; Output at 30 bar = 4800 l/h; Motor = 7.5 kW; Burner max. output 2000 kg/h).		**(3)**
	All models	PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.		**3010388**

(1) For Russian language only.
(1) Installation outside the burner cover.
An additional transformer kit is needed to guarantee the power supply to the PLL device in case of installation where the distance between the last servomotor and the PLL kit is greater than 20 meters. Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.
(3) On demand.

STATE OF SUPPLY

Monoblock forced draught dual fuel burner, suitable for gas and light oil combustion, with modulating operation, fully automatic, made up of:
- High performance fan with low sound emissions, forward curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 400/690 V with neutral, 50Hz
- Mobile combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Ignition pilot burner
- Automatic regulator for gas and oil delivery, controlled by a high precision servomotor
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator
- Integrated light oil pump with dedicated motor on RLS 1300 model (separated pumping unit, to be ordered as accessory, for the RLS 1600 and RLS 2000 models)
- Oil delivery safety valves
- Maximum oil pressure switch
- Minimum oil pressure switch
- AZL Display Interface, for combustion system commissioning and monitoring, included
- Burner safety control included on Electronic Cam device
- IRD sensor flame detector
- Star/delta starter for the fan motor
- Main terminal supply board
- Volt-free contacts output relay
- Emergency button
- Fuel selector and enable signal to remote fuel selector
- Light signalling of main fuel valve open
- Voltage present warning lamp
- Light signalling fan motor and pump motor lockout
- Burner lockout warning lamp and reset switch
- Heat request light signalling
- Ventil motor contactor and thermal relay
- Star/Delta starter
- Off-automatic selector
- Pump motor contactor and thermal relay
- Burner opening hinge
- Lifting rings
- IP 55 electric protection level

STANDARD EQUIPMENT

- Gasket for gas train flange
- Gas flange fixing screws, M16 x 50
- Thermal insulation screen
- M20 x 70 for fixing the burner flange to the boiler
- M20 nuts to secure the burner to the boiler door
- Pressure switch (for leak detection control)
- Light oil flexible hoses
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Modulating dual fuel burners

ENNE/EMME 1400-4500



- Modulating dual fuel burners

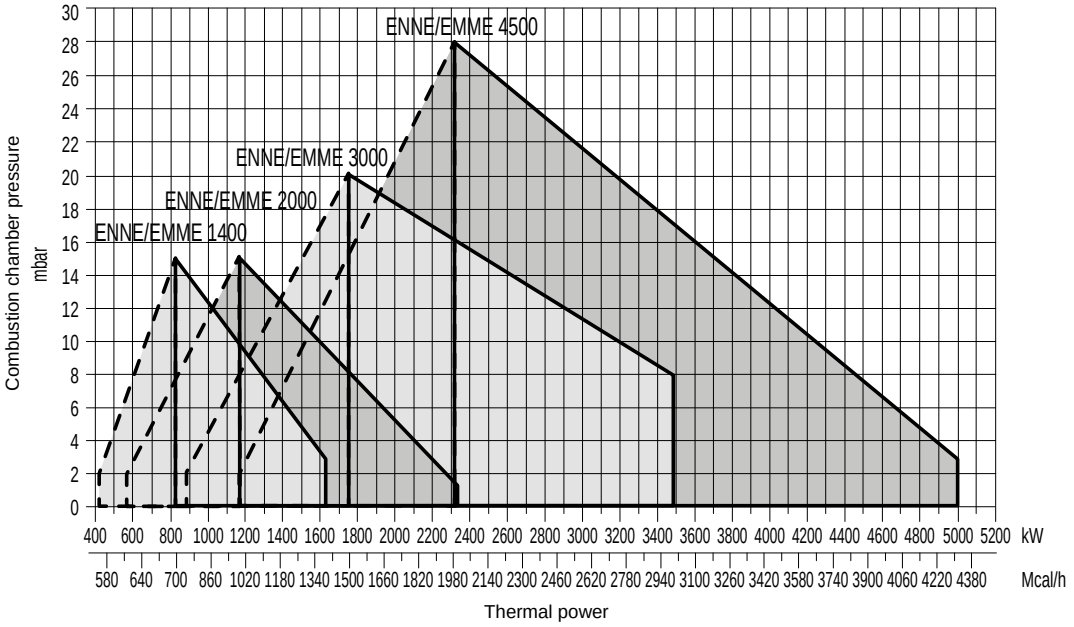
ENNE/EMME 1400-4500 series of burners covers a firing range from 407 to 5000 kW.
They have been designed for high output users and they are suitable for matching with every kind of boilers, with normal or pressurized combustion chamber.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes. Two fuel options are available: only gas and only heavy oil, thus settable by a manual switch. Heavy oil circuit is fitted with his own electric motor: this permits pump stop during gas operation preventing danger of pumping seizure and avoiding oil circulation. A wide range of accessories and gas trains suitable to the burners guarantee an elevated working flexibility.

TECHNICAL DATA

Description	Heat output			Total electrical power	Electric power supply		Note	Code
		Light oil	Natural Gas					
	kW	kg/h	(Nm³/h)	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
ENNE/EMME 1400 TC FS1	407/814-1628	35/70-140	41/81-163	6.5 (oil) 5.2 (gas)	3/400/50	230/50	(3)	**20206091**
ENNE/EMME 2000 TC FS1	581/1163-2325	50/100-200	58/116-233	6.6 (oil) 5.3 (gas)	3/400/50	230/50	(3)	**20205599**
ENNE/EMME 2000 TL FS1	581/1163-2325	50/100-200	58/116-233	6.6 (oil) 5.3 (gas)	3/400/50	230/50	(3)	**20206094**
ENNE/EMME 3000 TC FS1	872/1744-3488	75/150-300	87/174-349	10.6 (oil) 12.4 (gas)	3/400/50	230/50	(1)(3)	**20205606**
ENNE/EMME 4500 TC FS1	1163/2325-5000	100/200-430	116/233-500	18.7 (oil) 16.9 (gas)	3/400/50	230/50	(2)(3)	**20208705**

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt), Type BUNKER B / USA n° 5 (with separate 1400 rpm low speed pump, heavy oil heating cartridges factory installed on pump and valves group).
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 267 - EN 676 Standards.
(1) Star/delta starter.
(2) For the 3/230/50 version use the 220 - 230 V conversion kit (see the burner accessories paragraph).
(3) Model with LFL control box.

FIRING RATES

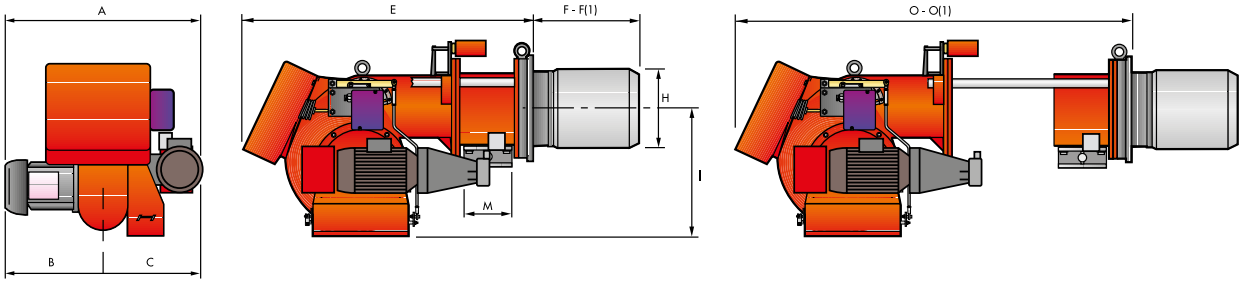


Useful working field for choosing the burner

Modulation range

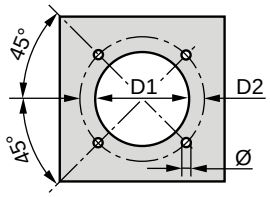
Test conditions conforming to EN 267-EN 676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

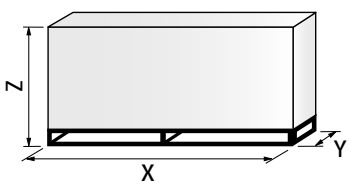


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	M	O - O (1) mm
ENNE/EMME 1400	940	376	564	1090	385 - 495	250	467	Rp 2”	1475 - 1585
ENNE/EMME 2000	960	396	564	1090	385 - 495	260	467	DN80	1475 - 1585
ENNE/EMME 3000	1000	447	553	1320	476 - 606	336	525	DN80	1796 - 1926
ENNE/EMME 4500	1061	508	553	1320	476 - 606	336	525	DN80	1796 - 1926

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø
ENNE/EMME 1400	255	368	M16
ENNE/EMME 2000	265	368	M16
ENNE/EMME 3000	340	438	M20
ENNE/EMME 4500	340	438	M20



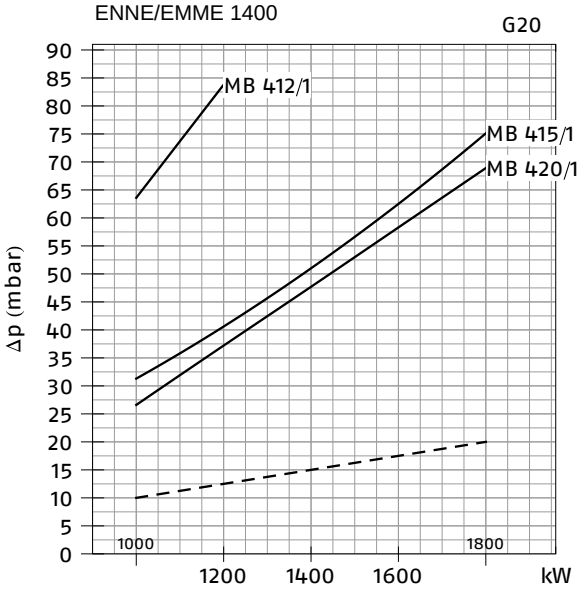
Description	X - X(1) mm	Y mm	Z mm	Net weight kg
ENNE/EMME 1400	1740 - 1740	990	950	265
ENNE/EMME 2000	1740 - 1740	990	950	265
ENNE/EMME 3000	2040 - 2040	1180	1125	280
ENNE/EMME 4500	2040 - 2040	1180	1125	500

(1) Length with extended combustion head.

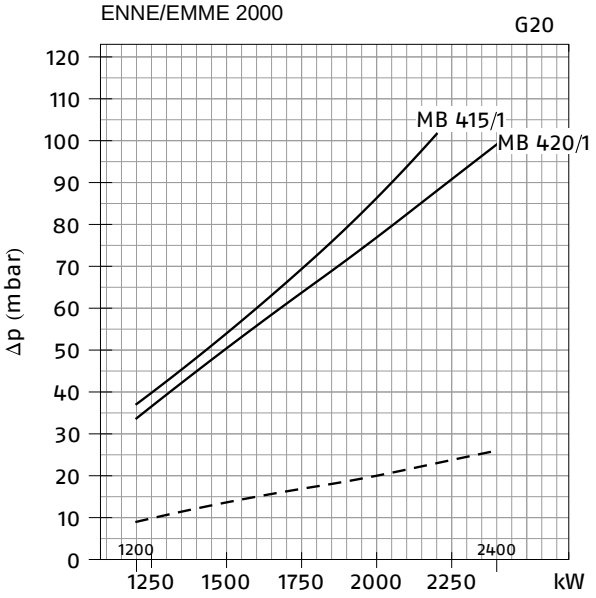
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

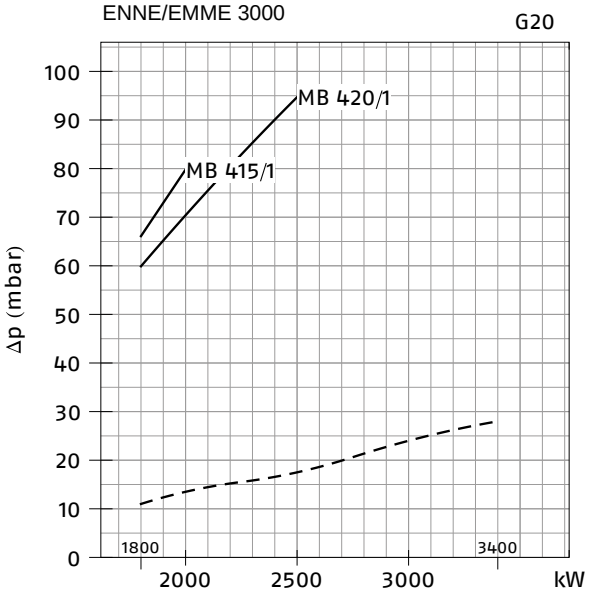
ENNE/EMME 1400



ENNE/EMME 2000



ENNE/EMME 3000



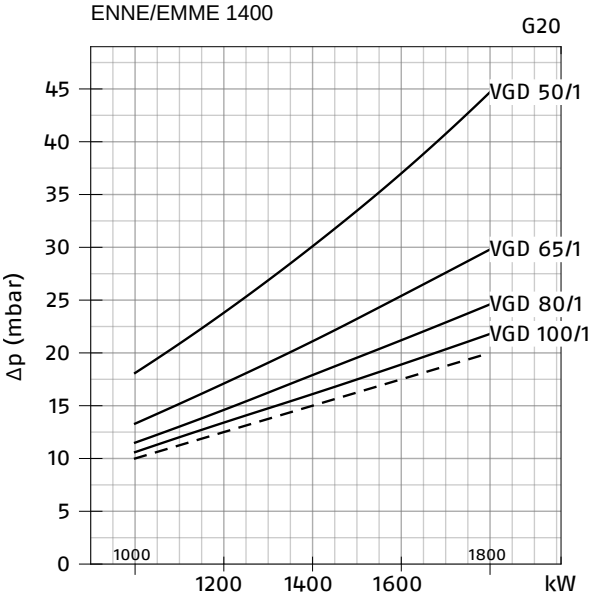
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

——— Combustion head + gas train

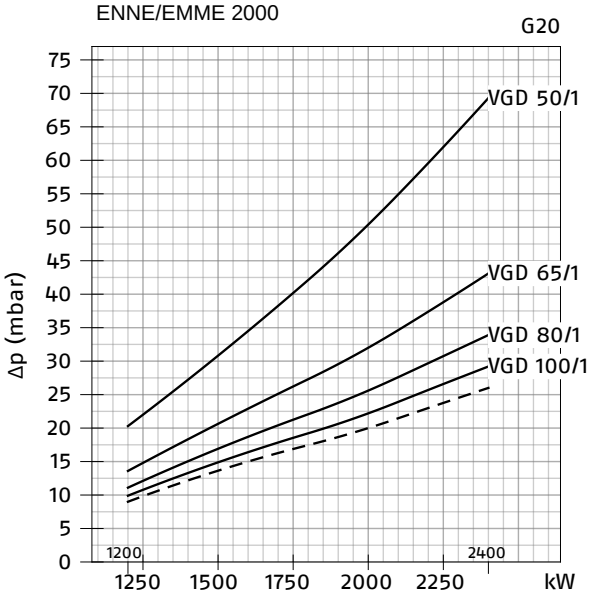
- - - - Combustion head

VGD SERIES GAS TRAIN

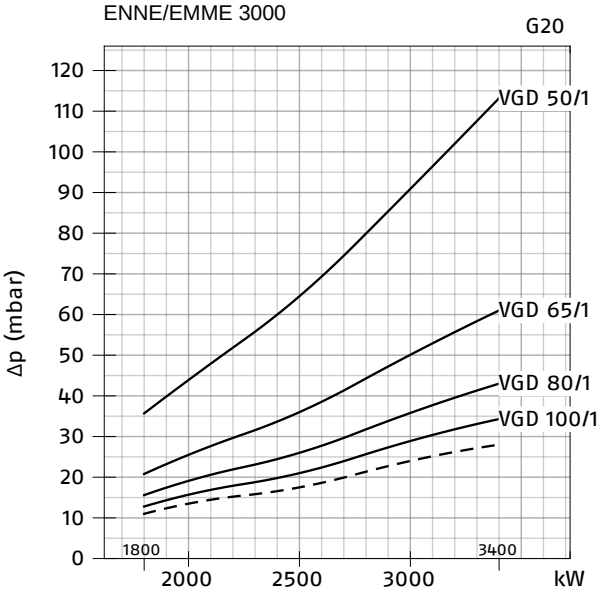
ENNE/EMME 1400



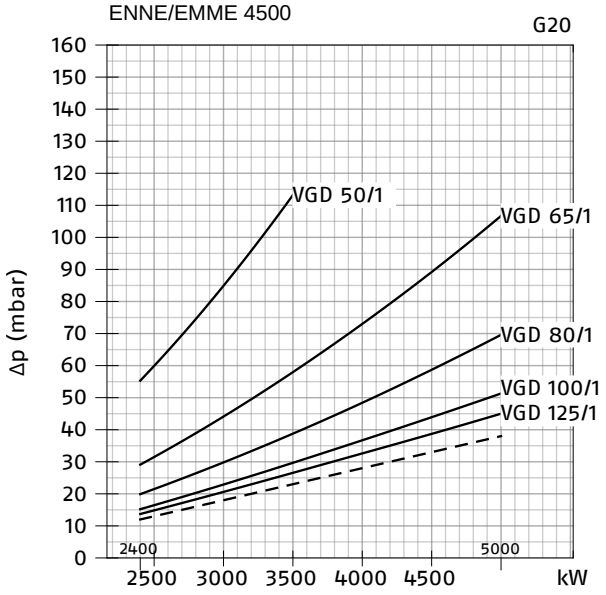
ENNE/EMME 2000



ENNE/EMME 3000



ENNE/EMME 4500



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)	VPS kit code (3)	Burner-gas train adapter (4)			
						N/M 1400	N/M 2000	N/M 3000	N/M 4500
MB SERIES ONE STAGE GAS TRAIN									
MB 415/1 - RT 30	**3970180***		Rp 1" ½	-	3010123	3000843	20064220+3010128		●
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦				●
MB 415/1 - RT 52	**3970250***		Rp 1" ½	-	3010123		20064220+3010128		●
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦				●
MB 415/1 - RSM 30	**3970232***		Rp 1" ½	-	3010123		20064220+3010128		●
MB 420/1 - RT 30	**3970181***		Rp 2"	-	3010123	□	20042324+3010128		●
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	□			●
MB 420/1 - RT 52	**3970257***		Rp 2"	-	3010123	□	20042324+3010128		●
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	□			●
MB 420/1 - RSM 30	**3970233***		Rp 2"	-	3010123	□	20042324+3010128		●
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	□			●
VGD SERIES ONE STAGE GAS TRAIN									
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	□	20042324+3010128		
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	□	20042324+3010128		
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826	3000832		
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826	3000832		
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	3000826	3000832		
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	3000826	3000832		
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	3010370+ 3000826	3010127		
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	3010370+ 3000826	3010127		
VGD 125/1 - FT 122	**20169195***		DN 125	-	(6)	●	●	(6)	

(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) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
(6) On demand.
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.
♦ Gas train equipped with leak detection control device.
□ Additional adapter not necessary, the gas train may be connected directly to the burner.
● Gas train not available or not suitable for the matching to the burner.

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	N/M 1400-2000	Spacer thickness S = 102 mm		**3000722**
	N/M 3000-4500	Spacer thickness S = 130 mm		**3000751**
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. The sound-proofing boxes are not suitable for outdoor use. Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1140 mm, E = 1645 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010376**
	All models	**POWER CONTROLLER** To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20100018**
		RWF 55.5 - Plus version.		**20101965**
	All models	**TEMPERATURE PROBE** The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**

Drawing	Burner model	Specification	Note	Code
		**PRESSURE PROBE** The pressure probe to be fitted to the power controller must be chosen based on the application.		
	All models	Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
	All models	Pressure (0-16 bar) with 4-20 mA output.		**3010214**
	All models	Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	**POTENTIOMETER** Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**20096322**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	N/M 1400-2000	Kit code for standard and extended head.	(1)	**3010063**
	N/M 3000	Kit code for standard and extended head.	(1)	**3090223**
	N/M 4500	Kit code for standard and extended head.	(1)	**3090937**
	All models	**SELF-CLEANING FILTER** For cleaning heavy oil from dirty particles and impurities, it is equipped with a thermostatic heater for oil with 60 °E viscosity at 50 °C.		
		Filter type: Ø = Rp 1” ½ (60 °E at 50 °C) - Filtering degree: 300 µm.		**3010022**
		Thermostatic heater with LED.		**3010050**
	N/M 3000-4500	**DEGASING UNIT** In modulating burner, gas separator bottle connects the burner circuit to the main ring circuit. It allows to recover heat in excess by discharge of the gas from the return circuit. Kit code is available.		**3010012**
	N/M 3000-4500	**220-230 V CONVERSION KIT** This kit is required to convert the 380-400 V models into the 220 or 230 V version.		**20163347**

(1) Without CE certification.

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

Drawing	Burner model	Specification	Note	Code	Code
		Rated delivery (kg/h)		BERGONZO B5 45°- WITH “AA” NEEDLE CODE	FLUIDICS W2 45°- WITH “AA” NEEDLE CODE
	ENNE/EMME 1400	70	(1)	**3009203**	**3045426**
	ENNE/EMME 1400	80	(1)	**3009205**	**3045427**
	ENNE/EMME 1400	90	(1)	**3009207**	**3045428**
	ENNE/EMME 1400-2000	100	(1)	**3009209**	**3045430**
	ENNE/EMME 1400-2000	125	(1)	**3009211**	**3045432**
	ENNE/EMME 1400-2000-3000	150	(1)	**3009213**	**3045434**
	ENNE/EMME 2000-3000	175	(1)	**3009215**	**3045436**
	ENNE/EMME 2000-3000-4500	200	(1)	**3009800**	**3045438**
	ENNE/EMME 3000-4500	225	(1)	**3009801**	**3045440**
	ENNE/EMME 3000-4500	250	(1)	**3009802**	**3045442**
	ENNE/EMME 3000-4500	275	(1)	**3009803**	**3045444**
	ENNE/EMME 3000-4500	300	(1)	**3009804**	**3045446**
	ENNE/EMME 4500	325	(1)	**3009805**	**3045448**
	ENNE/EMME 4500	350	(1)	**3009806**	**3045450**
	ENNE/EMME 4500	375	(1)	**3009807**	**3045452**
	ENNE/EMME 4500	400	(1)	**3009808**	**3045454**
	ENNE/EMME 4500	425	(1)	**3009809**	**3045455**
	ENNE/EMME 4500	450	(1)	**3009810**	**3045456**

(1) Each burner needs N° 1 nozzle.

STATE OF SUPPLY

Monoblock forced draught dual fuel burner, two stage progressive or modulating operation with a kit, made up of:
- Air suction circuit
- Fan with forward curved blades
- Air damper for setting and butterfly valve for regulating fuel output controlled by a servomotor
- Combustion head, that can be set on the basis of required output
- Maximum gas pressure switch
- Minimum air pressure switch
- Fan electrical motor
- Dedicated 1400 rpm low speed pump motor
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and a vacuometer
  - internal by-pass for single pipe installation
- Preheater unit
- Valve unit with a double oil safety valve on the output circuit and safety valve on the return circuit
- Heavy oil heating cartridges factory installed on pump and valves group
- UV photocell for flame detection
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) protection level

STANDARD EQUIPMENT

- 1 gas train flange
- 12 screws for fixing the burner flange to the boiler
- 1 insulating screen
- 2 flexible hoses for connection to the oil supply circuit
- 2 nipples for connection to the pump
- 4 wiring looms fittings for electrical connections
- 2 pin extensions
- 8 washers
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

HEAVY OIL BURNERS

STANDARD

Standard NOx emissions, lower than Class 1 of European Standard EN 267 (NOx lower than 250 mg/kWh) or, with MZ burner models, lower than Class 2 of European Standard EN 267 (NOx lower than 185 mg/kWh)

TWO STAGE



PRESS N

PRESS 30 N (85/171-342 kW)
PRESS 45 N (114/205-513 kW)
PRESS 60 N (171/342-684 kW)
PRESS 100 N (285/490-1140 kW)

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THREE STAGE



PRESS T/N

PRESS 140 T/N (320/800-1600 kW)
PRESS 200 T/N (515/1140-2280 kW)
PRESS 300 T/N (626/1710-3420 kW)
PRESS 450 T/N (855/2560-5130 kW)

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MODULATING MECHANICAL CAM



PRESS P/N

PRESS 140 P/N (4000/800-1600 kW)
PRESS 200 P/N (570/1140-2280 kW)
PRESS 300 P/N (683/1710-3420 kW)
PRESS 450 P/N (1140/2615-5130 kW)

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MODULATING MECHANICAL CAM WITH AIR/STEAM ATOMIZING



PRESS P/NA

PRESS 140 P/NA (4000/800-1600 kW)
PRESS 200 P/NA (570/1140-2280 kW)
PRESS 300 P/NA (683/1710-3420 kW)
PRESS 450 P/NA (1140/2615-5130 kW)

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Two stage heavy oil burners

PRESS N



- Two stage heavy oil burners

PRESS N series of burners covers a firing range from 85 to 1140 kW and they have been designed for use in civil installations of average dimensions, like building areas and large apartment groups or for use in industrial applications, like small or medium plants.
Operation is two stage; a servomotor adjust automatically air damper opening, to obtain the right air delivery on both stage. The burners are fitted with a microprocessor control panel which supplies indication of operation and diagnosis of fault cause.
The combustion head, that can be set on the basis of required output, allows optimal performance ensuring good combustion and reducing fuel consumption and is available in two different length to be selected on the basis of specific application requirements.
In basic version the burners are supplied for use with heavy oil 7 °E viscosity, but they can be supplied with higher viscosity oil with a specific heaters kit.
Simplified maintenance is achieved by the slide bar system, which allows easy access to all of the essential components of the combustion head.

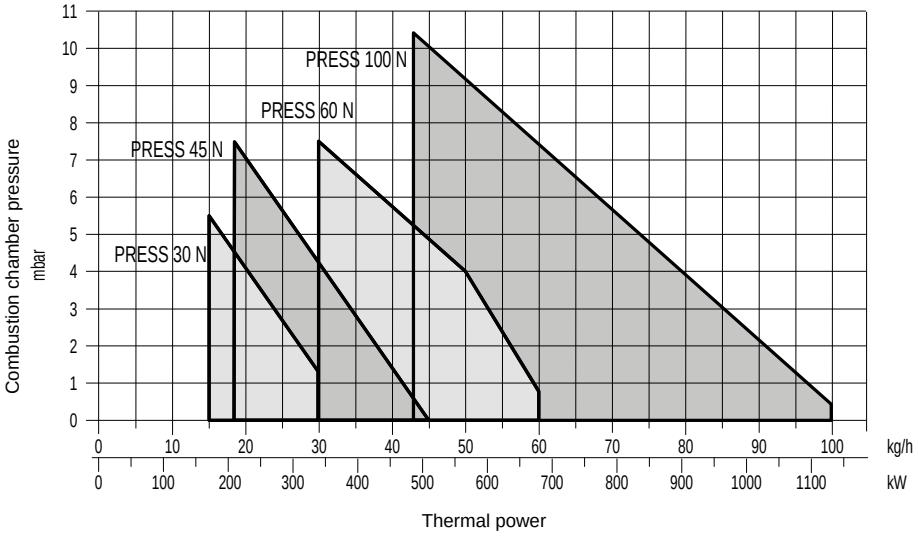
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With 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.

TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)							
PRESS 30 N TC FS1	85/171-342	7.5/15-30	3.4	1/230/50	230/50	(1)	**20201572**
PRESS 30 N TL FS1	85/171-342	7.5/15-30	3.4	1/230/50	230/50	(1)	**20201573**
PRESS 45 N TC FS1	114/205-513	10/18-45	3.6	3/400/50	230/50	(1)	**20200649**
PRESS 45 N TL FS1	114/205-513	10/18-45	3.6	3/400/50	230/50	(1)	**20200650**
PRESS 60 N TC FS1	171/342-684	15/30-60	5.5	3/400/50	230/50	(1)	**20199935**
PRESS 60 N TL FS1	171/342-684	15/30-60	5.5	3/400/50	230/50	(1)	**20199970**
PRESS 100 N TC FS1	285/490-1140	25/43-100	9.0	3/400/50	230/50	(1)	**20200231**
PRESS 100 N TL FS1	285/490-1140	25/43-100	9.0	3/400/50	230/50	(1)	**20200232**

Net calorific value of heavy oil: 11.16 kWh/kg; 9,600 kcal/kg - Max Viscosity at 50 °C: 7 °E (50 mm^2/s, cSt), Type MEDIUM HEAVY OIL / USA n° 4.
For viscosity higher 7 °E up to 60 °C (450 mm2/s, cSt), heavy oil, heating cartridges or nozzle, pump and valves group plus pipe heating cables, factory installed are available. Please ask for specific codes.
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) No. 2 nozzles as standard equipment.

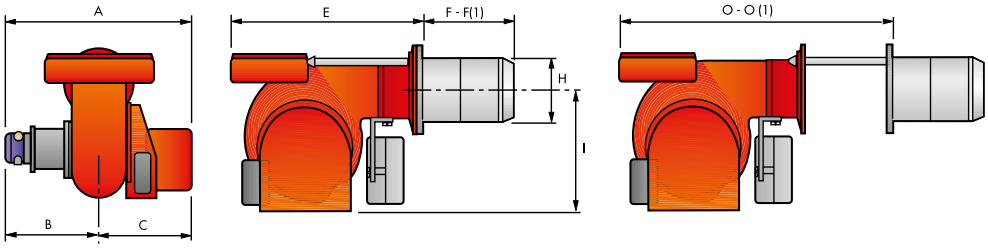
FIRING RATES



Useful working field for choosing the burner

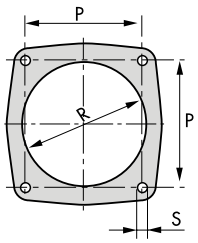
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

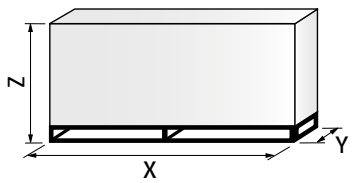


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
PRESS 30 N	625	335	290	625	185 - 320	161	305	905 - 1080
PRESS 45 N	625	335	290	625	235 - 370	161	305	925 - 1100
PRESS 60 N	625	335	290	660	245 - 400	172	335	940 - 1115
PRESS 100 N	625	335	290	710	250 - 410	195	370	1010 - 1195

(1) Length with extended combustion head.



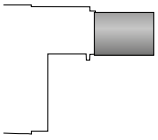
Description	P mm	R mm	S mm
PRESS 30 N	160	170	M10
PRESS 45 N	160	170	M10
PRESS 60 N	160	180	M10
PRESS 100 N	195	205	M12



Description	X - X(1) mm	Y mm	Z mm	Net weight kg
PRESS 30 N	1000 - 1015	790	550	84
PRESS 45 N	1000 - 1200	790	550	84
PRESS 60 N	925 - 1200	790	650	87
PRESS 100 N	1000 - 1200	790	650	104

(1) Length with extended combustion head.

ACCESSORIES

Drawing	Burner model	Specification	Code
		**EXTENDED HEAD KIT** “Standard head” burners can be transformed into “extended head” versions, by using the special kit. The kits available for the various burners, giving the original and the extended lengths, are listed below.	
	PRESS 60 N	Standard head length = 245 mm - Extended head length = 400 mm	**3092198**
		**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the list.	
	PRESS 30-45-60 N	Spacer thickness S = 142 mm	**3000755**
	PRESS 100 N	Spacer thickness S = 142 mm	**3000802**
	All models	**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the Box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010404**
		**SELF-CLEANING FILTER** For cleaning heavy oil from dirty particles and impurities, it is equipped with a thermostatic heater for oil with 50 °E viscosity at 50 °C.	
	All models	Filter type Ø =1 50 °E - 50 °C.	**3000790**
	All models	Thermostatic heater type 80 W.	**3010059**
		**HEAVY OIL KIT** Equipped with electrical heaters, it permits the employment of PRESS N burners with fuel oil of max. viscosity 20 °E at 50 °C (type BUNKER B / USA n° 5).	
	PRESS 30-45 N	Max. viscosity 20 °E at 50 °C	**20134878**
	PRESS 60-100 N	Max. viscosity 20 °E at 50 °C	**3010013**
	All models	**CARTRIDGE FILTER** For cleaning heavy oil from dirty particles and impurities, it is equipped with a cartridge system equipped with electronic resistance for oil with 7 °E viscosity at 50 °C.	**3005209**
	All models	**PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES)** When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required output.

Drawing	Burner model	Specification		Note	Code
		GPH	Rated delivery (kg/h) at 20 bar		TYPE F80 PL 45°
	PRESS 30-45 N	2	10.6	(1)	**3043121**
	PRESS 30-45 N	2.25	11.9	(1)	**3043131**
	PRESS 30-45-60 N	2.5	13.2	(1)	**3043141**
	PRESS 45-60 N	3	15.8	(1)	**3043151**
	PRESS 45-60-100 N	3.5	18.5	(1)	**3043161**
	PRESS 45-60-100 N	4	21.1	(1)	**3043171**
	PRESS 60-100 N	4.5	23.7	(1)	**3043181**
	PRESS 60-100 N	5	26.4	(1)	**3043191**
	PRESS 100 N	5.5	29	(1)	**3043201**
	PRESS 100 N	6	31.7	(1)	**3043211**
	PRESS 100 N	6.5	34.3	(1)	**3043221**
	PRESS 100 N	7	36.9	(1)	**3043231**
	PRESS 100 N	7.5	39.6	(1)	**3043241**
	PRESS 100 N	8.5	44.8	(1)	**3043261**

(1) Each burner needs N° 2 nozzles.

Drawing	Burner model	Specification		Note	Code
		GPH	Rated delivery (kg/h) at 20 bar		TYPE F80 PL 60°
	PRESS 30 N	1.25	6.6	(1)	**3041092**
	PRESS 30-45 N	1.5	7.9	(1)	**3041102**
	PRESS 30-45 N	1.75	9.2	(1)	**3041112**
	PRESS 30-45 N	2	10.6	(1)	**3043122**
	PRESS 30-45 N	2.25	11.9	(1)	**3043132**
	PRESS 30-45-60 N	2.5	13.2	(1)	**3043142**
	PRESS 45-60 N	3	15.8	(1)	**3043152**
	PRESS 45-60-100 N	3.5	18.5	(1)	**3043162**
	PRESS 45-60-100 N	4	21.1	(1)	**3043172**
	PRESS 60-100 N	4.5	23.7	(1)	**3043182**
	PRESS 60-100 N	5	26.4	(1)	**3043192**
	PRESS 100 N	5.5	29	(1)	**3043202**
	PRESS 100 N	6	31.7	(1)	**3043212**
	PRESS 100 N	6.5	34.3	(1)	**3043222**
	PRESS 100 N	7	36.9	(1)	**3043232**
	PRESS 100 N	7.5	39.6	(1)	**3043242**
	PRESS 100 N	8.5	44.8	(1)	**3043262**

(1) Each burner needs N° 2 nozzles.

STATE OF SUPPLY

Monoblock forced draught heavy oil burner, two stage operation, made up of:
- Air suction circuit
- Fan with forward curved blades
- Air dampers for air setting controlled by a servomotor
- Starting motor at 2850 rpm
- Combustion head, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Valve unit with a double oil safety valve on the output circuit;
- Oil preheater provided with chance of a thermometer application for temperature control;
- Servomotor for air damper regulation;
- Photocell for flame detection;
- Microprocessor-based burner safety control box, with diagnostic function
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) protection level

STANDARD EQUIPMENT

- 2 flexible hoses for pipe connection
- 2 gaskets for flexible hoses
- 2 nipples for flexible hoses
- 1 thermal insulation screen
- 4 screws for fixing the burner flange to the boiler
- 2 nozzles (see table of available burner model)
- 2 extensions for bars (for long head version)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Three stage heavy oil burners

PRESS T/N



- Three stage heavy oil burners

PRESS T/N series of burners covers a firing range from 320 to 5130 kW. They have been designed in three versions for use in commercial and industrial installations, to burn different oil viscosity from 7 up to 60 °E @ 50 °C. Operation is three-stage, thus making these burners suitable for installations that have variable but predictable heating requirments.
A servomotor adjusts automatically air damper to the opening value, determined to obtain always the necessary fuel consumption. Every model of PRESS T/N series is available in two different combustion head length (short or long head) to be selected on the basis of specific application requirements.
An electric preheater has been fitted to maintain the oil at the correct atomising temperature at maximum output and special heaters kits are separately supplied for burning high viscosity oil.
Simplified maintenance is achieved by the Riello designed slide bar system, which allows easy access to all of the essential components of the combustion head.

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.

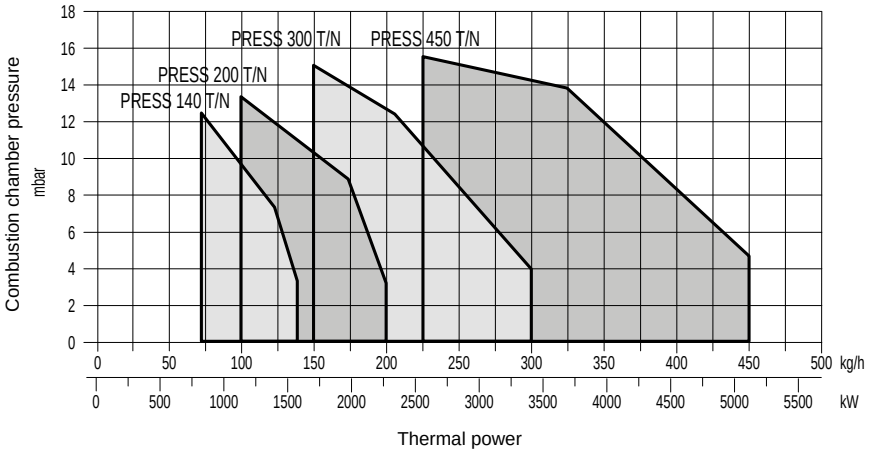
TECHNICAL DATA

Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)							
PRESS 140 T/N TC FS1	320/800-1600	28-140	19	3/400/50	230/50	(1)	**20205053**
PRESS 140 T/N TL FS1	320/800-1600	28-140	19	3/400/50	230/50		**20205054**
PRESS 140 T/N TC FS1	320/800-1600	28-140	19	3/380/60	220/60		**20207009**
PRESS 140 T/N TL FS1	320/800-1600	28-140	19	3/380/60	220/60		**20207012**
PRESS 200 T/N TC FS1	515/1140-2280	45-200	20	3/400/50	230/50		**20205052**
PRESS 200 T/N TL FS1	515/1140-2280	45-200	20	3/400/50	230/50		**20205055**
PRESS 200 T/N TC FS1	515/1140-2280	45-200	20	3/380/60	220/60		**20207013**
PRESS 300 T/N TC FS1	626/1710-3420	60-300	30	3/400/50	230/50	(1)(4)	**20205056**
PRESS 300 T/N TC FS1	626/1710-3420	60-300	30	3/400/50	230/50	(3)	**20205738**
PRESS 300 T/N TL FS1	626/1710-3420	60-300	30	3/400/50	230/50	(3)	**20205057**
PRESS 450 T/N TC FS1	855/2560-5130	75-450	34	3/400/50	230/50	(2)	**20210350**
PRESS 450 T/N TL FS1	855/2560-5130	75-450	34	3/400/50	230/50	(2)	**20207004**

Net calorific value of heavy oil: 11.16 kWh/kg; 9,600 kcal/kg - Max Viscosity at 50 °C: 7 °E (50 mm^2/s, cSt), Type MEDIUM HEAVY OIL / USA n° 4.
For higher viscosity please contact Riello Burners Technical Department.
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Nozzle supplied with the burner.
(3) Star/delta starting, on board.
(2) Star/delta starting, as standard equipment.
(4) For the 3/230/50 version use the 220 - 230 V conversion kit (see the burner accessories paragraph).

Special configuration on demand:
- Installed pipes heating cable on PRESS T/N models, Max Viscosity at 50 °C: 60 °E (450 mm2/s, cSt), Type BUNKER C / USA no. 6.

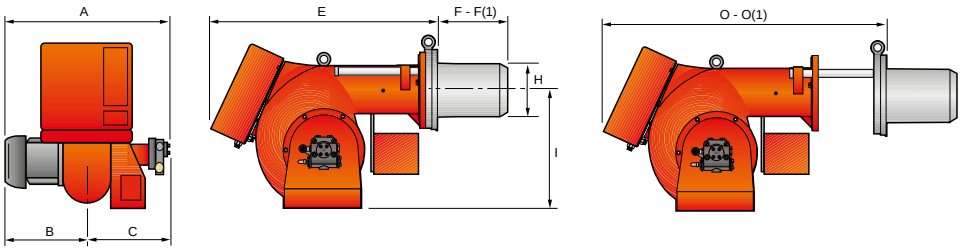
FIRING RATES



Useful working field for choosing the burner

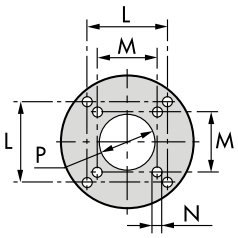
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

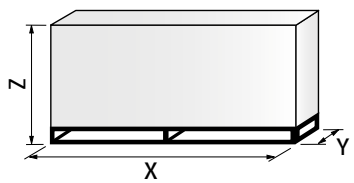


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
PRESS 140 T/N	796	396	400	890	323 - 433	222	467	1370 - 1370
PRESS 200 T/N	796	396	400	890	352 - 462	250	467	1370 - 1370
PRESS 300 T/N	858	447	411	1000	376 - 506	295	496	1515 - 1665
PRESS 450 T/N	950	508	442	1090	435 - 565	336	525	1665 - 1820

(1) Length with extended combustion head.



Description	L mm	M mm	N mm	P mm
PRESS 140 T/N	260	230	M14	225
PRESS 200 T/N	260	-	M16	255
PRESS 300 T/N	260	-	M18	300
PRESS 450 T/N	310	-	M20	350



Description	X mm	Y mm	Z mm	Net weight kg
PRESS 140 T/N	1740	990	950	180
PRESS 200 T/N	1740	990	950	190
PRESS 300 T/N	2040	1180	1125	260
PRESS 450 T/N	2040	1180	1125	350

ACCESSORIES

Drawing	Burner model	Specification	Code
		**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the list.	
	PRESS 140-200 T/N	Spacer thickness S = 102 mm	**3000722**
	PRESS 300 T/N	Spacer thickness S = 110 mm	**3000723**
	PRESS 450 T/N	Spacer thickness S = 130 mm	**3000751**
		**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use.	
	PRESS 140-200 T/N	Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010404**
	PRESS 300-450 T/N	Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1140 mm, E = 1345 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010376**
		**SELF-CLEANING FILTER** For cleaning heavy oil from dirty particles and impurities, it is equipped with a thermostatic heater for oil with 60 °E viscosity at 50 °C.	
	All models	Filter degree 300 µm. Type Ø =1 1/2 (60 °E at 50 °C).	**3010022**
	All models	Thermostatic heater with LED.	**3010050**
		**GAS SEPARATOR BOTTLE** Gas separator bottle connects the burner oil circuit to the main ring circuit. It allows to recover heat in excess and discharge return circuit gas.	
	PRESS 300-450 T/N	Kit code is available.	**3010012**
	All models	**HEAVY OIL KIT** Equipped with electrical heaters, it permits the employment of PRESS T/N burners with fuel oil of max. viscosity at 50 °C: 20 °E (150 mm^2/s, cSt), Type BUNKER B / USA n° 5.	**3000721**
		**HEAVY OIL PRECIRCULATION KIT** This kit, used with oil with high viscosity, in maintains fuel circulation in the oil circuit for avoiding system stop at start up.	
	PRESS 140-200 T/N	Kit code is available.	**3000749**
	PRESS 300-450 T/N	Kit code is available.	**3000750**
	PRESS 300-450 T/N	**BURNER SUPPORT** For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.	**3000731**
	All models	**PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES)** When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.	**3010386**
	PRESS 300 T/N	**220-230 V CONVERSION KIT** This kit is required to convert the 380-400 V models into the 220 or 230 V version.	**20163347**
	All models	**PC INTERFACE KIT** To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required output.

Drawing	Burner model	Specification		Note	Code
		GPH	Rated delivery (kg/h) at 25 bar		TYPE F80 PL 60°
	PRESS 140 T/N	3.5	20.8	(1)	**3043162**
	PRESS 140 T/N	4	23.8	(1)	**3043172**
	PRESS 140 T/N	4.5	26.8	(1)	**3043182**
	PRESS 140-200 T/N	5	29.8	(1)	**3043192**
	PRESS 140-200 T/N	5.5	32.7	(1)	**3043202**
	PRESS 140-200 T/N	6	35.7	(1)	**3043212**
	PRESS 140-200 T/N	6.5	38.7	(1)	**3043222**
	PRESS 140-200 T/N	7	41.7	(1)	**3043232**
	PRESS 140-200 T/N	7.5	44.6	(1)	**3043242**
	PRESS 200-300 T/N	8.5	50.6	(1)	**3043262**
	PRESS 200-300 T/N	9.5	56.5	(1)	**3043272**
	PRESS 200-300-450 T/N	10.5	62.5	(1)	**3043302**
	PRESS 300-450 T/N	12	71.4	(1)	**3043322**
	PRESS 300-450 T/N	13.5	80.4	(1)	**3043342**
	PRESS 300-450 T/N	15.5	92.3	(1)	**3043372**
	PRESS 450 T/N	17.5	104.2	(1)	**3043402**
	PRESS 450 T/N	19.5	116.1	(1)	**3043432**
	PRESS 450 T/N	21.5	128	(1)	**3043452**
	PRESS 450 T/N	24	142.8	(1)	**3043472**

(1) Each burner needs N° 3 nozzles.

STATE OF SUPPLY

Monoblock forced draught heavy oil burner, three stage operation, made up of:
- Air suction circuit
- Fan with forward curved blades
- Air dampers for air setting controlled by a servomotor
- Fan motor at 2850 rpm
- Combustion head, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Valve unit with a oil safety shut-off valve fitted in series with three valves controlling three-stage on the output circuit
- Oil preheater
- Servomotor for air damper regulation
- Photocell for flame detection
- Burner safety control box
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) electric protection level

STANDARD EQUIPMENT

- 2 flexible hoses for pipe connection
- 2 nipples for flexible hoses
- 1 thermal insulation screen
- 4 screws for fixing the burner flange to the boiler
- 3 nozzles
- 2 extensions for bars (for long head version of P 300 T/N and P 450 T/N)
- 5 wiring looms for electrical connections (7 for P 450 T/N version)
- 1 Star/delta starter (only for P 450 T/N version)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Modulating heavy oil burners

PRESS P/N



- Modulating heavy oil burners

PRESS P/N series of burners covers a firing range from 800 to 5130 kW. They have been designed in three versions for use in commercial and industrial installation, to burn different oil viscosity from 7 up to 60 °E @ 50 °C. Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes, which guarantees a turn down ratio of 3:1. The versatility of this range makes the burner well suited for use on steam boilers where the load factor is subject to wide variations, on thermal oil boilers and on boilers for particular heating plants, as hospitals or similar.
Simplified maintenance is achieved by the Riello designed slide bar system, which allows easy access to all of the essential components of the combustion head.

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.

TECHNICAL DATA

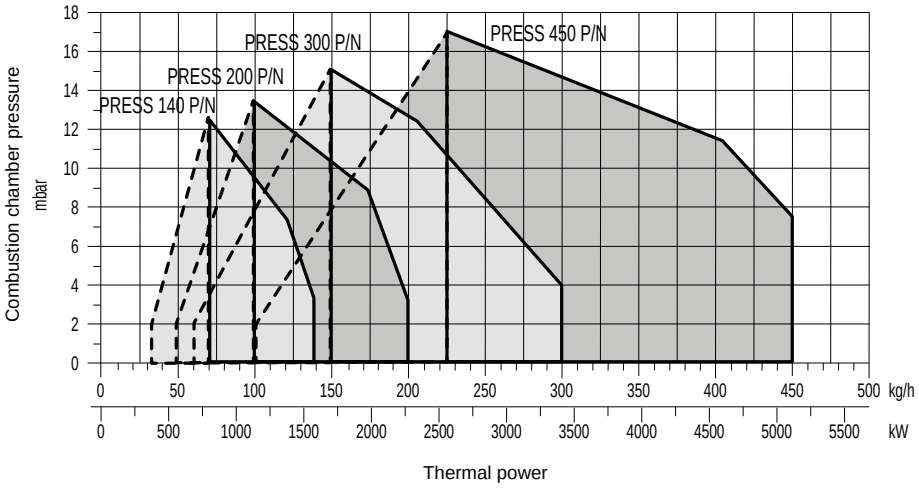
Description	Heat output		Total electrical power	Electric power supply		Note	Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)							
PRESS 140 P/N TC FS1	400/800-1600	35/70-140	19	3/400/50	230/50	(3)	**20206097**
PRESS 140 P/N TL FS1	400/800-1600	35/70-140	19	3/400/50	230/50	(3)	**20208707**
PRESS 200 P/N TC FS1	570/1140-2280	50/100-200	20	3/400/50	230/50	(3)	**20205676**
PRESS 200 P/N TL FS1	570/1140-2280	50/100-200	20	3/400/50	230/50	(3)	**20208709**
PRESS 300 P/N TC FS1	683/1710-3420	60/150-300	30	3/400/50	230/50	(2)(3)	**20205723**
PRESS 300 P/N TC FS1	683/1710-3420	60/150-300	30	3/400/50	230/50	(1)(3)	**20205790**
PRESS 450 P/N TC FS1	1140/2615-5130	100/225-450	34	3/400/50	230/50	(1)(3)	**20208710**
PRESS 450 P/N TL FS1	1140/2615-5130	100/225-450	34	3/400/50	230/50	(1)(3)	**20208711**

Net calorific value of heavy oil: 11.16 kWh/kg; 9,600 kcal/kg.
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) Star/delta starting.
(2) For the 3/230/50 version use the 220 - 230 V conversion kit (see the burner accessories paragraph).
(3) Model with LFL control box.

The PRESS P/N burners are also available in ECO version, equipped with a separate low speed pump. Form more information, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

Viscosity
The modulating burner P/N series can burn different heavy oil types from 7 up to 60 °E @ 50 °C (50 up to 450 cSt @ 50 °C).
For different viscosity levels Riello recommends 3 different configurations:
1) PRESS P/N version for viscosity up to 7 °E (50 mm^2/s, cSt), Type MEDIUM HEAVY OIL / USA n° 4: basic version with 2800 rmp oil pump installed directly on fan motor shaft (see available codes in the table above).
2) PRESS P/N version for viscosity up to 20 °E (150 mm^2/s, cSt), Type BUNKER B / USA n° 5: as basic version + heavy oil heating cartridges factory installed on nozzle, pump and valves group (please ask for specific code).
3) PRESS P/N ECO version for viscosity up to 20 °E (150 mm^2/s, cSt), Type BUNKER B / USA n° 5: with separate 1400 rpm low speed pump, heavy oil heating cartridges factory installed on nozzle, pump and valves group (please ask for specific code).
4) PRESS P/N and PRESS P/N ECO versions for viscosity up to 60 °E (450 mm^2/s, cSt), Type BUNKER C / USA n° 6: as versions 2) or 3) with pipes heating cable factory installed (please ask for specific code).

FIRING RATES

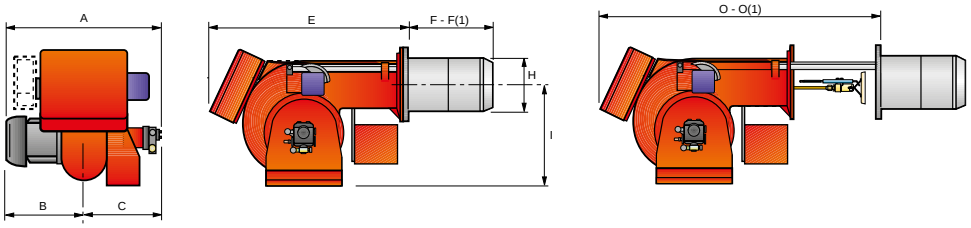


Useful working field for choosing the burner

Modulation range

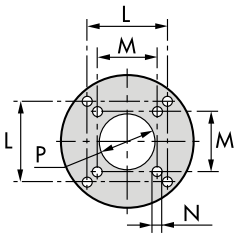
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

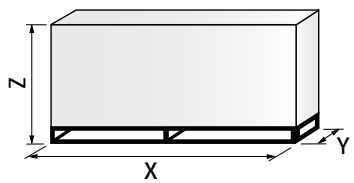


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
PRESS 140 P/N	796	396	400	910	323 - 433	222	467	1390 - 1390
PRESS 200 P/N	796	396	400	910	352 - 462	250	467	1390 - 1390
PRESS 300 P/N	858	447	411	1020	376 - 506	295	496	1535 - 1685
PRESS 450 P/N	950	508	442	1090	435 - 565	336	525	1665 - 1820

(1) Length with extended combustion head.



Description	L mm	M mm	N mm	P mm
PRESS 140 P/N	260	230	M14	225
PRESS 200 P/N	260	-	M16	255
PRESS 300 P/N	260	-	M18	300
PRESS 450 P/N	310	-	M20	350



Description	X mm	Y mm	Z mm	Net weight kg
PRESS 140 P/N	1740	990	950	180
PRESS 200 P/N	1740	990	950	220
PRESS 300 P/N	2040	1180	1125	238
PRESS 450 P/N	2040	1180	1125	300

ACCESSORIES

Drawing	Burner model	Specification	Code
		**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the list.	
	PRESS 140-200 P/N	Spacer thickness S = 102 mm	**3000722**
	PRESS 300 P/N	Spacer thickness S = 130 mm	**3000723**
	PRESS 450 P/N	Spacer thickness S = 130 mm	**3000751**
		**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use.	
	PRESS 140-200 P/N	Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010404**
	PRESS 300-450 P/N	Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1140 mm, E = 1345 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010376**
		**SELF-CLEANING FILTER** For cleaning heavy oil from dirty particles and impurities, it is equipped with a thermostatic heater for oil with 60 °E viscosity at 50 °C.	
	All models	Filter degree 300 µm. Type Ø =1 1/2 (60 °E at 50 °C).	**3010022**
	All models	Thermostatic heater with LED.	**3010050**
		**GAS SEPARATOR BOTTLE** Gas separator bottle connects the burner oil circuit to the main ring circuit. It allows to recover heat in excess and discharge return circuit gas.	
	PRESS 300-450 P/N	Kit code is available.	**3010012**
	All models	**HEAVY OIL KIT** Equipped with electrical heaters, it permits the employment of PRESS T/N burners with fuel oil of max. viscosity at 50 °C: 20 °E (150 mm²/s, cSt), Type BUNKER B / USA n° 5.	**3000721**
		**HEAVY OIL PRECIRCULATION KIT** This kit, used with oil with high viscosity, in maintains fuel circulation in the oil circuit for avoiding system stop at start up.	
	PRESS 140-200 P/N	Kit code is available.	**3000749**
	PRESS 300-450 P/N	Kit code is available.	**3000750**
	All models	**CARTRIDGE FILTER** For cleaning heavy oil from dirty particles and impurities, it is equipped with a cartridge system equipped with electronic resistance for oil with 7 °E viscosity at 50 °C.	**3005209**
	PRESS 300-450 P/N	**BURNER SUPPORT** For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.	**3000731**
	All models	**MODULATING OPERATION** To obtain modulating operation, the burner requires a regulator. For remote setpoint use RWF 55.	
		RWF 50.2 - Standard version.	**20100018**
		RWF 55.5 - Plus version.	**20101965**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
	All models	PRESSURE PROBE	
		Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	PRESS 300 P/N	**220-230 V CONVERSION KIT** This kit is required to convert the 380-400 V models into the 220 or 230 V version.	**20163347**
	All models	**POTENTIOMETER KIT** Depending on the servomotor fitted to the burner, a three-pole potentiometer (0-1000Ω) can be installed to check the position of the servomotor.	**20096322**

NOZZLES

The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required output.

Drawing	Burner model	Specification	Note	Code	Code
		Rated delivery (kg/h)		BERGONZO B5 45°- WITH "AA" NEEDLE CODE	FLUIDICS W2 45°- WITH "AA" NEEDLE CODE
	P 140 P/N	70	(1)	**3009203**	**3045426**
	P 140 P/N	80	(1)	**3009205**	**3045427**
	P 140 P/N	90	(1)	**3009207**	**3045428**
	P 140-200 P/N	100	(1)	**3009209**	**3045430**
	P 140-200 P/N	125	(1)	**3009211**	**3045432**
	P 200-300 P/N	150	(1)	**3009213**	**3045434**
	P 200-300 P/N	175	(1)	**3009215**	**3045436**
	P 200-300 P/N	200	(1)	**3009800**	**3045438**
	P 200-300 P/N	225	(1)	**3009801**	**3045440**
	P 300-400 P/N	250	(1)	**3009802**	**3045442**
	P 300-400 P/N	275	(1)	**3009803**	**3045444**
	P 300-400 P/N	300	(1)	**3009804**	**3045446**
	P 450 P/N	325	(1)	**3009805**	**3045448**
	P 450 P/N	350	(1)	**3009806**	**3045450**
	P 450 P/N	375	(1)	**3009807**	**3045452**
	P 450 P/N	400	(1)	**3009808**	**3045454**
	P 450 P/N	425	(1)	**3009809**	**3045455**
	P 450 P/N	450	(1)	**3009810**	**3045456**

(1) Each burner needs N° 1 nozzle.

