Modulating gas burners

GAS P/M

- Modulating gas burners

GAS P/M series covers a firing range from 130 to 4885 kW. Operation is featured by progressive two stage operation or full modulation, with an advanced modulating control system and probes. The burners of GAS P/M series are well suited for applications requiring versatility of control (process, steam, refrigerating absorption) where a variable output is needed. Due to their metal sheet structures, they are specifically suitable for process applications where plastic materials could be easily damaged or deformed.
Simplified maintenance is achieved by sliding bars which permit the access to the combustion head without need of removing the burner from the boiler.

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

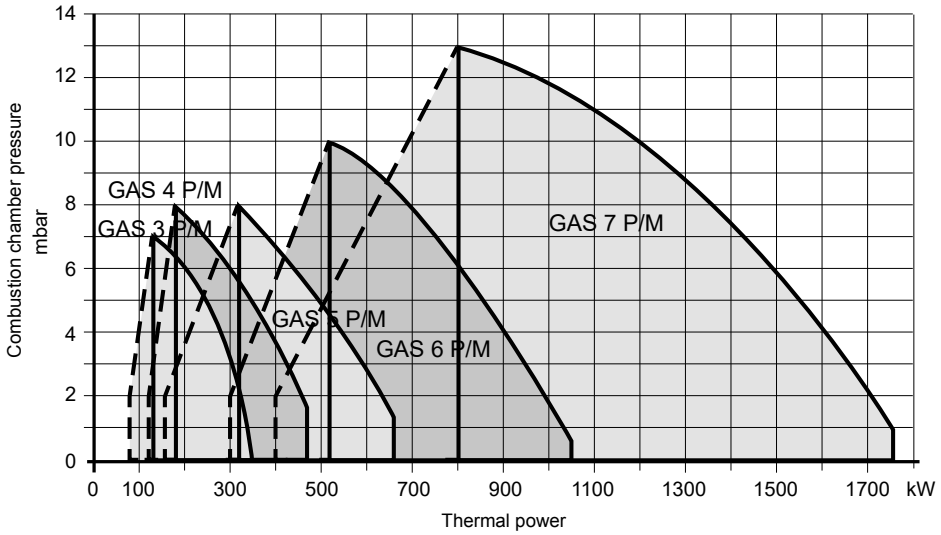
TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR INTERMITTENT OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
GAS 3 P/M TC FS1	80/130-350	8/13-35	0,4	1/230/50	230/50-60	CE 0085AQ0710	(2)	**20206280**
GAS 4 P/M TC FS1	120/180-470	12/18-47	0,54	1/230/50	230/50-60	CE 0085AQ0710	(2)	**20205666**
GAS 5 P/M TC FS1	155/320-660	15,5/32-66	0,85	3/400/50	230/50-60	CE 0085AQ0710	(2)	**20213787**
GAS 6 P/M TC FS1	300/520-1050	30/52-105	1,9	3/400/50	230/50-60	CE 0085AQ0710	(2)	**20213788**
GAS 7 P/M TC FS1	400/800-1760	40/80-176	4,5	3/400/50	230/50-60	CE 0085AQ0710	(2)	**20213789**
GAS 8 P/M TC FS1	640/1163-2210	64/116-221	5.0	3/400/50	230/50-60	CE 0085AP0941	(2)	**20205990**
GAS 8 P/M TL FS1	640/1163-2210	64/116-221	5.0	3/400/50	230/50-60	CE 0085AP0941	(2)	**20213790**
GAS 9 P/M TC FS1	870/1744-3488	87/174-349	16,9	3/400/50	230/50-60	CE 0085AP0942	(2)	**20213791**
GAS 9 P/M TC FS1	870/1744-3488	87/174-349	16,9	3/400/50	230/50-60	CE 0085AP0942	(1)(2)	**20213792**
GAS 9 P/M TL FS1	870/1744-3488	87/174-349	16,9	3/400/50	230/50-60	CE 0085AP0942	(2)	**20205585**
GAS 10 P/M TC FS1	1140/2441-4885	114/244-489	16,9	3/400/50	230/50-60	CE 0085AP0943	(1)(2)	**20206138**

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
GAS 10 P/M TL FS1	1140/2441-4885	114/244-489	16,9	3/400/50	230/50-60	CE 0085AP0943	(1)(2)	**20205654**

