



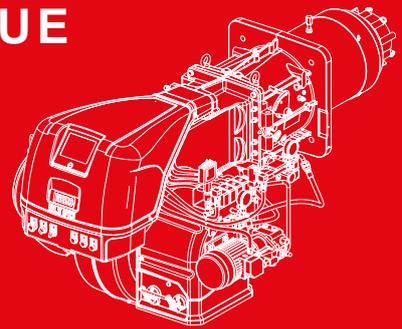
INTERNATIONAL

R

TECHNICAL SALES CATALOGUE

BURNERS AND PROCESS BURNERS

2025 | 1



Africa | Asia | Europe | Oceania | South America

F.lli **RIELLO**
OFFICINA MECCANICA = LEGNAGO PUNTO



 **RIELLO**



RIELLO

1922



 **RIELLO**
ISOTHERMO

RIELLO



RIELLO
Energy For Life



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 O₂

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.

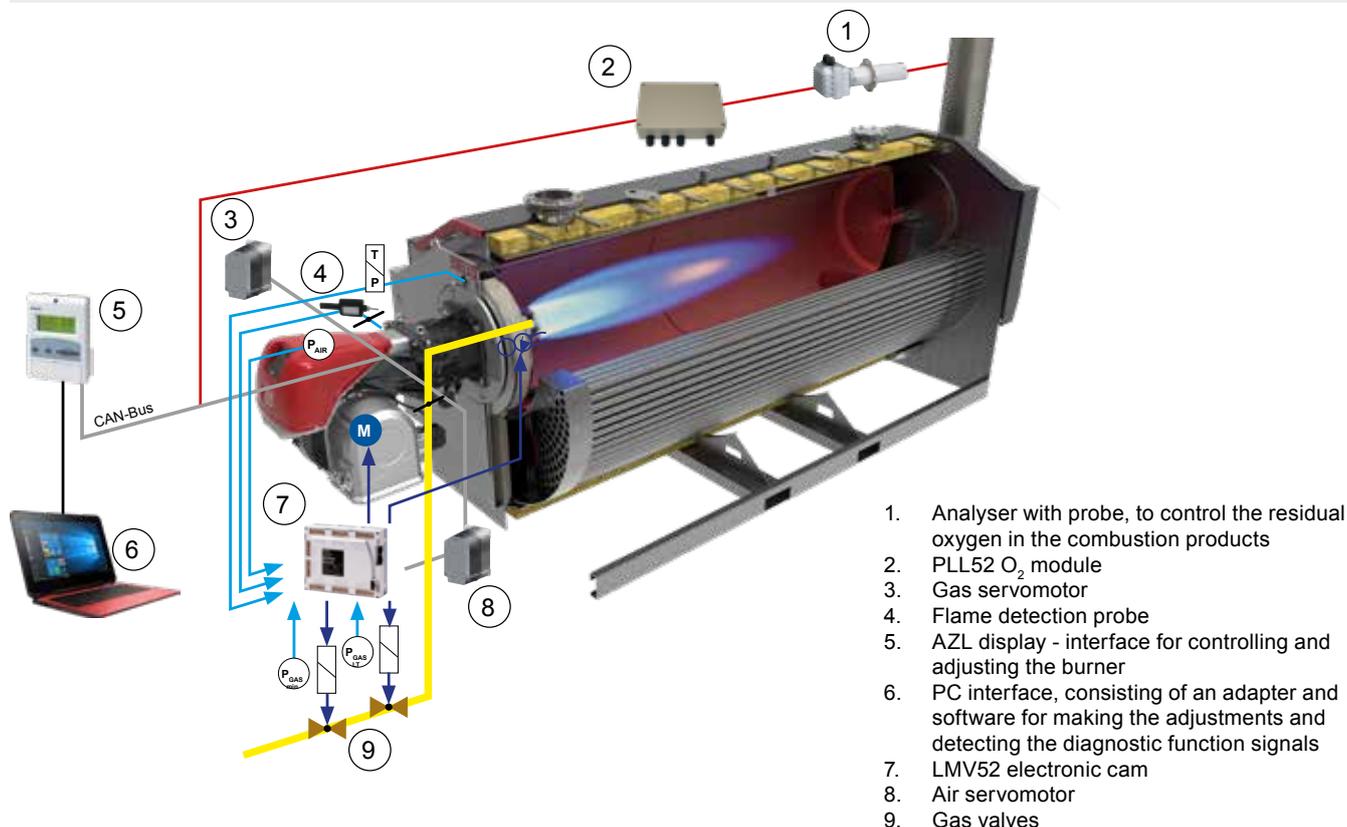
High performance over time and reduced polluting emissions can thus be obtained by acting against the 'disturbing factors' which inevitably influence the composition of the comburent air/fuel mixture, such as, for example, changes in temperature and pressure of air and fuel, variation in the calorific 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.



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
- O₂ 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 their own contribution in terms of hard work, skill and creativity.

Riello Burners
a world of experience in every burner we sell

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687	BPR	615	PRESS P/NA
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406	GULLIVER BGK	412	RL 25/1 BLU
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629	GULLIVER BSDF	454	RL 34-44
623	GULLIVER BSF	458	RL 50-64
146	GULLIVER BS/M	471	RL 70-190/M
433	GULLIVER RG	462	RL 70-250
438	GULLIVER RGD	420	RL/M BLU
711	GULLIVER RGDF	557	RLS 28-50
707	GULLIVER RGF	493	RLS 68-160/M MX
264	GULLIVER RS	511	RLS 68-200/E MX
268	GULLIVER RSD	518	RLS 68-200/EVI MX
664	GULLIVER RSDF	563	RLS 70-130
660	GULLIVER RSF	569	RLS 190-250/M MZ
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739	MB/2	550	RLS 1000-1200/EV MX
735	MBC 65/1	506	RLS 1000-1200/M MX
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GAS BURNERS

GAS

LIGHT OIL BURNERS

LIGHT OIL

DUAL FUEL BURNERS

DUAL FUEL

HEAVY OIL BURNERS

HEAVY OIL

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	 <p>RS 25-35/C05 RS 25 C05 (70/125-340 kW) RS 35 C05 (82/200-440 kW)</p> <p>page 18</p>	 <p>RS 45 C05 RS 45 C05 (90/190-570 kW)</p> <p>page 23</p>
	 <p>RS 25-35/M C05 RS 25/M C05 (70/125-340 kW) RS 35/M C05 (82/200-440 kW)</p> <p>page 28</p>	 <p>RS 45/M C05 RS 45/M C05 (90/190-570 kW)</p> <p>page 34</p>
MODULATING	 <p>RS 25-35/E C05 RS 25/E C05 (70/125-340 kW) RS 35/E C05 (82/200-440 kW)</p> <p>page 19</p>	 <p>RS 45/E C05 RS 45/E C05 (90/190-570 kW)</p> <p>page 44</p>

GAS BURNERS



ULTRA LOW NOx

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

MODULATING PROPORTIONAL VARIABLE SPEED		<p>RX 180-360 S/PV ULN</p> <p>RX 180 S/PV ULN (30-160 kW) RX 250 S/PV ULN(40-225 kW) RX 360 S/PV ULN (60-325 kW)</p> <p>page 49</p>		<p>RX 500-1000 S/PV ULN</p> <p>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)</p> <p>page 52</p>
	MODULATING ELECTRONIC CAM		<p>RX 1500 S/E ULN</p> <p>RX 1500 S/E ULN (270-1650 kW)</p> <p>page 56</p>	
MODULATING ELECTRONIC CAM			<p>RS 410-610/E FGR</p> <p>RS 410/E FGR (595-1210/3820 kW) RS 510/E FGR (660-1800/4800 kW) RS 610/E FGR (912-2200/5850 kW)</p> <p>page 65</p>	
	MODULATING ELECTRONIC CAM		<p>RS 1000-1200/E FGR</p> <p>RS 1000/E FGR (1100-4000/10100 kW) RS 1200/E FGR (1500-5500/11100 kW)</p> <p>page 81</p>	
MODULATING ELECTRONIC CAM VARIABLE SPEED			<p>RS 410-610/EV FGR</p> <p>RS 410/EV FGR (595-1210/3820 kW) RS 510/EV FGR (660-1800/4800 kW) RS 610/EV FGR (912-2200/5850 kW)</p> <p>page 69</p>	
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GAS BURNERS



GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

ULTRA LOW NOx

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

MODULATING ELECTRONIC CAM	 <p>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)</p> <p>page 97</p>	 <p>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)</p> <p>page 111</p>
	 <p>RS 810/E ULX RS 810/E ULX TL FS1 (970/3350-8100 kW)</p> <p>page 117</p>	
MODULATING ELECTRONIC CAM VARIABLE SPEED	 <p>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)</p> <p>page 104</p>	 <p>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)</p> <p>page 122</p>
	 <p>RS 810/EV ULX RS 810/EV ULX TL FS1 (970/3350-8100 kW)</p> <p>page 128</p>	

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 terms 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

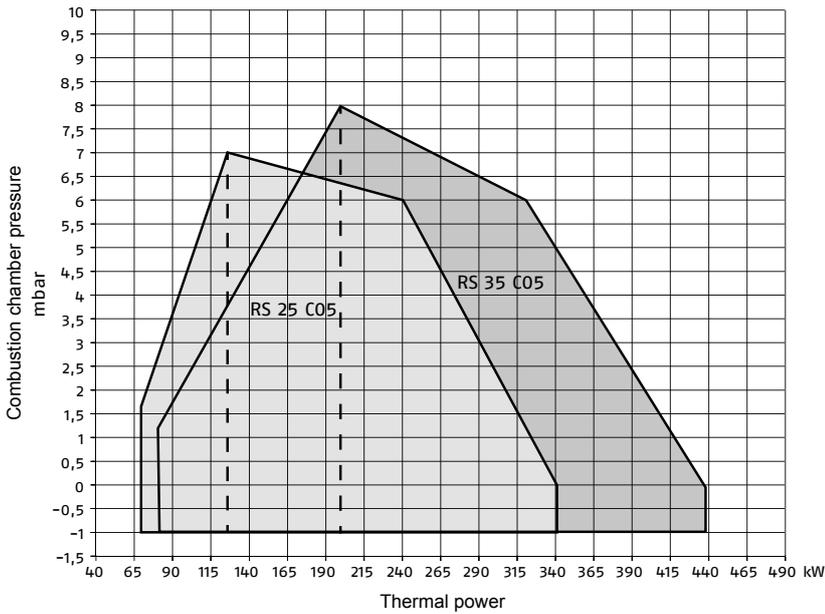
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 25 C05 TC FS1	70/125-340	7/12.5-34	0.6	1/220-230/50-60	220-230/50-60	CE-0123CT1607	(1)(2)	20159225
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.

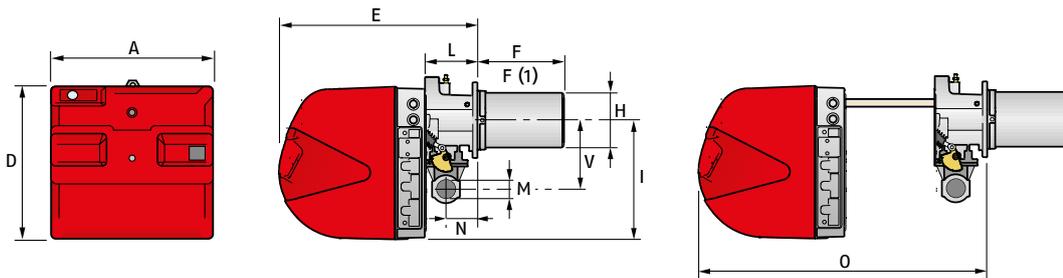
- (1) Model with plug and socket.
(2) Model with CMG control box.

FIRING RATES



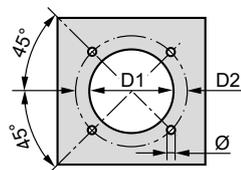
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

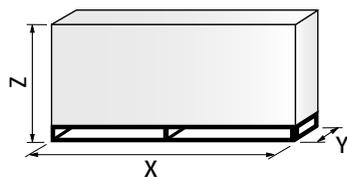


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 25 C05	442	422	508	230-365	140	305	138	1 1/2	84	780-/	-	177
RS 35 C05	442	422	508	192-327	152	305	138	1 1/2	84	780-/	-	177

(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

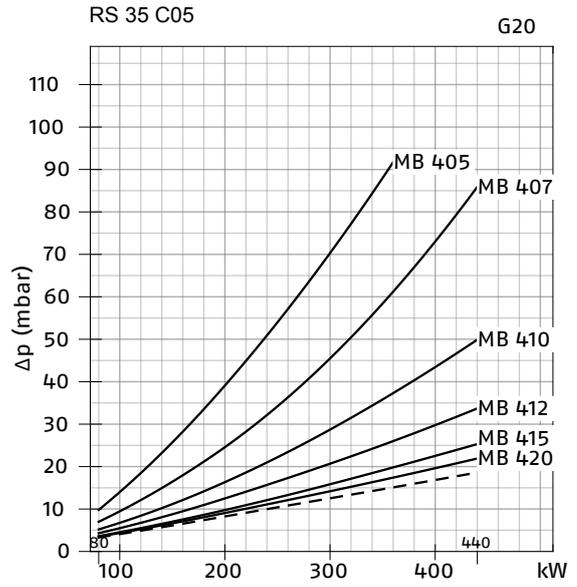
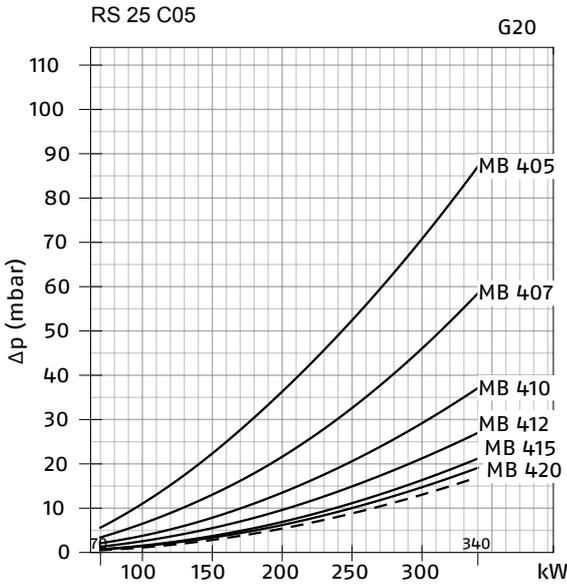


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 25 C05	1000	485	500	39
RS 35 C05	1000	485	500	40

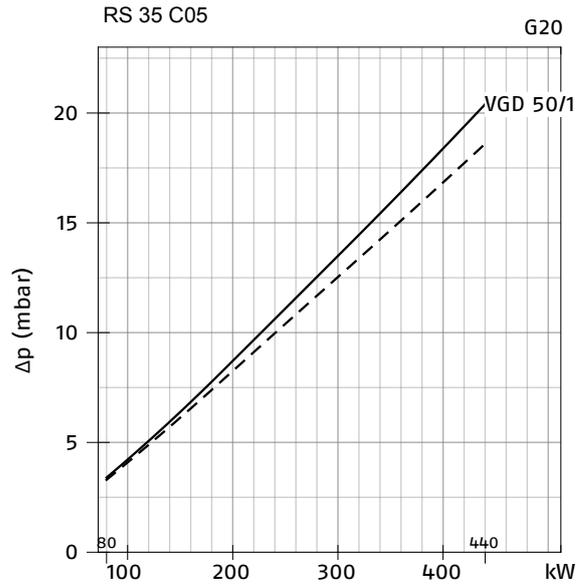
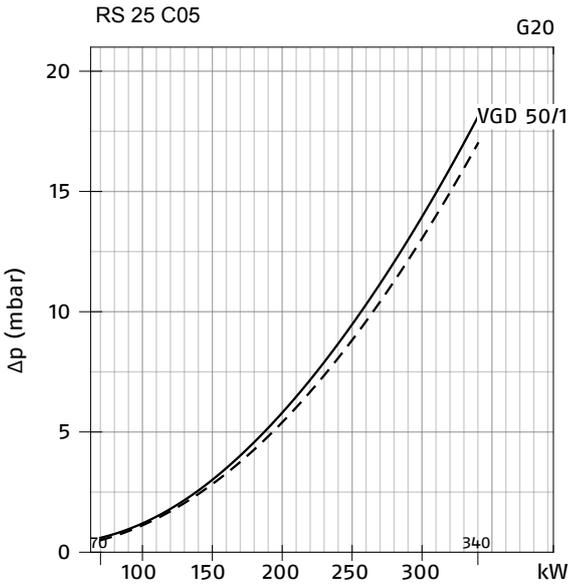
(1) Dimension with standard and extended head.

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 3/4"	-	3010123	3000824	
MB 407/1-RT 20	3970553*	Rp 3/4"	-	3010123	3000824	
MB 407/1-RT 52	3970599*	Rp 3/4"	-	3010123	3000824	
MB 407/1-RSM 20	3970229*	Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970258*	Rp 1" 1/4	-	3010123	3010124	
MB 410/1-RT 20	3970554*	Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970600*	Rp 3/4"	-	3010123	3000824	

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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	
VG D SERIES ONE STAGE GAS TRAIN						
VG D 50/1-RT 122	20137718*	Rp 2"	-	3010123+ 20186306	3000822	
VG D 50/1 CT RT 122	20169190**	Rp 2"	◆	◆	3000822	

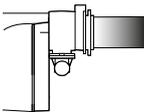
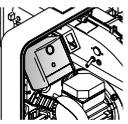
- (1) Please refer to "GAS TRAIN DESIGNATION".
 (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 (3) Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph 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.

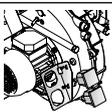
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

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 emissions (< 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 terms 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

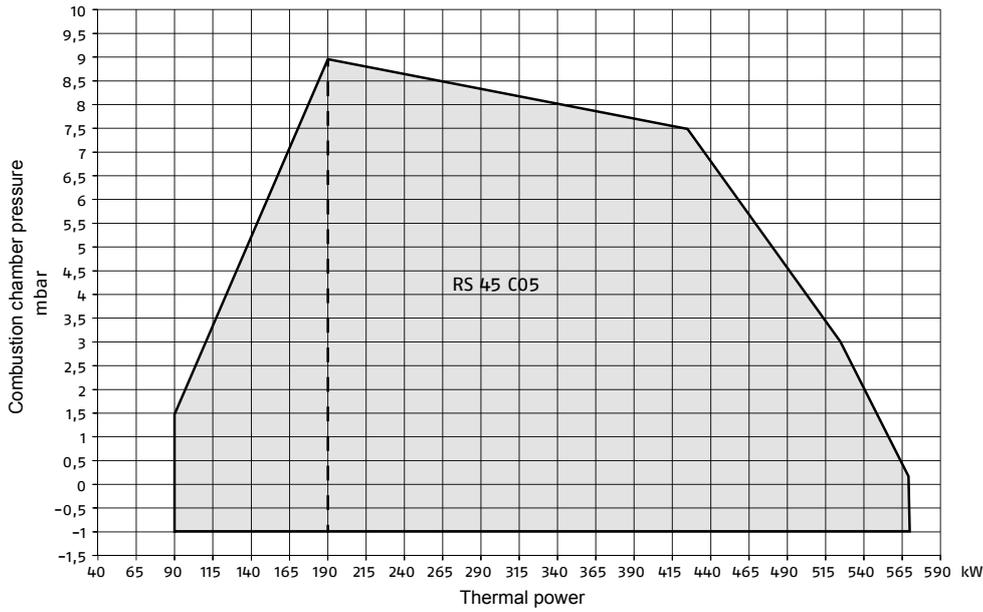
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		PhV/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 45 C05 TC FS1	90/190-570	9/19-57	0.76	1/220-230/50-60	230/50-60	CE-0123CT1607	(1)(2)	20159233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

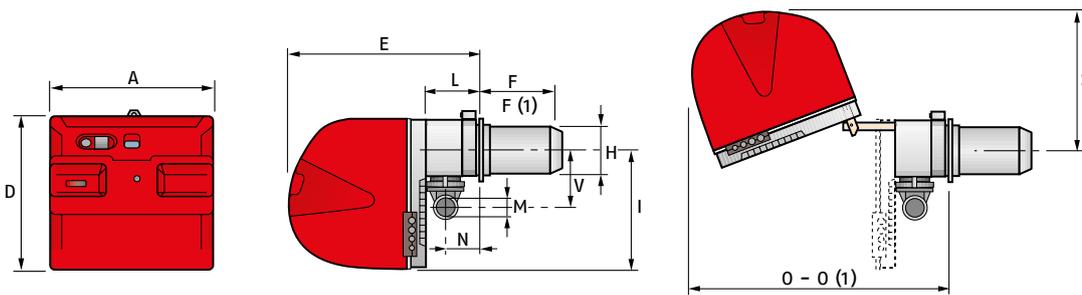
- (1) Model with plug and socket.
- (2) Model with CMG control box.

FIRING RATES



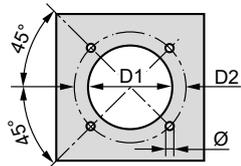
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

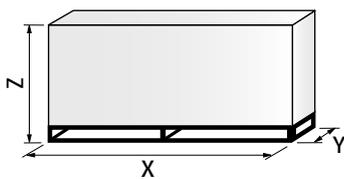


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 45 C05	476	474	580	192-327	160	352	164	1 1/2	108	810-810	367	168

(1) Length with extended combustion head.



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

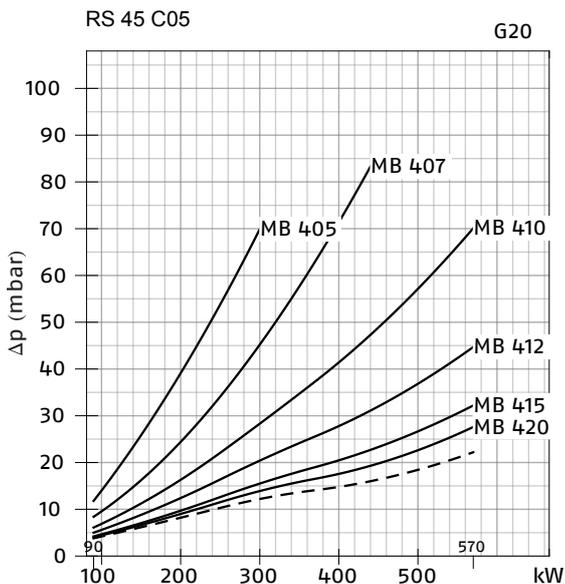


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 45 C05	1015	500	630	48

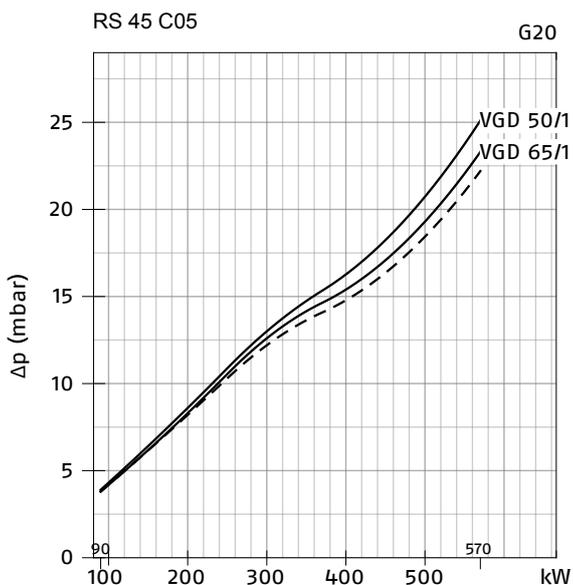
(1) Dimension with standard and extended head.

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 3/4"	-	3010123	3000824
MB 407/1-RT 20	3970553*		Rp 3/4"	-	3010123	3000824
MB 407/1-RT 52	3970599*		Rp 3/4"	-	3010123	3000824
MB 407/1-RSM 20	3970229*		Rp 3/4"	-	3010123	3000824
MB 410/1-RT 52	3970258*		Rp 1" 1/4	-	3010123	3010124
MB 410/1-RT 20	3970554*		Rp 3/4"	-	3010123	3000824
MB 410/1-RT 52	3970600*		Rp 3/4"	-	3010123	3000824
MB 410/1-RSM 20	3970230*		Rp 3/4"	-	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	<input type="checkbox"/>
MB 412/1-RT 20	3970144*		Rp 1" ½	-	3010123	<input type="checkbox"/>
MB 412/1 CT RT 20	3970197**		Rp 1" ½	◆	◆	<input type="checkbox"/>
MB 412/1-RSM 20	3970231*		Rp 1" ½	-	3010123	<input type="checkbox"/>
MB 415/1-RT 30	3970180*		Rp 1" ½	-	3010123	<input type="checkbox"/>
MB 415/1 CT RT 30	3970198**		Rp 1" ½	◆	◆	<input type="checkbox"/>
MB 415/1-RT 52	3970250*		Rp 1" ½	-	3010123	<input type="checkbox"/>
MB 415/1 CT RT 52	3970253**		Rp 1" ½	◆	◆	<input type="checkbox"/>
MB 415/1-RSM 30	3970232*		Rp 1" ½	-	3010123	<input type="checkbox"/>
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.

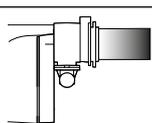
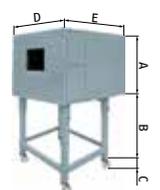
** 230V/50Hz electrical supply.

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 emissions (< 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 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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

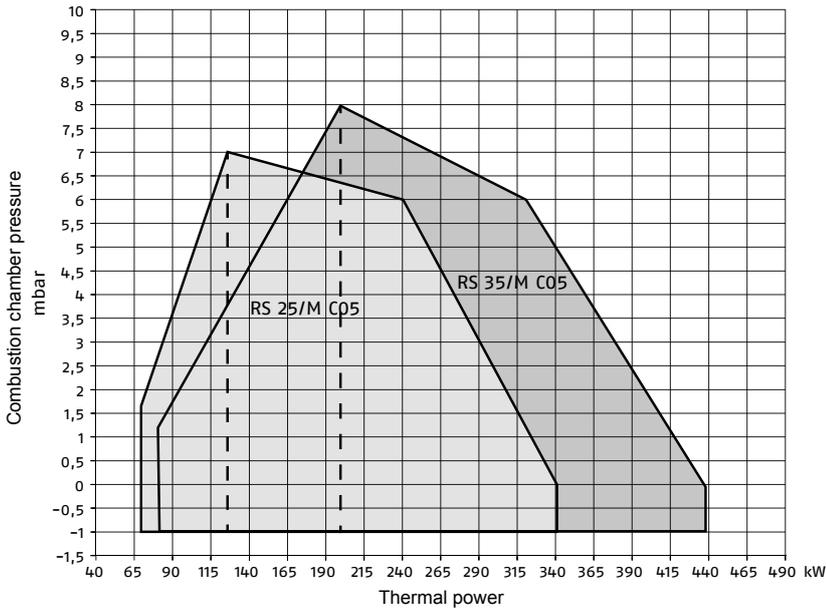
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

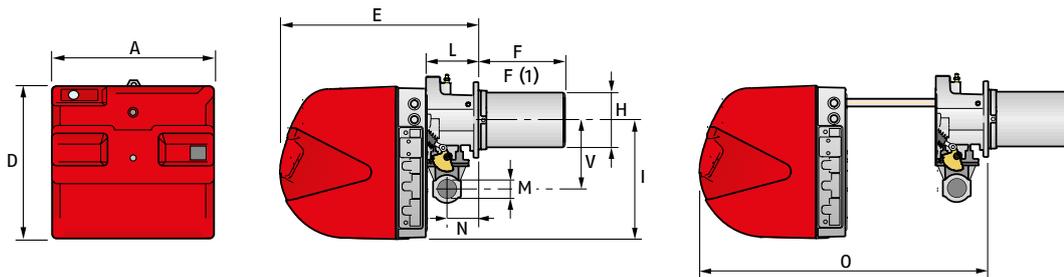
(2) Model with CMG control box.

FIRING RATES



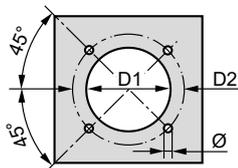
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

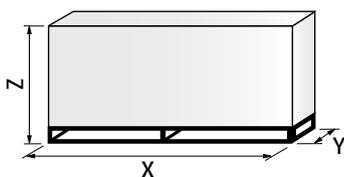


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 25/M C05	442	422	508	230-365	140	305	138	1 1/2	84	780-/	-	177
RS 35/M C05	442	422	508	198-333	152	305	138	1 1/2	84	780-/	-	177

(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

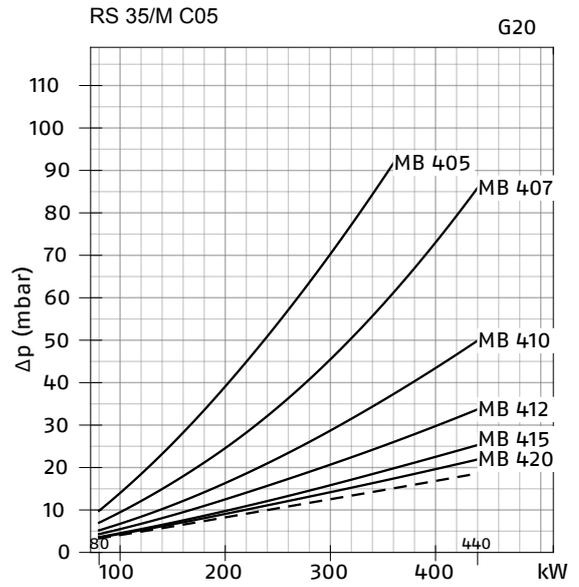
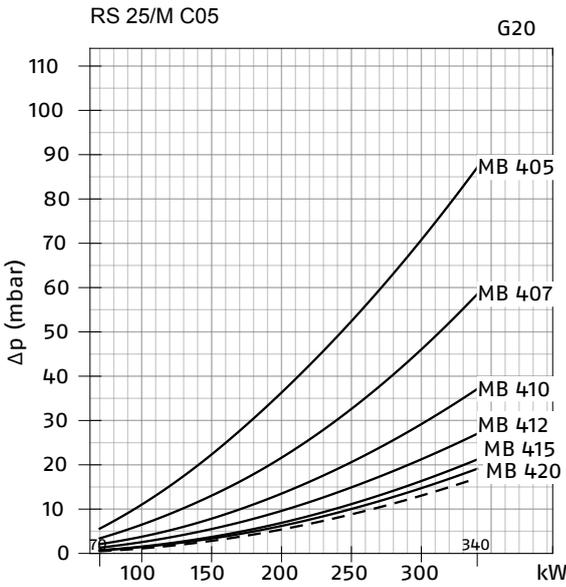


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 25/M C05	1000	485	500	39
RS 35/M C05	1000	485	500	40

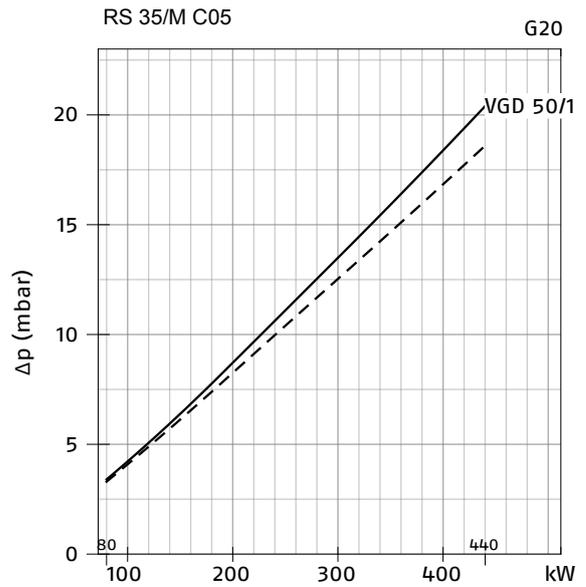
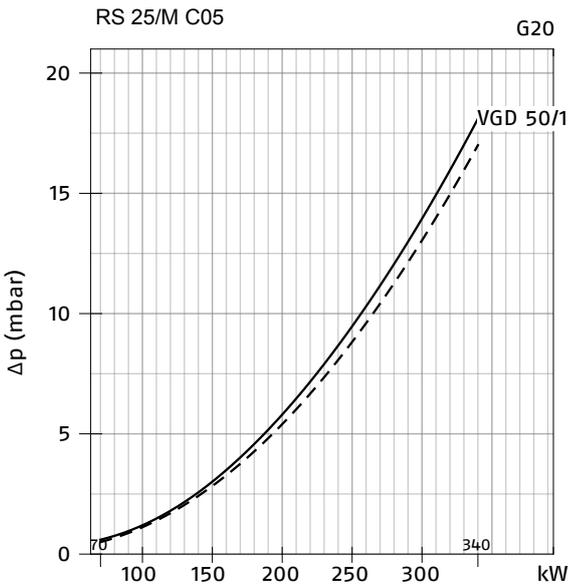
(1) Dimension with standard and extended head.

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 3/4"	-	3010123	3000824	
MB 407/1-RT 20	3970553*		Rp 3/4"	-	3010123	3000824	
MB 407/1-RT 52	3970599*		Rp 3/4"	-	3010123	3000824	
MB 407/1-RSM 20	3970229*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970258*		Rp 1" 1/4	-	3010123	3010124	
MB 410/1-RT 20	3970554*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970600*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RSM 20	3970230*		Rp 3/4"	-	3010123	3000824	

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

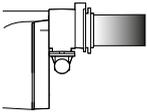
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 25/M C05	RS 35/M C05
MB 412/1-RT 52	3970256*		Rp 1" ½	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1-RT 20	3970144*		Rp 1" ½	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1 CT RT 20	3970197**		Rp 1" ½	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1-RSM 20	3970231*		Rp 1" ½	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RT 30	3970180*		Rp 1" ½	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1 CT RT 30	3970198**		Rp 1" ½	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RT 52	3970250*		Rp 1" ½	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1 CT RT 52	3970253**		Rp 1" ½	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RSM 30	3970232*		Rp 1" ½	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
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	
VG D SERIES ONE STAGE GAS TRAIN							
VG D 50/1-RT 122	20137718*		Rp 2"	-	3010123+ 20186306	3000822	
VG D 50/1 CT RT 122	20169190**		Rp 2"	◆	◆	3000822	

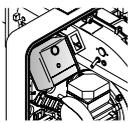
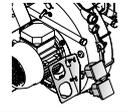
- (1) Please refer to "GAS TRAIN DESIGNATION".
 (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 (3) Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph 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
	RS 25/M C05 RS 35/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 = 230 mm - Extended head length = 365 mm Standard head length = 192 mm - Extended head length = 327 mm	20177160 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.	3010213
		Pressure (0-2.5 bar) with 4-20 mA output.	3010214
		Pressure (0-16 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

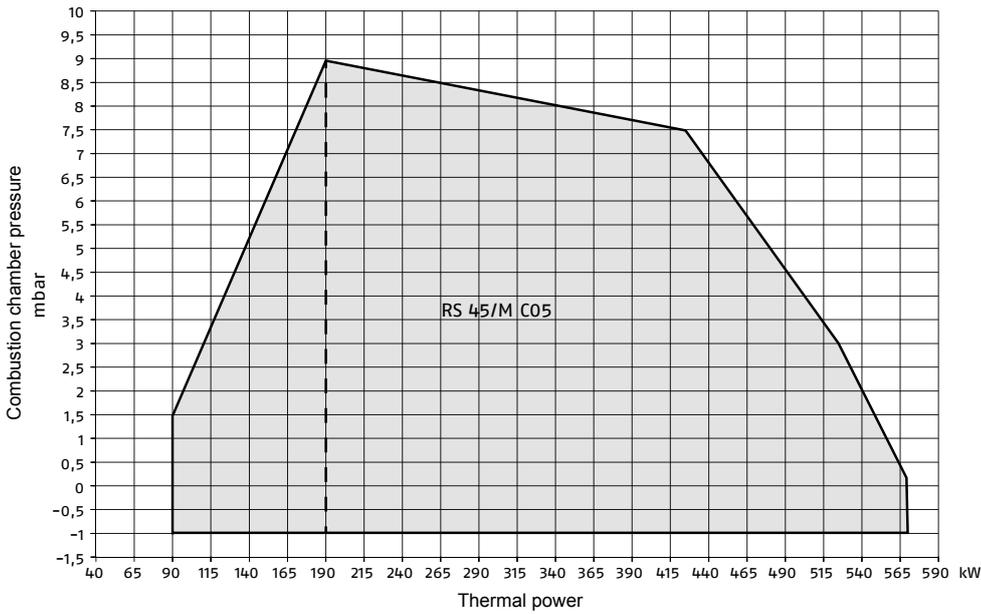
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 45/M C05 TC FS1	90/190-570	9/19-57	0.6	1/230/50	230/50-60	CE-0123CT1607	(1) (2)	20159209
RS 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/Nm³.

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

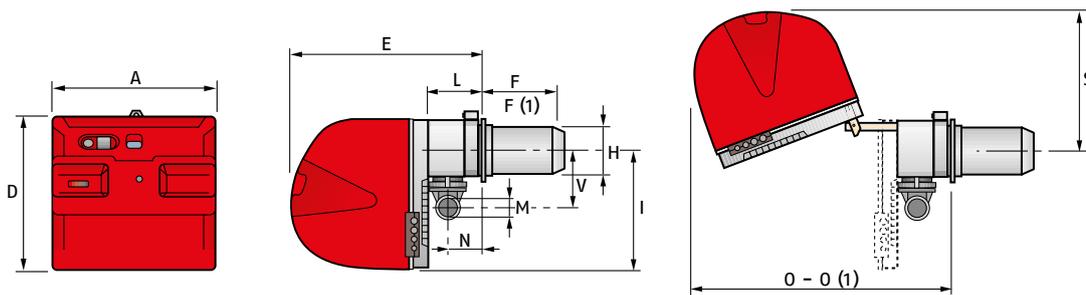
- (1) Model with plug and socket.
(2) Model with CMG control box.

FIRING RATES



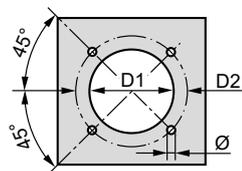
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

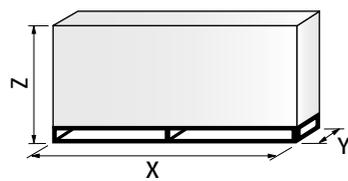


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 45/M C05	476	474	580	192-327	160	352	164	1 1/2	108	810-810	367	168

(1) Length with extended combustion head.



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

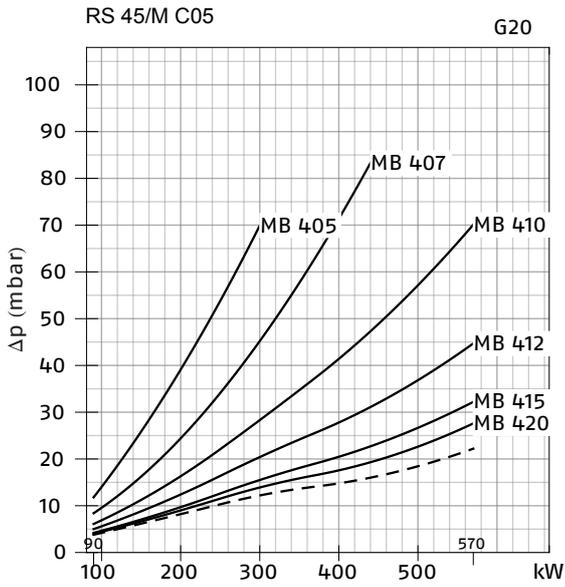


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 45/M C05	1015	500	630	48

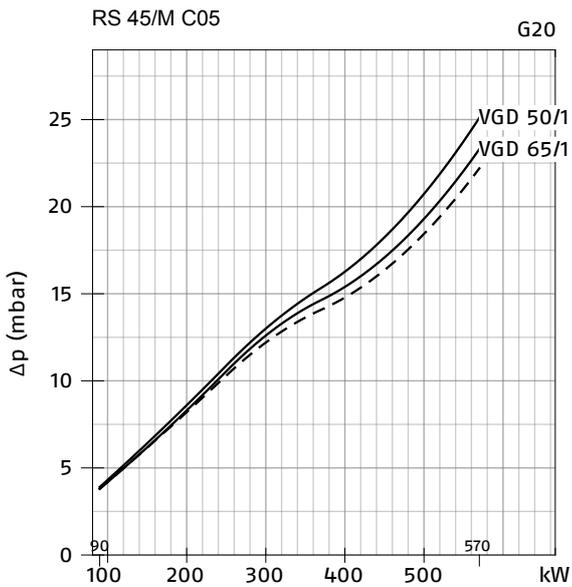
(1) Dimension with standard and extended head.

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 3/4"	-	3010123	3000824
MB 407/1-RT 20	3970553*		Rp 3/4"	-	3010123	3000824
MB 407/1-RT 52	3970599*		Rp 3/4"	-	3010123	3000824
MB 407/1-RSM 20	3970229*		Rp 3/4"	-	3010123	3000824
MB 410/1-RT 52	3970258*		Rp 1" 1/4	-	3010123	3010124
MB 410/1-RT 20	3970554*		Rp 3/4"	-	3010123	3000824
MB 410/1-RT 52	3970600*		Rp 3/4"	-	3010123	3000824
MB 410/1-RSM 20	3970230*		Rp 3/4"	-	3010123	3000824

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

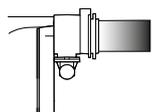
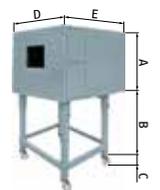
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)
						RS 45/M C05
MB 412/1-RT 52	3970256*		Rp 1" ½	-	3010123	<input type="checkbox"/>
MB 412/1-RT 20	3970144*		Rp 1" ½	-	3010123	<input type="checkbox"/>
MB 412/1 CT RT 20	3970197**		Rp 1" ½	◆	◆	<input type="checkbox"/>
MB 412/1-RSM 20	3970231*		Rp 1" ½	-	3010123	<input type="checkbox"/>
MB 415/1-RT 30	3970180*		Rp 1" ½	-	3010123	<input type="checkbox"/>
MB 415/1 CT RT 30	3970198**		Rp 1" ½	◆	◆	<input type="checkbox"/>
MB 415/1-RT 52	3970250*		Rp 1" ½	-	3010123	<input type="checkbox"/>
MB 415/1 CT RT 52	3970253**		Rp 1" ½	◆	◆	<input type="checkbox"/>
MB 415/1-RSM 30	3970232*		Rp 1" ½	-	3010123	<input type="checkbox"/>
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.	3010213
		Pressure (0-2.5 bar) with 4-20 mA output.	3010214
		Pressure (0-16 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		PhV/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 conforming to 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

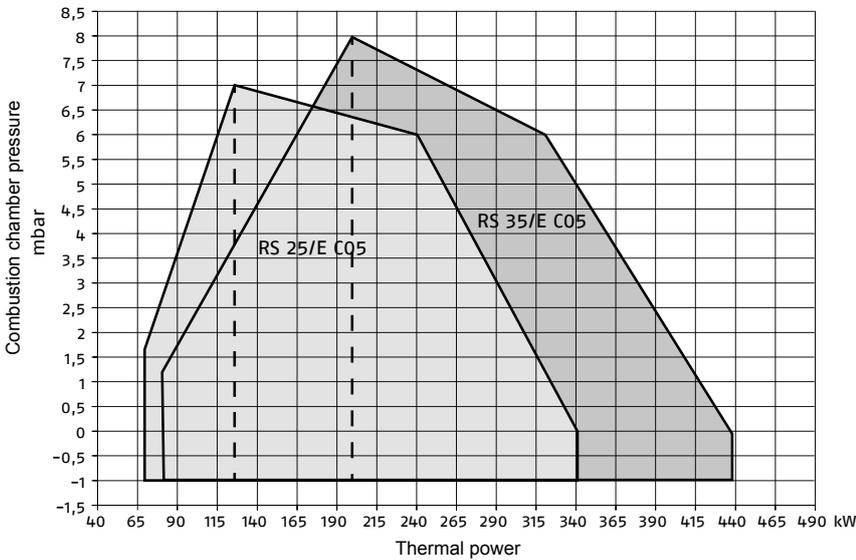
(2) Model with plug and socket.

(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%.

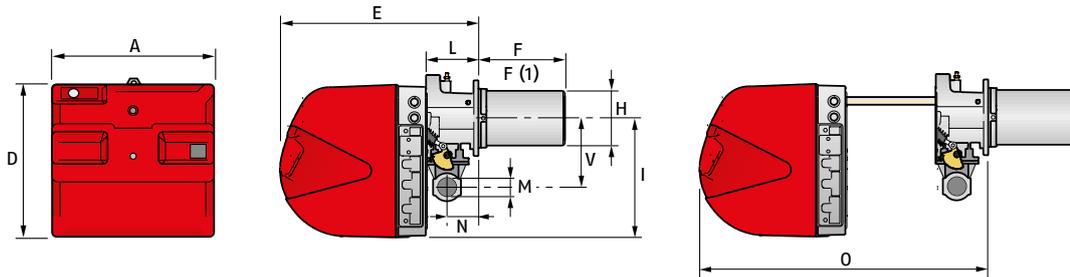
FIRING RATES

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.



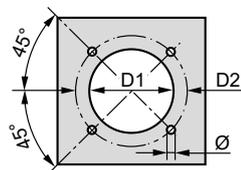
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

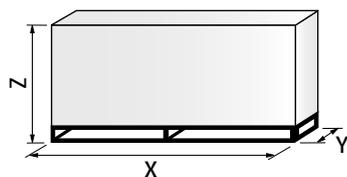


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 25/E C05	442	422	508	230-365	140	305	138	1 1/2	84	780-/	177
RS 35/E C05	442	422	508	198-333	152	305	138	1 1/2	84	780-/	177

(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

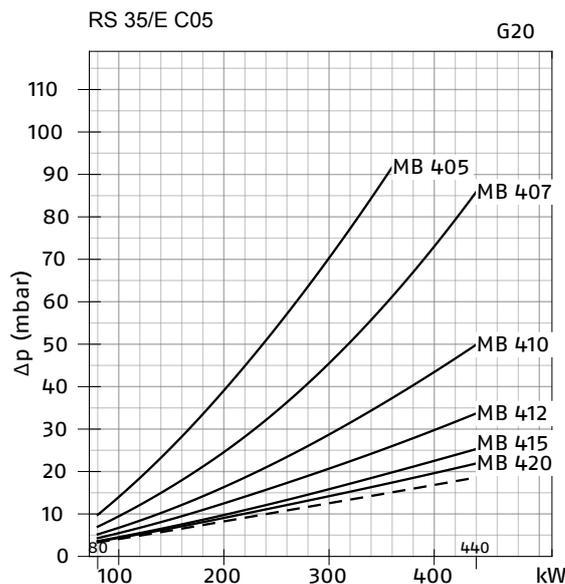
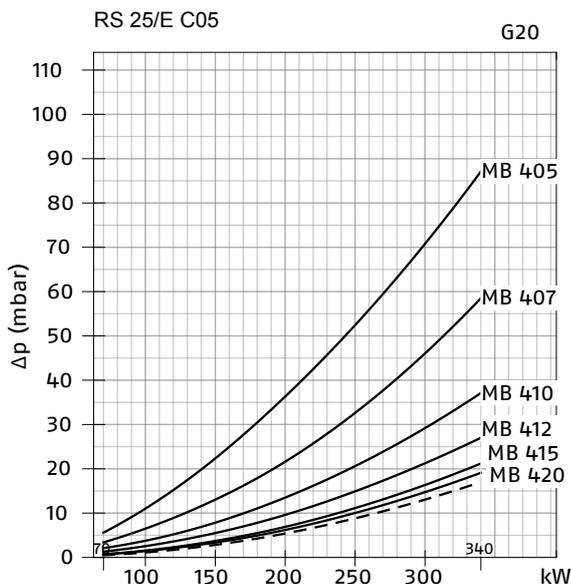


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 25/E C05	1000	485	500	39
RS 35/E C05	1000	485	500	40

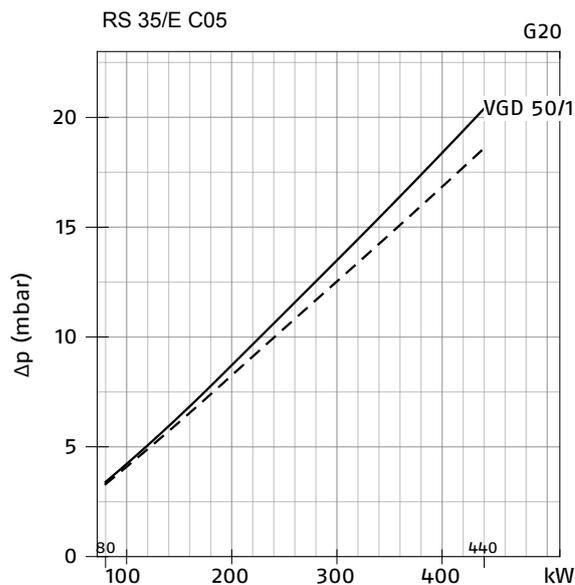
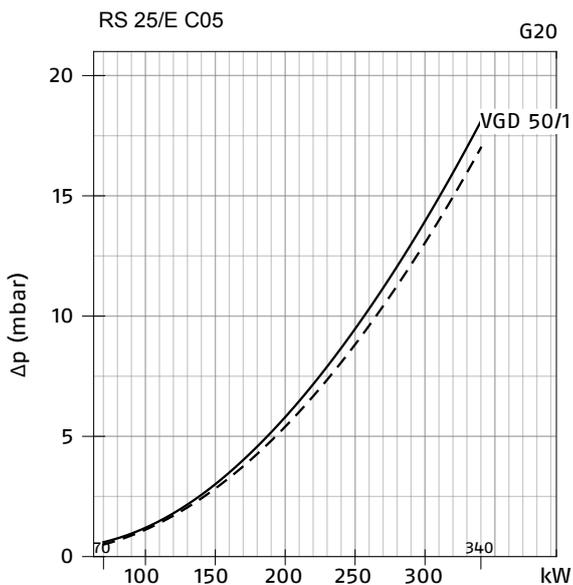
(1) Dimension with standard and extended head.

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	-	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1-RT 52	3970256*		Rp 1" ½	-	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RT 52	3970250*		Rp 1" ½	-	<input type="checkbox"/>	<input type="checkbox"/>
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	

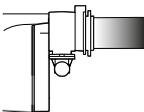
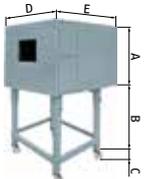
- (1) Please refer to "GAS TRAIN DESIGNATION".
 - (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 - (3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
 - (4) 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.	3010213
		Pressure (0-2.5 bar) with 4-20 mA output.	3010214
		Pressure (0-16 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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

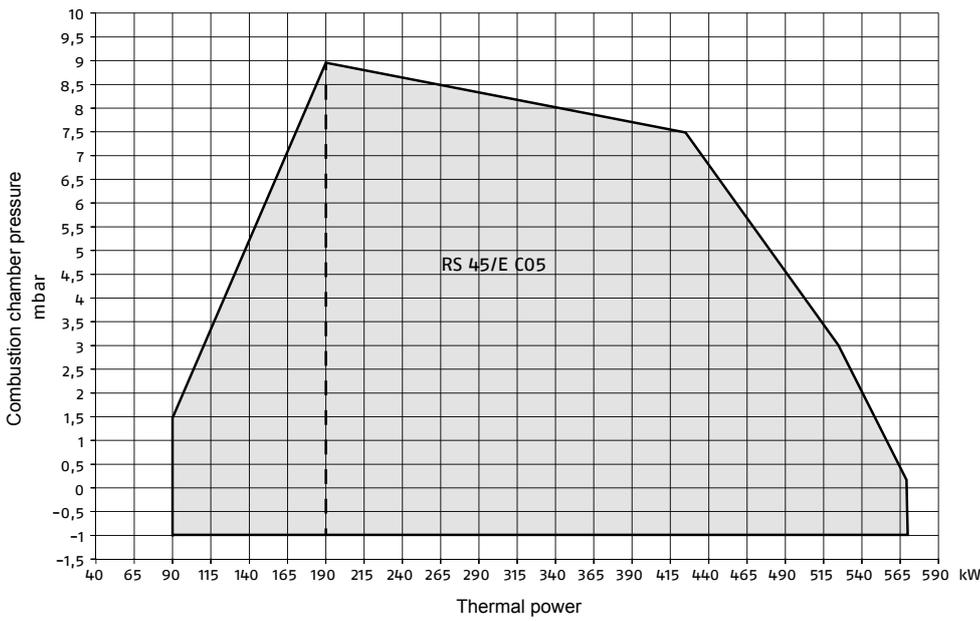
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

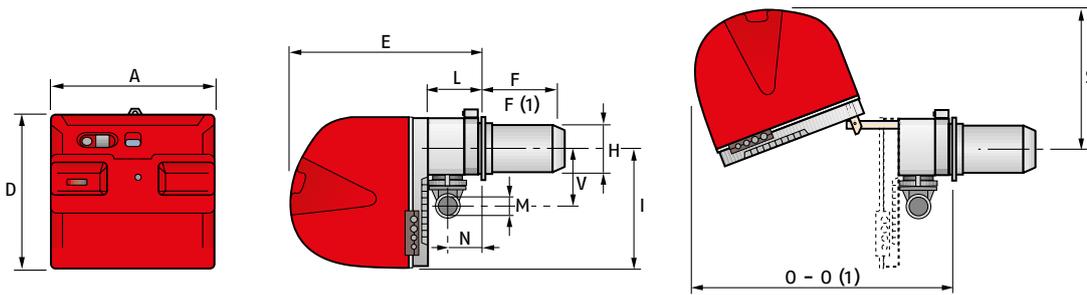
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train. In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.

FIRING RATES



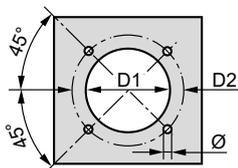
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

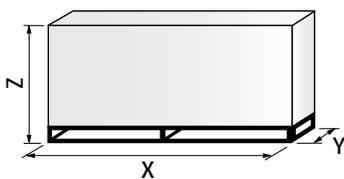


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 45/E C05	476	474	580	192-327	160	352	164	1 1/2	108	810-810	367	168

(1) Length with extended combustion head.



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

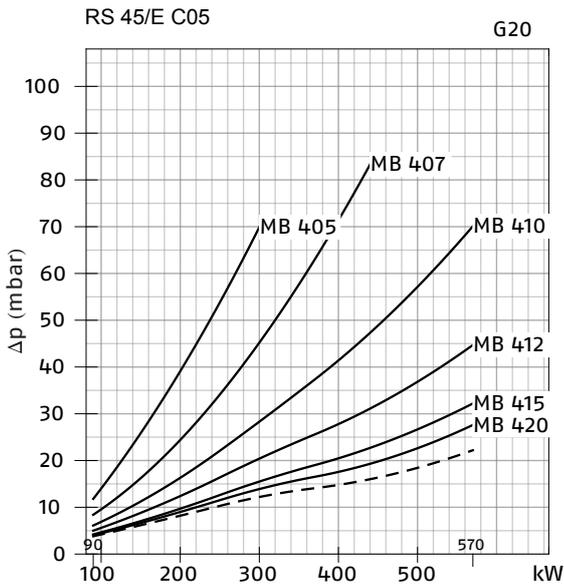


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 45/E C05	1015	500	630	48

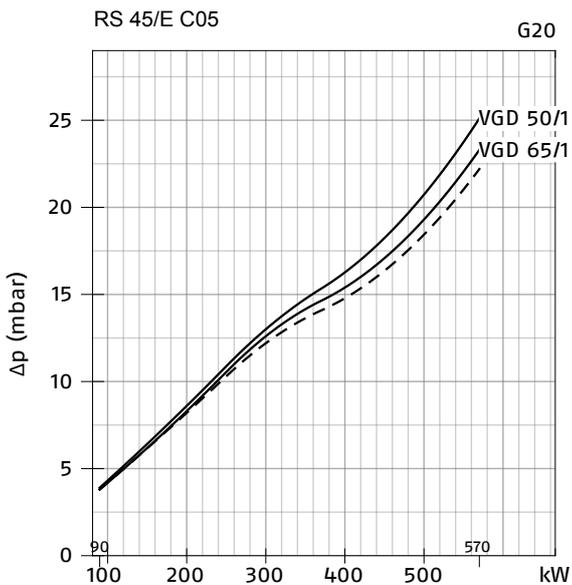
(1) Dimension with standard and extended head.

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 3/4"	-	3000824
MB 407/1-RT 52	3970599*		Rp 3/4"	-	3000824
MB 410/1-RT 52	3970258*		Rp 1" 1/4	-	□
MB 412/1-RT 52	3970256*		Rp 1" 1/2	-	□
MB 415/1-RT 52	3970250*		Rp 1" 1/2	-	□
MB 420/1-RT 52	3970257*		Rp 2"	-	3000822

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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

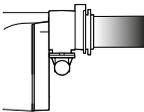
- (1) Please refer to "GAS TRAIN DESIGNATION".
 - (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 - (3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES)".
 - (4) 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 ($\text{NO}_x \leq 30 \text{ mg/Nm}^3$)
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 frequency 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 of 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 kW	Electric power supply		Certification	Note	Code
	kW (1)	kW (2)		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

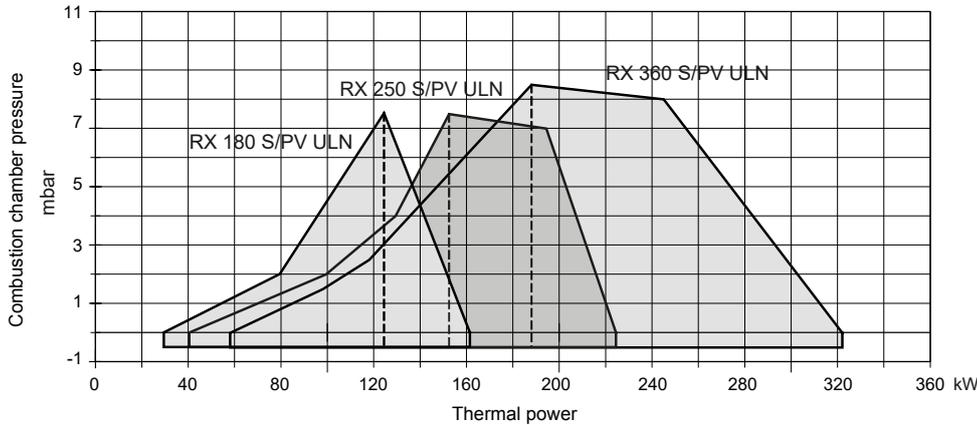
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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 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.

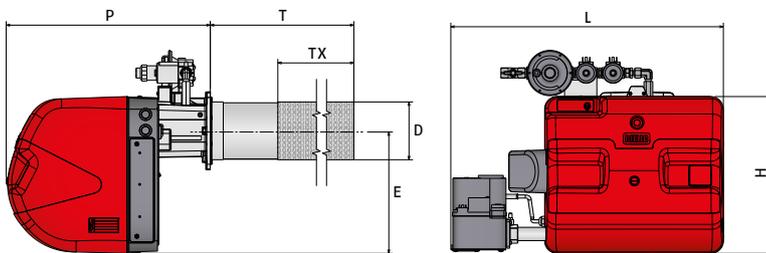
FIRING RATES

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



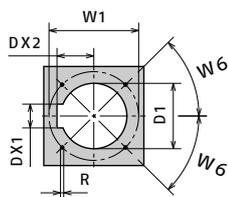
Useful firing rates for choosing the burner
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

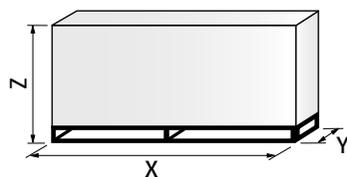


Description	H mm	L mm	P mm	T mm	TX mm	D mm	E mm
RX 180 S/PV ULN	390	640	503	465	320	119	306
RX 250 S/PV ULN	390	640	503	465	320	119	306
RX 360 S/PV ULN	390	675	503	635	442	144	306

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.	3010213
		Pressure (0-2.5 bar) with 4-20 mA output.	3010214
		Pressure (0-16 bar) with 4-20 mA output.	3090873
		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 ($\text{NO}_x \leq 30 \text{ mg/Nm}^3$)
- 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 frequency 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 of 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 kW	Electric power supply		Certification	Note	Code
	kW (1)	kW (2)		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/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 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.

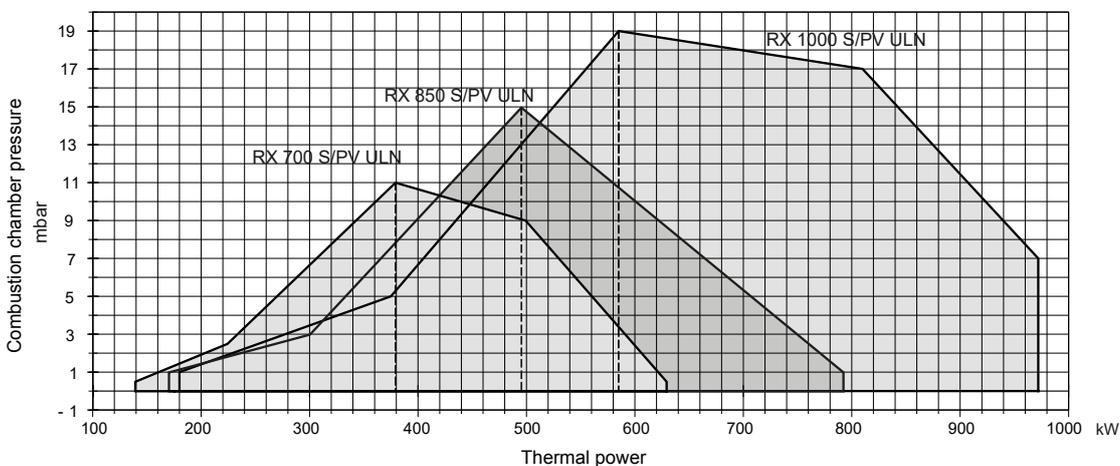
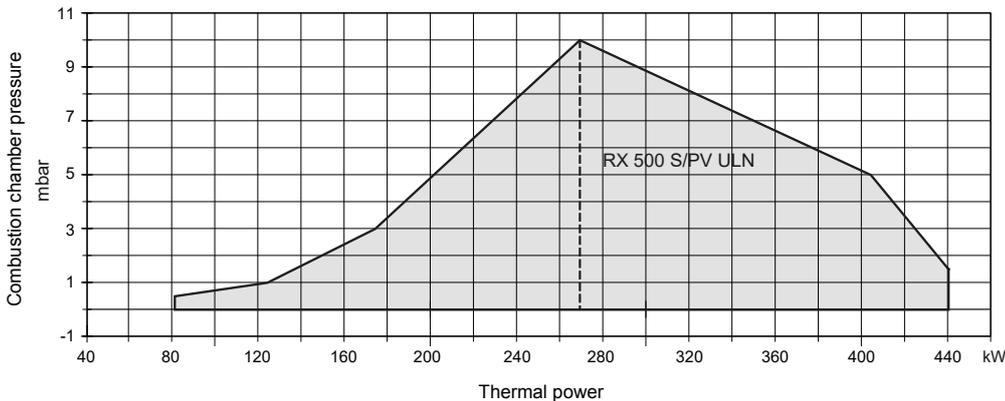
(5) Gas train included.

(6) Model with terminal board.

(7) Certified for natural gas use only or blend of natural gas and hydrogen up to 20%.

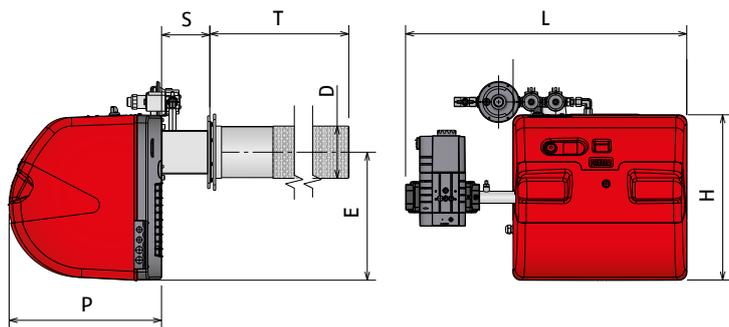
FIRING RATES

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



OVERALL DIMENSIONS

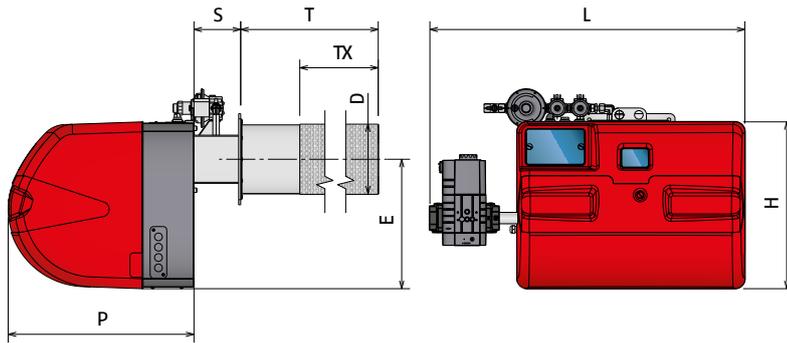
RX 500 S/PV ULN



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	-

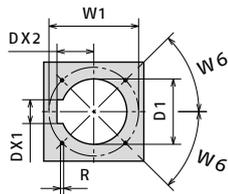
TX Flame zone length; the non combustion area (T-TX) must be greater than the thickness of the boiler door complete with refractory.

RX 700-850-1000 S/PV ULN

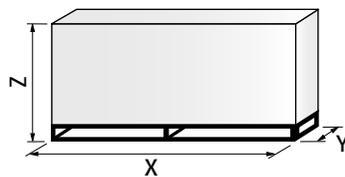


Description	H mm	L mm	P mm	T mm	TX mm	D mm	E mm	S mm
RX 700 S/PV ULN	490	910	520	540	367	200	370	135
RX 850 S/PV ULN	490	910	520	660	460	200	370	135
RX 1000 S/PV ULN	490	910	520	660	460	200	370	135

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
	RX 500 S/PV 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. 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.	3010213
		Pressure (0-2.5 bar) with 4-20 mA output.	3010214
		Pressure (0-16 bar) with 4-20 mA output.	3090873
		Pressure (0-25 bar) with 4-20 mA output.	3090873

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 ($\text{NO}_x \leq 30 \text{ mg/Nm}^3$)
- 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 RX S/E 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 frequency 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 of 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 kW	Electric power supply V/Ph/Hz	Certification	Note	Code
		kW (1)	kW (2)					
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/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 an Ultra Low NOx performance of 30 mg/Nm³

(2) Power range referred to a Low NOx performance conforming to 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).

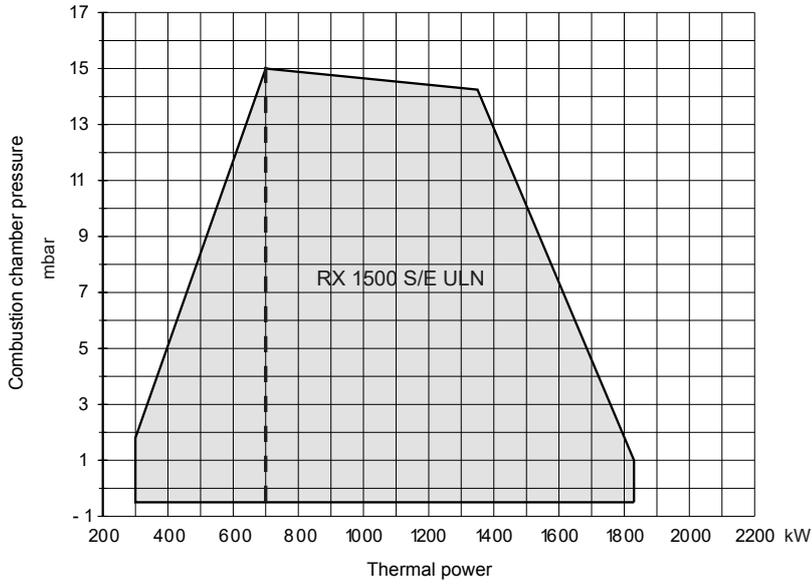
(5) Seal control function is included on Burner Digital Management System, by connection to the dedicated pressure switch included as standard equipment on the gas train.

(6) Direct starter fan motor.

(7) Model with terminal board.

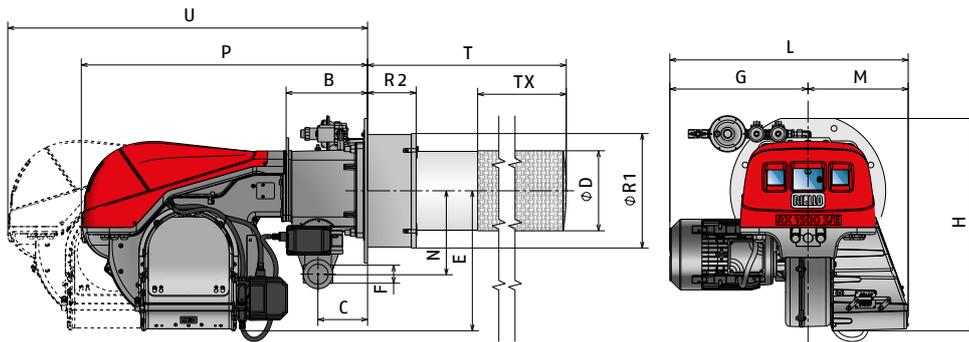
FIRING RATES

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.



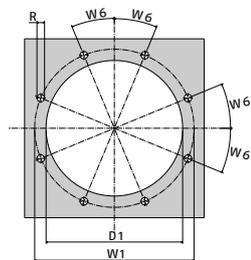
Useful firing rates for choosing the burner
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

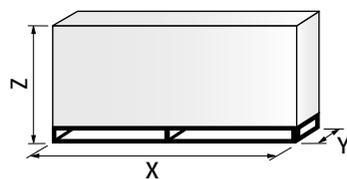


Description	B mm	C mm	D mm	E mm	F mm	G mm	H mm	L mm	M mm	N mm	P mm	R1 mm	R2 mm	T mm	TX mm	U mm
RX 1500 S/E ULN	250	154	250	440	2"	426	660	734	308	260	885	360	150	950	590	1060

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

GAS

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)	▲	●

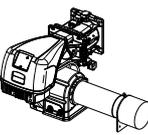
- (1) Please refer to "GAS TRAIN DESIGNATION".
 - (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 - (3) A gas pressure switch is supplied with the burner for the valve seal control function (to be installed on the gas 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

LIGHT OIL

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.	20099869
		RWF 50.2 - Standard version; 3-point outlet.	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.	3010213
		Pressure (0-2.5 bar) with 4-20 mA output.	3010214
		Pressure (0-16 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

DUAL FUEL

HEAVY OIL

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 to the 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 ($\text{NOx} \leq 30 \text{ mg/Nm}^3$)
- 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 frequency 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 of 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 kW	Electric power supply V/Ph/Hz	Certification	Note	Code
		kW (2)	kW (3)					
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

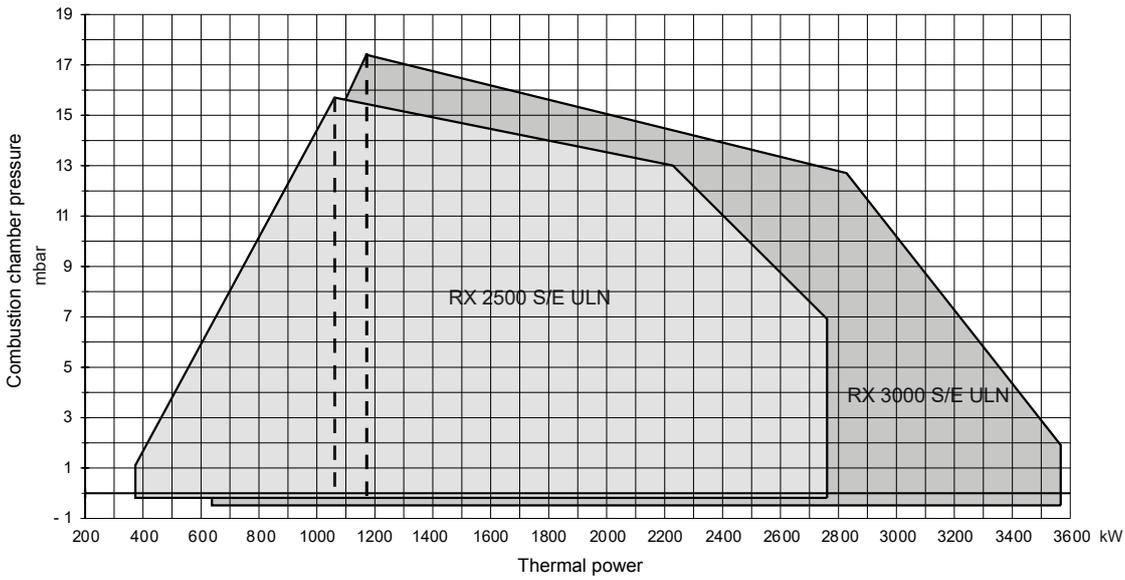
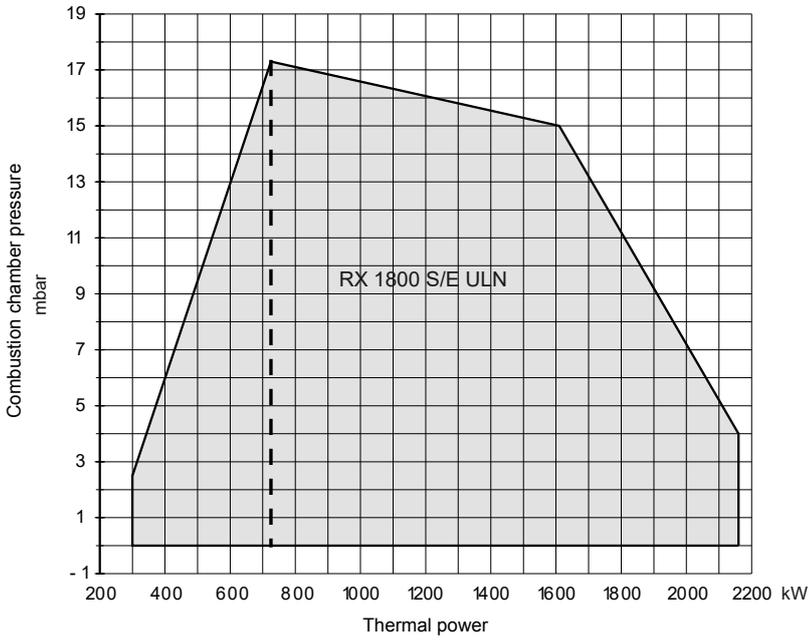
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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

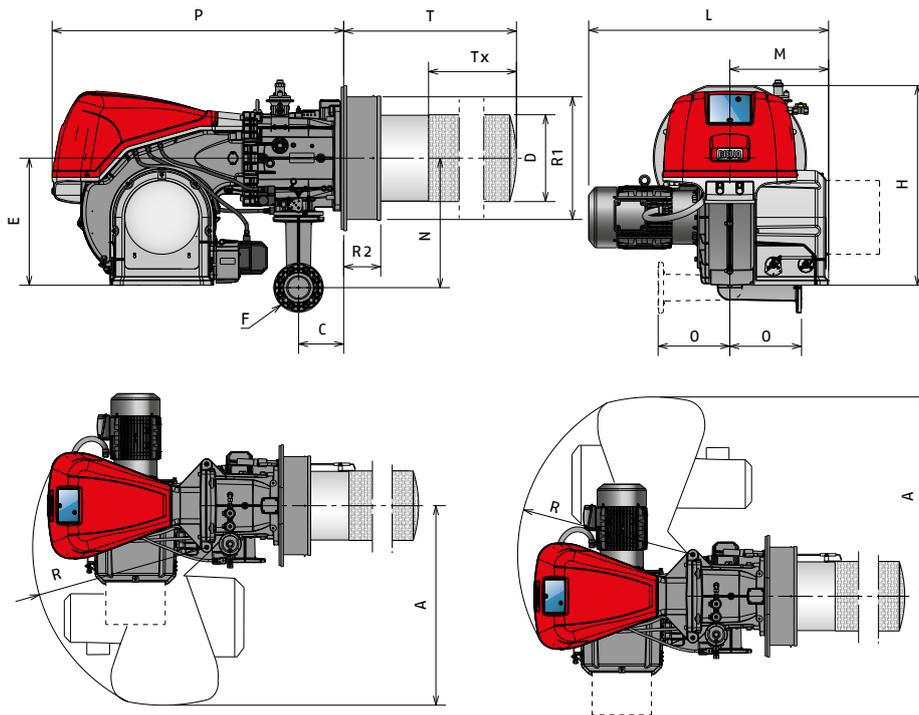
- (1) The combustion head is supplied separated from the burner and must be ordered with the specific code.
- (2) Power range referred to an Ultra Low NOx performance of 30 mg/Nm³
- (3) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard.
- (4) The burners 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.



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

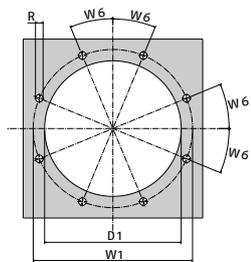
TX Flame zone length; the non combustion area (T-TX) must be greater than the thickness of the boiler door complete with refractory.
 * The gas adaptor is set also for DN 80 bore.

GAS

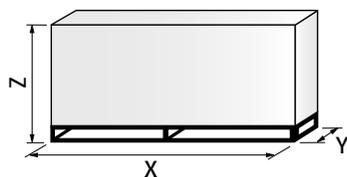
LIGHT OIL

DUAL FUEL

HEAVY OIL



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

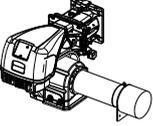
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Flange kit for gas pressure switch (4)	Burner-gas train adapter (5)		
						RX 1800 S/E ULN	RX 2500 S/E ULN	RX 3000 S/E ULN
VGD SERIES ONE STAGE GAS TRAIN								
VGD 50/1-RT 122	20137718*		Rp 2"	(3)	20185515	3000826+20042324	●	●
VGD 65/1-FT 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
		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.	
	RX 1800-2500 S/E ULN	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 to the 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/Nm³)
- 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, through the action of independent servomotors, allows the control of air, fuel and exhaust gas proportion in every working point, in order to reach very low NOx emissions, while maintaining high reliability 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 kW	Electric power supply V/Ph/Hz	Certification	Note	Code
	kW	Nm ³ /h					
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/Nm³.

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

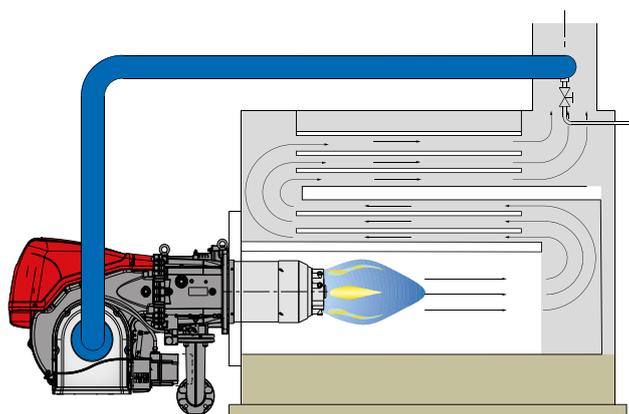
(1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.

(2) Direct starter fan motor.

(3) Star delta fan motor starter.

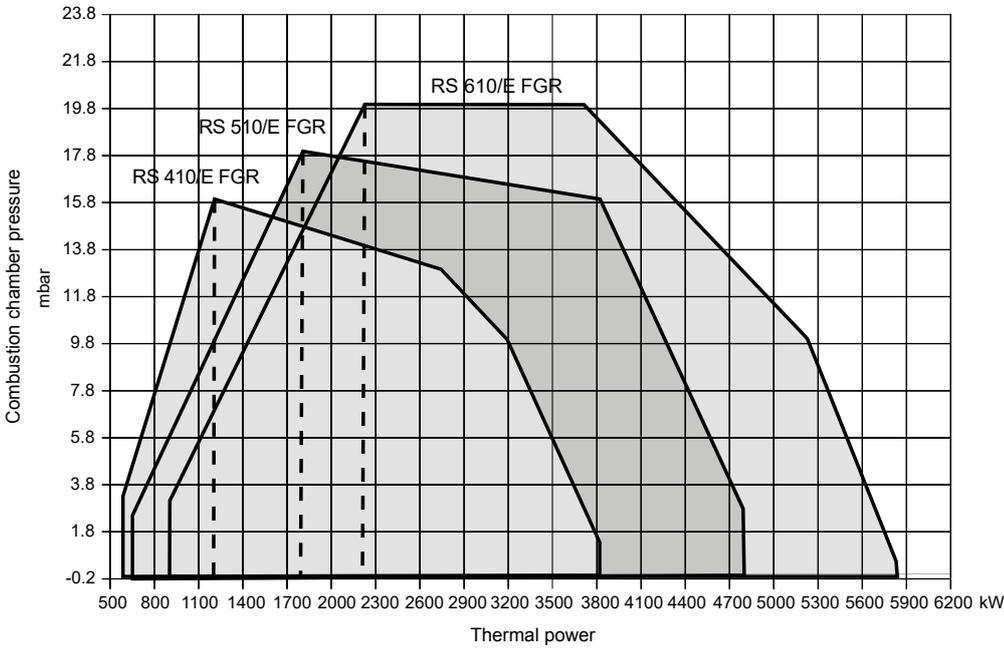
(4) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

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



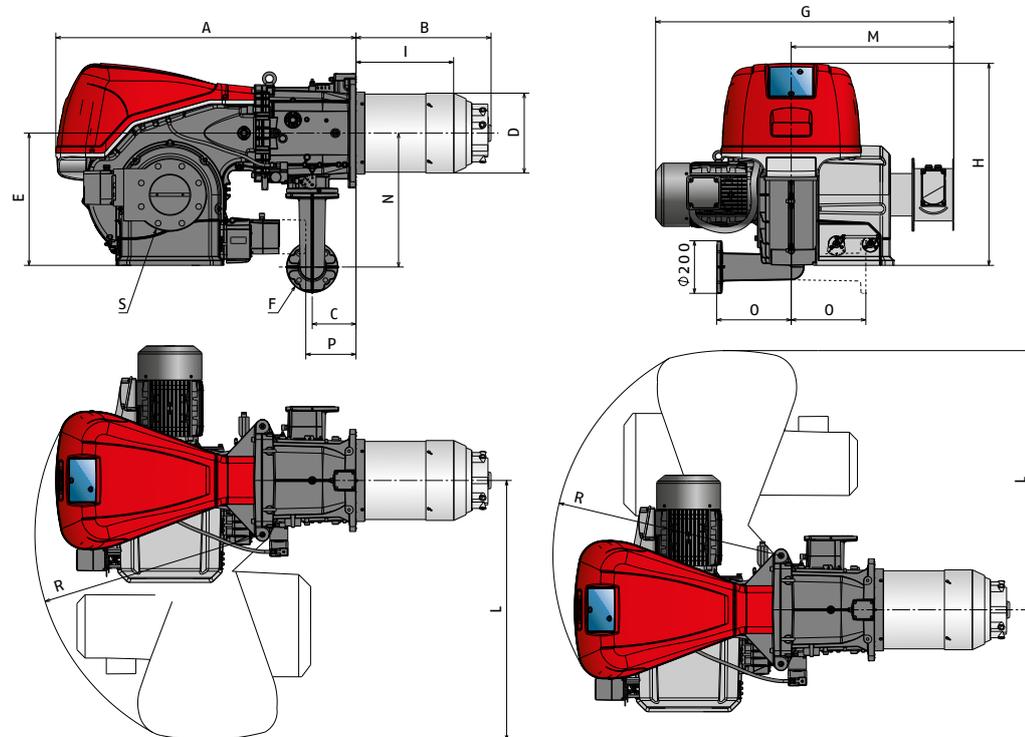
FIRING RATES

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/Nm³ will involve a maximum output reduction of at list 20%.



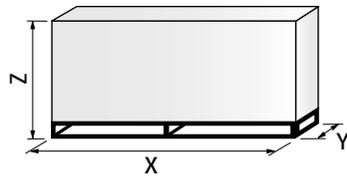
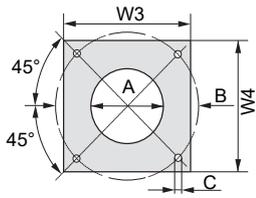
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

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 (**)	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 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 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
	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/Nm³)
- 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, through the action of independent servomotors, allows the control of air, fuel and exhaust gas proportion in every working point, in order to reach very low NOx emissions, while maintaining high reliability 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

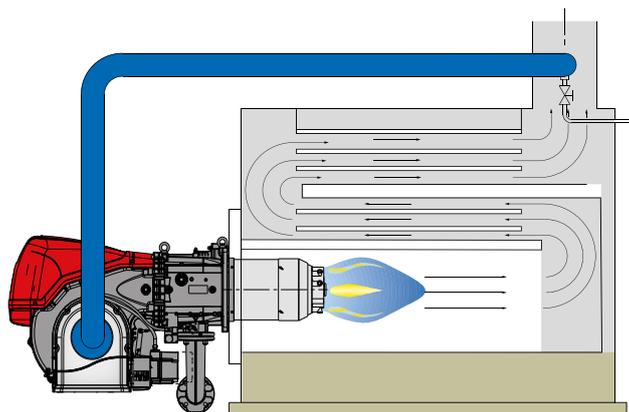
Description	Heat output natural gas		Total electrical power kW	Electric power supply V/Ph/Hz	Certification	Note	Code
	kW	Nm ³ /h					
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52)							
RS 410/EV 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/Nm³.

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

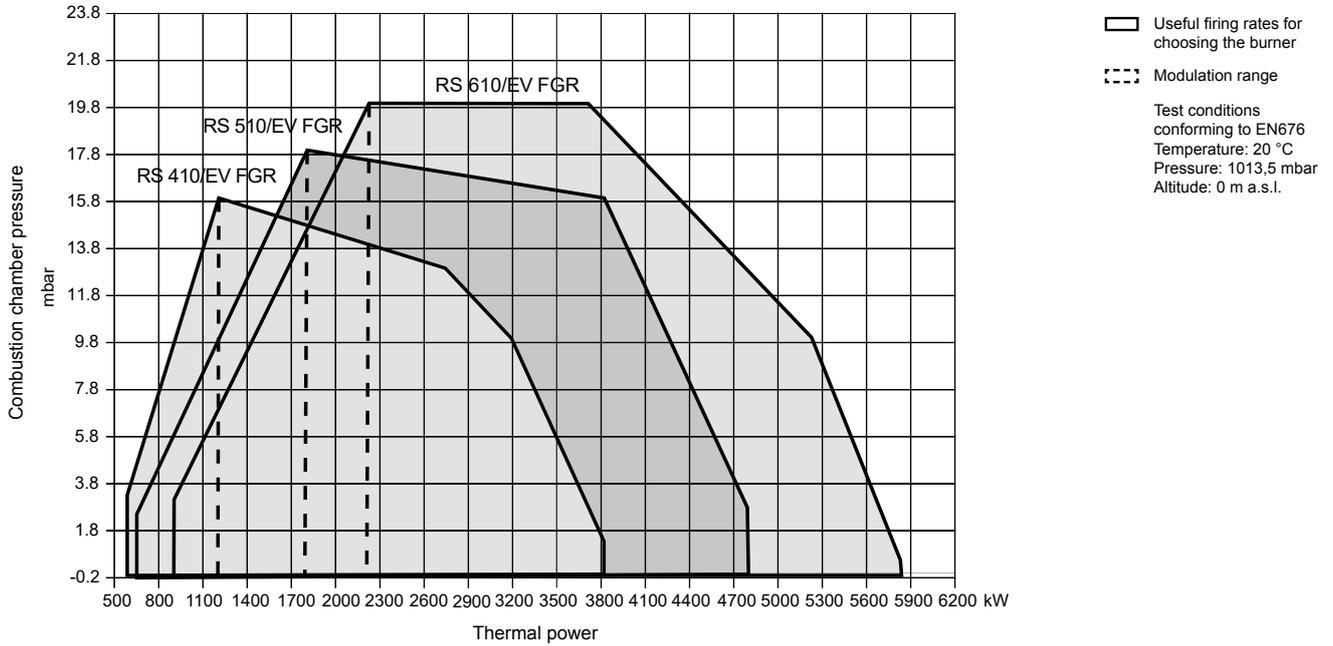
- (1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
- (2) The burners are factory set for 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.

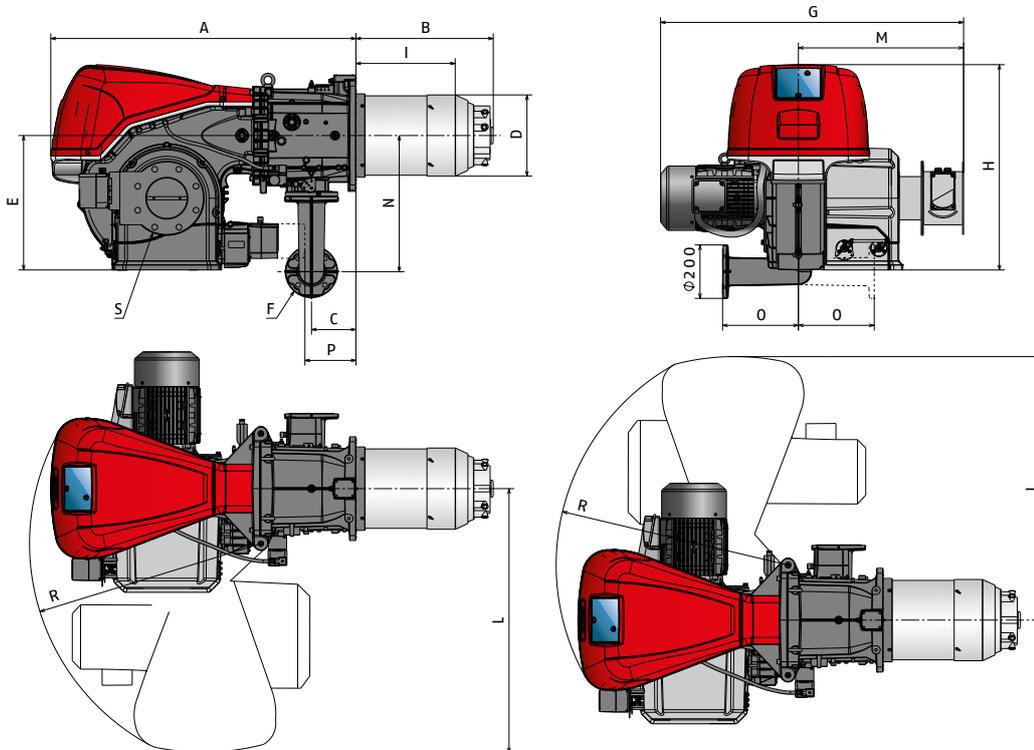


FIRING RATES

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/Nm³ will involve a maximum output reduction of at list 20%.

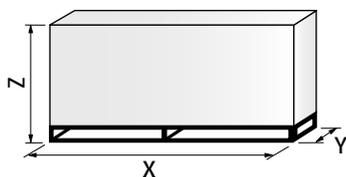
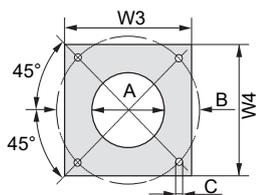


OVERALL DIMENSIONS



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 (**)	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 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 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/Nm³)
- 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, through the action of independent servomotors, allows the control of air, fuel and exhaust gas proportion in every working point, in order to reach very low NOx emissions, while maintaining high reliability 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

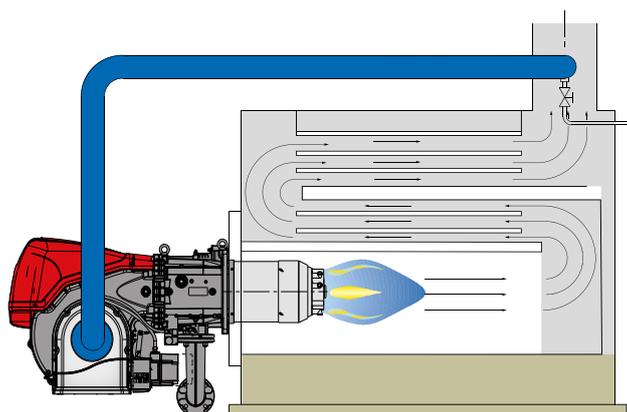
Description	Heat output natural gas		Total electrical power kW	Electric power supply V/Ph/Hz	Certification	Note	Code
	kW	Nm ³ /h					
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)							
RS 810/E 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/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 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.

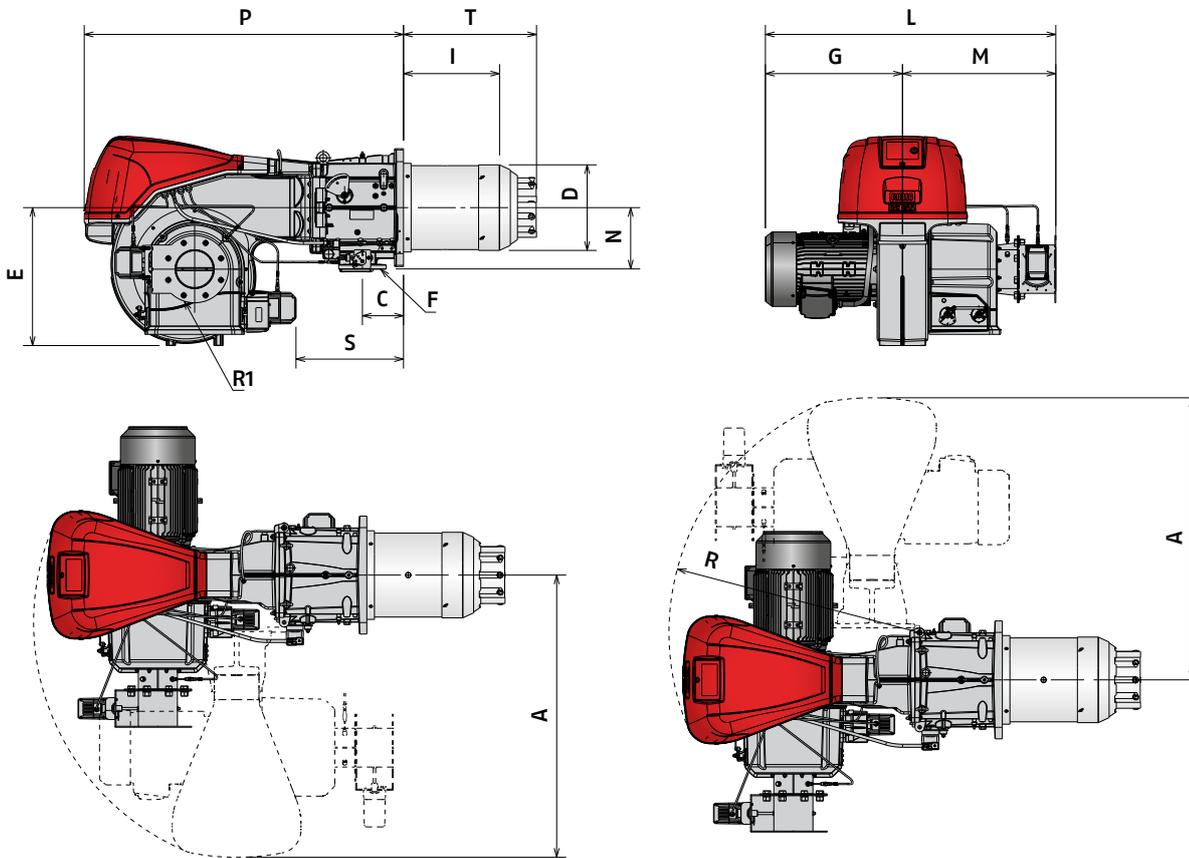


FIRING RATES

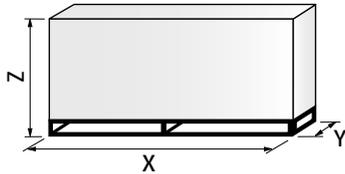
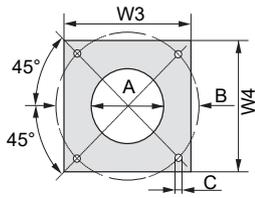
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen 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/Nm³ 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
VG D SERIES ONE STAGE GAS TRAIN					
VG D 65/1-FT 122	20140762*	(5)	DN65	(3)	20059331/(3010222+20059331) (6)
VG D 80/1-FT 122	20140763*		DN80	(3)	20059331/(3010222+20059331) (6)
VG D 100/1-FT 122	20169193*		DN100	(3)	20059332/(3010223+20059331) (6)
VG D 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 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 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/Nm³)
- 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, through the action of independent servomotors, allows the control of air, fuel and exhaust gas proportion in every working point, in order to reach very low NOx emissions, while maintaining high reliability 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

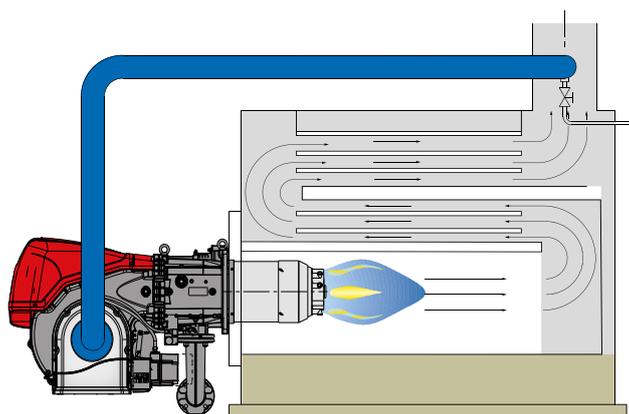
Description	Heat output natural gas		Total electrical power kW	Electric power supply V/Ph/Hz	Certification	Note	Code
	kW	Nm ³ /h					
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52)							
RS 810/EV 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/Nm³.

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

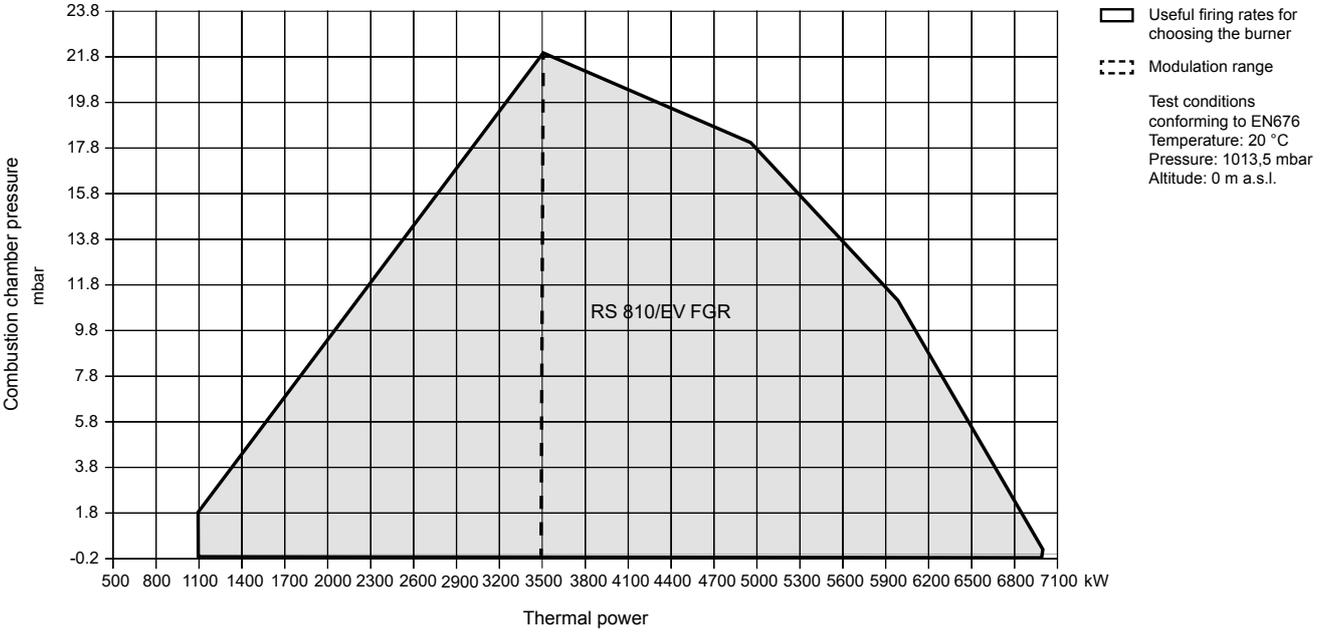
- (1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
- (2) The burners are factory set for 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.

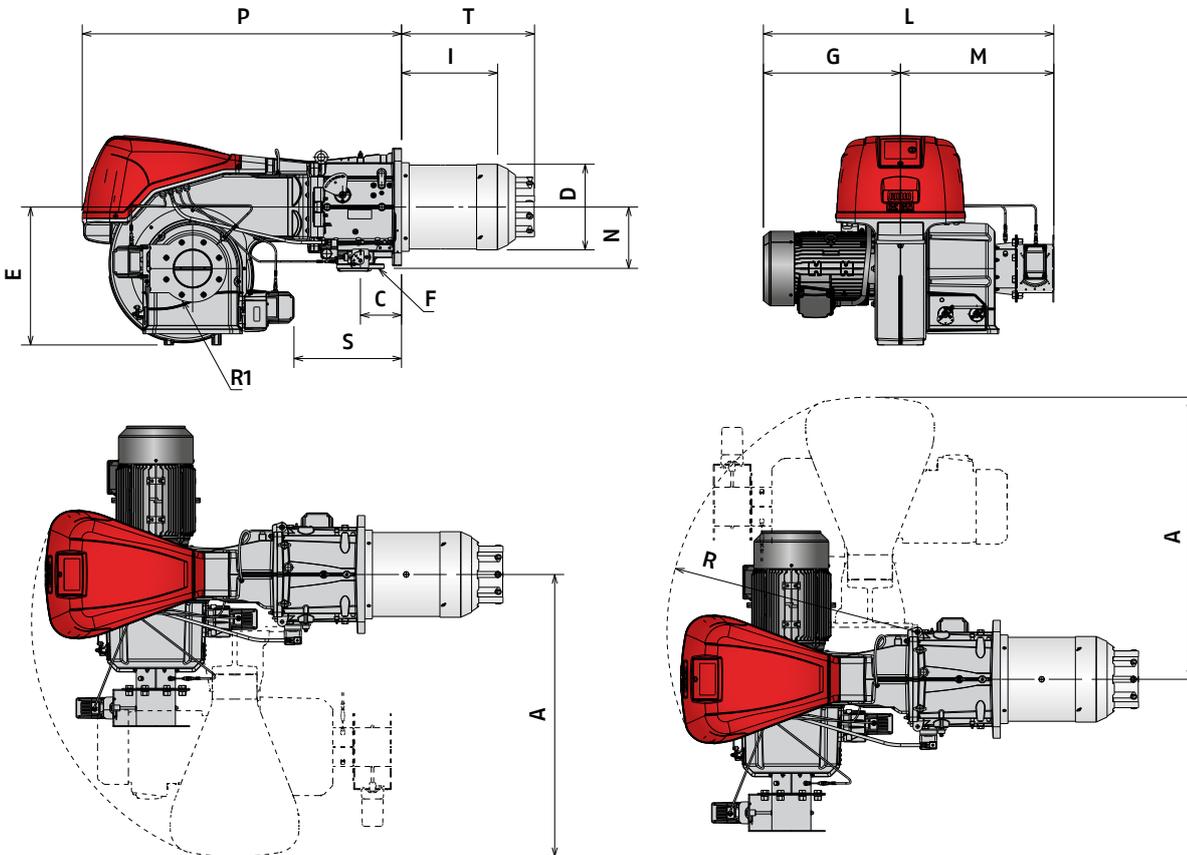


FIRING RATES

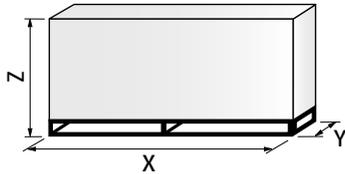
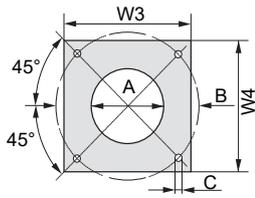
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen 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/Nm³ 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
VG D SERIES ONE STAGE GAS TRAIN					
VG D 65/1-FT 122	20140762*	(5)	DN65	(3)	20059331/(3010222+20059331) (6)
VG D 80/1-FT 122	20140763*		DN80	(3)	20059331/(3010222+20059331) (6)
VG D 100/1-FT 122	20169193*		DN100	(3)	20059332/(3010223+20059331) (6)
VG D 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 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 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/Nm³)
- 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, through the action of independent servomotors, allows the control of air, fuel and exhaust gas proportion in every working point, in order to reach very low NOx emissions, while maintaining high reliability 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

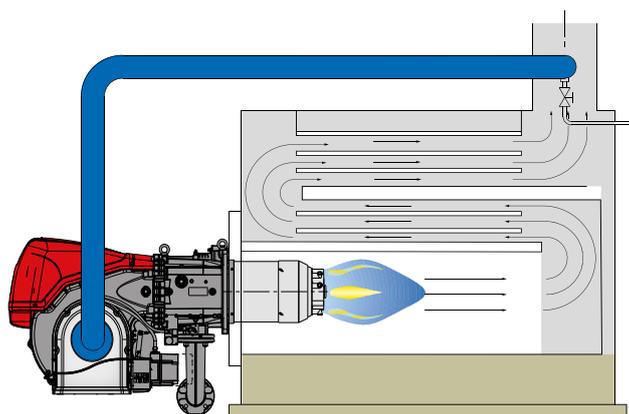
Description	Heat output natural gas		Total electrical power kW	Electric power supply V/Ph/Hz	Certification	Note	Code
	kW	Nm ³ /h					
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)							
RS 1000/E 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/Nm³.

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

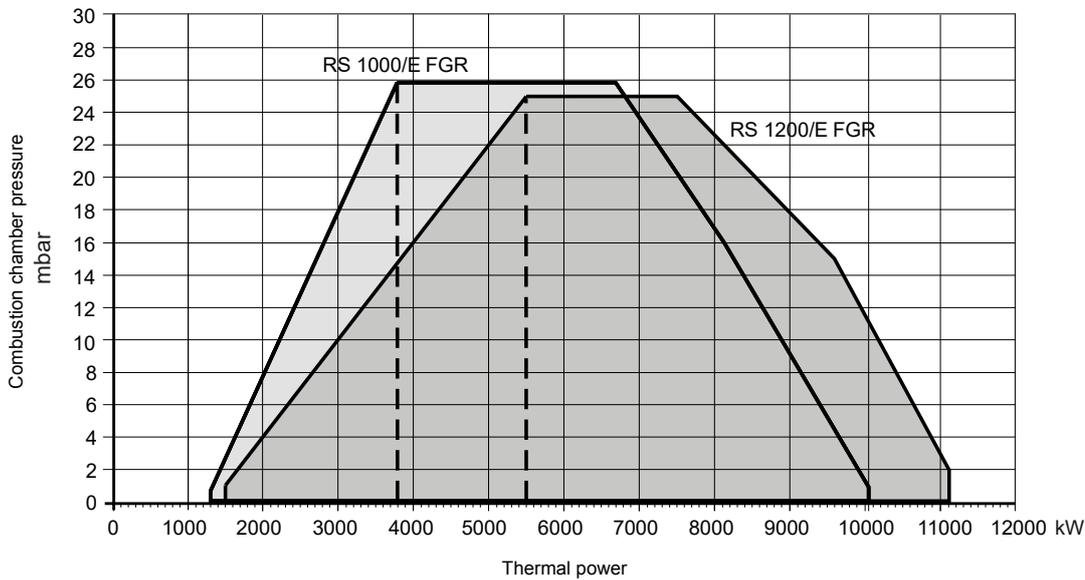
- (1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
- (2) Star delta fan motor starter.
- (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.

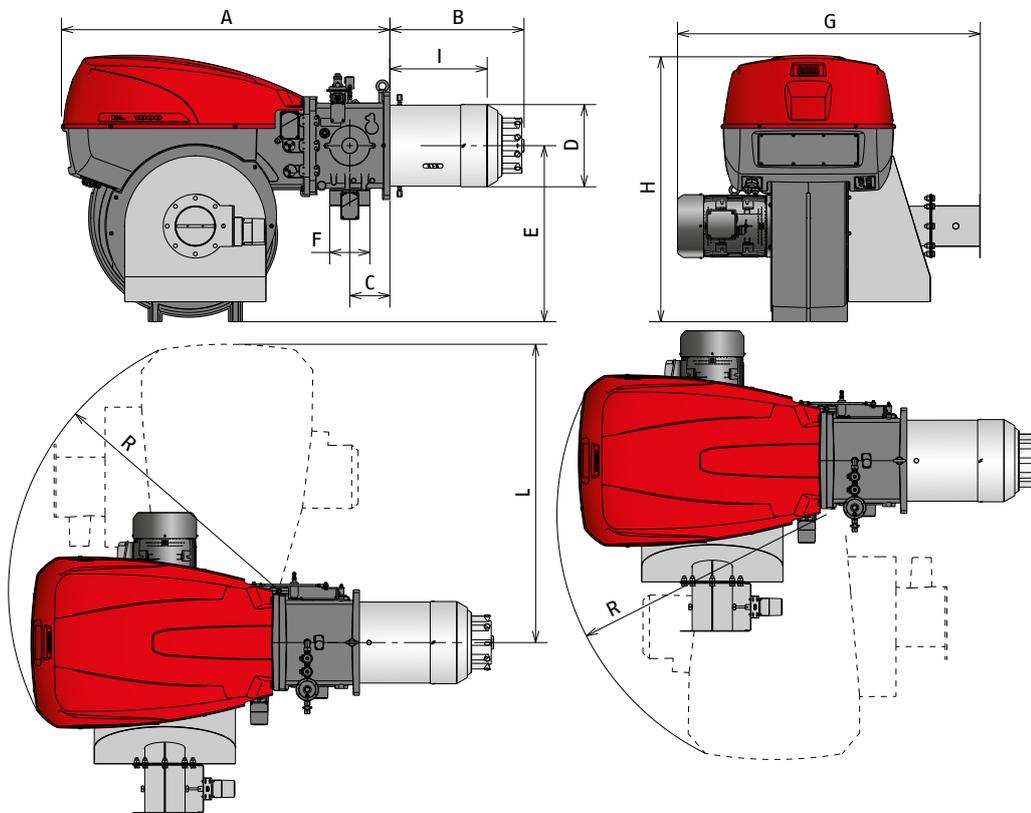


FIRING RATES

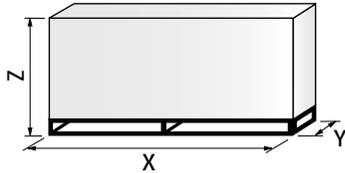
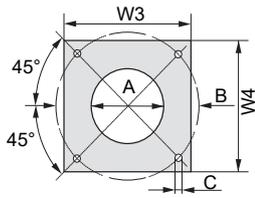
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen 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/Nm³ 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
VG D SERIES ONE STAGE GAS TRAIN					
VG D 80/1-FT 122	20140763*	DN80	(3)	20066268/(3010222+20066268) (5)	
VG D 100/1-FT 122	20169193*	DN100	(3)	20066278/(3010223+20066268) (5)	
VG D 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
	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/Nm³)
- 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, through the action of independent servomotors, allows the control of air, fuel and exhaust gas proportion in every working point, in order to reach very low NOx emissions, while maintaining high reliability 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

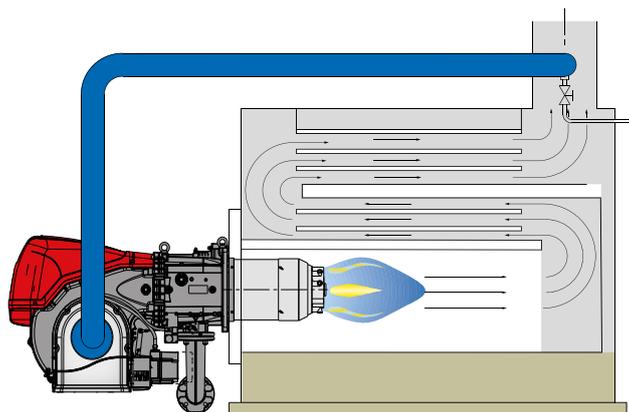
Description	Heat output natural gas		Total electrical power kW	Electric power supply V/Ph/Hz	Certification	Note	Code
	kW	Nm ³ /h					
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52)							
RS 1000/EV 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/Nm³.

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

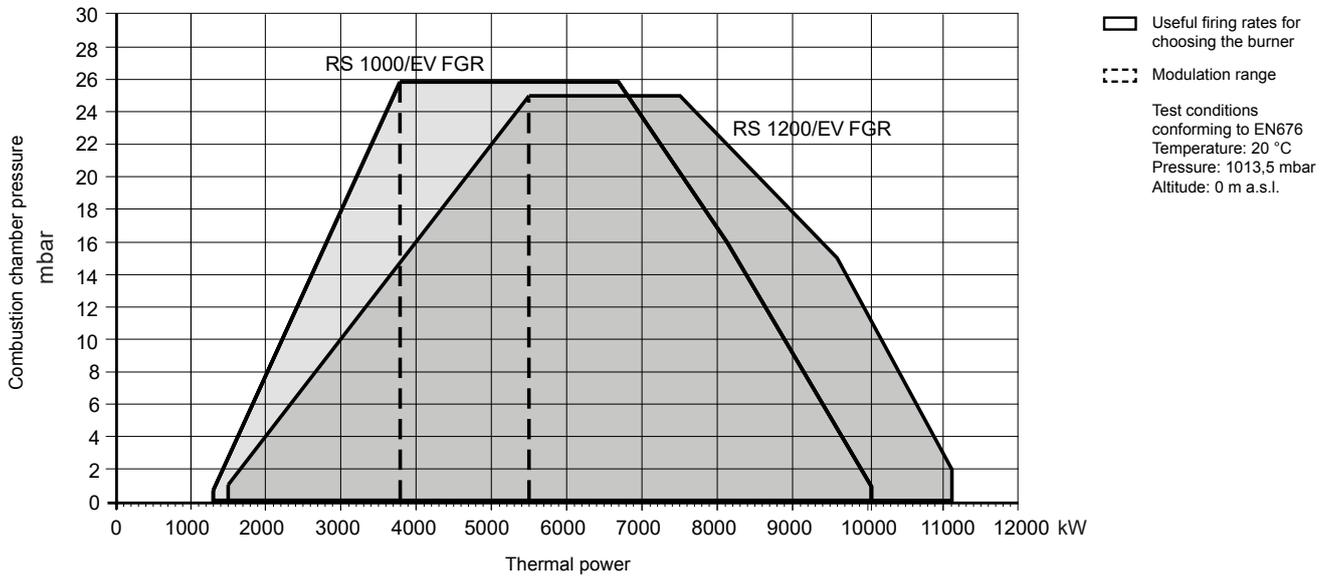
- (1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
- (2) The burners are factory set for 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.

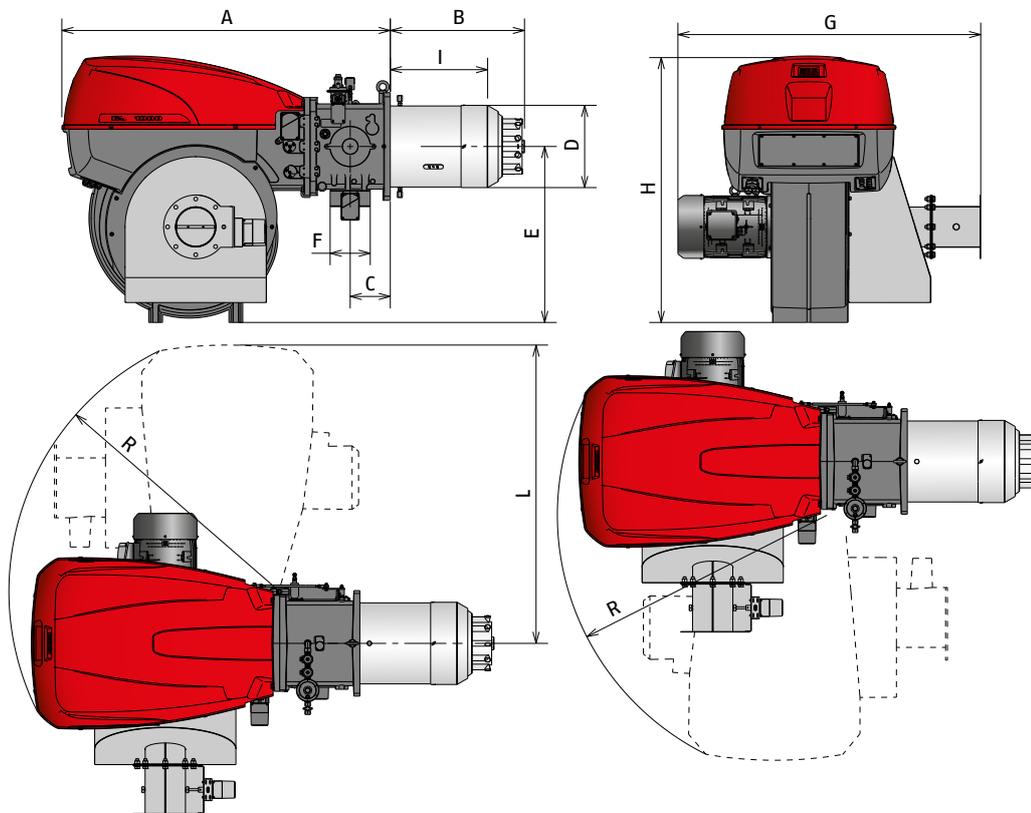


FIRING RATES

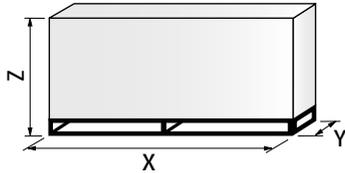
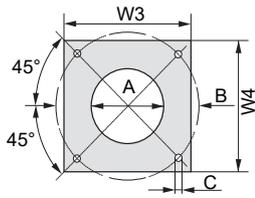
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen 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/Nm³ 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
VG D SERIES ONE STAGE GAS TRAIN					
VG D 80/1-FT 122	20140763*	DN80	(3)	20066268/(3010222+20066268) (5)	
VG D 100/1-FT 122	20169193*	DN100	(3)	20066278/(3010223+20066268) (5)	
VG D 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 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/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.	3010213 3010214 3090873
		Pressure (0-2.5 bar) with 4-20 mA output.	
		Pressure (0-16 bar) with 4-20 mA output.	
	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/Nm³)
- 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, through the action of independent servomotors, allows the control of air, fuel and exhaust gas proportion in every working point, in order to reach very low NOx emissions, while maintaining high reliability 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

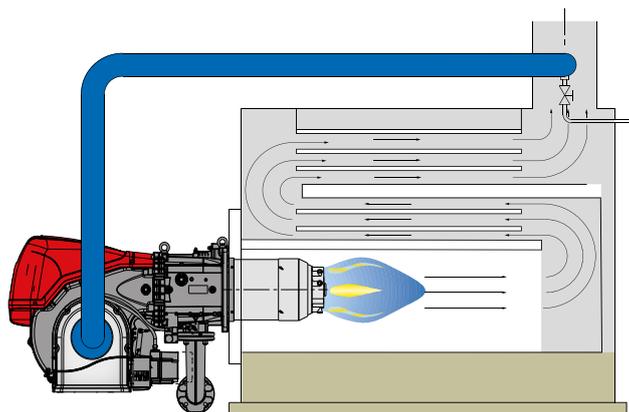
Description	Heat output natural gas		Total electrical power kW	Electric power supply V/Ph/Hz	Certification	Note	Code
	kW	Nm ³ /h					
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)							
RS 1300/E 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/Nm³.

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

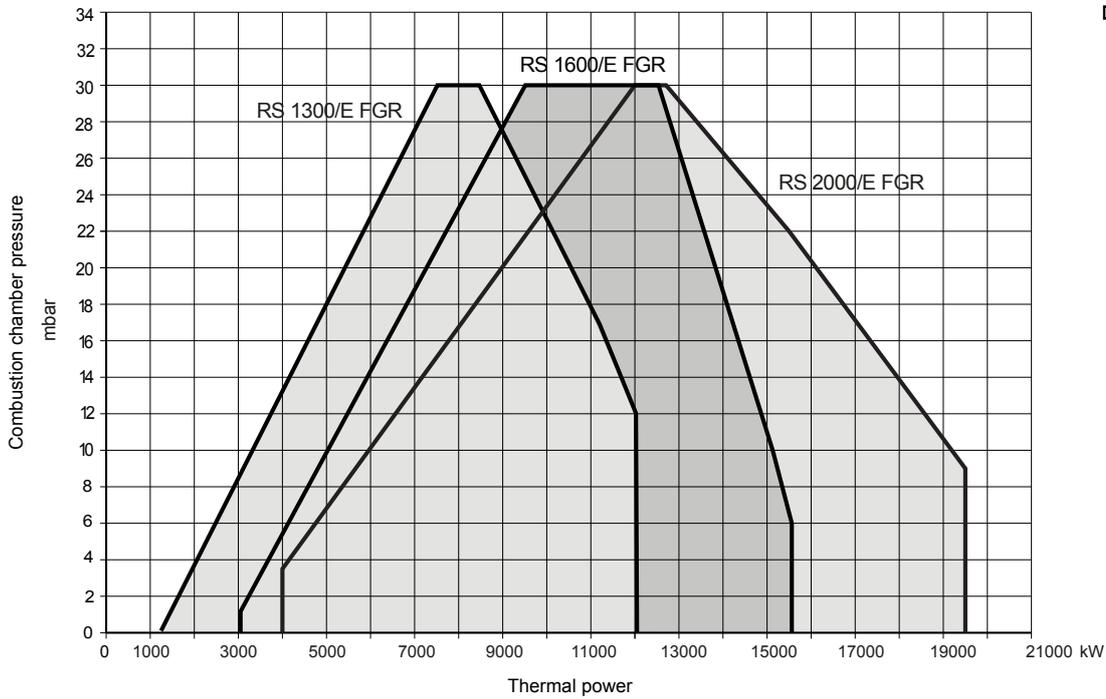
- (1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
- (2) Star delta fan motor starter.
- (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.

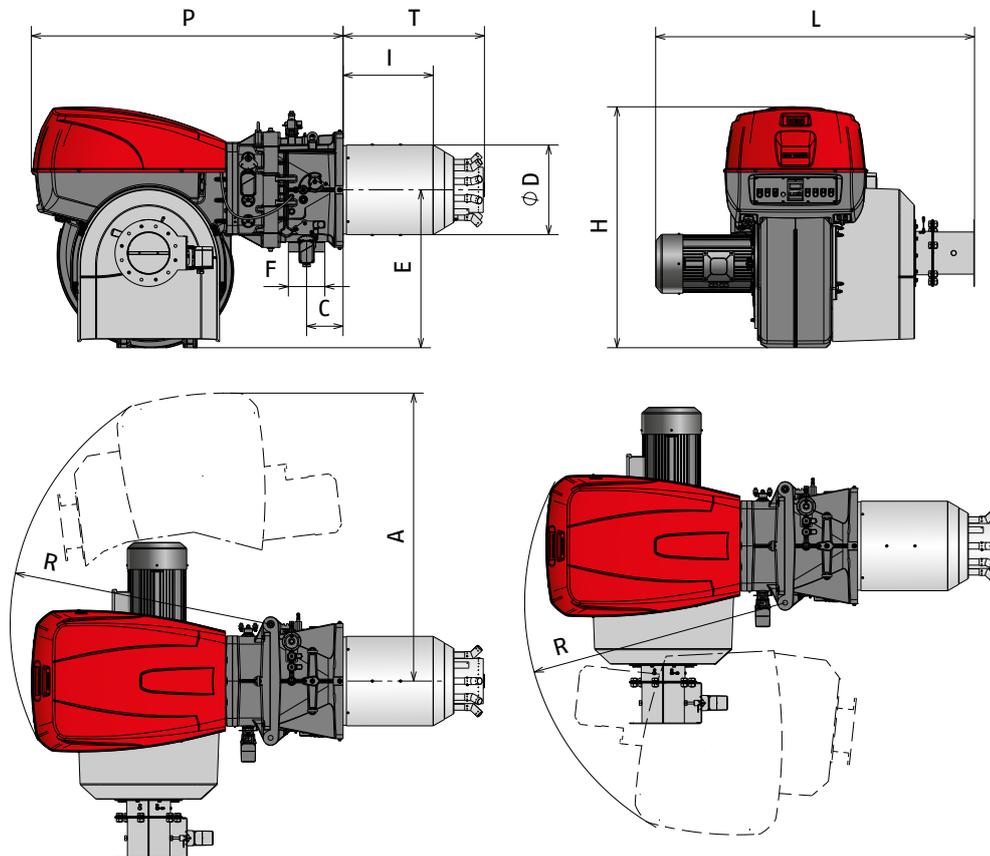


FIRING RATES

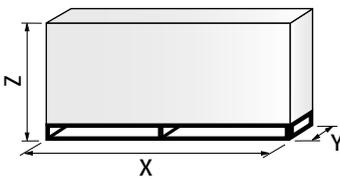
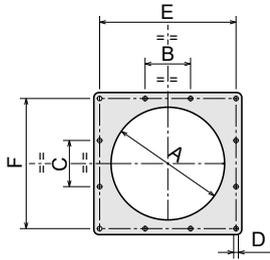
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen 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/Nm³ 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 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 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.	3010213
		Pressure (0-2.5 bar) with 4-20 mA output.	3010214
		Pressure (0-16 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
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- 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/Nm³)
- 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, through the action of independent servomotors, allows the control of air, fuel and exhaust gas proportion in every working point, in order to reach very low NOx emissions, while maintaining high reliability 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

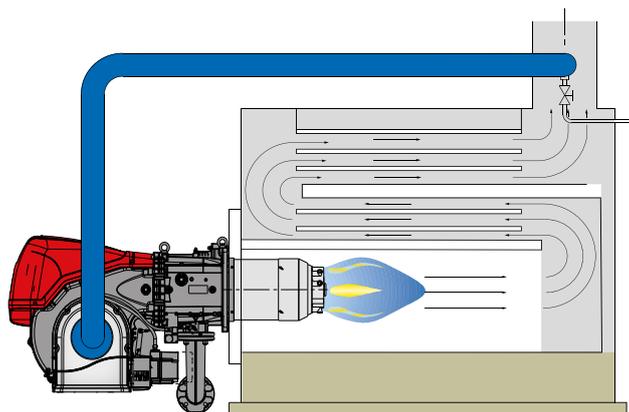
Description	Heat output natural gas		Total electrical power kW	Electric power supply V/Ph/Hz	Certification	Note	Code
	kW	Nm ³ /h					
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52)							
RS 1300/EV 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/Nm³.

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

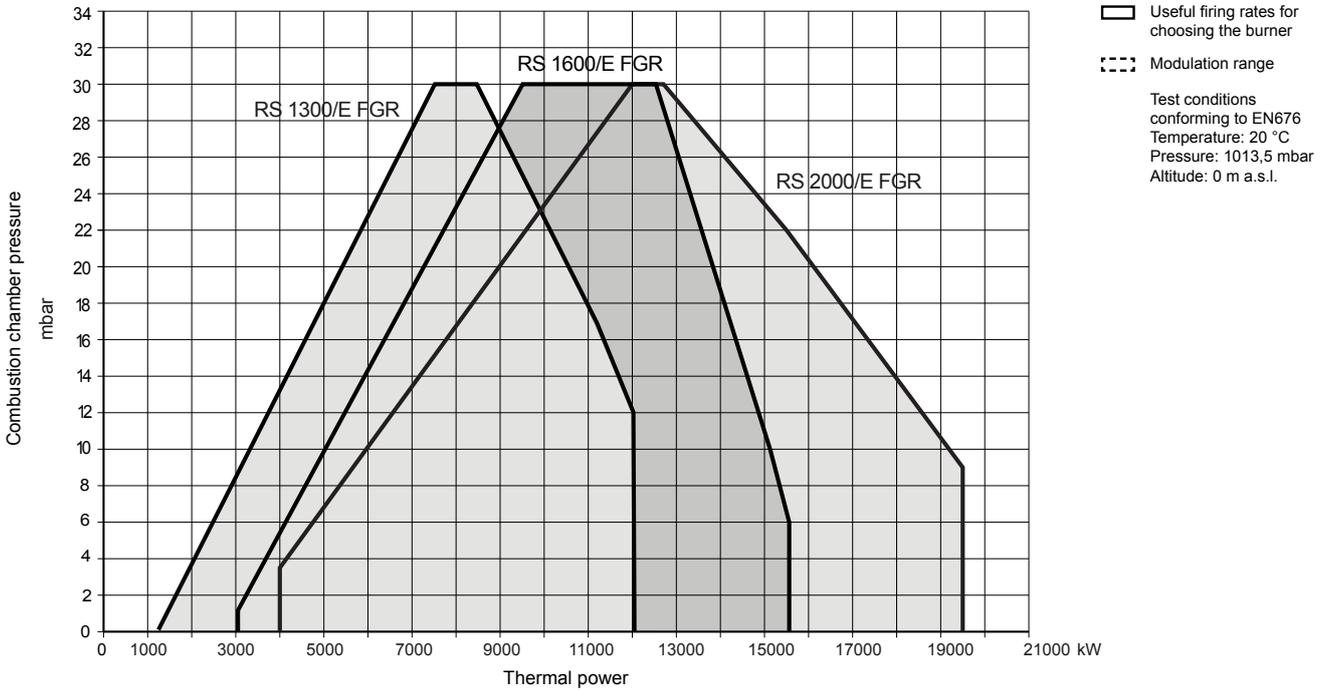
- (1) Power range referred to a Low NOx performance conforming to the Class 3 of EN676 European Standard, with 0% of Flue Gas Recirculation; by increasing the recirculation % in order to achieve an Ultra Low NOx emission the burner's maximum output will be reduced.
- (2) The burners are factory set for 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.

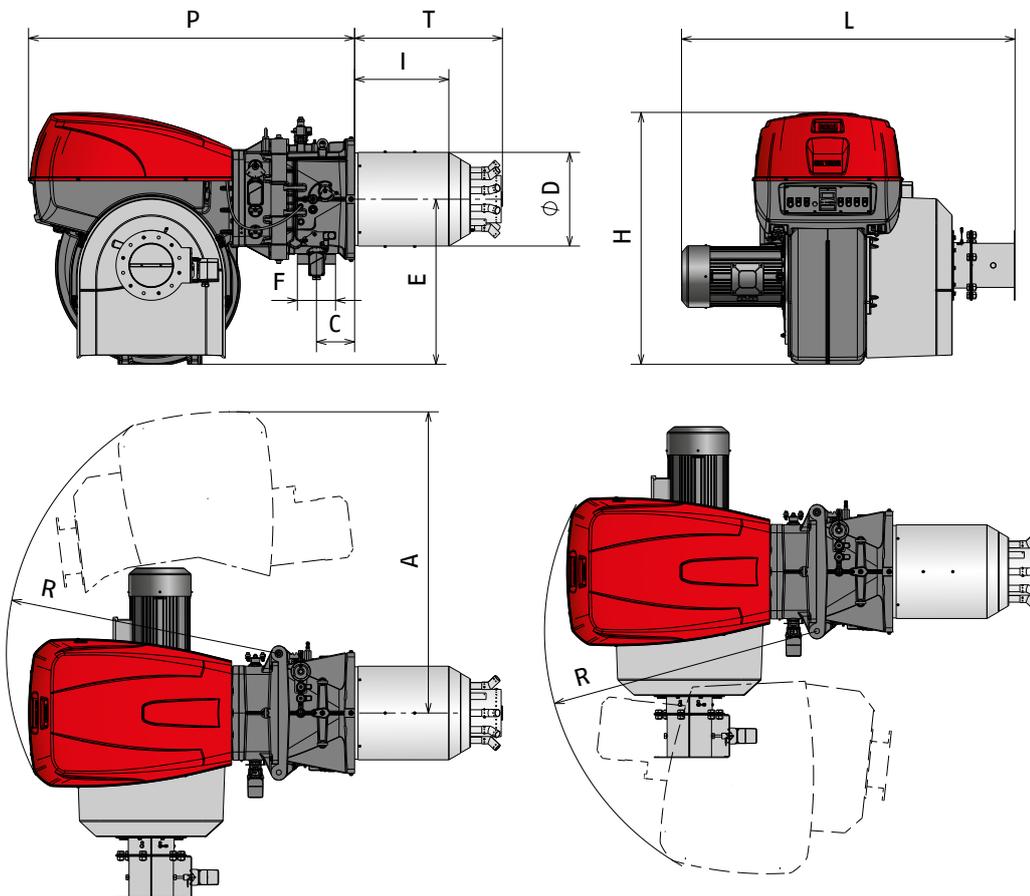


FIRING RATES

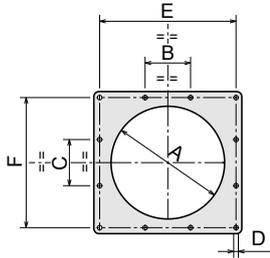
Please note: it is important to be aware that the use of the Flue Gas Recirculation (FGR) function, in order to achieve an Ultra Low NOx emission performance, might lower the burner's maximum output, because the maximum amount of combustion air that can be introduced will be reduced, and so the oxygen 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/Nm³ will involve a maximum output reduction of at list 20%.



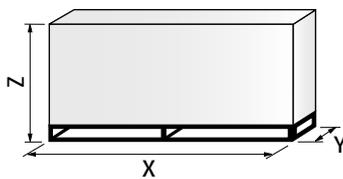
OVERALL DIMENSIONS



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 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 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.	3010213
		Pressure (0-2.5 bar) with 4-20 mA output.	3010214
		Pressure (0-16 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL



- 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		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 O₂ 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 O₂ 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 O₂ 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 O₂ 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.

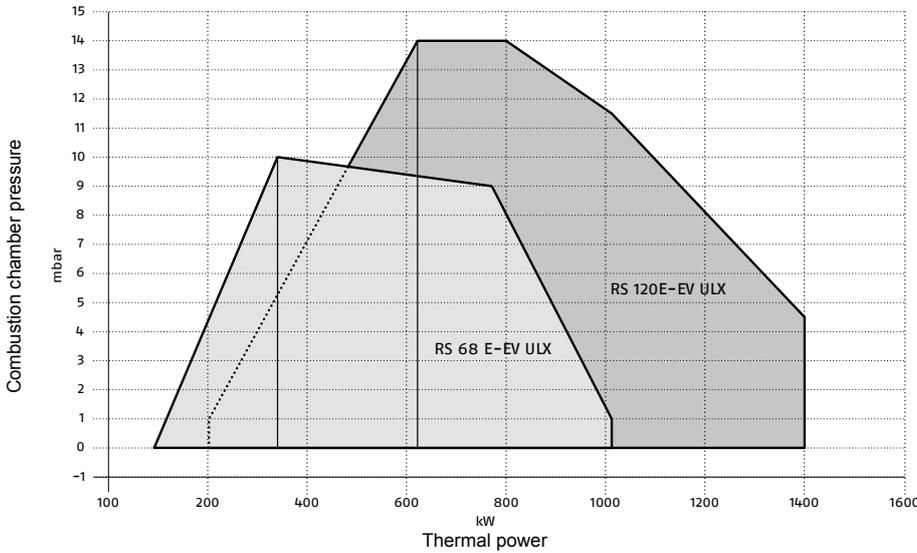
(1) Model with terminal board.

(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)

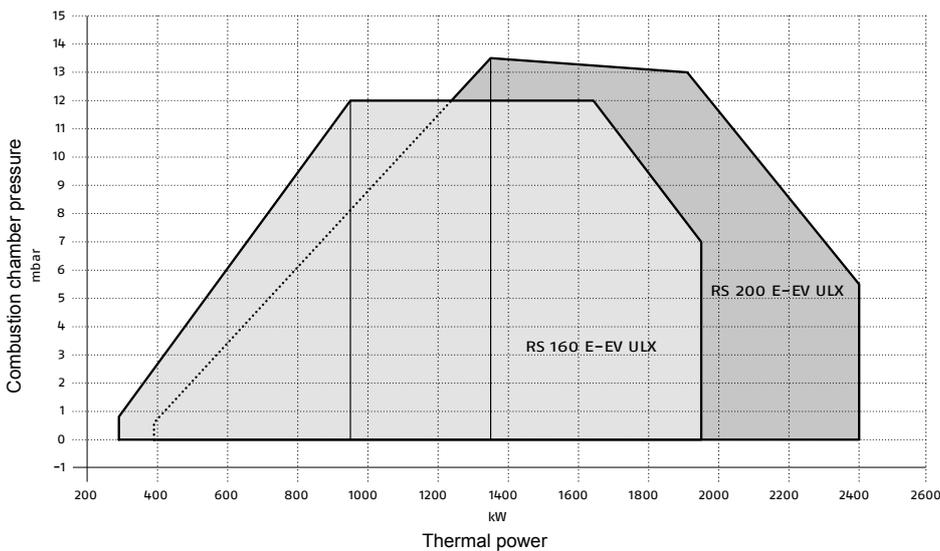
(3) Frequency Inverter, to be ordered as separated accessory; please refer to "Burner Accessories" paragraph.

(4) Seal control function is included on Burner 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

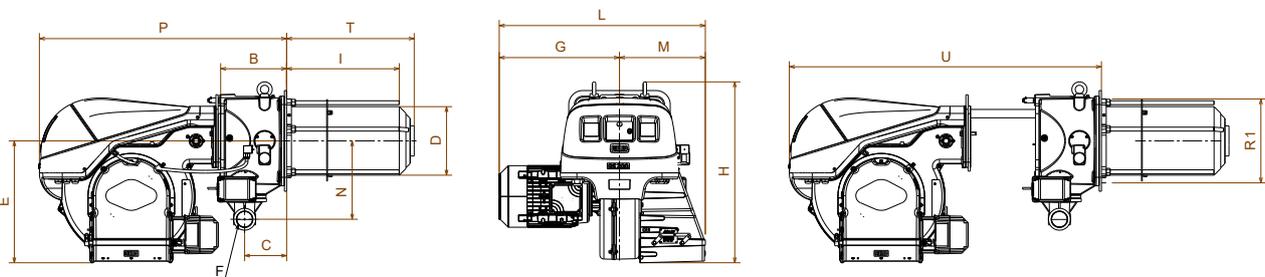


Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.



OVERALL DIMENSIONS

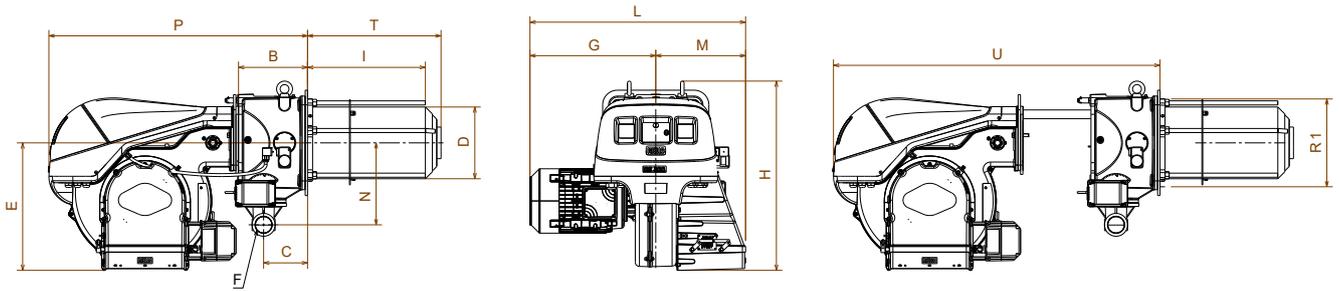
RS 68-200/E ULX WITH REC27 CONTROL BOX



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

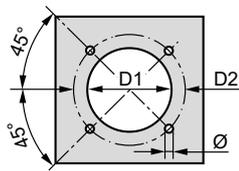
(1) Length with extended combustion head.
 (*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

RS 68-200/E ULX WITH LMV52 CONTROL BOX

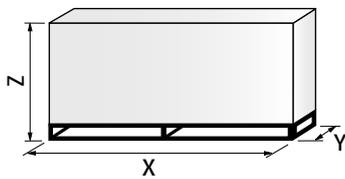


Model	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	P mm	R1 mm	T mm	U mm
RS 68/E O₂ ULX	234	149	189	425	2"	303	607	330	539	236	260	861	240	374	1245
RS 120/E O₂ ULX	234	149	189	425	2"	329	607	330	565	236	260	861	240	374	1245
RS 160/E O₂ ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446
RS 200/E O₂ 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

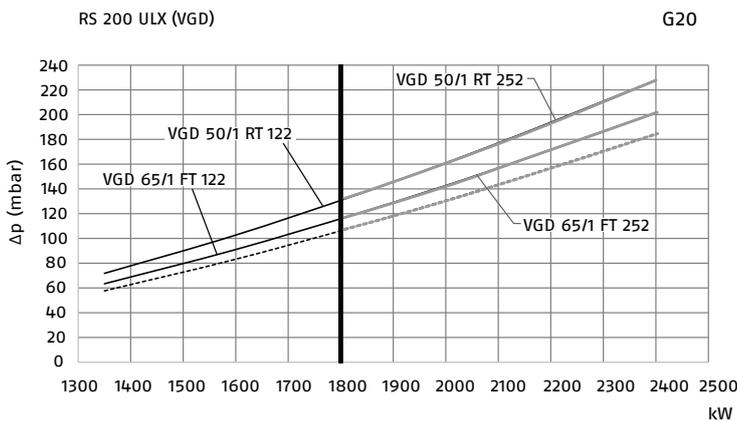
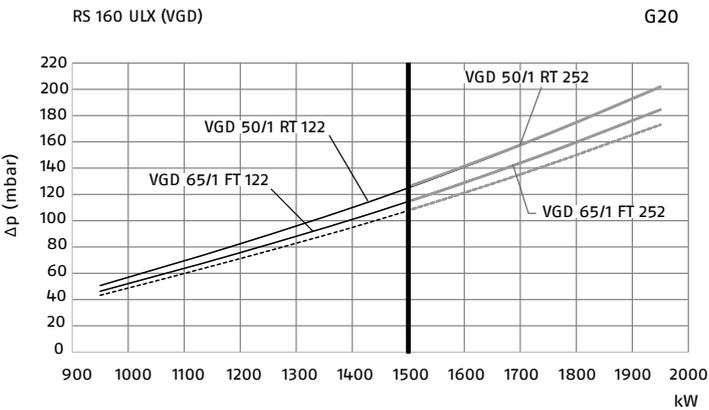
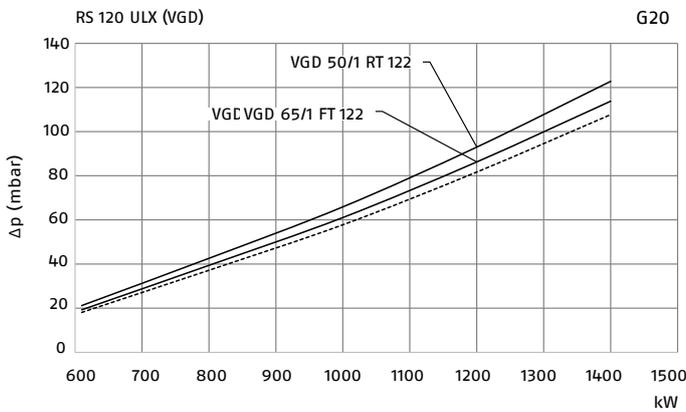
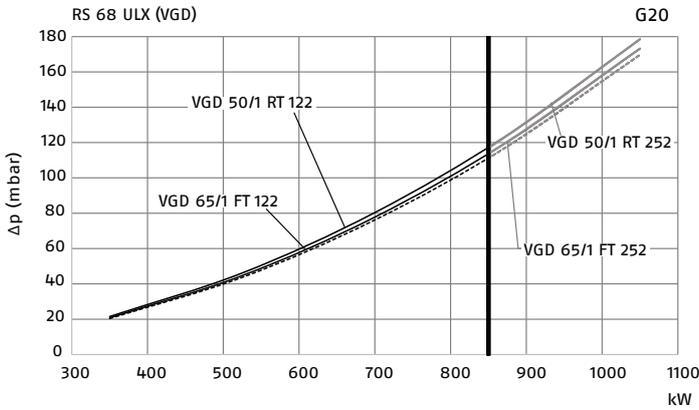
VGD SERIES GAS TRAIN

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL



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. RWF 55.5 - Plus version.		20099869 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. Pressure (0-16 bar) with 4-20 mA output. Pressure (0-25 bar) with 4-20 mA output.		3010213 3010214 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 analyzer 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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.

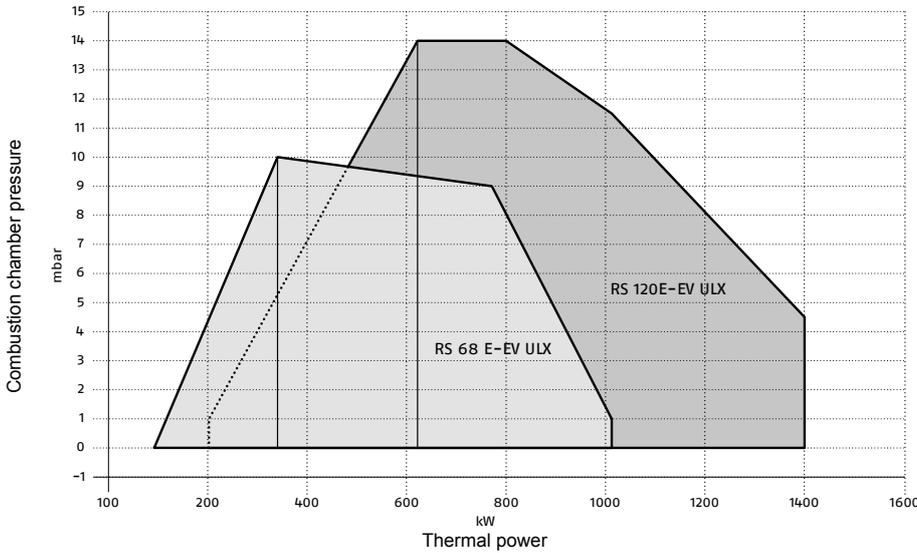
Power range referred to a Low NOx performance conforming to class 4 EN 676

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

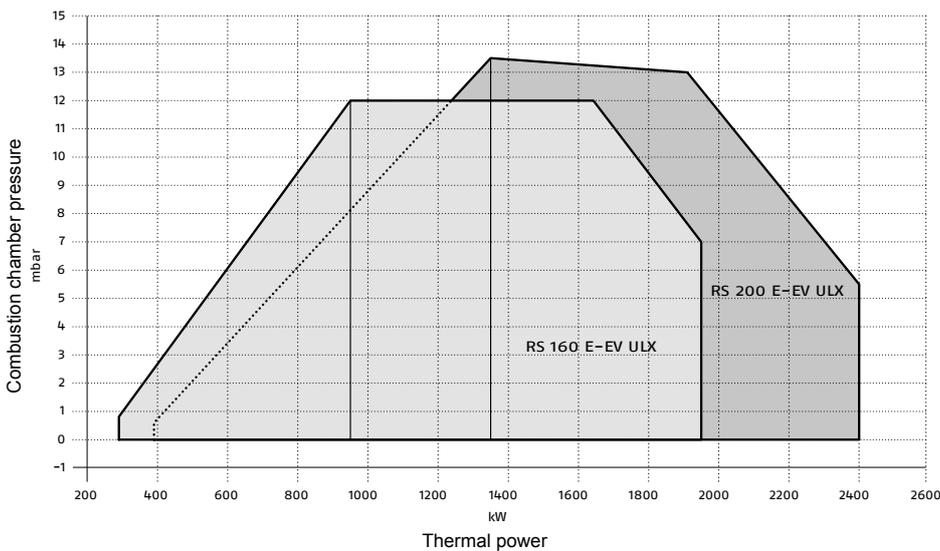
FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours). The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the 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 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

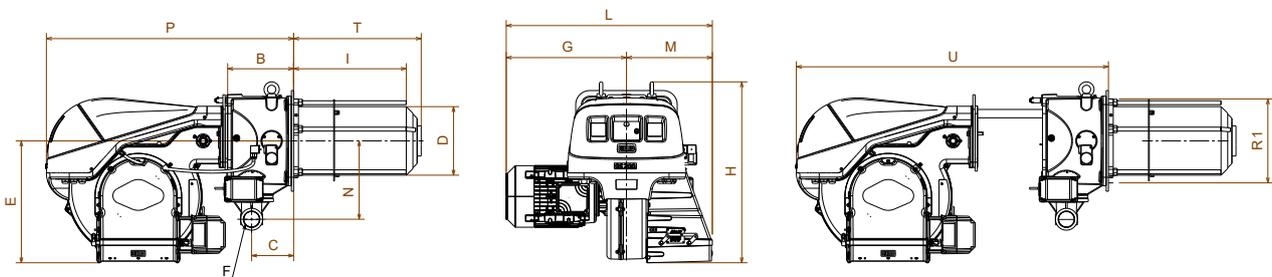


Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.