STATE OF SUPPLY

Monoblock forced draught oil burner with two-stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with forward curved blades high performance pressure levels
- Air damper for air setting and automatic oil output regulator controlled by a servomotor with variable cam
- Fan motor at 2850 rpm, three-phase 400V with neutral, 50Hz
- Combustion head, that can be set on the basis of the combustion output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Valve unit with a double oil safety valve on the output circuit
- Electrical preheater for heavy oil
- Safety oil pressure switch
- Photocell for flame detection
- Burner safety control box, fitted with control function for the correct positioning of the servomotor and possibility of post-ventilaton by just changing the electric wiring
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) electric protection level

STANDARD EQUIPMENT

- 2 flexible pipes for connection to the oil supply network
- 2 nipples for the connection to the pump
- Wiring looms fittings for electrical connections
- 4 screws for fixing the burner flange to the boiler
- 2 slide bar extensions (for the extended head models of PRESS 300-450 P/N)
- Gasket for flange
- Starter (only for versions with Star/delta starting)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Modulating heavy oil burners with air/steam atomizing

PRESS P/NA



- Modulating heavy oil burners with air/steam atomizing

Heavy oil burner series P/NA is an evolution of the traditional heavy oil modulating burners P/N series. The new range applies a different technology to replace the usual mechanical atomising (high pressure) by “assisted” air/steam atomising (feed pressure 5-8 bar) and taking the related advantages when burning heavy fuels (even vegetal oil). The upgraded design has been introduced to meet even the worst fuel qualities and to reach anyway the best achievable combustion performance (lower particulate and NOx emissions). The capacity range is suited to cover applications on steam generators designed for production from 1 to 6 tons/hr of steam or an equivalent capacity in case of other kind of boiler. Reliable and smooth ignition is achieved by LPG pilot burner installed into the combustion head. The control system includes all safety and operation interlocks, making possible the configuration compliance to the latest design norms on world-wide base (i.e. EN 267 – UL 296 – others), by the available options on request.

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.

TECHNICAL DATA

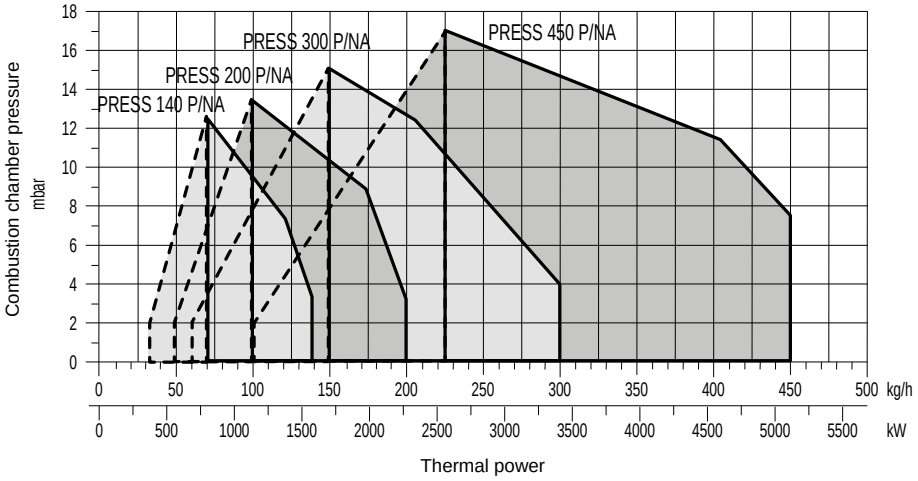
Description	Heat output		Total electrical power	Electric power supply		Code
	kW	kg/h	kW	Ph/V/Hz	V/Hz	
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)						
PRESS 140 P/NA TC	400/800-1600	33.7/67.4-134.9	11.5	3/400/50	230/50	**(1)**
PRESS 140 P/NA TC	400/800-1600	33.7/67.4-134.9	11.5	3/380/60	220/60	**(1)**
PRESS 200 P/NA TC	570/1140-2280	48/96.12-192.2	12.5	3/400/50	230/50	**(1)**
PRESS 200 P/NA TC	570/1140-2280	48/96.12-192.2	12.5	3/380/60	220/60	**(1)**
PRESS 300 P/NA TC	683/1710-3420	57.6/144.1-288.3	25	3/400/50	230/50	**(1)**
PRESS 300 P/NA TC	683/1710-3420	57.6/144.1-288.3	25	3/380/60	220/60	**(1)**
PRESS 450 P/NA TC	1140/2615-5130	96.1/220.5-432.6	37	3/400/50	230/50	**(1)**
PRESS 450 P/NA TC	1140/2615-5130	96.1/220.5-432.6	37	3/380/60	220/60	**(1)**

Net calorific value of heavy oil: 11,16 kWh/kg; 9600 kcal/kg
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
(1) On demand.

The PRESS P/NA burners are also available in ECO version, equipped with a separate low speed pump. Form more information, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

Viscosity
The modulating burner P/NA series can burn different heavy oil types from 50 up to 600 cSt @ 50 °C (up to 80 °E @ 50 °C).
For different viscosity levels Riello recommends 3 different configurations:
1) PRESS P/NA version for viscosity up to 60 °E (450 mm2/s, cSt), Type BUNKER C / USA n° 6:
- with 2800 rmp oil pump installed directly on fan motor shaft;
- heavy oil heating cartridges factory installed on nozzle, pump and valves group (see available codes in the table above).
2) PRESS P/NA ECO version for viscosity up to 60 °E (450 mm2/s, cSt), Type BUNKER C / USA n° 6: - with separate 1400 rpm low speed pump
- heavy oil heating cartridges factory installed on nozzle, pump and valves group (please ask for specific code).
3) PRESS P/NA and PRESS P/NA ECO versions for viscosity up to 80 °E (600 mm2/s, cSt), Type CHINESE OIL n° 60: as versions 1) or 2) with pipes heating cable factory installed (please ask for specific code).

FIRING RATES

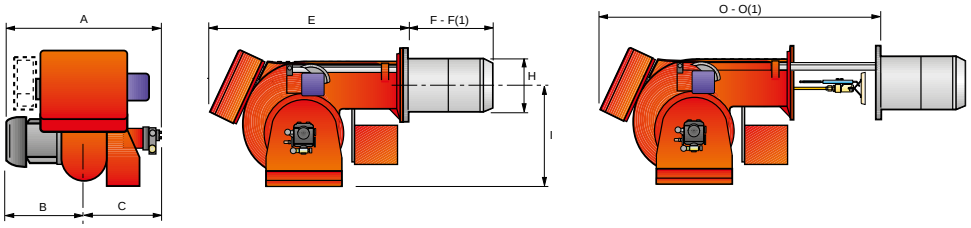


Useful working field for choosing the burner

Modulation range

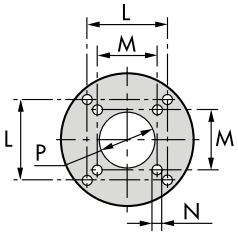
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

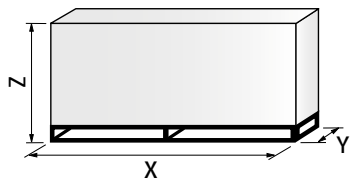


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
PRESS 140 P/NA	796	396	400	910	323 - 433	222	467	1390 - 1390
PRESS 200 P/NA	796	396	400	910	352 - 462	250	467	1390 - 1390
PRESS 300 P/NA	858	447	411	1020	376 - 506	295	496	1535 - 1685
PRESS 450 P/NA	950	508	442	1090	435 - 565	336	525	1665 - 1820

(1) Length with extended combustion head.



Description	L mm	M mm	N mm	P mm
PRESS 140 P/NA	260	230	M14	225
PRESS 200 P/NA	260	-	M16	255
PRESS 300 P/NA	260	-	M18	300
PRESS 450 P/NA	310	-	M20	350



Description	X mm	Y mm	Z mm	Net weight kg
PRESS 140 P/NA	1740	990	950	180
PRESS 200 P/NA	1740	990	950	220
PRESS 300 P/NA	2040	1180	1125	238
PRESS 450 P/NA	2040	1180	1125	300

ACCESSORIES

Drawing	Burner model	Specification	Code
		**SPACER KIT** If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the list.	
	PRESS 140-200 P/NA	Spacer thickness S = 102 mm	**3000722**
	PRESS 300 P/NA	Spacer thickness S = 130 mm	**3000723**
	PRESS 450 P/NA	Spacer thickness S = 130 mm	**3000751**
		**SOUND PROOFING BOX** If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use.	
	PRESS 140-200 P/NA	Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010404**
	PRESS 300-450 P/NA	Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1140 mm, E = 1345 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).	**3010376**
		**SELF-CLEANING FILTER** For cleaning heavy oil from dirty particles and impurities, it is equipped with a thermostatic heater for oil with 60 °E viscosity at 50 °C.	
	All models	Filter degree 300 µm. Type Ø =1 ½ (60 °E at 50 °C).	**3010022**
	All models	Thermostatic heater with LED.	**3010050**
	All models	**CARTRIDGE FILTER** For cleaning heavy oil from dirty particles and impurities, it is equipped with a cartridge system equipped with electronic resistance for oil with 7 °E viscosity at 50 °C.	**3005209**
		**GAS SEPARATOR BOTTLE** Gas separator bottle connects the burner oil circuit to the main ring circuit. It allows to recover heat in excess and discharge return circuit gas.	
	PRESS 300-450 P/NA	Kit code is available.	**3010012**
	PRESS 300-450 P/NA	**BURNER SUPPORT** For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.	**3000731**
		**MODULATING OPERATION** To obtain modulating operation, the burner requires a regulator. For remote setpoint use RWF 55.	
	All models	RWF 50.2 - Standard version.	**20100018**
		RWF 55.5 - Plus version.	**20101965**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).	**3010110**
		PRESSURE PROBE	
	All models	Pressure (0-2.5 bar) with 4-20 mA output.	**3010213**
		Pressure (0-16 bar) with 4-20 mA output.	**3010214**
		Pressure (0-25 bar) with 4-20 mA output.	**3090873**
	All models	**POTENTIOMETER KIT** Depending on the servomotor fitted to the burner, a three-pole potentiometer (0-1000Ω) can be installed to check the position of the servomotor.	**20096322**
	All models	**STEAM VALVE OVER 10 BAR OR 180 °C** To be applied for pressure from 10 to 15 bar or temperature from 180 °C to maximum 200 °C. ODE model.	**(1)**
	All models	**WATER SEPARATOR BOTTLE** To be installed on the air/steam supply line in order to prevent water droplets to the nozzle supply. WSB model.	**(1)**

(1) On demand.

NOZZLES

Y-jet air/steam atomising nozzles - type 15 AG 45°

Effective nozzle delivery depends from many factors. Particular small variations of air/steam atomising pressure or viscosity at the nozzle, cause big oil delivery variations. Therefore, to choose the right nozzle it is so necessary to consider all parameters listed in the table below.

Drawing	Type 15 AG 45°	Viscosity @ Nozzle	Oil density	Specification							Suggested air/steam pressure	Code
				Rated delivery (kg/h)					Air consumption at 4 bar (kg/h)			
		cSt	kg/m³	6 bar	5 bar	4 bar	3 bar	2 bar	High Fire	Low Fire	bar	
	60	5	850	112	94	75	60	32	2.5	8.4	2	**3045000**
		10	875	95	80	60	41	20	5.9	13.9	3	
		20	900	75	60	42	25	(1)	10	20	4	
		30	925	68	55	36	20	(1)	11.3	21.7	4	
	70	5	850	130	110	90	70	36	2.9	9.9	2	**3045001**
		10	875	111	95	78	48	25	6.8	16	3	
		20	900	88	70	50	30	(1)	11.9	23	4	
		30	925	80	64	44	24	(1)	13.2	25.4	4	
	80	5	850	150	130	105	80	40	3.3	11.3	2	**3045002**
		10	875	127	108	85	55	30	7.8	18.3	3	
		20	900	100	80	55	35	(1)	13.6	26.2	4	
		30	925	91	73	51	30	(1)	15	28.9	4	
	100	5	850	187	158	130	100	50	4.2	14	2	**3045003**
		10	875	158	135	100	70	35	9.8	22.8	3	
		20	900	126	105	70	40	(1)	17	32.7	4	
		30	925	114	91	65	35	(1)	18.8	34.2	4	
	130	5	850	243	200	170	130	60	5.4	18.3	2	**3045004**
		10	875	206	173	130	95	40	12.7	29.7	3	
		20	900	163	131	90	55	(1)	22	42.6	4	
		30	925	148	118	82	45	(1)	24.4	47	4	
	160	5	850	299	260	210	160	80	6.7	22.5	2	**3045005**
		10	875	253	215	170	115	50	15.7	36.5	3	
		20	900	201	161	115	65	(1)	27.1	52.4	4	
		30	925	182	145	102	58	(1)	30	57.9	4	
	200	5	850	374	330	260	215	105	8.3	28.1	2	**3045006**
		10	875	317	270	215	145	60	19.6	45.7	3	
		20	900	252	203	140	85	(1)	33.9	65.5	4	
		30	925	228	182	120	70	(1)	37.5	72.4	4	
	225	5	850	421	365	285	220	110	9.4	31.7	2	**3045007**
		10	875	357	311	240	160	70	22.1	51.4	3	
		20	900	280	225	156	100	(1)	38.2	73.7	4	
		30	925	256	205	141	60	(1)	42.2	81.4	4	
	250	5	850	468	410	340	250	120	10.4	35.2	2	**3045008**
		10	875	396	340	270	180	80	24.5	57.1	3	
		20	900	315	252	175	110	(1)	42.4	81.9	4	
		30	925	285	228	150	85	(1)	46.8	90.5	4	
	275	5	850	514	430	360	270	130	11.5	38.6	2	**3045009**
		10	875	436	365	300	190	85	27	62.8	3	
		20	900	346	277	193	120	(1)	46.7	90	4	
		30	925	313	250	175	95	(1)	51.6	99.5	4	
	300	5	850	560	470	400	300	150	11.5	38.6	2	**3045010**
		10	875	476	410	340	200	90	29.3	68.5	3	
		20	900	378	302	210	130	(1)	51	98.2	4	
		30	925	342	273	190	100	(1)	56.3	108.6	4	

(1) This matching is not available.

STATE OF SUPPLY

Monoblock forced draught oil burner with two-stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with forward curved blades high performance pressure levels
- Air damper for air setting and automatic oil output regulator controlled by a servomotor with variable cam
- Fan motor at 2850 rpm, three-phase 400V with neutral, 50Hz
- Combustion head, that can be set on the basis of the combustion output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and vacuometer
  - internal by-pass for single pipe installation
- Heavy oil kit cartridges
- Valve unit with a double oil safety valve on the output circuit
- LPG pilot burner ignition
- Electrical preheater for heavy oil
- Safety oil pressure switch
- Photocell for flame detection
- Burner safety control box, fitted with control function for the correct positioning of the servomotor and possibility of post-ventilaton by just changing the electric wiring
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) electric protection level

STANDARD EQUIPMENT

- 2 flexible pipes for connection to the oil supply network
- 2 nipples for the connection to the pump
- Wiring looms fittings for electrical connections
- 4 screws for fixing the burner flange to the boiler
- 2 slide bar extensions (for the extended head models of P 300 P/NA and P 450 P/NA)
- Gasket for flange
- Starter (only for versions with Star/delta starting)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue



PROCESS GAS BURNERS

PROCESS LIGHT OIL BURNERS

INDUSTRIAL BURNERS

GAS TRAINS

PROCESS GAS BURNERS

LOW NOx

Low NOx emissions, lower than class 3 of european standard EN 676 (NOx lower than 80 mg/kWh)

ONE-STAGE



GULLIVER BSF

- Industrial ovens
- Paint booths
- Low-power steam generators

page 623

TWO-STAGE



GULLIVER BSDF

- Industrial ovens
- Paint booths
- Low-power steam generators

page 629

PREMIX (OVENS)



RX 35-150 S/PV F

- Air heaters
- Steam generators
- Bakery ovens
- Textile industry
- Roasters

page 633



RX 180-360 S/PV F

- Air heaters
- Steam generators
- Bakery ovens
- Textile industry
- Roasters

page 637

PREMIX (AIR DUCT)



RX 180-310 S/PV VA

- Paint booths
- Direct exchange industrial applications

page 641



RX 400 S/PV VA

- Paint booths
- Direct exchange industrial applications

page 644

Low NOx gas oven burners

GULLIVER BSF



- One-stage gas burners with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)
- Installation flexibility: adjustable head length
- High maintainability: access to components and combustion head with burner installed
- Simplified calibration: air adjustment with external gear
- High flexibility of use and adaptability to the operating conditions
- Digital control box with diagnostic function

MAIN APPLICATIONS

- Industrial ovens
- Paint booths
- Low-power steam generators

The Riello Gulliver BSF series of One-stage gas burners, is a complete range of products developed to respond to any request for light industrial processes like bakery ovens, spray painting ovens, small steam or thermal boilers and all applications requiring a reliable, user-friendly industrial product with enhanced performance and specific functions.
The Gulliver BSF series is available in four different models, with an output ranging from 16 to 246 kW, divided in four different structures.
All models use the same components designed by Riello for the Gulliver series and have the same ventilation system and overall dimensions as the Standard one-stage gas models.
The burners are fitted with a microprocessor-based burner safety control box which supplies indication of operation and diagnosis of fault cause.
This new series can operate on 50 or 60 Hz and a 220-230 V (dual frequency).
All these burners are compliant with EN 676 Standard (Forced draught burners for gaseous fuels) and to European Directives for EMC, Low Voltage and Gas Appliance. For depressurised working field see EN 746-2 Standard.
All burners are fired before leaving the factory.

TECHNICAL DATA

Description	Heat output natural gas		Electric power supply	Total electrical power	Certification	Notes	Code
	kW	Nm3/h	Ph/V/Hz	kW			
BS1F	16-52	1,6-5,2	1/220-230/50-60	0,135 (at 50Hz) 0,165 (at 60 Hz)	CE-0085AQ0409	(1)	**3761171**
BS2F	35-92	3,5-9,1	1/220-230/50-60	0,155 (at 50Hz) 0,200 (at 60 Hz)	CE-0085AQ0409	(1)	**3761271**
BS3F	65-197	6,5-20	1/220-230/50-60	0,355 (at 50Hz) 0,485 (at 60 Hz)	CE-0085AQ0409	(1)	**3761371**
BS4F	110-246	11,0-25	1/220-230/50-60	0,420 (at 50Hz) 0,600 (at 60 Hz)	CE-0085AQ0409	(1)	**3761471**

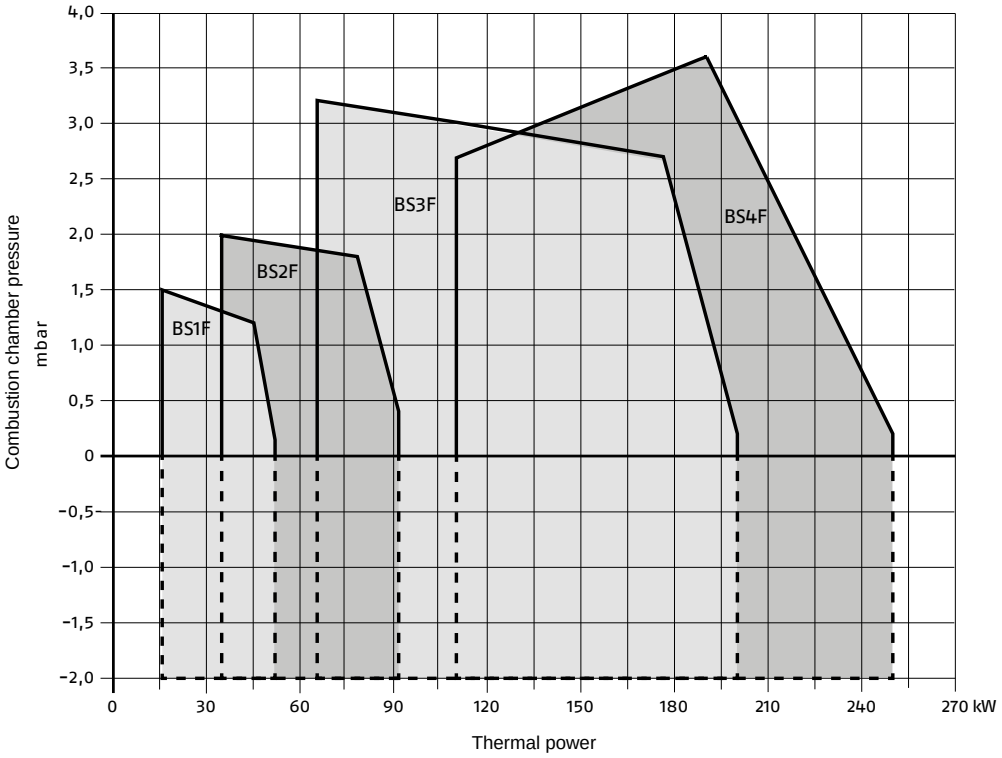
Net calorific value of natural gas (G20): 10 kWh/Nm³.
The burners comply with 2016/426/EU Regulation, the 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 676 Standard.
(1) Electrical connections with plug and socket.

* 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.

SERVICES FOR BURNERS

Burner range	Description Service	Code
GULLIVER BSF	Installation advice	**27017470**
	Commissioning and adjustment	**27017471**
	Performance Check	**27017475**
	Regular maintenance	**27017480**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017487**
	Commissioning and adjustment with initial regular maintenance package	**27017495**

FIRING RATES

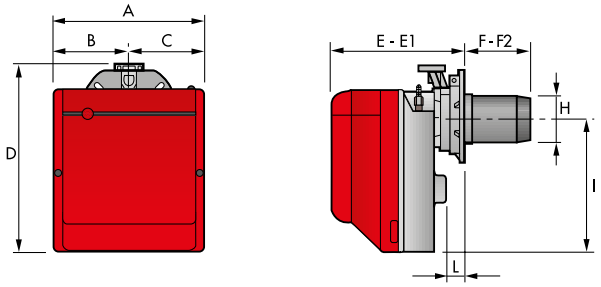


Useful firing rates for choosing the burner

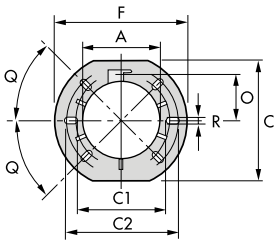
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

IMPORTANT:
For the part of the working field that is depressurised, refer to EN 746-2 Standard.

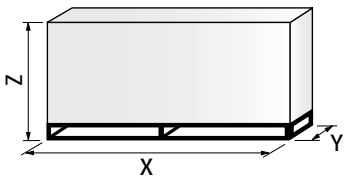
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	E1 mm	F mm	F2 mm	H mm	I mm	L mm
BS1F	234	122	112	295	230	276	116	70	89	210	41
BS2F	255	125.5	125.5	325	238	252	114	100	106	230	45
BS3F	300	150	150	391	262	280	128	110	129	285	45
BS4F	300	150	150	392	278	301	168	145	137	286	45



Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
BS1F	89	167	140	170	192	66	45°	11
BS2F	106	167	140	170	192	66	45°	11
BS3F	129	201	160	190	216	76.5	45°	11
BS4F	137	203	170	200	218	80.5	45°	11

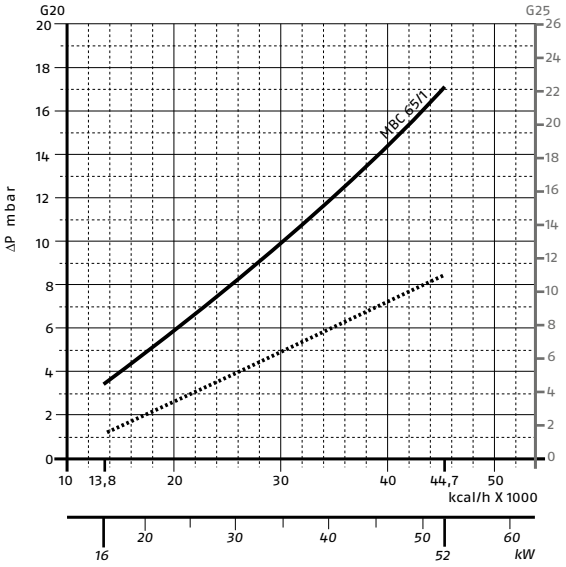


Description	X mm	Y mm	Z mm	Net weight kg
BS1F	395	278	350	10
BS2F	405	298	375	11
BS3F	450	345	440	15
BS4F	510	345	440	16.5

PRESSURE LOSS DIAGRAMS

MBC SERIES GAS TRAIN

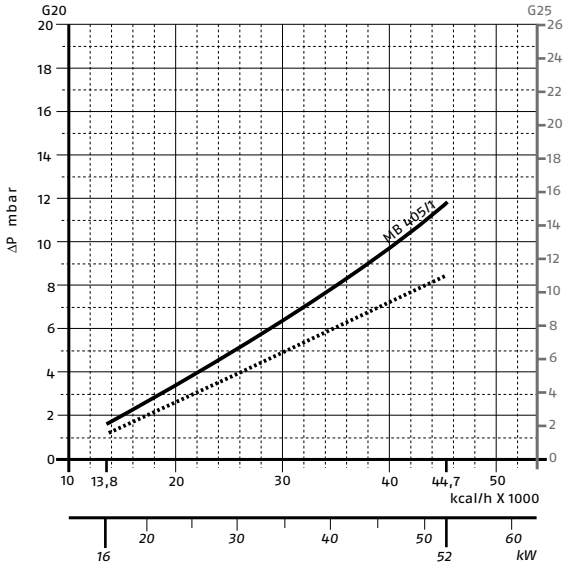
BS1F



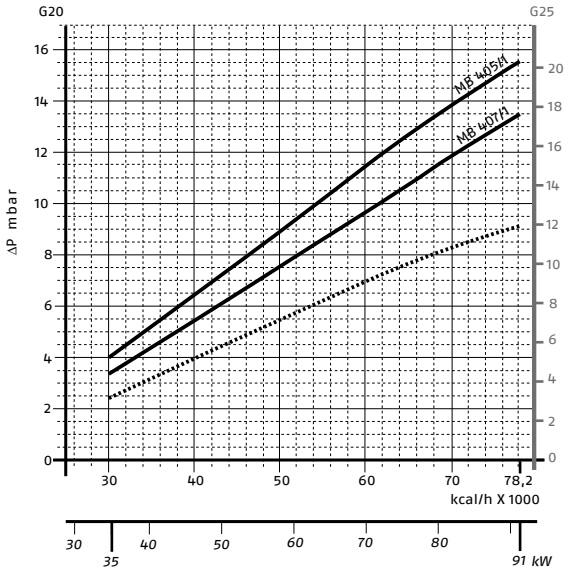
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

MB SERIES GAS TRAIN

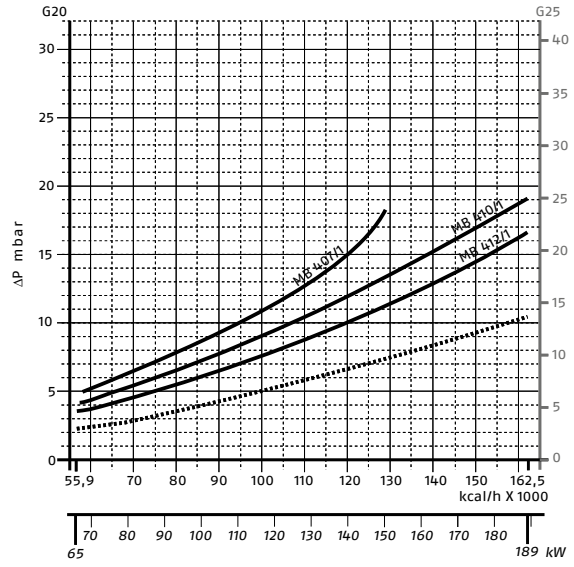
BS1F



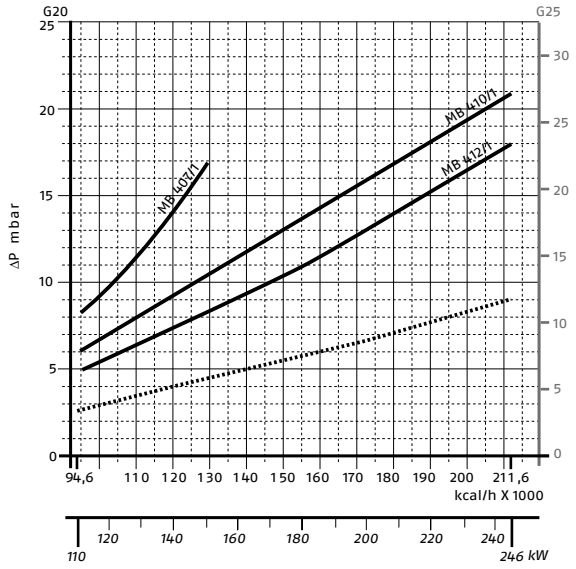
BS2F



BS3F



BS4F



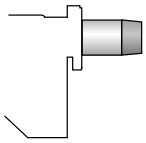
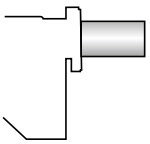
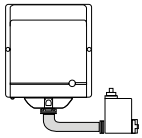
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

GAS TRAINS

Description (1)	Code	Notes	Ø Gas train	C.T. (2)	Burner
MBC SERIES ONE-STAGE GAS TRAINS					
MBC 65/1–F1SD 20	**3970570***	(3)	½"	(4)	BS1F
MB SERIES ONE-STAGE GAS TRAINS					
MB 405/1-F1SD 20	**3970546***	(3)	½"	3010123	BS1F
MB 405/1-F2SD 20	**3970547***	(3)	¾"	3010123	BS2F
MB 407/1-F2SD 20	**3970544***	(3)	¾"	3010123	BS2F
MB 407/1-F3SD 20	**3970548***	(3)	¾"	3010123	BS3F-BS4F
MB 410/1-F3SD 20	**3970549***	(3)	1"¼	3010123	BS3F-BS4F
MB 412/1-F3SD 20	**3970550***	(3)	1"¼	3010123	BS3F-BS4F

(1) Please refer to "GAS TRAIN DESIGNATION" on page 153.
(2) The C.T. valve leak test control device can be supplied as accessory separately from gas train (see "GAS TRAIN ACCESSORIES").
(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	Code
		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.	
	BS2F (long)	Standard head length = 100-114 mm - Extended head length = 170-180 mm	**3001007**
	BS2F (extra long)	Standard head length = 100-114 mm - Extended head length = 270-280 mm	**3001008**
	BS3F	Standard head length = 110-128 mm - Extended head length = 267-282 mm	**3001009**
	BS4F	Standard head length = 145-168 mm - Extended head length = 302-317 mm	**3001016**
		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 BSF 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.	
	BS1F	Kit code for alternative combustion head.	**3001059**
	BS2F	Kit code for alternative combustion head.	**3001064**
	BS3F	Kit code for alternative combustion head.	**3001060**
	BS4F	Kit code for alternative combustion head.	**3001070**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.	
	BS1F	Kit code for standard and extended head.	**3001003**
	BS2F	Kit code for standard and extended head.	**3001004**
	BS3F	Kit code for standard and extended head.	**3001005**
	BS4F	Kit code for standard and extended head.	**3001011**
		TOWN GAS KIT For burning Town Gas, a special kit is available to be fitted to the combustion head on the burner.	
	BS1F	Kit code for only standard head (**).	**3002727**
	BS2F	Kit code for standard and extended head (**).	**3002728**
	BS3F	Kit code for standard and extended head (**).	**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**
		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.	
	BS1F	Kit code for turned burner.	**3001179**
	BS2F	Kit code for turned burner.	**3001177**
	BS3F-BS4F	Kit code for turned burner.	**3001178**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).	**3000945**

(*) CE approval on field is required.
(**) Without CE certification.

STATE OF SUPPLY

Monobloc, gas burners, completely automatic, with One-stage operation fitted with:
– 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 220 - 230 V/50 - 60 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

– Flange with insulating gasket
– Screw and nut for flange
– Screw and nuts for flange to be fixed to the heat generator
– 7-pin plug
– Remote control release kit
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue

Low NOx gas light-process burners

GULLIVER BSDF



- Two-stage gas burners with low NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)
- Installation flexibility: adjustable head length
- High maintainability: access to components and combustion head with burner installed
- Simplified calibration: air adjustment with external gear
- High flexibility of use and adaptability to the operating conditions
- Digital control box with diagnostic function

MAIN APPLICATIONS

- Industrial ovens
- Paint booths
- Low-power steam generators

The Riello Gulliver BSDF series of Two-stage gas burners, is a complete range of Low NOx emission products, developed to respond to any request for light industrial processes like bakery ovens, spray painting ovens, small steam or thermal boilers and all applications requiring a reliable, user-friendly industrial product with enhanced performance and specific functions.
This series of burners is available in two different models with an output ranging from 80 to 249 kW, divided in two different structures.
All models use the same components designed by Riello for the 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. This new series can operate on 50 or 60 Hz and 220-230 V (dual frequency).
For depressurised working field see EN 746-2 Standard.
All burners are fired before leaving the factory.

TECHNICAL DATA

Description	Heat output natural gas		Electric power supply	Total electrical power	Certification	Notes	Code
	kW	Nm3/h	Ph/V/Hz	kW			
BS3DF	65/80-197	6,5/7,5-19	1/220-230/50-60	0,355 (at 50Hz) 0,485 (at 60 Hz)	CE-0085AQ0409	(1)	**3761391**
BS4DF	110/140-249	11/14-24,6	1/220-230/50-60	0,420 (at 50Hz) 0,600 (at 60 Hz)	CE-0085AQ0409	(1)	**3761491**

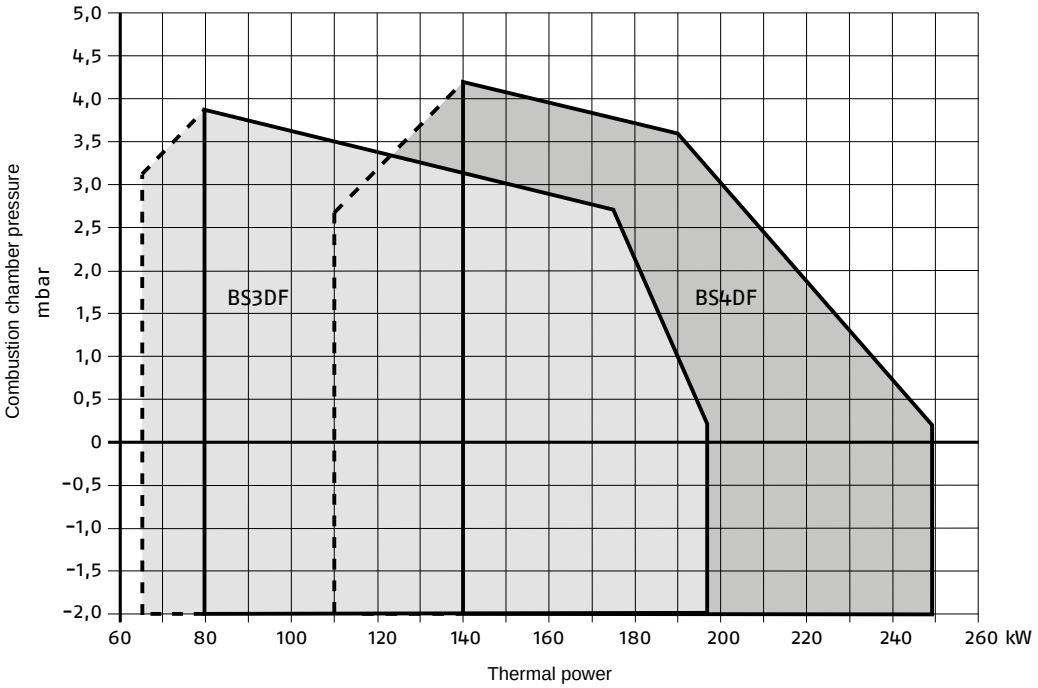
Net calorific value of natural gas (G20): 10 kWh/Nm3.
The burners comply with 2016/426/EU Regulation, the 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 676 Standard.
(1) Electrical connections with plug and socket.

SERVICES FOR BURNERS

Burner range	Description Service	Code
GULLIVER BSDF	Installation advice	**27017470**
	Commissioning and adjustment	**27017471**
	Performance Check	**27017475**
	Regular maintenance	**27017480**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017487**
	Commissioning and adjustment with initial regular maintenance package	**27017495**

* 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.

FIRING RATES



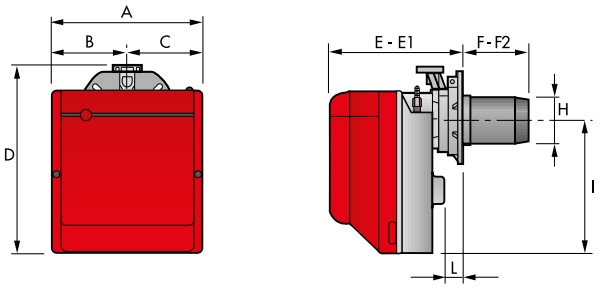
Useful firing rates for choosing the burner

1st stage operation range

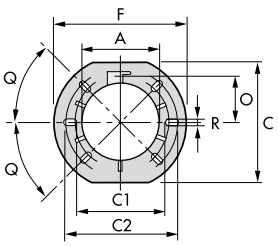
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

IMPORTANT:
For the part of the working field that is depressurised, refer to EN 746-2 Standard.

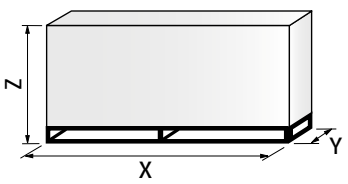
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	E1 mm	F mm	F2 mm	H mm	I mm	L mm
BS3DF	300	150	150	391	262	280	128	110	129	285	45
BS4DF	300	150	150	392	278	301	168	145	137	286	45



Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
BS3DF	129	201	160	190	216	76.5	45°	11
BS4DF	137	203	170	200	218	80.5	45°	11

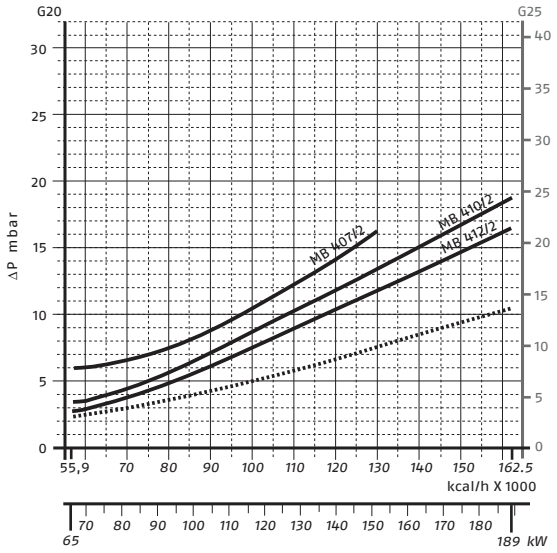


Description	X mm	Y mm	Z mm	Net weight kg
BS3DF	450	345	440	16
BS4DF	510	345	440	18

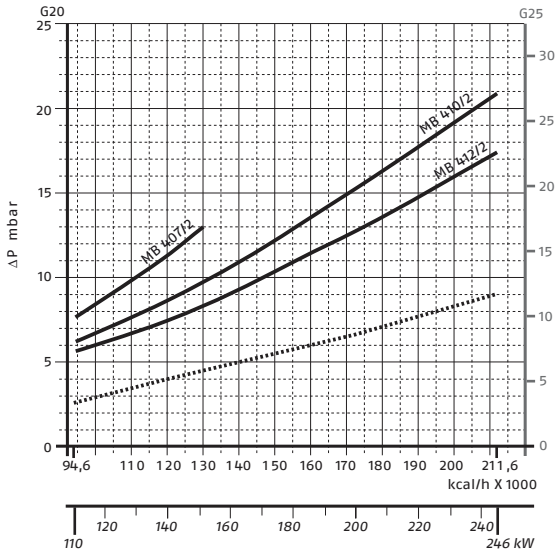
PRESSURE LOSS DIAGRAMS

MBC SERIES GAS TRAIN

BS3DF



BS4DF



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

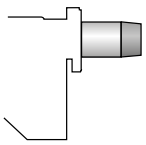
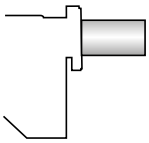
- - - - Combustion head

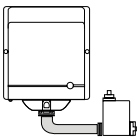
GAS TRAIN

Description (1)	Code	Notes	Ø Gas train	C.T. (2)	Burner
MB 407/2-F3SD 20	**3970541***	(3)	¾"	3010123	BS3DF
MB 410/2-F3SD 20	**3970542***		1"¼	3010123	BS3DF-BS4DF
MB 412/2-F3SD 20	**3970543***		1"¼	3010123	BS3DF-BS4DF

(1) Please refer to "GAS TRAIN DESIGNATION" on page 153.
(2) The C.T. valve leak test control device can be supplied as accessory separately from gas train (see "GAS TRAIN ACCESSORIES").
(3) With installed plug.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

ACCESSORIES

Drawing	Burner model	Specification	Code
		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.	
	BS3DF	Standard head length = 110-128 mm - Extended head length = 267-282 mm	**3001009**
	BS4DF	Standard head length = 145-168 mm - Extended head length = 302-317 mm	**3001016**
		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.	
	BS3DF	Kit code for alternative combustion head.	**3001060**
	BS4DF	Kit code for alternative combustion head.	**3001070**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.	
	BS3DF	Kit code for standard and extended head.	**3001005**
	BS4DF	Kit code for standard and extended head.	**3001011**
	BS3DF	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 and extended head (**).	**3002729**

Drawing	Burner model	Specification	Code
	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**
	All models	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.	**3001178**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).	**3000945**

(*) CE approval on field is required.
(**) Without CE certification.

STATE OF SUPPLY

Monobloc, gas burners, completely automatic, with One-stage operation fitted with:
- Fan with forward curve blades
- Cover lined with sound-proofing material
- Air damper with 1st and 2nd stage adjustment (2nd stage external adjustment, with no need to remove the cover)
- Driven by an electric servomotor
- Single phase electric motor 220 - 230 V/50 - 60 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

- Sliding flange
- Flange with insulating gasket
- Screws and nuts for fixing the flange to the boiler
- 7-pin plug
- 4-pin plug
- Remote control release kit
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Low NOx premix gas light-process burners

RX 35-150 S/PV F



- Premix gas burners
- NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)
- Compact flame (Riello patented combustion head with metal fiber mesh)
- Modulation with variable rpm brushless motor
- Operation with natural gas and LPG

MAIN APPLICATIONS

- Air heaters
- Steam boilers
- Bakery ovens
- Textile industry
- Roasters
- Convection (rotary or fixed panel type), plate, conduction and radiant heat ovens
- Continuous, tunnel and steam tube industrial ovens.

The RX S/PV F gas burner series with linear flame for light process applications has been designed and developed by Riello, based on the premix combustion technology. The adopted technical solutions represent the best answer to obtain low pollutant emissions, high performance and wide modulating turn down ratio. The in-depth study of fluid dynamics and the use of innovative porous materials has allowed a flame to be distributed throughout the length of the combustion zone and stability even in environments characterized by turbulence and internal recirculations.
The sealed fans equipped with brushless motors allow speed variations. Moreover, the use of proportional valves guarantees a perfect control of the power output and reduced electrical consumption.
The use of certified components and the easy maintenance makes RX gas burner a highly reliable product.
The microprocessor control box, integrated with the valve, has been developed exclusively for RIELLO.
RX S/PV F series is strongly oriented to customer needs: burners are customized for each specific application.
The premix models are therefore not orderable as standard products but only in the versions assuring a matching to target applications.
A wide range of configurations is available to comply with every customer specification involving industrial ovens.
The complete autonomy of each burner guarantees the optimization of the temperature
distribution inside the oven and simplifies the design of the overall industrial plant.
Use of the RX S/PV F range is addressed to convection ovens, of the type rotary or with fixed pans, in plates, conductive and irradiation, as well as industrial ovens of continuous type, tunnel and tube type of steam. Also possibility of replacement on electric ovens is available.

TECHNICAL DATA

Description	Heat output kW	Fuel	Main application	Electric power supply Ph/V/Hz	Combustion head assembly	External modulation	Notes	Code
RX 35 S/PV F	6-40	Natural gas/LPG	Tunnel ovens	1/230/50-60	Not included	0-10 V	(1)(4)	**20042815**
RX 70 S/PV F	10-40	Natural gas/LPG	Ovens	1/230/50	Included	0-10 V	(1)(2)(3)	**20140590**
RX 70 S/PV F	10-40	Natural gas/LPG	Ovens	1/230/50	Included	3 points	(1)(2)(3)	**20144823**
RX 70 S/PV F	14-70	Natural gas/LPG	Ovens	1/230/50-60	Included	3 points	(1)(2)	**20026963**
RX 150 S/PV F TC	25-145	Natural gas/LPG	Thermal cycle ovens	1/230/50-60	Included	3 points	(1)(2)	**20138689**
RX 150 S/PV F TL	25-145	Natural gas/LPG	Thermal cycle ovens	1/230/50-60	Not included	0-10 V	(1)(4)	**20139759**

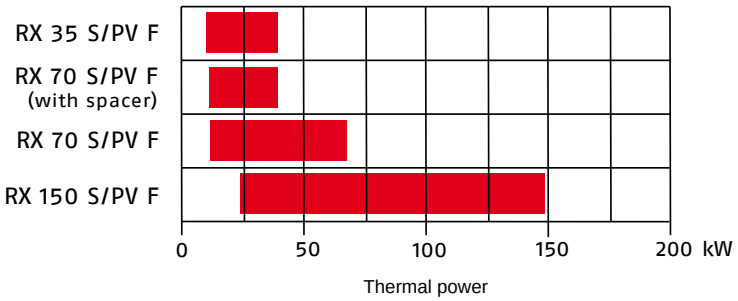
(1) External modulation signal as per factory setting. Refer to the installation manual for compatibility with other types of signals.
(2) With spacer.
(3) With spacer.
(4) Combustion head provided as an accessory.

* 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.

SERVICES FOR BURNERS

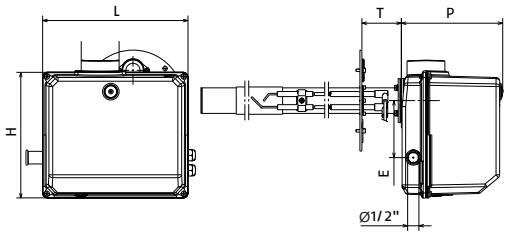
Burner range	Description service	Code
RX 35-150 S/PV F	Installation advice	**27017470**
	Commissioning and adjustment	**27017471**
	Performance Check	**27017475**
	Regular maintenance	**27017480**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017487**
	Commissioning and adjustment with initial regular maintenance package	**27017495**

BURNER OUTPUTS



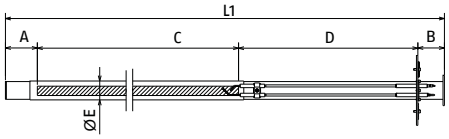
OVERALL DIMENSIONS

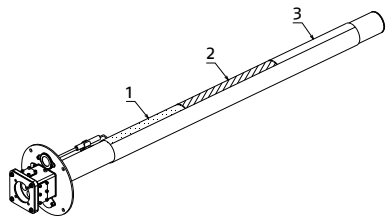
RX 35 S/PV F



Description	H mm	L mm	P mm	E mm	T mm
RX 35 S/PV F	249	288	201	113	78

RX 35 S/PV F - COMBUSTION HEAD

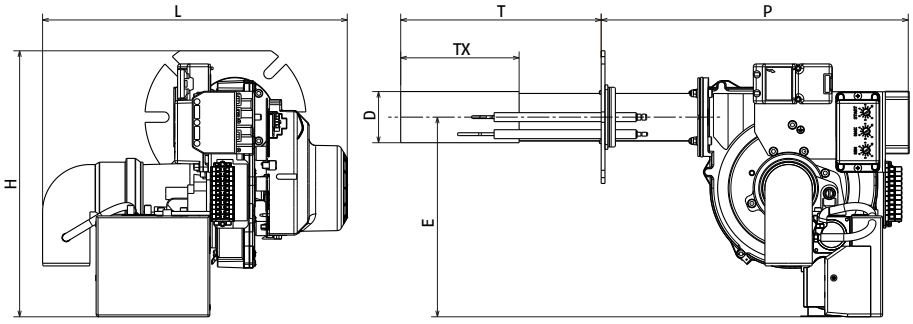




Description	A mm	B mm	C mm	D mm	ØE mm	L1 mm
COMBUSTION HEAD ASSEMBLIES						
20110452	106	85	1000	518	50	1709
20095286	106	85	1206	518	50	1915
20095407*	106	85	1206	518	60	1915
20045263	106	85	1400	518	50	2110
20131416	106	85	1506	518	50	2215
20131419*	106	85	1506	518	60	2215

(*) The three-flame version can be used when it is necessary to adapt the temperature inside the oven. The combustion head assembly is characterized by three zones (1-2-3) that can deliver a different power output. The adjustment of these zones is carried out in easy way using screws on the modulator.

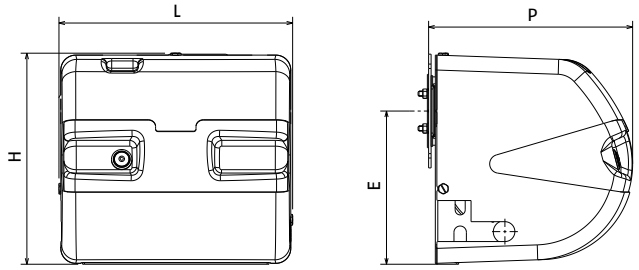
RX 70 S/PV F - COMBUSTION HEAD INCLUDED



Description	H mm	L mm	P mm	T mm	TX mm	D mm	E mm
RX 70 S/PV F*	280	320	325	212	125	54	210
RX 70 S/PV F	280	313	225	296	185	67	210

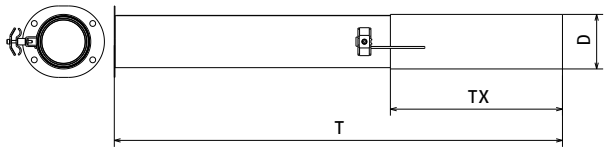
(*) With spacer.

RX 150 S/PV F



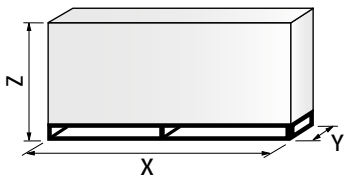
Description	H mm	L mm	P mm	E mm
RX 150 S/PV F TC	340	380	330	247
RX 150 S/PV F TL	340	380	330	247

RX 150 S/PV F - COMBUSTION HEAD



Description	Combustion head assembly	D mm	T mm	TX mm
COMBUSTION HEAD				
RX 150 S/PV F TC	INCLUDED IN BURNER CODE	84	392	265
RX 150 S/PV F TL	**20048844**	84	690	265

TX combustion zone length.



Description	X mm	Y mm	Z mm
RX 35 S/PV F**	395	315	305
RX 70 S/PV F*	590	395	305
RX 70 S/PV F	590	395	305
RX 150 S/PV F TC	778	398	476
RX 150 S/PV F TL**	778	398	476

(*) With spacer.
(**) Combustion head not included.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RX 35 S/PV F	It is used to simplify the wiring harness in the plants with a large number of installed burners. This accessory consists of an I/O module contained in an IP65 metal box (called sub-panel). The sub-panel can manage from 1 to 4 burners and can be connected in “sequence” using the bus connection cable for a maximum of 31 sub-panels (124 burners in all). By means of the BUS system, for each connected burner, is it possible to manage : burner ON/OFF, signaling of burner operation or lock-out. Thanks to the configuration parameters adjustable via dip-switches, the system is easy to set up both in case of new installation and replacement. In order to guarantee the plant safety, the device is equipped with a Watch-Dog timer system; If the module does not receive commands for a longer time than the set time, the WatchDog Alarm will be triggered and the burners will be switched off (thermostat opening) to avoid system damages. Modbus Slave module on RS-485 net MODBUS RTU/MODBUS ASCII 8-digital input channels 4-digital output channels with relay (2 SPDT format + 2 SPST format) Communication parameters set via dip-switch Watch-Dog alarm Remote configuration Remote configuration LED signaling on the front side for power supply and communication LED signaling on the front side for digital inputs and outputs Connection to extractable terminals	**On demand**

STATE OF SUPPLY

RX S/PV F series is strongly oriented to customer needs: burners are customized for each specific application. The premix models are therefore not orderable as standard products but only in the versions assuring a matching to target applications. A wide range of configurations is available to comply with every customer specification involving industrial ovens. The complete autonomy of each burner guarantees the optimization of the temperature distribution inside the oven and simplifies the design of the overall industrial plant.

Available power output:
– From 5 to 60 kW
Available electrical supply:
– 1/230/50-60
– 1/120/50-60
Fuel:
– Natural Gas
– LPG
Operating mode:
– One-stage
– Two-stage Progressive
– Modulating
Modulation signal input:
– 0-10 V
– 4-20 A
– 3-point modulation or Up/Down
Aesthetic
– With cover
– Without cover
Combustion head
– Cylindrical or frontal shaped head
– One or three different combustion zones
– Customizable length and cross section
Other:
– Variable speed brushless motor
– Compact proportional valve
– Diagnostic via PC
– Possibility of canalize the air circuit
– Possibility or discharge in the environment
– Programmable pre-purging, post-purging, safety time
– BUS management
– Wide modulating turn down ratio up to 1:8 with shutdowns/starts-up
– On field or EN 676 certification

Low NOx premix gas light-process burners

RX 180-360 S/PV F



- Premix gas burners
- NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)
- Compact flame (Riello patented combustion head with metal fiber mesh)
- Modulation with variable rpm brushless motor
- Operation with natural gas and LPG

MAIN APPLICATIONS

- Air heaters
- Steam boilers
- Bakery ovens
- Textile industry
- Roasters
- Convection (rotary or fixed panel type), plate, conduction and radiant heat ovens
- Continuous, tunnel and steam tube industrial ovens.

The RX S/PV F gas burner series with linear flame for light process applications has been designed and developed by Riello, based on the premix combustion technology. The adopted technical solutions represent the best answer to obtain low pollutant emissions, high performance and wide modulating turn down ratio. The in-depth study of fluid dynamics and the use of innovative porous materials has allowed a flame to be distributed throughout the length of the combustion zone and stability even in environments characterized by turbulence and internal recirculations.
The sealed fans equipped with brushless motors allow speed variations. Moreover, the use of proportional valves guarantees a perfect control of the power output and reduced electrical consumption.
The use of certified components and the easy maintenance makes RX gas burner a highly reliable product.
The microprocessor control box, integrated with the valve, has been developed exclusively for RIELLO.
RX S/PV F series is strongly oriented to customer needs: burners are customized for each specific application.
The premix models are therefore not orderable as standard products but only in the versions assuring a matching to target applications.
A wide range of configurations is available to comply with every customer specification involving industrial ovens.
The complete autonomy of each burner guarantees the optimization of the temperature
distribution inside the oven and simplifies the design of the overall industrial plant.
Use of the RX S/PV F range is addressed to convection ovens, of the type rotary or with fixed pans, in plates, conductive and irradiation, as well as industrial ovens of continuous type, tunnel and tube type of steam. Also possibility of replacement on electric ovens is available.

TECHNICAL DATA

Description	Heat output kW	Fuel	Main application	Electric power supply Ph/V/Hz	Combustion head assembly	External modulation	Note	Code
RX 180 S/PV F TC	30-180	Natural gas/LPG	Thermal cycle ovens	1/230/50-60	Included	3 points	(1)(3)	**20135846**
RX 180 S/PV F TL	30-180	Natural gas/LPG	Thermal cycle ovens	1/230/50-60	Not included	0-10 V	(1)(4)	**20137565**
RX 250 S/PV F TC	42-250	Natural gas/LPG	Thermal cycle ovens	1/230/50-60	Included	3 points	(1)(3)	**20134866**
RX 250 S/PV F TL	42-250	Natural gas/LPG	Thermal cycle ovens	1/230/50-60	Not included	0-10 V	(1)(4)	**20137510**
RX 360 S/PV F	65-360	Natural gas	Thermal cycle ovens	1/230/50	Included	3 points	(1)(2)(3)	**20148871**
RX 360 S/PV F	65-360	LPG	Thermal cycle ovens	1/230/50	Included	3 points	(1)(2)(3)	**20171627**

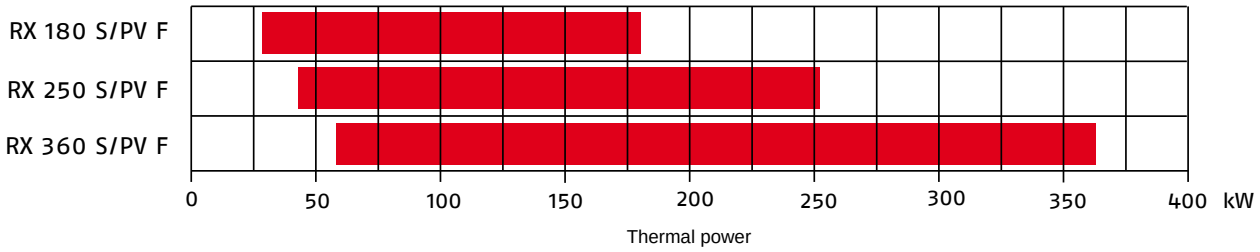
(1) External modulation signal as per factory setting. Refer to the installation manual for compatibility with other types of signals.
(2) Equipped with ignition pilot.
(3) With spacer.
(4) Combustion head provided as an accessory.

* 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.