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

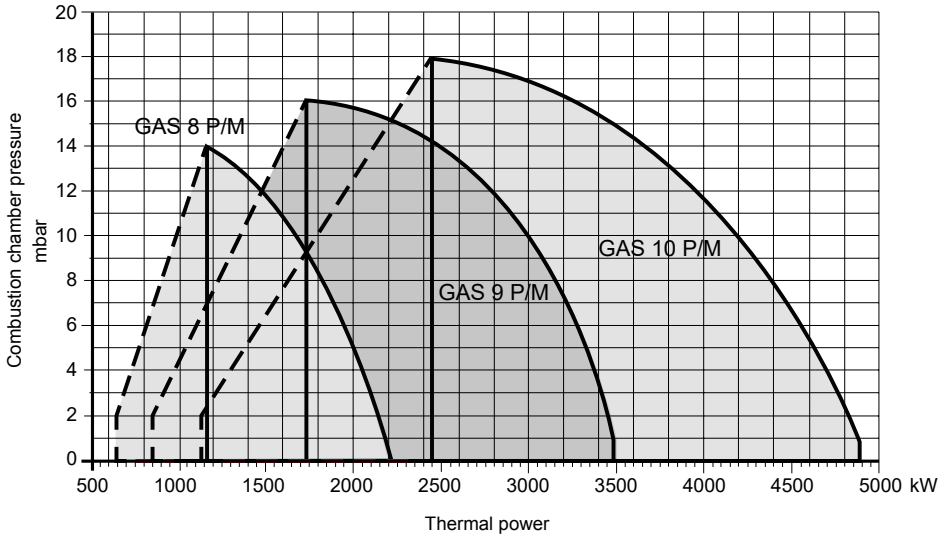
FIRING RATES



Useful firing rates for choosing the burner

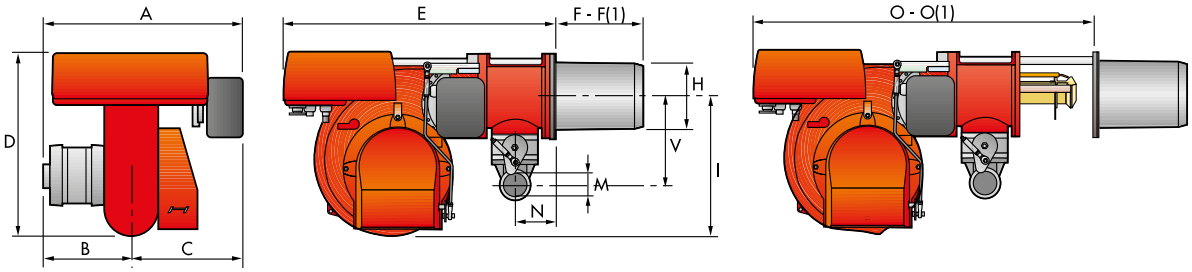
Modulation range

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

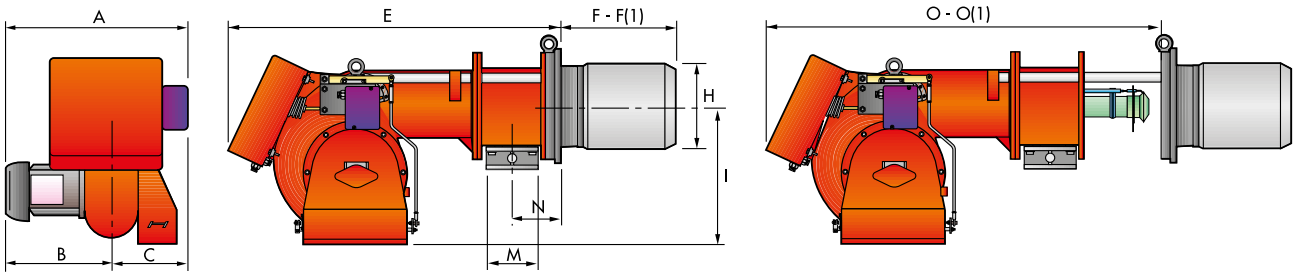


OVERALL DIMENSIONS

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

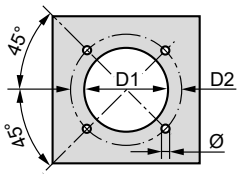


GAS 8-9-10 P/M

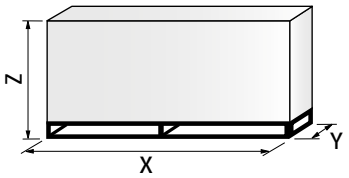


Description	A mm	B mm	C mm	D mm	E mm	F-F(1)	H mm	I mm	M mm	N mm	O-O(1) mm	V mm
GAS 3 P/M	585	205	380	397	610	185	140	292	1”1/2	97	775	225
GAS 4 P/M	585	205	380	397	610	187	150	292	1”1/2	97	775	225
GAS 5 P/M	581	226	355	437	645	207	155	332	1”1/2	97	810	225
GAS 6 P/M	628	258	370	485	770	227	175	370	Rp 2”	131	966	250
GAS 7 P/M	758	358	400	590	920	240	220	445	Rp 2”	140	1142	305