OVERALL DIMENSIONS

RS 68-200/EV ULX WITH REC37 CONTROL BOX

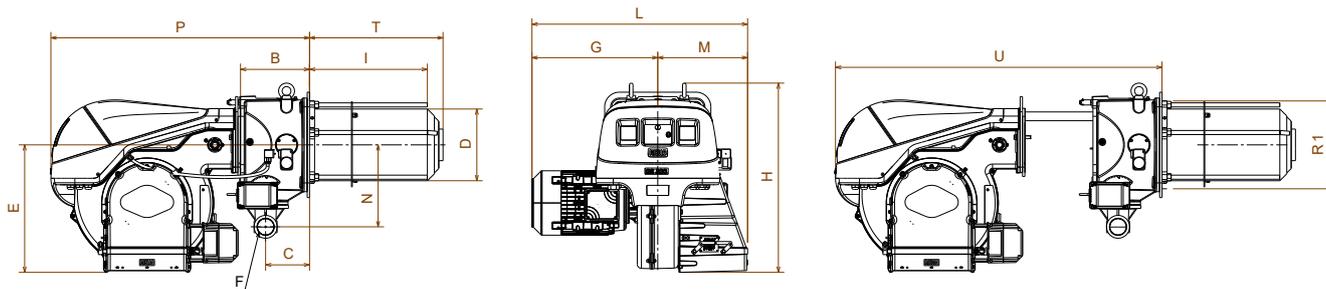


Model	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	P mm	R1 mm	T mm	U mm
RS 68/EV ULX	234	149	189	425	2"	303	607	330	539	236	260	861	240	374	1245
RS 120/EV ULX	234	149	189	425	2"	329	607	330	565	236	260	861	240	374	1245
RS 160/EV ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446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

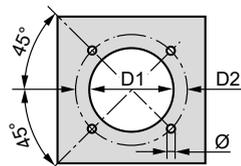
GAS



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 O₂ ULX	234	149	189	425	2"	303	607	330	539	236	260	861	240	374	1245
RS 120/EV O₂ ULX	234	149	189	425	2"	329	607	330	565	236	260	861	240	374	1245
RS 160/EV O₂ ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446
RS 200/EV O₂ ULX	234	149	245	436	2"	427	646	400	732	305	280	877	300	453	1446

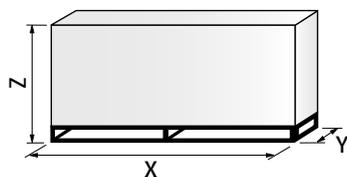
- (1) Length with extended combustion head.
- (*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

LIGHT OIL



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

DUAL FUEL



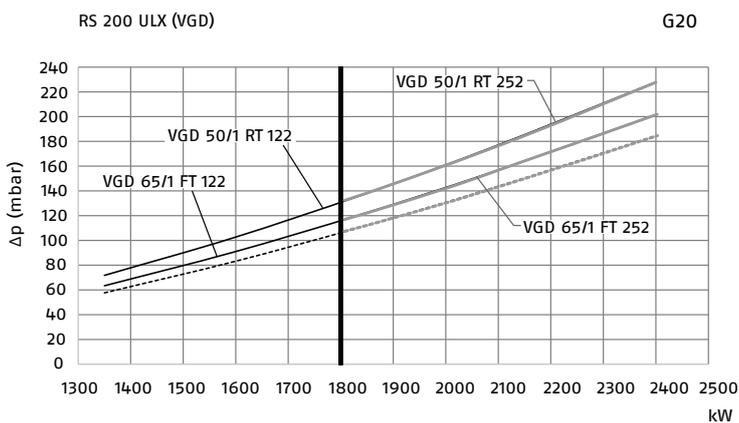
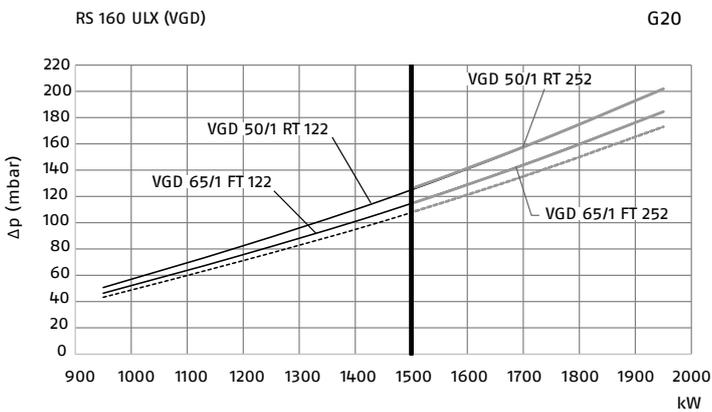
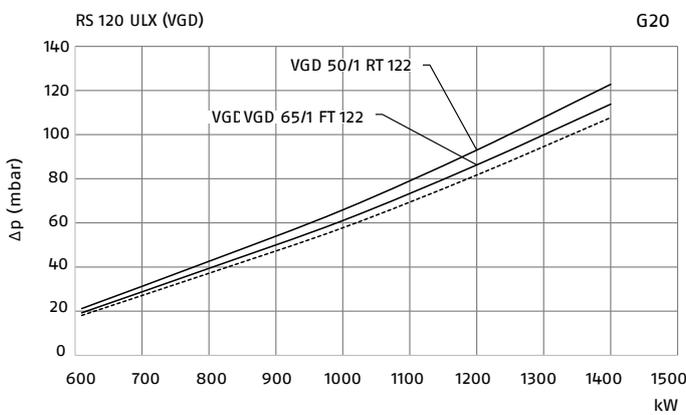
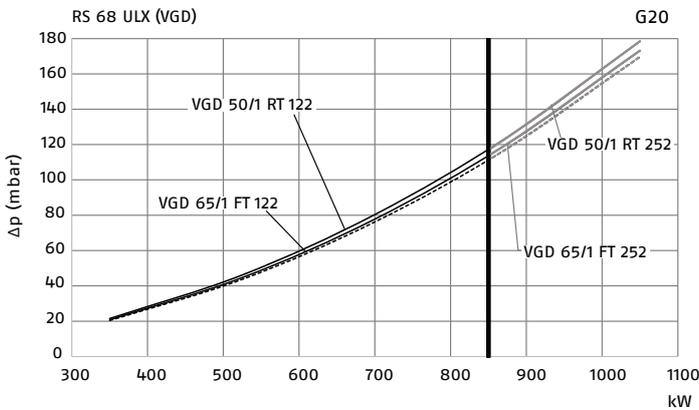
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 68/E ULX	1400	700	810	90
RS 120/E ULX	1400	700	810	100
RS 160/E ULX	1500	1000	810	130
RS 200/E ULX	1500	1000	810	130

- (1) Dimension with standard and extended head.

HEAVY OIL

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	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.

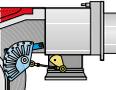
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

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 analyzer 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.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		PhV/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 - O₂ CONTROL READY)								
RS 310/E O₂ 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 O₂ 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 O₂ 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).

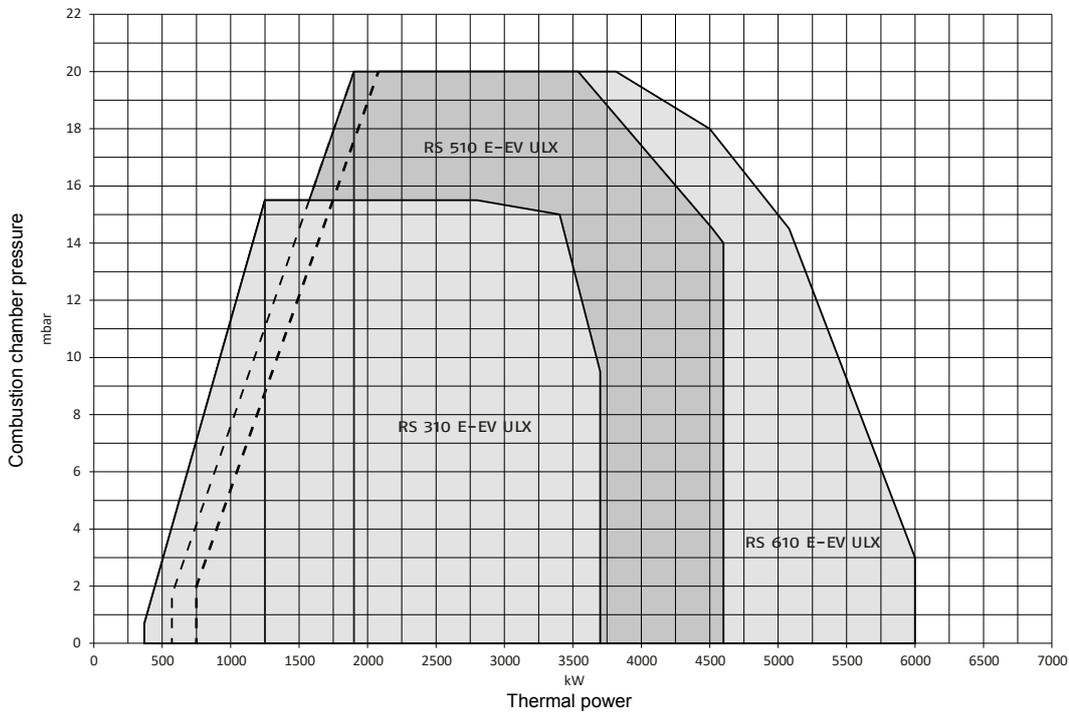
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

(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).

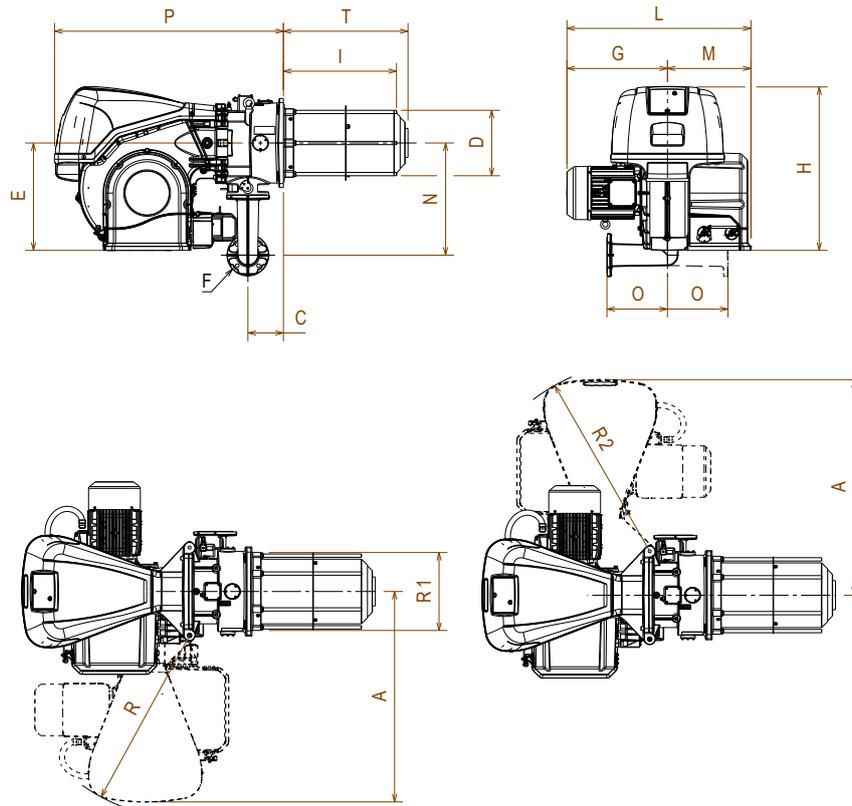
(3) The QGO2 oxygen analyzer with relevant probe must be ordered as Accessory (see Accessories paragraph)..

FIRING RATES



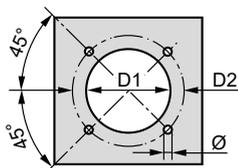
Useful firing rates for choosing the burner
Modulation range
Test conditions conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

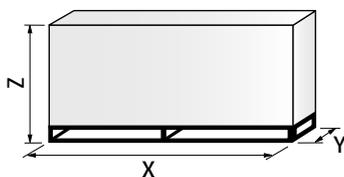


Description	A mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	R mm	R1 mm	R2 mm	T mm
MODELS WITH ELECTRONIC CAM (REC 27-37)																	
RS 310/E ULX	1015	176	312	518	DN65-DN80	480	790	525	880	400	541	290	1104	886	376	886	590
RS 510/E ULX	1015	176	312	518	DN65-DN80	527	790	525	927	400	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) - O ₂ CONTROL READY																	
RS 310/E O₂ ULX	1015	176	312	518	DN65-DN80	480	790	525	880	400	541	290	1104	886	376	886	590
RS 510/E O₂ ULX	1015	176	312	518	DN65-DN80	527	790	525	927	400	541	290	1104	886	376	886	590
RS 610/E O₂ 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

GAS

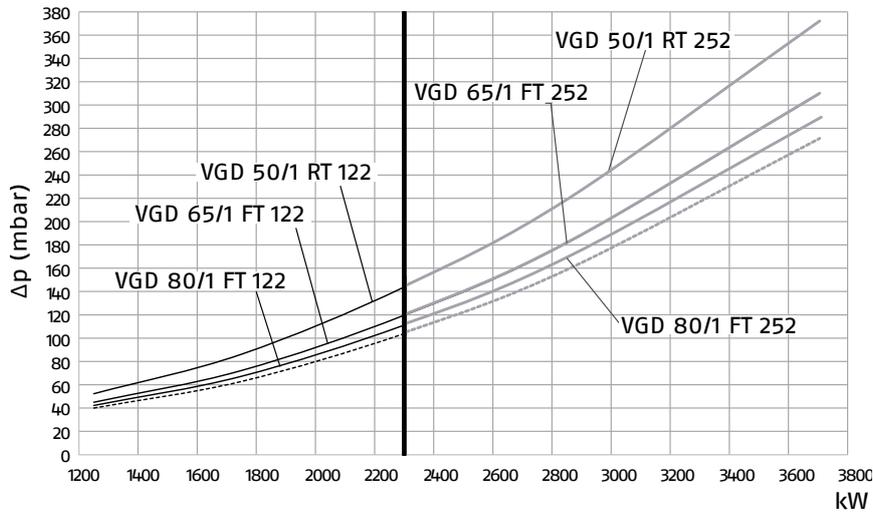
LIGHT OIL

DUAL FUEL

HEAVY OIL

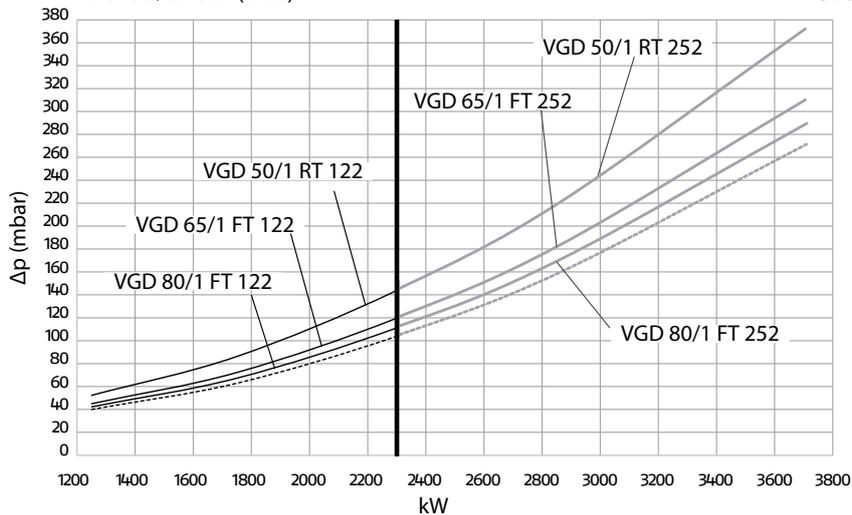
RS 310 E/EV ULX (VGD)

G20



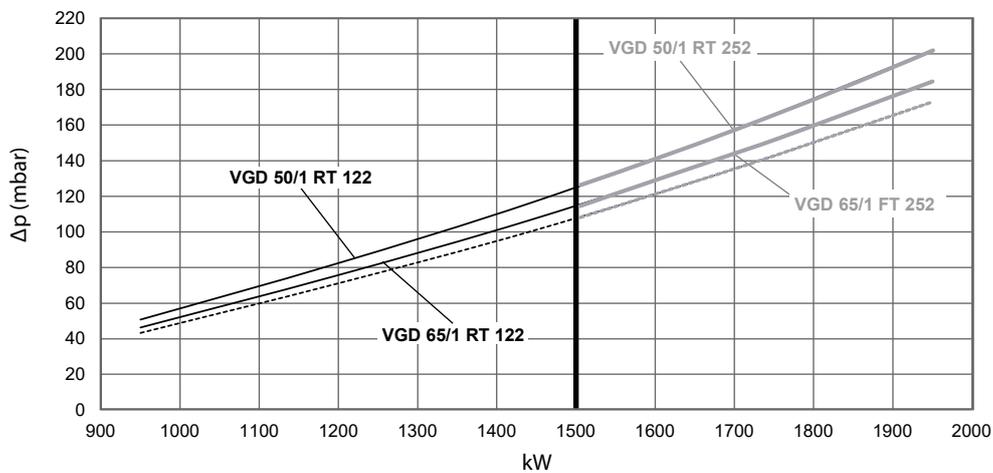
RS 510 E/EV ULX (VGD)

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 (QGO₂) FOR BURNERS The QGO ₂ is an oxygen analyzer 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		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).

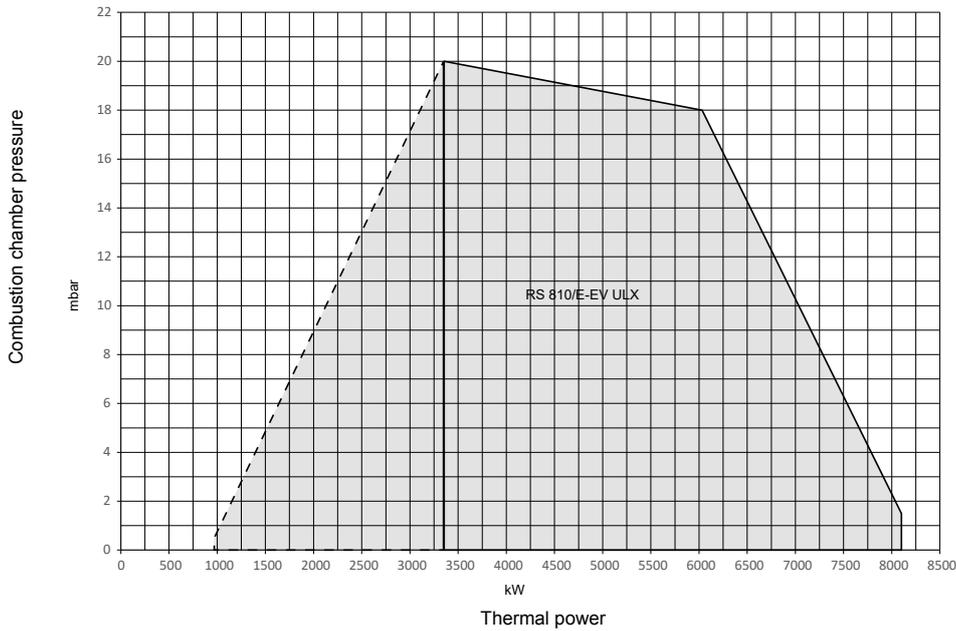
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

(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).

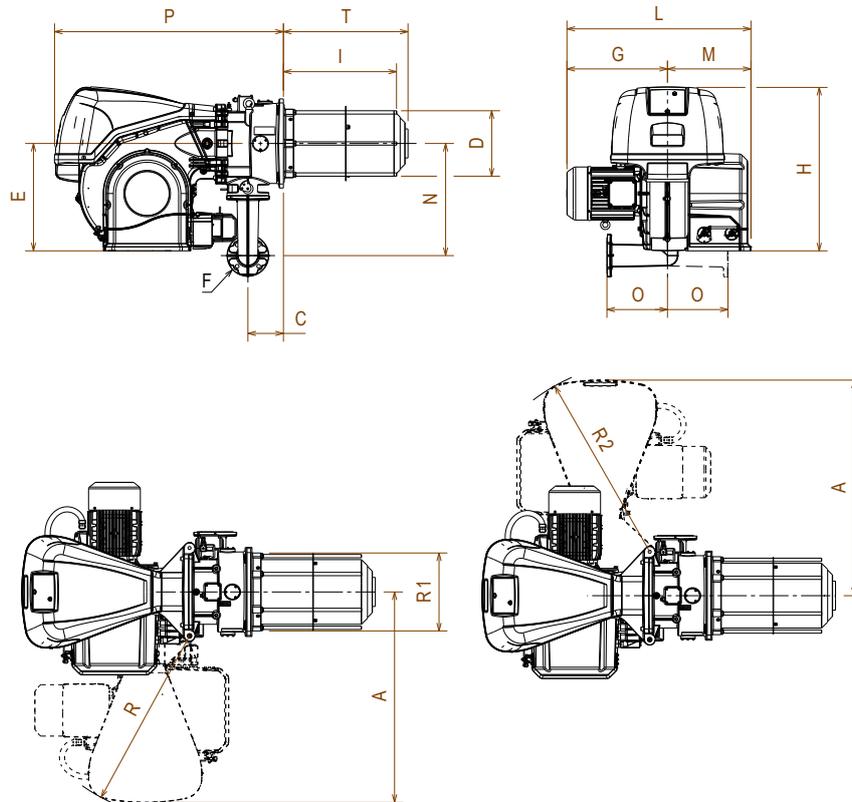
(3) The QGO2 oxygen analyzer with relevant probe must be ordered as Accessory (see Accessories paragraph).

FIRING RATES



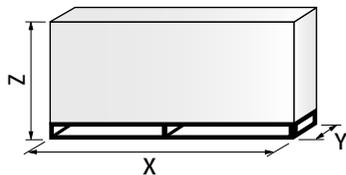
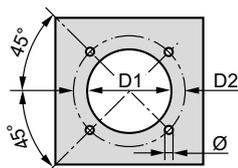
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

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 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 O₂ 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

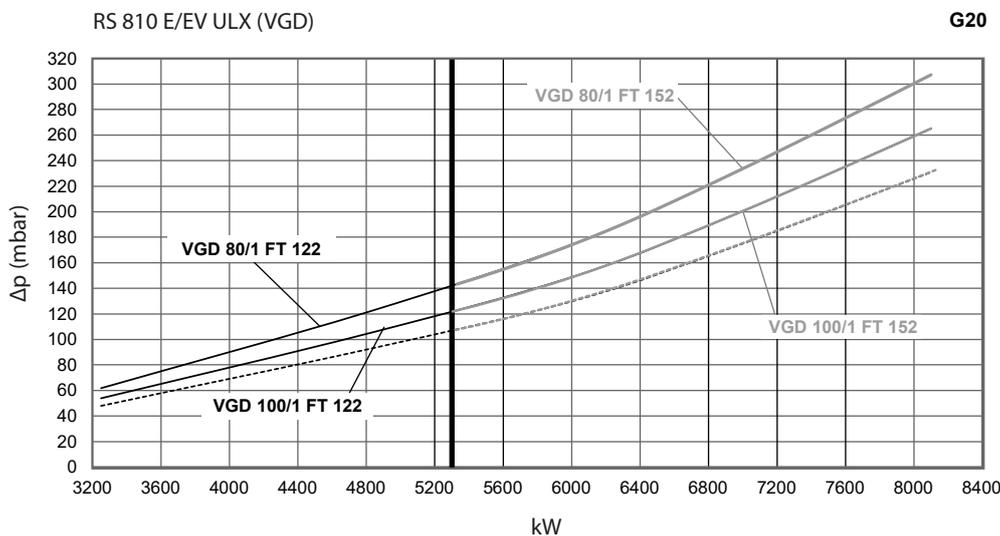


Description	D1 mm	D2 mm	Ø mm
RS 810/E ULX	480	608	M18

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 is 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.		3010213
		Pressure (0-2.5 bar) with 4-20 mA output.		3010214
		Pressure (0-16 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 analyzer 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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 O₂ 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 O₂ 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 O₂ 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).

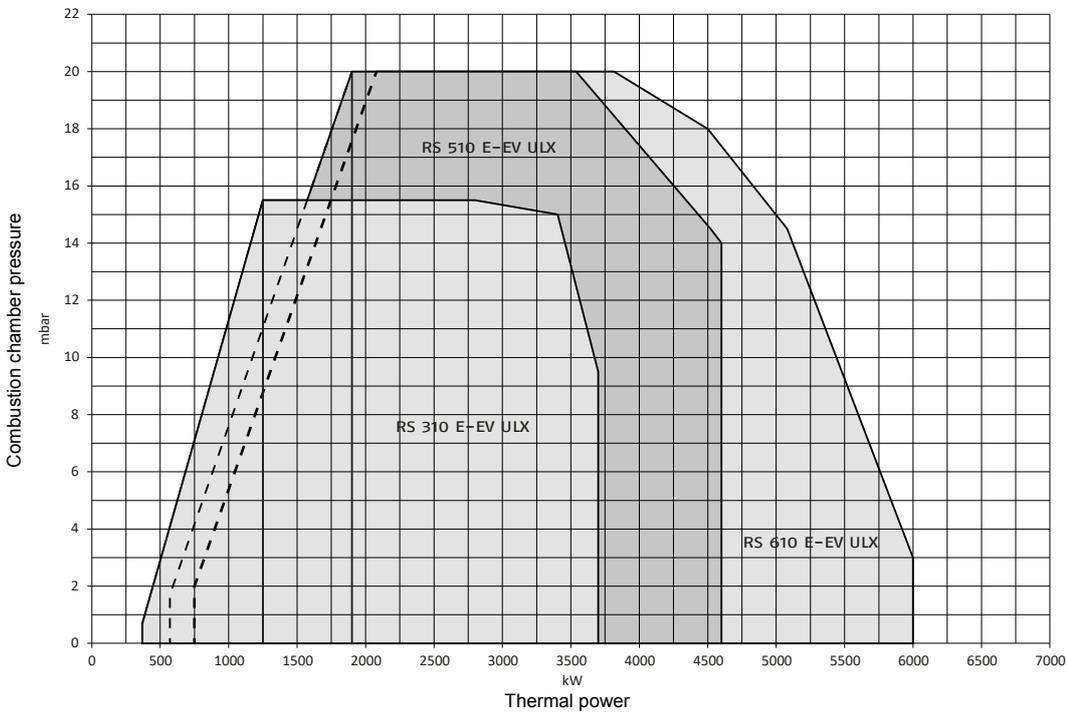
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

(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 analyzer 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.

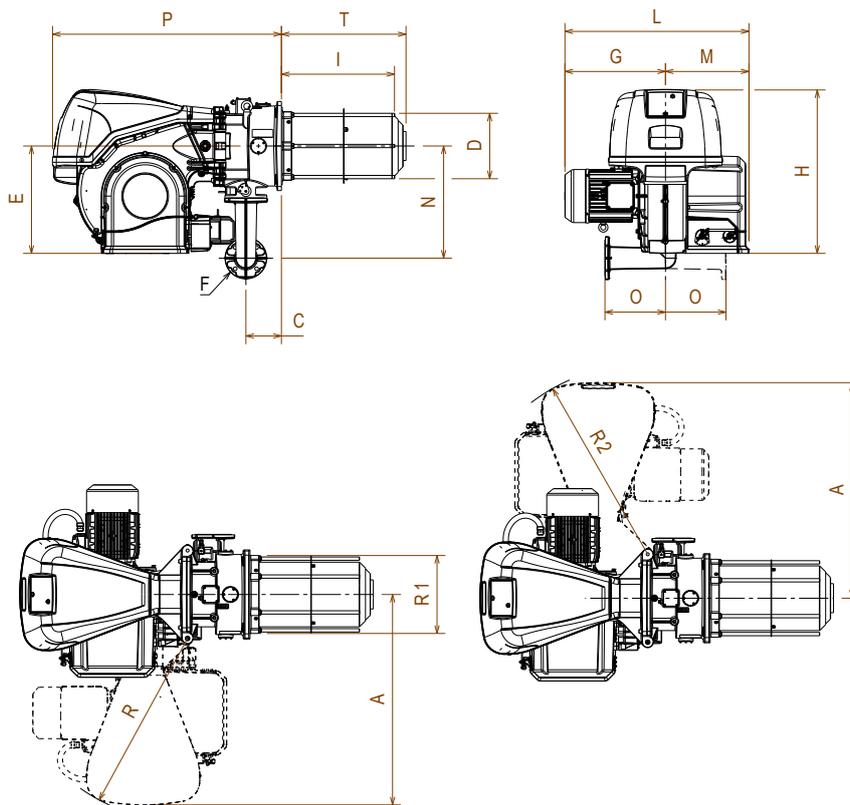
OVERALL DIMENSIONS

GAS

LIGHT OIL

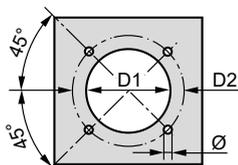
DUAL FUEL

HEAVY OIL

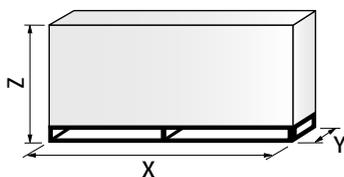


Description	A mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	R mm	R1 mm	R2 mm	T mm
MODELS WITH ELECTRONIC CAM (REC 27-37)																	
RS 310/EV ULX	1015	176	312	518	DN65-DN80	511	790	525	911	400	541	290	1186	966	376	966	590
RS 510/EV ULX	1015	176	312	518	DN65-DN80	559	790	525	959	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.



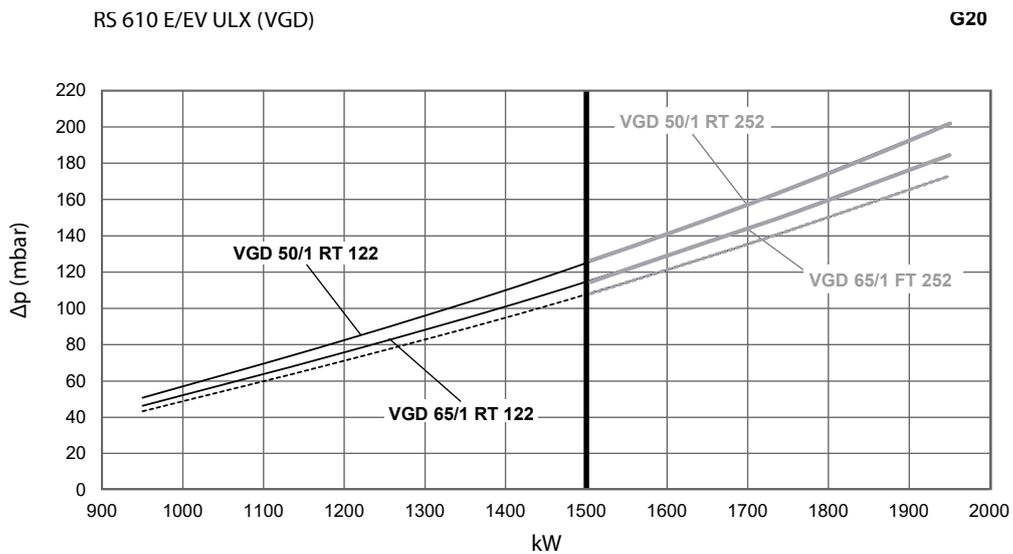
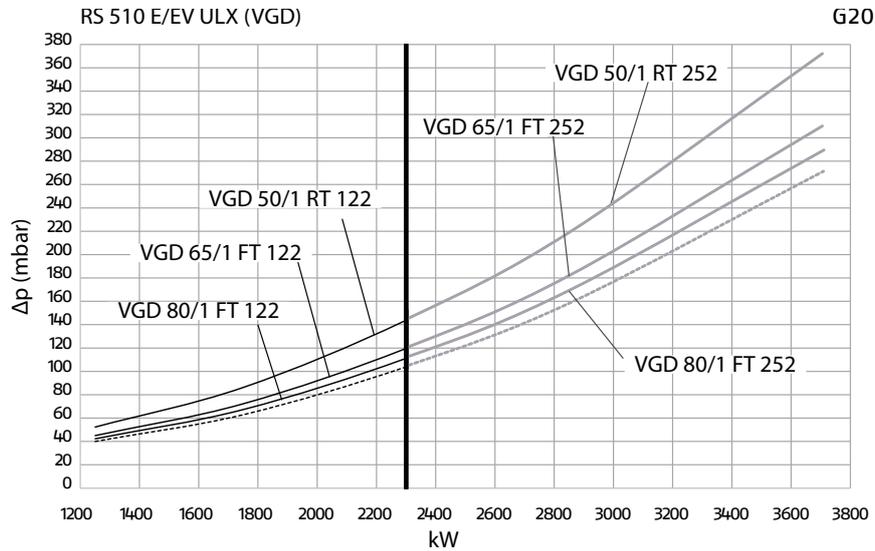
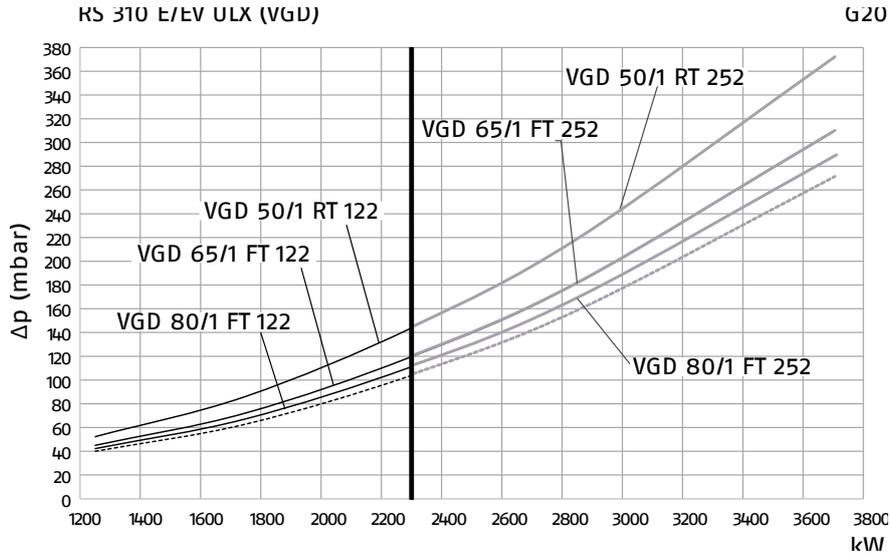
Description	D1 mm	D2 mm	Ø mm
RS 310/EV ULX	390	452	M18
RS 510/EV ULX	390	452	M18
RS 610/EV ULX	480	608	M18



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



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 is 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 QGO ₂ is an oxygen analyzer 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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 O₂ 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.

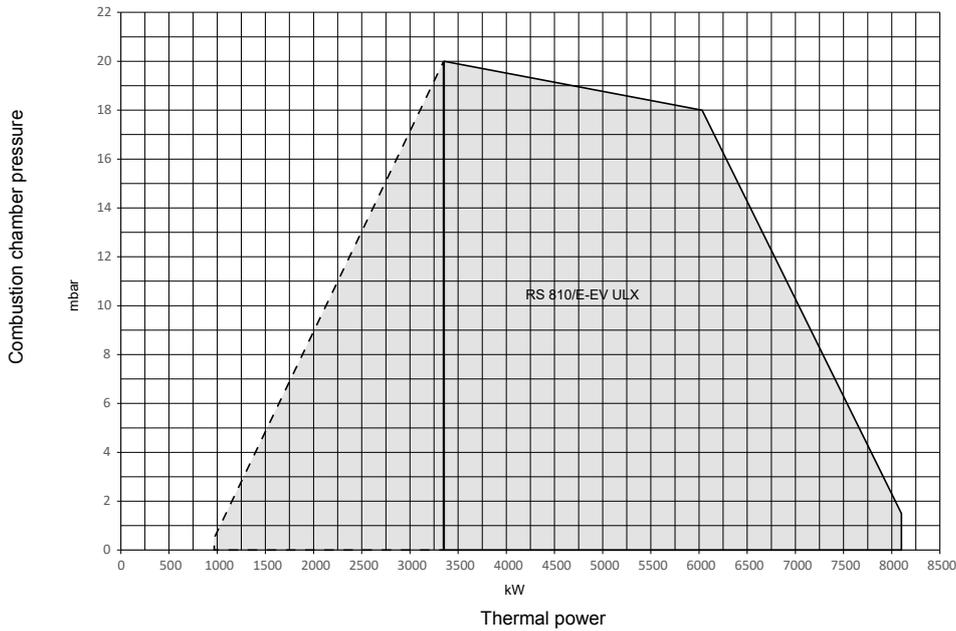
FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours).

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.

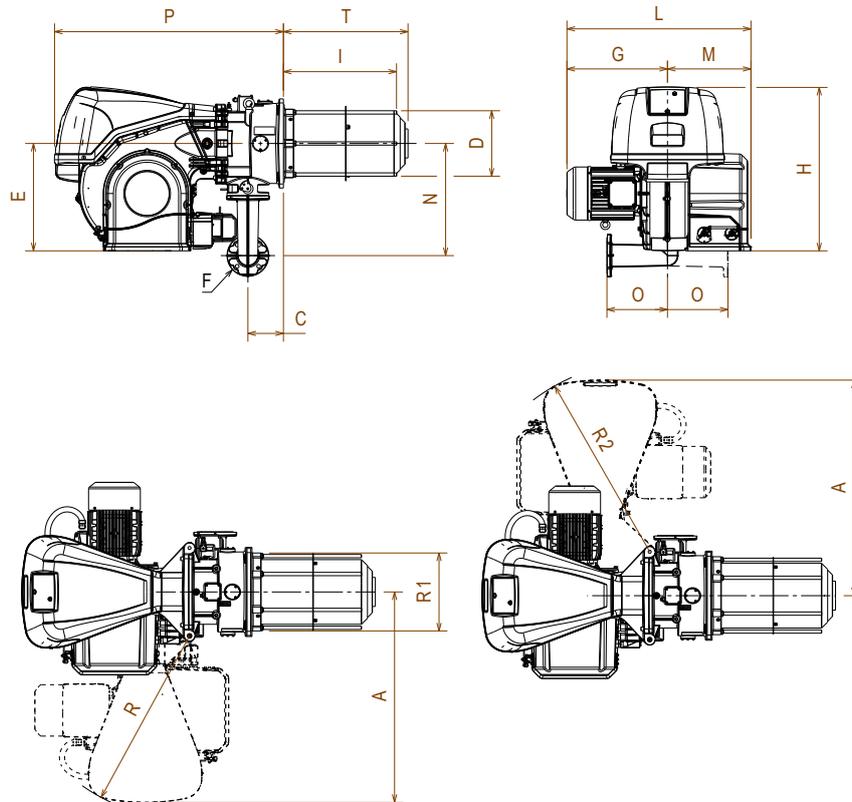
- (1) Frequency Inverter to be ordered as separated accessory; please refer to "Accessories" paragraph.
- (2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories).
- (3) The QGO2 oxygen analyzer 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.

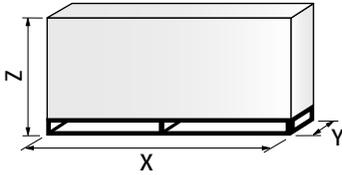
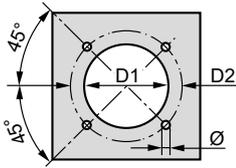


OVERALL DIMENSIONS



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
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 O₂ 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

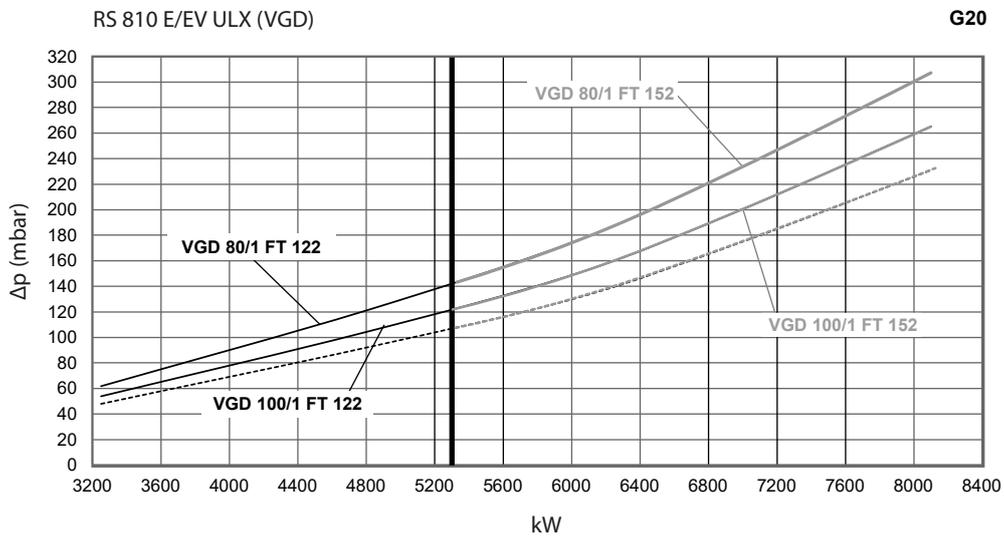


Description	D1 mm	D2 mm	Ø mm
RS 810/EV ULX	480	608	M18

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		<input type="checkbox"/>
VGD 80/1-FT 122	20140763*		DN80		<input type="checkbox"/>
VGD 65/1-FT 252	20210156*	(3)	DN65		<input type="checkbox"/>
VGD 80/1-FT 252	20210157*		DN80		<input type="checkbox"/>
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 analyzer 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

LIGHT OIL

DUAL FUEL

HEAVY OIL

GAS BURNERS



LOW NOx

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

ONE STAGE		<p>GULLIVER BS</p> <p>BS1 (16-52 kW) BS2 (35-91 kW) BS3 (65-200 kW) BS4 (110-250 kW)</p> <p>page 136</p>			
		<p>GULLIVER BSD</p> <p>BS1D (16/19-52 kW) BS2D (35/40-91 kW) BS3D (65/80-200 kW) BS4D (110/140-250 kW)</p> <p>page 141</p>			
		<p>GULLIVER BS/M</p> <p>BS2/M (26/49-91 kW) BS3/M (48/79-195 kW) BS4/M (68/140-250 kW)</p> <p>page 146</p>			
TWO STAGE		<p>RS 25-35/M BLU</p> <p>RS 25/M BLU (44/125-370 kW) RS 35/M BLU (70/200-480 kW)</p> <p>page 151</p>	<td></td> <td> <p>RS 45-55/M BLU</p> <p>RS 45/M BLU (90/190-550 kW) RS 55/M BLU (100/300-680 kW)</p> <p>page 157</p> </td>		<p>RS 45-55/M BLU</p> <p>RS 45/M BLU (90/190-550 kW) RS 55/M BLU (100/300-680 kW)</p> <p>page 157</p>
		<p>RS 68-200/M BLU</p> <p>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)</p> <p>page 163</p>			
MODULATING		<p>RS 310-610/M BLU</p> <p>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)</p> <p>page 194</p>	<td></td> <td> <p>RS 810/M BLU</p> <p>RS 810/M BLU (1200/3500-8010 kW)</p> <p>page 199</p> </td>		<p>RS 810/M BLU</p> <p>RS 810/M BLU (1200/3500-8010 kW)</p> <p>page 199</p>
		<p>RS 1000-1200/M BLU</p> <p>RS 1000/M BLU (1100/4000-10100 kW) RS 1200/M BLU (1500/5500-11100 kW)</p> <p>page 226</p>			

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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		<p>RS 25-35/E BLU</p> <p>RS 25/E BLU (44/125-370 kW)</p> <p>RS 35/E BLU (70/200-480 kW)</p> <p>page 170</p>		<p>RS 45-55/E BLU</p> <p>RS 45/E BLU (90/190-550 kW)</p> <p>RS 55/E BLU (100/300-680 kW)</p> <p>page 175</p>
		<p>RS 68-200/E BLU</p> <p>RS 68/E BLU (150/350-860 kW)</p> <p>RS 120/E BLU (300/600-1300 kW)</p> <p>RS 160/E BLU (300/930-1860 kW)</p> <p>RS 200/E BLU (570/1375-2400 kW)</p> <p>page 182</p>		
		<p>RS 310-610/E BLU</p> <p>RS 310/E BLU (400/1200-3600 kW)</p> <p>RS 410/E BLU (500/1500-4450 kW)</p> <p>RS 510/E BLU (680/1800-5250 kW)</p> <p>RS 610/E BLU (1000/2200-6250 kW)</p> <p>page 204</p>		<p>RS 810/E BLU</p> <p>RS 810/E BLU (1200/3500-8010 kW)</p> <p>page 210</p>
		<p>RS 1000-1200/E BLU</p> <p>RS 1000/E BLU (1100/4000-10100 kW)</p> <p>RS 1200/E BLU (1500/5500-11100 kW)</p> <p>page 230</p>		<p>RS 1300-2000/E BLU</p> <p>RS 1300/E BLU (1350-7500/12000 kW)</p> <p>RS 1600/E BLU (3065/9503-15560 kW)</p> <p>RS 2000/E BLU (4000/12000-19500 kW)</p> <p>page 234</p>
MODULATING ELECTRONIC CAM VARIABLE SPEED		<p>RS 68-200/EV BLU</p> <p>RS 68/EV BLU (150/350-860 kW)</p> <p>RS 120/EV BLU (300/600-1300 kW)</p> <p>RS 160/EV BLU (300/930-1860 kW)</p> <p>RS 200/EV BLU (570/1375-2400 kW)</p> <p>page 187</p>		
		<p>RS 310-610/EV BLU</p> <p>RS 310/EV BLU (400/1200-3600 kW)</p> <p>RS 410/EV BLU (500/1500-4450 kW)</p> <p>RS 510/EV BLU (680/1800-5250 kW)</p> <p>RS 610/EV BLU (1000/2200-6250 kW)</p> <p>page 204</p>		<p>RS 810/EV BLU</p> <p>RS 810/EV BLU (1200/3500-8010 kW)</p> <p>page 210</p>
		<p>RS 1000-1200/EV BLU</p> <p>RS 1000/EV BLU (1100/4000-10100 kW)</p> <p>RS 1200/EV BLU (1500/5500-11100 kW)</p> <p>page 239</p>		<p>RS 1300-2000/EV BLU</p> <p>RS 1300/EV BLU (1350-7500/12000 kW)</p> <p>RS 1600/EV BLU (3065/9503-15560 kW)</p> <p>RS 2000/EV BLU (4000/12000-19500 kW)</p> <p>page 243</p>

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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

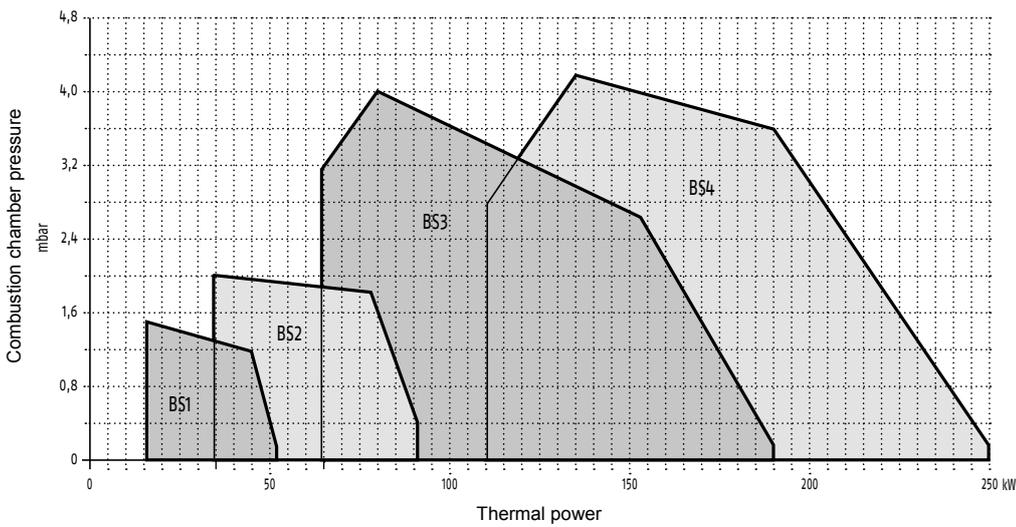
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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

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

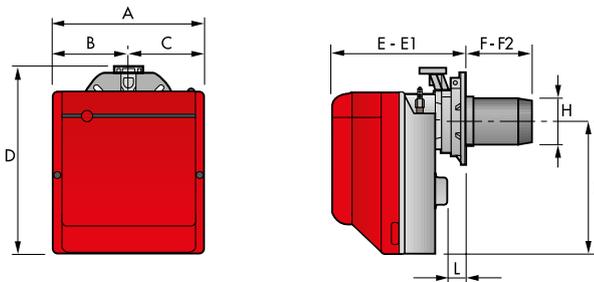
(2) Model with plug and socket.

FIRING RATES

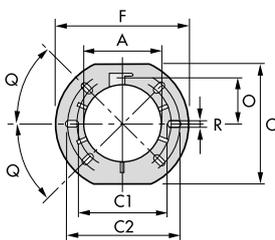


□ Useful firing rates for choosing the burner
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

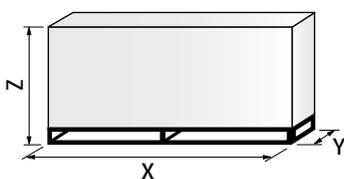
OVERALL DIMENSIONS



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



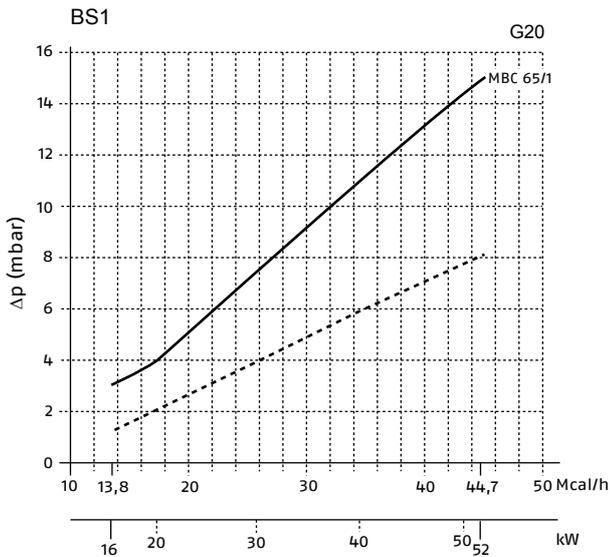
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
BS1	89	167	140	170	192	66	45°	11
BS2 - BS2 TL	106	167	140	170	192	66	45°	11
BS3 - BS3 TL	129	201	160	190	216	76.5	45°	11
BS4 - BS4 TL	137	203	170	200	218	80.5	45°	11



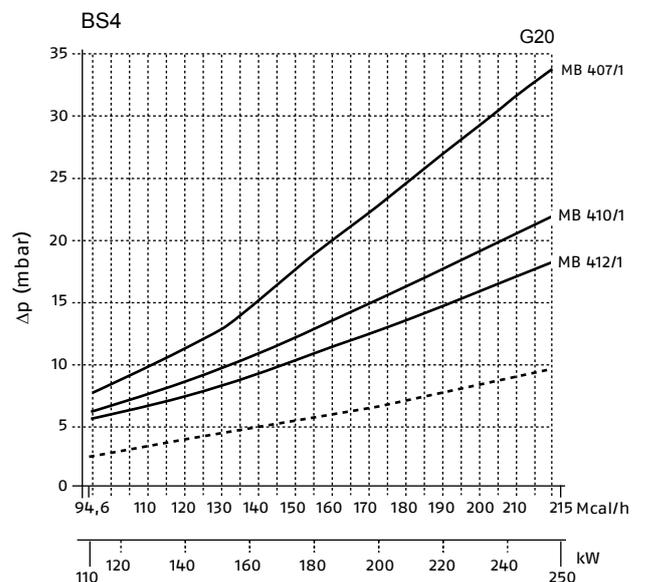
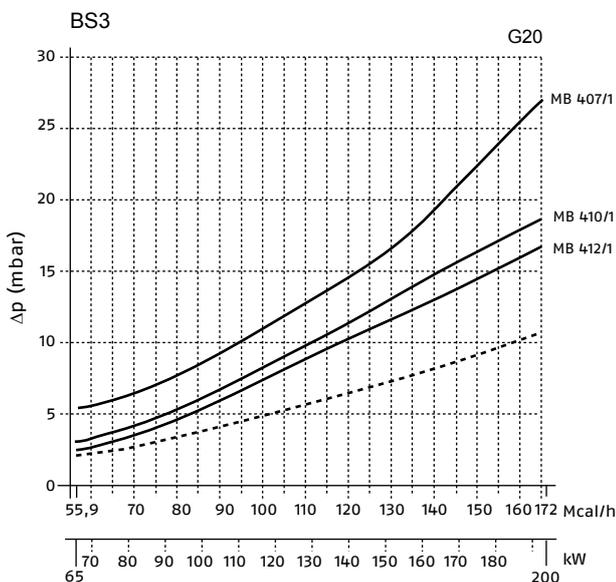
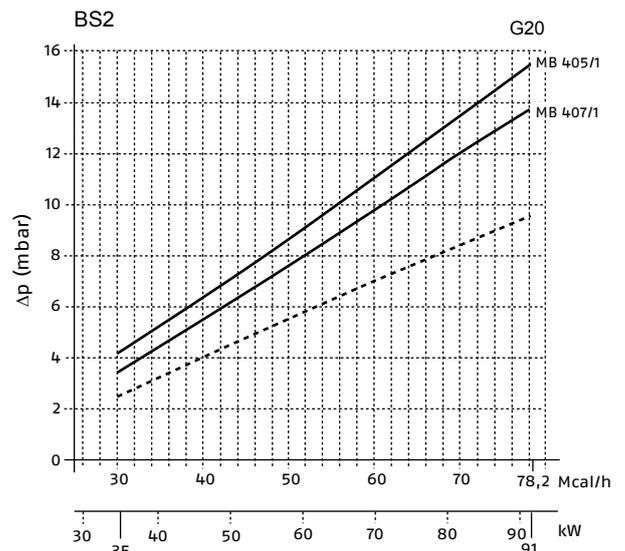
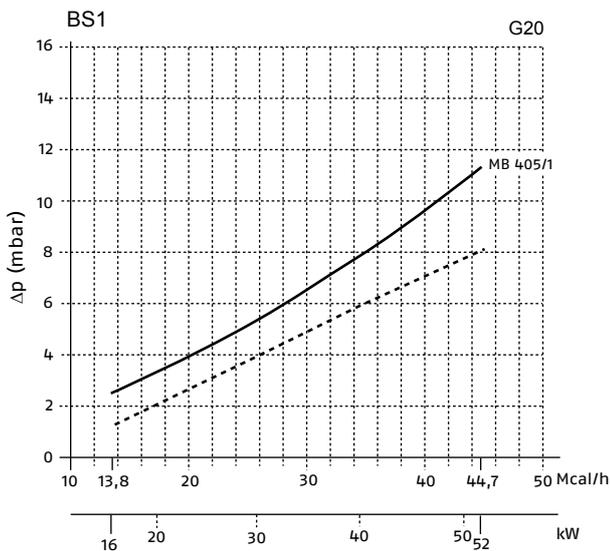
Description	X mm	Y mm	Z mm	Net weight kg
BS1	395	278	350	10
BS2	405	298	375	11
BS2 TL	583	290	370	11-13
BS3	450	345	440	15
BS3 TL	703	335	435	15-17
BS4	510	345	440	16.5
BS4 TL	703	335	435	16.5-18.5

PRESSURE LOSS DIAGRAMS

MBC SERIES GAS TRAIN



MB SERIES GAS TRAIN



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

— Combustion head + gas train
 - - - Combustion head

GAS

LIGHT OIL

DUAL FUEL

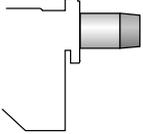
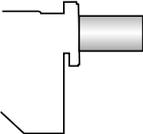
HEAVY OIL

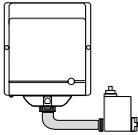
GAS TRAINS

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

(1) Please refer to "GAS TRAIN DESIGNATION".
 (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 (3) With installed plug.
 (4) Not available.
 * 230V/50Hz - 220V/60Hz electrical supply.
 NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

ACCESSORIES

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

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

(1) CE approval on field is required.

(2) Without CE certification.

STATE OF SUPPLY

Monoblock, gas burners, completely automatic, one stage operation, made up of:

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

STANDARD EQUIPMENT

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

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

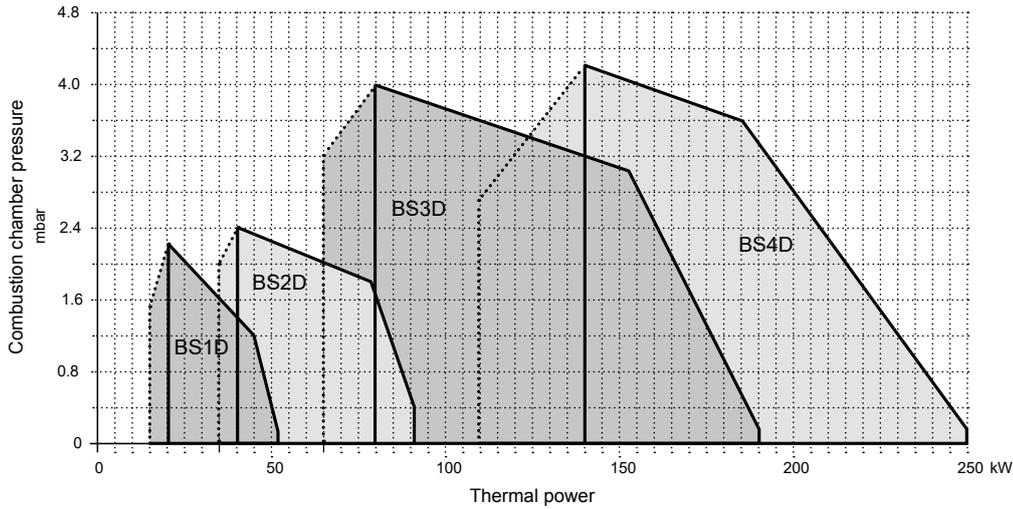
Description	Heat output natural gas		Electric power supply	Total electrical power	Certification	Note	Code
	kW	Nm ³ /h	Ph/V/Hz	kW			
BS1D	16/19-52	1.6/1.9-5.2	1/230/50	0.15	CE-0085 AQ0409	(1)	3761558
BS2D	35/40-92	3.5/4-9	1/230/50	0.18	CE-0085 AQ0409	(1)	3761658
BS2D TL	35/40-92	3.5/4-9	1/230/50	0.18	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/Nm³.

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

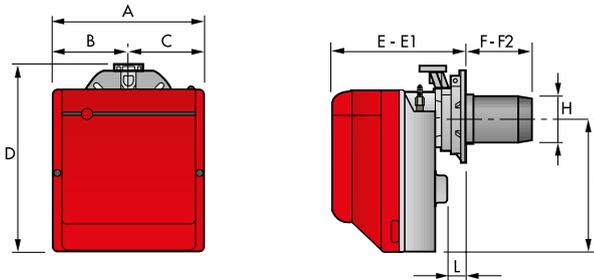
(1) Model with plug and socket.

FIRING RATES



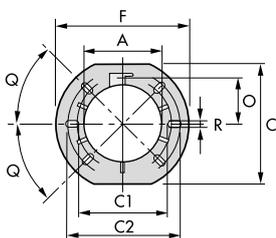
Useful firing rates for choosing the burner
 1st stage operation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

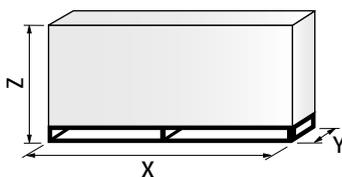


Description	A mm	B mm	C mm	D mm	E mm	E1 mm	F-F(1) mm	F2-F2(1) mm	H mm	I mm	L mm
BS1D	234	122	112	295	230	276	116	70	89	210	41
BS2D	255	125,5	125,5	325	238	252	114-270	100-280	106	230	45
BS3D	300	150	150	391	262	280	128-267	110-282	129	285	45
BS4D	300	150	150	392	278	301	168-302	145-317	137	286	45

(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

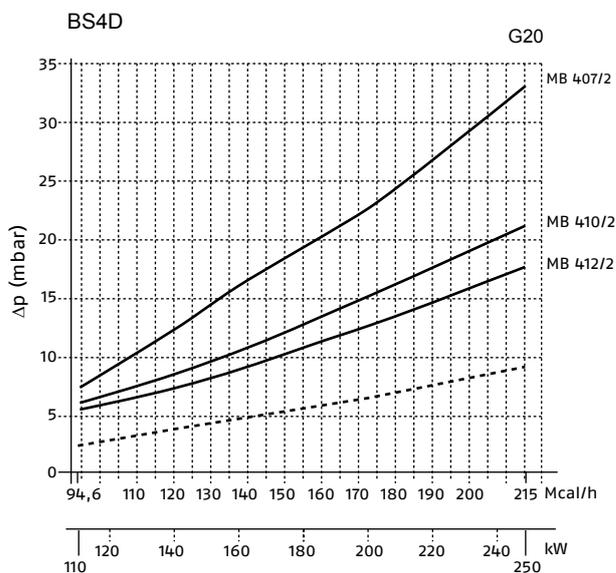
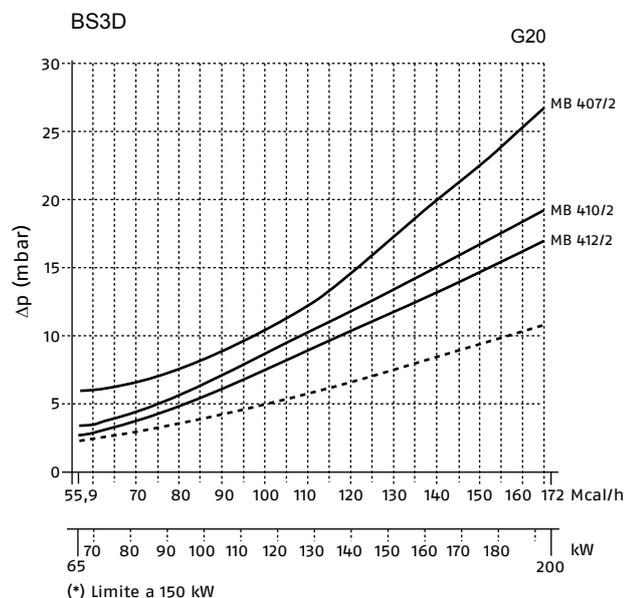
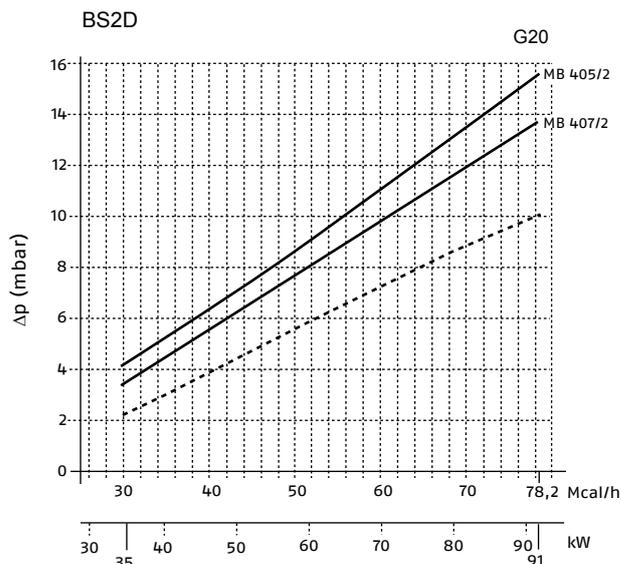
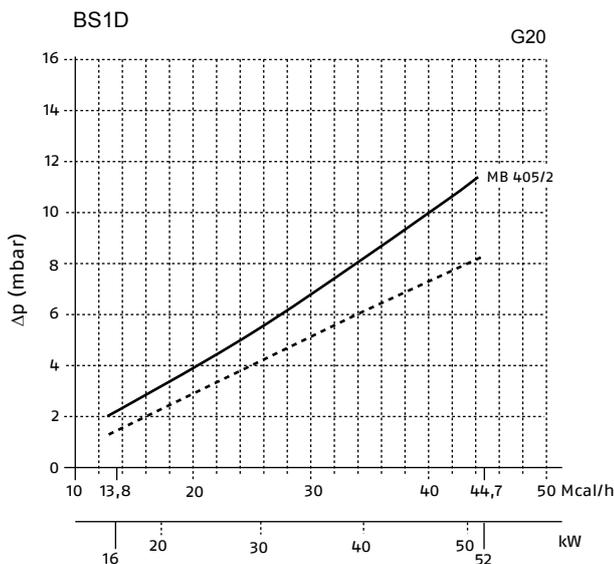


Description	X-X(1) mm	Y-Y(1) mm	Z-Z(1) mm	Net weight kg (1)
BS1D	395	278	350	11
BS2D	405-593	298-300	375-380	12-14
BS3D	450-713	345	440-445	16-18
BS4D	510-713	345	440-445	18-20

(1) Dimension with extended head.

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN



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

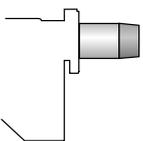
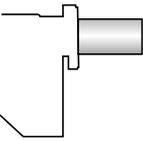
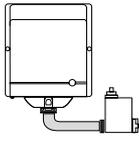
GAS TRAINS

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 kW	Electric power supply Ph/V/Hz	Certification	Note	Code
	kW	Nm ³ /h					
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

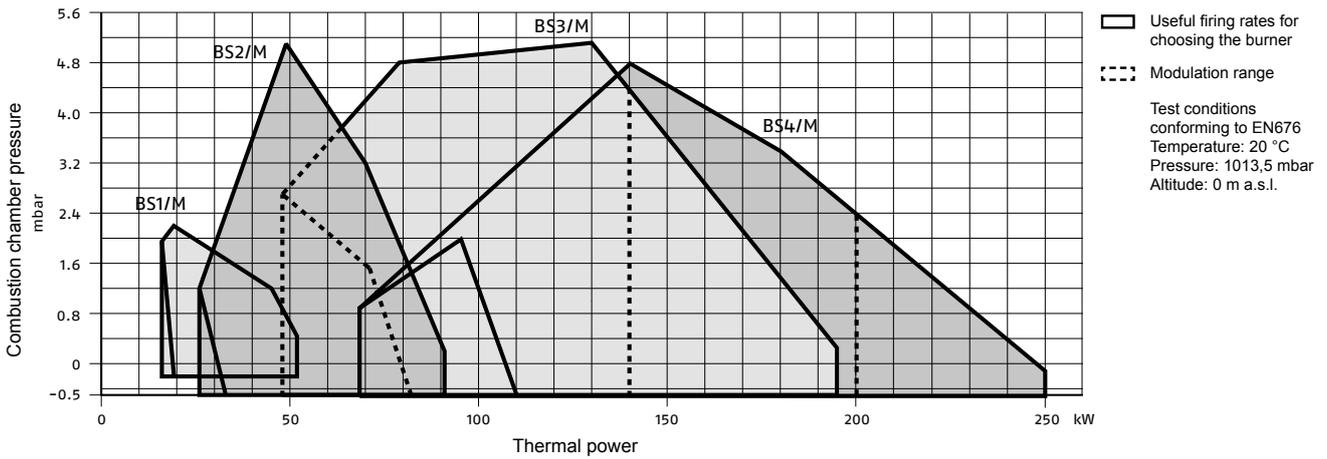
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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

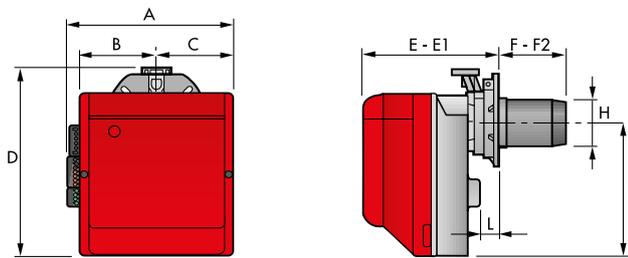
(1) Model with plug and socket.

(2) Head length: see quote F-F2 in the Overall imensions table.

FIRING RATES

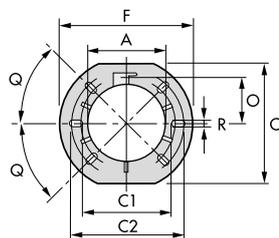


OVERALL DIMENSIONS

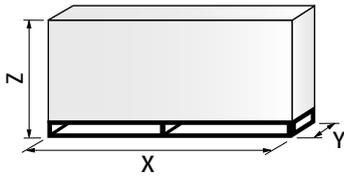


Description	A mm	B mm	C mm	D mm	E mm	E1 mm	F mm	F2 mm	H mm	I mm	L mm
BS1/M	285	125.5	125.5	316	234.5	-	116.5	-	89.5	230	8
BS2/M	285	125.5	125.5	325	238	252	114	100	106	230	18
BS2/M TL	285	125.5	125.5	325	238	252	184	170	106	230	18
BS3/M	330	150	150	391	262	280	128	110	129	285	21
BS3/M TL	330	150	150	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.



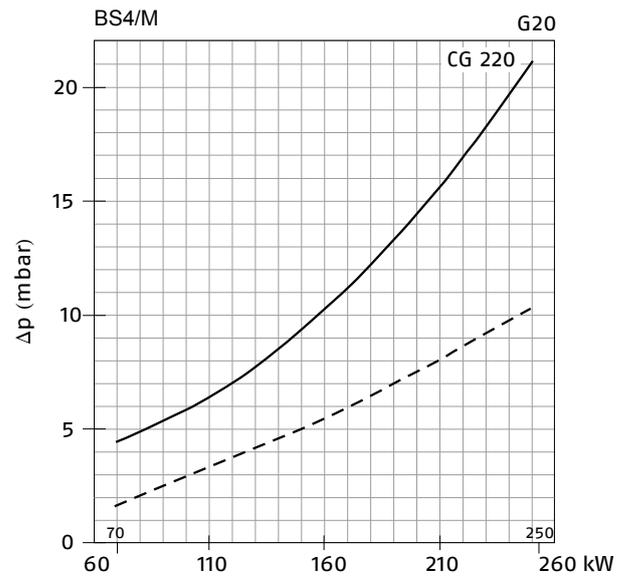
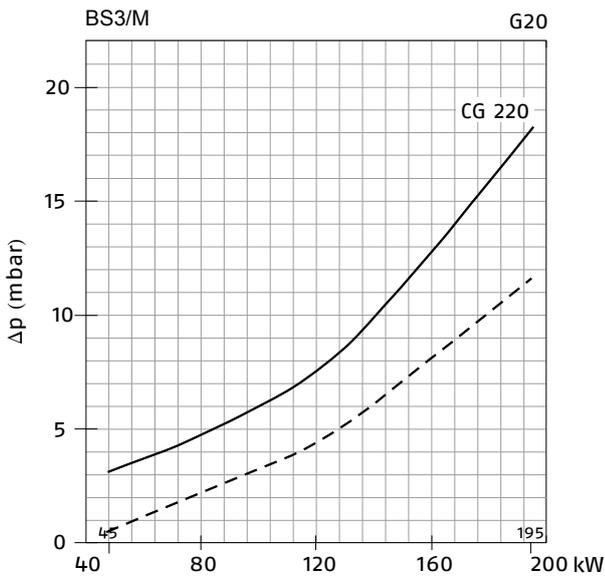
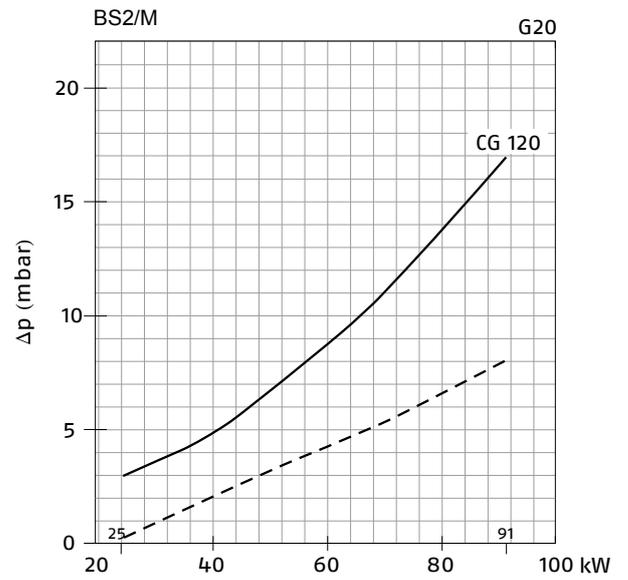
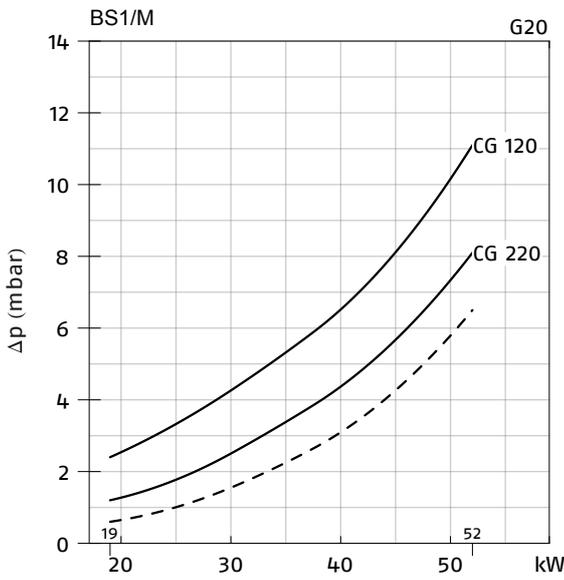
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
BS1/M	89.5	167	140	170	192	66	45°	11
BS2/M	106	167	140	170	192	66	45°	11
BS2/M TL	106	167	140	170	192	66	45°	11
BS3/M	129	201	160	190	216	76.5	45°	11
BS3/M TL	129	201	160	190	216	76.5	45°	11
BS4/M	137	203	170	200	218	80.5	45°	11
BS4/M TL	137	203	170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

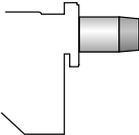
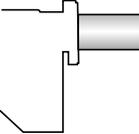
- Combustion head + gas train
- - - Combustion head

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 3/4"	20185149	BS1/M
CG 120/P-F2SD 00	3970587*	(3)(4)	Rp 3/4"	20185149	BS2/M
CG 220/P-F3SD 00	3970588*	(3)(4)	Rp 3/4"	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. RWF 55.5 - Plus version.		20102002 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. Pressure (0-16 bar) with 4-20 mA output.		3010213 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

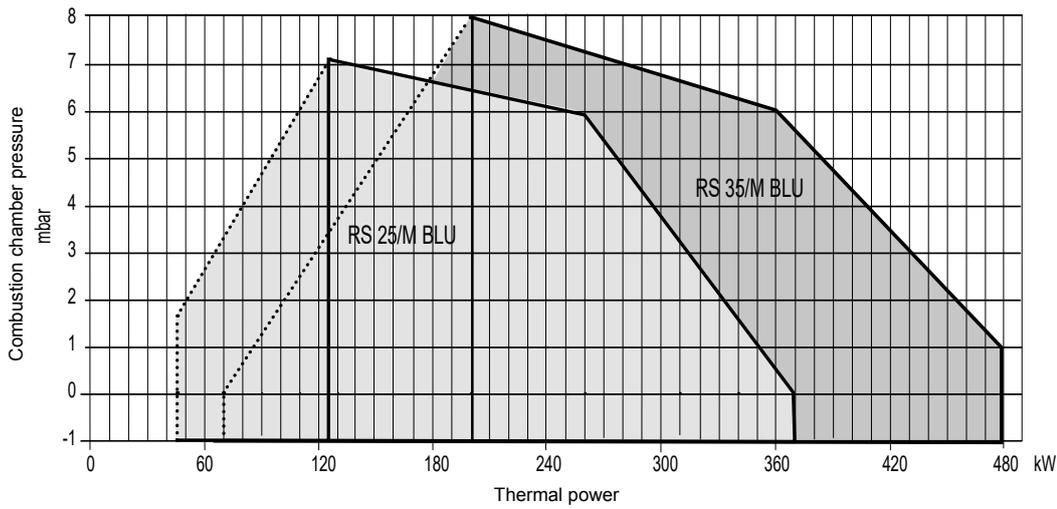
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 25/M BLU TC FS1	44/125-370	4.5/13-37	0.6	1/220-230/50-60	220-230/50-60	CE-0476DP3335	(1)(2)	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

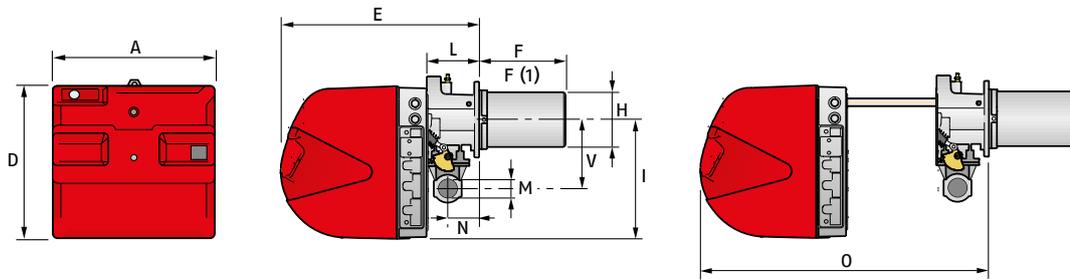
- (1) Model with plug and socket.
- (2) Model with CMG control box.

FIRING RATES



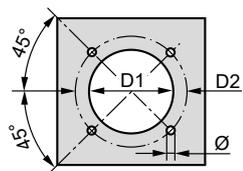
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

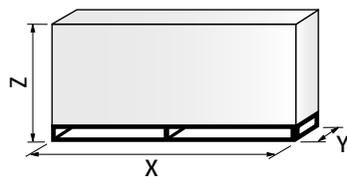


Description	A mm	D mm	E mm	F-F(1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 25/M BLU	442	422	508	230-365	140	305	138	1 1/2	84	780-/	177
RS 35/M BLU	442	422	508	230-365	152	305	138	1 1/2	84	780-/	177

(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

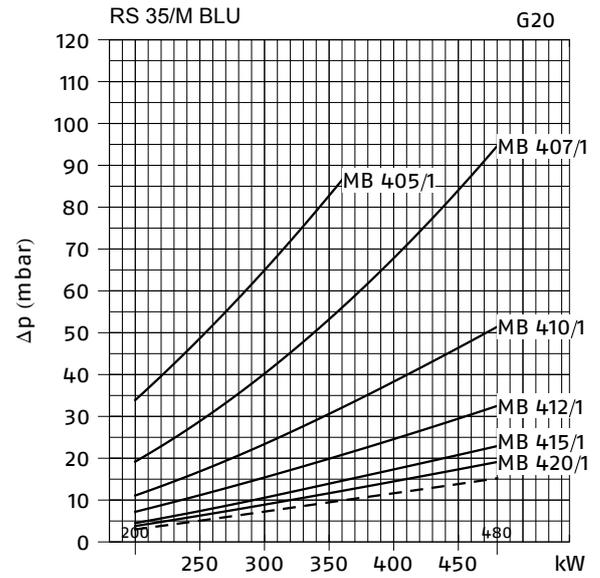
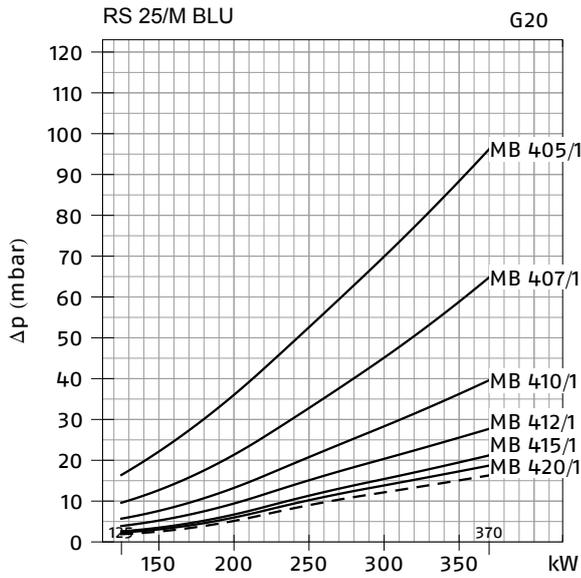


Description	X(1) mm	Y mm	Z mm	Net weight kg
RS 25/M BLU	1000	485	500	39
RS 35/M BLU	1000	485	500	40

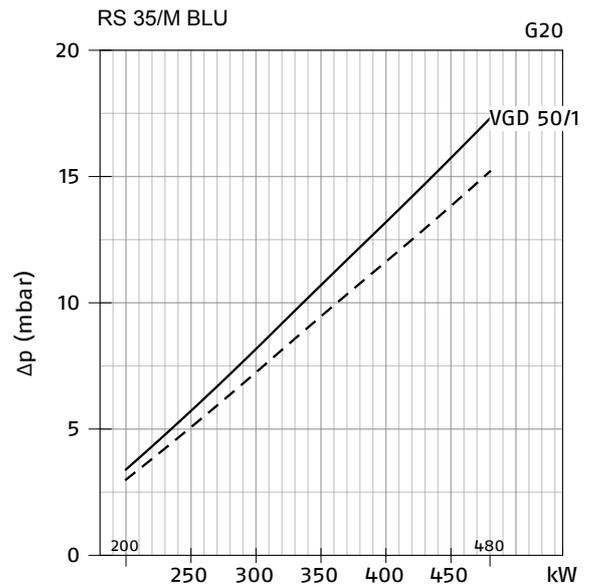
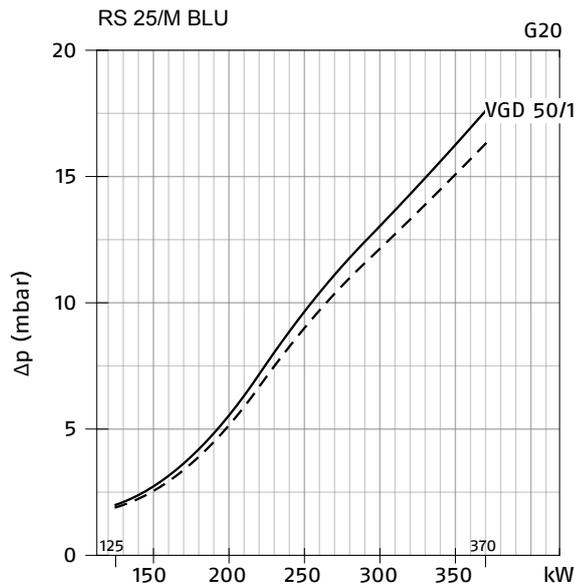
(1) Dimension with standard and extended head.

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

LIGHT OIL

DUAL FUEL

HEAVY OIL

GAS TRAINS

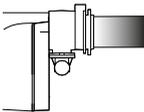
Description (1)	Code	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
					RS 25/M BLU	RS 35/M BLU
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RT 20	3970500*	Rp 3/4"	-	3010123	3000824	
MB 407/1-RT 20	3970553*	Rp 3/4"	-	3010123	3000824	
MB 407/1-RT 52	3970599*	Rp 3/4"	-	3010123	3000824	
MB 407/1-RSM 20	3970229*	Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970258*	Rp 1" 1/4	-	3010123	3010124	
MB 410/1-RT 20	3970554*	Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970600*	Rp 3/4"	-	3010123	3000824	
MB 410/1-RSM 20	3970230*	Rp 3/4"	-	3010123	3000824	
MB 412/1-RT 52	3970256*	Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1-RT 20	3970144*	Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1 CT RT 20	3970197**	Rp 1" 1/2	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1-RSM 20	3970231*	Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RT 30	3970180*	Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1 CT RT 30	3970198**	Rp 1" 1/2	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RT 52	3970250*	Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1 CT RT 52	3970253**	Rp 1" 1/2	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RSM 30	3970232*	Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
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

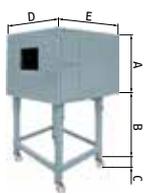
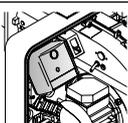
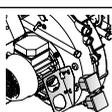
Drawing	Burner model	Specification	Note	Code
	RS 25/M BLU RS 35/M BLU	EXTENDED HEAD KIT Burners standard head can be transformed into "extended head" versions by using the special kit. Here the kits available for the various burners are listed, showing the original and the extended lengths. Standard head length = 230 mm - Extended head length = 365 mm		3010430 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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. RWF 55.5 - Plus version.		20083339 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. Pressure (0-16 bar) with 4-20 mA output. Pressure (0-25 bar) with 4-20 mA output.		3010213 3010214 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
	RS 25/M BLU RS 35/M 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. Kit code for standard and extended head.		3010423 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

- 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

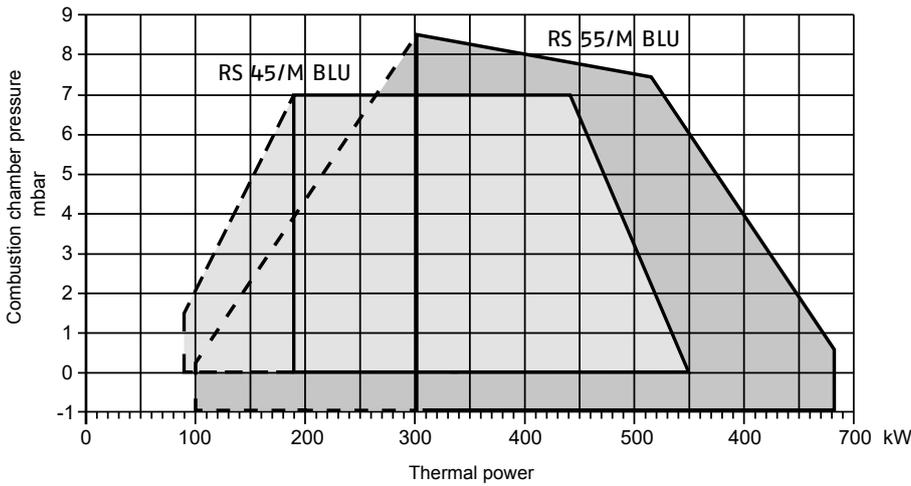
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		PhV/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 45/M BLU TC FS1	90/190-550	9/19-55	0.6	1/230/50	230/50-60	CE-0476DP3335	(1)	3897306
RS 45/M BLU 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/Nm³.

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

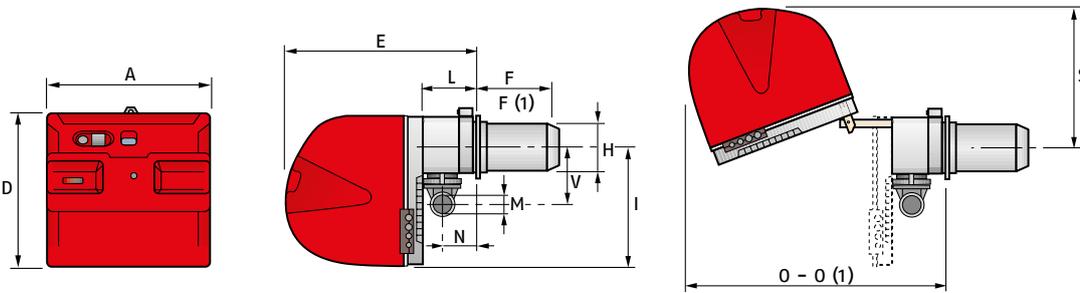
(1) Model with plug and socket.

FIRING RATES



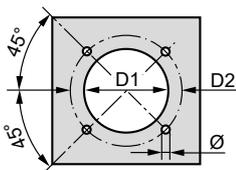
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

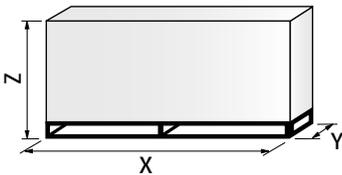


Description	A mm	B mm	D mm	E mm	F-F(1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 45/M BLU	476	-	474	580	229-354	160	352	164	Rp 1" 1/2	108	810-810	367	168
RS 55/M BLU	533	300	490	640	255-390	189	352	222	Rp 2"	134	870-/	-	221

(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

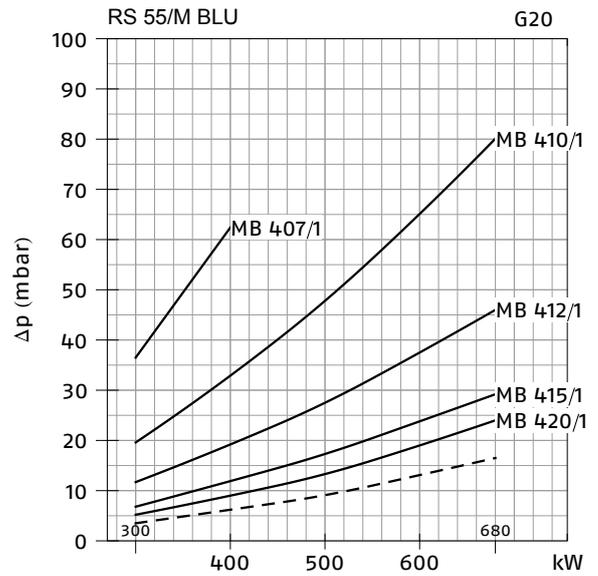
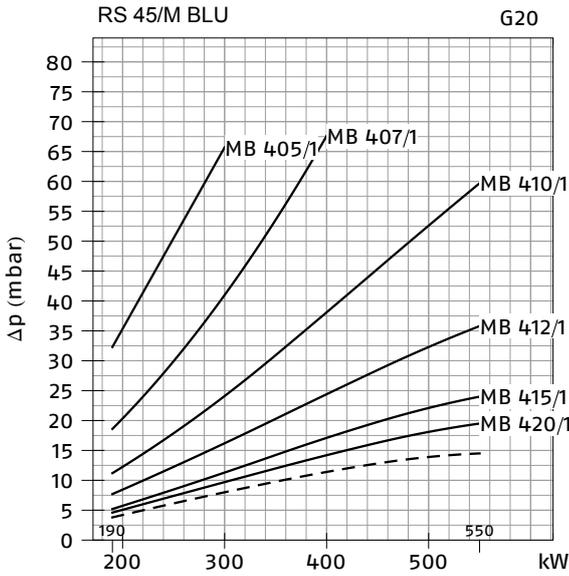


Description	X(1) mm	Y mm	Z mm	Net weight kg
RS 45/M BLU	1015	500	630	48
RS 55/M BLU	1405	700	660	44

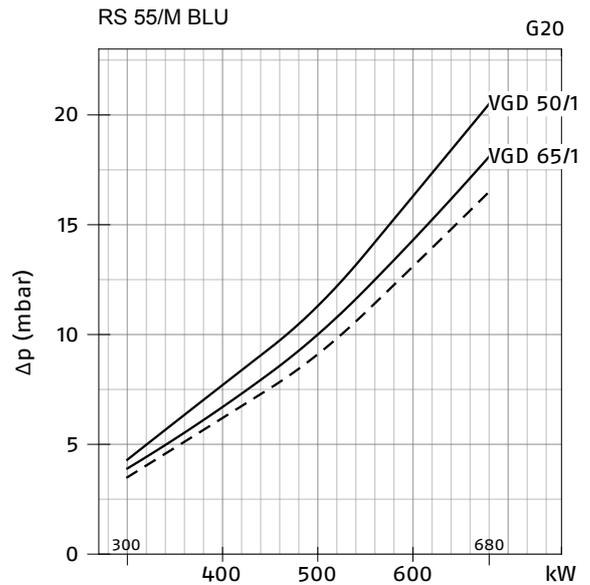
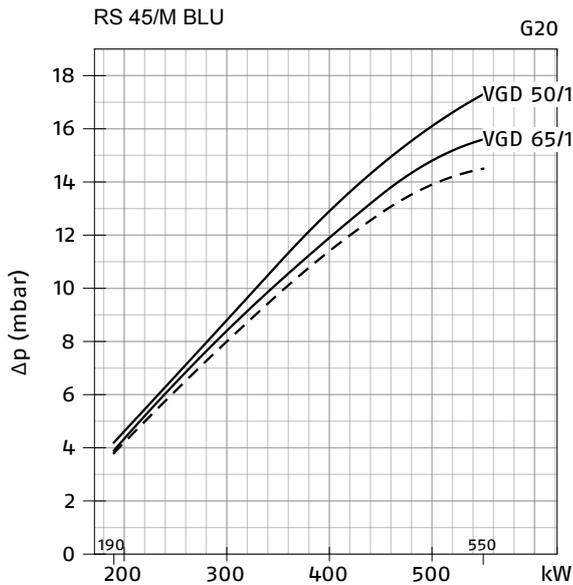
(1) Dimension with standard and extended head.

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

LIGHT OIL

DUAL FUEL

HEAVY OIL

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	3010126
MB 410/1-RT 52	3970258*		Rp 1" ¼	-	3010123	3010124	3000824+ 3000843
MB 410/1-RT 20	3970554*		Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	3970600*		Rp ¾"	-	3010123	3000824	3000824+ 3000843
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.

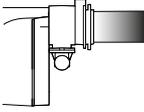
** 230V/50Hz electrical supply.

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
	RS 45/M 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.	(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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		PhV/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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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

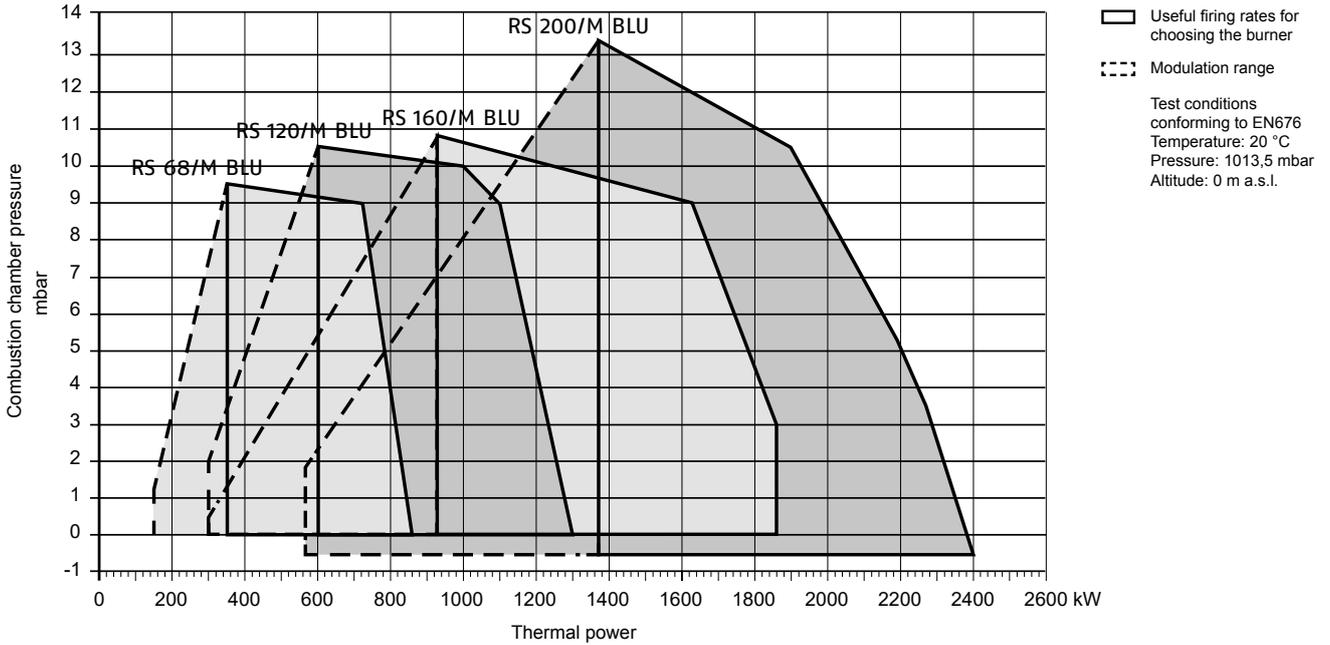
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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

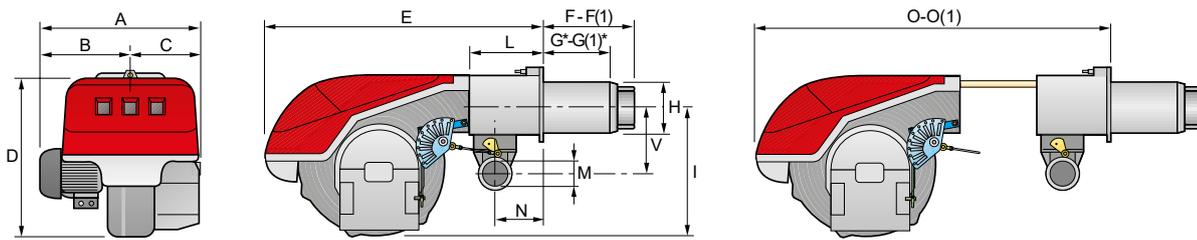
Models for continuous operation (FS2: one stop every 72 hours) are available on request.

- (1) Model with terminal board.
- (2) Model with CMG control box.

FIRING RATES

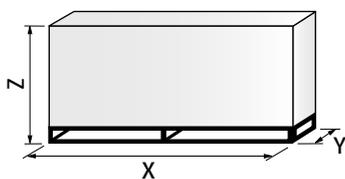
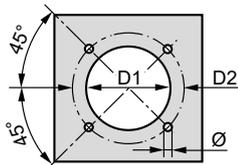


OVERALL DIMENSIONS



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.



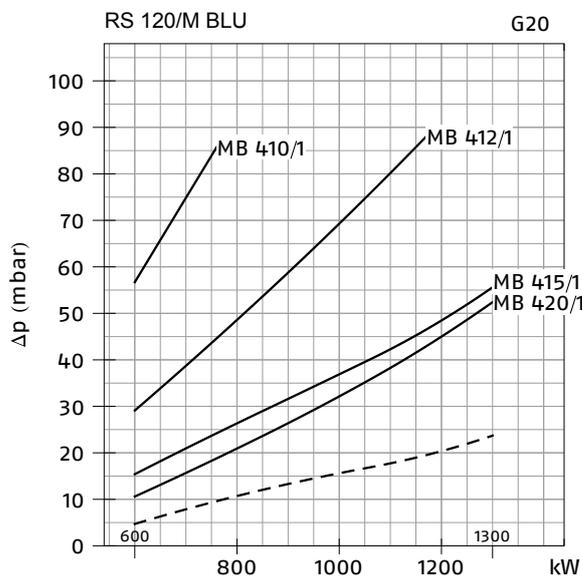
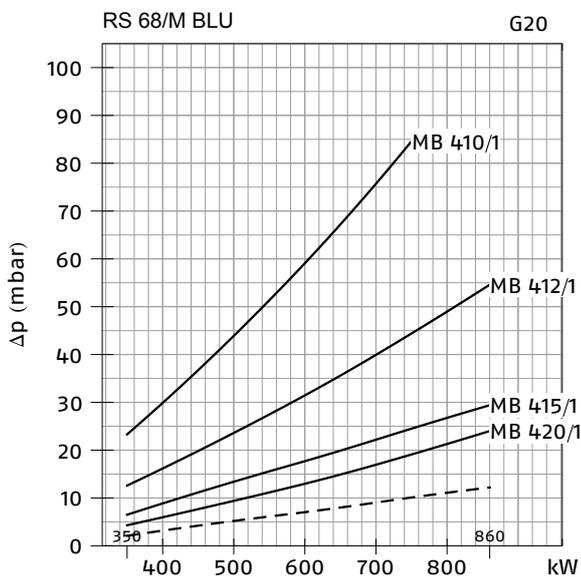
Description	D1 mm	D2 mm	Ø mm
RS 68/M BLU	195	275-325	M12
RS 120/M BLU	195	275-325	M12
RS 160/M BLU	230	325-368	M16
RS 200/M BLU	230	325-368	M16

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

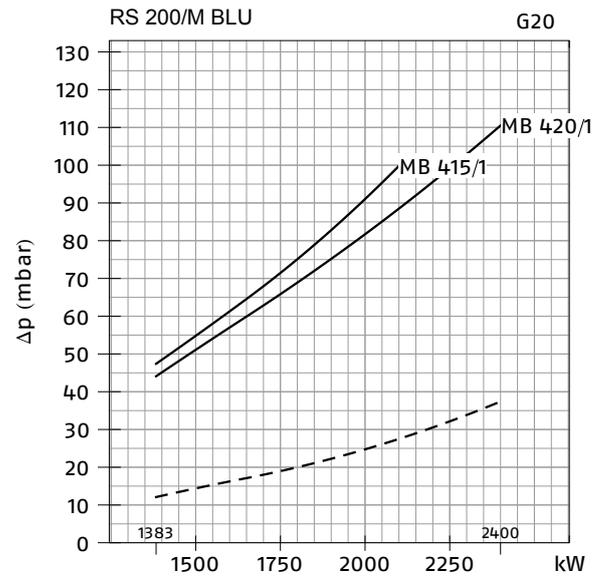
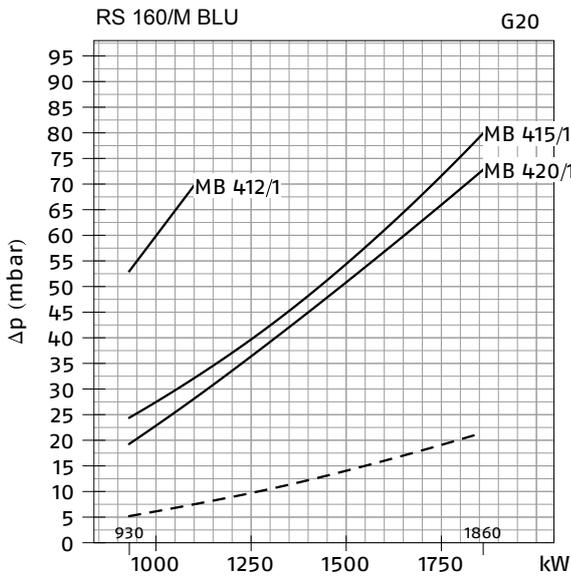
MB SERIES GAS TRAIN



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.

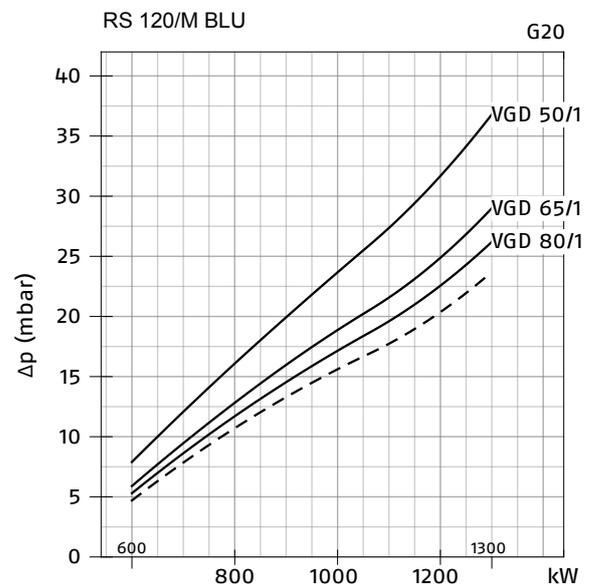
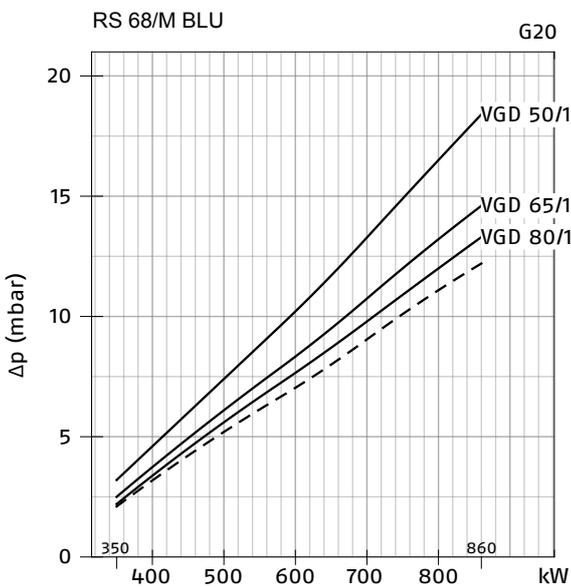
— Combustion head + gas train
 - - - Combustion head

GAS

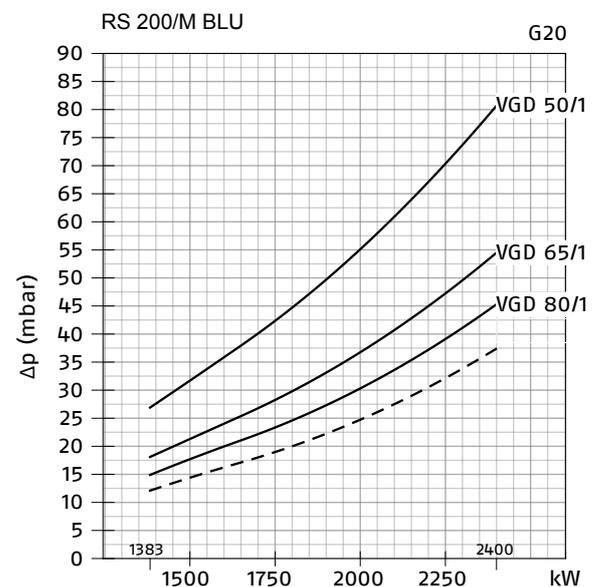
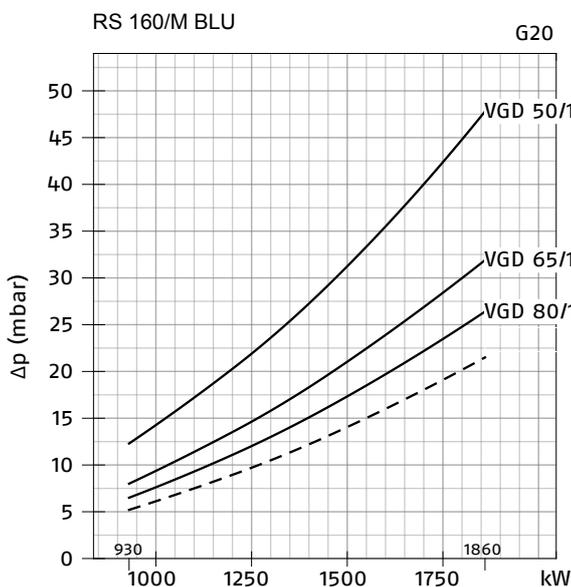


LIGHT OIL

VGD SERIES GAS TRAIN



DUAL FUEL



HEAVY OIL

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.

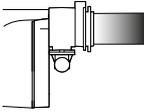
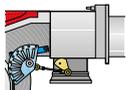
** 230V/50Hz electrical supply.

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

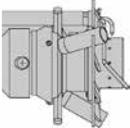
Drawing	Burner model	Specification	Note	Code
		EXTENDED HEAD KIT Burners standard head can be transformed into "extended head" versions by using the special kit. Here the kits available for the various burners are listed, showing the original and the extended lengths.		
	RS 68-120/M BLU	Standard head 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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

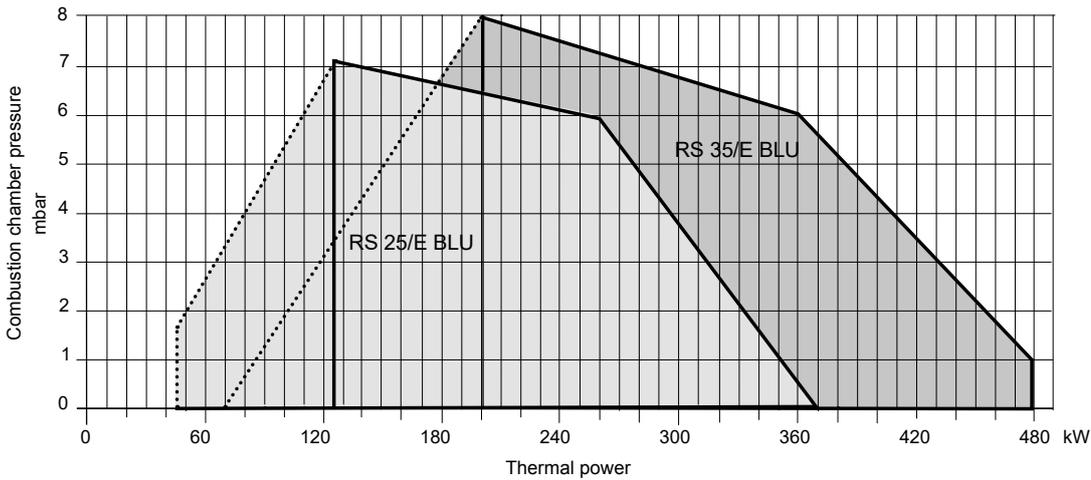
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

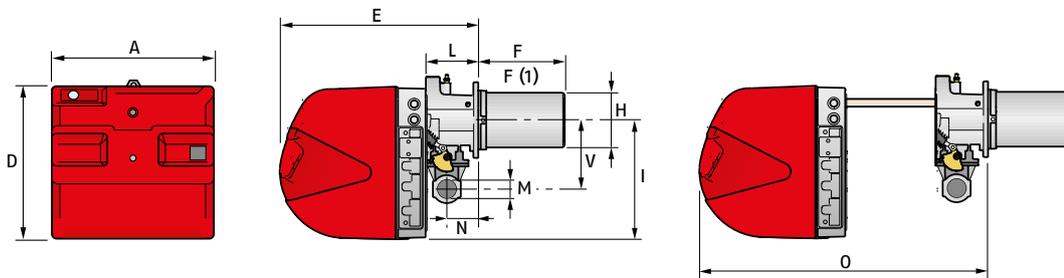
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as accessory (see Gas Train Accessories).

FIRING RATES



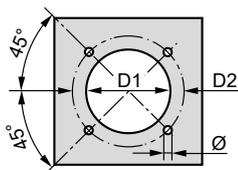
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

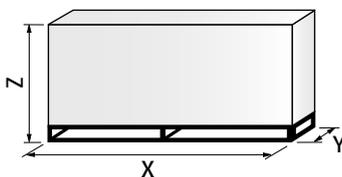


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 25/E BLU	442	422	508	230-365	140	305	138	1 1/2	84	780-/	177
RS 35/E BLU	442	422	508	198-333	152	305	138	1 1/2	84	780-/	177

(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

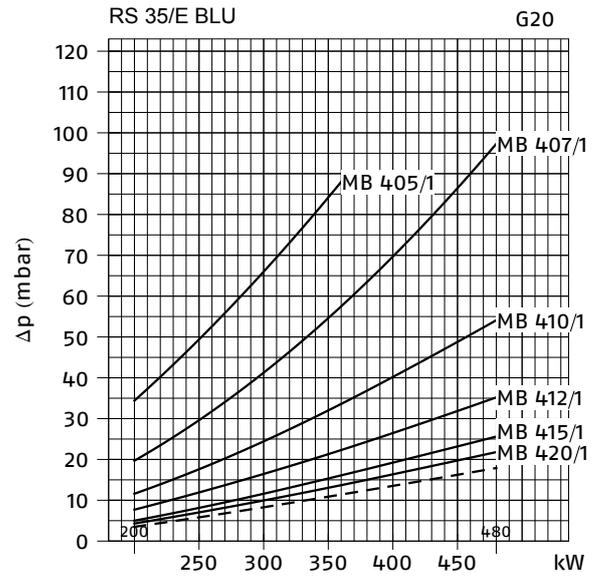
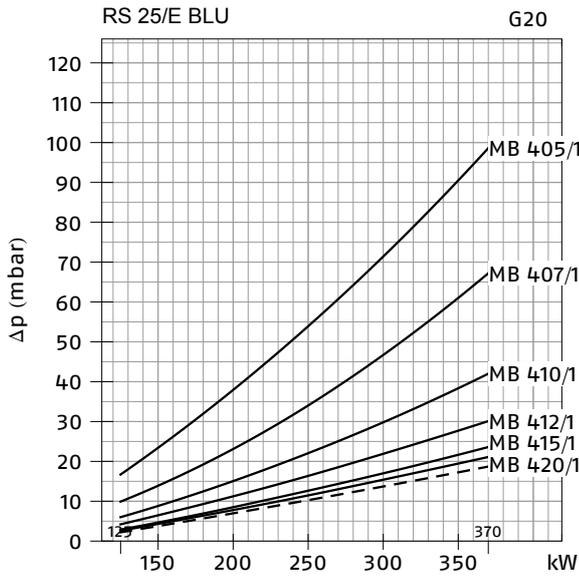


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 25/E BLU	1000	485	500	39
RS 35/E BLU	1000	485	500	40

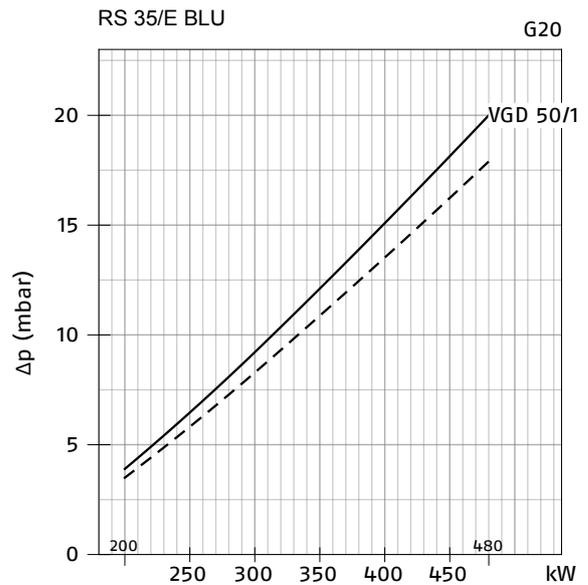
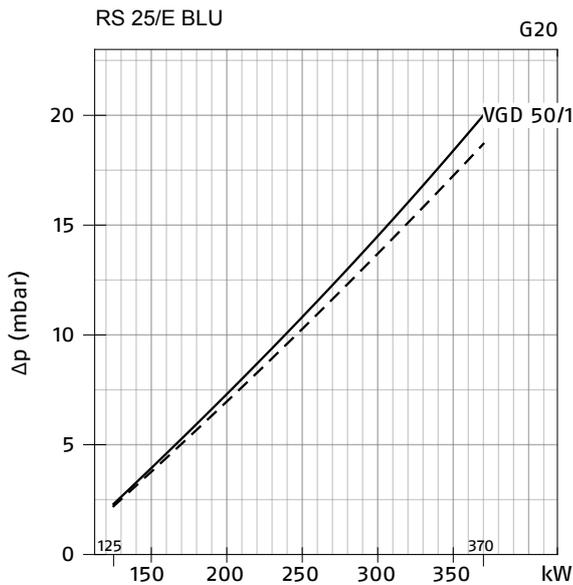
(1) Dimension with standard and extended head.

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

LIGHT OIL

DUAL FUEL

HEAVY OIL

GAS TRAINS

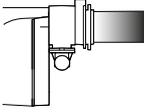
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 25/E BLU	RS 35/E BLU
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RSM 20	20065553*	(4)	Rp ¾"	-	3000824	
MB 407/1-RT 52	3970599*		Rp ¾"	-	3000824	
MB 410/1-RT 52	3970258*		Rp 1" ¼	-	3010124	
MB 410/1-RT 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
	RS 25/E BLU RS 35/E BLU	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		3010430 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. RWF 55.5 - Plus version.		20083339 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. Pressure (0-16 bar) with 4-20 mA output. Pressure (0-25 bar) with 4-20 mA output.		3010213 3010214 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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

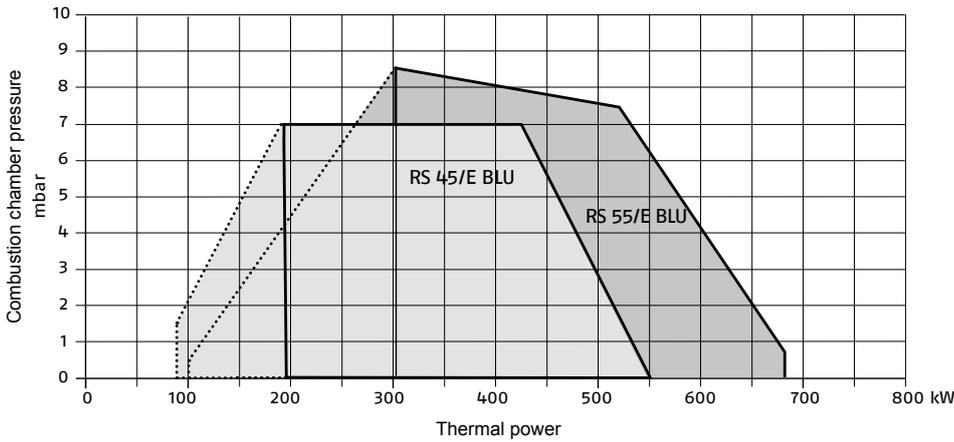
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

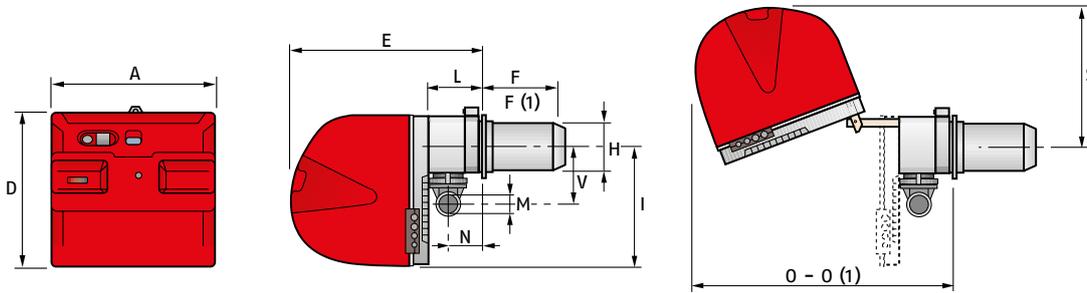
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit (included as burner standard equipment) on the gas train. In case of matching with VGD 50/1 gas train, additional flange kit code 20185515 is needed.

FIRING RATES



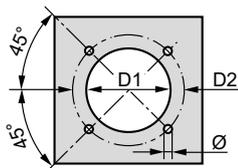
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

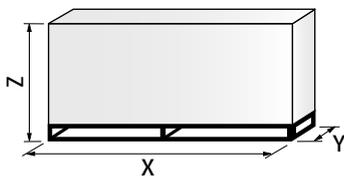


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	S mm	V mm
RS 45/E BLU	476	474	580	229-354	160	352	164	1 1/2"	108	810-810	367	168
RS 55/E BLU	533	490	640	255-390	189	352	222	Rp 2"	134	870-/-	-	221

(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

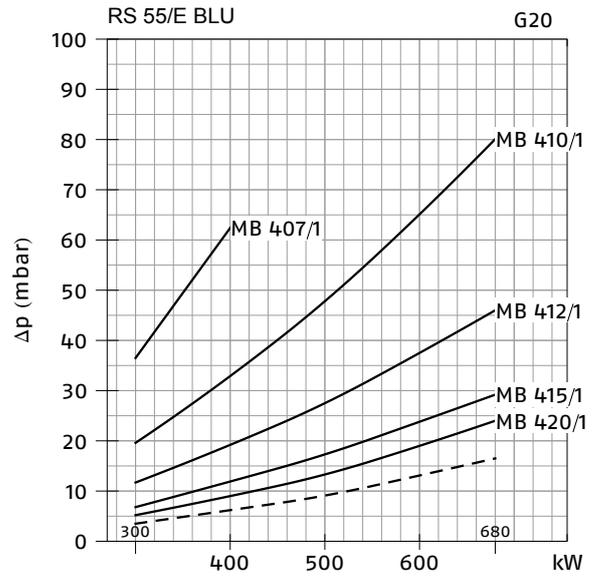
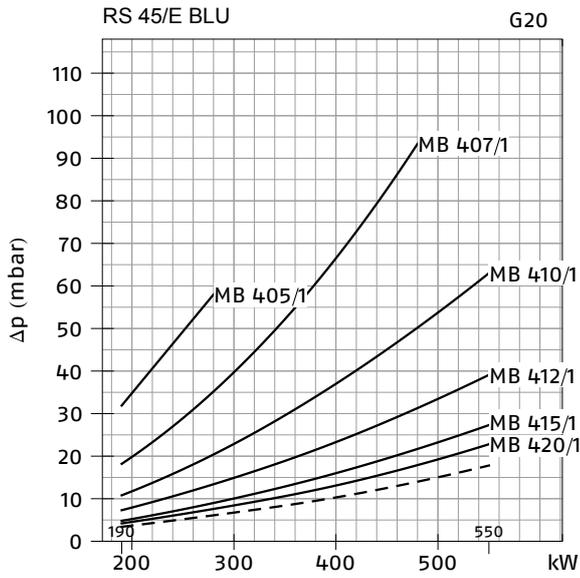


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 45/E BLU	1015	500	630	48
RS 55/E BLU	1405	700	660	44

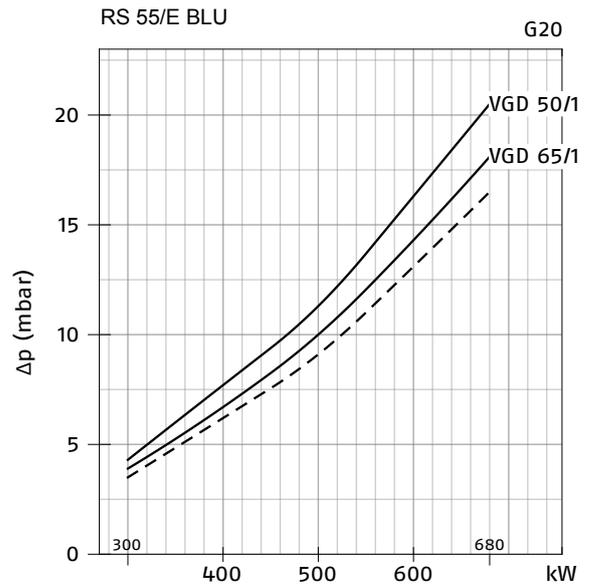
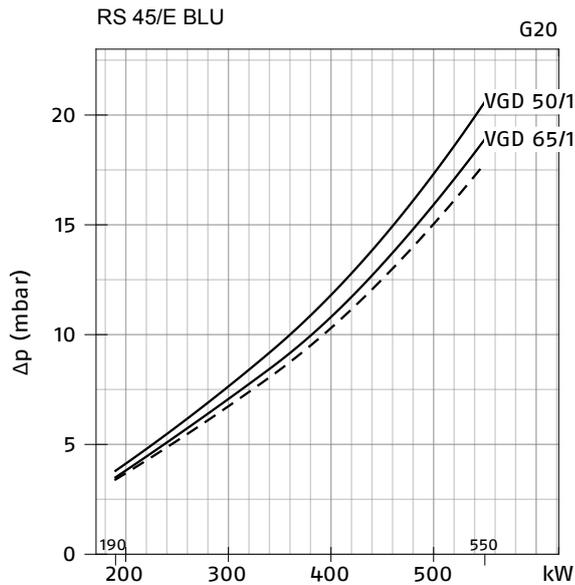
(1) Dimension with standard and extended head.

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

LIGHT OIL

DUAL FUEL

HEAVY OIL

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.

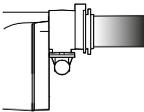
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

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
	RS 45/E BLU RS 55/E BLU	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 = 229 mm - Extended head length = 354 mm Standard head length = 255 mm - Extended head length = 390 mm		2006586 20040373
	RS 45/E BLU RS 55/E BLU	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm Spacer thickness S = 135 mm		3010095 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. RWF 55.5 - Plus version.		20083339 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. Pressure (0-16 bar) with 4-20 mA output. Pressure (0-25 bar) with 4-20 mA output.		3010213 3010214 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 O₂ 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 O₂ 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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 kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		Ph/V/Hz	V/Hz			
RS 68/E O₂ 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 O₂ 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 O₂ 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 O₂ 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 O₂ 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 O₂ 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 O₂ 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 O₂ BLU TL FS1/FS2	570/1375-2400	30/93-186	6.5	3/400/50	1N/230/50	CE-0085BT0419	(1)(3)	20166368

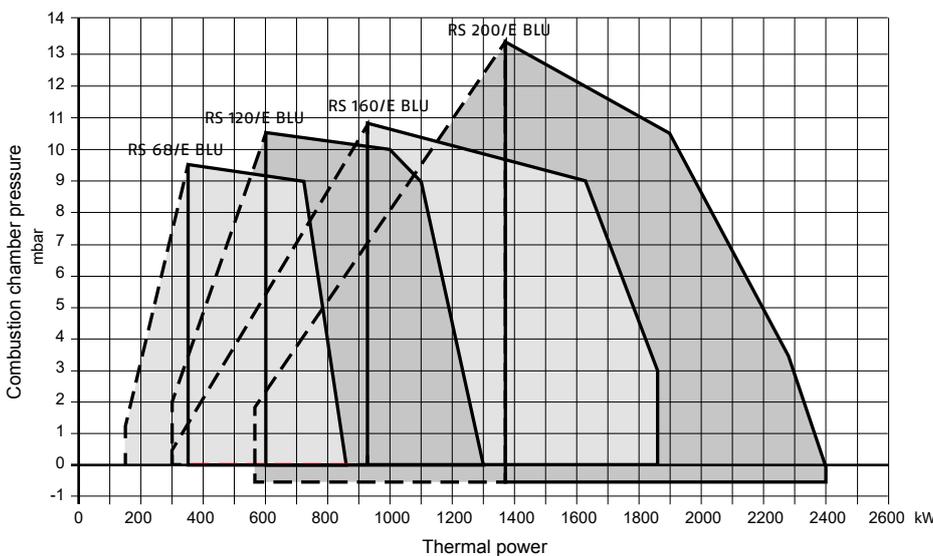
Net calorific value of natural gas (G20): 10 kWh/Nm³.
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

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

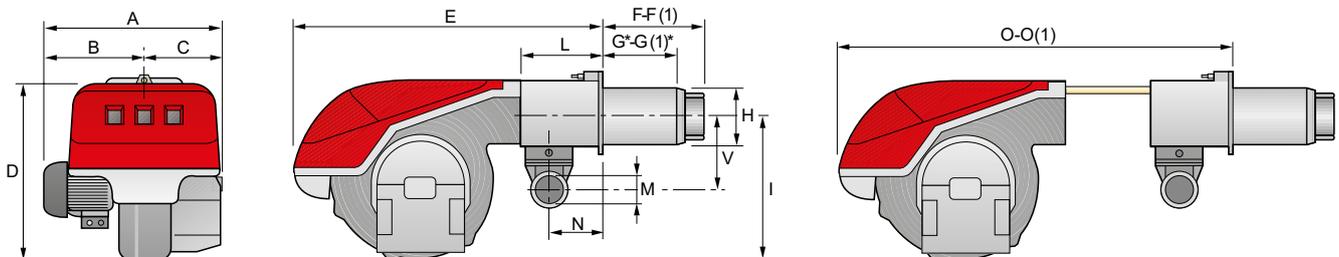
When operating with 20%vol hydrogen the max power will be reduced by 15% due to a lower volumetric calorific value of the hydrogen compared to natural gas.



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

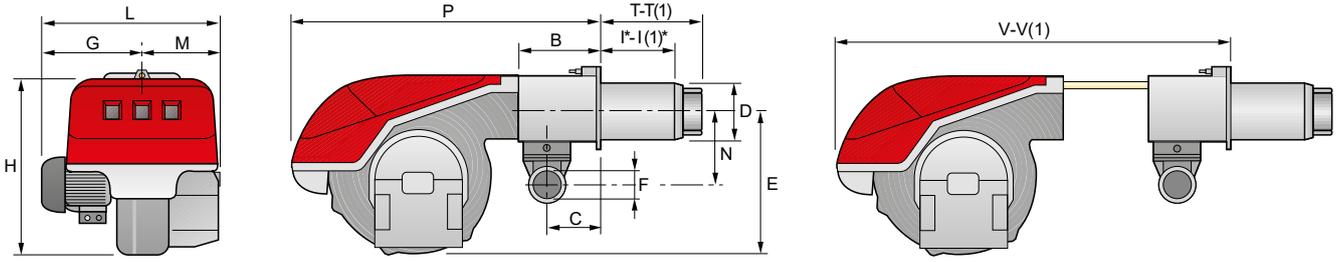
RS 68-200/E BLU WITH REC27 CONTROL BOX



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

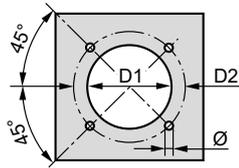
(1) Length with extended combustion head.
(*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

RS 68-200/E BLU WITH LMV52 CONTROL BOX

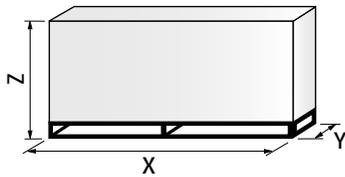


Model	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I* - I(1)* mm	L mm	M mm	N mm	P mm	T - T(1) mm	V - V(1) mm
RS 68/E BLU	217	137	189	425	Rp 2"	305	640	200-335	575	270	221	1010	255-390	1350-1485
RS 120/E BLU	217	137	189	425	Rp 2"	330	640	200-335	600	270	221	1010	255-390	1350-1485
RS 160/E BLU	230	141	222	435	Rp 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

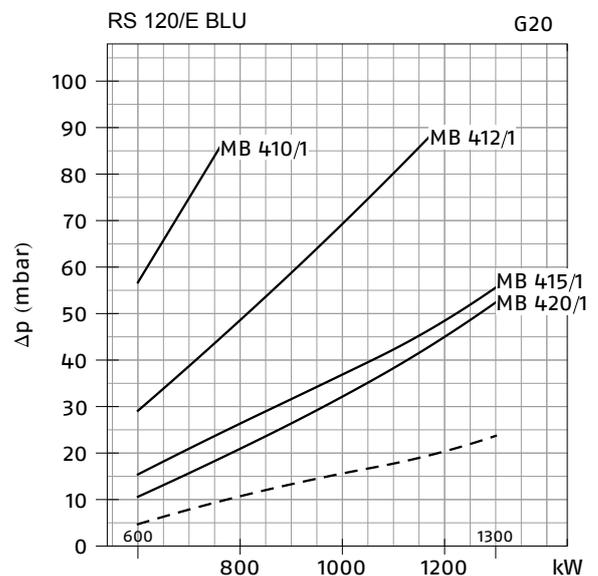
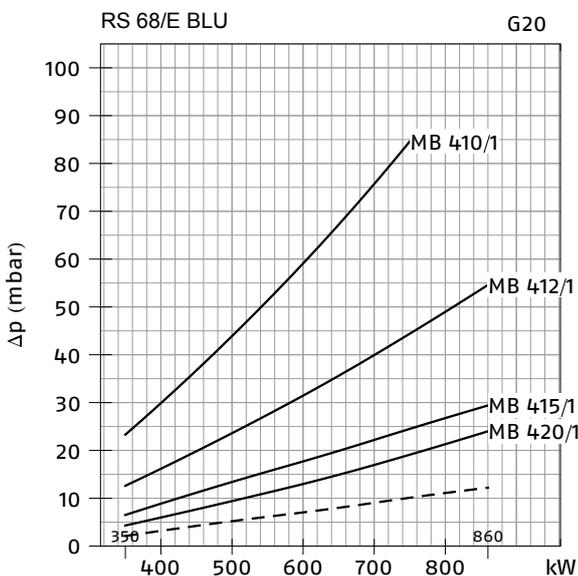


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 68/E BLU	1405	700	660	78
RS 120/E BLU	1405	700	660	84
RS 160/E BLU	1405-1420	1000	660	89
RS 200/E BLU	1405-1420	1000	660	125

- (1) Dimension with standard and extended head.

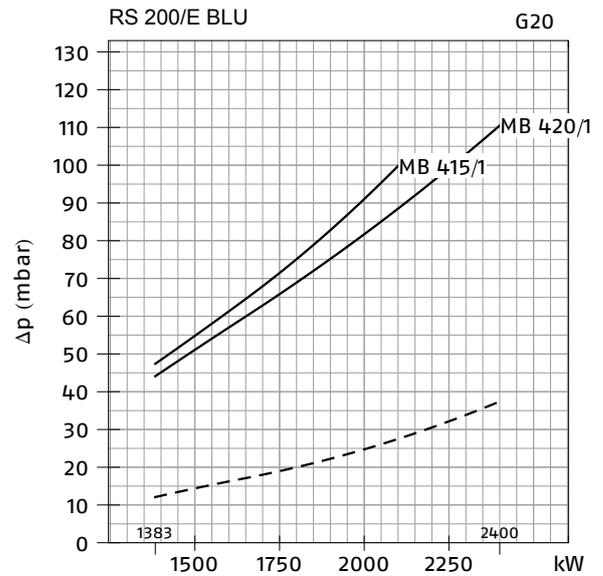
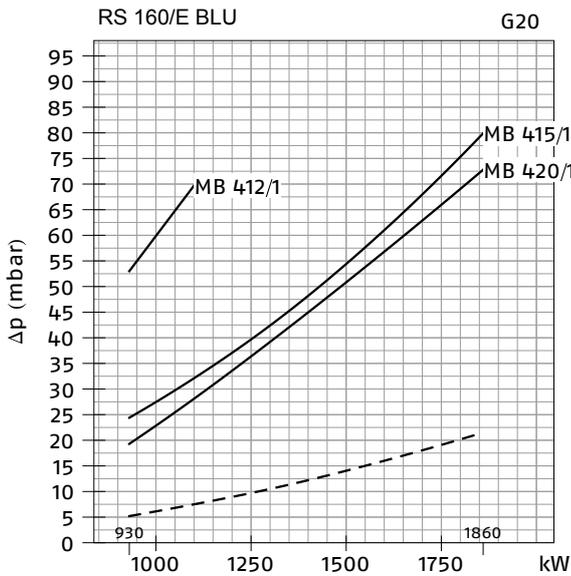
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

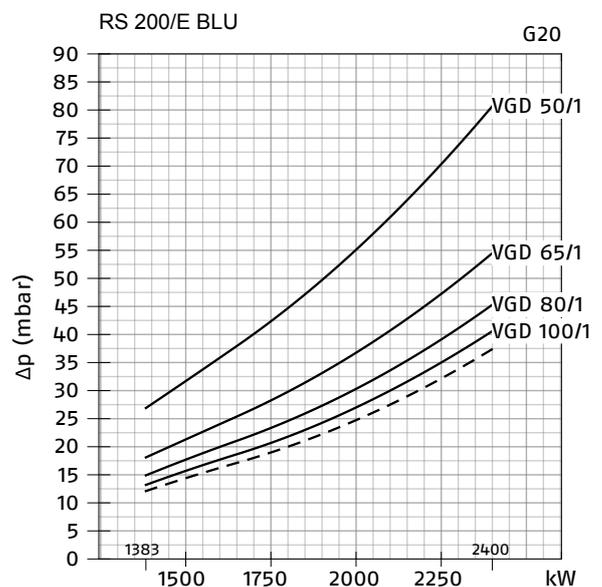
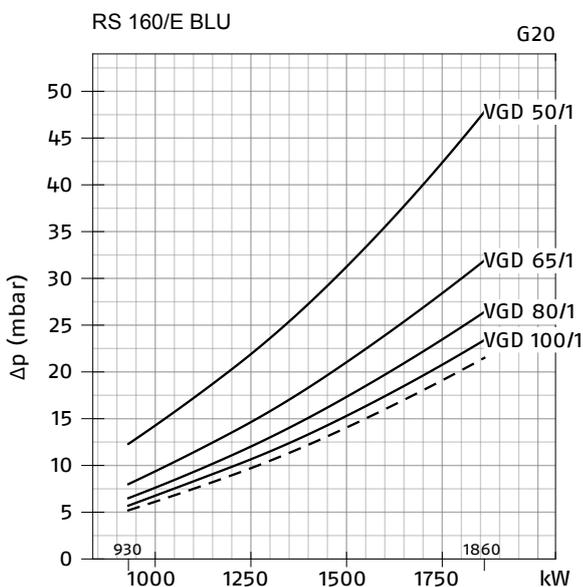
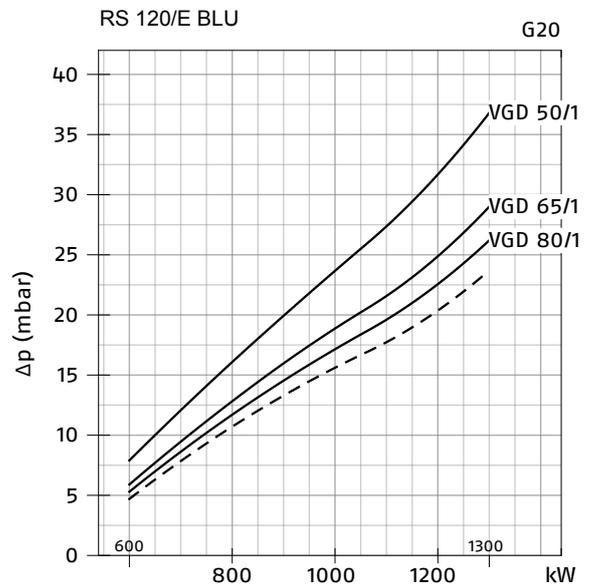
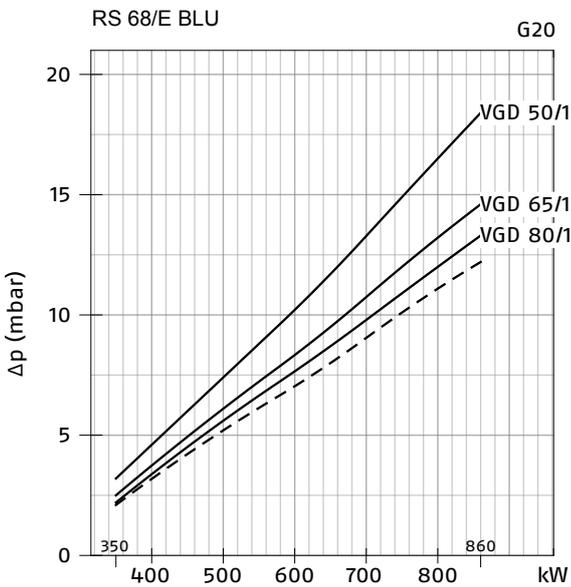


Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

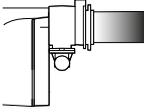
GAS TRAINS

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

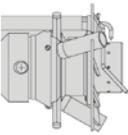
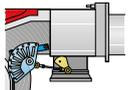
Drawing	Burner model	Specification	Note	Code
		EXTENDED HEAD KIT Burners standard head can be transformed into "extended head" versions by using the special kit. Here the kits available for the various burners are listed, showing the original and the extended lengths.		
	RS 68-120/E BLU	Standard head 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
		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).		
	All models			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.		
	All models equipped with REC37 control box	RWF 50.2 - Standard version. RWF 55.5 - Plus version.		20099869 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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
	RS 68/E BLU	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)	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 analyzer 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 O₂ 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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 O₂ 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 O₂ 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 O₂ 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 O₂ 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 O₂ 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 O₂ 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		Ph/V/Hz	V/Hz			
RS 200/EV O₂ 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 O₂ BLU TL FS1/FS2	570/1375-2400	30/93-186	6.5	3/400/50	1N/230/50	CE-0085BT0419	(1)(3)(4)	20156077

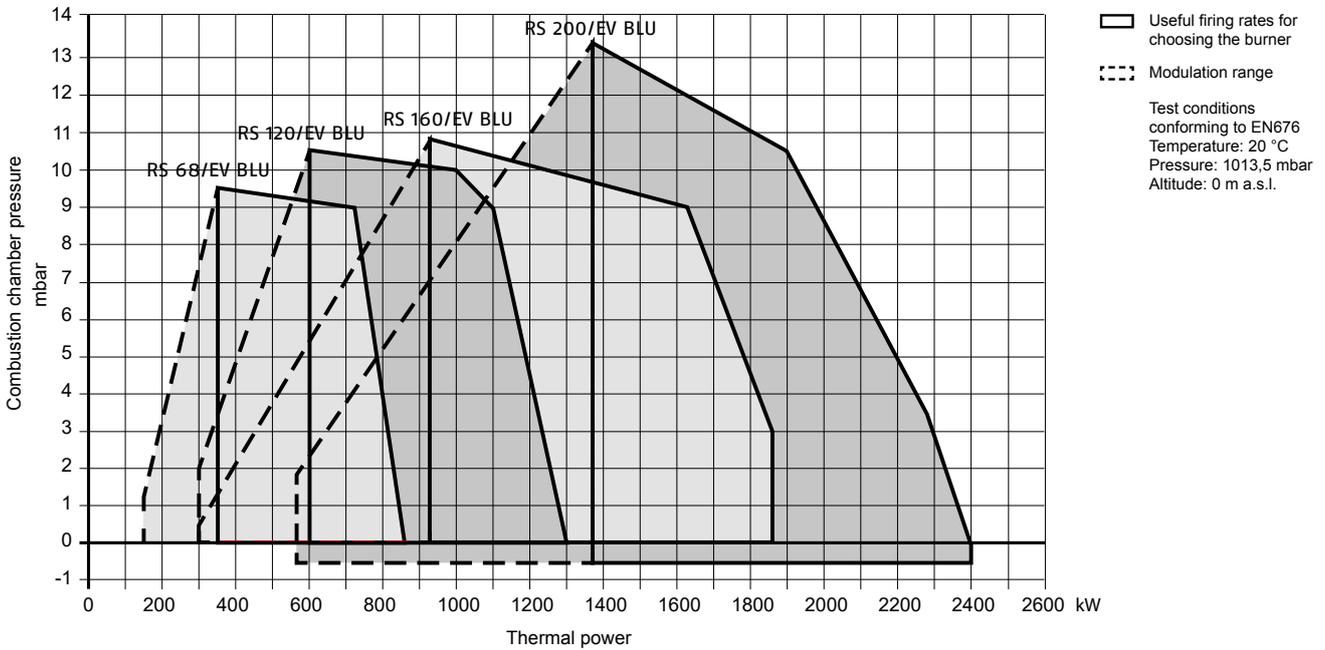
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

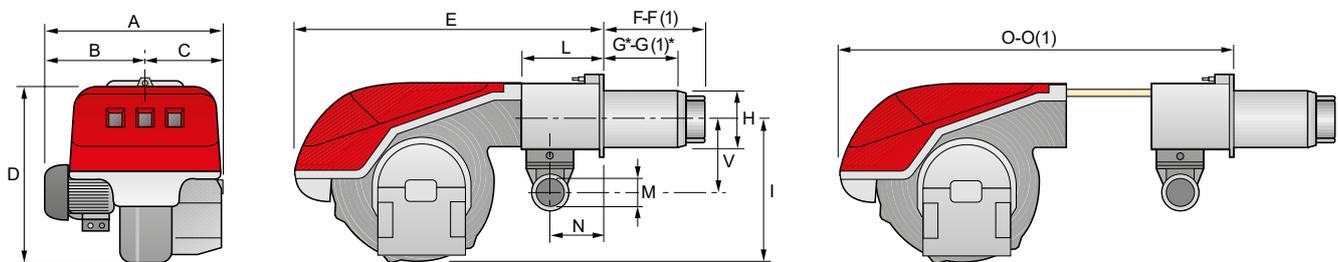
- (1) Model with terminal board.
- (2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories)
- (3) Frequency Inverter, to be ordered as separated accessory; please refer to "Burner Accessories" paragraph.
- (4) Seal control function is included on Burner 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.
- (5) With AZL display included as burner standard equipment.

FIRING RATES



OVERALL DIMENSIONS

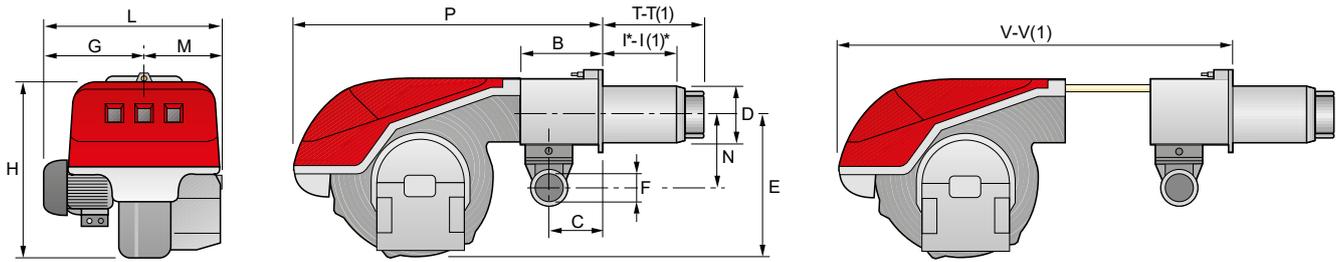
RS 68-200/EV BLU WITH REC37 CONTROL BOX



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

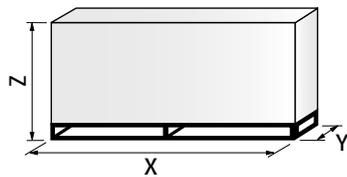
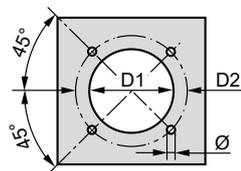
- (1) Length with extended combustion head.
- (*) Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

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.