SERVICES FOR BURNERS

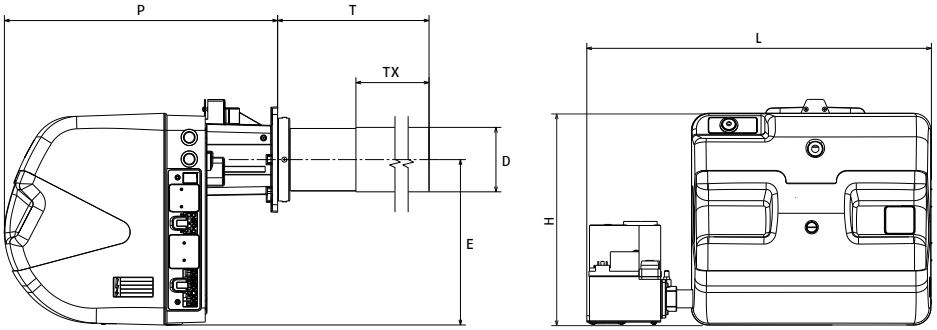
Burner range	Description service	Code
RX 180-360 S/PV F	Installation advice	**27017470**
	Commissioning and adjustment	**27017472**
	Performance Check	**27017475**
	Regular maintenance	**27017481**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017488**
	Commissioning and adjustment with initial regular maintenance package	**27017496**

BURNER OUTPUTS

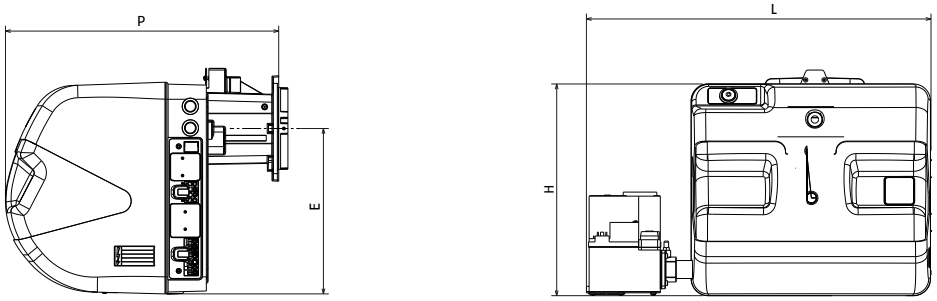


OVERALL DIMENSIONS

RX 180-250 S/PV F TC

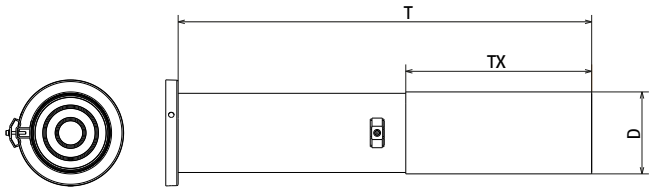


RX 180-250 S/PV F TL



Description	H mm	L mm	P mm	T mm	TX mm	D mm	E mm
RX 180 S/PV F TC	390	640	503	465	320	119	306
RX 250 S/PV F TC	390	640	503	465	320	119	306
RX 180 S/PV F TL	390	640	503	-	-	-	306
RX 250 S/PV F TL	390	640	503	-	-	-	306

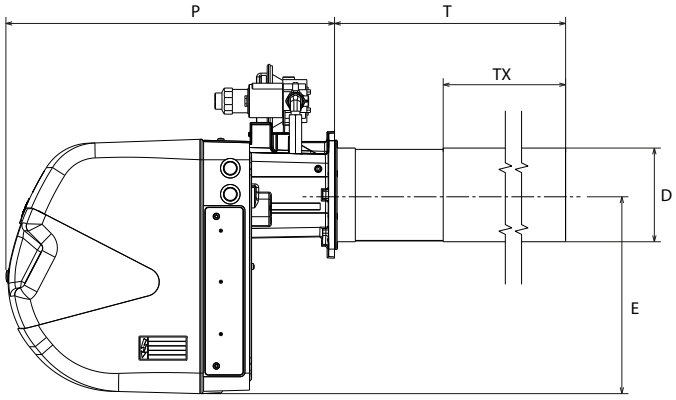
RX 180-250 S/PV F - COMBUSTION HEAD

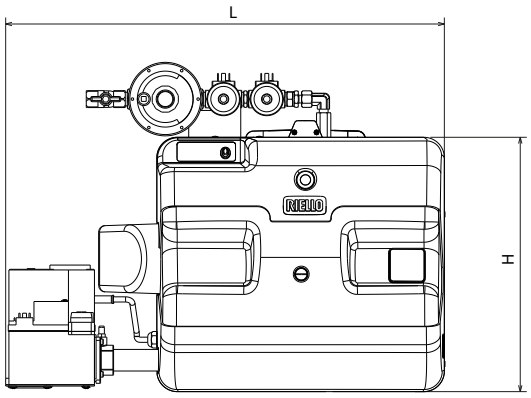


Description	Combustion head assembly	D mm	T mm	TX mm
COMBUSTION HEAD				
RX 180 S/PV F TC	**INCLUDED IN BURNER CODE**	119	160	460
RX 250 S/PV F TC	**INCLUDED IN BURNER CODE**	119	160	460
RX 180 S/PV F TL	**20028729**	119	600	250
RX 180 S/PV F TL	**20054833**	119	500	150
RX 250 S/PV F TL	**20058677**	119	690	250

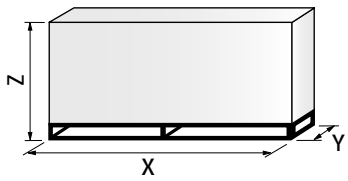
TX Combustion zone length.

RX 360 S/PV F





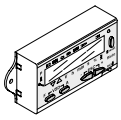
Description	H mm	L mm	P mm	T mm	TX mm	D mm	E mm
RX 360 S/PV F	390	675	502	635	410	144	306



Description	X mm	Y mm	Z mm
RX 180 S/PV F TC	730	550	530
RX 250 S/PV F TC	730	550	530
RX 180 S/PV F TL*	730	550	530
RX 250 S/PV F TL*	730	550	530
RX 360 S/PV F	1218	564	485

(*) Combustion head not included.

ACCESSORIES

Drawing	Burner model	Specification	Code
		POWER CONTROLLER To obtain modulating operation, the RX S/PV F series of burners requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range.	
	RX 180 S/PV F	RWF50.2 - Basic version with 3 position output.	**20094733**
	RX 250 S/PV F	RWF50.2 - Basic version with 3 position output.	**20094733**
	RX 360 S/PV F	RWF50.2 - Basic version with 3 position output.	**20086840**
	**All models**	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C)	**3010110**
	**All models**	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2,5 bar) with 4-20 mA output	**3010213**
		Pressure (0-16 bar) with 4-20 mA output	**3010214**
		Pressure (0-25 bar) with 4-20 mA output	**3090873**
	All models	PC INTERFACE KIT A special kit is available for the connection with a PC and the indication of hours of operation, number and types of blocks, number of engine revolutions and parameters safety.	**On demand**
	**All models**	DISPLAY AND OPERATING UNIT The AZL 21 LCD display Kit is suitable to be connected to the LME 71 control box in order to get indication of the operating status, to activate the diagnostic functions and to change the password-protected parameters (carried out only by qualified personnel).	**20109292**

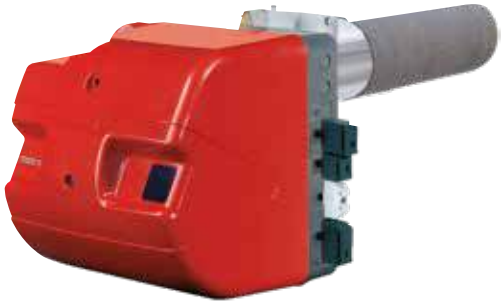
STATE OF SUPPLY

RX S/PV F series is strongly oriented to customer needs: burners are customized for each specific application. The premix models are therefore not orderable as standard products but only in the versions assuring a matching to target applications. A wide range of configurations is available to comply with every customer specification involving industrial ovens. The complete autonomy of each burner guarantees the optimization of the temperature distribution inside the oven and simplifies the design of the overall industrial plant.

Available power output:
– From 5 to 60 kW
Available electrical supply:
– 1/230/50-60
– 1/120/50-60
Fuel:
– Natural Gas
– LPG
Operating mode:
– One-stage
– Two-stage progressive
– Modulating
Modulation signal input:
– 0-10 V
– 4-20 A
– 3-point modulation or Up/Down
Aesthetic
– With cover
– Without cover
Combustion head
– Cylindrical or frontal shaped head
– One or three different combustion zones
– Customizable length and cross section
Other:
– Variable speed brushless motor
– Compact proportional valve
– Diagnostic via PC
– Possibility of canalize the air circuit
– Possibility or discharge in the environment
– Programmable pre-purging, post-purging, safety time
– BUS management
– Wide modulating turn down ratio up to 1:8 with shutdowns/starts-up
– On field or EN 676 certification

Low NOx air duct premix gas burners

RX 180-310 S/PV VA



- Premix gas burners
- NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)
- Compact flame (Riello patented combustion head with metal fiber mesh)
- Modulation with variable rpm brushless motor
- Operation with natural gas and LPG

MAIN APPLICATIONS

- Paint booths
- Direct exchange industrial applications

The Riello RX 180-310 S/PV VA series of modulating premix gas burner, is a range of product developed to respond to direct exchange application (e.g paint booth). The RX 180-310 S/PV VA series is available in four different models, with an output ranging from 22 to 310 kW.
The burners are fitted with a micro-processor based safety control which supplies indication of operation and diagnosis fault cases. Burners can operate on 50 or 60 Hz (dual-frequency). Also combustion head over a wide range of different lengths are available, meeting every application needs.
Burners can operate with LPG also by means of a simple regulation on the gas valve.

TECHNICAL DATA

Description	Heat output kW	Electric power supply Ph/V/Hz	Total electrical power kW	Notes	Code
RX 180 S/PV VA	25-180	1/230/50-60	0.51	(1)(3)	**On demand**
RX 250 S/PV VA	42-250	1/230/50-60	0.51	(1)(3)	**On demand**
RX 290 S/PV VA	42-290	1/230/50-60	0.51	(1)(2)(3)	**On demand**
RX 310 S/PV VA	50-310	1/230/50-60	0.51	(1)(3)	**On demand**

(1) 0-10V external modulation
(2) This maximum power is obtained only with depression exchange channels.
(3) The burner operates correctly with internal pressures in the channel of between -3 and +2 mbar and with maximum variations of +/- 1 mbar. The air speed inside the channel must be higher than 4 m/s.

COMBUSTION HEAD MATCHING

Description	Combustion head assembly code	Length mm	Note
RX 180 S/PV VA	**20025306**	T = 1000	
RX 250 S/PV VA **RX 290 S/PV VA** **RX 310 S/PV VA**	**3151000**	T = 1000	
	3151002	T = 1250	
	3151003	T = 1470	
	20085194	T = 1000 High temperature	(1)
	20069560	T = 1250 High temperature	(1)
	20085180	T = 1470 High temperature	(1)

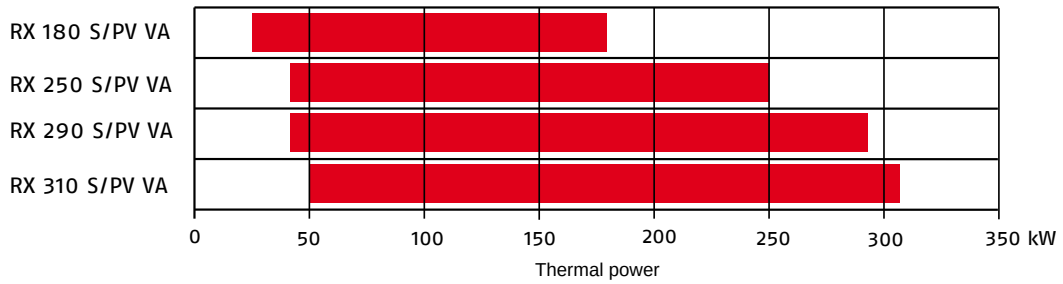
(1) To be used with air temperature inside the channel higher than 100°C.

* 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.

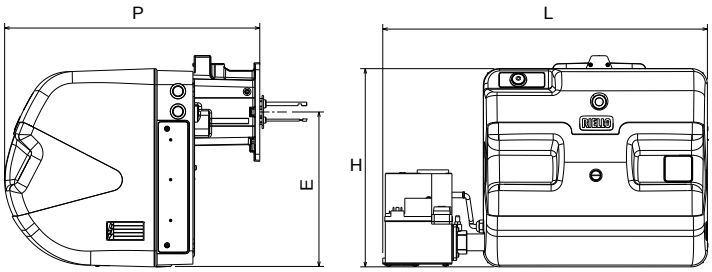
SERVICES FOR BURNERS

Burner range	Description service	Code
RX 180-310 S/PV VA	Installation advice	**27017470**
	Commissioning and adjustment	**27017472**
	Performance Check	**27017475**
	Regular maintenance	**27017481**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017488**
	Commissioning and adjustment with initial regular maintenance package	**27017496**

BURNER OUTPUTS

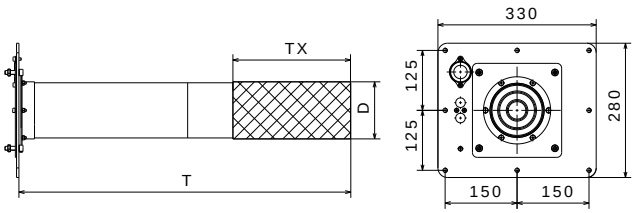


OVERALL DIMENSIONS



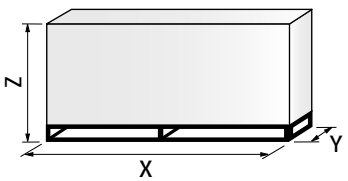
Description	H mm	L mm	P mm	E mm
RX 180 S/PV VA	390	640	503	306
RX 250 S/PV VA	390	640	503	306
RX 290 S/PV VA	390	640	503	306
RX 310 S/PV VA	390	640	503	306

COMBUSTION HEAD

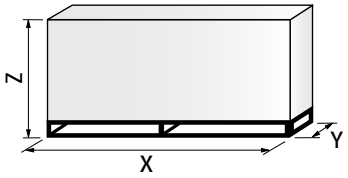


Description	T mm	TX mm	D mm
COMBUSTION HEAD			
20025306	1000	250	119
20085194-3151000	1000	350	119
3151002-20069560	1250	350	119
3151003-20085180	1470	350	119

TX Flame zone length.

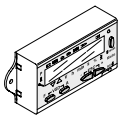


Description	X mm	Y mm	Z mm
RX 180 S/PV VA	1000	485	500
RX 250 S/PV VA	1000	485	500
RX 290 S/PV VA	1000	485	500
RX 310 S/PV VA	1000	485	500



Description	X mm	Y mm	Z mm
COMBUSTION HEAD			
T = 1000 mm	1065	345	283
T = 1250 mm	1315	345	283
T = 1470 mm	1535	345	283
T = 1570 mm	1635	345	283

ACCESSORIES

Drawing	Burner model	Specification	Code
	All models	POWER CONTROLLER To obtain modulating operation, the RX S/PV F series of burners requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. RWF50.2 - Basic version with 3 position output.	**20094733**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C)	**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2,5 bar) with 4-20 mA output	**3010213**
		Pressure (0-16 bar) with 4-20 mA output	**3010214**
		Pressure (0-25 bar) with 4-20 mA output	**3090873**
	All models	GAS VALVE SPACE SAVING KIT A special kit is available for gas valve space saving.	**20016843**
	All models	DIAGNOSTIC SOFWARE KIT A special kit is available that identifies the life of the burner by connecting to a PC indicating hours of operation, number and types of blocks, number of engine revolutions and parameters safety.	**On demand**
	All models	DISPLAY AND OPERATING UNIT The AZL 21 LCD display Kit is suitable to be connected to the LME 71 control box in order to get indication of the operating status, to activate the diagnostic functions and to change the password-protected parameters (carried out only by qualified personnel).	**20109292**

STANDARD EQUIPMENT

- Flange for gas valve
- Screws to fix the valve
- Gas valve
- 2, 4 and 7-pole plugs
- Gas pipe (only for RX 400 S/PV VA)
- Hood protection (only for RX 400 S/PV VA)
- Fixing screw
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Low NOx air duct premix gas burners

RX 400 S/PV VA



- Premix gas burners
- NOx emissions according to Class 3 of European standard EN 676 (NOx lower than 80 mg/kWh*)
- Compact flame (Riello patented combustion head with metal fiber mesh)
- Modulation with variable rpm brushless motor
- Operation with natural gas and LPG

MAIN APPLICATIONS

- Paint booths
- Direct exchange industrial applications

The Riello RX 400 S/PV VA series of modulating premix gas burner, is a range of product developed to respond to direct exchange application (e.g paint booth).
The RX 400 S/PV VA series is available with an output ranging from 45 to 400 kW.
The burners are fitted with a micro-processor based safety control which supplies indication of operation and diagnosis fault cases. Burners can operate on 50 or 60 Hz (dual-frequency).
Also combustion head over a wide range of different lengths are available, meeting every application needs.
Burners can operate with LPG also by means of a simple regulation on the gas valve.

TECHNICAL DATA

Description	Heat output kW	Electric power supply Ph/V/Hz	Total electrical power kW	Note	Code
RX 400 S/PV VA	45-400	1/230/50-60	1,0	(1)(3)	**On demand**

(1) 0-10V external modulation
(3) The burner operates correctly with internal pressures in the channel of between -3 and +2 mbar and with maximum variations of +/- 1 mbar. The air speed inside the channel must be higher than 4 m/s.

COMBUSTION HEAD MATCHING

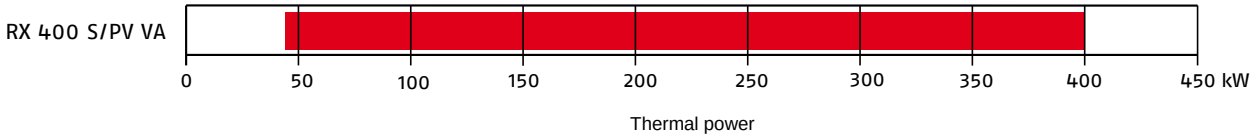
Description	Combustion head assembly code	Length mm
RX 400 S/PV VA	3151000	T = 1000
	3151001	T = 1250
	3151004	T = 1570

* 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.

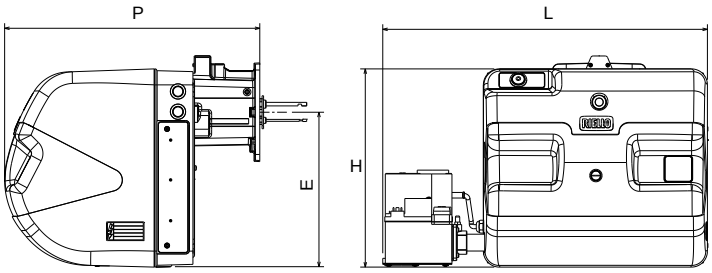
SERVICES FOR BURNERS

Burner range	Description service	Code
RX 400 S/PV VA	Installation advice	**27017470**
	Commissioning and adjustment	**27017472**
	Performance Check	**27017475**
	Regular maintenance	**27017481**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017488**
	Commissioning and adjustment with initial regular maintenance package	**27017496**

BURNER OUTPUT

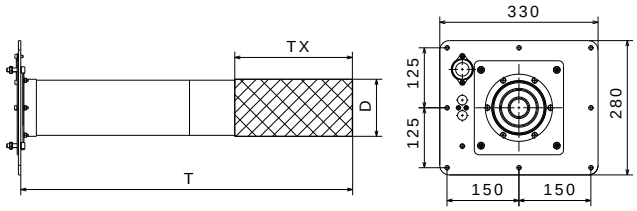


OVERALL DIMENSIONS



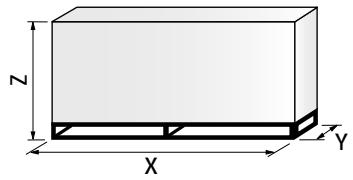
Description	H mm	L mm	P mm	E mm
RX 400 S/PV VA	457	707	524	353

COMBUSTION HEAD

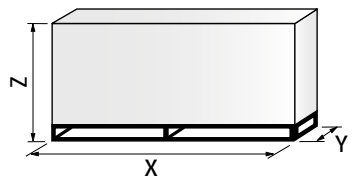


Description	T mm	TX mm	D mm
COMBUSTION HEAD			
3151000	1000	350	119
3151001	1250	450	119
3151004	1570	450	119

TX Flame zone length.

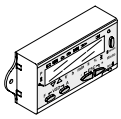


Description	X mm	Y mm	Z mm
RX 400 S/PV VA	1000	485	500



Description	X mm	Y mm	Z mm
COMBUSTION HEAD			
T = 1000 mm	1065	345	283
T = 250 mm	1315	345	283
T = 1570 mm	1635	345	283

ACCESSORIES

Drawing	Burner model	Specification	Code
	**RX 400 S/PV VA**	POWER CONTROLLER To obtain modulating operation, the RX S/PV F series of burners requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. RWF50.2 - Basic version with 3 position output.	**20086840**
	**RX 400 S/PV VA**	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C)	**3010110**
	**RX 400 S/PV VA**	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.	
		Pressure (0-2,5 bar) with 4-20 mA output	**3010213**
		Pressure (0-16 bar) with 4-20 mA output	**3010214**
		Pressure (0-25 bar) with 4-20 mA output	**3090873**
	**RX 400 S/PV VA**	GAS VALVE SPACE SAVING KIT A special kit is available for gas valve space saving.	**20016843**
	RX 400 S/PV VA	DIAGNOSTIC SOFWARE KIT A special kit is available that identifies the life of the burner by connecting to a PC indicating hours of operation, number and types of blocks, number of engine revolutions and parameters safety.	**On demand**
	**RX 400 S/PV VA**	DISPLAY AND OPERATING UNIT The AZL 21 LCD display Kit is suitable to be connected to the LME 71 control box in order to get indication of the operating status, to activate the diagnostic functions and to change the password-protected parameters (carried out only by qualified personnel).	**20109292**

STANDARD EQUIPMENT

- Flange for gas valve
- Screws to fix the valve
- Gas valve
- 2, 4 and 7-pole plugs
- Gas pipe (only for RX 400 S/PV VA)
- Hood protection (only for RX 400 S/PV VA)
- Fixing screw
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

PROCESS GAS BURNERS

STANDARD

Standard NOx emissions

ONE-STAGE



RIELLO 40 FS

- Convection ovens (rotary or fixed tray type)
- Bedplate ovens
- Conduction ovens
- Radiant heat ovens
- Continuous, tunnel and steam tube ovens

page 650



GULLIVER RSF

- Industrial ovens
- Paint booths
- Low-power steam generators

page 660

TWO-STAGE



RIELLO 40 FSD

- Convection ovens (rotary or fixed tray type)
- Bedplate ovens
- Conduction ovens
- Radiant heat ovens
- Continuous, tunnel and steam tube ovens

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GULLIVER RSDF

- Industrial ovens
- Paint booths
- Low-power steam generators

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AIR DUCT



GULLIVER RS VA

- Paint ovens
- Low-temperature dryers (grain, straw, wood)
- Printing machines
- Laundry machines
- Agricultural dryers (cereals, fodder, tobacco)

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RS 28-50 VA

- Paint ovens
- Low-temperature dryers (grain, straw, wood)
- Printing machines
- Laundry machines
- Agricultural dryers (cereals, fodder, tobacco)

page 671



RS 70 VA

- Paint ovens
- Low-temperature dryers (grain, straw, wood)
- Printing machines
- Laundry machines
- Agricultural dryers (cereals, fodder, tobacco)

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ADB

- Dryers for ceramics, bricks, refractory material
- Ovens and dryers for surface treatments
- Air heaters for printing and packaging industry
- Food industry
- Direct exchange industrial applications

page 680



GVA ADB

- Dryers for ceramics, bricks, refractory material
- Ovens and dryers for surface treatments
- Air heaters for printing and packaging industry
- Food industry
- Direct exchange industrial applications

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BVA ADB ME

- Agricultural dryers (cereals, fodder, tobacco)
- Direct exchange industrial applications

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HIGH TURNDOWN RATIO



BPR

- Stenters, dryers, polymerisation units for textile industry
- Dryers for ceramics, bricks, refractory material
- Dryers and ovens for surface treatments
- Air heaters and dryers for paper and printing industry
- Agricultural dryers (cereals, fodder, tobacco)

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PROCESS GAS BURNERS

STANDARD

Standard NOx emissions

HIGH SPEED



BPM GV - BPN GV

- Ovens and dryers for ceramics, bricks, refractory material
- Steel industry
- Tempering furnace for glass industry
- Air heaters for printing and packaging industry
- Agricultural dryers (cereals, fodder and tobacco)

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METAL VOLUMETRIC BURNERS FOR RADIANT TUBES



N/TR

- Ceramics, bricks, refractory material industry:
  - Roller ovens, tunnel ovens, intermittent ovens, melting ovens
  - Continuous and intermittent dryers
- Steel industry
- Surface treatments

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INCINERATORS AND POST-COMBUSTORS



FC

- Ceramics industry: post-combustors for atomizers
- Incineration of fumes from heat treatments and metal melting ovens (steel industry)
- Incineration of fumes from paint and solvent evaporation
- Environment: municipal solid waste leachate treatment ovens with reduced calorific value
- Applications that require post-combustion and/or flue gas incineration

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Standard gas light-process burners

RIELLO 40 FS



- One-stage gas burners for light process applications
- Robust structure, aluminium body and metal sheet cover for component protection
- Microprocessor control box with diagnostic function and remote reset
- Ease of installation
- Flange coupling system in maintenance position
- Combustion air calibration through damper
- Electrical protection level IP X0D (IP 40)

MAIN APPLICATIONS

- Convection ovens (rotary or fixed tray type)
- Bedplate ovens
- Conduction ovens
- Radiant heat ovens
- Continuous, tunnel and steam tube ovens

Riello 40 FS series of One-stage gas burners, is a complete range of products developed to respond to any request for light industrial application. The Riello 40 FS series is available in five different models, with an output ranging from 11 to 220 kW, divided in four different structures.
All models use the same components designed by Riello for the Riello 40 FS series. The high quality level guarantees safe working.
The Riello 40 FS burners are fitted with a microprocessor - based control box, with diagnostic functions.
In developing these burners, special attention was paid to reducing noise, to the ease of installation and adjustment and to obtain the smallest size possible to fit into any sort of boiler available on the market.
All models are approved by the EN 676 European Standard and are compliant with European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.
All burners are tested before leaving the factory.

TECHNICAL DATA

Description	Heat output natural gas		Electric power supply	Total electrical power	Certification	Note	Code
	kW	Nm3/h	Ph/V/Hz	kW			
MODELS FOR NATURAL GAS APPLICATIONS							
FS3	11-35	1,1-3,5	1/230/50	0,15	CE-0476CT2714	(1)	**3756506**
FS5	23-58	2,3-5,8	1/230/50	0,15	CE-0476CT2714	(1)	**3756606**
FS8	46-93	4,6-9,3	1/230/50	0,15	CE-0476CT2714	(1)	**3756706**
FS10	42-116	4,2-11,6	1/230/50	0,13	CE-0476CT2714	(1)	**3756435**
FS15	81-175	8,1-17,5	1/230/50	0,13	CE-0476CT2714	(1)	**3756803**
FS20	81-220	8,1-22	1/230/50	0,25	CE-0476CT2714	(1)	**3756935**

Net calorific value of natural gas (G20): 10 kWh/Nm3.
The burners comply with 2016/426/EU Regulation, the 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 676 Standard.
(1) Electrical connections with plug and socket.

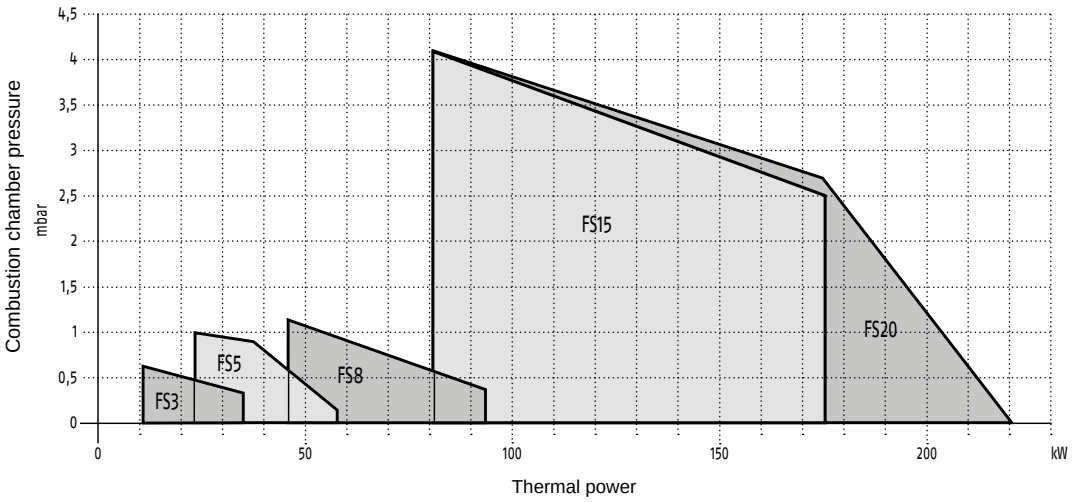
Description	Heat output LPG		Electric power supply	Total electrical power	Certification	Note	Code
	kW	Nm^3/h	Ph/V/Hz	kW			
MODELS FOR LPG APPLICATIONS							
FSP10	42-116	1,6-4,4	1/230/50	0,13	CE–0063AP6680	(1)	**3756439**
FSP20	81-220	3,1-8,5	1/230/50	0,25	CE–0063AP6680	(1)	**3756939**

Net calorific value of natural gas (G31): 25,8 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, the 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 676 Standard.
(1) Electrical connections with plug and socket.

SERVICES FOR BURNERS

Burner range	Description service	Code
RIELLO 40 FS	Installation advice	**27017470**
	Commissioning and adjustment	**27017471**
	Performance Check	**27017475**
	Regular maintenance	**27017480**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017487**
	Commissioning and adjustment with initial regular maintenance package	**27017495**

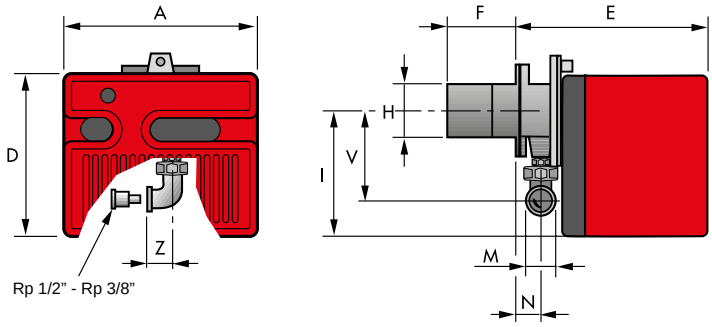
FIRING RATES



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.

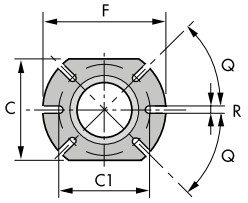
OVERALL DIMENSIONS



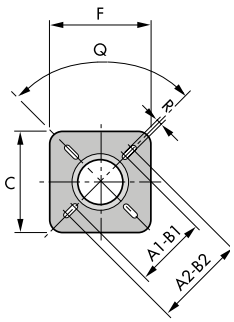
Description	A mm	D mm	E mm	F mm	H mm	I mm	M	N mm	V mm	Z mm
FS3	252	215	230	100	91	165	Rp 3/8"*	37	132	25
FS5	272	233	295	100	91	180	Rp ½"	48	138	28
FS8	305	262	347	110	105	204	Rp ¾"	61	142	33
FS10	305	262	346	110	105	204	Rp v"	61	142	33
FS15	350	298	389	120	125	230	Rp ¾"	67	152	33
FS20	350	298	389	120	125	230	Rp ¾"	67	152	33

* With reduction nipple, standard equipment on R40 FS3.

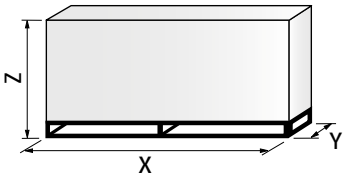
FS3-FS10



FS15-FS20



Description	A1 mm	A2 mm	B1 mm	B2 mm	C mm	C1 mm	F mm	Q	R mm
FS3	-	-	-	-	140	130	170	45°	10
FS5	-	-	-	-	140	130	170	45°	10
FS8	-	-	-	-	160	130	185	45°	11
FS10	-	-	-	-	160	130	185	45°	11
FS15	155	200	155	200	170	-	170	90°	11
FS20	155	200	155	200	170	-	170	90°	11

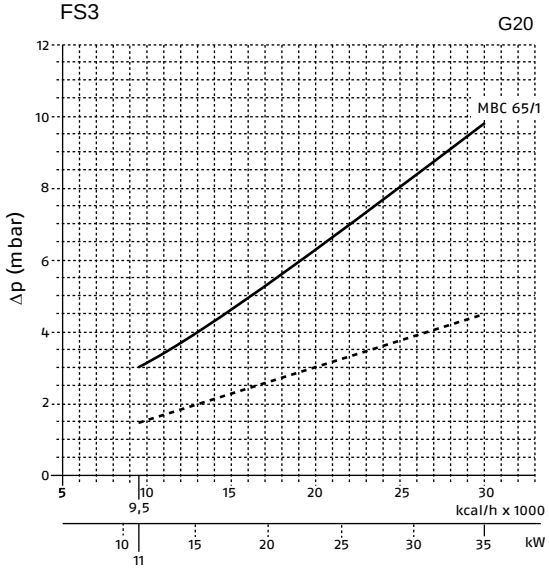


Description	X mm	Y mm	Z mm	Net weight kg
FS3	375	335	310	9.5
FS5	445	355	335	11
FS8	483	495	330	13
FS10	483	495	330	16
FS15	535	535	375	19
FS20	535	535	375	20

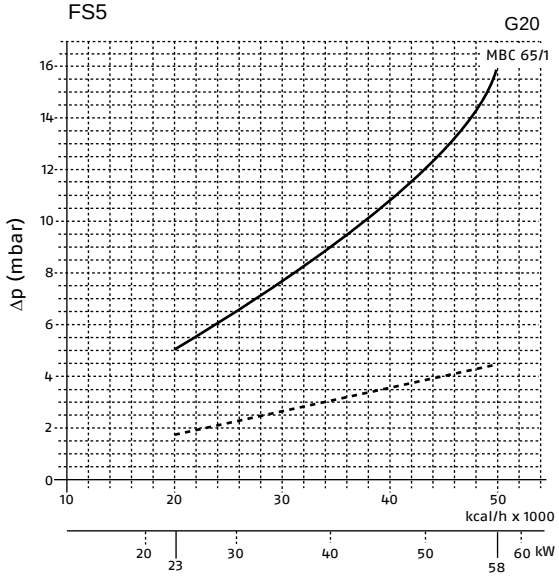
PRESSURE LOSS DIAGRAMS

MBC SERIES GAS TRAINS

FS3



FS5

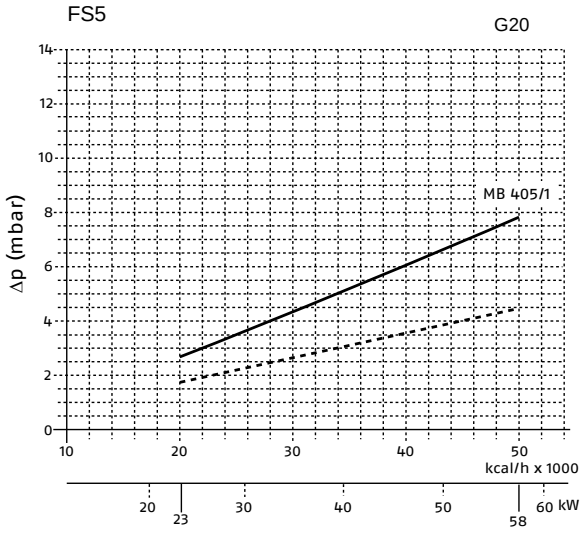


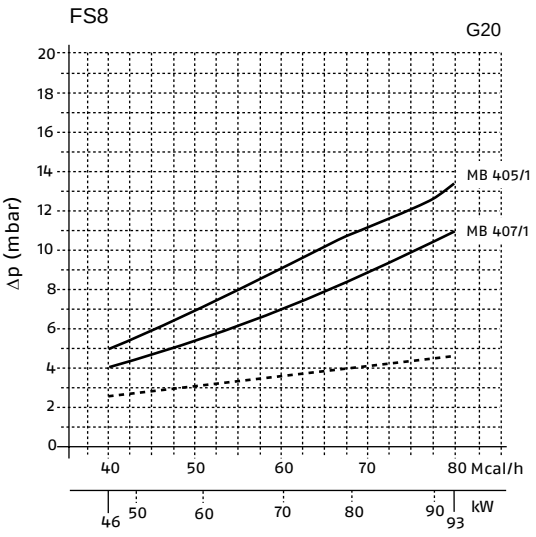
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

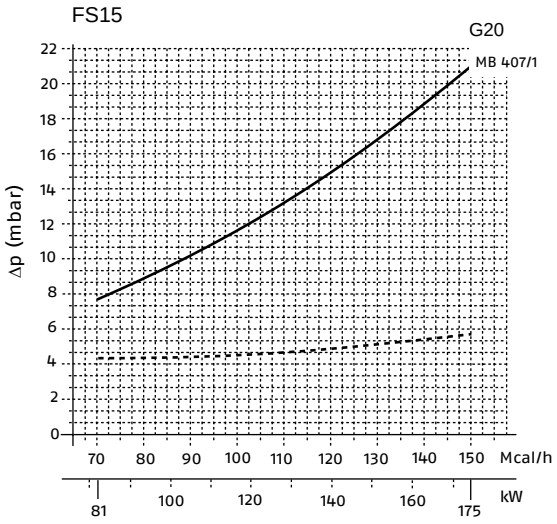
——— Combustion head + gas train

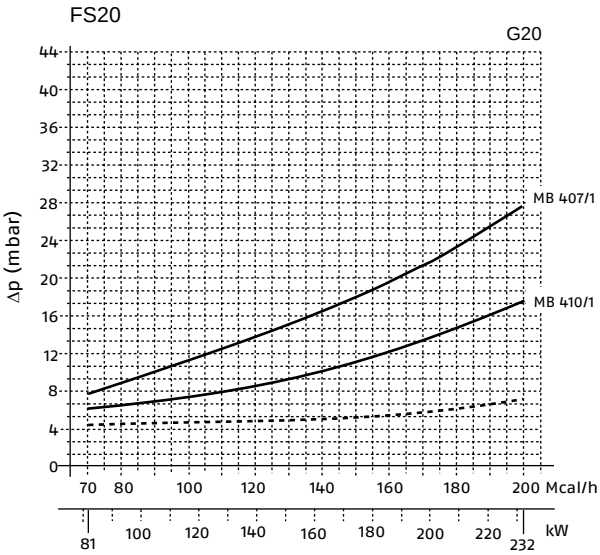
- - - - Combustion head

MB SERIES GAS TRAINS









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

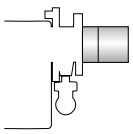
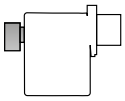
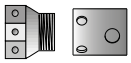
- - - - Combustion head

GAS TRAINS

Description (1)	Code	Notes	Ø Gas train	C.T. (2)	VPS kit code (3)	Burner	
						Natural gas	LPG
MBC SERIES ONE-STAGE GAS TRAINS							
MBC 65/1–RSD 20	**3970569***	(5)	½"	-	(4)	FS3-FS5	FS3-FS5
MB SERIES ONE-STAGE GAS TRAINS							
MB 405/1-RSD 20	**3970530***	(5)(6)	½"	-	3010123	FS5-FS8-FS10	FS5-FS8-FS10
MB 407/1-RSD 20	**3970531***	(5)(6)(7)	¾"	-	3010123	FS8-FS10 FS15-FS20	FS8-FS10 FS15-FS20
MB 410/1-RSD 20	**3970532***	(5)	1"	-	3010123	FS20	FS20

(1) Please refer to "GAS TRAIN DESIGNATION" on page 153.
(2) C.T. indicates the gas valve seal control device (compulsory, according to EN 676, for burner output up to 1200 kW).
(3) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) Not available.
(5) With installed plug (if the plug is not necessary, remove it in accordance with gas train instruction manual indication).
(6) FS8-FS10 using natural gas, the gas train can be combined only in case of burnt output lower than 80 kW.
(7) FS20 using natural gas, the gas train can be combined only in case of burnt output lower than 180 kW.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".
Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

ACCESSORIES

Drawing	Burner model	Specification	Notes	Code
		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.		
	FS3-FS5	Standard head length = 100 mm - Extended head length = 125 mm		**3000820**
	FS8	Standard head length = 110 mm - Extended head length = 170 mm		**3001064**
	FS8	Standard head length = 110 mm - Extended head length = 278 mm		**3000920**
	FS15-FS20	Standard head length = 120 mm - Extended head length = 280 mm		**3000873**
	FS3-FS5 FS8-FS15	REMOTE RESET CONTROL KIT FOR MG 557/3/5 CONTROL BOX The MG 557 control box can be remotely released using an electric command kit. This kit must be installed in conformity with the local authority.		**3002750**
	FS15-FS20	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
		INLET AIR ASPIRATION KIT This kit allows to channel the external air directly into the burner.		
	FS3	Kit code for inlet air aspiration.	(1)	**20027571**
	FS5	Kit code for inlet air aspiration.	(1)	**20027574**
	FS8	Kit code for inlet air aspiration.	(1)	**20027577**
	FS10	Kit code for inlet air aspiration.	(1)	**20159837**
	FS15-FS20	Kit code for inlet air aspiration	(1)	**20159751**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	FS3	Kit code for standard and extended head.		**3000881**
	FS5	Kit code for standard and extended head.		**3000882**
	FS8	Kit code for standard and extended head.		**3000927**
	FS10	Kit code for standard and extended head.		**3000884**
	FS15	Kit code for standard and extended head.		**3000885**
	FS20	Kit code for standard and extended head.		**3000886**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.		
	FS3	Kit code for standard and extended head.		**3000888**
	FS5	Kit code for standard and extended head.		**3000889**
	FS8	Kit code for standard and extended head.		**3000890**
	FS10	Kit code for standard and extended head.		**3000891**
	FS20	Kit code for standard and extended head.		**3000893**
		END CONE WITH TURBULATOR DISK The end cone turbolator disk reduces the flame length. It is suitable for oven application (CO emissions) and short boiler chamber.		
	FS5	Lengthening compared to standard head + 15 mm		**3000916**
	FS8	Lengthening compared to standard head + 18 mm		**3000917**
	FS10	Lengthening compared to standard head + 18 mm		**3000918**
	FS20	Lengthening compared to standard head + 23 mm		**3000919**
	FS5-FS8 FS10-FS20	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**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		**3000945**
	FS10-FS15-FS20	PC INTERFACE KIT To connect the RMG control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) By applying this kit, the combustion air is drawn in from outside, so there can be significant setting variations with respect to the original configuration and the instructions on the burner manual, therefore, it is recommended to adjust combustion according to the kit instruction.

STATE OF SUPPLY

Monoblock, gas burners, completely automatic, with One-stage settings fitted with:
- Fan with forward curve blades
- Cover lined with sound-deadening material
- Metallic and fixed air damper with adjustment
- 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 flame control box, with diagnostic functions
- IP X0D (IP 40) electric protection level. IP X0D (IP 40) electric protection level.

STANDARD EQUIPMENT

- Flange insulation screen
- Screws and nuts for fixing the flange to the boiler
- 7-pole socket
- Hinge
- Reduction nipple Rp 1/2” - Rp 3/8” (for R40 FS3 only)
- Grommet
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Standard gas light-process burners

RIELLO 40 FSD



- Two-stage gas burners for light process applications
- Robust structure, aluminium body and metal sheet cover for component protection
- Microprocessor control box with diagnostic function and remote reset
- Ease of installation
- Flange coupling system in maintenance position
- Combustion air calibration through damper
- Electrical protection level IP X0D (IP 40)

MAIN APPLICATIONS

- Convection ovens (rotary or fixed tray type)
- Bedplate ovens
- Conduction ovens
- Radiant heat ovens
- Continuous, tunnel and steam tube ovens

Riello 40 FSD series of Two-stage gas burners, is a complete range of products developed to respond to any request for light industrial process.
Riello 40 FSD series is available in two different models, with an output ranging from 23 to 220 kW, divided in two different structures. All models use the same components designed by Riello for the Riello 40 FSD series. The high quality level guarantees safe working.
The Riello 40 FSD burners are fitted with a microprocessor - based control box, with diagnostic functions.
In developing these burners, special attention was paid to reducing noise, to the ease of installation and adjustment and to obtain the smallest size possible to fit into any sort of boiler available on the market.
All models are approved by the EN 676 European Standard and are compliant with European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.
All burners are fired before leaving the factory.

TECHNICAL DATA

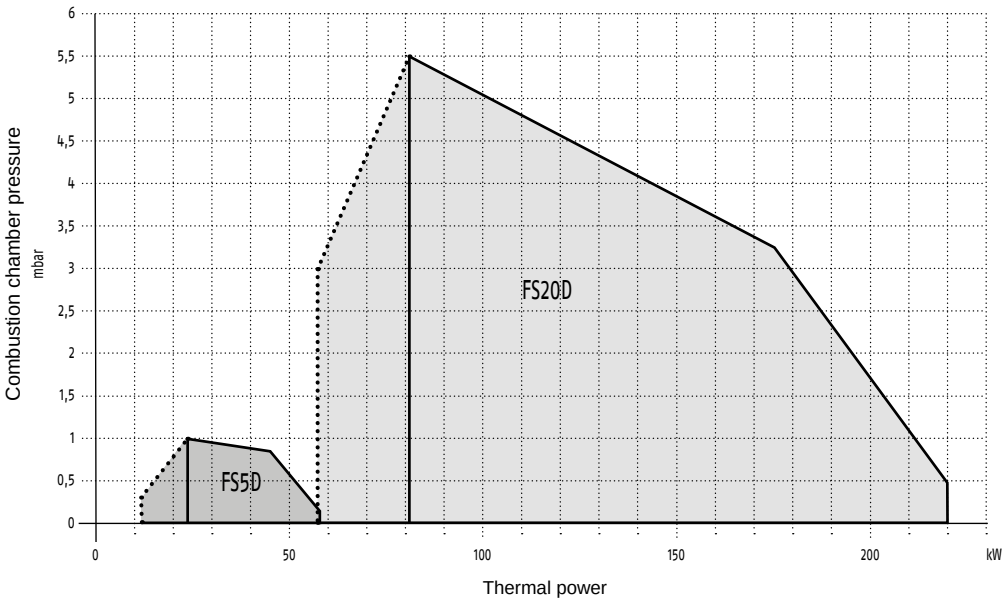
Description	Heat output natural gas		Electric power supply	Total electrical power	Certification	Notes	Code
	kW	Nm3/h	Ph/V/Hz	kW			
FS5D	12/23-58	1,2/2,3-5,8	1/230/50	0.11	CE-0476CT2714	(1)	**3758705**
FS20D	58/81-220	5,8/8,1-22	1/230/50	0.25	CE-0476CT2714	(1)	**3759105**

Net calorific value of natural gas (G20): 10 kWh/Nm3.
The burners comply with 2016/426/EU Regulation, the 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 676 Standard.
(1) Electrical connections with terminal block.

SERVICES FOR BURNERS

Burner range	Description service	Code
RIELLO 40 FSD	Installation advice	**27017470**
	Commissioning and adjustment	**27017471**
	Performance Check	**27017475**
	Regular maintenance	**27017480**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017487**
	Commissioning and adjustment with initial regular maintenance package	**27017495**

FIRING RATES

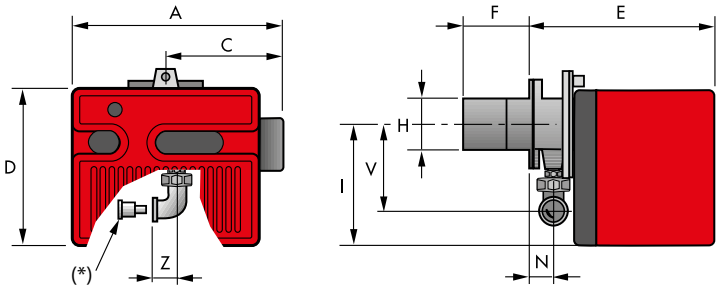


Useful firing rates for choosing the burner

1st stage operation range

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

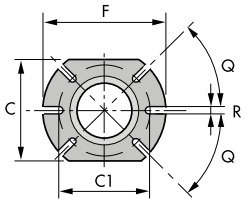
OVERALL DIMENSIONS



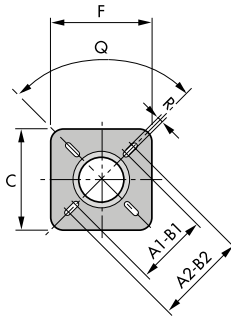
Description	A mm	C mm	D mm	E mm	Fv	H mm	I mm	N mm	V mm	Z mm
FS5D	306	170	233	295	100	91	180	48	138	28
FS20D	413	238	298	389	120	125	230	67	152	33

(*) With reduction nipple.

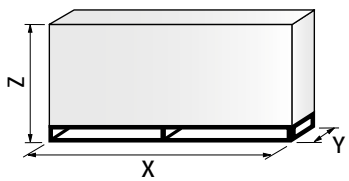
FS5D



FS20D



Description	A1 mm	A2 mm	B1 mm	B2 mm	C mm	C1 mm	F mm	Q	R mm
FS5D	-	-	-	-	140	130	170	45°	10
FS20D	155	200	155	200	170	-	170	90°	11

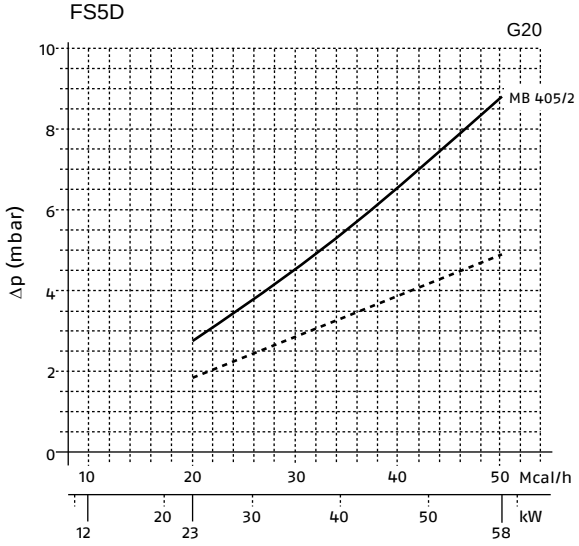


Description	X mm	Y mm	Z mm	Net weight kg
FS5D	445	355	335	10
FS20D	535	535	375	20

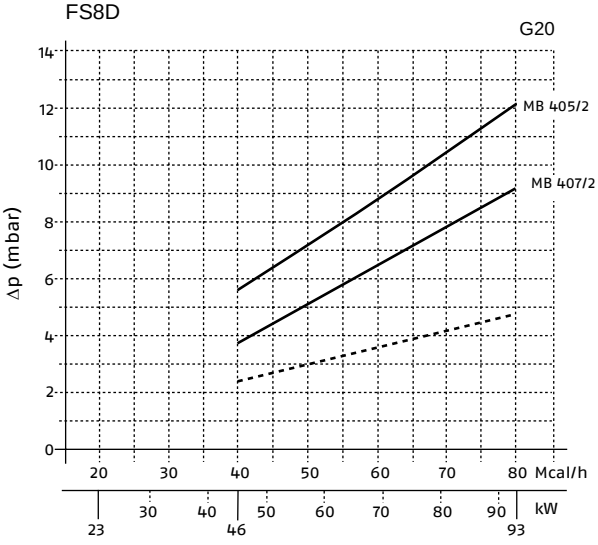
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAINS

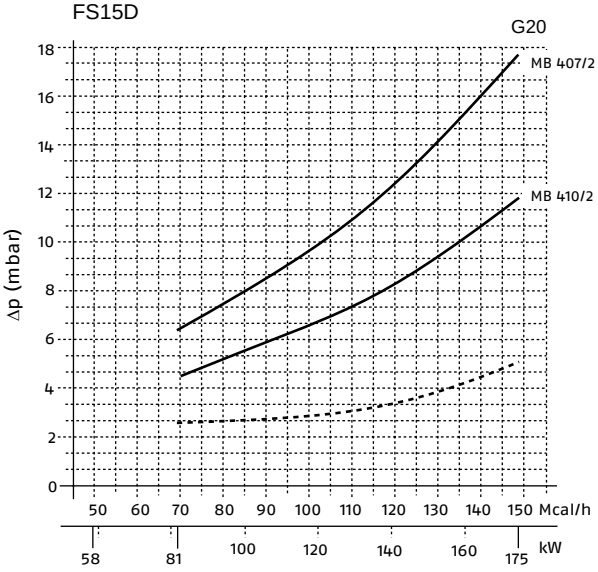
FS5D



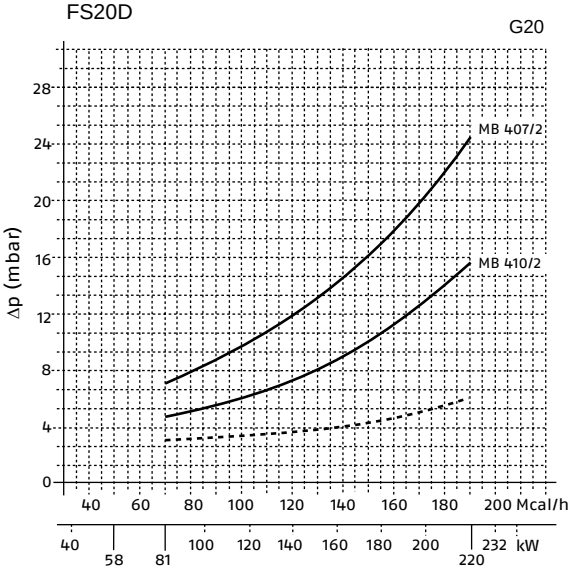
FS8D



FS15D



FS20D



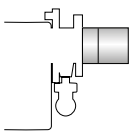
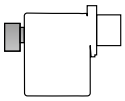
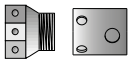
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

GAS TRAINS

Description (1)	Code	Notes	Ø Gas train	C.T. (2)	VPS kit code (3)	Burner
MB SERIES TWO-STAGE GAS TRAINS						
MB 405/2-RSD 20	**3970084**	(5)	½"	-	3010123	FS5D
MB 407/2-RSD 20	**3970537**	(5)(6)	¾"	-	3010123	FS20D
MB 410/2-RSD 20	**3970534**	(5)(6)	1"	-	3010123	FS20D

(1) Please refer to "GAS TRAIN DESIGNATION" on page 153.
(2) C.T. indicates the gas valve seal control device (compulsory, according to EN 676, for burner output up to 1200 kW).
(3) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) Not available.
(5) With installed plug (if the plug is not necessary, remove it in accordance with gas train instruction manual indication).
(6) FS20D using natural gas, the gas train can be combined only in case of burnt output lower than 180 kW.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".
Key to symbols:
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

ACCESSORIES

Drawing	Burner model	Specification	Code
		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.	
	FS5D	Standard head length = 100 mm - Extended head length = 125 mm	**3000820**
	FS20D	Standard head length = 120 mm - Extended head length = 280 mm	**3000873**
	FS5D	REMOTE RESET CONTROL KIT FOR MG 557/3/5 CONTROL BOX The MG 557 control box can be remotely released using an electric command kit. This kit must be installed in conformity with the local authority.	**3002750**
	FS20D	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**3010094**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.	
	FS5D	Kit code for standard and extended head.	**3000882**
	FS20D	Kit code for standard and extended head.	**3000886**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.	
	FS5D	Kit code for standard and extended head.	**3000889**
	FS20D	Kit code for standard and extended head.	**3000894**
		END CONE WITH TURBULATOR DISK The end cone turbolator disk reduces the flame length. It is suitable for oven application (CO emissions) and short boiler chamber.	
	FS5D	Lengthening compared to standard head + 15 mm	**3000916**
	FS20D	Lengthening compared to standard head + 23 mm	**3000919**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).	**3000945**
	FS20D	PC INTERFACE KIT To connect the RMG control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.	**3002719**

STATE OF SUPPLY

Monoblock, gas burners, completely automatic, with Two-stage settings fitted with:
- Fan with forward curve blades
- Metallic cover
- Air damper, open in stand by, driven by an electric servomotor
- Air damper with 1st and 2nd stage adjustement
- 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
- 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 MG 557 (with diagnostic, remote reset, continuous purge integrated, recycle, post-purge)
- IP X0D (IP 40) electric protection level.

STANDARD EQUIPMENT

- Insulating gasket
- Screws and nuts for fixing the flange to the boiler
- Hinge
- Cable grommet
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Standard gas light-process burners

GULLIVER RSF



- One-stage gas burners
- Suitable for remote reset.
- Compact size.
- Ease of maintenance.
- Simplified calibration: air regulator with external gear.
- High flexibility of use and adaptability to the operating conditions.
- Digital control box with diagnostic function.

MAIN APPLICATIONS

- Industrial ovens
- Paint booths
- Low-power steam generators

Riello Gulliver RS5F, is a new model of the series of One-stage gas burners, developed to respond to any request for light industrial processes like bakery ovens, spray painting ovens, small steam or thermal boilers and all applications requiring a reliable, user-friendly industrial product with enhanced performance and specific functions. Gulliver RS5F series has an output ranging from 160 to 330 kW, uses the same components designed by Riello for the Gulliver series and have the same ventilation system and overall dimensions as the standard one-stage gas model.
The burners are fitted with a microprocessor-based burner safety control box which supplies indication of operation and diagnosis of fault cause.
This new burner can operate on 50 or 60 Hz and 220-230 V (dual frequency); it is compliant with the EN 676 Standard (Forced draught burners for gaseous fuels) and to European Directives for EMC, Low Voltage and Machinery.
All burners are fired before leaving the factory.