GAS 8 P/M	755	396	359	-	1090	391	260	467	DN 80	158	1541-1644	-
GAS 9 P/M	817	447	370	-	1200	444	295	496	DN 80	168	1627-1757	-
GAS 10 P/M	917	508	409	-	1320	476	336	525	DN 80	203	1730-1860	-

(1) Length with extended combustion head.



Description	D1 mm	D2 mm	Ø mm
GAS 3 P/M	155	226	M10
GAS 4 P/M	165	226	M10
GAS 5 P/M	165	226	M10
GAS 6 P/M	185	276	M12
GAS 7 P/M	230	325	M12
GAS 8 P/M	265	368	M16
GAS 9 P/M	300	368	M18
GAS 10 P/M	350	438	M20



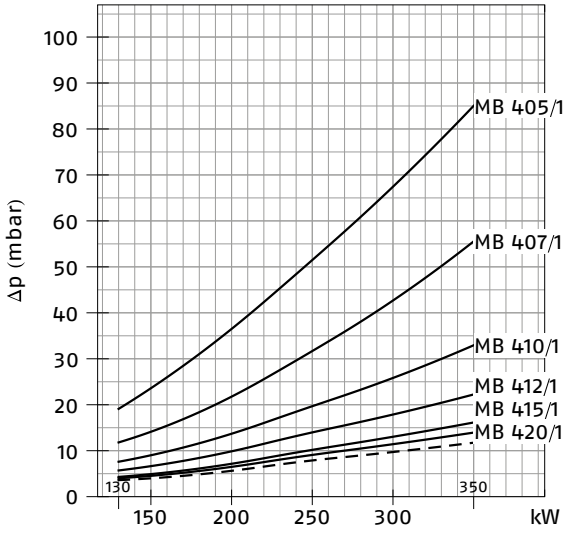
Description	X (1) mm	Y mm	Z mm	Net weight kg
GAS 3 P/M	930	705	555	37
GAS 4 P/M	930	705	555	43
GAS 5 P/M	930	705	555	46
GAS 6 P/M	1045	705	555	63
GAS 7 P/M	1400	850	650	101
GAS 8 P/M	1740	990	950	195
GAS 9 P/M	2040	1180	1125	240
GAS 10 P/M	2040	1180	1125	310

(1) Dimension with standard and extended head.

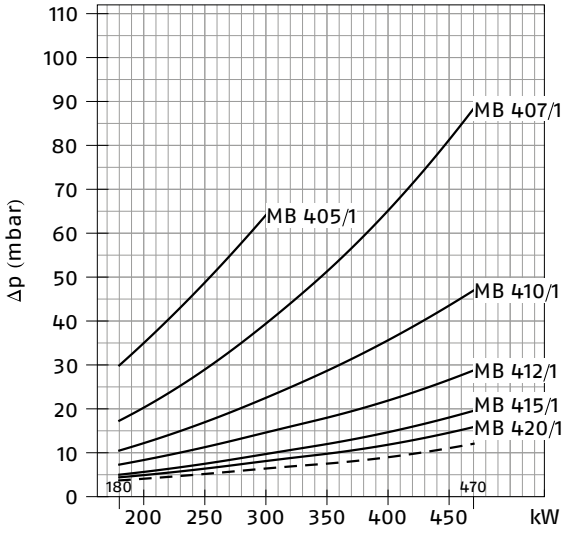
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN

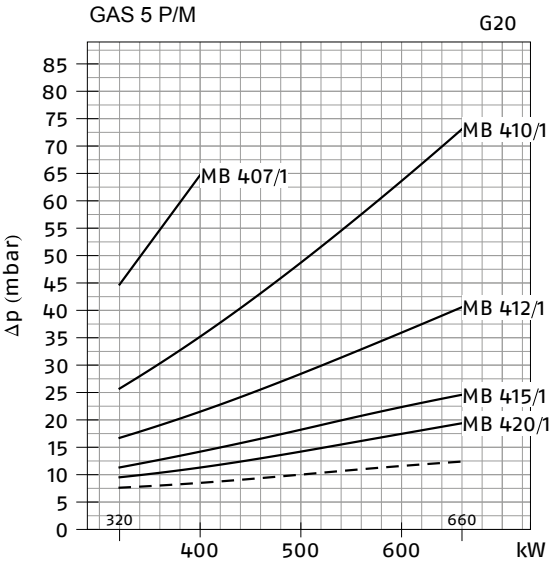
GAS 3 P/M



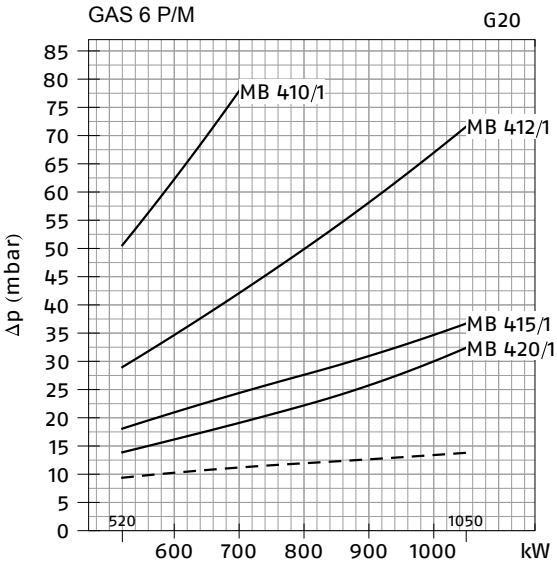
GAS 4 P/M



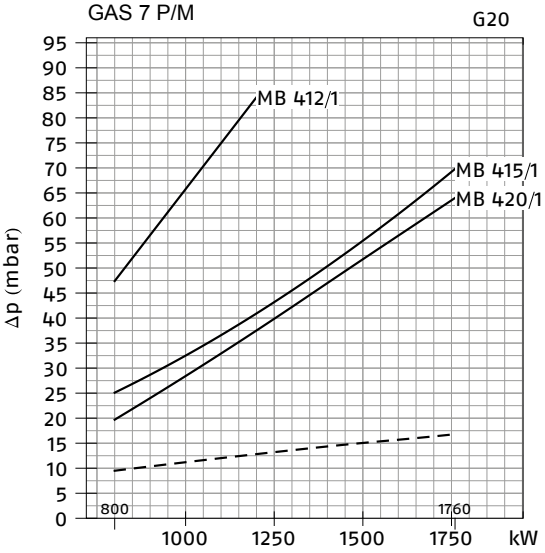
GAS 5 P/M



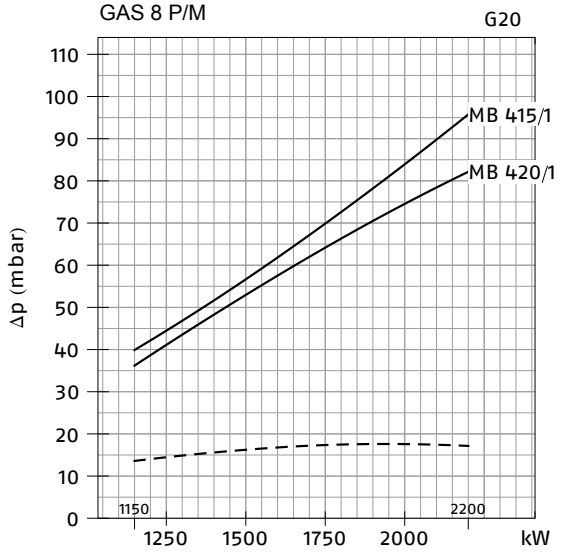
GAS 6 P/M



GAS 7 P/M



GAS 8 P/M

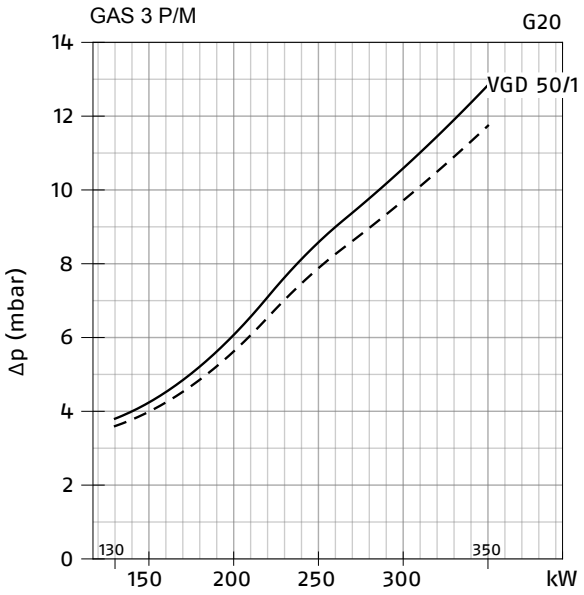


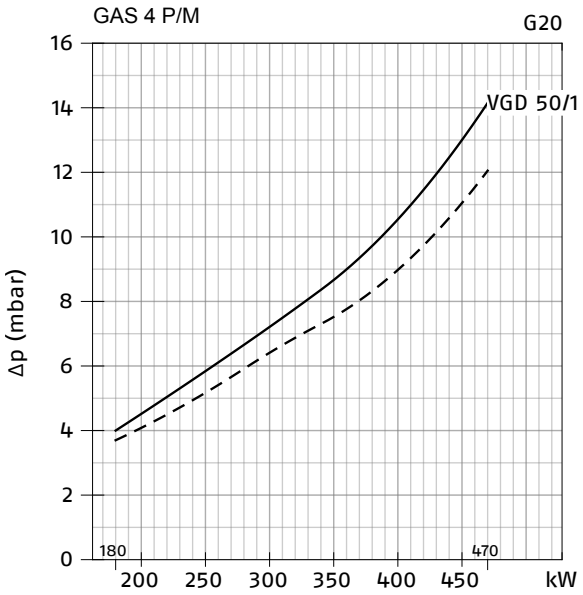
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