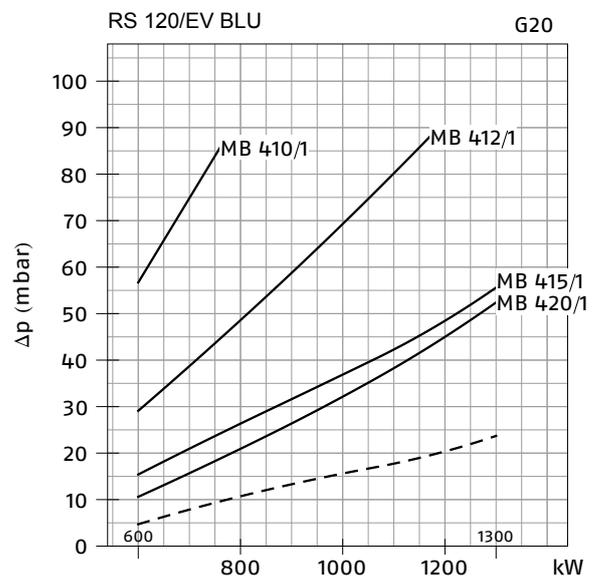
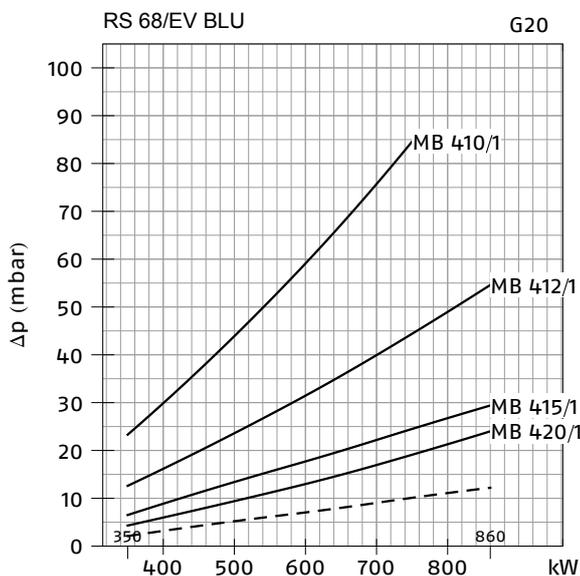
Description	D1 mm	D2 mm	Ø mm
RS 68/EV BLU	195	275-325	M12
RS 120/EV BLU	195	275-325	M12
RS 160/EV BLU	230	325-368	M16
RS 200/EV BLU	230	325-368	M16

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

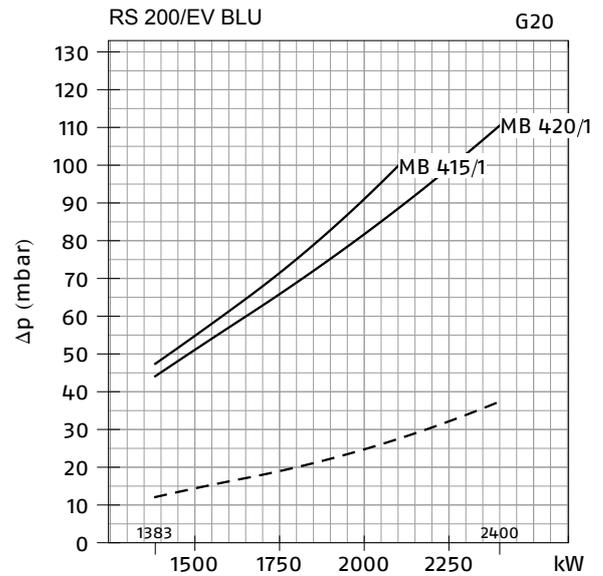
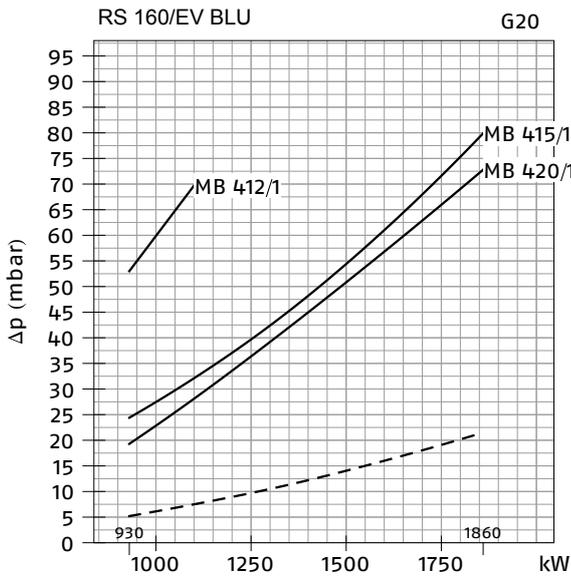
MB SERIES GAS TRAIN



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.

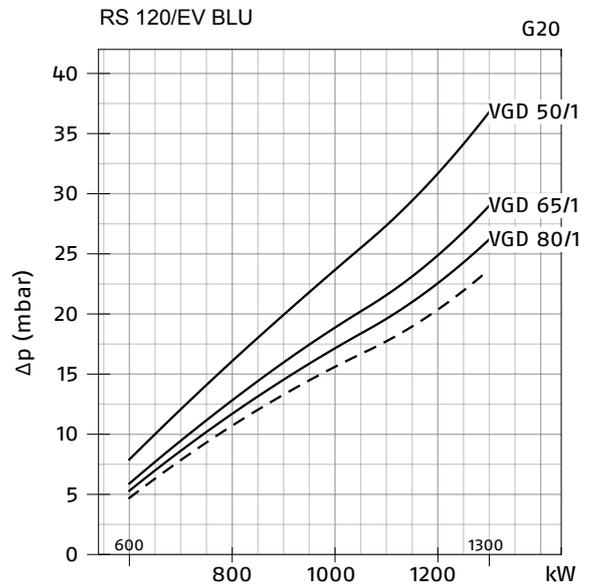
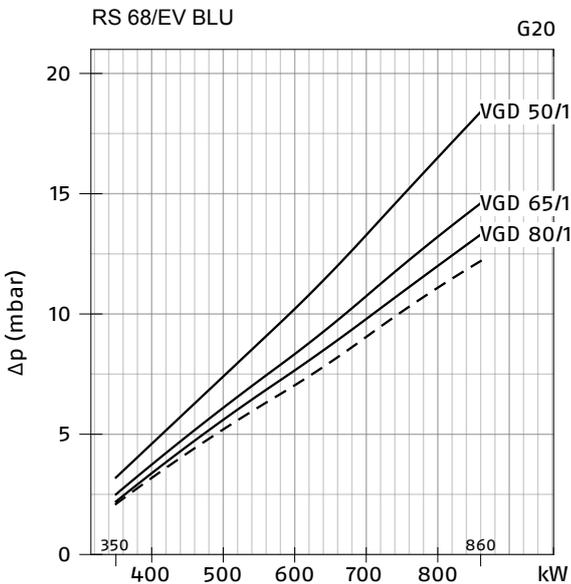
- Combustion head + gas train
- - - Combustion head

GAS

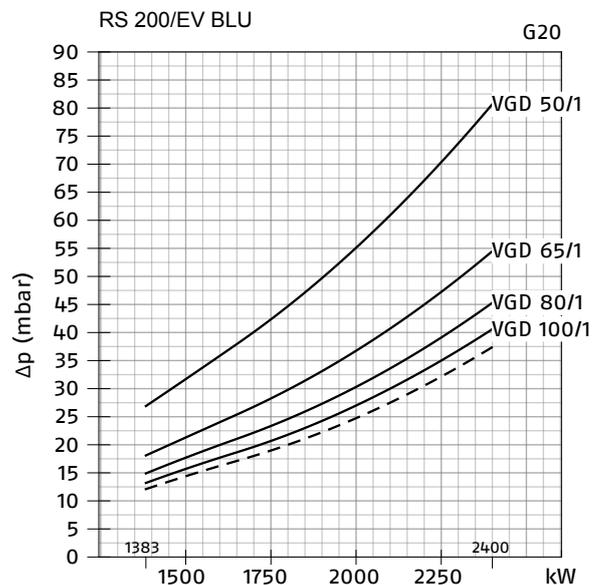
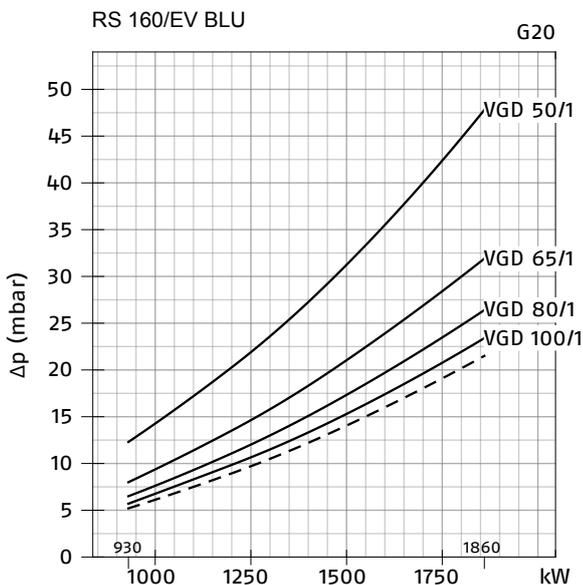


LIGHT OIL

VGD SERIES GAS TRAIN



DUAL FUEL



HEAVY OIL

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

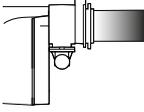
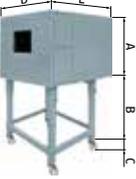
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)			
					RS 68/EV BLU	RS 120/EV BLU	RS 160/EV BLU	RS 200/EV BLU
MB SERIES ONE STAGE GAS TRAIN								
MB 410/1-RT 52	3970258*		Rp 1" ¼	-	3010126	•	•	
MB 410/1-RT 52	3970600*		Rp ¾"	-	3000824+3000843	•	•	
MB 412/1-RT 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	

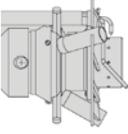
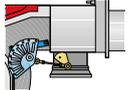
- (1) Please refer to "GAS TRAIN DESIGNATION".
 - (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 - (3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES)".
 - (4) 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
	RS 68/EV BLU	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)	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 analyzer 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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/Nm³.

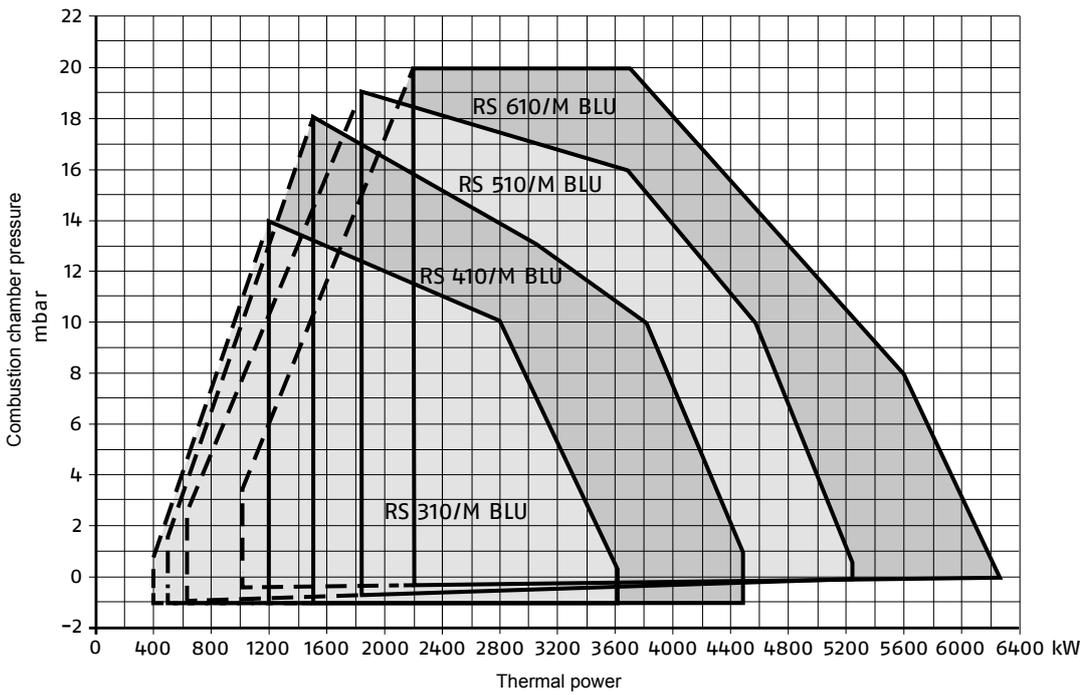
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

FS1: Models for standard operation (one stop every 24 hours).

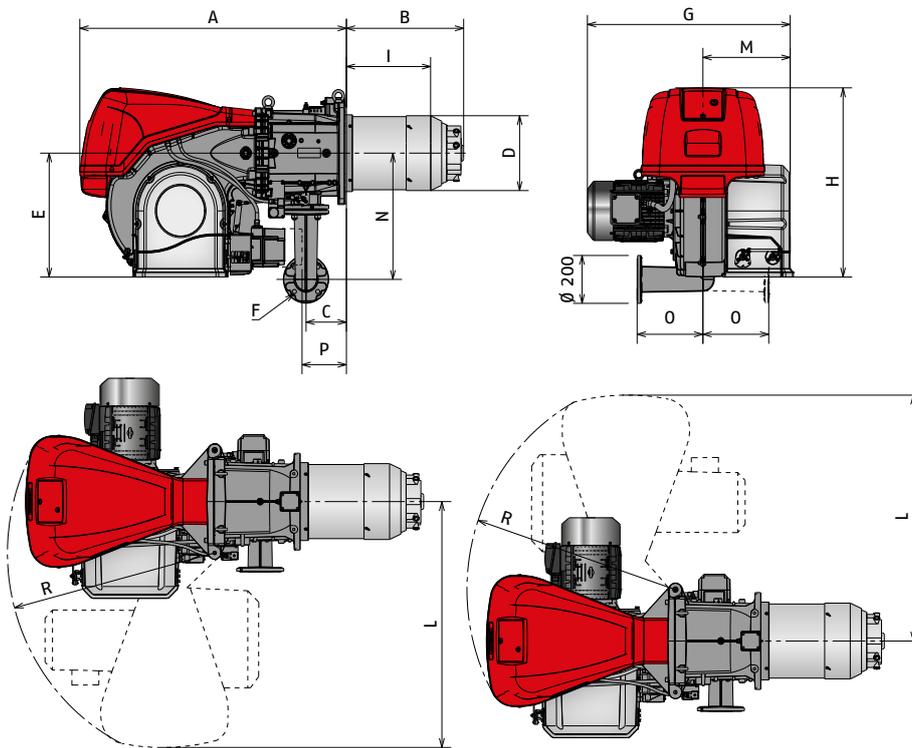
Models for continuous operation (FS2: one stop every 72 hours) are available on request.

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

FIRING RATES

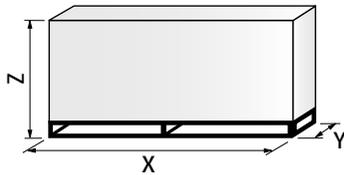
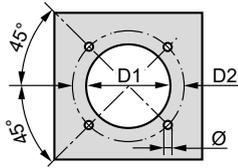


OVERALL DIMENSIONS



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.

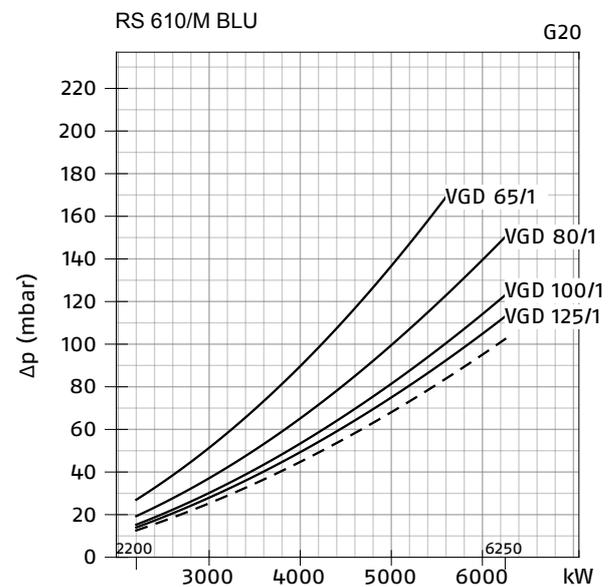
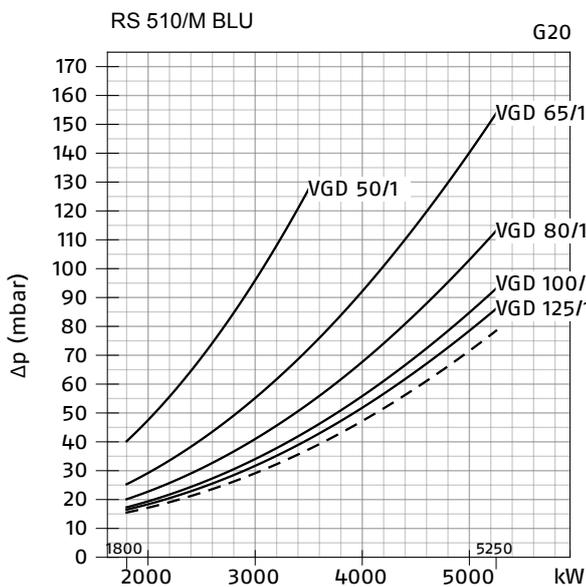
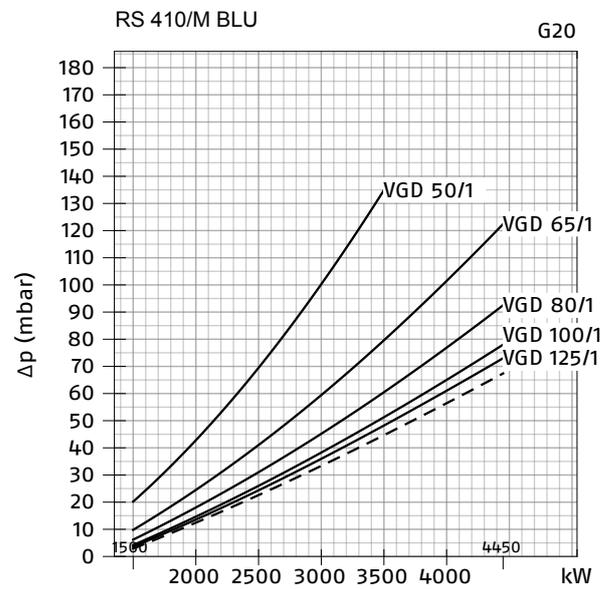
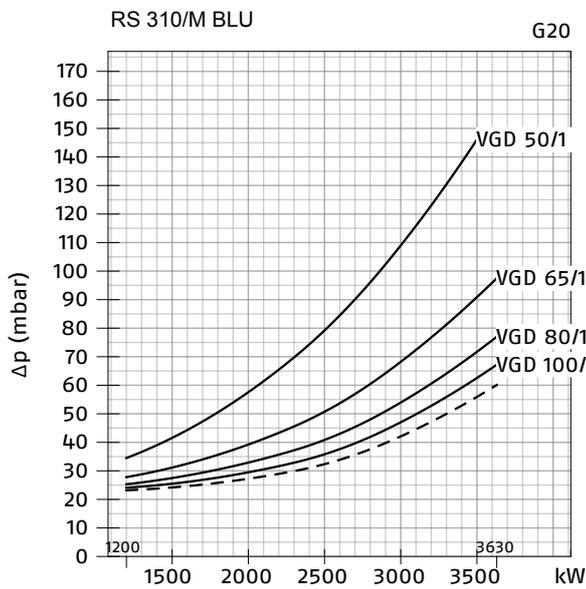


Description	D1 mm	D2 mm	Ø mm
RS 310/M BLU	335	452	M18
RS 410/M BLU	335	452	M18
RS 510/M BLU	335	452	M18
RS 610/M BLU	350	452	M18

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



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. RWF 55.5 - Complete with RS-485 interface. RWF 55.6 - Complete with RS-485/PROFIBUS interface.		20073595 20074441 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. 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).		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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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.

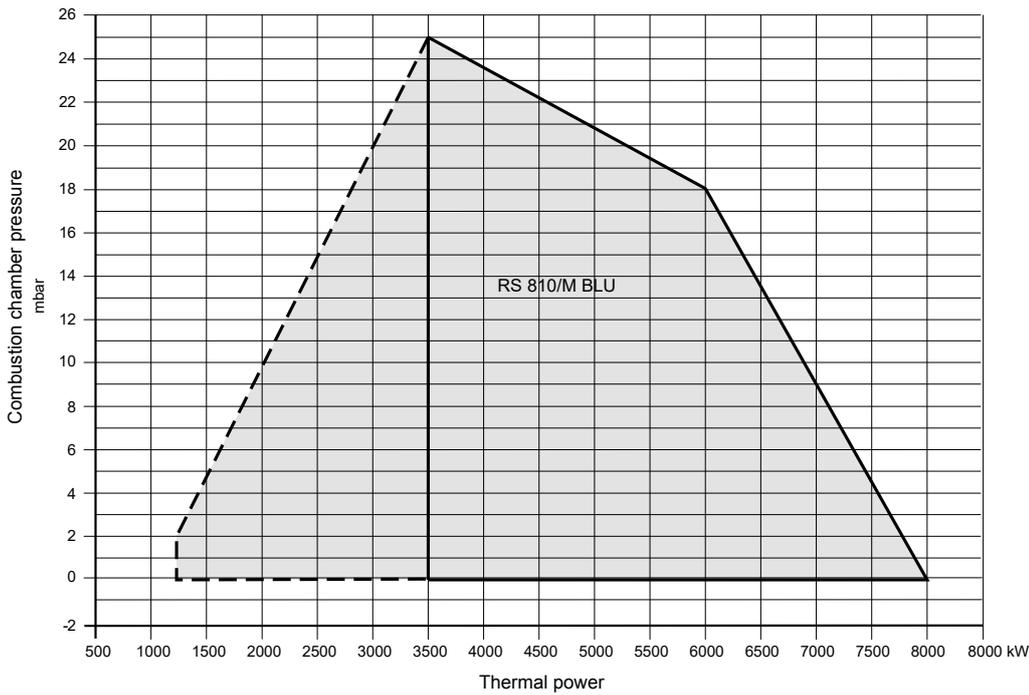
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

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.

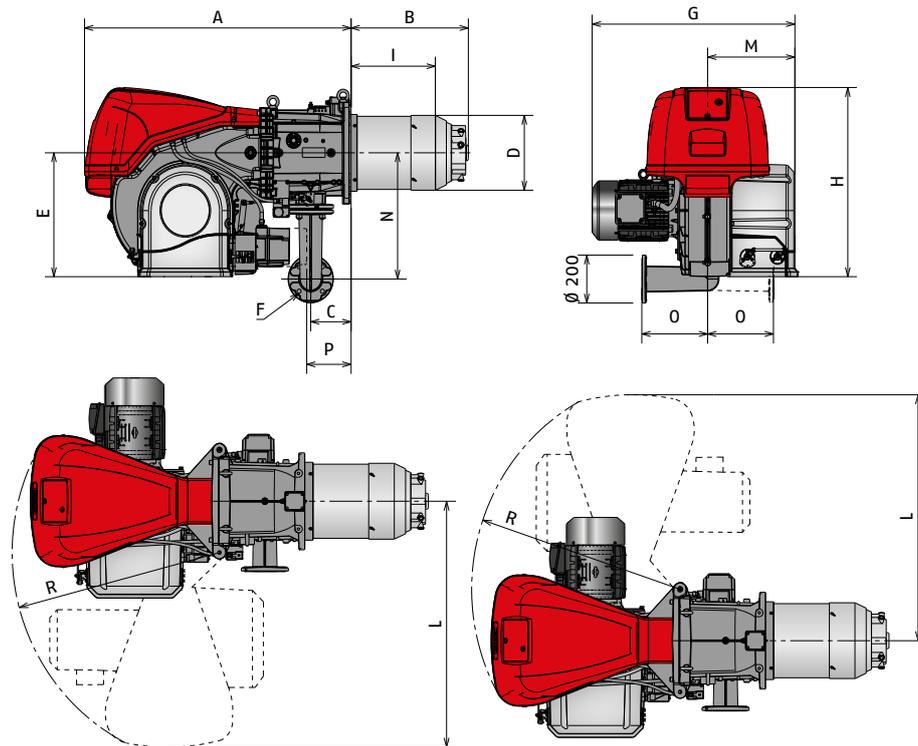
FIRING RATES



- ▭ Useful firing rates for choosing the burner
- - - Modulation range

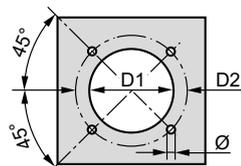
Test conditions
conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

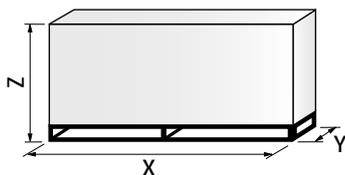


Description	A mm	B mm	C mm	D mm	E mm	F(**) mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P(*) mm	R mm
RS 810/M BLU	1345	558	173	363	585	DN80	980	790	405	1197	413	528	290	177	1055

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



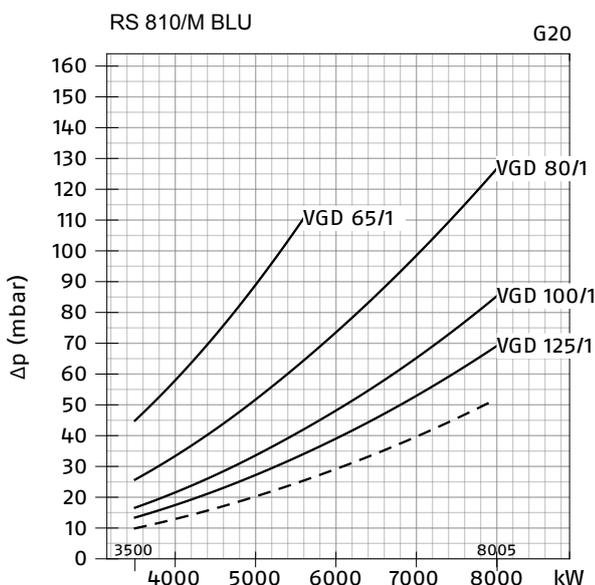
Description	D1 mm	D2 mm	Ø mm
RS 810/M BLU	400	495	M18



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.		3010213
		Pressure (0-2.5 bar) with 4-20 mA output.		3010214
		Pressure (0-16 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 adaptor 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 O₂ 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

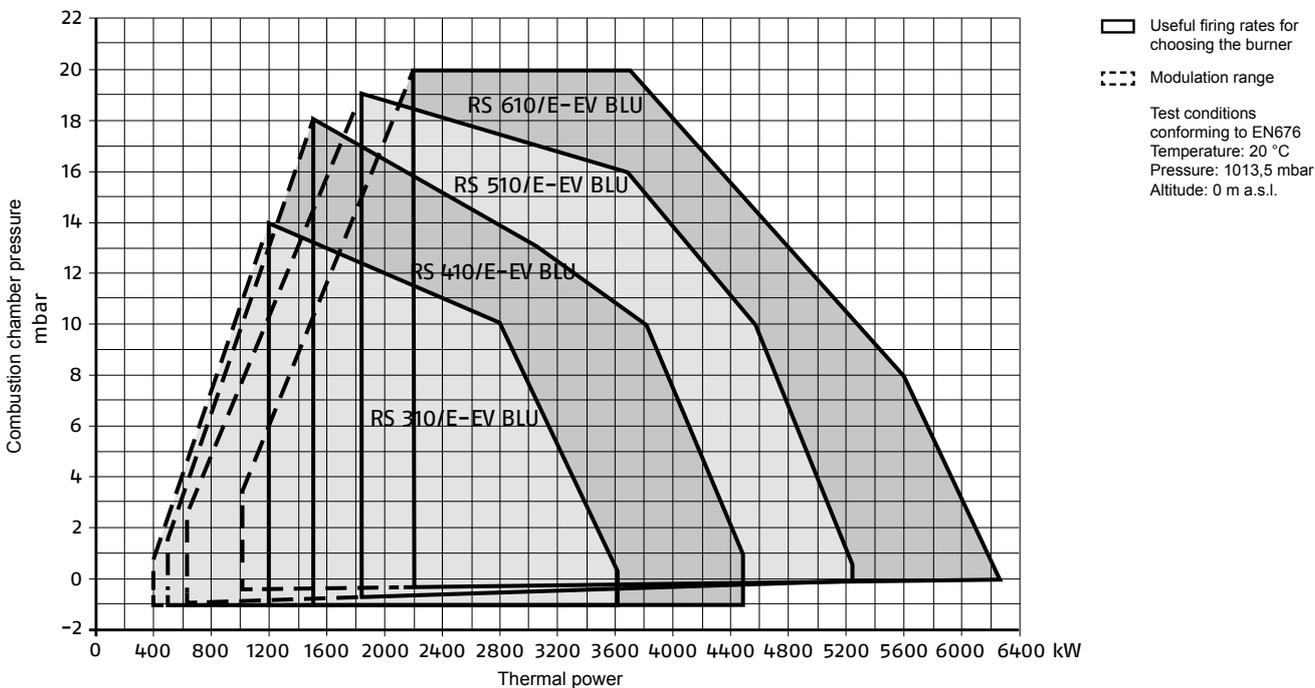
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (REC 27)								
RS 310/E BLU TC FS1	400/1200-3630	40/120-363	8.8	3/400/50	230/50-60	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 O₂ 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 O₂ 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 O₂ 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 O₂ 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		Ph/V/Hz	V/Hz			
RS 410/E O₂ 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 O₂ 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 O₂ 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 O₂ 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 O₂ 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



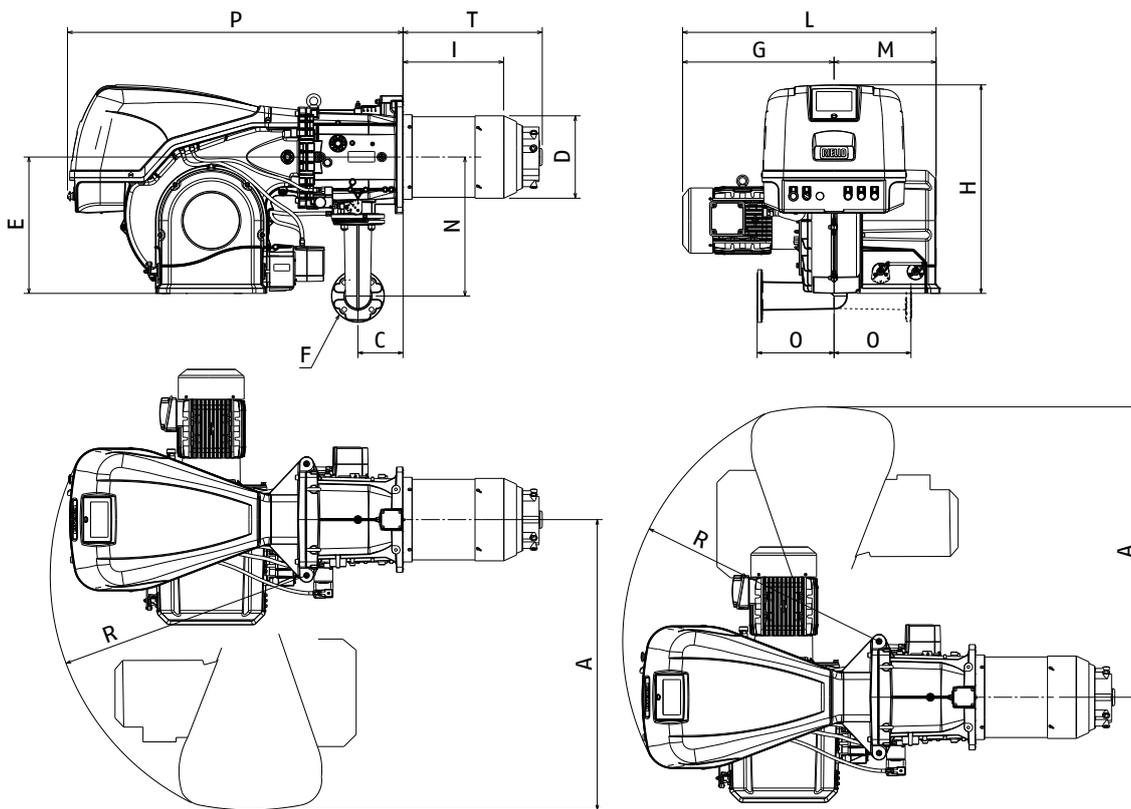
GAS

LIGHT OIL

DUAL FUEL

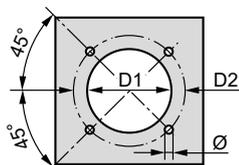
HEAVY OIL

OVERALL DIMENSIONS

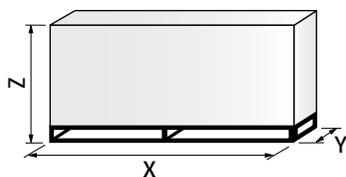


Description	A mm	C(*) mm	D mm	E mm	F mm	G mm	H mm	I mm	L mm	M mm	N mm	O mm	P mm	R mm	T mm
MODELS WITH ELECTRONIC CAM (REC 27-37)															
RS 310/E BLU	1015	178	306	520	DN65-DN80	500	790	346	900	400	528	290	1178	890	465
RS 410/E BLU	1015	178	313	520	DN65-DN80	540	790	365	940	400	528	290	1178	890	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

GAS

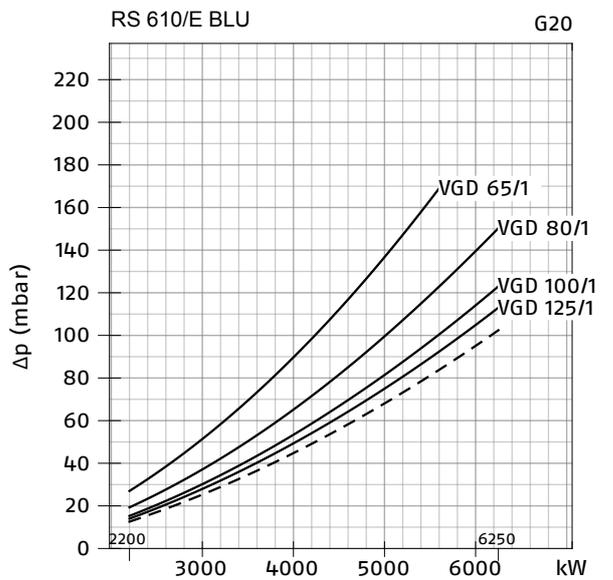
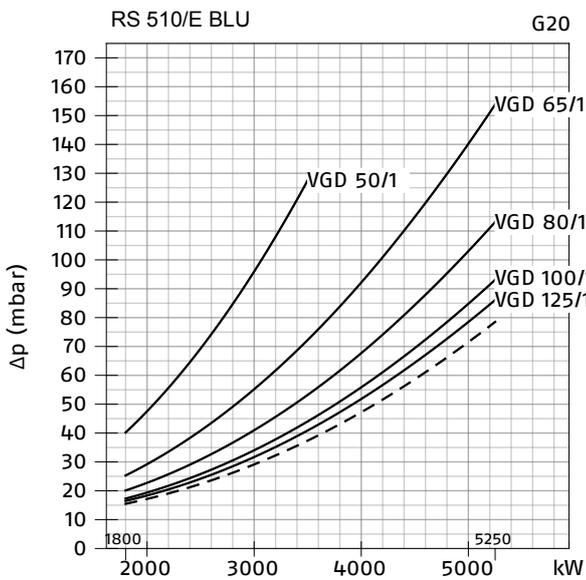
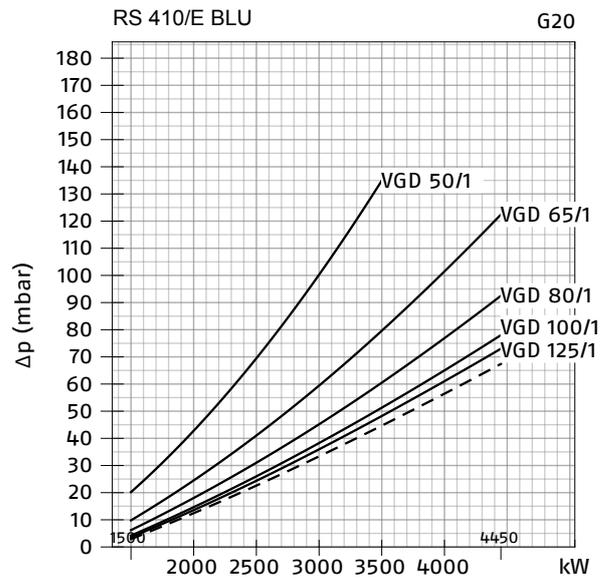
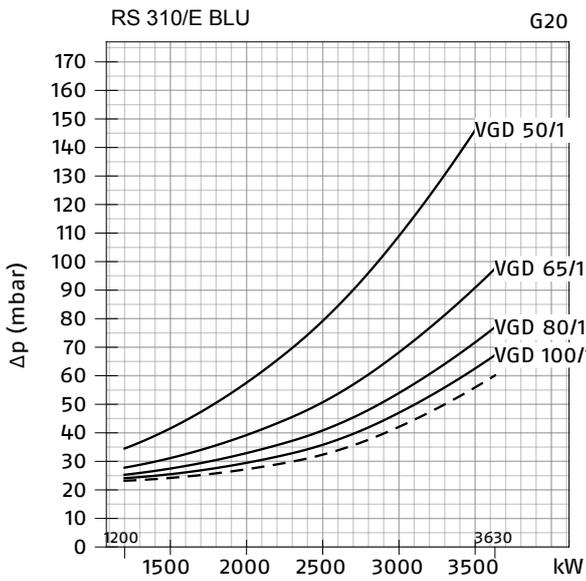
LIGHT OIL

DUAL FUEL

HEAVY OIL

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

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 is integrated inside the control box.		20085417
		RWF 50.2 - Basic version with 3 position output		20074441
		RWF 55.5 - Complete with RS-485 interface		20074442
		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.		3010213
		Pressure (0-2.5 bar) with 4-20 mA output.		3010214
		Pressure (0-16 bar) with 4-20 mA output.		3090873
		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 analyzer 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 O₂ Control Ready with output PID modulation control included (RS 310-610/E O₂ 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 O₂ 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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) - O ₂ CONTROL READY								
RS 810/E O₂ 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.

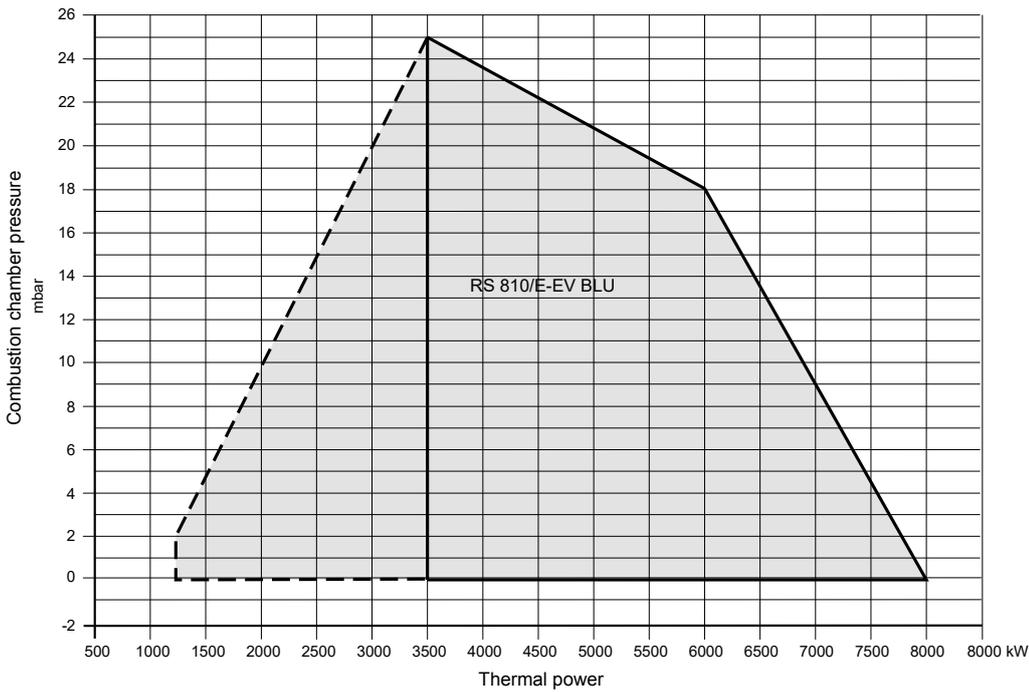
FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours).

(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).

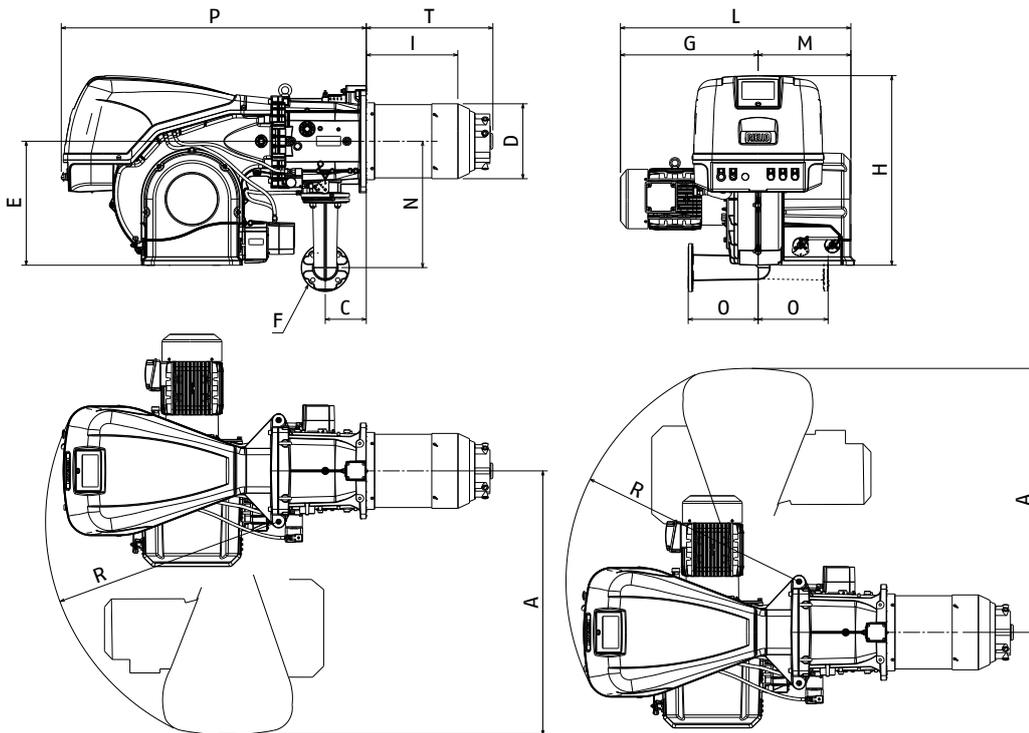
(3) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES



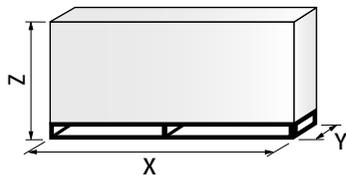
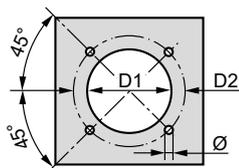
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

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) - O₂ CONTROL READY															
RS 810/E O₂ 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

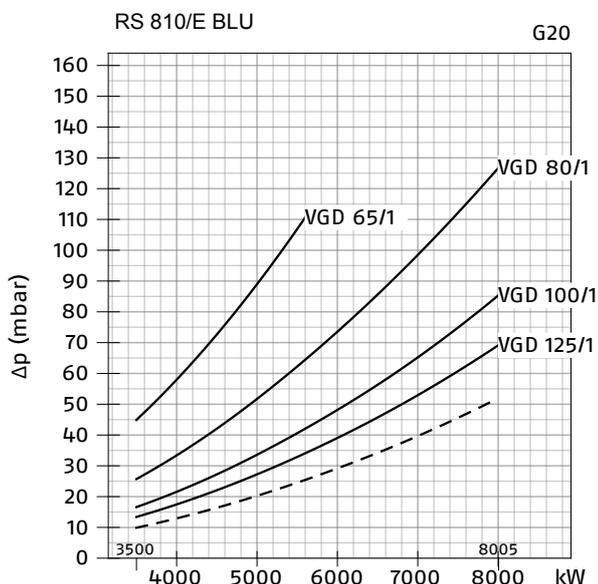


Description	D1 mm	D2 mm	Ø mm
RS 810/E BLU	400	495	M18

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

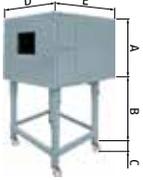
Description (1)	Code	Note	Ø Gas train	VPS kit code (2)	Burner-gas train adapter (3)
					RS 810/E BLU
VGD SERIES ONE STAGE GAS TRAIN					
VGD 65/1-FT 122	20140762*	(5)	DN65	3010123	20059331/(3010222+20059331)(6)
VGD 80/1-FT 122	20140763*		DN80	3010123	20059331/(3010222+20059331)(6)
VGD 100/1-FT 122	20169193*		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 (QGO₂) FOR BURNERS The QGO ₂ is an oxygen analyzer 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 O₂ 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 O₂ 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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 O₂ 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 O₂ 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 O₂ 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 O₂ 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 O₂ 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).

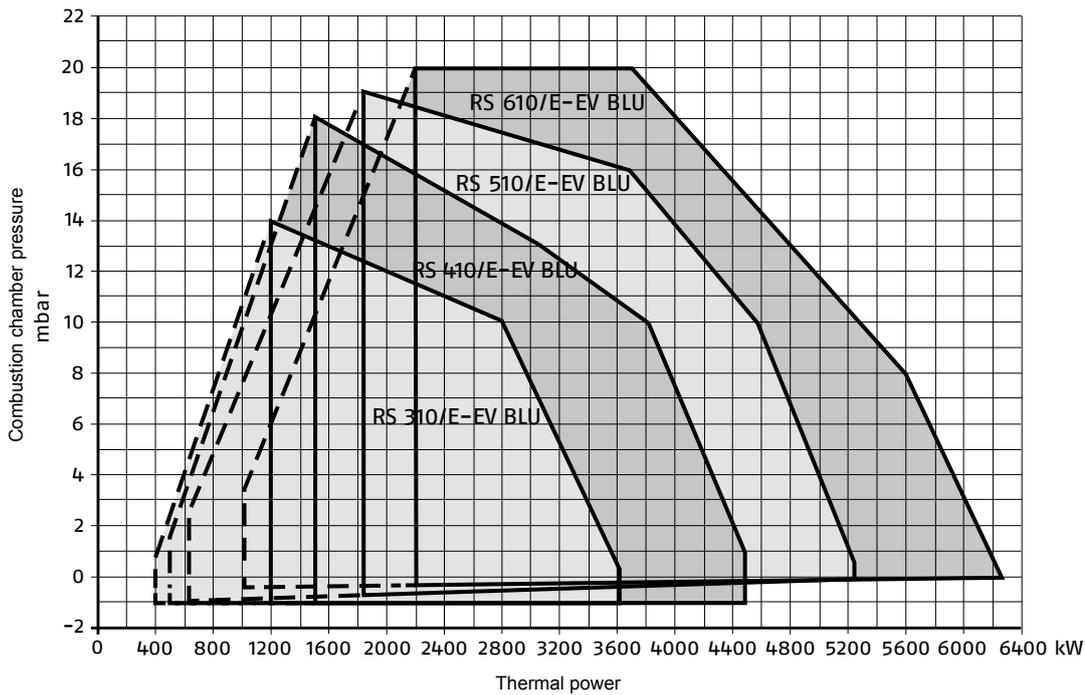
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

(1) Frequency Inverter to be ordered as separated accessory; please refer to "Accessories" paragraph.

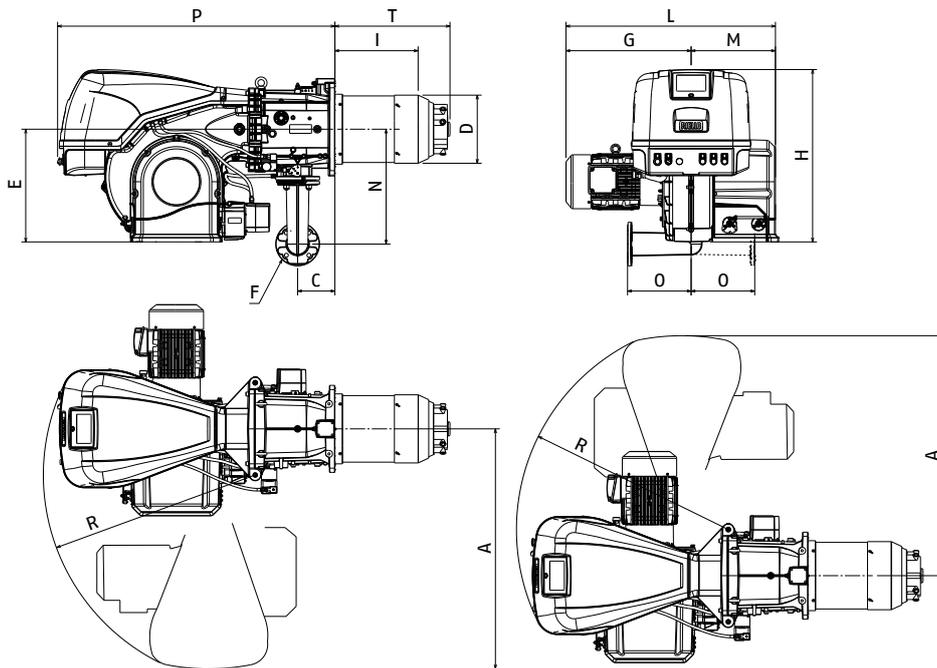
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories).

(3) The QGO₂ oxygen analyzer 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	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

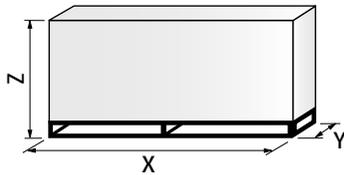
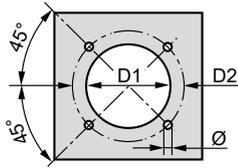
(*) Maximum position for the extraction of the servomotor cover.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

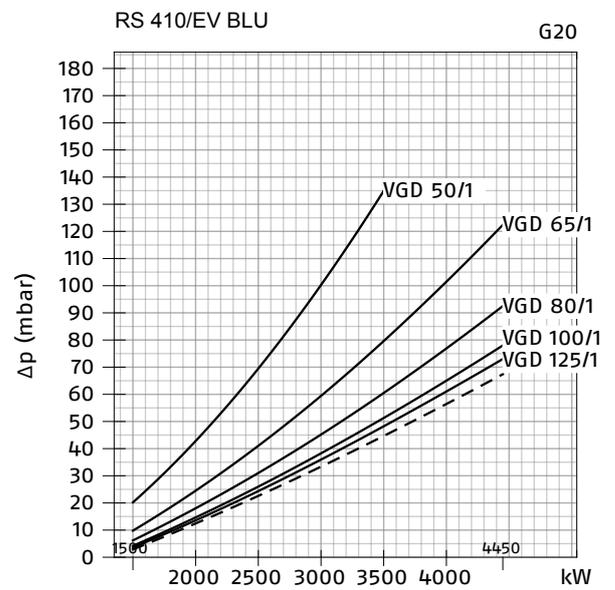
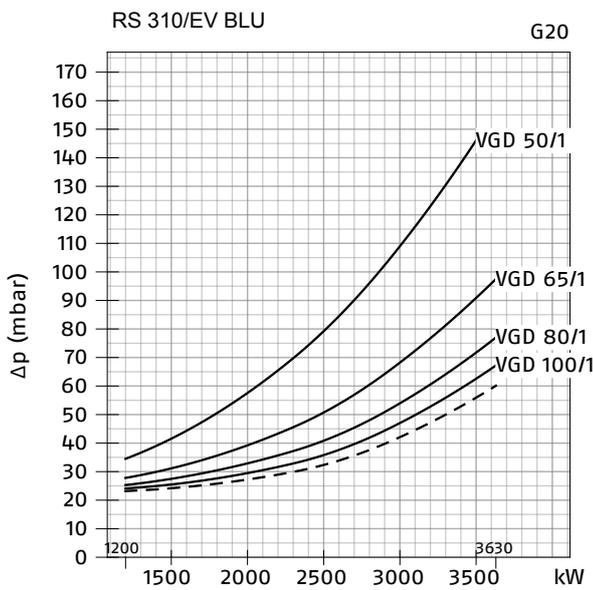


Description	D1 mm	D2 mm	Ø mm
RS 310/EV BLU	335	452	M18
RS 410/EV BLU	335	452	M18
RS 510/EV BLU	335	452	M18
RS 610/EV BLU	350	452	M18

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

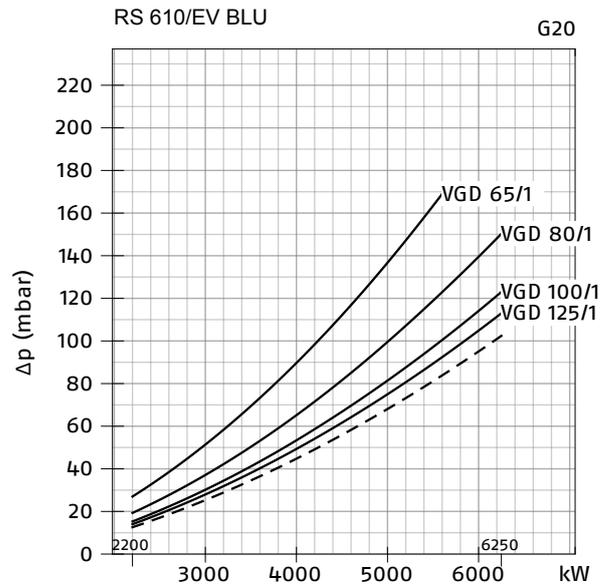
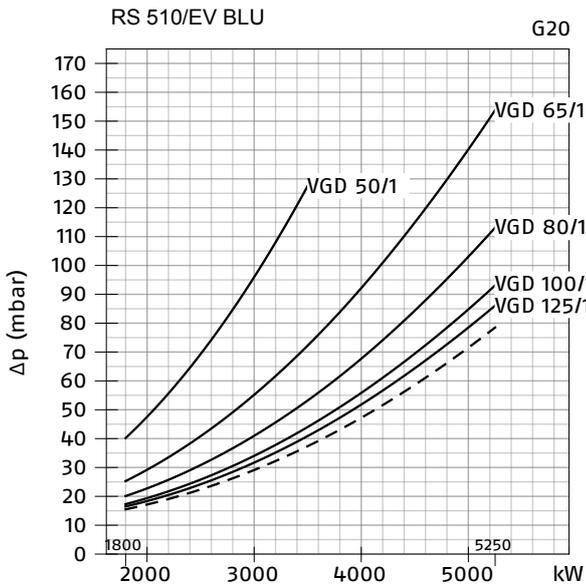
PRESSURE LOSS DIAGRAMS

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.

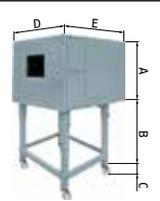
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

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	<p>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</p>		3010376
	All models equipped with REC37 control box	<p>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 is integrated inside the control box.</p>		
		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	<p>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).</p>		3010110
	All models	<p>PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.</p>		
		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	<p>OXYGEN CONTROL KIT (QGO₂) FOR BURNERS The QGO₂ is an oxygen analyzer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.</p>	(1)	20045187
	All models equipped with LMV52 control box	<p>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.</p>		3010377
	RS 310/EV BLU	<p>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.</p> 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	<p>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.</p>		3010436
	All models equipped with LMV52 control box	<p>PC INTERFACE SOFTWARE (ACS 450) PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.</p>		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, O₂ Control Ready and Operation with Variable Speed Drive (VSD) with output PID modulation control included (RS 310-610/EV O₂ 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 O₂ 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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 O₂ 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.

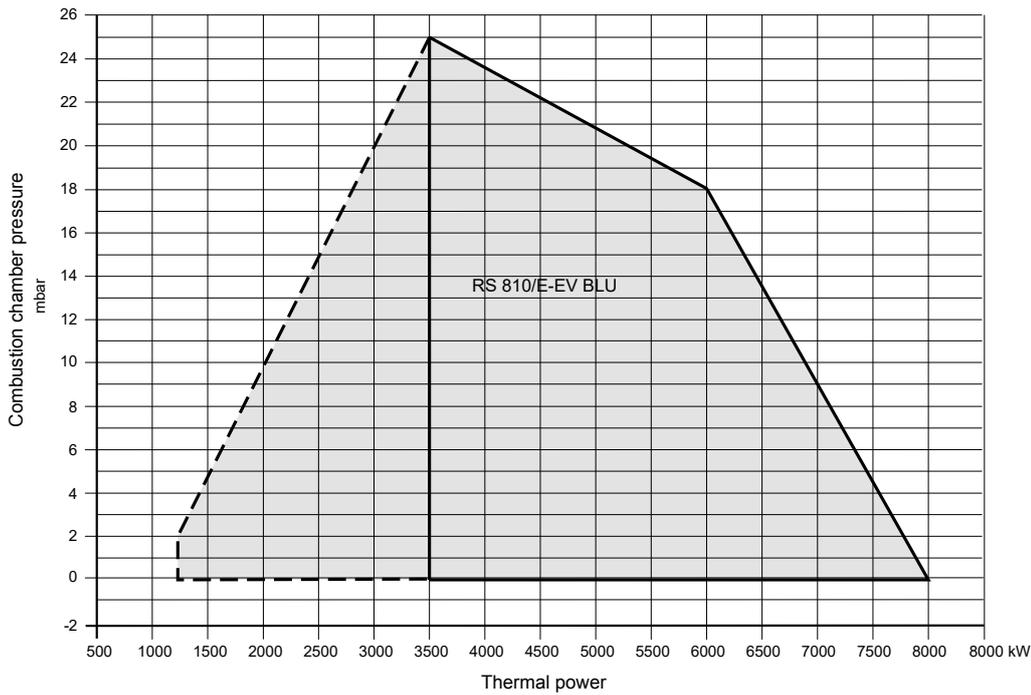
FS1/FS2: Models for standard operation (one stop every 24 hours) and for continuous operation (one stop every 72 hours).

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 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.

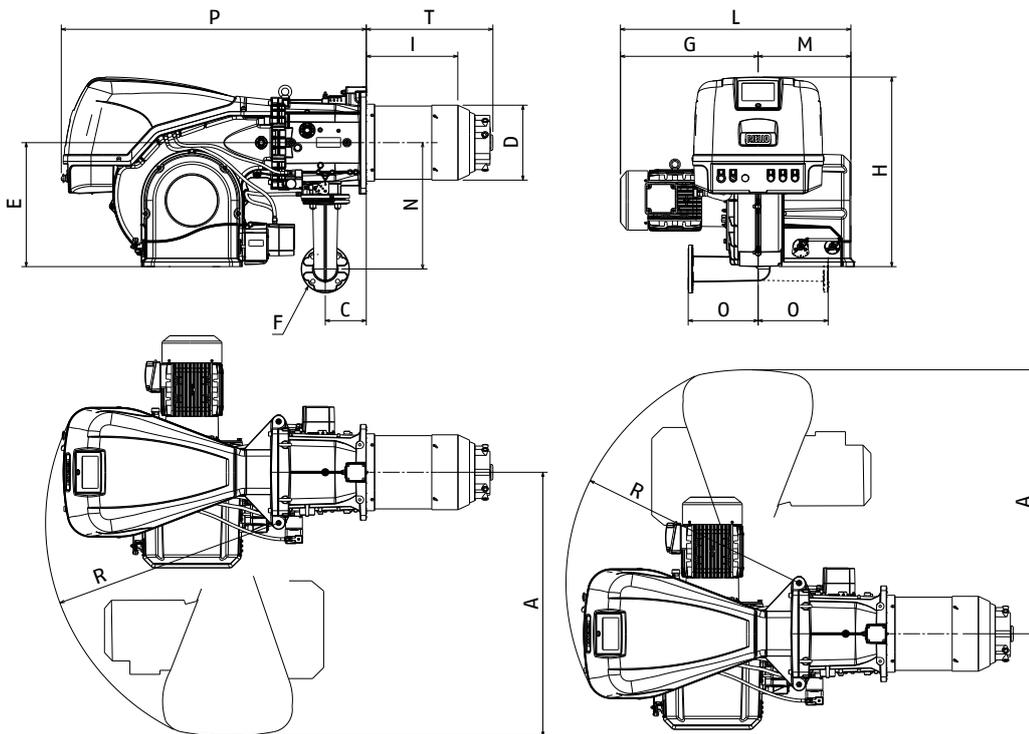
FIRING RATES



- ▭ Useful firing rates for choosing the burner
- - - Modulation range

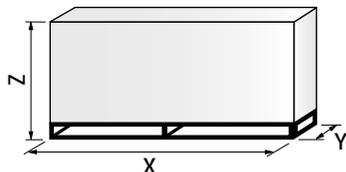
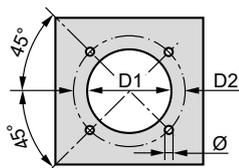
Test conditions
conforming to EN676
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS



Description	A mm	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 O₂ 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

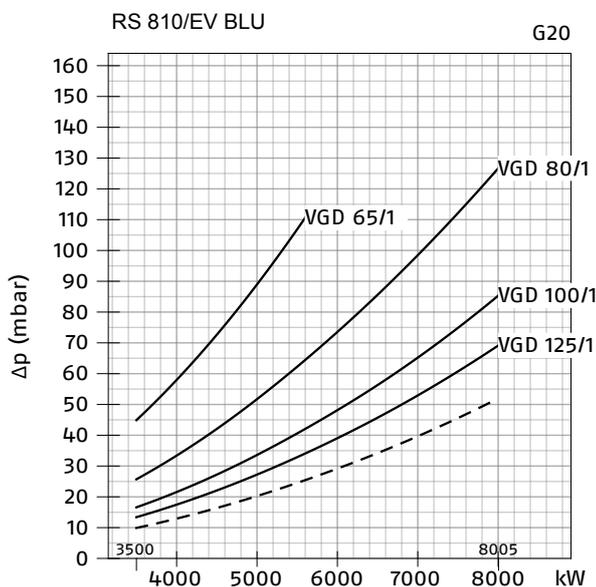


Description	D1 mm	D2 mm	Ø mm
RS 810/EV BLU	400	495	M18

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

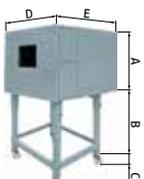
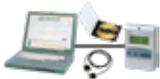
Description (1)	Code	Note	Ø Gas train	VPS kit code (2)	Burner-gas train adapter (3)
					RS 810/EV BLU
VGD SERIES ONE STAGE GAS TRAIN					
VGD 65/1-FT 122	20140762*	(5)	DN65	3010123	20059331/(3010222+20059331)(6)
VGD 80/1-FT 122	20140763*		DN80	3010123	20059331/(3010222+20059331)(6)
VGD 100/1-FT 122	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 analyzer 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.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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, O₂ 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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

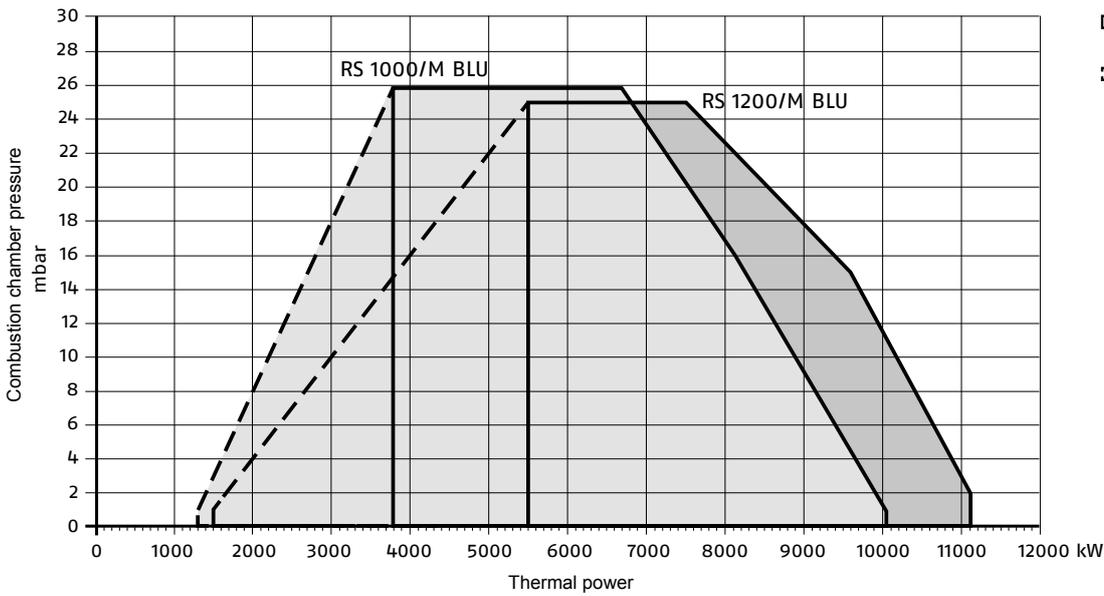
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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 LFL control box.

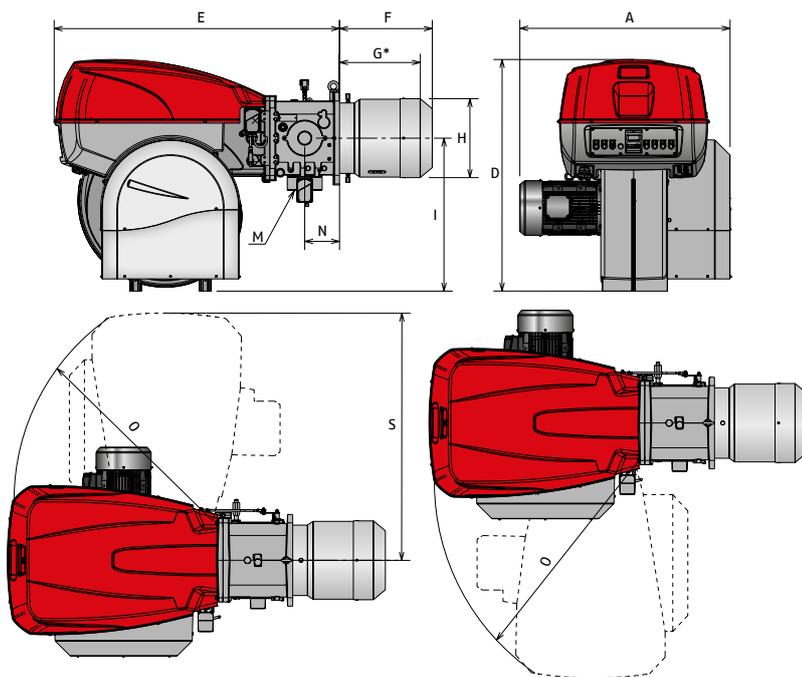
(2) Model with UV photocell.

FIRING RATES



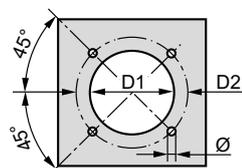
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

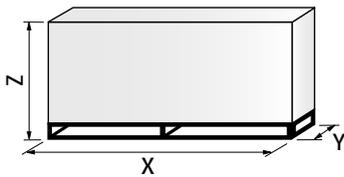


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/M BLU	1206	1338	1637	669	485	413	885	DN80	200	1350	1493
RS 1200/M BLU	1250	1338	1637	670	454	456	885	DN80	200	1350	1493

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



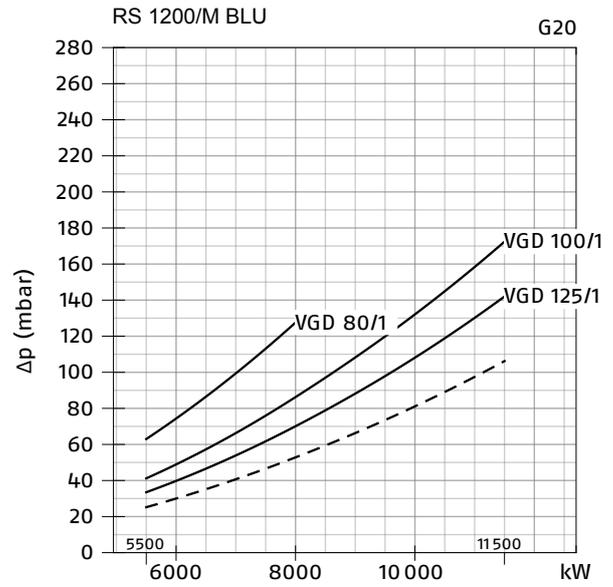
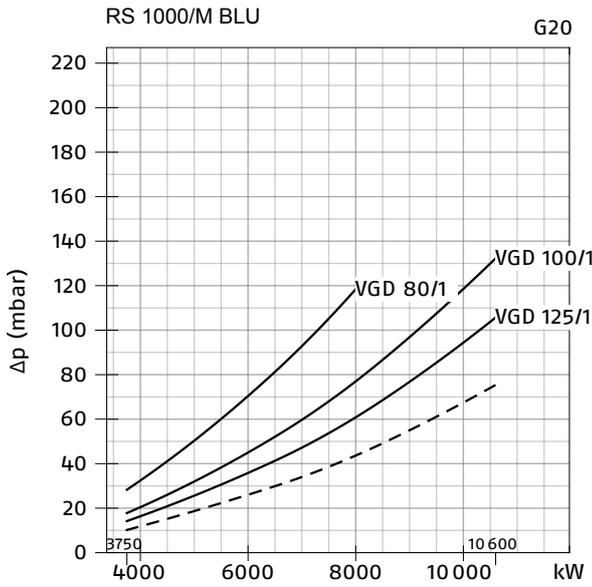
Description	D1 mm	D2 mm	Ø mm
RS 1000/M BLU	460	608	M20
RS 1200/M BLU	500	608	M20



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.	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.	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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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

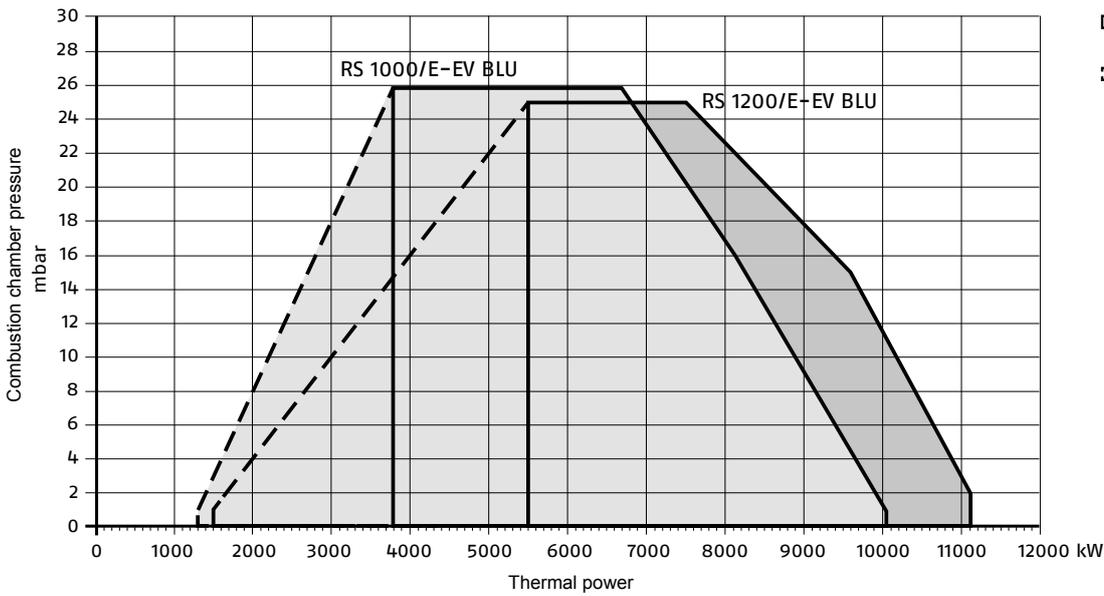
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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 IRD sensor.

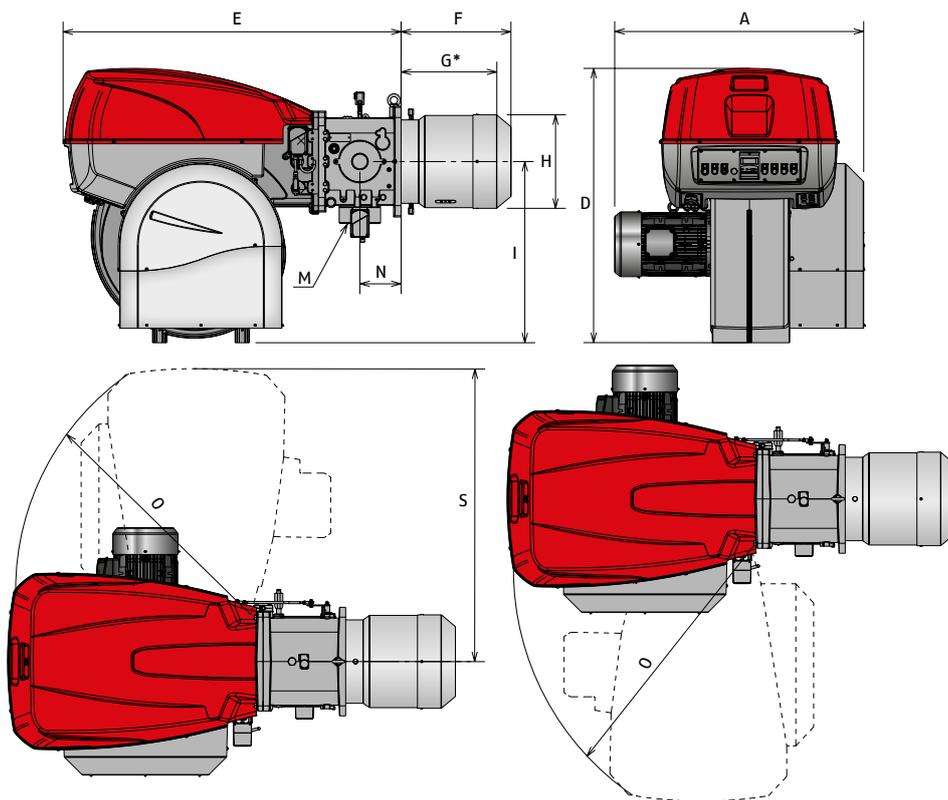
(2) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES



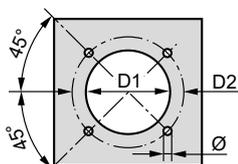
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

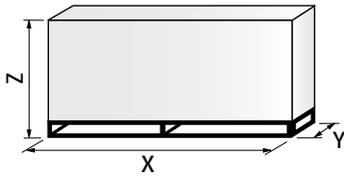


Description	A mm	D mm	E mm	Fv	G(*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/E BLU	1206	1338	1637	669	485	413	885	DN80	200	1350	1493
RS 1200/E BLU	1250	1338	1637	670	485	456	885	DN80	200	1350	1493

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



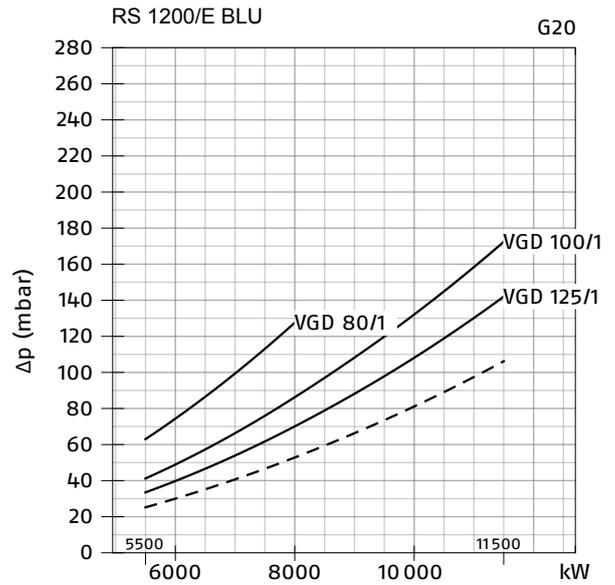
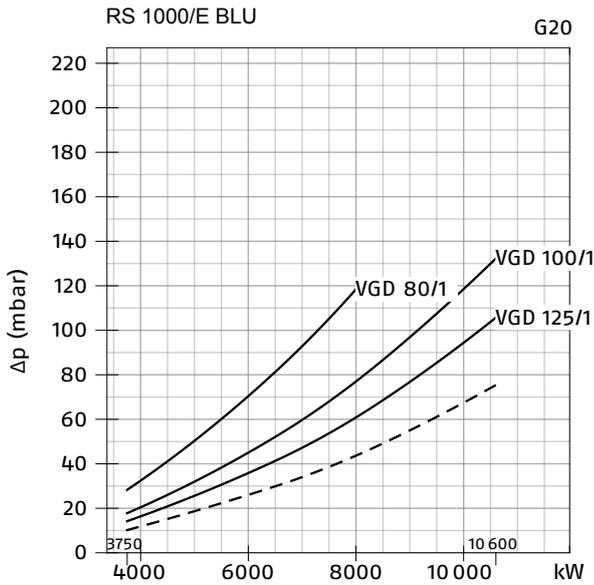
Description	D1 mm	D2 mm	Ø mm
RS 1000/E BLU	460	608	M20
RS 1200/E BLU	500	608	M20



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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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

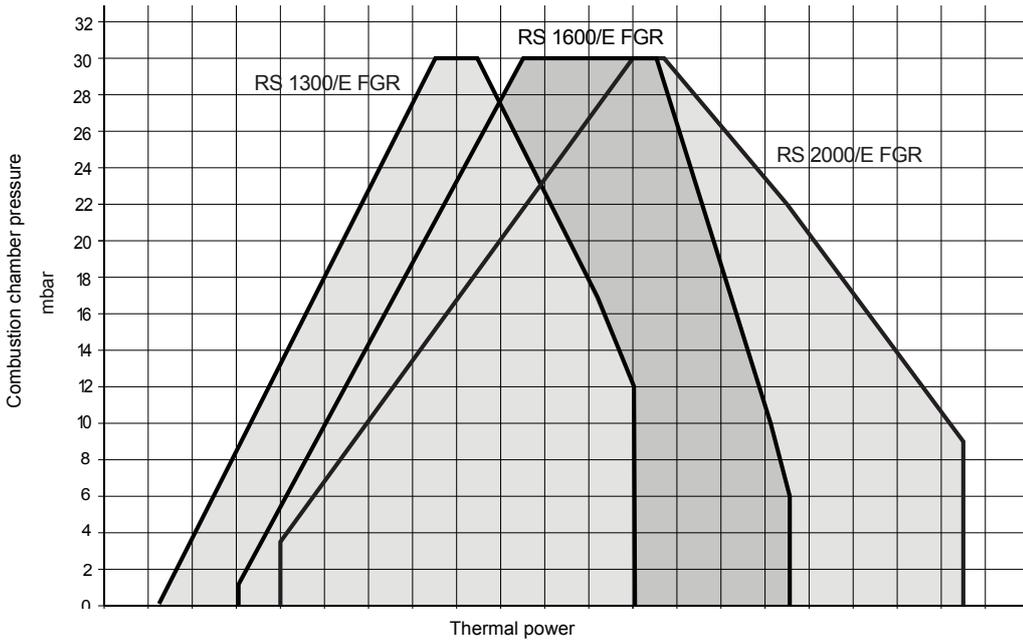
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

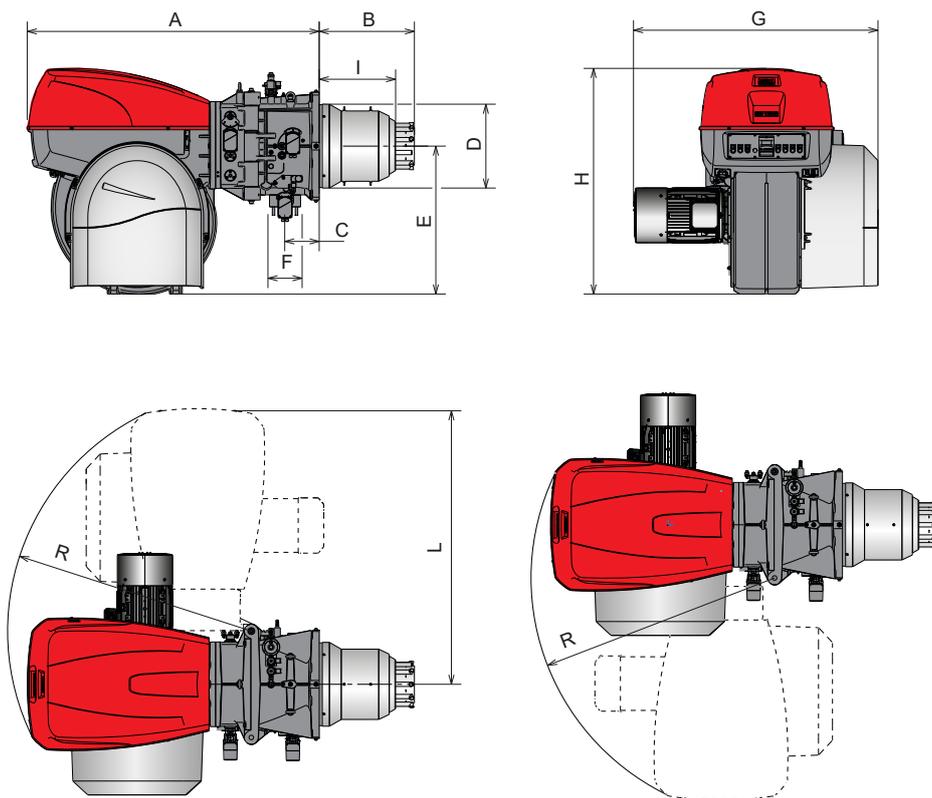
(2) Model with IRD sensor.

FIRING RATES

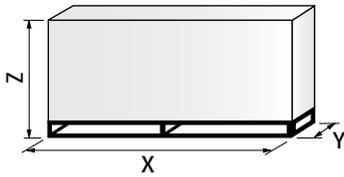
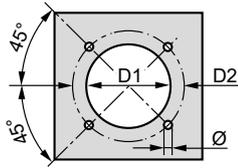


Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

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

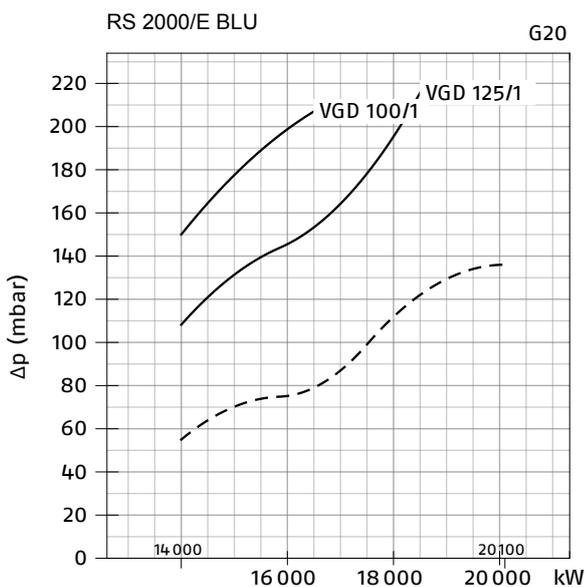
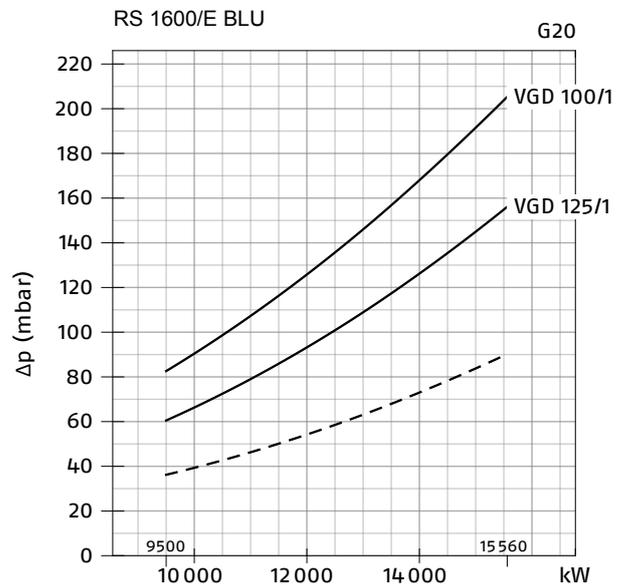
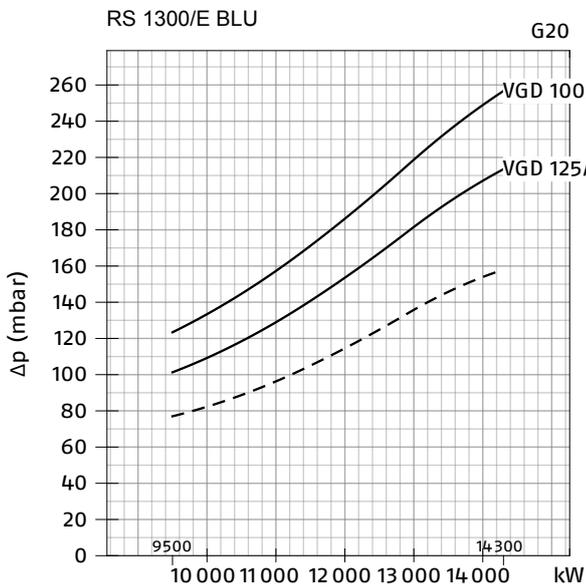


Description	D1 mm	D2 mm	Ø mm
RS 1300/E BLU	580	645	M20
RS 1600/E BLU	580	645	M20
RS 2000/E BLU	580	645	M20

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



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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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

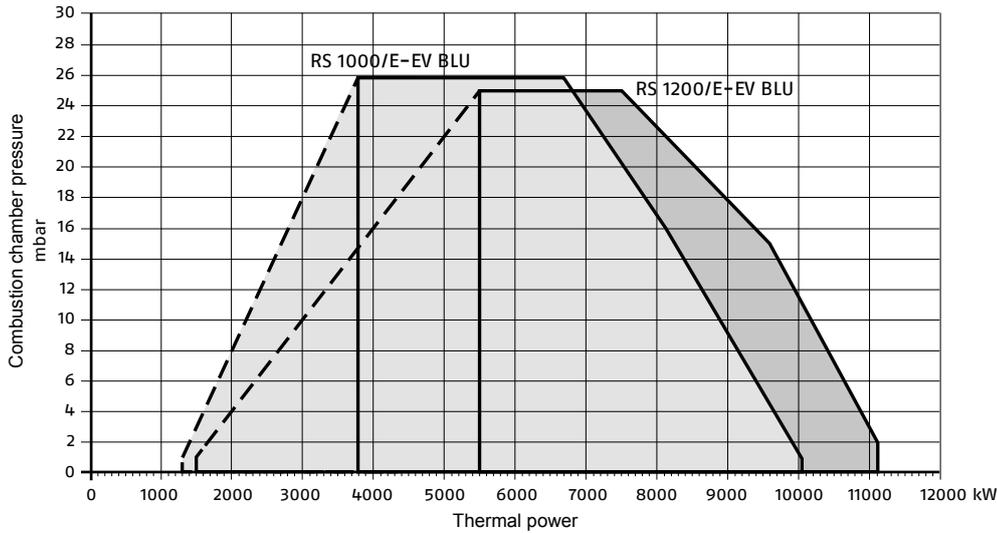
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

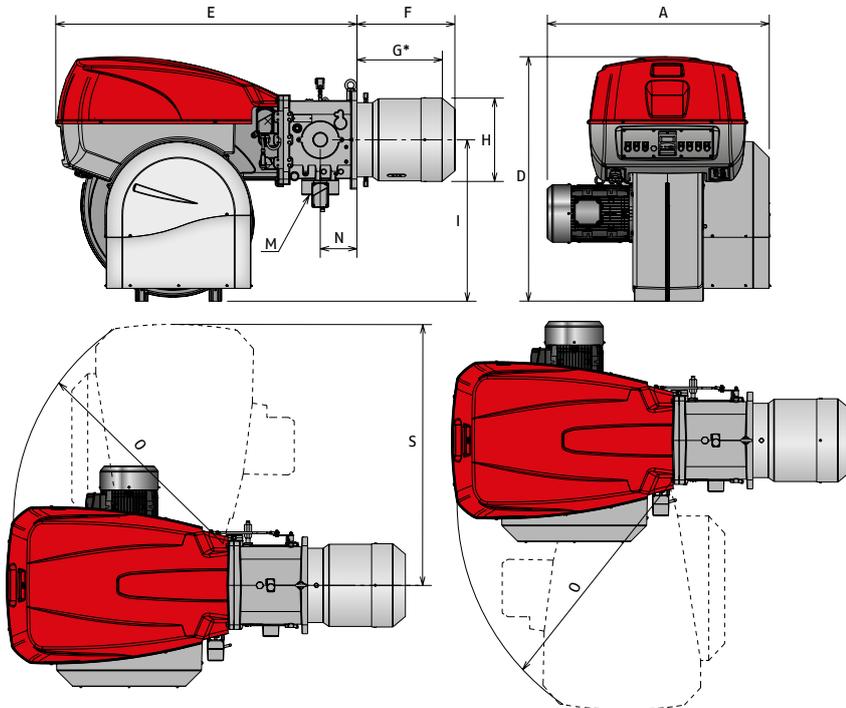
(1) Model with IRD sensor.

FIRING RATES



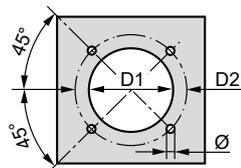
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

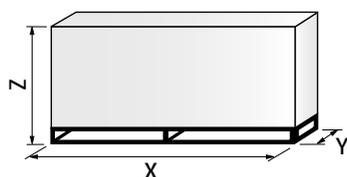


Description	A mm	D mm	E mm	Fv	G(*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/EV BLU	1206	1338	1637	669	485	413	885	DN80	200	1350	1493
RS 1200/EV BLU	1250	1338	1637	670	485	456	885	DN80	200	1350	1493

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



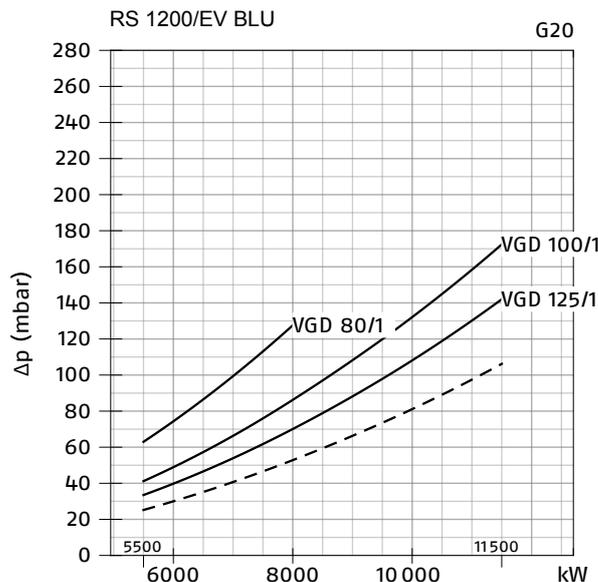
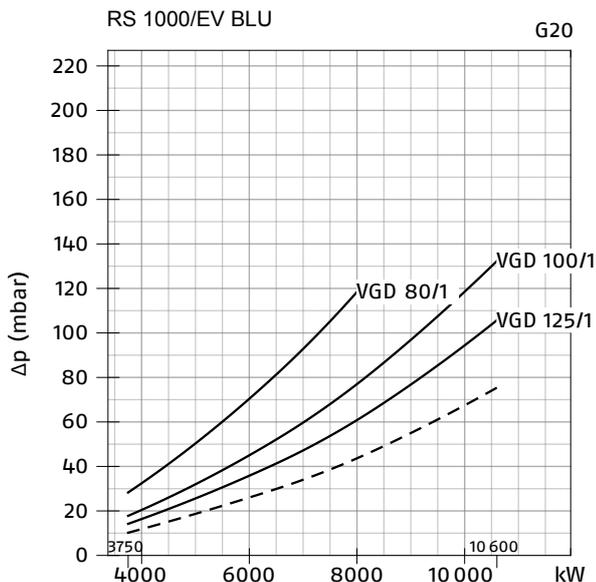
Description	D1 mm	D2 mm	Ø mm
RS 1000/EV BLU	460	608	M20
RS 1200/EV BLU	500	608	M20



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.		3010213
		Pressure (0-2.5 bar) with 4-20 mA output.		3010214
		Pressure (0-16 bar) with 4-20 mA output.		3090873
		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 analyzer 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 1000/EV BLU	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 kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		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

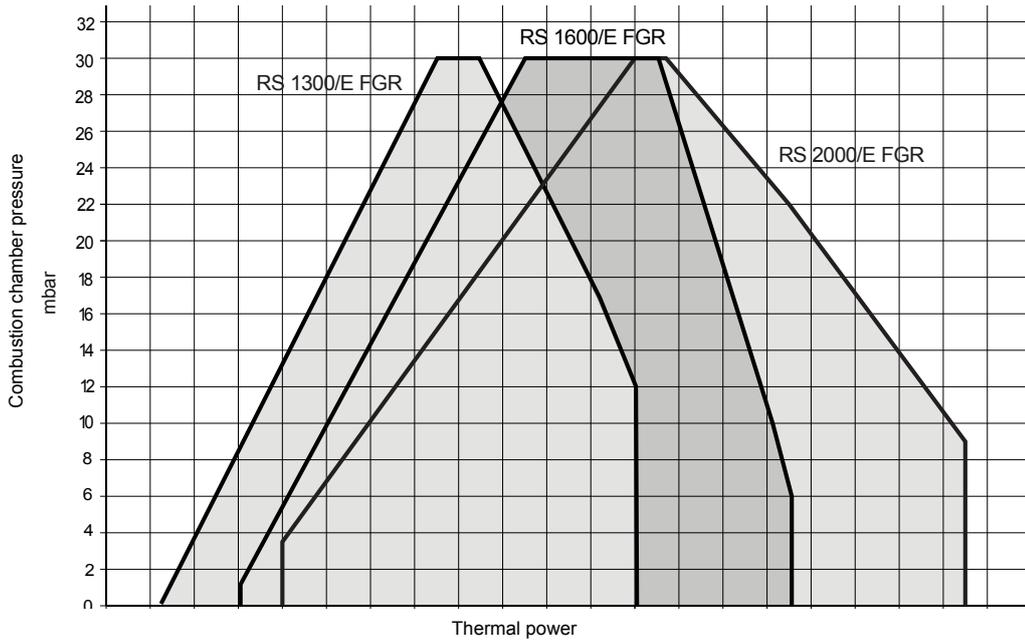
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

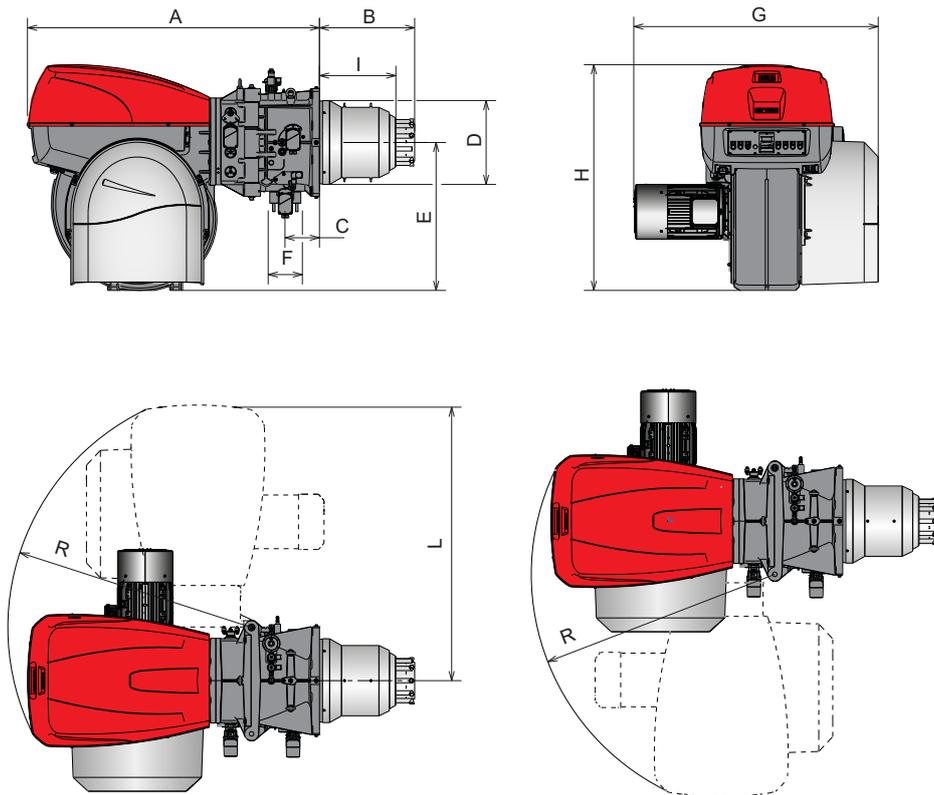
(2) Model with IRD sensor.

FIRING RATES

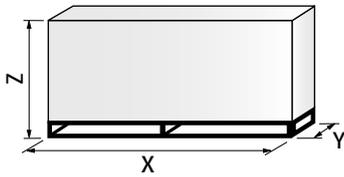
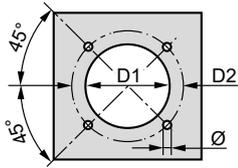


Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

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

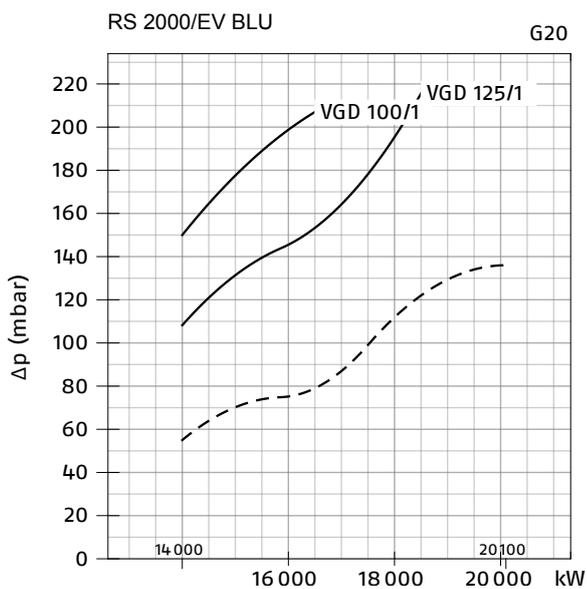
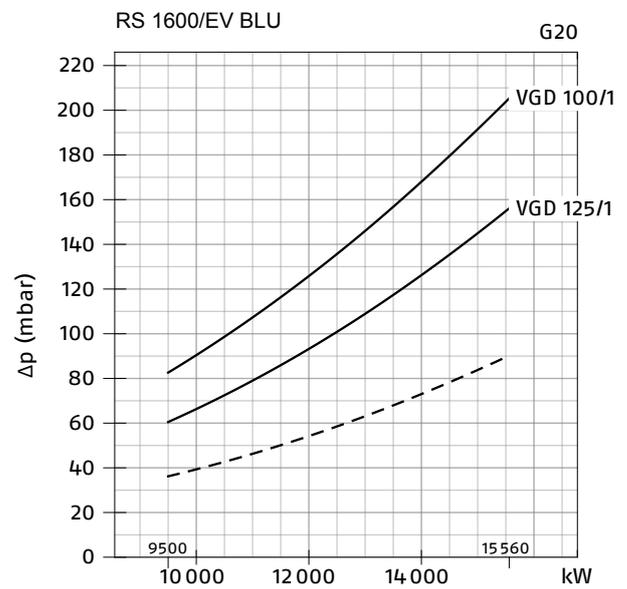
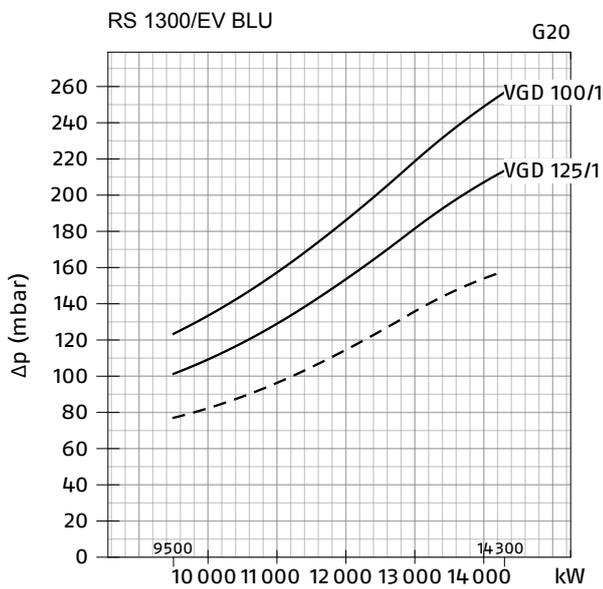


Description	D1 mm	D2 mm	Ø mm
RS 1300/EV BLU	580	645	M20
RS 1600/EV BLU	580	645	M20
RS 2000/EV BLU	580	645	M20

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



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 (QGO₂) FOR BURNERS The QGO ₂ is an oxygen analyzer 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 1300/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 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)

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

ONE STAGE	 <p>RIELLO 40 GS GS3 (11-35 kW) GS5 (18-58 kW) GS10 (42-116 kW) GS20 (81-220 kW) page 250</p>	 <p>GULLIVER RS RS5 (160-330 kW) page 264</p>
	 <p>RS 34-44/1 RS 34/1 MZ (70-390 kW) RS 44/1 MZ (100-550 kW) page 272</p>	 <p>GAS GAS 3 (130-350 kW) GAS 4 (185-465 kW) GAS 5 (325-660 kW) GAS 6 (525-1050 kW) page 377</p>
TWO STAGE	 <p>RIELLO 40 GSD GS10D (29/41-106 kW) GS20D (58/81-220 kW) page 256</p>	 <p>GULLIVER RS RS5D (160/208-345 kW) page 268</p>
	 <p>RS 34-44 RS 34 MZ (45/125-390 kW) RS 44 MZ (80/203-550 kW) page 278</p>	 <p>RS 50-64 RS 50 (115/290-600 kW) RS 64 MZ (150/400-850 kW) page 284</p>
	 <p>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) page 290</p>	 <p>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) page 385</p>
MODULATING MECHANICAL CAM	 <p>RS 34-44/M Z RS 34/M Z (45/125-390 kW) RS 44/M Z (80/203-550 kW) page 298</p>	 <p>RS 50-64/M RS 50/M Z (80/285-630 kW) RS 64/M Z (150/400-850 kW) page 304</p>
	 <p>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 Z (600/1250-2650 kW) page 310</p>	 <p>RS 310-610/M Z RS 310/M Z (600/1300-3900 kW) RS 410/M Z (800/2000-4900 kW) RS 510/M Z (800/2200-5520 kW) RS 610/M Z (820/2400-6300 kW) page 340</p>
	 <p>RS 1000-1200/M C01 RS 1000/M C01 (1100/4000-10100 kW) RS 1200/M C01 (1500/5500-11100 kW) page 355</p>	 <p>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</p>

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		<p>RS 34-44/E MZ RS 34/E MZ (44/130-390 kW) RS 44/E MZ (80/200-550 kW)</p> <p>page 318</p>		<p>RS 50-64/E RS 50/E MZ (85/290-580 kW) RS 64/E MZ (150/400-850 kW)</p> <p>page 323</p>	
		<p>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)</p> <p>page 328</p>		<p>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)</p> <p>page 345</p>	
		<p>RS 1000-1200/E C01 RS 1000/E C01 (1100/4000-10100 kW) RS 1200/E C01 (1500/5500-11100 kW)</p> <p>page 359</p>		<p>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)</p> <p>page 363</p>	
	MODULATING ELECTRONIC CAM VARIABLE SPEED		<p>RS 70-250/EV RS 190/EV (470/1279-2290 kW) RS 250/EV MZ (600/1250-2650 kW)</p> <p>page 335</p>		<p>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)</p> <p>page 350</p>
			<p>RS 1000-1200/EV C01 RS 1000/E C01 (1100/4000-10100 kW) RS 1200/E C01 (1500/5500-11100 kW)</p> <p>page 368</p>		<p>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)</p> <p>page 372</p>

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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

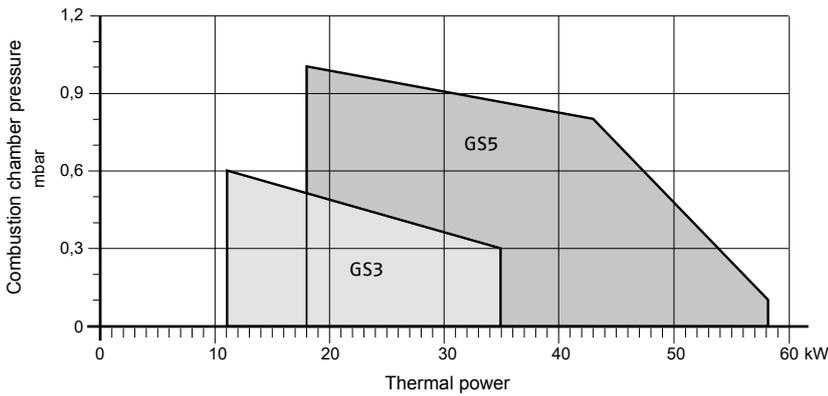
Description	Heat output natural gas		Total electrical power kW	Electric power supply Ph/V/Hz	Certification	Note	Code
	kW	Nm ³ /h					
GS3	11-35	1.1-3.5	0.10	1/230/50	CE-0476CT2714	(1)(4)	3755119
GS5	18-58	1.8-5.8	0.11	1/230/50	CE-0476CT2714	(1)(4)	3755219
GS5	23-65	2.3-6.5	0.18	1/220/60	-	(2)(3)	3755281
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/Nm³.

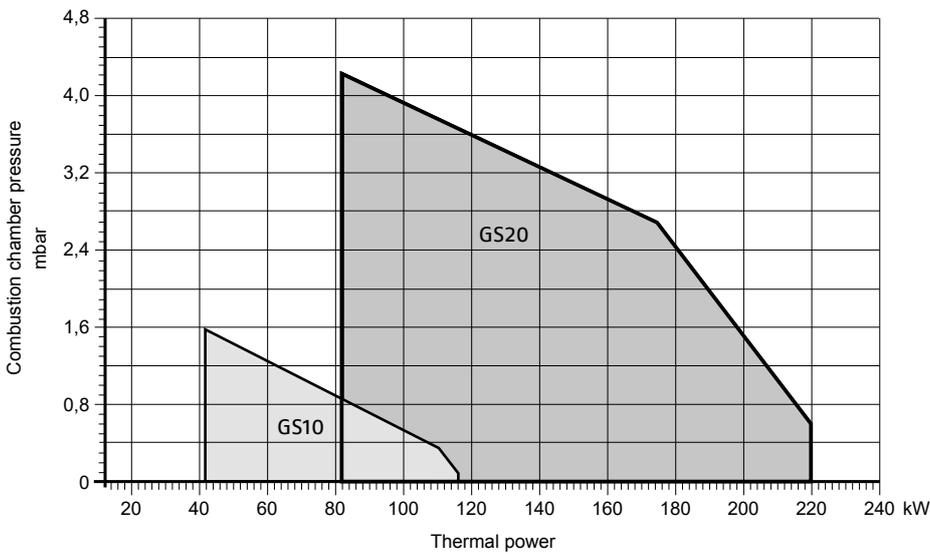
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

- (1) Model with plug and socket.
- (2) Model with terminal board.
- (3) Fixed air damper always open in stand by.
- (4) Model with air damper opening motor.

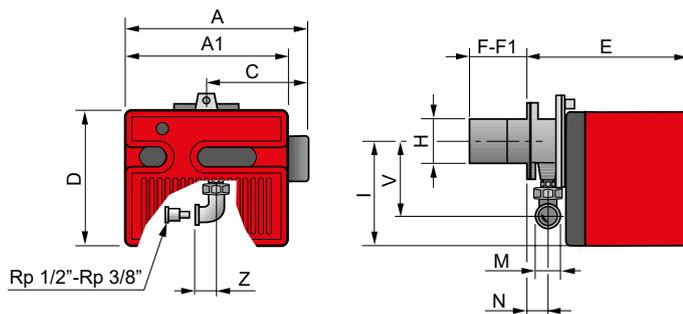
FIRING RATES



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.



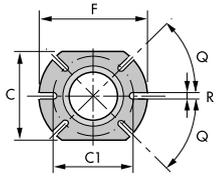
OVERALL DIMENSIONS



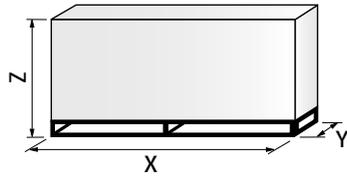
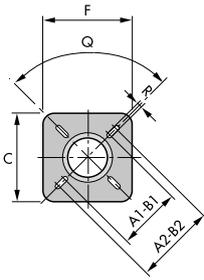
Description	A mm	A1 mm	C mm	D mm	E mm	F-F1 (1) mm	H mm	I mm	M mm	N mm	V mm	Z mm
GS3	-	252	-	215	230	100	91	165	Rp 3/8"*	37	132	25
GS5	-	272	-	233	295	100	91	180	Rp 1/ Rp 2"	48	138	28
GS10	341	-	188,5	262	346	110	105	204	Rp 3/4"	61	142	33
GS10 **	-	305	-	262	346	110-170	105	204	Rp 3/4"	61	142	33
GS20	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

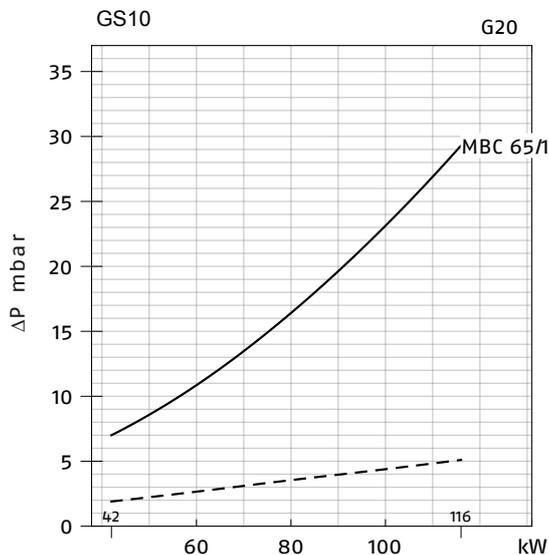
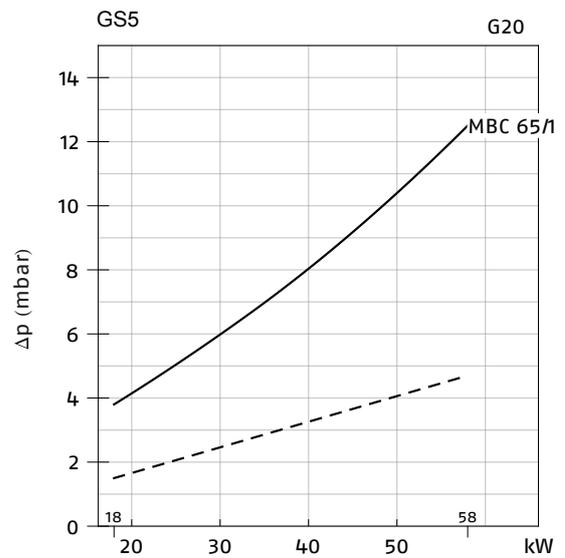
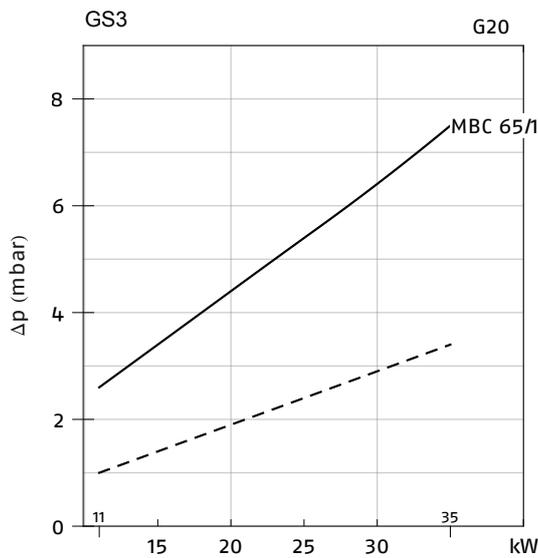


Description	A1 mm	A2 mm	B1 mm	B2 mm	C mm	C1 mm	F mm	Q	R mm
GS3	-	-	-	-	140	130	170	45°	10
GS5	-	-	-	-	140	130	170	45°	10
GS10	-	-	-	-	160	130	185	45°	11
GS20	155	200	155	200	170	-	170	90°	11

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

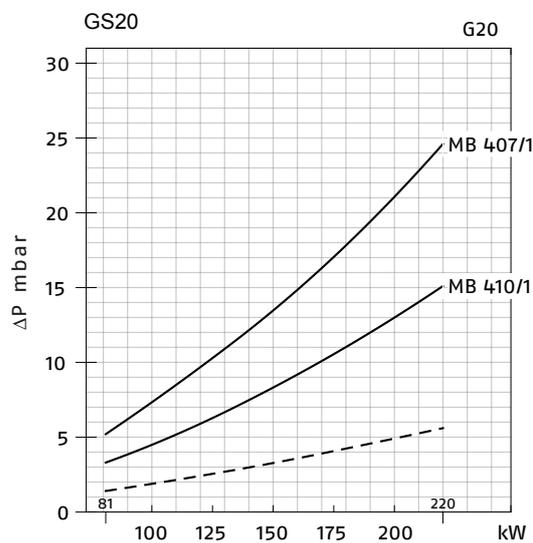
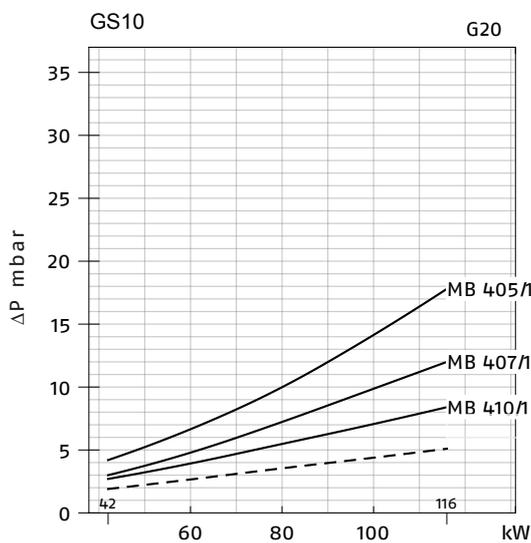
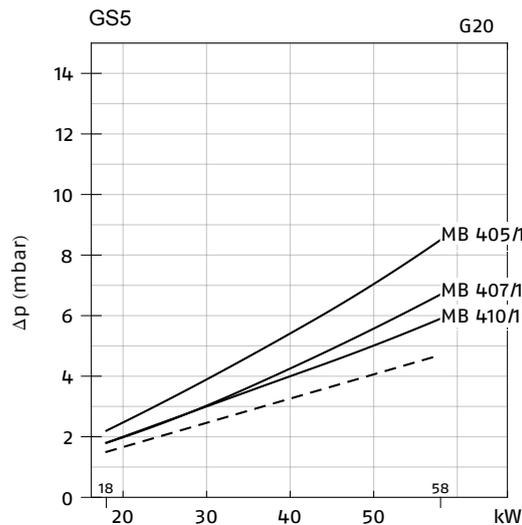
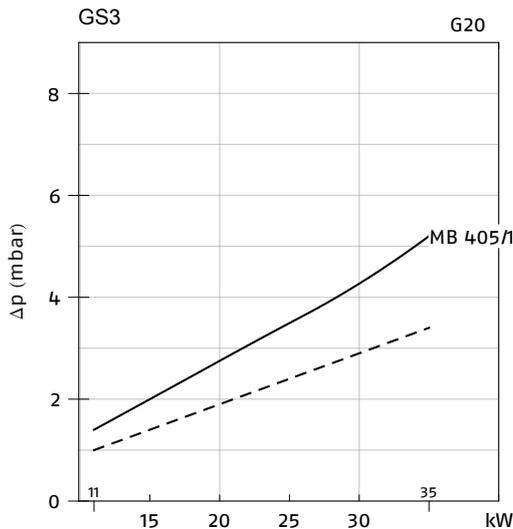
MBC SERIES GAS TRAIN



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 1/2"	(4)	GS3-GS5-GS10**
MB SERIES ONE STAGE GAS TRAIN					
MB 405/1-RSD 20	3970530*	(3)	Rp 1/2"	3010123	GS3-GS5-GS10**
MB 407/1-RSD 20	3970531*	(3)	Rp 3/4"	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".

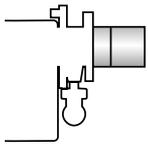
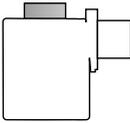
GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 turbulator disk reduces the flame length. 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.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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

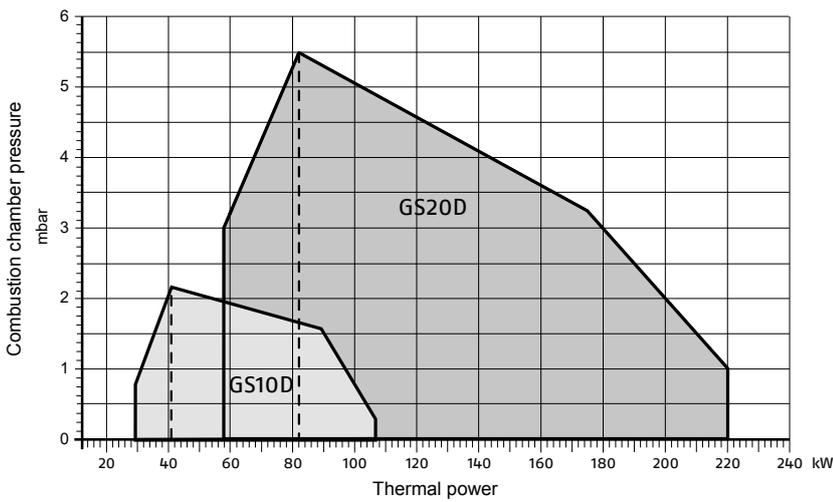
Description	Heat output natural gas		Total electrical power kW	Electric power supply Ph/V/Hz	Certification	Note	Code
	kW	Nm ³ /h					
GS10D	29/41-106	2,9/4,1-10.6	0,13	1/230/50	CE-0476CT2714	(1)	3757615
GS20D	58/81-220	5,8/8,1-22.0	0,25	1/230/50	CE-0476CT2714	(1)	3757714

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

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

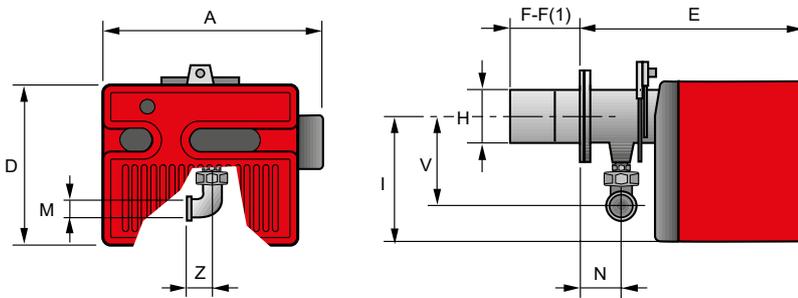
(1) Model with plug and socket.

FIRING RATES



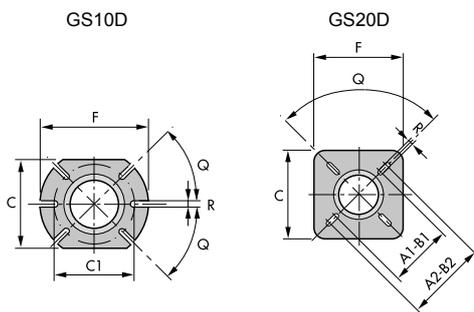
Useful firing rates for choosing the burner
 1st stage operation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

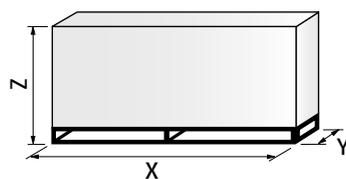


Description	A mm	D mm	E mm	F-F1 (1) mm	H mm	I mm	M mm	N mm	V mm	Z mm
GS10D	368	262	346	110	105	204	Rp 3/4"	61	142	33
GS20D	413	298	389	120-280	125	230	Rp 3/4"	67	152	33

(1) Dimension with extended head



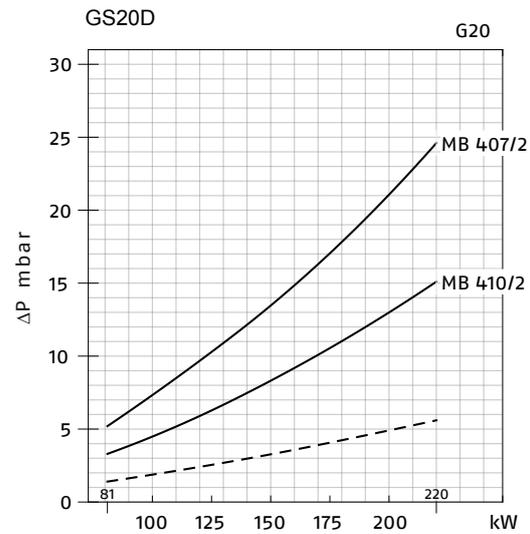
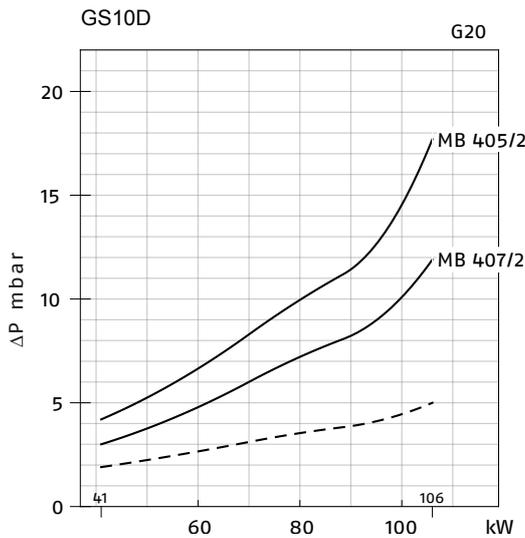
Description	A1 mm	A2 mm	B1 mm	B2 mm	C mm	C1 mm	F mm	Q	R mm
GS10D	-	-	-	-	160	130	185	45°	11
GS20D	155	200	155	200	170	-	170	90°	11



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
	GS10D	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 = 110 mm - Extended head length = 170 mm	3001064
	GS20D	Standard head length = 120 mm - Extended head length = 280 mm	3000873
	GS10D	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.	3000884
	GS20D	Kit code for standard and extended head.	3000886
	GS10D	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 only standard head.	3000891
	GS20D	Kit code for only standard head.	3000893
	GS10D	END CONE WITH TURBULATOR DISK The end cone turbulator disk reduces the flame length. It is suitable for hoven application (CO emissions) and short boiler chamber. 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 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
- 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

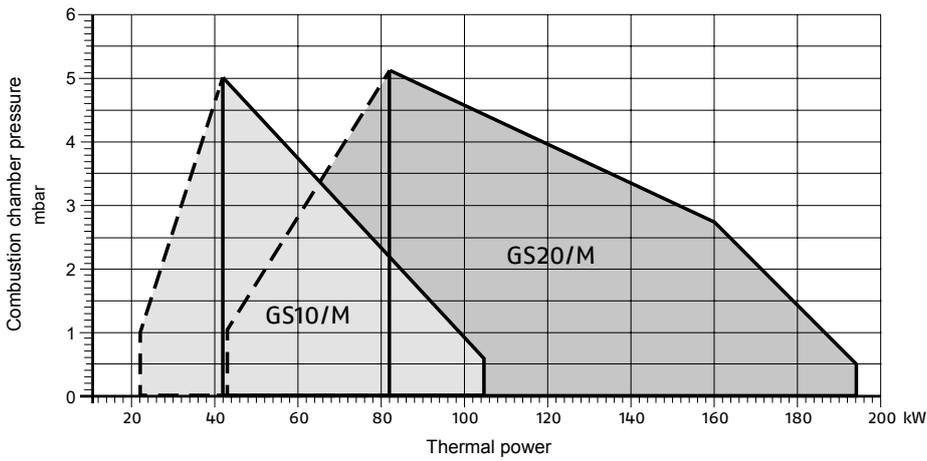
Description	Heat output natural gas		Total electrical power kW	Electric power supply Ph/V/Hz	Certification	Note	Code
	kW	Nm ³ /h					
GS10/M	22/42-105	2.2/4.2-10.5	0.13	1/230/50	CE-0085BM0453	(1)	3755556
GS20/M	43/82-194	4.3/8.2-19.4	0.25	1/230/50	CE-0085BM0453	(1)	3755756
GS10/M	22/42-105	2.2/4.2-10.5	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/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 installed plug.

FIRING RATES

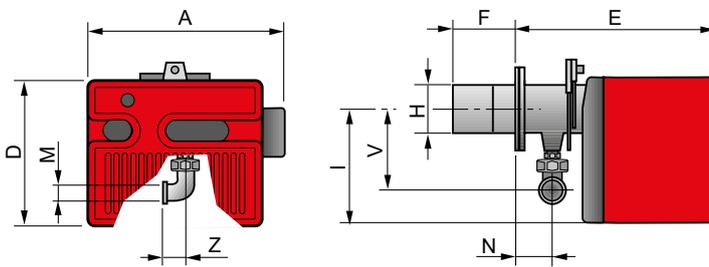


▭ Useful firing rates for choosing the burner

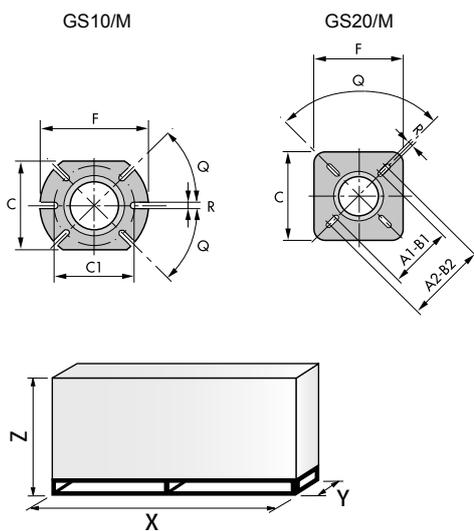
▭ Modulation range

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

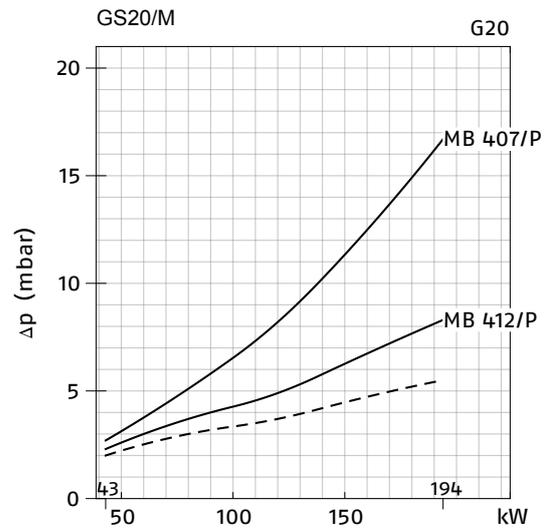
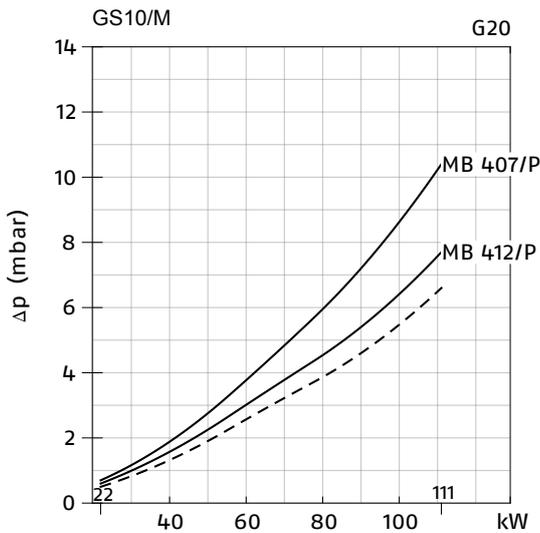


Description	A1 mm	A2 mm	B1 mm	B2 mm	C mm	C1 mm	F mm	Q	R mm
GS10/M	-	-	-	-	160	130	185	45°	11
GS20/M	155	200	155	200	170	-	170	90°	11

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 3/4"	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
	GS10/M	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 = 128 mm - Extended head length = 170 mm	3001064
	GS20/M	Standard head length = 120 mm - Extended head length = 280 mm	3000873
	GS10/M	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.	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

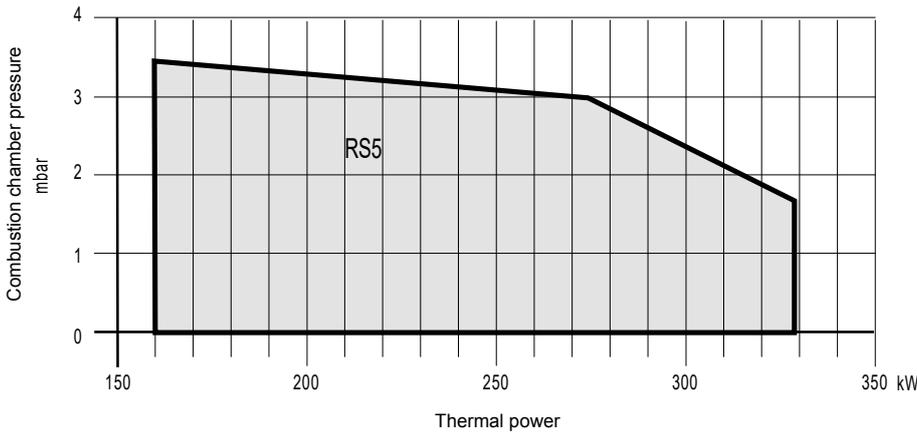
Description	Heat output natural gas		Total electrical power kW	Electric power supply Ph/V/Hz	Certification	Note	Code
	kW	Nm ³ /h					
RS5	160-330	16-33	1/230/50	0,43	CE-0085BM0114	(1)	3761958
RS5 TL	160-330	16-33	1/230/50	0,43	CE-0085BM0114	(1)	20052614

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

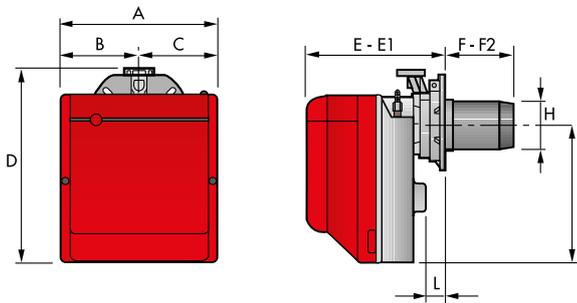
FIRING RATES



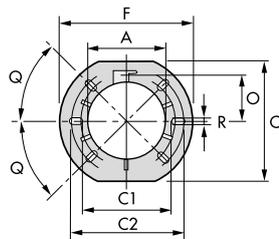
□ Useful firing rates for choosing the burner

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

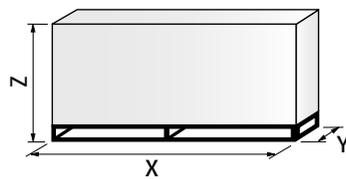
OVERALL DIMENSIONS



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



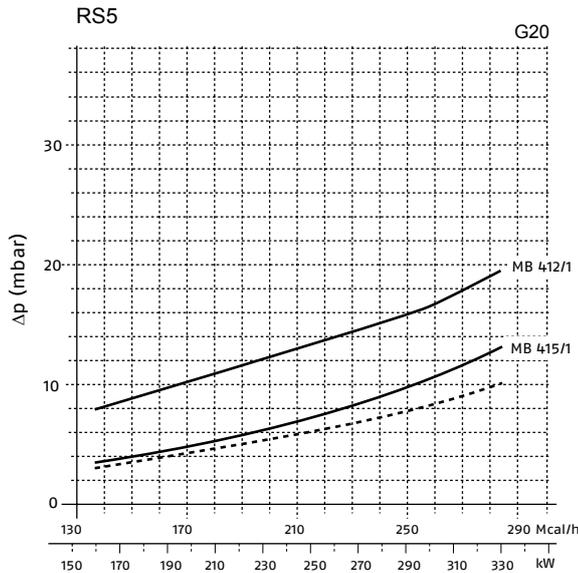
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q mm	R mm
RS5	137	203	170	200	218	80.5	45°	11
RS5 TL	137	203	170	200	218	80.5	45°	11



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.

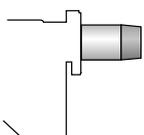
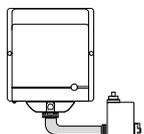
— Combustion head + gas train
 - - - Combustion head

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

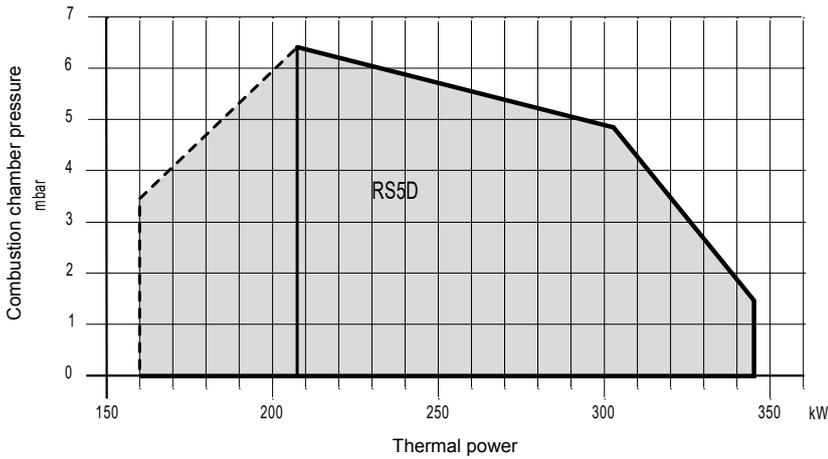
Description	Heat output natural gas		Total electrical power kW	Electric power supply Ph/V/Hz	Certification	Note	Code
	kW	Nm ³ /h					
RS5D	160/208-345	16/20.8-34.5	1/230/50	0,45	CE-0085BN0325	(1)	3762058
RS5D TL	160/208-345	16/20.8-34.5	1/230/50	0,45	CE-0085BN0325	(1)	20052615

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

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

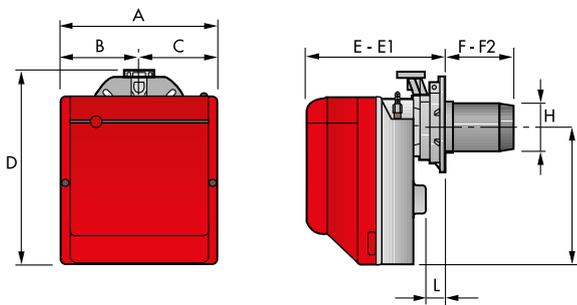
(1) Model with plug and socket.

FIRING RATES

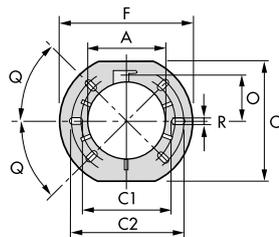


Useful firing rates for choosing the burner
 1st stage operation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

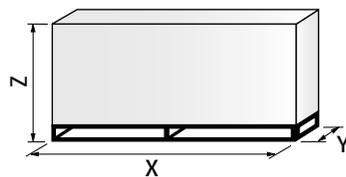
OVERALL DIMENSIONS



Description	A mm	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



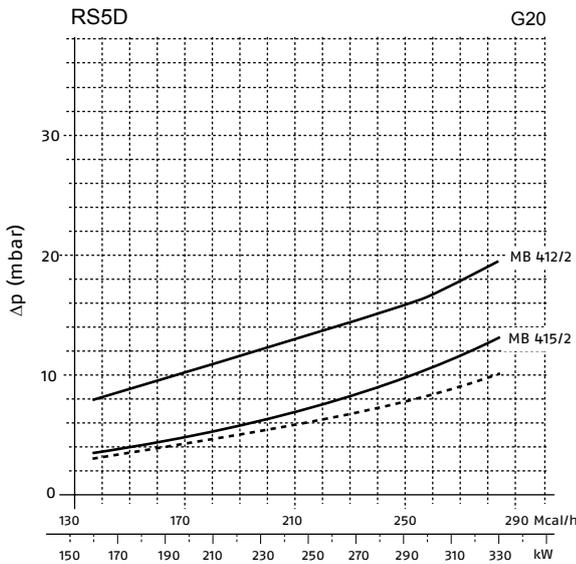
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q mm	R mm
RS5D	137	203	170	200	218	80.5	45°	11
RS5D TL	137	203	170	200	218	80.5	45°	11



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

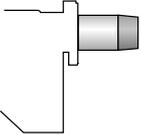
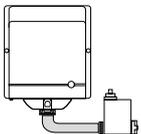
GAS TRAINS

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.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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.

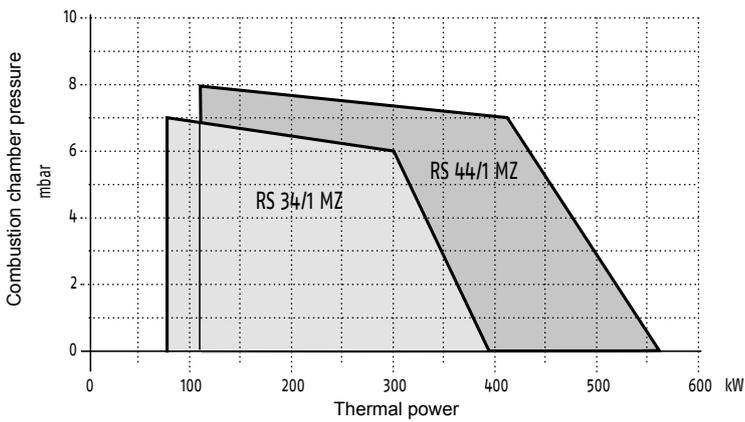
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Code
	kW	Nm ³ /h		PhV/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

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

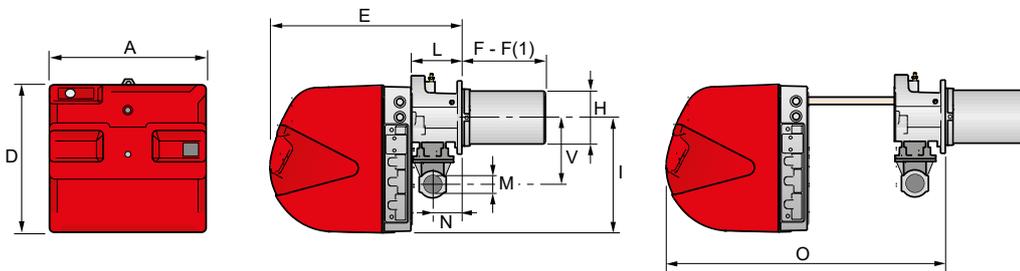
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

FIRING RATES



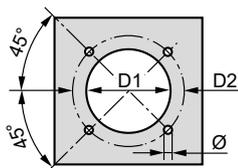
Useful firing rates for choosing the burner
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

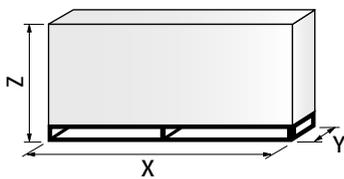


Description	A mm	D mm	E mm	F-F(1) mm	H mm	I mm	L mm	M mm	N mm	O mm	V mm
RS 34/1 MZ	442	422	508	216-351	140	305	138	1"1/2	84	780	177
RS 44/1 MZ	442	422	508	216-351	152	305	138	1"1/2	84	780	177

(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

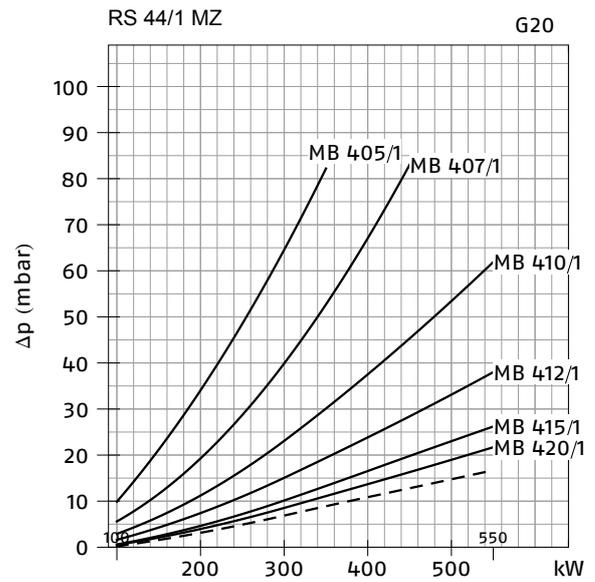
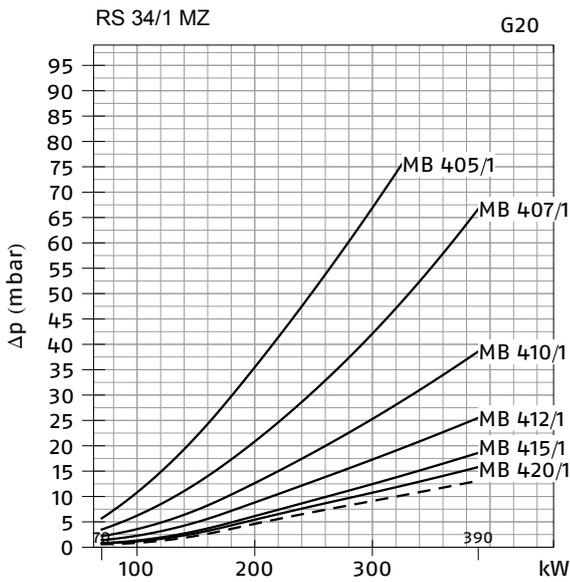
(1) Dimension with standard and extended head.

PRESSURE LOSS DIAGRAMS

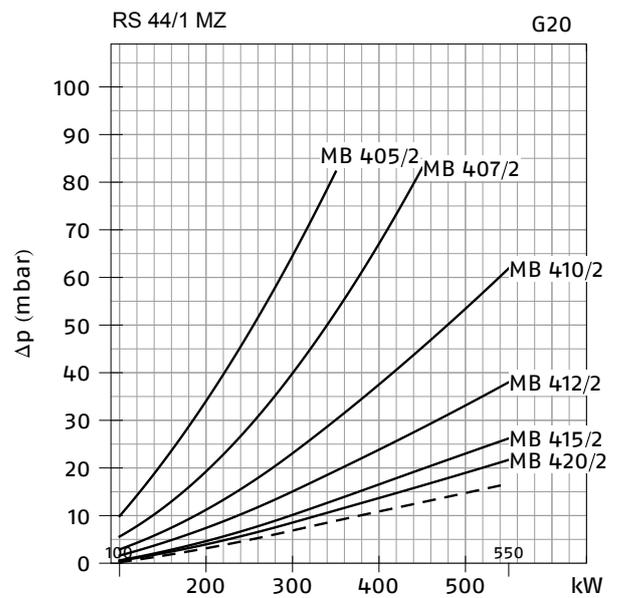
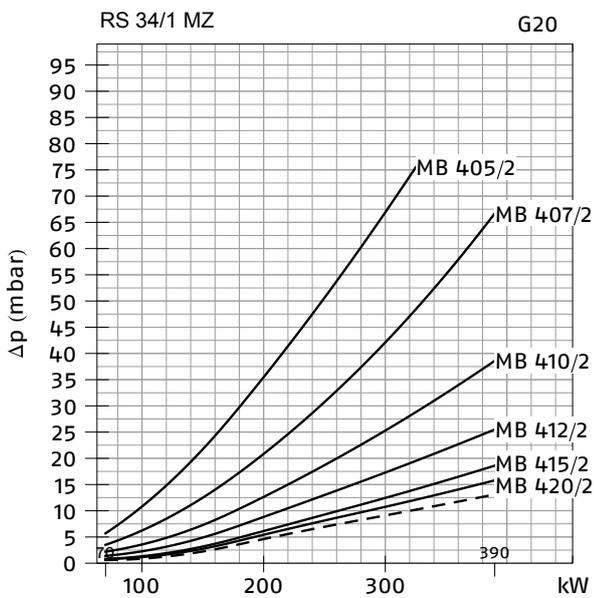
MB SERIES GAS TRAIN

GAS

LIGHT OIL



DUAL FUEL

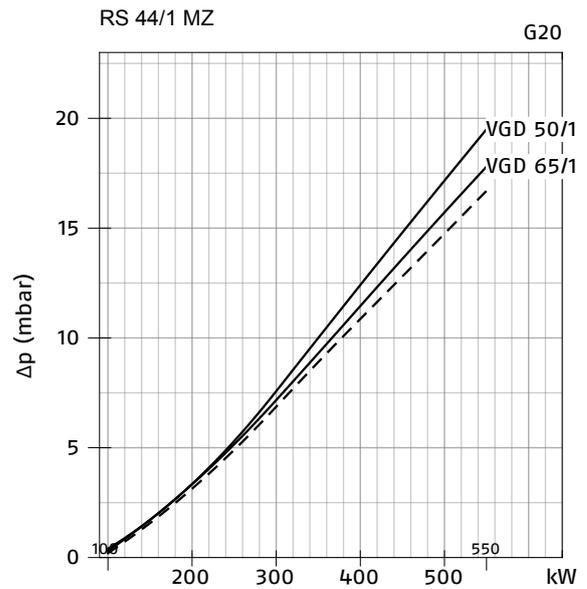
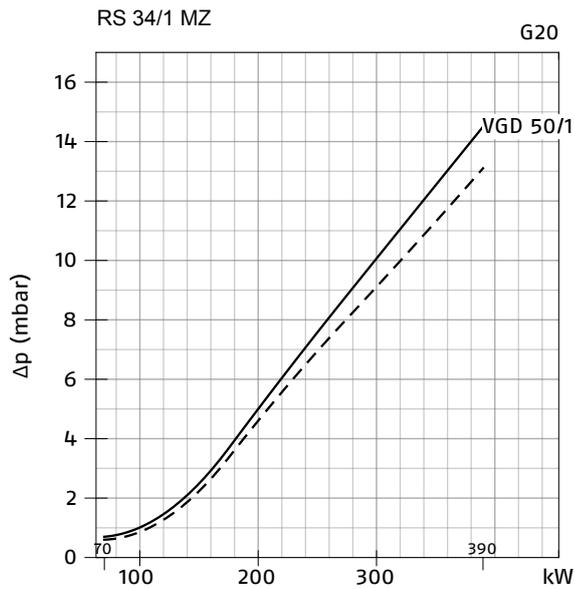


Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

— Combustion head + gas train
 - - - Combustion head

HEAVY OIL

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 3/4"	-	3010123	3000824	
MB 407/1-RT 20	3970553*		Rp 3/4"	-	3010123	3000824	
MB 407/1-RT 52	3970599*		Rp 3/4"	-	3010123	3000824	
MB 407/1-RSM 20	3970229*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970258*		Rp 1" 1/4	-	3010123	3010124	
MB 410/1-RT 20	3970554*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970600*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RSM 20	3970230*		Rp 3/4"	-	3010123	3000824	
MB 412/1-RT 52	3970256*		Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1-RT 20	3970144*		Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1 CT RT 20	3970197**		Rp 1" 1/2	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1-RSM 20	3970231*		Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RT 30	3970180*		Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1 CT RT 30	3970198**		Rp 1" 1/2	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RT 52	3970250*		Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1 CT RT 52	3970253**		Rp 1" 1/2	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RSM 30	3970232*		Rp 1" 1/2	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
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 1/2"	-	3010123	20044756	
MB 407/2 - RSD 20	3970537*		Rp 3/4"	-	3010123	3000824	
MB 407/2 - RT 20	3970556*		Rp 3/4"	-	3010123	3000824	
MB 410/2 - RSD 20	3970534*		Rp 3/4"	-	3010123	3000824	
MB 410/2 - RT 20	3970557*		Rp 3/4"	-	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

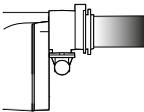
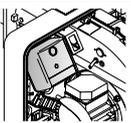
- (1) Please refer to "GAS TRAIN DESIGNATION".
 (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 (3) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for 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.

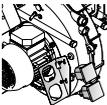
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

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
	RS 34/1 MZ RS 44/1 MZ	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 = 216 mm - Extended head length = 351 mm		3010428 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

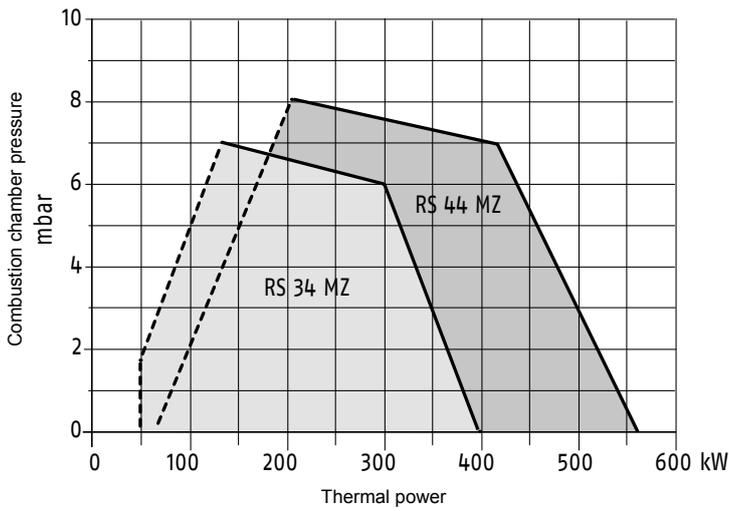
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 34 MZ TC FS1	44/130-390	4.5/13-39	0.6	1/230/50-60	230/50-60	CE-0085BR0381	(1)	3789010
RS 34 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.

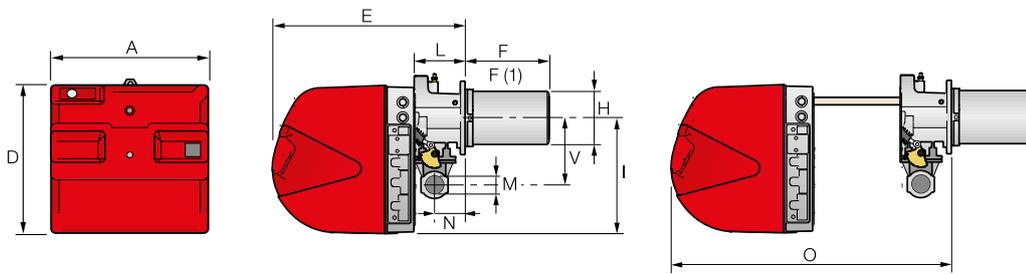
(1) Model with plug and socket.

FIRING RATES

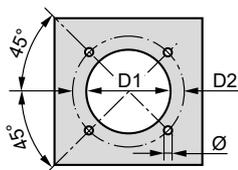


Useful firing rates for choosing the burner
 1st stage operation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

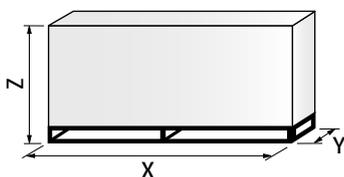
OVERALL DIMENSIONS



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 1/2	84	780	177
RS 44 MZ	442	422	508	216-351	152	305	138	1 1/2	84	780	177



Description	D1 mm	D2 mm	Ø mm
RS 34 MZ	160	224	M8
RS 44 MZ	160	224	M8

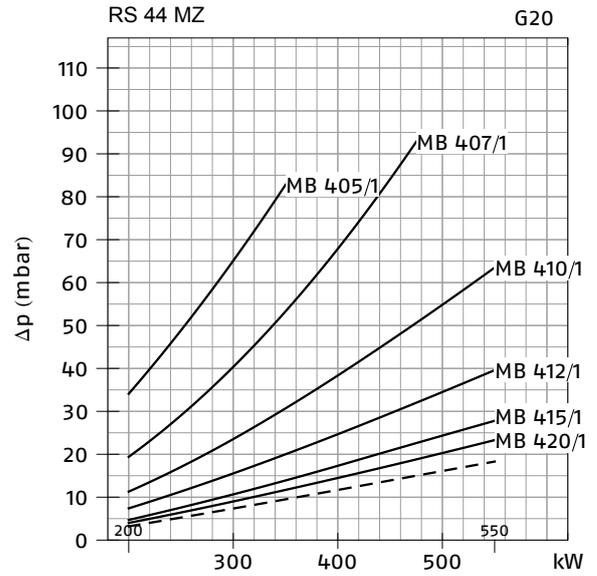
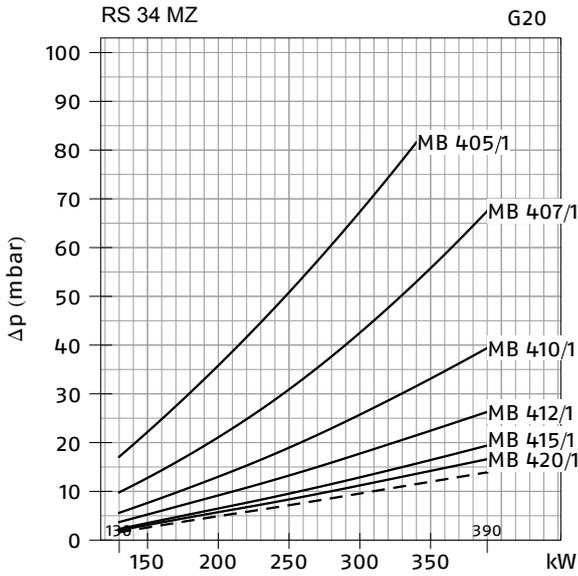


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 34 MZ	1000	485	500	32
RS 44 MZ	1000	485	500	33

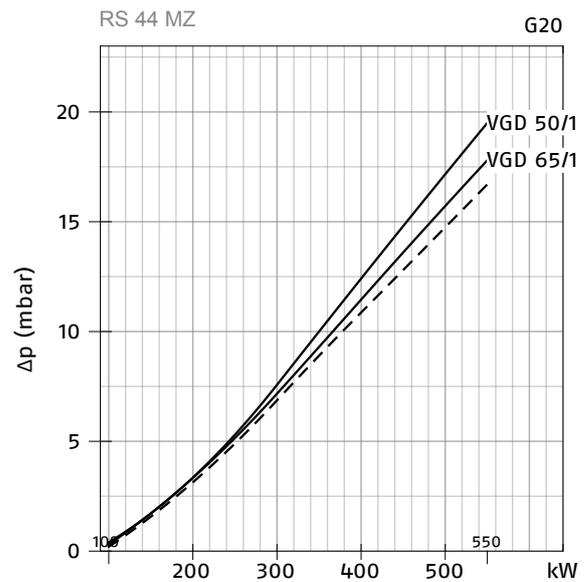
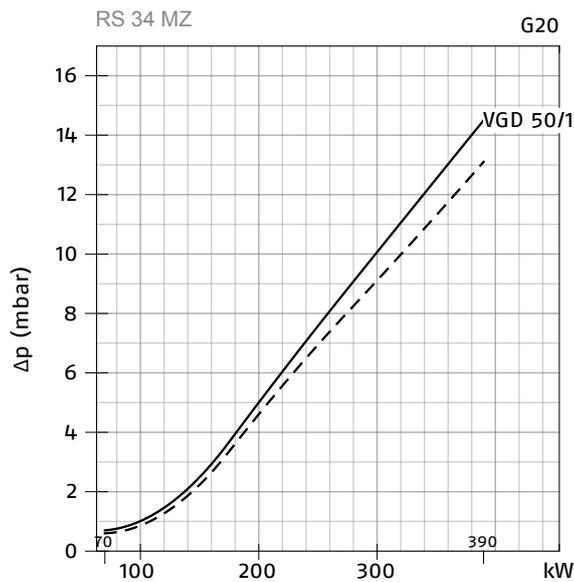
(1) Dimension with standard and extended head.

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 3/4"	-	3010123	3000824	
MB 407/1-RT 20	3970553*		Rp 3/4"	-	3010123	3000824	
MB 407/1-RT 52	3970599*		Rp 3/4"	-	3010123	3000824	
MB 407/1-RSM 20	3970229*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970258*		Rp 1" 1/4	-	3010123	3010124	
MB 410/1-RT 20	3970554*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970600*		Rp 3/4"	-	3010123	3000824	

GAS

LIGHT OIL

DUAL FUEL

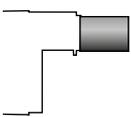
HEAVY OIL

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 ¼"	-	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
	RS 34 MZ RS 44 MZ	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 = 216 mm - Extended head length = 351 mm		3010428 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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
	RS 34 MZ	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 44 MZ	Kit code for standard and extended head.		3010424
	RS 34 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)	3010502
	RS 44 MZ	Kit code for standard and extended head.	(1)	3010503
	RS 34 MZ	VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate. 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

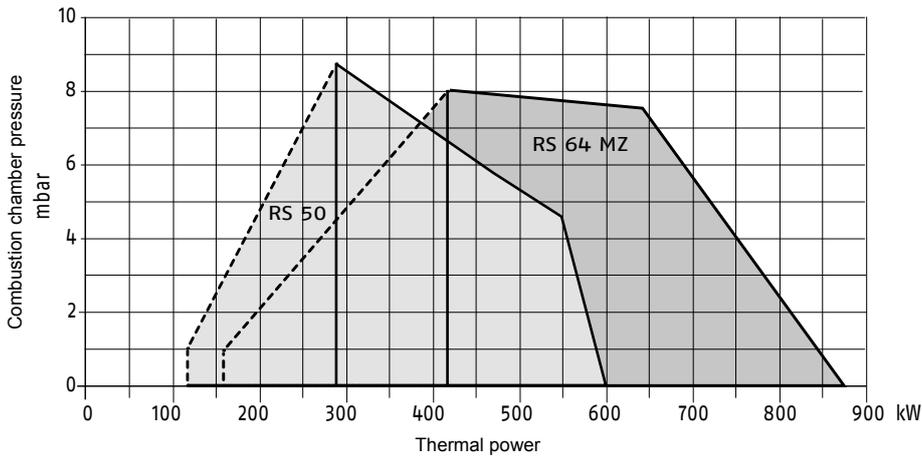
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 50 TC FS1	115/290-600	12/29-58	0.75	3/400/50	230/50-60	CE-0085AP0735	(1)	3784702
RS 50 TL 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.

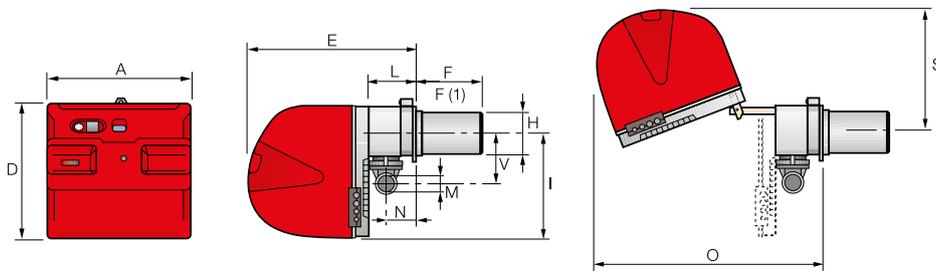
FIRING RATES



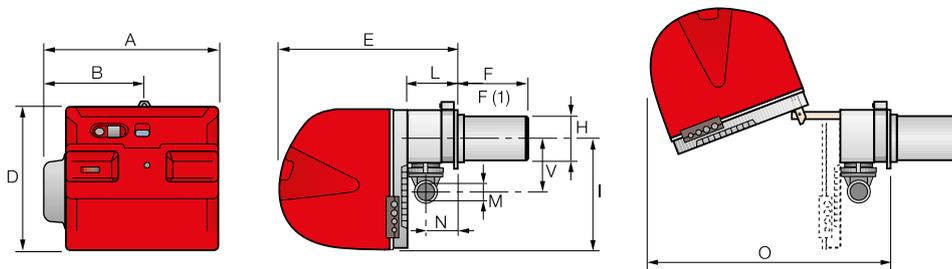
Useful firing rates for choosing the burner
 1st stage operation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

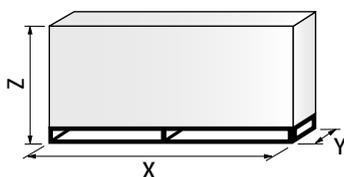
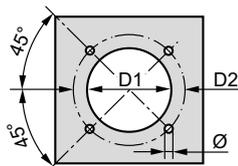
RS 50



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 1/2"	108	810	367	168
RS 64 MZ	533	300	490	640	250 - 385	179	352	222	Rp 2"	134	870	-	221



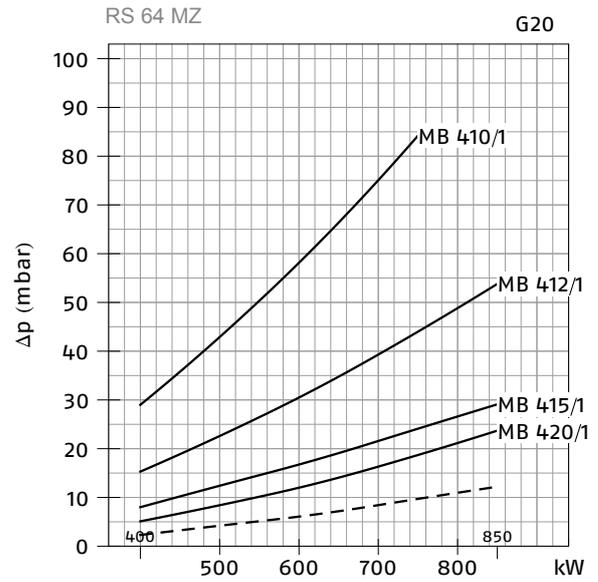
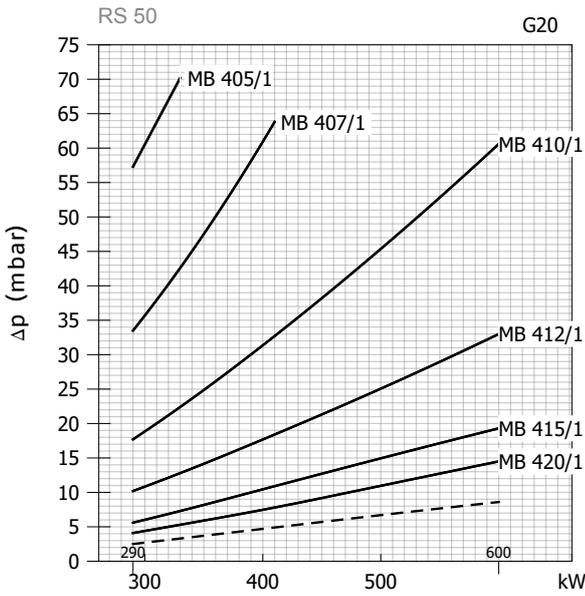
Description	D1 mm	D2 mm	Ø mm
RS 50	160	224	M8
RS 64 MZ	185	275-325	M12

Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 50	1200	502	520	41
RS 64 MZ	1200	580	520	42

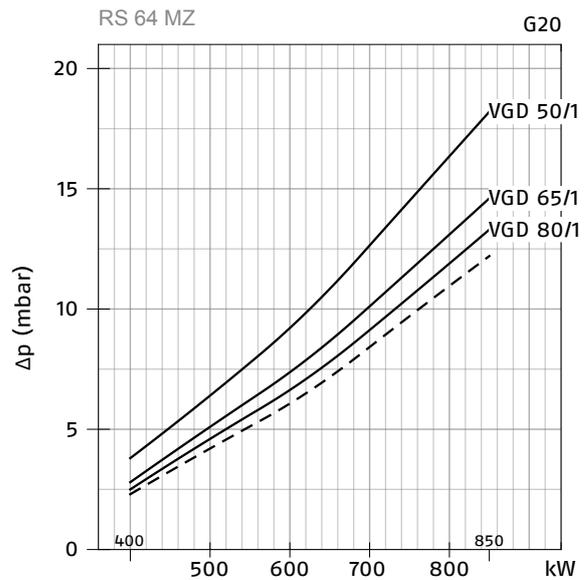
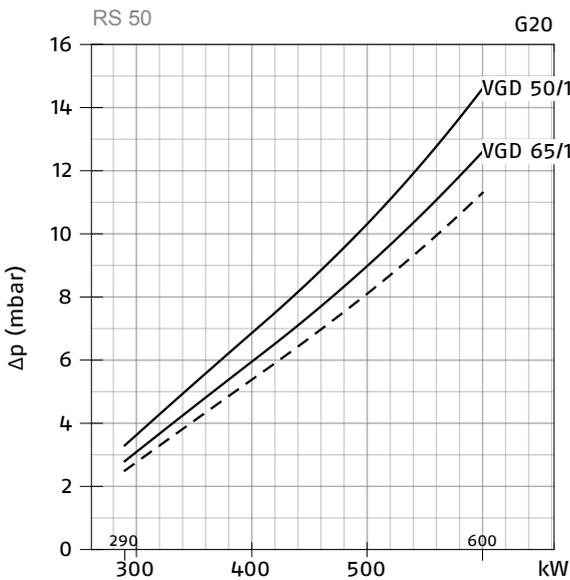
(1) Dimension with standard and extended head.

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 3/4"	-	3010123	3000824	●
MB 407/1-RT 20	3970553*		Rp 3/4"	-	3010123	3000824	●
MB 407/1-RT 52	3970599*		Rp 3/4"	-	3010123	3000824	●
MB 407/1-RSM 20	3970229*		Rp 3/4"	-	3010123	3000824	●
MB 410/1-RT 52	3970258*		Rp 1" 1/4	-	3010123	3010124	3000843
MB 410/1-RT 20	3970554*		Rp 3/4"	-	3010123	3000824	3000824+ 3000843
MB 410/1-RT 52	3970600*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RSM 20	3970230*		Rp 3/4"	-	3010123	3000824	

GAS

LIGHT OIL

DUAL FUEL

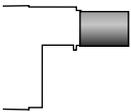
HEAVY OIL

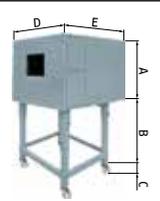
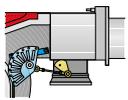
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 50	RS 64 MZ
MB 412/1-RT 52	3970256*		Rp 1" ½	-	3010123	□	3000843
MB 412/1-RT 20	3970144*		Rp 1" ½	-	3010123	□	3000843
MB 412/1 CT RT 20	3970197**		Rp 1" ½	◆	◆	□	3000843
MB 412/1-RSM 20	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
	RS 50 RS 64 MZ	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 = 216 mm - Extended head length = 351 mm Standard head length = 250 mm - Extended head length = 385 mm		3010078 3010427
	RS 50	CONNECTION FLANGE KIT A kit is available for use where the burner opening on the boiler is of excessive diameter.		3010138
	RS 50 RS 64 MZ	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm Spacer thickness S = 135 mm		3010095 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.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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.

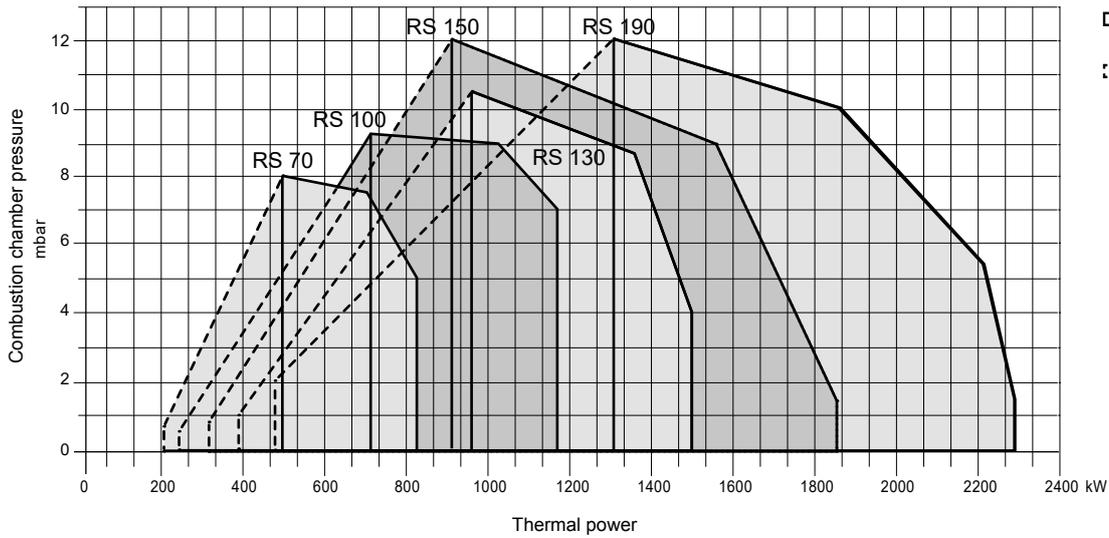
NOTE: due to the improvement of the technical specification of some products, some burner codes have been changed. For correspondence between new and previous code, see the Tab below.

Description	NEW CODE	Note	OLD CODE	Note
RS 70 TC FS1 3/230-400/50	20194283	(3)	3785102	(4)
RS 70 TL FS1 3/230-400/50	20194356	(3)	3785103	(4)
RS 70 TC FS1 3/230-400/50	20194286	(3)	3785104	(4)
RS 70 TL FS1 3/230-400/50	20194878	(3)	3785105	(4)
RS 70 TC FS1 3/220-380/60	20195084	(3)	3785120	(4)
RS 70 TL FS1 3/220-380/60	20195085	(3)	3785121	(4)
RS 100 TC FS1 3/230-400/50	20194281	(3)	3785302	(4)
RS 100 TL FS1 3/230-400/50	20194293	(3)	3785303	(4)
RS 100 TC FS1 3/230-400/50	20194881	(3)	3785304	(4)
RS 100 TL FS1 3/230-400/50	20194884	(3)	3785305	(4)
RS 100 TC FS1 3/220/380-460/60	20195086	(3)	3785320	(4)
RS 100 TL FS1 3/220/380-460/60	20195087	(3)	3785321	(4)
RS 130 TC FS1 3/230-400/50	20194288	(3)	3785502	(4)
RS 130 TL FS1 3/230-400/50	20194295	(3)	3785503	(4)
RS 130 TC FS1 3/230-400/50	20194885	(3)	3785504	(4)
RS 130 TL FS1 3/230-400/50	20194887	(3)	3785505	(4)
RS 130 TC FS1 3/220/380-460/60	20195088	(3)	3785520	(4)
RS 130 TL FS1 3/220/380-460/60	20195089	(3)	3785521	(4)

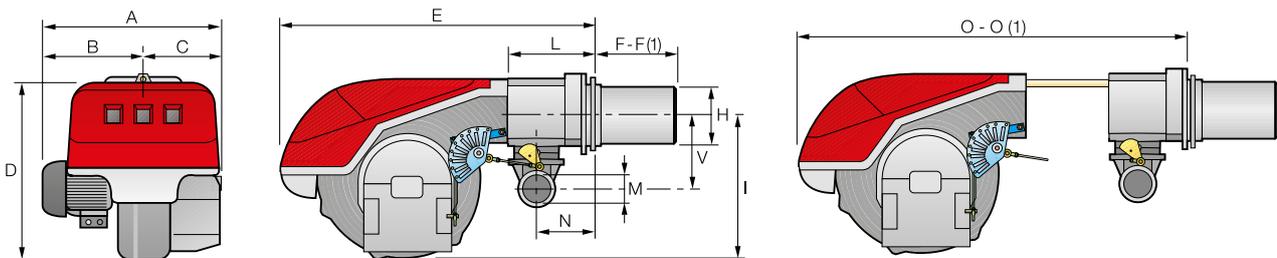
(3) With SQN73

(4) With LKS

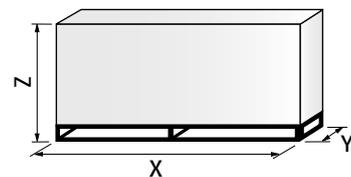
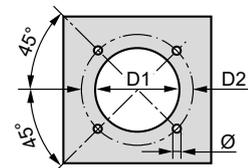
FIRING RATES



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	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	1328-1	262



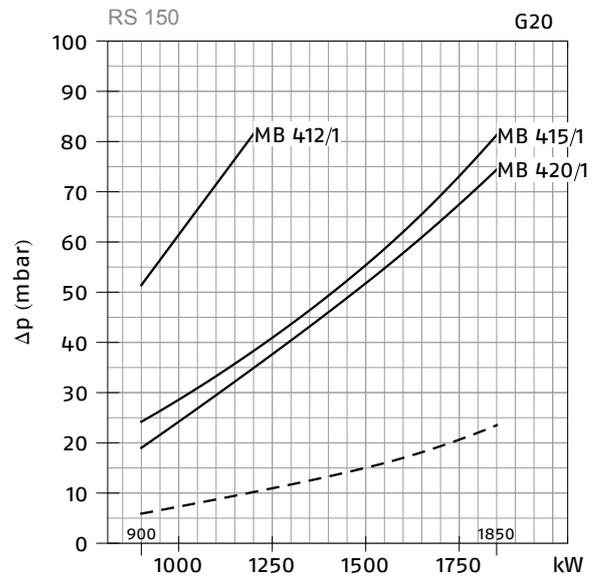
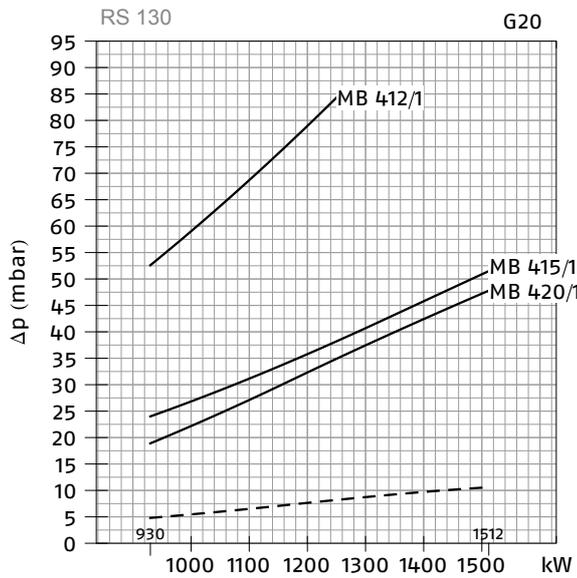
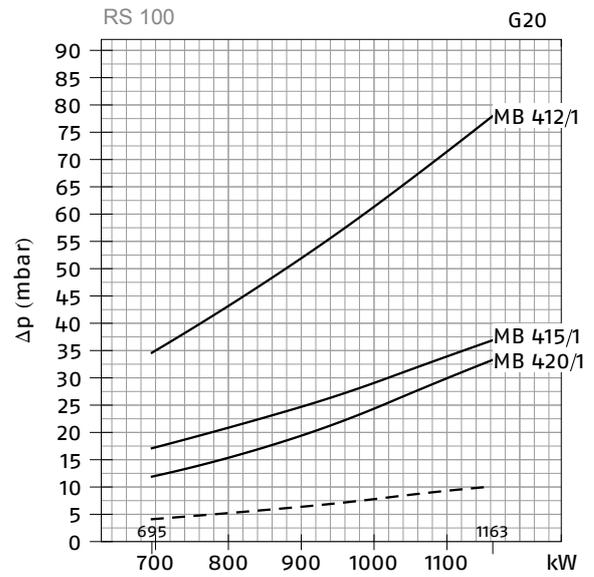
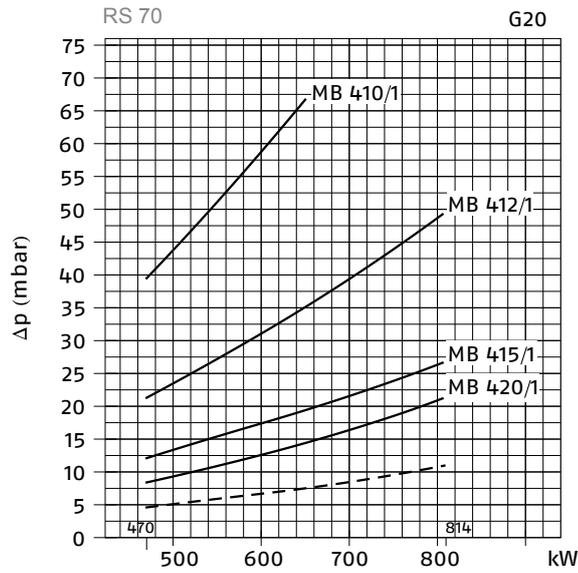
Description	D1 mm	D2 mm	Ø mm
RS 70	185	275-325	M12
RS 100	185	275-325	M12
RS 130	195	275-325	M12
RS 150	195	275-325	M12
RS 190	230	325-368	M16

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

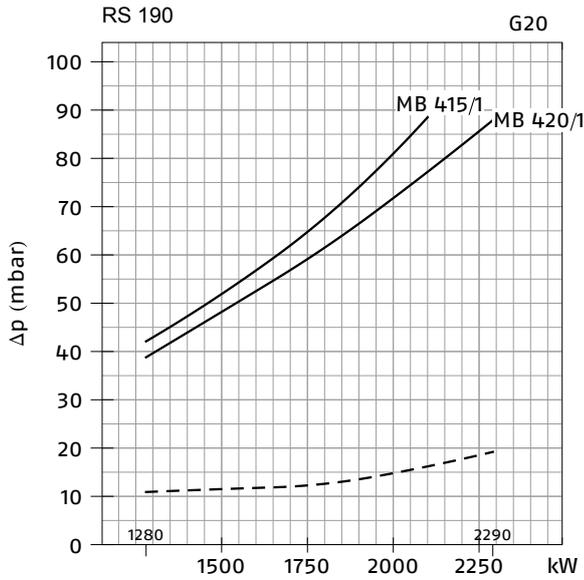
GAS

LIGHT OIL

DUAL FUEL

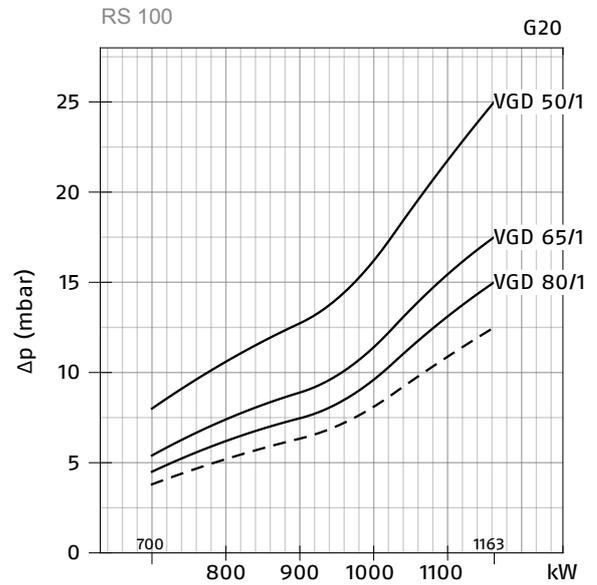
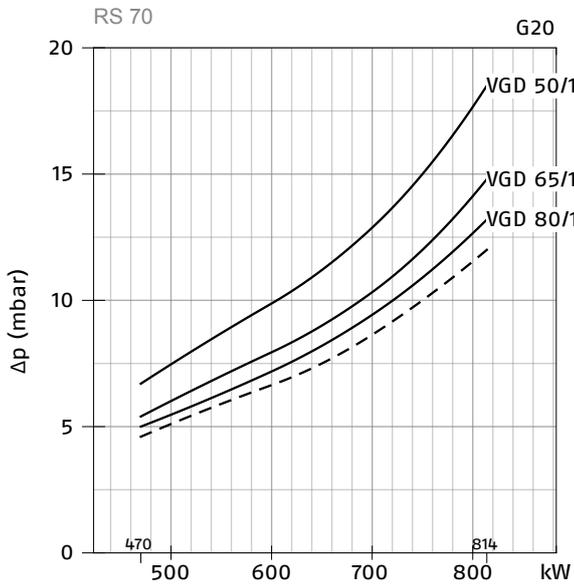
HEAVY OIL

GAS

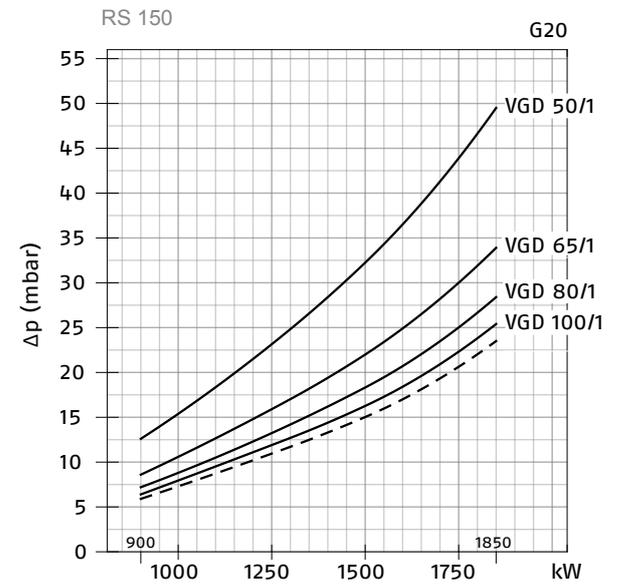
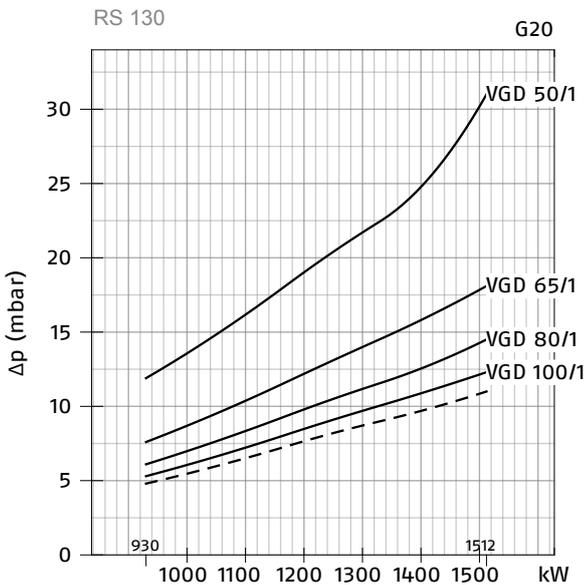


LIGHT OIL

VGD SERIES GAS TRAIN



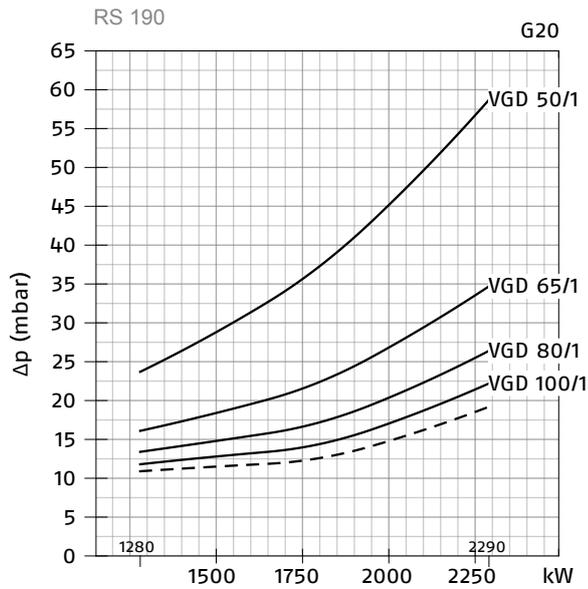
DUAL FUEL



HEAVY OIL

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		

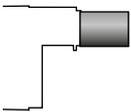
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)				
						RS 70	RS 100	RS 130	RS 150	RS 190
VG D 100/1 CT FT 122	20169194**		DN100	◆	◆	●	●			3000826+3010223

- (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
	RS 70	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 = 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
	RS 70-150	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. 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
	RS 70	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 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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

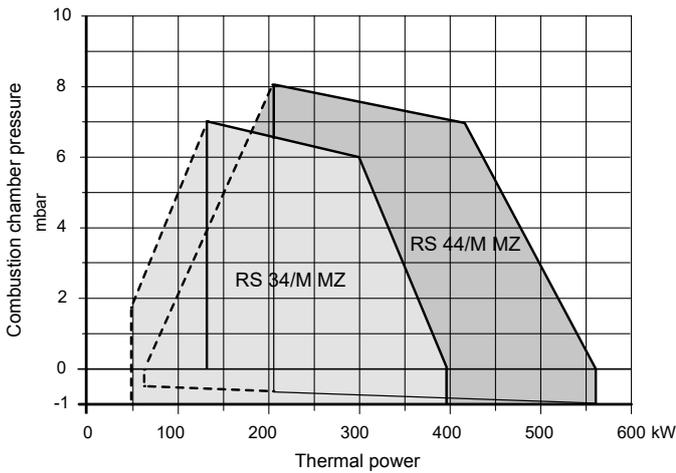
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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

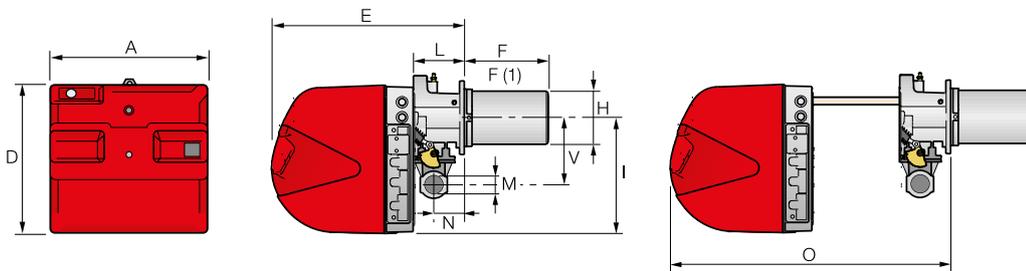


▭ Useful firing rates for choosing the burner

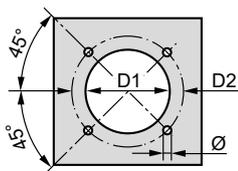
⋯ Modulation range

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

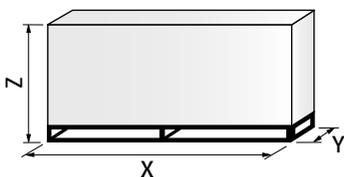
OVERALL DIMENSIONS



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 1/2	84	780	177
RS 44/M MZ	442	422	508	216-351	152	305	138	1 1/2	84	780	177



Description	D1 mm	D2 mm	Ø mm
RS 34/M MZ	160	224	M8
RS 44/M MZ	160	224	M8

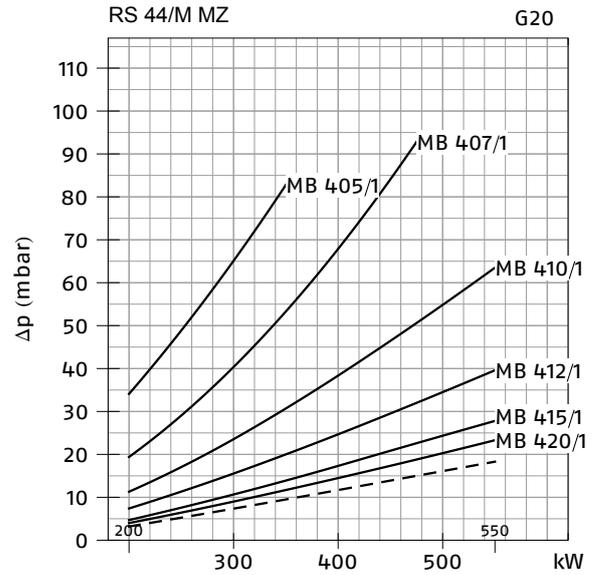
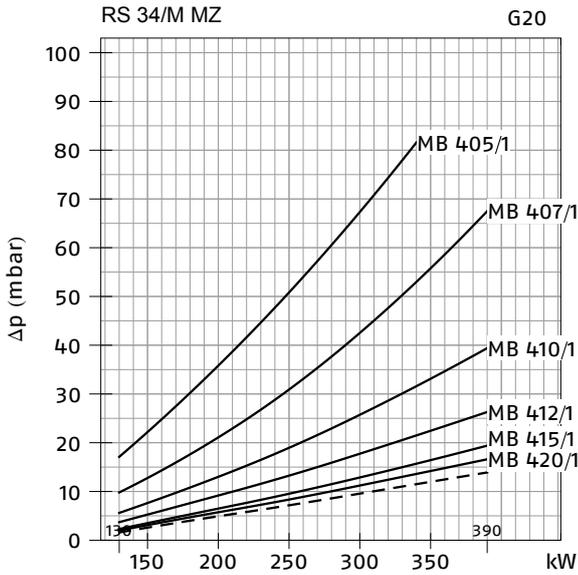


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 34/M MZ	1000	485	500	32
RS 44/M MZ	1000	485	500	33

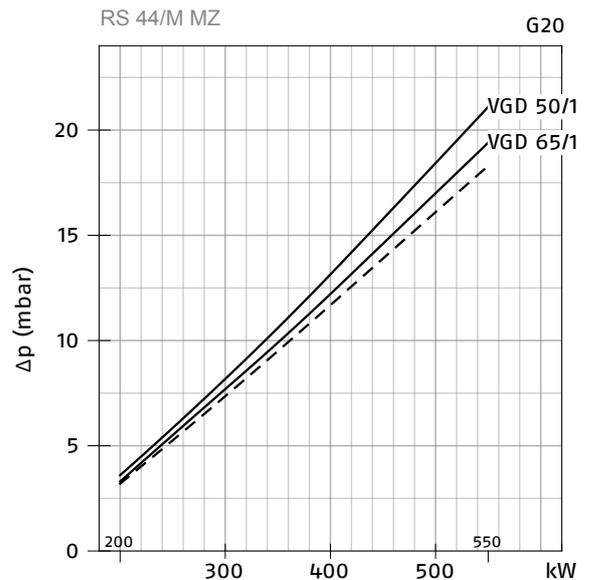
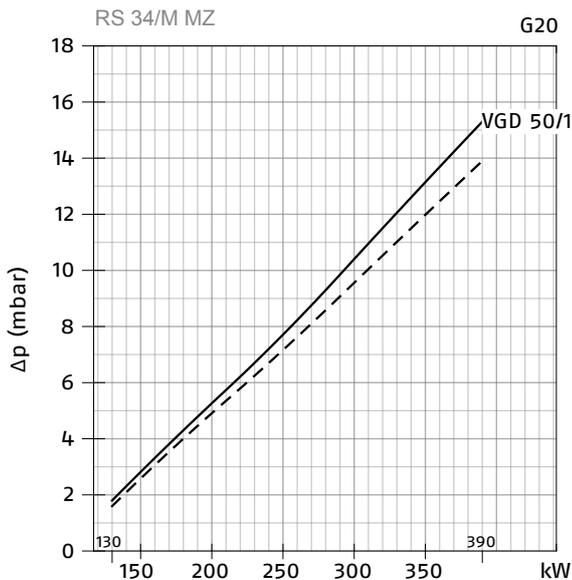
(1) Dimension with standard and extended head.

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 3/4"	-	3010123	3000824	
MB 407/1-RT 20	3970553*		Rp 3/4"	-	3010123	3000824	
MB 407/1-RT 52	3970599*		Rp 3/4"	-	3010123	3000824	
MB 407/1-RSM 20	3970229*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970258*		Rp 1" 1/4	-	3010123	3010124	
MB 410/1-RT 20	3970554*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RT 52	3970600*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RSM 20	3970230*		Rp 3/4"	-	3010123	3000824	

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1-RT 20	3970144*		Rp 1" ½	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1 CT RT 20	3970197**		Rp 1" ½	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 412/1-RSM 20	3970231*		Rp 1" ½	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RT 30	3970180*		Rp 1" ½	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1 CT RT 30	3970198**		Rp 1" ½	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RT 52	3970250*		Rp 1" ½	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1 CT RT 52	3970253**		Rp 1" ½	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 415/1-RSM 30	3970232*		Rp 1" ½	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
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

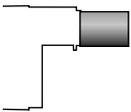
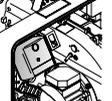
- (1) Please refer to "GAS TRAIN DESIGNATION".
 (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 (3) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for 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.

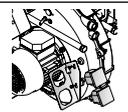
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

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
	RS 34/M MZ RS 44/M MZ	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 = 216 mm - Extended head length = 351 mm		3010428 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
	RS 34/M MZ	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 44/M MZ	Kit code for standard and extended head.		3010424
	RS 34/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)	3010502
	RS 44/M MZ	Kit code for standard and extended head.	(1)	3010503
	RS 34/M MZ	VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate. 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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

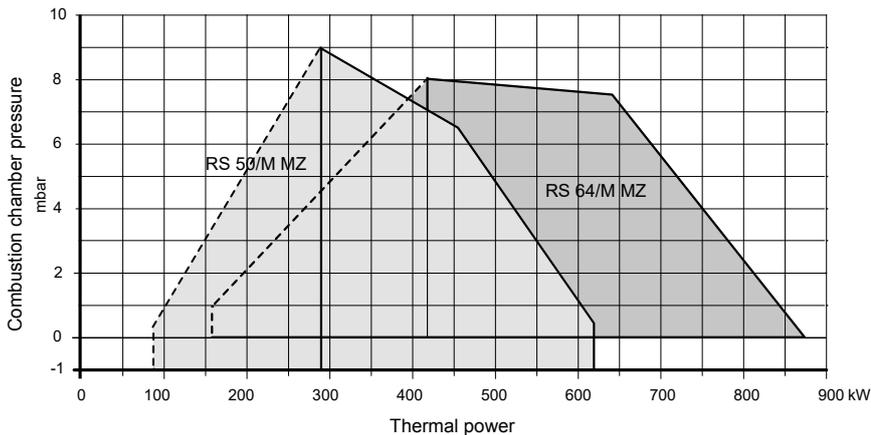
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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



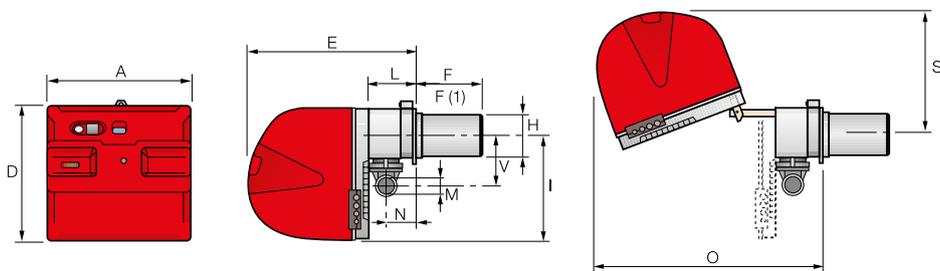
▭ Useful firing rates for choosing the burner

⋯ Modulation range

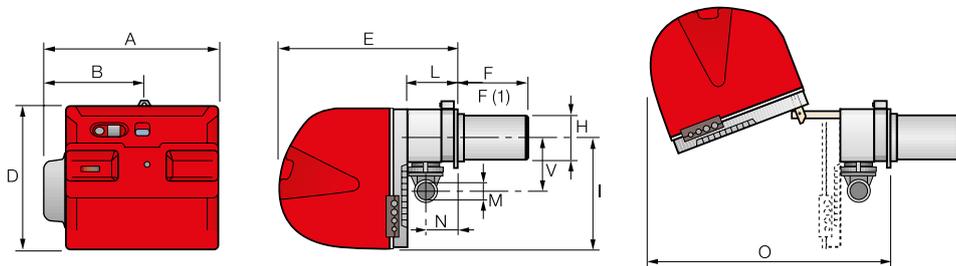
Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

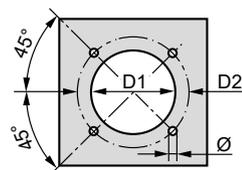
RS 50/M MZ



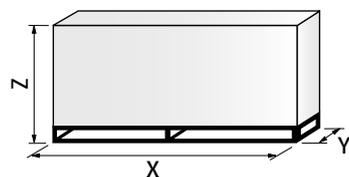
RS 64/M MZ



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	1½"	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

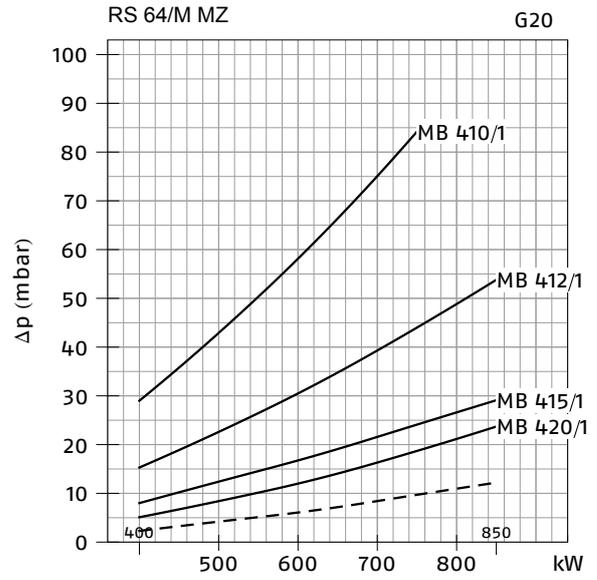
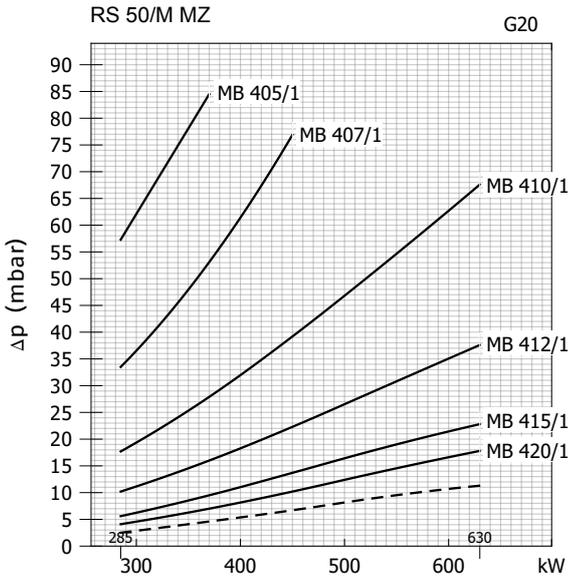


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 50/M MZ	1200	502	520	41
RS 64/M MZ	1200	580	520	42

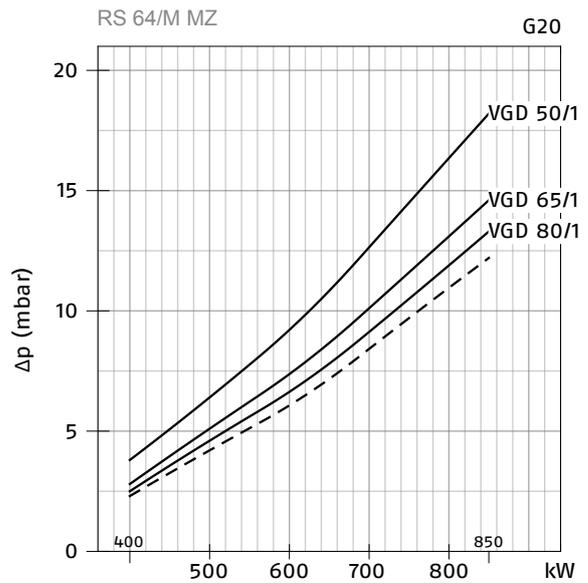
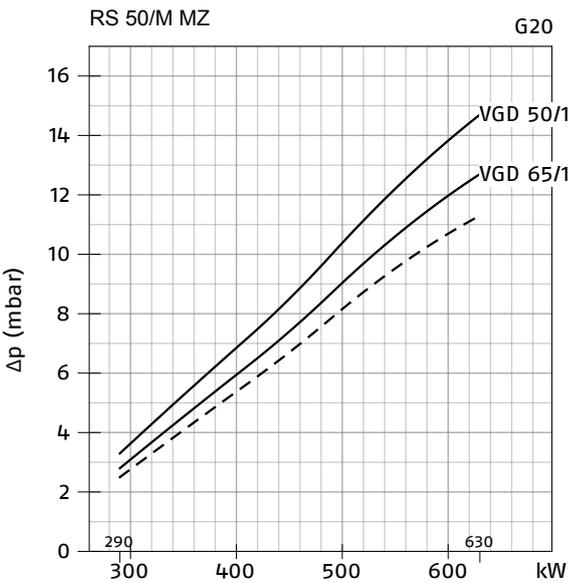
(1) Dimension with standard and extended head.

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 3/4"	-	3010123	3000824	●
MB 407/1-RT 20	3970553*		Rp 3/4"	-	3010123	3000824	●
MB 407/1-RT 52	3970599*		Rp 3/4"	-	3010123	3000824	●
MB 407/1-RSM 20	3970229*		Rp 3/4"	-	3010123	3000824	●
MB 410/1-RT 52	3970258*		Rp 1" 1/4	-	3010123	3010124	3000843
MB 410/1-RT 20	3970554*		Rp 3/4"	-	3010123	3000824	3000824+ 3000843
MB 410/1-RT 52	3970600*		Rp 3/4"	-	3010123	3000824	
MB 410/1-RSM 20	3970230*		Rp 3/4"	-	3010123	3000824	

GAS

LIGHT OIL

DUAL FUEL

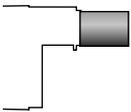
HEAVY OIL

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
	RS 50/M MZ RS 64/M MZ	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 = 216 mm - Extended head length = 351 mm Standard head length = 250 mm - Extended head length = 385 mm		3010078 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
	RS 50/M MZ RS 64/M MZ	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm Spacer thickness S = 135 mm		3010095 3010129
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		3010094

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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
	RS 50/M MZ	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/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

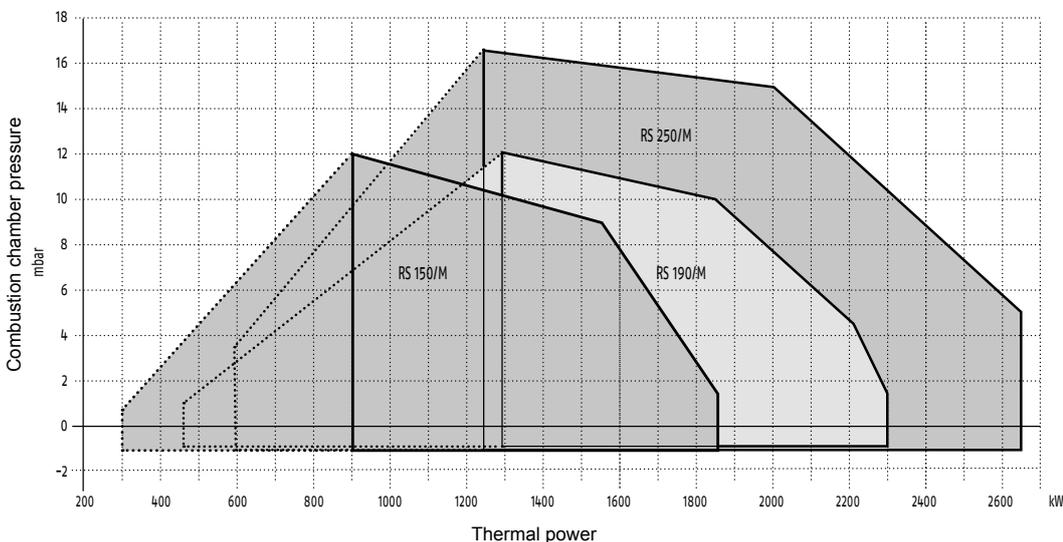
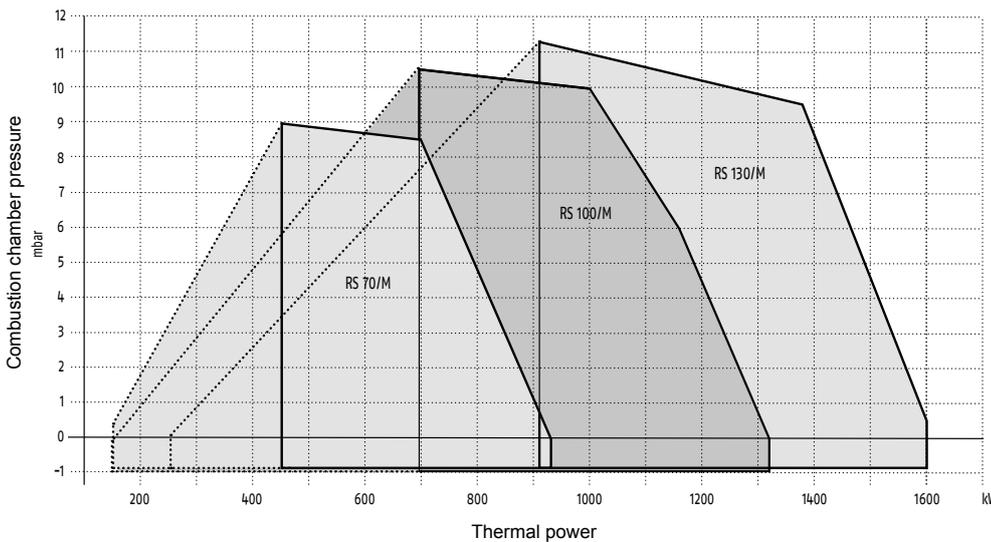
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 70/M TC FS1	150/470-930	15/47-93	1.4	3/400/50	230/50-60	CE-0085AQ0708	(2)(5)	3789610
RS 70/M 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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

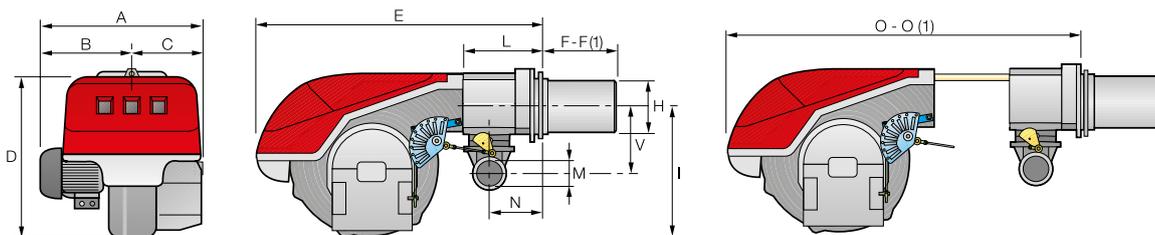
Net calorific value of natural gas (G20): 10 kWh/Nm³.
 The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
 Models for continuous operation (FS2: one stop every 72 hours) are available on request.

- (1) Model with plug and socket.
- (2) Model with terminal board.
- (3) Model with LFL control box.
- (5) Model with CMG/M control box.

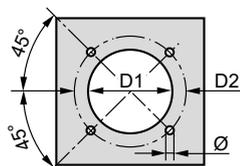
FIRING RATES



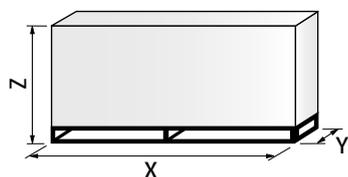
OVERALL DIMENSIONS



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.

GAS

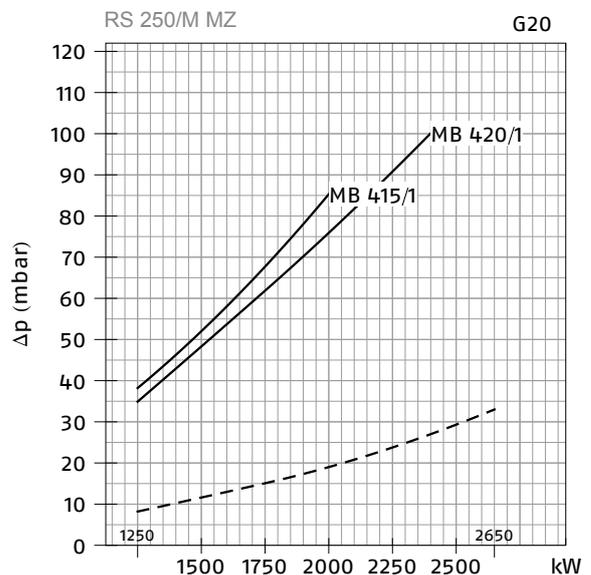
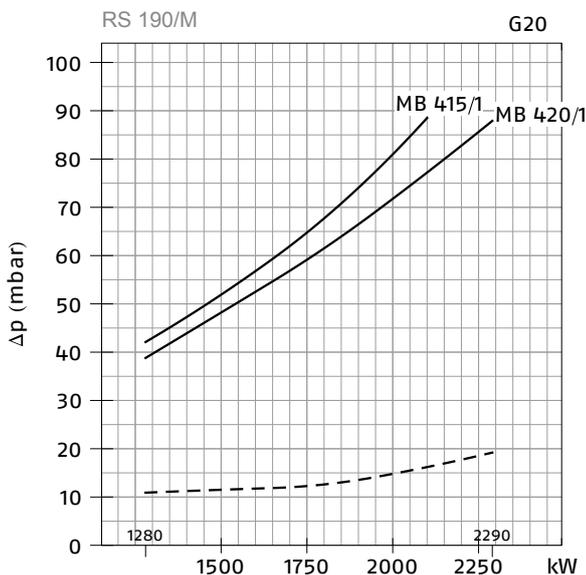
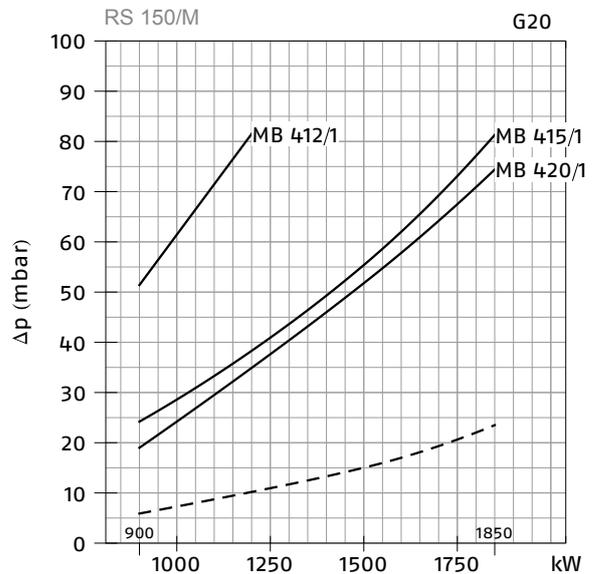
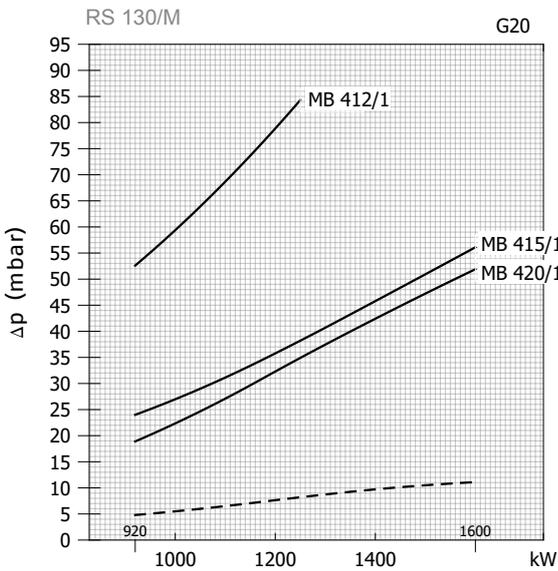
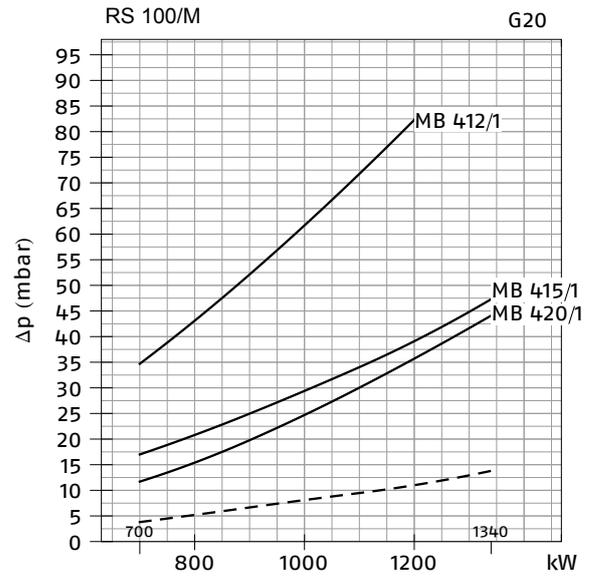
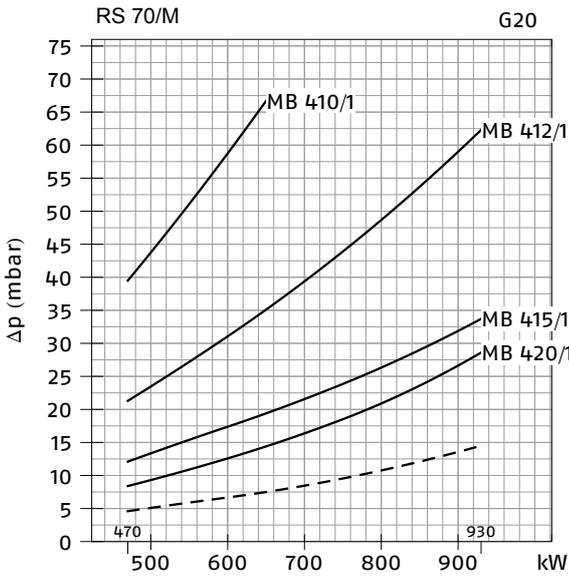
LIGHT OIL

DUAL FUEL

HEAVY OIL

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

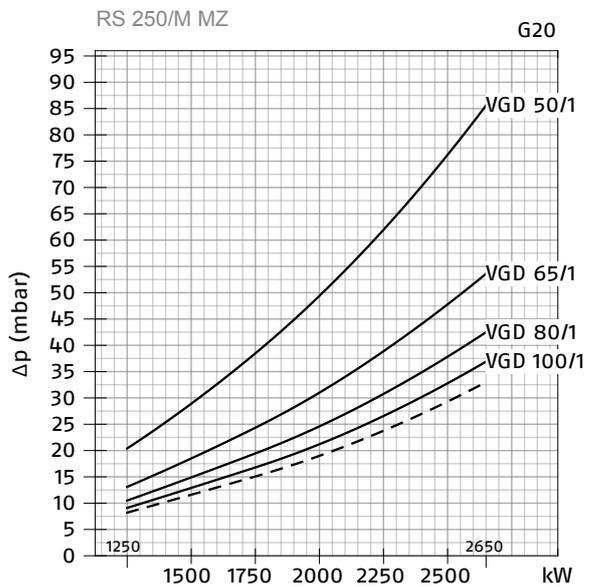
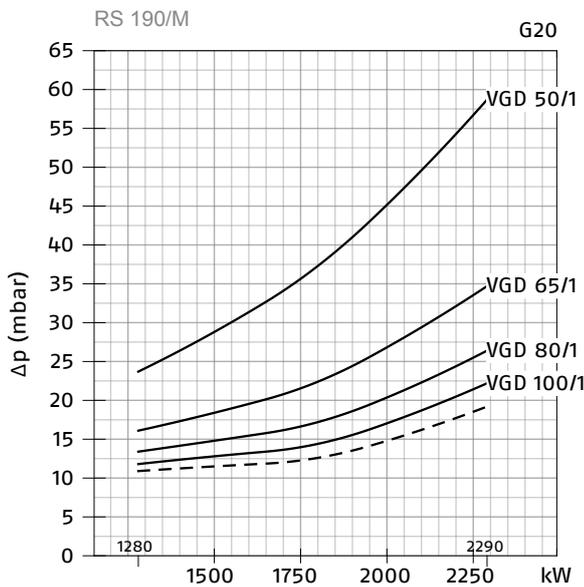
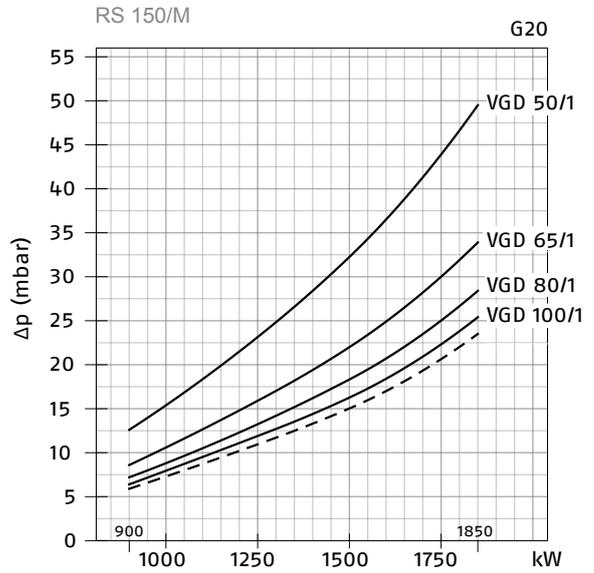
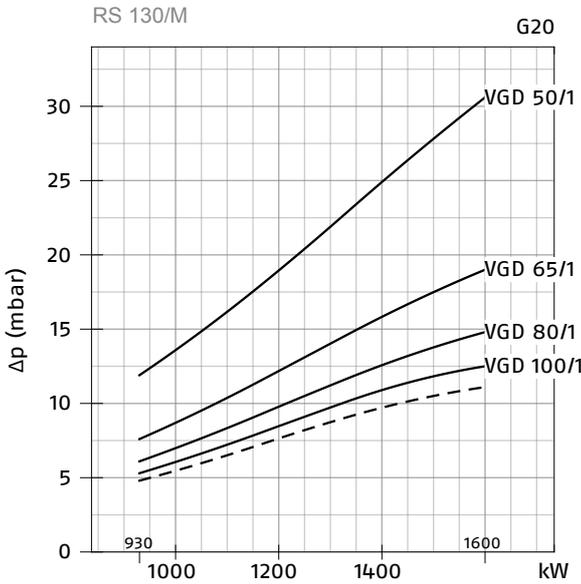
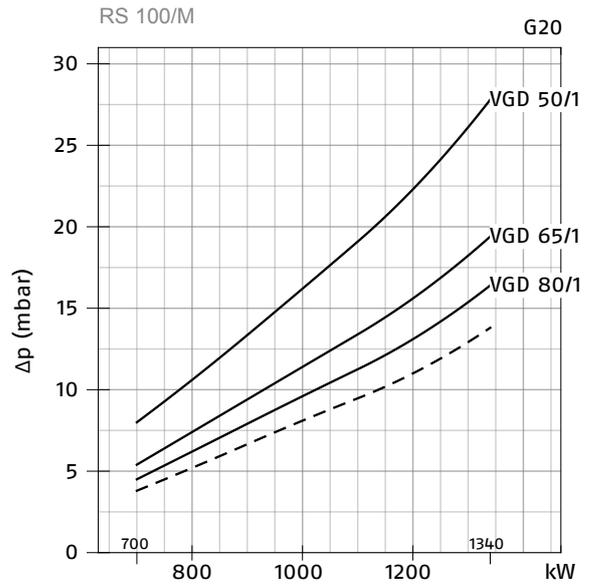
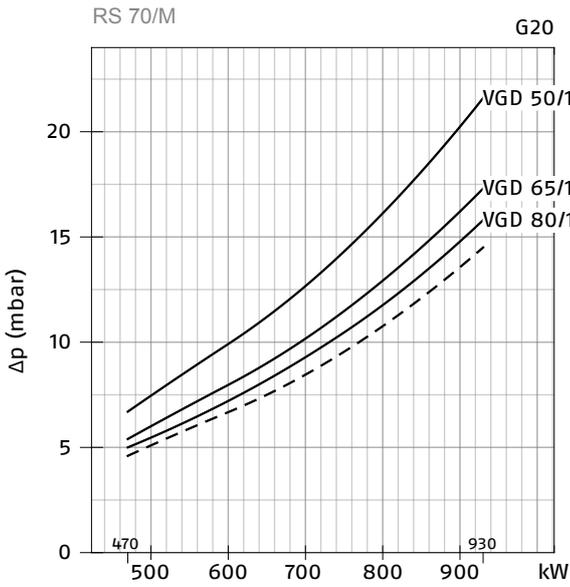
VGD SERIES GAS TRAIN

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL



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

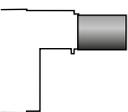
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)					
						RS 70/M	RS 100/M	RS 130/M	RS 150/M	RS 190/M	RS 250/M MZ
MB SERIES ONE STAGE GAS TRAIN											
MB 410/1-RT 52	3970258*		Rp 1" ¼	-	3010123	3000843	●	●	●	●	●
MB 410/1-RT 20	3970554*		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

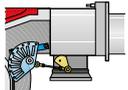
Drawing	Burner model	Specification	Note	Code
		EXTENDED HEAD KIT Burners standard head can be transformed into "extended head" versions by using the special kit. Here the kits available for the various burners are listed, showing the original and the extended lengths.		
	RS 70/M	Standard head length = 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)
	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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

Drawing	Burner model	Specification	Note	Code
	RS 70-150/M	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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

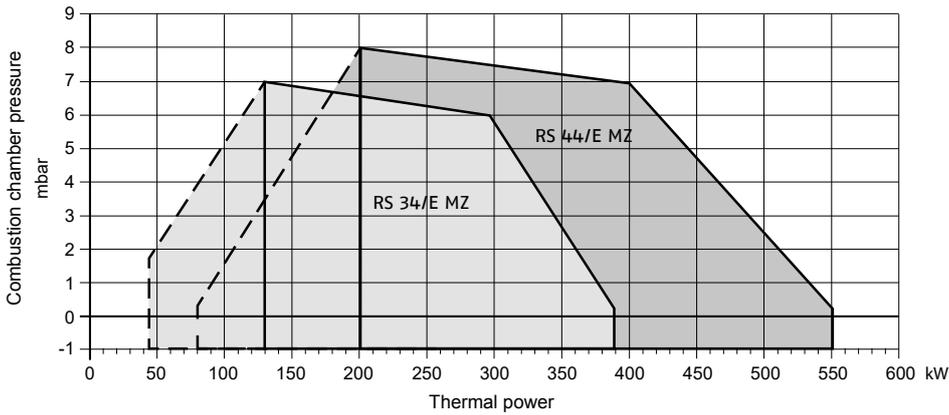
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

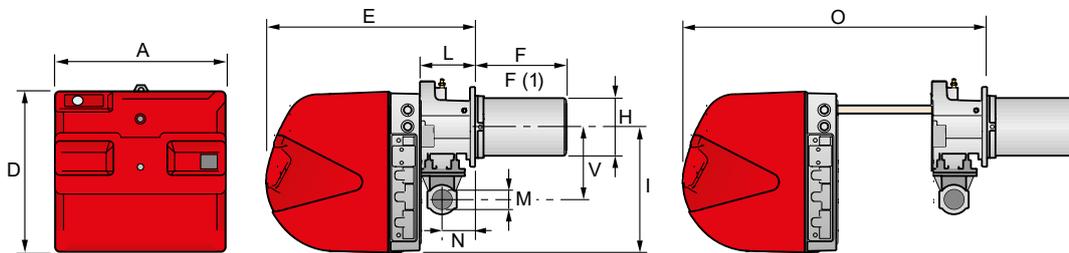
(2) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories paragraph).

FIRING RATES



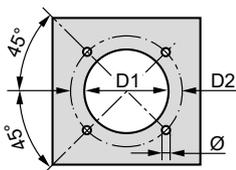
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

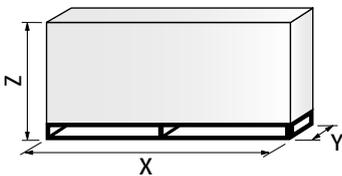


Description	A mm	D mm	E mm	F-F (1) mm	H mm	I mm	L mm	M mm	N mm	O mm	V mm
RS 34/E MZ	442	422	508	216 - 351	140	305	138	1"1/2	84	780	177
RS 44/E MZ	442	422	508	216 - 351	152	305	138	1"1/2	84	780	177

(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

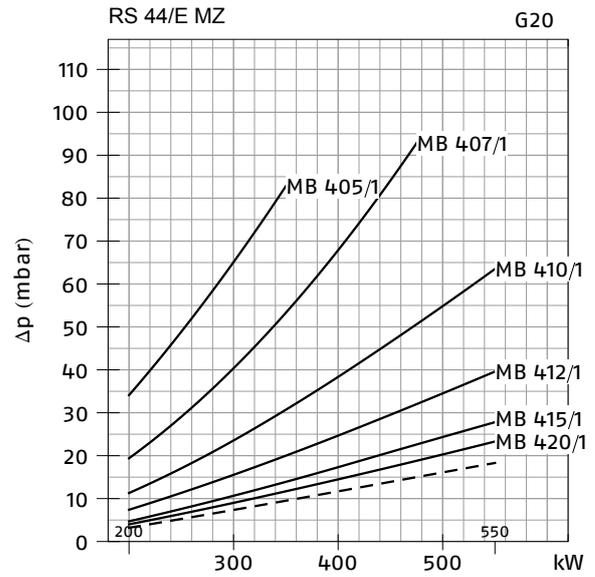
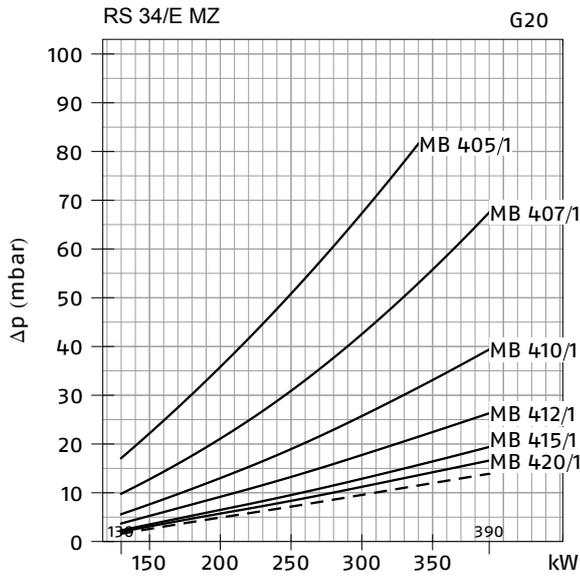


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 34/E MZ	1000	485	500	39
RS 44/E MZ	1000	485	500	40

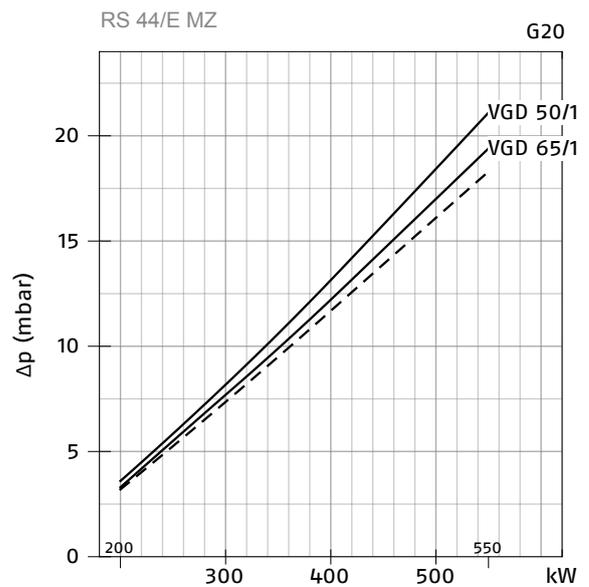
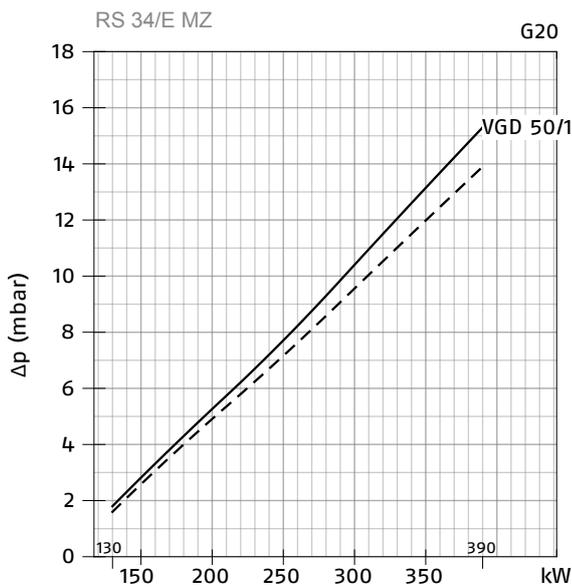
(1) Dimension with standard and extended head.

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	

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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

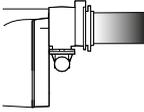
- (1) Please refer to "GAS TRAIN DESIGNATION".
 - (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 - (3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
 - (4) 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
	RS 34/E MZ RS 44/E MZ	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 = 216 mm - Extended head length = 351 mm		3010428 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. RWF 55.5 - Plus version.		20083339 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. Pressure (0-16 bar) with 4-20 mA output. Pressure (0-25 bar) with 4-20 mA output.		3010213 3010214 3090873
	RS 34/E MZ RS 44/E MZ	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. Kit code for standard and extended head.	(1) (1)	3010423 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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

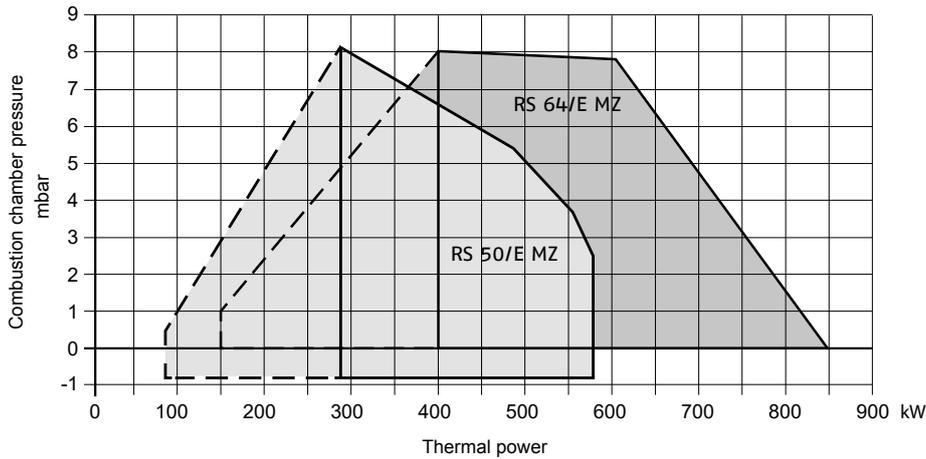
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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).

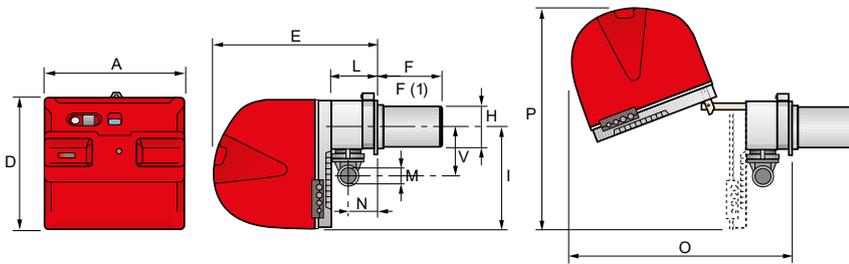
FIRING RATES



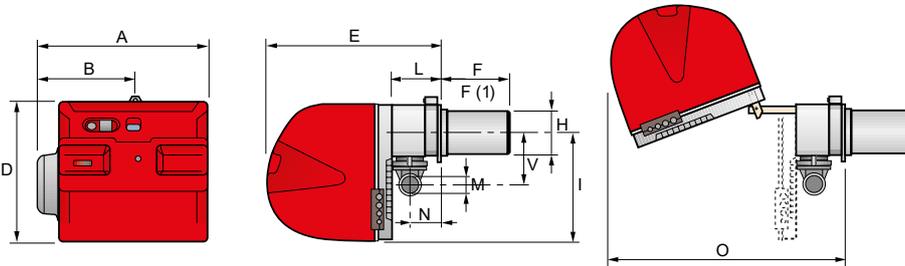
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

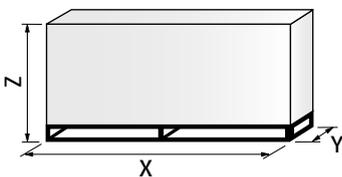
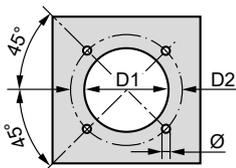
RS 50/E MZ



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 1/2"	108	810	719	168
RS 64/E MZ	533	300	490	640	250-385	179	352	222	Rp 2"	134	870	-	221



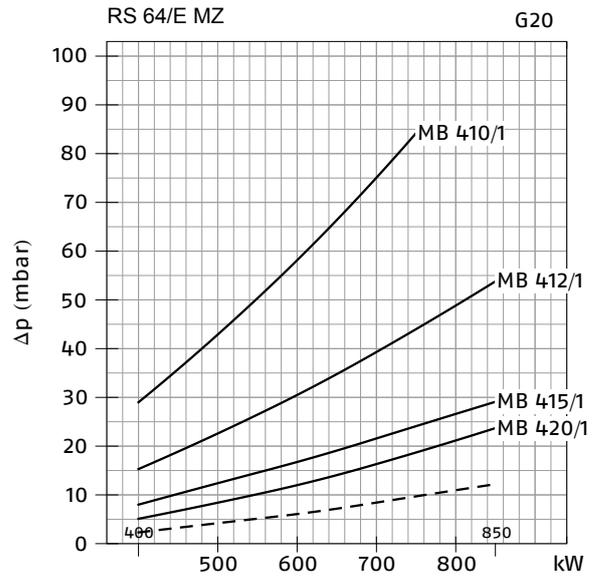
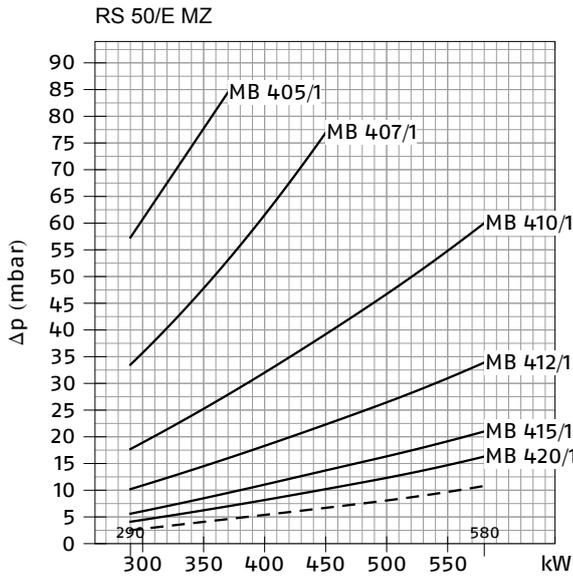
Description	D1 mm	D2 mm	Ø mm
RS 50/E MZ	160	224	M8
RS 64/E MZ	185	275-325	M12

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

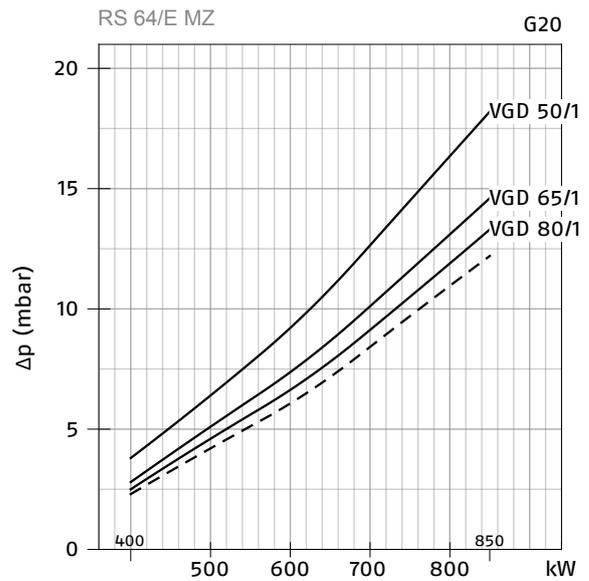
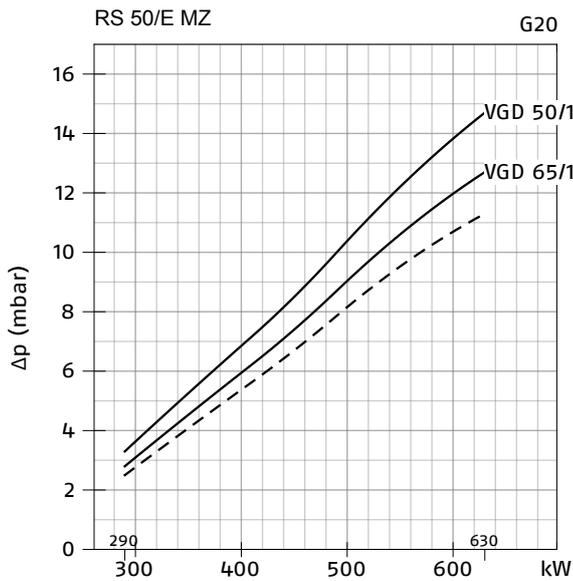
(1) Dimension with standard and extended head.

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

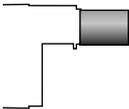
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 50/E MZ	RS 64/E MZ
MB SERIES ONE STAGE GAS TRAIN						
MB 405/1-RT 20	3970500*	(4)	Rp ¾"	-	3000824	●
MB 407/1-RT 52	3970599*		Rp ¾"	-	3000824	●
MB 410/1-RT 52	3970258*		Rp 1" ¼	-	3010124	3000843
MB 410/1-RT 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	□

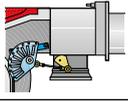
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)	
					RS 50/E MZ	RS 64/E MZ
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	20137718*	(5)	Rp 2"	-	3000822	□
VGD 65/1-FT 122	20140762*	(6)	DN65	-	3000822+3000826	3000826
VGD 80/1-FT 122	20140763*		DN80	-	●	3000826

- (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
	RS 50/E MZ RS 64/E MZ	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 = 216 mm - Extended head length = 351 mm Standard head length = 250 mm - Extended head length = 385 mm		20008182 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
	RS 50/E MZ RS 64/E MZ	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm Spacer thickness S = 135 mm		3010095 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. RWF 55.5 - Plus version.		20083339 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. Pressure (0-16 bar) with 4-20 mA output. Pressure (0-25 bar) with 4-20 mA output.		3010213 3010214 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
	RS 50/E MZ	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/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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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.

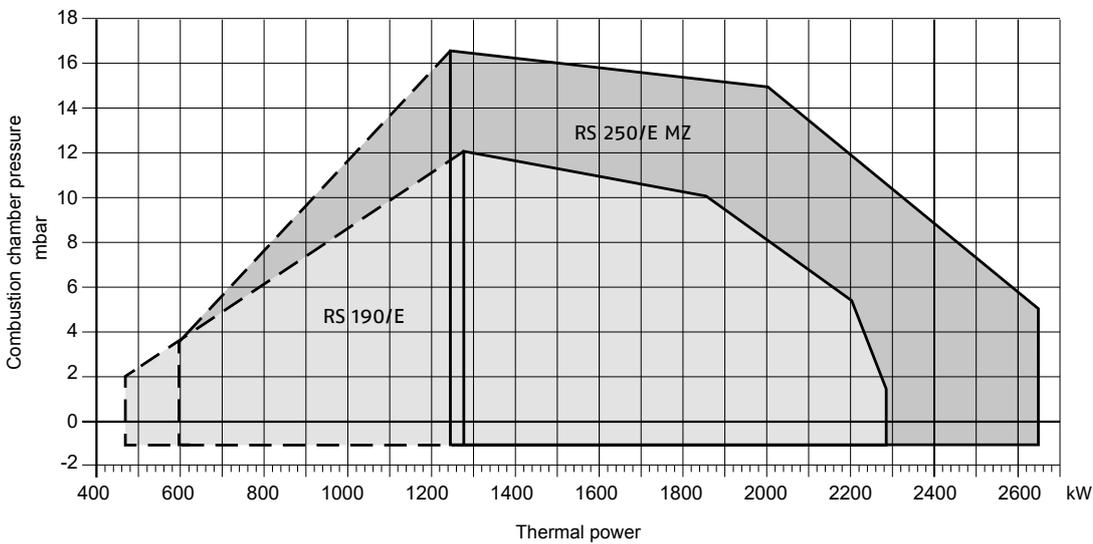
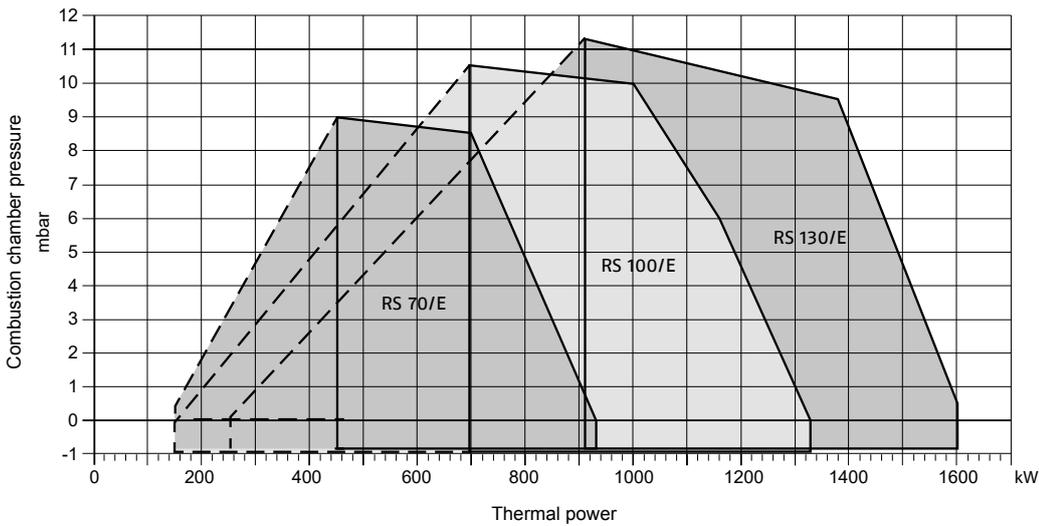
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

(2) Model with terminal board.

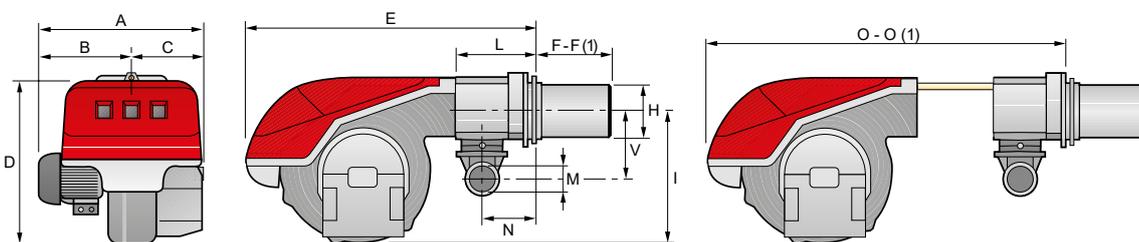
(3) Seal control function is included on Burner Digital Management System; it is necessary to add the PVP kit on the gas train as Accessory (see Gas Train Accessories paragraph).

(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.

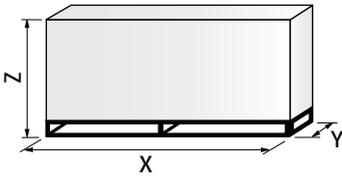
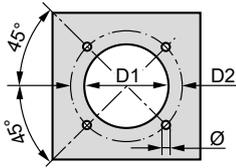
FIRING RATES



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



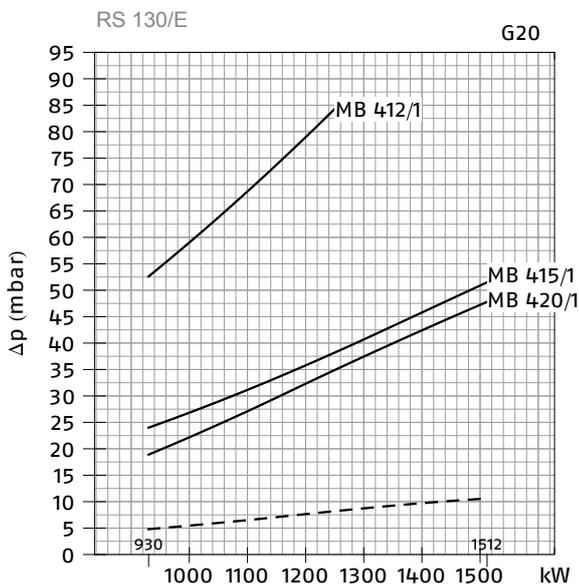
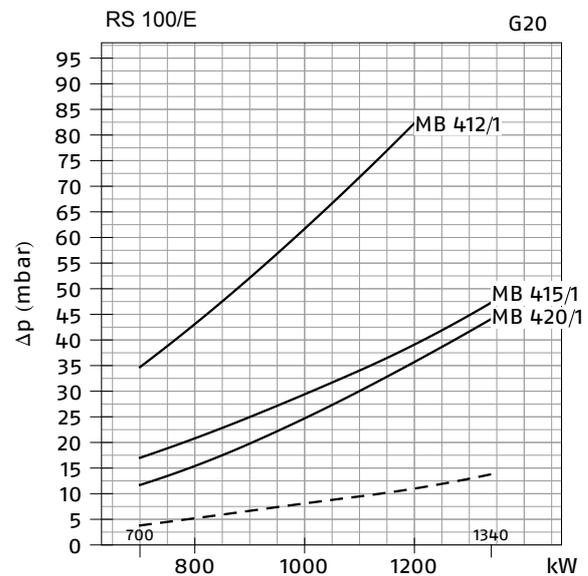
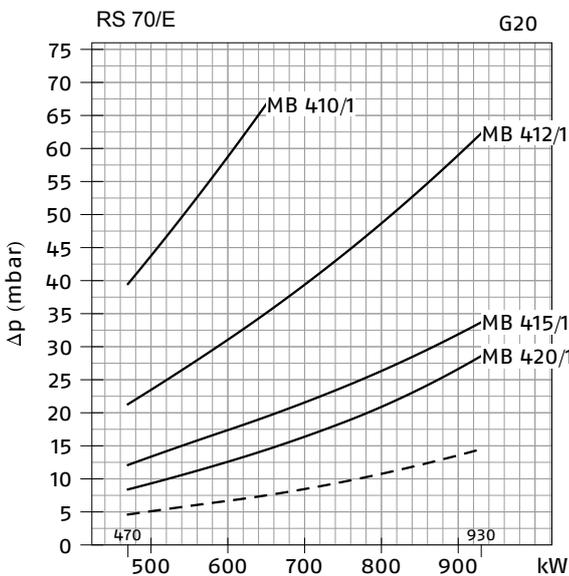
Description	D1 mm	D2 mm	Ø mm
RS 70/E	185	275-325	M12
RS 100/E	185	275-325	M12
RS 130/E	195	275-325	M12
RS 190/E	230	325-368	M16
RS 250/E MZ	230	325-368	M16

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.

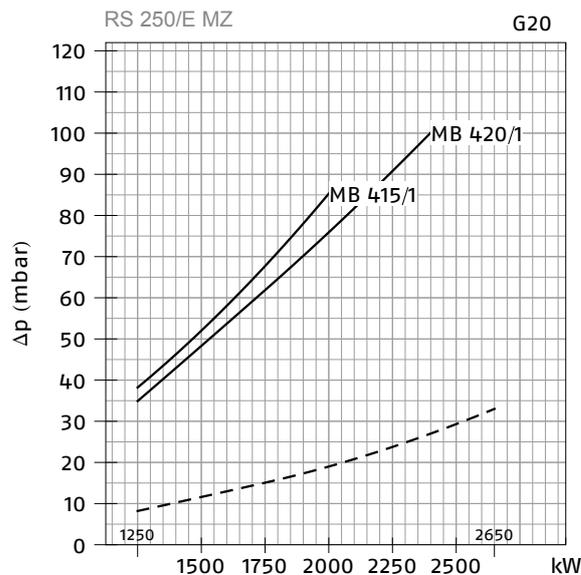
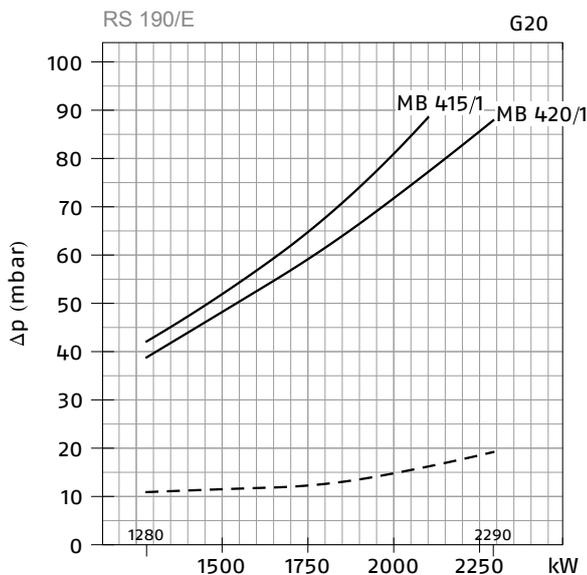
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

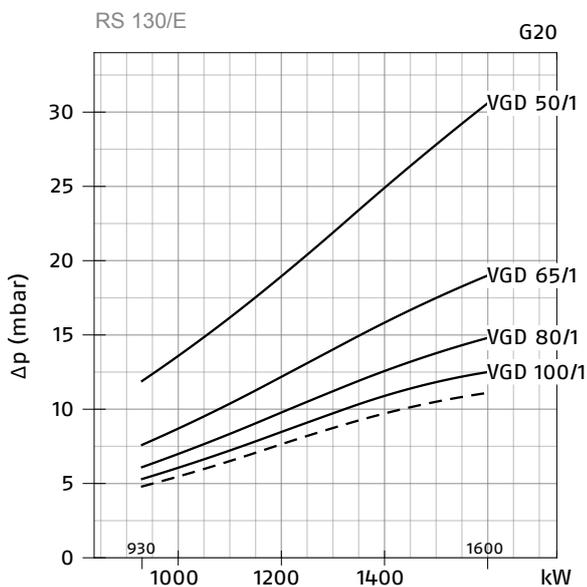
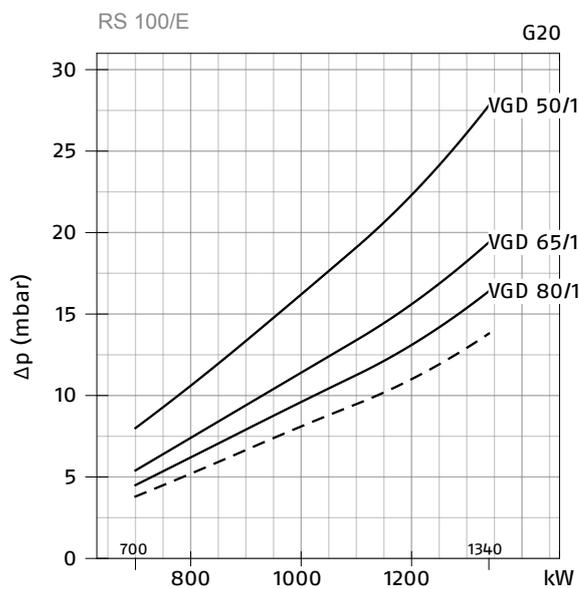
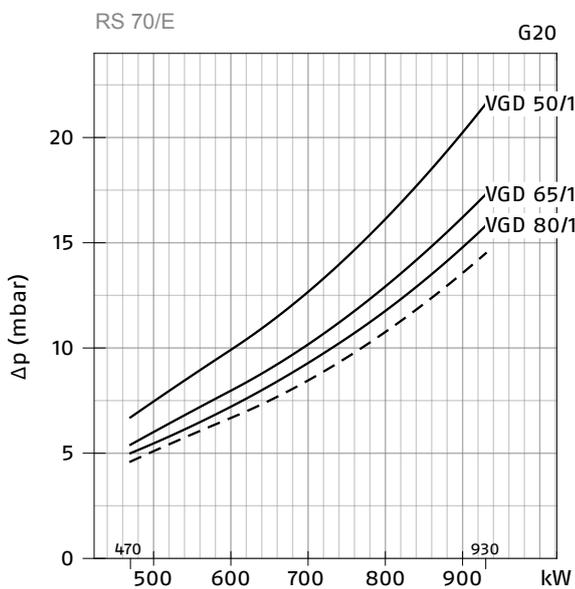


Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

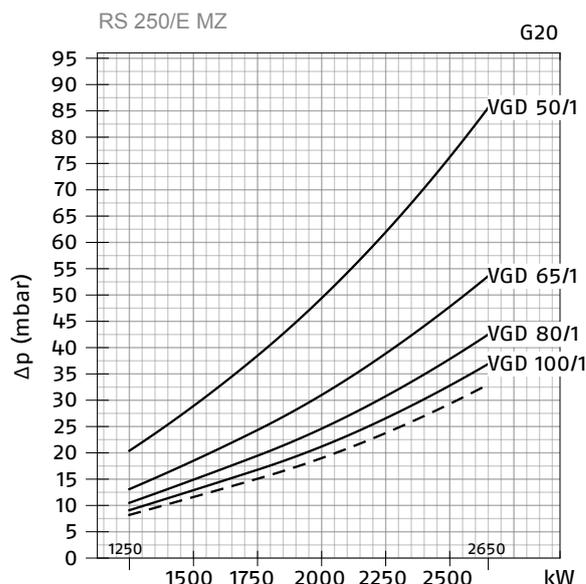
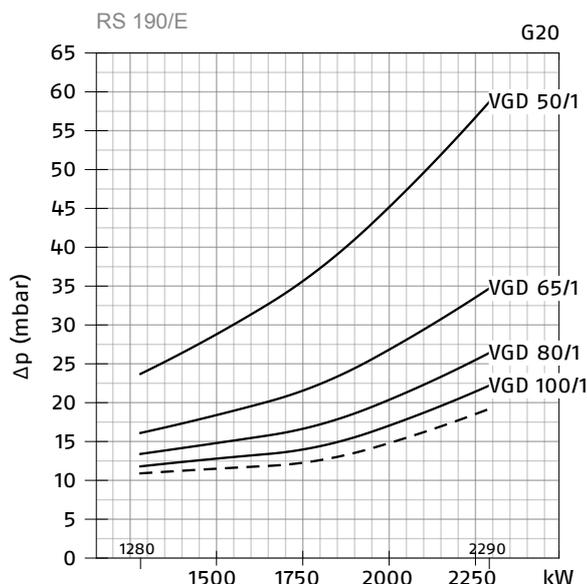
— Combustion head + gas train
 - - - Combustion head

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL



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

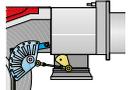
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)				
					RS 70/E	RS 100/E	RS 130/E	RS 190/E	RS 250/E MZ
MB SERIES ONE STAGE GAS TRAIN									
MB 410/1-RT 52	3970258*		Rp 1" ¼	-	3000843	●	●	●	●
MB 410/1-RT 52	3970600*		Rp ¾"	-	3000824+3000843	●	●	●	●
MB 412/1-RT 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
	RS 70-130/E	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. 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
	RS 70/E	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 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
	RS 70/E	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)	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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		PhV/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

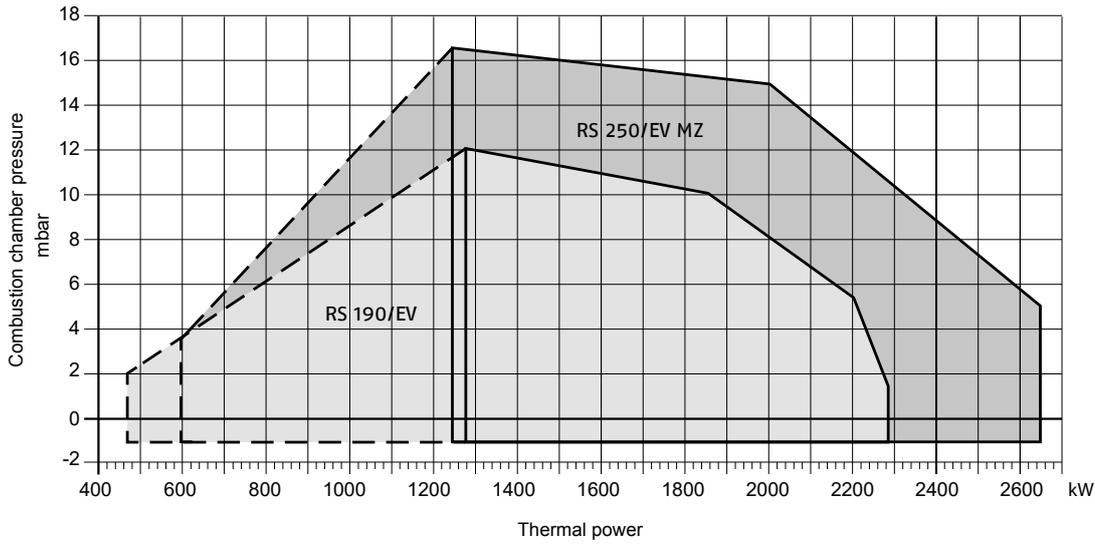
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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

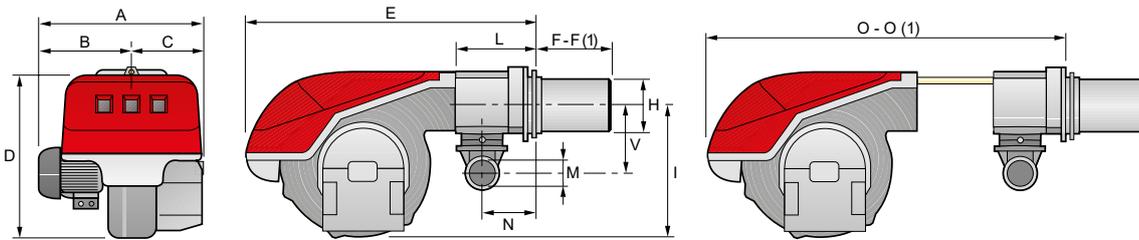
(1) Model with terminal board.

(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.

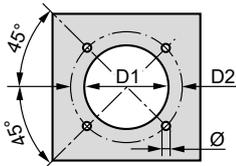
FIRING RATES



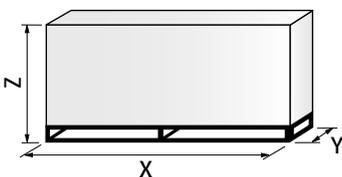
OVERALL DIMENSIONS



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

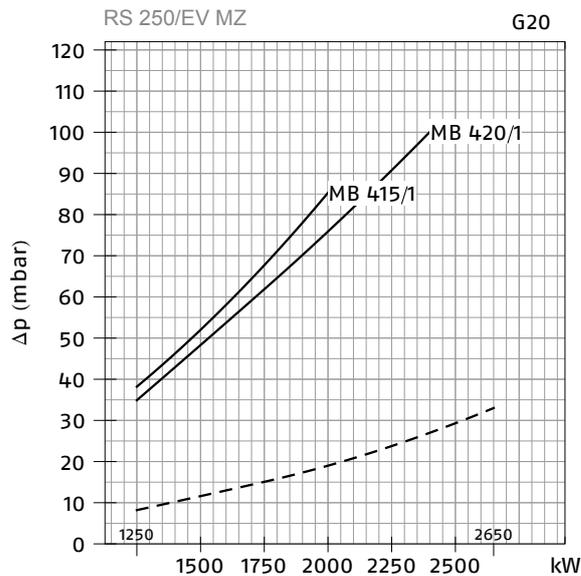
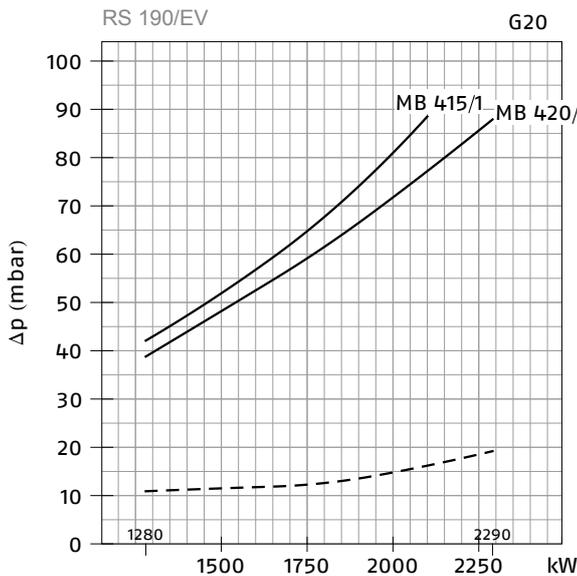


Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 190/EV	1405	1000	660	89
RS 250/EV MZ	1405-1420	1000	660	125

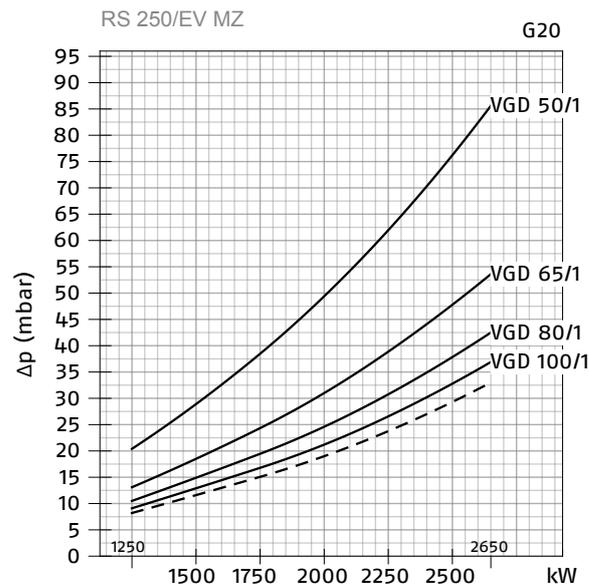
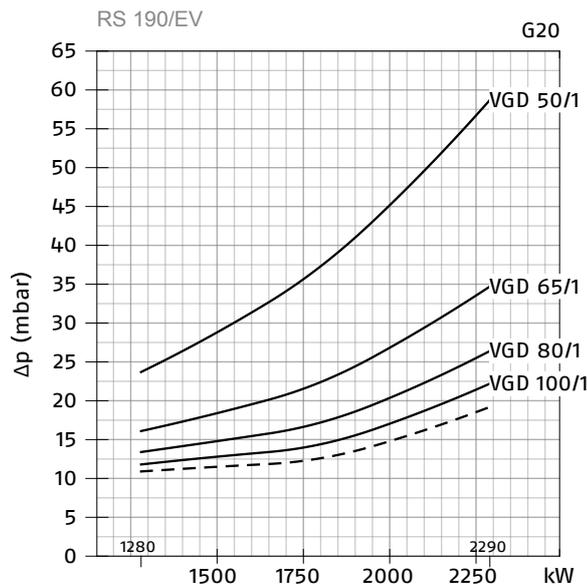
(1) Dimension with standard and extended head.

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"	-	<input type="checkbox"/>	<input type="checkbox"/>
VGD SERIES ONE STAGE GAS TRAIN						
VGD 50/1-RT 122	20137718*	(4)	Rp 2"	-	<input type="checkbox"/>	<input type="checkbox"/>
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
VG D 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
	RS 190/EV	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.		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)
- 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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/Nm³.

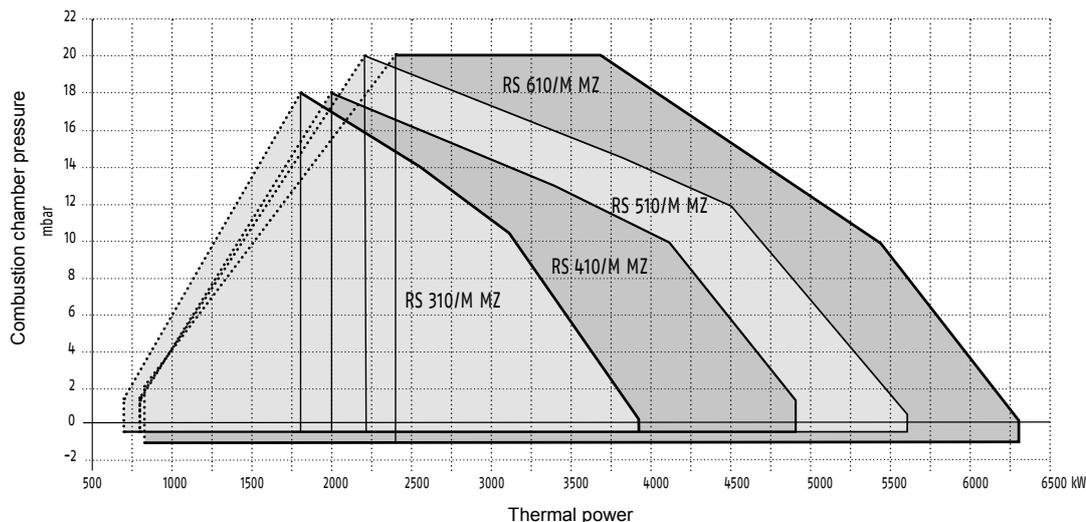
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

(1) Model with CMG control box.

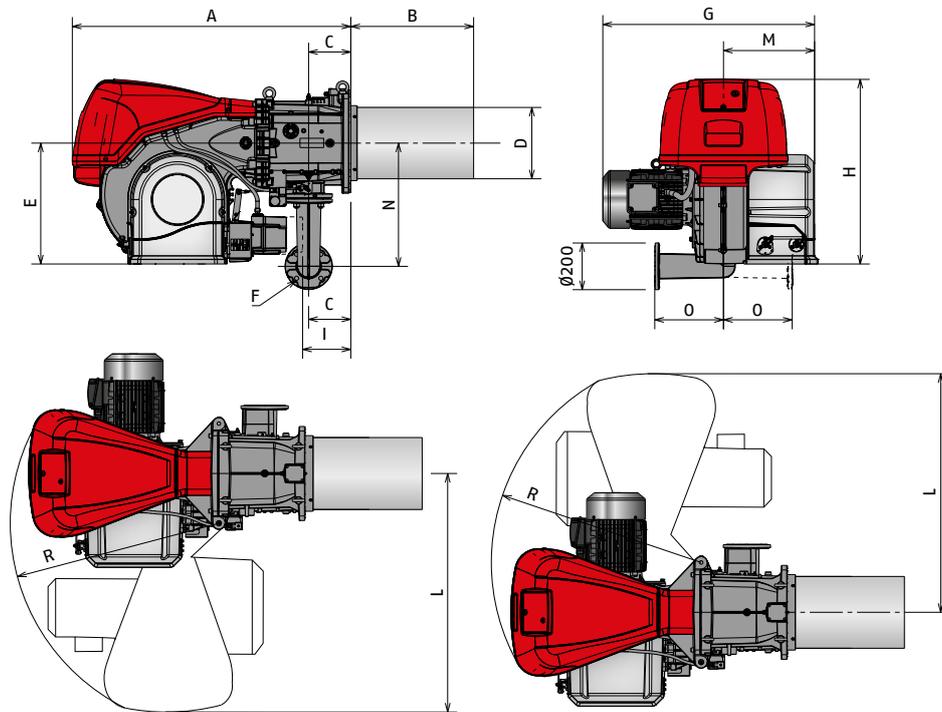
(2) Star/delta starter.

(3) Direct starter

FIRING RATES

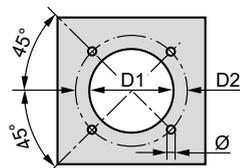


OVERALL DIMENSIONS

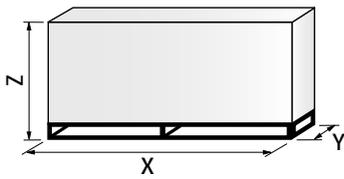


Description	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I (*) mm	L mm	M mm	N mm	O mm	P mm	R mm
RS 310/M MZ	1178	519	178	306	520	DN65	890	790	177	1015	400	528	290	177	890
RS 410/M MZ	1178	519	178	306	520	DN65	908	790	177	1015	400	528	290	177	890
RS 510/M MZ	1178	519	178	306	520	DN65	908	790	177	1015	400	528	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.



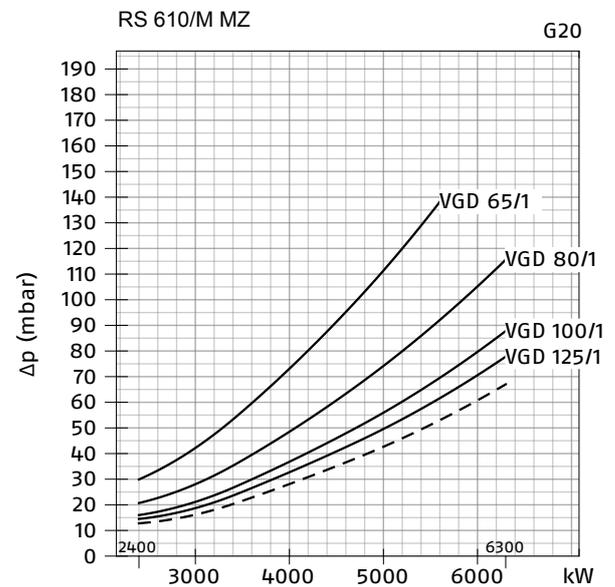
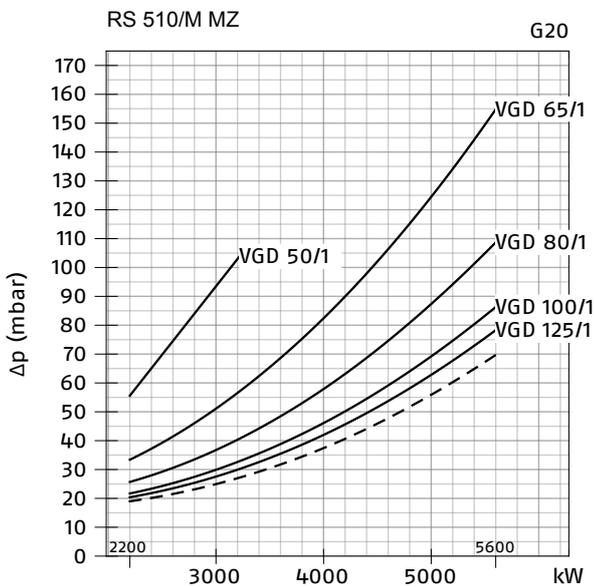
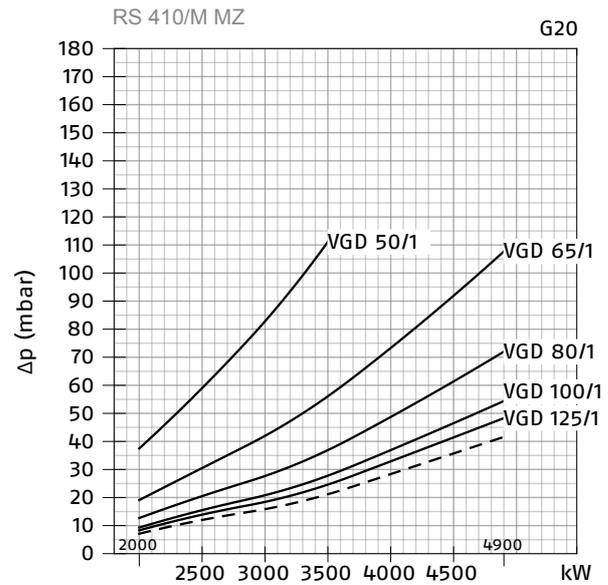
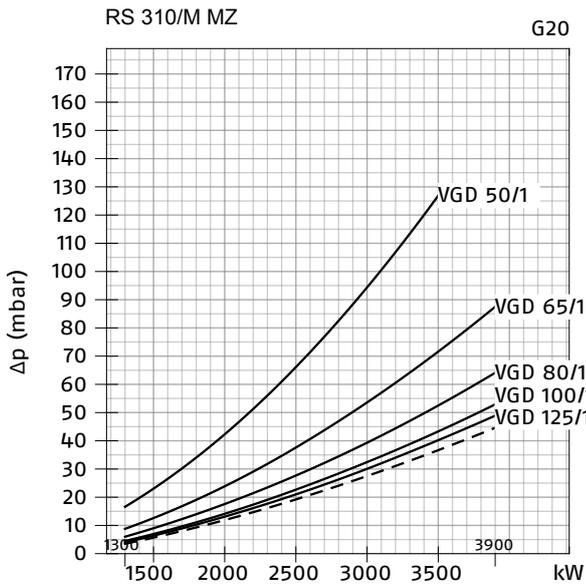
Description	D1 mm	D2 mm	Ø mm
RS 310/M MZ	335	452	M18
RS 410/M MZ	335	452	M18
RS 510/M MZ	335	452	M18
RS 610/M MZ	350	452	M18



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



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				

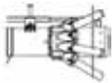
- (1) Please refer to "GAS TRAIN DESIGNATION".
 (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 (3) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for 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; 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 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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

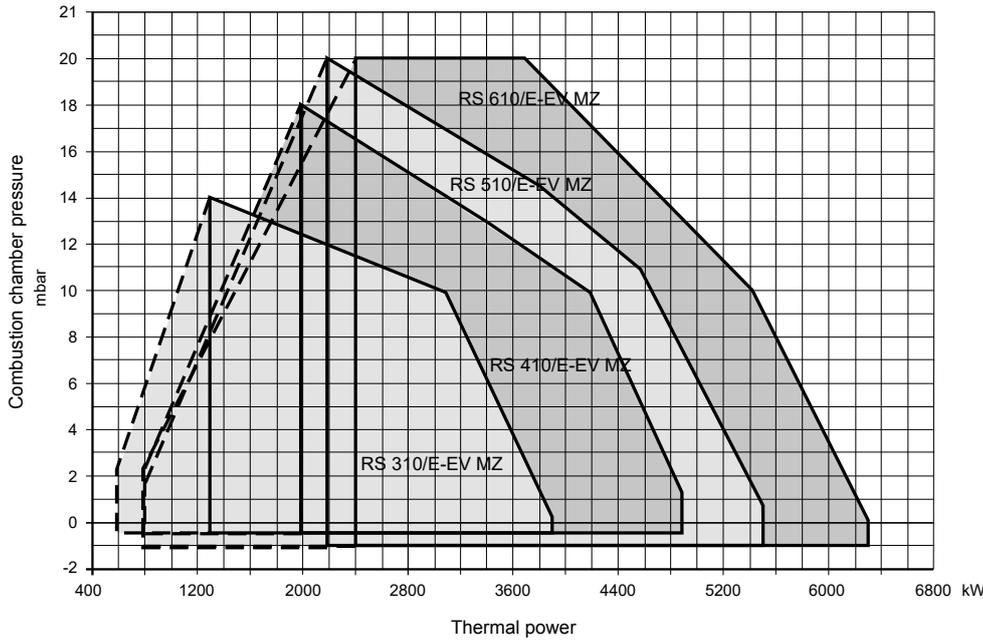
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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

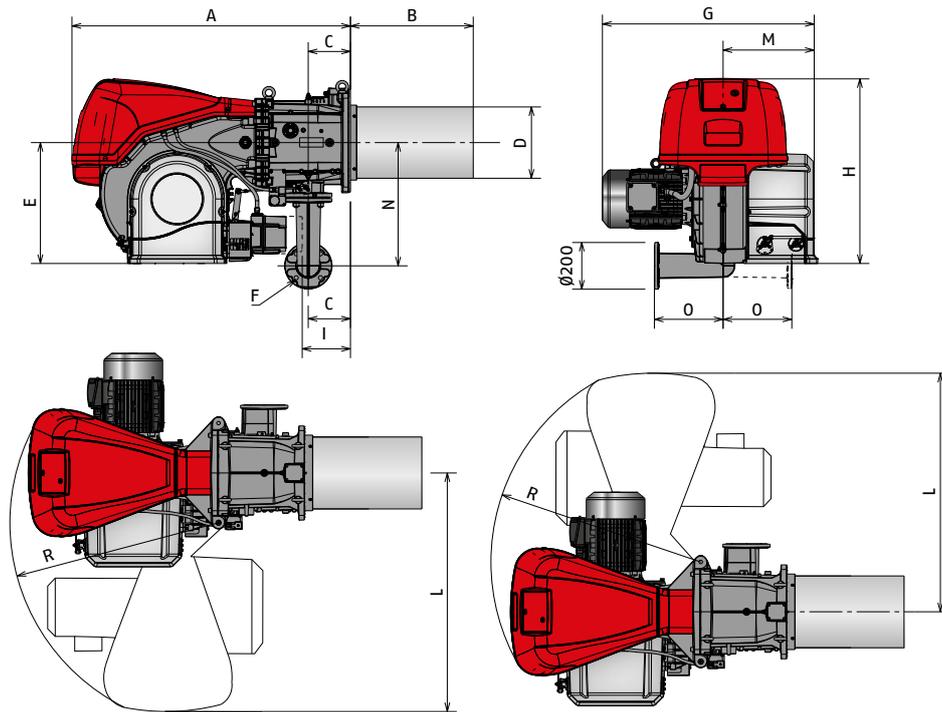
(1) Star/delta starter.

(2) Direct starter.

FIRING RATES

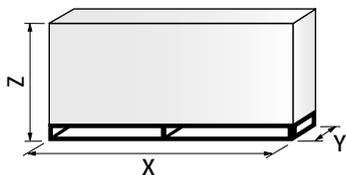
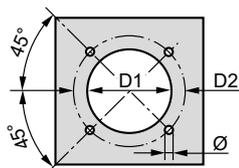


OVERALL DIMENSIONS



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.

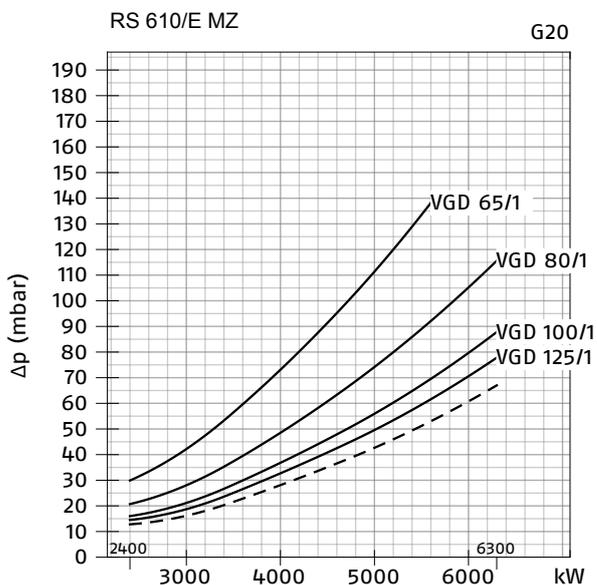
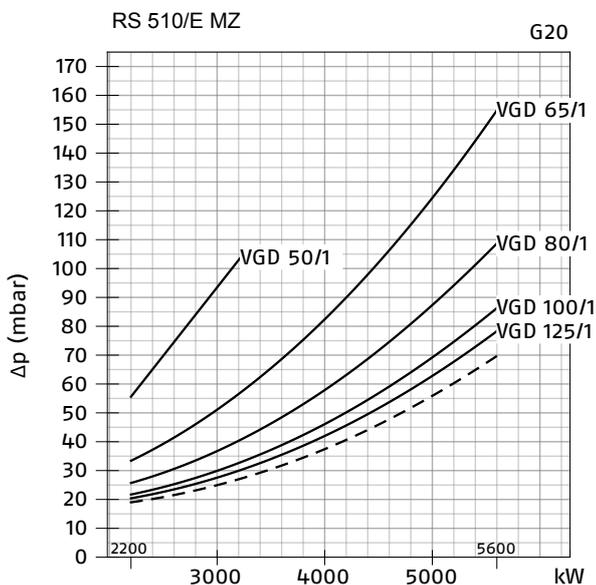
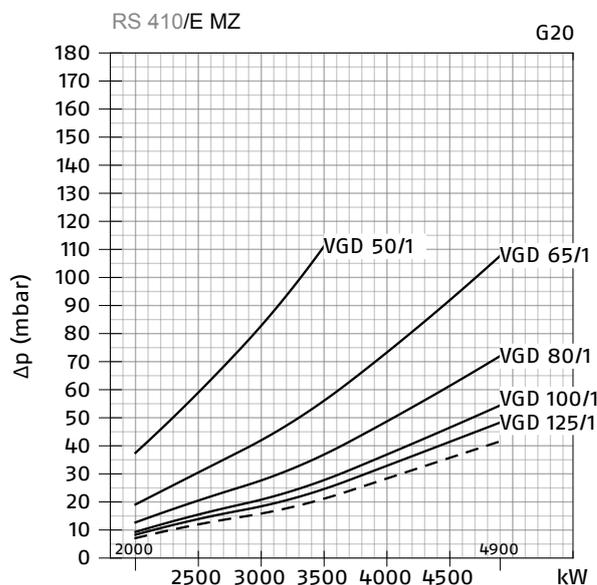
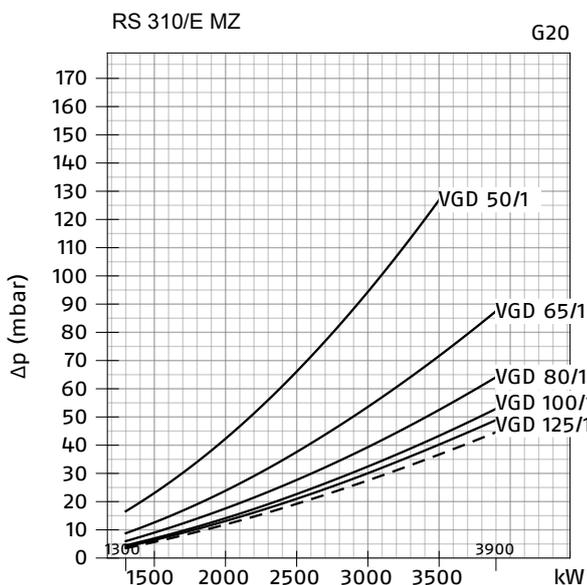


Description	D1 mm	D2 mm	Ø mm
RS 310/E MZ	335	452	M18
RS 410/E MZ	335	452	M18
RS 510/E MZ	335	452	M18
RS 610/E MZ	350	452	M18

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				

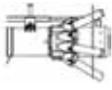
- (1) Please refer to "GAS TRAIN DESIGNATION".
 - (2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
 - (3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES)".
 - (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.		20073595
		RWF 50.2 - Basic version with 3 position output		20074441
		RWF 55.5 - Complete with RS-485 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.		3010213
		Pressure (0-2.5 bar) with 4-20 mA output.		3010214
		Pressure (0-16 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; 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 exclusive design ensures reduced dimensions, simple use and maintenance.

A wide range of accessories guarantees elevated working flexibility.

TECHNICAL DATA

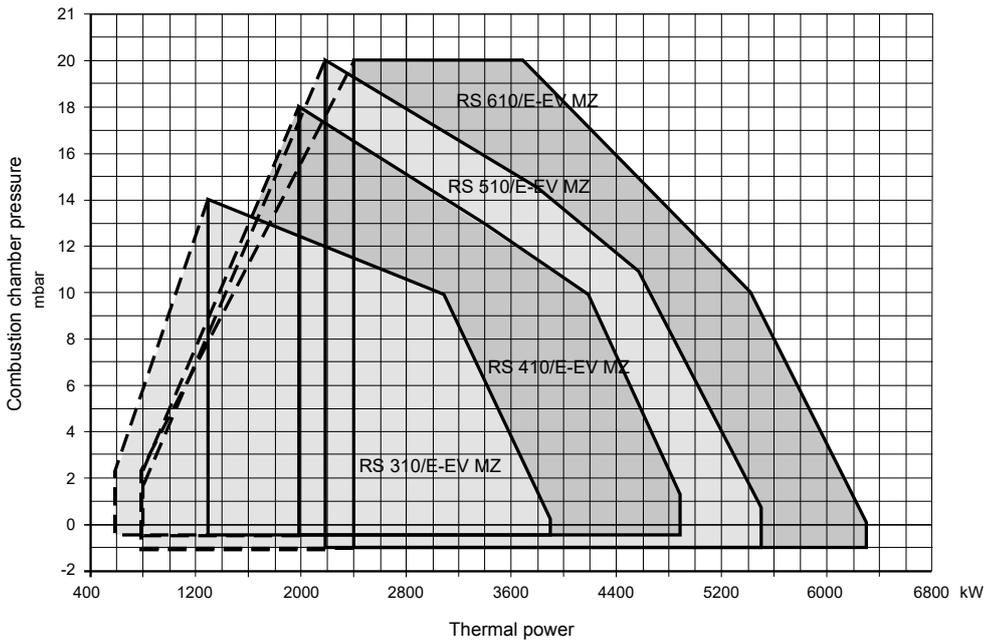
Description	Heat output natural gas		Total electrical power kW	Electric power supply Ph/V/Hz	Certification	Code
	kW	Nm ³ /h				
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (REC 37)						
RS 310/EV MZ TC 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/Nm³.

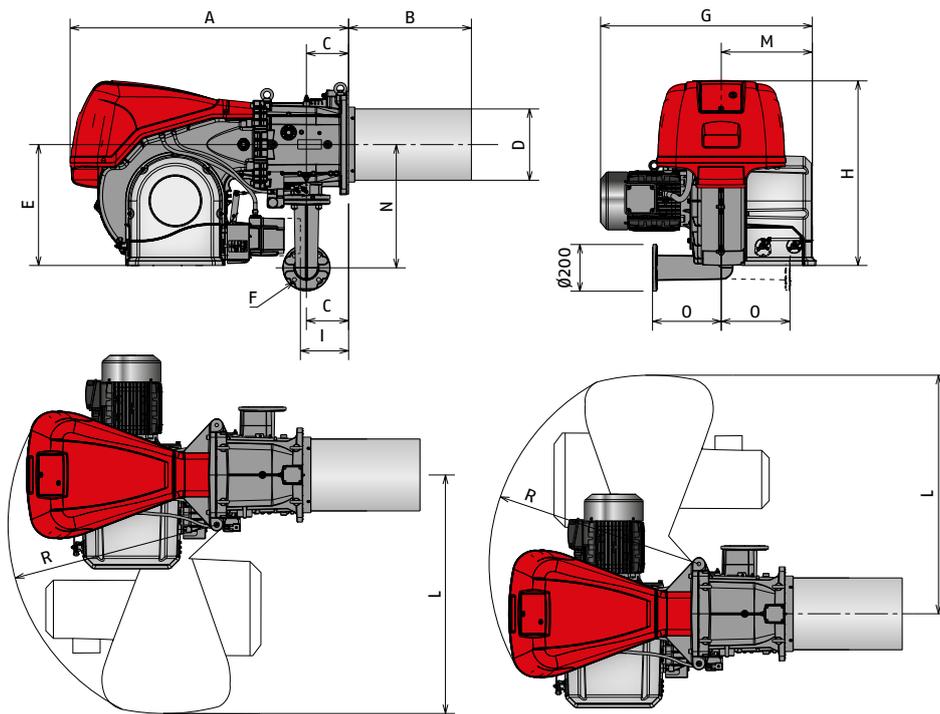
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

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

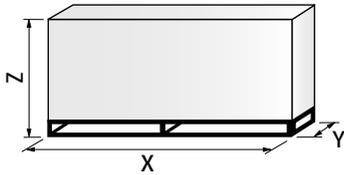
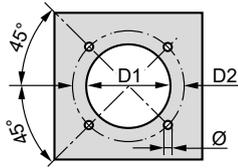


OVERALL DIMENSIONS



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.

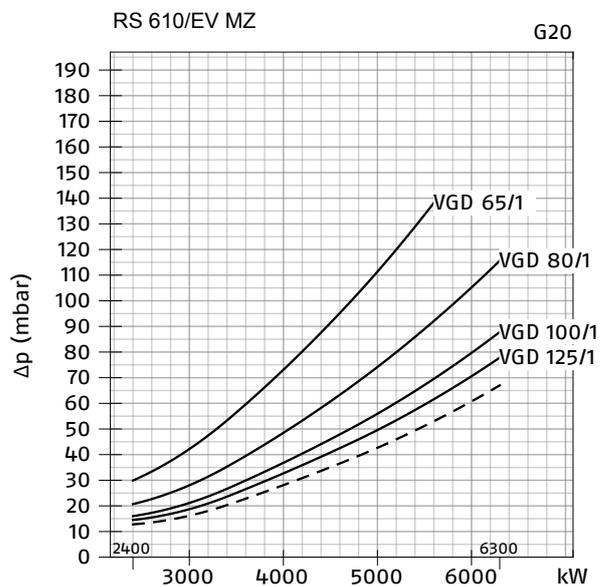
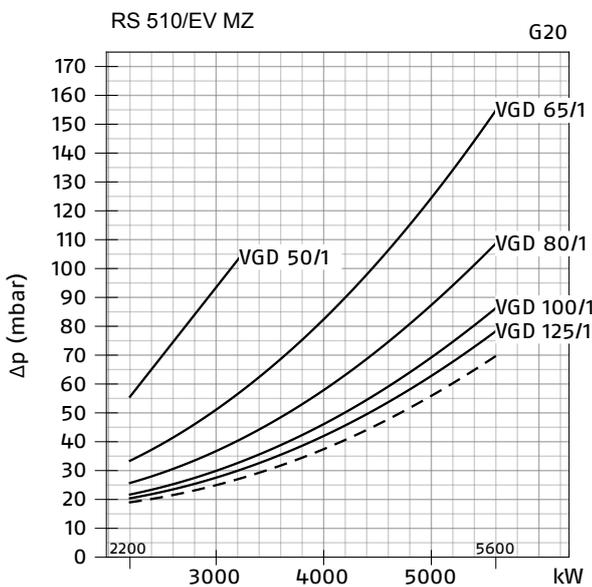
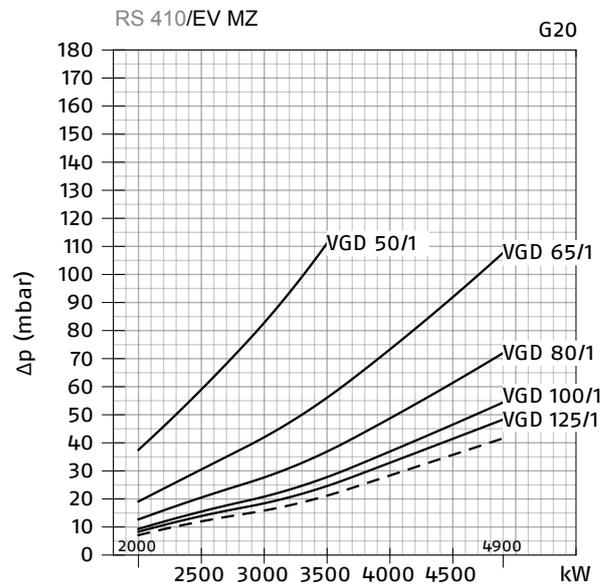
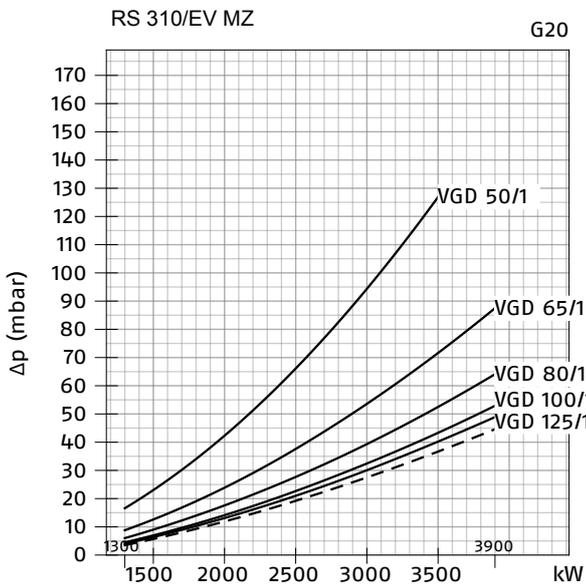


Description	D1 mm	D2 mm	Ø mm
RS 310/EV MZ	335	452	M18
RS 410/EV MZ	335	452	M18
RS 510/EV MZ	335	452	M18
RS 610/EV MZ	350	452	M18

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



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				

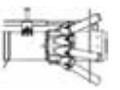
- (1) Please refer to "GAS TRAIN DESIGNATION".
 - (2) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
 - (3) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
 - (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 kW	Electric power supply		Note	Code
	kW	Nm³/h		PhV/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

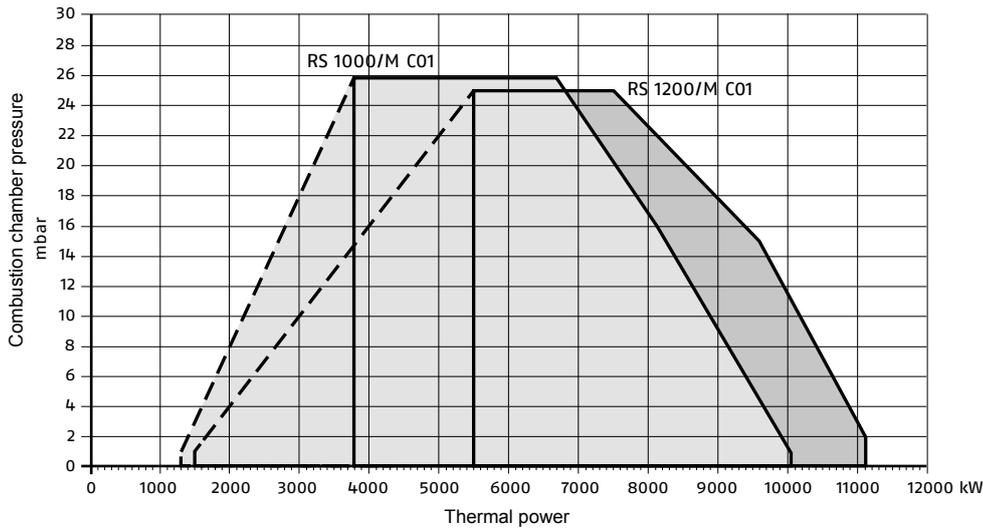
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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 LFL control box.

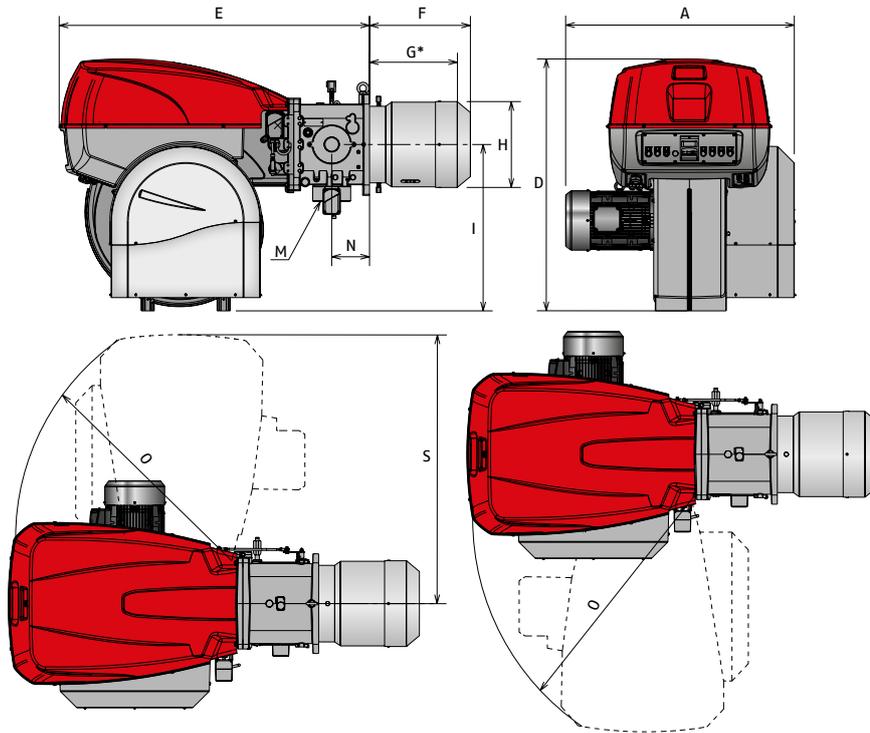
(2) Model with UV photocell flame sensor.

FIRING RATES



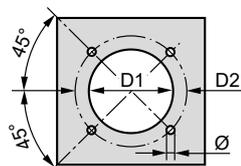
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

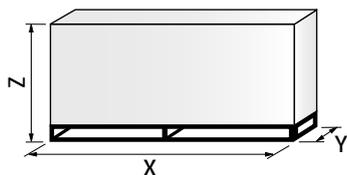


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/M C01	1206	1338	1637	538	485	413	885	DN80	200	1350	1493
RS 1200/M C01	1250	1338	1637	539	485	456	885	DN80	200	1350	1493

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



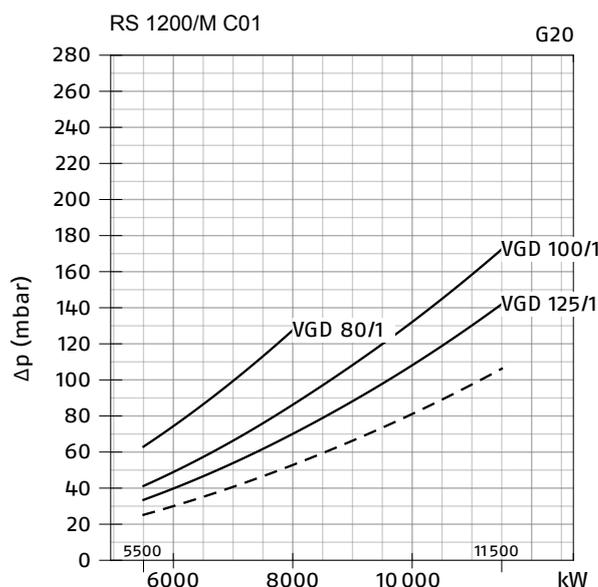
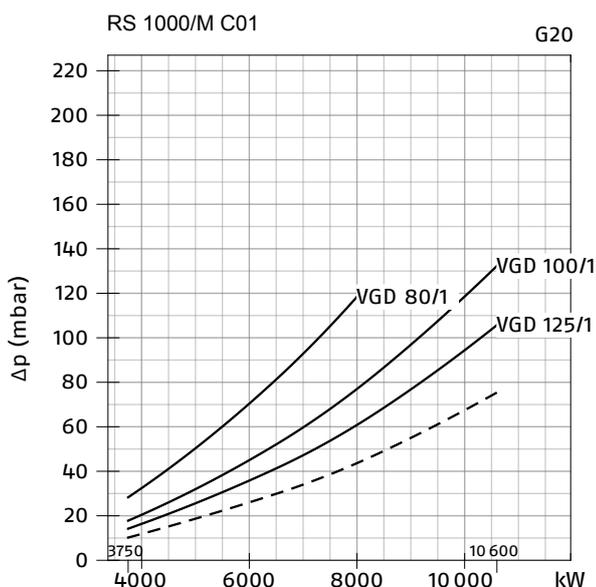
Description	D1 mm	D2 mm	Ø mm
RS 1000/M C01	460	608	M20
RS 1200/M C01	500	608	M20



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.	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.	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

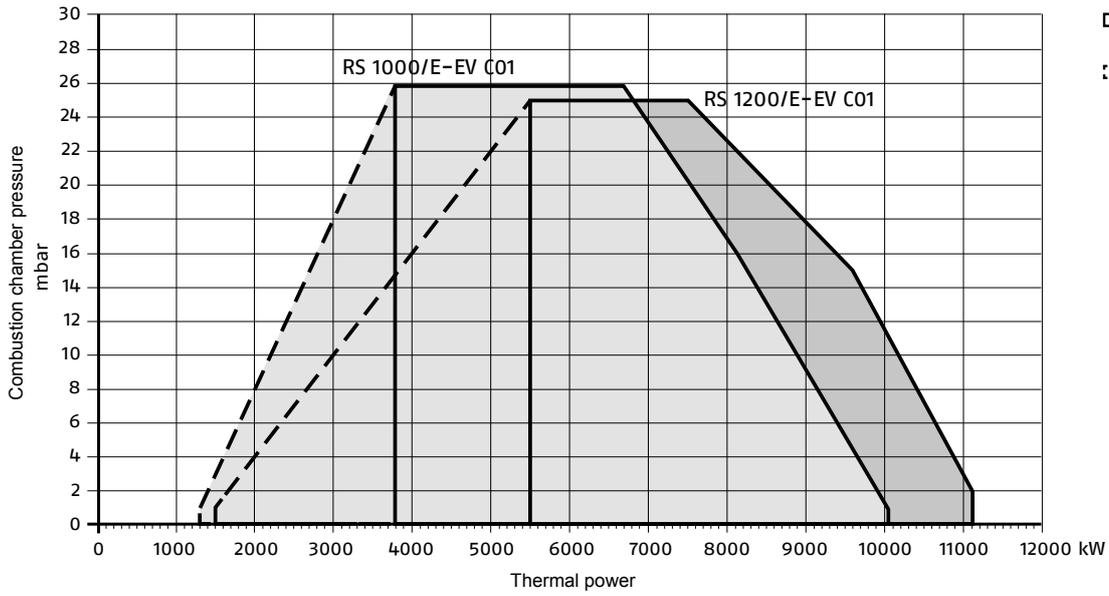
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Code
	kW	Nm ³ /h		PhV/Hz	V/Hz		
MODELS FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)							
RS 1000/E C01 TC FS1-FS2	1300/3800-10100	130/380-940	24	3/400/50	230/50-60	-	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/Nm³.

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

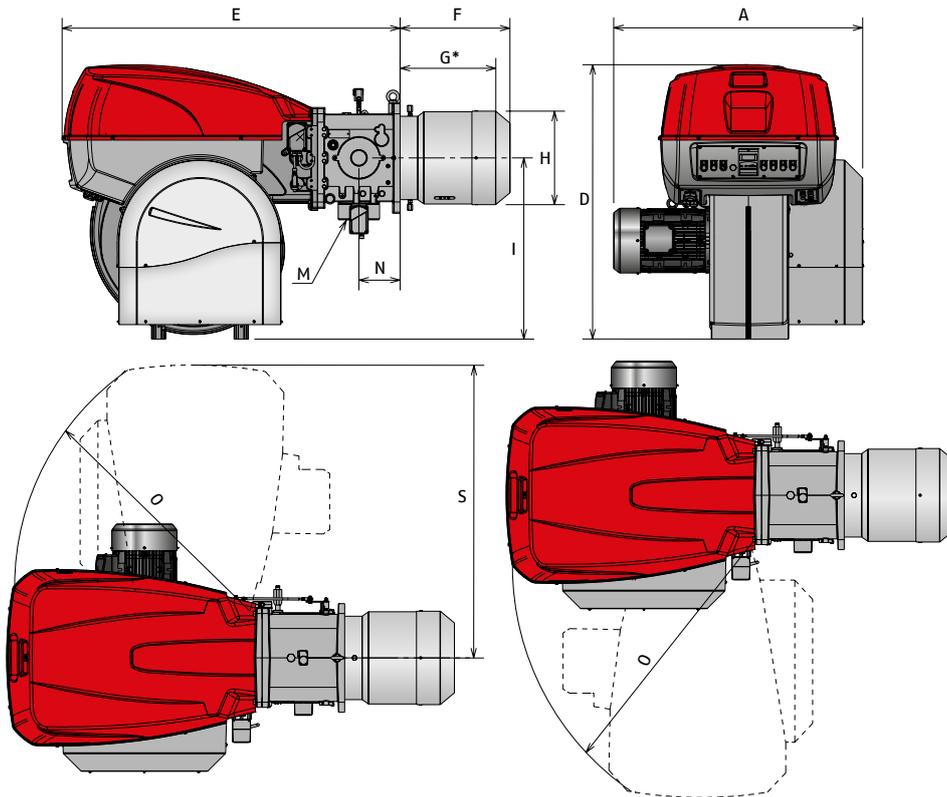
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES



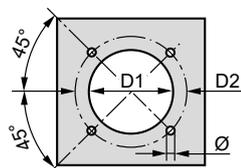
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

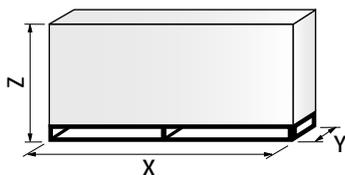


Description	A mm	D mm	E mm	F mm	G(*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/E C01	1206	1338	1637	538	485	413	885	DN80	200	1350	1493
RS 1200/E C01	1250	1338	1637	539	485	456	885	DN80	200	1350	1493

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



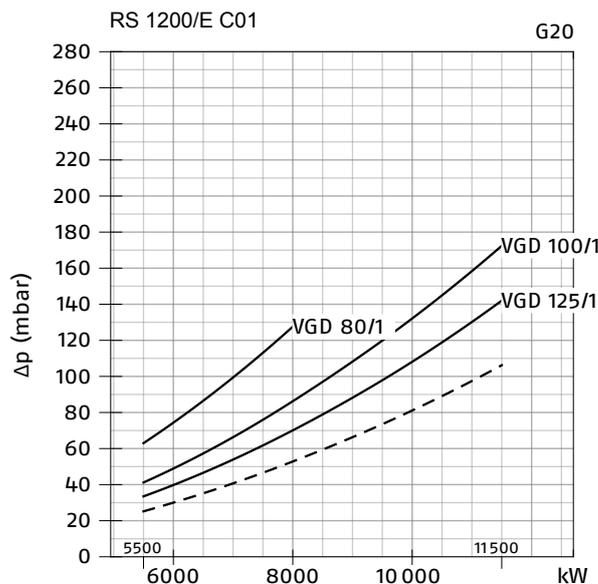
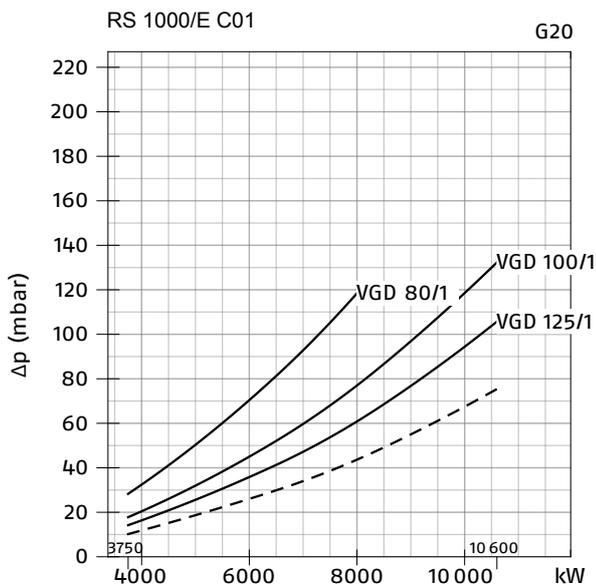
Description	D1 mm	D2 mm	Ø mm
RS 1000/E C01	460	608	M20
RS 1200/E C01	500	608	M20



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

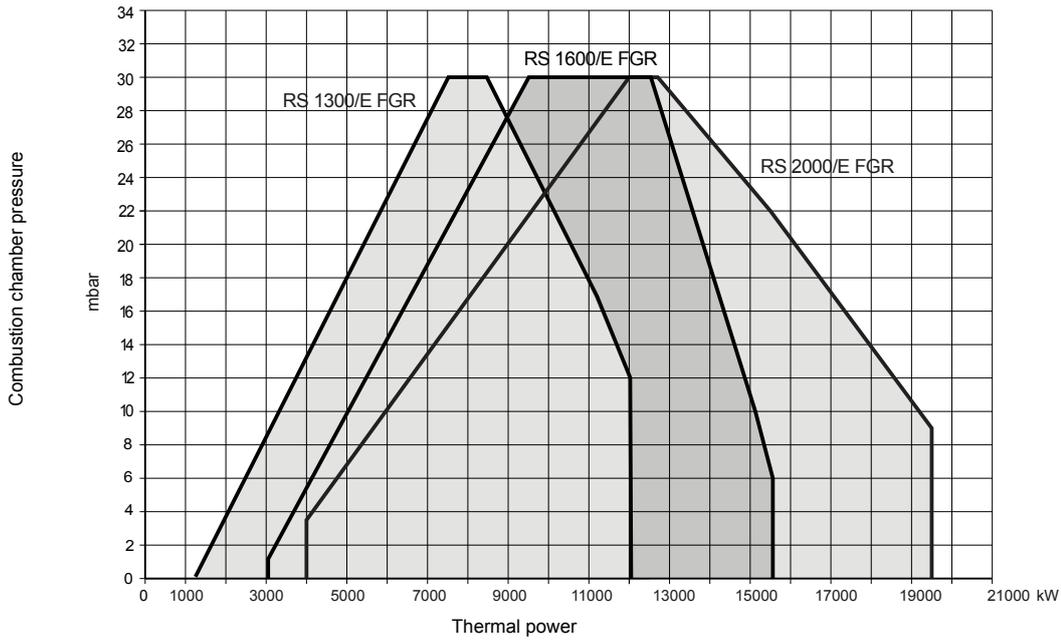
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Code
	kW	Nm³/h		PhV/Hz	V/Hz	
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 51)						
RS 1300/E C01 TC FS1/FS2	1350-7500/12000	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/Nm³.

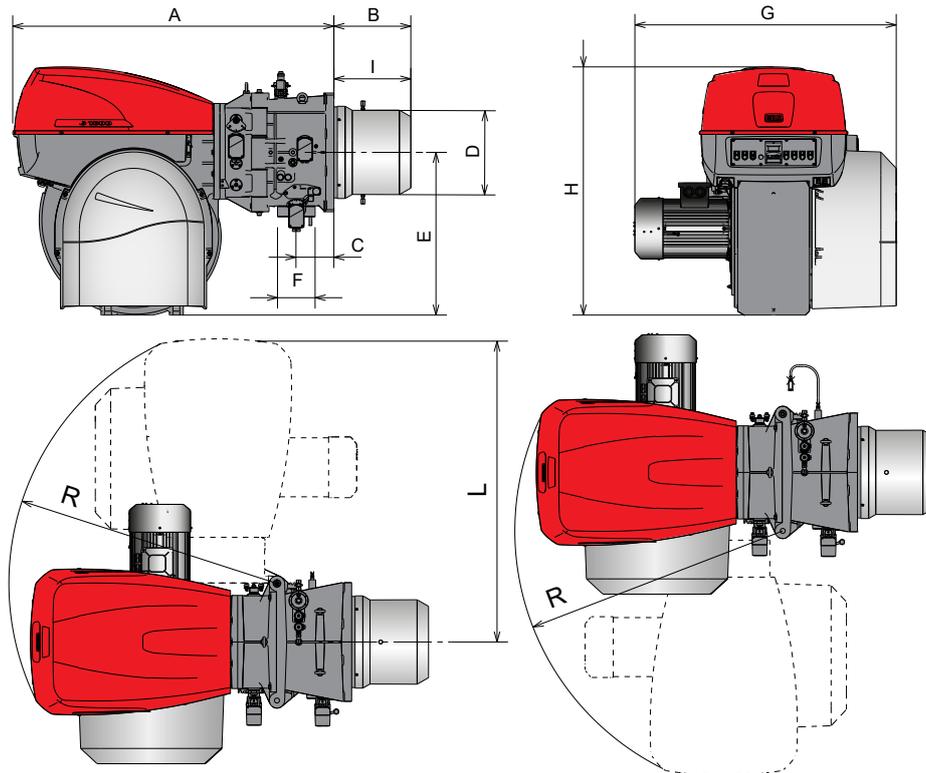
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

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.

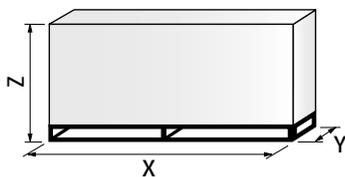
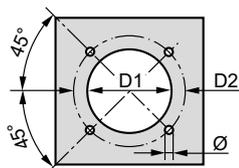
FIRING RATES



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/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

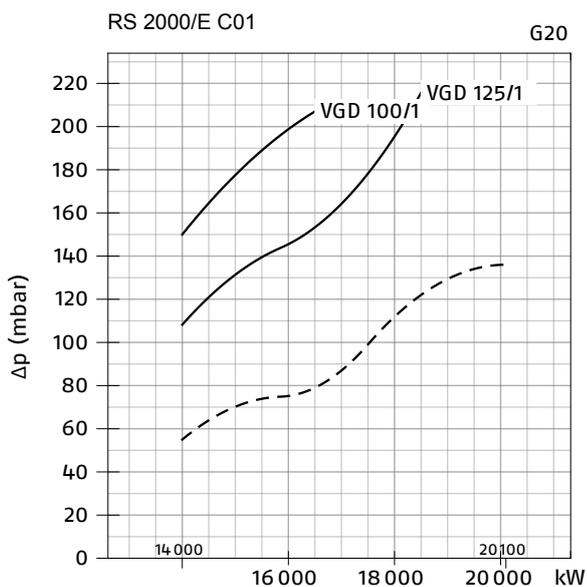
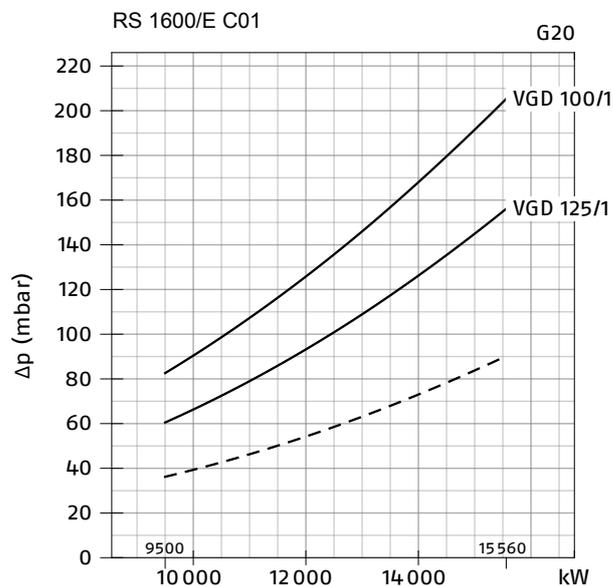
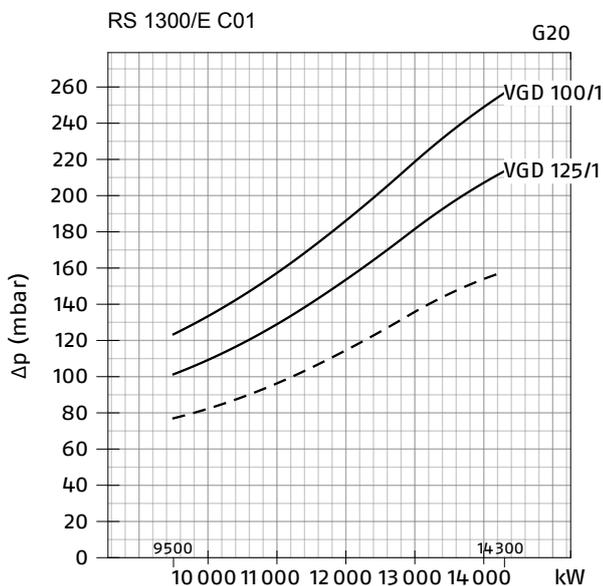


Description	D1 mm	D2 mm	Ø mm
RS 1300/E C01	580	645	M20
RS 1600/E C01	580	645	M20
RS 2000/E C01	580	645	M20

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



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.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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

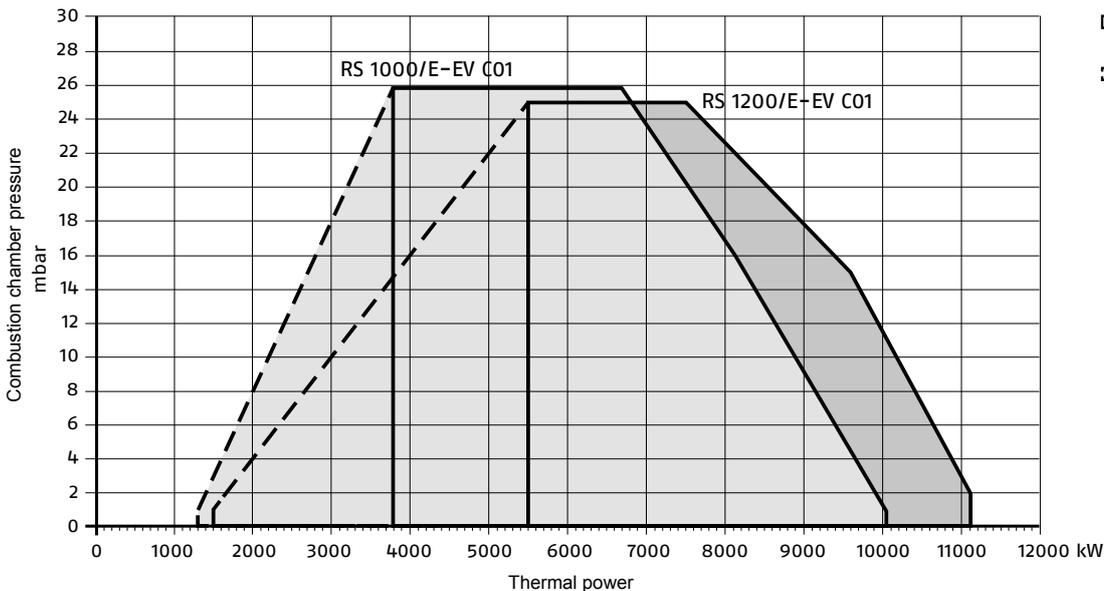
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Code
	kW	Nm ³ /h		PhV/Hz	V/Hz	
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O ₂ CONTROL READY - OPERATION 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.

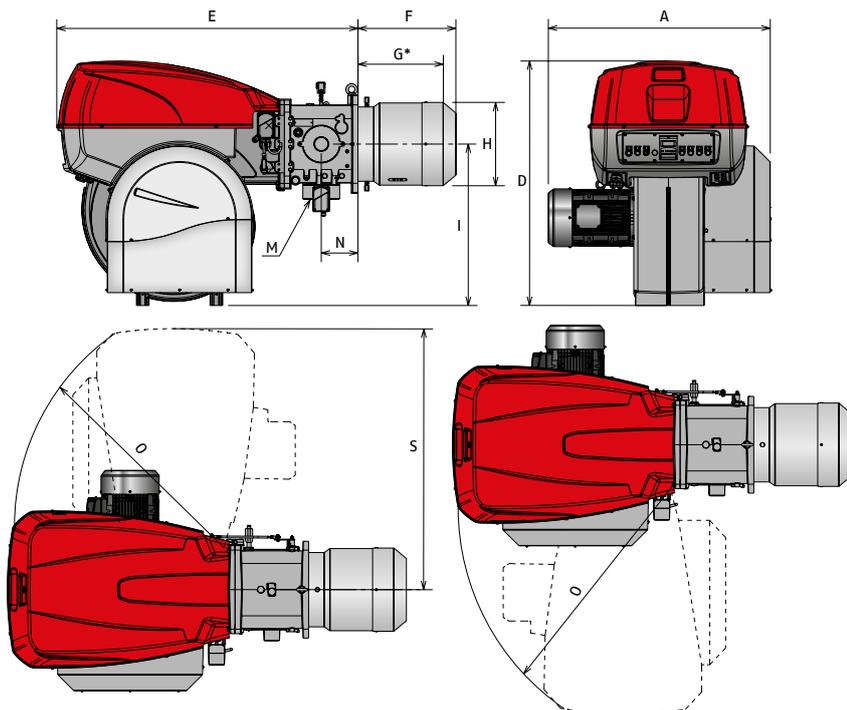
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES



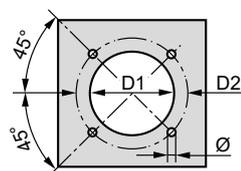
Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

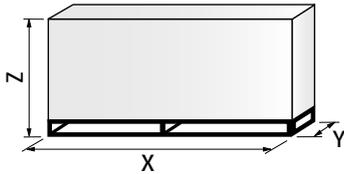


Description	A mm	D mm	E mm	Fv	G(*) mm	H mm	I mm	M mm	N mm	O mm	S mm
RS 1000/EV C01	1206	1338	1637	538	485	413	885	DN80	200	1350	1493
RS 1200/EV C01	1250	1338	1637	539	485	456	885	DN80	200	1350	1493

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



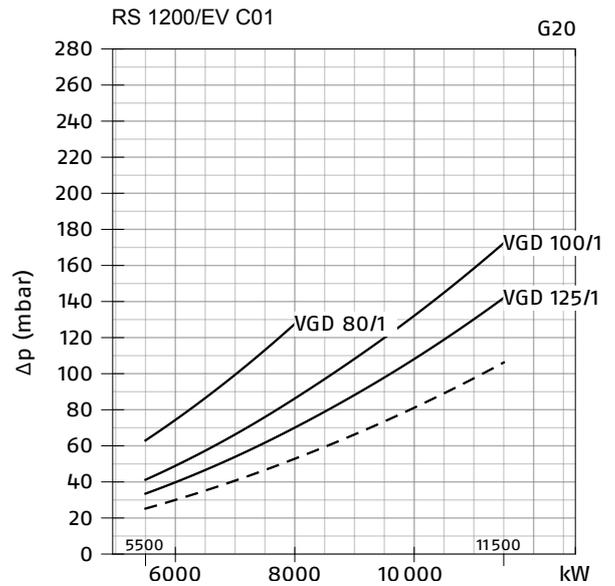
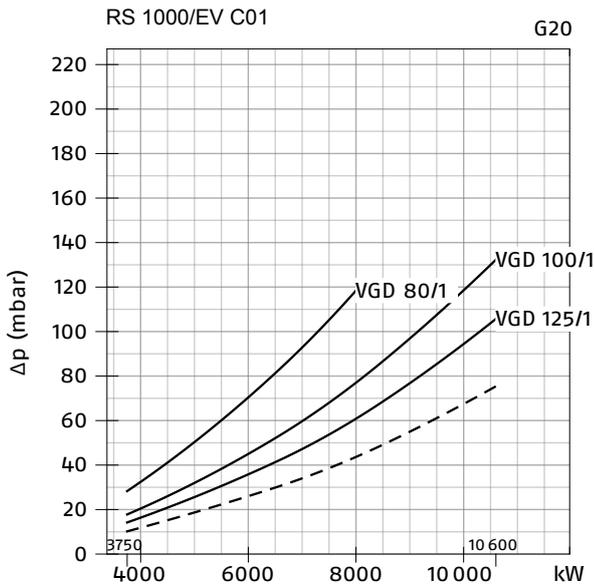
Description	D1 mm	D2 mm	Ø mm
RS 1000/EV C01	460	608	M20
RS 1200/EV C01	500	608	M20



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.

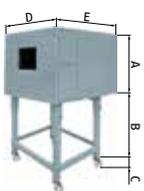
— Combustion head + gas train
 - - - Combustion head

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	<p>SOUND PROOFING BOX</p> <p>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.</p> <p>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).</p>		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. Pressure (0-16 bar) with 4-20 mA output.		3010213 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 analyzer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	20045187
	RS 1000/EV C01 RS 1200/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 Inverter power 30 kW - Electrical supply 400V - 50/60Hz		20163099 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

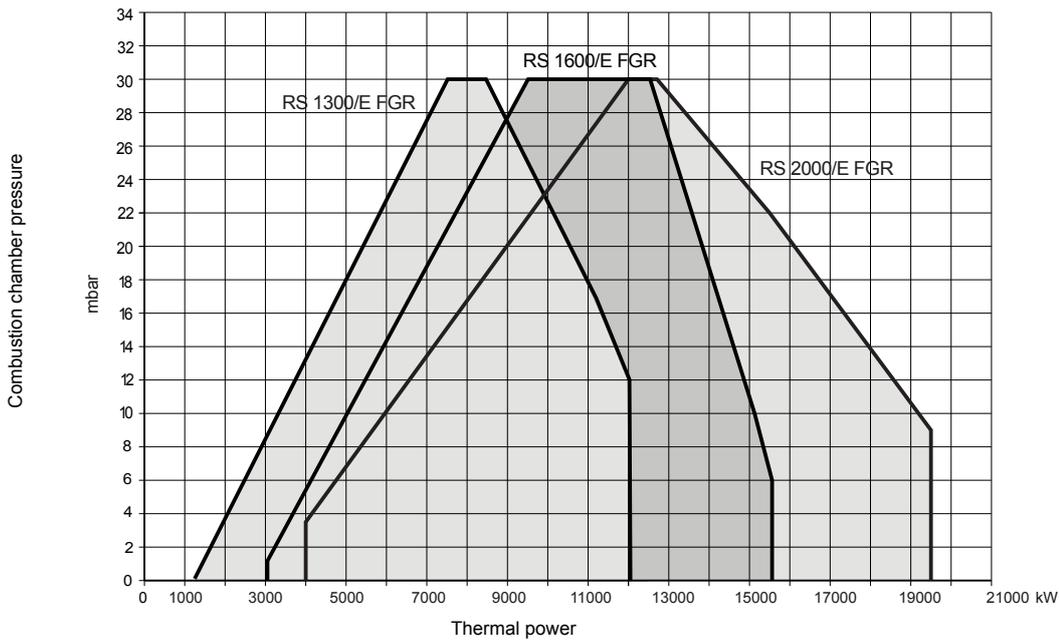
Description	Heat output natural gas		Total electrical power kW	Electric power supply		Code
	kW	Nm ³ /h		PhV/Hz	V/Hz	
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) AND FOR CONTINUOUS OPERATION (FS2: ONE STOP EVERY 72 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O ₂ CONTROL READY - OPERATION 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.

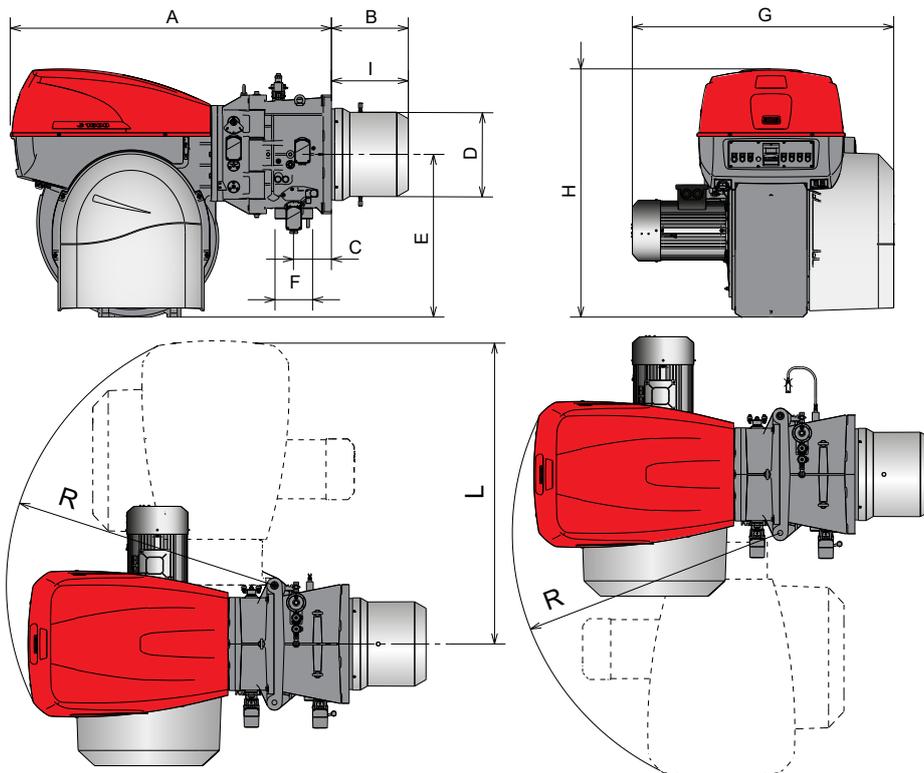
The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES

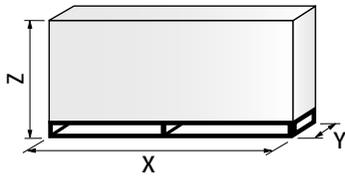
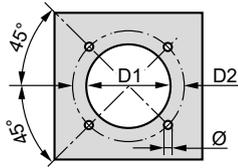


Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

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 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

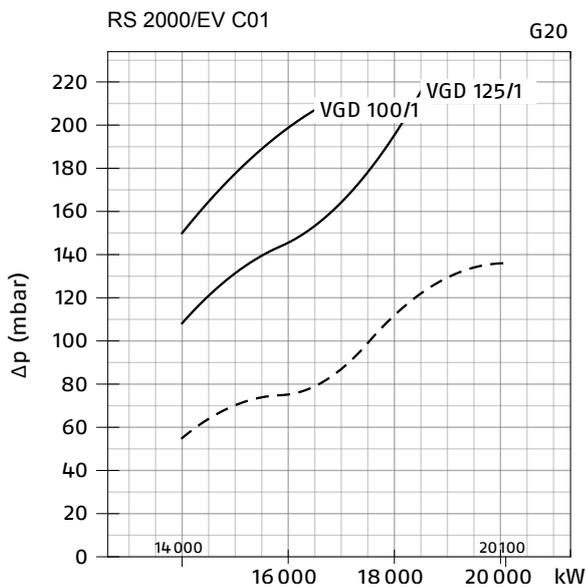
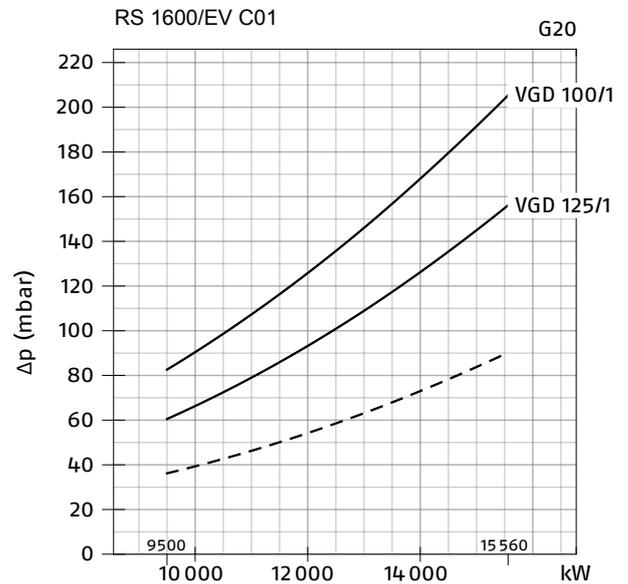
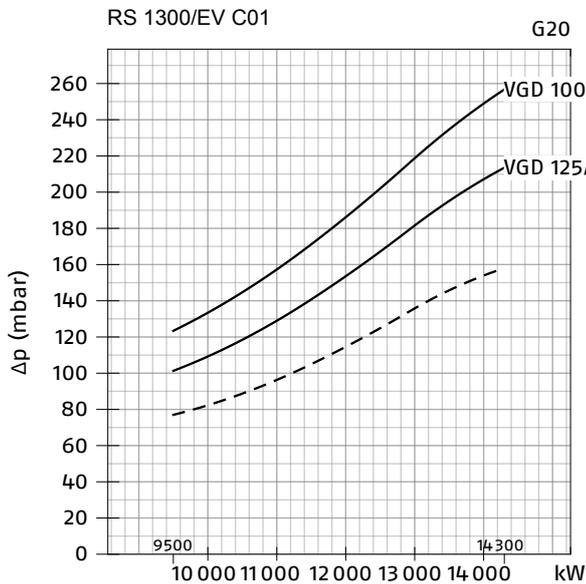


Description	D1 mm	D2 mm	Ø mm
RS 1300/EV C01	580	645	M20
RS 1600/EV C01	580	645	M20
RS 2000/EV C01	580	645	M20

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



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 analyzer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.	(1)	20045187
	RS 1300/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 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.

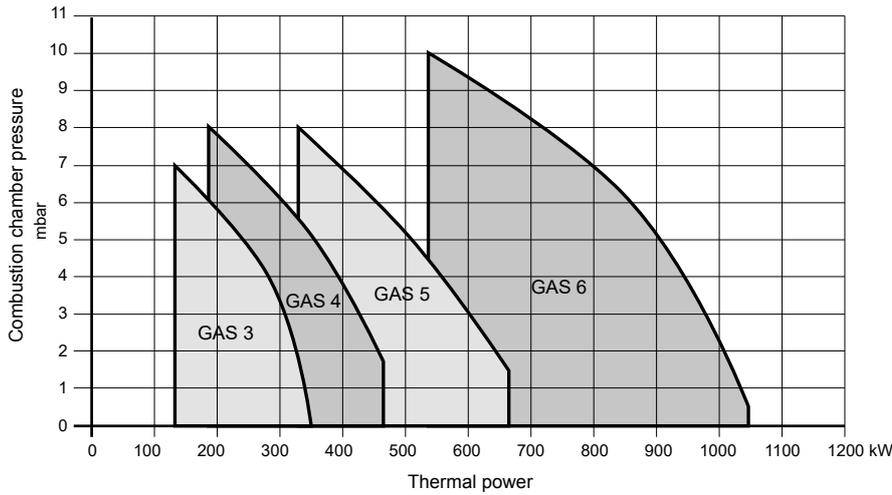
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Code
	kW	Nm³/h		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.

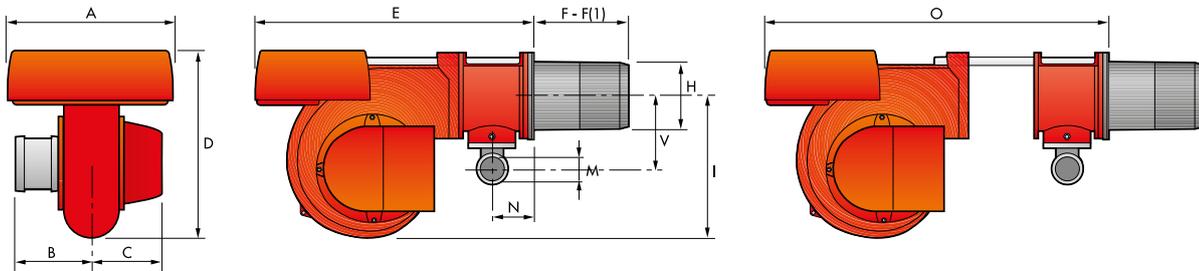
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.

FIRING RATES



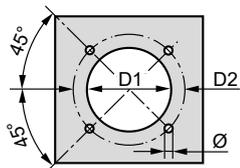
Useful firing rates for choosing the burner
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

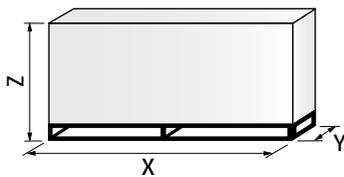


Description	A mm	B mm	C mm	D mm	E mm	F - mm	F (1) mm	H mm	I mm	M mm	N mm	O mm	V mm
GAS 3	410	205	205	397	610	185 -	320	140	292	1"1/2	97	775	165
GAS 4	410	205	205	397	610	187 -	320	150	292	1"1/2	97	775	165
GAS 5	431	226	205	437	645	207 -	365	155	332	1"1/2	97	810	165
GAS 6	463	258	205	485	770	227 -	360	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

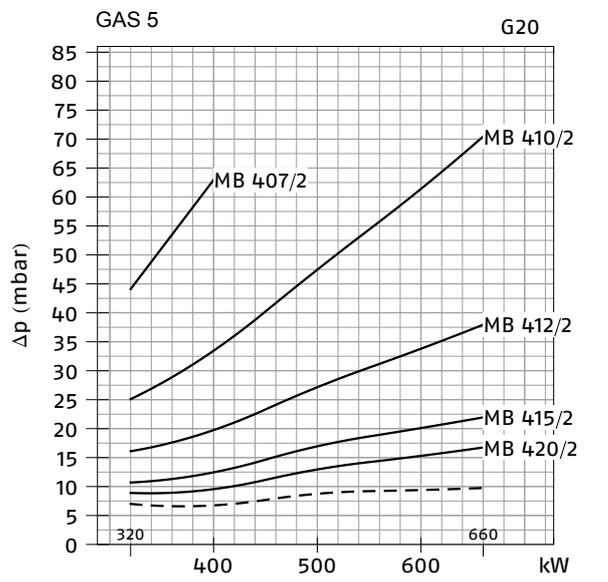
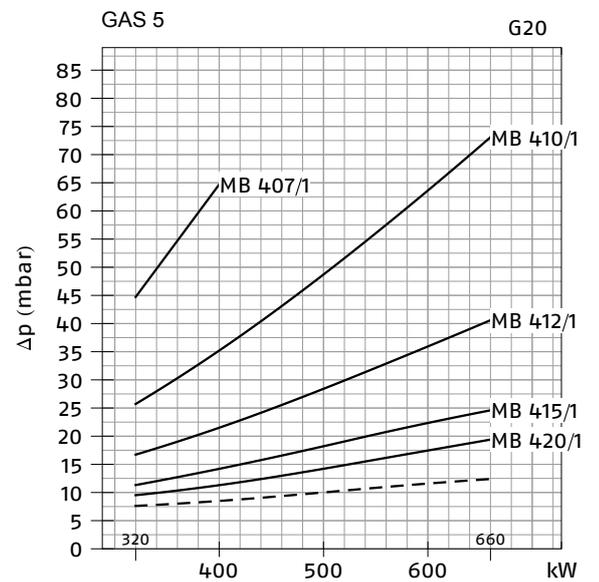
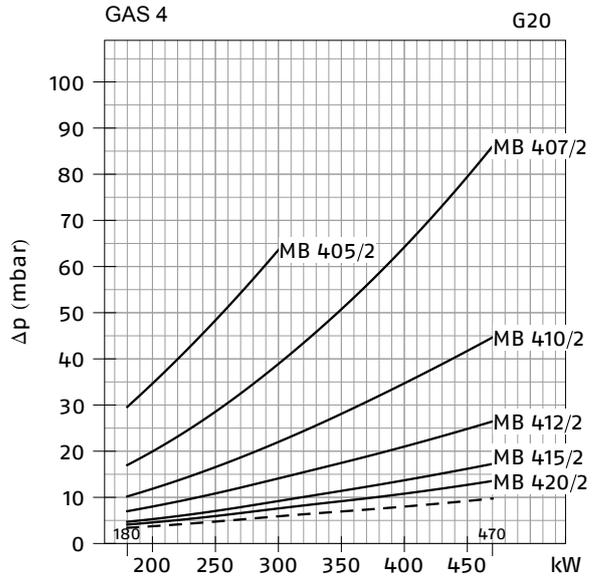
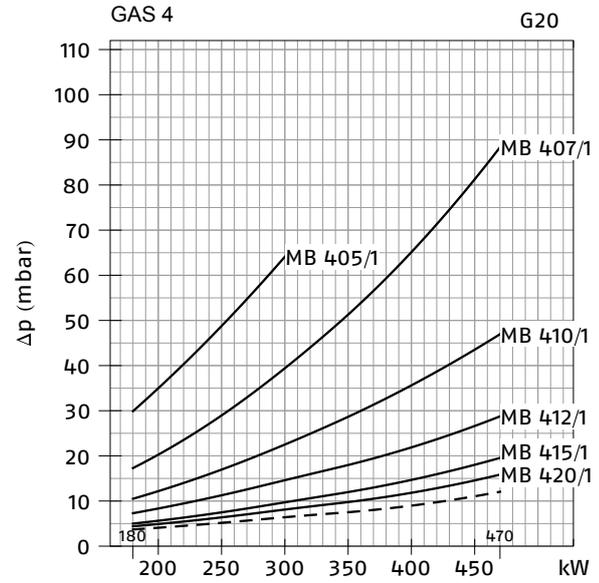
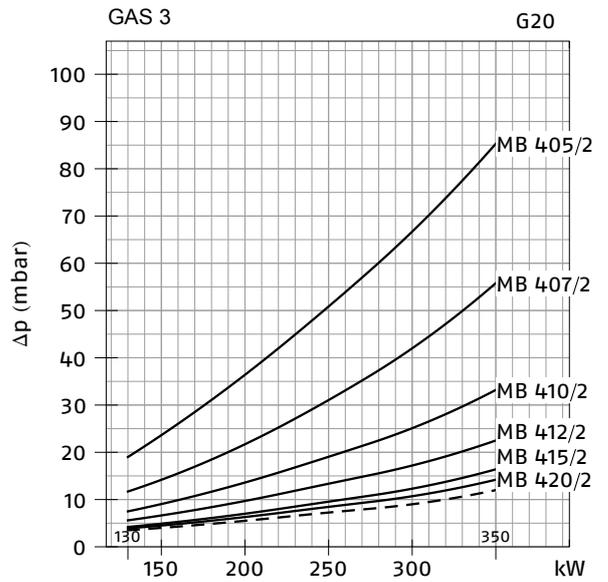
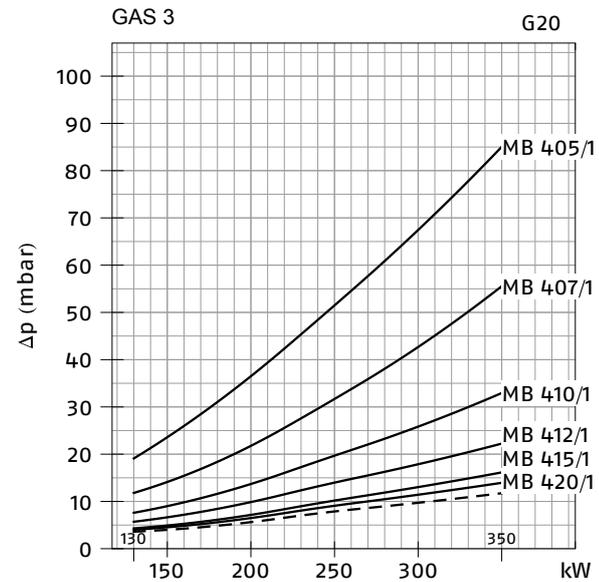


Description	X (1) mm	Y mm	Z mm	Net weight kg
GAS 3	850	545	473	32
GAS 4	850	545	473	38
GAS 5	895	543	520	41
GAS 6	1045	543	555	58

(1) Dimension with standard and extended head.

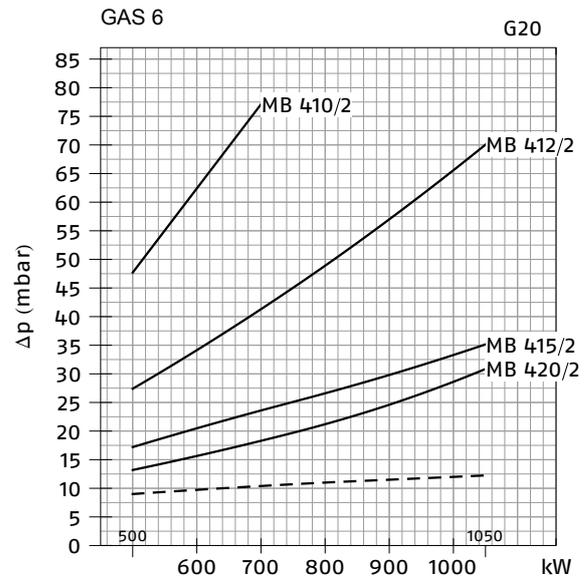
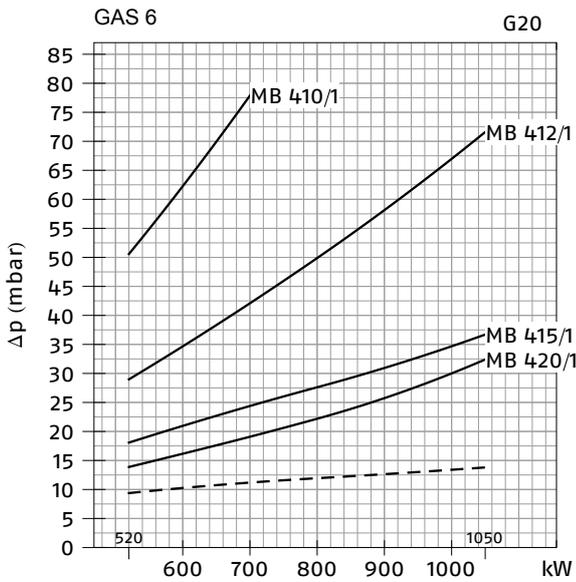
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN



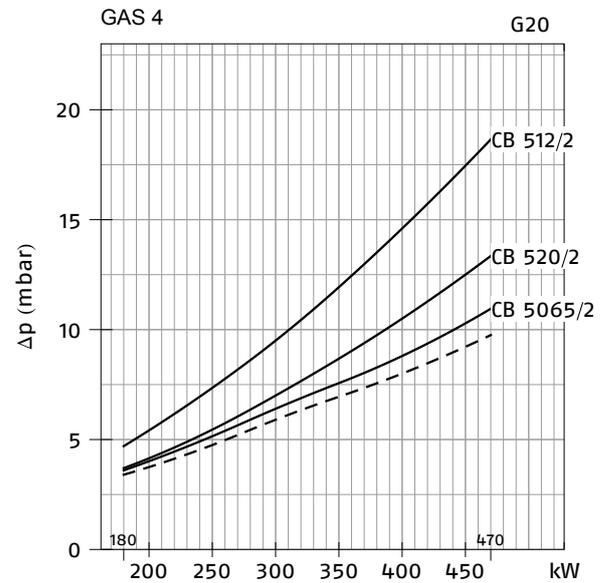
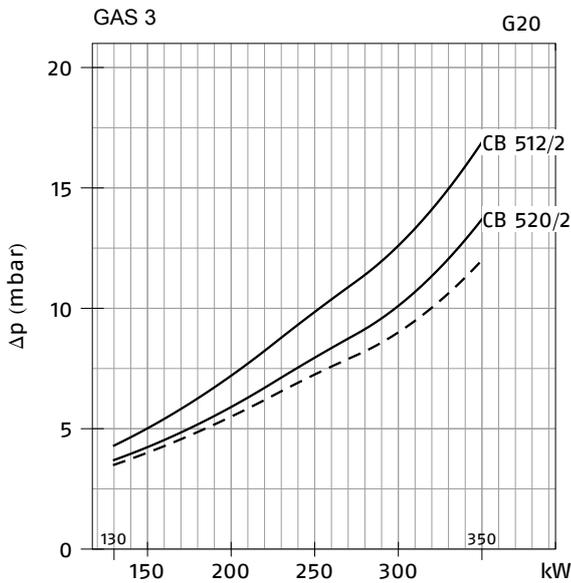
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

GAS

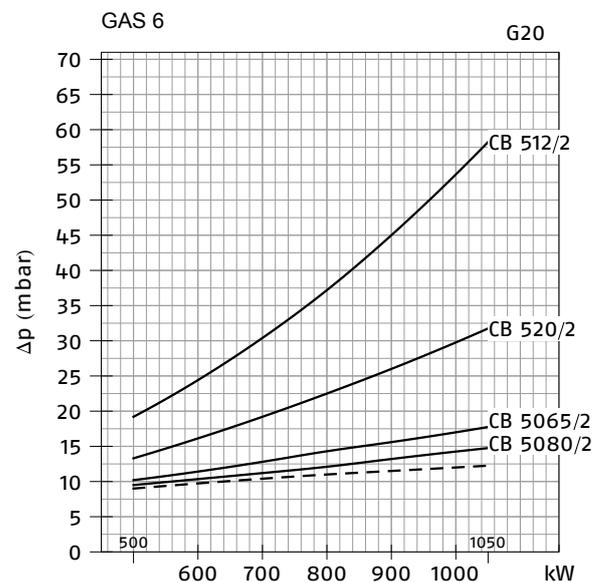
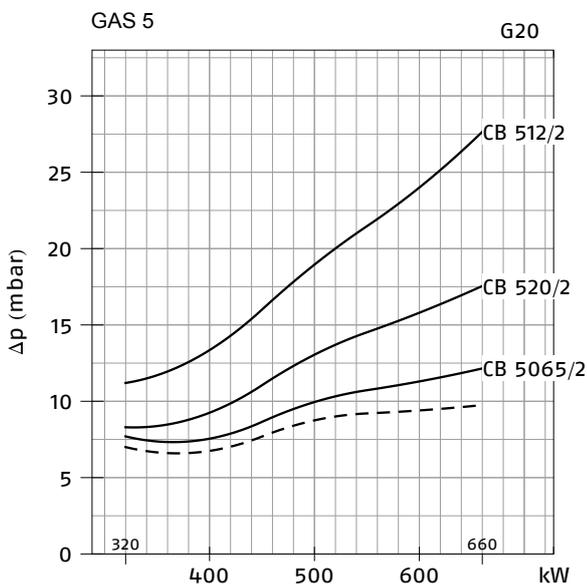


LIGHT OIL

CB SERIES GAS TRAIN



DUAL FUEL

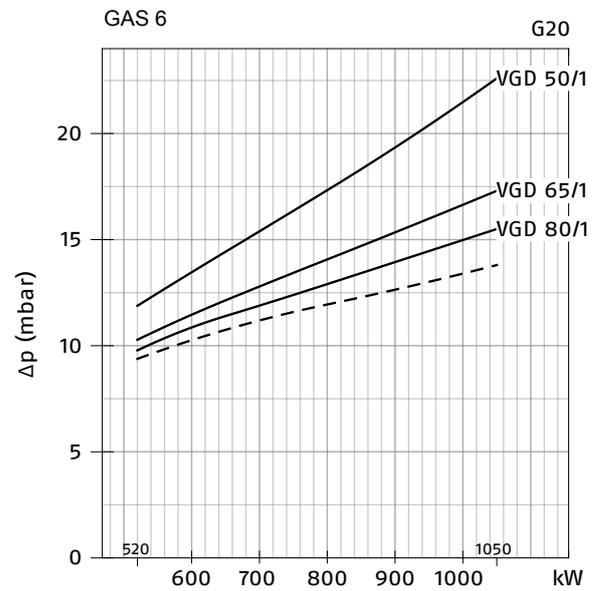
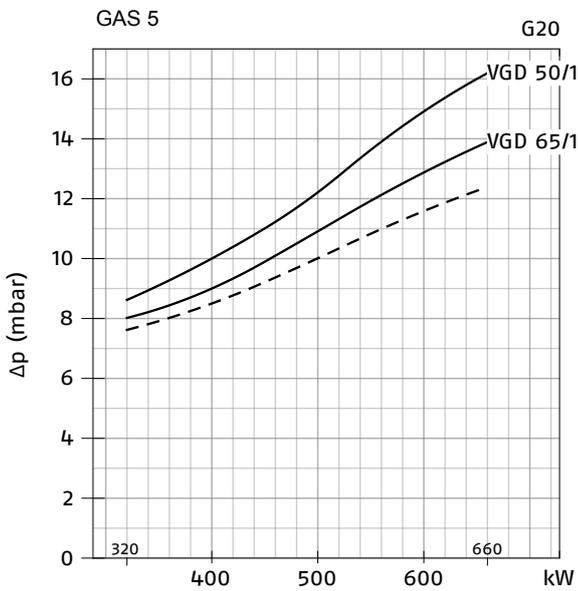
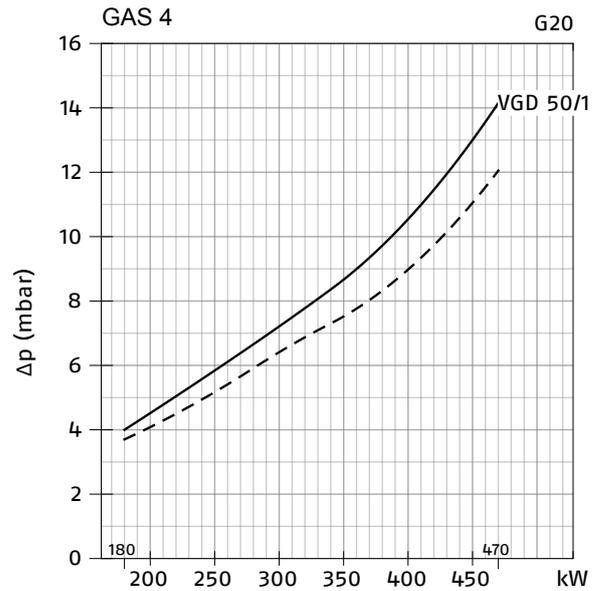
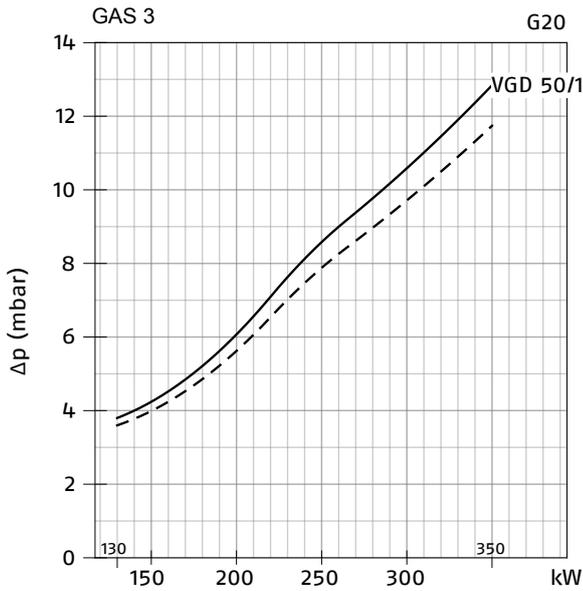


HEAVY OIL

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 3/4"	-	3010123	3000824	●	●	
MB 407/1-RT 20	3970553*		Rp 3/4"	-	3010123	3000824		●	
MB 407/1-RT 52	3970599*		Rp 3/4"	-	3010123	3000824		●	
MB 407/1-RSM 20	3970229*		Rp 3/4"	-	3010123	3000824		●	
MB 410/1-RT 52	3970258*		Rp 1" 1/4	-	3010123	□	□	□	3000843
MB 410/1-RT 20	3970554*		Rp 3/4"	-	3010123	3000824			3000824+ 3000843
MB 410/1-RT 52	3970600*		Rp 3/4"	-	3010123	3000824			
MB 410/1-RSM 20	3970230*		Rp 3/4"	-	3010123	3000824			
MB 412/1-RT 52	3970256*		Rp 1" 1/2	-	3010123	□	□	□	3000843
MB 412/1-RT 20	3970144*		Rp 1" 1/2	-	3010123	□	□	□	
MB 412/1 CT RT 20	3970197**		Rp 1" 1/2	◆	◆	□	□	□	
MB 412/1-RSM 20	3970231*		Rp 1" 1/2	-	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:

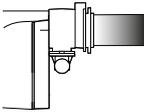
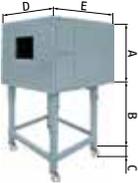
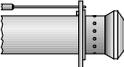
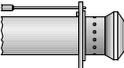
- Gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

◆ 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.

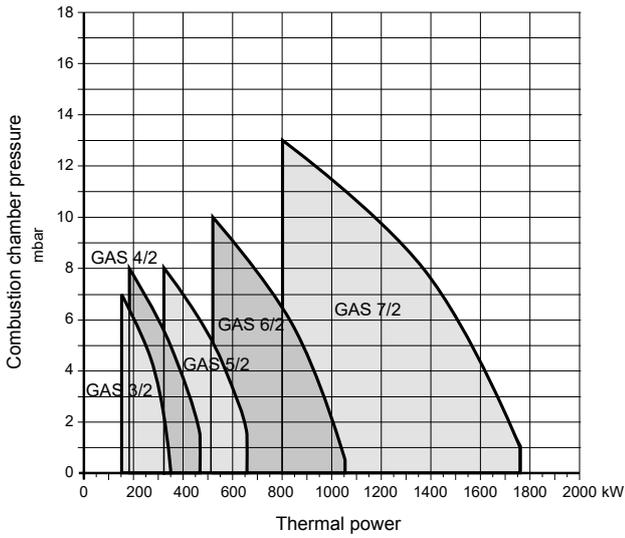
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power kW	Electric power supply		Certification	Note	Code
	kW	Nm³/h		PhV/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

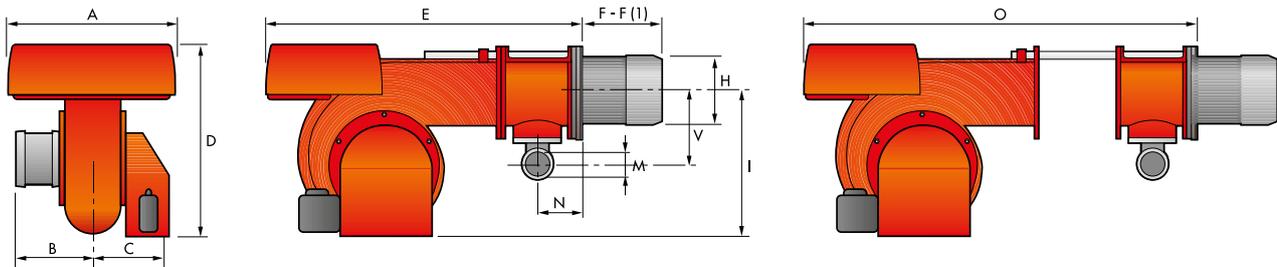


Useful firing rates for choosing the burner

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

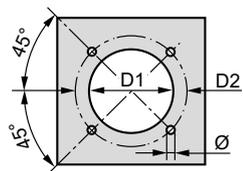
OVERALL DIMENSIONS

GAS 3/2 - 4/2 - 5/2 - 6/2 - 7/2

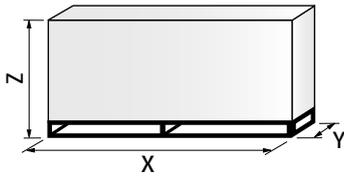


Description	A mm	B mm	C mm	D mm	E mm	F-F(1) mm	H mm	I mm	M mm	N mm	O mm	V mm
GAS 3/2	410	205	205	397	610	185-320	140	292	1"1/2	97	775	165
GAS 4/2	410	205	205	397	610	187-320	150	292	1"1/2	97	775	165
GAS 5/2	431	226	205	437	645	207-365	155	332	1"1/2	97	810	165
GAS 6/2	463	258	205	485	770	227-360	175	370	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

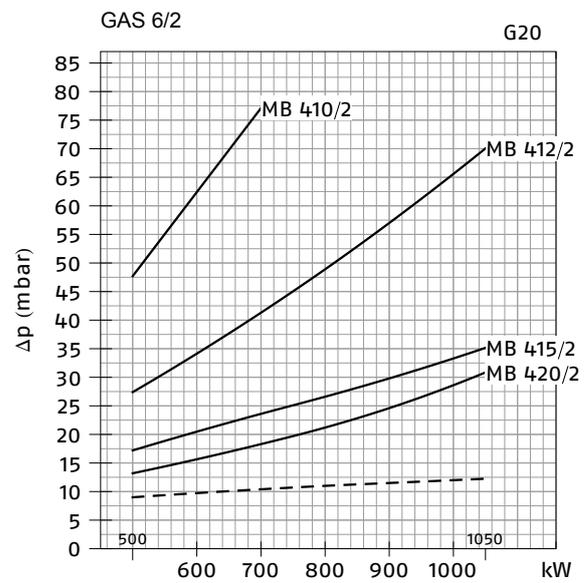
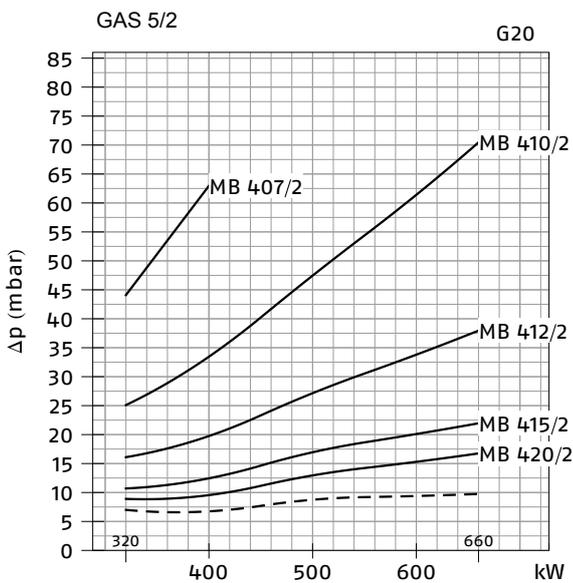
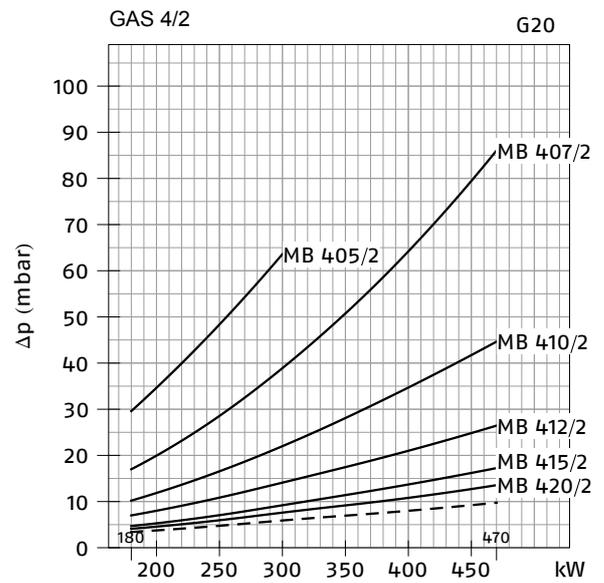
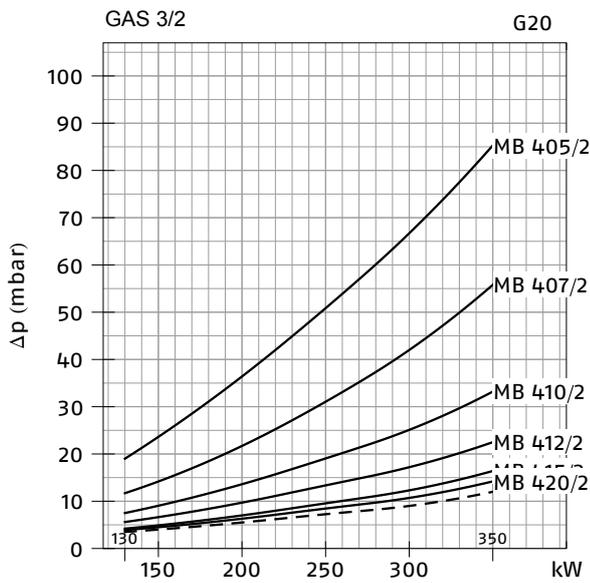


Description	X (1) mm	Y mm	Z mm	Net weight kg
GAS 3/2	850	545	473	34
GAS 4/2	850	545	473	40
GAS 5/2	895	543	520	43
GAS 6/2	1045	543	555	60
GAS 7/2	1400	850	650	98

(1) Dimension with standard and extended head.

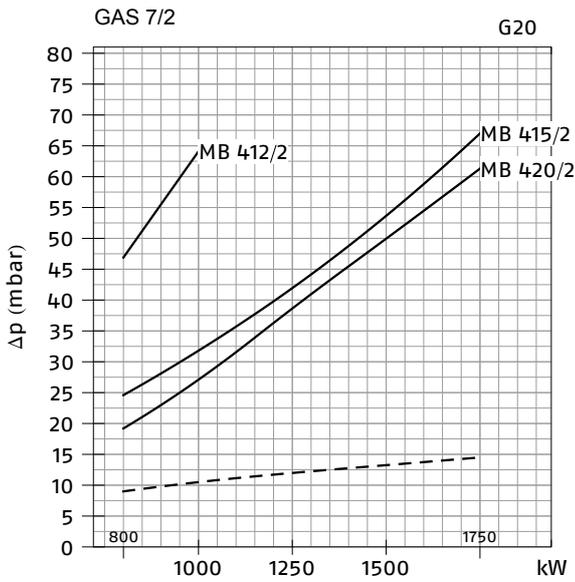
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

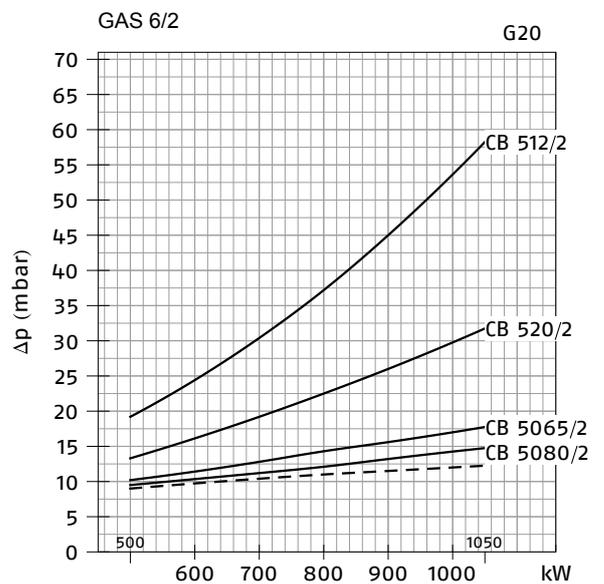
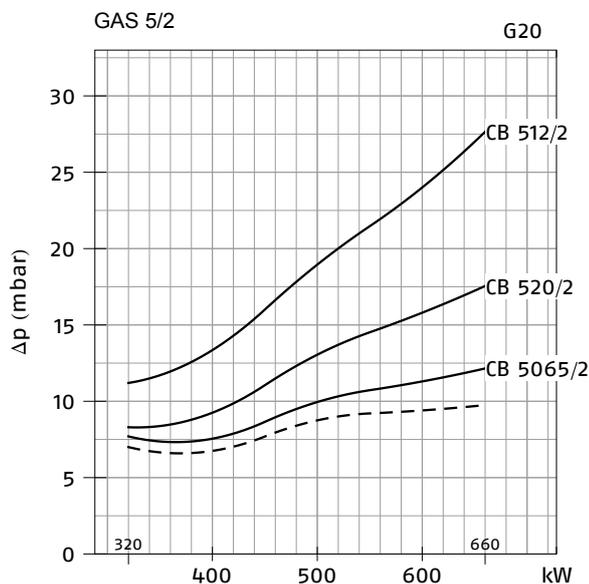
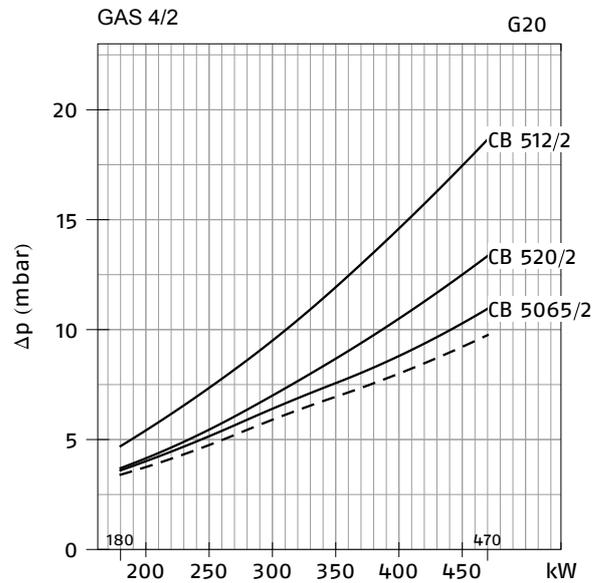
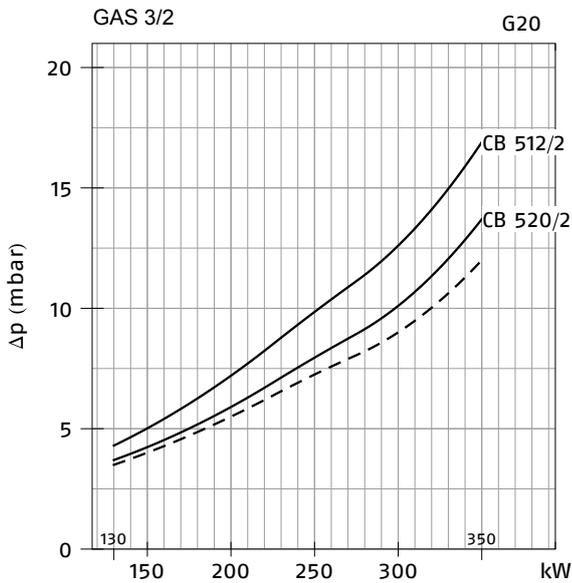


Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

— Combustion head + gas train
 - - - Combustion head

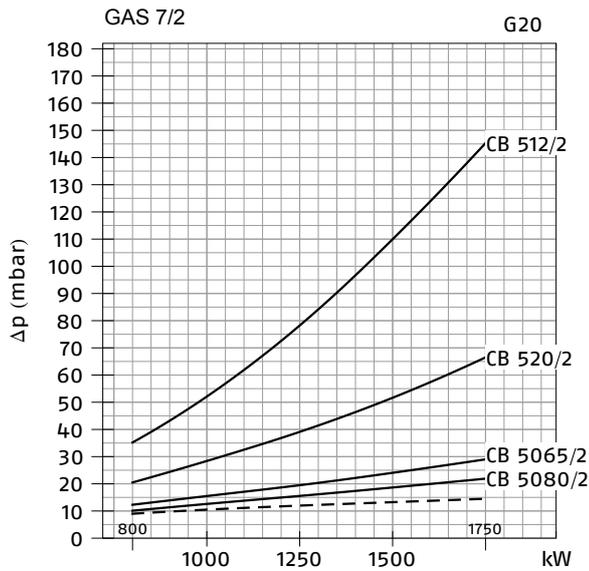


CB SERIES GAS TRAIN



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

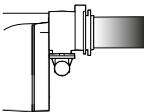
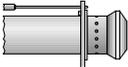
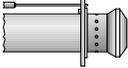
GAS TRAINS

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 1/2"	-	3010123	20044756		●	●	●
MB 407/2-RSD 20	3970537*	Rp 3/4"	-	3010123	3000824			●	●
MB 407/2-RT 20	3970556*	Rp 3/4"	-	3010123	3000824			●	●
MB 410/2-RSD 20	3970534*	Rp 3/4"	-	3010123	3000824			3000824+	●
MB 410/2-RT 20	3970557*	Rp 3/4"	-	3010123	3000824			3000843	●
MB 412/2-RT 20	3970152*	Rp 1 1/2"	-	3010123	□	□	□		●
MB 415/2-RT 20	3970183*	Rp 1 1/2"	-	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 1/2"	-	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). 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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		PhV/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 kW	Electric power supply		Certification	Note	Code
	kW	Nm ³ /h		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

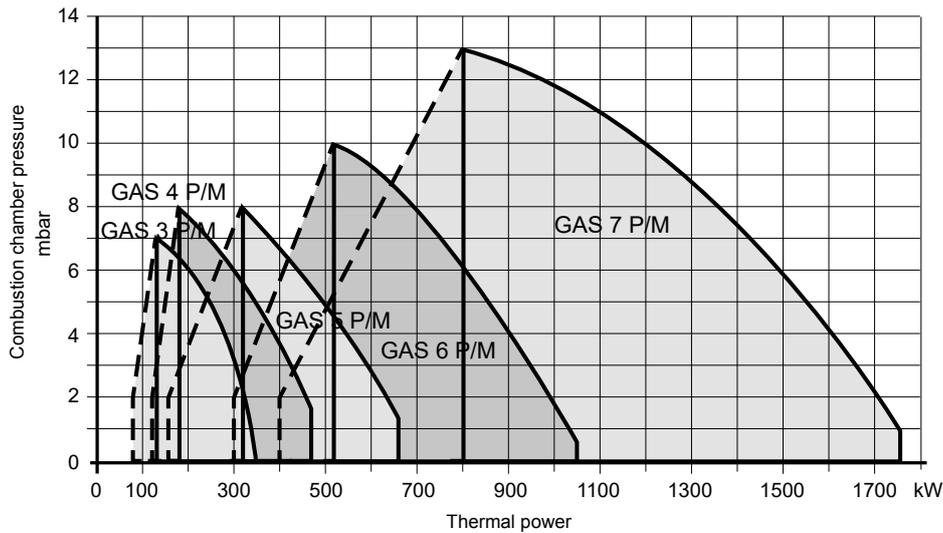
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

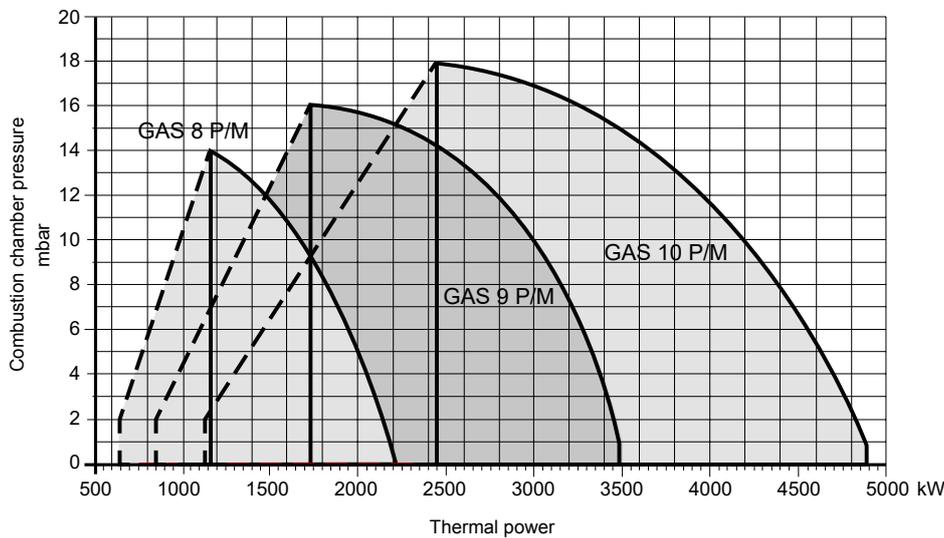
FIRING RATES



▭ Useful firing rates for choosing the burner

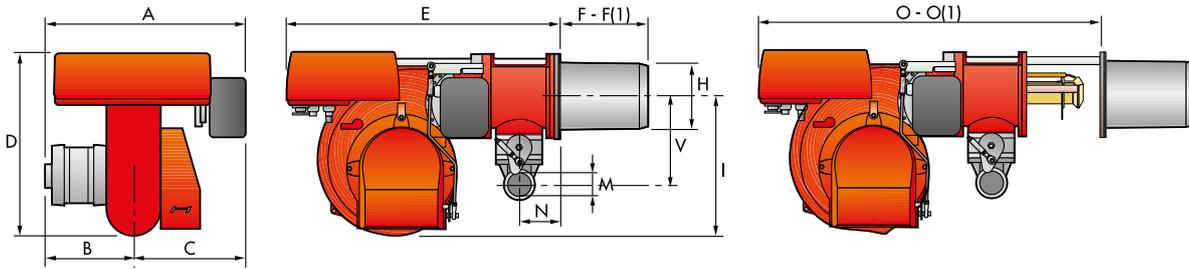
- - - Modulation range

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

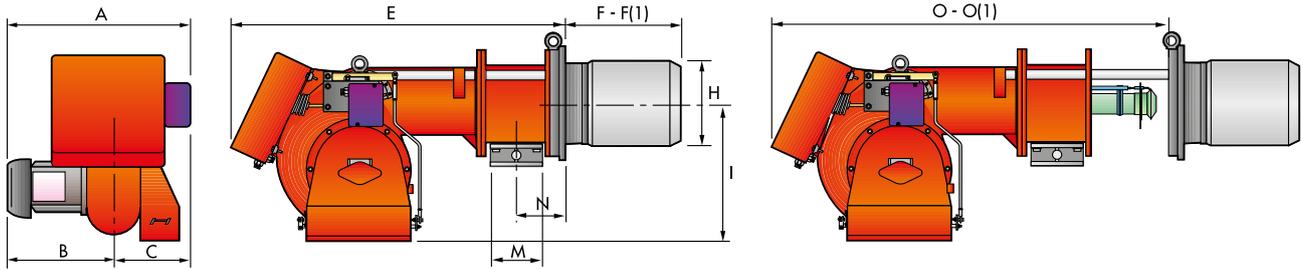


OVERALL DIMENSIONS

GAS 3-4-5-6-7 P/M

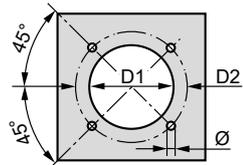


GAS 8-9-10 P/M

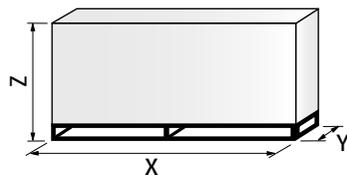


Description	A mm	B mm	C mm	D mm	E mm	F-F(1)	H mm	I mm	M mm	N mm	O-O(1) mm	V mm
GAS 3 P/M	585	205	380	397	610	185	140	292	1"1/2	97	775	225
GAS 4 P/M	585	205	380	397	610	187	150	292	1"1/2	97	775	225
GAS 5 P/M	581	226	355	437	645	207	155	332	1"1/2	97	810	225
GAS 6 P/M	628	258	370	485	770	227	175	370	Rp 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.

GAS

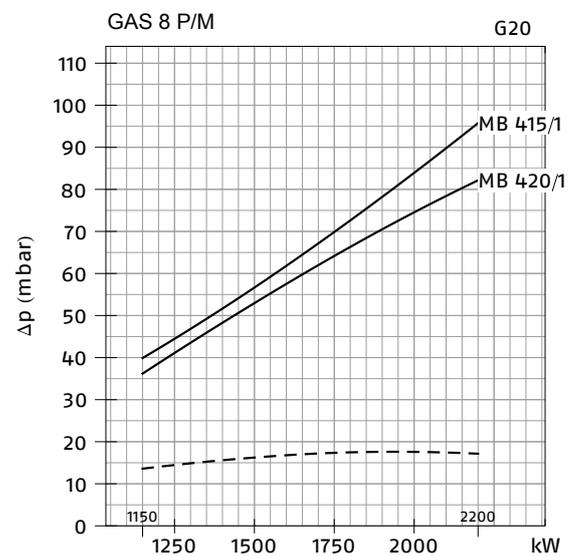
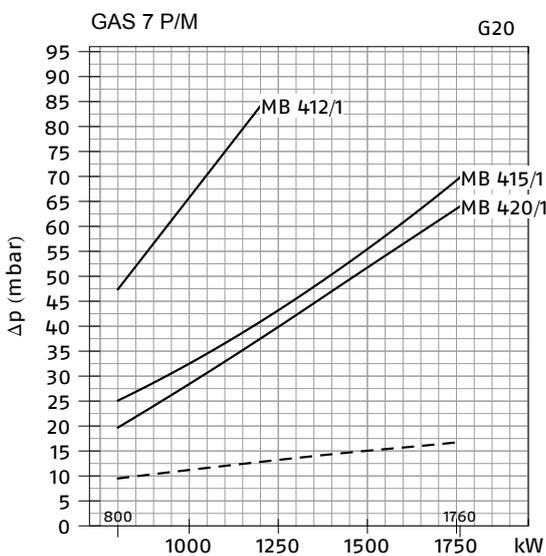
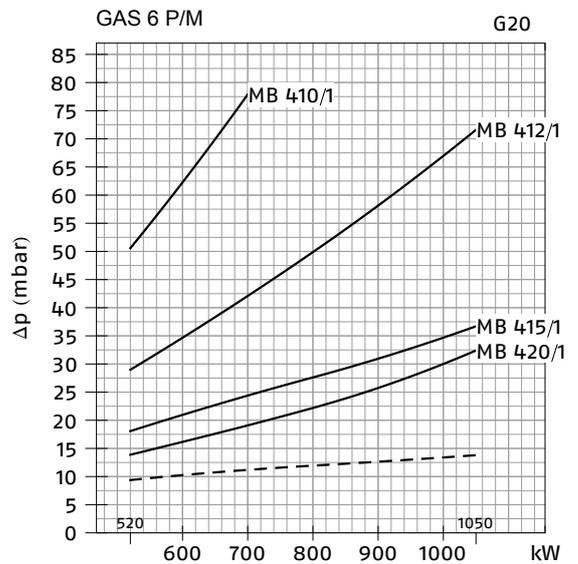
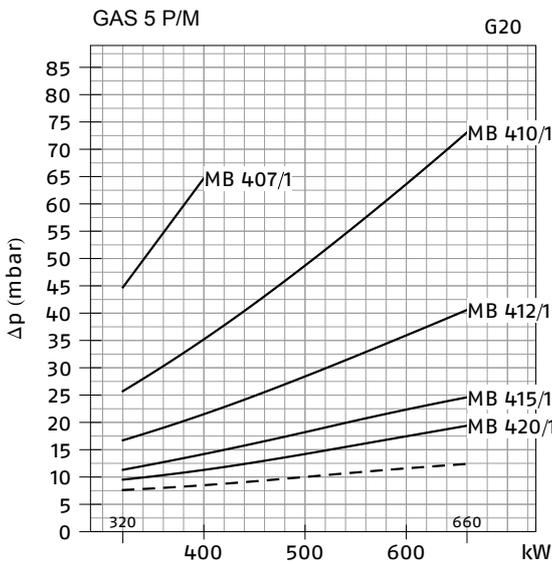
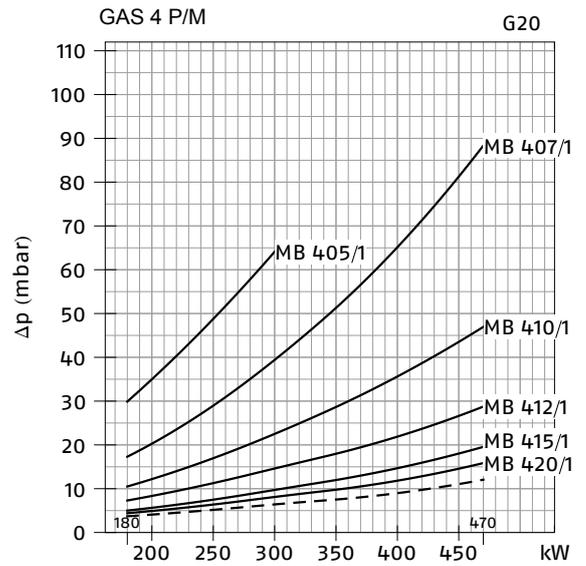
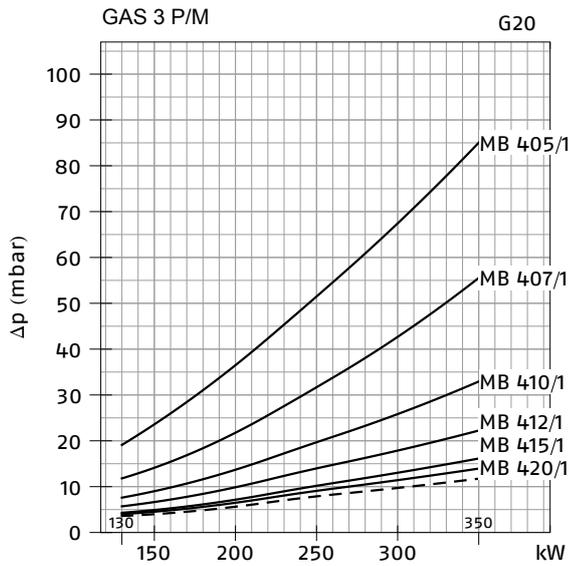
LIGHT OIL

DUAL FUEL

HEAVY OIL

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

LIGHT OIL

DUAL FUEL

HEAVY OIL

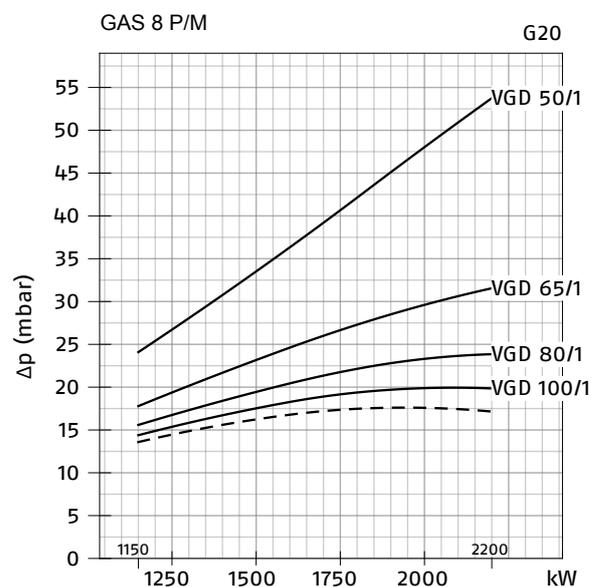
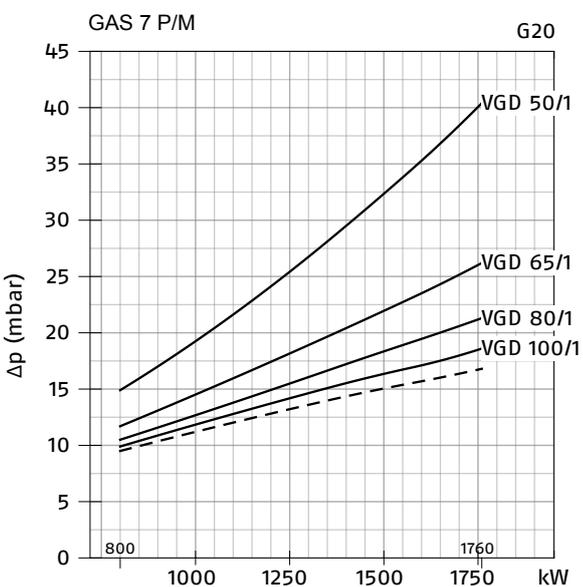
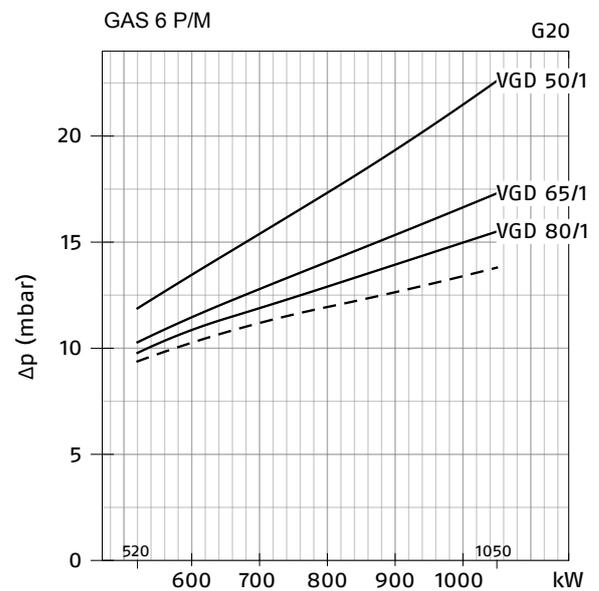
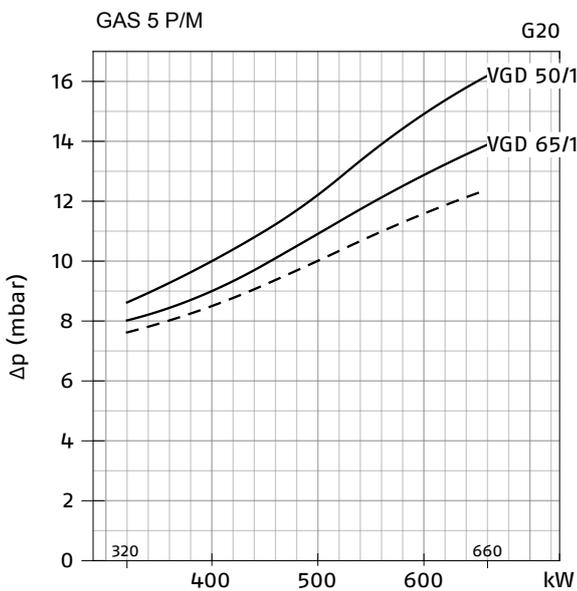
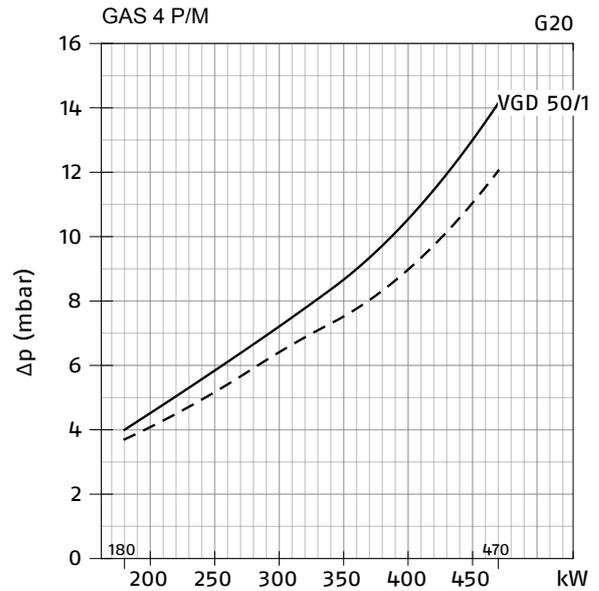
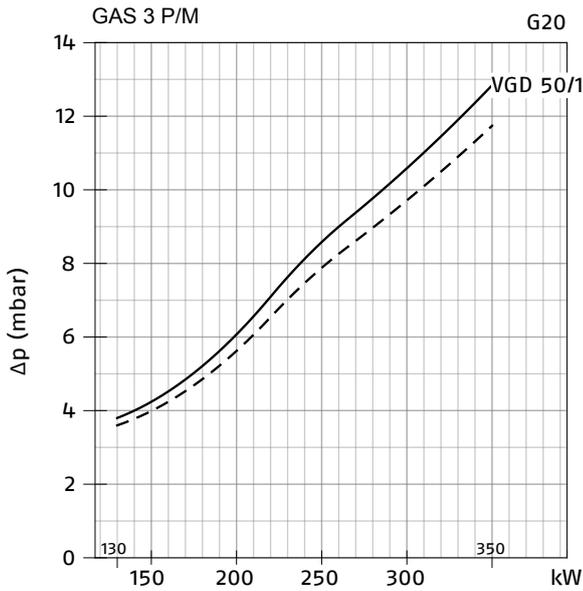
VGD SERIES GAS TRAIN

GAS

LIGHT OIL

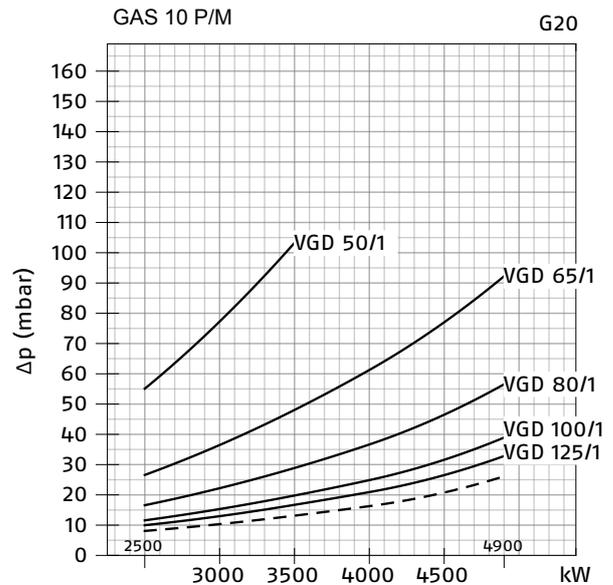
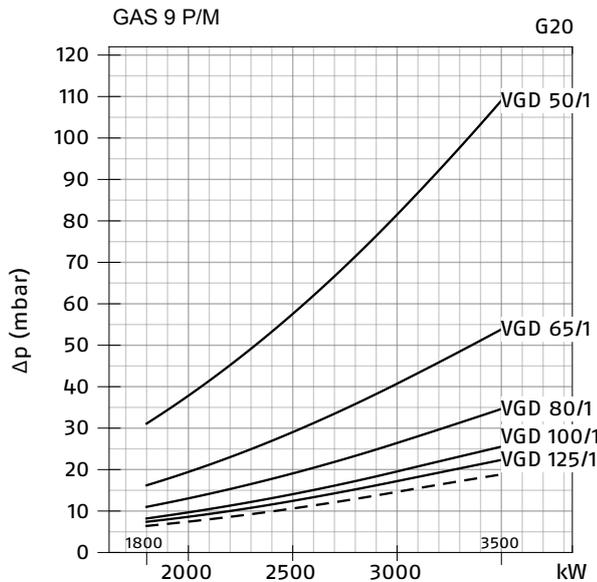
DUAL FUEL

HEAVY OIL



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 3/4"	-	3010123	3000824	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
MB 407/1-RT 20	3970553*		Rp 3/4"	-	3010123	3000824		●	●	●	●	●	●	●	●	●	●	●	●	●	
MB 407/1-RT 52	3970599*		Rp 3/4"	-	3010123	3000824		●	●	●	●	●	●	●	●	●	●	●	●	●	
MB 407/1-RSM 20	3970229*		Rp 3/4"	-	3010123	3000824		●	●	●	●	●	●	●	●	●	●	●	●	●	
MB 410/1-RT 52	3970258*		Rp 1" 1/4	-	3010123	3010124	3010126	●	●	●	●	●	●	●	●	●	●	●	●	●	
MB 410/1-RT 20	3970554*		Rp 3/4"	-	3010123	3000824		●	●	●	●	●	●	●	●	●	●	●	●	●	
MB 410/1-RT 52	3970600*		Rp 3/4"	-	3010123	3000824	3000824+ 3000843	●	●	●	●	●	●	●	●	●	●	●	●	●	
MB 410/1-RSM 20	3970230*		Rp 3/4"	-	3010123	3000824		●	●	●	●	●	●	●	●	●	●	●	●	●	
MB 412/1-RT 52	3970256*		Rp 1" 1/2	-	3010123	□	□	□	3000843		●	●	●	●	●	●	●	●	●	●	
MB 412/1-RT 20	3970144*		Rp 1" 1/2	-	3010123	□	□	□	3000843		●	●	●	●	●	●	●	●	●	●	
MB 412/1 CT RT 20	3970197**		Rp 1" 1/2	◆	◆	□	□	□	3000843		●	●	●	●	●	●	●	●	●	●	
MB 412/1-RSM 20	3970231*		Rp 1" 1/2	-	3010123	□	□	□	3000843		●	●	●	●	●	●	●	●	●	●	
MB 415/1-RT 30	3970180*		Rp 1" 1/2	-	3010123	□	□	□	3000843						●	●	●	●	●	●	
MB 415/1 CT RT 30	3970198**		Rp 1" 1/2	◆	◆	□	□	□	3000843						●	●	●	●	●	●	
MB 415/1-RT 52	3970250*		Rp 1" 1/2	-	3010123	□	□	□	3000843						●	●	●	●	●	●	
MB 415/1 CT RT 52	3970253**		Rp 1" 1/2	◆	◆	□	□	□	3000843						●	●	●	●	●	●	
MB 415/1-RSM 30	3970232*		Rp 1" 1/2	-	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	□	□							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)		

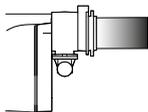
- (1) Please refer to "GAS TRAIN DESIGNATION".
- (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
- (3) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph 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.

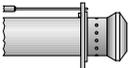
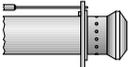
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

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
	GAS 3 P/M	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 = 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
	GAS 3-6 P/M	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. 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
	GAS 3-6 P/M	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: 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
	GAS 3-7 P/M	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.		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
	GAS 3-7 P/M	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. 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

LIGHT OIL BURNERS



LOW NOx

Low NOx emissions, lower than Class 3 of European Standard EN 267 (NOx lower than 120 mg/kWh)



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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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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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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GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

ONE STAGE

TWO STAGE

MODULATING
MECHANICAL CAM

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.

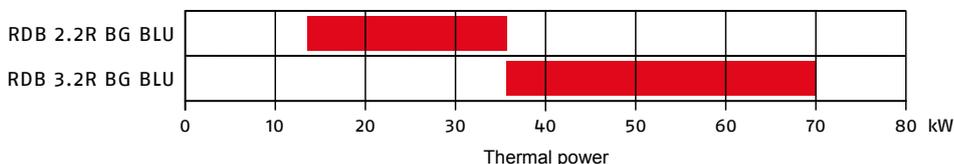
TECHNICAL DATA

Description	Heat output		Total electrical power kW	Electric power supply		Note	Code
	kW	kg/h		PhV/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.

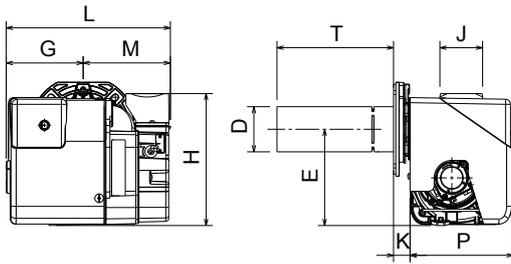
FIRING RATES

The RDB BG BLU burner, depending on the backpressure available, can be set at the specific power output required by the customer's boiler.

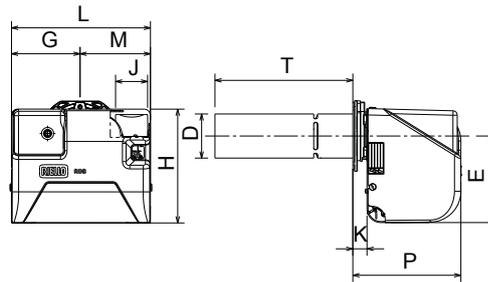


OVERALL DIMENSIONS

RDB 2.2R BG BLU

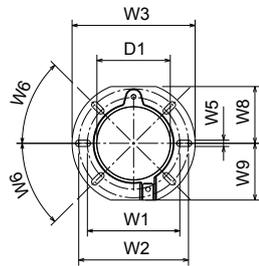


RDB 3.2R BG BLU

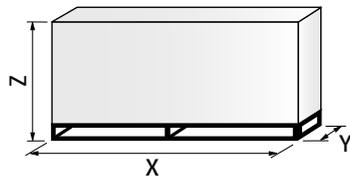


Description	D* mm	E mm	G mm	H mm	K mm	L mm	M mm	P mm	T* mm	J mm
RDB 2.2R BG BLU	80	170	135	235	29	288	153	210	204	75
RDB 3.2R BG BLU	97	204	160	268	33	325	165	253	258	75

(*) 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Note	Code
	kW	kg/h		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.

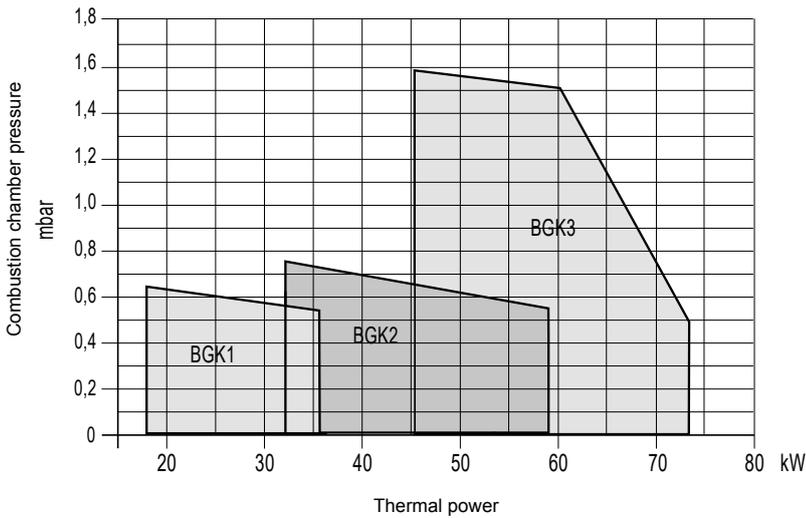
(1) For combustion of Light Oil

(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.

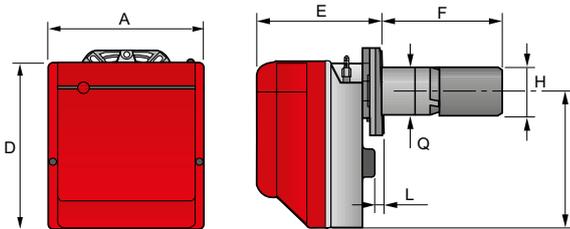
FIRING RATES



□ Useful working field for choosing the burner

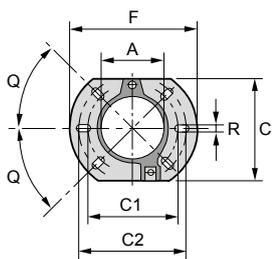
Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

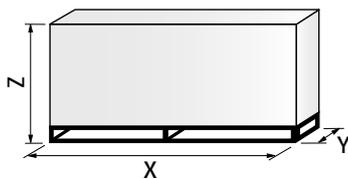


Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm	Q mm
BGK1	255	280	202	192	87	230	10	89
BGK2	255	280	202	197	90	230	10	89
BGK3	300	345	230	222	90	285	12	89

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 vacuumeter
 - 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 kW	Electric power supply		Note	Code
	kW	kg/h		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.

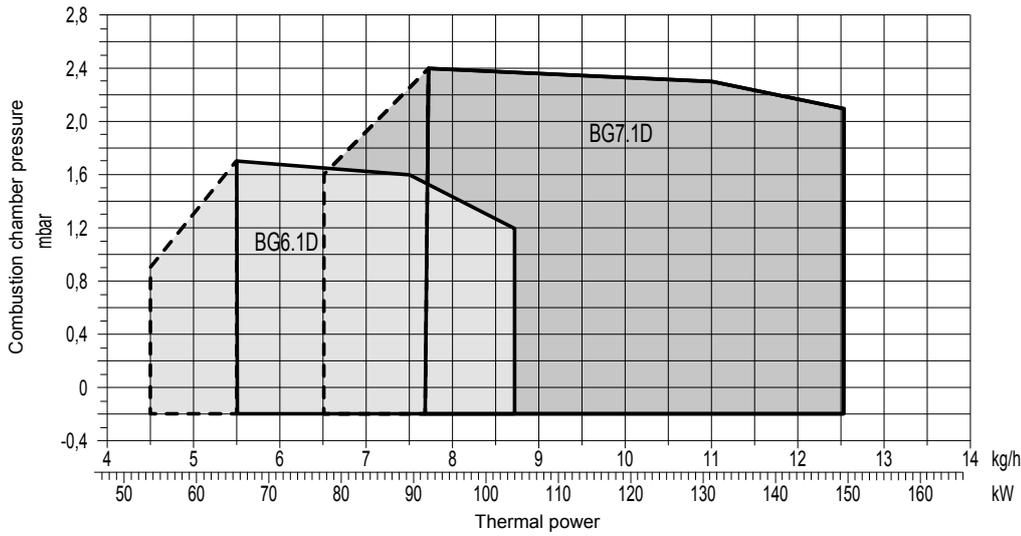
(1) For combustion of Light Oil

(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

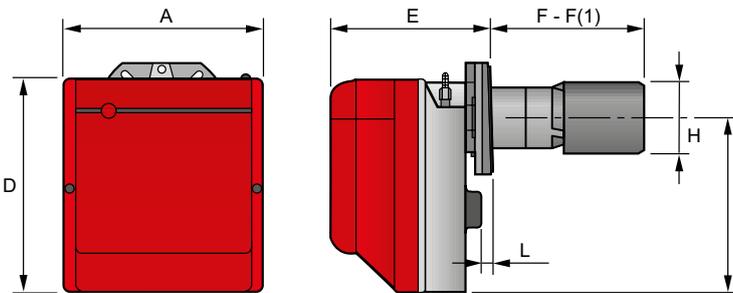


□ Useful working field for choosing the burner

⋯ 1st stage operation range

Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

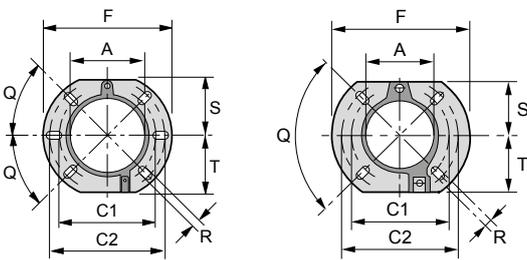


Description	A mm	D mm	E mm	F mm	F (1) mm	H mm	I mm	L mm
BG6.1D	300	345	228	284	363	131	285	12
BG7.1D	300	345	247	394	-	165	285	12

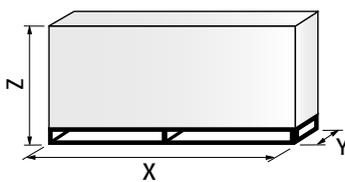
(1) Length with extended combustion head.

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.

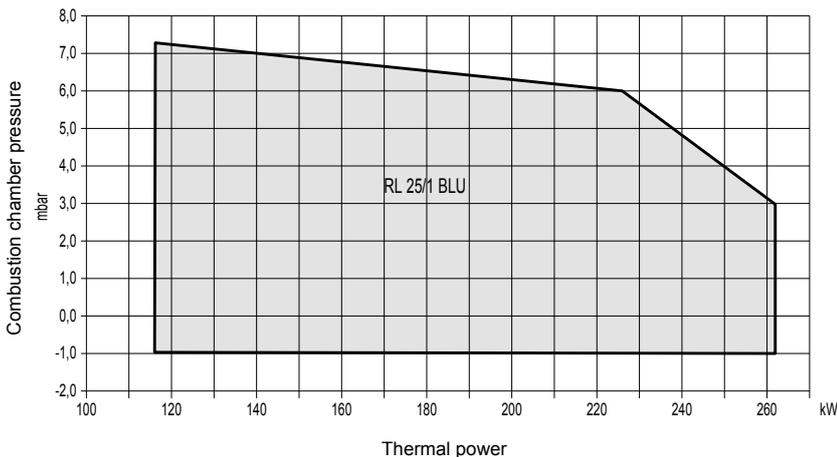
TECHNICAL DATA

Description	Heat output		Total electrical power kW	Electric power supply		Code
	kW	kg/h		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 mm²/s (cSt).

The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

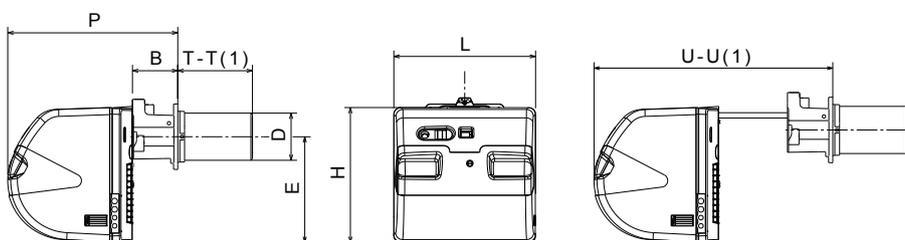
FIRING RATES



□ Useful working field for choosing the burner

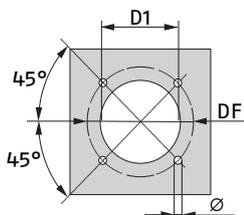
Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

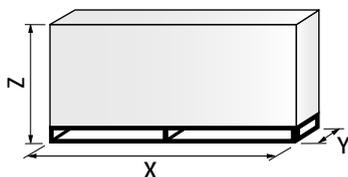


Description	B mm	D mm	E mm	L mm	H mm	P mm	U mm	T mm	T (1) mm	U (1) mm
RL 25/1 BLU	130	140	305	442	416	508	788	200	280	788

(1) Length with extended combustion head.



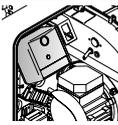
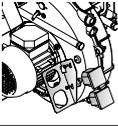
Description	D1 mm	DF mm	Ø mm
RL 25/1 BLU	160	224	M8



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	<p>SOUND PROOFING BOX</p> <p>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.</p> <p>Box type: C1/3</p> <p>Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, E = 770 mm</p> <p>Average noise reduction according to EN 15036-1 Standard = 10 dB(A).</p>	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 degassing 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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.

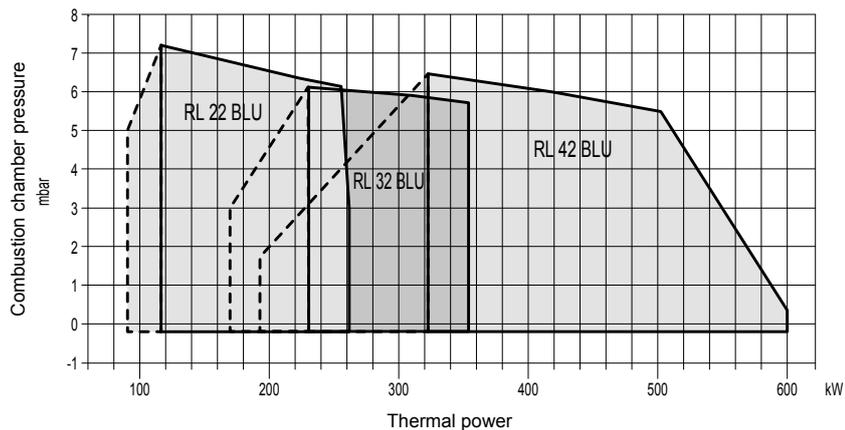
TECHNICAL DATA

Description	Heat output		Total electrical power kW	Electric power supply		Code
	kW	kg/h		PhV/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 mm²/s (cSt).

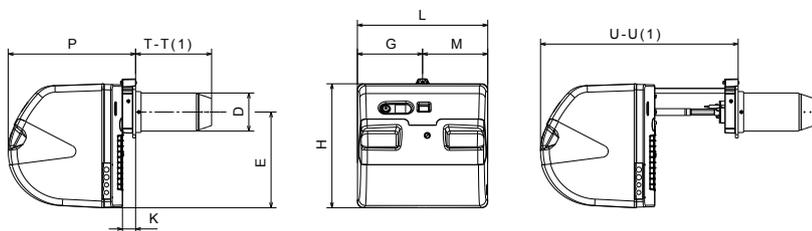
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

FIRING RATES

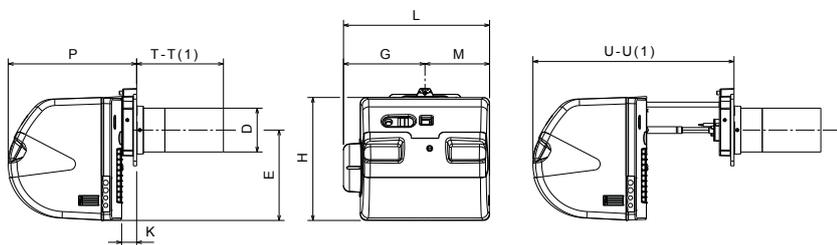


OVERALL DIMENSIONS

RL 22-32 BLU

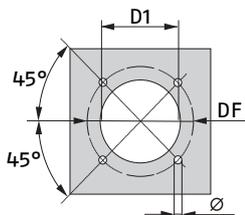


RL 42 BLU

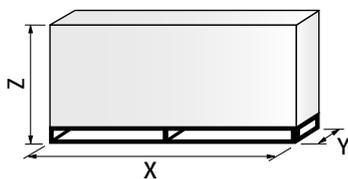


Description	D mm	E mm	G mm	K mm	L mm	M mm	H mm	P mm	T mm	T (1) mm	U (1) mm
RL 22 BLU	140	352	238	52	476	238	474	468	197	276	604-739
RL 32 BLU	140	352	238	52	476	238	474	468	217	293	604-739
RL 42 BLU	163	335	300	60	533	238	490	680	291	430	680-815

(1) Length with extended combustion head.

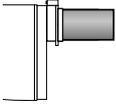


Description	D1 mm	DF mm	Ø mm
RL 22 BLU	160	224	M8
RL 32 BLU	160	224	M8
RL 42 BLU	185	275-325	M12



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. 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
	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

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.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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

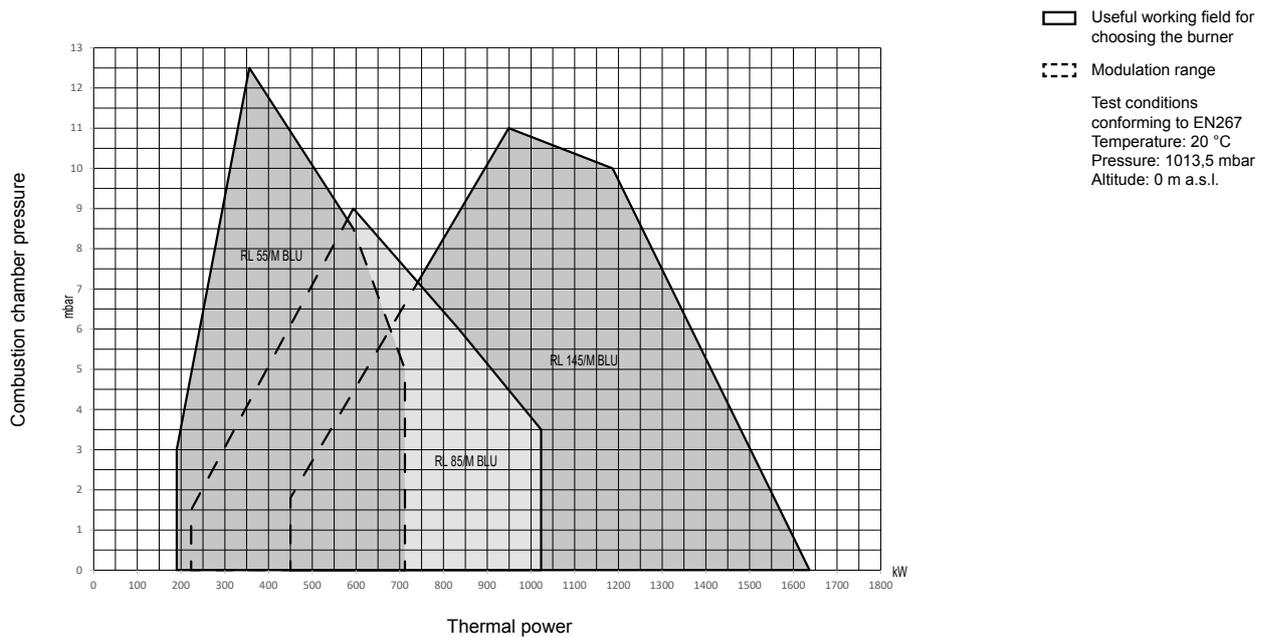
Description	Heat output		Total electrical power kW	Electric power supply		Note	Code
	kW	kg/h		Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)							
RL 55/M BLU TC FS1	190/356-712	16/30-60	2.2	3/400/50	230/50-60	(1)	20208592
RL 85/M BLU TC FS1	223/594-1023	18.8/50-86.2	2.6	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 mm²/s (cSt).

The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

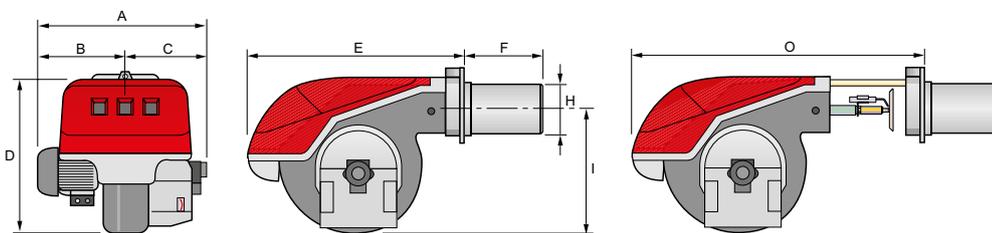
(1) Model with LAL control box.

FIRING RATES

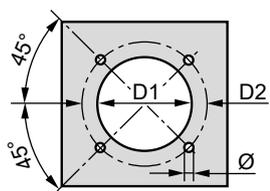


NOTE: the RL 55-85/M BLU burners are designed exclusively for combustion chambers with flue gas outlet from the bottom, for example three flue gas passes (not reverse flame boilers) accessible through the door. Maximum thickness of the frontal boiler wall: 250 mm. Exhaust gases ducts must be always and 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°.

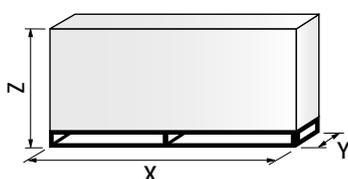
OVERALL DIMENSIONS



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.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 vacuumeter
 - 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)



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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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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GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

ONE STAGE

TWO STAGE

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		<p>PRESS T/G</p> <p>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)</p> <p>page 483</p>			
	MODULATING MECHANICAL CAM		<p>RL 28-50/M</p> <p>RL 28/M FS1 (90/166-332 kW) RL 38/M FS1 (101/237-450 kW) RL 50/M FS1 (130/296-593 kW)</p> <p>page 467</p>	<td></td> <td> <p>RL 70-190/M</p> <p>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)</p> <p>page 471</p> </td>	
		<p>PRESS P/G</p> <p>PRESS 300 P/G (890/1780-3560 kW) PRESS 450 P/G (1190/2670-5340 kW)</p> <p>page 487</p>			

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 mm²/s (cSt).

Net calorific value of kerosene: 11.97 kWh/kg - Viscosity at 20 °C: 1.5-6 mm²/s (cSt).

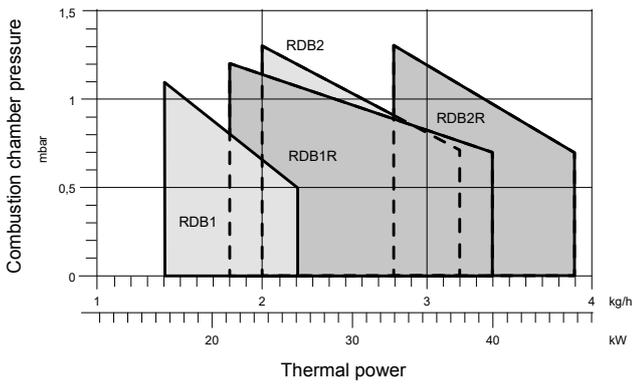
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

(1) All burner models are OEM's customized.

(2) This code is unprovided with thermal screen.

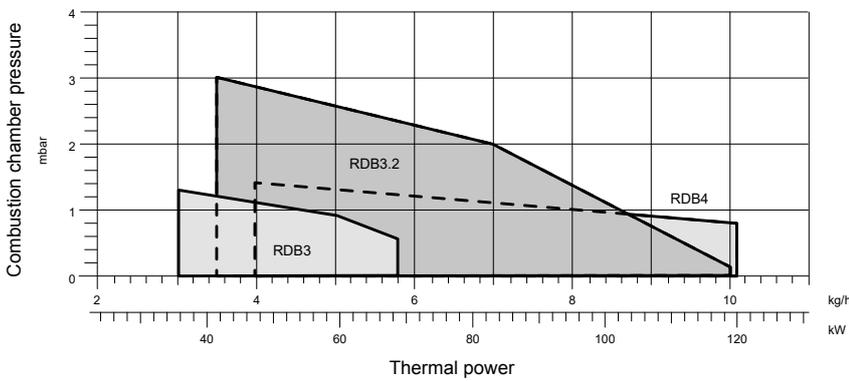
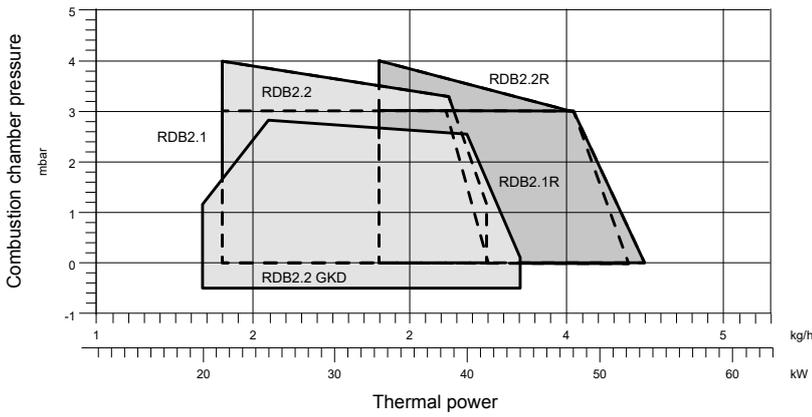
(3) Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

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.



GAS

LIGHT OIL

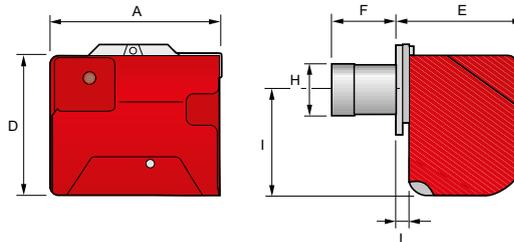
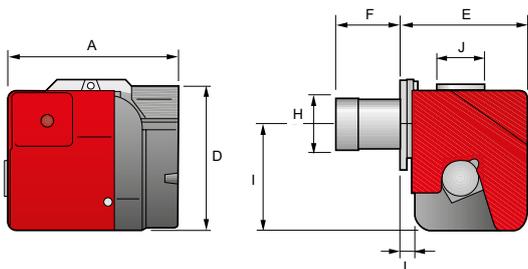
DUAL FUEL

HEAVY OIL

OVERALL DIMENSIONS

RDB1-1R - RDB2-2R - RDB2.1-2.1R - RDB2.2-2.2R - RDB2.2 GKD

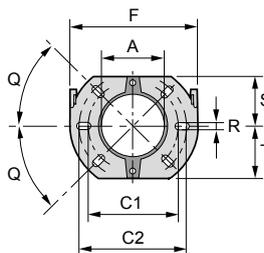
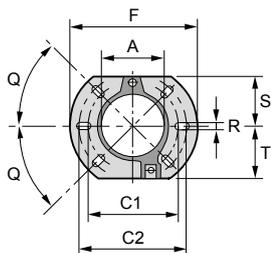
RDB3 - RDB3.2 - RDB4



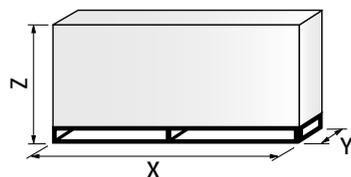
Description	A mm	D mm	E mm	F mm	H mm	I mm	J mm	L mm
RDB1 - 1R	276	230	202	76-86	89-90	168	75	20
RDB2 - 2R	276	230	202	76-86	89-90	168	75	20
RDB2.1 - 2.1R	286	230	202	77	85	168	75	20
RDB2.2 - 2.2R	286	230	202	77	85	168	75	20
RDB2.2 GKD	286	232	200	203	103	171	75	18
RDB3	325	268	253	78	88	204	75	30
RDB3.2	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
	RDB3 - RDB4	Balanced flue conversion kit.		20186506
		Conventional flue kit.		3062775
	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

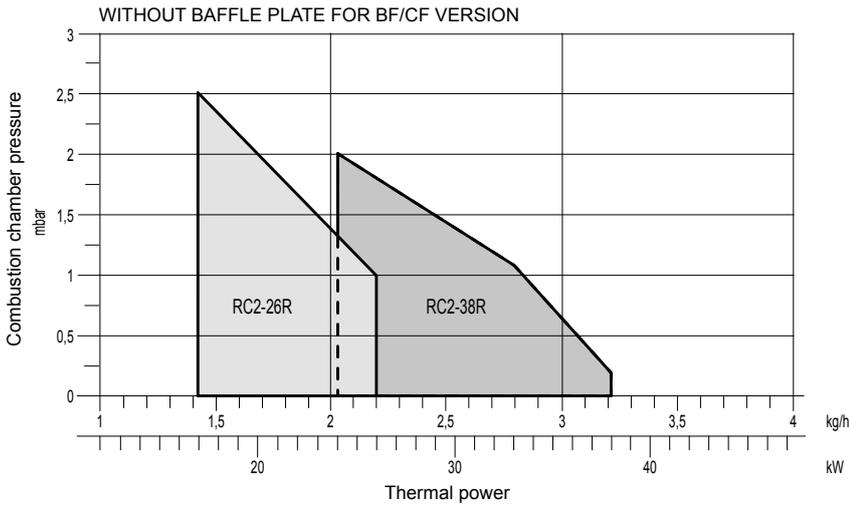
Description	Heat output		Total electrical power	Electric power supply	Code
	kW	kg/h	kW	Ph/V/Hz	
RC2-26R	17-26	1.4-2.2	0.15	1/230/50	(1)
RC2-38R	24-38	2.0-3.2	0.15	1/230/50	(1)
RC2-38	24-38	2.0-3.2	0.15	1/230/50	(1)
RC2-46R	33-46	2.8-3.9	0.15	1/230/50	(1)
RC2.1-46	33-46	2.8-3.9	0.15	1/230/50	(1)

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).

The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

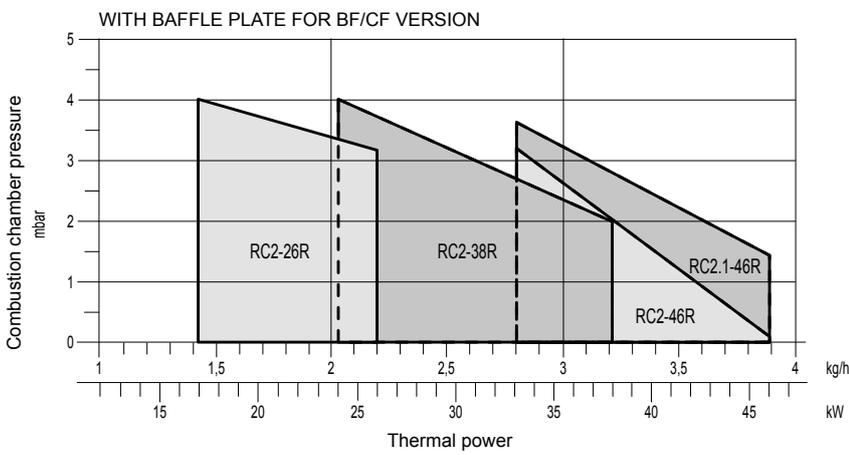
(1) Please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

FIRING RATES

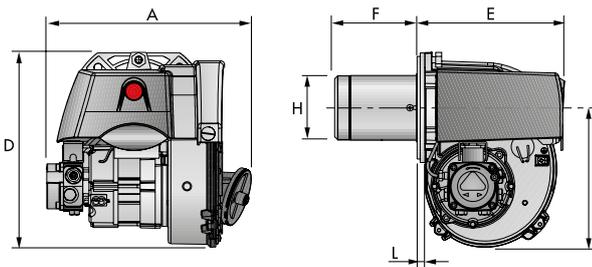


Useful working field for choosing the burner

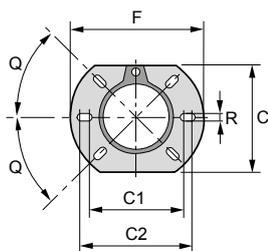
Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.



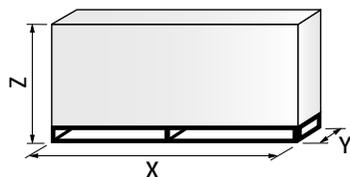
OVERALL DIMENSIONS



Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm
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 vacuumeter
 - 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 mm²/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 kW	Electric power supply		Note	Code
	kW	kg/h		PhV/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).

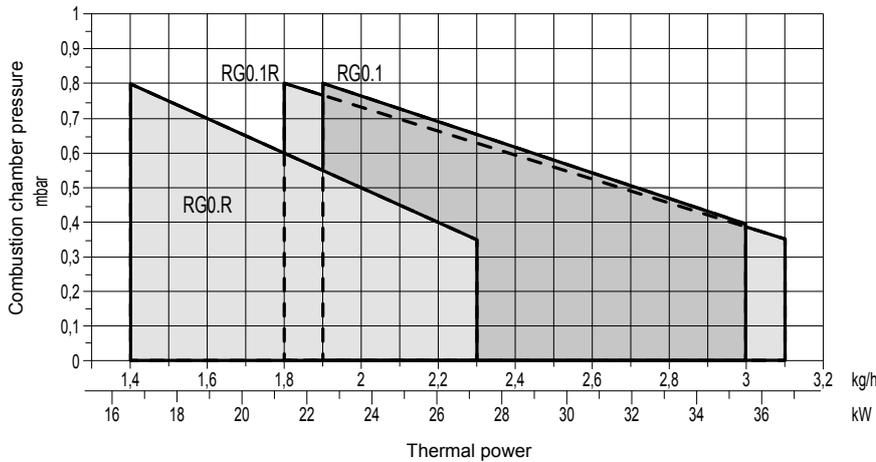
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

(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.

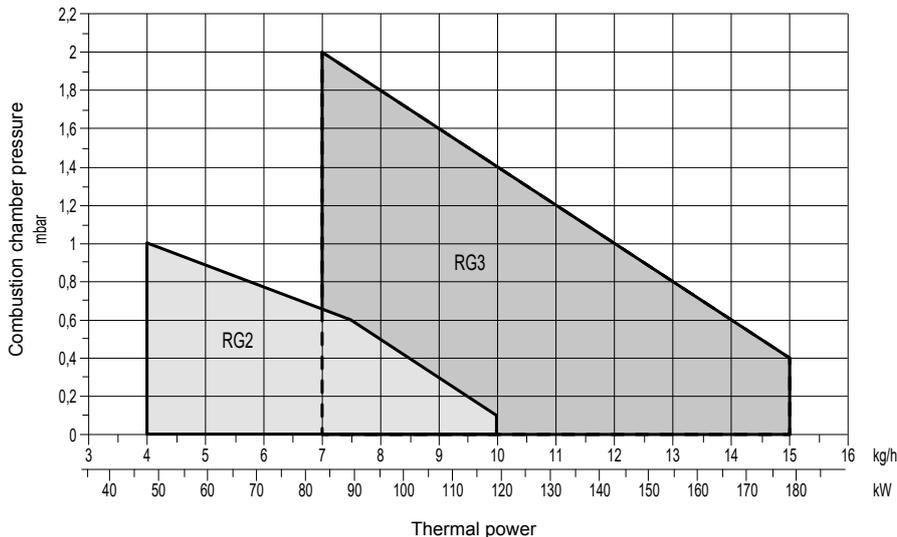
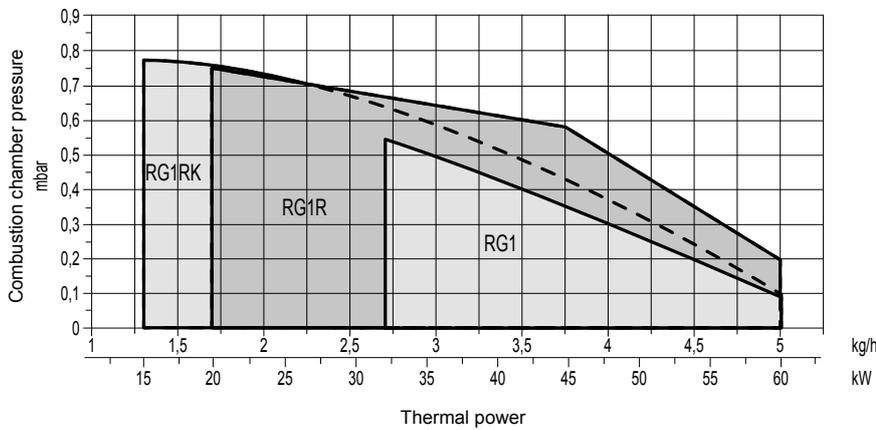
Blend with a FAME percentage higher than 7% in the HVO is not permitted.

FIRING RATES

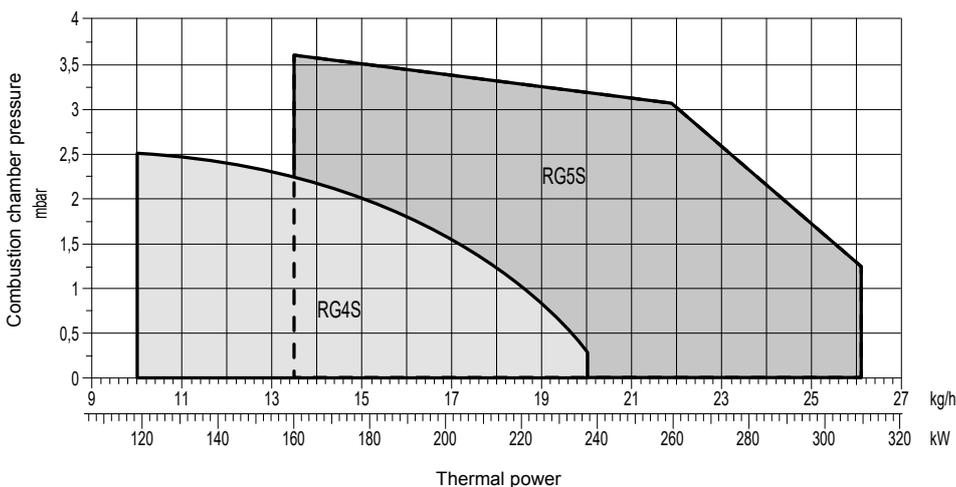


Useful working field for choosing the burner

Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.



FIRING RATES

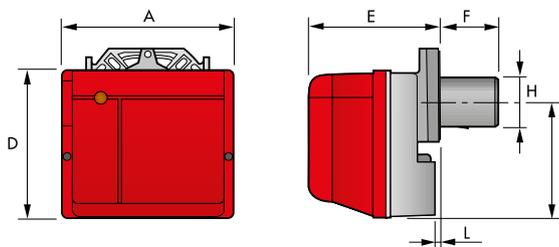


□ Useful working field for choosing the burner

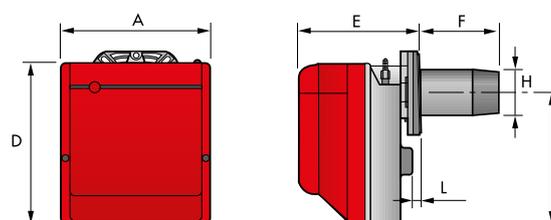
Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

GULLIVER RG0



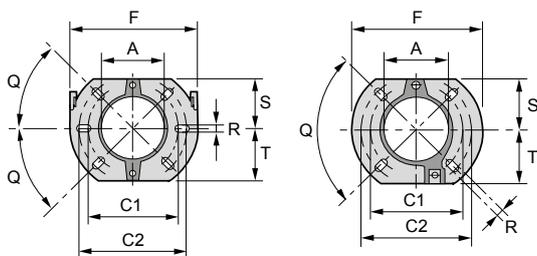
GULLIVER RG



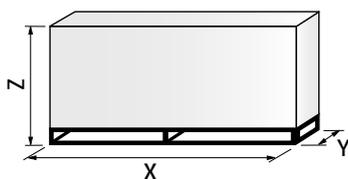
Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm
RG0.R	255	210	205	93	84	168	5
RG0.1R	255	210	205	93	84	168	5
RG0.1	255	210	205	93	84	168	5
RG1	234	254	196	93	84	210	4
RG1R	234	254	196	93	84	210	4
RG1RK	234	254	196	111	84	210	4
RG2	255	280	202	115-180	95	230	10
RG3	300	345	228	142-300	123	285	12
RG4S	300	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
		EXTENDED HEAD KIT Kits of extended heads are available.		
	RG1-RG1R	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
		SPACER KIT By using the special accessories, the burner can be with-drawn to reduce head penetration into the combustion chamber.		
	RG0.R-RG0.1R RG0.1-RG1 RG1R-RG1RK	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 mm²/s (cSt).

The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

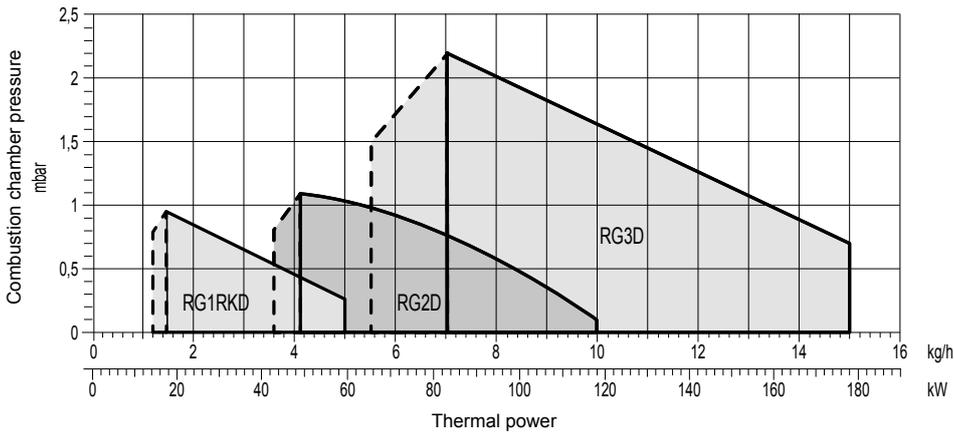
(1) For combustion of Light Oil

(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.

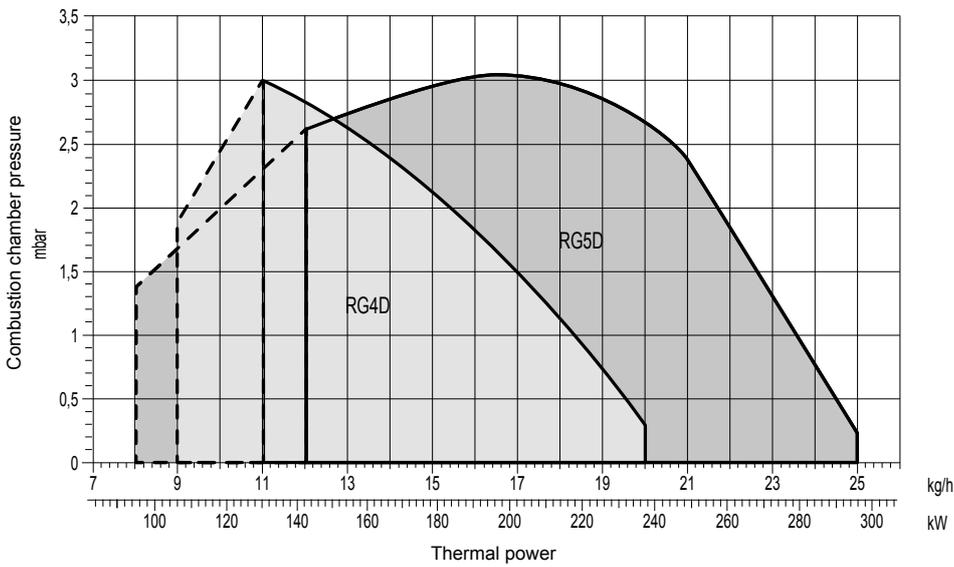
Blend with a FAME percentage higher than 7% in the HVO is not permitted.

FIRING RATES

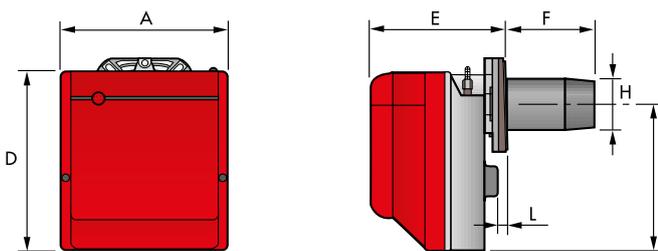


Useful working field for choosing the burner
 1st stage operation range

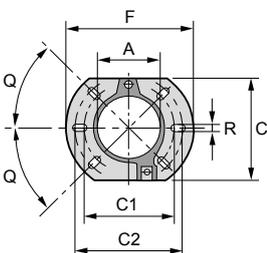
Test conditions
 conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.



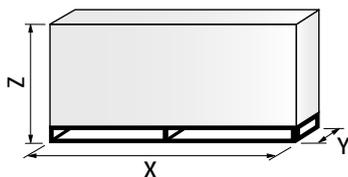
OVERALL DIMENSIONS



Description	A mm	D mm	E mm	F mm	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
	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
- 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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	PhV/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 mm²/s (cSt).