TECHNICAL DATA

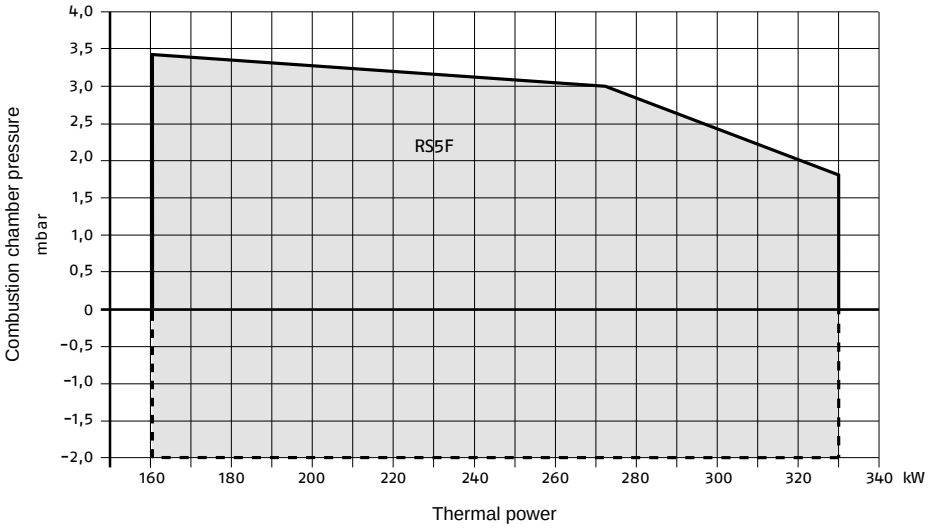
Description	Heat output natural gas		Electric power supply	Total electrical power	Certification	Notes	Code
	kW	Nm3/h	Ph/V/Hz	kW			
RS5F	160-330	16,0-33,0	1/220-230/50-60	0,43 (at 50 Hz) 0,60 (at 60 Hz)	CE-0085BM0114	(1)	**3761971**

Net calorific value of natural gas (G20): 10 kWh/Nm^3.
The burners comply with 2016/426/EU Regulation, the 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 676 Standard.
(1) Electrical connections with plug and socket.

SERVICES FOR BURNERS

Burner range	Description service	Code
GULLIVER RSF	Installation advice	**27017470**
	Commissioning and adjustment	**27017471**
	Performance Check	**27017475**
	Regular maintenance	**27017480**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017487**
	Commissioning and adjustment with initial regular maintenance package	**27017495**

FIRING RATES

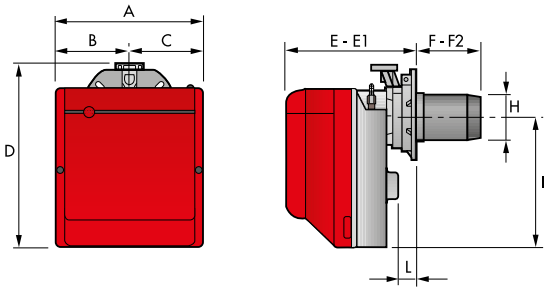


Useful firing rates for choosing the burner

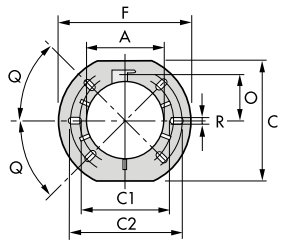
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

IMPORTANT:
For the part of the working field that is depressurised, refer to EN 746-2 Standard.

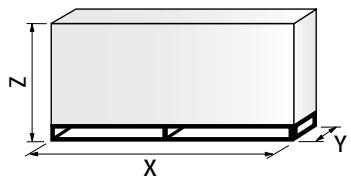
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	E1 mm	F mm	F2 mm	H mm	I mm	L mm
RS5F	300	150	150	392	278	300	225	203	137	286	45



Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
RS5F	137	203	170	200	218	80.5	45°	11

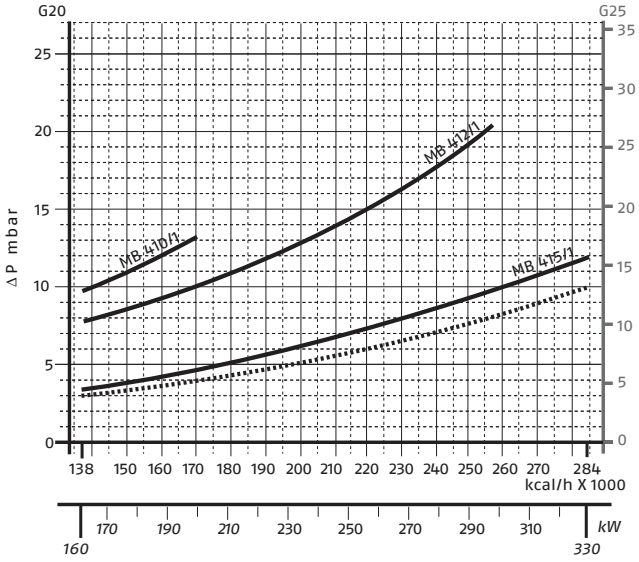


Description	X mm	Y mm	Z mm	Net weight kg
RS5F	600	345	430	18

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAINS

RS5F



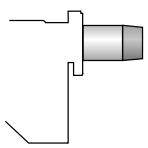
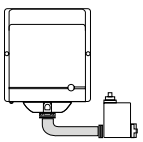
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

GAS TRAINS

Description (1)	Code	Notes	Ø Gas train	C.T. (2)	Burner
MB SERIES ONE-STAGE GAS TRAINS					
MB 410/1-F3SD 20	**3970549***	(3)(4)	1”	3010123	RS5F
MB 412/1-F3SD 20	**3970550***	(3)(5)	1”¼	3010123	RS5F
MB 415/1-F3SD 30	**3970558***	(3)	1”½	3010123	RS5F

(1) Please refer to "GAS TRAIN DESIGNATION" on page 153.
(2) The C.T. valve leak test control device can be supplied as accessory separately from gas train (see “GAS TRAIN ACCESSORIES”).
(3) With installed plug.
(4) Using natural gas, the gas train can be combined only in case of burnt output lower than 200 kW.
(5) Using natural gas, the gas train can be combined only in case of burnt output lower than 300 kW.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section “GAS TRAINS FOR BURNERS”.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS5F	EXTENDED HEAD KIT Burners standard head can be transformed into "extended head" versions by using the special kit. Standard head length = 203-225 mm - Extended head length = 302-317 mm	**3001016**
	RS5F	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.	**3001011**
	RS5F	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**
	RS5F	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.	**3001178**

Drawing	Burner model	Specification	Code
	RS5F	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).	**3000945**

STATE OF SUPPLY

Monobloc, gas burners, completely automatic, with One-stage operation fitted with:
- Fan with forward curve blades
- Cover lined with sound-proofing material
- Air damper, always open in stand by, with external adjustment, with no need to remove the cover
- Single phase electric motor 220-230 V, 50-60 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

- Flange with insulating gasket
- Screw and nut for flange
- Screw and nuts for flange to be fixed to the heat generator
- 7-pin plug
- Remote control release kit
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Standard gas light-process burners

GULLIVER RSDF



- Two-stage gas burners
- Suitable for remote reset
- Compact size
- Ease of maintenance
- Simplified calibration: air regulator with external gear
- High flexibility of use and adaptability to the operating conditions
- Digital control box with diagnostic function

MAIN APPLICATIONS

- Industrial ovens
- Paint booths
- Low-power steam generators

Riello Gulliver RS5DF is a new model of the series of Two-stage gas burners, characterized for its small dimensions in spite of its high combustion performance. It has been developed to respond to any request for light industrial processes like bakery ovens, spray painting ovens, small steam or thermal boilers and all applications requiring a reliable, user-friendly industrial product with enhanced performance and specific functions.
This model uses the same components designed by Riello for the 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.
This new burner can operate on 50 or 60 Hz and 220-230 V (dual frequency); it is compliant with EN 676 Standard (Forced draught burners for gaseous fuels) and to European Directives for EMC, Low Voltage and Machinery.
For depressurised working field see EN 746-2 Standard.
All burners are fired before leaving the factory.

TECHNICAL DATA

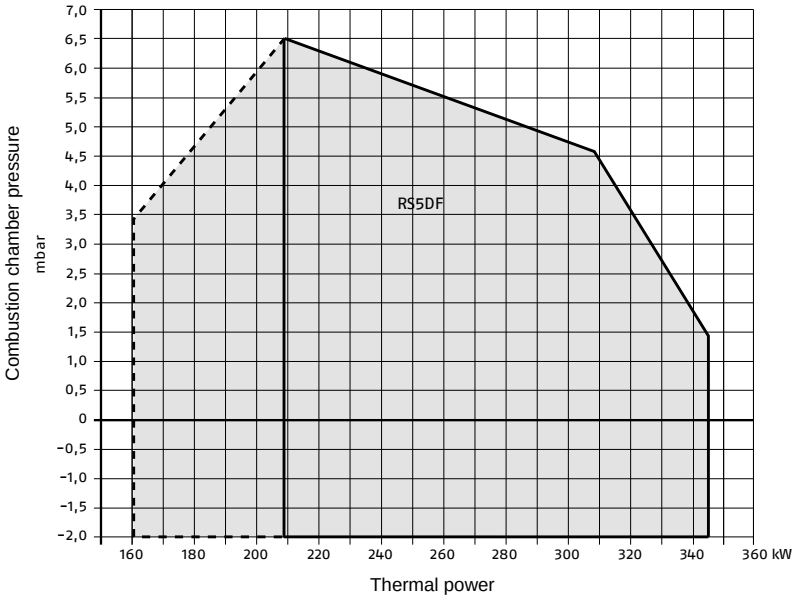
Description	Heat output natural gas		Electric power supply	Total electrical power	Certification	Notes	Code
	kW	Nm3/h	Ph/V/Hz	kW			
RS5DF	160/208-345	16/20,8-34,5	1/220-230/50-60	0,45 (at 50 Hz) 0,60 (at 60 Hz)	-	(1)	**3761991**

Net calorific value of natural gas (G20): 10 kWh/Nm3.
The burners comply with 2016/426/EU Regulation, the 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 676 Standard.
(1) Electrical connections with plug and socket.

SERVICES FOR BURNERS

Burner range	Description service	Code
GULLIVER RSDF	Installation advice	**27017470**
	Commissioning and adjustment	**27017471**
	Performance Check	**27017475**
	Regular maintenance	**27017480**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017487**
	Commissioning and adjustment with initial regular maintenance package	**27017495**

FIRING RATES



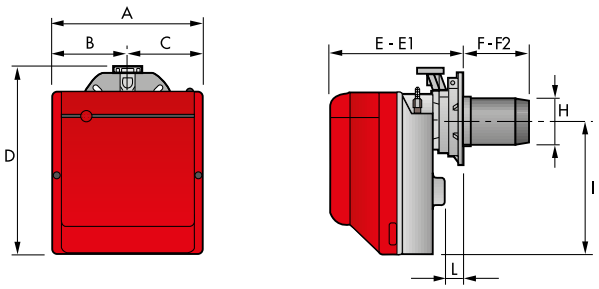
Useful firing rates for choosing the burner

1st stage operation range

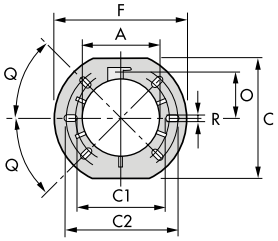
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

IMPORTANT:
For the part of the working field that is depressurised, refer to EN 746-2 Standard.

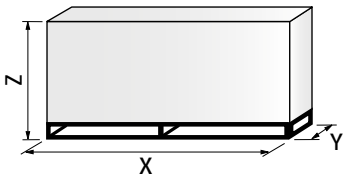
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	E1 mm	F mm	F2 mm	H mm	I mm	L mm
RS5DF	300	150	150	392	278	300	203	225	137	286	45



Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
RS5DF	137	203	170	200	218	80.5	45°	11

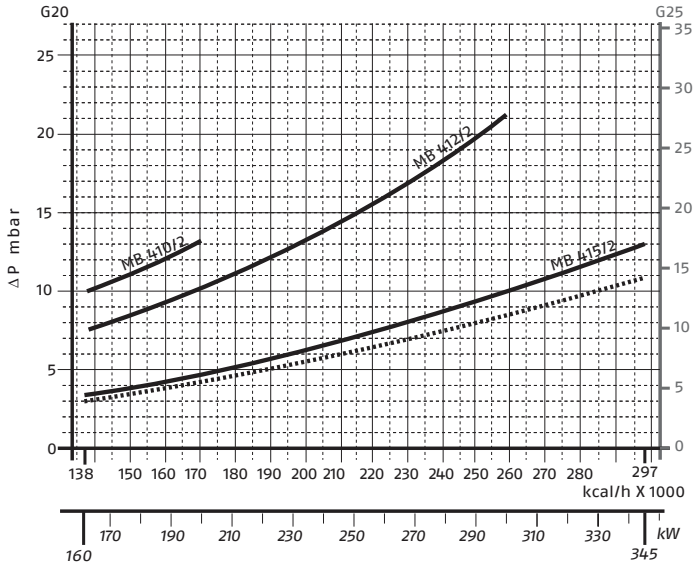


Description	X mm	Y mm	Z mm	Net weight kg
RS5DF	600	345	430	18

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAINS

RS5DF



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.

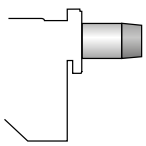
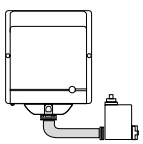
——— Combustion head + gas train
- - - - Combustion head

GAS TRAINS

Description (1)	Code	Notes	Ø Gas train	C.T. (2)	Burner
MB 410/2-F3SD 20	**3970542***	(3)(4)	1"¼	3010123	RS5DF
MB 412/2-F3SD 20	**3970543***	(5)	1"¼	3010123	RS5DF
MB 415/2-F3SD 20	**3970582***		1"½	3010123	RS5DF

(1) Please refer to "GAS TRAIN DESIGNATION" on page 153.
(2) The C.T. valve leak test control device can be supplied as accessory separately from gas train (see "GAS TRAIN ACCESSORIES").
(3) With installed plug.
(4) Using natural gas, the gas train can be combined only in case of burnt output lower than 200 kW.
(5) Using natural gas, the gas train can be combined only in case of burnt output lower than 300 kW.
* 230V/50Hz - 220V/60Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS5DF	EXTENDED HEAD KIT Burners standard head can be transformed into "extended head" versions by using the special kit. Standard head length = 203-225 mm - Extended head length = 302-317 mm	**3001016**
	RS5DF	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.	**3001011**
	RS5DF	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**
	RS5DF	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.	**3001178**
	RS5DF	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).	**3000945**

STATE OF SUPPLY

Monobloc, gas burners, completely automatic, with One-stage operation fitted with:
- Fan with forward curve blades
- Cover lined with sound - proofing material
- Air damper, with 1st and 2nd stage adjustment, driven by an electric servomotor
- Single phase electric motor 220-230 V/50-60 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

- Sliding flange
- Flange with insulating gasket
- Screws and nuts for fixing the flange to the boiler
- 7-pin plug
- 4-pin plug
- Remote control release kit
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Standard air duct gas burners

GULLIVER RS VA



- Air duct gas burners
- Main applications: processes with direct exchange at low temperature (e.g. paint booths)
- Various combustion heads available, to be combined according to the output produced and the pressure in the channel
- Pre-assembled head unit with fixing plate to the booth included
- Modulating ratio up to 1:8
- Operation at 50 and 60 Hz
- Excellent flame stability and smooth combustion
- Ease of use
- Reduced flame length

MAIN APPLICATIONS

- Paint ovens
- Low-temperature dryers (grain, straw, wood)
- Printing machines
- Laundry machines
- Agricultural dryers (cereals, fodder, tobacco)

Riello series RS 5 VA of monoblock air duct burner is designed for the installation in low-medium temperature direct air heating system, such as painting booths ones. These burners are strongly performing when used in applications with:
– High recirculation ratio: the embedded air fan ensure the right oxidizer air flow rate
– High variability of the air flow to be treated: combustion head is crossed by homogeneous oxidizing air flow ensuring the right air/fuel ratio in every point of the combustion head
– Presence of impurities in the air to be treated: the protection of the combustion head from the primary air flow avoid depositing of impurities on the combustion module, preserving efficiency and durability over the time.

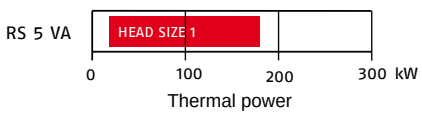
SERVICES FOR BURNERS

Burner range	Description service	Code
GULLIVER RS VA	Installation advice	**27017470**
	Commissioning and adjustment	**27017472**
	Performance Check	**27017475**
	Regular maintenance	**27017481**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017488**
	Commissioning and adjustment with initial regular maintenance package	**27017496**

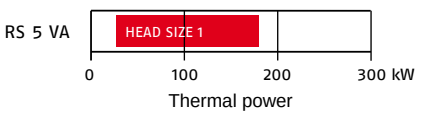
COMBUSTION HEAD MATCHING

Burners fire rate depends on the size of fitted head and on the pressure in the duct section.

AIR DUCT PRESSURE = 0-3 mbar

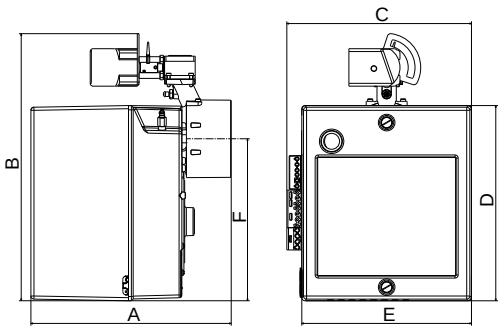


AIR DUCT PRESSURE = 3-6 mbar



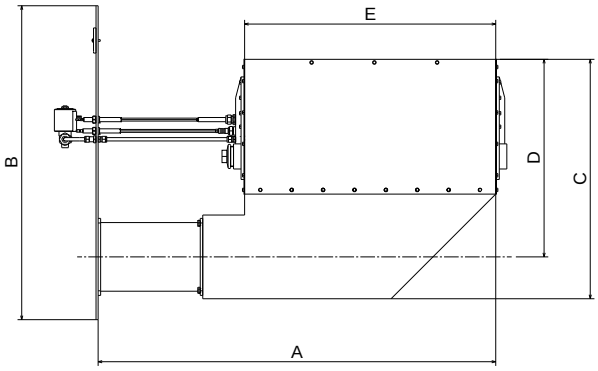
OVERALL DIMENSIONS

RS5 VA



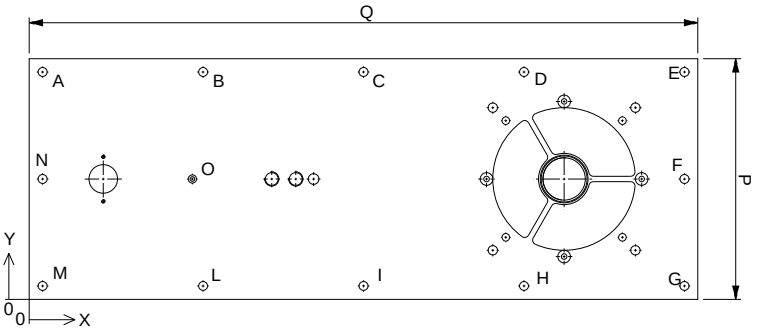
Description	A mm	B mm	C mm	D mm	E mm	F mm
RS 5 VA	353	471	325	344	302	286

COMBUSTION HEAD ASSEMBLY

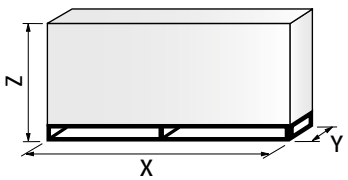


Head size	A mm	B mm	C mm	D mm	E mm
1/250	661	750	574	453	307
1/750	1161	750	574	453	307

FIXING PLATE

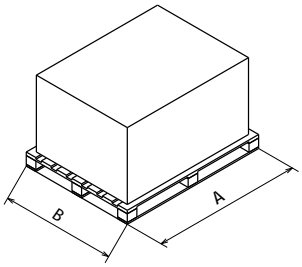


Holes	X mm	Y mm	Ø mm	Q mm	P mm
A	15	255	10	750	270
B	195	255	10	750	270
C	375	255	10	750	270
D	555	255	10	750	270
E	735	255	10	750	270
F	735	135	10	750	270
G	735	15	10	750	270
H	555	15	10	750	270
I	375	15	10	750	270
L	195	15	10	750	270
M	15	15	10	750	270
N	15	135	10	750	270
O	183	135	5.2	750	270



Description	X mm	Y mm	Z mm	Net weight kg
RS 5 VA	460	505	340	17

The ventilation structures are shipped in cardboard boxes with the overall dimensions shown inthe table. The weight of the ventilation structure, complete with packaging.

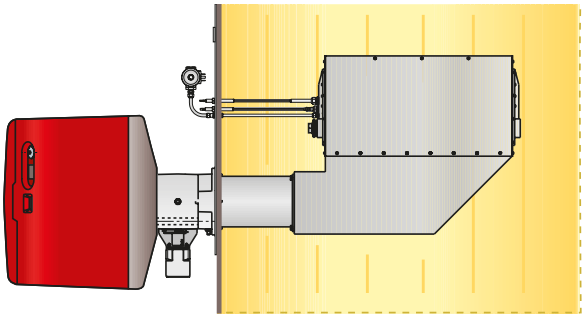


Head size	A mm	B mm
1/250	1200	800
1/750	1590	790

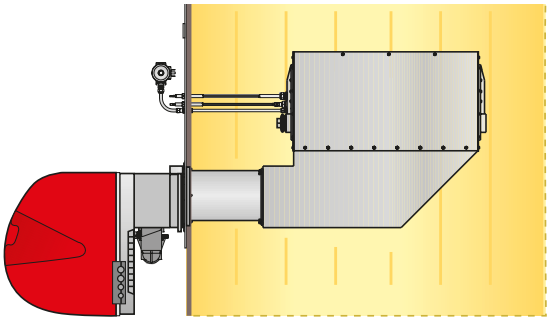
The head assemblies are shipped on pallets with the dimensions shown in the table.

STANDARD CONFIGURATION

L1 - Angle configuration with combustion head developed in horizontal in primary air duct



L2 - Angle configuration with combustion head developed in vertical in primary air duct



AVAILABLE BURNERS STRUCTURE

	Description	RS5 VA
Fuel	Natural gas	●
	LPG	●
Electrical supply	230/1/50	●
	220-230/1/60	◆
Auxiliary	230/50-60	●
	110/50-60	◆
Configuration	L1 - Angle configuration with combustion head developed in horizontal in primary air duct	●
	L2 - Angle configuration with combustion head developed in vertical in primary air duct	◆
Operation	Two-stage/Fixed Air	●

Key to layout:
● Standard.
◆ On Demand. For more informations about product codes, please contact Riello Commercial and Technical departments, our Application Engineers will be pleased to help you.

AVAILABLE COMBUSTION HEAD ASSEMBLY

The table shows the possible combinations between the structures and the combustion heads available. Burner output values are to be considered with ignition pilot off and with the following reference conditions: ambient temperature 20 ° C, gas temperature 15 ° C, pressure barometric 1013 mbar, altitude 0 m s.l.m.

Combustion head size	Length mm	p<3 mbar (*)	p>3 mbar (*)	Pmin kW	Pmax kW
1	250	RS 5 VA	RS 5 VA	20	180
	750				

(*) Please refer to the pressure in the air duct section.
In case of applications with negative duct pressure and/or for more informations about product codes, please contact Riello Commercial and Technical departments, our Application Engineers will be pleased to help you.

STANDARD EQUIPMENT

– Screws to fix the flange
– Thermal screen
– Plugs for 4-5-6-7 poles electrical connections
– Flexible piping for ignition pilot
– Pilot gas train assembly
– Pilot gas train fixing fittings with main gas train
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Standard air duct gas burners

RS 28-50 VA



- Air duct gas burners
- Various combustion heads available, to be combined according to the output produced and the pressure in the channel
- Pre-assembled head unit with fixing plate to the booth included
- Modulating ratio up to 1:8
- Operation at 50 and 60 Hz
- Excellent flame stability and smooth combustion
- Ease of use
- Reduced flame length

MAIN APPLICATIONS

- Paint ovens
- Low-temperature dryers (grain, straw, wood)
- Printing machines
- Laundry machines
- Agricultural dryers (cereals, fodder, tobacco)

Riello series RS 28-38-50 VA and RS 28-38-50/M VA of monoblock air duct burner is designed for the installation in low-medium temperature direct air heating system, such as painting booths ones. These burners are strongly performing when used in applications with:
– High recirculation ratio: the embedded air fan ensure the right oxidizer air flow rate
– High variability of the air flow to be treated: combustion head is crossed by homogeneous oxidizing air flow ensuring the right air/fuel ratio in every point of the combustion head
– Presence of impurities in the air to be treated: the protection of the combustion head from the primary air flow avoid depositing of impurities on the combustion module, preserving efficiency and durability over the time.

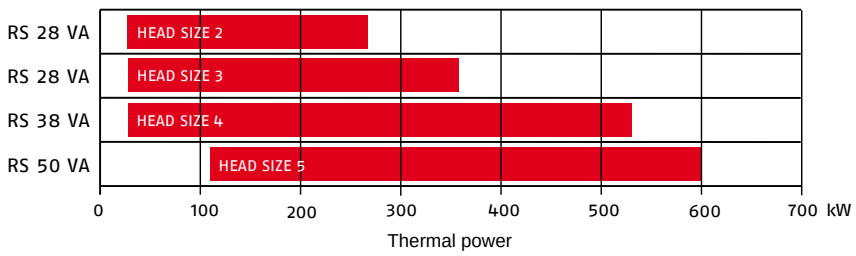
SERVICES FOR BURNERS

Burner range	Description service	Code
RS 28-50 VA	Installation advice	**27017470**
	Commissioning and adjustment	**27017472**
	Performance Check	**27017475**
	Regular maintenance	**27017481**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017488**
	Commissioning and adjustment with initial regular maintenance package	**27017496**

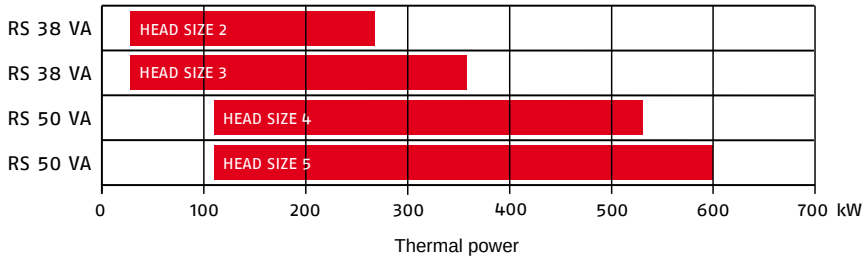
COMBUSTION HEAD MATCHING

Burners fire rate depends on the size of fitted head and on the pressure in the duct section.

AIR DUCT PRESSURE = 0-3 mbar

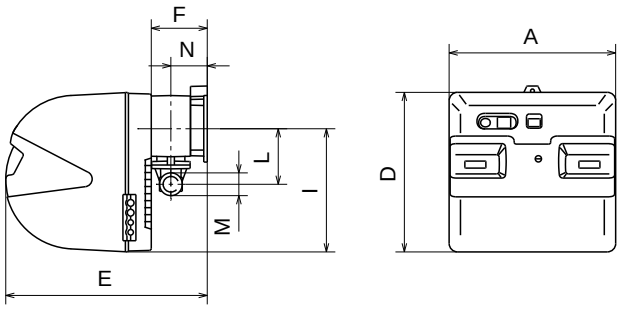


AIR DUCT PRESSURE = 3-6 mbar



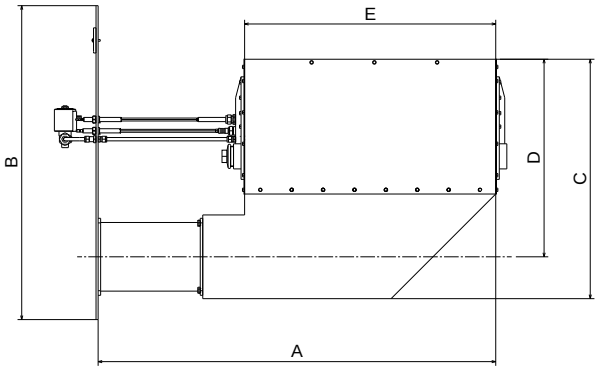
OVERALL DIMENSIONS

RS28-38-50 VA



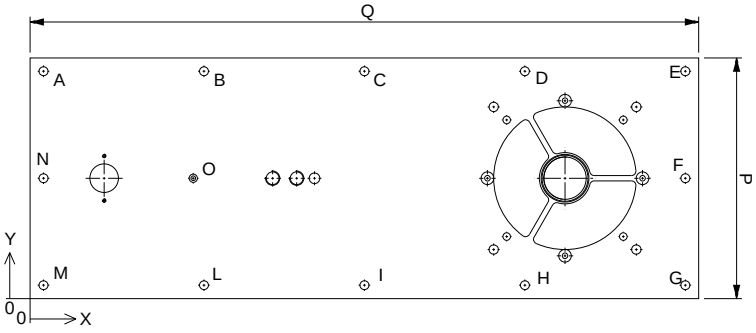
Description	A mm	D mm	E mm	F mm	I mm	L mm	M mm	N mm
RS 28 VA	476	474	580	164	352	168	1" ½	108
RS 38 VA	476	474	580	164	352	168	1" ½	108
RS 50 VA	476	474	580	164	352	168	1" ½	108

COMBUSTION HEAD ASSEMBLY

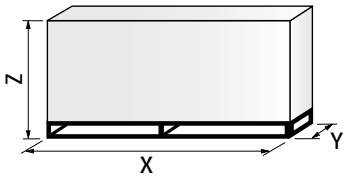


Head size	A mm	B mm	C mm	D mm	E mm
2/110	656	750	574	451	450
2/250	796	750	574	451	450
2/350	896	750	574	451	450
2/500	1046	750	574	451	450
2/750	1296	750	574	451	450
2/1000	1546	750	574	451	450
3/250	946	750	574	451	600
3/350	1046	750	574	451	600
3/500	1196	750	574	451	600
3/750	1446	750	574	451	600
3/1000	1696	750	574	451	600
4/110	1106	750	574	451	900
4/250	1246	750	574	451	900
4/500	1496	750	574	451	900
4/750	1746	750	574	451	900
4/1000	1996	750	574	451	900
4/1500	2496	750	574	451	900
5/250	1546	750	574	451	1200
5/500	1796	750	574	451	1200
5/750	2046	750	574	451	1200
5/1000	2296	750	574	451	1200
5/1500	2796	750	574	451	1200

FIXING PLATE

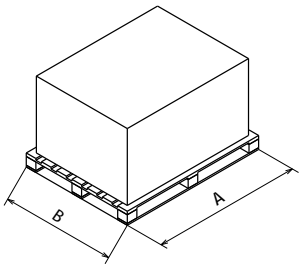


Holes	X mm	Y mm	Ø mm	L mm	P mm
A	15	255	10	750	270
B	195	255	10	750	270
C	375	255	10	750	270
D	555	255	10	750	270
E	735	255	10	750	270
F	735	135	10	750	270
G	735	15	10	750	270
H	555	15	10	750	270
I	375	15	10	750	270
L	195	15	10	750	270
M	15	15	10	750	270
N	15	135	10	750	270



Description	X mm	Y mm	Z mm	Net weight kg
RS 28 VA	872-1007	550	540	38
RS 38 VA	872-1007	550	540	40
RS 50 VA	872-1007	550	540	41

The ventilation structures are shipped in cardboard boxes with the overall dimensions shown inthe table. The weight of the ventilation structure, complete with packaging.

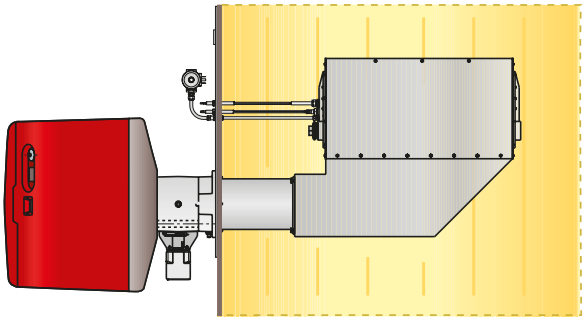


Head size	A mm	B mm
2/110	1190	790
2/250	1000	800
2/350	1190	790
2/500	1200	800
2/750	1800	800
2/1000	1800	800
3/250	1200	800
3/350	1190	790
3/500	1400	1000
3/750	1800	800
3/1000	2200	800
4/110	1590	790
4/250	1400	1000
4/250	1390	790
4/500	1800	800
4/750	2200	800
4/1000	2200	800
4/1500	2690	790
5/250	1800	800
5/500	2200	800
5/750	2200	800
5/1000	2600	800
5/1500	3400	886

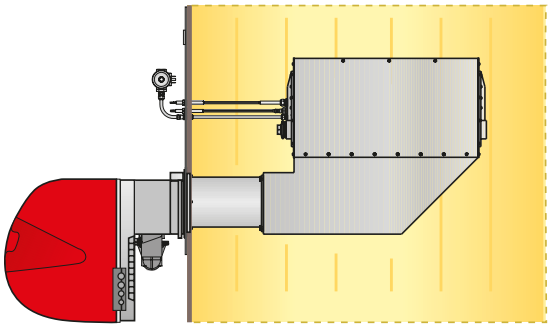
The head assemblies are shipped on pallets with the dimensions shown in the table.

STANDARD CONFIGURATION

L1 - Angle configuration with combustion head developed in horizontal in primary air duct



L2 - Angle configuration with combustion head developed in vertical in primary air duct



AVAILABLE BURNERS STRUCTURE

Description		RS5 VA	RS28 VA RS28/M VA	RS38 VA RS38/M VA	RS50 VA RS50/M VA	RS70 VA RS70/M VA
Fuel	Natural gas	●	●	●	●	●
	LPG	●	●	●	●	●
Electrical supply	230/1/50	●	●	●		
	220-230/1/60	◆	●	●		
	230-400/3/50		◆	●	●	●
Auxiliary	208-230/380-460/3/60		◆	◆	◆	◆
	230/50-60	●	●	●	●	●
	110/50-60	◆	◆	◆	◆	◆
Configuration	L1 - Angle configuration with combustion head developed in horizontal in primary air duct	●	●	●	●	●
	L2 - Angle configuration with combustion head developed in vertical in primary air duct	◆	◆	◆	◆	◆
Operation	Two-stage/Fixed Air	●	●	●	●	●
	Modulating/Air adjustment with mechanical cam		●	●	●	●

Key to layout:
● Standard.
◆ On Demand. For more informations about product codes, please contact Riello Commercial and Technical departments, our Application Engineers will be pleased to help you.

AVAILABLE COMBUSTION HEAD ASSEMBLY

The table shows the possible combinations between the structures and the combustion heads available. Burner output values are to be considered with ignition pilot off and with the following reference conditions: ambient temperature 20 ° C, gas temperature 15 ° C, pressure barometric 1013 mbar, altitude 0 m s.l.m.

Combustion head size	Length mm	p<3 mbar (*)	p>3 mbar (*)	Pmin kW	Pmax kW
2	110	RS 28 VA	RS 38 VA	30	270
	250				
	350				
	500				
	750				
	1000				
3	250	RS 28 VA	RS 38 VA	30	360
	350				
	500				
	750				
	1000				
	1500				
4	110	RS 38 VA	RS 50 VA	30	530
	250				
	500				
	750				
	1000				
	1500				

Combustion head size	Length mm	p<3 mbar (*)	p>3 mbar (*)	Pmin kW	Pmax kW
5	250	RS 50 VA	-	110	600
	500				
	750				
	1000				

(*) Please refer to the pressure in the air duct section.
In case of applications with negative duct pressure and/or for more informations about product codes, please contact Riello Commercial and Technical departments, our Application Engineers will be pleased to help you.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 28-38-50 VA	POWER CONTROLLER To obtain modulating operation, the burners requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range.. RWF50.2 - Basic version with 3 position output.	**On demand**
		RWF55.5 - Plus version; complete with RS-485 interface.	**On demand**
	RS 28-38-50 VA	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10 V (impedance 200 kW) - 0/4-20 mA (impedance 250 W)	**On demand**
	RS 28-38-50 VA	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 W) can be installed to check the position of the servomotor.	**On demand**
	RS 28-38-50 VA	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**On demand**
	RS 28-38-50 VA	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.	**On demand**

STANDARD EQUIPMENT

– Screws to fix the flange
– Thermal screen
– Plugs for 4 - 5 - 6 - 7 poles electrical connections
– Flexible piping for ignition pilot
– Pilot gas train assembly
– Pilot gas train fixing fittings with main gas train
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Standard air duct gas burners

RS 70 VA



- Air duct gas burners
- Various combustion heads available, to be combined according to the output produced and the pressure in the channel
- Pre-assembled head unit with fixing plate to the booth included
- Modulating ratio up to 1:8
- Operation at 50 and 60 Hz
- Excellent flame stability and smooth combustion
- Ease of use
- Reduced flame length

MAIN APPLICATIONS

- Paint ovens
- Low-temperature dryers (grain, straw, wood)
- Printing machines
- Laundry machines
- Agricultural dryers (cereals, fodder, tobacco)

Riello series RS 70 VA and RS 70/M VA of monoblock air duct burner is designed for the installation in low-medium temperature direct air heating system, such as painting booths ones. These burners are strongly performing when used in applications with:
– High recirculation ratio: the embedded air fan ensure the right oxidizer air flow rate
– High variability of the air flow to be treated: combustion head is crossed by homogeneous oxidizing air flow ensuring the right air/fuel ratio in every point of the combustion head
– Presence of impurities in the air to be treated: the protection of the combustion head from the primary air flow avoid depositing of impurities on the combustion module, preserving efficiency and durability over the time.

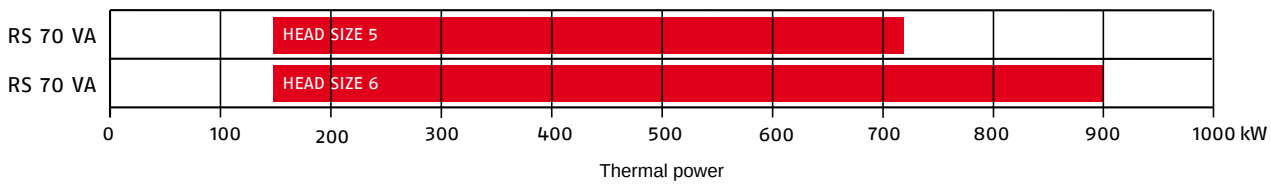
SERVICES FOR BURNERS

Burner range	Description service	Code
RS 70 VA	Installation advice	**27017470**
	Commissioning and adjustment	**27017472**
	Performance Check	**27017475**
	Regular maintenance	**27017481**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017488**
	Commissioning and adjustment with initial regular maintenance package	**27017496**

COMBUSTION HEAD MATCHING

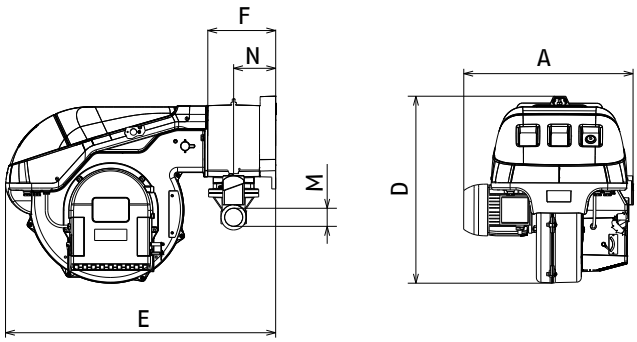
Burners fire rate depends on the size of fitted head and on the pressure in the duct section.

AIR DUCT PRESSURE = 0-3 mbar



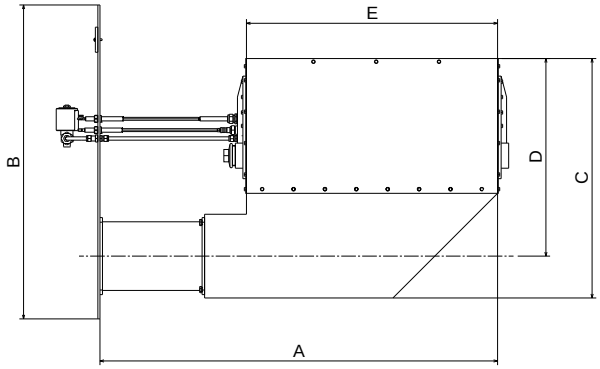
OVERALL DIMENSIONS

RS 70 VA



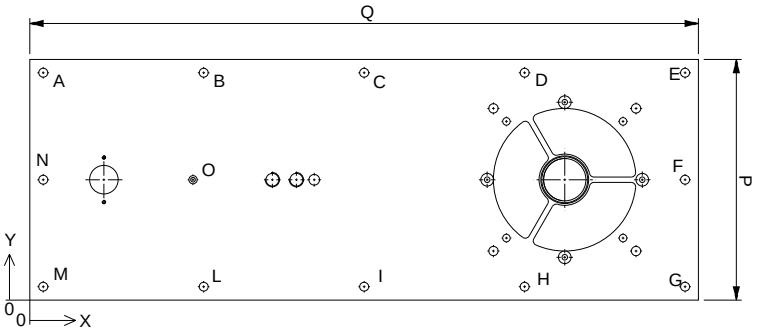
Description	A mm	D mm	E mm	F mm	M mm	N mm
RS70 VA	523.5	577	836	210	2”	130

COMBUSTION HEAD ASSEMBLY

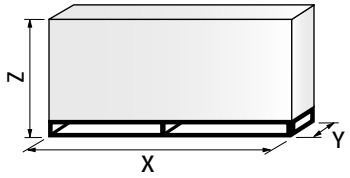


Head size	A mm	B mm	C mm	D mm	E mm
5/250	1746	800	574	451	1200
5/500	1996	800	574	451	1200
5/750	2246	800	574	451	1200
5/1000	2496	800	574	451	1200
5/1500	2996	800	574	451	1200
6/250	2046	800	574	451	1500
6/500	2296	800	574	451	1500
6/750	2546	800	574	451	1500
6/1000	2796	800	574	451	1500

FIXING PLATE

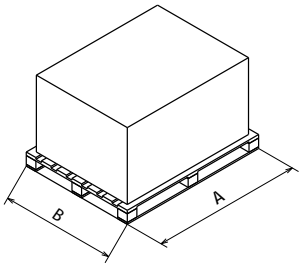


Holes	X mm	Y mm	Ø mm	L mm	P mm
A	20	330	10	800	350
B	210	330	10	800	350
C	400	330	10	800	350
D	590	330	10	800	350
E	780	330	10	800	350
F	780	175	10	800	350
G	780	20	10	800	350
H	570	20	10	800	350
I	400	20	10	800	350
L	210	20	10	800	350
M	20	20	10	800	350
N	20	175	10	800	350
O	-	-	-	800	350



Description	X mm	Y mm	Z mm	Net weight kg
RS 70 VA	1405	740	692	70

The ventilation structures are shipped in cardboard boxes with the overall dimensions shown inthe table. The weight of the ventilation structure, complete with packaging.

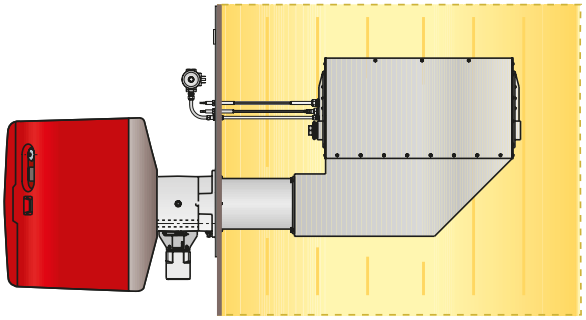


Head size	A mm	B mm
5/250	2200	850
5/500	2200	850
5/750	2700	850
5/1000	2700	850
5/1500	3400	940
6/250	2200	850
6/500	2700	850
6/750	2700	850
6/1000	3400	940

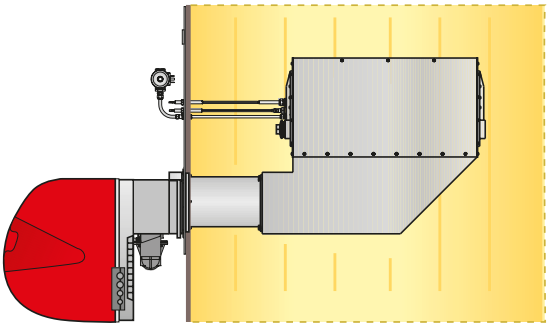
The head assemblies are shipped on pallets with the dimensions shown in the table.

STANDARD CONFIGURATION

L1 - Angle configuration with combustion head developed in horizontal in primary air duct



L2 - Angle configuration with combustion head developed in vertical in primary air duct



AVAILABLE BURNERS STRUCTURE

	Description	RS5 VA	RS28 VA RS28/M VA	RS38 VA RS38/M VA	RS50 VA RS50/M VA	RS70 VA RS70/M VA
Fuel	Natural gas	●	●	●	●	●
	LPG	●	●	●	●	●
Electrical supply	230/1/50	●	●	●		
	220-230/1/60	◆	●	●		
	230-400/3/50		◆	●	●	●
Auxiliary	208-230/380-460/3/60		◆	◆	◆	◆
	230/50-60	●	●	●	●	●
	110/50-60	◆	◆	◆	◆	◆
Configuration	L1 - Angle configuration with combustion head developed in horizontal in primary air duct	●	●	●	●	●
	L2 - Angle configuration with combustion head developed in vertical in primary air duct	◆	◆	◆	◆	◆
Operation	Two-stage/Fixed Air	●	●	●	●	●
	Modulating/Air adjustment with mechanical cam		●	●	●	●

Key to layout:
● Standard.
◆ On Demand. For more informations about product codes, please contact Riello Commercial and Technical departments, our Application Engineers will be pleased to help you.

AVAILABLE COMBUSTION HEAD ASSEMBLY

The table shows the possible combinations between the structures and the combustion heads available. Burner output values are to be considered with ignition pilot off and with the following reference conditions: ambient temperature 20 ° C, gas temperature 15 ° C, pressure barometric 1013 mbar, altitude 0 m s.l.m.

Combustion head size	Length mm	p<3 mbar (*)	p>3 mbar (*)	Pmin kW	Pmax kW
5	250	RS 70 VA	-	150	720
	500				
	750				
	1000				
	1500				
6	250	RS 70 VA	-	150	900
	500				
	750				
	1000				

(*) Please refer to the pressure in the air duct section.
In case of applications with negative duct pressure and/or for more informations about product codes, please contact Riello Commercial and Technical departments, our Application Engineers will be pleased to help you.

ACCESSORIES

Drawing	Burner model	Specification	Code
	RS 70 VA	POWER CONTROLLER To obtain modulating operation, the burners requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range.. RWF50.2 - Basic version with 3 position output.	**On demand**
		RWF55.5 - Plus version; complete with RS-485 interface.	**On demand**
	RS 70 VA	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10 V (impedance 200 kW) - 0/4-20 mA (impedance 250 W)	**On demand**
	RS 70 VA	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 W) can be installed to check the position of the servomotor.	**On demand**
	RS 70 VA	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.	**On demand**
	RS 70 VA	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.	**On demand**

STANDARD EQUIPMENT

- Screws to fix the flange
- Thermal screen
- Plugs for 4 - 5 - 6 - 7 poles electrical connections
- Flexible piping for ignition pilot
- Pilot gas train assembly
- Pilot gas train fixing fittings with main gas train
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Air duct burner

ADB



ADB - Head modules for air duct burners

- Main module direct electrical ignition by electrode or indirect by a pilot incorporated in burner structure
- Flame detection with ionization electrode or UV cell
- Standard executions for natural gas and LPG, other fuel on request
- Turn-down ratio 15:1
- Easy to install, to start, to operate

MAIN APPLICATIONS

- Ceramic, brick, refractory sector: continuous and intermittent dryers.
- Surface treatment: paint ovens, enamelling ovens, dryers.
- Graphic printing and packaging: air heaters for rotogravure and flexographic printing machines, laminators, adhesive coaters.
- Dryers for cereals, fodder and tobacco, roasters.
- In general, all applications where a large exchange surface between combustion gas and process air and quick, smooth mix are required, using a gas burner with wide automatic adjustment field.

ADB and burner series are designed to be installed in all the applications requiring the heating of process air and its mixing with the combustion products. These burners can be properly classified as "open-back air draught burners"; the most appreciated features of ADB burners are the extreme versatility and the modular structure.

ADB burner modules are available in two different configurations:
– LLD Low potentiality by surface unit 75 kW every 152 mm
– LD High potentiality by surface unit 150 kW every 152 mm

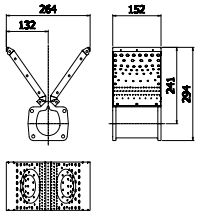
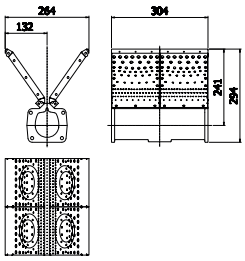
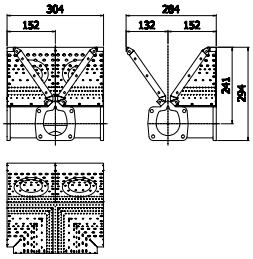
In order to allow the correct burner operation, the process air directly involved in the combustion is required to comply to the following specifics:
– Oxigen content ≥ 19%
– Speed of the air flow around the burner head between 10 and 20 m/s

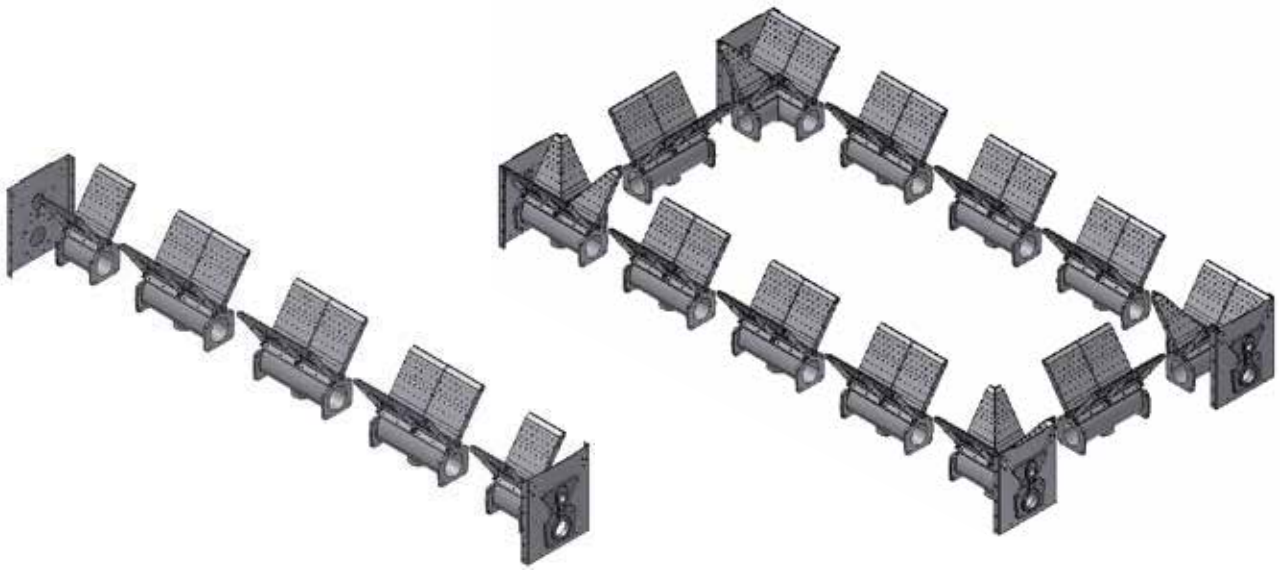
The pressure drop generally created by these burners is about 2,5 mbar; the burners guarantee the same efficiency either in pressure or in suction condition. The burner head structure is completely made in Nickel-Chrome alloys, allowing an upstream temperature ≤ 450°C and a downstream temperature ≤ 800°C (≤ 200°C upstream and ≤ 450°C downstream in the standard version).
Particular attention is finally dedicated to the maximum reduction of the CO content and of the NOx emissions.

SERVICES FOR BURNERS

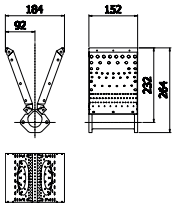
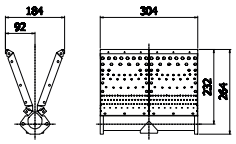
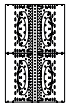
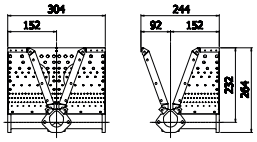
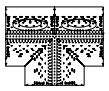
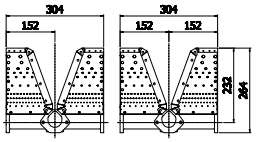
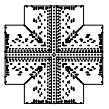
Burner range	Description service	Code
ADB	Installation advice	**27017470**
	Commissioning and adjustment	**27017474**
	Performance Check	**27017475**
	Regular maintenance	**27017483, 27017484**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017489, 27017490**
	Commissioning and adjustment with initial regular maintenance package	**27017497, 27017498**

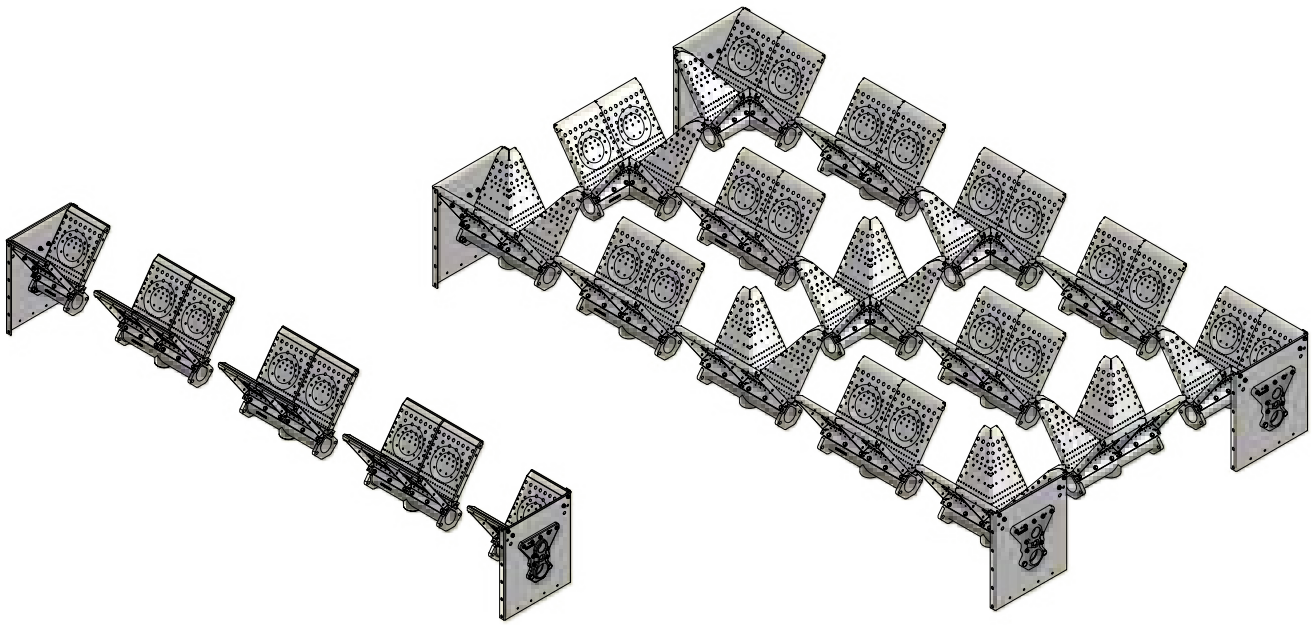
CONFIGURATION EXAMPLES ADB/0 LLE

Drawing	Specification	Burner output kW	Overall dimensions
	Straight LLD 6”	75	
	Straight LD 6”	150	
	Straight D 6”	225	
	Straight LLD 12”	150	
	Straight LD 12”	300	
	Straight D 12”	450	
	Tee LLD 12x6”	225	
	Tee LD 12x6”	450	
	Tee D 12x6”	675	

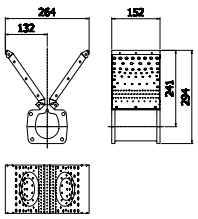
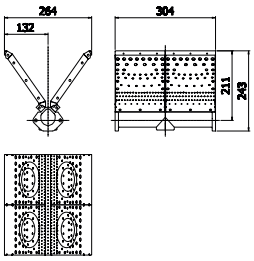
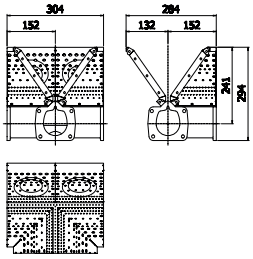
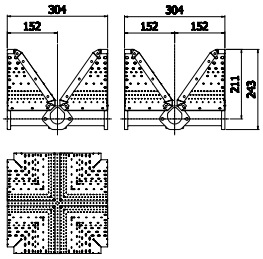


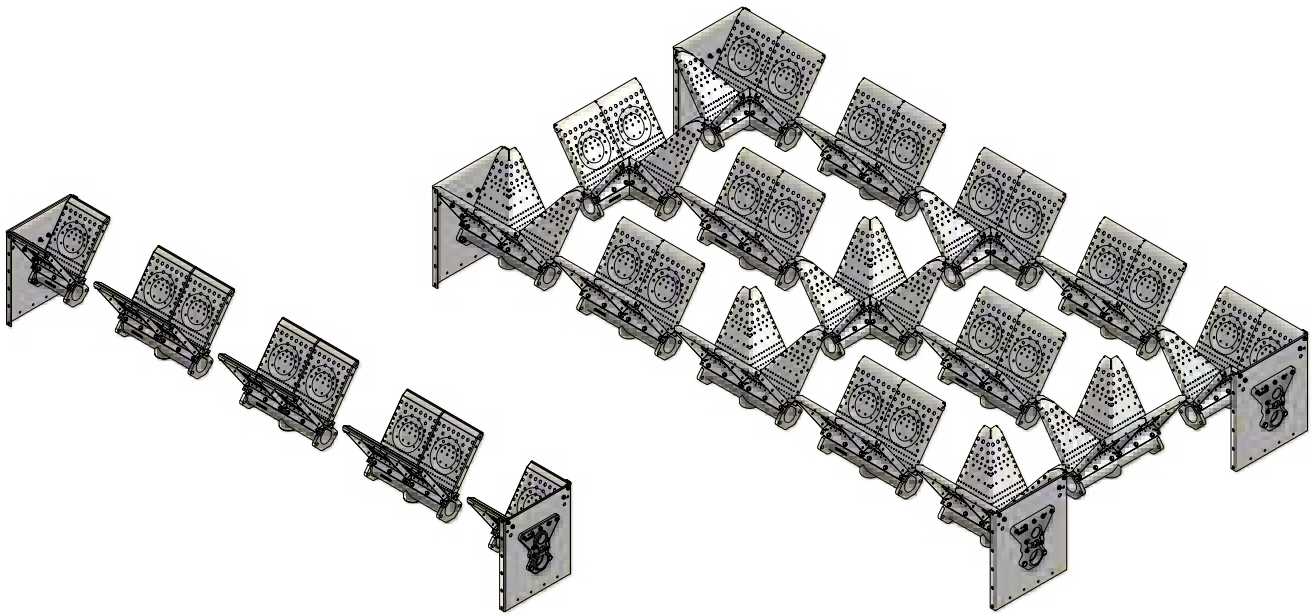
CONFIGURATION EXAMPLES ADB/S LE

Drawing	Specification	Burner output kW	Overall dimensions
	Straight LLD 6”	75	
	Straight LD 6”	150	
	Straight LLD 12”	150	
	Straight LD 12”	300	
	Tee LLD 12x6”	225	
	Tee LD 12x6”	450	
	Cross LLD 12x12”	300	
	Cross LD 12x12”	600	



CONFIGURATION EXAMPLES ADB/S LLE

Drawing	Specification	Burner output kW	Overall dimensions
	Straight LLD 6”	75	
	Straight LD 6”	150	
	Straight LLD 12”	150	
	Straight LD 12”	300	
	Tee LLD 12x6”	225	
	Tee LD 12x6”	450	
	Cross LLD 12x12”	300	
	Cross LD 12x12”	600	



Air duct burners

GVA ADB



- Main module direct electrical ignition by electrode or indirect by a pilot incorporated in burner structure
- Flame detection with ionization electrode or UV cell
- Standard executions for natural gas and LPG, other fuel on request
- Turn-down ratio 15:1
- Easy to install, to start, to operate

MAIN APPLICATIONS

- Ceramic, brick, refractory sector: continuous and intermittent dryers.
- Surface treatment: paint ovens, enamelling ovens, dryers.
- Graphic printing and packaging: air heaters for rotogravure and flexographic printing machines, laminators, adhesive coaters.
- Dryers for cereals, fodder and tobacco, roasters.
- In general, all applications where a large exchange surface between combustion gas and process air and quick, smooth mix are required, using a gas burner with wide automatic adjustment field.

