Modulating gas burners

RS 34-44/M



- Modulating gas burners

RS 34-44/M burners series covers a firing range from 45 to 550 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Operation can be “two stage progressive” or, alternatively, “modulating” with the installation of a PID logic regulator and respective probes.
RS/M burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.
The exclusive design ensures reduced dimensions, simple use and maintenance. Optimisation of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material.
A wide range of accessories guarantees elevated working flexibility.

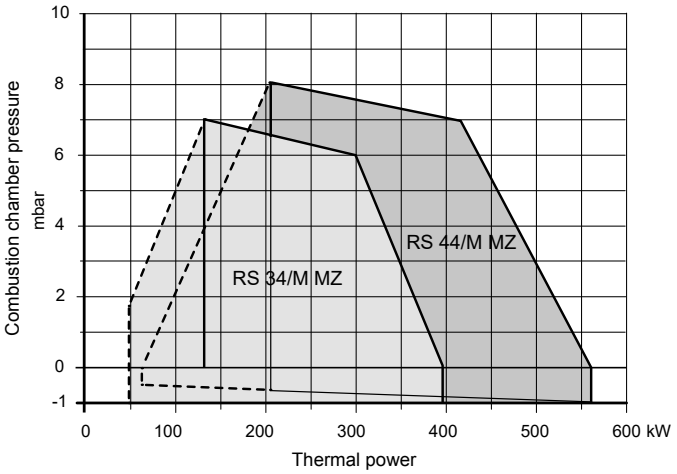
Guidelines for installation of burners in conformity to EU Regulation:
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤ 400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
– With boilers (heater housings) already in service in the field, for replacement of identical products, in conformity to Article 1, paragraph 2, point (G) of the EU Regulation No. 813/2013;
– With boilers (heater housings) on a new installation, if they have emissions complying with the requirement of Annex II, paragraph 4 of the EU regulation No. 813/2013.

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 34/M MZ TC FS1	45/125-390	4.5/12.5-39	0.6	1/230/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788710**
RS 34/M MZ TL FS1	45/125-390	4.5/12.5-39	0.6	1/230/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788711**
RS 44/M MZ TC FS1	80/203-550	8/20.3-55	0.7	1/230/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788810**
RS 44/M MZ TL FS1	80/203-550	8/20.3-55	0.7	1/230/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788811**
RS 44/M MZ TC FS1	80/203-550	8/20.3-55	0.75	3/400/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788840**
RS 44/M MZ TL FS1	80/203-550	8/20.3-55	0.75	3/400/50-60	230/50-60	CE-0085BR0378	(1)(2)	**3788841**

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

FIRING RATES

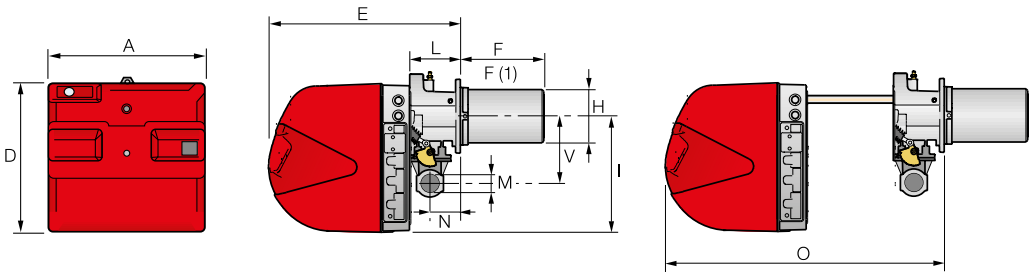


Useful firing rates for choosing the burner

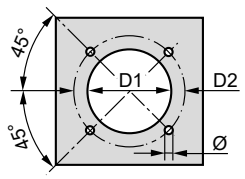
Modulation range

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

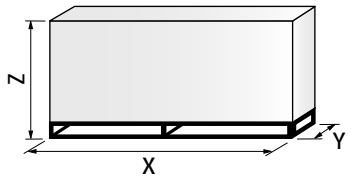
OVERALL DIMENSIONS



Description	A mm	D mm	E mm	F - F(1) mm	H mm	I mm	L mm	M mm	N mm	O mm	V mm
RS 34/M MZ	442	422	508	216-351	140	305	138	1"½	84	780	177
RS 44/M MZ	442	422	508	216-351	152	305	138	1"½	84	780	177



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

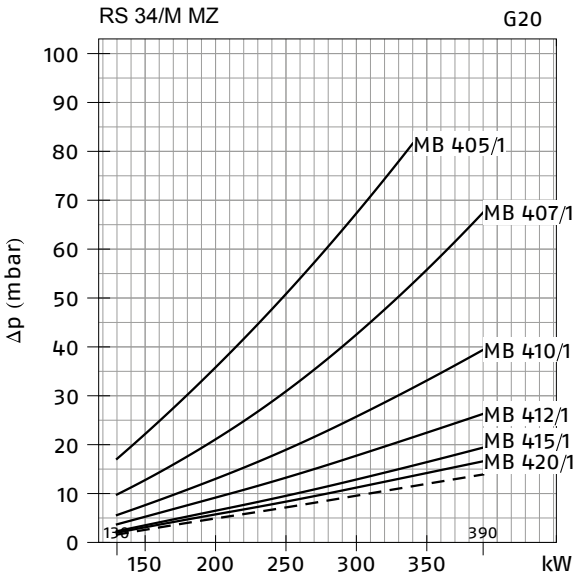


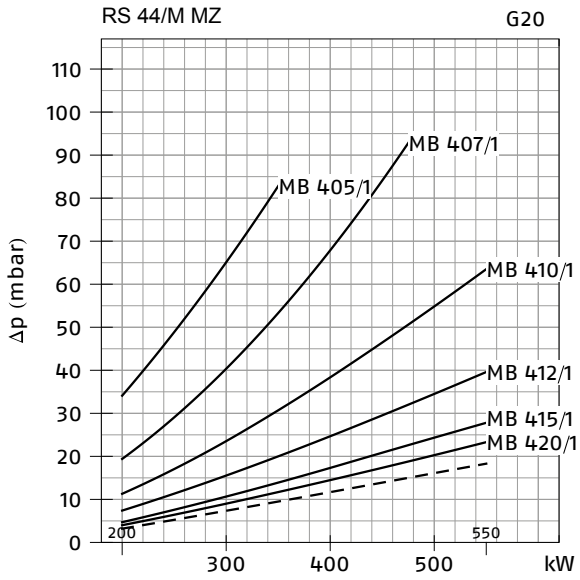
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 34/M MZ	1000	485	500	32
RS 44/M MZ	1000	485	500	33

(1) Dimension with standard and extended head.

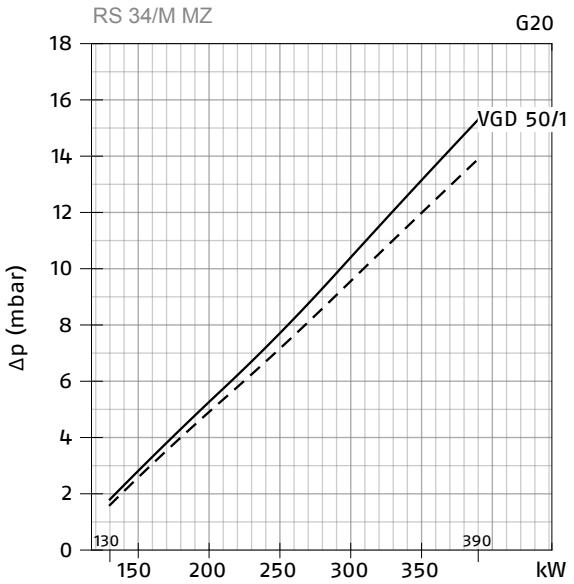
PRESSURE LOSS DIAGRAMS

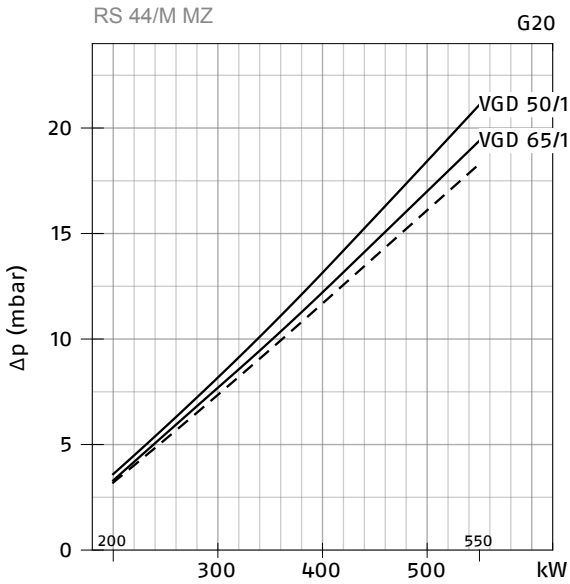
MB SERIES GAS TRAIN





VGD SERIES GAS TRAIN





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

GAS TRAINS

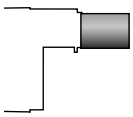
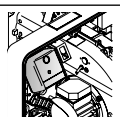
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 34/M MZ	RS 44/M MZ
MB SERIES ONE STAGE GAS TRAIN							
MB 405/1-RT 20	**3970500***		Rp ¾"	-	3010123	3000824	
MB 407/1-RT 20	**3970553***		Rp ¾"	-	3010123	3000824	
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3010123	3000824	
MB 407/1-RSM 20	**3970229***		Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3010124	
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824	
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123	3000824	
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123	3000824	

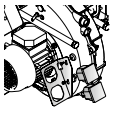
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)	
						RS 34/M MZ	RS 44/M MZ
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	□	□
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	□	□
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	□	□
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	□	□
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	□	□
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	□	□
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	□	□
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	□	□
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	3000822	
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	3000822	
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	3000822	
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	3000822	
VGD SERIES ONE STAGE GAS TRAIN							
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	3000822	
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	3000822	
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	●	3000826+ 3000822
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	●	3000826+ 3000822

(1) Please refer to "GAS TRAIN DESIGNATION".
(2) The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.
(3) Valve leak detection control device. Supplied separately from the gas train (see "GAS TRAIN ACCESSORIES" paragraph for both 50 Hz and 60 Hz codes).
(4) The code indicates the adapter necessary for "burner-gas train connection (see "GAS TRAINS ACCESSORIES").
(5) Ø in = DN65; Ø out = DN80
* 230V/50Hz - 220V/60Hz electrical supply.
** 230V/50Hz electrical supply.
NOTE: for further information, refer to section "GAS TRAINS FOR BURNERS".

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

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		EXTENDED HEAD KIT Burners standard head can be transformed into "extended head" versions by using the special kit. Here the kits available for the various burners are listed, showing the original and the extended lengths.		
	RS 34/M MZ	Standard head length = 216 mm - Extended head length = 351 mm		**3010428**
	RS 44/M MZ	Standard head length = 216 mm - Extended head length = 351 mm		**3010429**
	All models	CONNECTION FLANGE KIT A kit is available for use where the burner opening on the boiler is of excessive diameter.		**3010138**
	All models	SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available. Spacer thickness S = 110 mm		**3010095**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010449**
	All models	POST-VENTILATION KIT To prolong ventilation after opening of thermostats chain, a special kit is available. Post-ventilation time 20s.		**3010451**

Drawing	Burner model	Specification	Note	Code
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm, ,E = 770 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010403**
	All models	POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
		RWF 50.2 - Standard version.		**20083339**
		RWF 55.5 - Plus version.		**20098541**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
	All models	SIGNAL CONVERTER Modulating operation can also be obtained with an analog control signal converter and a feedback three-pole potentiometer. Alternatively, the potentiometer can be used to check the servomotor position. Input signal: 0/2-10V (impedance 200 kΩ) - 0/4-20 mA (impedance 250 Ω).		**3010410**
	All models	POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		**3010420**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010448**
	All models	VOLT FREE CONTACT KIT A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.		**3010419**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 34/M MZ	Kit code for standard and extended head.		**3010423**
	RS 44/M MZ	Kit code for standard and extended head.		**3010424**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 34/M MZ	Kit code for standard and extended head.	(1)	**3010502**
	RS 44/M MZ	Kit code for standard and extended head.	(1)	**3010503**
		VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate.		
	RS 34/M MZ	Natural gas version.	(2)	**20098750**
	RS 34/M MZ	LPG version.	(3)	**20098753**
	RS 44/M MZ	Natural gas version.	(2)	**20098746**
	All models	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.		**3010418**
	All models	HOURS COUNTER KIT To measure the burner working time a hours counter kit is available.		**3010450**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**

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

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

STATE OF SUPPLY

Monoblock forced draught gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:
– Air suction circuit with sound proofing material
– High performance fan with straight blades
– Air damper for air flow setting and butterfly valve for regulating fuel output controlled by a servomotor with variable cam
– Starting motor at 2800 rpm, single-phase / 230V / 50-60Hz or three-phase / 230-400V / 50-60Hz
– Combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Microprocessor-based burner safety control box, with diagnostic functions
– Plugs and Sockets for electrical connection, accessible from the external of the cover
– Burner on/off selection switch
– Manual or automatic output increase/decrease selection switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 40 electric protection level.

STANDARD EQUIPMENT

– 1 gas train flange
– 1 flange gasket
– 4 screws for fixing the flange
– 1 thermal screen
– 4 screws for fixing the burner flange to the boiler
– 3 plugs for electrical connection (RS 34-44/M MZ single-phase)
– 4 plugs for electrical connection (RS 44/M MZ three-phase)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.