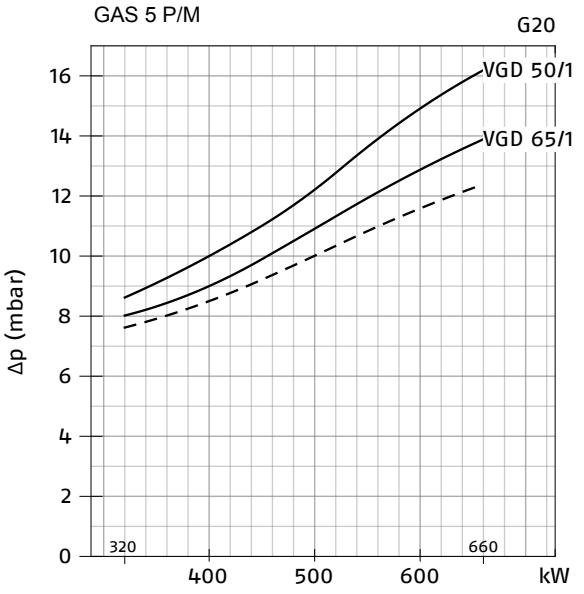
——— Combustion head + gas train

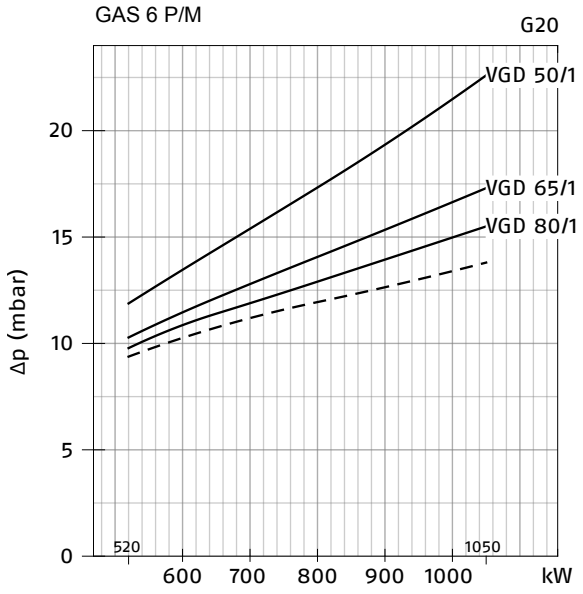
- - - - Combustion head

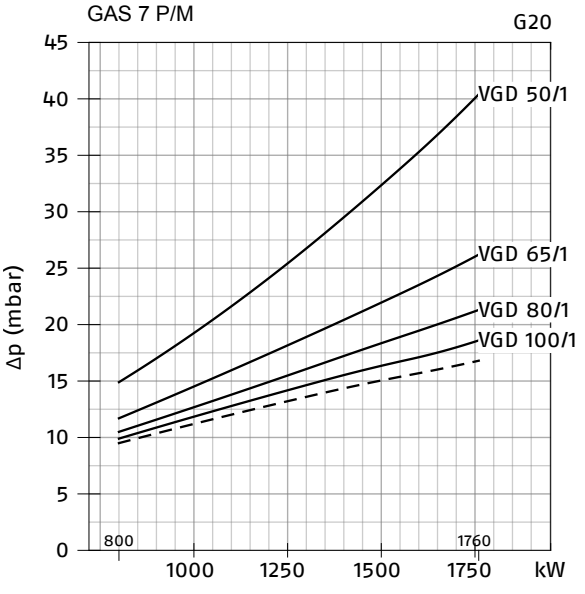
VGD SERIES GAS TRAIN

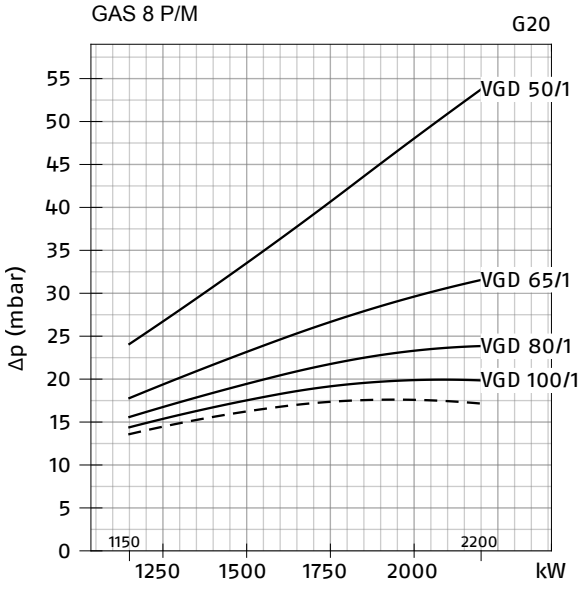








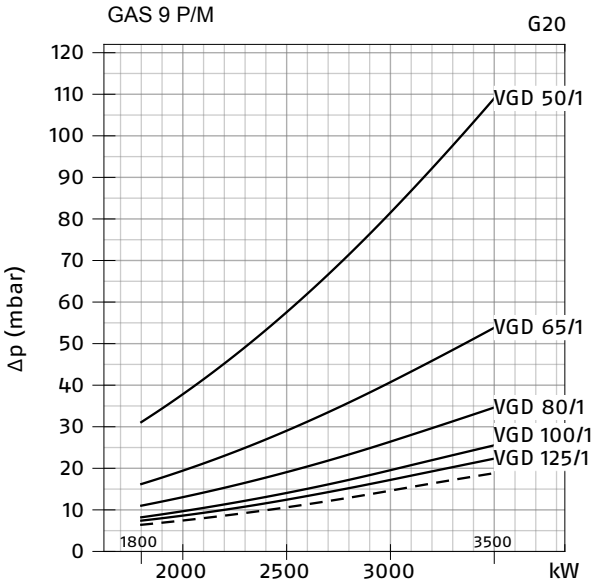


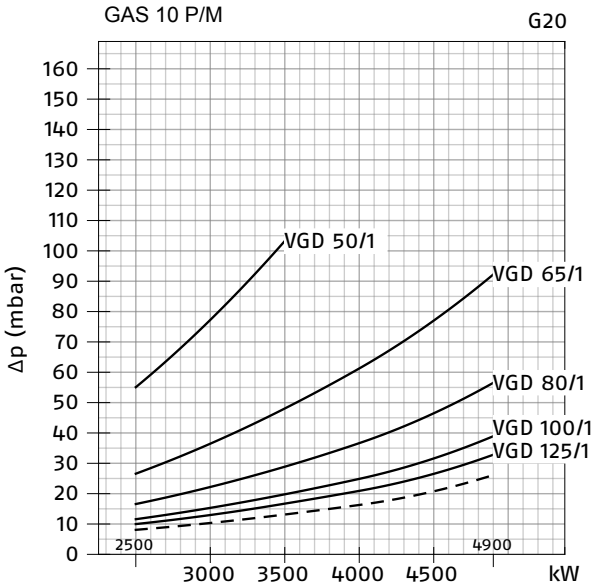


Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

——— Combustion head + gas train

- - - - Combustion head





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

GAS TRAINS

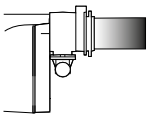
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)							
						GAS 3 P/M	GAS 4 P/M	GAS 5 P/M	GAS 6 P/M	GAS 7 P/M	GAS 8 P/M	GAS 9 P/M	GAS 10 P/M
MB SERIES ONE STAGE GAS TRAIN													
MB 405/1-RT 20	**3970500***		Rp ¾"	-	3010123	3000824		●	●	●	●	●	●
MB 407/1-RT 20	**3970553***		Rp ¾"	-	3010123	3000824			●	●	●	●	●
MB 407/1-RT 52	**3970599***		Rp ¾"	-	3010123	3000824			●	●	●	●	●
MB 407/1-RSM 20	**3970229***		Rp ¾"	-	3010123	3000824			●	●	●	●	●
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3010124			3010126	●	●	●	●
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824			3000824+ 3000843	●	●	●	●
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123	3000824				●	●	●	●
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123	3000824				●	●	●	●
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	□	□	□	3000843		●	●	●
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	□	□	□			●	●	●
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	□	□	□	3000843		●	●	●
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	□	□	□			●	●	●
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	□	□	□	3000843		3000843+ 3010495+ 3000826	●	●
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	□	□	□				●	●
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	□	□	□	3000843			●	●
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	□	□	□				●	●