ADB and GVA ADB gas burner series are designed to be installed in all the applications requiring the heating of process air and its mixing with the combustion products. These burners can be properly classified as "open-back air draught burners"; the most appreciated features of ADB and GVA ADB burners are the extreme versatility and the modular structure.
ADB burner modules are available in two different configurations:
– LLD Low potentiality by surface unit 75 kW every 152 mm
– LD High potentiality by surface unit 150 kW every 152 mm

GVA ADB burners combine ADB modules with the accessories necessary for the correct burner operation (i.e. gas train, control box). The supply can also include, if requested, the process air duct to be directly connected to the customer's plant.
In order to allow the correct burner operation, the process air directly involved in the combustion is required to comply to the following specifics:
– Oxigen content ≥ 19%
– Speed of the air flow around the burner head between 10 and 20 m/s

The pressure drop generally created by these burners is about 2,5 mbar; the burners guarantee the same efficiency either in pressure or in suction condition. The burner head structure is completely made in Nickel-Chrome alloys, allowing an upstream temperature ≤ 450°C and a downstream temperature ≤ 800°C (≤ 200°C upstream and ≤ 450°C downstream in the standard version).
Particular attention is finally dedicated to the maximum reduction of the CO content and of the NOx emissions.

SERVICES FOR BURNERS

Burner range	Description service	Code
GVA ADB	Installation advice	**27017470**
	Commissioning and adjustment	**27017474**
	Performance Check	**27017475**
	Regular maintenance	**27017483, 27017484**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017489, 27017490**
	Commissioning and adjustment with initial regular maintenance package	**27017497, 27017498**

Air duct burners

BVA ADB ME

BVA ADB ME.P

BVA ADB ME



- Ignition of the main burner through integrated pilot
- Flame detection with ionization electrode (one for length up to 1200 mm, two for higher burner lengths) or with UV cell (optional)
- Standard executions for Natural gas and LPG, other fuels on request
- Regulations are: Modulating gas and High-Low Flame
- Optional floating or analog thermoregulator to be installed (if requested) inside the control panel
- Complete version with gas train according to EN 746-2 (other regulations on demand) and control panel
- Max inlet comburent air temperature: 70°C

MAIN APPLICATIONS

- Agricultural dryers (cereals, fodder, tobacco)
- Direct exchange industrial applications

BVA ADB air duct burners series has been designed for all the applications requiring the direct heating of ducted air, regardless of the industrial process type. The supply includes a modular air duct burner properly dimensioned and assembled in order to guarantee the most performing heat exchange between the ducted air and the combustion products.
An air box in reinforced stainless or carbon steel is placed in the bottom part of the burner body; the air box, with a modular structure, houses the special combustion air fans dimensioned for the duct burner feeding.
The gas train is positioned directly below the air box, while the junction box (containing the ignition transformer and the terminal board) is to be fixed on one of the sides of the burner structure.
The control panel, including the multicore cable for the connection with the junction box, is supplied separately (standard cable length 5 m, other lengths on demand). The ignition is operated by a dedicated pilot burner; the two main combustion phases (ignition and operation) are managed by flame control positioned inside of the control panel.
Supporting feet for vertical installations are available on demand.
Available burner operations:
– Modulating (gas): adjustment of the fuel flow rate operated by floating or analog (optional) motorized valve; combustion air flow rate is set for combustion at maximum capacity. Max. - min. ratio: 10:1.
– High-low flame: two-step adjustment of the fuel flow rate (maximum capacity or lower capacity); combustion air flow rate is set for combustion at maximum capacity. Max. - min. ratio: 7:1.

TECHNICAL DATA

Description	Max. burner output [kW]	Overall dimensions			No. of flame detection electrodes	Gas train inlet diameter	Fans	
		Length [mm]	Width [mm]	Height [mm]			no.	Electric power (each) [kW]
BVA ADB 0.4 ME	400	640	270	1500	1	1”	1	1.1 (0.75)
BVA ADB 0.6 ME	600	795	270	1500	1	1"½	1	1.5
BVA ADB 0.8 ME	800	945	270	1500	1	1"½	1	1.5
BVA ADB 1.0 ME	1000	945	270	1500	1	1"½	1	1.5
BVA ADB 1.2 ME	1200	945	270	1500	1	1"½	1	2.2
BVA ADB 1.5 ME	1500	1249	270	2000	1	1"½	1	2.2
BVA ADB 1.75 ME	1750	1249	270	2000	1	2”	1	2.2
BVA ADB 2 ME	2000	1553	270	2000	1	2”	1	3
BVA ADB 2.5 ME	2500	1857	270	2000	1	2”	1	3
BVA ADB 2.5 MET	2500	1486	337	2000	1	2”	1	3
BVA ADB 3 ME	3000	2465	270	2000	1	2”	2	2.2
BVA ADB 3.2 ME	3200	2465	270	2000	1	DN65	2	2.2
BVA ADB 3.5 ME	3500	3073	270	2000	1	DN65	2	2.2
BVA ADB 4 ME	4000	3681	270	2000	2	DN65	2	3
BVA ADB 5 ME	5000	3681	270	2000	2	DN65	2	3
BVA ADB 6 ME	6000	4593	270	2000	2	DN80	3	3

Description	Max. burner output [kW]	Overall dimensions			No. of flame detection electrodes	Gas train inlet diameter	Fans	
		Length [mm]	Width [mm]	Height [mm]			no.	Electric power (each) [kW]
BVA ADB 3 ME.P	3000	1249	890	2000	2x1	2”	2	2.2
BVA ADB 4 ME.P	4000	1857	890	2000	2x1	DN65	2	3
BVA ADB 5 ME.P	5000	2465	890	2000	2x1	DN65	2	3
BVA ADB 6 ME.P	6000	3073	890	2000	2x1	DN80	4	2.2
BVA ADB 7 ME.P	7000	3681	890	2000	2x2	DN80	4	3
BVA ADB 8 ME.P	8000	3681	890	2000	2x2	DN80	4	3
BVA ADB 9 ME.P	9000	4593	890	2000	2x2	DN100	6	3
BVA ADB 10 ME.P	10000	4593	890	2000	2x2	DN100	6	3
BVA ADB 11 ME.P	11000	4593	890	2000	2x2	DN100	6	3
BVA ADB 14 ME.P	14000	4593	890	2000	2x2	DN100	6	3
BVA ADB 16 ME.P	16000	4593	890	2000	2x2	DN100	6	3

SERVICES FOR BURNERS

Burner range	Description service	Code
BVA ADB ME	Installation advice	**27017470**
	Commissioning and adjustment	**27017474**
	Performance Check	**27017475**
	Regular maintenance	**27017483, 27017484**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017489, 27017490**
	Commissioning and adjustment with initial regular maintenance package	**27017497, 27017498**

High turndown ratio burners

BPR



- High turndown ratio gas burners (up to 50:1)
- Use in direct and indirect exchange applications
- Highly resistant material structure
- Operation with natural gas and LPG (other fuels on request)
- Version with main accessories included available
- Highly customisable configuration according to the specifications required by the installation
- On-off, two-stage or modulating operation

MAIN APPLICATIONS

- Ceramic, Tile, Refractory industries: Roller dryers, Tunnel dryers, Continuous and intermittent dryers
- Textile industry: Stenter, Dryers, Polymerising devices, Print dryers
- Surface treatment: Dryers/kilns and paint ovens
- Paper industry: Air heaters for Drying hoods
- Converting industry: Air heaters for Rotogravure and Flexographic printing machinery, Adhesive coating machines
- Food industry: Cereal dryers, Roasting machines
- Tobacco drying

The gas burners of the “BPR” series have a light and handy structure, reduced overall dimensions and this is why they are ideal for all the installations requiring a compact and silent combustion unit with high turndown ratio. The burner structure is in painted carbon steel; parts in contact with the flame are in refractory steel and in Nickel Chrome alloys. Externally to the burner, with a layout that depends on installation requirements, the following are located: the gas train, the combustion air fan and the flame control box.
Maximum power is 1450 kW, while minimum power can be up to 5 kW.
The completely automatic operation allows for different controls such as on-off, high-low flame, modulating on gas or modulating on air ratio. These latter allow to obtain a turndown ratio of up to 50:1 with neutral combustion chamber.
The burner can be supplied in the following versions:
- Installed inside the duct (duct-type);
- Installed outside the duct;
According with customers needs, special executions, that can include complete equipment of combustion system, can be developed.

TECHNICAL DATA

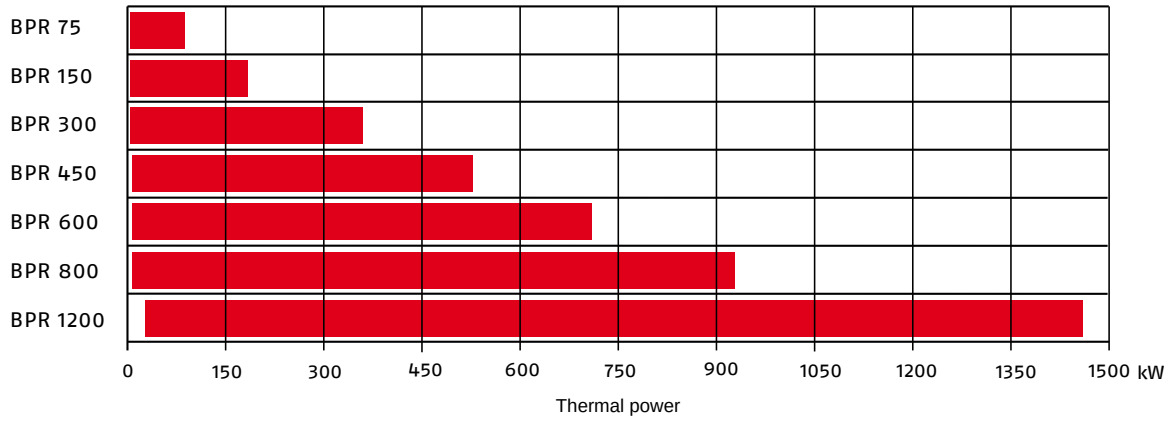
Description	Power range kW	Fuel	Turndown ratio	Operation	Max air excess	Flame diameter mm	Flame length mm	Gas supply pressure mbar	Air supply pressure mbar
BPR 75	5-87	Natural gas/LPG	18:1	Modulating	50% at 87 kW	160	600	30	8
BPR 150	6-175	Natural gas/LPG	30:1	Modulating	50% at 175 kW	200	600	10	10
BPR 300	9-350	Natural gas/LPG	40:1	Modulating	50% at 350 kW	250	600	40	10
BPR 450	18-525	Natural gas/LPG	30:1	Modulating	50% at 325 kW	300	600	20	10
BPR 600	18-700	Natural gas/LPG	25:1	Modulating	50% at 700 kW	350	700	35	17
BPR 800	18-930	Natural gas/LPG	50:1	Modulating	50% at 930 kW	350	1000	35	17
BPR 1200	30-1450	Natural gas/LPG	30:1	Modulating	50% at 1450 kW	350	1200	35	17

The above data refer to maximum power conditions. The pressure values are approximate, the gas values refer to natural gas.
Flame dimensions are referred to 30% air excess condition.
Performance data and dimensions are guidelines only.
Other versions are available on demand by means a special execution request.

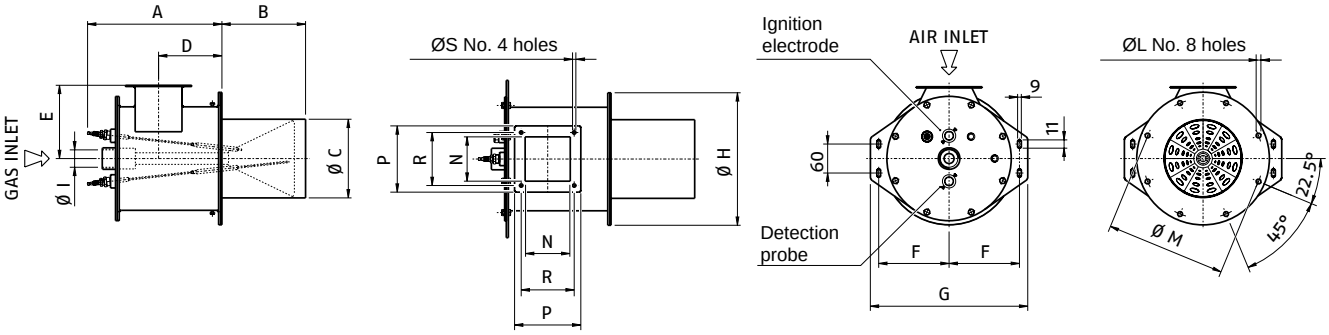
SERVICES FOR BURNERS

Burner range	Description service	Code
BPR	Installation advice	**27017470**
	Commissioning and adjustment	**27017472**
	Performance Check	**27017475**
	Regular maintenance	**27017481**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017488**
	Commissioning and adjustment with initial regular maintenance package	**27017496**

FIRING RATES (COMBUSTION HEAD)



OVERALL DIMENSIONS



Description	A mm	B mm	ØC mm	D mm	E mm	F mm	G mm	ØH mm	ØI mm	ØL mm	ØM mm	N mm	P mm	R mm	ØS mm	Net weight kg
BPR 75	270	210	110	140	120	120	270	220	¾"	9.5	195	66	105	85	7	22
BPR 150	270	205	145	145	150	140	310	250	1"	9.5	225	66	105	85	7	38
BPR 300	320	205	190	150	180	170	380	320	1" ½	11.5	290	114	160	128	9	45
BPR 450	370	215	220	200	220	195	430	370	1" ½	11.5	340	140	190	165	10	48
BPR 600	370	215	220	200	220	195	430	370	1" ½	11.5	340	140	190	165	10	48
BPR 800	370	215	220	200	220	195	430	370	1" ½	11.5	340	140	190	165	10	52
BPR 1200	392	215	220	200	220	195	430	370	1" ½	11.5	340	140	190	165	10	56

NOTE: the weight in the table refers to the combustion head only.

STANDARD EQUIPMENT

– Turndown ratio up to 50:1
– Thermal steel flame tube
– Direct spark ignition, ionisation-type flame detection
– Standard versions are for natural gas and LPG. Versions for other gases available on request
– Available as complete unit, with gas train with right or left hand layout
– Single phase or 3 phase motor, 50/60 Hz.
– Easy to install, start, operate
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

High speed burners

BPM GV-BPN GV



- Direct spark ignition and ionization electrode or UV flame detection, depending on the burner model
- Multifuel combustion head for Natural gas and LPG, lean gas and gases with low calorific value (on demand)
- Turn down ratio up to 35:1
- Available as packaged execution, with gas train according to EN746-2 (other standards on demand), on right or left hand
- Easy to install, start and operate

MAIN APPLICATIONS

- Ceramic, brick, refractory sector:
  – Roller ovens, tunnel ovens, intermittent ovens, melting ovens;
  – Continuous and intermittent dryers.
- Steel industry
- Surface treatments
- Glass industry: tempering ovens
- Graphic printing and packaging: air heaters for rotogravure and flexographic printing machines, laminators, adhesive coaters.
- Food sector: dryers for cereals, roasters.
- In general, all applications with strong positive or negative pressure where an automatic gas burner with wide adjustment field is required.

BPM GV and BPN GV series are composed of air draught burners able to operate with different fuels such as natural gas, LPG, lean gas and gases with low calorific value (on demand). Burner operation can be automatic or semiautomatic; all burners are equipped with ignition by electrode and ionization probe for flame detection. The BPM GV and BPN GV series can be properly classified as a “high/average speed gas burner”, with exhaust gases speed coming out from the combustion chamber up to 100 m/s (or higher, according to the outlet diameter of the burner head cone).
The burners are compatible with a combustion air temperature up to 100 °C and cover a firing range between 2 kW and 3.500 kW.
Thanks to the extreme flexibility, BPM GV and BPN GV burners can operate with a turndown up to35:1.

A dedicated version (BPM GV-T and BPN GV-T series) is available for installations on kilns requiring the combustion gases to reach distances of 6-8 m without any flame flexion. These burners are compatible with a speed of the exhaust gases coming out from the combustion chamber up to 150 m/s (or higher, according to the outlet diameter of the burner head cone) and cover a firing range between 6 kW and 190 kW.

In case of processes requiring highly oxidizing combustion, BPN GV S/0 AT series (compatible with a combustion air temperature up to 550 °C) is available. These burners, covering a firing range between 20 kW and 1.500 kW, are equipped with UV flame detection and can operate with a turndown ratio up to 1:15.

TECHNICAL DATA

Description	BPM 2 GV S	BPM 3 GV S	BPM 5 GV S	BPN 7 GV S	BPN 18 GV S	BPN 60 GV S	BPN 100 GV S	BPN 150 GV S	BPN 300 GV S
Min. output	2 kW	3 kW	5 kW	5 kW	10 kW	10 kW	20 kW	88 kW	175 kW
Max. output	23 kW	46 kW	58 kW	190 kW	500 kW	850 kW	1160 kW	1750 kW	3500 kW
Fuel	Natural Gas - LPG								
Burner cone material	Silicon Carbide or Concrete Casting					Concrete casting			
Cone outlet diameter (Silicon carbide)	Ø30-50 mm	Ø38 mm	Ø40-60 mm	Ø40-65 mm	Ø50-85 mm	-	-	-	-
Max. excess air	100% at 11,5 kW	100% at 23 kW	100% at 29 kW	100% at 95 kW	100% at 250 kW	100% at 425 kW	100% at 580 kW	100% at 875 kW	100% at 1750 kW
Max. excess gas	35% at 23 kW	35% at 46 kW	35% at 58 kW	35% at 190 kW	35% at 500 kW	35% at 850 kW	35% at 1160 kW	35% at 1750 kW	35% at 3500 kW

The above data refer to maximum power conditions. The pressure values are approximate, the gas values refer to natural gas.
Technical characteristics are given as an indication and may be subject to modifications.
NOTE: other versions are available on demand.

Description	BPM 5 GV-T .25	BPM 5 GV-T .33	BPN 7 GV-T .33	BPN 7 GV-T .48
Min. output	6 kW		10 kW	
Max. output	58 kW		190 kW	
Fuel	Natural Gas - LPG		Natural Gas - LPG	
Burner cone material	Silicon Carbide		Silicon Carbide	
Cone outlet diameter	Ø 25 mm	Ø 33 mm	Ø 33 mm	Ø 48 mm
Max. excess air	100% at 29 kW		100% at 96 kW	
Max. excess gas	35% at 58 kW		35% at 190 kW	

The above data refer to maximum power conditions. The pressure values are approximate, the gas values refer to natural gas.
Technical characteristics are given as an indication and may be subject to modifications.
NOTE: other versions are available on demand.

Description	BPN 60 GV S/0 AT.181	BPN 100 GV S/0 AT.200	BPN 150 GV S/0 AT.240	BPN 250 GV S/0 AT.240
Min. output	20 kW	20 kW	20 kW	100 kW
Max. output	300 kW	523 kW	850 kW	1500 kW
Fuel	Natural Gas - LPG	Natural Gas - LPG	Natural Gas - LPG	Natural Gas - LPG
Burner cone material	Silicon Carbide	Silicon Carbide	Silicon Carbide	Silicon Carbide
Cone outlet diameter	Ø 181 mm	Ø 200 mm	Ø 240 mm	Ø 240 mm
Max. excess air	100% at 150 kW	100% at 260 kW	100% at 425 kW	100% at 750 kW
Max. excess gas	35% at 300 kW	35% at 523 kW	35% at 850 kW	35% at 1500 kW

The above mentioned performance data are described at their maximum power. Pressure showed are guidelines only.
Gas pressures are refer to Methane and LPG.
NOTE: other versions are available on demand.

SERVICES FOR BURNERS

Burner range	Description service	Code
BPM GV-BPN GV	Installation advice	**27017470**
	Commissioning and adjustment	**27017474**
	Performance Check	**27017475**
	Regular maintenance	**27017483, 27017484**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017489, 27017490**
	Commissioning and adjustment with initial regular maintenance package	**27017497, 27017498**

Metal volumetric burners for radiant tubes

N/TR



- Designed for processes with highly oxidizing combustion
- Full range of burners from 4 to 1.160 kW, with high modulation ratios (up to 30:1)
- Compact and robust structure, made of highly resistant materials
- Combustion air temperature up to 100°C
- Compatible with natural gas and LPG use (other gases upon request)
- Direct spark ignition and ionization flame detection electrode
- Available as complete version including the gas train, according to EN 746-2 on right or left hand
- Easy to install, to start, to operate

MAIN APPLICATIONS

- Industrial ovens with oxidising, stoichiometric or reducing combustion
- Ceramic, brick, refractory sectors:
  – Roller ovens, tunnel ovens, intermittent ovens, melting. ovens.
  – Continuous and intermittent dryers.
- Steel industry
- Surface treatments
- Graphic printing and packaging: air heaters for rotogravure and flexographic printing machines, laminators, adhesive coaters.
- Glass industry: tempering ovens
- Food sector: dryers for cereals, roasters
- Tobacco drying
- In general, all applications with strong positive or negative pressure where an automatic gas burner with wide adjustment field is required

N/TR burner series is composed of air draught burners able to operate with natural gas, LPG, lean gas and gases with low calorific power (upon request).
This burner range has been designed to be installed in all the processes in which highly oxidizing combustion is needed to limit the working temperature.
The completely automatic working allows on-off regulations, high/ low flame, air/gas modulating.
This last control system allows to reach turndown ratio of 30:1 with neutral combustion chambers. The burners cover a firing range between 4 kW and 1.160 kW and are compatible with a combustion air temperature up to 100 °C. The burner is composed of a painted casting structure, with the main body in cast iron and bottom in aluminum; the parts in contact with the flame are made of refractory steel and Nickel-Chromium alloys.
The burners include ignition and flame detection electrodes, pressure taps for measuring instantaneous air and gas flow rates, flame indicator light.

SERVICES FOR BURNERS

Burner range	Description service	Code
N/TR	Installation advice	**27017470**
	Commissioning and adjustment	**27017474**
	Performance Check	**27017475**
	Regular maintenance	**27017483, 27017484**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017489, 27017490**
	Commissioning and adjustment with initial regular maintenance package	**27017497, 27017498**

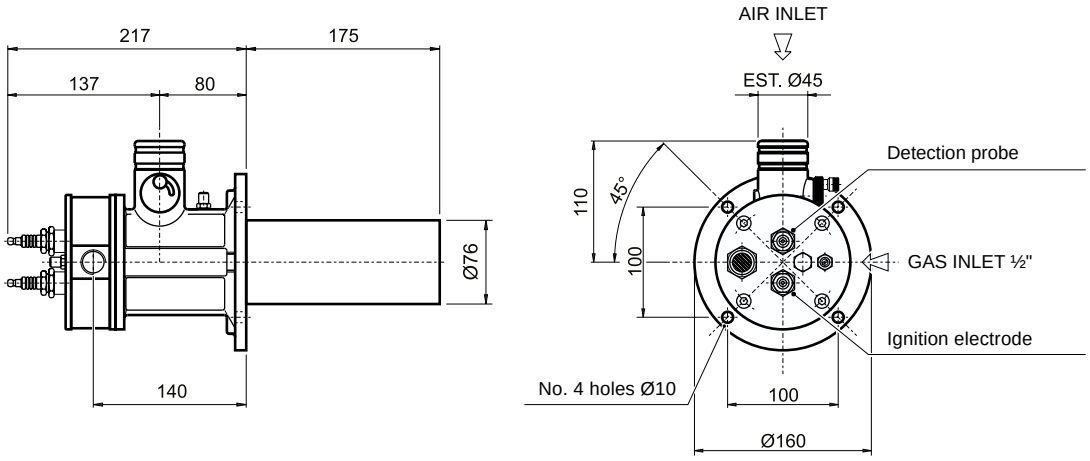
TECHNICAL DATA

Description	N 70 TR	N 140 TR	N 280 TR	N 520 TR	N 800 TR
Min. burner output	4 kW (3.500 kcal/h)	5 kW (4.300 kcal/h)	10 kW (8.600 kcal/h)	20 kW (17.200 kcal/h)	58 kW (50.000 kcal/h)
Max. burner output	70 kW (60.000 kcal/h)	160 kW (137.600 kcal/h)	280 kW (240.000 kcal/h)	520 kW (450.000 kcal/h)	1.160 kW (997.600 kcal/h)
Fuel	Natural gas/LPG	Natural gas/LPG	Natural gas/LPG	Natural gas/LPG	Natural gas/LPG
Flame tube material	Ni-Cr alloy	Ni-Cr alloy	Ni-Cr alloy	Ni-Cr alloy	Ni-Cr alloy
Flame tube diameter	Ø76 mm	Ø90 mm	Ø115 mm	Ø129 mm	Ø168,3 mm
Max. excess air	200% at 35 kW (30.000 kcal/h)	200% at 80 kW (68.800 kcal/h)	200% at 140 kW (120.400 kcal/h)	200% at 260 kW (223.600 kcal/h)	200% at 580 kW (500.000 kcal/h)
Max. excess gas	30%	30%	30%	30%	30%
Flame diameter (*)	60 mm	80 mm	100 mm	150 mm	140 mm
Flame length (*)	500 mm	700 mm	700 mm	900 mm	500 mm
Gas supply pressure (**)	40 mbar	69 mbar	50 mbar	80 mbar	45 mbar
Air supply pressure	35 mbar	18 mbar	35 mbar	40 mbar	45 mbar
Weight	8 kg	10.5 kg	28 kg	26 kg	28 kg

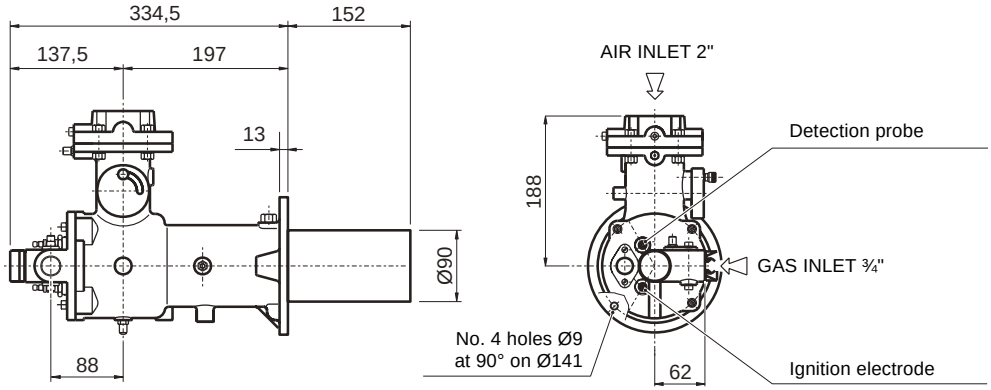
The characteristics described above refer to conditions of maximum potential. Pressures shown are indicative.
(*) In stoichiometric combustion conditions.
(**) Pressure values indicated refer to natural gas.

OVERALL DIMENSIONS

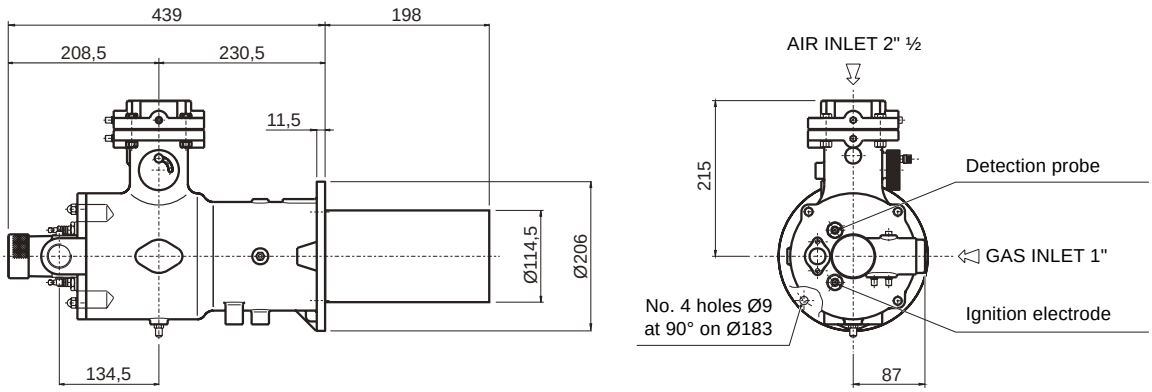
N 70 TR



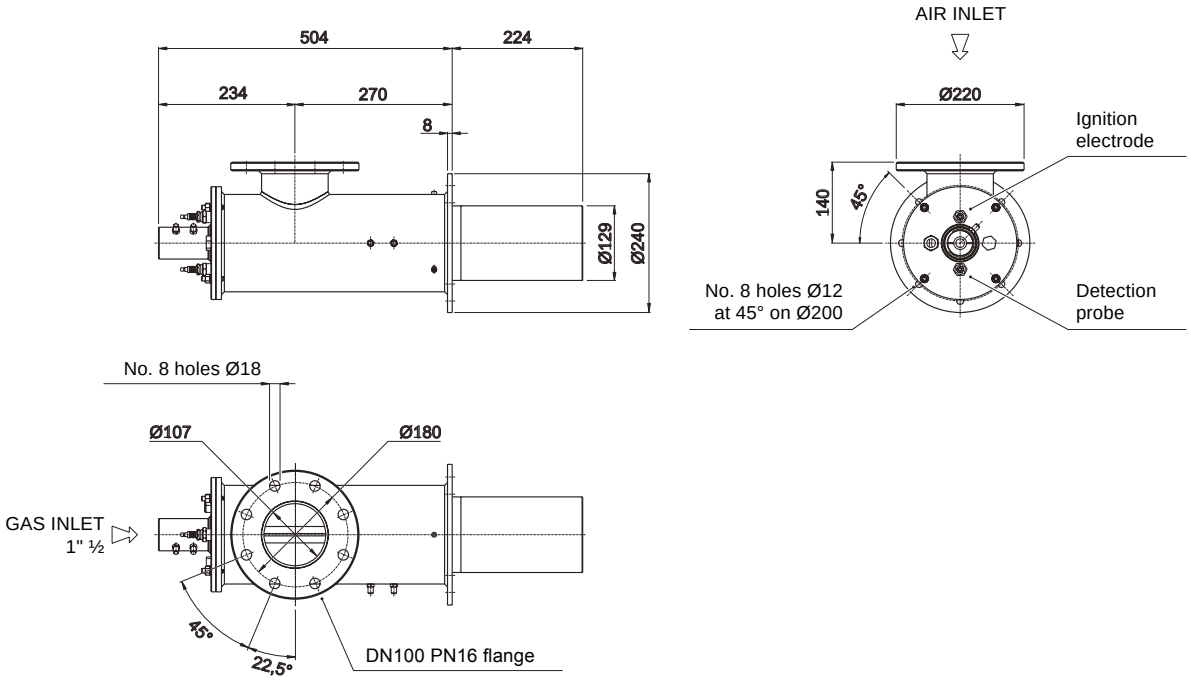
N 140 TR



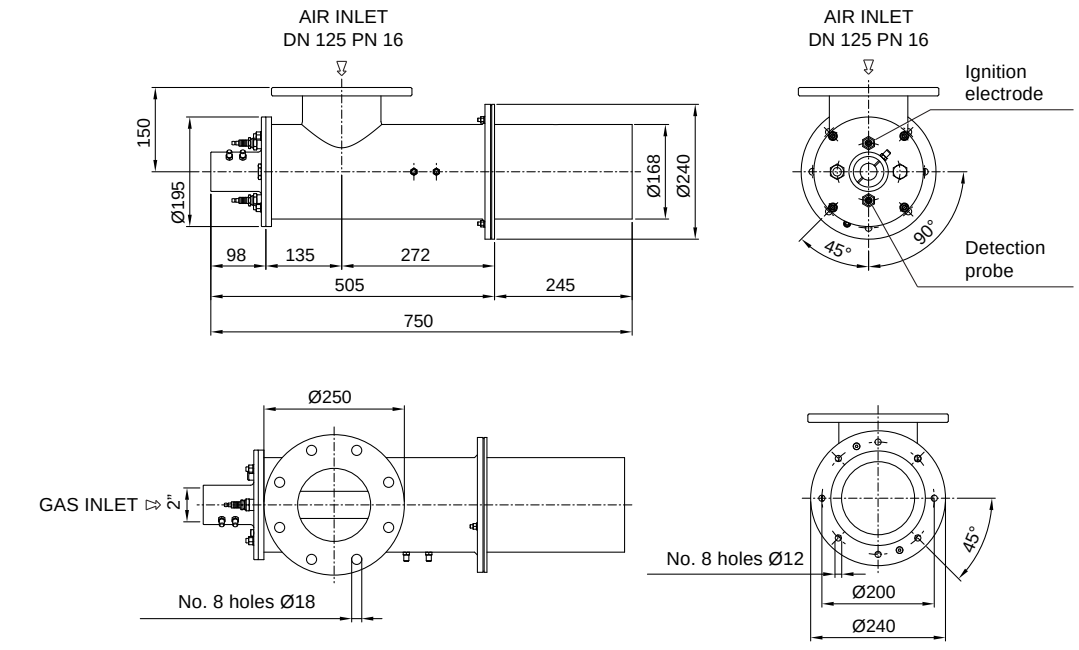
N 280 TR



N 520 TR



N 800 TR



Incinerators and post-combustion burners

FC



- Direct ignition by electrode or by dedicated pilot (on demand)
- UV cell flame detection
- Standard executions for natural gas and LPG, other fuels on request
- Operation: modulating (gas) or high-low flame
- Complete version with gas train according to EN 746-2 (other regulations if required) and control panel

MAIN APPLICATIONS

- Ceramics industry: post-combustors and atomizers.
- Steel industry: incineration of fumes from heat treatments or metal melting ovens.
- Surfaces treatment: incineration of fumes from paint and solvent evaporation.
- Environment: municipal solid waste leachate treatment ovens with reduced calorific value.
- In general, all types of installation where post-combustion or incineration of flue gas produced by industrial installations is required.

FC gas burner series has been developed specifically for a wide range of industrial plant systems requiring the incineration of the gases/vapours produced (needing fume-processing before being exhausted in the environment). These burners are able to operate with natural gas, LPG and lean gases (on request). Burner operation can be automatic or semiautomatic, with direct ignition by electrode and UV flame detection.
FC burner series covers a firing range between 12 kW and 5.860 kW. For a correct and performing combustion, these burners require compliance to the following specifics:
– inlet fumes temperature up to 1.050 °C
– outlet fumes temperature up to 1.600 °C
– inlet fumes speed between 10 m/s and 20 m/s
– inlet fumes oxygen content ≥ 18% (if not possible, oxygen content can be increased by adding clean air from the environment.)
In case of inlet fumes containing combustible substances, it is possible to use such compounds as fuel, without the need of an external supply.
The ignition electrode is fitted on the fuel lance and can be withdrawn from the back of the assembly in order to allow easy maintenance.
The burner structure is extremely resistant to heat and chemical attacks as it is entirely made of Nickel-Chromium alloys.

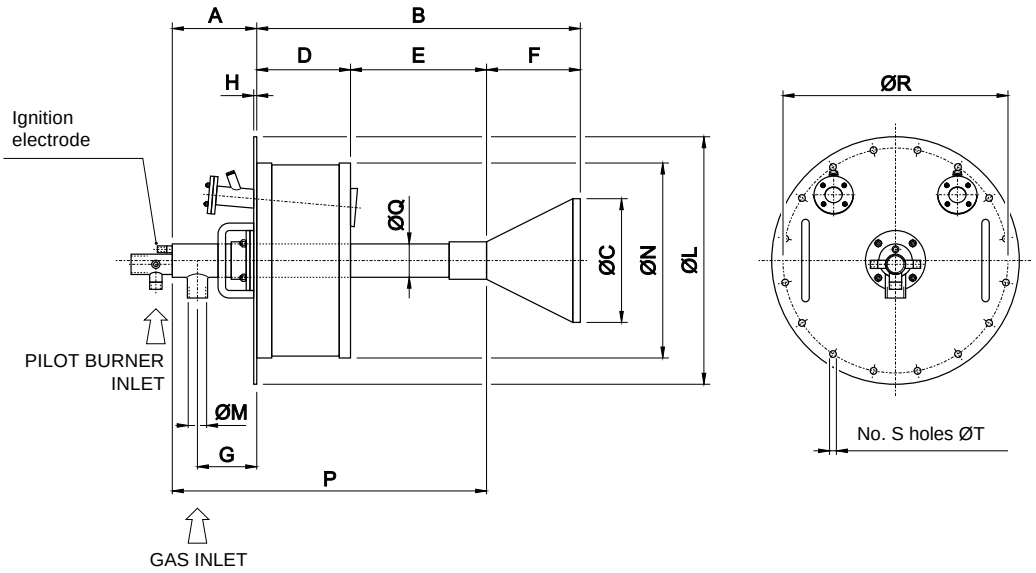
TECHNICAL DATA

Description	Burner output		Code
	kW	Mcal/h	
FC 1	12-110	10-100	**On demand**
FC 2	15-230	13-195	**On demand**
FC 3	15-350	13-300	**On demand**
FC 4	28-580	24-500	**On demand**
FC 5	44-870	38-750	**On demand**
FC 6	50-1,170	43-1,000	**On demand**
FC 7	70-1,460	60-1,500	**On demand**
FC 8	90-1,750	77-1,750	**On demand**
FC 9	120-2,340	103-2,010	**On demand**
FC 10	150-2,930	129-2,520	**On demand**
FC 11	200-3,810	172-3,270	**On demand**
FC 12	230-4,690	198-4,030	**On demand**
FC 13	250-5,860	215-5,000	**On demand**

SERVICES FOR BURNERS

Burner range	Description service	Code
FC	Installation advice	**27017470**
	Commissioning and adjustment	**27017474**
	Performance Check	**27017475**
	Regular maintenance	**27017483, 27017484**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017489, 27017490**
	Commissioning and adjustment with initial regular maintenance package	**27017497, 27017498**

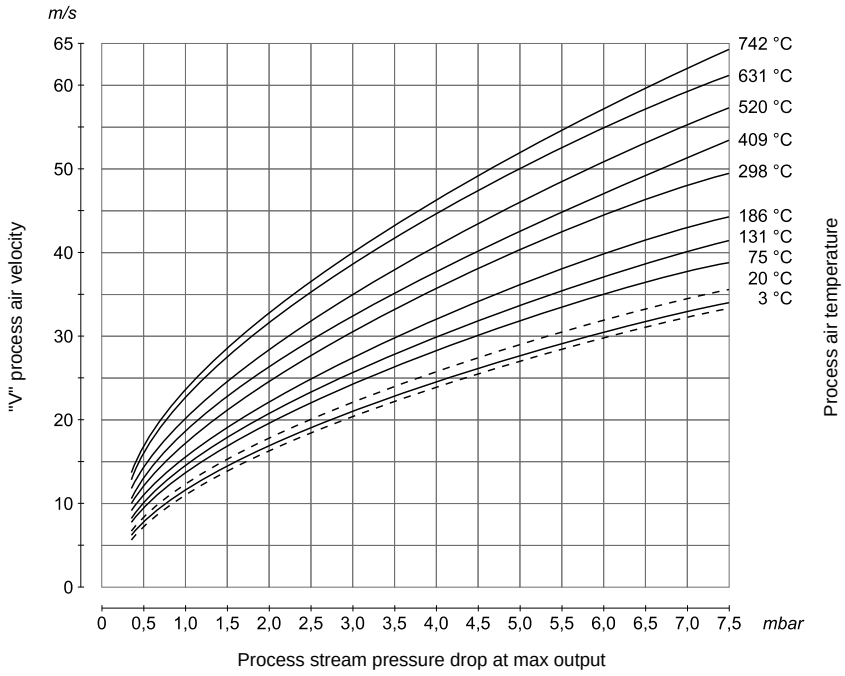
OVERALL DIMENSIONS



Description	A mm	B mm	ØC	D mm	E mm	F mm	G mm	H mm	ØL	ØM	ØN mm	P mm	ØQ	ØR	S mm	ØT
FC 1	200	615	158	200	285	130	150	6	508	1”	400	685	63,5	450	16	14
FC 2	245	660	201	200	290	170	195	6	560	1"½	450	735	76,2	510	16	14
FC 3	245	765	304	250	295	220	195	8	610	1"½	500	790	88,9	560	16	14
FC 4	245	843	330	250	343	250	195	8	660	1"½	520	838	88,9	600	16	18
FC 5	275	928	356	250	413	265	225	8	712	2”	572	938	88,8	652	20	18
FC 6	300	1026	386	300	430	296	250	8	762	DN65	622	1030	88,8	702	20	18
FC 7	350	1005	436	300	380	325	250	8	812	DN65	672	1030	101,6	752	20	18
FC 8	380	1130	520	300	460	370	280	8	864	DN80	724	1140	101,6	804	24	18
FC 9	400	1220	570	300	500	420	300	8	914	DN80	774	1200	101,6	854	24	18
FC 10	400	1280	624	300	500	480	300	10	1016	DN100	876	1200	114,3	956	24	18
FC 11	400	1300	720	300	500	500	300	10	1118	DN100	978	1200	141,3	1058	28	18
FC 12	400	1400	820	300	580	520	300	12	1220	DN100	1080	1280	141,3	1160	28	18
FC 13	400	1510	910	300	640	570	300	12	1250	DN100	1110	1340	141,3	1190	28	18

PRESSURE LOSS DIAGRAMS

Performance values are considered at maximum burner power. Pressure values are indicative; gas pressure values refer to the use of natural gas and LPG.



Description	FC
Minimum burneroutput (referred to Δp = 5 mbar)	12 kW - (10 Mcal/h)
Maximum burner output	5.860 kW - (5.000 Mcal/h)
Fuel	CH4/LPG
Combustion head materials	Ni-Cr alloy
Flame length (*)	1,000 mm
Gas supply pressure	40 mbar
Inlet fumes max. temperature	1050 °C
Outlet fumes max. temperature	1,600 °C

(*) The flame length is closely influenced by the process air speed; the values indicated refer to a combustion air speed of 20 m/s.
Technical specifications and overall dimensions are indicative.

PROCESS LIGHT OIL BURNERS

Standard NOx emissions

ONE-STAGE



RIELLO 40 F

- Convection ovens (rotary or fixed tray type)
- Bedplate ovens
- Conduction ovens
- Radiant heat ovens
- Continuous, tunnel and steam tube ovens

page 699



GULLIVER RGF

- Industrial ovens
- Paint booths
- Low-power steam boilers

page 707

ONE-STAGE MOBILE APPLICATIONS (24V)



RIELLO 40 G 24V

- Machines for road applications
- Mobile air heaters
- Industrial high pressure cleaners

page 703

TWO-STAGE



GULLIVER RGDF

- Industrial ovens
- Paint booths
- Low-power steam boilers

page 711

Light oil light-process burners

RIELLO 40 F



- One-stage light oil burners for light process applications
- Complete with nozzle and light oil flexible hoses
- Robust structure, aluminium body and metal sheet cover for component protection
- Ease of installation
- Flange coupling system in maintenance position
- Combustion air calibration through fixed damper
- Electrical protection level IP X0D (IP 40)

MAIN APPLICATIONS

- Convection ovens (rotary or fixed tray type)
- Bedplate ovens
- Conduction ovens
- Radiant heat ovens
- Continuous, tunnel and steam tube ovens

Riello 40 F series of One-stage light oil burners, is a complete range of products developed to respond to any request for light industrial applications.
Riello 40 F series is available in three different models, with an output ranging from 30 to 202 kW, divided in three different structures.
All models use the same components designed by Riello for Riello 40 G series.
The high quality level guarantees safe working. In developing these burners, special attention was paid to reducing noise, to the ease of installation and adjustment and to obtain the smallest size possible to fit into any sort of boiler available on the market.
All models are approved by the EN 267 European Standard and compliant with European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency. All Riello 40 F burners are fired before leaving the factory.

TECHNICAL DATA

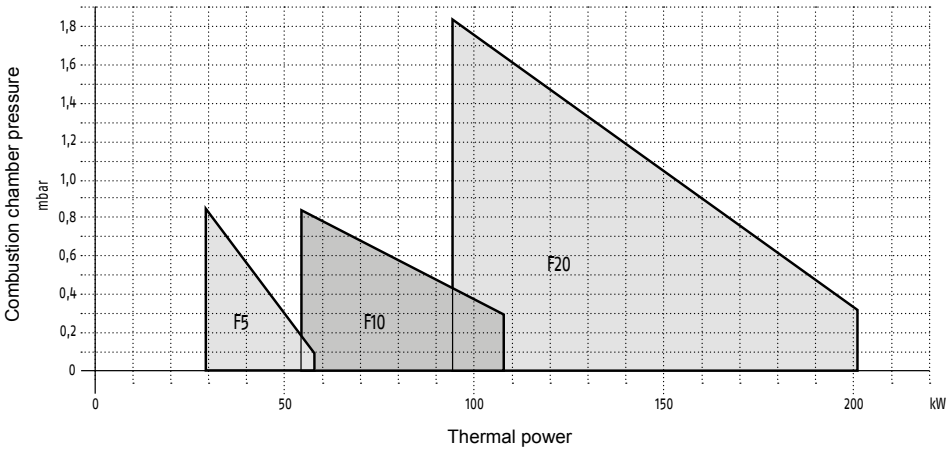
Description	Heat output		Electric power supply	Total electrical power	Code
	kW	kg/h	Ph/V/Hz	kW	
F5	30-60	2,5-5	1/230/50	0.13	**3451083**
F5	30-60	2,5-5	1/220/60	0.18	**3746159**
F10	54-107	4,5-9	1/230/50	0.17	**3452083**
F10	54-107	4,5-9	1/220/60	0.20	**3746260**
F20	95-202	8-17	1/230/50	0.32	**3452783**
F20	95-213	8-18	1/220/60	0.40	**3747260**

Net calorific value of light oil: 11,8 kWh/kg - Viscosity at 20°C: 4-6 mm2/s (cSt)
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 267 Standard.

SERVICES FOR BURNERS

Burner range	Description service	Code
RIELLO 40 F	Installation advice	**27017470**
	Commissioning and adjustment	**27017471**
	Performance Check	**27017475**
	Regular maintenance	**27017480**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017487**
	Commissioning and adjustment with initial regular maintenance package	**27017495**

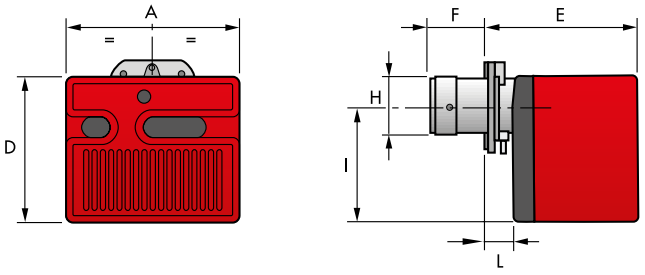
FIRING RATES



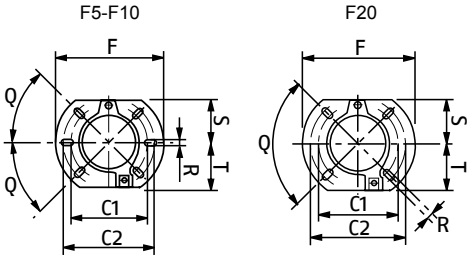
Useful firing rates for choosing the burner

Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

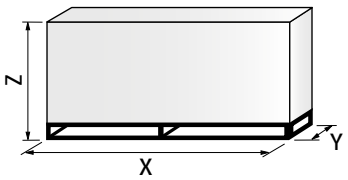
OVERALL DIMENSIONS



Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm
F5	272	233	240	72	89	180	41
F10	305	262	265	104	105	204	44
F20	350	298	299	118	125	230	45

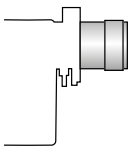
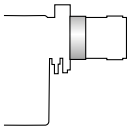


Description	C1 mm	C2 mm	F mm	Q	R mm	S mm	T mm
F5	130	150	180	45°	11	72	75
F10	140	170	189	45°	11	83	83
F20	160	190	213	90°	11	99	99



Description	X mm	Y mm	Z mm	Net weight kg
F5	383	315	325	12
F10	423	348	340	13
F20	483	393	377	16

ACCESSORIES

Drawing	Burner model	Specification	Notes	Code
		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.		
	F5	Standard head length = 72 mm - Extended head length = 107 mm		**3000638**
	F10	Standard head length = 104 mm - Extended head length = 168 mm		**3000643**
	F10	Standard head length = 104 mm - Extended head length = 250 mm		**3000770**
	F20	Standard head length = 118 mm - Extended head length = 178 mm		**3000644**
	F20	Standard head length = 118 mm - Extended head length = 260 mm		**3000771**
		SPACER KIT Using the special accessories, the burner can be pulled back to reduce head penetration into the combustion chamber.		
	F5	Spacer thickness = 25 mm		**3000642**
	F20	Spacer thickness = 15 mm	(1)	**20103452**
		INLET AIR ASPIRATION KIT This kit allows to channel the external air directly into the burner.		
	F5	Kit code for inlet air aspiration.	(2)	**20027574**
	F10	Kit code for inlet air aspiration.	(2)	**20027577**
	F20	Kit code for inlet air aspiration.	(2)	**20027580**
	All models	HOUR COUNTER KIT FOR 530 SE AND 531 SE CONTROL BOXES To measure the burner working time a hour counter kit is available.		**3000904**
		LIGHT OIL FILTER For cleaning light oil from dirty particles and impurities filters with the following features are available.		
	All models	Filtering degree 60 µm (Filter made up of aluminium body and stainless steel filtering cartridge; available singularly).		**3006561**
	All models	Filtering degree 60 µm (Filter made up of aluminium cover, plastic tank and nylon filtering cartridge; available in packaging of 50 pieces).		**3075011**
	All models	LIGHT OIL FILTER/DEGASSING UNIT To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.		**3000926**
	All models	7-POLE SOCKET KIT FOR 530 SE AND 531 SE CONTROL BOXES For burner without pre installed socket a 7-pole socket kit with cable is available.		**3001065**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		**3000945**

(1) The application of this accessory does not allow the use of the burner head opening hinge.
(2) By applying this kit, the combustion air is drawn in from outside, so there can be significant setting variations with respect to the original configuration and the instructions on the burner manual, therefore it is recommended to adjust combustion according to the kit instruction.

STATE OF SUPPLY

Completely automatic monobloc light oil burners, One-stage operation, made up of:
- Fan with forward curve blades
- Metallic cover
- Fixed air damper with adjustment
- Single phase electric motor 230 V, 50 Hz
- Combustion head fitted with:
  - stainless steel head cone, resistant to high temperatures
  - ignition electrodes
  - flame stability disk
- Geared pump for fuel supply, fitted with:
  - filter
  - pressure regulator
  - attachments for fitting a pressure gauge and vacuum meter
  - internal by-pass for preparing for single-pipe installations
- Fuel feed solenoid valve incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Light oil nozzle
- IP X0D (IP 40) protection level.

STANDARD EQUIPMENT

- Two flexible pipes for connection to the light oil supply line
- Two nipples for connection to the pump
- Flange, screws and nuts for fixing
- Thermal screen

– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.

Light oil burners for mobile applications

RIELLO 40 G 24V



- One-stage light oil burners for light process applications
- Complete with nozzle and light oil flexible hoses
- Robust structure, aluminium body and metal sheet cover for component protection
- Ease of installation
- Flange coupling system in maintenance position
- Adjustable air damper fully closed when the burner is not in operation
- Motor with 24V DC power supply
- Electrical protection level IP X0D (IP 40)

MAIN APPLICATIONS

- Machines for road applications
- Mobile air heaters
- Industrial high pressure cleaners

Riello 40 G 24V series of one-stage light oil burners, is a complete range of products developed to respond to any request for mobile applications.
Riello 40 G 24V series is available in three different models, with an output ranging from 29 to 201 kW, divided into four different structures.
All models use the same components designed by Riello for the traditional Riello 40 G series.
The high quality level guarantees safe working.
In developing these burners, special attention was paid to reducing noise, to the ease of installation and adjustment, obtaining the smallest size possible to fit into any sort of boiler available on the market.
All models are approved by EN 267 European Standard and are compliant with European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.
All burners are fired before leaving the factory.

TECHNICAL DATA

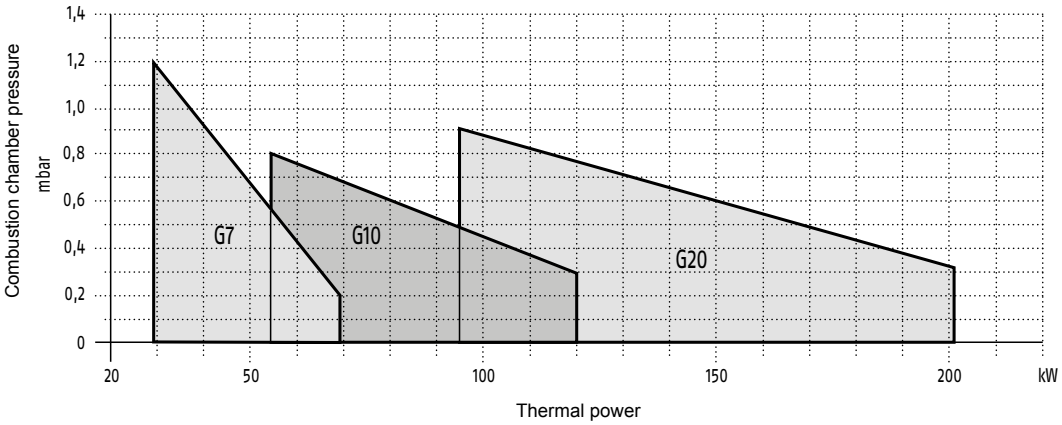
Description	Heat output		Electric power supply	Total electrical power	Notes	Code
	kW	kg/h		kW		
G7 24V	29-69	2.45-5.8	24V DC	0.3	(1)(2)(3)	**20030878**
G10 24V	54-120	4,5-10,0	24V DC	0.3	(1)(2)(3)(4)	**20045709**
G20 24V	95-201	8.0-17.0	24V DC	0.3	(1)(2)(3)	**20030873**

(1) Burner compatible with the use of light oil (max. viscosity at 20 °C: 4-6 mm2/s).
(2) Burner compatible with the use of light oil and biofuel mixtures (FAME, in accordance with EN 14214) up to a maximum of 10%.
(3) Burner compatible with the use of kerosene (max. viscosity at 20 °C: 1,6-6 mm2/s)
(4) The burner leaves the factory with the nozzle already fitted, model: Delavan W 60° - 1.75 GPH.