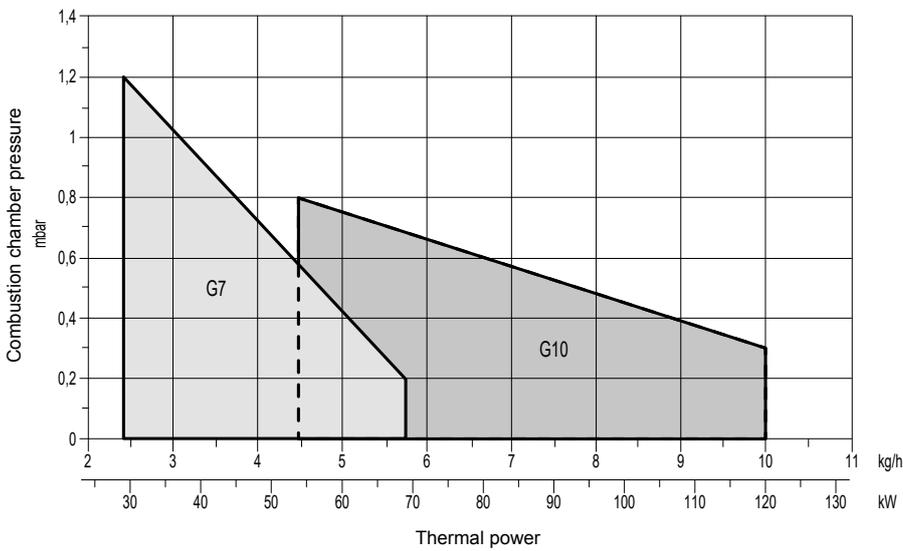
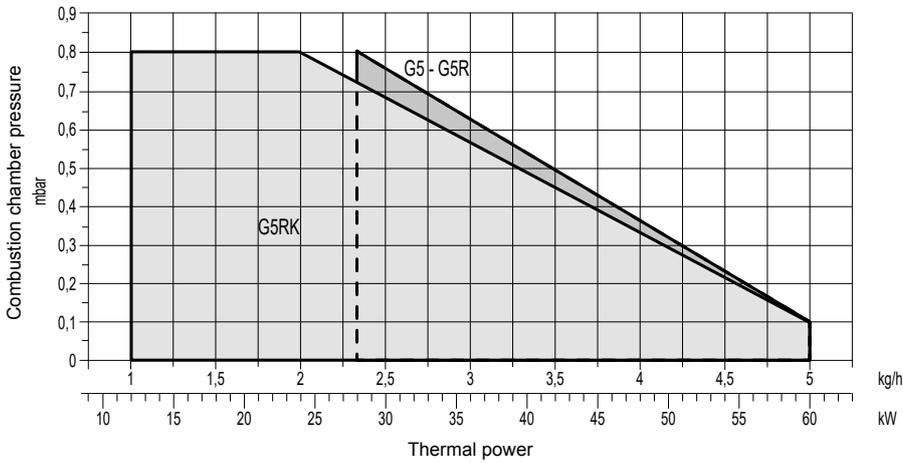
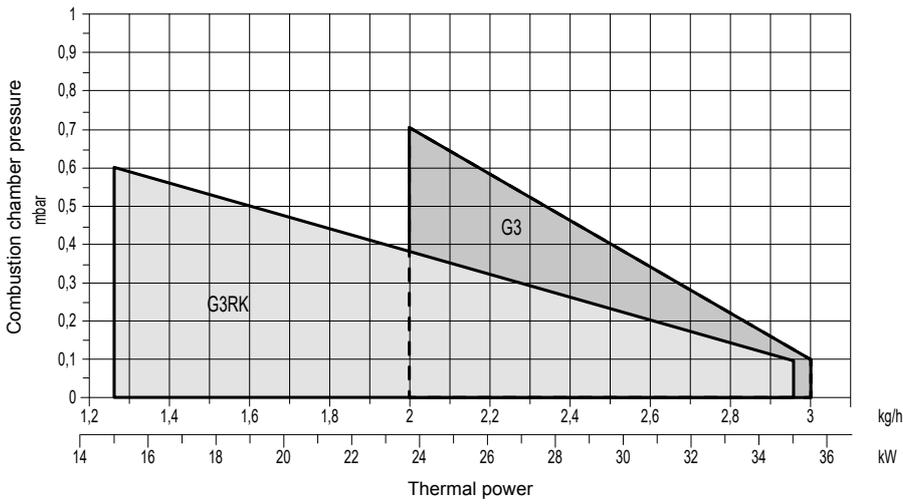
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

(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.

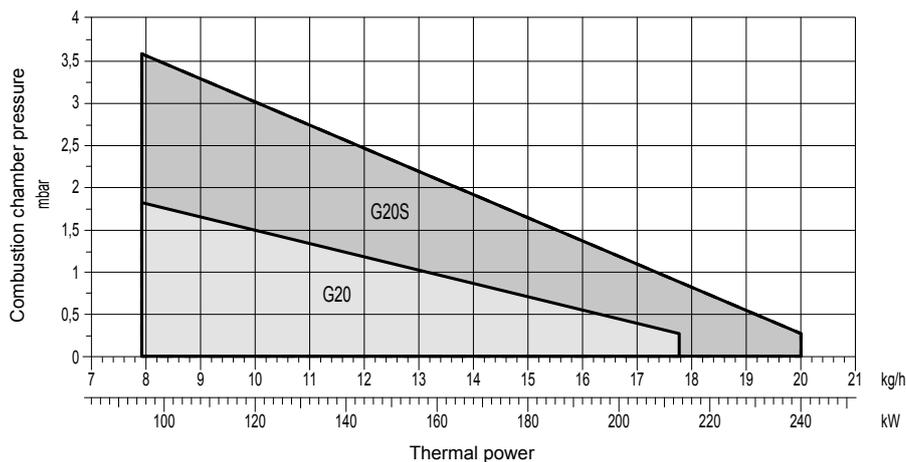


GAS

LIGHT OIL

DUAL FUEL

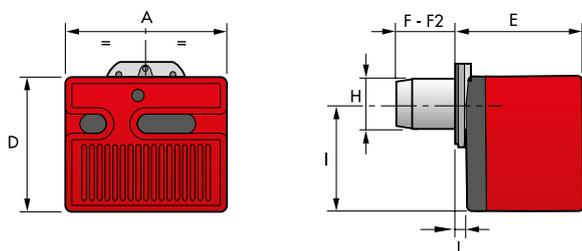
HEAVY OIL



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.

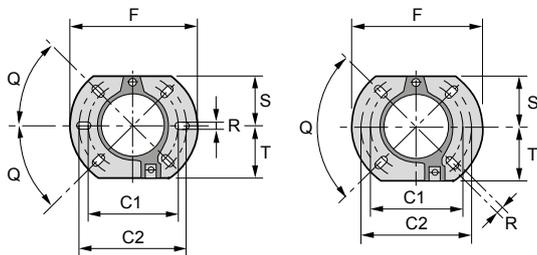
OVERALL DIMENSIONS



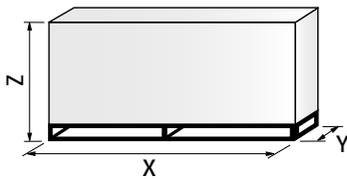
Description	A mm	D mm	E mm	F mm	F2 mm	H mm	I mm	L mm
G3	252	215	203	86	-	89	164	19
G3RK	252	215	203	97	115	89	164	19
G5	272	233	236	107-180	-	89	180	37
G5R	272	233	236	107	-	89	180	37
G5RK	272	233	236	94	112	89	180	37
G7	305	262	261	73	-	89	204	40
G10	305	262	261	108-250	-	105	204	40
G20	350	298	295	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

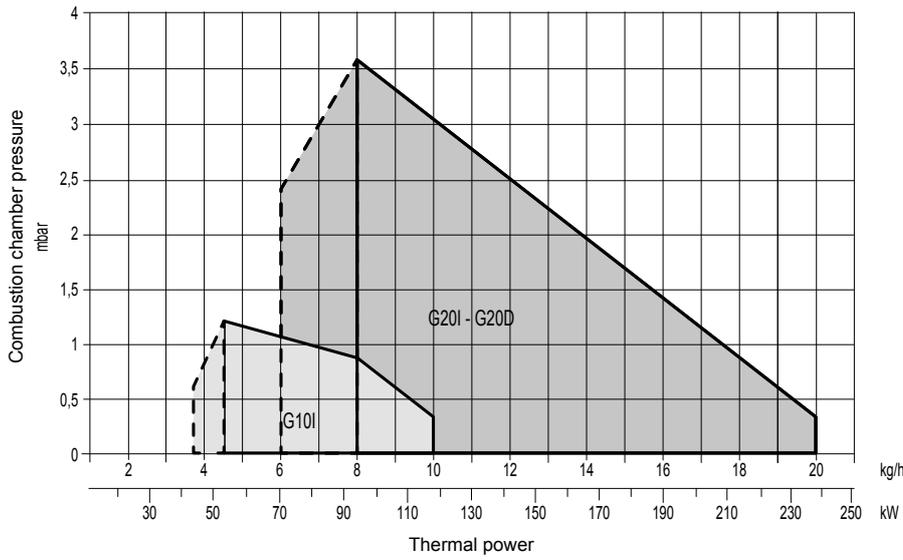
Description	Heat output		Total electrical power kW	Electric power supply Ph/V/Hz	Note	Code
	kW	kg/h				
G10I	44/54-120	3.7/4.5-10	0.17	1/230/50		3746613
G20D	71/95-240	6/8-20	0.33	1/230/50		3748414
G20D	71/95-231	6/8-19.5	0.40	1/220/60	(1)	3748415

Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/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

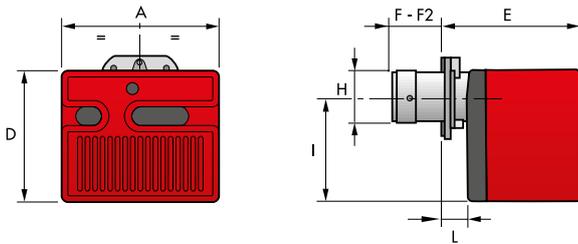


□ Useful working field for choosing the burner

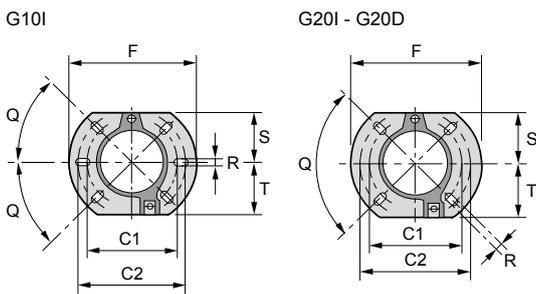
⋯ 1st stage operation range

Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

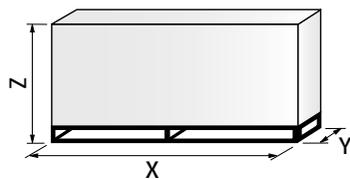
OVERALL DIMENSIONS



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

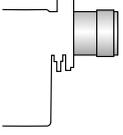
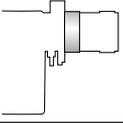


Description	C1 mm	C2 mm	F mm	Q mm	R mm	S mm	T mm
G10I	140	170	189	45°	11	83	83
G20I	160	190	213	90°	11	99	99
G20D	160	190	213	90°	11	99	99



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
	G10I	EXTENDED HEAD KIT Kits of extended heads are available. 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

GAS

RL 34/1

LIGHT OIL



- 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.

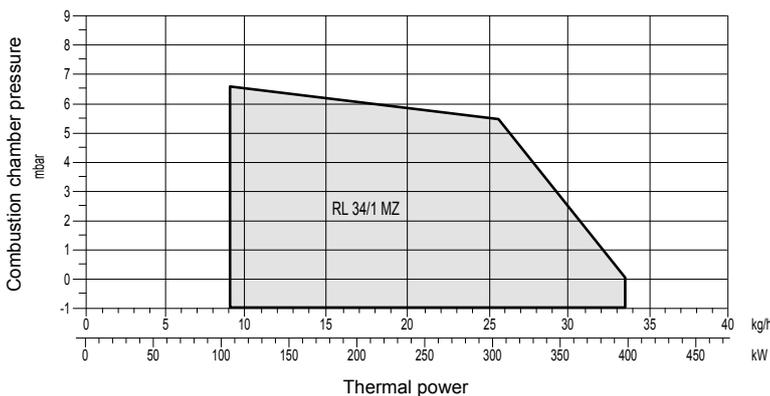
DUAL FUEL

TECHNICAL DATA

Description	Heat output		Total electrical power kW	Electric power supply		Code
	kW	kg/h		PhV/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 mm²/s (cSt).
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

FIRING RATES

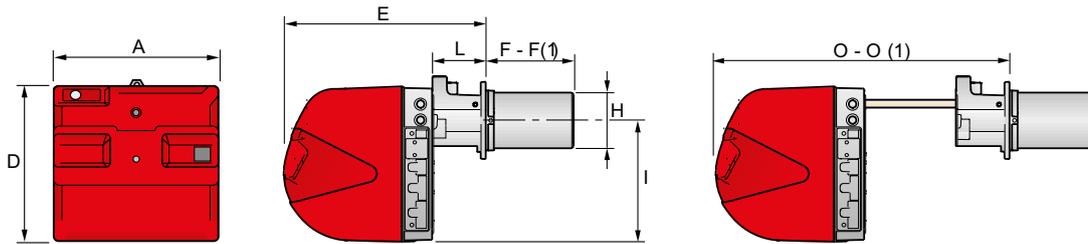


Useful working field for choosing the burner

Test conditions conforming to EN267
Temperature: 20 °C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

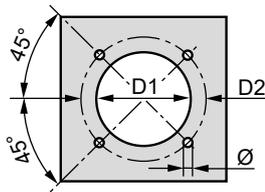
HEAVY OIL

OVERALL DIMENSIONS

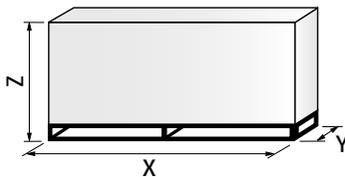


Description	A mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	O - O(1) mm
RL 34/1 MZ	442	422	508	216 - 351	140	305	138	780 - 915

(1) Dimension with extended head.



Description	D1 mm	D2 mm	Ø mm
RL 34/1 MZ	160	224	M8

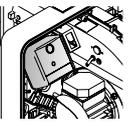
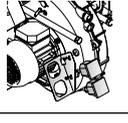


Description	X(1) mm	Y mm	Z mm	Net weight kg
RL 34/1 MZ	1000	485	500	32

(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 vacuumeter
 - 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Note	Code
	kW	kg/h		PhV/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

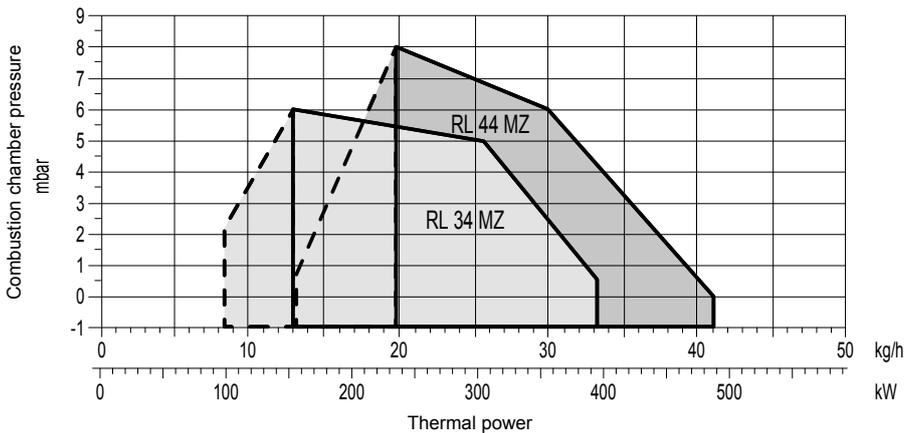
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).

The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

(1) Model with plug and socket.

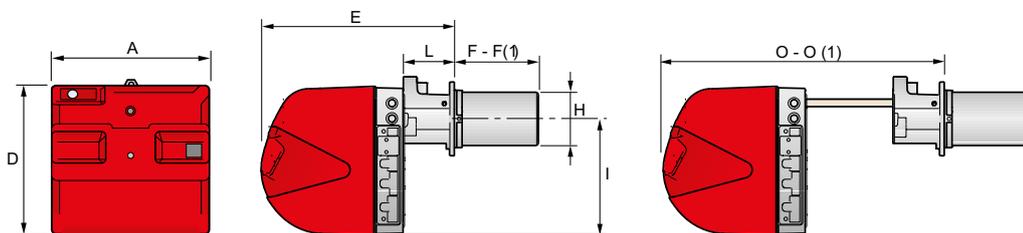
Attention: the nozzles are supplied as accessories which must be ordered separately; please refer to the "NOZZLES" section.

FIRING RATES



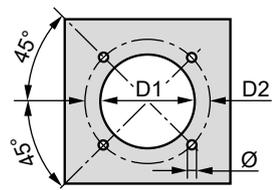
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

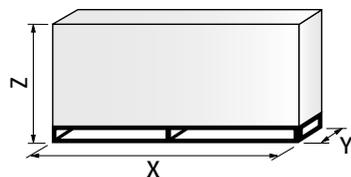


Description	A mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	O - O(1) mm
RL 34 MZ	442	422	508	216 - 351	140	305	138	780 - 915
RL 44 MZ	442	422	508	216 - 351	152	305	138	780 - 915

(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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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
	RL 34 MZ	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 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 vacuumeter
 - 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 kW	Electric power supply		Note	Code
	kW	kg/h		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

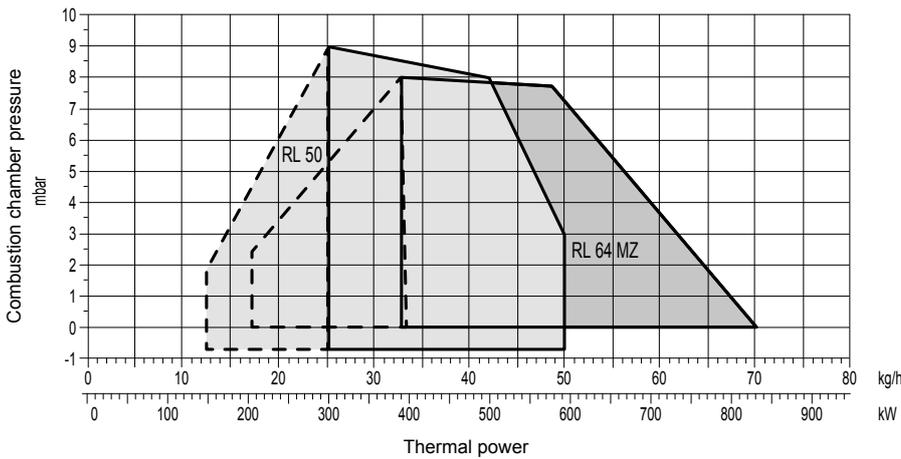
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).

The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

(1) Model with plug and socket.

ATTENTION: the nozzles are supplied as accessories which must be ordered separately; please refer to the "NOZZLES" section.

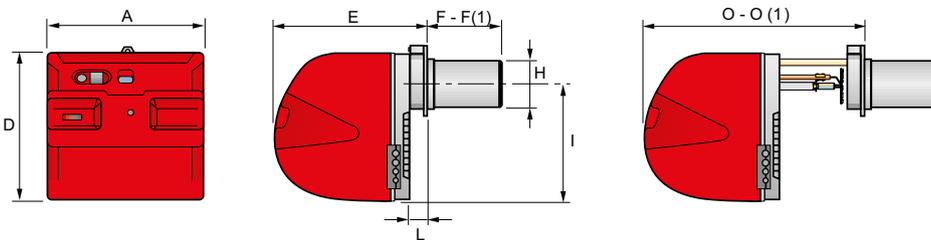
FIRING RATES



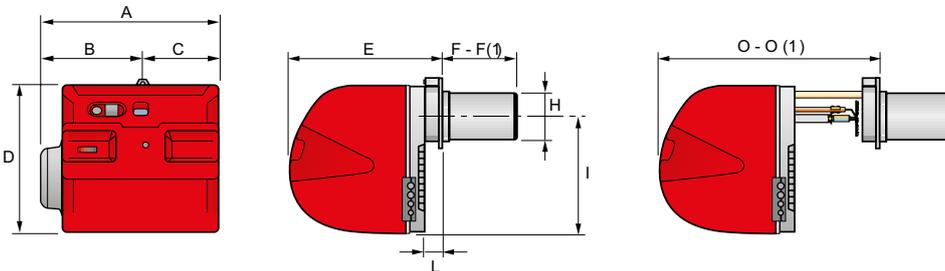
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

RL 50

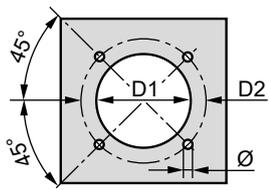


RL 64 MZ

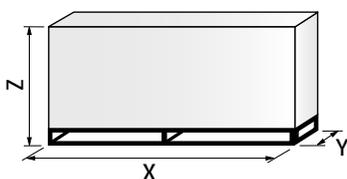


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	O - O(1) mm
RL 50	476	-	-	474	468	216 - 351	152	352	52	672 - 807
RL 64 MZ	538	300	238	490	477	250 - 385	179	335	60	680 - 815

(1) Dimension with extended head.



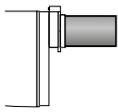
Description	D1 mm	D2 mm	Ø mm
RL 50	160	224	M8
RL 64 MZ	185	275-325	M12



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
	RL 50	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	3010075
	RL 64 MZ	Standard head length = 250 mm - Extended head length = 385 mm	3010114
	RL 50	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 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
	RL 64 MZ	60°B	6.50	25	27.6	30	(1)	3042222
		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		

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 vacuumeter
 - 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 kW	Electric power supply		Note	Code
	kW	kg/h		PhV/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

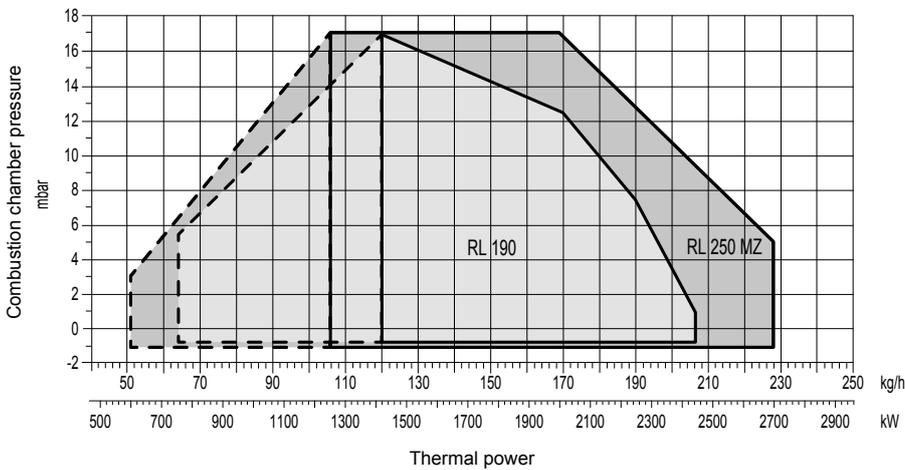
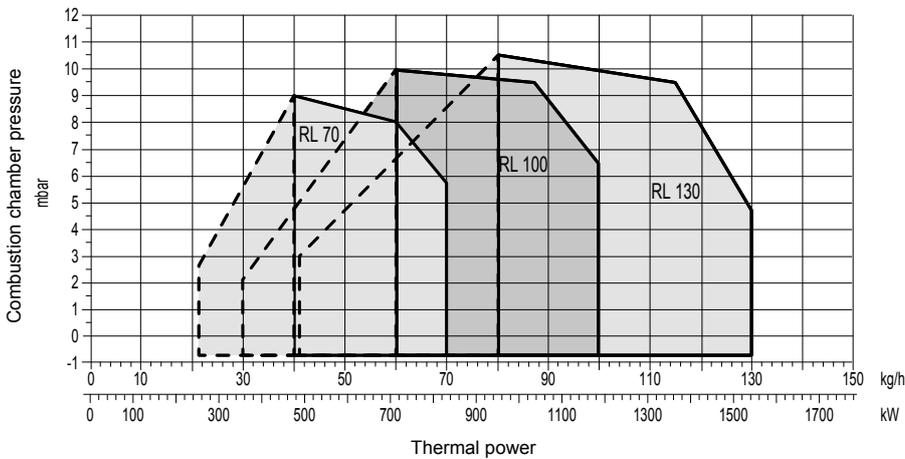
Description	Heat output		Total electrical power kW	Electric power supply		Note	Code
	kW	kg/h		Ph/V/Hz	V/Hz		
RL 190 TC FS1	759/1423-2443	64/120-206	5.87	3/380/60	220/60	(2)	3475680
RL 190 TC FS1	759/1423-2443	64/120-206	5.87	3/220/60	220/60	(2)	20011009
RL 250 MZ TC FS1	600/1250-2700	51/106-228	7.2	3/400/50	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.

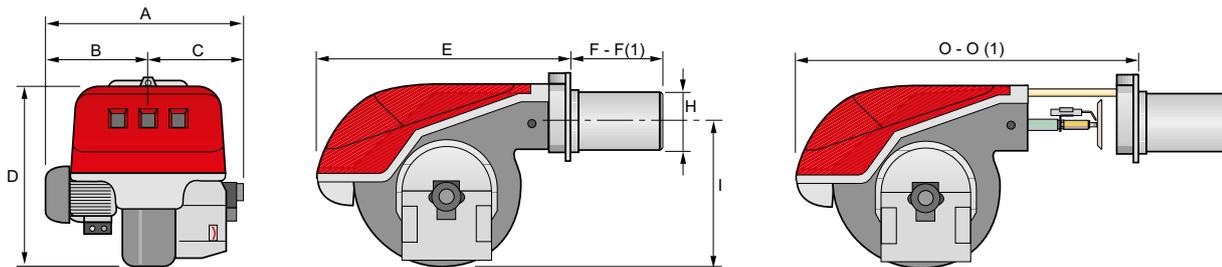
- (1) Model with plug and socket.
- (2) Model with terminal board.

ATTENTION: the nozzles are supplied as accessories which must be ordered separately; please refer to the "NOZZLES" section.

FIRING RATES

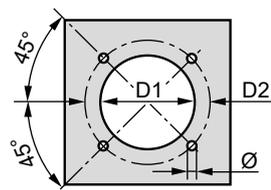


OVERALL DIMENSIONS

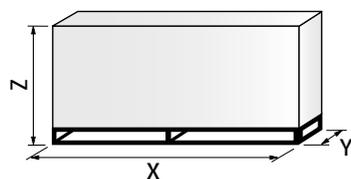


Description	A mm	B mm	C mm	D mm	E mm	F - F (1) mm	H mm	I mm	O - O (1) mm
RL 70	580	296	284	555	680	250 - 385	179	430	951 - 1086
RL 100	599	312	287	555	680	250 - 385	179	430	951 - 1086
RL 130	625	338	287	555	680	250 - 385	189	430	951 - 1086
RL 190	756	366	390	555	712	370 - 530*	222	430	1166 - -
RL 250 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 degassing 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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
	RL 70-100-130	60°B	8.50	32.7	36.1	39.2	(1)	3042262
		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
	RL 130-190 RL 250 MZ	60°B	16.00	61.5	67.9	73.8	(1)	3042382
		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
	RL 190 RL 250 MZ	60°B	20.00	76.9	84.8	92.2	(1)	3042442
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	
RL 250 MZ	60°B	28.00	107.6	118.8	129.1	(1)	20018051	
	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 vacuumeter
 - 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
- 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:

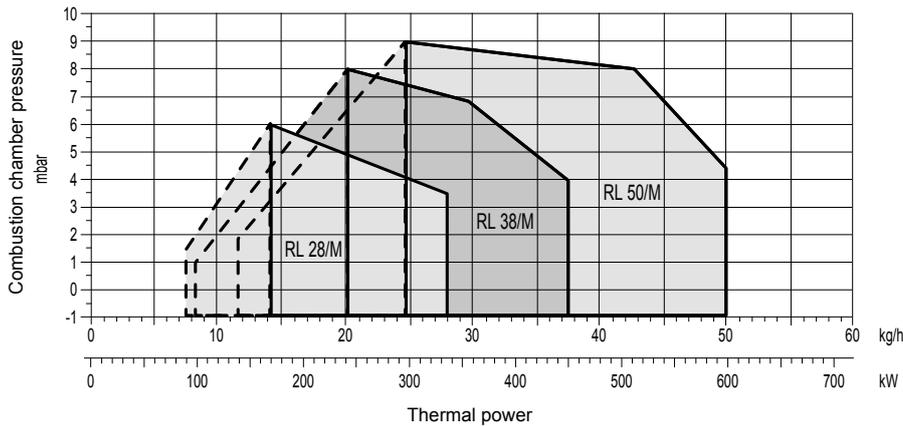
- With boilers (heater housings) already in service in the field, for replacement of identical products, in conformity to Article 1, paragraph 2, point (G) of the EU Regulation No. 813/2013;
- With boilers (heater housings) on a new installation, if they have emissions complying with the requirement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

TECHNICAL DATA

Description	Heat output		Total electrical power kW	Electric power supply		Note	Code
	kW	kg/h		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

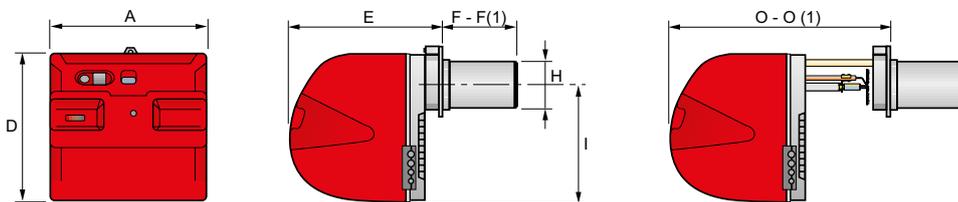
NET calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
 The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
 (1) Model with LFL control box.

FIRING RATES



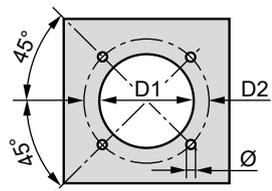
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

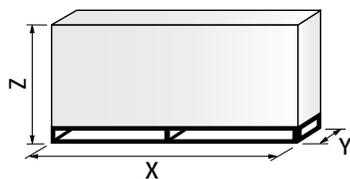


Description	A mm	D mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
RL 28/M	476	474	468	241 - 351	140	352	672 - 807
RL 38/M	476	474	468	241 - 351	140	352	672 - 807
RL 50/M	476	474	468	241 - 351	152	352	672 - 807

(1) Dimension with extended head.



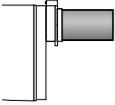
Description	D1 mm	D2 mm	Ø mm
RL 28/M	160	224	M8
RL 38/M	160	224	M8
RL 50/M	160	224	M8



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

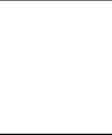
(1) Length with extended combustion head.

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 degassing 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL



- 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:

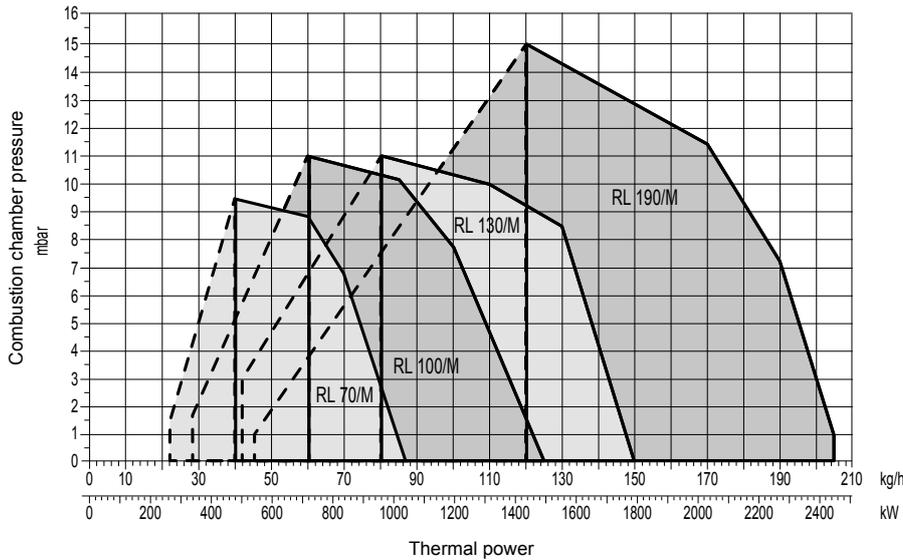
- With boilers (heater housings) already in service in the field, for replacement of identical products, in conformity to Article 1, paragraph 2, point (G) of the EU Regulation No. 813/2013;
- With boilers (heater housings) on a new installation, if they have emissions complying with the requirement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

TECHNICAL DATA

Description	Heat output		Total electrical power kW	Electric power supply		Note	Code
	kW	kg/h		PhV/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

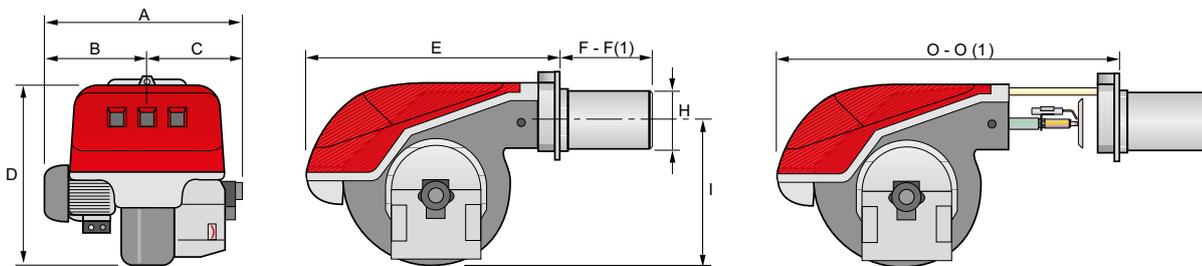
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
 The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.
 (1) Model with LFL control box.

FIRING RATES



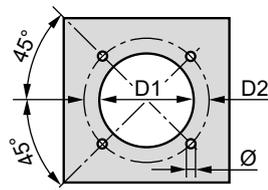
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

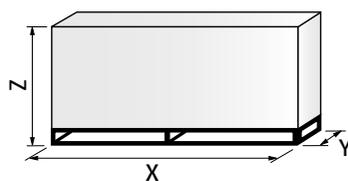


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
RL 70/M	663	296	367	555	680	272 - 385	179	430	951 - 1086
RL 100/M	679	312	367	555	680	272 - 385	179	430	951 - 1086
RL 130/M	705	338	367	555	680	272 - 385	189	430	951 - 1086
RL 190/M	813	366	447	555	712	370	222	430	1166

(1) Dimension with extended head.



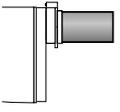
Description	D1 mm	D2 mm	Ø mm
RL 70/M	185	275 - 325	M12
RL 100/M	185	275 - 325	M12
RL 130/M	195	275 - 325	M12
RL 190/M	230	325 - 368	M16



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
		POWER CONTROLLER To obtain modulating operation, the burner requires a regulator. For remote setpoint use RWF 55.	
	All models	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
		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 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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:

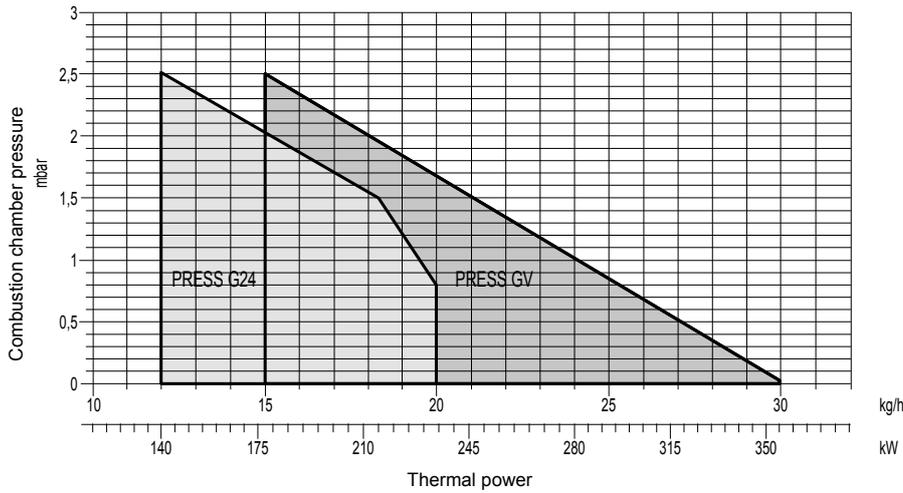
- With boilers (heater housings) already in service in the field, for replacement of identical products, in conformity to Article 1, paragraph 2, point (G) of the EU Regulation No. 813/2013;
- With boilers (heater housings) on a new installation, if they have emissions complying with the requirement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

TECHNICAL DATA

Description	Heat output		Total electrical power kW	Electric power supply		Note	Code
	kW	kg/h		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 mm²/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

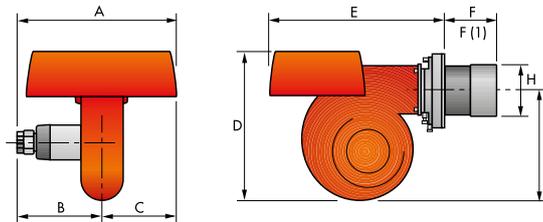


Useful working field for choosing the burner

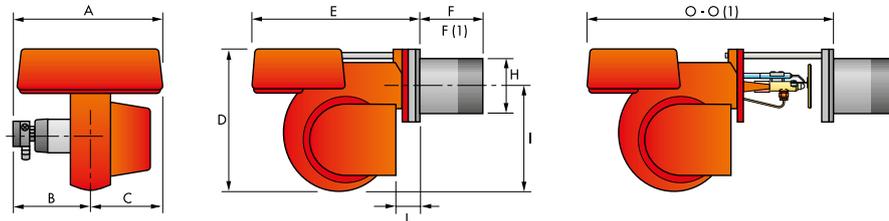
Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

PRESS G24

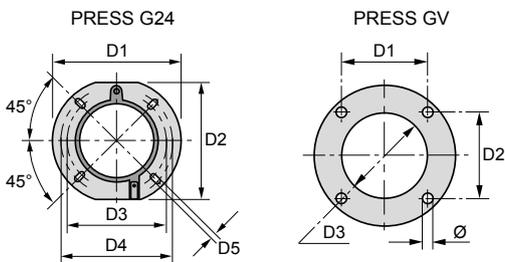


PRESS GV

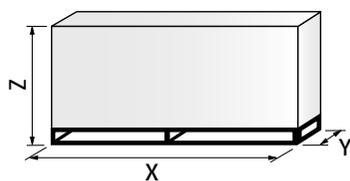


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	O - O(1) mm
PRESS G24	425	222	203	397	485	118 - 253	125	290	-	-
PRESS GV	439	234	205	397	473	185 - 320	140	292	59	690 - 825

(1) Dimension with extended head.



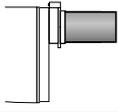
Description	D1 mm	D2 mm	D3 mm	D4 mm	D5 mm	Ø mm
PRESS G24	213	198	160	190	11	-
PRESS GV	160	160	170	-	-	M10



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 vacuumeter
 - 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 dismantling 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.

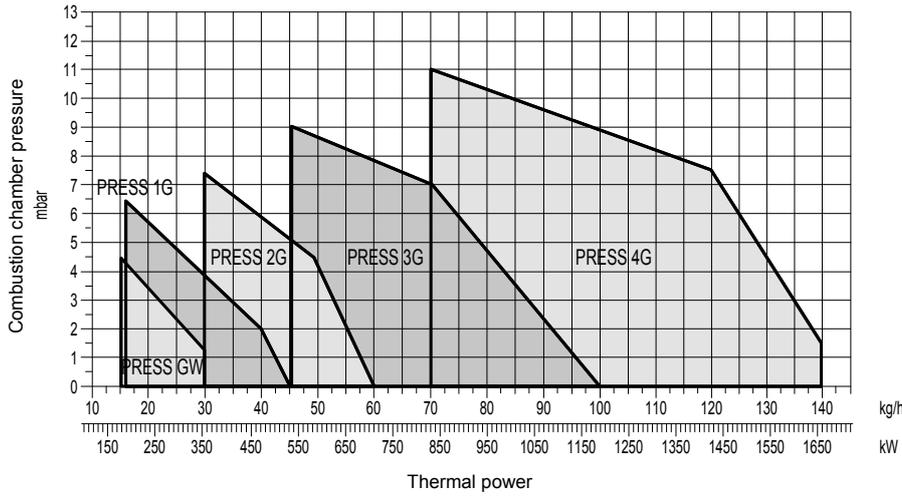
TECHNICAL DATA

Description	Heat output		Total electrical power kW	Electric power supply		Note	Code
	kW	kg/h		PhV/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 mm²/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%.

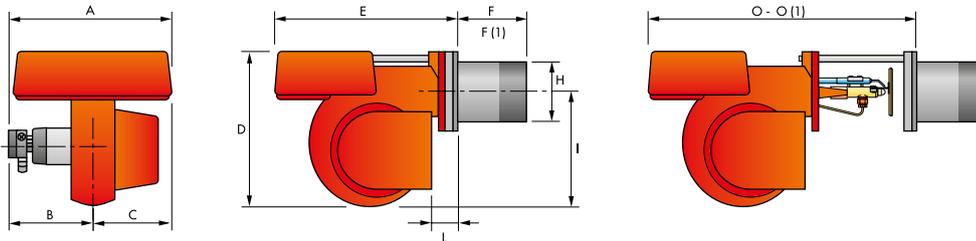
FIRING RATES



Useful working field for choosing the burner

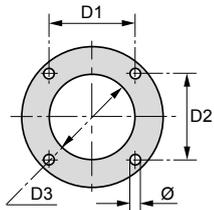
Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

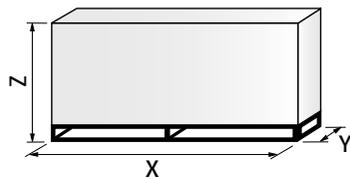


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	O - O(1) mm
PRESS GW	439	234	205	397	473	185 - 320	140	292	59	745 - 880
PRESS 1G	475	270	205	397	473	236 - 370	150	292	59	745 - 880
PRESS 2G	475	270	205	437	506	237 - 403	155	332	89	785 - 945
PRESS 3G	611	406	205	485	570	227 - 412	175	370	88	846 - 1006
PRESS 4G	675	354	316	590	720	266 - 426	205	445	175	999 - 1159

(1) Dimension with extended head.



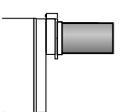
Description	D1 mm	D1 mm	D3 mm	Ø mm
PRESS GW	160	160	155	M10
PRESS 1G	160	160	165	M10
PRESS 2G	160	160	165	M10
PRESS 3G	195	195	185	M12
PRESS 4G	230	230	210	M12



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 vacuumeter
 - 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:

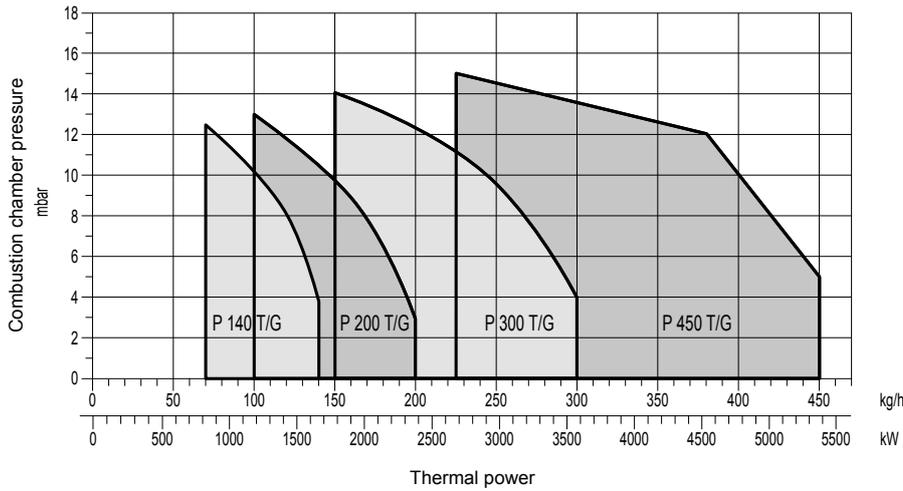
- With boilers (heater housings) already in service in the field, for replacement of identical products, in conformity to Article 1, paragraph 2, point (G) of the EU Regulation No. 813/2013;
- With boilers (heater housings) on a new installation, if they have emissions complying with the requirement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

TECHNICAL DATA

Description	Heat output		Total electrical power kW	Electric power supply		Note	Code
	kW	kg/h		PhV/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 mm²/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.

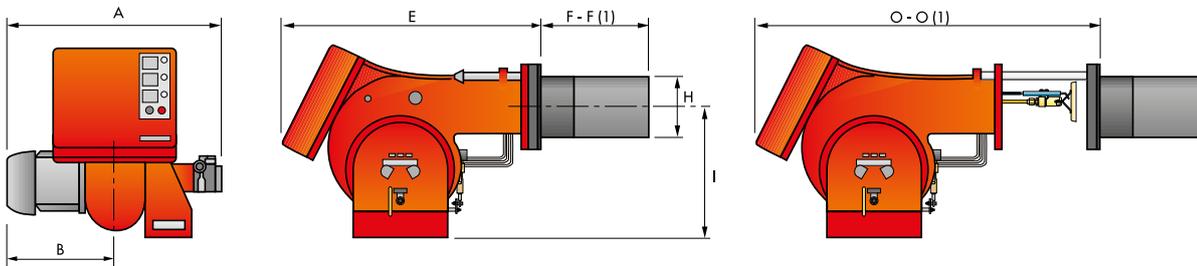
FIRING RATES



Useful working field for choosing the burner

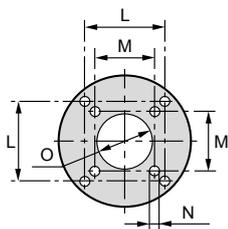
Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

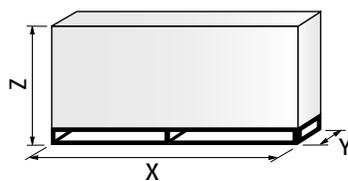


Description	A mm	B mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
P 140 T/G	765	365	890	363 - 473	222	467	1250 - 1360
P 200 T/G	796	396	890	391 - 501	250	467	1280 - 1390
P 300 T/G	858	447	1000	444 - 574	295	496	1440 - 1570
P 450 T/G	950	508	1070	476 - 606	336	525	1546 - 1676

(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
	P 140-200 T/G	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 = 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 vacuumeter
 - 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 kW	Electric power supply		Note	Code
	kW	kg/h		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 mm²/s (cSt).

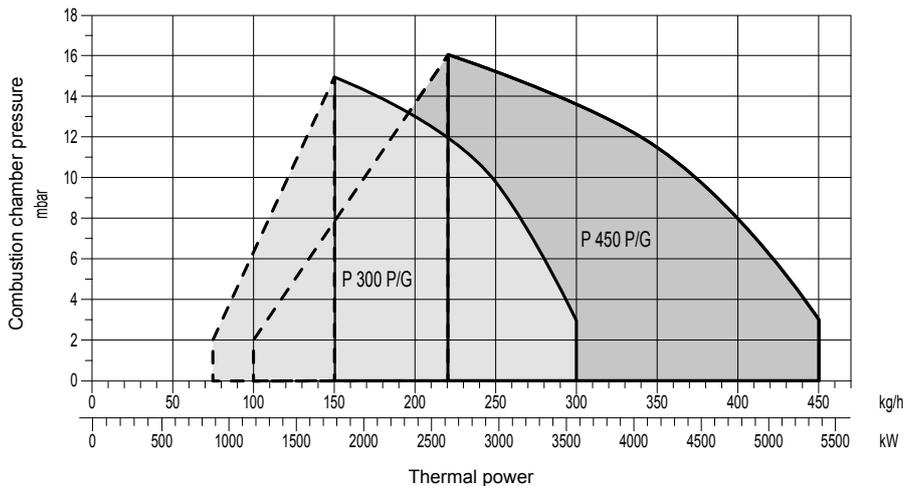
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

(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).

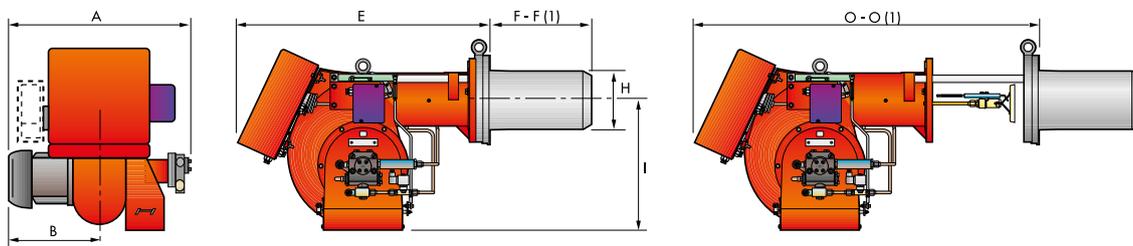
(3) Model with LFL control box.

FIRING RATES



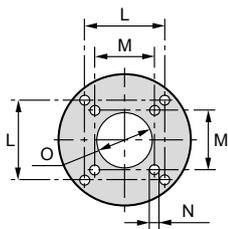
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

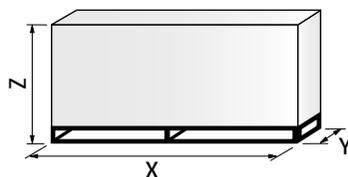


Description	A mm	B mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
P 300 P/G	858	447	1000	444 - 574	295	496	1440 - 1570
P 450 P/G	950	508	1070	476 - 606	336	525	1546 - 1676

(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
	P 300 P/G	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 = 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.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 vacuumeter
 - 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 electrical 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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)

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

MODULATING MECHANICAL CAM	 <p>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)</p> <p>page 493</p>	 <p>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)</p> <p>page 500</p>
	 <p>RLS 1000-1200/M MX RLS 1000/M MX (1200/3750-10600 kW) RLS 1200/M MX (1500/5500-11500 kW)</p> <p>page 506</p>	
MODULATING ELECTRONIC CAM	 <p>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)</p> <p>page 511</p>	 <p>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)</p> <p>page 525</p>
	 <p>RLS 810/E MX RLS 810/E MX (780/3550-7700 kW)</p> <p>page 537</p>	 <p>RLS 1000-1200/E MX RLS 1000/E MX (1200/3750-10600 kW) RLS 1200/E MX (1500/5500-11500 kW)</p> <p>page 541</p>
MODULATING ELECTRONIC CAM VARIABLE SPEED	 <p>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)</p> <p>page 518</p>	 <p>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)</p> <p>page 531</p>
	 <p>RLS 810/EV O2 MX RLS 810/EV O2 MX (780/3550-7700 kW)</p> <p>page 546</p>	 <p>RLS 1000-1200/EV MX RLS 1000/EV MX (1200/3750-10600 kW) RLS 1200/EV MX (1500/5500-11500 kW)</p> <p>page 550</p>

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 kW	Electric power supply		Certification	Note	Code	
	kW	Light oil kg/h		Natural Gas Nm ³ /h	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

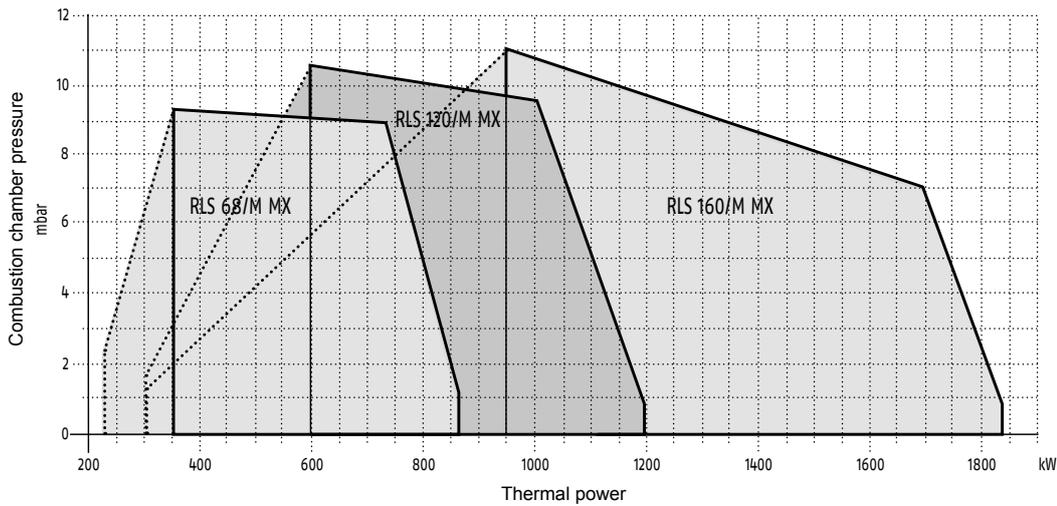
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).

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

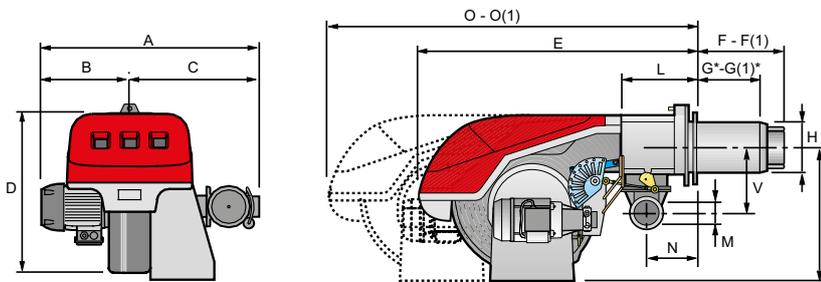


Useful firing rates for choosing the burner

Modulation range

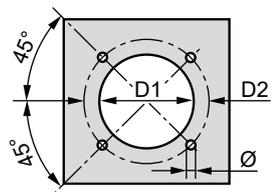
Test conditions conforming to EN267-676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

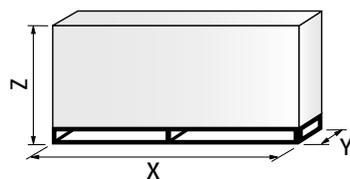


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	G* - G(1)* mm	H mm	I mm	L mm	M inch	N mm	O - O(1) mm	V mm
RLS 68/M MX	691	296	395	555	840	260 - 395	200 - 335	189	430	214	Rp 2"	134	1161 - 1300	221
RLS 120/M MX	733	338	395	555	840	260 - 395	200 - 335	189	430	214	Rp 2"	134	1161 - 1300	221
RLS 160/M MX	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

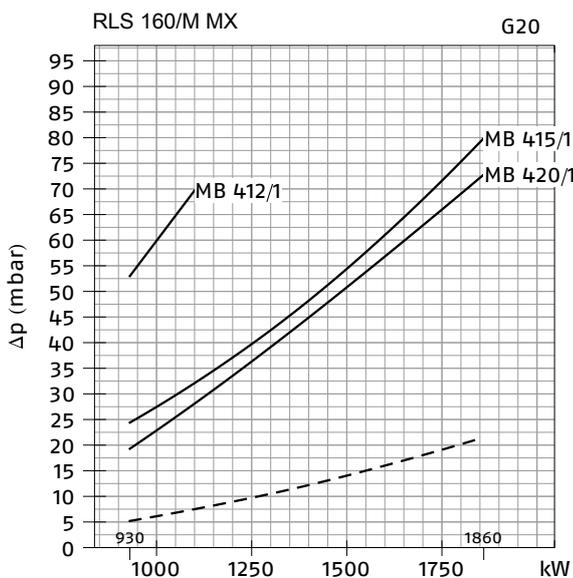
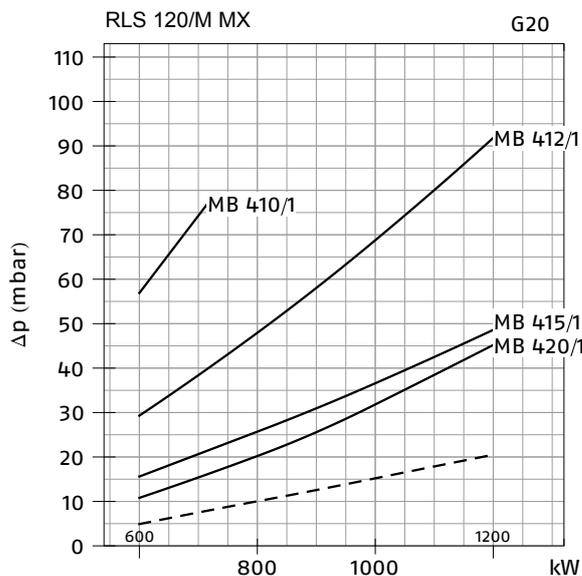
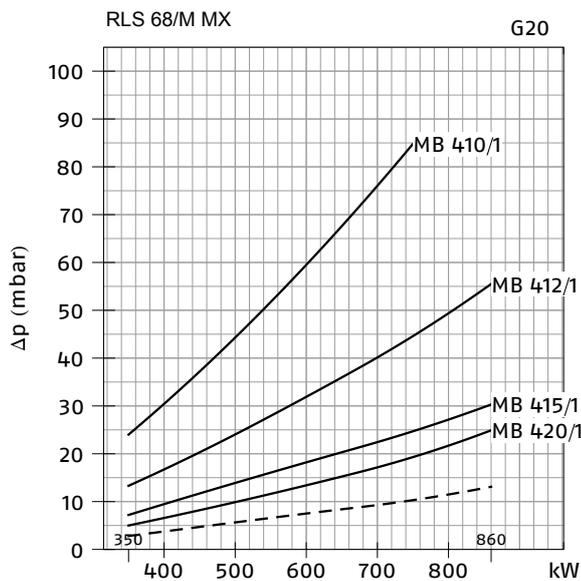


Description	X(1) mm	Y mm	Z mm	Net weight kg
RLS 68/M MX	1400	975	645	115
RLS 120/M MX	1400	975	645	120
RLS 160/M MX	1400	975	645	135

(1) Length with short and extended head.

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN



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

LIGHT OIL

DUAL FUEL

HEAVY OIL

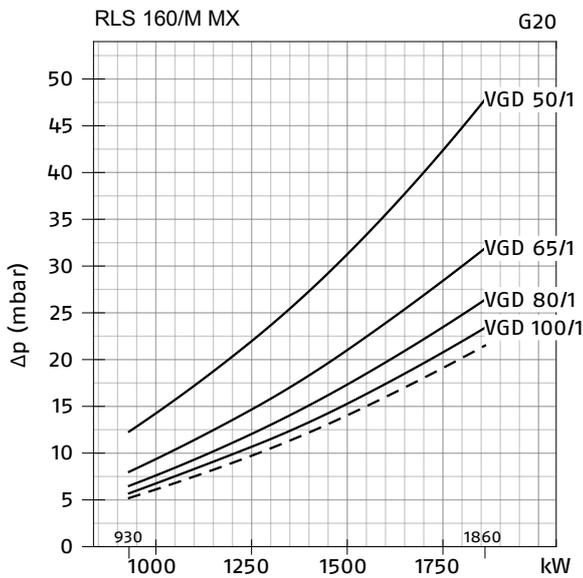
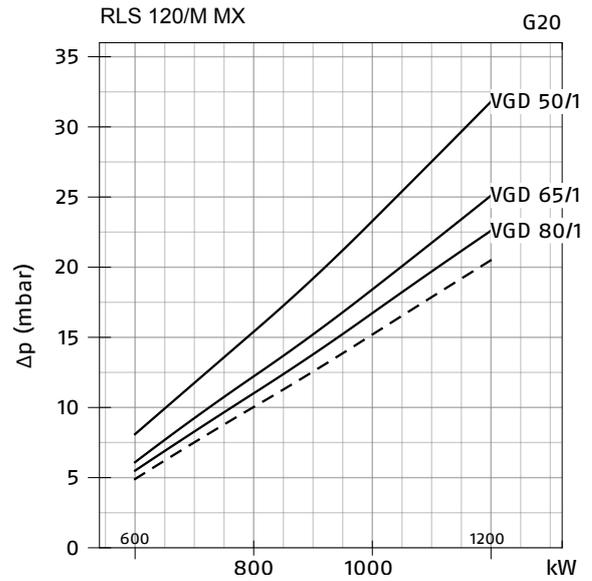
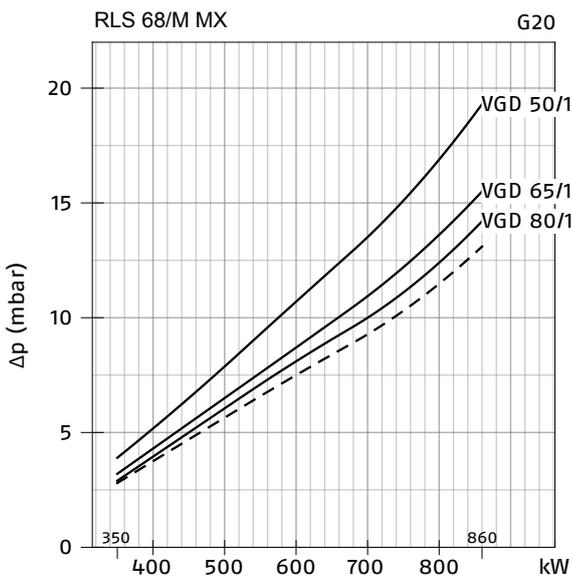
VGD SERIES GAS TRAIN

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL



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.

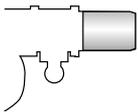
** 230V/50Hz electrical supply.

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
	RLS 68-120/M MX	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 = 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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
	28.00	118.8	20018051	

NOTE: each burner needs n. 2 nozzles.

(*) Nozzle rated delivery is referred 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 kW	Electric power supply		Certification	Note	Code	
	Light oil kg/h	Natural Gas (Nm ³ /h)		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.

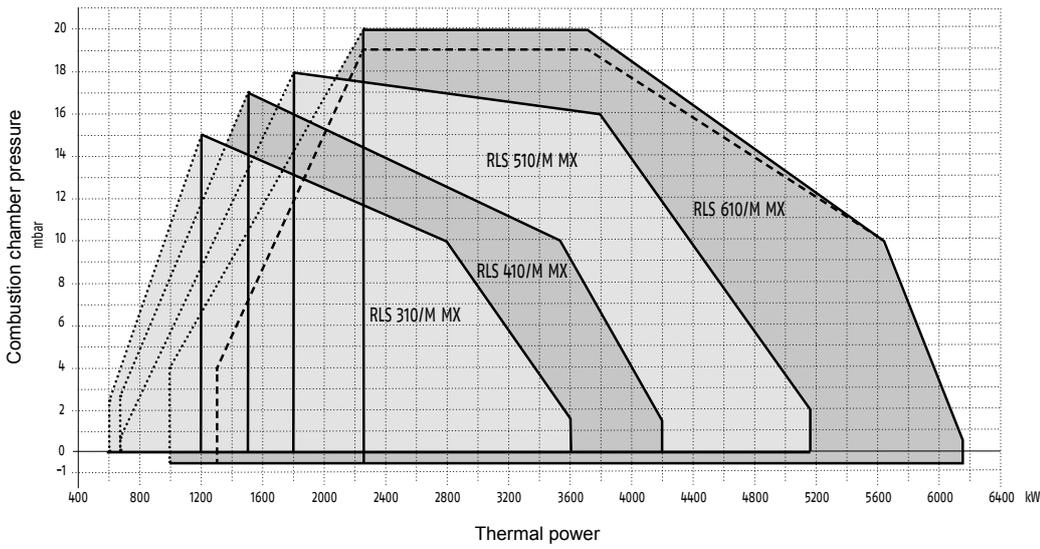
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 - EN 676 Standards.

(1) Model with LFL control box.

(2) Direct starter

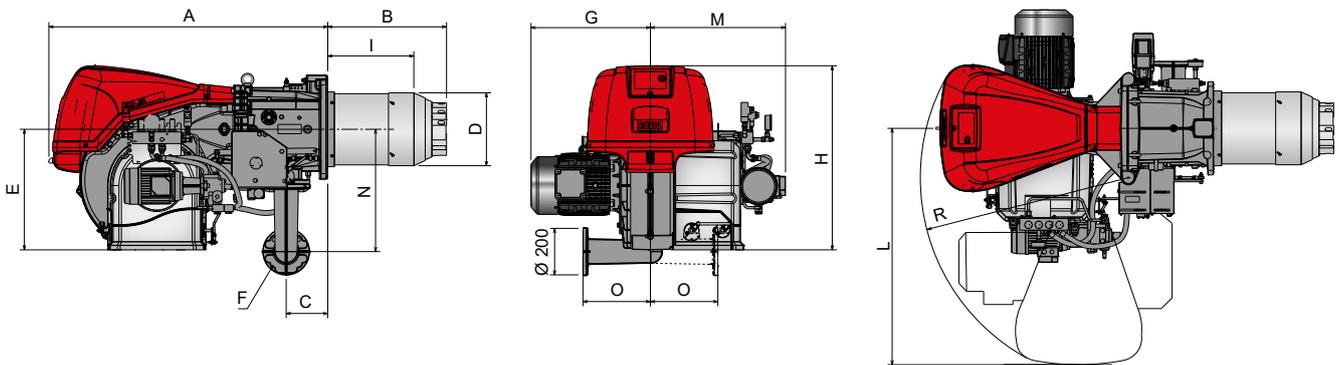
(3) Start/delta starter

FIRING RATES

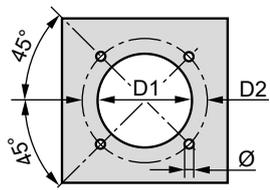


Useful firing rates for choosing the burner
 Modulation range
 Test conditions conforming to EN267-676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.
 Light-oil firing rate for RLS 610 model (min. output 1.300 kW)

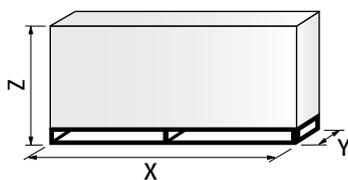
OVERALL DIMENSIONS



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

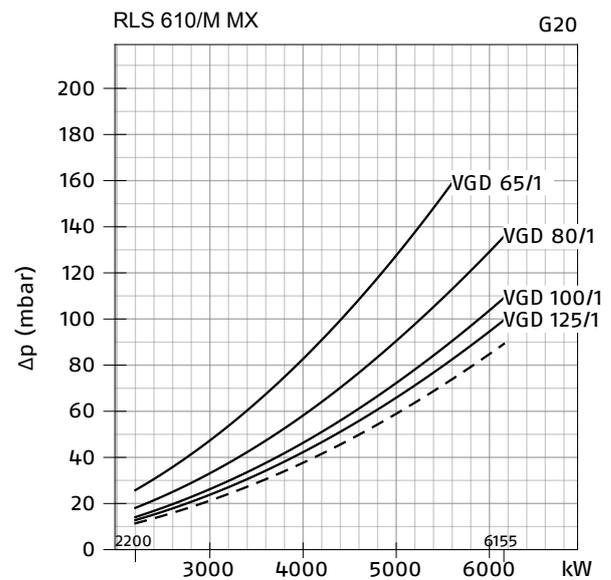
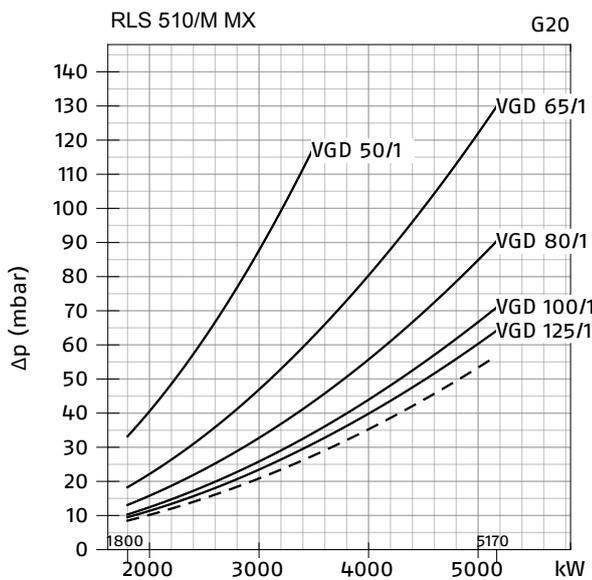
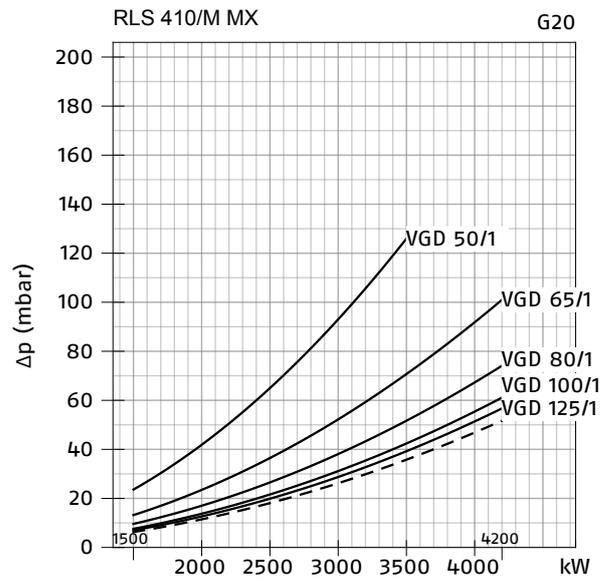
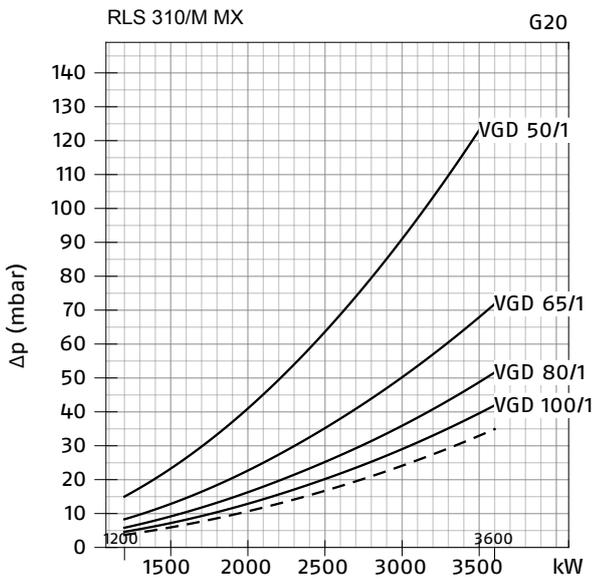
VGD SERIES GAS TRAIN

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL



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. RWF 55.5 - Complete with RS-485 interface. RWF 55.6 - Complete with RS-485/PROFIBUS interface.		20073595 20074441 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. 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).		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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Certification	Code
	kW	Light oil kg/h		Natural Gas (Nm ³ /h)	PhV/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 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.

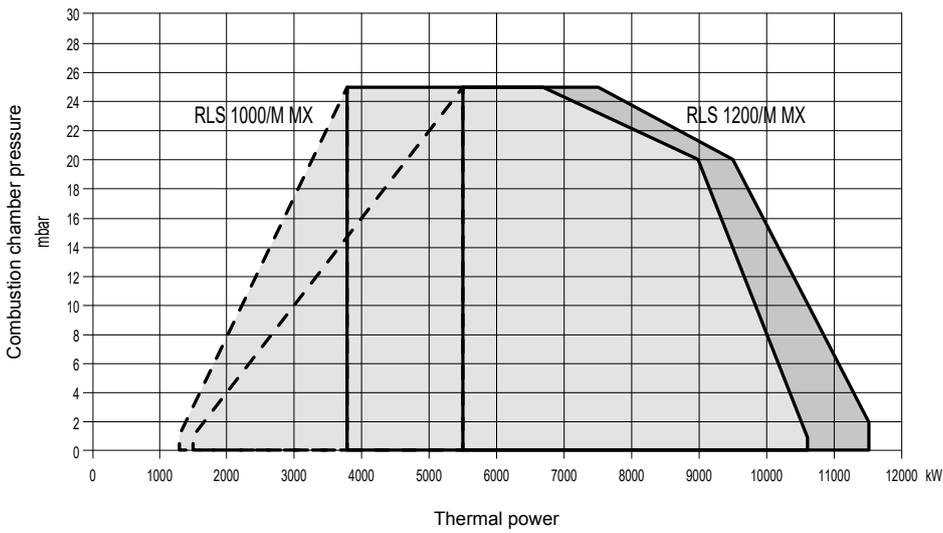
GAS

LIGHT OIL

DUAL FUEL

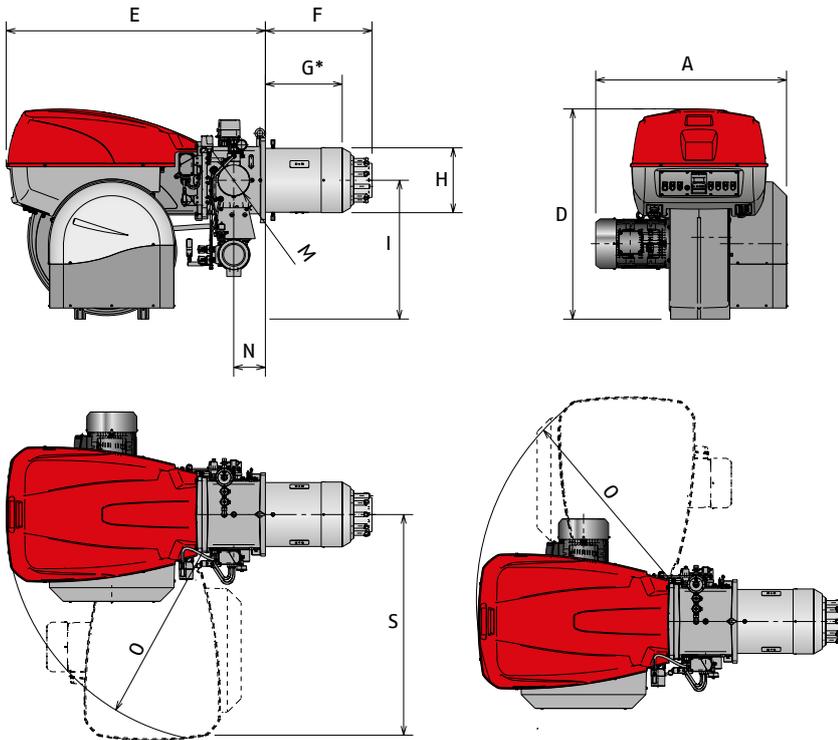
HEAVY OIL

FIRING RATES



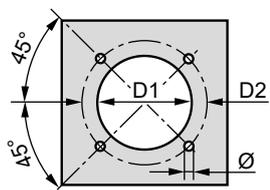
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN 267-EN 676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

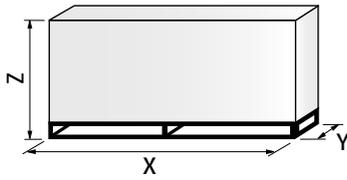


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M inch	N mm	O mm	S mm
RLS 1000/M MX	1206	1338	1637	674	484	413	885	DN80	200	1350	1425
RLS 1200/M MX	1250	1338	1637	658	465	456	885	DN80	200	1350	1425

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



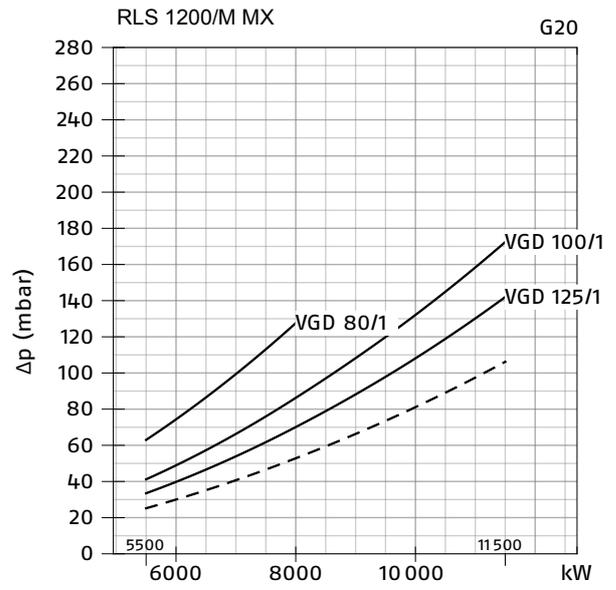
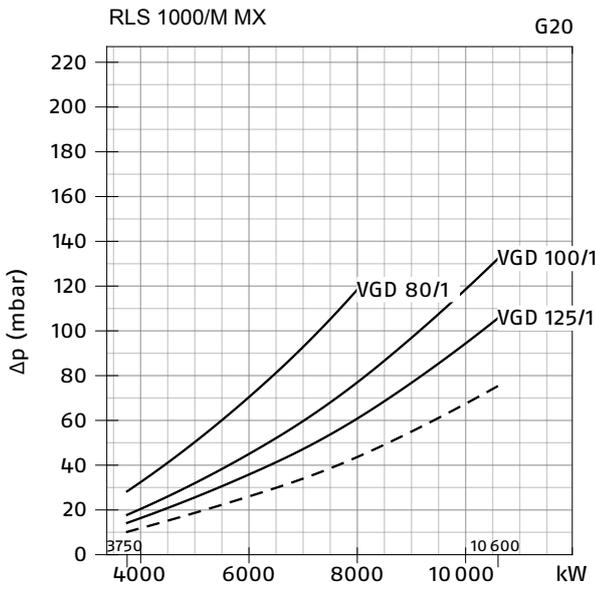
Description	D1 mm	D2 mm	Ø mm
RLS 1000/M MX	460	608	M20
RLS 1200/M MX	500	608	M20



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.	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 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 kW	Electric power supply		Certification	Note	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		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

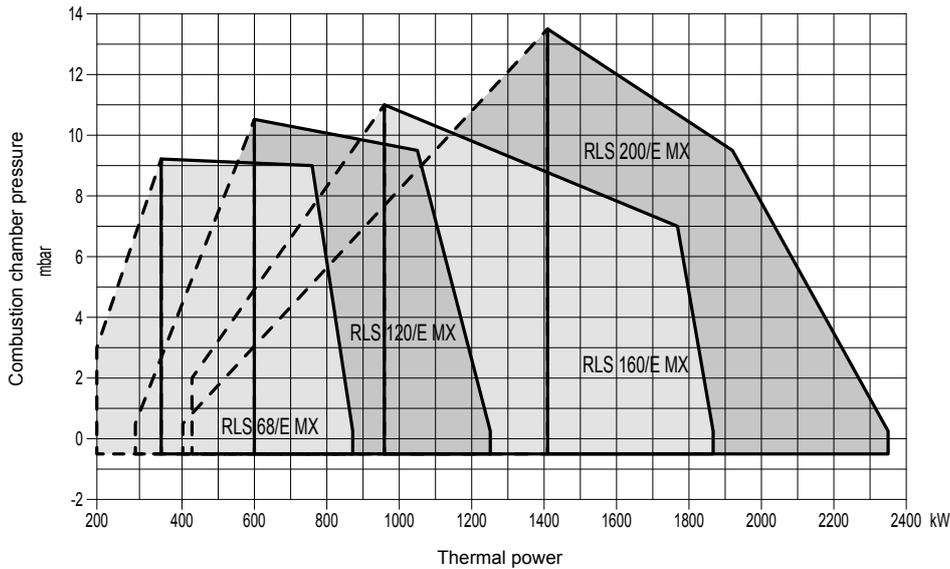
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).

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.

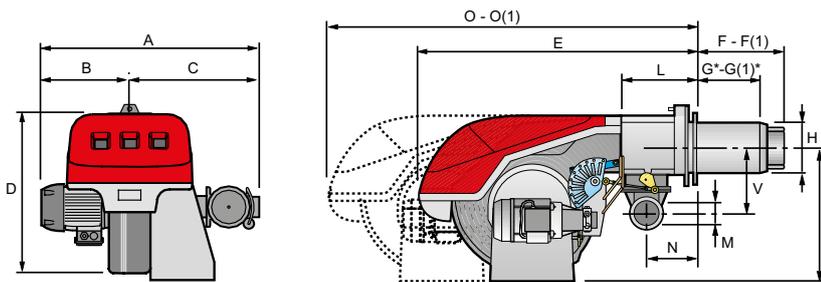
(1) Model with plug and socket.

FIRING RATES



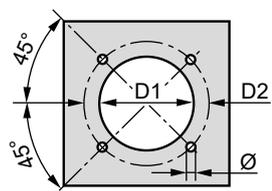
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN 267-EN 676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

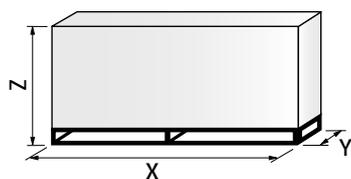


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	G* - G(1)* mm	H mm	I mm	L mm	M inch	N mm	O - O(1) mm	V mm
RLS 68/E MX	745	350	395	585	860	260 - 395	200 - 335	189	430	214	Rp 2"	134	1161 - 1300	221
RLS 120/E MX	765	370	395	585	860	260 - 395	200 - 335	189	430	214	Rp 2"	134	1161 - 1300	221
RLS 160/E MX	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

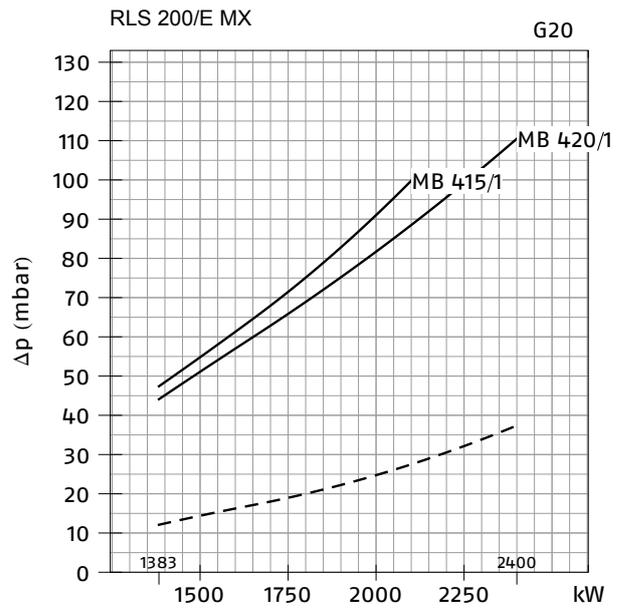
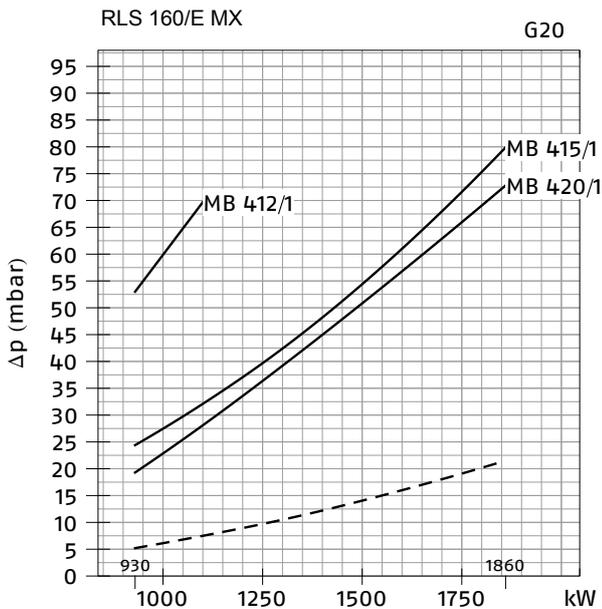
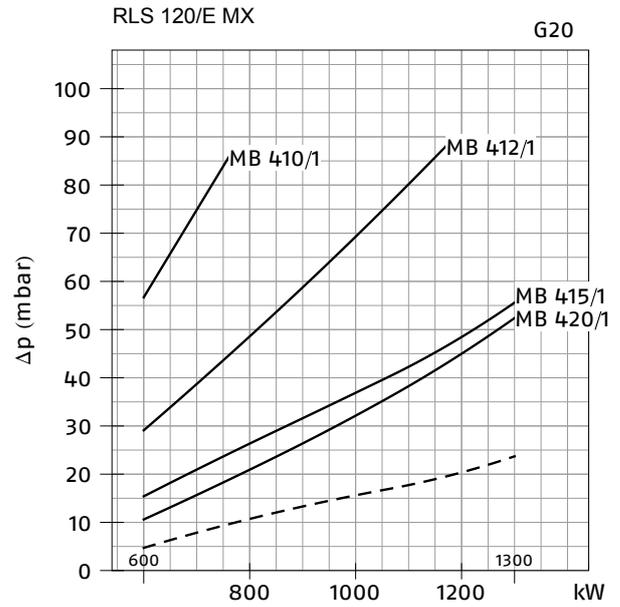
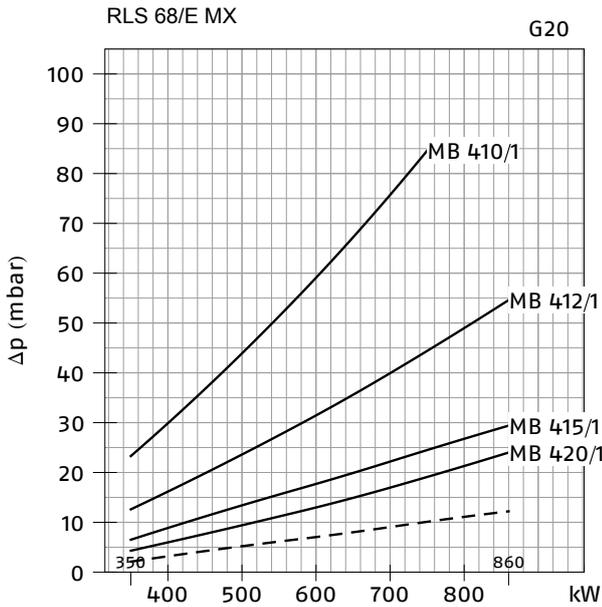


Description	X(1) mm	Y mm	Z mm	Net weight kg
RLS 68/E MX	1400	975	645	115
RLS 120/E MX	1400	975	645	120
RLS 160/E MX	1400 - 1500 (2)	975	645	135
RLS 200/E MX	1400 - 1500 (2)	975	645	135

(1) Length with standard and extended combustion head.
 (2) Length with extended combustion head.

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN



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

LIGHT OIL

DUAL FUEL

HEAVY OIL

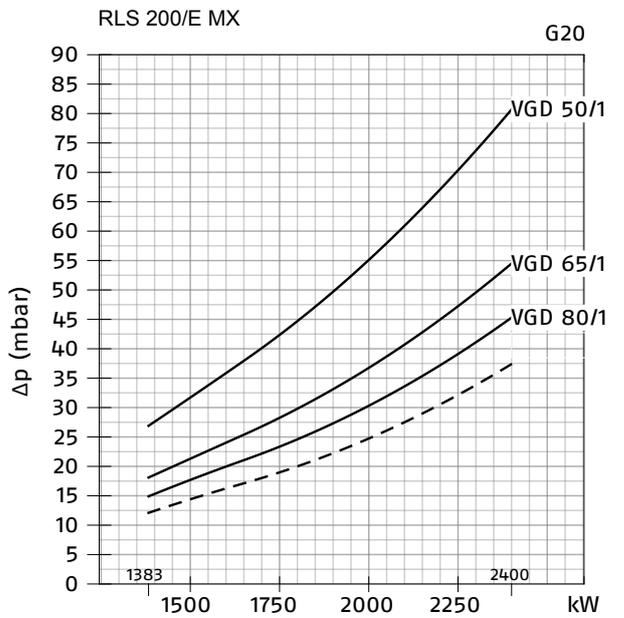
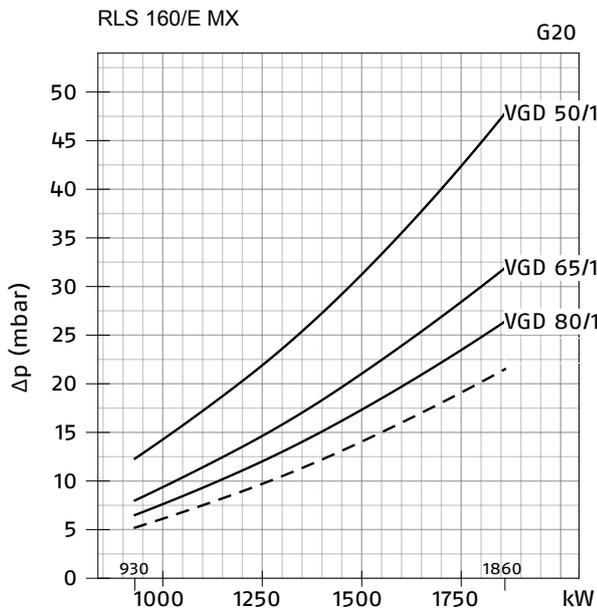
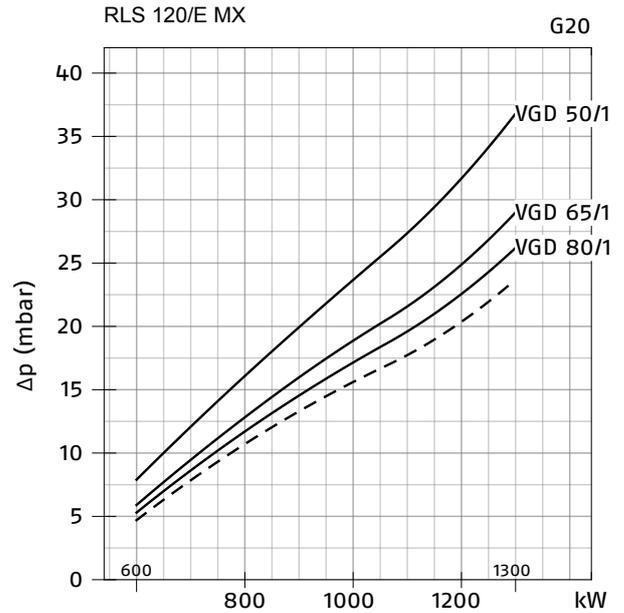
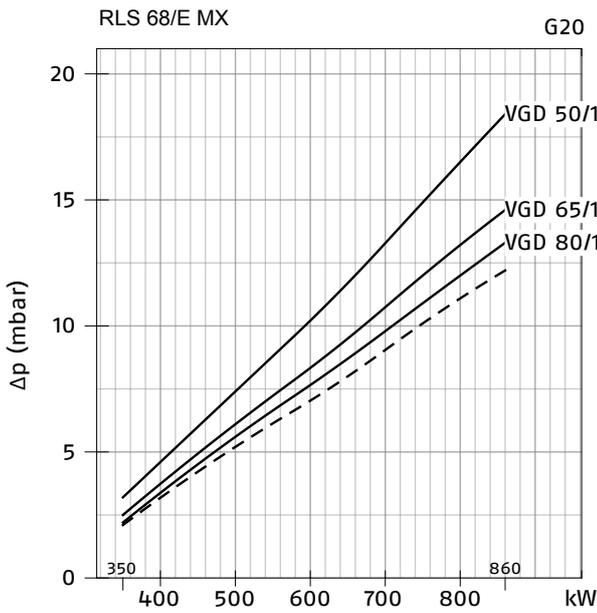
VGD SERIES GAS TRAIN

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL



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

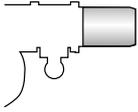
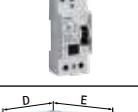
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)			
					RLS 68/E MX	RLS 120/E MX	RLS 160/E MX	RLS 200/E MX
MB SERIES ONE STAGE GAS TRAIN								
MB 410/1-RT 52	3970258*		Rp 1" ¼		3000824+3000843	•	•	
MB 410/1-RT 20	3970554*		Rp ¾"		3000824+3000843	•	•	
MB 410/1-RT 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
	RLS 68-120/E MX RLS 160/E MX RLS 200/E MX	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 = 260 mm - Extended head length = 395 mm Standard head length = 373 mm - Extended head length = 503 mm Standard head length = 373 mm - Extended head length = 503 mm		20198595 (1) (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.		20099869
		RWF 50.2 - Standard 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.		3010213
		Pressure (0-2.5 bar) with 4-20 mA output.		3010214
		Pressure (0-16 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 kW	Electric power supply		Certification	Note	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		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

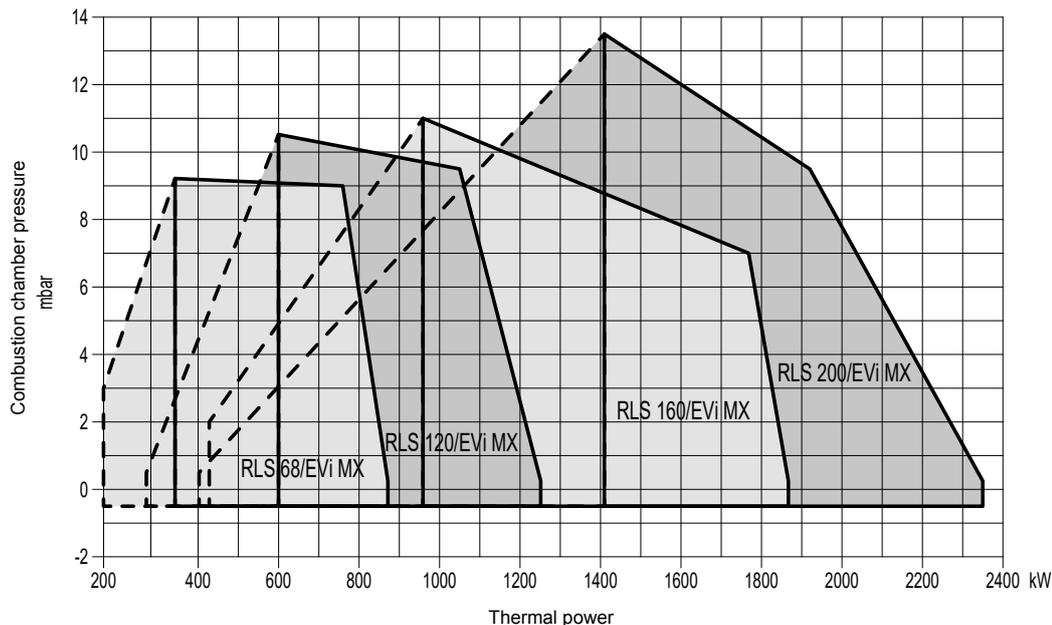
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).

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.

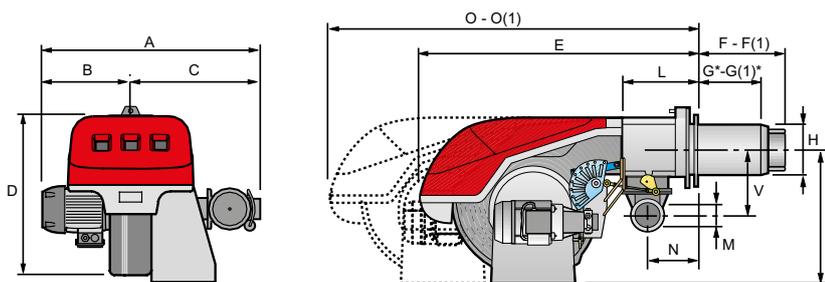
(1) Model with plug and socket.

FIRING RATES



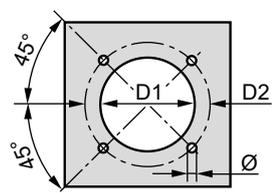
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN 267-EN 676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

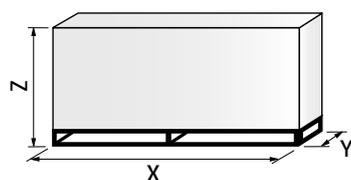


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	G* - G(1)* mm	H mm	I mm	L mm	M inch	N mm	O - O (1) mm	V mm
RLS 68/Evi MX	745	350	395	585	860	260 - 395	200 - 335	189	430	214	Rp 2"	134	1161 - 1300	221
RLS 120/Evi MX	765	370	395	585	860	260 - 395	200 - 335	189	430	214	Rp 2"	134	1161 - 1300	221
RLS 160/Evi 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

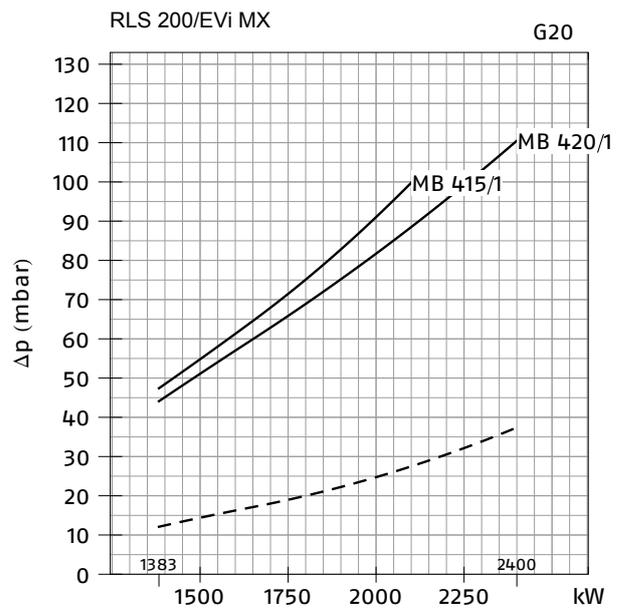
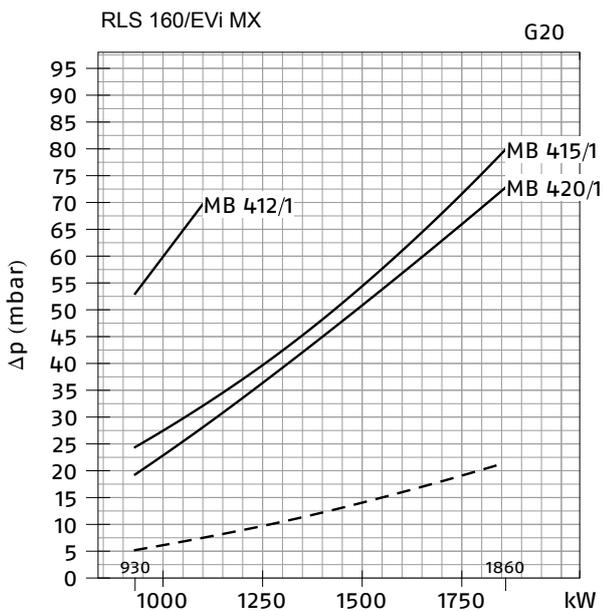
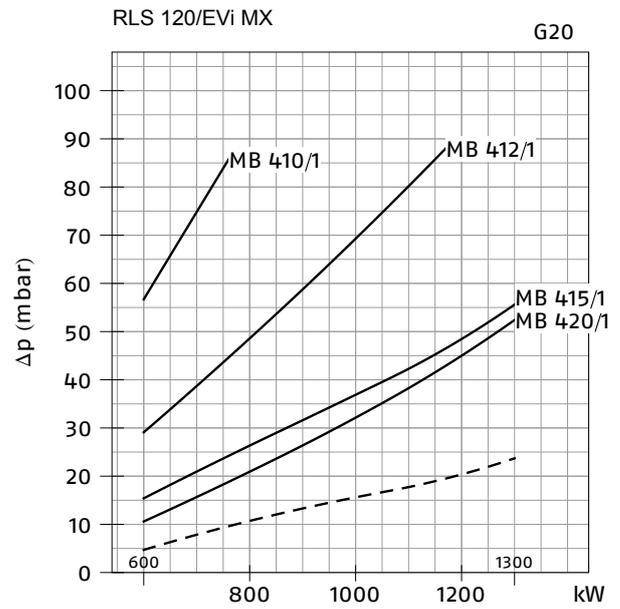
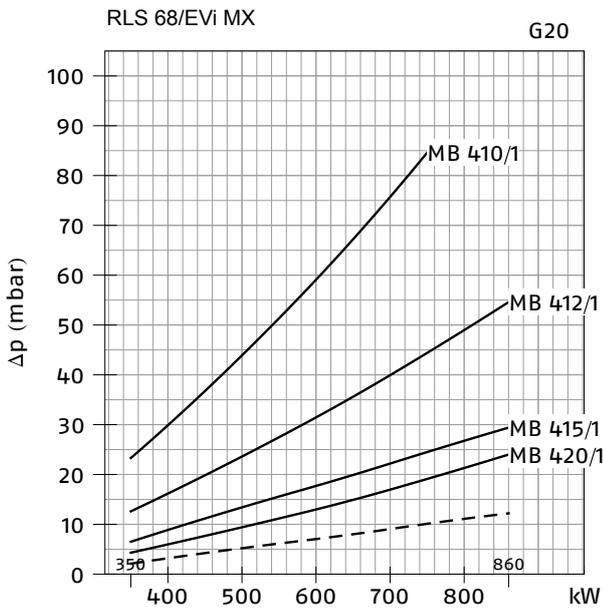
MB SERIES GAS TRAIN

GAS

LIGHT OIL

DUAL FUEL

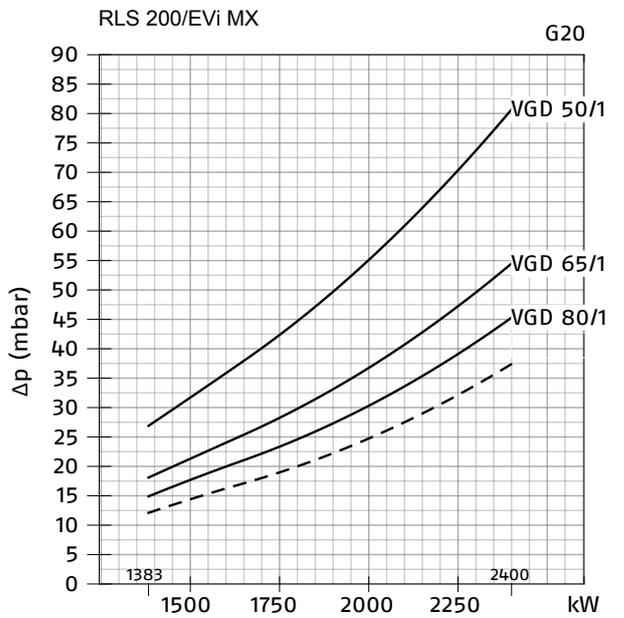
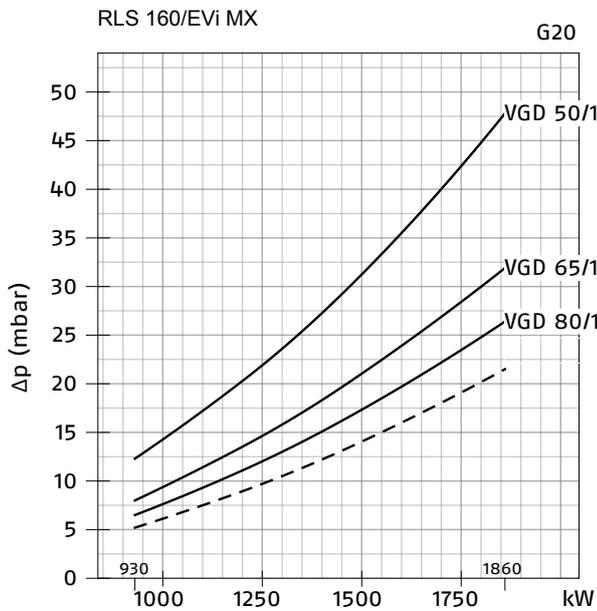
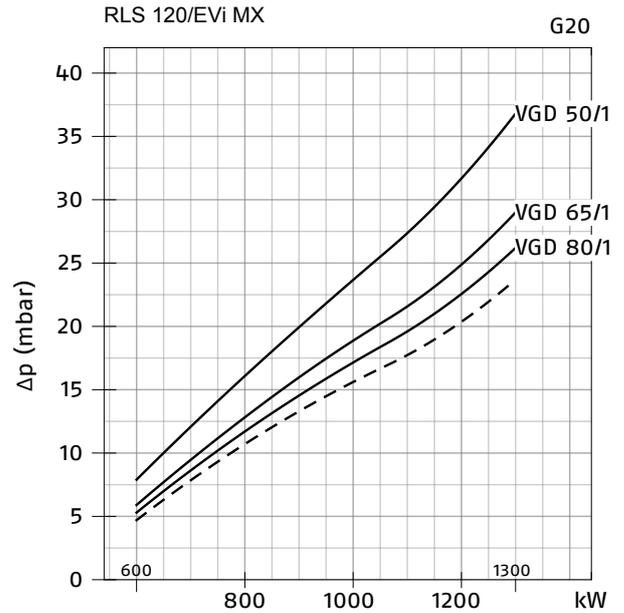
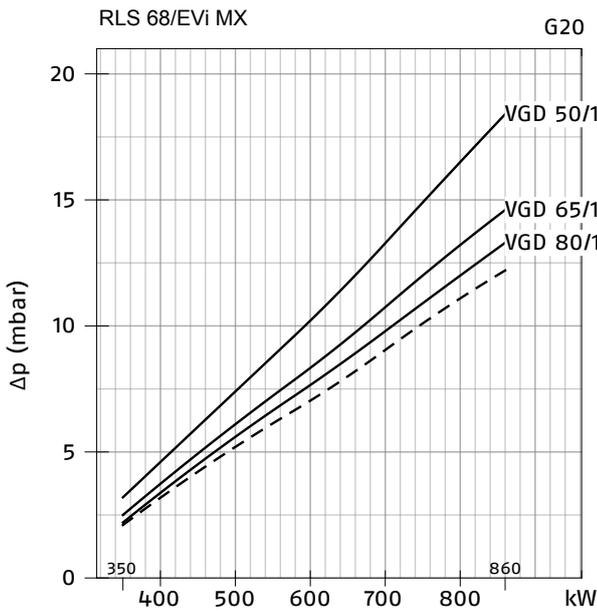
HEAVY OIL



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

LIGHT OIL

DUAL FUEL

HEAVY OIL

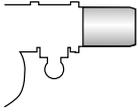
GAS TRAINS

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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Certification	Note	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		PhV/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) - O₂ CONTROL READY									
RLS 310/E O₂ 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 O₂ 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 O₂ 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 O₂ 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.

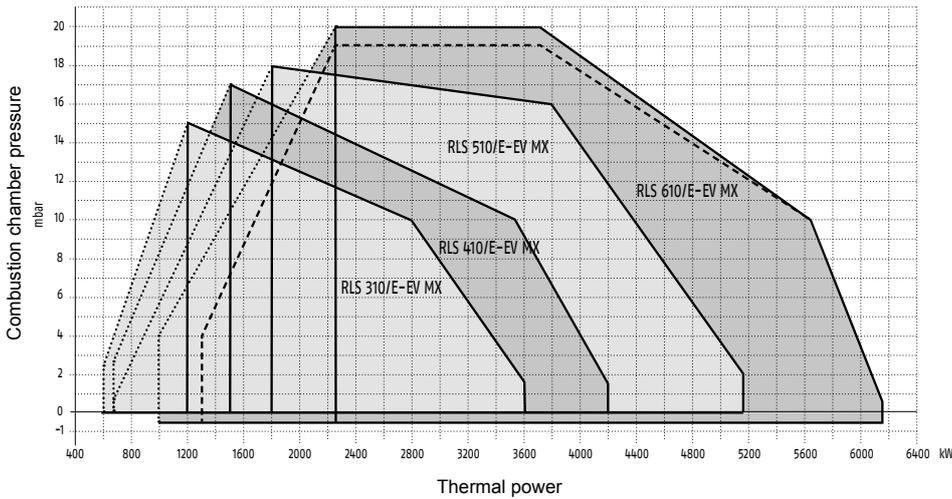
(2) Direct starter.

(3) The frequency converter for variable speed drive (VSD) operation must be ordered as Accessory (see Accessories paragraph).

(4) The QGO₂ oxygen analyzer with relevant probe must be ordered as Accessory (see Accessories paragraph).

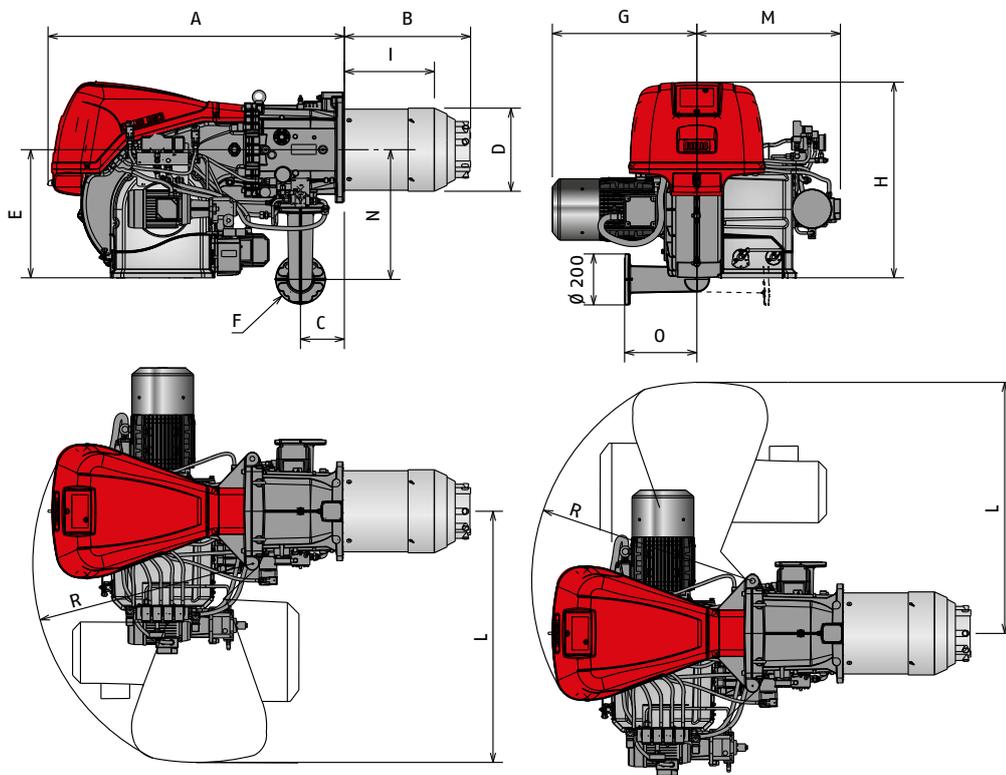
For more information, please contact Riello Burners Commercial and Technical Department.

FIRING RATES

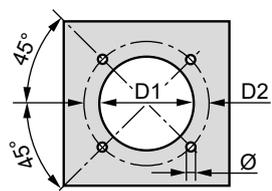


Useful working field for choosing the burner
 Light-oil firing rate for RLS 610/E MX model
 Modulation range
 Test conditions conforming to EN 267-EN 676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

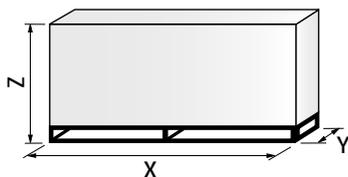
OVERALL DIMENSIONS



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



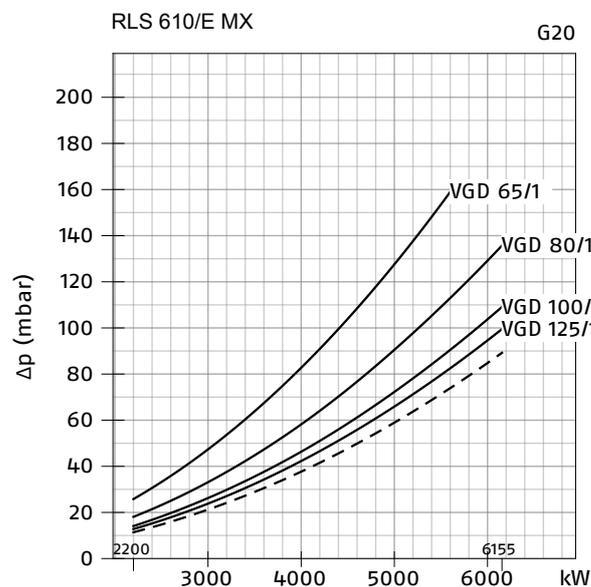
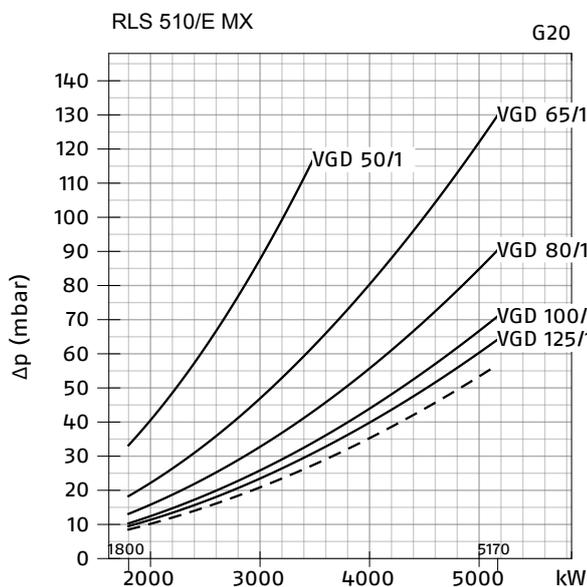
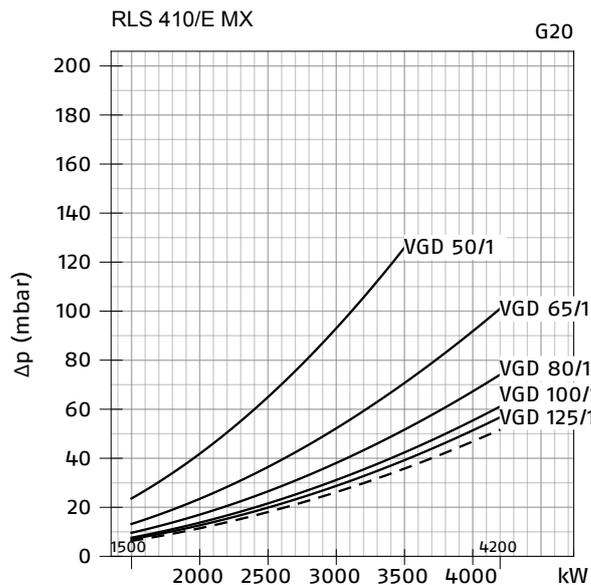
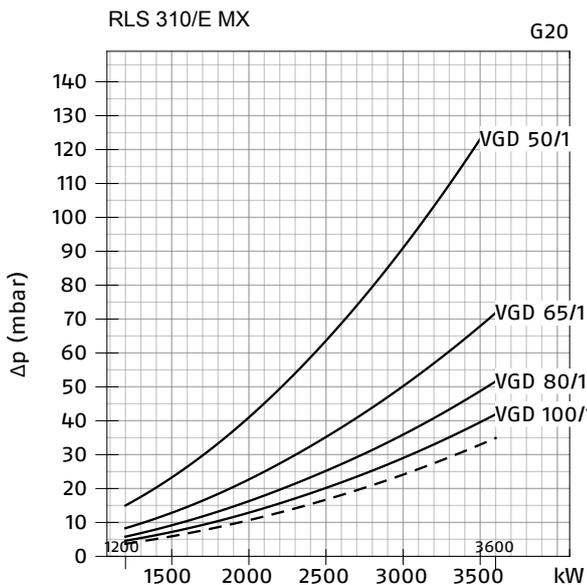
Description	D1 mm	D2 mm	Ø mm
RLS 310/E MX	335	452	M18
RLS 410/E MX	335	452	M18
RLS 510/E MX	335	452	M18
RLS 610/E MX	350	452	M18



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



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

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 (QGO₂) The QGO ₂ is an oxygen analyzer 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 kW	Electric power supply		Certification	Note	Code
	kW	Light oil kg/h		Natural Gas (Nm ³ /h)	Ph/V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (LMV 52) - O₂ CONTROL READY - OPERATION WITH VARIABLE SPEED DRIVE (VSD)								
RLS 310/EV O₂ 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 O₂ 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 O₂ 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 O₂ 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.

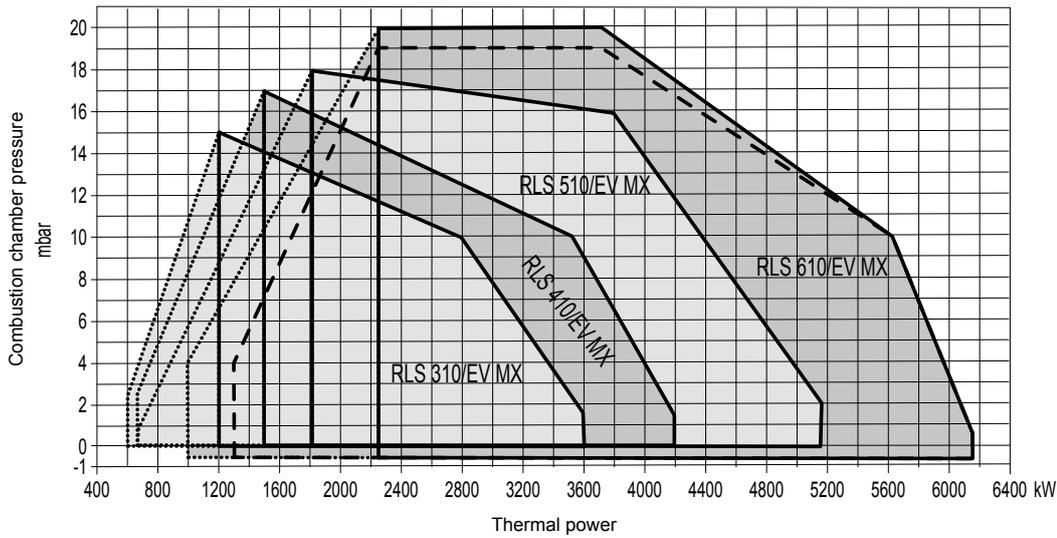
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 - EN 676 Standards.

For more information, please contact Riello Burners Commercial and Technical Department.

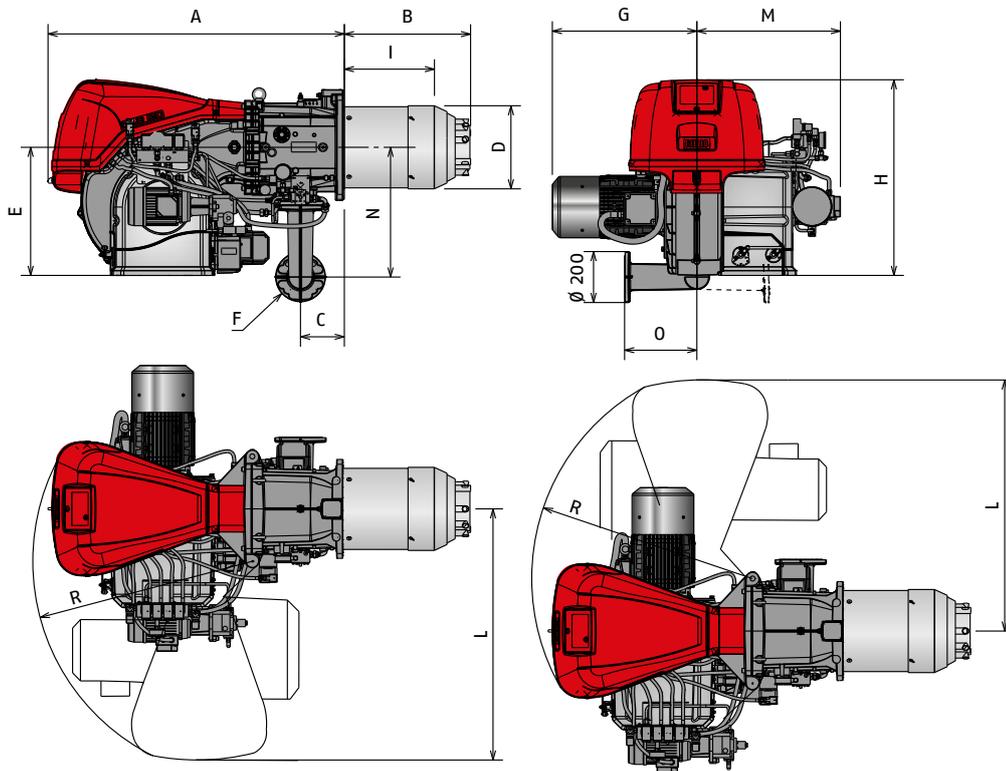
(1) The frequency converter for variable speed drive (VSD) operation must be ordered as Accessory (see Accessories paragraph).

(2) The QGO₂ oxygen analyzer with relevant probe must be ordered as Accessory (see Accessories paragraph).

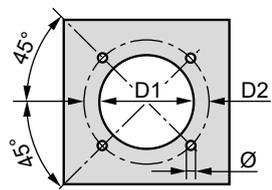
FIRING RATES



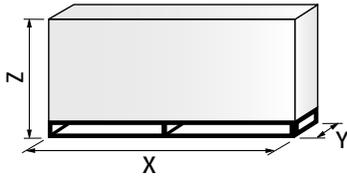
OVERALL DIMENSIONS



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



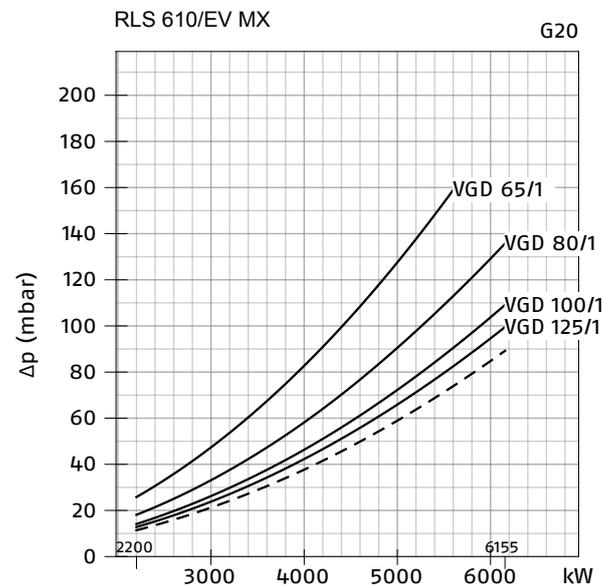
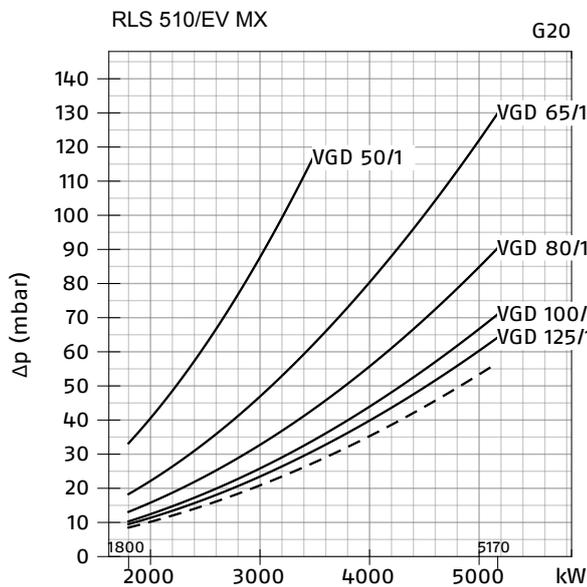
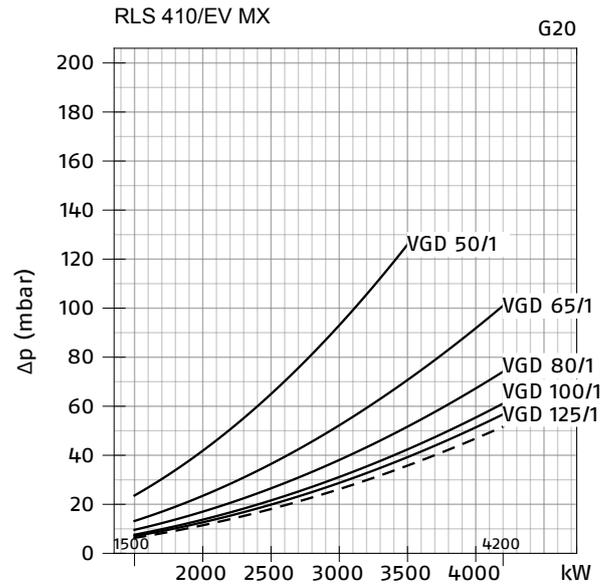
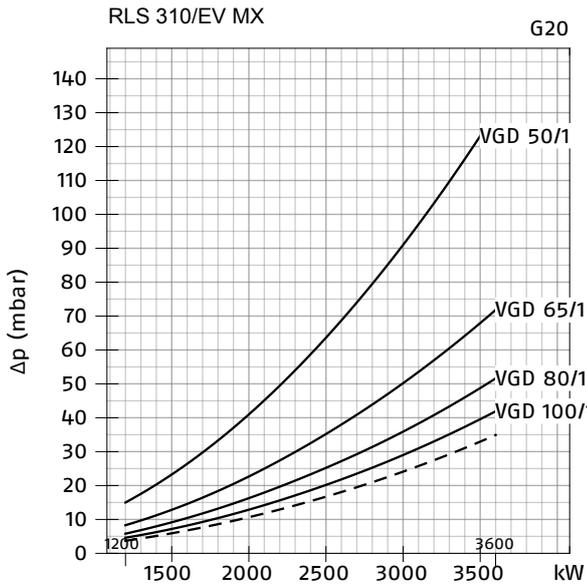
Description	D1 mm	D2 mm	Ø mm
RLS 310/EV MX	335	452	M18
RLS 410/EV MX	335	452	M18
RLS 510/EV MX	335	452	M18
RLS 610/EV MX	350	452	M18



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



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

LIGHT OIL

DUAL FUEL

HEAVY OIL

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

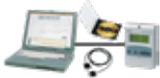
Drawing	Burner model	Specification	Note	Code
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 180 mm		20008903
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation 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. RWF 55.5 - Complete with RS-485 interface. RWF 55.6 - Complete with RS-485/ PROFIBUS interface.		20085417 20074441 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. Pressure (0-16 bar) with 4-20 mA output. Pressure (0-25 bar) with 4-20 mA output.		3010213 3010214 3090873
	All models	OXYGEN CONTROL KIT (QGO₂) The QGO ₂ is an oxygen analyzer 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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, O₂ 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL



- 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 to 7700 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 kW	Electric power supply		Certification	Note	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		PhV/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

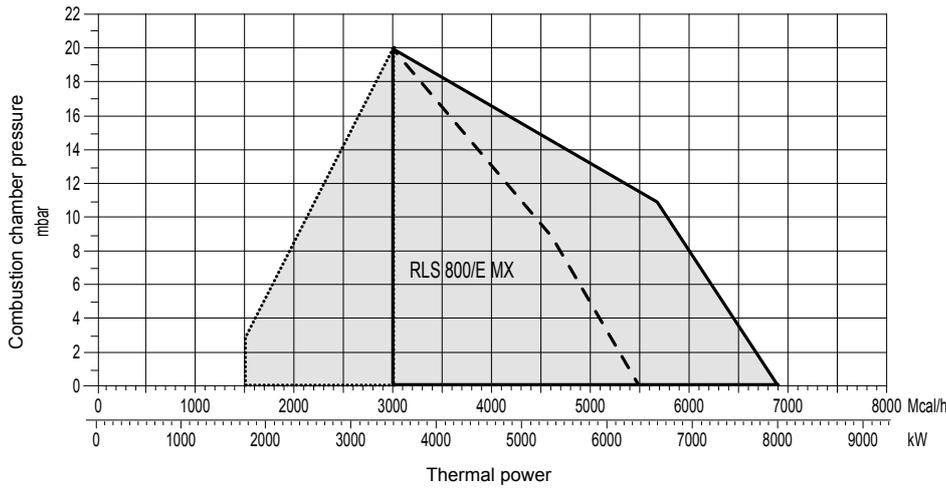
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).

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.

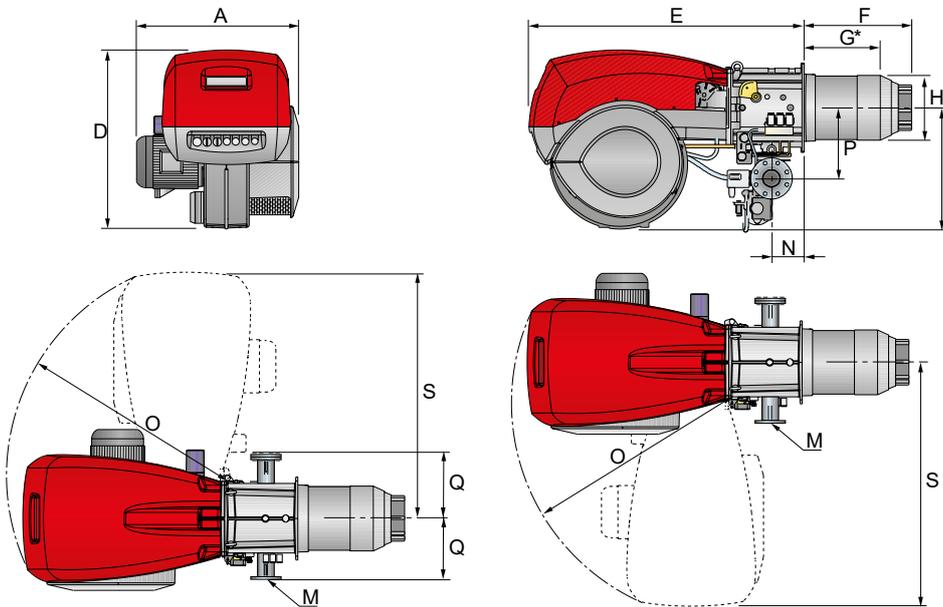
(1) The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

FIRING RATES



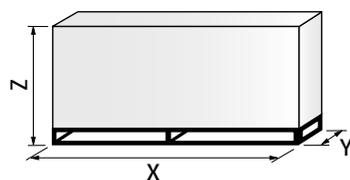
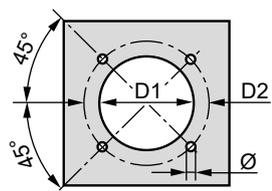
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN 267-EN 676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

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.

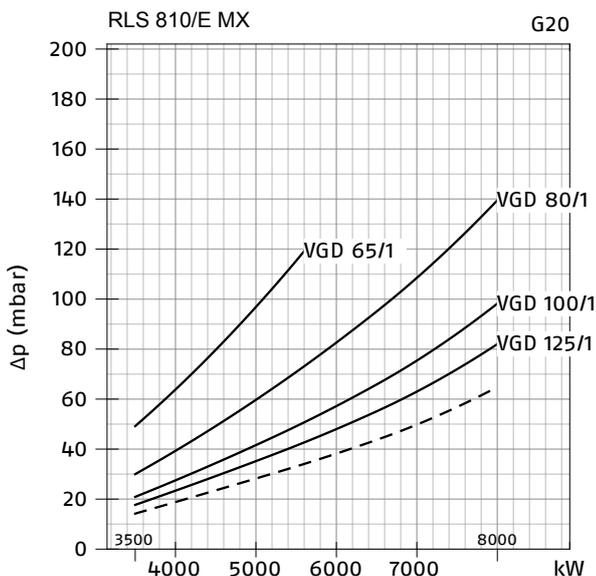


Description	D1 mm	D2 mm	Ø mm
RLS 810/E MX	440	495	M18

Description	X mm	Y mm	Z mm	Net weight kg
RLS 810/E MX	2190	1110	1450	320

PRESSURE LOSS DIAGRAMS

VG D 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

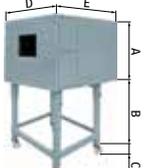
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)
						RLS 810/E MX
VG D SERIES ONE STAGE GAS TRAIN						
VG D 65/1-FT 122	20140762*	(5)	DN65	-	3010123	20059331 / (3010222+20059331)
VG D 80/1-FT 122	20140763*		DN80	-	3010123	20059331 / (3010222+20059331)
VG D 100/1-FT 122	20169193*		DN100	-	3010123	20059332 / (3010223+20059331)
VG D 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

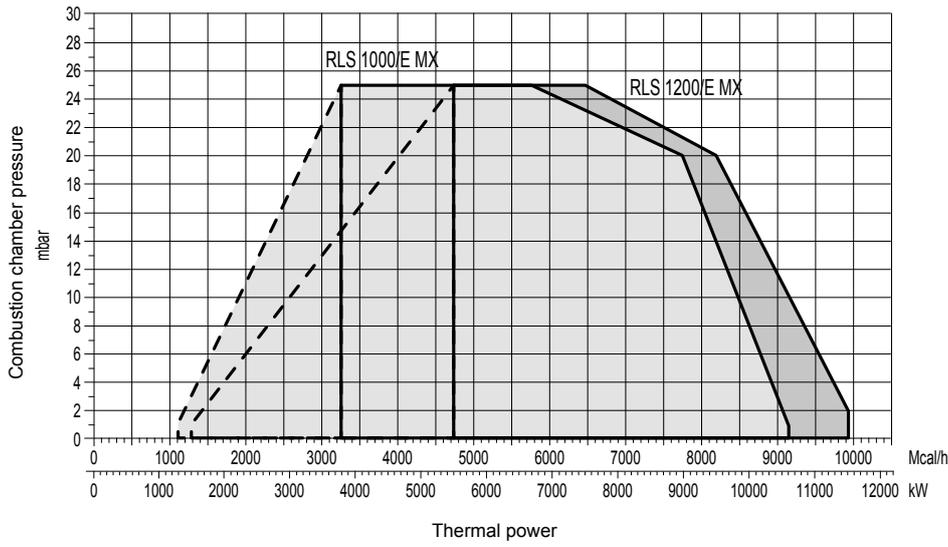
Description	Heat output			Total electrical power kW	Electric power supply		Certification	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		PhV/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (LMV 51)								
RLS 1000/E MX TC FS1	1200/3750-10600	110/320-793	130/380-940	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.

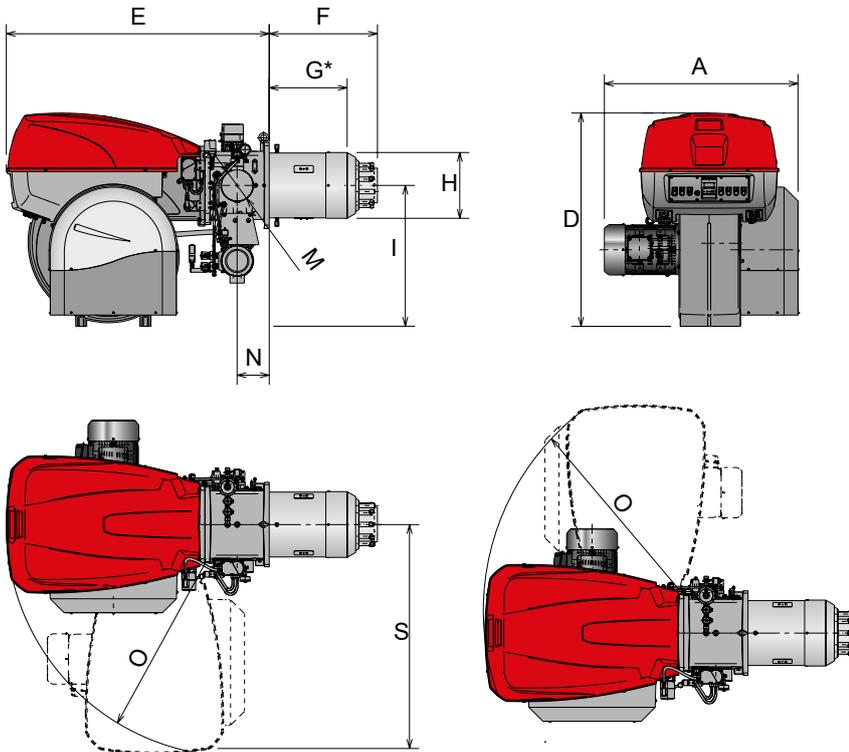
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 - EN 676 Standards.

FIRING RATES



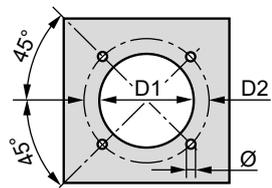
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN 267-EN 676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

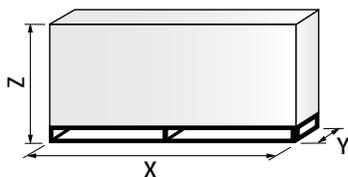


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M inch	N mm	O mm	S(1) mm
RLS 1000/E MX	1206	1338	1637	674	484	413	885	DN80	200	1350	1425
RLS 1200/E MX	1250	1338	1637	658	465	456	885	DN80	200	1350	1425

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



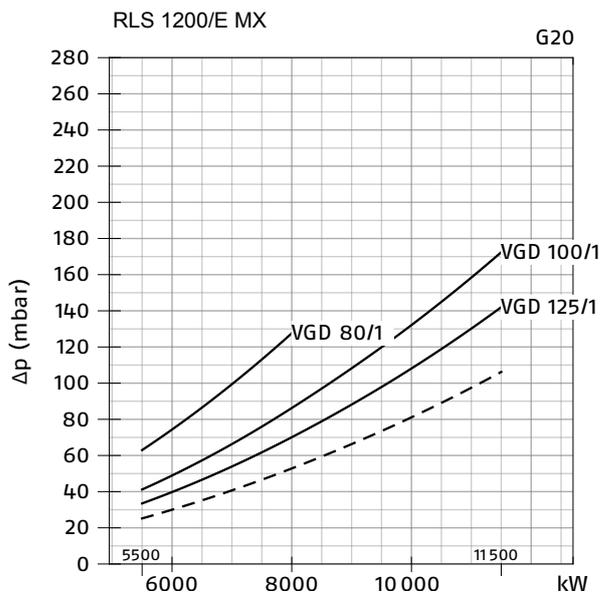
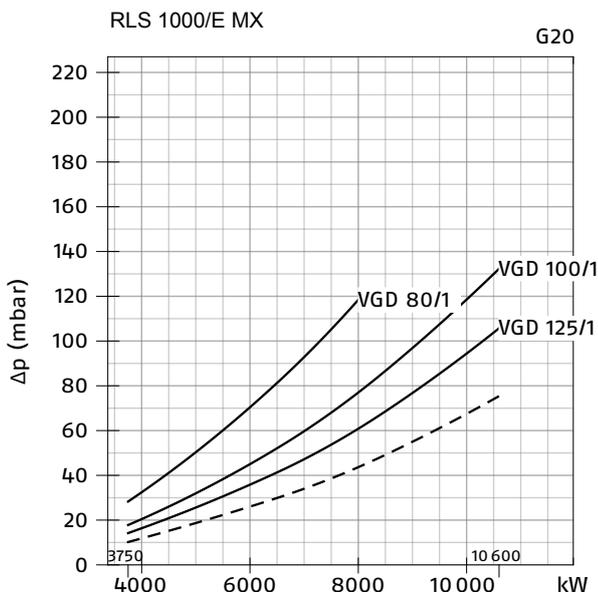
Description	D1 mm	D2 mm	Ø mm
RLS 1000/E MX	460	608	M20
RLS 1200/E MX	500	608	M20



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



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	<input type="checkbox"/>	<input type="checkbox"/>
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.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

- 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 to 7700 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 kW	Electric power supply		Certification	Note	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		PhV/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 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.

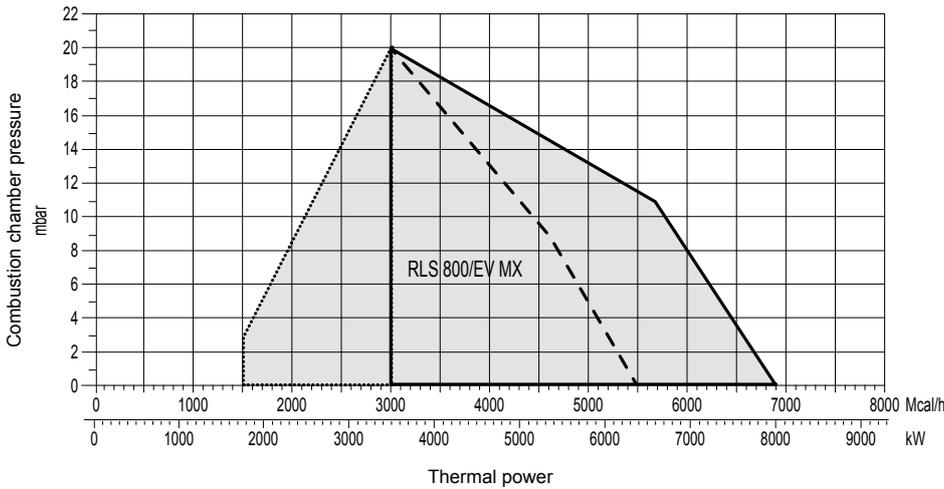
GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

FIRING RATES

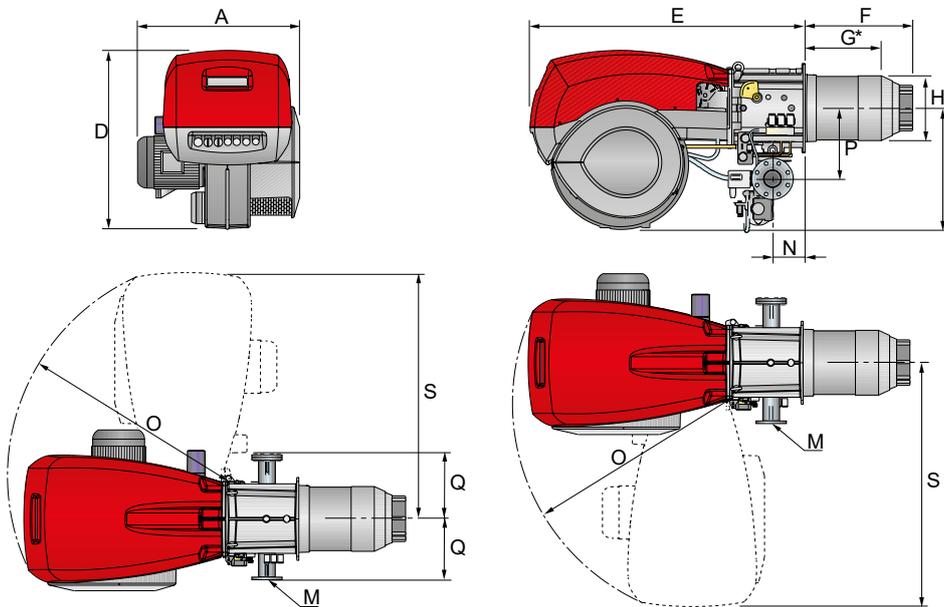


▭ Useful working field for choosing the burner

⋯ Modulation range

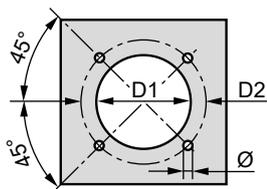
Test conditions conforming to EN 267-EN 676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

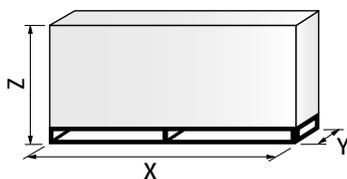


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M inch	N mm	O mm	P mm	Q mm	S mm
RLS 810/EV O2 MX	940	937	1325	558	382	428	630	DN80	164	1055	427	320	1190

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



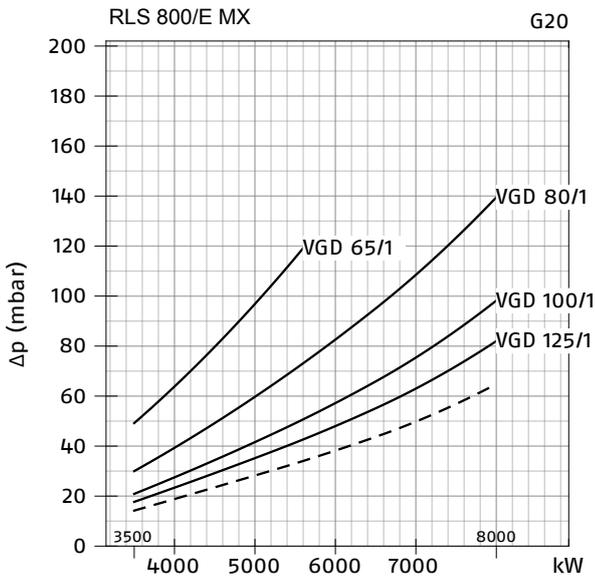
Description	D1 mm	D2 mm	Ø mm
RLS 810/EV O2 MX	440	495	M18



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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 (QGO₂) The QGO ₂ is an oxygen analyzer 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

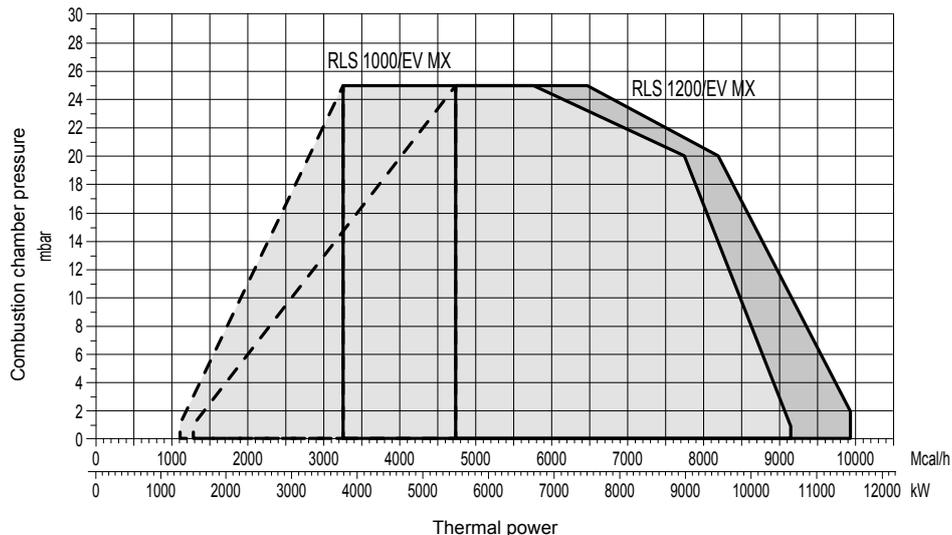
Description	Heat output		Total electrical power kW	Electric power supply		Certification	Code	
	kW	Light oil kg/h		Natural Gas (Nm ³ /h)	PhV/Hz			V/Hz
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS) - WITH ELECTRONIC CAM (LMV 52)								
RLS 1000/EV MX TC FS1	1200/3750-10600	110/320-793	130/380-940	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 mm²/s (cSt).

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

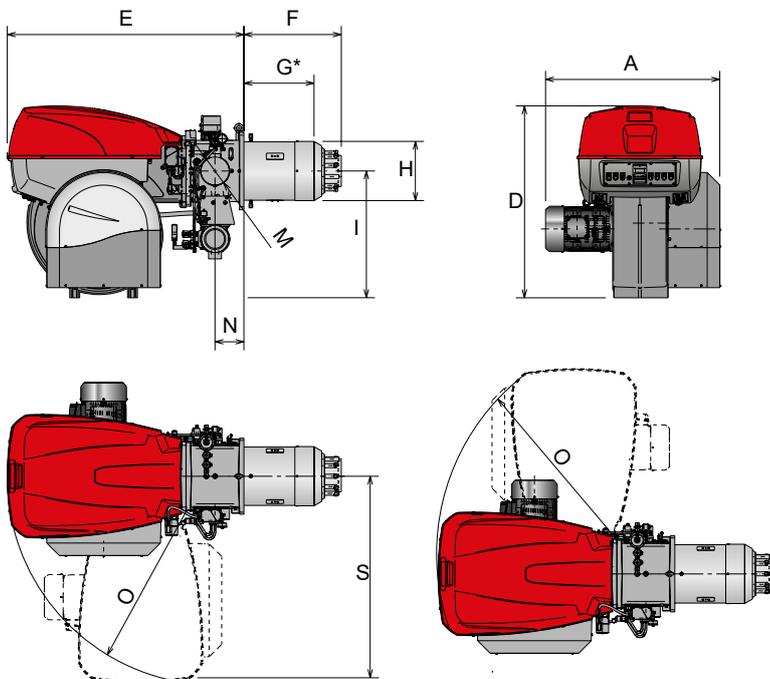
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 - EN 676 Standards.

FIRING RATES



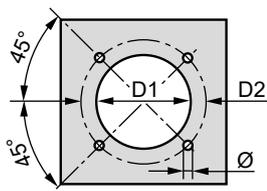
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN 267-EN 676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

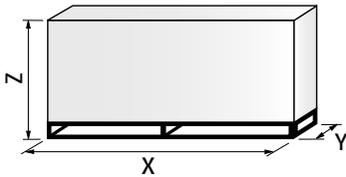


Description	A mm	D mm	E mm	F mm	G (*) mm	H mm	I mm	M inch	N mm	O mm	S(1) mm
RLS 1000/EV MX	1206	1338	1637	674	484	413	885	DN80	200	1350	1425
RLS 1200/EV MX	1250	1338	1637	658	465	456	885	DN80	200	1350	1425

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



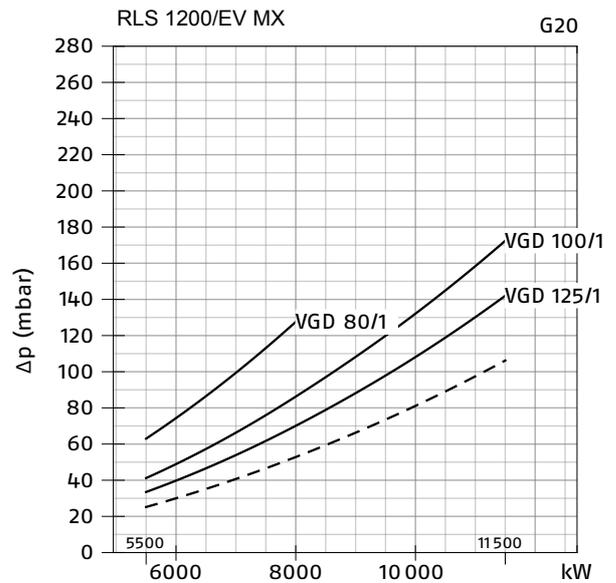
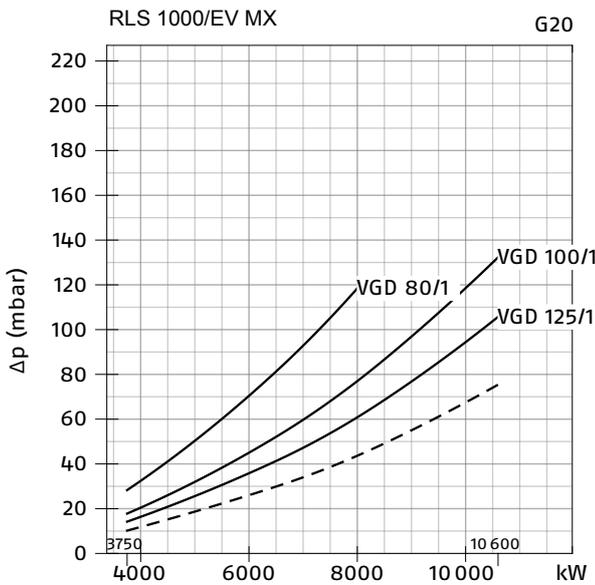
Description	D1 mm	D2 mm	Ø mm
RLS 1000/EV MX	460	608	M20
RLS 1200/EV MX	500	608	M20



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	<input type="checkbox"/>	<input type="checkbox"/>
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 (QGO₂) The QGO ₂ is an oxygen analyzer 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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)		RLS 70-130 RLS 70 (232/465-814 kW) RLS 100 (349/698-1163 kW) RLS 130 (465/930-1395 kW)
		page 557		page 563
MODULATING MECHANICAL CAM		RLS 190-250/M MZ RLS 190/M MZ (550/1100-2150 kW) RLS 250/M MZ (550/1230-2460 kW)		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)
		page 569		page 575
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)		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)
		page 582		page 594
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)		
		page 588		

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Certification	Note	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		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).

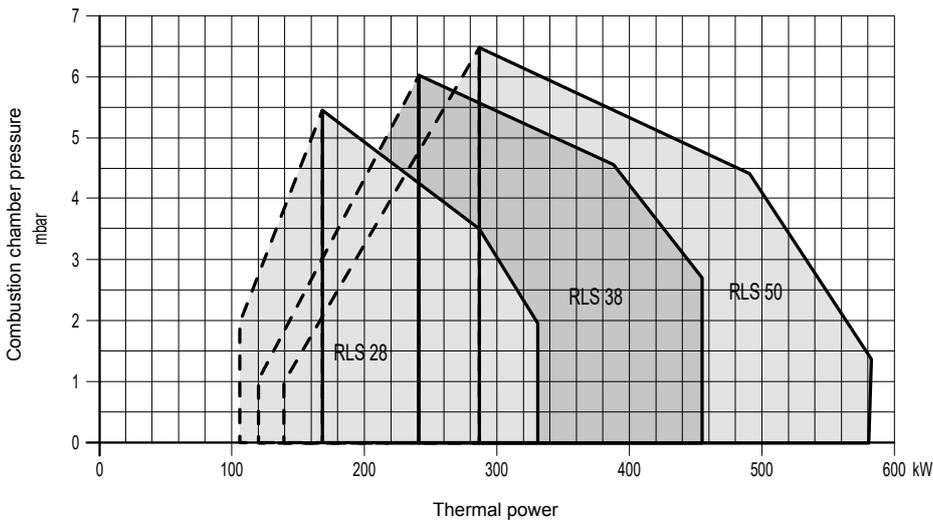
Net calorific value of natural gas (G20): 10 kWh/Nm³.

The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 - EN 676 Standards.

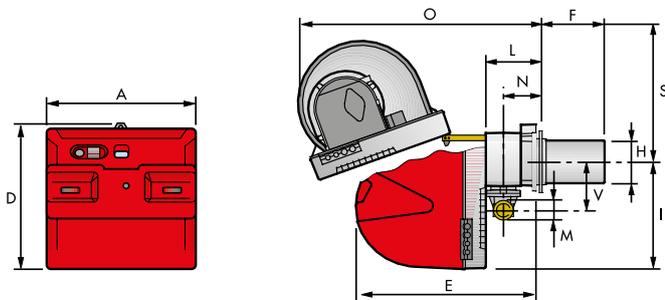
(1) Model with plug and socket.

(2) Model with LFL control box.

FIRING RATES

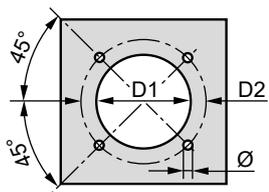


OVERALL DIMENSIONS

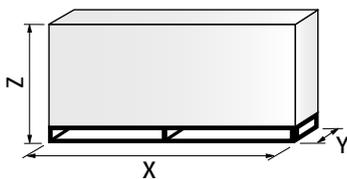


Description	A mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M inch	N mm	O - O (1) mm	S mm	V mm
RLS 28	476	474	580	191 - 326	140	352	164	1" ½	108	810 - 810	367	168
RLS 38	476	474	580	201 - 336	152	352	164	1" ½	108	810 - 810	367	168
RLS 50	476	474	580	216 - 351	152	352	164	1" ½	108	810 - 810	367	168

(1) Length with extended combustion head.



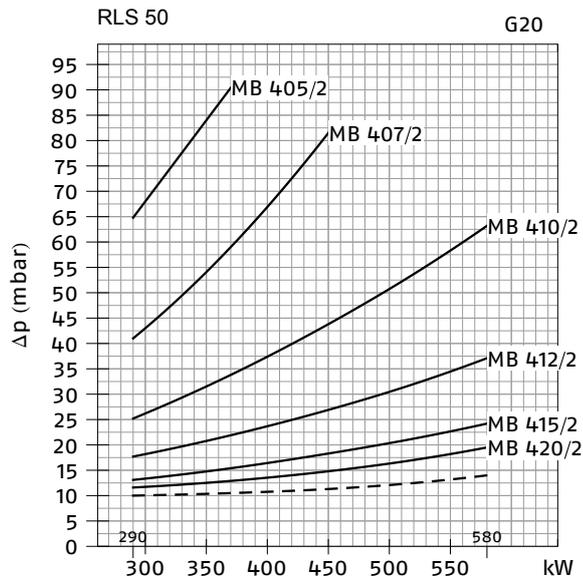
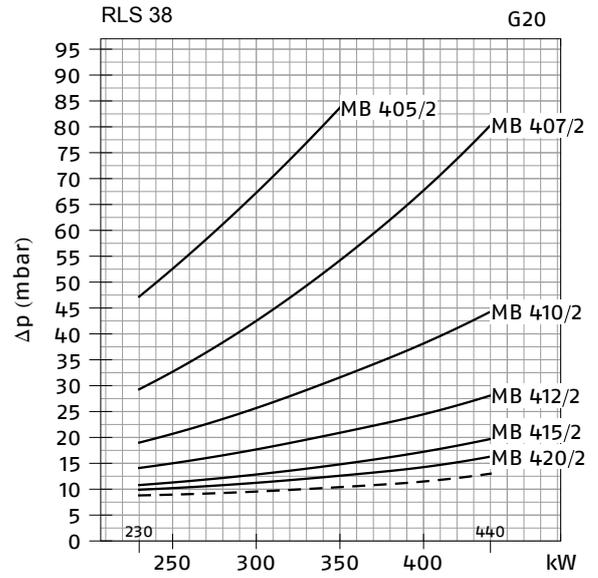
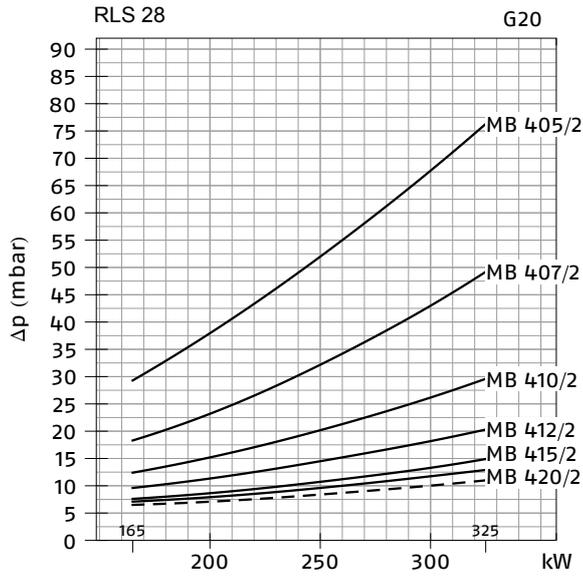
Description	D1 mm	D2 mm	Ø
RLS 28	160	224	M8
RLS 38	160	224	M8
RLS 50	160	224	M8



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

GAS

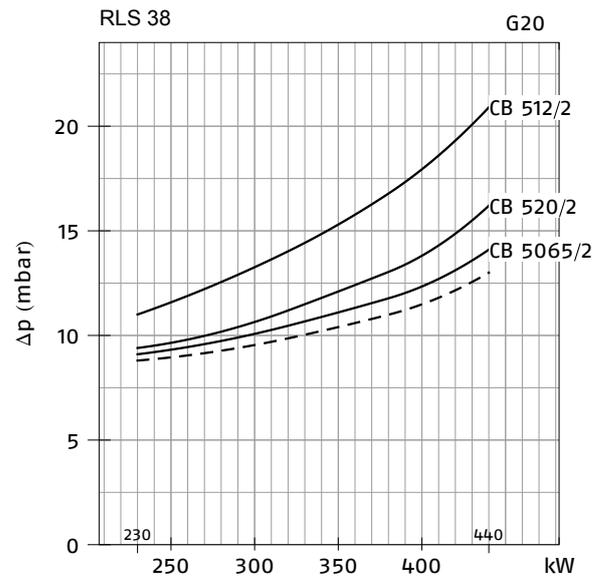
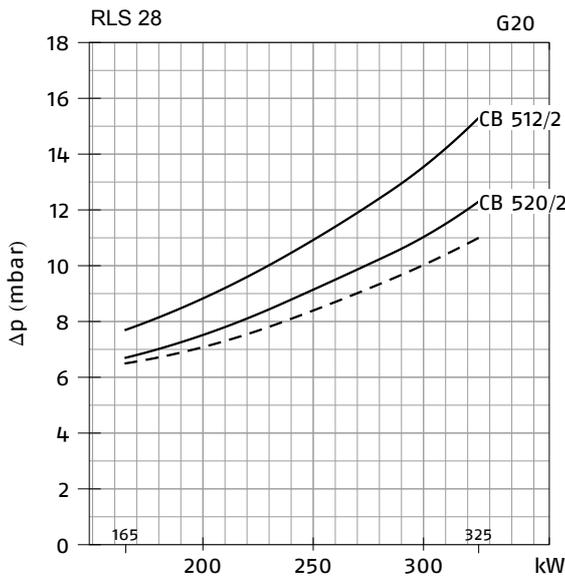
LIGHT OIL

DUAL FUEL

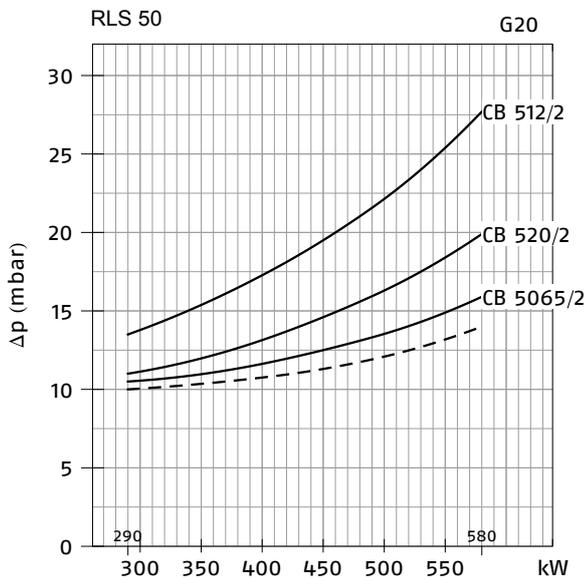
HEAVY OIL

CB SERIES GAS TRAIN

GAS



LIGHT OIL



DUAL FUEL

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		

HEAVY OIL

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		

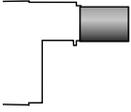
- (1) Please refer to "GAS TRAIN DESIGNATION".
 (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
 (3) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for 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
	RLS 28 RLS 38 RLS 50	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 = 191 mm - Extended head length = 326 mm Standard head length = 201 mm - Extended head length = 336 mm Standard head length = 216 mm - Extended head length = 351 mm		20097840 20097868 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 kW	Electric power supply		Certification	Note	Code
	kW	Light oil kg/h		Natural Gas (Nm ³ /h)	Ph/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).

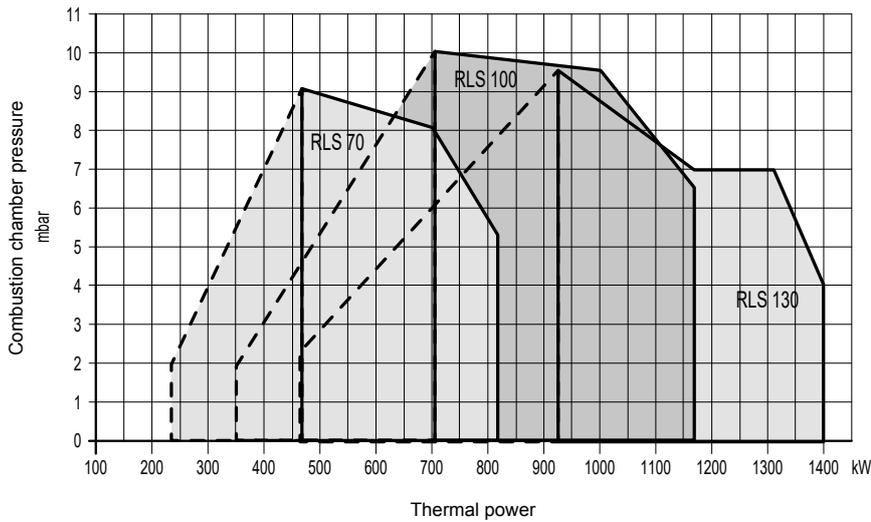
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

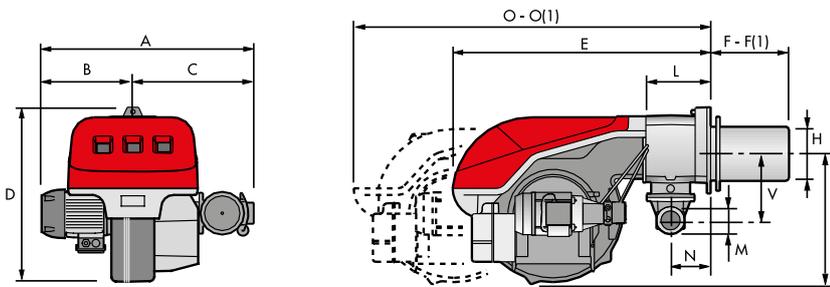
FIRING RATES



□ Useful working field for choosing the burner
 - - - Modulating range

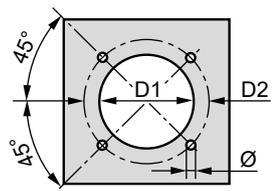
Test conditions conforming to EN 267-EN 676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

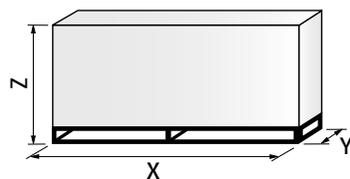


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M mm	N mm	O - O (1) mm	V mm
RLS 70	691	296	395	555	840	250 - 385	179	430	214	Rp 2"	134	1161 - 1361	221
RLS 100	707	312	395	555	840	250 - 385	189	430	214	Rp 2"	134	1161 - 1361	221
RLS 130	733	338	395	555	840	250 - 385	189	430	214	Rp 2"	134	1161 - 1361	221

(1) Length with extended combustion head.



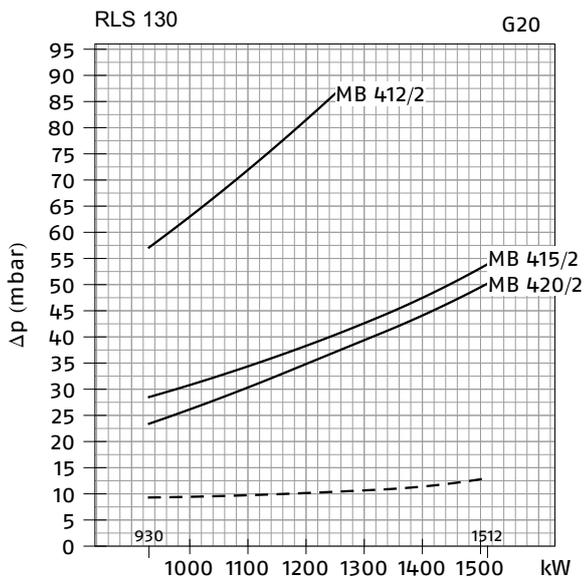
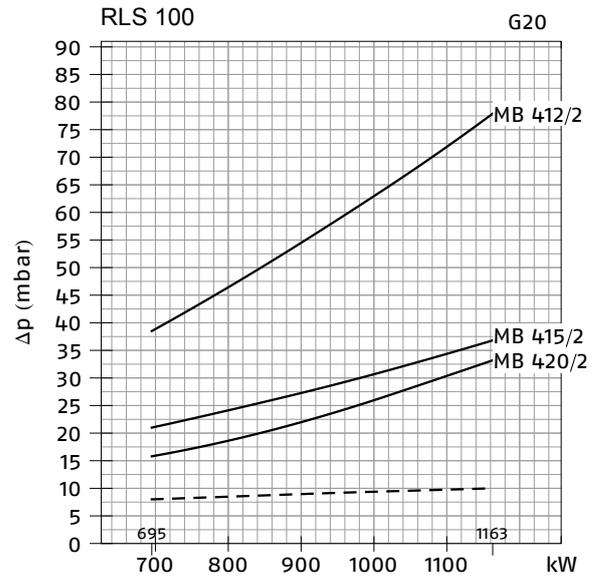
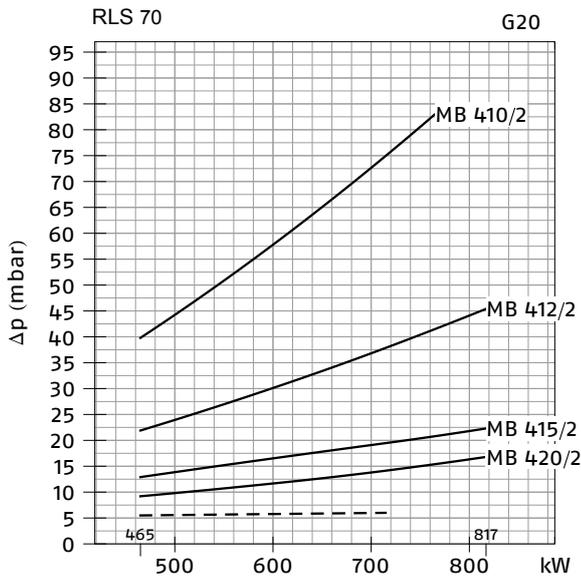
Description	D1 mm	D2 mm	Ø
RLS 70	185	275-325	M12
RLS 100	195	275-325	M12
RLS 130	195	275-325	M12



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



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

LIGHT OIL

DUAL FUEL

HEAVY OIL

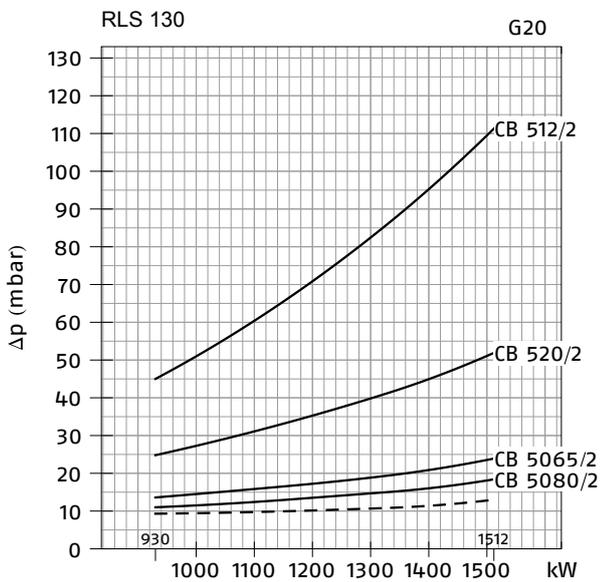
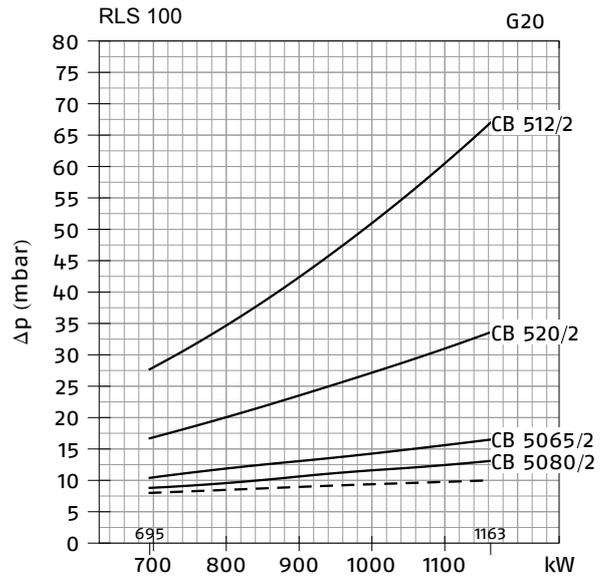
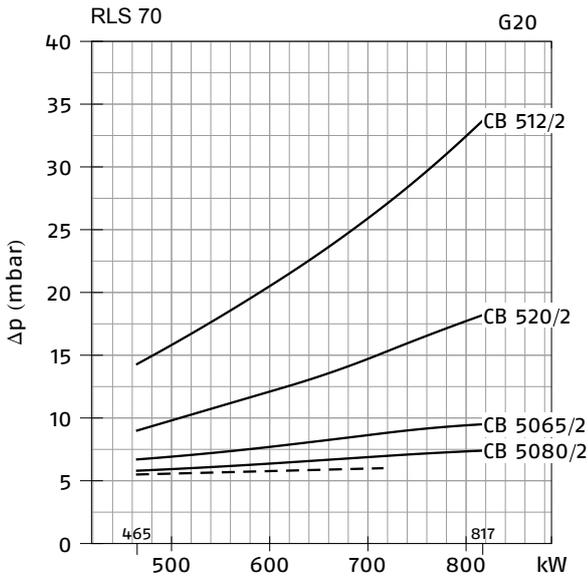
CB SERIES GAS TRAIN

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL



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 3/4"	-	3010123	3000824+ 3000843	•	•
MB 410/2-RT 20	3970557*		Rp 3/4"	-	3010123	3000824+ 3000843	•	•
MB 412/2-RT 20	3970152*		Rp 1" 1/2	-	3010123		3000843	
MB 415/2-RT 20	3970183*		Rp 1" 1/2	-	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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

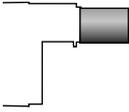
- (1) Please refer to "GAS TRAIN DESIGNATION".
- (2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
- (3) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph 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
	RLS 70 RLS 100 RLS 130	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 = 250 mm - Extended head length = 385 mm		3010345 3010346 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 kW	Electric power supply		Certification	Note	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		PhV/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

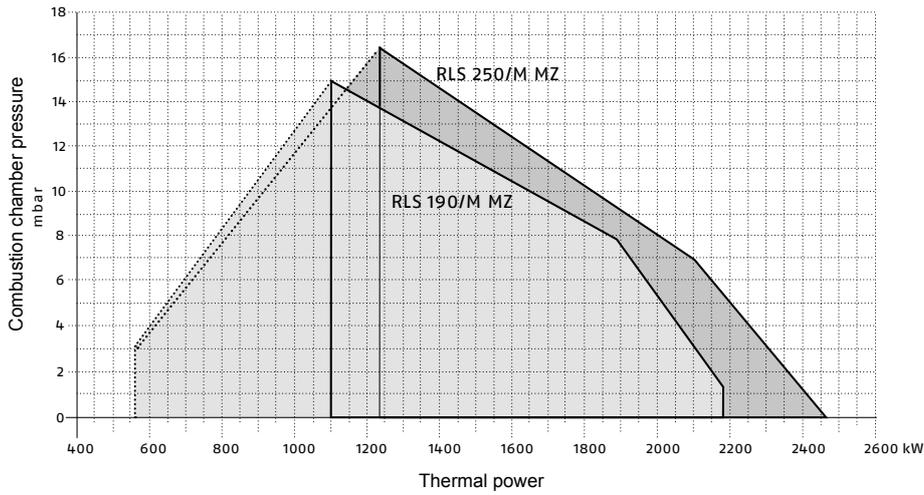
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).

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.

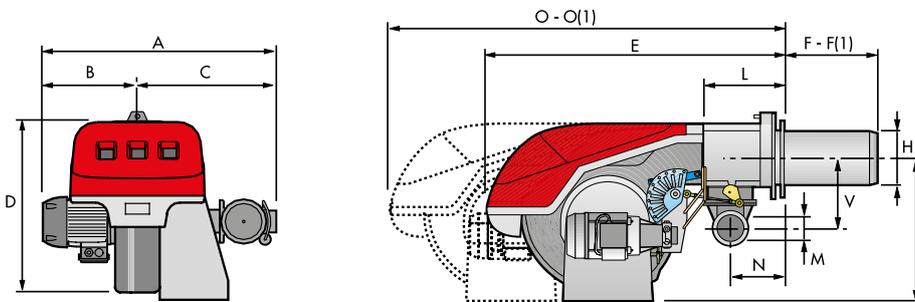
(1) Model with LFL control box.

FIRING RATES



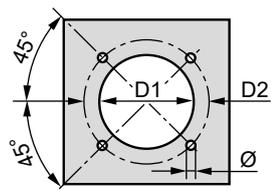
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN 267-EN 676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

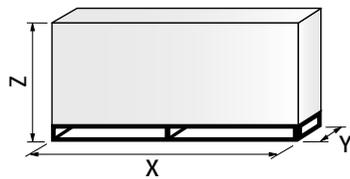


Description	A mm	B mm	C mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M inch	N mm	O - O (1) mm	V mm
RLS 190/M MZ	843	366	477	555	863	412 - 542	222	430	237	Rp 2"	141	1442 - 1587	186
RLS 250/M MZ	904	427	477	555	863	412 - 542	222	435	237	Rp 2"	141	1442 - 1587	186

(1) Length with extended combustion head.



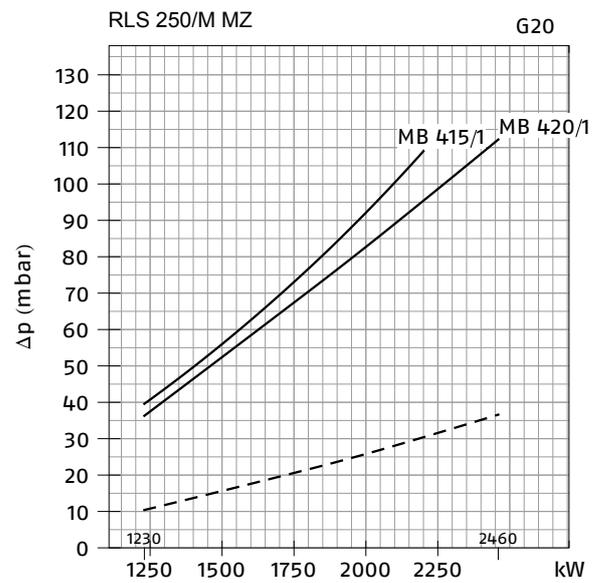
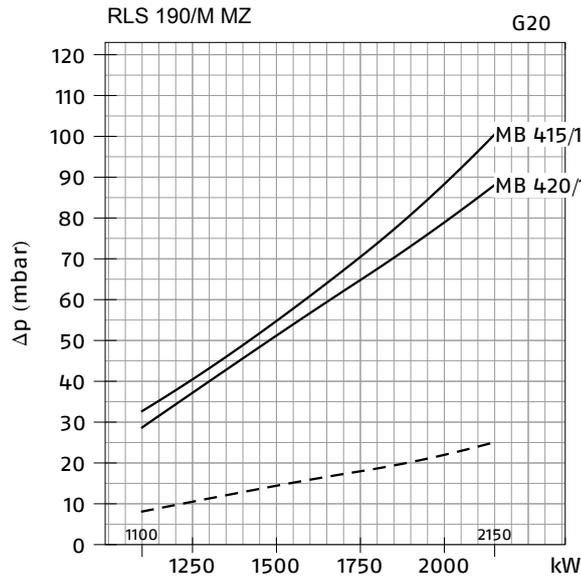
Description	D1 mm	D2 mm	Ø mm
RLS 190/M MZ	230	325 - 368	M16
RLS 250/M MZ	230	325 - 368	M16



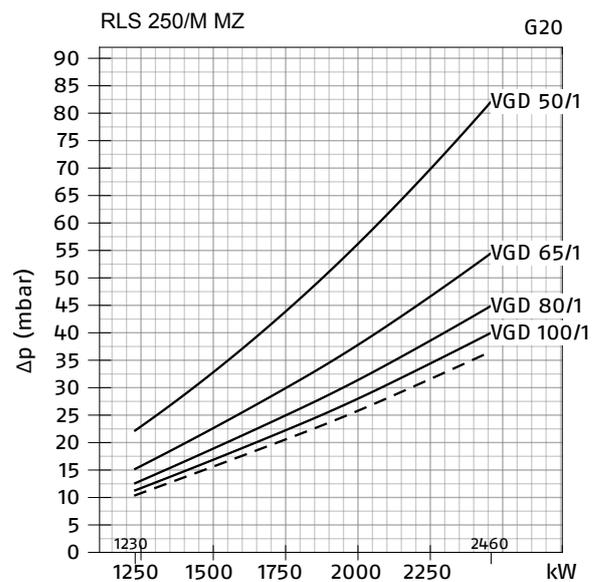
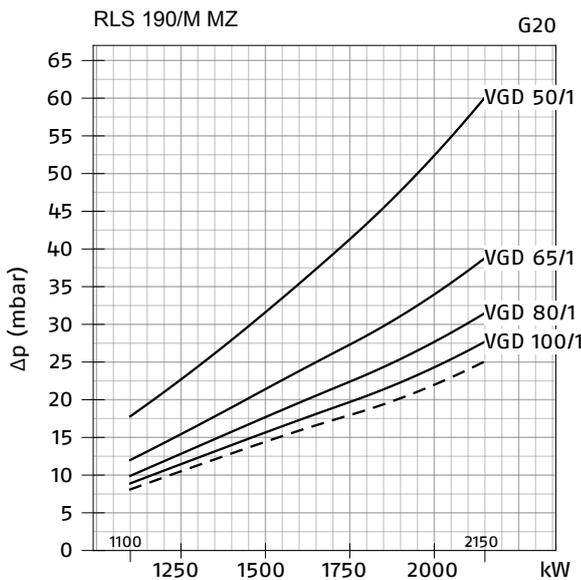
Description	X mm	Y mm	Z mm	Net weight kg
RLS 190/M MZ	1400	975	645	95
RLS 250/M MZ	1400	1000	765	100

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"	◆	◆	□	□

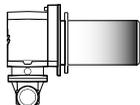
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 190/M	RS 250/M Z
MB 420/1-RT 52	3970257*		Rp 2"	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 420/1 CT RT 52	3970252**		Rp 2"	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
MB 420/1-RSM 30	3970233*		Rp 2"	-	3010123	<input type="checkbox"/>	<input type="checkbox"/>
MB 420/1 CT RSM 30	3970234**		Rp 2"	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	20137718*		Rp 2"	-	3010123+ 20186306	<input type="checkbox"/>	<input type="checkbox"/>
VGD 50/1 CT RT 122	20169190**		Rp 2"	◆	◆	<input type="checkbox"/>	<input type="checkbox"/>
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
	RLS 190/M Z RLS 250/M Z	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 = 412 mm - Extended head length = 542 mm	(1)	3010440 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
	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. RWF 55.5 - Plus version; complete with RS-485 interface.		20099869 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 referred 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.

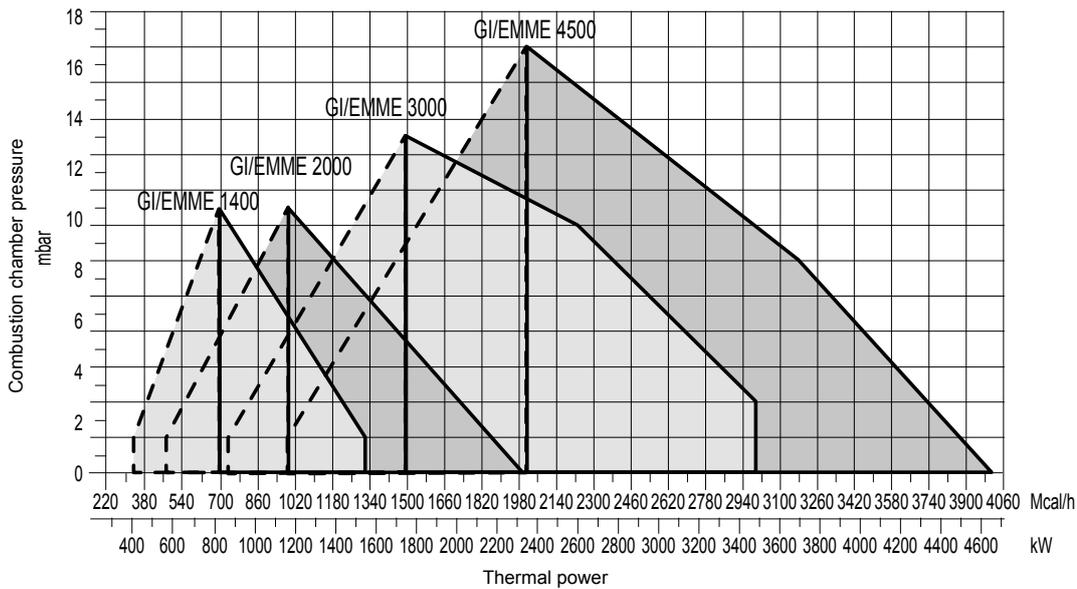
TECHNICAL DATA

Description	Heat output			Total electrical power kW	Electric power supply		Certification	Note	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		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

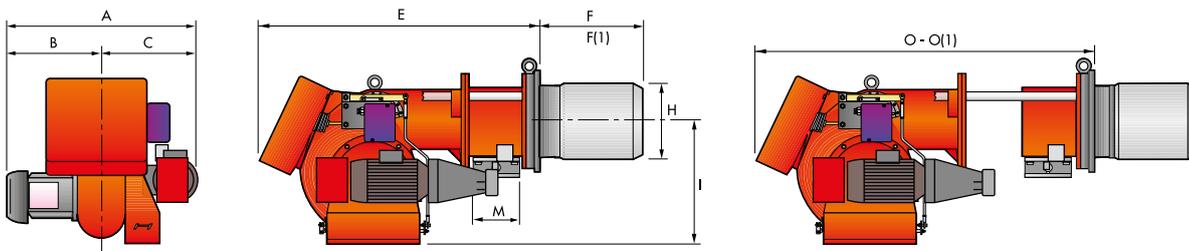
Net calorific value of light oil: 11.86 kWh/kg - Viscosity at 20 °C: 4-6 mm²/s (cSt).
 Net calorific value of natural gas (G20): 10 kWh/Nm³.

- (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

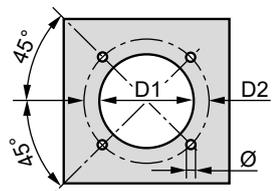


OVERALL DIMENSIONS

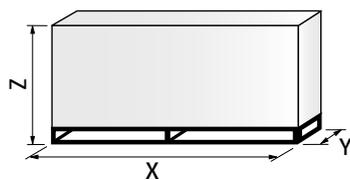


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	M	O - O (1) mm
GI/EMME 1400	858	376	482	1090	385	250	467	Rp 2"	1407 - 1585
GI/EMME 2000	878	396	482	1090	385	260	467	DN 80	1407 - 1585
GI/EMME 3000	985	447	538	1320	476	336	525	DN 80	1796 - 2000
GI/EMME 4500	1046	508	538	1320	476	336	525	DN 80	1796 - 1926

(1) Length with extended combustion head.



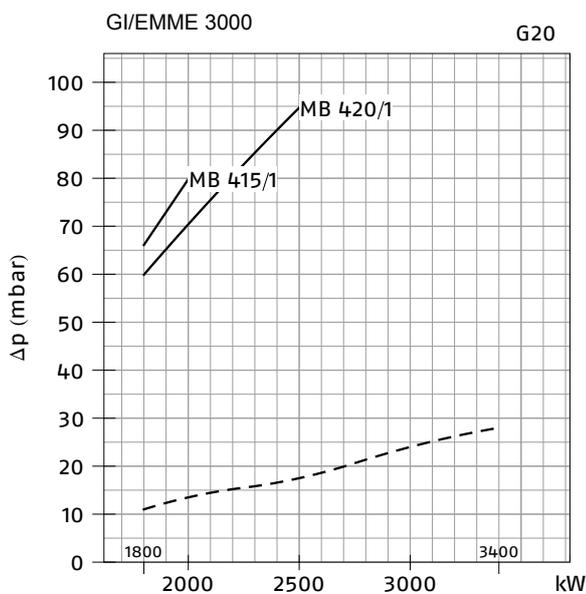
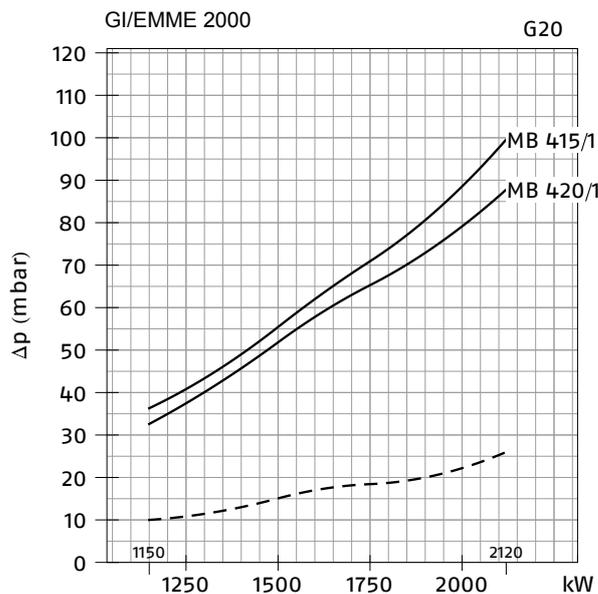
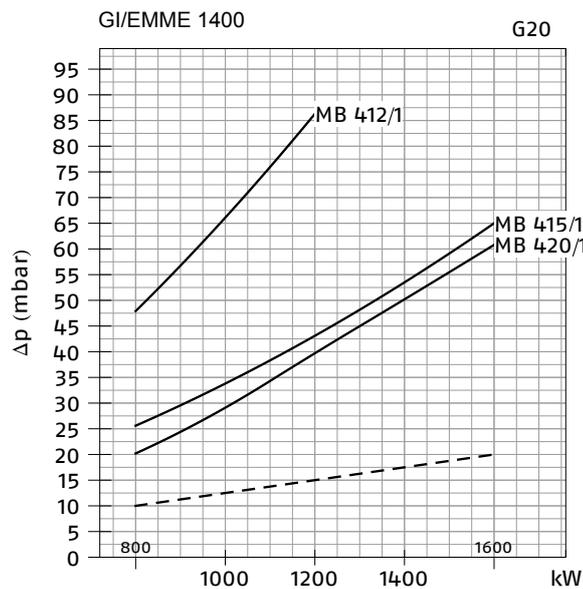
Description	D1 mm	D2 mm	Ø
GI/EMME 1400	255	368	M16
GI/EMME 2000	265	368	M16
GI/EMME 3000	340	438	M20
GI/EMME 4500	340	438	M20



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



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

LIGHT OIL

DUAL FUEL

HEAVY OIL

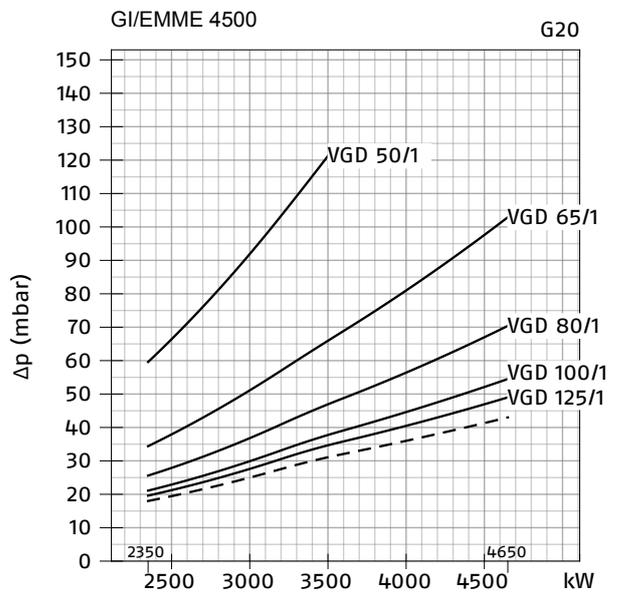
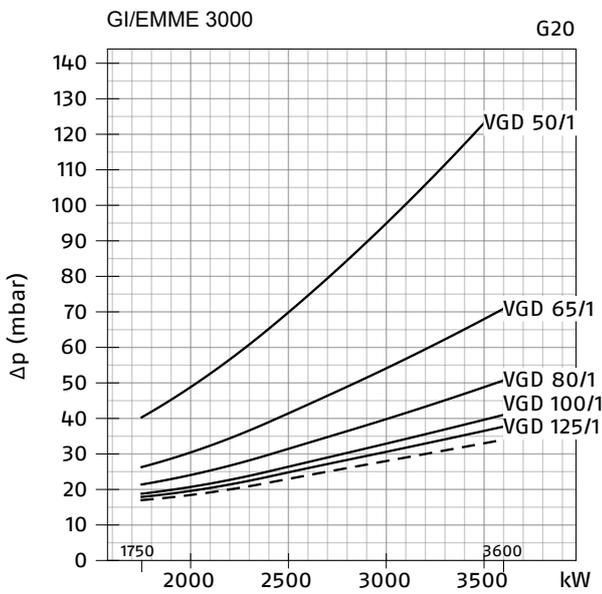
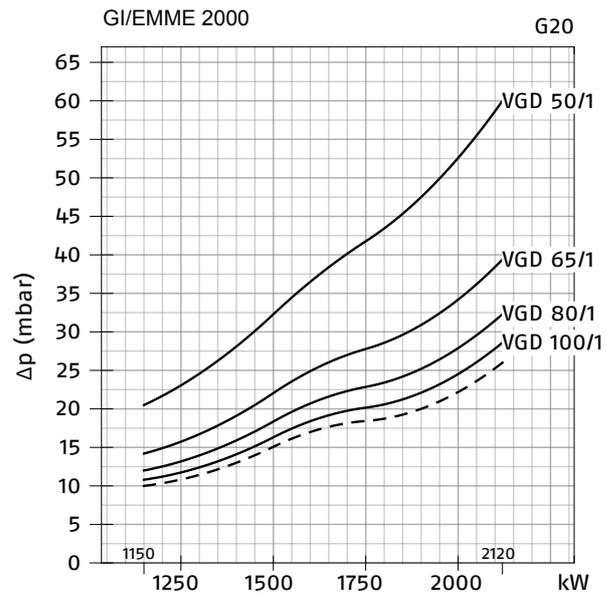
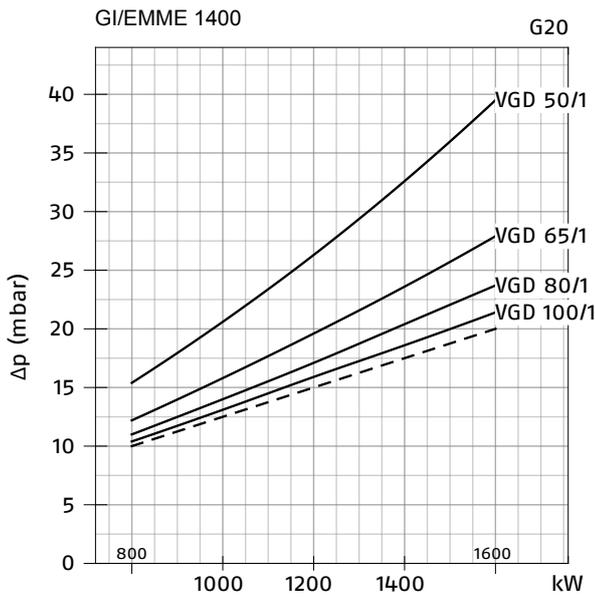
VGD SERIES GAS TRAIN

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL



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
	GI/EMME 1400-2000	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.	(1)	3010063
		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	
				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 vacuumeter
 - 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Note	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		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).

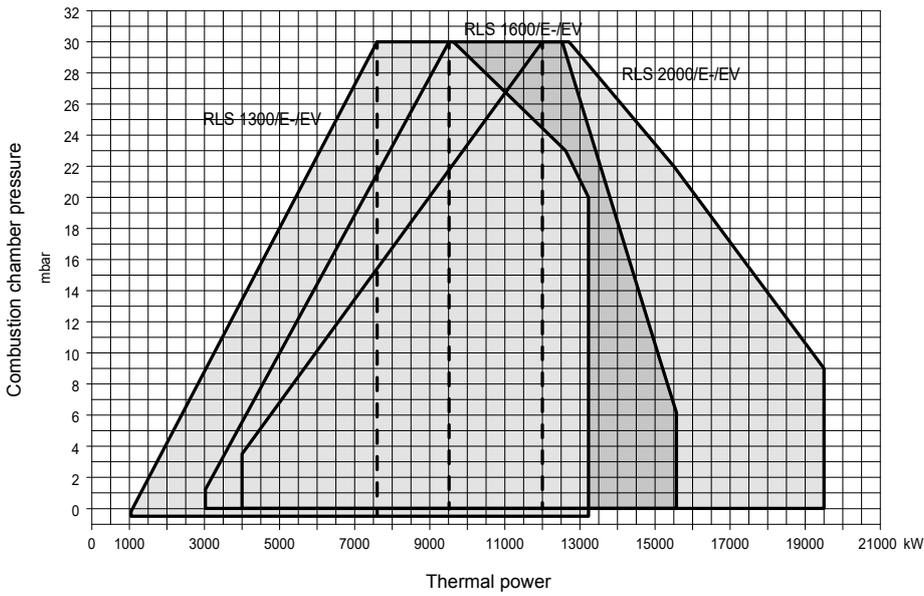
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

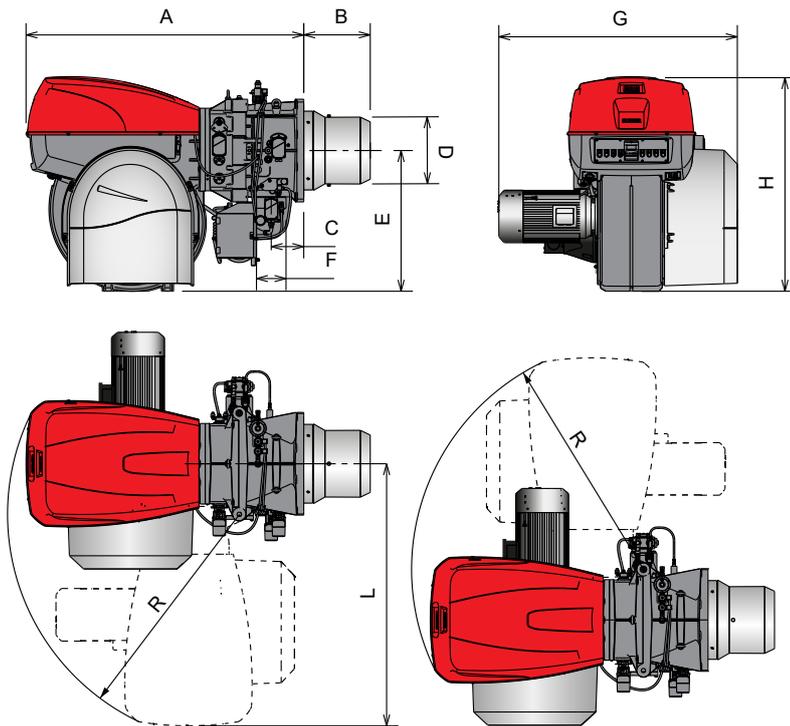
FIRING RATES



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

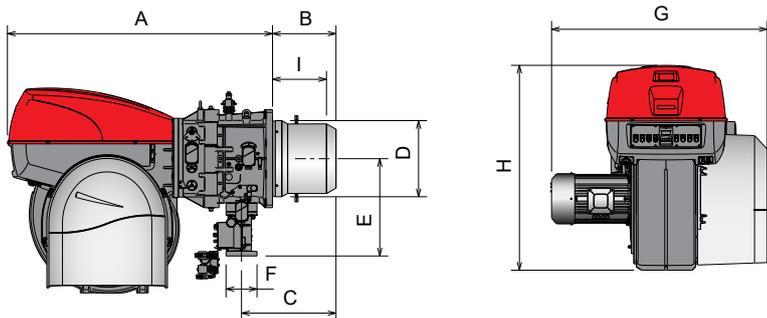
RLS 1300/E C11



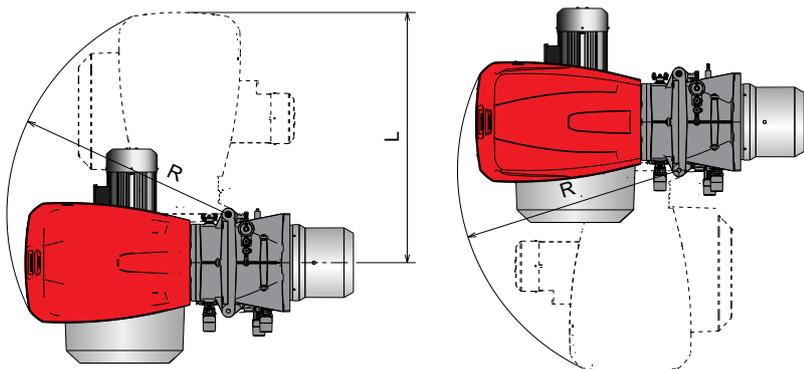
Description	A mm	B mm	C mm	D mm	E mm	F	G mm	H mm	I mm	L inch	R mm
RLS 1300/E C11	1880	450	220	544	459	DN80	1620	1463	380	1787	1564

RLS 1600-2000/E C11

GAS



LIGHT OIL

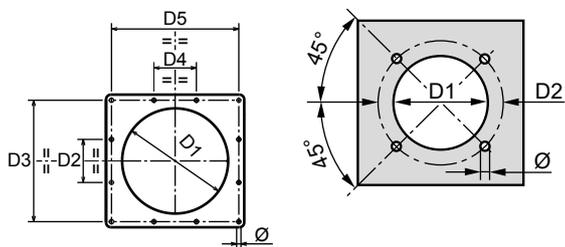


Description	A mm	B mm	C mm	D mm	E mm	F	G mm	H mm	I mm	L inch	R mm
RLS 1600/E C11	1880	450	220	544	960	DN100	1560	1464	383	1782	1564
RLS 2000/E C11	1880	450	220	544	960	DN100	1530	1464	383	1782	1564

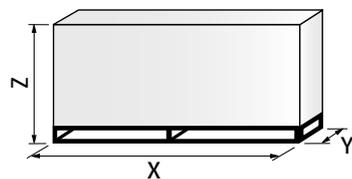
DUAL FUEL

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

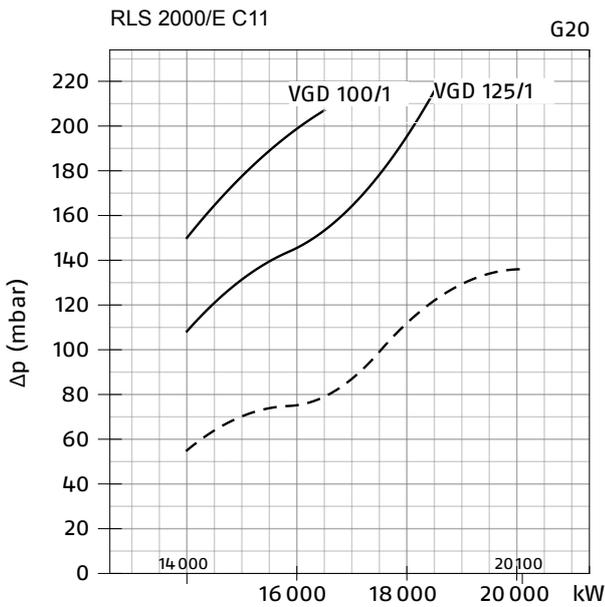
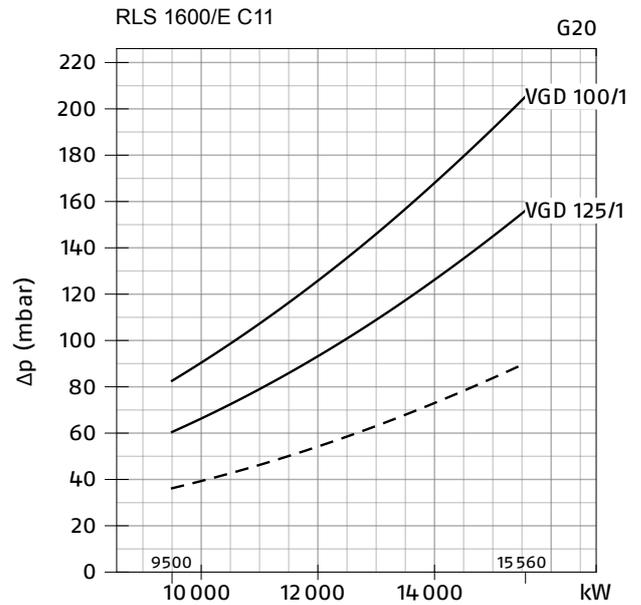
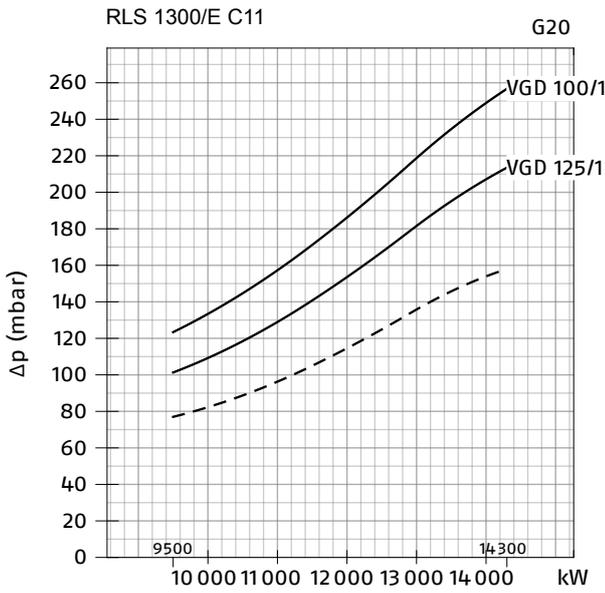


Description	X mm	Y mm	Z mm	Net weight kg
RLS 1300/E C11	3000	1800	1750	1000
RLS 1600/E C11	2600	1710	1700	1000
RLS 2000/E C11	2600	1710	1700	1000

HEAVY OIL

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.

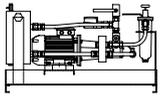
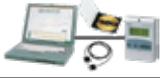
— Combustion head + gas train
 - - - Combustion head

GAS TRAINS

Description (1)	Code	Ø Gas train	Valve seal control (2)	Burner-gas train adapter (3)		
				RLS 1300/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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Note	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		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) - O ₂ 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).

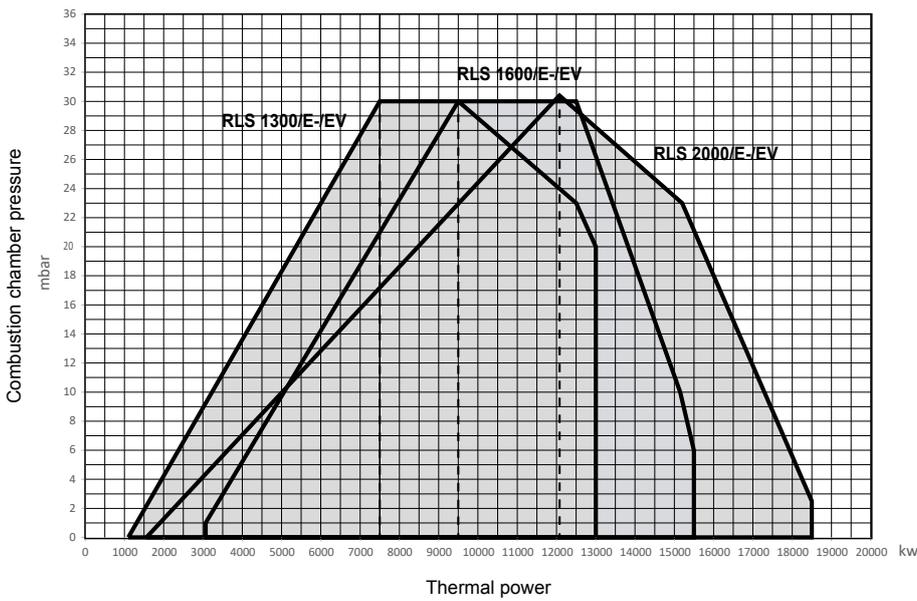
Net calorific value of natural gas (G20): 10 kWh/Nm³.

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.

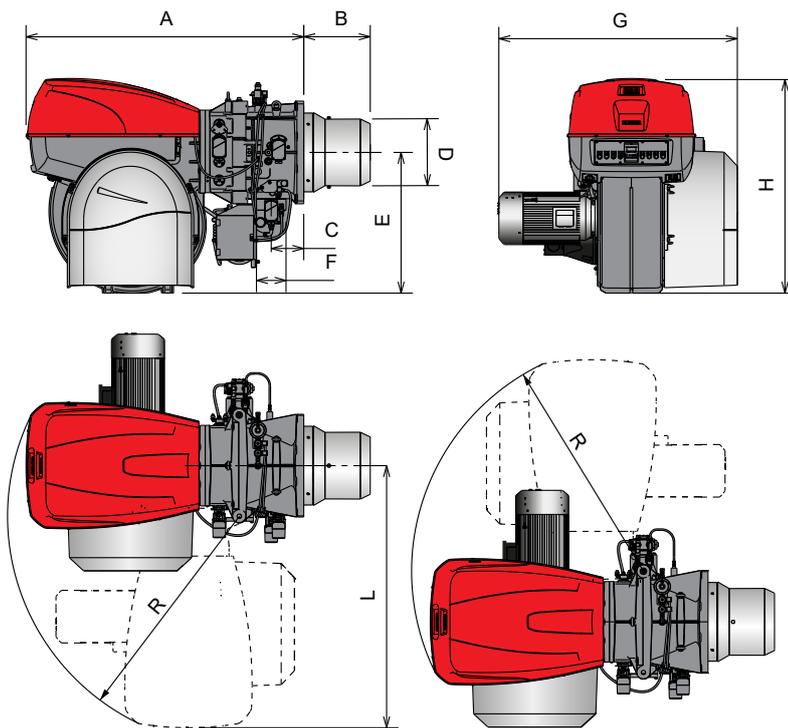
FIRING RATES



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

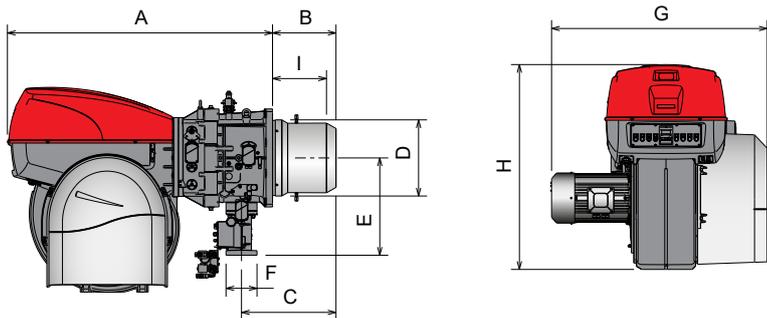
RLS 1300/EV C11



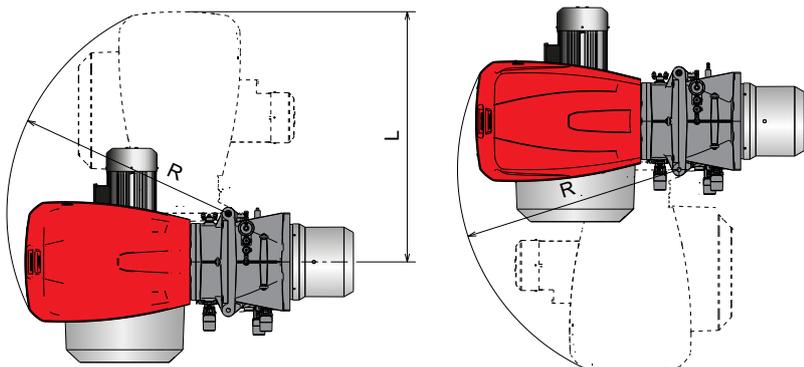
Description	A mm	B mm	C mm	D mm	E mm	F	G mm	H mm	I mm	L inch	R mm
RLS 1300/EV C11	1880	450	220	544	459	DN80	1620	1463	380	1787	1564

RLS 1600-2000/EV C11

GAS



LIGHT OIL

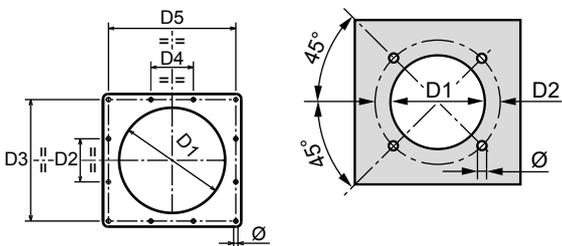


Description	A mm	B mm	C mm	D mm	E mm	F	G mm	H mm	I mm	L inch	R mm
RLS 1600/EV C11	1880	450	220	544	960	DN100	1560	1464	383	1782	1564
RLS 2000/EV C11	1880	450	220	544	960	DN100	1530	1464	383	1782	1564

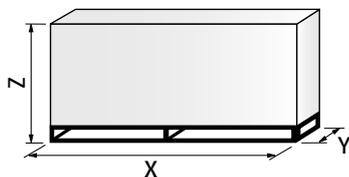
DUAL FUEL

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

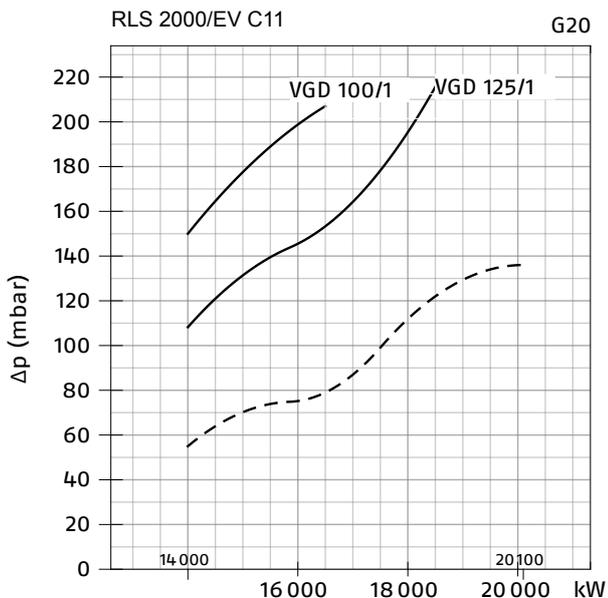
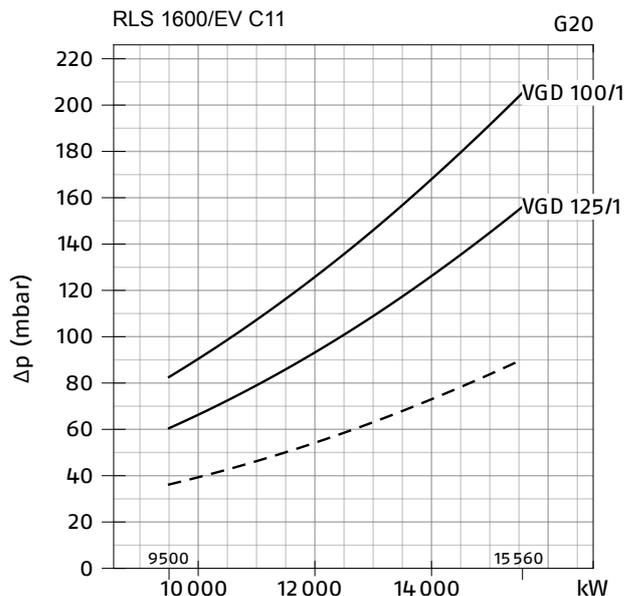
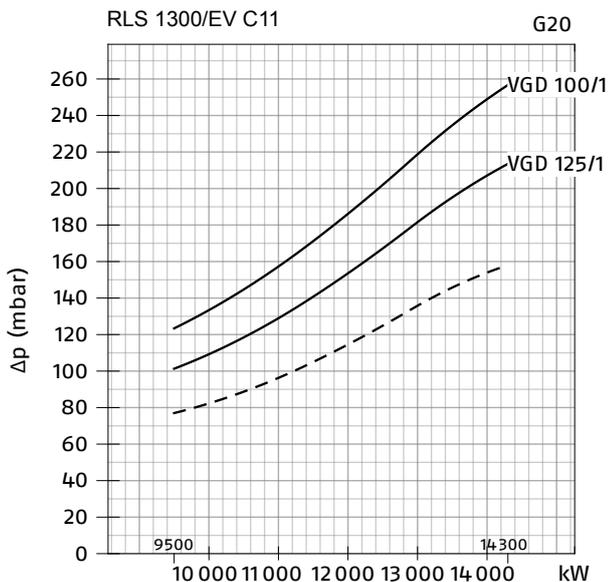


Description	X mm	Y mm	Z mm	Net weight kg
RLS 1300/EV C11	3000	1800	1750	1000
RLS 1600/EV C11	2600	1710	1700	1000
RLS 2000/EV C11	2600	1710	1700	1000

HEAVY OIL

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".

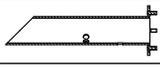
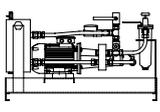
GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 (QGO₂) The QGO ₂ is an oxygen analyzer 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.

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 kW	Electric power supply		Note	Code
	kW	Light oil kg/h	Natural Gas (Nm ³ /h)		PhV/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.

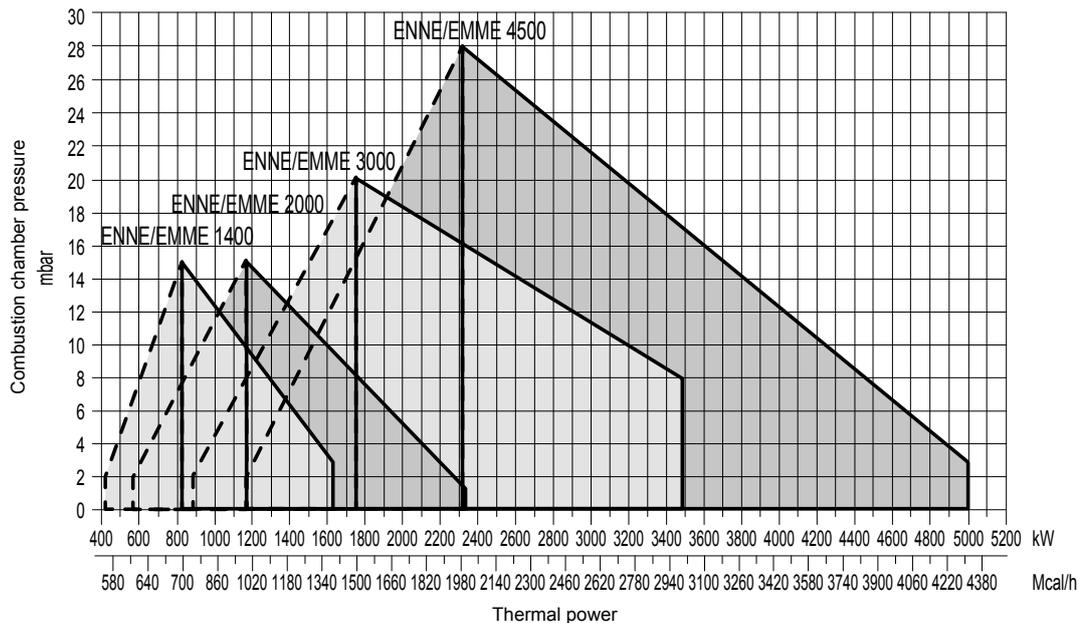
The burners comply with 2016/426/EU Regulation, 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 - EN 676 Standards.

(1) Star/delta starter.

(2) For the 3/230/50 version use the 220 - 230 V conversion kit (see the burner accessories paragraph).

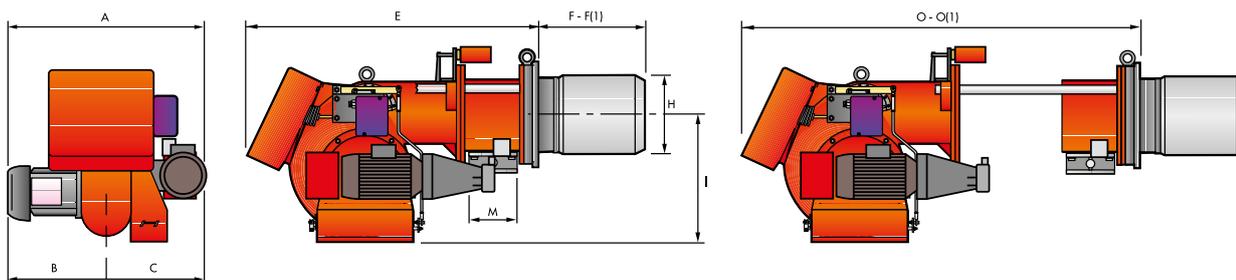
(3) Model with LFL control box.

FIRING RATES



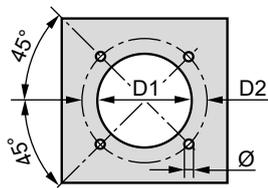
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN 267-EN 676
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

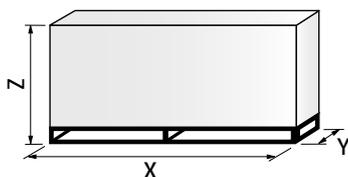


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	M	O - O(1) mm
ENNE/EMME 1400	940	376	564	1090	385 - 495	250	467	Rp 2"	1475 - 1585
ENNE/EMME 2000	960	396	564	1090	385 - 495	260	467	DN80	1475 - 1585
ENNE/EMME 3000	1000	447	553	1320	476 - 606	336	525	DN80	1796 - 1926
ENNE/EMME 4500	1061	508	553	1320	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

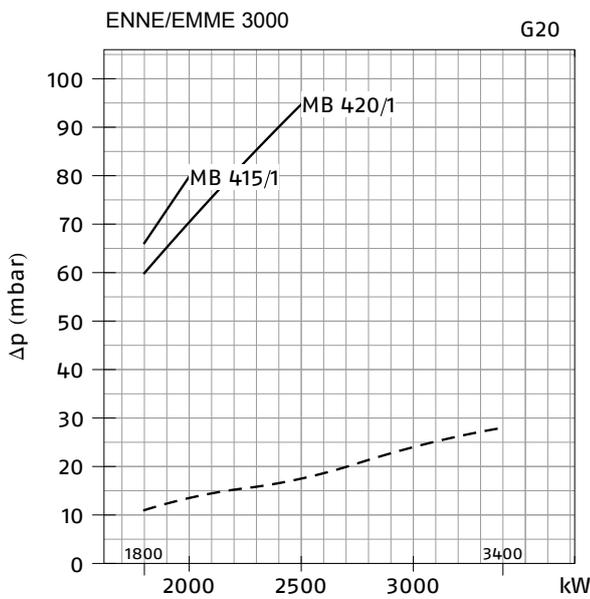
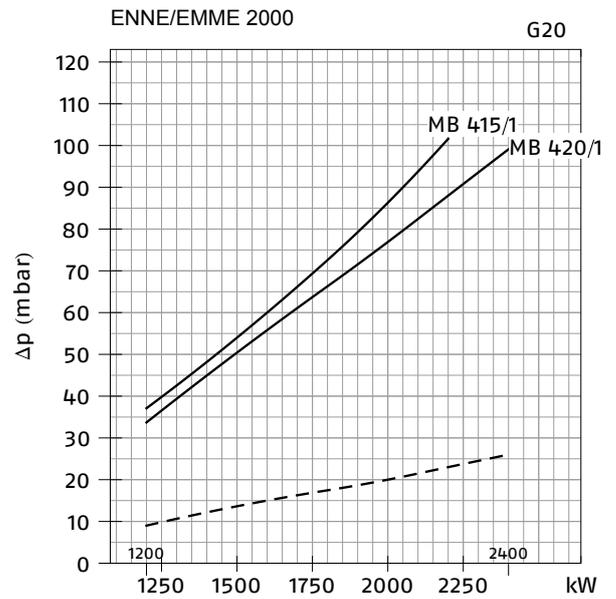
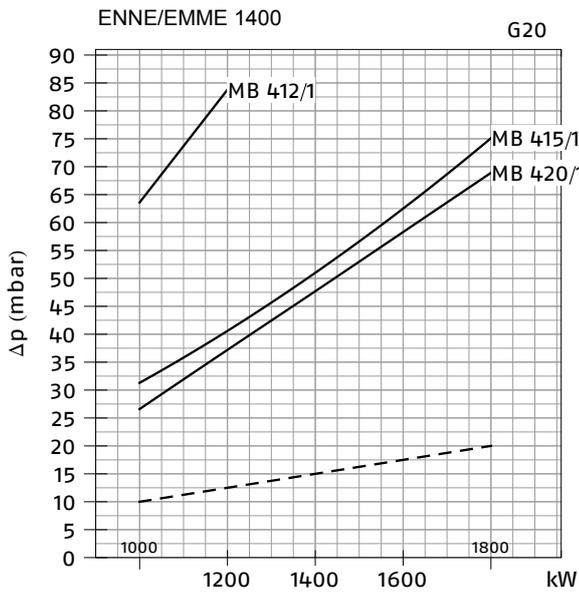
MB SERIES GAS TRAIN

GAS

LIGHT OIL

DUAL FUEL

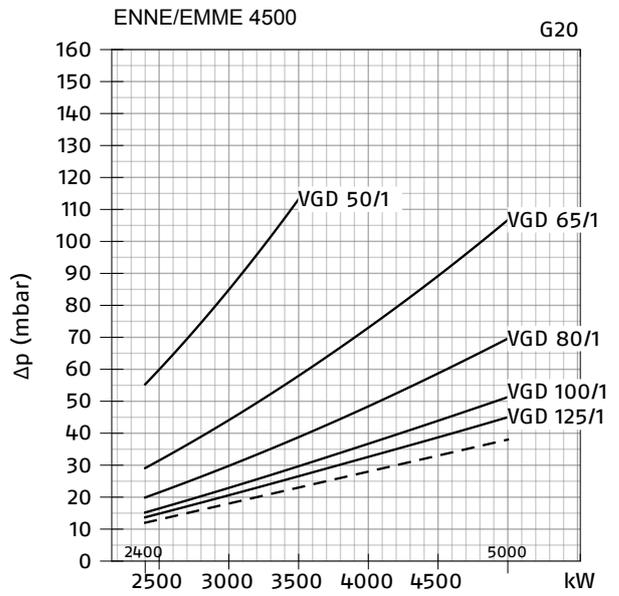
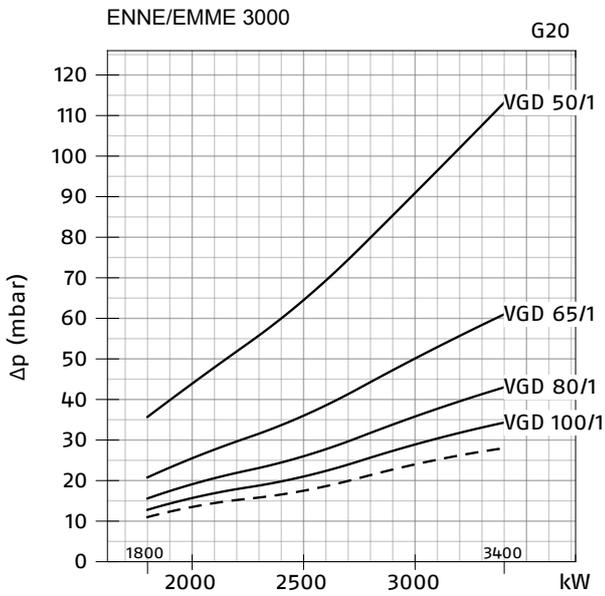
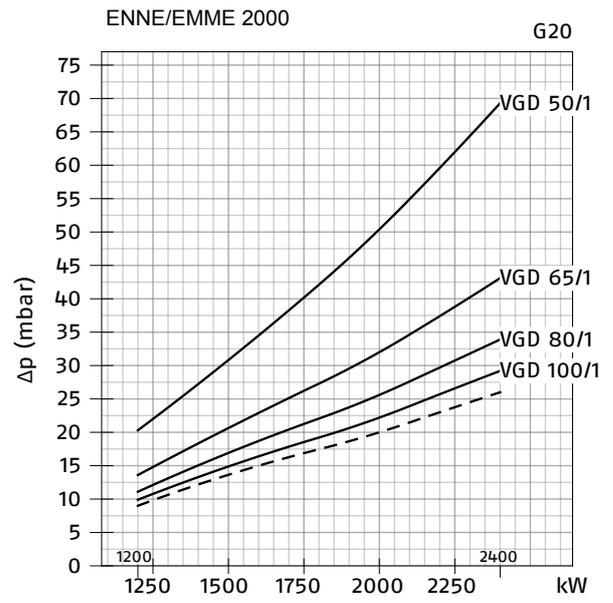
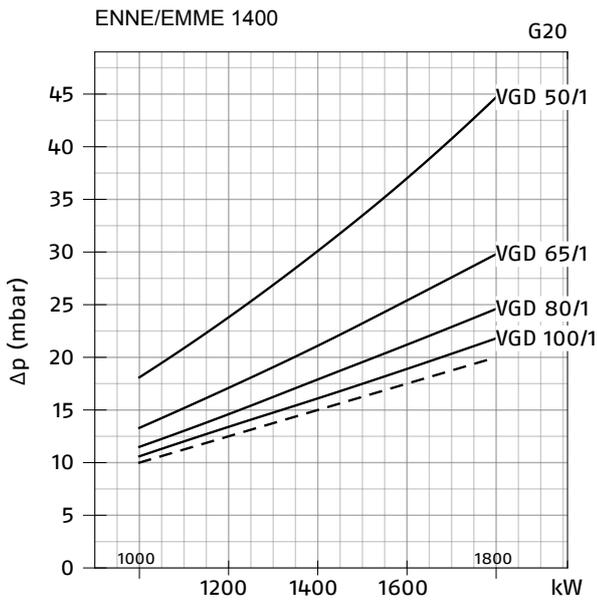
HEAVY OIL



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

LIGHT OIL

DUAL FUEL

HEAVY OIL

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. RWF 55.5 - Plus version.		20100018 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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
		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 vacuumeter
 - 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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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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GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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

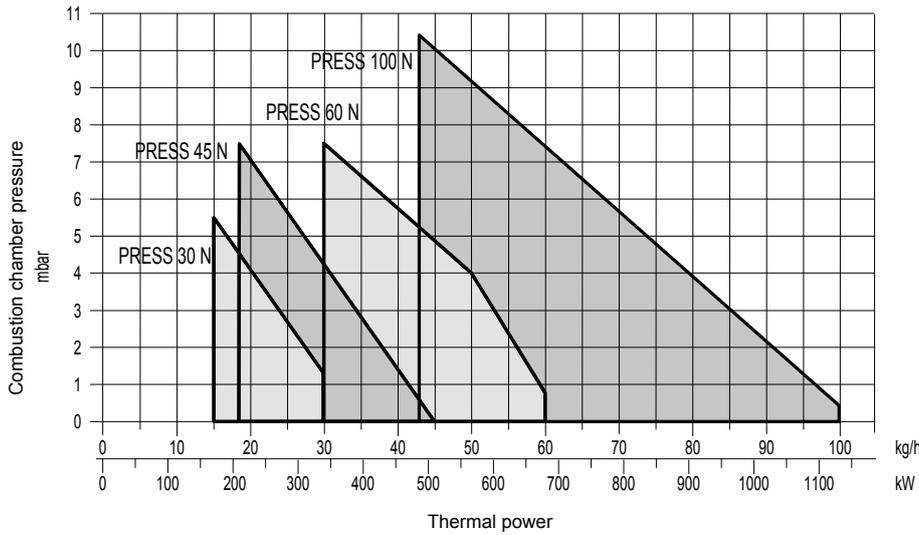
Description	Heat output		Total electrical power kW	Electric power supply		Note	Code
	kW	kg/h		PhV/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)							
PRESS 30 N TC FS1	85/171-342	7.5/15-30	3.4	1/230/50	230/50	(1)	20201572
PRESS 30 N TL FS1	85/171-342	7.5/15-30	3.4	1/230/50	230/50	(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 mm²/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.

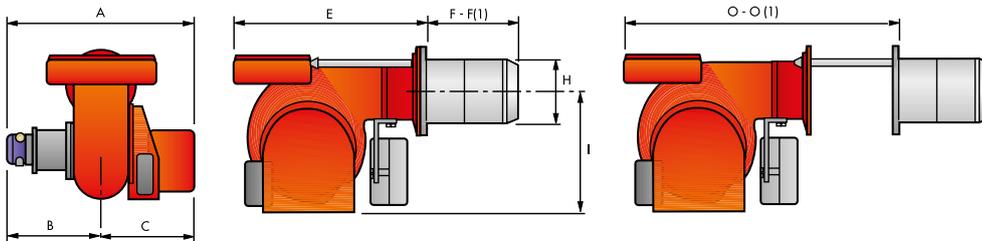
FIRING RATES



□ Useful working field for choosing the burner

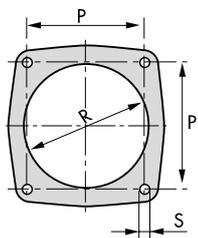
Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

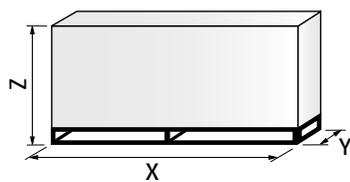


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
PRESS 30 N	625	335	290	625	185 - 320	161	305	905 - 1080
PRESS 45 N	625	335	290	625	235 - 370	161	305	925 - 1100
PRESS 60 N	625	335	290	660	245 - 400	172	335	940 - 1115
PRESS 100 N	625	335	290	710	250 - 410	195	370	1010 - 1195

(1) Length with extended combustion head.



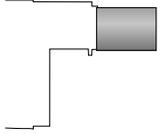
Description	P mm	R mm	S mm
PRESS 30 N	160	170	M10
PRESS 45 N	160	170	M10
PRESS 60 N	160	180	M10
PRESS 100 N	195	205	M12



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
	All models	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. 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		
	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 vacuumeter
 - 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 requirements.

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 kW	Electric power supply		Note	Code
	kW	kg/h		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 mm²/s, cSt), Type MEDIUM HEAVY OIL / USA n° 4.

For higher viscosity please contact Riello Burners Technical Department.

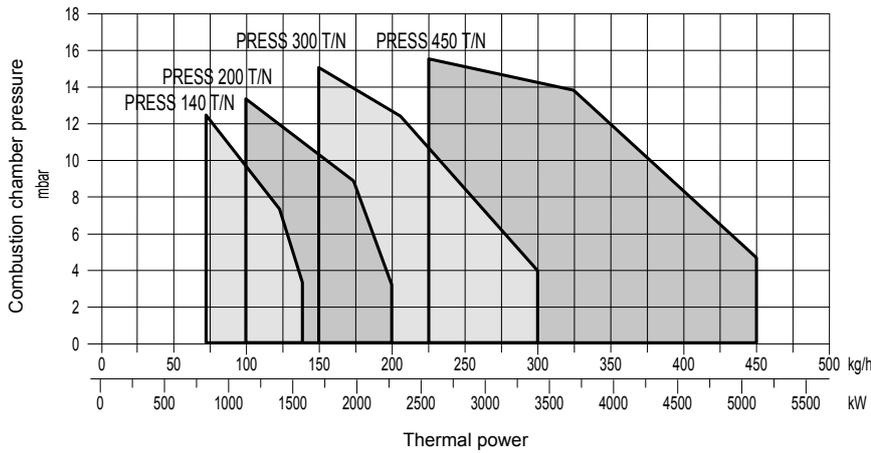
The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 267 Standard.

- (1) Nozzle supplied with the burner.
- (2) Star/delta starting, on board.
- (3) 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.

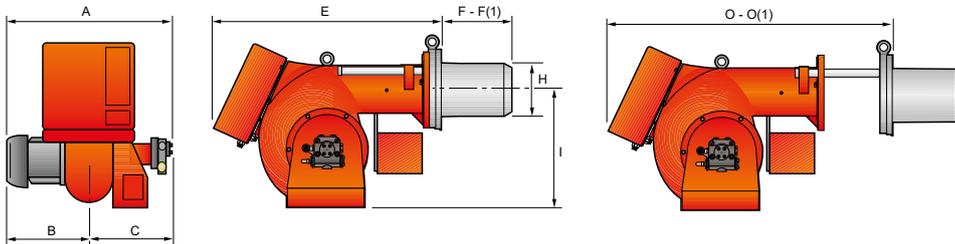
FIRING RATES



Useful working field for choosing the burner

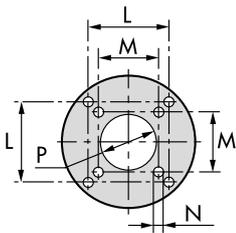
Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

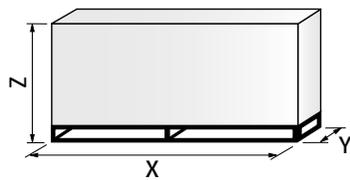


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
PRESS 140 T/N	796	396	400	890	323 - 433	222	467	1370 - 1370
PRESS 200 T/N	796	396	400	890	352 - 462	250	467	1370 - 1370
PRESS 300 T/N	858	447	411	1000	376 - 506	295	496	1515 - 1665
PRESS 450 T/N	950	508	442	1090	435 - 565	336	525	1665 - 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 thermostat 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 TYPE F80 PL 60°
		GPH	Rated delivery (kg/h) at 25 bar		
	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 vacuumeter
 - 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

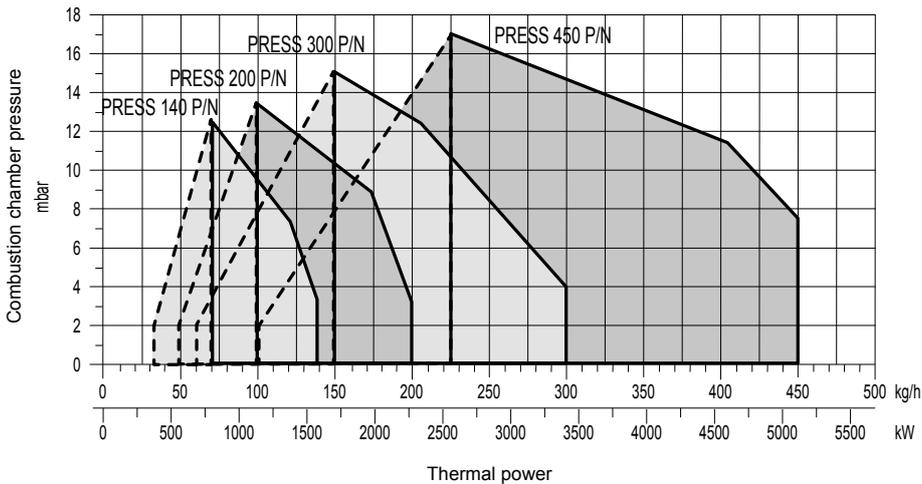
Description	Heat output		Total electrical power kW	Electric power supply		Note	Code
	kW	kg/h		Ph/V/Hz	V/Hz		
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)							
PRESS 140 P/N TC FS1	400/800-1600	35/70-140	19	3/400/50	230/50	(3)	20206097
PRESS 140 P/N TL FS1	400/800-1600	35/70-140	19	3/400/50	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 TL 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.

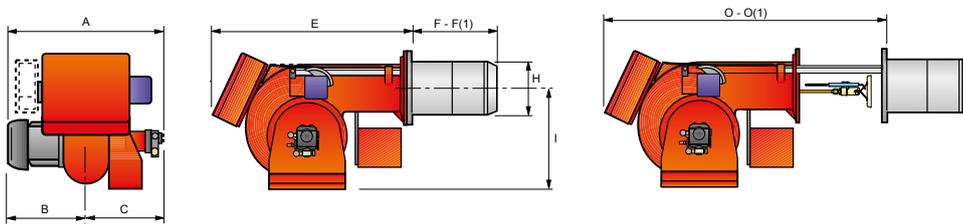
Viscosity
 The modulating burner P/N series can burn different heavy oil types from 7 up to 60 °E @ 50 °C (50 up to 450 cSt @ 50 °C).
 For different viscosity levels Riello recommends 3 different configurations:
 1) PRESS P/N version for viscosity up to 7 °E (50 mm²/s, cSt), Type MEDIUM HEAVY OIL / USA 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 mm²/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 mm²/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 mm²/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



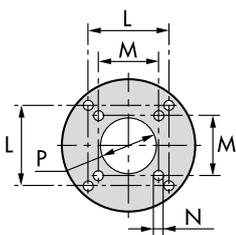
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

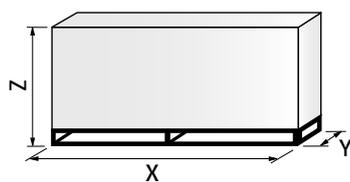


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
PRESS 140 P/N	796	396	400	910	323 - 433	222	467	1390 - 1390
PRESS 200 P/N	796	396	400	910	352 - 462	250	467	1390 - 1390
PRESS 300 P/N	858	447	411	1020	376 - 506	295	496	1535 - 1685
PRESS 450 P/N	950	508	442	1090	435 - 565	336	525	1665 - 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
	PRESS 300-450 P/N	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. 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 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
		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
	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

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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 vacuumeter
 - 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-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 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 kW	Electric power supply		Code
	kW	kg/h		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.

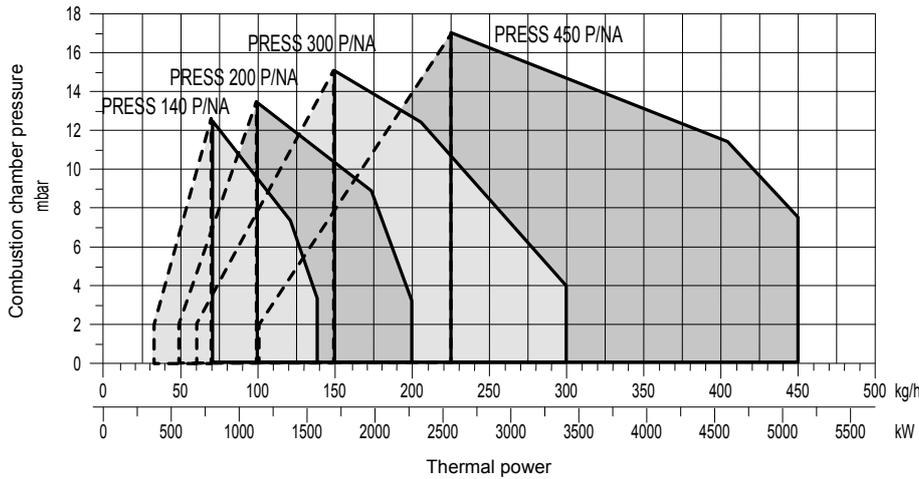
Viscosity

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:

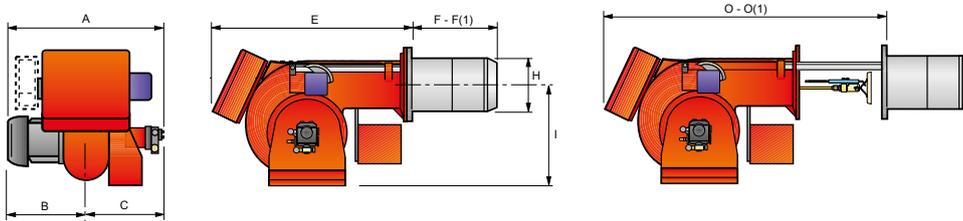
- 1) PRESS P/NA version for viscosity up to 60 °E (450 mm2/s, cSt), Type BUNKER C / USA n° 6:
 - with 2800 rmp oil pump installed directly on fan motor shaft;
 - heavy oil heating cartridges factory installed on nozzle, pump and valves group (see available codes in the table above).
- 2) PRESS P/NA ECO 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



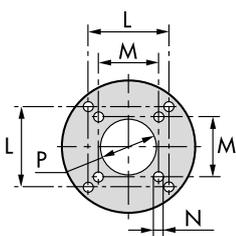
Useful working field for choosing the burner
 Modulation range
 Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013,5 mbar
 Altitude: 0 m a.s.l.

OVERALL DIMENSIONS

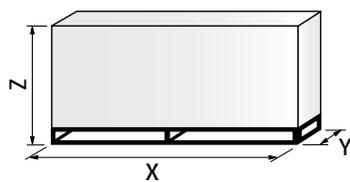


Description	A mm	B mm	C mm	E mm	F - F(1) mm	H mm	I mm	O - O(1) mm
PRESS 140 P/NA	796	396	400	910	323 - 433	222	467	1390 - 1390
PRESS 200 P/NA	796	396	400	910	352 - 462	250	467	1390 - 1390
PRESS 300 P/NA	858	447	411	1020	376 - 506	295	496	1535 - 1685
PRESS 450 P/NA	950	508	442	1090	435 - 565	336	525	1665 - 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
	PRESS 300-450 P/NA	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.	
		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
	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
	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°

GAS

LIGHT OIL

DUAL FUEL

HEAVY OIL

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/m ³	6 bar	5 bar	4 bar	3 bar	2 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

GAS

LIGHT OIL

DUAL FUEL

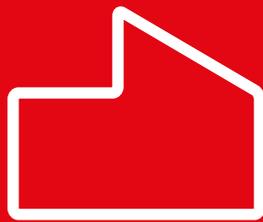
HEAVY OIL

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 vacuumeter
 - 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-ventilator 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 GAS

PROCESS LIGHT OIL BURNERS

PROCESS LIGHT OIL

INDUSTRIAL BURNERS

INDUSTRIAL

GAS TRAINS

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 Ph/V/Hz	Total electrical power kW	Certification	Notes	Code
	kW	Nm3/h					
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.

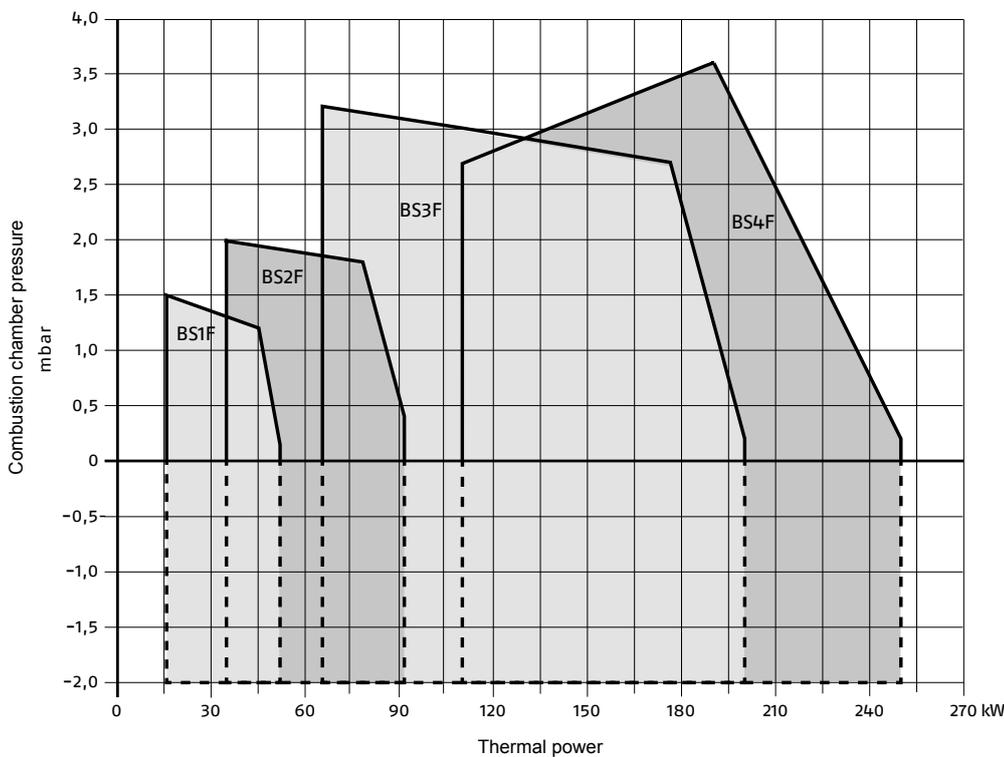
(1) Electrical connections with plug and socket.

* 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

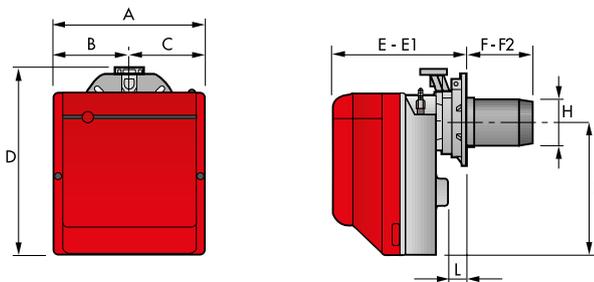
FIRING RATES



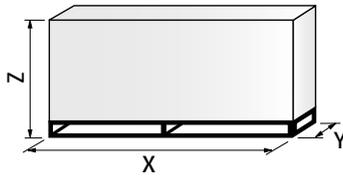
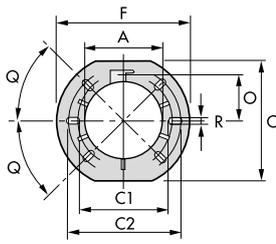
Useful firing rates for choosing the burner
 Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

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



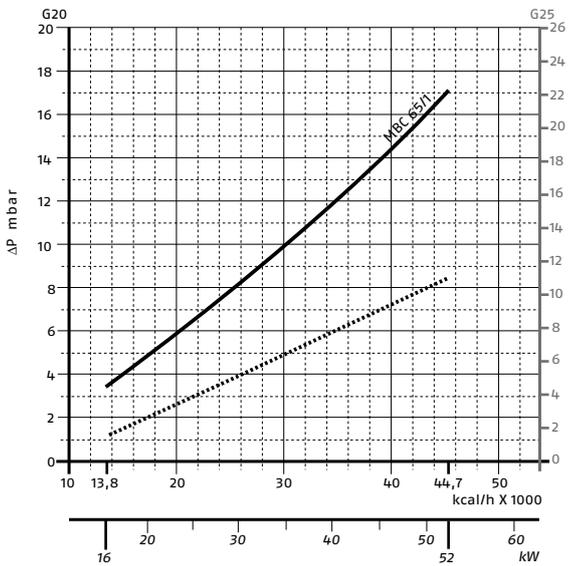
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
BS1F	89	167	140	170	192	66	45°	11
BS2F	106	167	140	170	192	66	45°	11
BS3F	129	201	160	190	216	76.5	45°	11
BS4F	137	203	170	200	218	80.5	45°	11

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

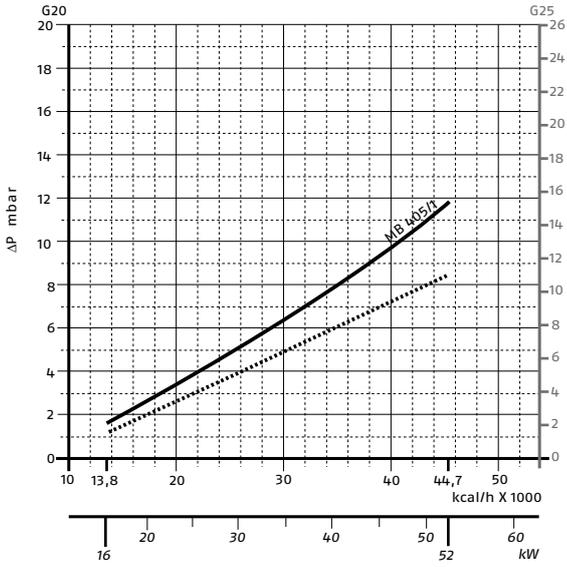


Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

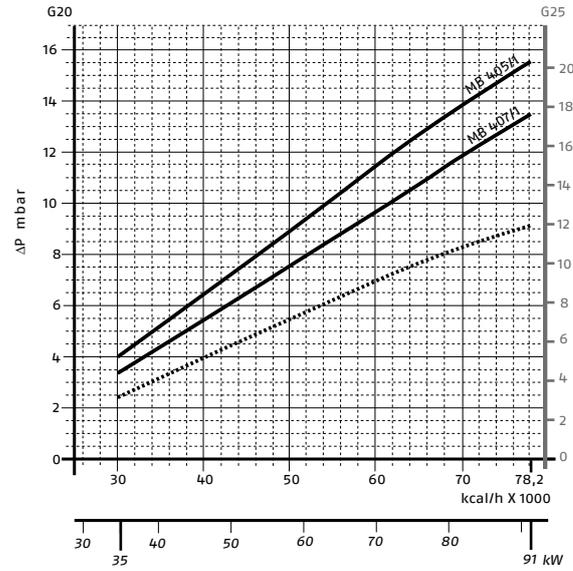
- Combustion head + gas train
- - - Combustion head

MB SERIES GAS TRAIN

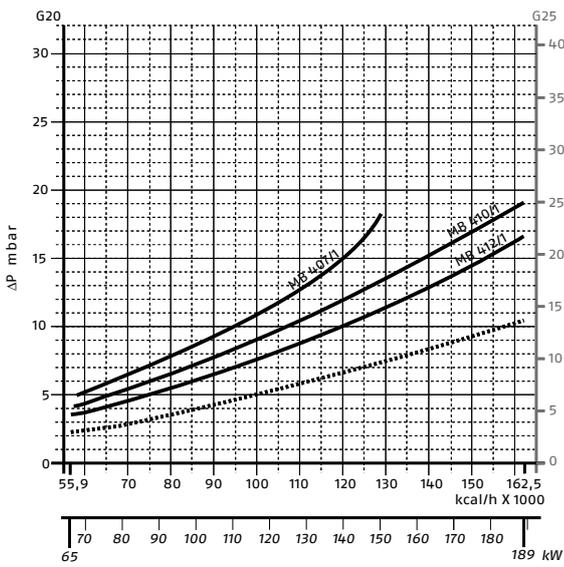
BS1F



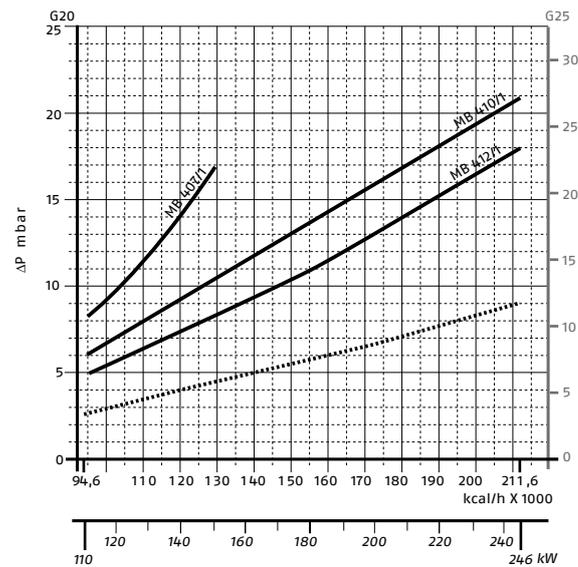
BS2F



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.

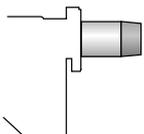
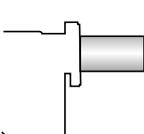
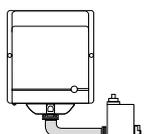
— Combustion head + gas train
 - - - Combustion head

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 Ph/V/Hz	Total electrical power kW	Certification	Notes	Code
	kW	Nm3/h					
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.

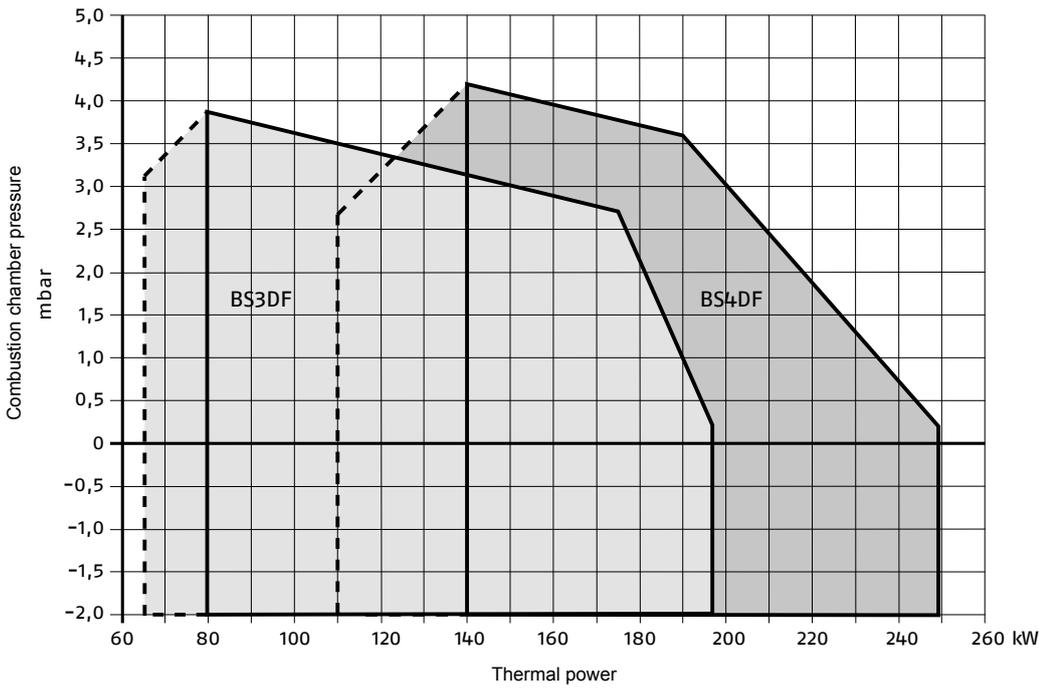
(1) Electrical connections with plug and socket.

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

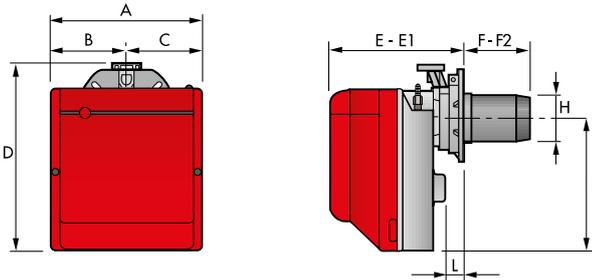


Useful firing rates for choosing the burner
 1st stage operation range

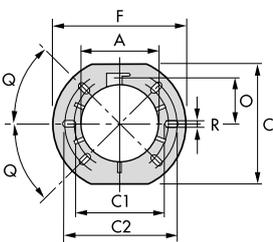
Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

IMPORTANT:
 For the part of the working field that is depressurised, refer to EN 746-2 Standard.

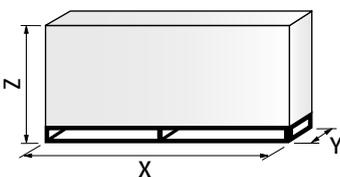
OVERALL DIMENSIONS



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



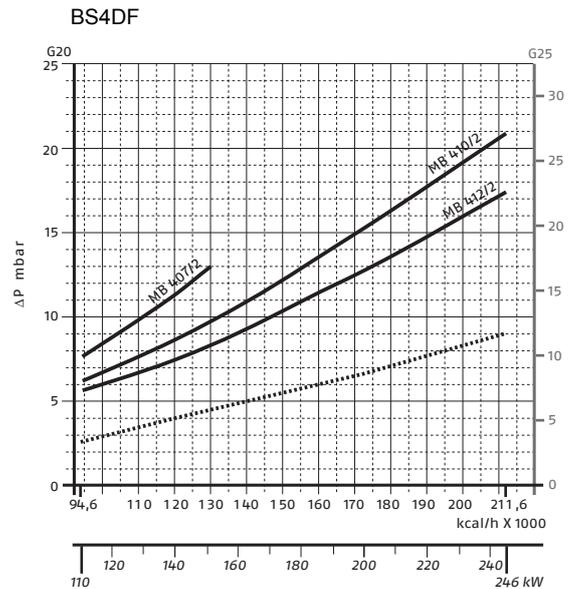
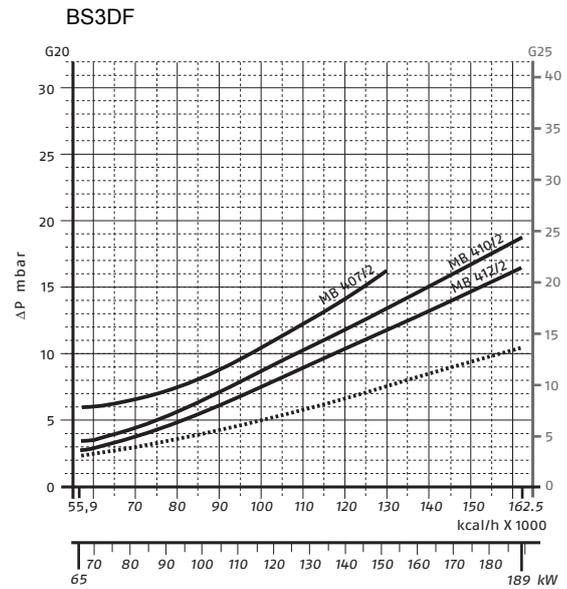
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
BS3DF	129	201	160	190	216	76.5	45°	11
BS4DF	137	203	170	200	218	80.5	45°	11



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



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

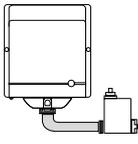
GAS TRAIN

Description (1)	Code	Notes	Ø Gas train	C.T. (2)	Burner
MB 407/2-F3SD 20	3970541*	(3)	3/4"	3010123	BS3DF
MB 410/2-F3SD 20	3970542*		1"1/4	3010123	BS3DF-BS4DF
MB 412/2-F3SD 20	3970543*		1"1/4	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
	BS3DF	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 = 110-128 mm - Extended head length = 267-282 mm	3001009
	BS4DF	Standard head length = 145-168 mm - Extended head length = 302-317 mm	3001016
	BS3DF	ALTERNATIVE COMBUSTION HEAD KIT (*) This kit can be used to prevent combustion instability which could arise with particular heat generators. To extend the adaptability of Gulliver BS burners to any sort of application, alternative combustion heads have been developed. These heads cause a very limited increase in NOx emissions, due to the slower air flow. Kit code for alternative combustion head.	3001060
	BS4DF	Kit code for alternative combustion head.	3001070
	BS3DF	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.	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 PhV/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.

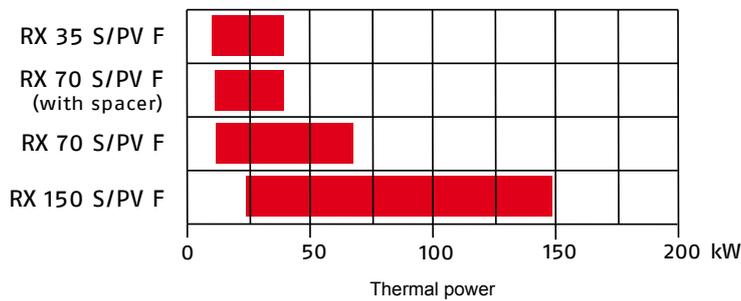
(4) Combustion head provided as an accessory.

* 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

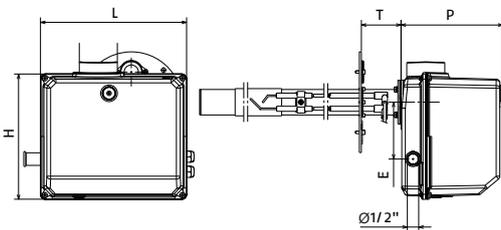
Burner range	Description service	Code
RX 35-150 S/PV F	Installation advice	27017470
	Commissioning and adjustment	27017471
	Performance Check	27017475
	Regular maintenance	27017480
	Intervention on request (4h)	27017485
	Intervention on request (8h)	27017486
	Maintenance and repair plan	27017487
	Commissioning and adjustment with initial regular maintenance package	27017495

BURNER OUTPUTS



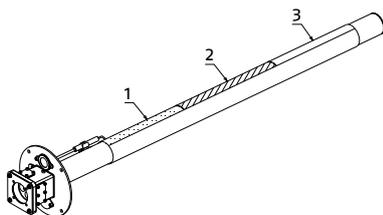
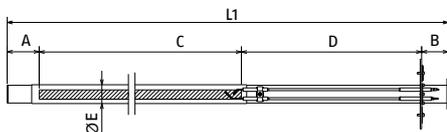
OVERALL DIMENSIONS

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

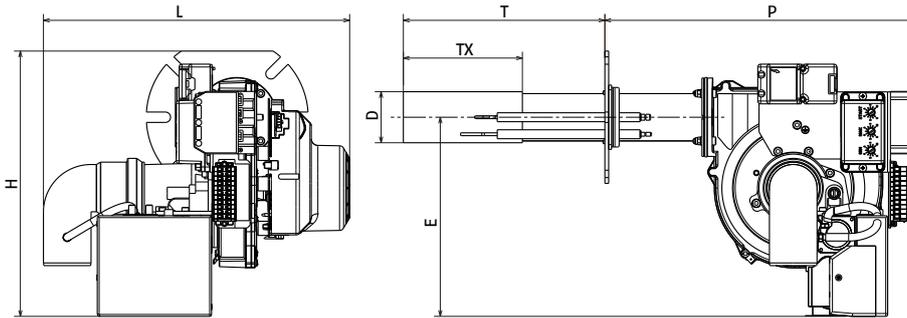
RX 35 S/PV F - COMBUSTION HEAD



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.

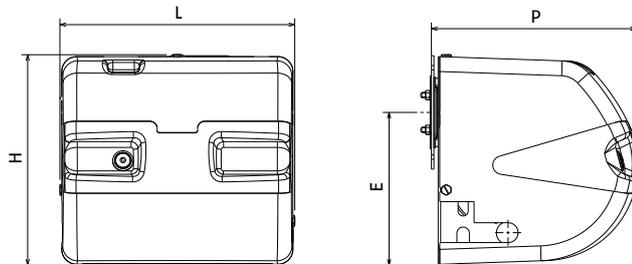
RX 70 S/PV F - COMBUSTION HEAD INCLUDED



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

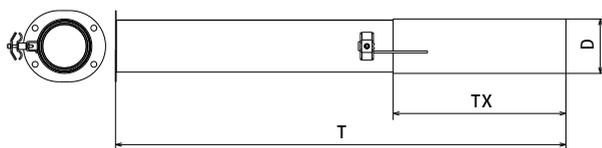
(*) With spacer.

RX 150 S/PV F



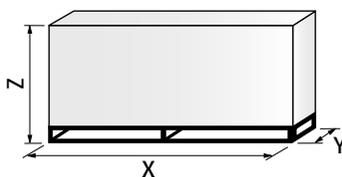
Description	H mm	L mm	P mm	E mm
RX 150 S/PV F TC	340	380	330	247
RX 150 S/PV F TL	340	380	330	247

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	<p>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).</p> <p>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.</p> <p>Thanks to the configuration parameters adjustable via dip-switches, the system is easy to set up both in case of new installation and replacement.</p> <p>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.</p> <p>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</p>	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 PhV/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.

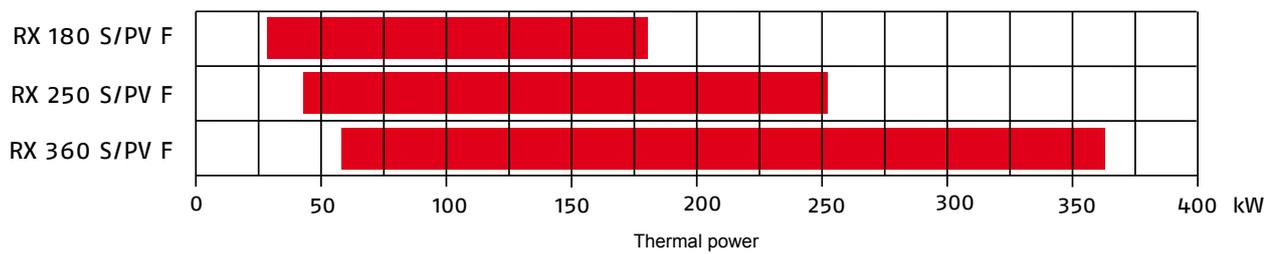
(4) Combustion head provided as an accessory.

* 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

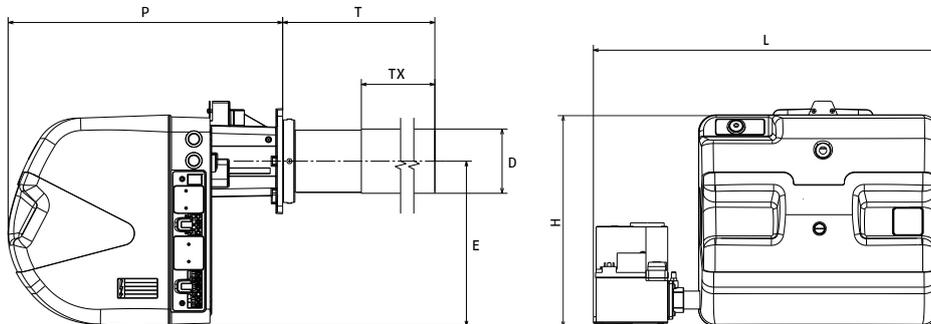
Burner range	Description service	Code
RX 180-360 S/PV F	Installation advice	27017470
	Commissioning and adjustment	27017472
	Performance Check	27017475
	Regular maintenance	27017481
	Intervention on request (4h)	27017485
	Intervention on request (8h)	27017486
	Maintenance and repair plan	27017488
	Commissioning and adjustment with initial regular maintenance package	27017496

BURNER OUTPUTS

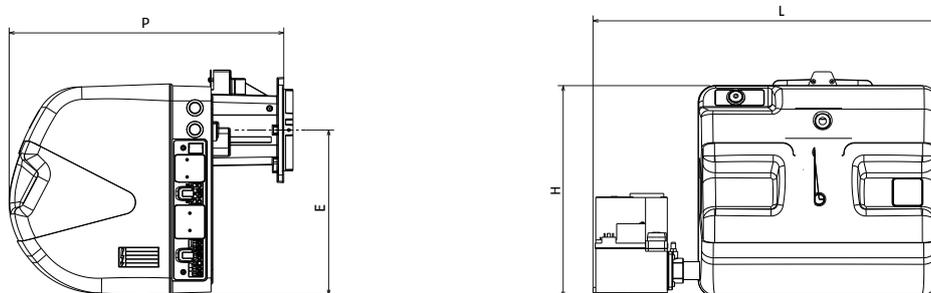


OVERALL DIMENSIONS

RX 180-250 S/PV F TC

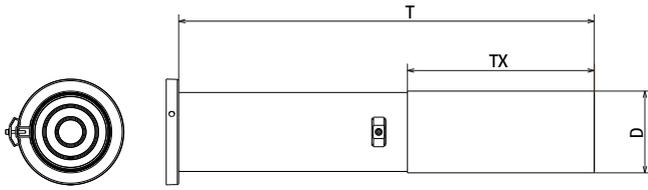


RX 180-250 S/PV F TL



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

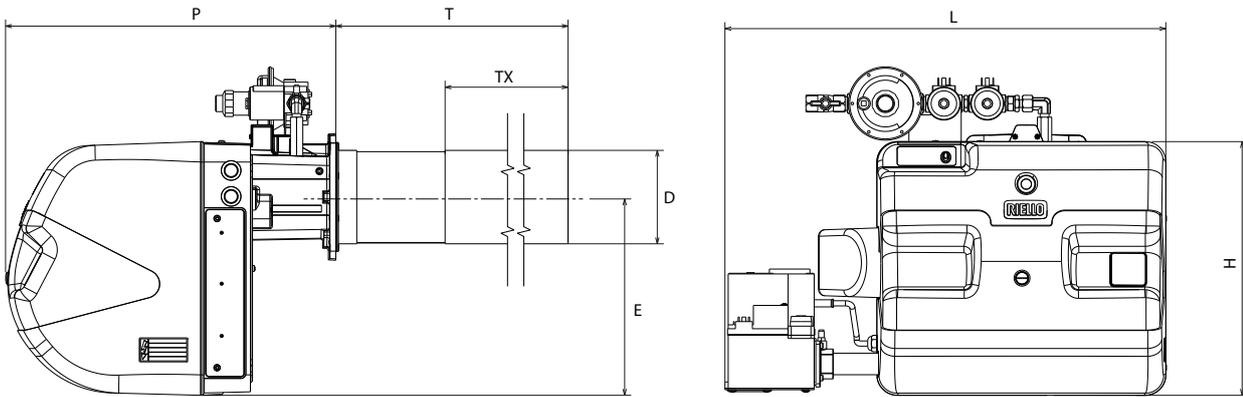
RX 180-250 S/PV F - COMBUSTION HEAD



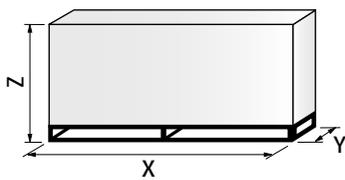
Description	Combustion head assembly	D mm	T mm	TX mm
COMBUSTION HEAD				
RX 180 S/PV F TC	INCLUDED IN BURNER CODE	119	160	460
RX 250 S/PV F TC	INCLUDED IN BURNER CODE	119	160	460
RX 180 S/PV F TL	20028729	119	600	250
RX 180 S/PV F TL	20054833	119	500	150
RX 250 S/PV F TL	20058677	119	690	250

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	
	3151000	T = 1000	
	3151002	T = 1250	
RX 250 S/PV VA RX 290 S/PV VA RX 310 S/PV VA	3151003	T = 1470	
	20085194	T = 1000 High temperature	(1)
	20069560	T = 1250 High temperature	(1)
	20085180	T = 1470 High temperature	(1)

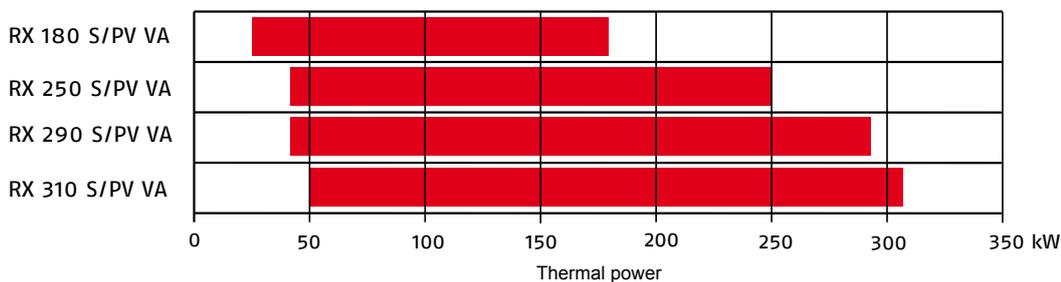
- (1) To be used with air temperature inside the channel higher than 100°C.

* 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.

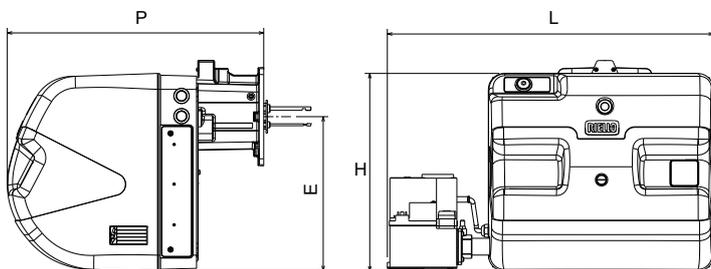
SERVICES FOR BURNERS

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

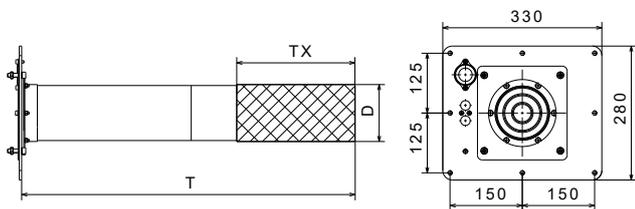


OVERALL DIMENSIONS



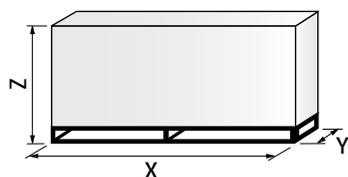
Description	H mm	L mm	P mm	E mm
RX 180 S/PV VA	390	640	503	306
RX 250 S/PV VA	390	640	503	306
RX 290 S/PV VA	390	640	503	306
RX 310 S/PV VA	390	640	503	306

COMBUSTION HEAD

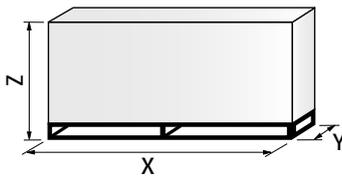


Description	T mm	TX mm	D mm
COMBUSTION HEAD			
20025306	1000	250	119
20085194-3151000	1000	350	119
3151002-20069560	1250	350	119
3151003-20085180	1470	350	119

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 SOFTWARE 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	Electric power supply	Total electrical power	Note	Code
	kW	Ph/V/Hz	kW		
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

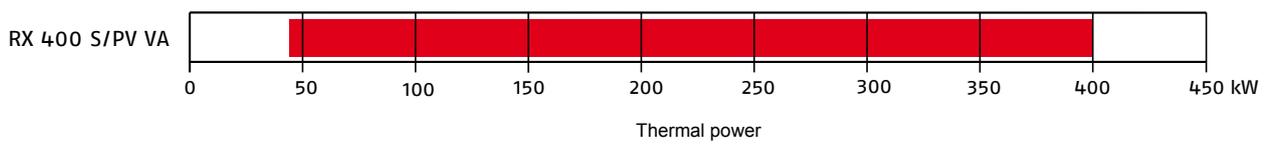
Description	Combustion head assembly code	Length mm
RX 400 S/PV VA	3151000	T = 1000
	3151001	T = 1250
	3151004	T = 1570

* 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.

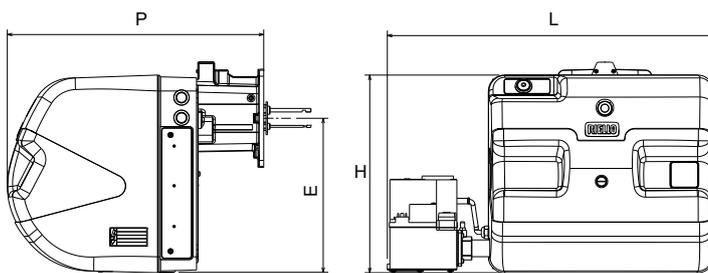
SERVICES FOR BURNERS

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

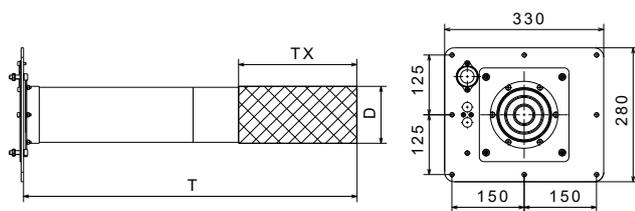


OVERALL DIMENSIONS



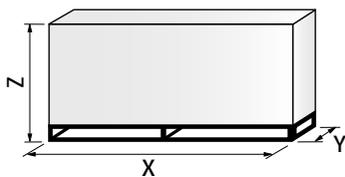
Description	H mm	L mm	P mm	E mm
RX 400 S/PV VA	457	707	524	353

COMBUSTION HEAD

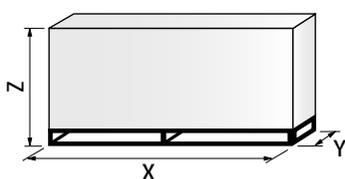


Description	T mm	TX mm	D mm
COMBUSTION HEAD			
3151000	1000	350	119
3151001	1250	450	119
3151004	1570	450	119

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 SOFTWARE 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

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GULLIVER RSF

- Industrial ovens
- Paint booths
- Low-power steam generators

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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)

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RS 70 VA

- Paint ovens
- Low-temperature dryers (grain, straw, wood)
- Printing machines
- Laundry machines
- Agricultural dryers (cereals, fodder, tobacco)

page 676



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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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

<p>HIGH SPEED</p>	 <p>BPM GV - BPN GV</p> <ul style="list-style-type: none"> • 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) <p>page 690</p>	
<p>METAL VOLUMETRIC BURNERS FOR RADIANT TUBES</p>	 <p>N/TR</p> <ul style="list-style-type: none"> • Ceramics, bricks, refractory material industry: <ul style="list-style-type: none"> - Roller ovens, tunnel ovens, intermittent ovens, melting ovens - Continuous and intermittent dryers • Steel industry • Surface treatments <p>page 692</p>	
<p>INCINERATORS AND POST-COMBUSTORS</p>	 <p>FC</p> <ul style="list-style-type: none"> • 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 <p>page 695</p>	

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	Nm ³ /h					
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					
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/Nm³.

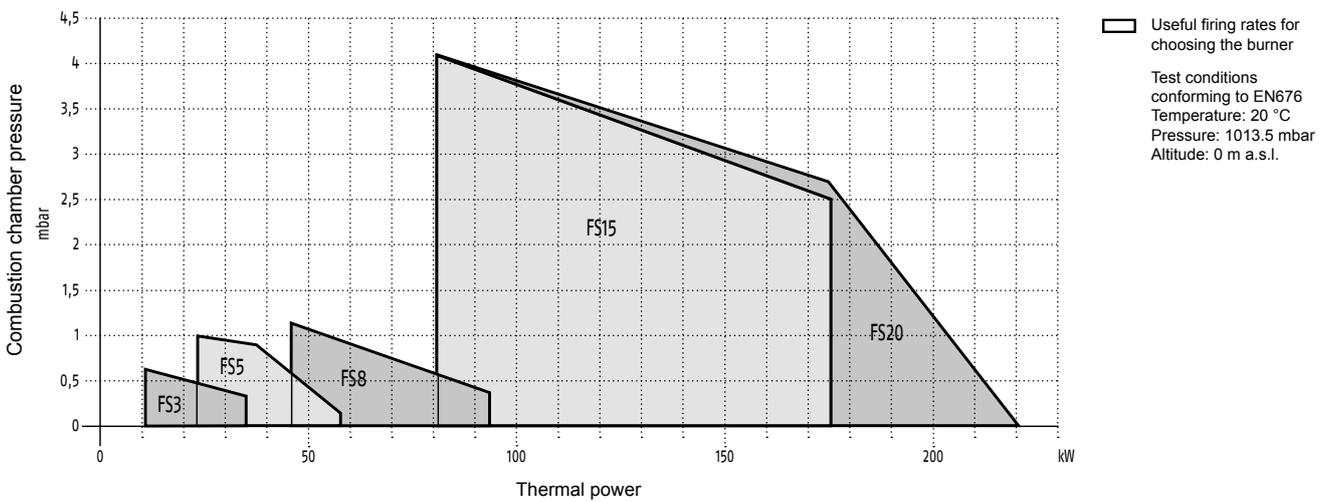
The burners comply with 2016/426/EU Regulation, the 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 676 Standard.

(1) Electrical connections with plug and socket.

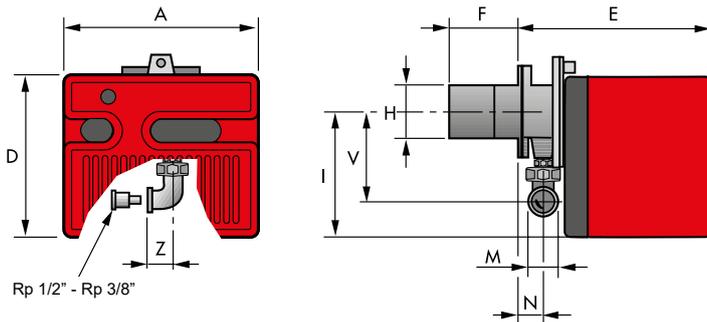
SERVICES FOR BURNERS

Burner range	Description service	Code
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



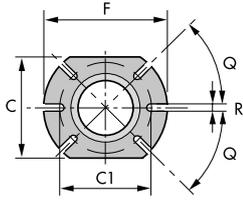
OVERALL DIMENSIONS



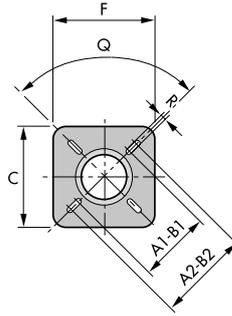
Description	A mm	D mm	E mm	F mm	H mm	I mm	M	N mm	V mm	Z mm
FS3	252	215	230	100	91	165	Rp 3/8"*	37	132	25
FS5	272	233	295	100	91	180	Rp 1/2"	48	138	28
FS8	305	262	347	110	105	204	Rp 3/4"	61	142	33
FS10	305	262	346	110	105	204	Rp 1/2"	61	142	33
FS15	350	298	389	120	125	230	Rp 3/4"	67	152	33
FS20	350	298	389	120	125	230	Rp 3/4"	67	152	33

* With reduction nipple, standard equipment on R40 FS3.

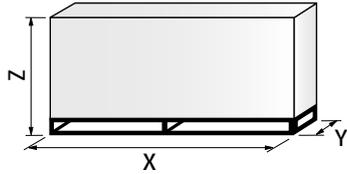
FS3-FS10



FS15-FS20



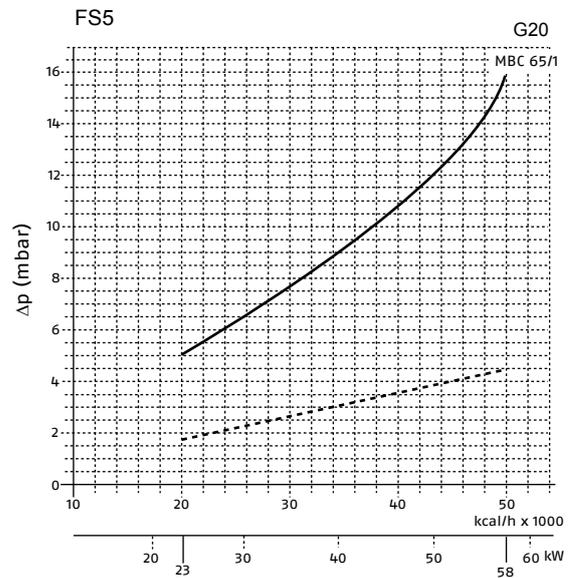
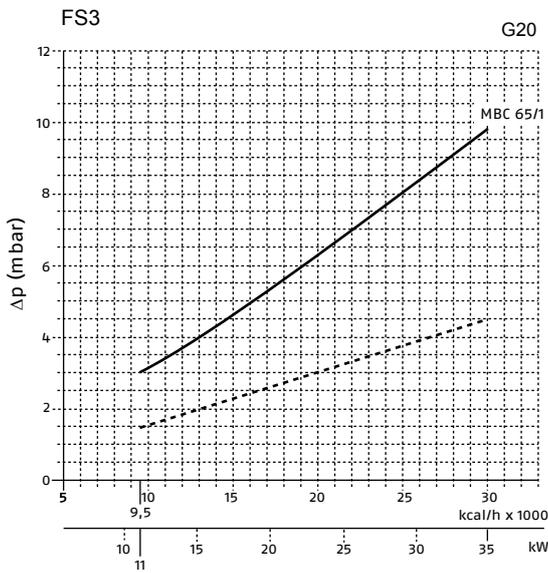
Description	A1 mm	A2 mm	B1 mm	B2 mm	C mm	C1 mm	F mm	Q	R mm
FS3	-	-	-	-	140	130	170	45°	10
FS5	-	-	-	-	140	130	170	45°	10
FS8	-	-	-	-	160	130	185	45°	11
FS10	-	-	-	-	160	130	185	45°	11
FS15	155	200	155	200	170	-	170	90°	11
FS20	155	200	155	200	170	-	170	90°	11



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

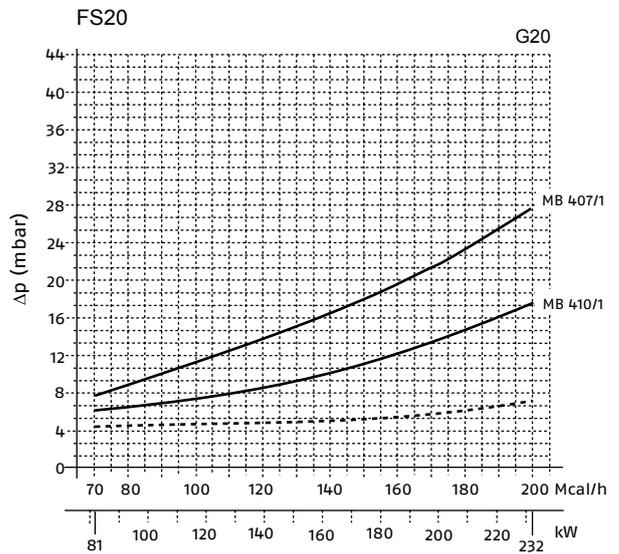
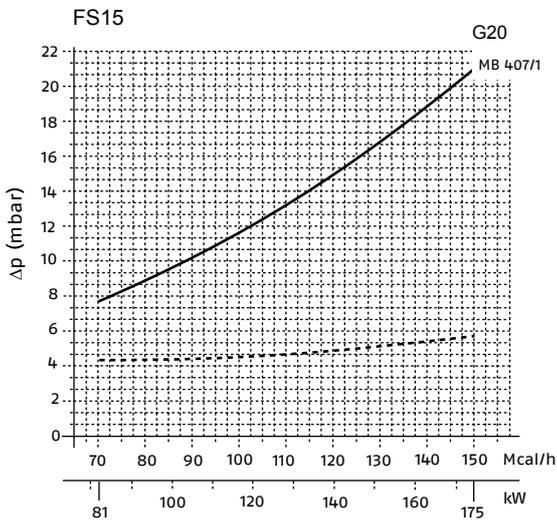
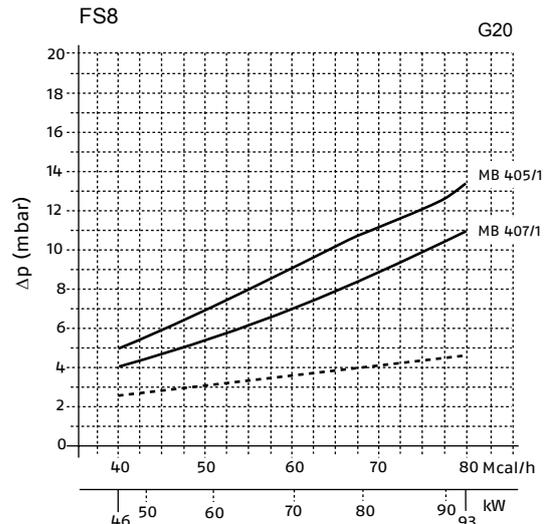
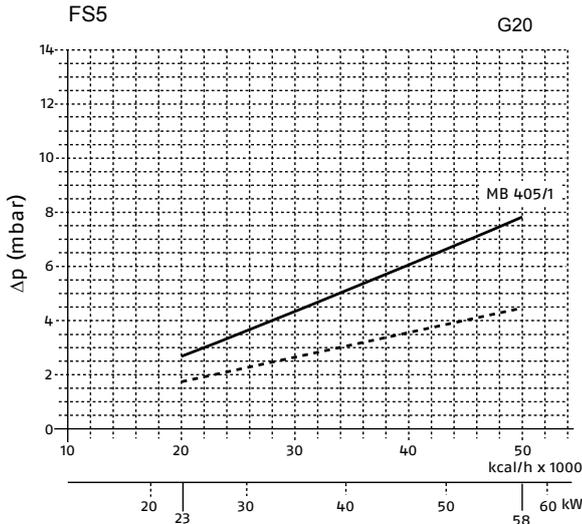
MBC SERIES GAS TRAINS



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

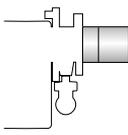
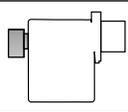
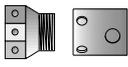
- (1) Please refer to "GAS TRAIN DESIGNATION" on page 153.
- (2) C.T. indicates the gas valve seal control device (compulsory, according to EN 676, for burner output up to 1200 kW).
- (3) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph 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
	FS3-FS5	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 = 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
	FS3	INLET AIR ASPIRATION KIT This kit allows to channel the external air directly into the burner. 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
	FS3	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.		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
	FS3	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.		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
	FS5	END CONE WITH TURBULATOR DISK The end cone turbulator disk reduces the flame length. It is suitable for oven application (CO emissions) and short boiler chamber. 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	Nm ³ /h					
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.

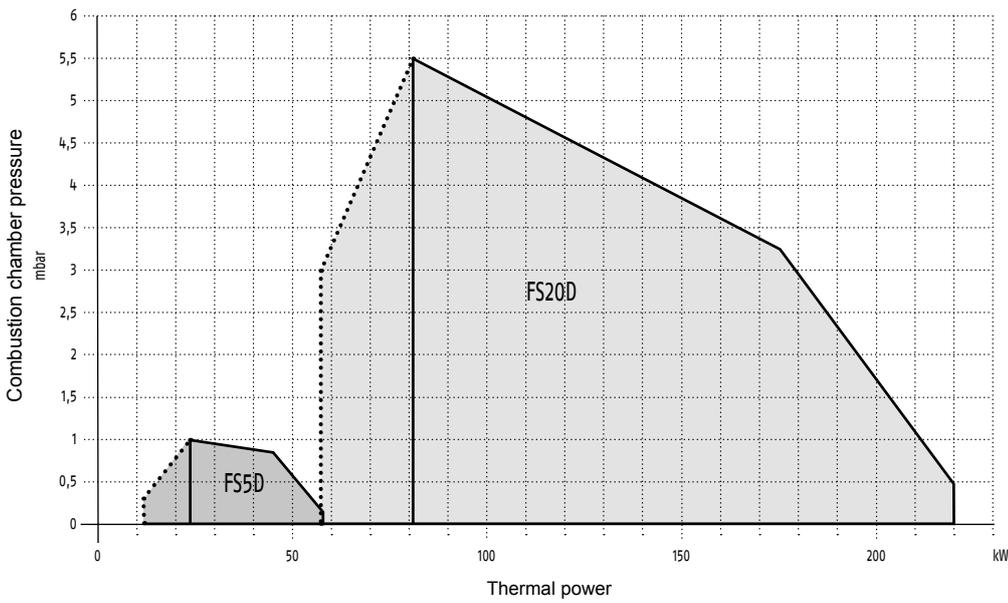
The burners comply with 2016/426/EU Regulation, the 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 676 Standard.

(1) Electrical connections with terminal block.

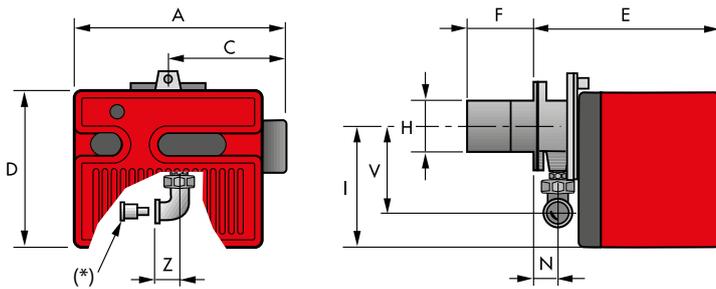
SERVICES FOR BURNERS

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



OVERALL DIMENSIONS

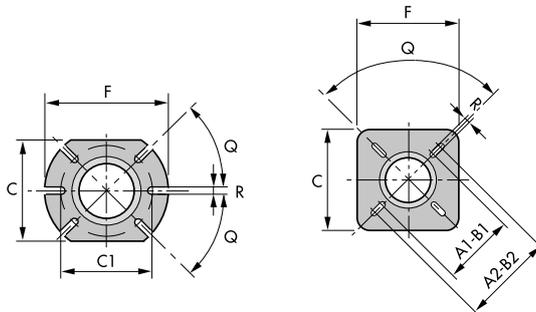


Description	A mm	C mm	D mm	E mm	Fv	H mm	I mm	N mm	V mm	Z mm
FS5D	306	170	233	295	100	91	180	48	138	28
FS20D	413	238	298	389	120	125	230	67	152	33

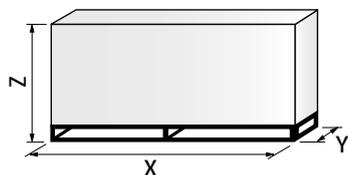
(*) With reduction nipple.

FS5D

FS20D



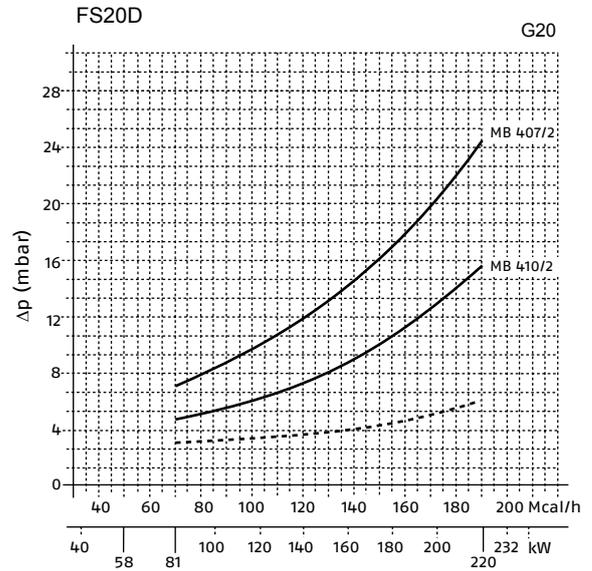
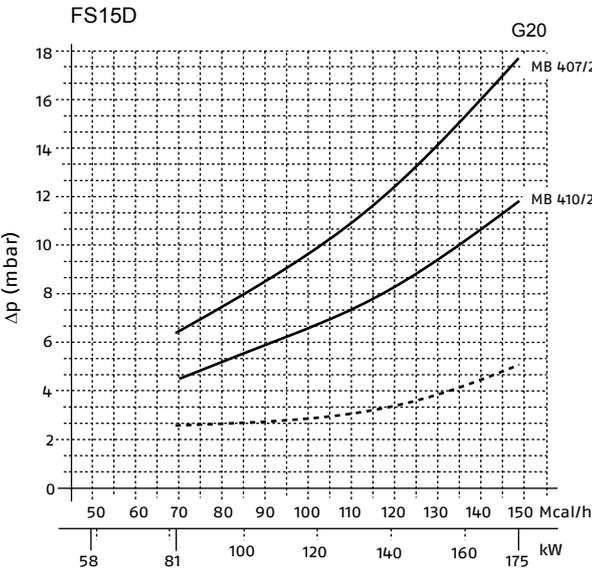
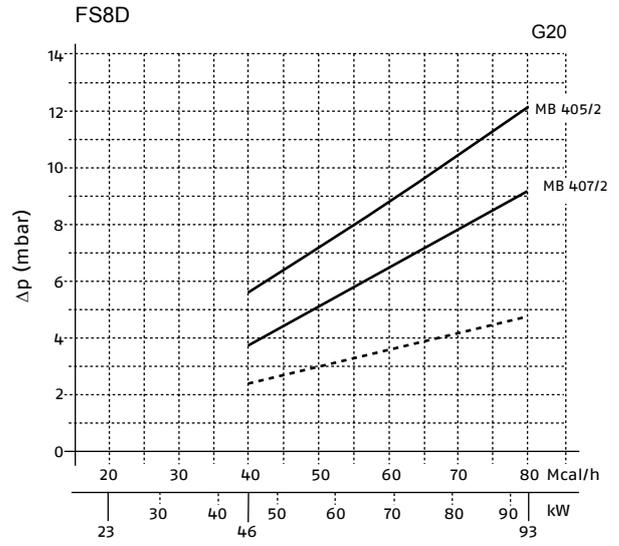
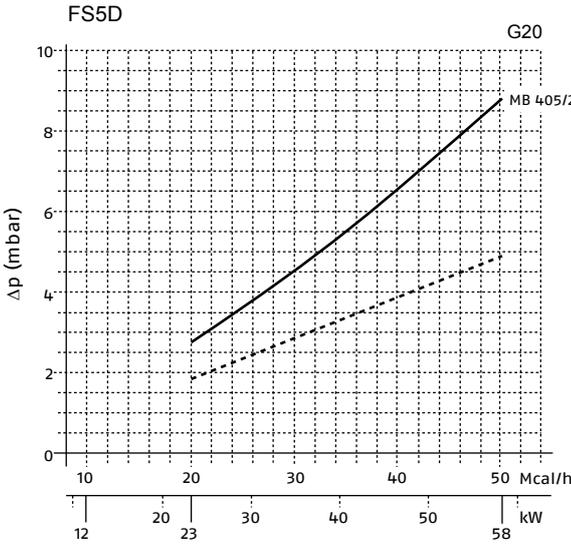
Description	A1 mm	A2 mm	B1 mm	B2 mm	C mm	C1 mm	F mm	Q	R mm
FS5D	-	-	-	-	140	130	170	45°	10
FS20D	155	200	155	200	170	-	170	90°	11



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



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

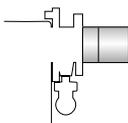
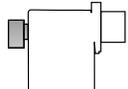
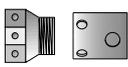
- (1) Please refer to "GAS TRAIN DESIGNATION" on page 153.
- (2) C.T. indicates the gas valve seal control device (compulsory, according to EN 676, for burner output up to 1200 kW).
- (3) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph 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
	FS5D	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 = 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
	FS5D	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.	3000882
	FS20D	Kit code for standard and extended head.	3000886
	FS5D	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.	3000889
	FS20D	Kit code for standard and extended head.	3000894
	FS5D	END CONE WITH TURBULATOR DISK The end cone turbulator disk reduces the flame length. It is suitable for oven application (CO emissions) and short boiler chamber. 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 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
- 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	Nm ³ /h					
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/Nm³.

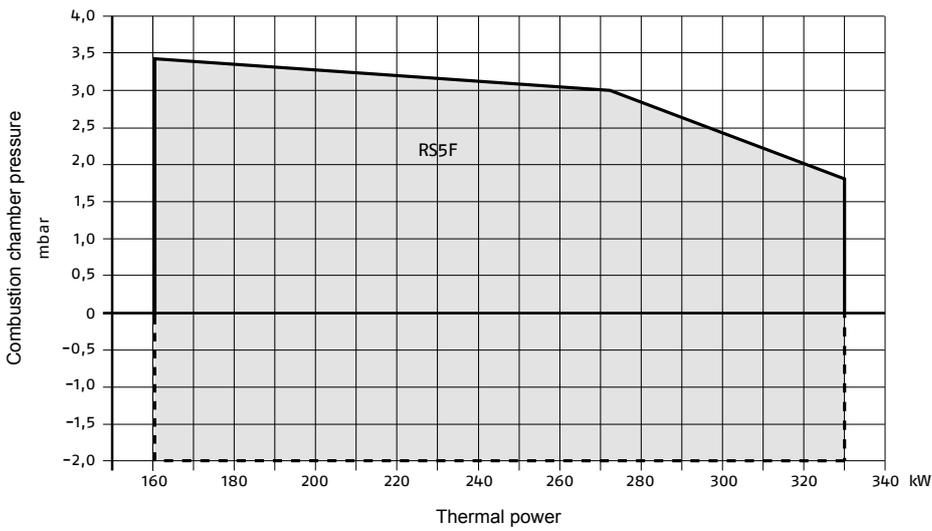
The burners comply with 2016/426/EU Regulation, the 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 676 Standard.

(1) Electrical connections with plug and socket.

SERVICES FOR BURNERS

Burner range	Description service	Code
GULLIVER 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

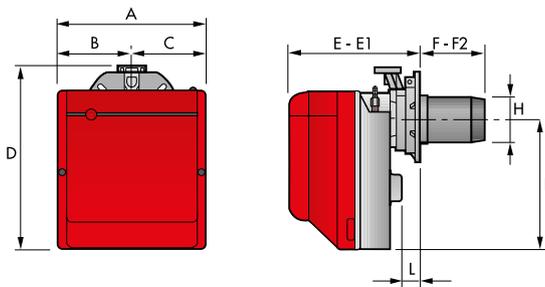


□ Useful firing rates for choosing the burner

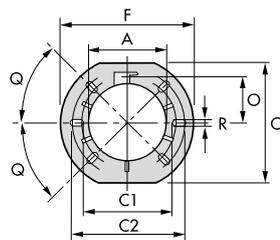
Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

IMPORTANT:
 For the part of the working field that is depressurised, refer to EN 746-2 Standard.

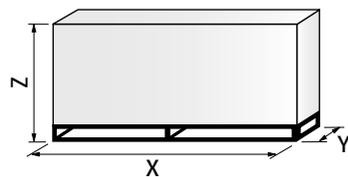
OVERALL DIMENSIONS



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



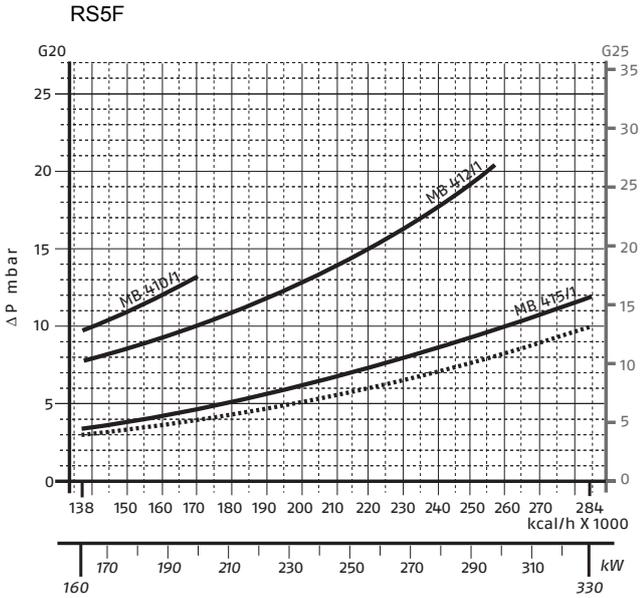
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
RS5F	137	203	170	200	218	80.5	45°	11



Description	X mm	Y mm	Z mm	Net weight kg
RS5F	600	345	430	18

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAINS



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 1/4"	3010123	RS5F
MB 415/1-F3SD 30	3970558*	(3)	1 1/2"	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 Ph/V/Hz	Total electrical power kW	Certification	Notes	Code
	kW	Nm ³ /h					
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.

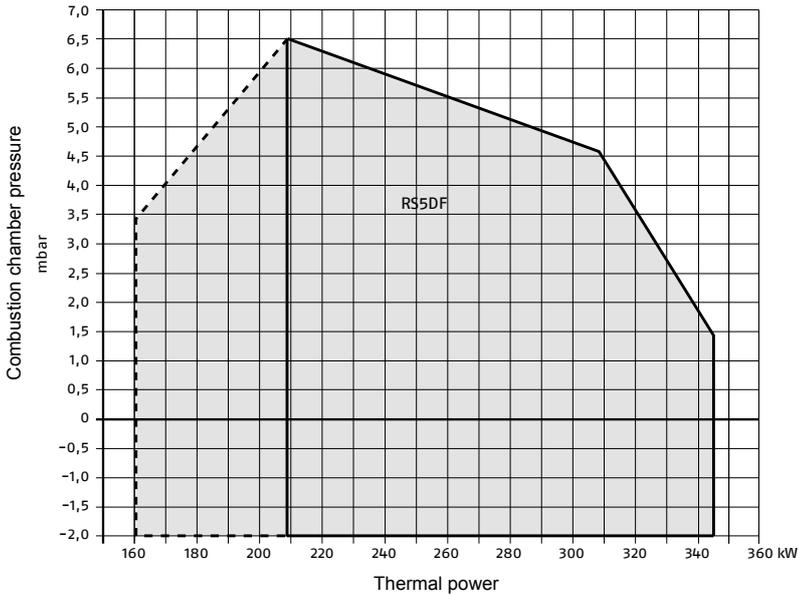
The burners comply with 2016/426/EU Regulation, the 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 676 Standard.

(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

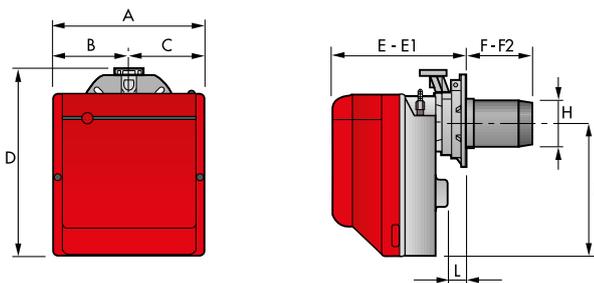


- ▭ Useful firing rates for choosing the burner
- - - 1st stage operation range

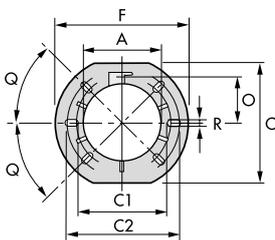
Test conditions conforming to EN676
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

IMPORTANT:
 For the part of the working field that is depressurised, refer to EN 746-2 Standard.

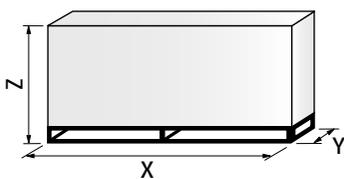
OVERALL DIMENSIONS



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



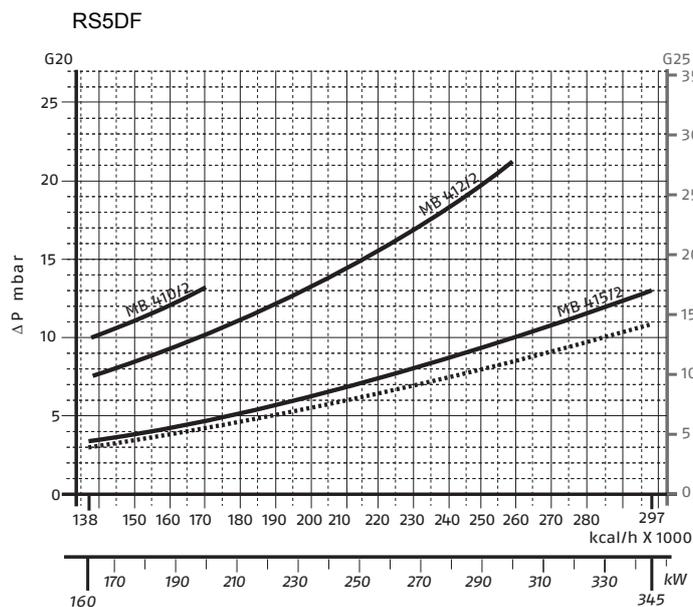
Description	A mm	C mm	C1 mm	C2 mm	F mm	O mm	Q	R mm
RS5DF	137	203	170	200	218	80.5	45°	11



Description	X mm	Y mm	Z mm	Net weight kg
RS5DF	600	345	430	18

PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAINS



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.

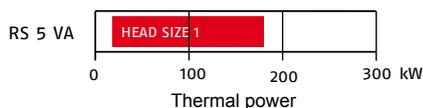
SERVICES FOR BURNERS

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

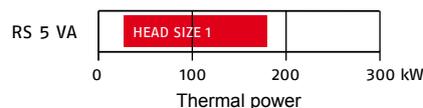
COMBUSTION HEAD MATCHING

Burners fire rate depends on the size of fitted head and on the pressure in the duct section.

AIR DUCT PRESSURE = 0-3 mbar

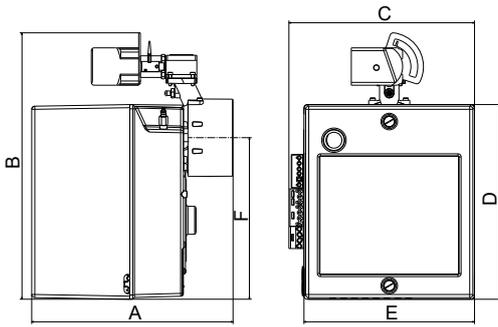


AIR DUCT PRESSURE = 3-6 mbar



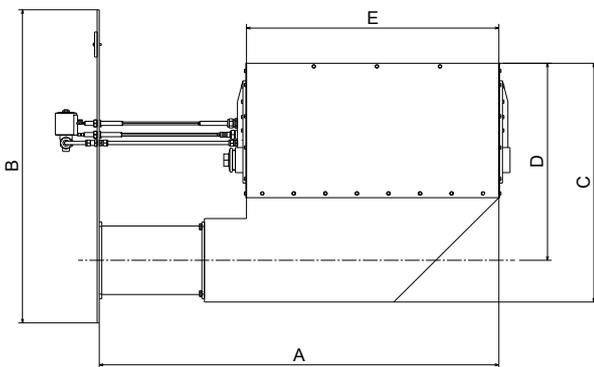
OVERALL DIMENSIONS

RS5 VA



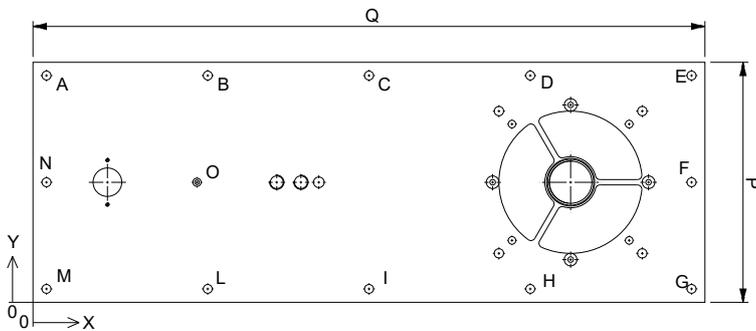
Description	A mm	B mm	C mm	D mm	E mm	F mm
RS 5 VA	353	471	325	344	302	286

COMBUSTION HEAD ASSEMBLY

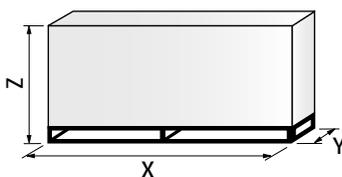


Head size	A mm	B mm	C mm	D mm	E mm
1/250	661	750	574	453	307
1/750	1161	750	574	453	307

FIXING PLATE

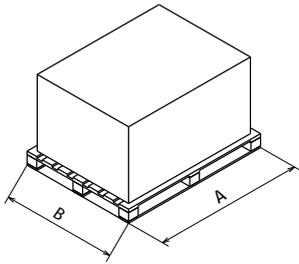


Holes	X mm	Y mm	Ø mm	Q mm	P mm
A	15	255	10	750	270
B	195	255	10	750	270
C	375	255	10	750	270
D	555	255	10	750	270
E	735	255	10	750	270
F	735	135	10	750	270
G	735	15	10	750	270
H	555	15	10	750	270
I	375	15	10	750	270
L	195	15	10	750	270
M	15	15	10	750	270
N	15	135	10	750	270
O	183	135	5.2	750	270



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 in the table. The weight of the ventilation structure, complete with packaging.

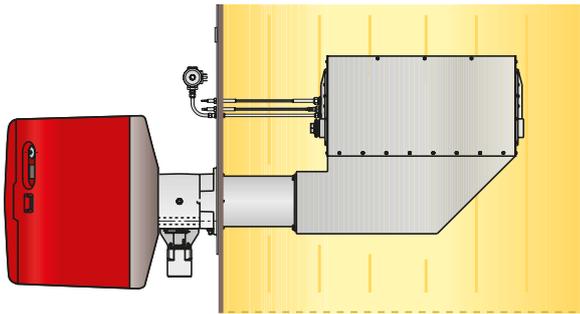


Head size	A mm	B mm
1/250	1200	800
1/750	1590	790

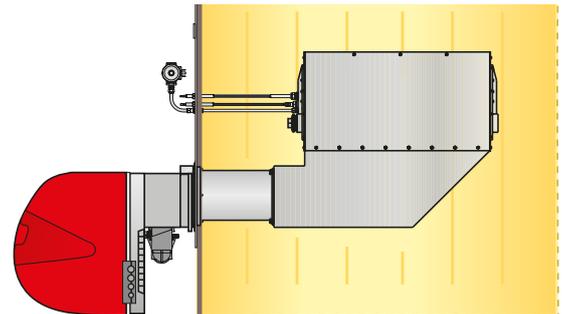
The head assemblies are shipped on pallets with the dimensions shown in the table.

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.

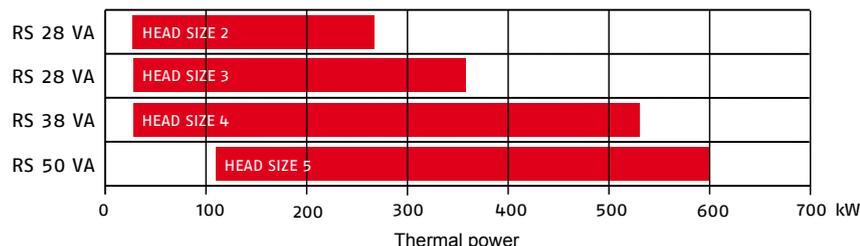
SERVICES FOR BURNERS

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

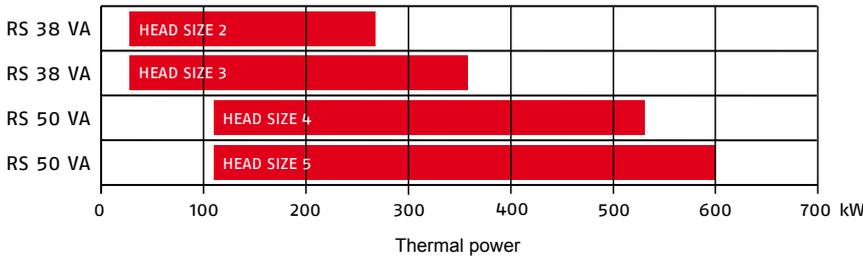
COMBUSTION HEAD MATCHING

Burners fire rate depends on the size of fitted head and on the pressure in the duct section.

AIR DUCT PRESSURE = 0-3 mbar

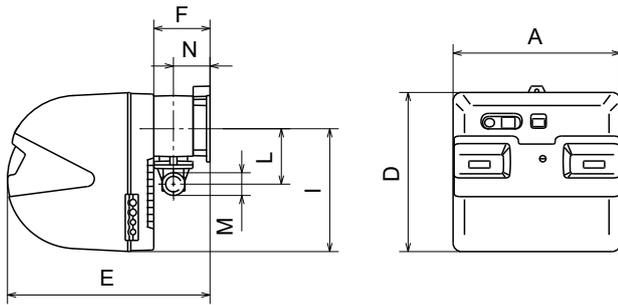


AIR DUCT PRESSURE = 3-6 mbar



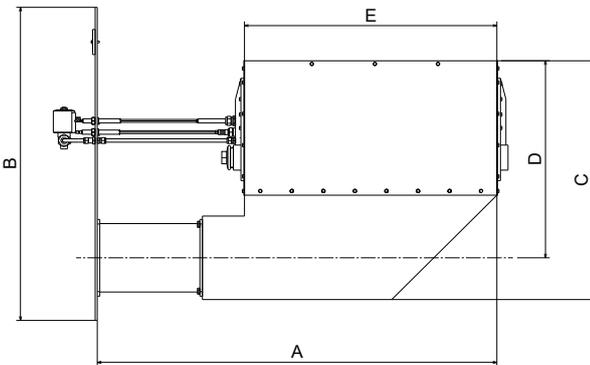
OVERALL DIMENSIONS

RS28-38-50 VA



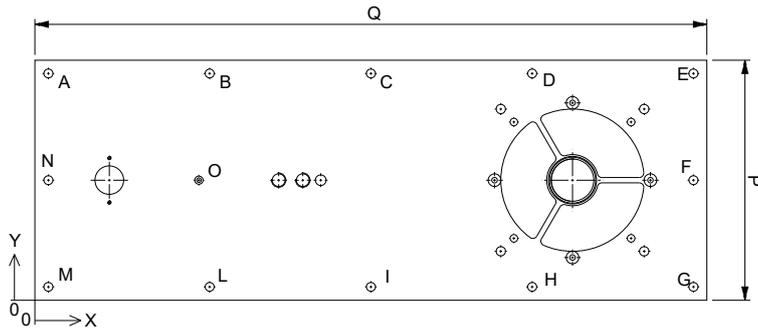
Description	A mm	D mm	E mm	F mm	I mm	L mm	M mm	N mm
RS 28 VA	476	474	580	164	352	168	1" 1/2	108
RS 38 VA	476	474	580	164	352	168	1" 1/2	108
RS 50 VA	476	474	580	164	352	168	1" 1/2	108

COMBUSTION HEAD ASSEMBLY

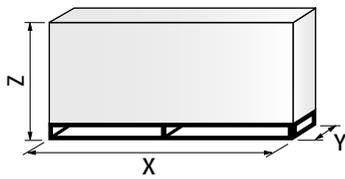


Head size	A mm	B mm	C mm	D mm	E mm
2/110	656	750	574	451	450
2/250	796	750	574	451	450
2/350	896	750	574	451	450
2/500	1046	750	574	451	450
2/750	1296	750	574	451	450
2/1000	1546	750	574	451	450
3/250	946	750	574	451	600
3/350	1046	750	574	451	600
3/500	1196	750	574	451	600
3/750	1446	750	574	451	600
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

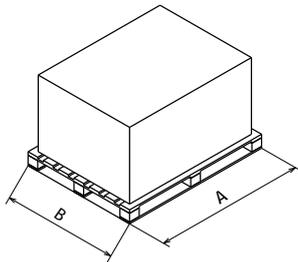


Holes	X mm	Y mm	Ø mm	L mm	P mm
A	15	255	10	750	270
B	195	255	10	750	270
C	375	255	10	750	270
D	555	255	10	750	270
E	735	255	10	750	270
F	735	135	10	750	270
G	735	15	10	750	270
H	555	15	10	750	270
I	375	15	10	750	270
L	195	15	10	750	270
M	15	15	10	750	270
N	15	135	10	750	270



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 in the table. The weight of the ventilation structure, complete with packaging.

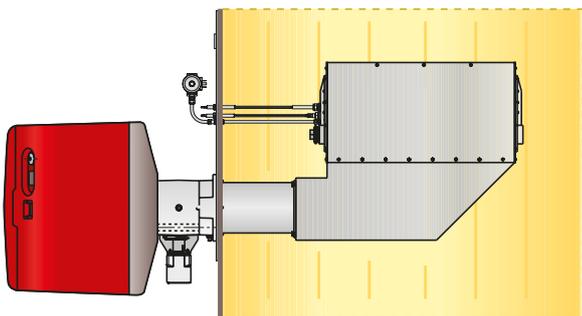


Head size	A mm	B mm
2/110	1190	790
2/250	1000	800
2/350	1190	790
2/500	1200	800
2/750	1800	800
2/1000	1800	800
3/250	1200	800
3/350	1190	790
3/500	1400	1000
3/750	1800	800
3/1000	2200	800
4/110	1590	790
4/250	1400	1000
4/250	1390	790
4/500	1800	800
4/750	2200	800
4/1000	2200	800
4/1500	2690	790
5/250	1800	800
5/500	2200	800
5/750	2200	800
5/1000	2600	800
5/1500	3400	886

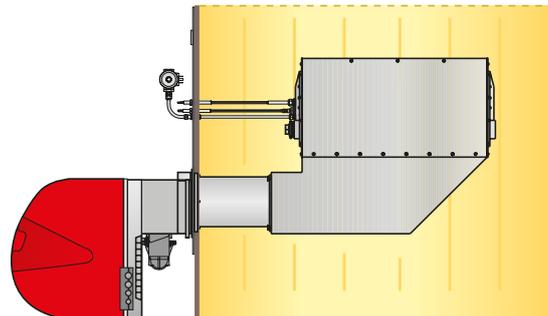
The head assemblies are shipped on pallets with the dimensions shown in the table.

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.

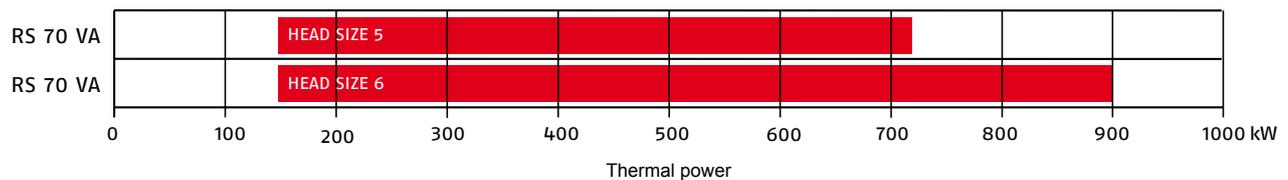
SERVICES FOR BURNERS

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

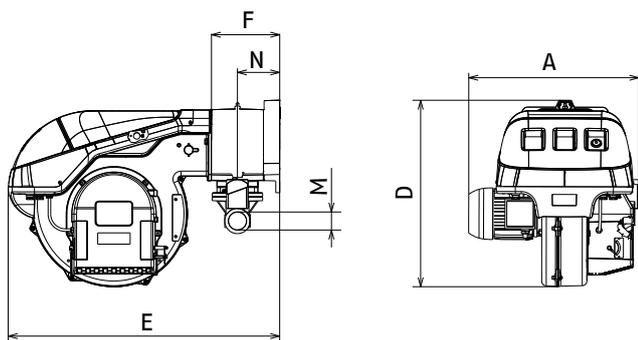
Burners fire rate depends on the size of fitted head and on the pressure in the duct section.

AIR DUCT PRESSURE = 0-3 mbar



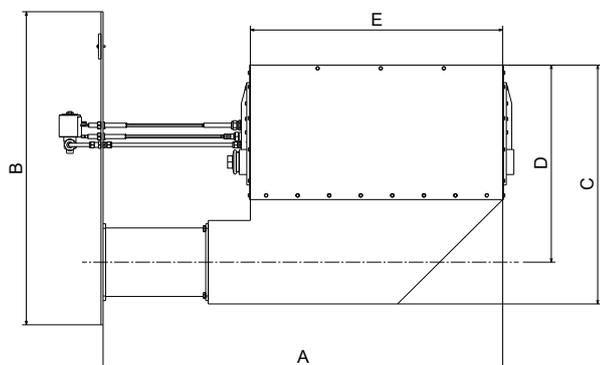
OVERALL DIMENSIONS

RS 70 VA



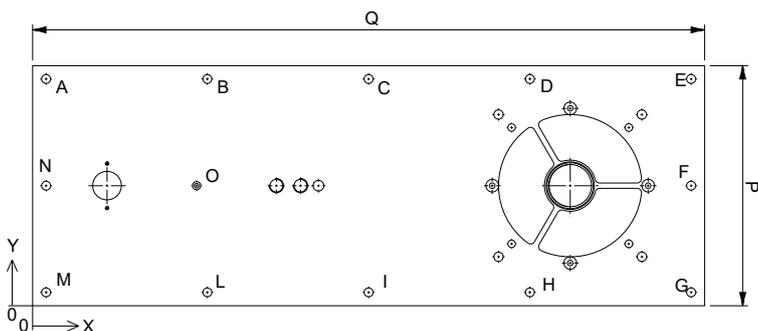
Description	A mm	D mm	E mm	F mm	M mm	N mm
RS70 VA	523.5	577	836	210	2"	130

COMBUSTION HEAD ASSEMBLY

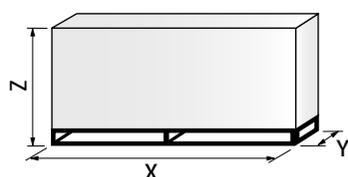


Head size	A mm	B mm	C mm	D mm	E mm
5/250	1746	800	574	451	1200
5/500	1996	800	574	451	1200
5/750	2246	800	574	451	1200
5/1000	2496	800	574	451	1200
5/1500	2996	800	574	451	1200
6/250	2046	800	574	451	1500
6/500	2296	800	574	451	1500
6/750	2546	800	574	451	1500
6/1000	2796	800	574	451	1500

FIXING PLATE

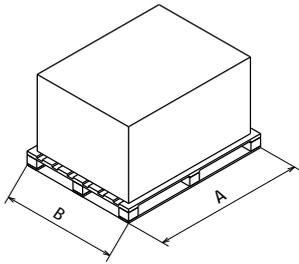


Holes	X mm	Y mm	Ø mm	L mm	P mm
A	20	330	10	800	350
B	210	330	10	800	350
C	400	330	10	800	350
D	590	330	10	800	350
E	780	330	10	800	350
F	780	175	10	800	350
G	780	20	10	800	350
H	570	20	10	800	350
I	400	20	10	800	350
L	210	20	10	800	350
M	20	20	10	800	350
N	20	175	10	800	350
O	-	-	-	800	350



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 in the table. The weight of the ventilation structure, complete with packaging.

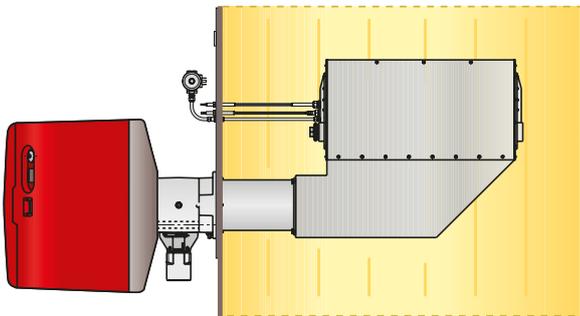


Head size	A mm	B mm
5/250	2200	850
5/500	2200	850
5/750	2700	850
5/1000	2700	850
5/1500	3400	940
6/250	2200	850
6/500	2700	850
6/750	2700	850
6/1000	3400	940

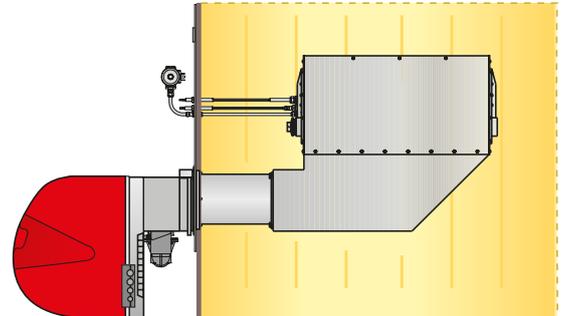
The head assemblies are shipped on pallets with the dimensions shown in the table.

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:

- Oxygen content $\geq 19\%$
- Speed of the air flow around the burner head between 10 and 20 m/s

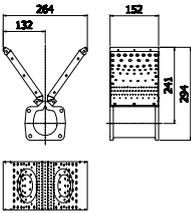
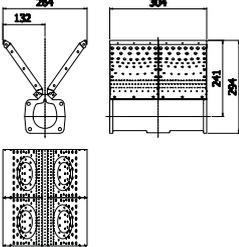
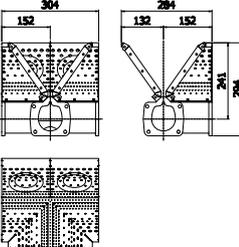
The pressure drop generally created by these burners is about 2,5 mbar; the burners guarantee the same efficiency either in pressure or in suction condition. The burner head structure is completely made in Nickel-Chrome alloys, allowing an upstream temperature $\leq 450^{\circ}\text{C}$ and a downstream temperature $\leq 800^{\circ}\text{C}$ ($\leq 200^{\circ}\text{C}$ upstream and $\leq 450^{\circ}\text{C}$ downstream in the standard version).

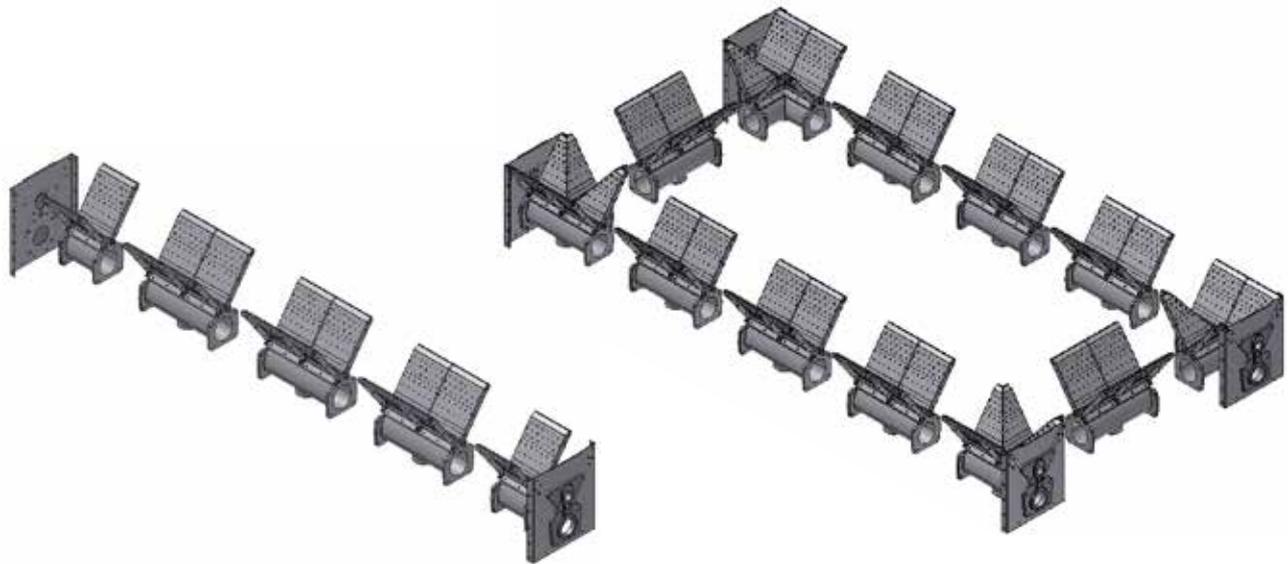
Particular attention is finally dedicated to the maximum reduction of the CO content and of the NOx emissions.

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	



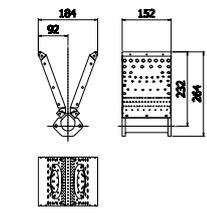
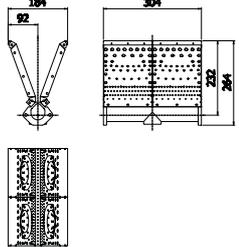
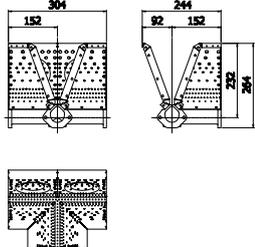
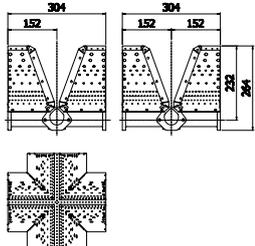
PROCESS GAS

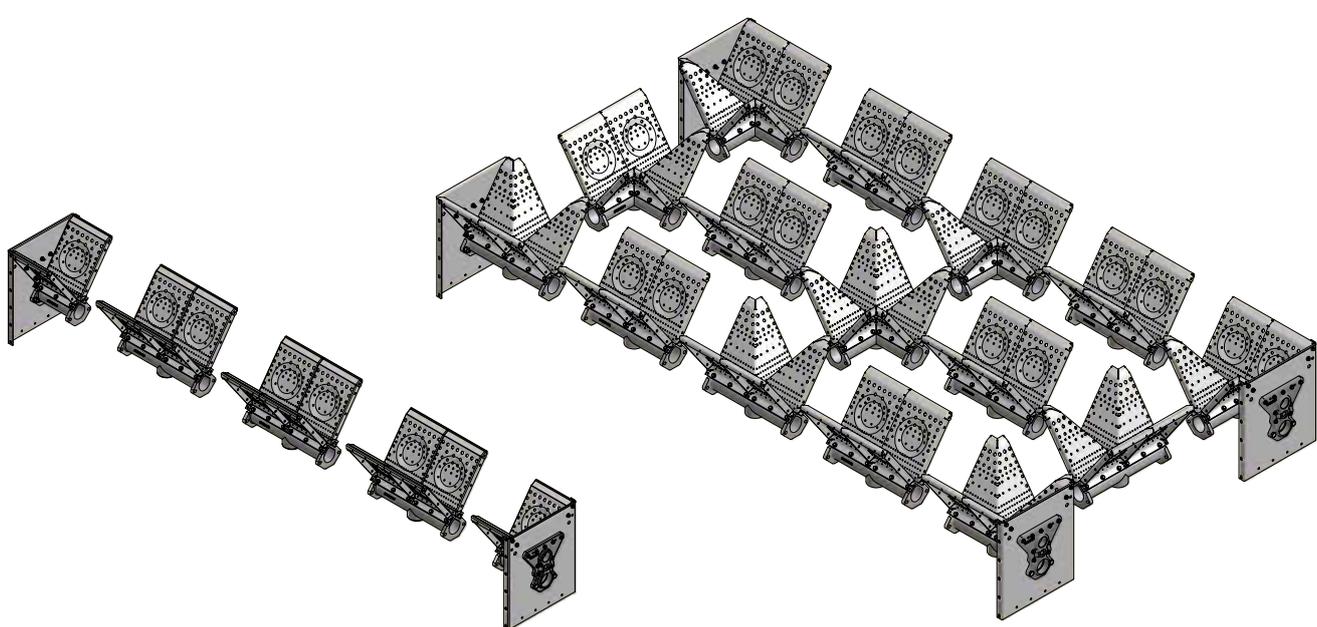
PROCESS LIGHT OIL

INDUSTRIAL

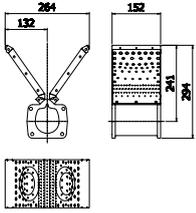
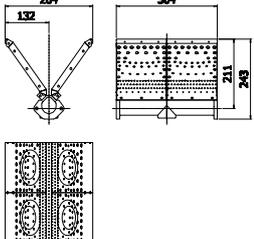
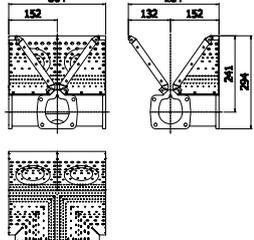
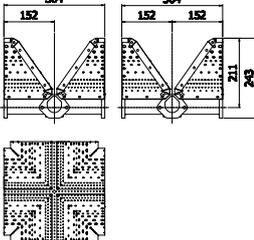
GAS TRAINS

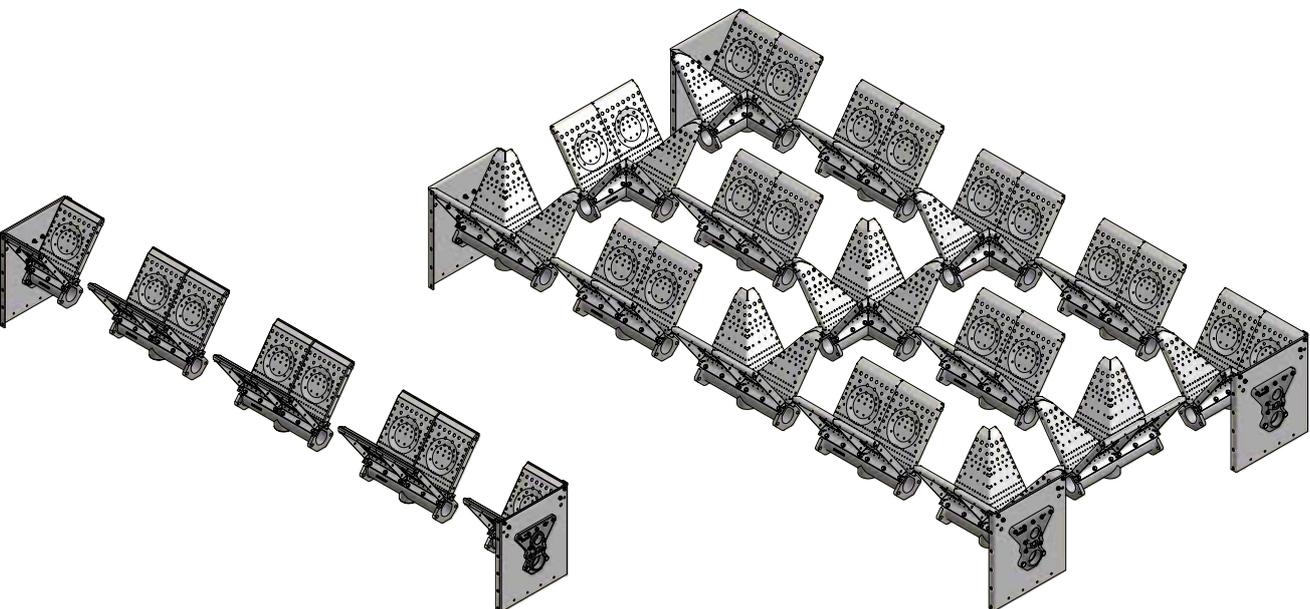
CONFIGURATION EXAMPLES ADB/S LE

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	



PROCESS GAS

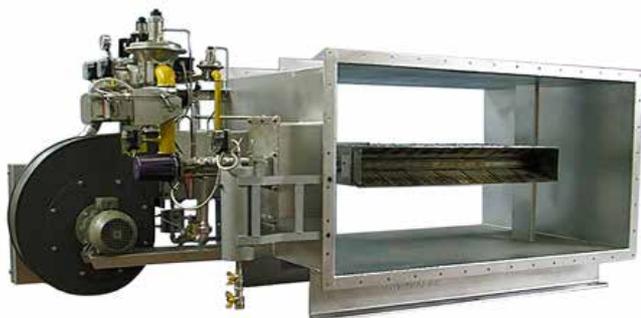
PROCESS LIGHT OIL

INDUSTRIAL

GAS TRAINS

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:

- Oxygen content $\geq 19\%$
- 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 $\leq 450^{\circ}\text{C}$ and a downstream temperature $\leq 800^{\circ}\text{C}$ ($\leq 200^{\circ}\text{C}$ upstream and $\leq 450^{\circ}\text{C}$ downstream in the standard version).

Particular attention is finally dedicated to the maximum reduction of the CO content and of the NO_x 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 combustent air temperature: 70°C

MAIN APPLICATIONS

- Agricultural dryers (cereals, fodder, tobacco)
- Direct exchange industrial applications

BVAADB 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	1½"	1	1.5
BVA ADB 0.8 ME	800	945	270	1500	1	1½"	1	1.5
BVA ADB 1.0 ME	1000	945	270	1500	1	1½"	1	1.5
BVA ADB 1.2 ME	1200	945	270	1500	1	1½"	1	2.2
BVA ADB 1.5 ME	1500	1249	270	2000	1	1½"	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.

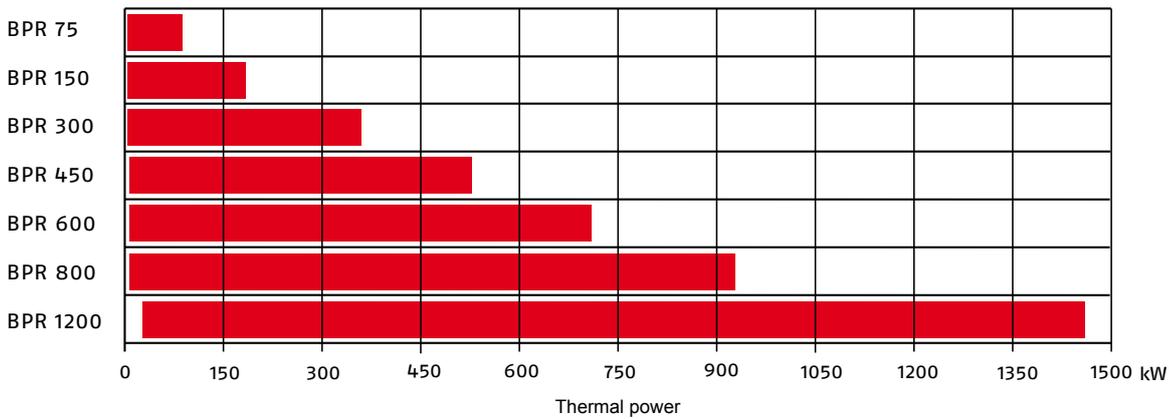
Performance data and dimensions are guidelines only.

Other versions are available on demand by means a special execution request.

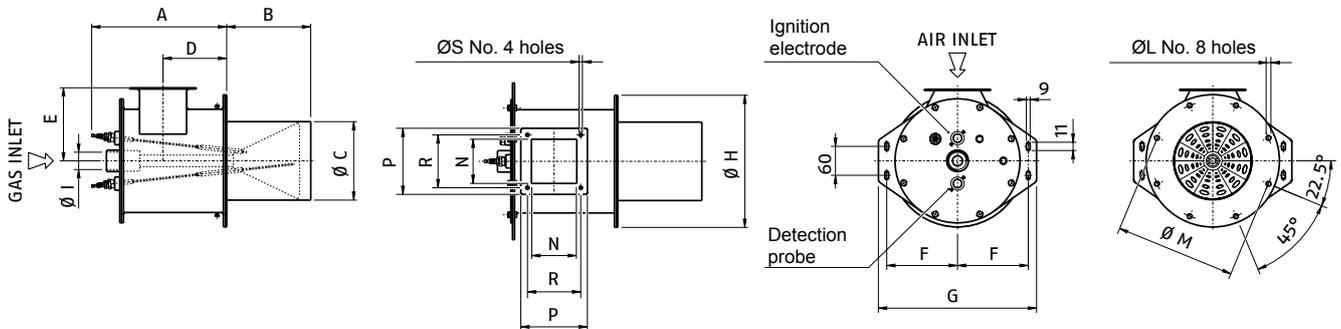
SERVICES FOR BURNERS

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	3/4"	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 1/2"	11.5	290	114	160	128	9	45
BPR 450	370	215	220	200	220	195	430	370	1 1/2"	11.5	340	140	190	165	10	48
BPR 600	370	215	220	200	220	195	430	370	1 1/2"	11.5	340	140	190	165	10	48
BPR 800	370	215	220	200	220	195	430	370	1 1/2"	11.5	340	140	190	165	10	52
BPR 1200	392	215	220	200	220	195	430	370	1 1/2"	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 to 35:1.

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

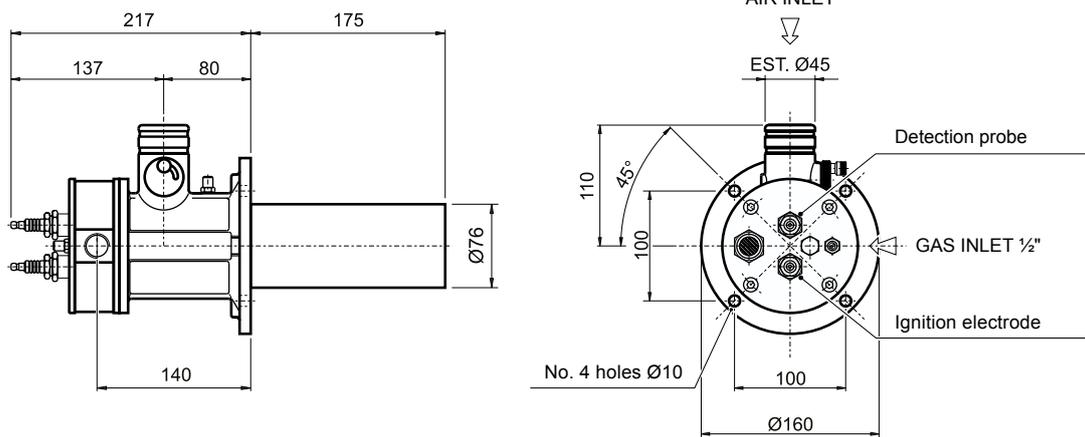
The characteristics described above refer to conditions of maximum potential. Pressures shown are indicative.

(*) In stoichiometric combustion conditions.

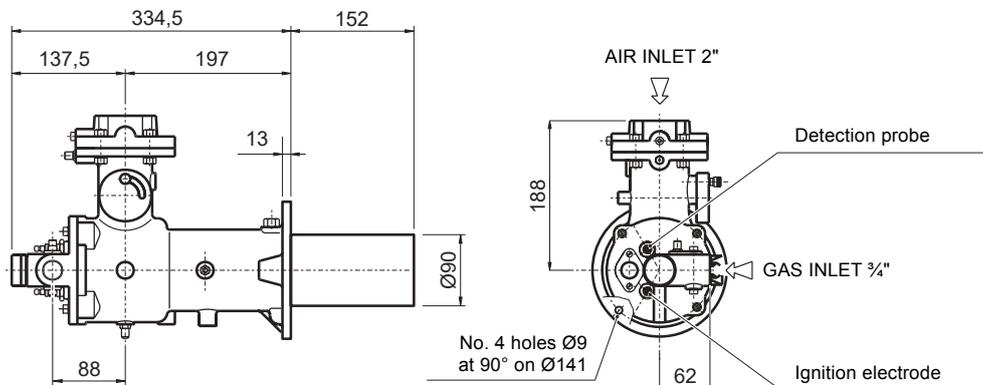
(**) Pressure values indicated refer to natural gas.

OVERALL DIMENSIONS

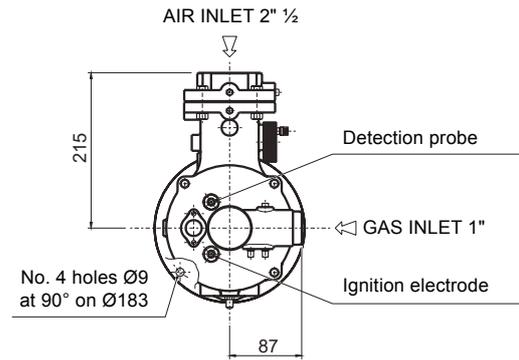
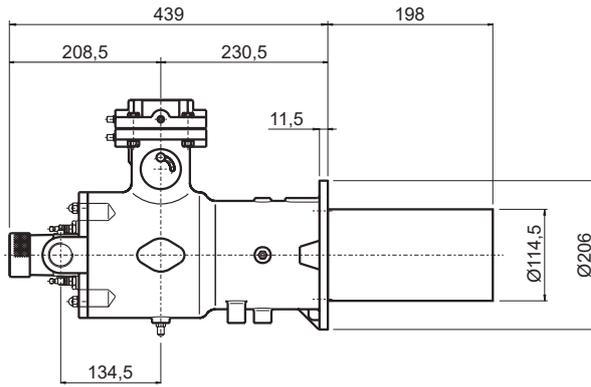
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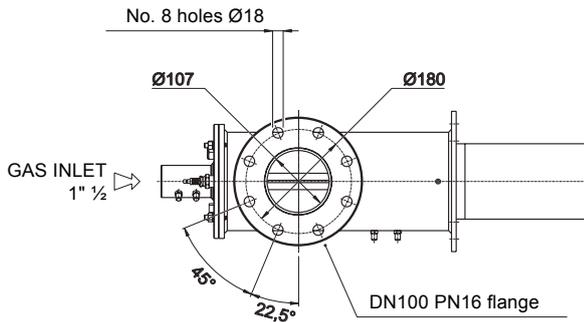
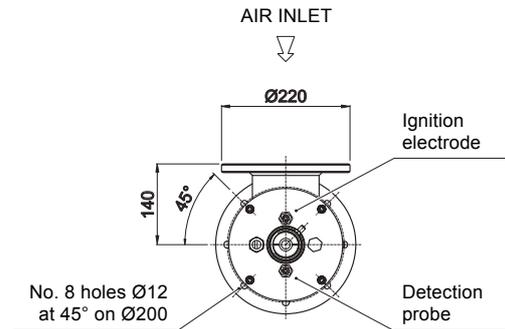
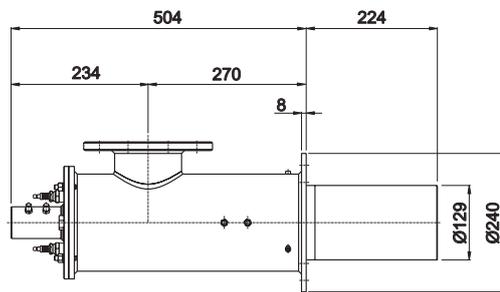
N 140 TR



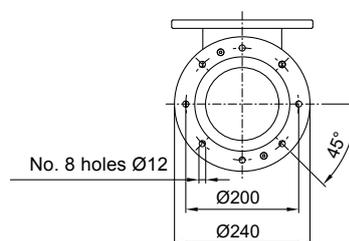
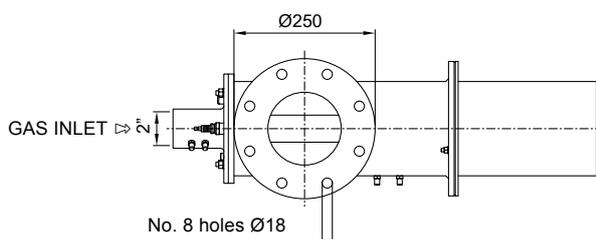
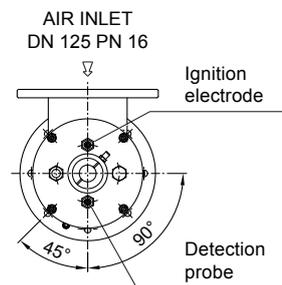
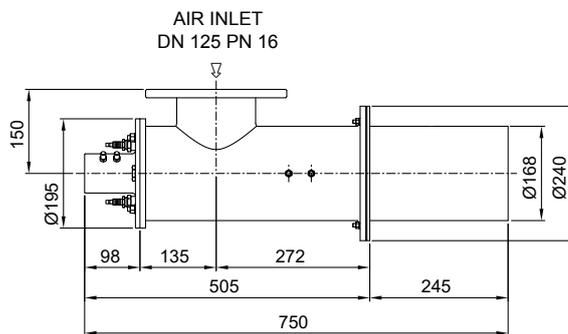
N 280 TR



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.

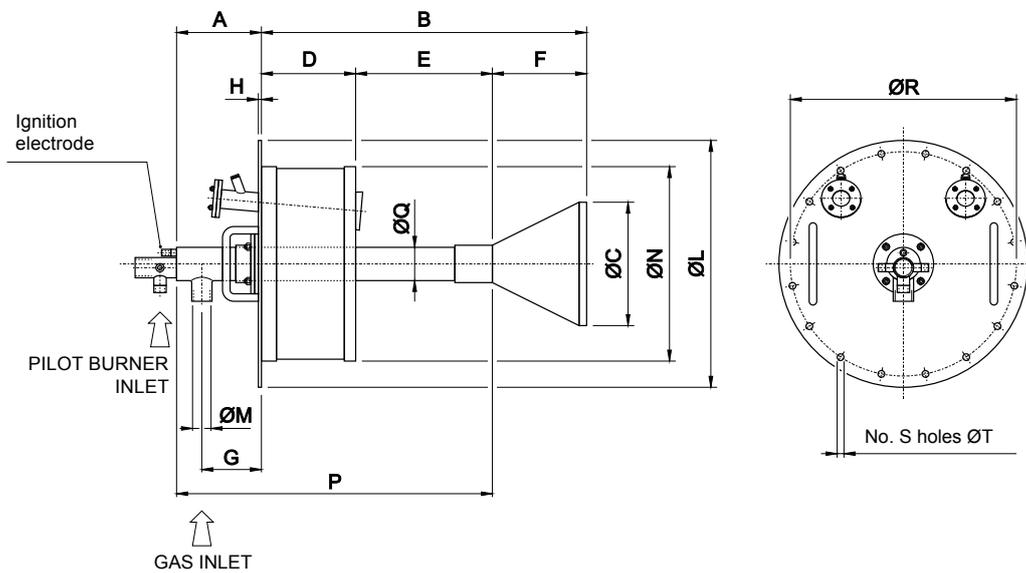
TECHNICAL DATA

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

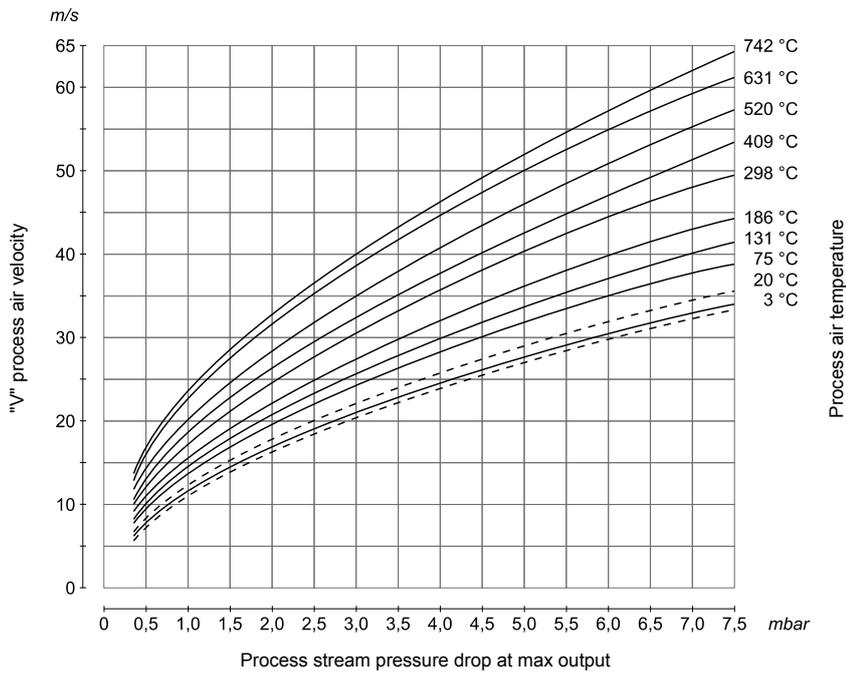
OVERALL DIMENSIONS



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	1½"	450	735	76,2	510	16	14
FC 3	245	765	304	250	295	220	195	8	610	1½"	500	790	88,9	560	16	14
FC 4	245	843	330	250	343	250	195	8	660	1½"	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 $\Delta p = 5$ 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	 <p>RIELLO 40 F</p> <ul style="list-style-type: none"> • Convection ovens (rotary or fixed tray type) • Bedplate ovens • Conduction ovens • Radiant heat ovens • Continuous, tunnel and steam tube ovens <p>page 699</p>	 <p>GULLIVER RGF</p> <ul style="list-style-type: none"> • Industrial ovens • Paint booths • Low-power steam boilers <p>page 707</p>
ONE-STAGE MOBILE APPLICATIONS (24V)	 <p>RIELLO 40 G 24V</p> <ul style="list-style-type: none"> • Machines for road applications • Mobile air heaters • Industrial high pressure cleaners <p>page 703</p>	
TWO-STAGE	 <p>GULLIVER RGDF</p> <ul style="list-style-type: none"> • Industrial ovens • Paint booths • Low-power steam boilers <p>page 711</p>	

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

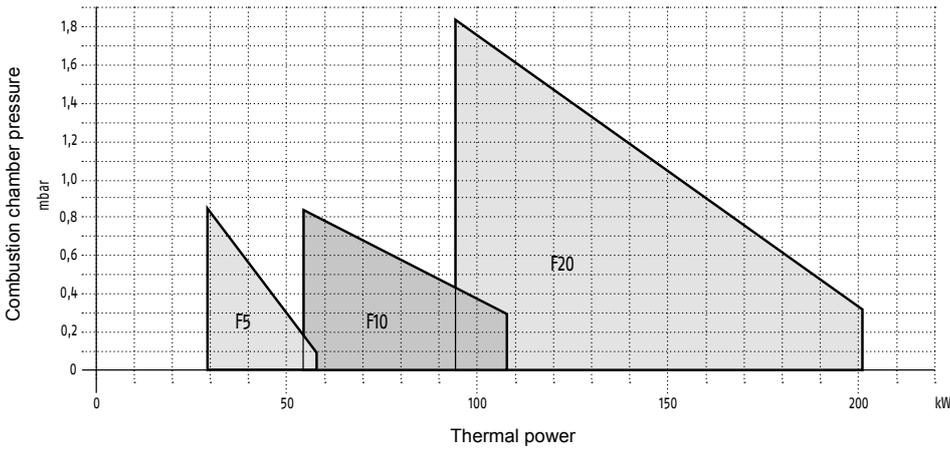
Net calorific value of light oil: 11,8 kWh/kg - Viscosity at 20°C: 4-6 mm²/s (cSt)

The burners comply with 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and the EN 267 Standard.

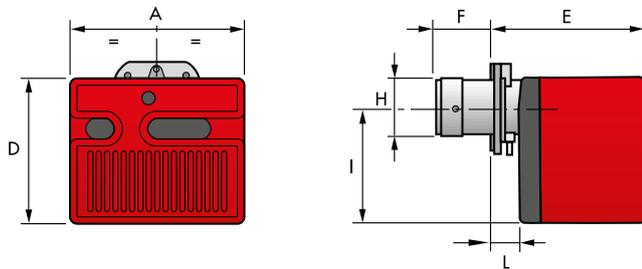
SERVICES FOR BURNERS

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

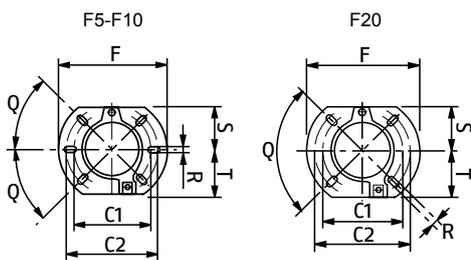
FIRING RATES



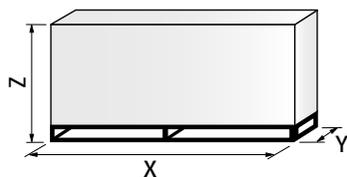
OVERALL DIMENSIONS



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

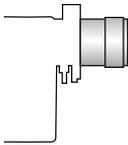
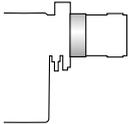


Description	C1 mm	C2 mm	F mm	Q	R mm	S mm	T mm
F5	130	150	180	45°	11	72	75
F10	140	170	189	45°	11	83	83
F20	160	190	213	90°	11	99	99



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
		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
		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
		HOURLY COUNTER KIT FOR 530 SE AND 531 SE CONTROL BOXES To measure the burner working time a hourly counter kit is available.		3000904
	All models			
		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
		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 kW	Notes	Code
	kW	kg/h				
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%.

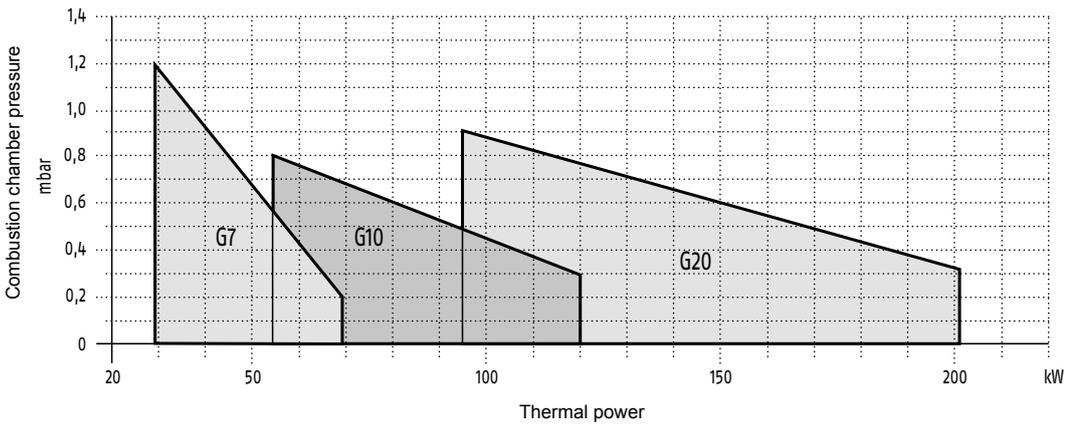
(3) Burner compatible with the use of kerosene (max. viscosity at 20 °C: 1,6-6 mm²/s)

(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

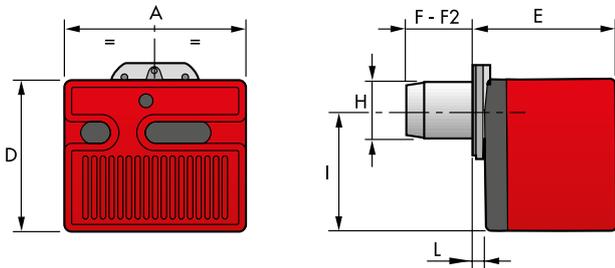
FIRING RATES



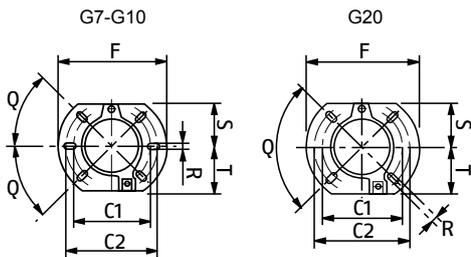
Useful firing rates for choosing the burner

Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

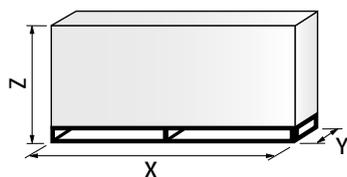
OVERALL DIMENSIONS



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

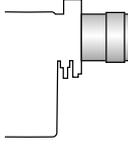
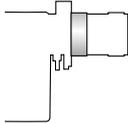


Description	C1 mm	C2 mm	F mm	Q	R mm	S mm	T mm
G7 24V	140	170	189	45°	11	83	83
G10 24V	140	170	189	45°	11	83	83
G20 24V	160	190	213	90°	11	99	99



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
		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
		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
		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.		3000926
	All models	Filtering degree 100 µm.		
		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 Ph/V/Hz	Total electrical power kW	Code
	kW	kg/h			
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

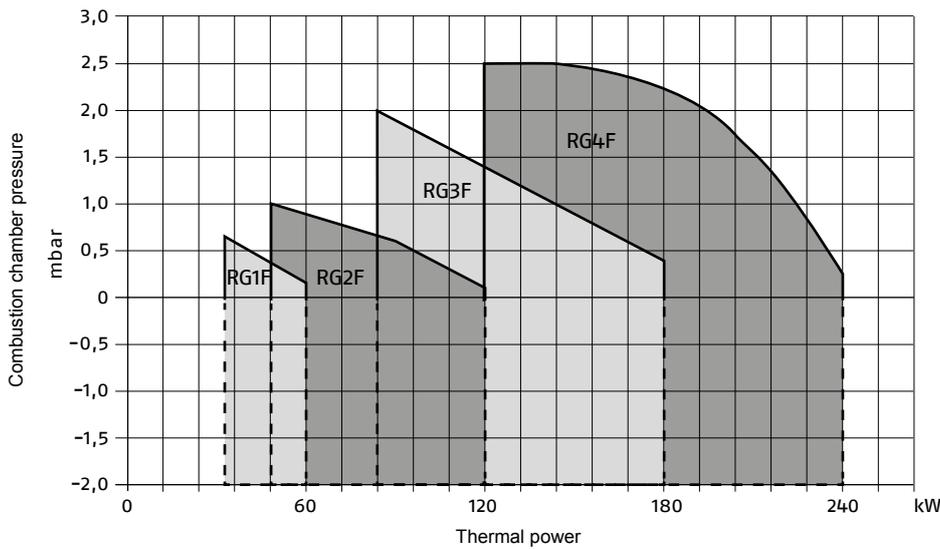
Net calorific value of light oil: 11,8 kWh/kg - Viscosity at 20°C: 4-6 mm²/s (cSt)

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

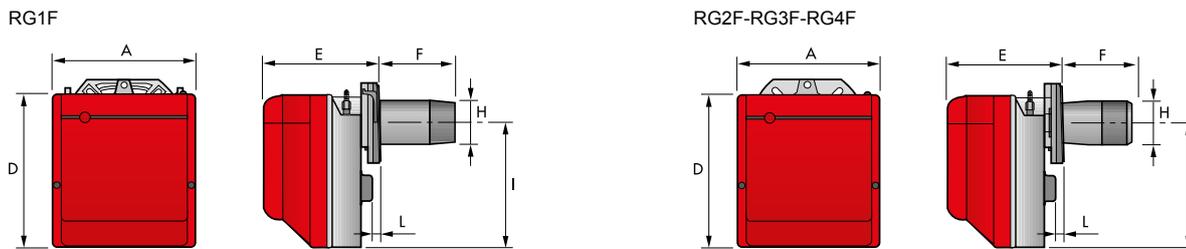


Useful firing rates for choosing the burner

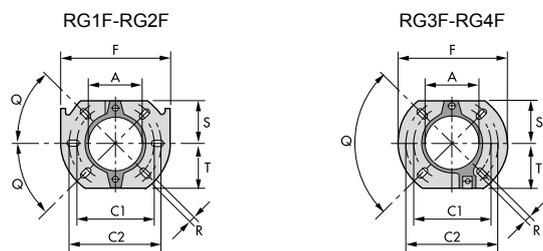
Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

IMPORTANT:
 For the part of the working field that is depressurised, refer to EN 746-2 Standard.

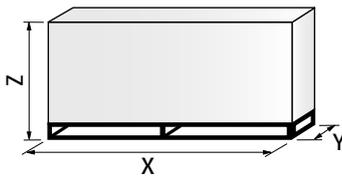
OVERALL DIMENSIONS



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



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
		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
	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; 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 Ph/V/Hz	Total electrical power kW	Code
	kW	kg/h			
RG5DF	95/142-296	8/12-25	1/220-230/50-60	0,4 (at 50 Hz) - 0,575 (at 60 Hz)	3739870

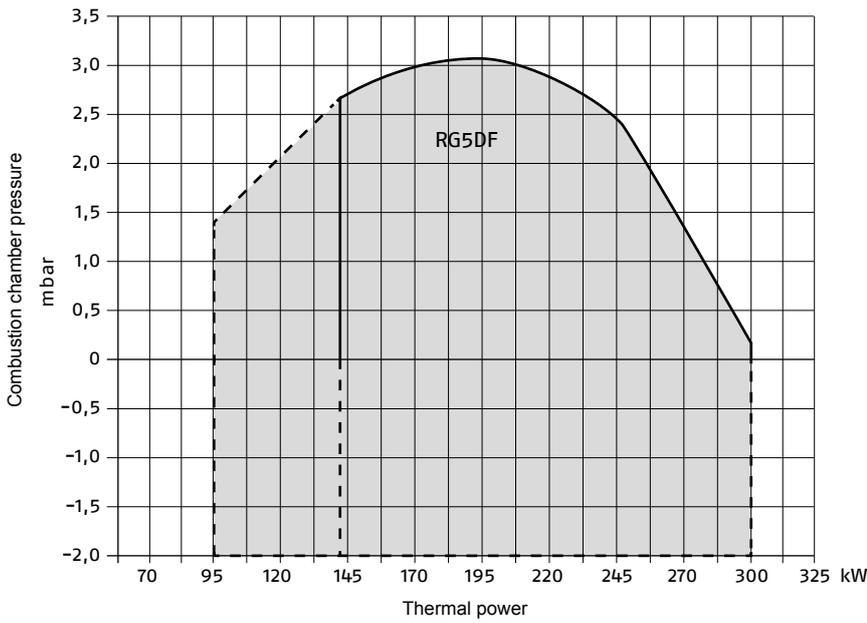
Net calorific value of light oil: 11,8 kWh/kg - Viscosity at 20°C: 4-6 mm²/s (cSt)

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

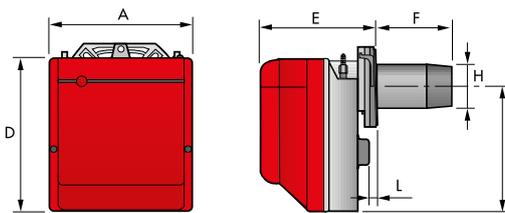


- ▭ Useful firing rates for choosing the burner
- - - 1st stage operation range

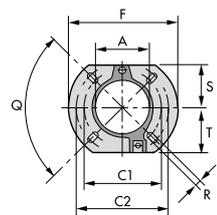
Test conditions conforming to EN267
 Temperature: 20 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

IMPORTANT:
 For the part of the working field that is depressurised, refer to EN 746-2 Standard.

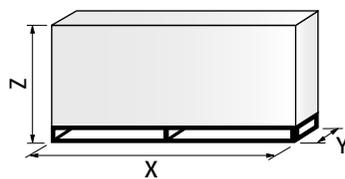
OVERALL DIMENSIONS



Description	A mm	D mm	E mm	F mm	H mm	I mm	L mm
RG5DF	300	345	247	159	125	285	12.5

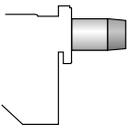
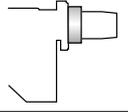


Description	A mm	C1 mm	C2 mm	F mm	Q	R mm	S mm	T mm
RG5DF	127	198	160	190	213	45°	11	99



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 regulator 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 regulator valve of degasing unit
 - Drainage valve (normally closed)
 - Steam circuit solenoid valve
 - Pressure gauge on the delivery circuit
 - Temperature probe
 - Safety valve

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INDUSTRIAL FANS



INDUSTRIAL FANS

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CONTROL PANELS



CONTROL PANELS

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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:

21CKGLAWRF DB SM
 21CKBLAWRF DB NSM
 21CKGLBWRWF DB SM BLU
 21CKGOAWRF DB SE
 21CKOLAWRF DB LM
 21CKDOBWRWF DB LSE C13

21CKDLAWRF DB LSM
 21CKBOAWRF DB NSE
 21CKGOBWRWF DB SE BLU
 21CKGOHWRWF DB SE FGR
 21CKHLAWRF DB NM
 21CKQBWRWF DB SEV BLU

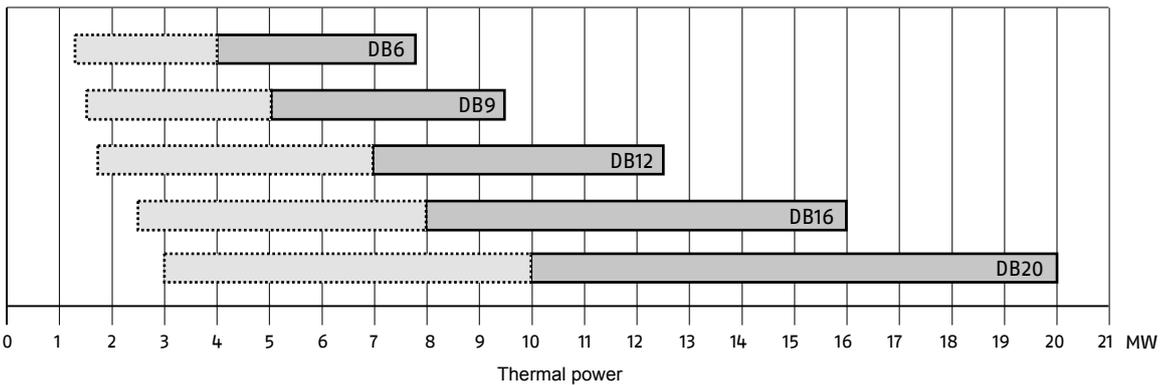
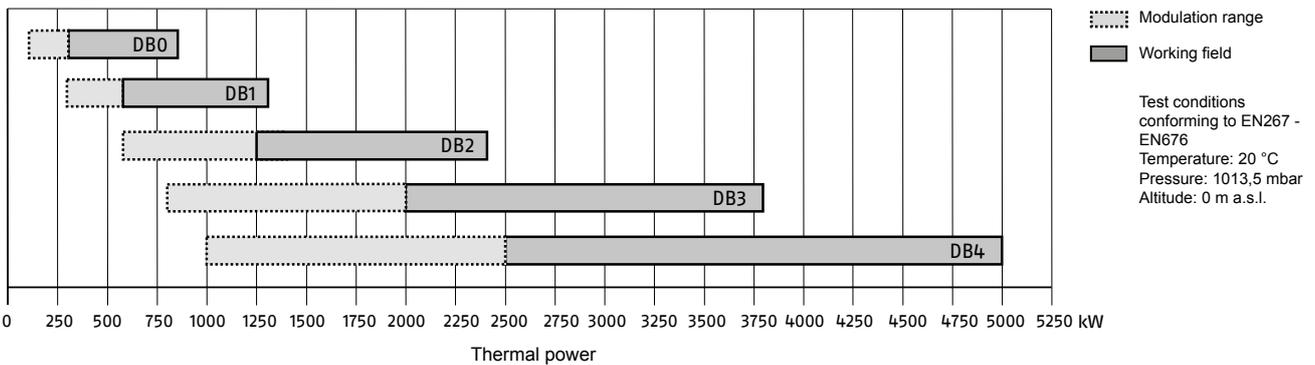
21CKDLBWRWF DB LSM BLU
 21CKHOAWRF DB NE
 21CKOOAWRF DB LE
 21CKDOAWRF DB LSE
 21CKDOHWRWF DB LSE FGR
 21CKHPAWRF DB NAE

TECHNICAL DATA

Description	Fuel (1)	Firing rates (2)	Operation	Code
		kW		
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)

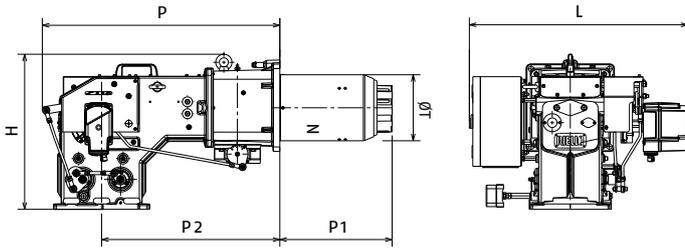
- (1) Dual fuel version available as combinations of the fuels indicated.
- (2) Firing rates referred to:
 Light oil with LCV 11.8 kWh/kg and viscosity 4-6 mm²/s (cSt) at 20 °C.
 Heavy oil with LCV 11.1-11.3 kWh/kg and viscosity 500 mm²/s (cSt) at 20 °C.
 Natural gas (G20) with LCV 10 kWh/Nm³ and density 0.71 kg/Nm³.
 LPG (G31) with LCV 25.8 kWh/Nm³ and density 2.02 kg/Nm³.
- (3) On demand.

FIRING RATES

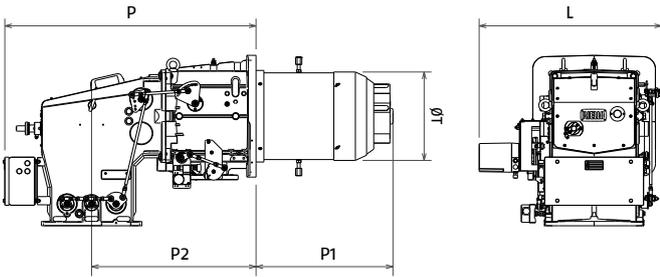


OVERALL DIMENSIONS

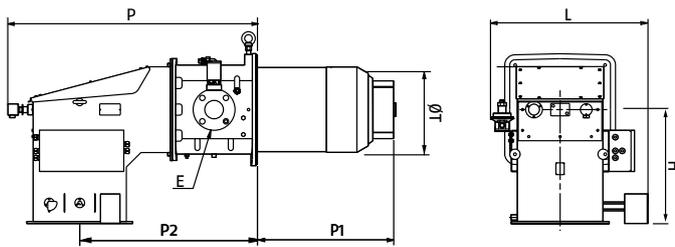
DB 0-1-2



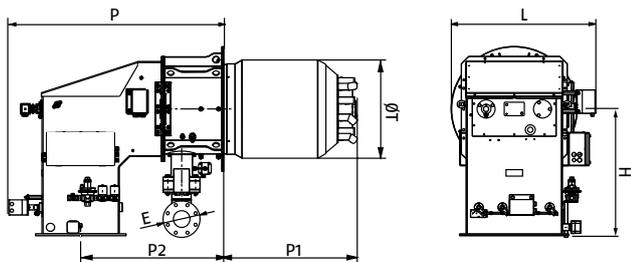
DB 3-4-6



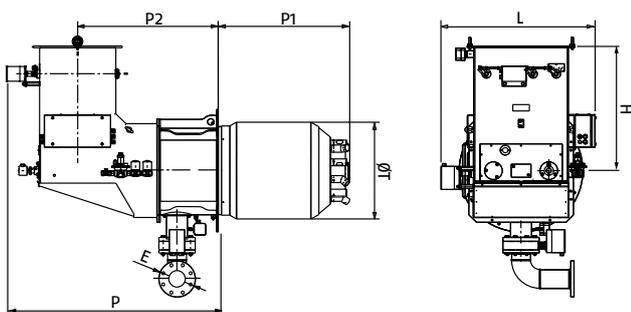
DB 9-12



DB 16-20 – A0 configuration - air supply from the bottom



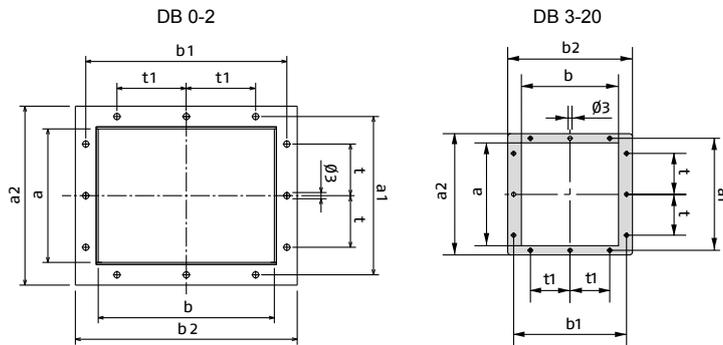
DB 16-20 – A180 configuration - air supply from the top



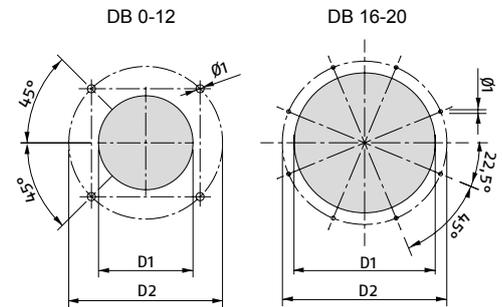
Description	H mm	L mm	P mm	P1 mm	P2 mm	E mm	ØT mm
DB 0	538	830	780	258	583	Rp 2"	189
DB 1	538	830	780	258	583	Rp 2"	189
DB 2	519	723	790	373	592	Rp 2"	221
DB 3	450	728	1009	370	655	DN65	313
DB 4	450	744	1024	526	670	DN65	313
DB 6	450	744	1024	495	670	DN80	363
DB 9	550	753	1195*-1539**	662	851	DN80	413
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 further information.

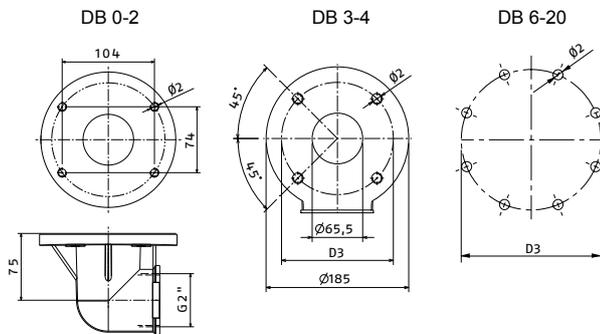
Air duct connection



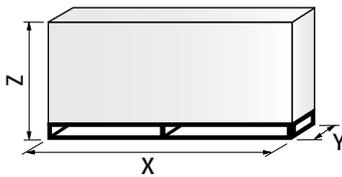
Boiler fixing



Gas supply



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

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

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)

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

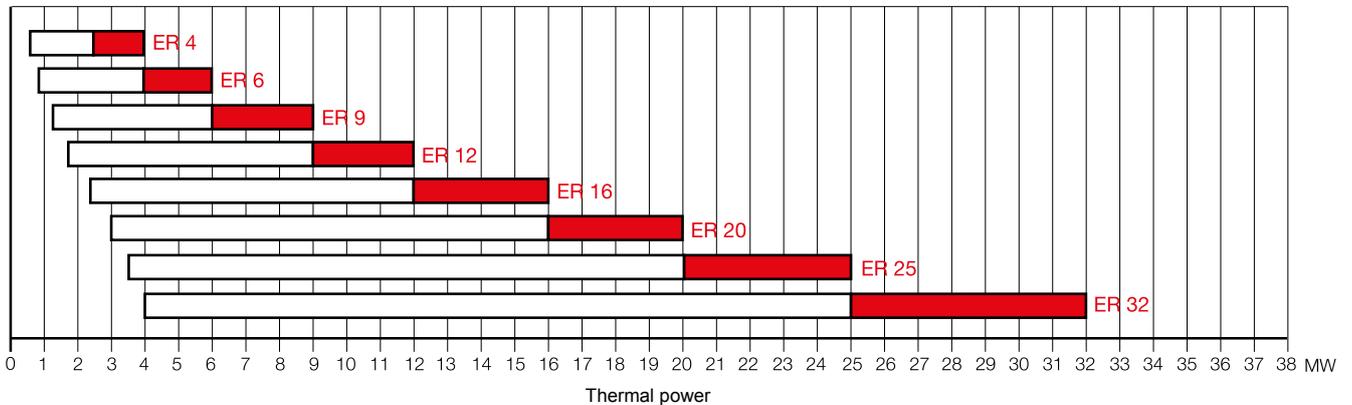
Description (1)	Fuel (2)	Firing rates (3)	Operation	Code
		kW		
ER 4 L	Light Oil	540/2500 - 4000 kW	/M /E	(1)
ER 6 L		840/4000 - 6000 kW		(1)
ER 9 L		1250/6000 - 9000 kW		(1)
ER 12 L		1750/9000 - 12000 kW		(1)
ER 16 L		2350/12000 - 16000 kW		(1)
ER 20 L		3000/16000 - 20000 kW		(1)
ER 25 L		3500/20000 - 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/kg - 10200 kcal/kg - Viscosity at 20°C 4-6 mm²/s (cSt)
 Heavy oil net calorific value 11,1-11,3 kWh/kg - 9545-9720 kcal/kg - Viscosity at 20°C 500 mm²/s (cSt)
 G20 net calorific value 10 kWh/Nm³ - Density 0,71 kg/Nm³
 G25 net calorific value 8,6 kWh/Nm³ - Density 0,78 kg/Nm³
 LPG net calorific value 25,8 kWh/Nm³ - Density 2,02 kg/Nm³

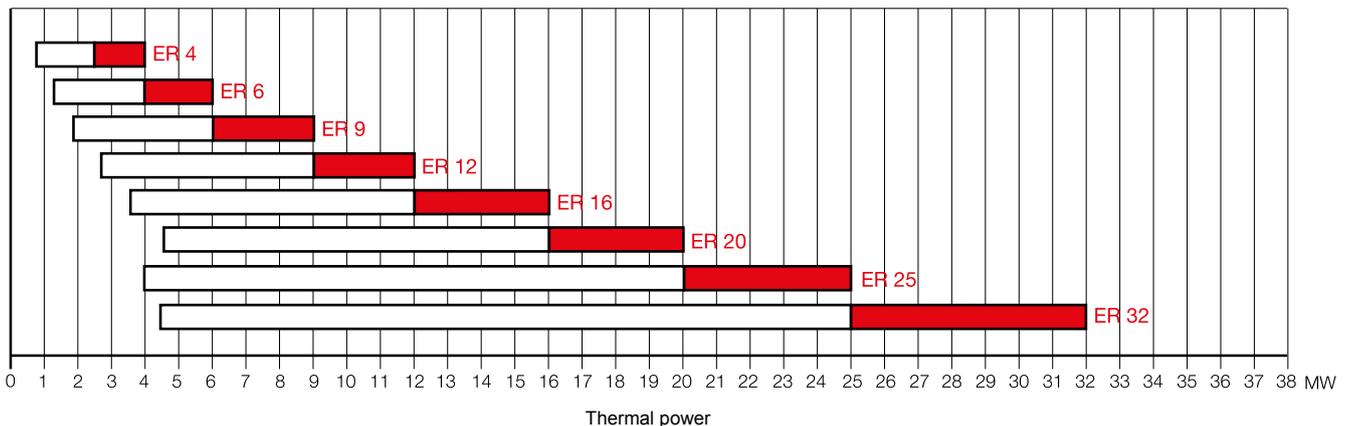
Note: or more information about product codes, please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

FIRING RATES

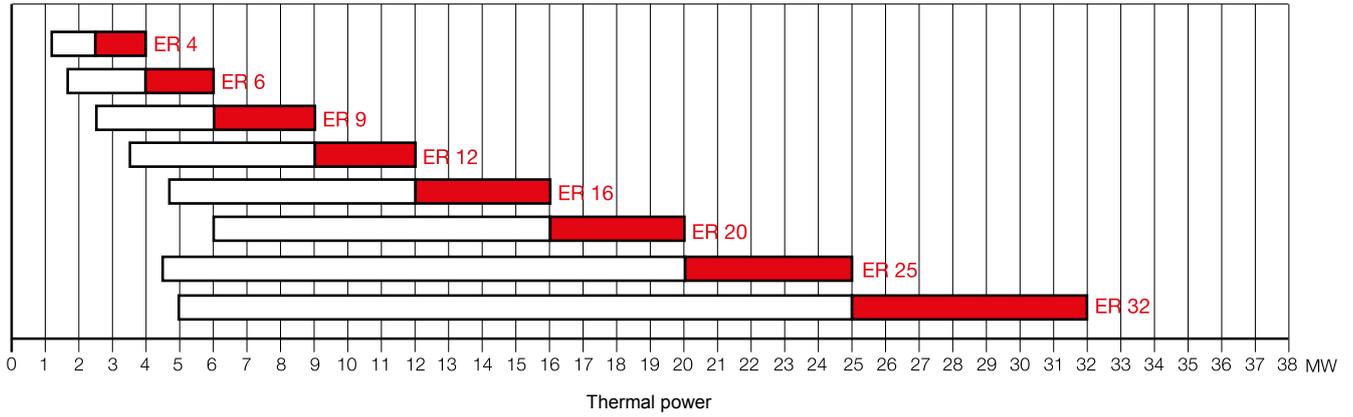
NATURAL GAS



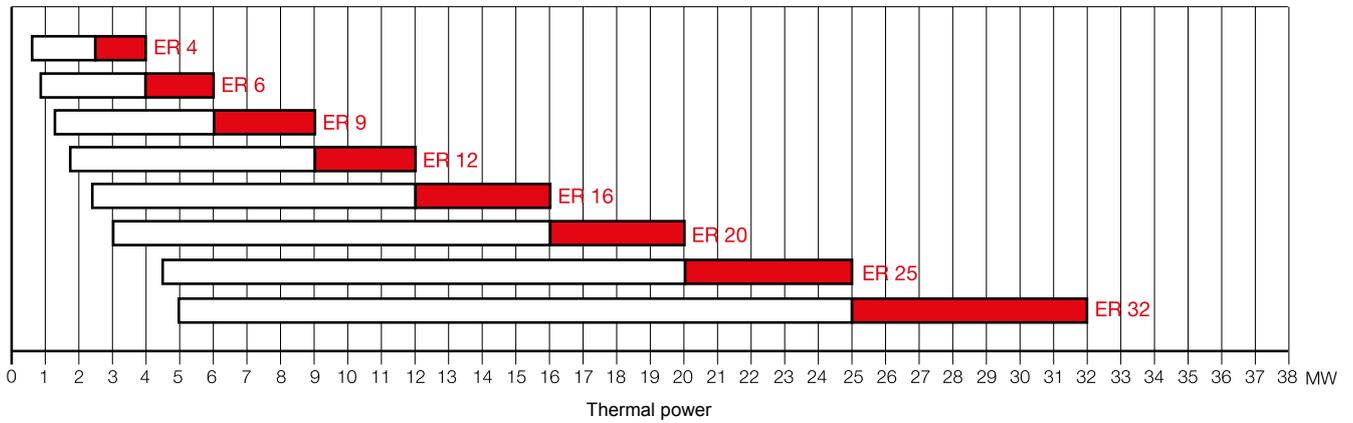
LIGHT OIL



HEAVY OIL

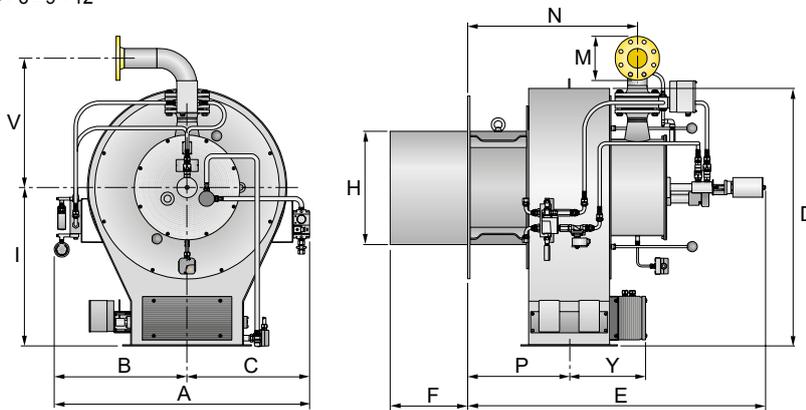


DUAL FUEL

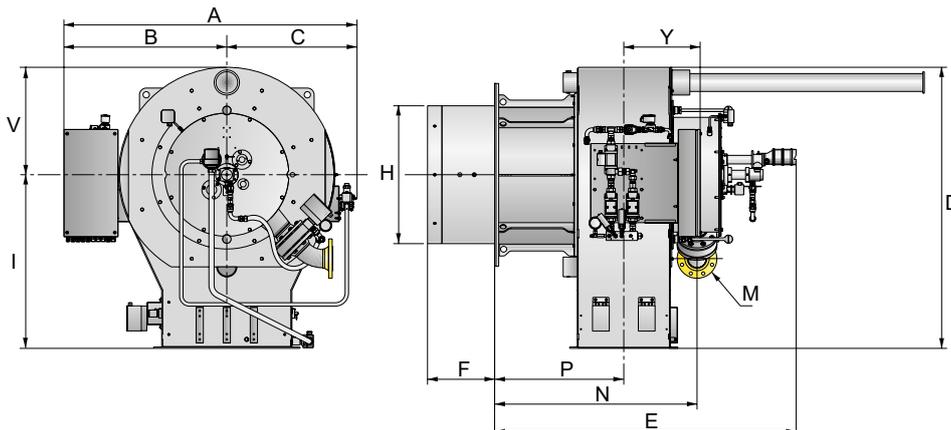


OVERALL DIMENSIONS

ER 4 - 6 - 9 - 12

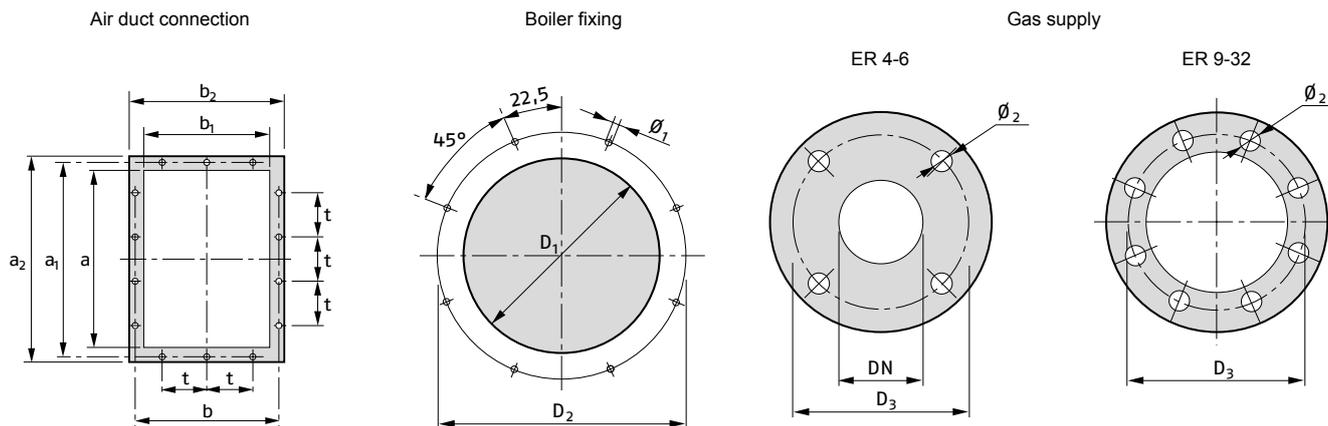


ER 16 - 20 - 25 - 32



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.



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 independent high precision servomotors
- Combustion head fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - pilot burner with gas train and ignition electrodes
 - flame stability disk made up of axial swirlers
- Flame shape regulation device
- Photocell for flame detection
- Minimum air pressure switch
- Nozzle pipe
- Safety nozzle valve
- Valves group with safety oil valves
- Automatic regulator of oil delivery controlled by a high precision servomotor
- Maximum oil pressure switch on the return circuit
- Pressure gauge on the delivery circuit
- Pressure gauge on the return circuit
- Electrical box with ignition transformer
- IP 54 electric protection level.

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 independent high precision servomotors
- Combustion head fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - gas distributor with multiple pipes
 - pilot burner with gas train and ignition 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 independent high precision servomotors
- Combustion head fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - gas distributor with multiple pipes
 - pilot burner with gas train and ignition 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 maintenance

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.

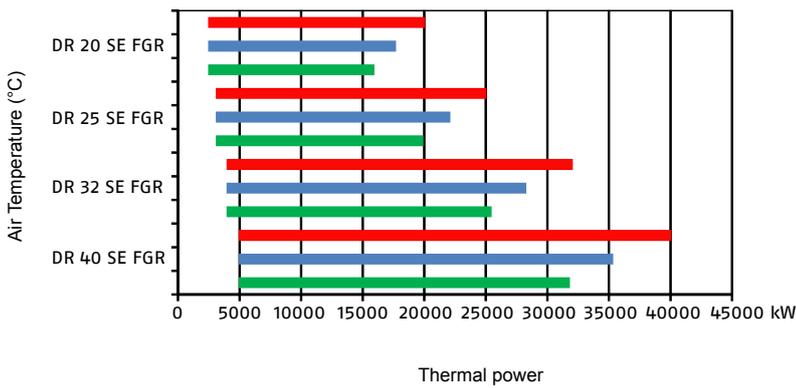
TECHNICAL DATA

Description	Fuel	Firing rates (1)	Operation	Code
		kW		
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.

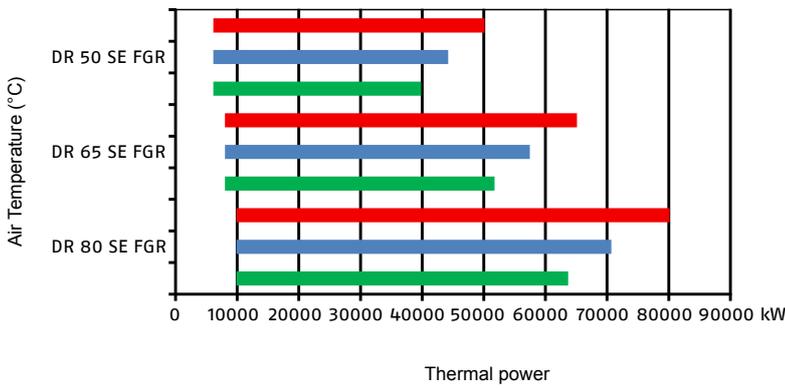
(2) On demand.

FIRING RATES

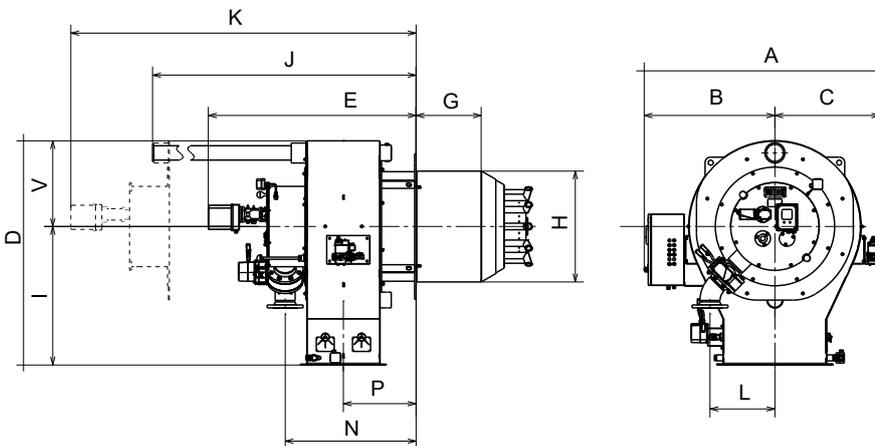


■ NO FGR
 Combustion air temperature 50 °C
■ 10 % FGR
 Combustion air temperature 50 °C
■ 10 % FGR
 Combustion air temperature 150 °C
TEST CONDITIONS
 CONFORMING TO EN676
 Temperature: 50 °C
 Pressure: 1013.5 mbar
 Altitude: 0 m a.s.l.

NOTE
 Maximum burner's load output, with 10% FGR active is calculated considering flue gases rated temperature: 200 °C.



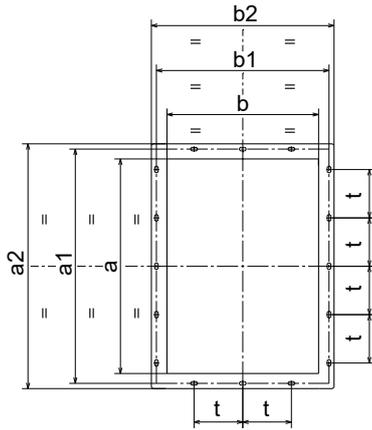
OVERALL DIMENSIONS



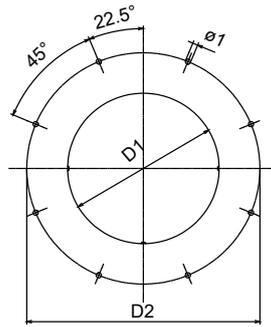
Description	A mm	B mm	C mm	D mm	E mm	G mm	H mm	I mm	j mm	k mm	l mm	n mm	p mm	V mm
DR 20	1639	909	730	1570	1444	453	696	970	2430	3000	451	910	505	600
DR 25	1639	909	730	1570	1444	453	776	970	2430	3000	451	910	505	600
DR 32	1851	1013	838	1758	1726	510	880	1050	-	-	521	1082	583	706
DR 40	1851	1013	838	1758	1726	510	978	1050	-	-	521	1082	583	706
DR 50	(1)													
DR 65	(1)													
DR 80	(1)													

(1) On demand.

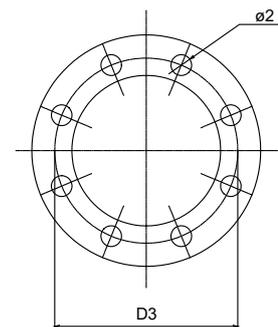
Air duct connection



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 independent 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
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)

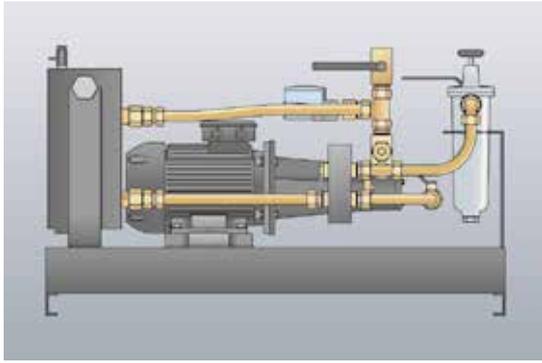
(1) On demand.

(*) 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

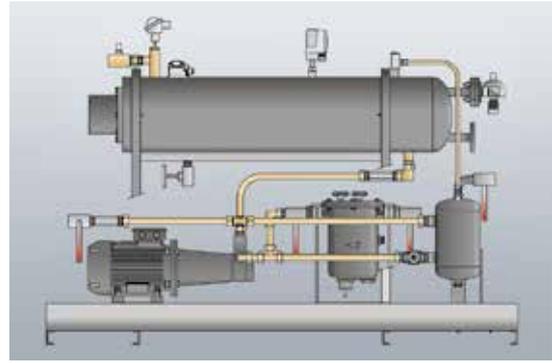
(***) Max. oil delivery of skid considering a safety increase of 100%, oil density 0,86.

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 regulator valve of degasing unit
- VC Drainage valve (normally closed)
- MM Pressure gauge on the delivery circuit

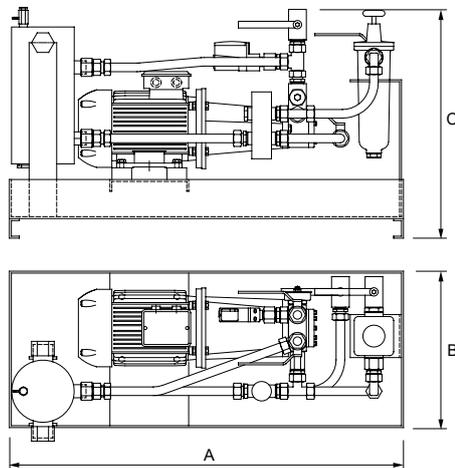


Example of light oil pumping unit skid - SN series

- 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 regulator 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

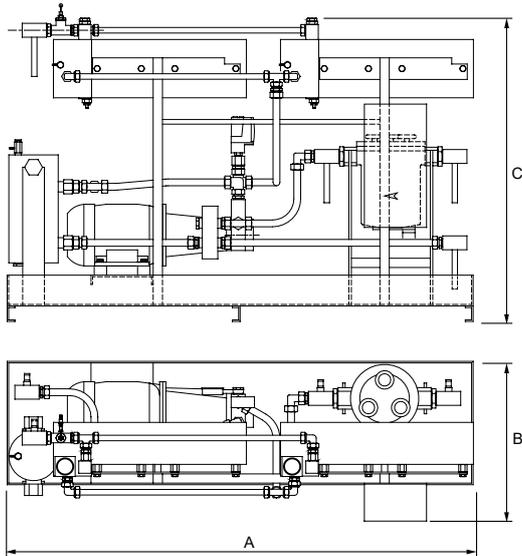
LIGHT OIL PUMPING UNIT SKIDS



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

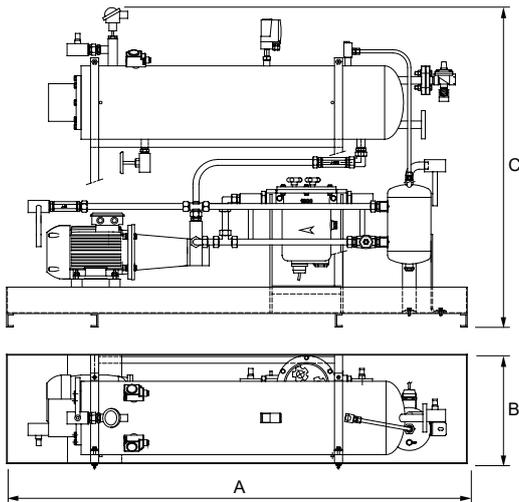
HEAVY OIL HEATING AND PUMPING UNIT SKIDS

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 regulator 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

PROCESS GAS

PROCESS LIGHT OIL

INDUSTRIAL

GAS TRAINS



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 type (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 continuous regulation of combustion (oxygen 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



PROCESS GAS

PROCESS LIGHT OIL

INDUSTRIAL

GAS TRAINS

	Without seal control device	With seal control device
ONE STAGE	 <p>MBC 65/1</p> <p>page 735</p>	
	 <p>MB/1</p> <p>page 736</p>	 <p>MB/1</p> <p>page 736</p>
	 <p>VGD/1</p> <p>page 738</p>	 <p>VGD/1</p> <p>page 738</p>
TWO STAGE	 <p>MB/2</p> <p>page 739</p>	 <p>MB/2</p> <p>page 739</p>
	 <p>CB/2</p> <p>page 741</p>	
PROPORTIONAL	 <p>CG/P</p> <p>page 742</p>	
	 <p>MB/P</p> <p>page 743</p>	
HIGH PRESSURE GAS REGULATING REDUCING UNITS	 <p>HPRT</p> <p>page 744</p>	

One stage gas train

MBC 65/1



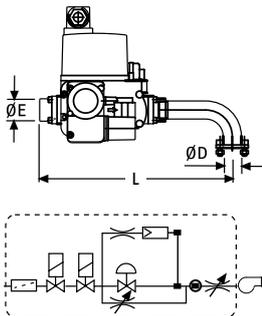
The one stage gas trains include:

- 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

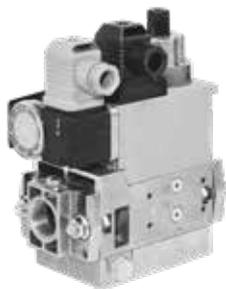


Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MBC 65/1-RSD 20	65	4-20	Rp 1/2"	Rp 1/2"	232	3970569
MBC 65/1-F1SD 20	65	4-20	Rp 1/2"	fl 1	307	3970570

- 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



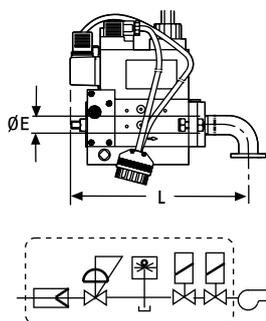
The one stage gas trains include:

- gas filter
- minimum gas pressure switch
- safety valve
- one stage regulation valve
- pressure stabilizer

TECHNICAL FEATURES

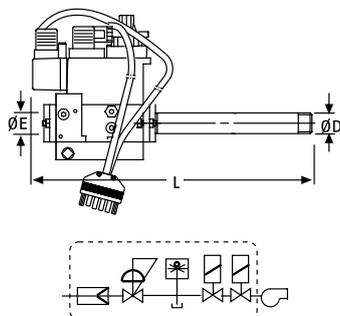
- Electrical supply: 230V / 50Hz
- Electrical protection degree : IP 54
- Operating ambient temperature -15 °C + 60 °C (+ 70 °C MB / 1 series)
- Class A group 2
- Reference Standard: EN 161

ONE STAGE WITHOUT SEAL CONTROL DEVICE



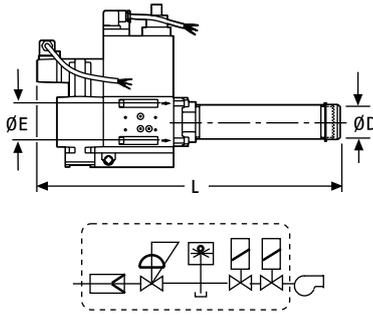
Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MB 405/1-F1SD 20	360	4-20	Rp ½"	fi 1	246	3970546
MB 405/1-F2SD 20	360	4-20	Rp ¾"	fi 2	236	3970547
MB 407/1-F2SD 20	360	4-20	Rp ¾"	fi 2	236	3970544
MB 407/1-F3SD 20	360	4-20	Rp ¾"	fi 3	236	3970548
MB 410/1-F3SD 20	360	4-20	Rp 1" ¼"	fi 3	259	3970549
MB 412/1-F3SD 20	360	4-20	Rp 1" ¼"	fi 3	259	3970550
MB 415/1-F3SD 30	360	4-33	Rp 1" ½"	fi 3	330	3970558

- fi 1 Flanged connection for BS1.
- fi 2 Flanged connection for BS2.
- fi 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

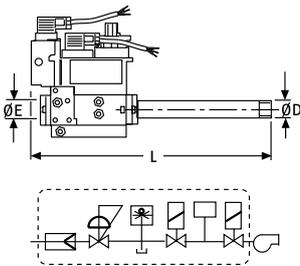
- (*) ½" - Rp ¾" adapter supplied.
- (1) Refer to the gas trains designation.
- (2) Gas train maximum inlet gas pressure.
- (3) Gas train outlet pressure range.



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



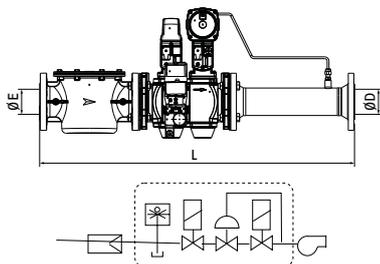
The one stage gas trains include:

- 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

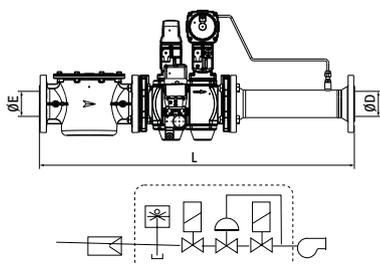
ONE STAGE WITHOUT SEAL CONTROL DEVICE



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

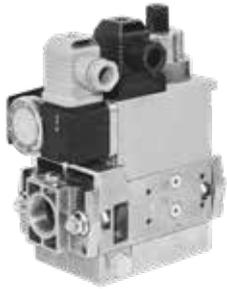


Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
VGD 50/1 CT RT 122	< 500	15-120 (*)	Rp 2"	GRp 2"	890	20169190
VGD 65/1 CT FT 122	< 500	15-120 (*)	DN65	DN80	1013	20169191
VGD 80/1 CT FT 122	< 500	15-120 (*)	DN80	DN80	1033	20169192
VGD 100/1 CT FT 122	< 500	15-120 (*)	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



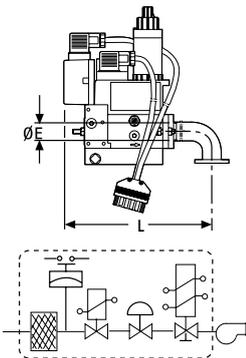
The two stage gas trains include:

- gas filter
- minimum gas pressure switch
- safety valve
- one stage regulation valve
- pressure stabilizer

TECHNICAL FEATURES

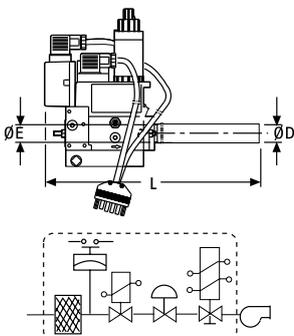
- Electrical supply: 230V / 50Hz
- Electrical protection degree : IP 54
- Operating ambient temperature -15 °C + 60 °C (+ 70 °C MB / 1 series)
- Class A group 2
- Reference Standard: EN 161

TWO STAGE WITHOUT SEAL CONTROL DEVICE



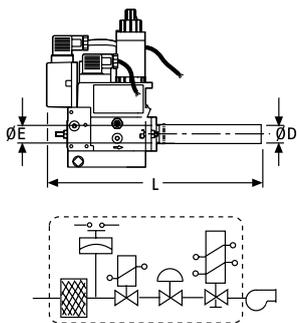
Description (1)	P. In max (mbar) (2)	P.Out (mbar) (3)	Net Ø E	Burner Ø D	L mm	Code
MB 405/2-F1SD 20	360	4-20	Rp ½"	fl 1	246	3970539
MB 405/2-F2SD 20	360	4-20	Rp ¾"	fl 2	236	3970540
MB 407/2-F2SD 20	360	4-20	Rp ¾"	fl 2	236	3970538
MB 407/2-F3SD 20	360	4-20	Rp ¾"	fl 3	236	3970541
MB 410/2-F3SD 20	360	4-20	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

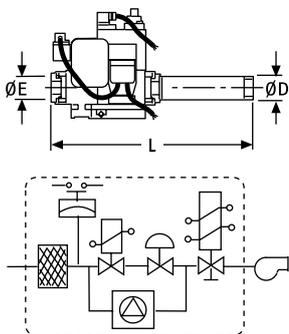
- (1) Refer to the gas trains designation.
- (2) Gas train maximum inlet gas pressure.
- (3) Gas train outlet pressure range.



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



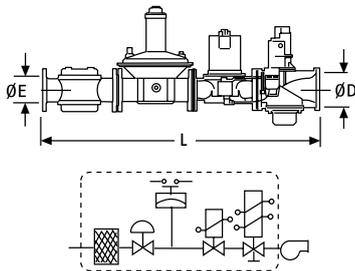
The two stage gas trains include:

- 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

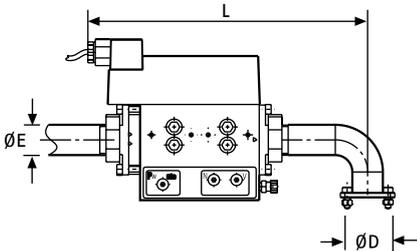
CG/P

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 3/4"	fl 2	175	3970587
CG 220/P-F3SD 00	100	Rp 3/4"	fl 3	210	3970588

fl 2 Flanged connection for BS2/M

fl 3 Flanged connection for BS3/M-BS4/M

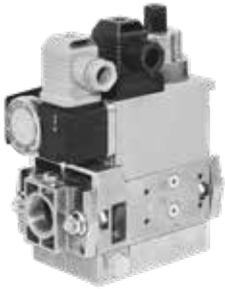
(1) Refer to the gas trains designation.

(2) Gas train maximum inlet gas pressure.

Proportional gas train

MB/P

Range code xxxxxxxxx



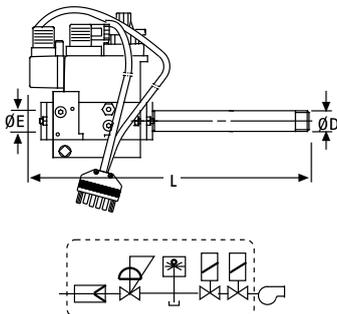
The proportional gas trains include:

- 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.

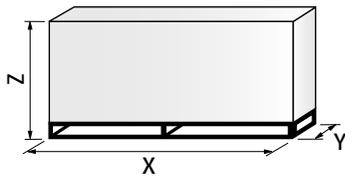
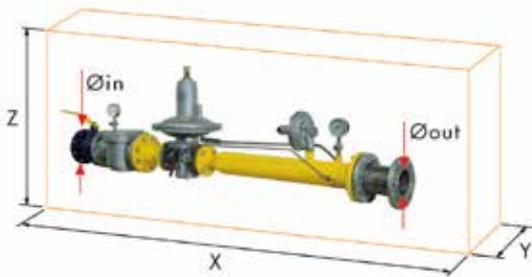
An antivibrating joint permits to damp vibrations and a simple connection to the gas distribution circuit.

TECHNICAL DATA

Description	Connection		Outlet pressure range mbar	Max delivery P inlet = 1 bar (Natural gas)	Max delivery P inlet = 2-4 bar (Natural gas)	Code
	Ø IN	Ø OUT		Sm ³ /h	Sm ³ /h	
HPRT 80	Rp 1"	Rp 1"	30-90	100	100	20070203
HPRT 180	Rp 1½"	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 downstream 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

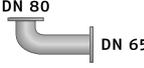
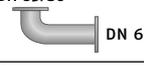
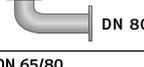
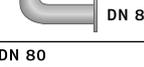
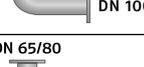
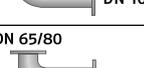
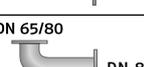
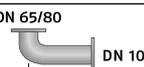
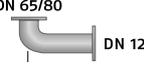
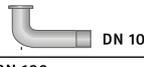
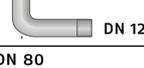
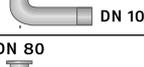
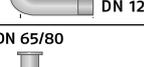
- instruction handbook for installation, use and maintenance
- gaskets (in flanged version)
- fixing screws (in flanged version)
- electrical connection terminals.

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	Length = 320 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

PROCESS GAS

PROCESS LIGHT OIL

INDUSTRIAL

GAS TRAINS

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 1/2"	5	1/2"	(1)
	GBV 1"	5	1"	3090967
	GBV 1 1/2"	5	1 1/2"	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.

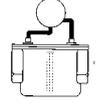
ANTI-VIBRATION JOINTS

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 3/4"	3891033
	GA 25 Anti-vibration joint	Threaded joint Ø 1"	3891034
	GA 40 Anti-vibration joint	Threaded joint Ø 1 1/2"	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 1/2"	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 1/2"	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

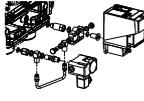
A kit composed from a pressure gauge and a push-button cock for measuring gas pressure is available in different sizes following the table.

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)

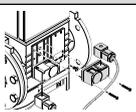
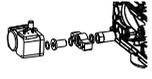
To test the valve seals on the gas train, a special "seal control kit" is available. The valve seal control device is compulsory (EN 676) on gas trains to burners with a maximum output over 1200 kW. The seal control is type VPS 504.

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
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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
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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
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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
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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
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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 modulating

Head: TC Standard head

TL Extended head

Electrical supply to the system: 1/230/50 1/230V/50Hz

G	10		D	1/230/50
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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
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BASIC DESIGNATION

EXTENDED DESIGNATION

GI/EMME and ENNE/EMME SERIES

Series: GI/EMME

ENNE/EMME

Size: 1400 - 4500

Emission: Class 1 EN267 - EN676

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: 3/230-400/50 3/230V/50Hz - 3N/400V/50Hz
3/400/50 3N/400V/50Hz
3/380/60 3N/380V/60Hz
3/220-380/60 3/220/60Hz - 3N/380V/60Hz

Auxiliary voltage: 230/50 230V/50Hz
220/60 220V/60Hz

GI/EMME	1400		TC	FS1	3/230-400/50	230/50
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BASIC DESIGNATION

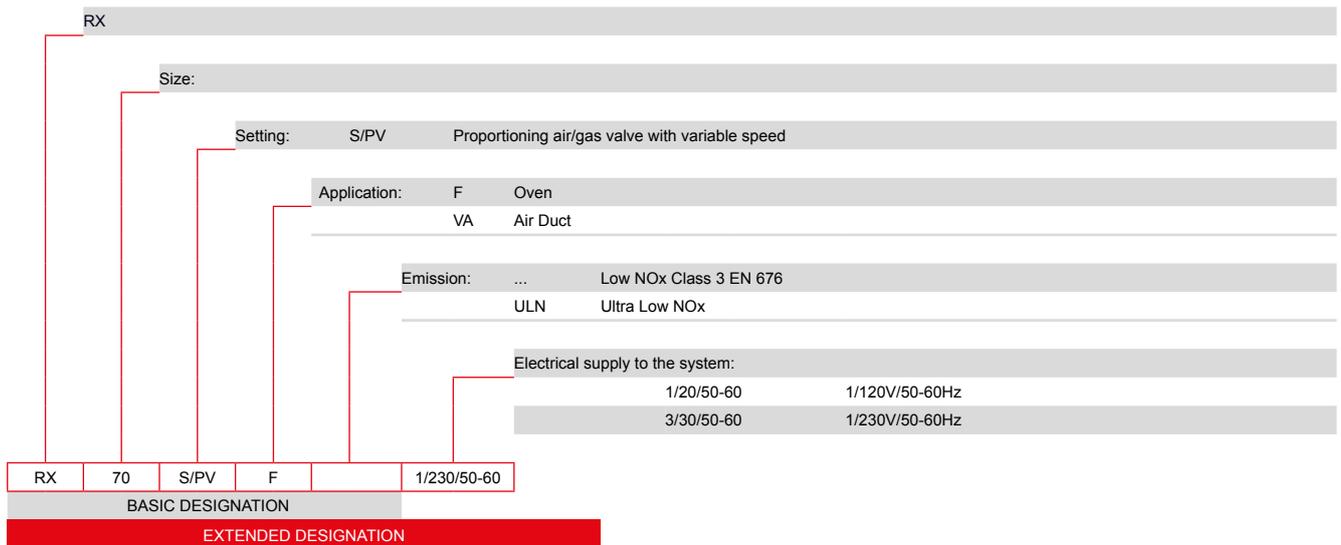
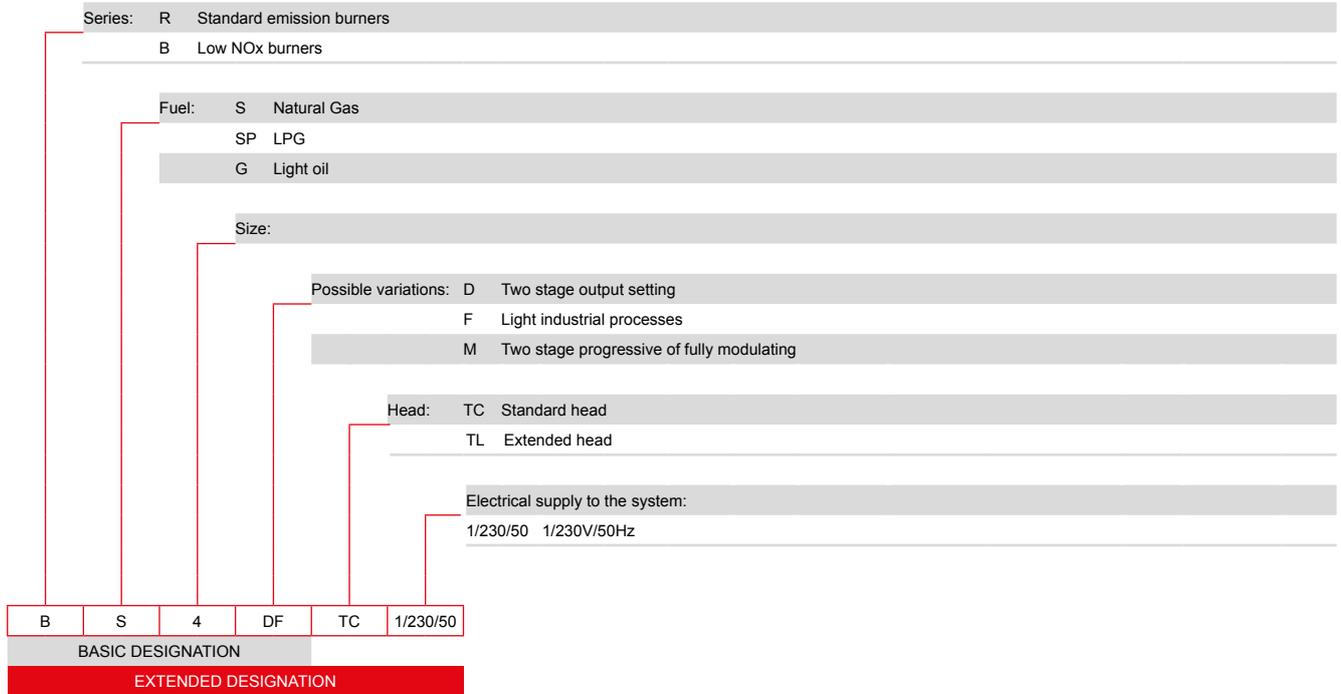
EXTENDED DESIGNATION

ADDITIONAL INFORMATION

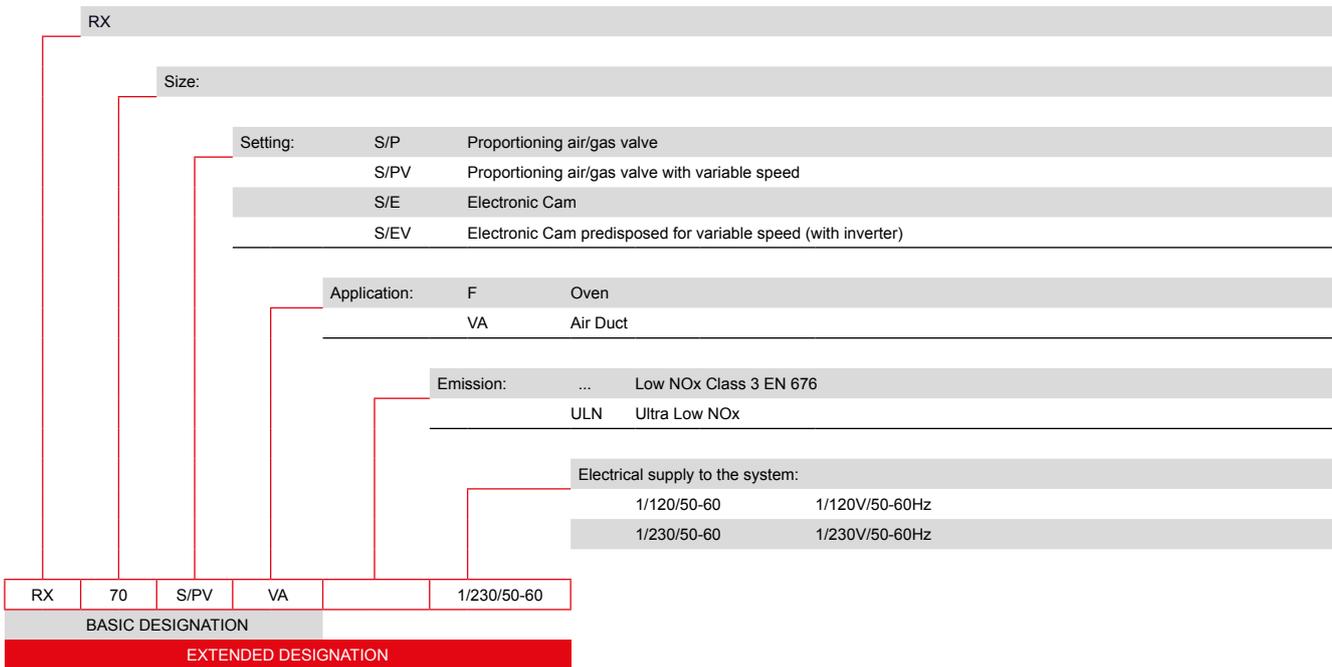
DESIGNATION OF PROCESS BURNERS SERIES

LOW NOx GAS PROCESS BURNERS

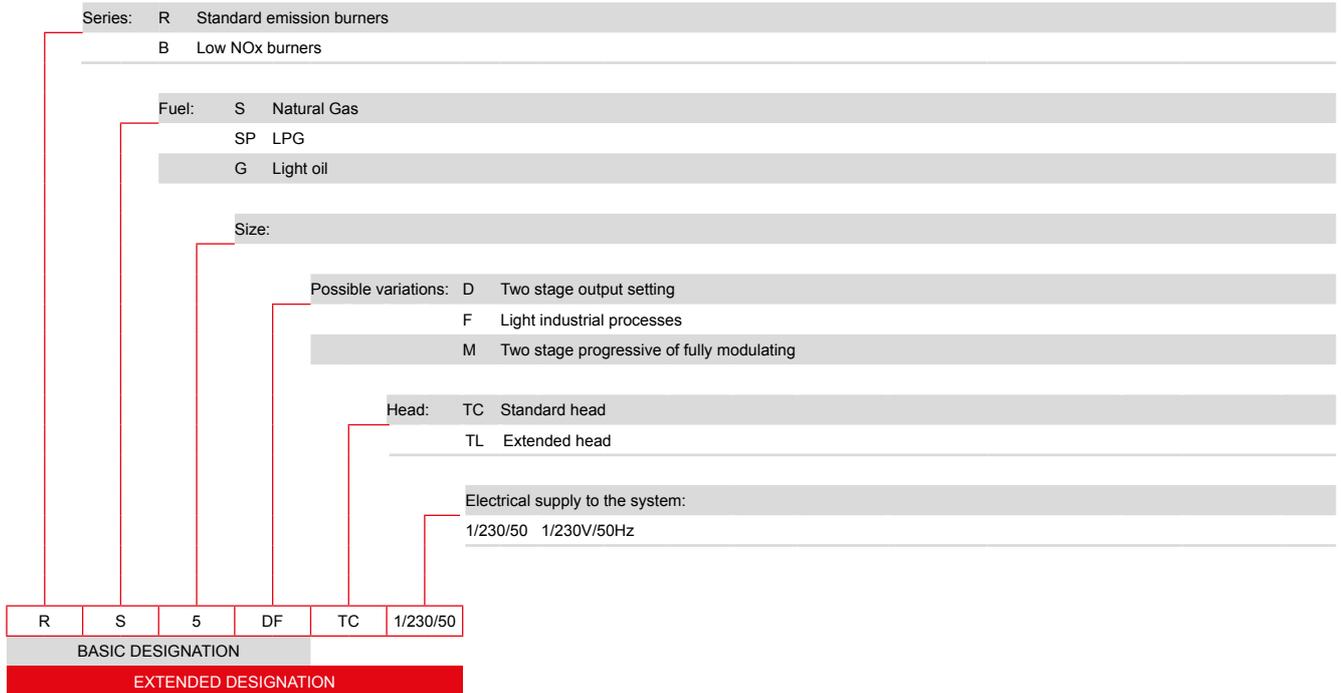
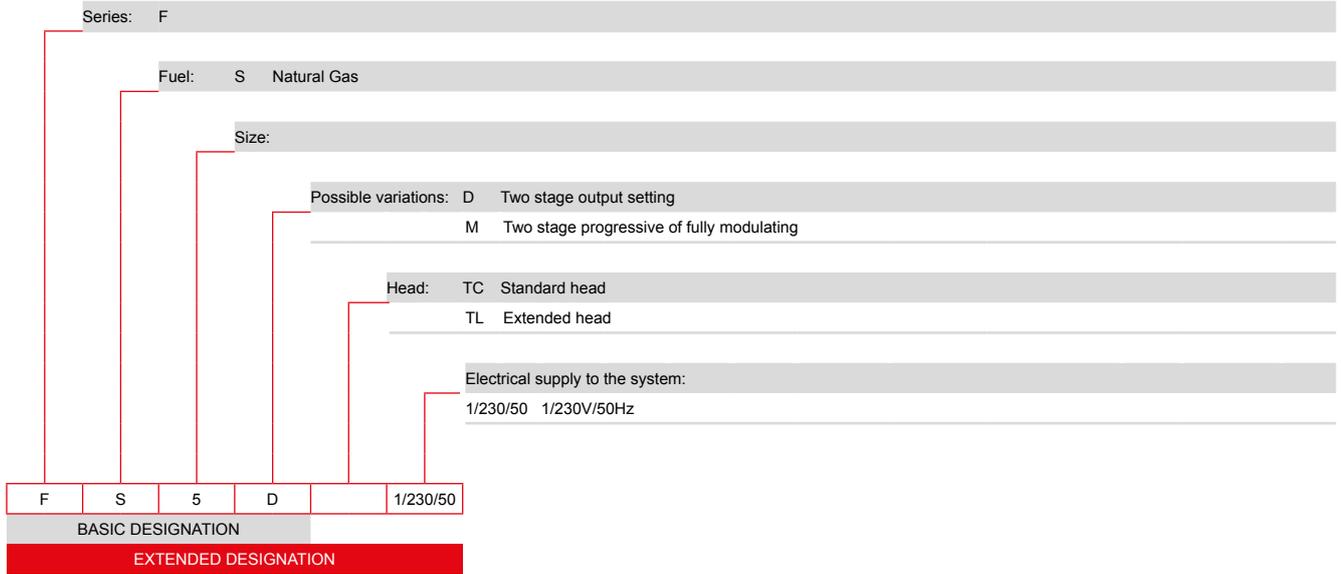
Low NOx emissions, lower than class 3 of european standard EN 676 (NOx lower than 80 mg/kWh)



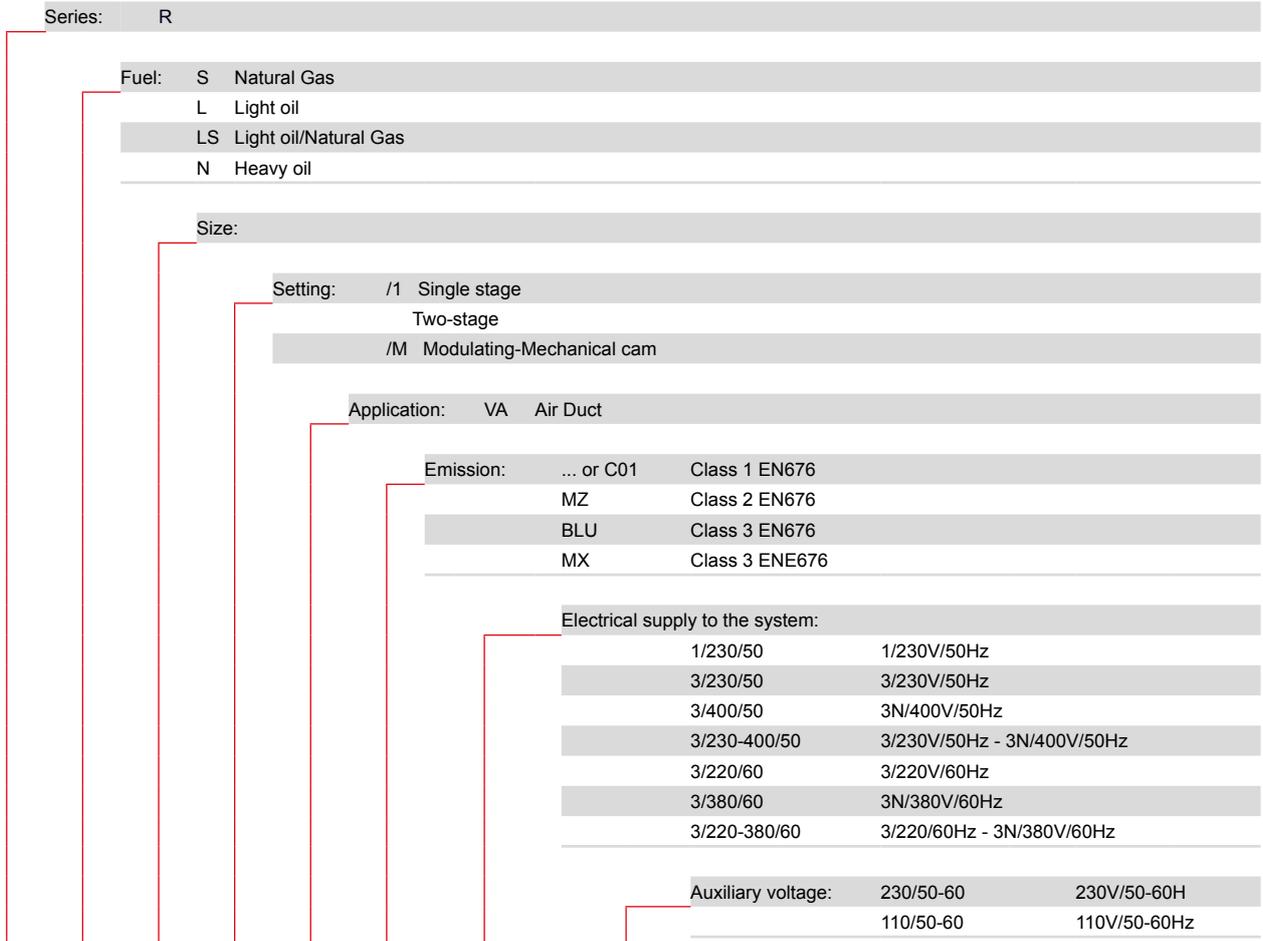
LOW NOx GAS PROCESS BURNERS
 Low NOx emissions, lower than class 3 of european standard EN 676 (NOx lower than 80 mg/kWh)



STANDARD NOx PROCESS BURNERS
Standard NOx emissions



STANDARD NOx GAS PROCESS BURNERS
Standard NOx emissions



R	S	70		VA		3/230-400/50	230/50-60
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BASIC DESIGNATION

EXTENDED DESIGNATION

STANDARD NO_x LIGHT OIL PROCESS BURNERS
Standard NO_x 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
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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
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BASIC DESIGNATION

EXTENDED DESIGNATION

STANDARD NOx LIGHT OIL PROCESS BURNERS
Standard NOx emissions

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	G	5	DF	TC	1/230/50
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BASIC DESIGNATION

EXTENDED DESIGNATION

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
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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 _____	
<input type="checkbox"/> Hot water <input type="checkbox"/> High pressure steam Max working pressure _____ bar		<input type="checkbox"/> Superheated water <input type="checkbox"/> Low pressure steam Max working temp. _____ °C		<input type="checkbox"/> Thermal oil <input type="checkbox"/> Superheated steam Steam _____ ton/h	
				<input type="checkbox"/> Hot air-Indirect generator <input type="checkbox"/> Hot air-direct generator	
Boiler Design					
Firetube <input type="checkbox"/> 3-pass Watertube <input type="checkbox"/> D-shape Preheating comburent air <input type="checkbox"/> Yes		<input type="checkbox"/> Reverse flame <input type="checkbox"/> Heat recovery <input type="checkbox"/> No		<input type="checkbox"/> Twin Chamber/Twin Burner <input type="checkbox"/> Rapid Comburent Air Temperature _____ °C	
Boiler output _____ kW Burner ouput _____ kW		_____ kcal/h _____ kcal/h		_____ btu/h _____ btu/h Boiler Efficiency _____ %	
Combustion Chamber Data					
Back pressure _____ mbar Length _____ mm Diameter _____ mm		_____ mm W.C. High _____ mm Width _____ mm		_____ mm Hg Refractory Hole Diameter _____ mm Refractory Hole Lenght _____ mm	
Fuel					
<input type="checkbox"/> Natural gas <input type="checkbox"/> Light oil		<input type="checkbox"/> LPG <input type="checkbox"/> Heavy oil		<input type="checkbox"/> Town gas <input type="checkbox"/> Kerosene	
				<input type="checkbox"/> Biogas <input type="checkbox"/> Biodiesel	
Gas Supply					
Lower calorific value _____ kWh/Nmc Gas supply pressure _____ mbar Biogas Composition _____		_____ kcal/Nmc _____ mm W.C.		_____ Btu/ft³ _____ PSI	
Oil Supply					
Min Viscosity _____ cSt Max Viscosity _____ cSt Lower Calorific Value _____ kWh/kg Temperature _____ °C Pressure _____ bar		_____ °E _____ °E _____ kcal/kg		_____ °C _____ °C _____ Btu/lb	
Burner Site Installation					
Country _____ Altitude _____ m a.s.l.		Town _____ Environment Temperature _____ °C		<input type="checkbox"/> Indoor <input type="checkbox"/> Outdoor	
Electrical Power supply					
Main 3- phase _____ V _____ Hz		Aux 1- phase _____ V _____ Hz			
Burner Control Options					
<input type="checkbox"/> O2 control <input type="checkbox"/> Mechanical cam <input type="checkbox"/> Single-block		<input type="checkbox"/> Electronic cam-Siemens <input type="checkbox"/> CO control <input type="checkbox"/> Dual-block		<input type="checkbox"/> Inverter <input type="checkbox"/> One stage <input type="checkbox"/> Electronic cam-Lamtec	
				<input type="checkbox"/> FGR <input type="checkbox"/> Two stage	
		<input type="checkbox"/> Modulating			
Flame Control Options					
<input type="checkbox"/> Standard flame safeguard (FS1)		<input type="checkbox"/> Self-Check flame safeguard (FS2)			
Oil pumping skid for dual-block					
<input type="checkbox"/> Single pump <input type="checkbox"/> Electrical Oil Preheater		<input type="checkbox"/> Double pump <input type="checkbox"/> Steam Oil Preheater		<input type="checkbox"/> Single filter <input type="checkbox"/> Steam + Electrical Oil Preheater	
		<input type="checkbox"/> Double filter			
Gas train					
<input type="checkbox"/> Regulating gas train <input type="checkbox"/> Safety gas train		<input type="checkbox"/> Leakage control		<input type="checkbox"/> Filter	
Approval/Compliance					
<input type="checkbox"/> European Standards EN267/EN676 <input type="checkbox"/> North American Standards UL296/UL795		<input type="checkbox"/> ATEX <input type="checkbox"/> _____			
Max NOx emission value					
_____ ppm _____ mg/kWh		_____ mg/Nm³ @ _____ % O₂			
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

SALES & SERVICE NETWORK

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