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	□	□	□				●	●
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	3000822			□	□	3010495+ 3000826	●	●
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	3000822			□	□		●	●
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	3000822			□	□		●	●
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	3000822			□	□		●	●
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	3000822			□	□		●	●
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	3000822			□	□		●	●
VGD SERIES ONE STAGE GAS TRAIN													
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	3000822			□	□	3010495+3000826		
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	3000822			□	□	3010495+3000826		
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826+3000822			3000826		3000832		
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826+3000822			3000826		3000832		
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	3000826+3000822			3000826		3000832		
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	3000826+3000822			3000826		3000832		
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	●	●	●	●	●	3010127		

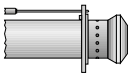
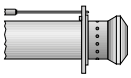
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)							
						GAS 3 P/M	GAS 4 P/M	GAS 5 P/M	GAS 6 P/M	GAS 7 P/M	GAS 8 P/M	GAS 9 P/M	GAS 10 P/M
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	●	●	●	●	●	3010127		
VGD 125/1-FT 122	**20169195***		DN125	-	(6)	●	●	●	●	●	(6)		

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

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

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		EXTENDED HEAD KIT Burners standard head can be transformed into "extended head" versions by using the special kit. Here the kits available for the various burners are listed, showing the original and the extended lengths.		
	GAS 3 P/M	Standard head length = 185 mm - Extended head length = 320 mm		**3000605**
	GAS 4 P/M	Standard head length = 187 mm - Extended head length = 320 mm		**3000606**
	GAS 5 P/M	Standard head length = 207 mm - Extended head length = 365 mm		**3000607**
	GAS 6 P/M	Standard head length = 227 mm - Extended head length = 360 mm		**3000608**
	GAS 7 P/M	Standard head length = 240 mm - Extended head length = 400 mm		**3000678**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	GAS 3-6 P/M	Spacer thickness S = 142 mm		**3000755**
	GAS 7-8 P/M	Spacer thickness S = 102 mm		**3000722**
	GAS 9 P/M	Spacer thickness S = 122 mm		**3000723**
	GAS 10 P/M	Spacer thickness S = 130 mm		**3000751**
	GAS 3-7 P/M	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010030**
		SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		
	GAS 3-6 P/M	Box type: C1/3 Dimensions: A = 650 mm, B (min-max) = 372-980 mm, C = 110 mm, D = 690 mm E = 770 mm		**3010403**
	GAS 7-8 P/M	Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 980 mm E = 930 mm		**3010404**
	All models	Box type: C7 Dimensions: A = 1255 mm, B (min-max) = 160-980 mm, C = 110 mm, D = 1250 mm E = 1345 mm		**3010376**
	GAS 8 P/M GAS 10 P/M	BURNER SUPPORT For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.		**3000731**
		POWER CONTROLLER To obtain modulating operation, the burner requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. For remote setpoint use RWF 55.		
	GAS 3-7 P/M	RWF 50.2 - Basic version with 3 position output.		**20105445**
		RWF 55.5 - Complete with RS-485 interface.		**20105717**
	GAS 8-9-10 P/M	RWF 50.2 - Basic version with 3 position output.		**20100018**
		RWF 55.5 - Complete with RS-485 interface.		**20101965**
	All models	TEMPERATURE PROBE The temperature probe to be fitted to the power controller must be chosen based on the application. Temperature probe type PT 100 (-100-500 °C).		**3010110**