SERVICES FOR BURNERS

Burner range	Description service	Code
RIELLO 40 G 24V	Installation advice	**27017470**
	Commissioning and adjustment	**27017471**
	Performance Check	**27017475**
	Regular maintenance	**27017480**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017487**
	Commissioning and adjustment with initial regular maintenance package	**27017495**

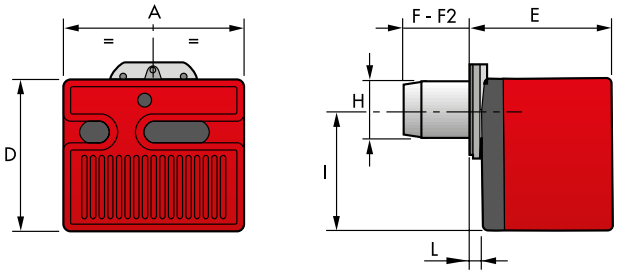
FIRING RATES



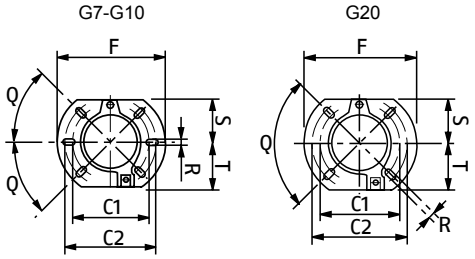
Useful firing rates for choosing the burner

Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

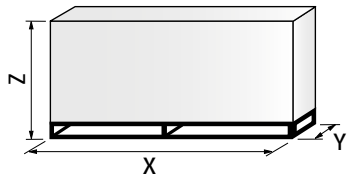
OVERALL DIMENSIONS



Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm
G7 24V	305	262	261	73	89	204	40
G10 24V	305	262	261	108-260	105	204	40
G20 24V	350	298	295	118-260	125	230	41

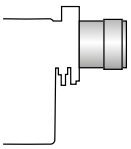
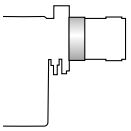


Description	C1 mm	C2 mm	F mm	Q	R mm	S mm	T mm
G7 24V	140	170	189	45°	11	83	83
G10 24V	140	170	189	45°	11	83	83
G20 24V	160	190	213	90°	11	99	99



Description	X mm	Y mm	Z mm	Net weight kg
G7 24V	423	348	340	13
G10 24V	423	348	340	13
G20 24V	483	393	377	16

ACCESSORIES

Drawing	Burner model	Specification	Notes	Code
		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.		
	G10 24V	Standard head length = 108 mm - Extended head length = 168 mm		**3000643**
	G10 24V	Standard head length = 108 mm - Extended head length = 250 mm		**3000770**
	G20 24V	Standard head length = 118 mm - Extended head length = 178 mm		**3000644**
	G20 24V	Standard head length = 118 mm - Extended head length = 260 mm		**3000771**
		SPACER KIT Using the special accessories, the burner can be pulled back to reduce head penetration into the combustion chamber.		
	G7 24V	Spacer thickness = 25 mm		**3000642**
	G20 24V	Spacer thickness = 15 mm	(1)	**20103452**
		INLET AIR ASPIRATION KIT This kit allows to channel the external air directly into the burner.		
	G7-G10 24V	Kit code for inlet air aspiration.	(2)	**20027577**
	G20 24V	Kit code for inlet air aspiration.	(2)	**20027580**
	All models	HOUR COUNTER KIT FOR 530 SE AND 531 SE CONTROL BOXES To measure the burner working time a hour counter kit is available.		**3000904**
		LIGHT OIL FILTER For cleaning light oil from dirty particles and impurities filters with the following features are available.		
	All models	Filtering degree 60 µm (Filter made up of aluminium body and stainless steel filtering cartridge; available singularly).		**3006561**
	All models	Filtering degree 60 µm (Filter made up of aluminium cover, plastic tank and nylon filtering cartridge; available in packaging of 50 pieces).		**3075011**
	All models	LIGHT OIL FILTER/DEGASSING UNIT To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.		**3000926**
	All models	7-POLE SOCKET KIT FOR 530 SE AND 531 SE CONTROL BOXES For burner without pre installed socket a 7-pole socket kit with cable is available.		**3001065**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).		**3000945**

(1) The application of this accessory does not allow the use of the burner head opening hinge.
(2) By applying this kit, the combustion air is drawn in from outside, so there can be significant setting variations with respect to the original configuration and the instructions on the burner manual, therefore it is recommended to adjust combustion according to the kit instruction.

STATE OF SUPPLY

Completely automatic monobloc light oil burners, One-stage operation, made up of:
- Fan with forward curve blades
- Metallic cover lined with sound-proofing material
- Air damper, completely closed in stand by, with adjustment
- 24VDC electric motor
- Combustion head fitted with:
  - stainless steel head cone, resistant to high temperatures
  - ignition electrodes
  - flame stability disk
- Geared pump for fuel supply, fitted with:
  - filter
  - pressure regulator
  - attachments for fitting a pressure gauge and vacuum meter
  - internal by-pass for preparing for single-pipe installations
- Fuel feed solenoid valve incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Light oil nozzle
- IP X0D (IP 40) protection level
- Fuel pre-heater (optional)
- Reduced output ignition mechanism (optional).

STANDARD EQUIPMENT

- Two flexible pipes for connection to the light oil supply line
- Two nipples for connection to the pump
- Flange, screws and nuts for fixing
- Thermal gasket
- 7-pin plug (on request)
- Maintenance assembly
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Light oil light-process burners

GULLIVER RGF



- One-stage light oil burners for light process applications
- Ease of maintenance
- Simplified calibration: air regulator with external gear
- High flexibility of use and adaptability to the operating conditions
- Complete with nozzle and flexible hoses for light oil

MAIN APPLICATIONS

- Industrial ovens
- Paint booths
- Low-power steam boilers

Riello Gulliver RGF series of One-stage light oil burners, is a complete range of products developed to respond to any request for light industrial processes like bakery ovens, spray painting ovens, small steam or thermal boilers and all applications requiring a reliable, user-friendly industrial product with enhanced performance and specific functions.
Gulliver RGF series is available in four different models, with an output ranging from 32 to 237 kW, divided in three different structures.
All models share the majority of the components with the traditional Riello Gulliver RG series (including the ventilation system), maintaining the same overall dimensions.
This series can operate on 50 or 60 Hz and 220-230 V (dual frequency).
All these burners are compliant with EN 267 Standard (Forced draught oil burners) and to European Directives for EMC, Low Voltage and Machinery.
For depressurised working field please refer to EN 746-2 Standard.
All burners are fired before leaving the factory.

TECHNICAL DATA

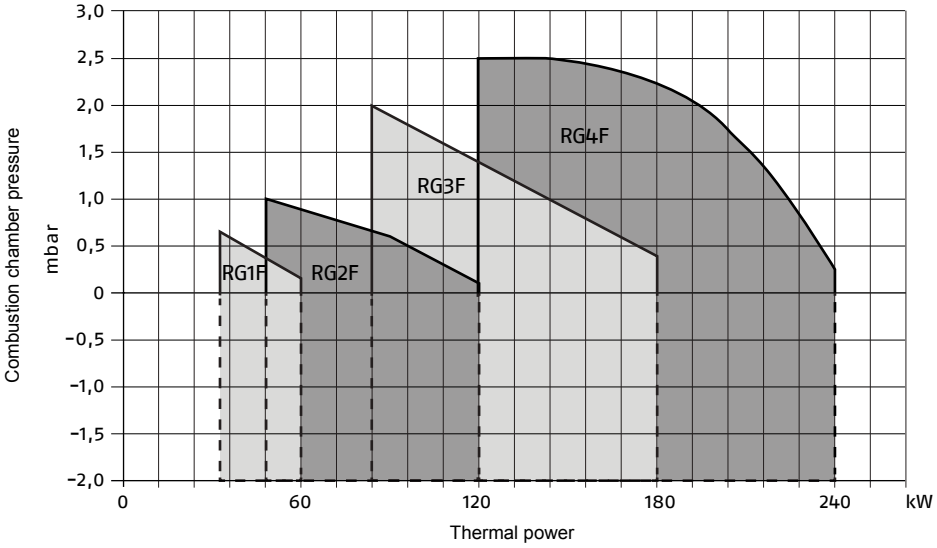
Description	Heat output		Electric power supply	Total electrical power	Code
	kW	kg/h	Ph/V/Hz	kW	
RG1F	32-60	2.7-5	1/220-230/50-60	0,155 (at 50Hz) - 0,200 (at 60 Hz)	**3736370**
RG2F	47-119	4-10	1/220-230/50-60	0,165 (at 50Hz) - 0,220 (at 60 Hz)	**3737770**
RG3F	83-178	7-15	1/220-230/50-60	0,380 (at 50Hz) - 0,520 (at 60 Hz)	**3739380**
RG4F	118.5-237	10-20	1/220-230/50-60	0,370 (at 50Hz) - 0,510 (at 60 Hz)	**3739680**

Net calorific value of light oil: 11,8 kWh/kg - Viscosity at 20°C: 4-6 mm2/s (cSt)
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 267 Standard.

SERVICES FOR BURNERS

Burner range	Description service	Code
GULLIVER RGF	Installation advice	**27017470**
	Commissioning and adjustment	**27017471**
	Performance Check	**27017475**
	Regular maintenance	**27017480**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017487**
	Commissioning and adjustment with initial regular maintenance package	**27017495**

FIRING RATES



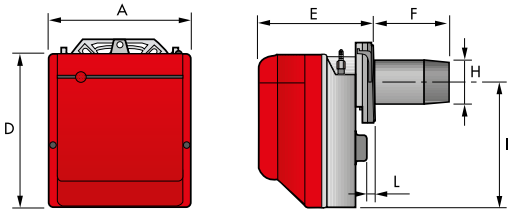
Useful firing rates for choosing the burner

Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

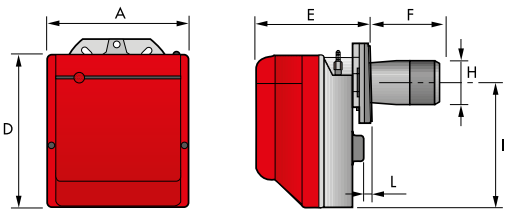
IMPORTANT:
For the part of the working field that is depressurised, refer to EN 746-2 Standard.

OVERALL DIMENSIONS

RG1F

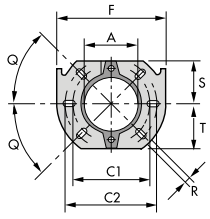


RG2F-RG3F-RG4F

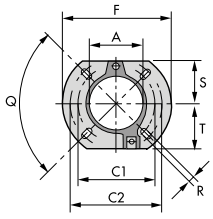


Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm
RG1F	234	254	196	93	84	210	4
RG2F	255	280	202	115	95	230	10
RG3F	300	345	228	142	123	285	12
RG4F	300	345	228	142	125	285	12

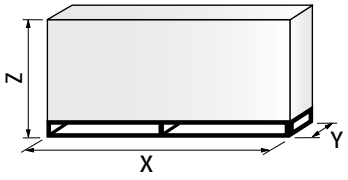
RG1F-RG2F



RG3F-RG4F

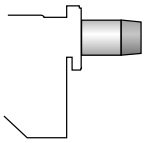
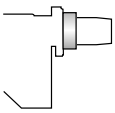


Description	A mm	C1 mm	C2 mm	F mm	Q	R mm	S mm	T mm
RG1F	91	130	150	180	45°	11	72	72
RG2F	106	140	168	189	45°	11	83	83
RG3F	127	160	190	213	90°	11	99	99
RG4F	127	160	190	213	90°	11	99	99



Description	X mm	Y mm	Z mm	Net weight kg
RG1F	353	278	320	13
RG2F	363	298	350	13
RG3F	430	345	430	15
RG4F	430	345	430	18

ACCESSORIES

Drawing	Burner model	Specification	Code
		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.	
	RG1F	Standard head length = 93 mm - Extended head length = 163 mm	**3000963**
	RG2F	Standard head length = 115 mm - Extended head length = 180 mm	**3000964**
	RG2F	Standard head length = 115 mm - Extended head length = 300 mm	**3000967**
	RG3F	Standard head length = 142 mm - Extended head length = 210 mm	**3000965**
	RG3F	Standard head length = 142 mm - Extended head length = 300 mm	**3000968**
	RG4F	Standard head length = 142 mm - Extended head length = 210 mm	**3000966**
	RG4F	Standard head length = 142 mm - Extended head length = 300 mm	**3000969**
		SPACER KIT Using the special accessories, the burner can be pulled back to reduce head penetration into the combustion chamber.	
	RG1F	Spacer thickness = 15 mm	**3007931**
	RG3F-RG4F	Spacer thickness = 15 mm	**20103452**
	RG1F	PRE-HEATER KIT This kit is used only for Gulliver RG1F burner. It can be installed in special atmospheric conditions (low temperatures), with high diesel oil viscosity and with low deliveries.	**3001083**
		LIGHT OIL FILTER For cleaning light oil from dirty particles and impurities filters with the following features are available.	
	All models	Filtering degree 60 µm (Filter made up of aluminium body and stainless steel filtering cartridge; available singularly).	**3006561**
	All models	Filtering degree 60 µm (Filter made up of aluminium cover, plastic tank and nylon filtering cartridge; available in packaging of 50 pieces).	**3075011**
	All models	LIGHT OIL FILTER/DEGASSING UNIT To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.	**3000926**
	All models	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).	**3000945**

STATE OF SUPPLY

Completely automatic monobloc light oil burners, with One-stage operation fitted with:
- Fan with forward curve blades
- Cover lined with sound - proofing material
- Air damper, always open in stand by, with external adjustment, without need to remove the cover
- Single phase electric motor 220 - 230 V, 50 - 60 Hz
- Combustion head fitted with:
  - stainless steel head cone, resistant to high temperatures
  - ignition electrodes
  - flame stability disk
- Geared pump for fuel supply, fitted with:
  - filter
  - pressure regulator
  - attachments for fitting a pressure gauge and vacuum meter
  - internal by-pass for preparing for single-pipe installations
- Fuel feed solenoid valve incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Light oil nozzle
- IP X0D (IP 40) protection level.

STANDARD EQUIPMENT

- Flange with insulating gasket
- Screw and nuts for flange
- 7-pin plug
- Screw and nuts for flange to be fixed to the heat generator
- Flexible oil pipes with nipples
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Light oil light-process burners

GULLIVER RGDF



- Two-stage light oil burners for light process applications
- Ease of maintenance
- Simplified calibration: air regulator with external gear
- High flexibility of use and adaptability to the operating conditions
- Complete with nozzle and flexible hoses for light oil

MAIN APPLICATIONS

- Industrial ovens
- Paint booths
- Low-power steam boilers

Riello Gulliver RG5DF is a new model of two-stage light oil burner, developed to respond to any request for light industrial processes like bakery ovens, spray painting ovens, small steam or thermal boilers and all applications requiring a reliable, user-friendly industrial product with enhanced performance and specific functions. All models share the majority of the components with the traditional Riello Gulliver RGD series (including the ventilation system), maintaining the same overall dimensions. This burner can operate on 50 or 60 Hz and 220-230 V (dual frequency).
It is compliant with EN 267 Standard (Forced draught oil burners) and to European Directives for EMC, Low Voltage and Machinery.
For depressurised working field please refer to EN 746-2 Standard.
All burners are fired before leaving the factory.

TECHNICAL DATA

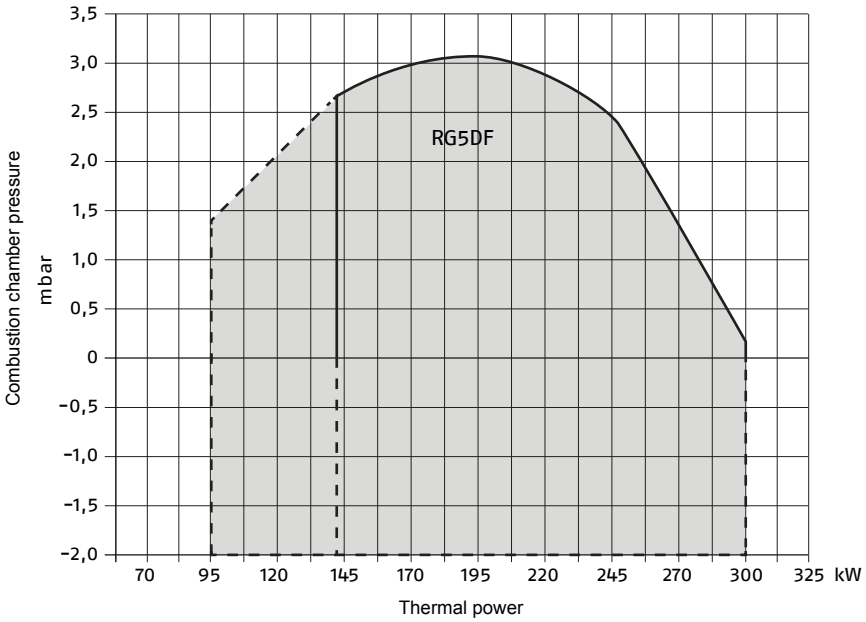
Description	Heat output		Electric power supply	Total electrical power	Code
	kW	kg/h	Ph/V/Hz	kW	
RG5DF	95/142-296	8/12-25	1/220-230/50-60	0,4 (at 50 Hz) - 0,575 (at 60 Hz)	**3739870**

Net calorific value of light oil: 11,8 kWh/kg - Viscosity at 20°C: 4-6 mm2/s (cSt)
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 267 Standard.

SERVICES FOR BURNERS

Burner range	Description service	Code
GULLIVER RGDF	Installation advice	**27017470**
	Commissioning and adjustment	**27017471**
	Performance Check	**27017475**
	Regular maintenance	**27017480**
	Intervention on request (4h)	**27017485**
	Intervention on request (8h)	**27017486**
	Maintenance and repair plan	**27017487**
	Commissioning and adjustment with initial regular maintenance package	**27017495**

FIRING RATES



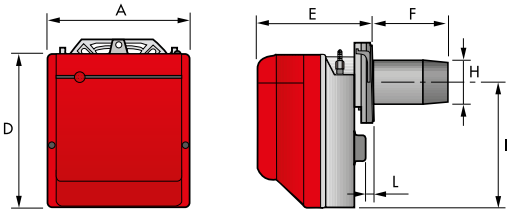
Useful firing rates for choosing the burner

1st stage operation range

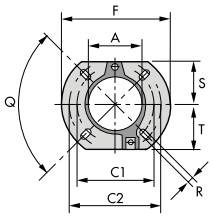
Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

IMPORTANT:
For the part of the working field that is depressurised, refer to EN 746-2 Standard.

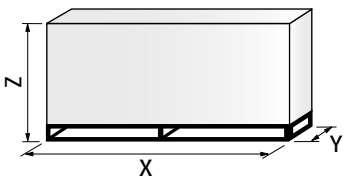
OVERALL DIMENSIONS



Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm
RG5DF	300	345	247	159	125	285	12.5

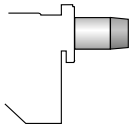
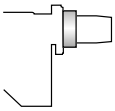


Description	A mm	C1 mm	C2 mm	F mm	Q	R mm	S mm	T mm
RG5DF	127	198	160	190	213	45°	11	99



Description	X mm	Y mm	Z mm	Net weight kg
RG5DF	510	345	440	18

ACCESSORIES

Drawing	Burner model	Specification	Code
	RG5DF	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 = 159 mm - Extended head length = 300 mm	**3000981**
	RG5DF	SPACER KIT Using the special accessories, the burner can be pulled back to reduce head penetration into the combustion chamber. Spacer thickness = 15 mm	**20103452**
	RG5DF	LIGHT OIL FILTER For cleaning light oil from dirty particles and impurities filters with the following features are available. Filtering degree 60 µm (Filter made up of aluminium body and stainless steel filtering cartridge; available singularly).	**3006561**
	RG5DF	Filtering degree 60 µm (Filter made up of aluminium cover, plastic tank and nylon filtering cartridge; available in packaging of 50 pieces).	**3075011**
	RG5DF	LIGHT OIL FILTER/DEGASSING UNIT To solve problems of air or water in the oil circuit a special filter/degassing unit is available, made up of aluminium cover, plastic tank, stainless steel filtering cartridge, air release cap and water purge valve. It is available singularly. Filtering degree 100 µm.	**3000926**
	RG5DF	7-PIN PLUG KIT If necessary a 7-pin plug kit is available (in packaging of n. 5 pieces).	**3000945**

STATE OF SUPPLY

Completely automatic monobloc light oil burners, with Two-stage operation fitted with:
- Fan with forward curve blades
- Cover lined with sound-proofing material
- Air damper always open in stand-by
- Air damper, with 1st and 2nd stage adjustment (2nd stage adjustment without removing the casing)
- Single phase electric motor 220 - 230 V/ 50 - 60 Hz
- Combustion head fitted with:
  - stainless steel head cone, resistant to high temperatures
  - ignition electrodes
  - flame stability disk
- Geared pump for fuel supply, fitted with:
  - filter
  - pressure regulator
  - attachments for fitting a pressure gauge and vacuum meter
  - internal by-pass for preparing for single-pipe installations
- Fuel feed solenoid valve incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Light oil nozzle
- IP X0D (IP 40) protection level.

STANDARD EQUIPMENT

- Flange with insulating gasket
- Screw and nuts for flange
- Screws and nuts for flange to be fixed to the heat generator
- Flexible oil pipes with nipples
- 7-pin plug
- 4-pin plug
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

INDUSTRIAL BURNERS

Dual block industrial burners

DUAL BLOCK - MEDIUM/HIGH POWER



DB

DB 0 (150/350-850 kW)
DB 1 (300/600-1300 kW)
DB 2 (600/1250-2400 kW)
DB 3 (800/2000-3800 kW)
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)

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ER

ER 4 N (540/2500 - 4000 kW)
ER 6 N (840/4000 - 6000 kW)
ER 9 N (1250/6000 - 9000 kW)
ER 12 N (1750/9000 - 12000 kW)
ER 16 N (2350/12000 - 16000 kW)
ER 20 N (3000/16000 - 20000 kW)
ER 25 N (3500/20000 - 25000 kW)
ER 32 N (4000/25000 - 32000 kW)

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DUAL BLOCK - HIGH POWER



DR

DR 20 (2500-20000 kW)
DR 25 (3000-25000 kW)
DR 32 (4000-32000 kW)
DR 40 (5000-40000 kW)
DR 50 (6000-50000 kW)
DR 65 (8000-65000 kW)
DR 80 (10000-80000 kW)

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Accessories for dual block industrial burners

LIGHT OIL PUMPING UNIT SKIDS



SG-DG

Including:

- Gas separator bottle
- Self-cleaning filter
- Minimum oil pressure switch
- Pumping group with pressure regulator
- Pump electric motor
- Pressure regolator valve of degasing unit
- Drainage valve (normally closed)
- Pressure gauge on the delivery circuit

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SN-DN

Including:

- Gas separator bottle
- Self-cleaning filter
- Minimum oil pressure switch
- Heating cartridge
- Pumping group with pressure regulator
- Pump electric motor
- Heavy oil heater
- Maximum thermostat
- Minimum thermostat
- Pressure regolator valve of degasing unit
- Drainage valve (normally closed)
- Steam circuit solenoid valve
- Pressure gauge on the delivery circuit
- Temperature probe
- Safety valve

page 729

INDUSTRIAL FANS



INDUSTRIAL FANS

page 732

CONTROL PANELS



CONTROL PANELS

page 733

Industrial dual block oil, gas and dual fuel burners

DB



- Full range of burners with max out from 0,85 to 20 MW
- Combustion air temperature up to 150°C, 200°C or 250°C
- Different burner configurations available for standard NOx emissions, Low NOx emissions (≤ 80 mg/kWh -gas) or Ultra Low NOx emissions (≤ 30 mg/kWh with FGR - gas)
- Operation with mechanical or electronic cam
- Highly customizable layout
- Operation with gas fuels (natural gas, LPG) and/or liquid fuels (light oil, heavy oil); other fuels available upon request
- Pilot ignition (available as standard or optional, depending on the burner size)
- Optimized configuration for easy commissioning and maintenance

DB series, representing the evolution in Riello Burners industrial product portfolio, includes dual block burners for applications in big plants (district heating, hospitals) as well as in food, chemicals, textile industry and matching with hot water boilers, steam and thermal oil generators.
DB series is available in 10 models with an output ranging from 150 kW to 20.000 kW; the burners are divided in homogeneous ranges according to the fuels used and on the NOx emissions level: combustion heads for standard, low NOx or ultra low NOx emissions are available.
DB burners can operate with different types of fuel: gas, LPG, light oil, heavy oil (and related combinations); other fuels available on demand. Burner operation, according to customer specifications, can be:
– /M: modulating with mechanical cam, with ease of management and ideal proportion between power delivered and thermal load.
– /E: modulating with electronic cam, with best performance and efficiency.
– /EV: modulating with electronic cam and VSD management, with noise emissions and energy saving optimization.
DB 9-12-16-20 are equipped with pilot ignition as standard, while it can be supplied on demand with DB 0-1-2-3-4-6 models. A hinge system for easier combustion head maintenance is available on all models.
DB series is suitable for applications including heat recovery systems, with pre-heated air temperature up to:
– 150 °C as standard
– 200 °C (as standard for DB 2-3-4-6, with special construction for other sizes)
– 250 °C with special construction.
The composite configuration allows to create a modular and flexible combustion system, to be integrated with the fuel supply unit (gas pressure adjustment unit, oil preheating/pumping station), gas train, control panel and fan; such accessories are available as part of the offer. The variable geometry combustion heads guarantee a wide modulation range and the fluid dynamic conditions necessary for the optimization of the combustion process, ensuring a real energy saving.
The ventilation and combustion head with new geometry allow to minimize noise and polluting emissions.

(*) The related burner range codes are listed below:

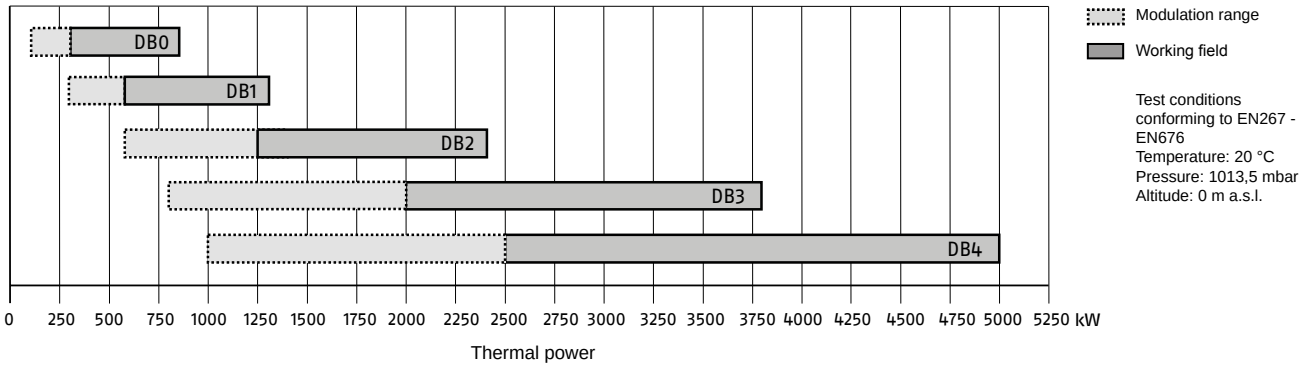
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21CKBLAWRF	DB NSM	21CKBOAWRF	DB NSE	21CKHOAWRF	DB NE
21CKGLBWRF	DB SM BLU	21CKGOBWRF	DB SE BLU	21CKOOAWRF	DB LE
21CKGOAWRF	DB SE	21CKGOHWRF	DB SE FGR	21CKDOAWRF	DB LSE
21CKOLAWRF	DB LM	21CKHLAWRF	DB NM	21CKDOHWRF	DB LSE FGR
21CKDOBWRF	DB LSE C13	21CKGQBWRF	DB SEV BLU	21CKHPAWRF	DB NAE

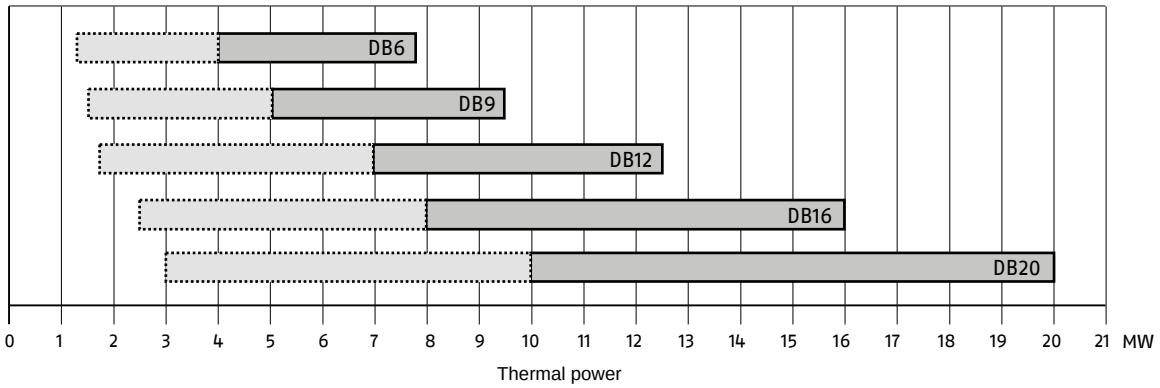
TECHNICAL DATA

Description	Fuel (1)	Firing rates (2) kW	Operation	Code
DB 0	Natural gas LPG Light oil Heavy oil (other fuels upon request)	150/350-850	/M /E /EV	**(3)**
DB 1		300/600-1300		**(3)**
DB 2		600/1250-2400		**(3)**
DB 3		800/2000-3800		**(3)**
DB 4		1000/2500-5000		**(3)**
DB 6		1400/4000-7800		**(3)**
DB 9		1500/5000-9500		**(3)**
DB 12		1700/7000-12500		**(3)**
DB 16		2500/8000-16000		**(3)**
DB 20		3000/10000-20000		**(3)**

(1) Dual fuel version available as combinations of the fuels indicated.
(2) Firing rates referred to:
Light oil with LCV 11.8 kWh/kg and viscosity 4-6 mm^2/s (cSt) at 20 °C.
Heavy oil with LCV 11.1-11.3 kWh/kg and viscosity 500 mm^2/s (cSt) at 20 °C.
Natural gas (G20) with LCV 10 kWh/Nm^3 and density 0.71 kg/Nm^3.
LPG (G31) with LCV 25.8 kWh/Nm^3 and density 2.02 kg/Nm^3.
(3) On demand.

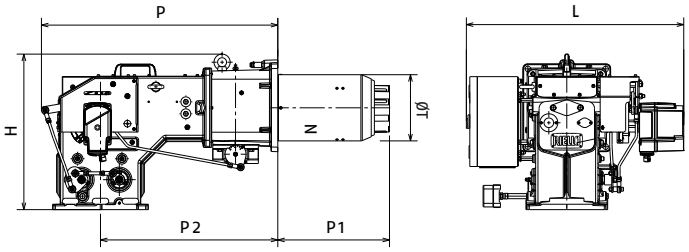
FIRING RATES



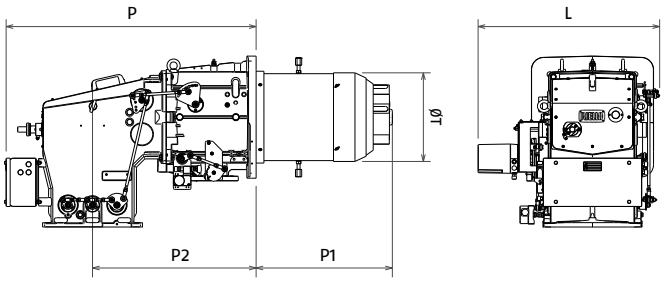


OVERALL DIMENSIONS

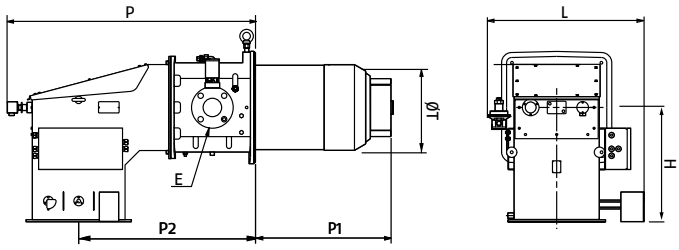
DB 0-1-2



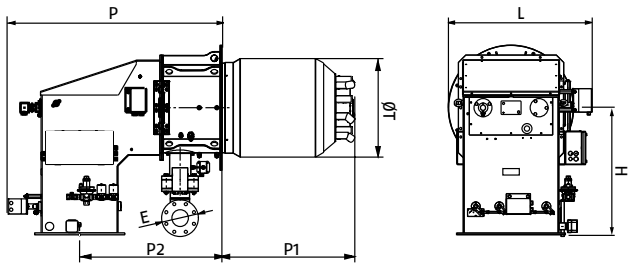
DB 3-4-6



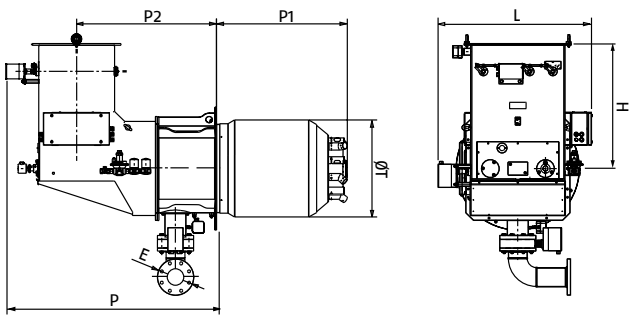
DB 9-12



DB 16-20 – A0 configuration - air supply from the bottom



DB 16-20 – A180 configuration - air supply from the top

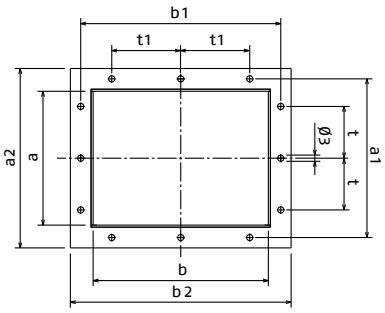


Description	H mm	L mm	P mm	P1 mm	P2 mm	E mm	ØT mm
DB 0	538	830	780	258	583	Rp 2"	189
DB 1	538	830	780	258	583	Rp 2"	189
DB 2	519	723	790	373	592	Rp 2"	221
DB 3	450	728	1009	370	655	DN65	313
DB 4	450	744	1024	526	670	DN65	313
DB 6	450	744	1024	495	670	DN80	363
DB 9	550	753	1195*-1539**	662	851	DN80	413
DB 12	550	753	1195*-1539**	662	851	DN80	456
DB 16	761	934	1283*-1600**	797	852	DN100	544
DB 20	761	934	1283*-1600**	797	852	DN100	590

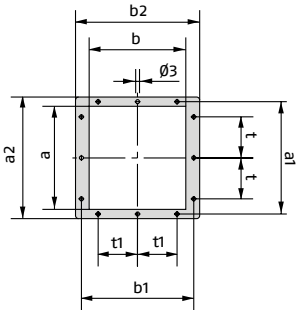
* Gas burners
** Light oil and dual fuel (gas/light oil) burners
Note: technical specifications and overall dimensions are indicative; please contact Riello for furher information.

Air duct connection

DB 0-2

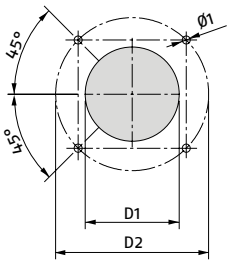


DB 3-20

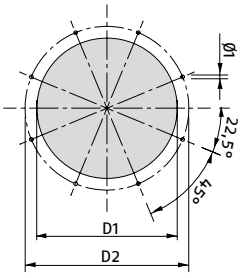


Boiler fixing

DB 0-12

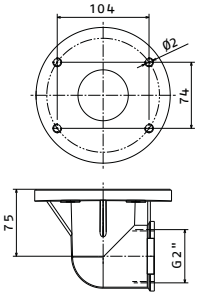


DB 16-20

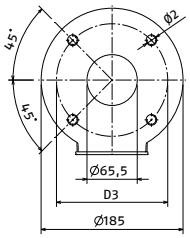


Gas supply

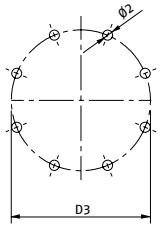
DB 0-2



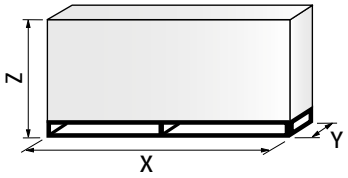
DB 3-4



DB 6-20



Description	a mm	a1 mm	a2 mm	b mm	b1 mm	b2 mm	D1 mm	D2 mm	D3 mm	t mm	t1 mm	Ø1 mm	Ø2 mm	Ø3 mm
DB 0	194	230	260	254	290	320	195	275-325	-	75	100	M16	M10	9
DB 1	194	230	260	254	290	320	195	275-325	-	75	100	M16	M10	9
DB 2	194	230	260	254	290	320	230	325-368	-	75	100	M16	M10	9
DB 3	329	370	409	318	370	400	350	453	145-DN65	130	130	M18	M16	13
DB 4	329	370	409	318	370	400	350	453	145-DN65	130	130	M18	M16	13
DB 6	329	370	409	318	370	400	385	495	160-DN80	130	130	M18	M18	13
DB 9	436	476	506	400	440	470	420	608	160-DN80	200	180	M20	M18	11
DB 12	436	476	506	400	440	470	465	608	160-DN80	200	180	M20	18	11
DB 16	562	620	652	452	510	542	560	700	180-DN100	260	205	M16	18	11
DB 20	562	620	652	452	510	542	600	700	160-DN100	260	205	M16	18	11



Description	X mm	Y mm	Z mm	Net weight kg
DB 0	1300	900	800	50
DB 1	1300	900	800	65
DB 2	1300	900	800	80
DB 3	2000	950	1090	200
DB 4	2000	950	1090	200
DB 6	2000	950	1090	200
DB 9	2040	1180	1125	270
DB 12	2040	1180	1125	250
DB 16	2200	1000	1300	530
DB 20	2200	1000	1300	550

STATE OF SUPPLY

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
- Phototcell 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.

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.

Dual fuel Burner (Oil/Gas)
- Phototcell 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
- 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.

STANDARD EQUIPMENT

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

Gas Burner
- Screws for fixing the burner flange to the boiler
- Thermal screen
- Screws for fixing the gas train flange to the burner
- Gas train gasket
- High voltage burner ignition for DB 4-6
- Pilot burner ignition for DB 9-20 (for DB 4-6 on demand)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Dual fuel Burner (Oil/Gas)
- Screws for fixing the burner flange to the boiler
- Thermal screen
- Screws for fixing the gas train flange to the burner
- Gas train gasket
- High voltage burner ignition for DB 4-6
- Pilot burner ignition for DB 9-20 (for DB 4-6 on demand)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue

Industrial oil, gas and dual fuel air register burners

ER



- Flame adaptability to boiler combustion chamber.
- Low air pressure drop.
- Easy access to the combustion head components.
- Electronic or mechanical air-fuel ratio control.
- Ignition by pilot system.
- Manual flame shape regulation device.
- Different types of photocell according to the application.

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

Description (1)	Fuel (2)	Firing rates (3) kW	Operation	Code
ER 4 S	Natural Gas	540/2500 - 4000 kW	/M /E	**(1)**
ER 6 S		840/4000 - 6000 kW		**(1)**
ER 9 S		1250/6000 - 9000 kW		**(1)**
ER 12 S		1750/9000 - 12000 kW		**(1)**
ER 16 S		2350/12000 - 16000 kW		**(1)**
ER 20 S		3000/16000 - 20000 kW		**(1)**
ER 25 S		3500/20000 - 25000 kW		**(1)**
ER 32 S		4000/25000 - 32000 kW		**(1)**
ER 4 P	LPG	540/2500 - 4000 kW	/M /E	**(1)**
ER 6 P		840/4000 - 6000 kW		**(1)**
ER 9 P		1250/6000 - 9000 kW		**(1)**
ER 12 P		1750/9000 - 12000 kW		**(1)**
ER 16 P		2350/12000 - 16000 kW		**(1)**
ER 20 P		3000/16000 - 20000 kW		**(1)**
ER 25 P		3500/20000 - 25000 kW		**(1)**
ER 32 P		4000/25000 - 32000 kW		**(1)**

(*) The related burner range codes are listed below:
21CLBQAWRF ER NSEV
21CLDOAWRF ER LSE
21CLDQAWRF ER LSEV
21CLGOAWRF ER SE
21CLOPAWRF ER LAE

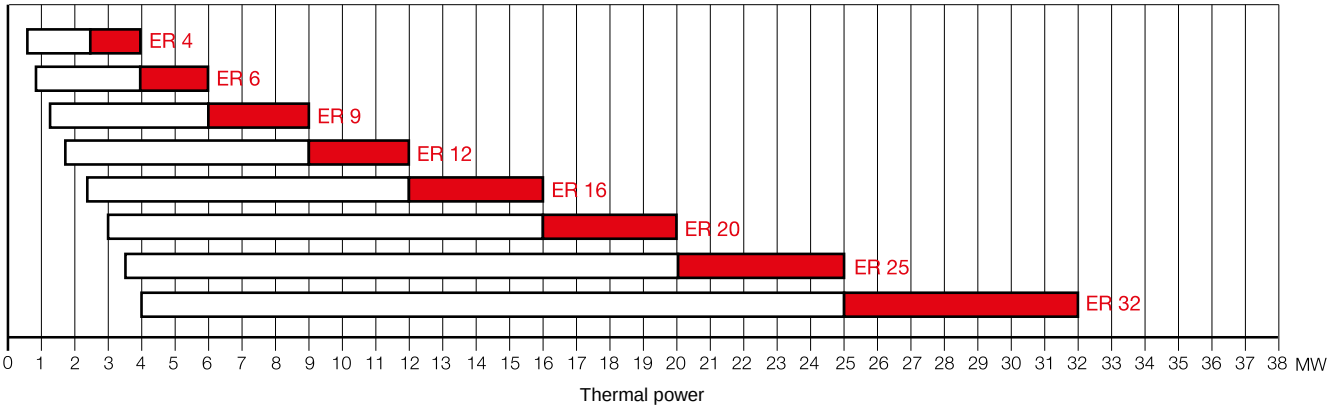
Description (1)	Fuel (2)	Firing rates (3) kW	Operation	Code
ER 4 L	Light Oil	540/2500 - 4000 kW	/M /E	**(1)**
ER 6 L		840/4000 - 6000 kW		**(1)**
ER 9 L		1250/6000 - 9000 kW		**(1)**
ER 12 L		1750/9000 - 12000 kW		**(1)**
ER 16 L		2350/12000 - 16000 kW		**(1)**
ER 20 L		3000/16000 - 20000 kW		**(1)**
ER 25 L		3500/20000 - 25000 kW		**(1)**
ER 32 L		4000/25000 - 32000 kW		**(1)**
ER 4 N	Heavy Oil	540/2500 - 4000 kW	/M /E	**(1)**
ER 6 N		840/4000 - 6000 kW		**(1)**
ER 9 N		1250/6000 - 9000 kW		**(1)**
ER 12 N		1750/9000 - 12000 kW		**(1)**
ER 16 N		2350/12000 - 16000 kW		**(1)**
ER 20 N		3000/16000 - 20000 kW		**(1)**
ER 25 N		3500/20000 - 25000 kW		**(1)**
ER 32 N		4000/25000 - 32000 kW		**(1)**

(1) Further versions are available according to the variants listed at the section "ADDITIONAL INFORMATION - Designation of Burners Series"
(2) Dual Fuel versions are available on the basis of a combination of listed fuels
(3) Max capacity is referred to:
Light oil net calorific value 11,8 kWh/kh - 10200 kcal/kg - Viscosity at 20°C 4-6 mm^2/s (cSt)
Heavy oil net calorific value 11,1-11,3 kWh/kg - 9545-9720 kcal/kg - Viscosity at 20°C 500 mm^2/s (cSt)
G20 net calorific value 10 kWh/Nm^3 - Density 0,71 kg/Nm^3
G25 net calorific value 8,6 kWh/Nm^3 - Density 0,78 kg/Nm^3
LPG net calorific value 25,8 kWh/Nm^3 - Density 2,02 kg/Nm^3

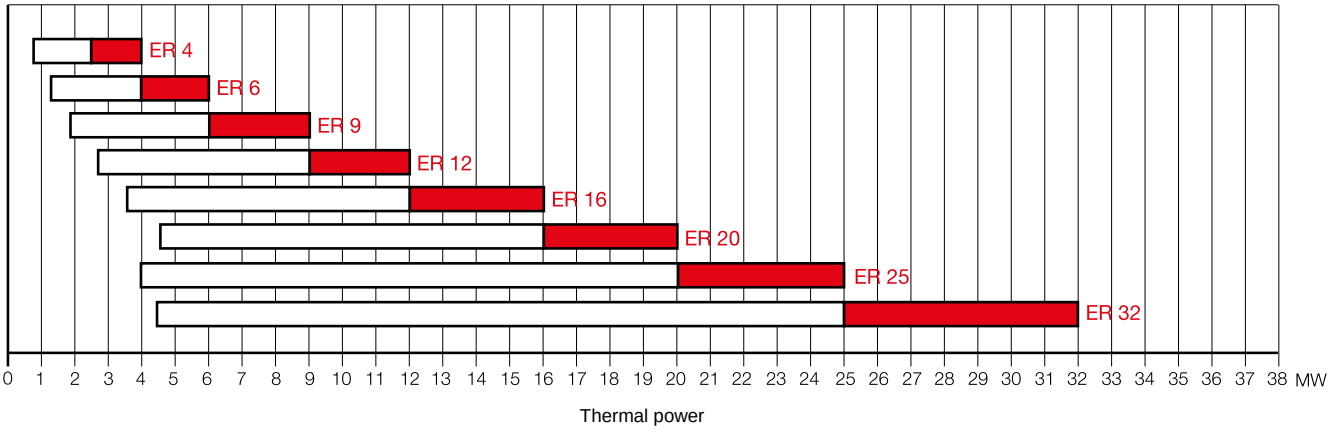
Note: or more information about product codes, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

FIRING RATES

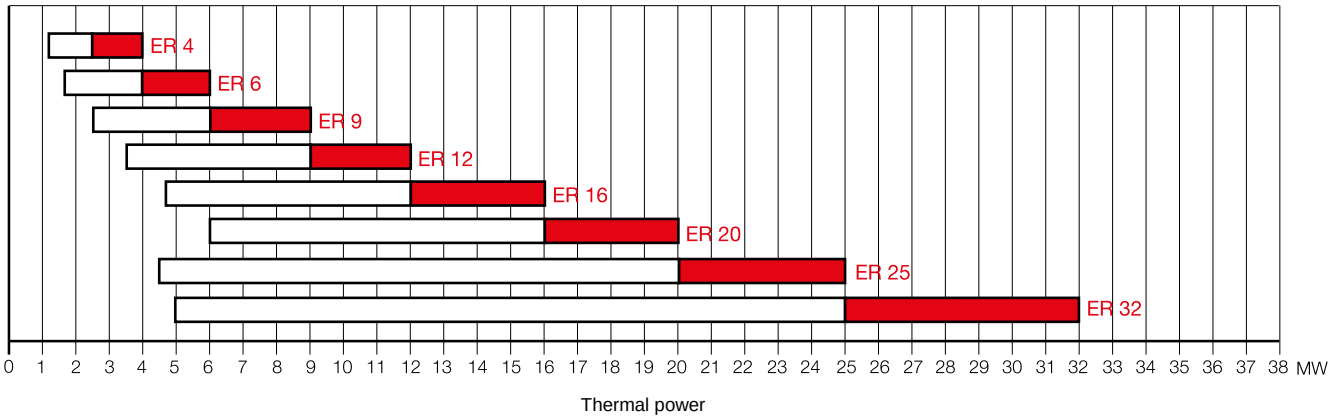
NATURAL GAS



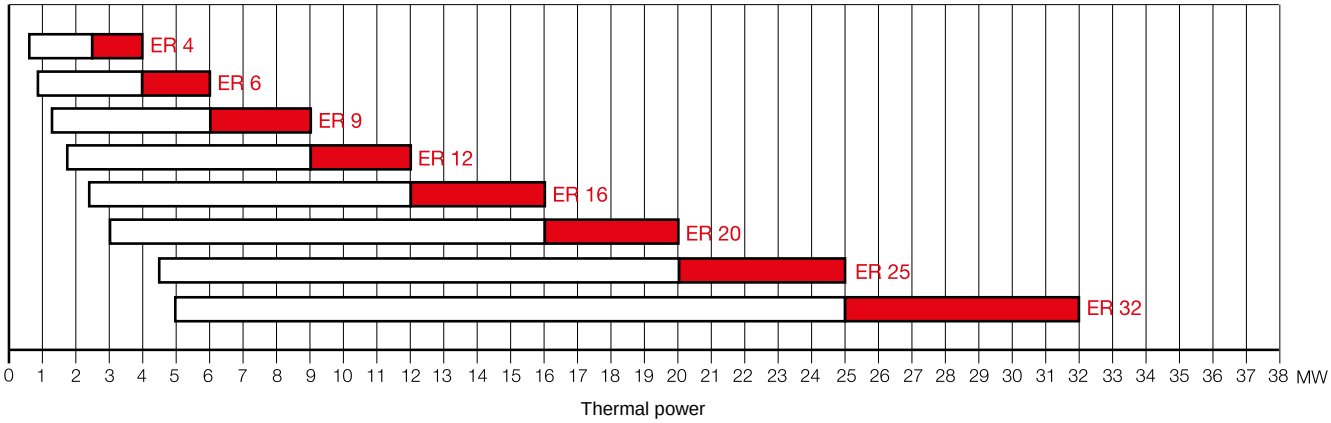
LIGHT OIL



HEAVY OIL

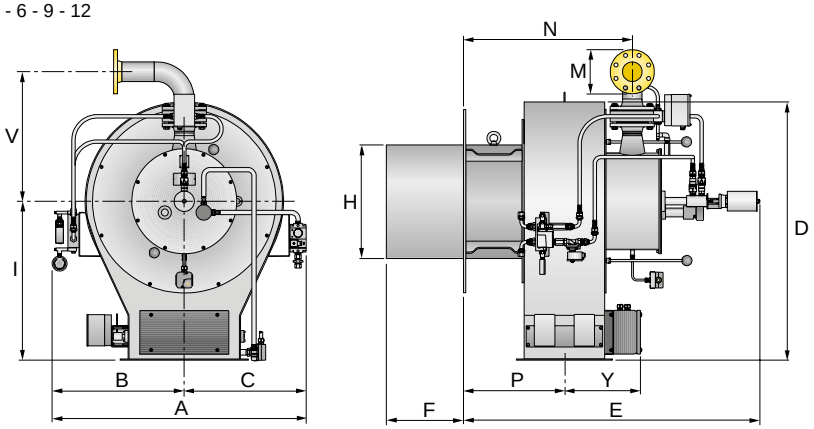


DUAL FUEL

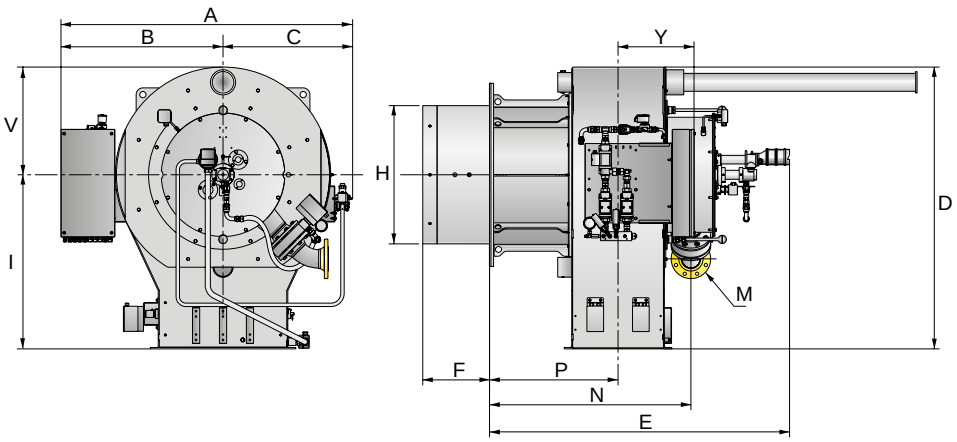


OVERALL DIMENSIONS

ER 4 - 6 - 9 - 12



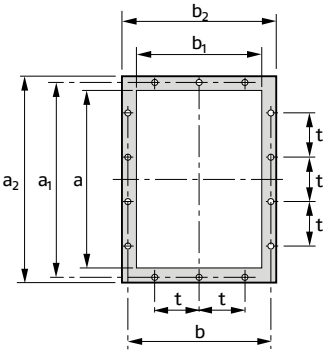
ER 16 - 20 - 25 - 32



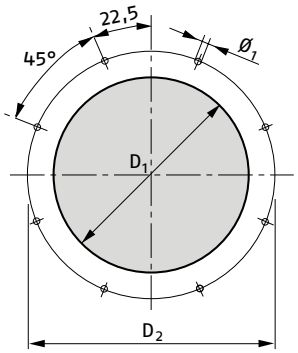
Description	A mm	B mm	C mm	D mm	E mm	F mm	H mm	I mm	M mm	N mm	P mm	Y mm	V mm
ER 4	855	455	400	835	1160	330	370	530	DN65	605	380	307	542
ER 6	855	455	400	835	1160	330	430	530	DN65	605	380	307	542
ER 9	1150	600	550	1170	1345	350	520	720	DN80	765	457	345	588
ER 12	1150	600	550	1170	1345	350	600	720	DN80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

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

Air duct connection

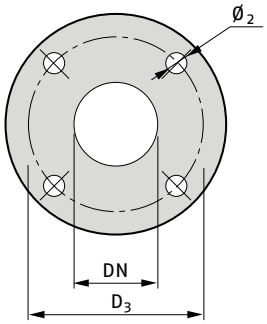


Boiler fixing

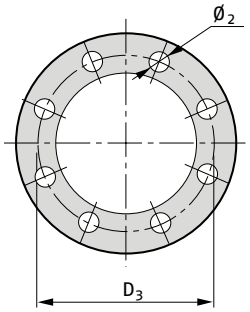


Gas supply

ER 4-6



ER 9-32



Description	a mm	a1 mm	a2 mm	b mm	b1 mm	b2 mm	D1 mm	D2 mm	D3 mm	t mm	Ø1 mm	Ø2 mm
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	540	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	720	860	180	160	M18	18
ER 20	710	775	810	567	500	600	800	970	180	160	M18	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

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

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 indipendent 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.

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 indipendent 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 electrode and probe
  • 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.

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 indipendent 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 electrode and probe
  • 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

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

Gas burner
– 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)
– 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

Industrial dual block burners

DR



- 7 models available with max burner output up to 80 MW
- Low NOx emissions (≤ 80 mg/kWh) or Ultra Low NOx emissions (≤ 30 mg/kWh with FGR)
- Operation with electronic cam
- Combustion head with staging combustion system (air suction circuit designed with two independent air ducts)
- Highly customizable layout
- Optimized configuration for easy commissioning and manteinance

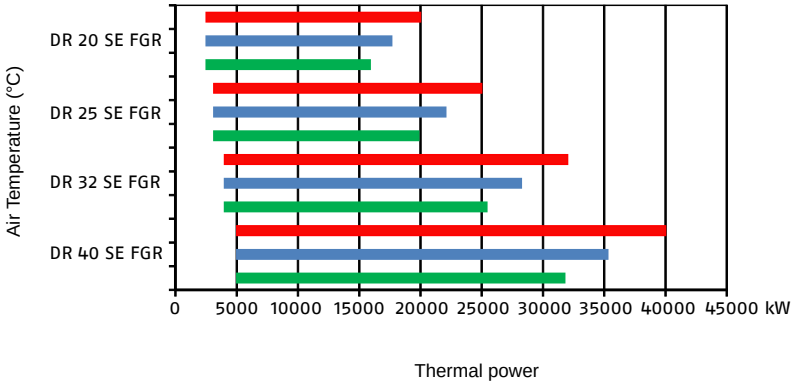
The new DR burner platform represents the evolution in Riello Burners industrial product range for high power applications.
The series includes dual block burners for applications in big civil heating plants (i.e. hospitals, district heating) and industrial processes (i.e. food chemicals, textile industry) with a remarkable thermal demand. DR burners can be matched with hot water boilers, steam and thermal oil generators.
These burners allow to realise a modular and flexible combustion system adding a preparation fuel unit, a gas train, a control panel and a fan. Control panel with high-end control box can be supplied installed on burner board. 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.
DR burners are suitable for applications including heat recovery systems (i.e. diathermic oil generators). The modulating regulation always allows to reach a wide modulation ratio and optimal fluid-dynamics conditions for a good combustion. The low-NOx combustion head allows to reach, on natural gas operations, NOx emissions ≤ 80 mg/kWh without FGR use (≤ 50 mg/kWh with 10% FGR).
LPG, light oil and heavy oil operation (including dual fuel solutions) is available as special execution.

TECHNICAL DATA

Description	Fuel	Firing rates (1) kW	Operation	Code
DR 20	Natural gas (other fuels upon request)	2500-20000	/E /EV	**(2)**
DR 25		3000-25000		**(2)**
DR 32		4000-32000		**(2)**
DR 40		5000-40000		**(2)**
DR 50		6000-50000		**(2)**
DR 65		8000-65000		**(2)**
DR 80		10000-80000		**(2)**

(1) Firing rates referred to: natural gas (G20) with LCV 10 kWh/Nm³ and density 0,71 kg/Nm³.
(2) On demand.

FIRING RATES



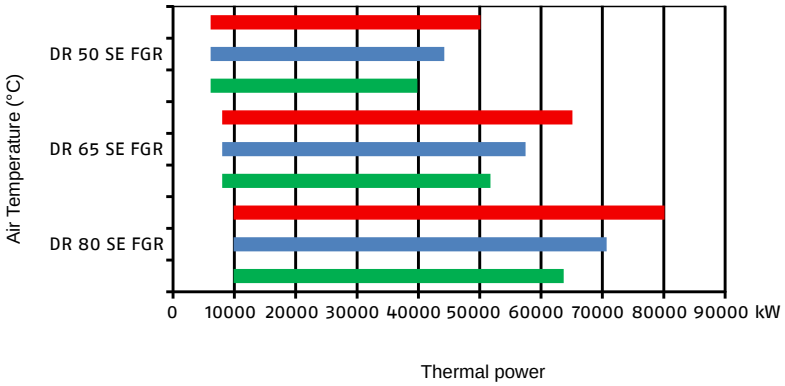
NO FGR
Combustion air temperature 50 °C

10 % FGR
Combustion air temperature 50 °C

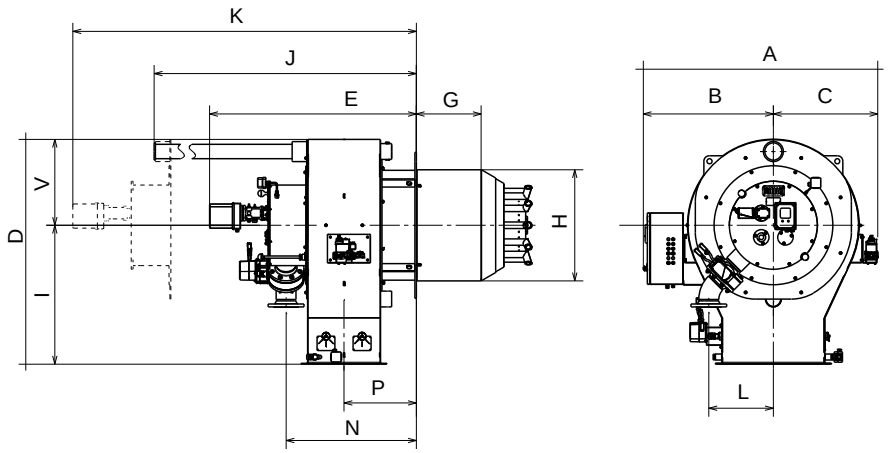
10 % FGR
Combustion air temperature 150 °C

TEST CONDITIONS
CONFORMING TO EN676
Temperature: 50 °C
Pressure: 1013.5 mbar
Altitude: 0 m a.s.l.

NOTE
Maximum burner's load output, with 10% FGR active is calculated considering flue gases rated temperature: 200 °C.



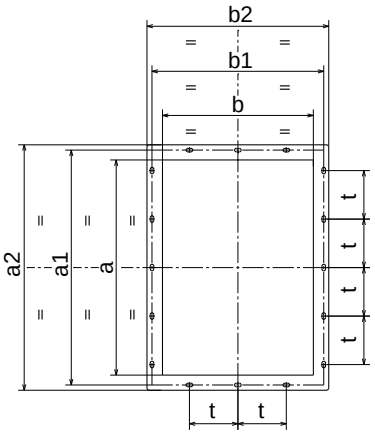
OVERALL DIMENSIONS



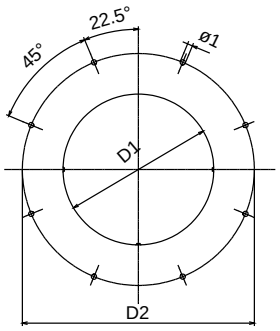
Description	A mm	B mm	C mm	D mm	E mm	G mm	H mm	I mm	j mm	k mm	l mm	n mm	p mm	V mm
DR 20	1639	909	730	1570	1444	453	696	970	2430	3000	451	910	505	600
DR 25	1639	909	730	1570	1444	453	776	970	2430	3000	451	910	505	600
DR 32	1851	1013	838	1758	1726	510	880	1050	-	-	521	1082	583	706
DR 40	1851	1013	838	1758	1726	510	978	1050	-	-	521	1082	583	706
DR 50	(1)													
DR 65	(1)													
DR 80	(1)													

(1) On demand.

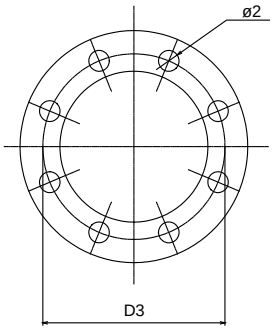
Air duct connection



Boiler fixing



Gas supply



Description	a1 mm	a2 mm	a mm	b1 mm	b2 mm	b mm	t mm	D1 mm	D2	D3 mm	ø1	ø2 mm
DR 20	775	810	710	567	600	500	160	720	860	180	M18	18
DR 25	775	810	710	567	600	500	160	800	970	210	M18	18
DR 32	968	1018	900	708	758	640	200	930	1200	210	M20	18
DR 40	968	1018	900	708	758	640	200	1050	1200	240	M20	22
DR 50	(1)											
DR 65	(1)											
DR 80	(1)											

(1) On demand.

STATE OF SUPPLY

Dual block forced draught burner, modulating operation, separate supply, 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 indipendent high precision servomotors managed by microprocessor
– Pilot burner with gas train and ignition electrodes
– Combustion head fitted with:
– flame stability disk made up of axial swirler
– stainless steel end cone, resistant to corrosion and high temperatures
– gas distributor with multiple pipes
– easy regulation system for gas pipes
– Variable geometry combustion head that can be set according to the required output
– Lifting rings.
– Flame inspection window
– Electrical interface box with ignition transformer inside
– IP54 protection level.
– UV photocell (other flame detector on request)
– Minimum air pressure switch
– Maximum gas pressure switch
– Butterfly gas valve with servomotor , controlled by a high precision servomotor managed by microprocessor
– Pressure test point to the combustion head for primary, secondary air channel and gas
– Complete control panel with LMV52 control box and AZL52 panel

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
– Holder for burner opening (tube)

Required components to be ordered separately:
– Gas train equipped with 2 safety shut off valves and gas pressure regulator
– High pressure gas regulator train

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 inside the burner
– Complete control panel for burner management and monitoring for stand-alone installation.

Accessories for industrial dual block burners

SG-DG/SN-DN



- Oil pumping unit skids for light oil and heavy oil
- Supplied assembled and tested for fast installation
- 42 models available
- SN-DN series suitable for heavy oil with viscosity up to 65°E at 50°C
- SN-DN series equipped with electrical heater or electrical/steam heater for correct heavy oil preparation

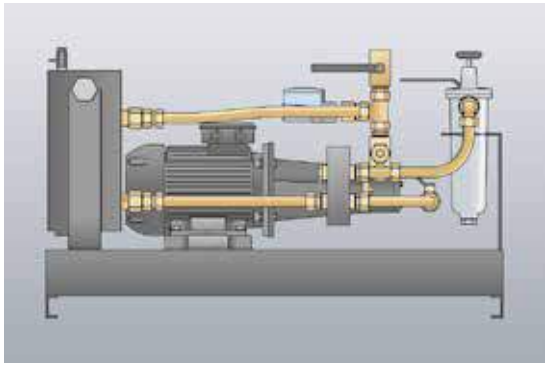
The unit skids of SG, DG, SN and DN series to treat and prepare fuel are an integral part of the industrial burners. The system, designed for oil fuel with max viscosity 65°E at 50°C, consists mainly of a filter, a heater, a pump and a vent valve. Electric or steam/electric heaters may be used and a double system with backup filter and pump is also available (DG and DN series).
The unit skids come ready assembled and tested for fast installation and the wide range of models available makes the system suitable for many different application. The unit skids of SG and DG series are designed to treat and prepare light oil; they consists mainly of a filter, a pump and a vent valve.
The unit skids come ready assembled and tested for fast installation and the wide range of models available makes the system suitable for many different application. The unit skids of SN-EP, DN-EP, SN-EV and DN-EV series are designed to treat and prepare heavy oil with max viscosity 65°E at 50°C; they consists mainly of a filter, a heater, a pump and a vent valve. The heater can be Electrical (EP-type) or Electrical/Steam type (EV-type).
The unit skids come ready assembled and tested for fast installation and the wide range of models available makes the system suitable for many different application.

TECHNICAL DATA

Description (*)	Fuel	Port size		Pump delivery	Pump motor	Heating power	Skid delivery	Code
		In	Out	l/h (**)	kW	kW	kg/h (***)	
SG 250	Light oil	G1/2"	G1/2"	600	1,1	-	250	**(1)**
SG 320		G1/2"	G1/2"	800	1,5	-	350	**(1)**
SG 500		G1/2"	G1/2"	1200	2,2	-	520	**(1)**
SG 800		G3/4"	G3/4"	1700	3,0	-	800	**(1)**
SG 1000		G1"	G3/4"	2200	4,0	-	950	**(1)**
SG 1500		G1"	G1"	3600	5,5	-	1500	**(1)**
SG 2000		G1"1/4	G1"	4800	7,5	-	2000	**(1)**
SN 250 EP	Heavy oil	G1/2"	G1/2"	600	1,5	14	250	**(1)**
SN 320 EP		G1/2"	G1/2"	700	1,5	20	350	**(1)**
SN 650 EP		G1/2"	G1/2"	1200	2,2	28	600	**(1)**
SN 800 EP		G3/4"	G3/4"	1700	3	40	850	**(1)**
SN 1000 EP		G1"	G3/4"	2200	4	60	1100	**(1)**
SN 1500 EP		G1"	G1"	3600	5,5	80	1700	**(1)**
SN 2000 EP		G1"1/4	G1"	4800	7,5	100	2100	**(1)**

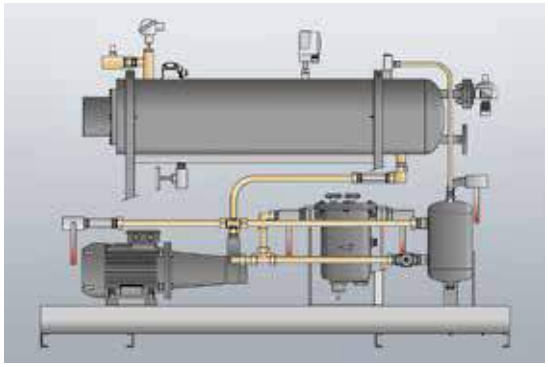
(1) On demand.
(*) Technical data specific for DG, DN-EP and SN/DN-EV series available upon request.
(**) These data are referred at 50Hz and pump pressure factory set at 28 bar
(***) Max. oil delivery of skid considering a safety increase of 100%, oil density 0,86.

GENERAL DESCRIPTION



Example of light oil pumping unit skid - SG series

B Gas separator bottle
F Selfcleaning filter
PO Minimum oil pressure switch
P Pumping group with pressure regulator
MP Pump electric motor
VR Pressure regolator valve of degasing unit
VC Drainage valve (normally closed)
MM Pressure gauge on the delivery circuit

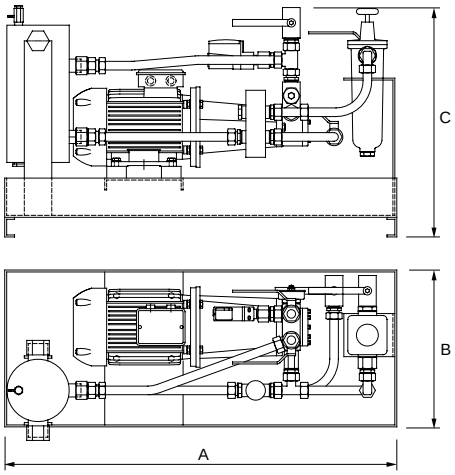


Example of light oil pumping unit skid - SN series

B Gas separator bottle
F Selfcleaning filter
PO Minimum oil pressure switch
RS Heating cartridge
P Pumping group with pressure regulator
MP Pump electric motor
PS Heavy oil heater
TM Maximum thermostat
Tm Minimum thermostat
VR Pressure regolator valve of degasing unit
VC Drainage valve (normally closed)
VV Steam circuit solenoid valve
MM Pressure gauge on the delivery circuit
TP Temperature probe
VS Safety valve

OVERALL DIMENSIONS

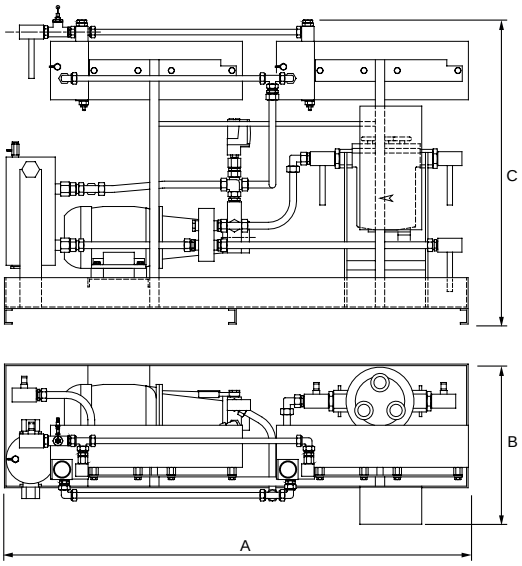
LIGHT OIL PUMPING UNIT SKIDS



Description	A mm	B mm	C mm
SG 160	1000	400	600
SG 250	1000	400	600
SG 320	1000	400	600
SG 400	1000	400	600
SG 500	1000	400	600
SG 800	1000	400	600
SG 1000	1300	400	650
SG 1500	1300	400	650
DG 160	1000	600	600
DG 250	1000	600	600
DG 320	1000	600	600
DG 400	1000	600	600
DG 500	1000	600	600
DG 800	1000	600	600
DG 1000	1300	800	650
DG 1500	1300	800	650

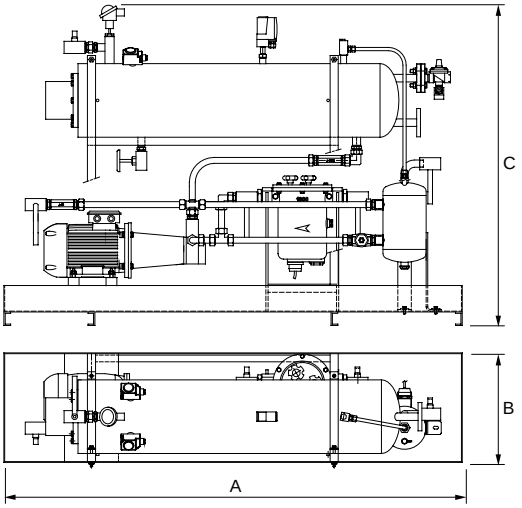
HEAVY OIL HEATING AND PUMPING UNIT SKIDS

Electrical heater



Description	A mm	B mm	C mm
SN 250 EP	1400	400	985
SN 320 EP	1400	400	985
SN 400 EP	1500	400	1100
SN 500 EP	1500	400	1100
SN 650 EP	1500	400	1100
SN 800 EP	1500	400	1100
SN 1000 EP	1500	600	1100
SN 1500 EP	1500	600	1100
DN 250 EP	1400	700	985
DN 320 EP	1400	700	985
DN 400 EP	1500	700	1100
DN 500 EP	1500	700	1100
DN 650 EP	1500	700	1100
DN 800 EP	1500	700	1100
DN 1000 EP	1500	900	1100
DN 1500 EP	1500	900	1100

Electrical/steam heater



Description	A mm	B mm	C mm
SN 250 EV	1700	400	1105
SN 320 EV	1700	400	1200
SN 400 EV	1700	400	1200
SN 500 EV	1700	400	1200
SN 650 EV	1700	400	1200
SN 800 EV	1700	400	1200
SN 1000 EV	1900	600	1300
SN 1500 EV	1900	600	1300
SN 2000 EV	1900	600	1300
DN 250 EV	1700	700	1105
DN 320 EV	1700	700	1200
DN 400 EV	1700	700	1200
DN 500 EV	1700	700	1200
DN 650 EV	1700	700	1200
DN 800 EV	1700	700	1200
DN 1000 EV	1900	900	1300
DN 1500 EV	1900	900	1300
DN 2000 EV	1900	900	1300

STATE OF SUPPLY

- Base on paint steel sheet
- Manual shut-off valve
- Selfcleaning filter on SN skids and cartridge filter on SG skids
- Gas separator group
- Pressure regolator on the burner oil circuit
- Pumping group
- Pressure gauge
- Electrical heater (on the EP models)
- Mixed heating: electrical/steam (on the EV models)
- Maximum thermostat
- Minimum thermostat
- Shunt box
- Steam circuit solenoid valve
- Temperature probe
- Safety valve
- Heating cartridge.

Accessories for industrial dual block burners

INDUSTRIAL FANS



In order to obtain a complete Industrial Combustion System, Riello is able to offer various components to be matched with the Combustion Heads of DB and DR series, such as the Centrifugal Air Fans.
The fans allow to supply the air flow to the combustion head through the adduction channel, with the appropriate technical features required from the application.
The air delivery processed from the fan is in a correct proportion to the fuel in order to guarantee the required burner output with a safe operation.
The use of a separate air fan allows:
– The matching with high boiler combustion pressure.
– The working with pre-heated combustion air to reach a higher system efficiency.
– The reduction or the elimination of fan noise on boiler room.
All the fan models are pre-assembled and tested in factory, conforming to the reference standards, so to permit the maximum easiness of installation.
In Riello's Application Engineering department a dedicated team works to perform application matching and burner integration, optimizing performance to help our customers in achieving the competitive advantage they need.
We can offer a great support in terms of burner application consulting, analysis for product engineering, job development, integrated system proposals and assistance for international standards compliance.
Training, start-up, commissioning and after-sale assistance are also performed by headquarter expert engineers.
For more information about product codes, please contact Riello Burners Commercial and Technical Department.

Accessories for industrial dual block burners

CONTROL PANELS



In order to obtain a complete Industrial Combustion System, Riello is able to offer various components to be matched with the Combustion Heads of DB and DR series, such as the Control Panels.
Burner control panels are available in different structural versions, such as wall-mounted and desk tpye (on request).
The automatic control system makes the logical integration of whole combustion system.
The customization of this logic is carried out with the different type of combustion process and in compliance with the main safety norms.
Basic operation can be increased by the addition of more sophisticated control systems such as continuos regulation of combustion (oxygene trim), fan speed control (with inverter), electronic cam and others.
The standard control panels are designed and realized according to the norm EN 61439 (limited to the applicable parts).
They are suitable for indoor application (IP 54), on request, suitable for outdoor applications.
In Riello's Application Engineering department a dedicated team works to perform application matching and burner integration, optimizing performance to help our customers in achieving the competitive advantage they need.
We can offer a great support in terms of burner application consulting, analysis for product engineering, job development, integrated system proposals and assistance for international standards compliance.
Training, start-up, commissioning and after-sale assistance are also performed by headquarter expert engineers.

TECHNICAL DATA

Description	Fuel
QE…PM	Natural gas
QE…PG	Light oil
QE…PN	Heavy oil
QE…PGM	Natural gas and light oil
QE…PNM	Natural gas and heavy oil

For more information about product codes, please contact Riello Burners Commercial and Technical Department.

GAS TRAINS

	Without seal control device	With seal control device
ONE STAGE	 MBC 65/1 page 735	
	 MB/1 page 736	 MB/1 page 736
	 VGD/1 page 738	 VGD/1 page 738
TWO STAGE	 MB/2 page 739	 MB/2 page 739
	 CB/2 page 741	
PROPORTIONAL	 CG/P page 742	
	 MB/P page 743	
HIGH PRESSURE GAS REGULATING/ REDUCING UNITS	 HPRT page 744	

One stage gas train

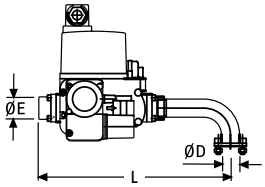
MBC 65/1

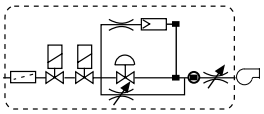


The one stage gas trains include:
– gas filter
– minimum gas pressure switch
– safety valve
– one stage regulation valve
– pressure stabilizer

TECHNICAL FEATURES
– Electrical supply: 230V / 50Hz
– Electrical protection degree : IP 54
– Operating ambient temperature -15 °C + 60 °C (+ 70 °C MB / 1 series)
– Class A group 2
– Reference Standard: EN 161

ONE STAGE WITHOUT SEAL CONTROL DEVICE



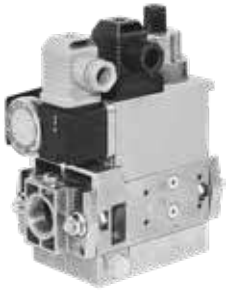


Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MBC 65/1-RSD 20	65	4-20	Rp ½"	Rp ½"	232	**3970569**
MBC 65/1-F1SD 20	65	4-20	Rp ½"	fl 1	307	**3970570**

fl 1 Flanged connection for BS1.
(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.

One stage gas train

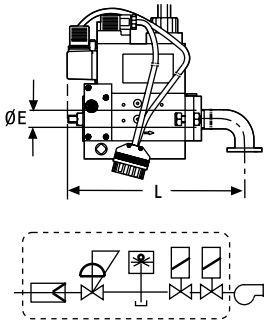
MB/1



The one stage gas trains include:
– gas filter
– minimum gas pressure switch
– safety valve
– one stage regulation valve
– pressure stabilizer

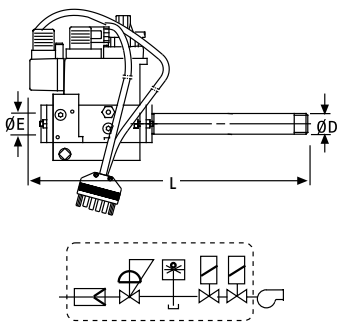
TECHNICAL FEATURES
– Electrical supply: 230V / 50Hz
– Electrical protection degree : IP 54
– Operating ambient temperature -15 °C + 60 °C (+ 70 °C MB / 1 series)
– Class A group 2
– Reference Standard: EN 161

ONE STAGE WITHOUT SEAL CONTROL DEVICE



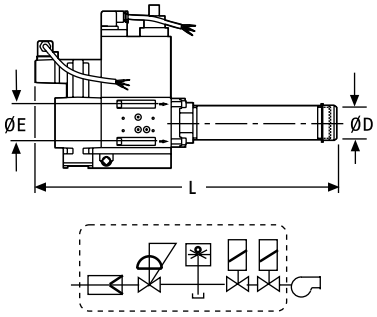
Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MB 405/1-F1SD 20	360	4-20	Rp ½"	fl 1	246	**3970546**
MB 405/1-F2SD 20	360	4-20	Rp ¾"	fl 2	236	**3970547**
MB 407/1-F2SD 20	360	4-20	Rp ¾"	fl 2	236	**3970544**
MB 407/1-F3SD 20	360	4-20	Rp ¾"	fl 3	236	**3970548**
MB 410/1-F3SD 20	360	4-20	Rp 1" ¼	fl 3	259	**3970549**
MB 412/1-F3SD 20	360	4-20	Rp 1" ¼	fl 3	259	**3970550**
MB 415/1-F3SD 30	360	4-33	Rp 1" ½	fl 3	330	**3970558**

fl 1 Flanged connection for BS1.
fl 2 Flanged connection for BS2.
fl 3 Flanged connection for BS3-BS4-RS5.
(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.



Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MB 405/1-RSD20 (*)	360	4-20	Rp ½"	Rp ½"	321	**3970530**
MB 407/1-RSD20	360	4-20	Rp ¾"	Rp ¾"	371	**3970531**
MB 410/1-RSD20	360	4-20	Rp 1"	Rp ¾"	405	**3970532**

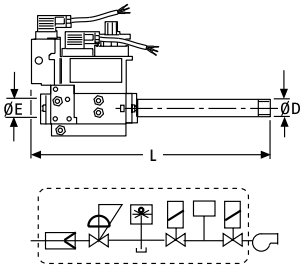
(*) ½ "- Rp ¾" adapter supplied.
(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.



Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MB 405/1-RSM 20	360	4-20	Rp ¾"	Rp 1" ½	371	**20065553**
MB 407/1-RT 20	360	4-20	Rp ¾"	Rp ¾"	371	**3970553**
MB 410/1-RT 20	360	4-20	Rp 1"	Rp ¾"	405	**3970554**
MB 412/1-RT 20 (*)	360	4-20	Rp 1" ¼	Rp 1" ¼	433	**3970144**
MB 415/1-RT 30	360	4-33	Rp 1" ½	Rp 1" ½	523	**3970180**
MB 420/1-RT 30	360	4-33	Rp 2"	Rp 2"	523	**3970181**
MB 407/1-RT 52	360	20-50	Rp ¾"	Rp 1" ½	371	**3970599**
MB 410/1-RT 52	360	20-50	Rp 1" ¼	Rp 1" ½	405	**3970258**
MB 412/1-RT 52	360	20-50	Rp 1" ½	Rp 2"	433	**3970256**
MB 415/1-RT 52	360	20-50	Rp 1" ½	Rp 2"	523	**3970250**
MB 420/1-RT 52	360	20-50	Rp 2"	Rp 1" ½	523	**3970257**

(*) Rp 1" ¼ - Rp 1" ½ adapter supplied.
(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.

ONE STAGE WITH SEAL CONTROL DEVICE



Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MB 415/1 CT RT 30	360	4-33	Rp 1" ½	Rp 1" ½	523	**3970198**
MB 420/1 CT RT 30	360	4-33	Rp 2"	Rp 2"	523	**3970182**

(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.

One stage gas train

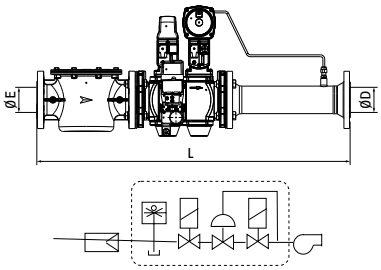
VGD/1



The one stage gas trains include:
– gas filter
– minimum gas pressure switch
– safety valve
– one stage regulation valve
– pressure stabilizer

TECHNICAL FEATURES
– Electrical supply: 230V / 50Hz
– Electrical protection degree : IP 54
– Operating ambient temperature -15 °C + 60 °C (+ 70 °C MB / 1 series)
– Class A group 2
– Reference Standard: EN 161

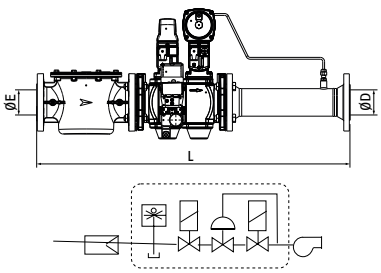
ONE STAGE WITHOUT SEAL CONTROL DEVICE



Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
VGD 50/1-RT 122	< 500	15-120 (*)	Rp 2”	GRp 2”	890	**20137718**
VGD 65/1-FT 122	< 500	15-120 (*)	DN65	DN80	1013	**20140762**
VGD 80/1-FT 122	< 500	15-120 (*)	DN80	DN80	1033	**20140763**
VGD 100/1-FT 122	< 500	15-120 (*)	DN100	DN100	1330	**20169193**
VGD 125/1-FT 122	< 500	15-120 (*)	DN125	DN125	1580	**20169195**

(*) Second spring for outlet pressure 0 - 22 mbar supplied.
(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.

ONE STAGE WITH SEAL CONTROL DEVICE

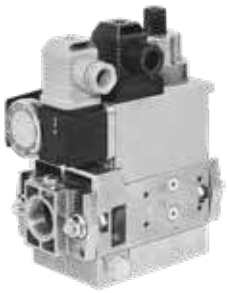


Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
VGD 50/1 CT RT 122	< 500	15-120 (*)	Rp 2”	GRp 2”	890	**20169190**
VGD 65/1 CT FT 122	< 500	15-120 (*)	DN65	DN80	1013	**20169191**
VGD 80/1 CT FT 122	< 500	15-120 (*)	DN80	DN80	1033	**20169192**
VGD 100/1 CT FT 122	< 500	15-120 (*)	DN100	DN100	1330	**20169194**

(*) Second spring for outlet pressure 0 - 22 mbar supplied.
(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.

Two stage gas train

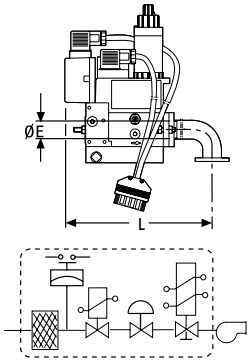
MB/2



The two stage gas trains include:
– gas filter
– minimum gas pressure switch
– safety valve
– one stage regulation valve
– pressure stabilizer

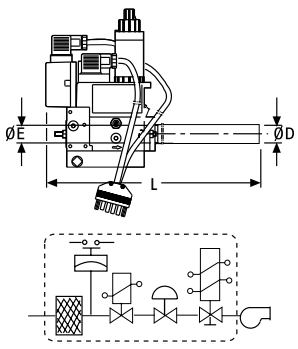
TECHNICAL FEATURES
– Electrical supply: 230V / 50Hz
– Electrical protection degree : IP 54
– Operating ambient temperature -15 °C + 60 °C (+ 70 °C MB / 1 series)
– Class A group 2
– Reference Standard: EN 161

TWO STAGE WITHOUT SEAL CONTROL DEVICE



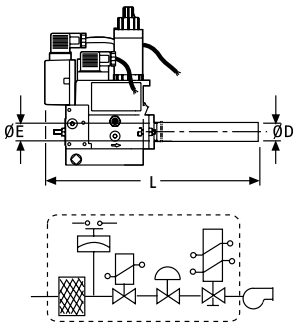
Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MB 405/2-F1SD 20	360	4-20	Rp ½"	fl 1	246	**3970539**
MB 405/2-F2SD 20	360	4-20	Rp ¾"	fl 2	236	**3970540**
MB 407/2-F2SD 20	360	4-20	Rp ¾"	fl 2	236	**3970538**
MB 407/2-F3SD 20	360	4-20	Rp ¾"	fl 3	236	**3970541**
MB 410/2-F3SD 20	360	4-20	Rp 1" ¼	fl 3	259	**3970542**
MB 412/2-F3SD 20	360	4-20	Rp 1" ¼	fl 3	259	**3970543**
MB 415/2-F3SD 20	360	4-33	Rp 1" ½	fl 3	330	**3970582**

fl 1 Flanged connection for BS1D
fl 2 Flanged connection for BS2D
fl 3 Flanged connection for BS3D-BS4D-RS5D
(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.



Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MB 405/2-RSD 20	360	4-20	Rp ½"	½"	321	**3970084**
MB 407/2-RSD 20	360	4-20	Rp ¾"	Rp ¾"	371	**3970537**
MB 410/2-RSD 20	360	4-20	Rp 1"	Rp ¾"	405	**3970534**

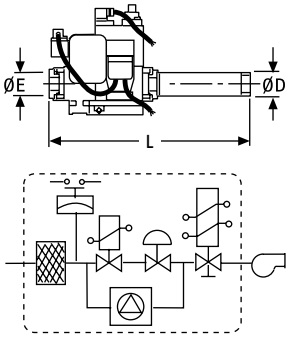
(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.



Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MB 407/2-RT 20	360	4-20	Rp ¾"	Rp ¾"	371	**3970556**
MB 410/2-RT 20	360	4-20	1"	Rp ¾"	405	**3970557**
MB 412/2-RT 20 (*)	360	4-20	Rp 1" ¼	Rp 1" ¼	433	**3970152**
MB 415/2-RT 20	360	4-20	Rp 1" ½	Rp 1" ½	523	**3970183**
MB 420/2-RT 20	360	4-20	Rp 2"	Rp 2"	523	**3970184**

(*) Rp 1" ¼ - Rp 1" ½ adapter supplied.
(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.

TWO STAGE WITH SEAL CONTROL DEVICE



Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MB 420/2 CT RT 20	360	4-20	Rp 2"	Rp 2"	523	**3970185**

(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.

Two stage gas train

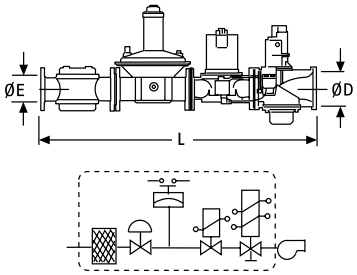
CB/2



The two stage gas trains include:
– gas filter
– minimum gas pressure switch
– safety valve
– one stage regulation valve
– pressure stabilizer

TECHNICAL FEATURES
– Electrical supply: 230V / 50Hz
– Electrical protection degree : IP 54
– Operating ambient temperature -15 °C + 60 °C (+ 70 °C MB / 1 series)
– Class A group 2
– Reference Standard: EN 161

TWO STAGE WITHOUT SEAL CONTROL DEVICE



Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
CB 512/2-RT 32	500	10-30 (*)	Rp 1" ½	Rp 1" ½	1013	**3970153**
CB 520/2-RT 32	500	10-30 (*)	Rp 2"	Rp 2"	1150	**3970154**

(*) Outlet pressure with "Blue" spring installed as standard in the gas train regulator.
(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.

Proportional gas train

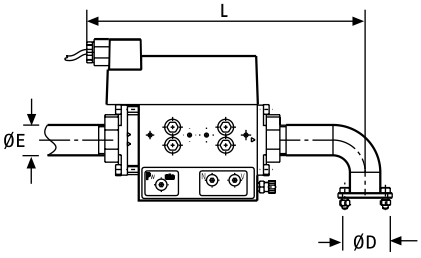
CG/P



The proportional gas trains include:
– gas filter
– minimum gas pressure switch
– safety valve
– one stage regulation valve
– pressure stabilizer
– seal control

TECHNICAL FEATURES
– Electrical supply: 230V/50Hz
– Electrical protection degree: IP 54
– Operating ambient temperature -10 °C +60 °C
– Class A group 2

PROPORTIONAL



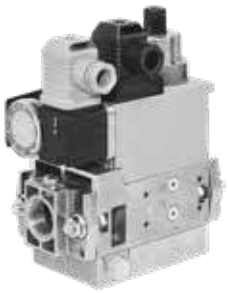
Description (1)	P. In max (mbar) (2)	Net Ø E	Burner Ø D	L mm	Code
CG 120/P-F2SD 00	100	Rp ¾"	fl 2	175	**3970587**
CG 220/P-F3SD 00	100	Rp ¾"	fl 3	210	**3970588**

fl 2 Flanged connection for BS2/M
fl 3 Flanged connection for BS3/M-BS4/M
(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.

Proportional gas train

MB/P

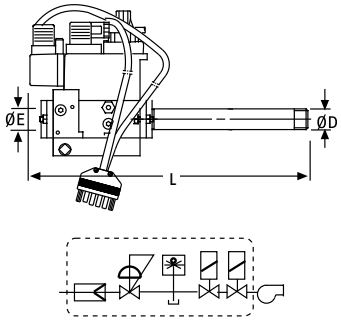
Range code xxxxxxxxxx



The proportional gas trains include:
– gas filter
– minimum gas pressure switch
– safety valve
– proportional regulation valve
– pressure stabilizer

TECHNICAL FEATURES
– Electrical supply: 230V / 50Hz
– Electrical protection degree: IP 54
– Operating ambient temperature -15 °C + 70 °C
– Class A group 2
– Reference Standard: EN 161

PROPORTIONAL



Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MB 407/P - RSD 00	360	5÷100	Rp ¾"	Rp ¾"	435	**3970535**
MB 412/P - RSD 00	360	5÷100	Rp 1"	Rp ¾"	465	**3970536**

(1) Refer to the gas trains designation.
(2) Gas train maximum inlet gas pressure.
(3) Gas train outlet pressure range.

Pressure reduction and regulation units

HPRT



The pressure reduction and regulation unit include:
- manual shut-off valve (ball-valve)
- gas filter
- shut-off cock
- gas pressure gauge upstream to the stabilizer
- pressure regulator-stabilizer
- safety slam-shut valve
- vent valve
- shut-off cock
- gas pressure gauge downstream to the stabilizer
- anti-vibration joint

TECHNICAL FEATURES
- Pressure regulating/reducing units
- Maximum inlet pressure 5 mbar
- Outlet flange with anti-vibrating joint
- 8 models available, with inlet/outlet diameter from Rp 1" to DN 125

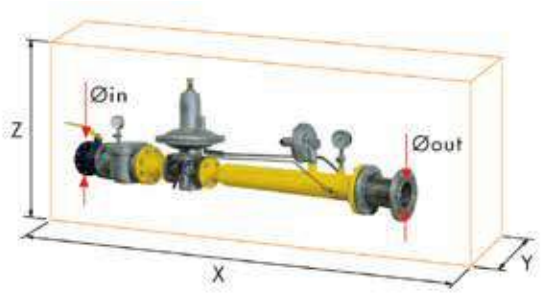
HPRT series units are systems designed for reduction and regulation of gas pressure; the units are assembled and tested in the factory to guarantee the maximum safety in operation and an easy installation. HPRT are designed to be integrated in high pressure systems and used when it is necessary to regulate gas pressure available in the line to obtain values compatible with the application.
Pressure regulating/reducing units are integrating part of the burner and together they compose a single system for gas combustion. HPRT pressure regulating/reducing units are equipped with a shut-off ball valve and a filter for a preliminary treatment of inlet gas.
Pressure regulators installed on HPRT series units are direct action devices, controlled by a diaphragm and counterspring.
A safety slam-shut valve is included in the supply; this device blocks gas flow when the downstream pressure is modified (increased or decreased) up to the intervention set-point; alternatively, it can be actuated manually.
HPRT units include a pressure relief valve, a device mounted to avoid that small leaks (when there is no flow required) or sudden and temporary overpressures (such as deriving from rapid switching or overheating of the gas) cause intervention of the slam shut.
Pressure gauges with shut-off cock are mounted upstream or downstream to the regulator, allowing pressure monitoring.
An antivibrating joint permits to damp vibrations and a simple connection to the gas distribution circuit.

TECHNICAL DATA

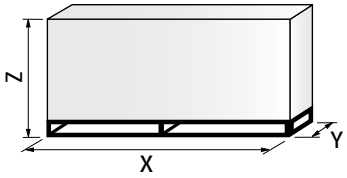
Description	Connection		Outlet pressure range	Max delivery P inlet = 1 bar (Natural gas)	Max delivery P inlet = 2-4 bar (Natural gas)	Code
	Ø IN	Ø OUT	mbar	Sm^3/h	Sm^3/h	
HPRT 80	Rp 1"	Rp 1"	30-90	100	100	**20070203**
HPRT 180	Rp 1"½	Rp 2"	50-95	250	300	**20069397**
HPRT 250	Rp 2"	Rp 2"	85-180	250	380	**20065422**
HPRT 500	DN65	DN65	85-180	500	650	**20066448**
HPRT 750	DN80	DN80	110-200	850	850	**20074024**
HPRT 1000	DN100	DN100	110-200	1000	1000	**20074026**
HPRT 1500	DN100	DN100	110-200	1500	1600	**20074031**
HPRT 2000	DN125	DN125	110-200	2200	2300	**(1)**

(1) On demand.

OVERALL DIMENSIONS



Description	X mm	Y mm	Z mm	Ø In	Ø Out
HPRT 80	625	120	250	Rp 1"	Rp 1"
HPRT 180	1255	230	400	Rp 1" ½	Rp 2"
HPRT 250	1340	230	400	Rp 2"	Rp 2"
HPRT 500	1730	230	400	DN 65	DN 65
HPRT 750	1900	350	550	DN 80	DN 80
HPRT 1000	2220	350	550	DN 100	DN 100
HPRT 1500	2220	350	550	DN 100	DN 100
HPRT 2000	2630	350	550	DN 125	DN 125



Description	X mm	Y mm	Z mm
HPRT 80	890	245	260
HPRT 180	1300	530	440
HPRT 250	1300	530	440
HPRT 500	2000	500	800
HPRT 750	2000	500	800
HPRT 1000	2500	500	800
HPRT 1500	2500	500	800
HPRT 2000	2800	500	800

STATE OF SUPPLY

High pressure regulating/reducing unit, for gas of 1st - 2nd - 3rd family, with max. inlet pressure of 5 bar made up of:
- 1 manual shut-off valve (ball valve)
- 1 gas filter with filtering degree lower than 50 µm
- 1 gas pressure gauge, with shut-off push-button cock, located upstream to the regulator
- 2 connection stubs
- 1 pressure regulator-stabilizer
- 1 slam-shut valve
- 1 gas pressure gauge, with shut-off push-button cock, located downstrem to the regulator
- 2 pipelines for sensing line
- 1 vent valve
- 1 antivibrating joint
- Nipples (in threaded version)
- Gaskets (in flanged version)
- Fixing screws (in flanged version).

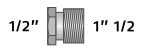
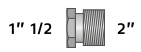
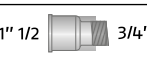
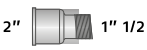
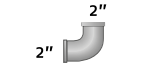
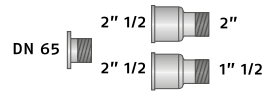
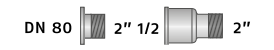
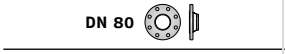
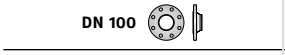
STANDARD EQUIPMENT

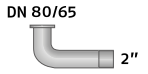
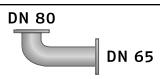
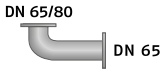
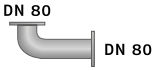
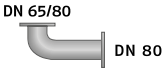
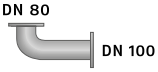
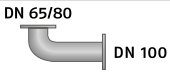
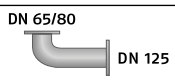
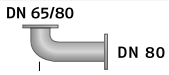
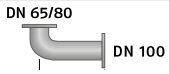
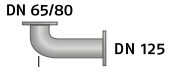
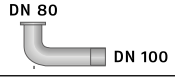
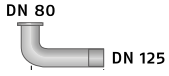
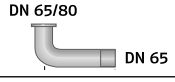
- instruction handbook for installation, use and maintenance
- gaskets (in flanged version)
- fixing screws (in flanged version)
- electrical connection terminals.

GAS TRAINS ACCESSORIES

ADAPTERS

In certain cases, an adapter must be fitted between the gas train and the burner, when the diameter of the gas train is different from the set diameter of the burner. Below are given the available adapters; please see on the Gas Train list the correct adapter codes to select.

Drawing	Description	Specification	Code
	Adapter	Length = 26 mm	**3000842**
	Adapter	Length = 31 mm	**20044756**
	Adapter	Length = 31 mm	**3000824**
	Adapter	Length = 31 mm	**3010124**
	Adapter	Length = 35 mm	**3010126**
	Adapter	Length = 35 mm	**3000843**
	Adapter	Length = 60 mm	**3000823**
	Adapter	Length = 70 mm	**3000822**
	Adapter	Length = 65 mm	**20064220**
	Adapter	Length = 65 mm	**20042324**
	Adapter	Length = 58 mm	**3010495**
	Adapter	Length = 540 mm	**3010128**
	Adapter	Length = 300 mm	**3000825**
	Adapter	Length = 300 mm	**3000826**
	Adapter	Thickness = 10 mm	**3010369**
	Adapter	Thickness = 50 mm	**3010370**
	DN65 flange	Thickness = 18 mm	**3000858**
	DN80 weld neck flange	Thickness = 50 mm	**3000859**
	DN100 weld neck flange	Thickness = 52 mm	**3000860**
	Adapter	Length = 400 mm	**3010221**
	Adapter	Length = 400 mm	**3010222**
	Adapter	Length = 400 mm	**3010223**
	Adapter	Length = 320 mm	**3010224**
	Adapter	Length = 800 mm	**20065924**
	Adapter	Length = 800 mm	**20065937**
	Adapter	Length = 800 mm	**20065960**
	Adapter	Length = 320 mm	**3091093**
	Adapter	Length = 800 mm	**20065968**

Drawing	Description	Specification	Code
	Adapter	Length = 230 mm	**20064169**
	Adapter	Length = 320 mm	**3000831**
	Adapter	Length = 230 mm	**20059330**
	Adapter	Lengthv320 mm	**3000832**
	Adapter	Length = 230 mm	**20059331**
	Adapter	Length = 320 mm	**3010127**
	Adapter	Length = 230 mm	**20059332**
	Adapter	Length = 245 mm	**20059333**
	Adapter	Length = 230 mm	**20066268**
	Adapter	Length = 230 mm	**20066278**
	Adapter	Length = 245 mm	**20066284**
	Adapter	Length = 350 mm	**20130616**
	Adapter	Length = 350 mm	**20130617**
	Adapter	Length = 350 mm	**20130602**
	Adapter	Length = 350 mm	**20130606**
	Adapter	Length = 230 mm	**20066263**
	Adapter	Length = 780 mm	**20068062**

MANUAL VALVES

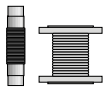
Ball shut-off manual valves are available in different sizes and listed in the following table.

Drawing	Description	Max operating pressure bar	Port size Ø	Code
	GBV ½”	5	½”	**(1)**
	GBV 1”	5	1”	**3090967**
	GBV 1”½	5	1” ½	**3090143**
	GBV Rp 2”	5	2”	**3090968**
	GBV DN65	16	DN65	**3090947**
	GBV DN80	16	DN80	**3090969**
	GBV DN100	16	DN100	**3090962**
	GBV DN150	16	DN150	**(1)**

(1) On demand.

ANTI-VIBRATION JOINTS

Anti-vibrating joints to damp vibrations and facilitate application of the gas train to the gas distribution line are available in different sizes listed in the table below. Maximum inlet pressure 500 mbar.

Drawing	Description	Port size Ø	Code
	GA 20 Anti-vibration joint	Threaded joint Ø ¾”	**3891033**
	GA 25 Anti-vibration joint	Threaded joint Ø 1”	**3891034**
	GA 40 Anti-vibration joint	Threaded joint Ø 1” ½	**3891043**
	GA 50 Anti-vibration joint	Threaded joint Ø 2”	**3891053**
	GAF 65 Anti-vibration joint	Flanged joint DN65	**3891013**
	GAF 80 Anti-vibration joint	Flanged joint DN80	**3891003**
	GAF 100 Anti-vibration joint	Flanged joint DN100	**3891023**
	GAF 125 Anti-vibration joint	Flanged joint DN125	**3091092**

FILTERS

A series of gas filters of different sizes are available and listed in the following table.

Drawing	Description	Port IN/OUT Ø	Inlet max pressure bar	Code
	GF515/1	1”½	0.5	**3012198**
	GF520/1	Rp 2”	0.5	**3012199**
	GF40065/3	DN 65	4	**3012200**
	GF40080/3	DN 80	4	**3012201**
	GF40100/3	DN 100	4	**3012202**
	GF40125	DN 125	4	**3013141**

PRESSURE REGULATORS

A series of pressure regulators of different sizes are available and listed in the following table.

Drawing	Description	Port IN/OUT Ø	Inlet max pressure bar	Code
	FRS 515	1”½	0.5	**3012203**
	FRS 520	2”	0.5	**3012204**
	FRS 5065	DN 65	0.5	**3012205**
	FRS 5080	DN 80	0.5	**3012206**
	FRS 5100	DN 100	0.5	**3012207**
	FRS 5125	DN 125	0.5	**(1)**

(1) On demand.

PRESSURE GAUGE + PUSH-BUTTON COCK KITS

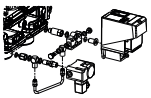
A kit composed from a pressure gauge and a push-button cock for measuring gas pressure is available in different sizes following the table.

Drawing	Description	Maximum pressure mbar	Code
	NGPG 1	60	**3090062**
	NGPG 2	160	**3091805**
	NGPG 3	300	**3091491**
	NGPG 4	500	**3090099**
	NGPG 5	1000	**(1)**
	NGPG 6	2000	**(1)**
	NGPG 7	3000	**(1)**
	NGPG 8	4000	**(1)**

(1) On demand.

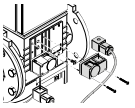
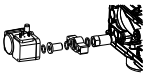
GAS VALVE SEAL CONTROL DEVICES (mandatory, according to EN 676, when the maximum power of the burner is greater than 1200 kW)

To test the valve seals on the gas train, a special “seal control kit” is available. The valve seal control device is compulsory (EN 676) on gas trains to burners with a maximum output over 1200 kW. The seal control is type VPS 504.

Drawing	Description	Specification Gas valve seal control device	Note	Code
	Gas valve seal control device kit	For gas trains of the MB/1-MB/2 and VGD 50-65-80-100/1 series.	(1)	**3010123**
	Gas valve seal control device kit	For VGD 125/1 gas train.		**(2)**
	Flange kit for VGD 50/1 seal control kit	Flange kit for the interface between the valve body and the VPS seal control device. Mandatory when using VGD 50/1 gas train.		**20186306**
	Gas valve seal control device kit	For gas trains of the CB/2 series.	(1)	**3010125**

(1) For 50Hz operation, degree of electrical protection: IP40.
(2) On demand.

GAS PRESSURE SWITCHES FOR SEAL CONTROL

Drawing	Description	Specification	Code
FOR INSTALLATION ON THE GAS TRAIN			
	VP gas pressure switch kit	For gas trains of the MB-VGD series.	**3010344**
	VGD 50/1 pressure switch flange kit	Flange kit for the interface between the valve body and the gas pressure switch for the seal control. Mandatory when using the VGD 50/1 gas train.	**20185515**
FOR INSTALLATION IN THE CONTROL PANEL			
	GW 1500	Setting range ΔP 300-1500 mbar	**(1)**
	GW 6000	Setting range ΔP 1000-6000 mbar	**(1)**

(1) On demand.

SPRINGS FOR PRESSURE REGULATORS (VGD-CB/2 GAS TRAIN)

Accessories springs are available for varying pressure range of the regulator-stabilizer included in VGD gas trains. In the following table, the springs are listed with their application range.

Drawing	Description	Gas train model	Spring colour	Pressure range mbar	Note	Code
FOR REPLACEMENT OF THE SPRING INSTALLED AS STANDARD IN THE GAS TRAIN REGULATOR (TO BE SELECTED ACCORDING TO THE NECESSARY PRESSURE RANGE)						
	Spring	VGD 50-125/1	Neutral	0-22	(1)	**20181839**
			Yellow	15-120	(1)	**20141900**
			Red	100-250	(1)	**20141901**
		CB 512/2	Red	25-55	(1)	**3010131**
			Black	60-110	(1)	**3010157**
			Pink	90-150	(1)	**3090486**
		CB 520/2	Red	25-55	(1)	**3010132**
			Black	60-110	(1)	**3010158**
		CB 5065/2 CB 5080/2	Red	25-55	(1)	**3010133**
			Black	60-110	(1)	**3010135**
			Pink	100-150	(1)	**3090456**
			Grey	140-200	(1)	**3090992**

(1) With and without seal control device.

ADDITIONAL INFORMATION

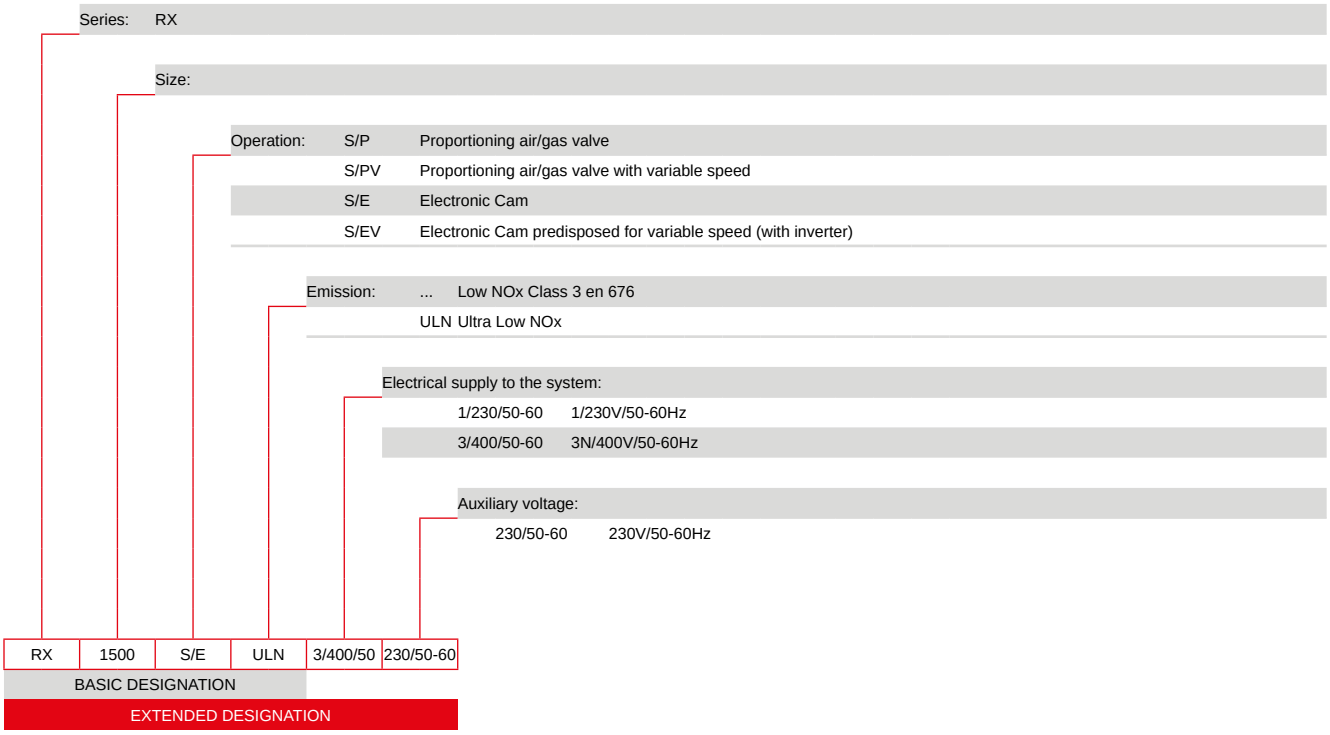
DESIGNATION OF BURNERS SERIES

R SERIES

Series:	R	
Fuel:	S	Natural Gas
	L	Light oil
	LS	Light oil/Natural Gas
	N	Heavy oil
	P	LPG
Size:		
Operation:	/1	Single stage
	"..."	Two stage
	/M	Modulating-Mechanical cam
	/E	Electronic cam
	/EV	Electronic cam predisposed for variable speed (with inverter)
	/EVi	Electronic cam with integrated inverter
Emission:	... or C01	Class 1 EN267 - EN676
	MZ or C22	Class 2 EN267 - EN676
	BLU or C33	Class 3 EN267 - EN676
	MX or C23	Class 2 EN267 - Class 3 EN676
	C05	Class 5 EN676 (NOx < 56 mg/kWh)
	FGR	Ultra Low NOx
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)
Electrical supply to the system:		
	1/220-230/50-60	1/220-230V/50-60Hz
	1/230/50	1/230V/50Hz
	3/220-400/50-60	3/220-230V/50-60Hz - 3/380-400V/50-60Hz
	3/230/50	3/230V/50Hz
	3/400/50	3N/400V/50Hz
	3/230-400/50	3/230V/50Hz - 3N/400V/50Hz
	3/220/60	3/220V/60Hz
	3/380/60	3N/380V/60Hz
	3/220-380/60	3/220/60Hz - 3N/380V/60Hz
Auxiliary voltage:	220-230/50-60	220-230V/50-60Hz
	230/50-60	230V/50-60Hz
	110/50-60	110V/50-60Hz

R	S	45	/E	C05	TC	FS1	1/230/50	230/50-60
BASIC DESIGNATION								
EXTENDED DESIGNATION								

RX SERIES


Series: RX
Size:
Operation: S/P Proportioning air/gas valve
S/PV Proportioning air/gas valve with variable speed
S/E Electronic Cam
S/EV Electronic Cam predisposed for variable speed (with inverter)
Emission: ... Low NOx Class 3 en 676
ULN Ultra Low NOx
Electrical supply to the system:
1/230/50-60 1/230V/50-60Hz
3/400/50-60 3N/400V/50-60Hz
Auxiliary voltage:
230/50-60 230V/50-60Hz
RX
1500
S/E
ULN
3/400/50
230/50-60
BASIC DESIGNATION
EXTENDED DESIGNATION

GULLIVER SERIES

Series:	R	Standard emission burners
	B	Low NOx burners
Fuel:	S	Natural Gas
	SP	LPG
	G	Light oil
	GK	Light oil with cone shaped head
Size:		
Possible variations:	R	Light-oil pre-heater
	S	Reduced output ignition
	D	Two stage output setting
	M	Two stage progressive of fully modulating
Head:	TC	Standard head
	TL	Extended head
Electrical supply to the system:		
1/230/50	1/230V/50Hz	

B	S	4	D	TC	1/230/50
BASIC DESIGNATION					
EXTENDED DESIGNATION					

GAS SERIES

Series:	GAS	
Size:	3 ...10	
Setting:	...	Single stage
	/2	Two stage
	P/M	Modulating
Emission:	...	Class 1 EN267 - EN676
Head length:	TC	Standard/Intermittent (at least 1 stop every 24 h)
	TL	Continuous (1 stop every 72 h)
Flame control system:	FS1	Standard/Intermittent (at least 1 stop every 24 h)
	FS2	Continuous (1 stop every 72 h)

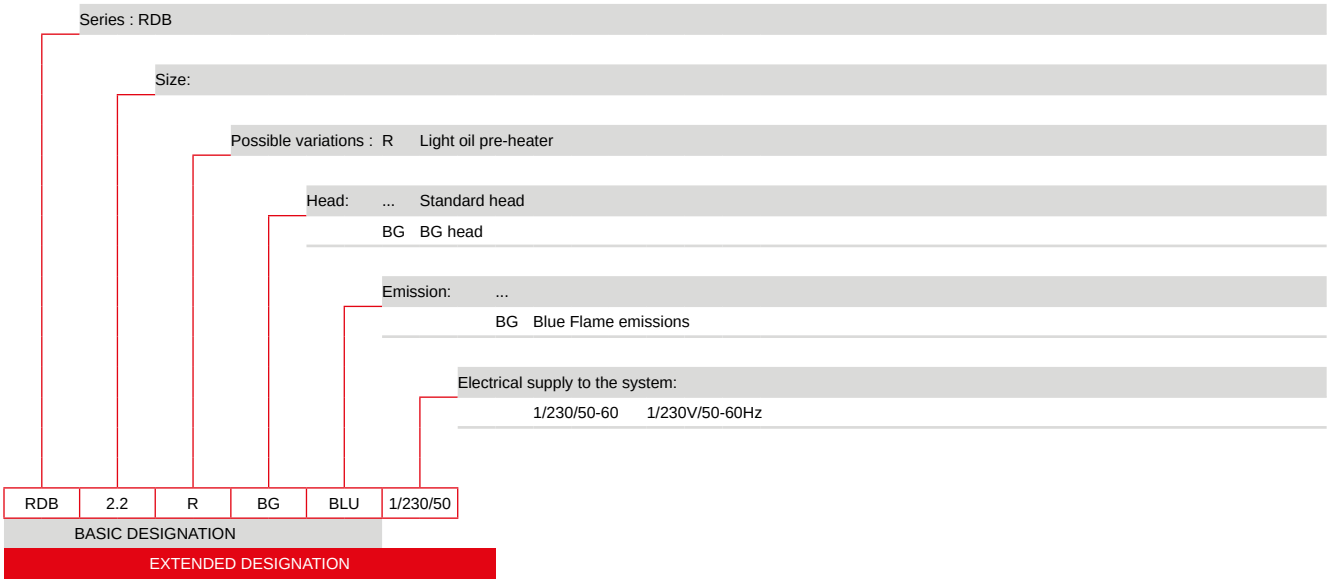
Electrical supply to the system:

1/230/50	1/230V/50Hz
1/240/50	1/240V/50Hz
1/220/60	1/220V/60Hz
1/200/50-60	1/200V/50-60Hz
3/230/50	3/230V/50Hz
3/400/50	3N/400V/50Hz
3/230-400/50	3/230V/50Hz - 3N/400V/50Hz
3/220/60	3/220V/60Hz
3/380/60	3/380V/60Hz
3/220-380/60	3/220V/60Hz - 3N/380V/60Hz
3/200/50-60	3/200V/50-60Hz

Auxiliary voltage:	230/50	230V/50Hz
	240/50	240V/50Hz
	220/60	220V/60Hz
	200/50-60	200V/50-60Hz
	230/50-60	230V/50-60Hz

GAS	9	P/M		TC	FS1	3/230-400/50	230/50-60
BASIC DESIGNATION							
EXTENDED DESIGNATION							

RDB SERIES


Series : RDB
Size:
Possible variations : R Light oil pre-heater
Head: ... Standard head
BG BG head
Emission: ...
BG Blue Flame emissions
Electrical supply to the system:
1/230/50-60 1/230V/50-60Hz
RDB
2.2
R
BG
BLU
1/230/50
BASIC DESIGNATION
EXTENDED DESIGNATION

RIELLO 40 SERIES

Series:	G	Light oil
	GS	Natural Gas
Size:		
Possible variations:	R	Light-oil pre-heater
	K	Cone shaped head
	S	Reduced output ignition
	D	Two stage output setting
	I	Intelligent
	M	Two stage progressive of fully modulationg
Head:	TC	Standard head
	TL	Extended head
Electrical supply to the system:	1/230/50	1/230V/50Hz

G	10		D	1/230/50

BASIC DESIGNATION

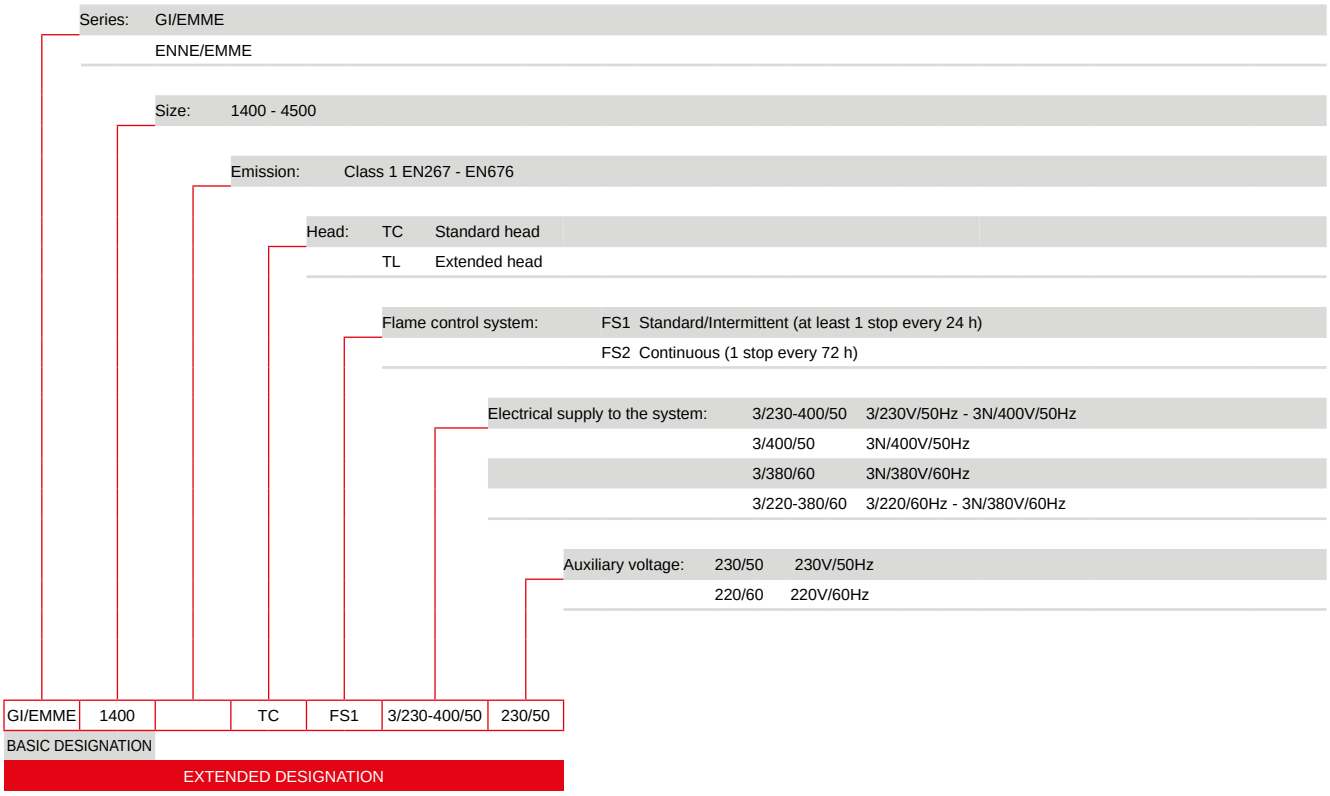
EXTENDED DESIGNATION

PRESS SERIES

Series:	PRESS	
Size:	140... 450	
Settings:	GV or G24	One stage
	GW or 1-2-3-4G	Two stage
	T/G	Three stage
	P/G	Modulating
	N/ECO	Two stage with separated oil pump
	T/N ECO	Three stage with separate oil pump
	P/N ECO	Modulating with separate oil pump
	P/NA	Modulating with air/steam atomizing
Emission:	Class 1 EN267	
Head:	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)
Electrical supply to the system:	1/230/50	1/230V/50Hz
	1/220/60	1/220V/60Hz
	1/200/50-60	1/200V/50-60Hz
	3/230-400/50	3/230V/50Hz - 3N/400V/50Hz
	3/220-380/60	3/220V/60Hz - 3N/380V/60Hz
	3/200/50-60	3/200V/50-60Hz
	3/400/50	3N/400V/50Hz
	3/380/60	3N/380V/60Hz
Auxiliary voltage:	230/50-60	230V/50-60Hz
	220-230/50-60	220-230V/50-60Hz
	220/60	220V/60Hz
	200/50-60	220V/50-60Hz
	230/50	230V/50Hz

PRESS	140	T/G		TC	FS1	3/230-400/50	230/50
BASIC DESIGNATION							
EXTENDED DESIGNATION							

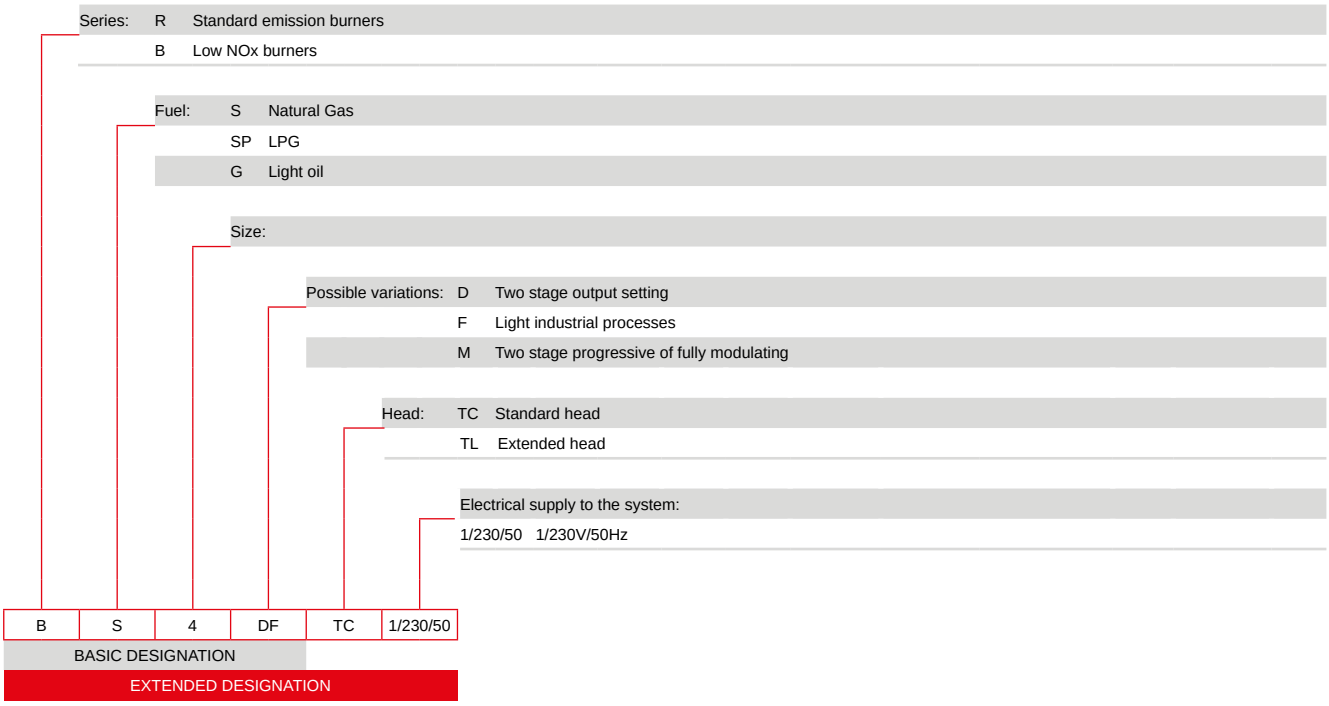
GI/EMME and ENNE/EMME SERIES

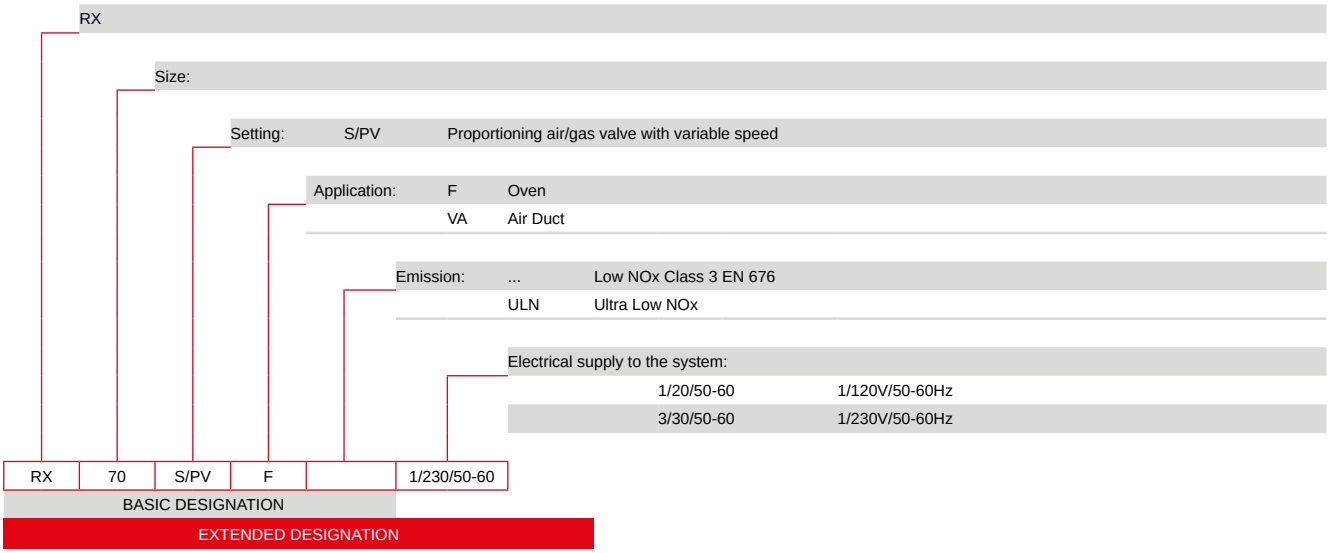


ADDITIONAL INFORMATION

DESIGNATION OF PROCESS BURNERS SERIES

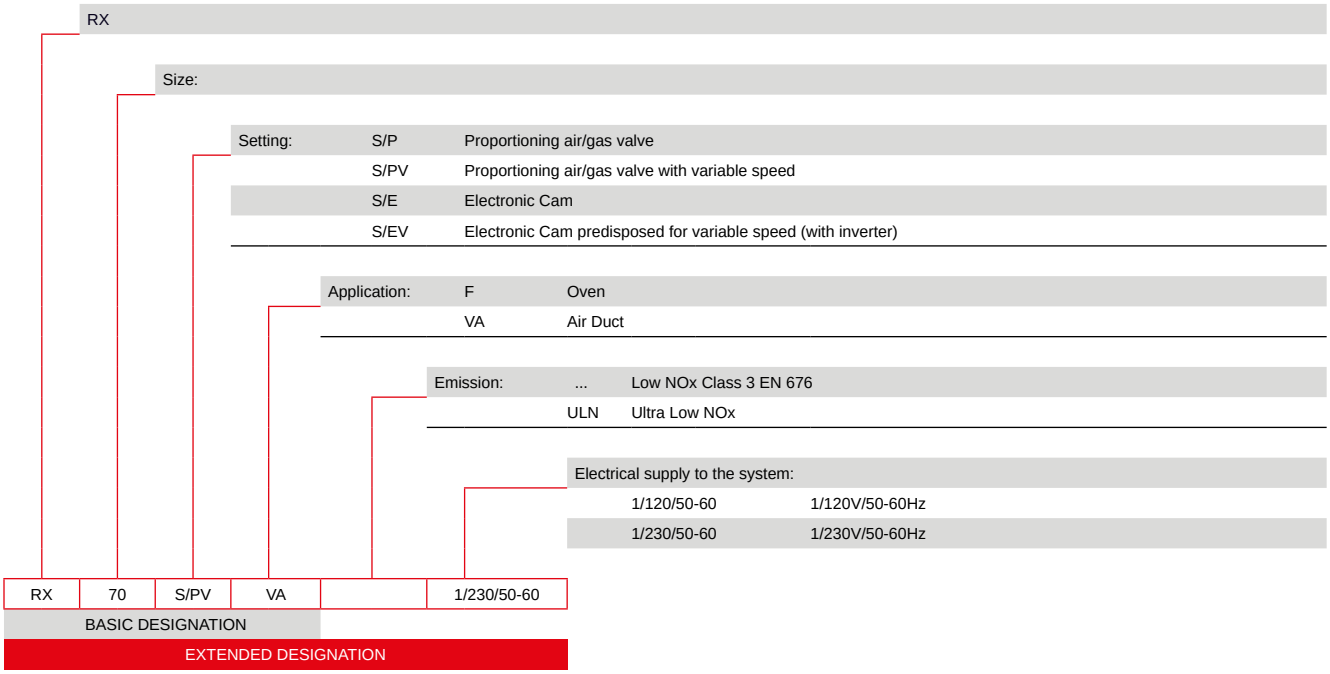
LOW NOx GAS PROCESS BURNERS
Low NOx emissions, lower than class 3 of european standard EN 676 (NOx lower than 80 mg/kWh)





LOW NOx GAS PROCESS BURNERS

Low NOx emissions, lower than class 3 of european standard EN 676 (NOx lower than 80 mg/kWh)



STANDARD NOx PROCESS BURNERS
Standard NOx emissions

Series: F

Fuel: S Natural Gas

Size:

Possible variations: D Two stage output setting
M Two stage progressive of fully modulating

Head: TC Standard head
TL Extended head

Electrical supply to the system:
1/230/50 1/230V/50Hz

F	S	5	D		1/230/50
BASIC DESIGNATION					
EXTENDED DESIGNATION					

Series: R Standard emission burners
B Low NOx burners

Fuel: S Natural Gas
SP LPG
G Light oil

Size:

Possible variations: D Two stage output setting
F Light industrial processes
M Two stage progressive of fully modulating

Head: TC Standard head
TL Extended head

Electrical supply to the system:
1/230/50 1/230V/50Hz

R	S	5	DF	TC	1/230/50
BASIC DESIGNATION					
EXTENDED DESIGNATION					

STANDARD NOx GAS PROCESS BURNERS
Standard NOx emissions

Series:	R	
Fuel:	S	Natural Gas
	L	Light oil
	LS	Light oil/Natural Gas
	N	Heavy oil
Size:		
Setting:	/1	Single stage
		Two-stage
	/M	Modulating-Mechanical cam
Application:	VA	Air Duct
Emission:	... or C01	Class 1 EN676
	MZ	Class 2 EN676
	BLU	Class 3 EN676
	MX	Class 3 ENE676

Electrical supply to the system:	
1/230/50	1/230V/50Hz
3/230/50	3/230V/50Hz
3/400/50	3N/400V/50Hz
3/230-400/50	3/230V/50Hz - 3N/400V/50Hz
3/220/60	3/220V/60Hz
3/380/60	3N/380V/60Hz
3/220-380/60	3/220/60Hz - 3N/380V/60Hz

Auxiliary voltage:		
	230/50-60	230V/50-60H
	110/50-60	110V/50-60Hz

R	S	70		VA		3/230-400/50	230/50-60

BASIC DESIGNATION

EXTENDED DESIGNATION

STANDARD NOx LIGHT OIL PROCESS BURNERS
Standard NOx emissions

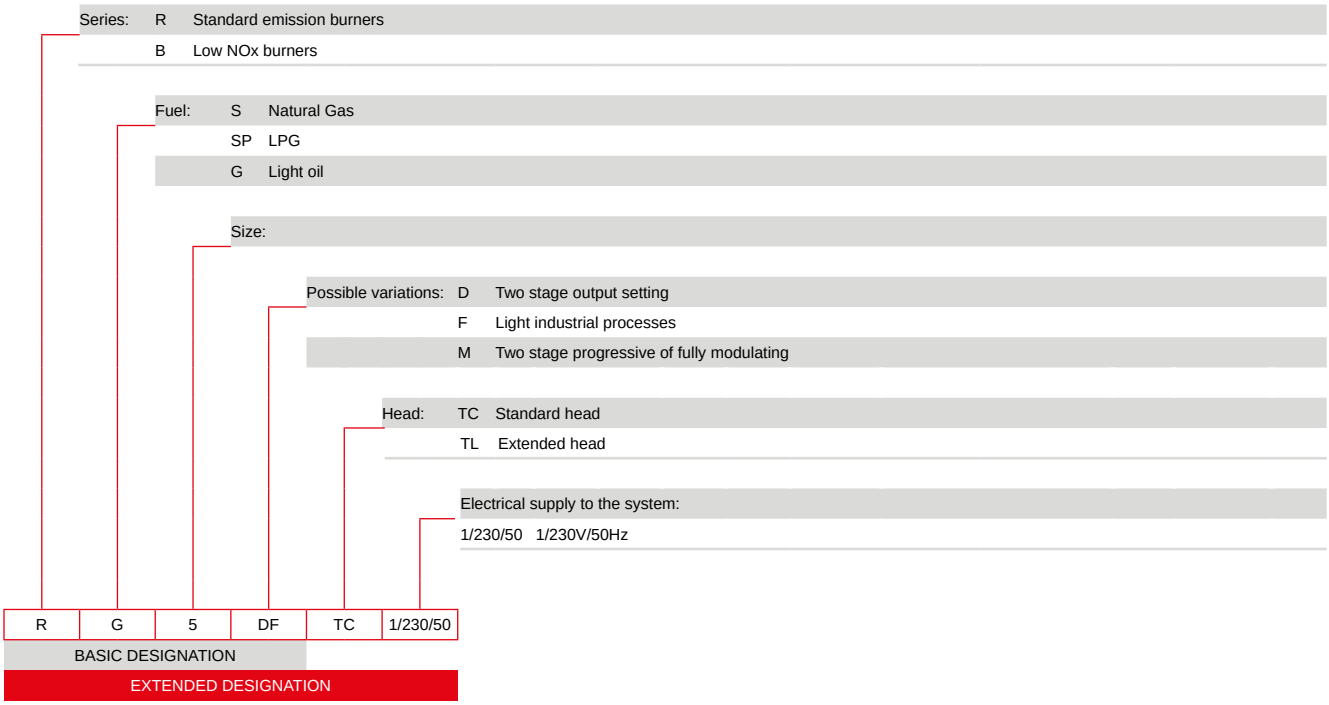
Series:	F	Light industrial process	
Size:			
Possible variations:	R	Light-oil pre-heater	
	K	Cone shaped head	
	S	Reduced output ignition	
	D	Two stage output setting	
	I	Intelligent	
Head:	TC	Standard head	
	TL	Extended head	
Electrical supply to the system:	1/230/50	1/230V/50Hz	

F	10			1/230/50
BASIC DESIGNATION				
EXTENDED DESIGNATION				

Series:	G	Light oil	
Size:			
Possible variations:	R	Light-oil pre-heater	
	K	Cone shaped head	
	S	Reduced output ignition	
	D	Two-stage output setting	
Head length:	...	Standard head	
	TL	Extended head	
Electrical supply to the system:	1/230/50	1/230V/50Hz	
	1/220/60	1/220V/60Hz	
	24 V	24V DC	

G	10			24V
BASIC DESIGNATION				
EXTENDED DESIGNATION				

STANDARD NOx LIGHT OIL PROCESS BURNERS
Standard NOx emissions



INDUSTRIAL DUAL BLOCK OIL, GAS AND DUAL FUEL PROCESS BURNERS

Series:	DB - ER			
Size:	4 - 6 - 9 - 12 - 16 - 20 - 25 - 32 - 40 - 50 - 65 - 80			
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:	M	Mechanic cam		
	E	Electronic cam		
	EV	Electronic cam predisposed for variable speed (with inverter)		
Emission:	C11	Class 1 oil - Class 1 gas		
	C13	Class 1 oil - Class 3 gas		
	C01	No oil - Class 1 gas		
	C02	No oil - Class 2 gas		
	C03	No oil - Class 3 gas		
	C10	Class 1 oil - No gas		
	C20	Class 2 oil - No gas		
	C23	Class 3 oil - Class 3 gas		
	C30	Class 3 oil - No gas		
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:	G0 or FB	From bottom		
	G90 or FR	From right		
	G180	From top		
	G270 or FL	From left		
Air max temperature:	T50 = 50° C			
	T150 = 150° C			
	T200 = 200° C			
	T250 = 250° C			
Auxiliary voltage:	230/50-60	230V/50-60Hz		
	110/50-60	110V/50-60Hz		

DB	4	S	E	C03	TC	FS1	FR	A0	T50	230/50-60

BASIC DESIGNATION

EXTENDED DESIGNATION

DESIGNATION OF GAS TRAIN SERIES

Series:	
	MB
	MBC
	VGD
	CB
	CG

Size:						
	405	407	410	412	415	420
	65	-	-	-	-	-
	50	65	80	100	125	-
	512	520	5065	5080	-	-
	120	220	-	-	-	-

Operation:		
	/S	only ON-OFF function
	/1	stage mode opening
	/2	2nd stage mode opening
	/P	1st stage mode opening with air/gas proportional regulator

Leak detection control:		
	-	0
	CT	leak detection control device installed on the gas train
	CQ	equipped with pressure switch for leak detection control

Joint type:		
	R	threaded joint
	F	standard flange ISO
	F1	square flange BS1
	F2	square flange BS2
	F3	square flange BS3 - BS4

Electrical connection:		
	T	Terminals - Terminal strip
	SD	Domestic plug
	SM	Medium voltage plug

Standard output pressure range:		
	-	without pressure governor
	0	with regulator and air/gas proportional pressure
	2	with regulator and output pressure up to 20 mbar
	3	with regulator and output pressure up to 30 mbar
	4	with regulator and output pressure up to 40 mbar
	5	with regulator and output pressure up to 50 mbar
	6	with regulator and output pressure up to 60 mbar
	8	with regulator and output pressure up to 80 mbar
	12	with regulator and output pressure up to 120 mbar
	15	with regulator and output pressure up to 150 mbar

Valve control:		
	0	shared
	2	separate

VGD	65	/1	CT	F	T	12	2
BASIC DESIGNATION							
EXTENDED DESIGNATION							

REQUEST FOR INFORMATION

Customer _____ **Ref.** _____ **Riello project ref.** _____

Boiler **Model** _____ **Manufacturer** _____ **Year** _____

☐ Hot water ☐ Superheated water ☐ Thermal oil ☐ Hot air-Indirect generator

☐ High pressure steam ☐ Low pressure steam ☐ Superheated steam ☐ Hot air-direct generator

Max working pressure _____ bar Max working temp. _____ °C Steam _____ ton/h

Boiler Design

Firetube ☐ 3-pass ☐ Reverse flame ☐ Twin Chamber/Twin Burner ☐ Single Chamber/Twin Burner

Watertube ☐ D-shape ☐ Heat recovery ☐ Rapid ☐ Vertical

Preheating comburent air ☐ Yes ☐ No

Boiler output _____ kW _____ kcal/h _____ btu/h Comburent Air Temperature _____ °C

Burner ouput _____ kW _____ kcal/h _____ btu/h Boiler Efficiency _____ %

Combustion Chamber Data

Back pressure _____ mbar _____ mm W.C. _____ mm Hg

Length _____ mm High _____ mm Refractory Hole Diameter _____ mm

Diameter _____ mm Width _____ mm Refractory Hole Lenght _____ mm

Fuel

☐ Natural gas ☐ LPG ☐ Town gas ☐ Biogas ☐ _____

☐ Light oil ☐ Heavy oil ☐ Kerosene ☐ Biodiesel ☐ _____

Gas Supply

Lower calorific value _____ kWh/Nmc _____ kcal/Nmc _____ Btu/ft³

Gas supply pressure _____ mbar _____ mm W.C. _____ PSI

Biogas Composition

Oil Supply

Min Viscosity _____ cSt _____ °E _____ °C

Max Viscosity _____ cSt _____ °E _____ °C

Lower Calorific Value _____ kWh/kg _____ kcal/kg _____ Btu/lb

Temperature _____ °C

Pressure _____ bar

Burner Site Installation

Country _____ Town _____

Altitude _____ m a.s.l. Environment Temperature _____ °C ☐ Indoor ☐ Outdoor

Electrical Power supply

Main 3- phase _____ V _____ Hz Aux 1- phase _____ V _____ Hz

Burner Control Options

☐ O2 control ☐ Electronic cam-Siemens ☐ Inverter ☐ FGR ☐ Modulating

☐ Mechanical cam ☐ CO control ☐ One stage ☐ Two stage

☐ Single-block ☐ Dual-block ☐ Electronic cam-Lamtec

Flame Control Options

☐ Standard flame safeguard (FS1) ☐ Self-Check flame safeguard (FS2)

Oil pumping skid for dual-block

☐ Single pump ☐ Double pump ☐ Single filter ☐ Double filter

☐ Electrical Oil Preheater ☐ Steam Oil Preheater ☐ Steam + Electrical Oil Preheater

Gas train

☐ Regulating gas train ☐ Safety gas train ☐ Leakage control ☐ Filter

Approval/Compliance

☐ European Standards EN267/EN676 ☐ ATEX

☐ North American Standards UL296/UL795 ☐ _____

Max NOx emission value

_____ ppm _____ mg/kWh _____ mg/Nm³ @ _____ % O_2

Other requirements

_____

_____

_____

Date _____/_____/_____ Signature _____

Certificate

Standard **ISO 9001:2015**

Certificate Registr. No. **01 100 1917589**

Certificate Holder: **RIELLO S.p.A**
Via Ing. Pilade Riello 7
37045 Legnago VR
Italy

Scope: Design, manufacture and service of: burners for residential heating and for commercial and industrial application; wall hung boilers and water heaters; units, floor-standing boilers and heat-ing systems; solar collectors and solar boilers.
Sales and assistance of its own brand traded products for heating; products for conditioning and cooling, system accessories; spare
Proof has been furnished by means of an audit that the requirements of ISO 9001:2015 are met.

Validity: The certificate is valid from 2022-12-11 until 2025-12-10.
Certified by other OdC from 12.11.1992 to 12.11.2019

2022-12-16

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

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CONTINENT	COUNTRY	COMPANY	REFERENCES FOR CONTACT
AFRICA			
AFRICA	ALGERIA	EURL HOUSE HEAT CITE ENASSIM ROUTE BATNA 5 KM, ONAMA NR 1LOCAL A CONSTANTINE, Algeria Costantine	0021331970628 Eurl.househeat@gmail.com
AFRICA	EGYPT	MOHAMED AHMED OMER 11 Darb Shaikh Faraq St. Block Ela 0000 Cairo	00202 25 762898 00202 25 779503 a-omar@link.net
AFRICA	KENYA	D.K. ENGINEERING COMPANY LTD. AIRPORT N. RD 23 NAIROBI	3540258020-8018899 020-8018898 info@dkengineering.co.ke
AFRICA	MOROCCO	AQUA FLAMME Rue de l'Aisne Belvedere 22-24 21100 Bodega	00212 22 305350 00212 22 305289 aquaflamme@aquaflamme.ma
AFRICA	MOROCCO	VM DISTRIBUTION Route de Rabat B.P. 2578 Aïn Sebaâ Casablanca	+212 522 677 450 mailto:distrib@vmdistribution.ma www.vmdistribution.ma
AFRICA	NAMIBIA	Rentec Rentech Building no. 5, 12th street, Industrial Area 0000 WALVIS BAY,NAMIBIA	00264 64 204327 00264 64 204328 renecle@me.com http://www.rentechtrading.com
AFRICA	SENEGAL	N.B.A.-NOUVELLES BOULANGERIES AFRICHLM HANN MARISTE VILLA N.210 BP 8014 Poste Change 8, Dalinfart Grand Yoff, Dakar, Senegal DAKAR	00 221 77 6393263 serigne1965@orange.sn
AFRICA	SOUTH AFRICA	COMBUSTION TECHNOLOGY LTD. P.O. Box 30047 - Unit 28E - 60 White Road Retreat, TOKAI 7966 Cape Town	0027 21 7153171 0027 21 7156297 grant@rielloburners.co.za
AFRICA	TUNISIA	SOTUCEP S.A. 8, Rue Abou El Hassen Gabsi 1003 Citè El Khadra - Tunis	+216 1 772506 +216 1 770476 khouja.samir@sotucep.com
AMERICA			
AMERICA	ARGENTINA	EQA S.A.I.C. 26 de Abril 3836 1714 Ituzaingo	+ 54 11 4481 9950 y rotativas + 54 11 4481 9288 ppiteo@eqa.com.ar www.eqa.com.ar
AMERICA	BOLIVIA	EQA S.A.I.C. 26 de Abril 3836 1714 Ituzaingo	+54 11 44819950 y rotativas +54 11 44819288 eqa@eqa.com.ar www.eqa.com.ar
AMERICA	BRAZIL	AUTO FERR IND. e COM. DE QUEIMADORES LTDA. Av. Alvaro Guimaraes, 322 Bairro Planalto 09890-001 SAO BERNARDO DO CAMPO 09861-690 ASSUNCAO SAO BERNARDO DO CAMPO / SP	0055 11 43414894 0055 11 43416501 auto-ferr@auto-ferr.com.br
AMERICA	CANADA	Riello Canada Inc. 2165 Meadowpine Blvd. L5N 6H6 Mississauga (Ontario)	+1-800-4-RIELLO +1-800-474-3556 +1-905-542-0303 riellocanada@carrier.com
AMERICA	CHILE	Commercial Anwo Ltda Av. Eduardo Frei Montalva17.001 Colina Santiago	0056 2 73110000 0056 2 2730404 rtellez@anwo.cl http:/www.anwo.cl

CONTINENT	COUNTRY	COMPANY	REFERENCES FOR CONTACT
AMERICA	COLOMBIA	EQUISOL, EQUIPOS Y SOLUCIONES S.A.S Diagonal 43 #28-41, Unidad Industrial Marandúa 104 Bodega	0057 57 4 4446169 0057 311 611 5566 esteban.velez@equisol.com.co http://www.equisol.com.co
AMERICA	ECUADOR	CALDERAS Y SERVICIOS DEL ECUADOR CALSER S.A. JUAN BARREZUETA N77-313 Y JUAN DE SELIS QUITO	+593 2 2479992 +593 2 2480102 +593 2 2473862 ventasquito@calser.com.ec, arunas@calser.com.ec www.calser.com.ec
AMERICA	GUATEMALA	Comercial Fema, S. A. 6ta. Avenida 13-53 Zona 9	+502 2361-2825 +502 2361-9039 +502 2361-5337 +502 2360-5899 info@comercialfema.com www.comercialfema.com
AMERICA	MEXICO	CONTROLES Y QUEMADORES 6 Poniente 3119-PB 72410 PUEBLA	+52 (222) 409-08-33 +52 (222) 409-0833 plima@cqindustriales.com.mx www.cqindustriales.com.mx
AMERICA	MEXICO	THERMAL COMBUSTION S. DE R.L. de C.V. Privada 29 B Sur 3511 Colonia El Vergel 72410 PUEBLA	+ (52) 222 279 6643 csevilla@thermalcombustion.com http://www.thermalcombustion.com
AMERICA	MEXICO	TERMODINAMICA ENICA, S.A. DE C.V.RFC: TEN-840430-465 AV DR JIMENEZ CANTU LOTE, EDIF 3 LOCAL 3-16, 2.5 S/N, Zona Esmeralda Atizapan De Zaragoza, Mexico 52937 ZONA ESMERALDA ATIZAPAN DE ZARAGOZA	005 393 5700 005 393 5711 jn@powermaster.com.mx
AMERICA	PANAMA	Servipan S.A. Calle Principal Altos de Bethania 3C - Apartado 6 2680 El Dorado Panama	+507 2600748 +507 2606342 servipa@sinfo.net
AMERICA	PARAGUAY	EQA S.A.I.C. 26 de Abril 3836 1714 Ituzaingo	+54 11 44819950 y rotativas +54 11 44819288 eqa@eqa.com.ar www.eqa.com.ar
AMERICA	PERÙ	RACINGAS COMBUSTION S.A.C.RUC 20601586712 Av. Argentina 575 Int. D4, CAP: 15082, C.C. La Chimenea Lima D4, Peru Lima	importaciones@racingascombustion.com.pe
AMERICA	URUGUAY	NOALER S.A. Bvar. Artigas 2879 11800 MONTEVIDEO	00598 00598 2200 7821 (+598) 2200 7821 gerardo.zunin@ciruy.com
AMERICA	URUGUAY	CIR Acondicionamiento Termico Grupo CIR Bvar. Artigas 2879 Montevideo - Uruguay	+598 2200 7821 www.ciruy.com
AMERICA	USA	Riello America LLC	+1-800-4-RIELLO +1-800-474-3556 +1-905-542-0303 riellocanada@carrier.com
ASIA			
ASIA	ARMENIA	KARIN CO., LTD 054/1 APT.39 Mamikonyants Str., CAP: 0051, Yerevan, Armenia 0051 Yerevan	
ASIA	AZERBAIJAN	SANTRAL ELEKTRIK LTD Ziya Bunyadov 2071, CAP: A1029, Baku, Azerbaijan AZ1029 Baku	00994124043400 Asif.Abulov@santral.az

CONTINENT	COUNTRY	COMPANY	REFERENCES FOR CONTACT
ASIA	GEORGIA	MAX COMFORT LTD. 7a,Agladze Str., CAP: 0154, Tbilisi, Georgia - 202360970, Georgia 0154 Tblisi	00995322477555 info@maxcomfort.ge
ASIA	IRAQ	HEATSEASONS Heat Seasons, 44001 Iskan Erbil, KRG, Iraq 44001 Iskan Erbil	kosiy@heatseasons.com
ASIA	ISRAEL	NETAFIM LTD Kibbutz Hatzerim, 85420000 D.N. Hanegev, Israel 85420000 Hanegev	97286473071 vered.shapira@netafim.com
ASIA	ISRAEL	ORAN HEATING EQUIPMENT LTD 14 Ohaliav St., CAP: 9446792, Jerusalem, Israel 94467 Jerusalem	0097225006116 0097225388331 seidel@oranheat.co.il
ASIA	JORDAN	UNITED PIONEERING BUSINESSFOR TRADE AND INVESTMENT 102 King Abdullah Street, CAP: 11821, Amman, Jordan Amman	0096265526850 96265526859 samir.khoury@upb.com.jo
ASIA	KAZAKHSTAN	TOO IVAN HEATING st. Shaymerdenova 119, Shymkent Kazakhstan 160013 Shymkent	8/7252/ 53-67-76 8/7252/ 53-67-76 O_mohigul@ivan-company.kz
ASIA	KYRGYZSTAN	EREKEN GROUP LLC / KYRGYZSTAN Mira avenue 53/3 Bishkek, CAP: 720040, Kygryzstan 0072005 Bodega	312541338 312541338 info@kazeko.kg
ASIA	LEBANON	HAGE GROUP Saifi, Area, Monot Street, Tabet BLDG, 2nd floor, CAP: 9312, Beirut, Lebanon 9312 Beirut	009611329209 009611329209 joe@hagegroup.com
ASIA	PAKISTAN	GINZA INTERNATIONAL CORPORATION 301 & 308, 3rd Floor Trade Tower, Altaf Hussain Road, Densohall KARACHI	92 (21) 32215273-4 sales@ginzaint.com https://ginzaint.com/
ASIA	QATAR	ELEC QATAR W.L.L. OFF.1, Capital Complex BLDG 446, 340 St., Salwa RD. Zone 55, Doha, Qatar Doha	
ASIA	SAUDI ARABIA	AL SAGHYIR TRADING-CONTRACTING CO.OMAR BIN ABDULAZIZ STREET, MAL P.O. BOX 29936, CAP: 11467, Riyadh 2nd. Ind. City, Saudi Arabia 11467 Riyadh	00966114741111 4765405 purchasing@al-saghyir.net
ASIA	UNITED ARAB EMIRATES	AL ITALIYA REF & HEATERSDEVICES TREST PO BOX 28095, Industrial Area NO. 4, Sharjah, United Arab Emirates 0000 Sharjah	0097165335880 0097165670260 mrefai@alitaliya.com
ASIA PACIFIC			
ASIA PACIFIC	AUSTRALIA	ACCUTHERM INTERNATIONAL PTY. LTD. PICKERING ROAD 18 3170 MULGRAVE VIC	0061 3 9763 6335 jwest@accutherm.com.au www.accutherm.com.au
ASIA PACIFIC	AUSTRALIA	SYSTEM CONTROL ENGINEERING PTY. LTD 621 WHITEHORSE ROAD 3132 MITCHAM VIC	0061 1800 225 572 Sivek.Manivasagan@systemcontrol.com.au https://www.systemcontrol.com.au
ASIA PACIFIC	AUSTRALIA	ALL CONTROLS Unit 7/175 CAMPBELL ST 6104 BELMONT WA	(08) 9277 4299 sales@allcontrols.com.au http://www.allcontrols.com.au/contact-all-controls/
ASIA PACIFIC	BANGLADESH	Suntec Energy Systems Plot no. 56, Phase-1 GIDC, Naroda, 382330 Ahmedabad - India	+91 79 22805529-30-31 +91 79 22805532 anita@suntecenergy.in

CONTINENT	COUNTRY	COMPANY	REFERENCES FOR CONTACT
ASIA PACIFIC	CHINA	Riello Heating Equipment (Shanghai) Co., Ltd, Beijing Branch Rm. 606, Wanhao Office Building A, No. 7 jianguomen South Avenue Dongcheng District 100005 Beijing	+86 10 6563 0131 +86 10 6566 2772 Beijing.office@carrier.com
ASIA PACIFIC	INDIA	SUNTEC ENERGY SYSTEMS PLOT 56, GIDC PHASE 1 382330 NARODA AHMEDABAD	+91 79 22805529-30-31 +91 9725343432 anita@suntecenergy.in https://suntecenergy.in/
ASIA PACIFIC	INDONESIA	PT UNITEK STANDARINDO ENGINEERING JL.PANGERAN JAYAKARTA 44/29 10730 JAKARTA	0062 216264806 vita@unitek.co.id www.unitek.co.id
ASIA PACIFIC	JAPAN	SAN-E INCORPORATED Motomiya 1-1-8, Tsurumi-ku YOKOHAMA	045-575-8097 045-575-8099 info@san-eee.com https://www.san-eee.com/en/
ASIA PACIFIC	KOREA	Chungwoo Gnt. Co. Ltd. 23, 58 Beon-Gil, MTV25-Ro Siheung-Si Gyeonggi-Do	+82 31 4972080 +82 31 4972048 overseas@cwgnt.co.kr http:www.cwgnt.co.kr
ASIA PACIFIC	MALAYSIA	UNIMECH ENGRG (M) SDN BHD NO.4934 JALAN CHAIN FERRY, BUTTERWORTH 12100 PENANG	0060 04323583 eric.koh@unimechgroup.com www.unimech.my
ASIA PACIFIC	NEW ZEALAND	SYSTEM CONTROL ENGINEERING NZ LTD. MT WELLINGTON 1061 AUCKLAND	0064 09 636 1401 sales@systemcontrol.co.nz http://www.systemcontrol.co.nz/
ASIA PACIFIC	NEW ZEALAND	ALL CONTROLS 33F Walmsley Rd, Otahuhu 1062 Auckland	(09)259-4545 Parmesh@allcontrols.co.nz http://www.allcontrols.com.au/contact-all-controls/
ASIA PACIFIC	PHILIPPINES	Riello S.p.A. Via Ing. Pilade Riello, 7 37045 Legnago (VR)	+39 0442 630111 www.riello.com
ASIA PACIFIC	SINGAPOR	COMBUSTION SOLUTION PTE LTD 395 JALAN BESAR N. 03-02 209006 SINGAPORE	0065 97719354 timseow28@gmail.com
ASIA PACIFIC	SRI LANKA	Riello S.p.A. Via Ing. Pilade Riello, 7 37045 Legnago (VR)	+39 0442 630111 www.riello.com
ASIA PACIFIC	SOUTH KOREA	CHUNG WOO GNT 23, 58 BEON-GIL, MTV 25-RO KR-15116 SIHEUNG-SI, GYEONGGI-DO	0082 31 497 2080 overseas@cwgnt.co.kr https://www.cwgnt.co.kr
ASIA PACIFIC	TAIWAN	CHING YE CO., LTD., 8F-11,NO 16,LANE 609,SEC.5,CHUNG HSIN RD., SANCHUNG DIST. 24159 NEW TAIPEI CITY, TAIWAN, R.O.C.	+886 /2 /2999 0456 +886 /2 /2999 0455 info@chingye.com.tw https://en.ching-ye.com.tw
ASIA PACIFIC	THAILAND	R.L. BURNER (THAILAND) CO.,LTD 32 RAMA II ROAD, KHWANG THAKHAM KHET BANGKHUNTHIAN 10150 BANGKOK	(+66) 02-898-3000 info@rlburner.com http://rlburner.com/
ASIA PACIFIC	VIETNAM	ATP VIET NAM COMPANY LIMITED No. 8/14, LANE 9, HAM NGHI STR., CAU DIEN WARD, NAM TU LIEM STH DISTR 100000 HA NOI CITY	983937777 atp@atpvietnam.com.vn www.atpvietnam.com.vn

CONTINENT	COUNTRY	COMPANY	REFERENCES FOR CONTACT
ASIA PACIFIC	VIETNAM	DINH HAI HEATING EQUIPMENT COMPANY LTD. 1C ROAD NO. 10, TAN BINH INDUSTRIAL PARK, TAY THANH WARD,TAN PHU DISTRICT HO CHI MINH	(848) 0283 815 5234 thangnh@dinhhai.com www.dinhhai.com
WEST EUROPE			
WEST EUROPE	ALBANIA	DDAIR GROUP SHPK Rruga 5 Maji Concord Center, Kulla 4 Tirana, Albany 1000 Tirana	+39 335 1764370 +39 335 1764370 doni.lamaj@klim.it
WEST EUROPE	ALBANIA	Klevis&Rjello Rruga Don Bosko, Pallati 139/3 Tirane	00355 683032965 shehudenis@yahoo.it
WEST EUROPE	AUSTRIA	Eibisberger Gerhard Südbahnstraße 34 - 36 A- 8700 Leoben	+43 0 3842/44749 +43 0 3842/44749-1 info@riello.at website: www.riello.at
WEST EUROPE	BELGIUM	VAN MARCKE N.V. Kortrijk-Aalbeke 8511 Aalbeke	003256237511 003256237609 gdemeyere@vanmarcke.be
WEST EUROPE	BOSNIA AND HERZEGOVINA	VOKEL D.O.O. VINJANI B.B., CAP: 88240, Posusje, Bosnia-Herzeg. 88240 Posusje	0038739693199 387 39693003 marina@vokel.com
WEST EUROPE	CROATIA	Riello Gaje Alage 1 10000 Zagreb	00385914578808 www.riello.hr
WEST EUROPE	CROATIA	MARITERM D.O.O. DRAŽICE 123 D, CAP: 51000, Zamet - Rijeka, Croatia 51000 Zamt - Rijeka	+385 (0)51 815 023 +385 (0)51 815 011 darko.jurisic@mariterm.hr
WEST EUROPE	CROATIA	PETROKOV D.O.O. Mrksina 52/d, CAP: 10000, Zagreb, Croatia 10000 Zagreb	385 12355373 gordana@petrokov.hr
WEST EUROPE	CROATIA	TERMOING D.O.O. Rudarska N. 3, CAP: 52220, Labin, Croatia 52220 Labin	0038552855012 0038552854336 termoing.labin@gmail.com
WEST EUROPE	CYPRUS	ROYAL ENGINEERING CO. LTD. 1, Prodicou Str. -P.O. Box 20689 1662 Nicosia	00357 2 344985 00357 2 348436 styleng@cytanet.com.cy
WEST EUROPE	DENMARK	MILTON Megatherm A/S Formenvangen 12-16 DK-2600 GLOSTRUP	0045 46 970000 0045 46 970001 info@miltonmegatherm.dk http://www.miltonmegatherm.dk
WEST EUROPE	DENMARK	V. HANSEN APS Tarupvej 57, CAP: 5210, Odense DV, Denmark 5210 Odense	0045 66 15 61 51 info@vh-as.dk
WEST EUROPE	FINLAND	EST SYSTEMS OYC/O RANTA-PUTKI OY EST Systems Oy c/o Ranta-Putki Oy, Lentokentäntie 75, 53600 LAPPEENRANTA, Finland 53600 Lappeenranta	toimisto@estsystems.fi
WEST EUROPE	FINLAND	GEBO TRADING OY HIEKKAKIVENTIE 1, 00710 HELSINKI, Finland 00710 Helsinki	00358937475523 0035854513401 jmk@gebo.fi
WEST EUROPE	FRANCE	Riello France Brûleurs France Espace Vinci - Balthus 3A - 24/28 Avenue Graham Bell 77600 Bussy Saint Georges	avantvente.riellofrance@carrier.com sav-technique.riellofrance@carrier.com portal.france@carrier.com 01 80 66 99 66

CONTINENT	COUNTRY	COMPANY	REFERENCES FOR CONTACT
WEST EUROPE	GERMANY	Riello S.p.A. Zweigniederlassung Deutschland Josef-Baumann-Str. 19a 44805 Bochum	Tel: 0049 (0) 234 890140 Fax: 0049 (0) 234 8901419 E-mail: technik-riello.de@carrier.com www.riello.com/germany/
WEST EUROPE	GREECE	Caloria S.A. 57 Ifestou str. 19400 Koropi - Athens	0030-210-6628068/69/70/71/72/73 0030-210-6623784 info@caloria.gr
WEST EUROPE	HOLLAND	Vitotherm B.V. Overgauwseweg 8 2641 NE Pijnacker	+31 15 3694757 info@vitotherm.nl www.vitotherm.nl
WEST EUROPE	ITALY	Riello S.p.A. Via Ing. Pilade Riello, 7 37045 Legnago (VR)	+39 0442 630111 assistenza.riello@carrier.com www.riello.it
WEST EUROPE	MACEDONIA	BIMI COMPANY Ul.380 br.46 - 1000 Skopje - MK MACEDONIA 1000 Skopje	+389 22600125 info@bimi.com.mk
WEST EUROPE	MALTA	A.FALZON ENERGY PROJECTS LTD 89, Canon Road SVR9035 St. Venera	+356 21470265 +356 21470264 info@energyprojectsmalta.com http://www.energyprojectsmalta.com
WEST EUROPE	NETHERLANDS	Vitotherm BV Owergauwseweg 8 2641 NE Pijnaker	+31 15 3694757 +31 15 36977742 info@vitotherm.nl www.vitotherm.nl
WEST EUROPE	NORWAY	VV GRUPPEN AS LARKOLLVEIEN 10, CAP: 1570, Dilling, Norway 01570 Odense	004769264650 004769264699 bcj@vvparts.no
WEST EUROPE	NORWAY	VV Parts AS Larkollveien 10 N- 1570 QUITO	+47 69 26 46 50 +47 69 26 46 99 bcj@vvgruppen.com www.vvparts.no
WEST EUROPE	PORTUGAL	EUROMA 21, Lda Zona Industrial da Maia I, Sector II Rua Engº Sabino Marques, 192 4470-402 Maia	+351 229 421 058 +351 229 489 456 geral@euroma21.pt www.euroma21.pt
WEST EUROPE	SERBIA	DOMING D.O.O. SIMANOVCI Golubinacka bb, CAP: 22310, Simanovci, Pecinci Srbija, Serbia 22310 Simanovci	00381112589666 +381 11 2577 161 vladimir.palavestric@doming.rs
WEST EUROPE	SERBIA	PMN D.O.O. JAGODINSKA 2, CAP: 11090, Belgrado, Serbia 11090 Belgrado	+381 11 237 00 13 +381 11 237 02 09 nikola.zrilic@pmn.co.rs
WEST EUROPE	SLOVAK REPUBLIC	SLOVTERMO, S.R.O. Cabajskà 24/4, CAP: 949 01, Nitra, Slovakia 951 31 Nitra	slovtermo@slovtermo.sk
WEST EUROPE	SLOVENIA	Martin d.o.o. Hmeljarska ulica 1 3310 Žalec	00386 3 7132602 00386 3 7132612 pe.zalec@martin.si http://www.martin.si
WEST EUROPE	SLOVENIA	Riello Gaje Alage 1 10000 Zagreb	0038 5914578808 www.riello.si
WEST EUROPE	SPAIN	RIELLO S.p.A. Sucursal en España C. de Pintor Tapiró 27 08028 Barcelona	quemadores.riello@carrier.com www.riello.com/spain/

CONTINENT	COUNTRY	COMPANY	REFERENCES FOR CONTACT
WEST EUROPE	SWITZERLAND	KRIOKLIMA SA Via Ronchi 10 CH-6802 Rivera, TI Switzerland	+41.91.9306.673 Info@krioklima.ch
WEST EUROPE	SWEDEN	Milton Sverige AB Lastgatan 13 254 64 Helsingborg	0042 252840 0042 158621 jm@milton.se http://www.milton.se
WEST EUROPE	SWEDEN	V. Hansen ApS Tarupvej 57 DK 5210 Odense NV	+45 66156151 info@vh-as.dk www.vh-as.dk
WEST EUROPE	UK	Riello Ltd. The Ermine Centre Ermine Business Park Huntingdon Cambridgeshire PE29 6WX	+44 1480432144 +44 1480432191 info@rielloburners.co.uk
EAST EUROPE			
EAST EUROPE	BELARUS	ALFA-LYVE LTD., Yunzhny Gorodok 37-8, CAP: 224002, Brest, Bielorussia 224002 Brest	375162559355 375162559333 alfalyve@tut.by
EAST EUROPE	BULGARIA	Caloria Ltd. 202 Street, no. 8 1220 Sofia	00359 2 831-11-30-33 00359 2 831-11-34 riello@mail.techno-link.com http://www.caloria.bg
EAST EUROPE	CZECH REPUBLIC	VLADISLAV SLITR GFE Tomkova 1232, CAP: 500 03, Hradec Kràlové, Czech Republic 500 03 Hradec Kràlové	+420 724 949 106 info@horaky-gfe.cz
EAST EUROPE	ESTONIA	RUG Riello Urzadzenia Grzewcze S.A. - Subsydiary Wroclaw UL. PÓLNOCNA 15-19 54-105 Wroclaw (Polska)	Dział Obsługi Klienta: + 48 56 657 16 58-59 Palniki i Kotły Dział Techniczny i Ofertowania: +48 600 998 106 +48 604 273 137 Palniki Dział Serwisu i Szkoleń: +48 604 443 554 +48 606 649 501 Kotły Dział Serwisu i Szkoleń: + 48 56 657 16 18 Website www.riello.com/poland/sprzeda- www.riello.com/poland/szukaj www.riello.com/poland/
EAST EUROPE	HUNGARY	SZATMARI KFT. Jaszbereny, Jasztelki u. 73, CAP: 5100, Hungary 5100 Jasztelki	3657500800 36500888
EAST EUROPE	LATVIA	RUG Riello Urzadzenia Grzewcze S.A. - Subsydiary Wroclaw UL. PÓLNOCNA 15-19 54-105 Wroclaw (Polska)	Dział Obsługi Klienta: + 48 56 657 16 58-59 Dział Techniczny i Ofertowania: +48 600 998 106 +48 604 273 137 www.riello.com/poland/
EAST EUROPE	LITHUANIA	RUG Riello Urzadzenia Grzewcze S.A. - Subsydiary Wroclaw UL. PÓLNOCNA 15-19 54-105 Wroclaw (Polska)	Dział Obsługi Klienta: + 48 56 657 16 58-59 Dział Techniczny i Ofertowania: +48 600 998 106 +48 604 273 137 www.riello.com/poland/

CONTINENT	COUNTRY	COMPANY	REFERENCES FOR CONTACT
EAST EUROPE	POLAND	RUG Riello Urzadzenia Grzewcze S.A. - Subsydiary Wroclaw UL. PÓLNOCNA 15-19 54-105 Wroclaw (Polska)	Dział Obsługi Klienta: + 48 56 657 16 58-59 Dział Techniczny i Ofertowania: +48 600 998 106 +48 604 273 137 www.riello.com/poland/
EAST EUROPE	ROMANIA	Riello RO S.r.l. Str. Copilului Nr. 20 Sector 1 012178 Bucuresti	+40 21 2246648 +40 21 2029287 office.ro@carrier.com
EAST EUROPE	SLOVAK REPUBLIC	Riello S.p.A. Via Ing. Pilade Riello, 7 37045 Legnago (VR)	+39 0442 630111 assistenza.riello@carrier.com www.riello.com
EAST EUROPE	RUSSIA	AHI-Carrier LLC A Carrier Joint Venture Company Kievskaya str. 7, entrance 7, floor 3, 121059 St. Venera	+7 (495) 937-42-41 ahi@ahi-carrier.ru
EAST EUROPE	UKRAINE	MAX GROUP TECHNOLOGYLIMITED LIABILITY COMPANY YAROSLAVA MUDROGO STR. 17, CAP: 09107, Kiev Region - Bila Tserkva, Ukraine 09107 Kiev Region	(093)4402510 mail@maxtechnology.com.ua
MIDDLE EST			
MIDDLE EST	JORDAN	United Pioneering Business 309 Wasfi Tal Street Khalda Amman Jordan Amman	+962 6-552-6850 +962 6-552-6859 info@upb.com.jo info@upbgroup.com www.upbgroup.com
MIDDLE EST	LEBANON	Hage Group Rue Monot, Imm. Tabet 11-4991 9312 Beirouth	+961 1 329209 +961 1 329209 +961 3 618558 rony@hagegroup.com
MIDDLE EST	TURKEY	E-Gaz Malzemeleri Mühendislik Müsavirlik Ltd. Sti. Ferhatpasa Mah. 49. Sokak No:31-35 34384 Ataşehir/ Istanbul	+90(0) 216 3101900 +90 (0) 212 3207925 zafer.unal@e-gaz.com.tr http://www.e-gaz.com.tr - www.riellobrulor.com.tr
MIDDLE EST	UNITED ARAB EMIRATES	Alitaliya Trading Est. P.O. Box 28095 Sharjah	+971 6 5671265 +971 6 5670260 mrefai@alitaliya.com

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