Drawing	Burner model	Specification	Note	Code
	All models	PRESSURE PROBE The pressure probe to be fitted to the power controller must be chosen based on the application.		
		Pressure (0-2.5 bar) with 4-20 mA output.		**3010213**
		Pressure (0-16 bar) with 4-20 mA output.		**3010214**
		Pressure (0-25 bar) with 4-20 mA output.		**3090873**
		POTENTIOMETER Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.		
	GAS 3-7 P/M	Three-pole potentiometer kit code.		**20096322**
	GAS 8-9-10 P/M	Three-pole potentiometer kit code.		**3010021**
	GAS 9 P/M	220-230 V CONVERSION KIT This kit is required to convert the 380-400 V models into the 220 or 230 V version.		**20163347**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	GAS 3 P/M	Kit code for standard head.	(1)	**3000657**
	GAS 3 P/M	Kit code for extended head.	(1)	**3000807**
	GAS 4 P/M	Kit code for standard head.	(1)	**3000658**
	GAS 4 P/M	Kit code for extended head.	(1)	**3000808**
	GAS 5 P/M	Kit code for standard head.	(1)	**3000659**
	GAS 5 P/M	Kit code for extended head.	(1)	**3000809**
	GAS 6 P/M	Kit code for standard head.	(1)	**3000753**
	GAS 6 P/M	Kit code for extended head.	(1)	**3000810**
	GAS 7 P/M	Kit code for standard head.	(1)	**3000806**
	GAS 7 P/M	Kit code for extended head.	(1)	**3000811**
	GAS 8 P/M	Kit code for standard head.	(1)	**3000875**
	GAS 8 P/M	Kit code for extended head.	(1)	**3010029**
	GAS 9 P/M	Kit code for standard head.	(1)	**3000876**
	GAS 9 P/M	Kit code for extended head.	(1)	**3010028**
	GAS 10 P/M	Kit code for standard head.	(1)	**3010152**
	GAS 10 P/M	Kit code for extended head.	(1)	**3010153**
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner.		
	GAS 3 P/M	Kit code for standard head.	(1)	**3000742**
	GAS 4 P/M	Kit code for standard head.	(1)	**3000754**
	GAS 5 P/M	Kit code for standard head.	(1)	**3000759**
	GAS 6 P/M	Kit code for standard head.	(1)	**3000768**
	GAS 7 P/M	Kit code for standard head.	(1)	**3000769**
	GAS 8 P/M	Kit code for standard head.	(2)	**(2)**
	GAS 9 P/M	Kit code for standard and extended head.	(1)	**3010298**
	GAS 10 P/M	Kit code for standard and extended head.	(1)	**3010300**

(1) Without CE certification.
(2) On demand.

STATE OF SUPPLY

Monoblock forced draught gas burner, two stage progressive operation or modulating with a kit, made up of:
– Air suction circuit
– Fan with forward curved blades
– Air damper for air setting controlled by a servomotor
– Combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • flame stability disk
– Servomotor for air and gas delivery regulation
– Maximum gas pressure switch (except for GAS 3 P/M model and GAS 6 P/M code 3753681)
– Minimum air pressure switch
– Single phase or three phases electrical motor
– Ionisation probe
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP X0D (IP 40) protection level.

STANDARD EQUIPMENT

– 1 gas train flange
– 1 flange gasket
– 1 insulating screen
– 8 screws for fixing the burner flange to the boiler (12 for GAS 8 P/M - GAS 9 P/M and GAS 10 P/M)
– 4 wiring looms for electrical connections
– 1 Star/delta starter (for GAS 8 P/M - GAS 9 P/M and GAS 10 P/M)
– 2 wiring looms for electrical connections to the Star/delta starter (for GAS 8 P/M - GAS 9 P/M and GAS 10 P/M)
– 8 washers (for GAS 8 P/M - GAS 9 P/M and GAS 10 P/M)
– 2 bar extensions (only for extended head versions of GAS 8 P/M - GAS 9 P/M and GAS 10 P/M)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue