Two stage progressive gas burners

RS 70-190

- Two stage progressive gas burners

RS 70-190 burners series covers a firing range from 192 to 2290 kW. and it has been designed for use in low or medium temperature hot water boilers. hot air or steam boilers. diathermic oil boilers.
Operation is “two stage progressive”; the burners are fitted with a microprocessor-based burner safety control box which supplies indication of operation and diagnosis of fault cause.
The elevated performance of the fans and combustion head. guarantee flexibility of use and excellent working at all firing rates.
The exclusive design ensures reduced dimensions. simple use and maintenance. Optimization of sound emissions is guaranteed by the special design of the air suction circuit and by incorporated sound proofing material. A wide range of accessories guarantees elevated working flexibility.

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

TECHNICAL DATA

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
MODELS FOR STANDARD OPERATION (FS1: ONE STOP EVERY 24 HOURS)								
RS 70 TC FS1	192/465-814	19/46.5-81	1.4	3/400/50	230/50-60	CE-0085AP0944	(2)	**20194283**
RS 70 TL FS1	192/465-814	19/46.5-81	1.4	3/400/50	230/50-60	CE-0085AP0944	(2)	**20194356**
RS 70 TC FS1	192/465-814	19/46.5-81	1.4	3/400/50	230/50-60	CE-0085AP0944	(1)	**20194286**
RS 70 TL FS1	192/465-814	19/46.5-81	1.4	3/400/50	230/50-60	CE-0085AP0944	(1)	**20194878**
RS 70 TC FS1	192/465-814	19/46.5-81	1.4	3/380/60	230/50-60	-	(2)	**20195084**
RS 70 TL FS1	192/465-814	19/46.5-81	1.4	3/380/60	230/50-60	-	(2)	**20195085**
RS 100 TC FS1	232/698-1163	23/70-116	1.8	3/400/50	230/50-60	CE-0085AP0945	(2)	**20194281**
RS 100 TL FS1	232/698-1163	23/70-116	1.8	3/400/50	230/50-60	CE-0085AP0945	(2)	**20194293**
RS 100 TC FS1	232/698-1163	23/70-116	1.8	3/400/50	230/50-60	CE-0085AP0945	(1)(2)	**20194881**
RS 100 TL FS1	232/698-1163	23/70-116	1.8	3/400/50	230/50-60	CE-0085AP0945	(1)(2)	**20194884**
RS 100 TC FS1	232/698-1163	23/70-116	1.8	3/380-460/60	230/50-60	-	(2)	**20195086**
RS 100 TL FS1	232/698-1163	23/70-116	1.8	3/380-460/60	230/50-60	-	(2)	**20195087**
RS 130 TC FS1	372/930-1512	37/93-151	2.6	3/400/50	230/50-60	CE-0085AP0946	(2)	**20194288**
RS 130 TL FS1	372/930-1512	37/93-151	2.6	3/400/50	230/50-60	CE-0085AP0946	(2)	**20194295**
RS 130 TC FS1	372/930-1512	37/93-151	2.6	3/400/50	230/50-60	CE-0085AP0946	(1)(2)	**20194885**
RS 130 TL FS1	372/930-1512	37/93-151	2.6	3/400/50	230/50-60	CE-0085AP0946	(1)(2)	**20194887**
RS 130 TC FS1	372/930-1512	37/93-151	2.6	3/380-460/60	230/50-60	-	(2)	**20195088**
RS 130 TL FS1	372/930-1512	37/93-151	2.6	3/380-460/60	230/50-60	-	(2)	**20195089**

Description	Heat output natural gas		Total electrical power	Electric power supply		Certification	Note	Code
	kW	Nm³/h	kW	Ph/V/Hz	V/Hz			
RS 150 TC FS1	300/900-1850	30/90-185	3.5	400/50	230/50-60	CE-0085CS0428	(2)	**20044636**
RS 150 TL FS1	300/900-1850	30/90-185	3.5	400/50	230/50-60	CE-0085CS0428	(2)	**20044637**
RS 190 TC FS1	470/1279-2290	47/128-229	5.5	3/400/50	230/50-60	CE-0085AT0042	(2)	**3785813**
RS 190 TL FS1	470/1279-2290	47/128-229	5.5	3/400/50	230/50-60	CE-0085AT0042	(2)	**20030087**
RS 190 TC FS1	470/1279-2290	47/128-229	5.5	3/400/50	230/50-60	CE-0085AT0042	(1)(2)	**3785814**
RS 190 TC FS1	470/1279-2290	47/128-229	5.5	3/380/60	230/50-60	-	(2)	**3785820**
RS 190 TC FS1	470/1279-2290	47/128-229	5.5	3/220/60	220/60	-	(2)	**20011699**

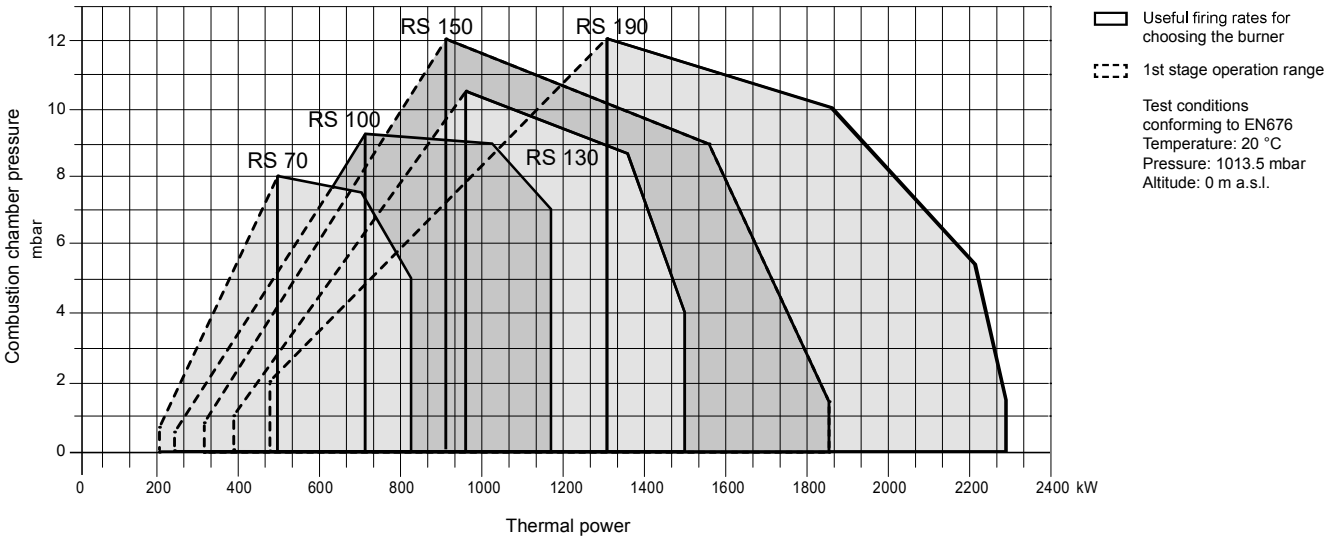
Net calorific value of natural gas (G20): 10 kWh/Nm³.
The burners comply with 2016/426/EU Regulation. 2014/30/EU - 2014/35/EU - 2006/42/EC Directives and EN 676 Standard.
(1) Model with plug and socket.
(2) Model with terminal board.

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

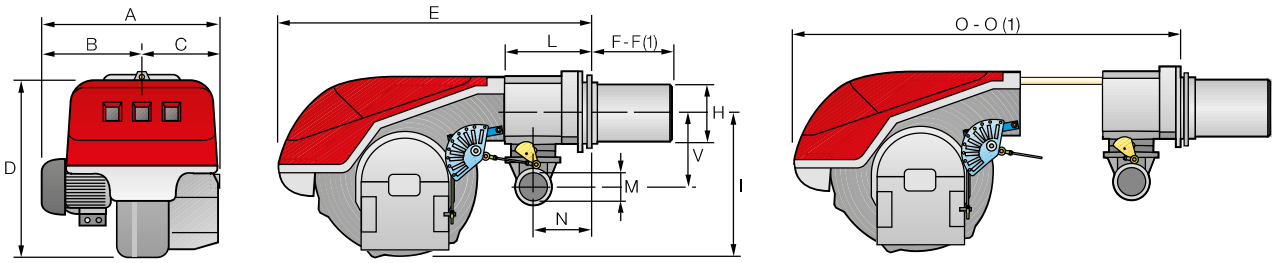
Description		NEW CODE	Note	OLD CODE	Note
RS 70 TC FS1 3/230-400/50	230/50-60	20194283	(3)	3785102	(4)
RS 70 TL FS1 3/230-400/50	230/50-60	20194356	(3)	3785103	(4)
RS 70 TC FS1 3/230-400/50	230/50-60	20194286	(3)	3785104	(4)
RS 70 TL FS1 3/230-400/50	230/50-60	20194878	(3)	3785105	(4)
RS 70 TC FS1 3/220-380/60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

(3) With SQN73
(4) With LKS

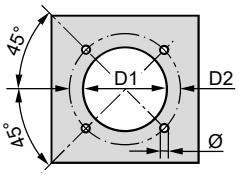
FIRING RATES



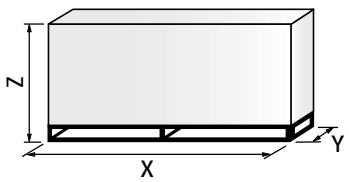
OVERALL DIMENSIONS



Description	A mm	B mm	C mm	D mm	E mm	F-F(1) mm	H mm	I mm	L mm	M mm	N mm	O-O(1) mm	V mm
RS 70	511	296	215	555	840	250-385	179	430	214	Rp 2”	134	1161-1296	221
RS 100	527	312	215	555	840	250-385	179	430	214	Rp 2”	134	1162-1296	221
RS 130	553	338	215	555	840	280-415	189	430	214	Rp 2”	134	1163-1296	221
RS 150	675	370	305	590	840	280-415	189	435	214	Rp 2”	134	1180-1315	221
RS 190	681	366	315	555	872	370-520	222	430	246	Rp 2”	150	1328-/	262



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

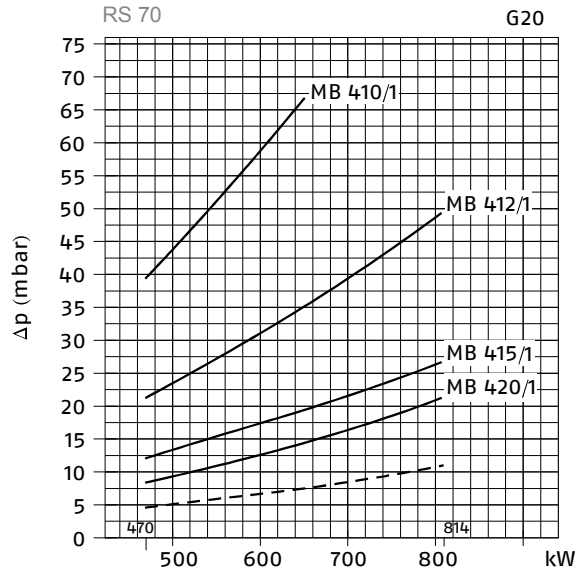


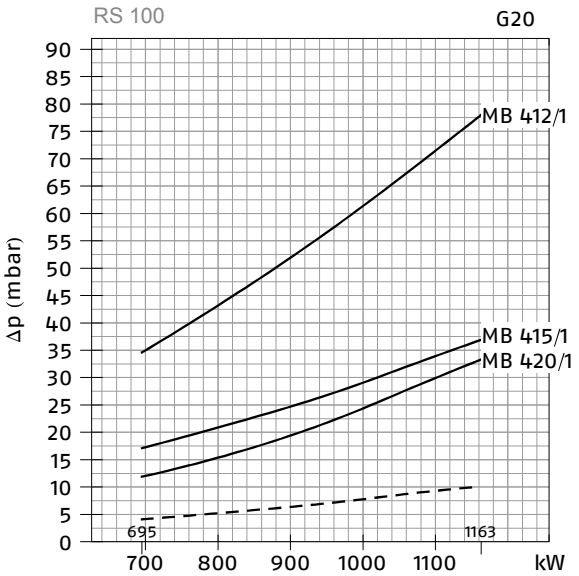
Description	X (1) mm	Y mm	Z mm	Net weight kg
RS 70	1405	700	660	70
RS 100	1405	700	660	73
RS 130	1400	700	660	76
RS 150	1400-1420	1000	660	110
RS 190	1400-1420	1000	660	115

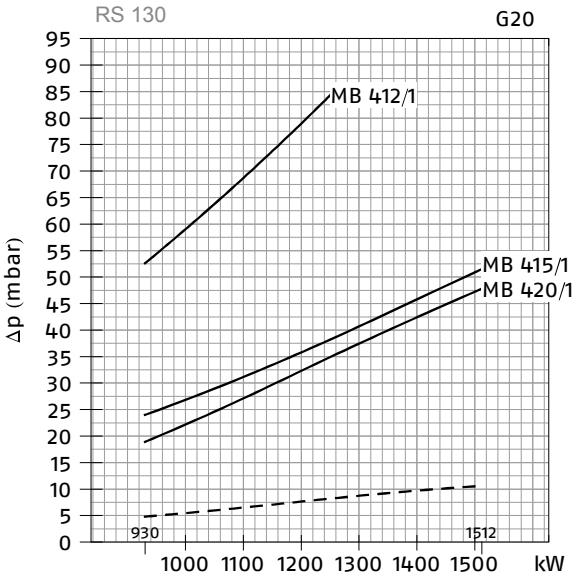
(1) Dimension with standard and extended head.

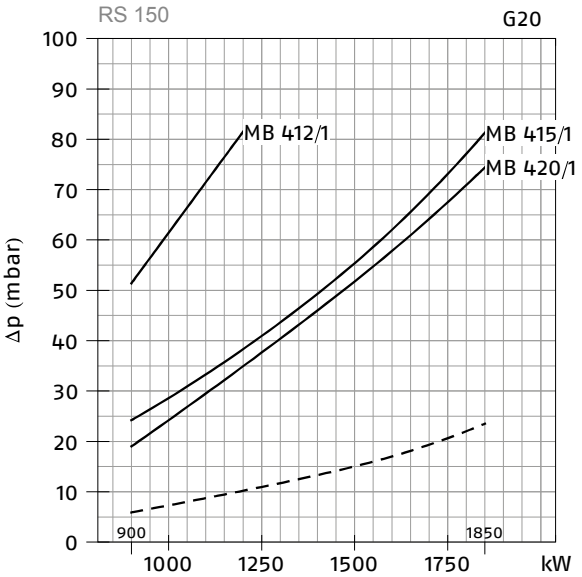
PRESSURE LOSS DIAGRAMS

MB SERIES GAS TRAIN





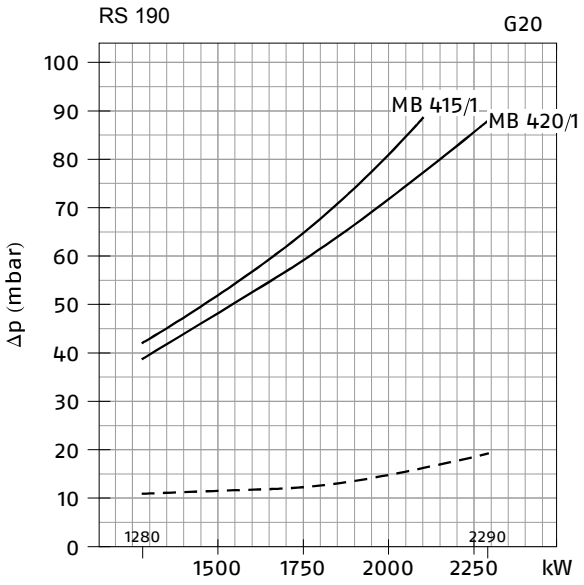




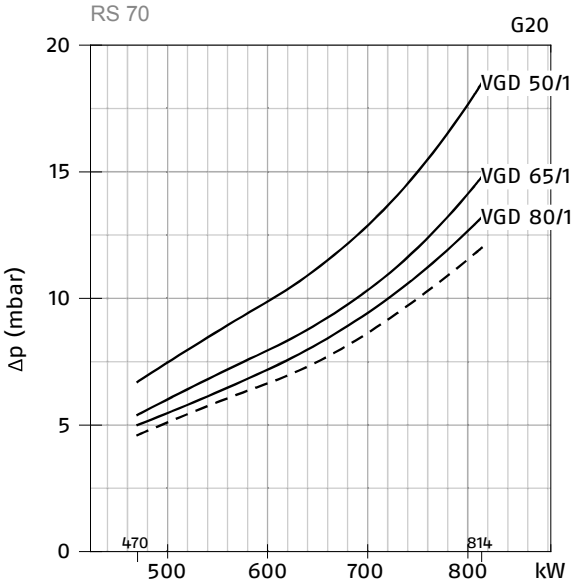
Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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

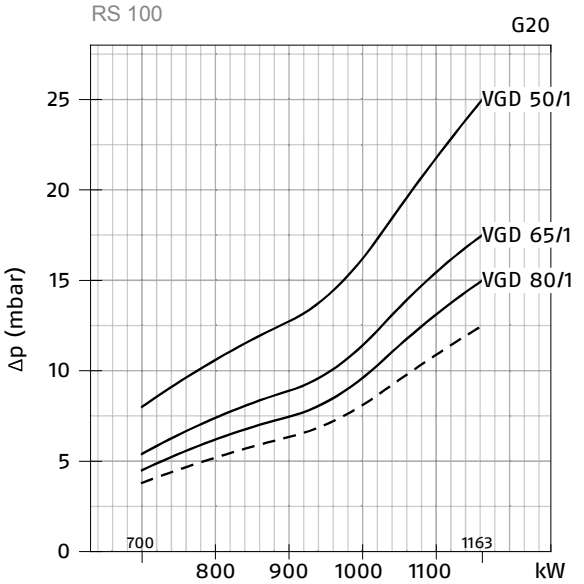
——— Combustion head + gas train

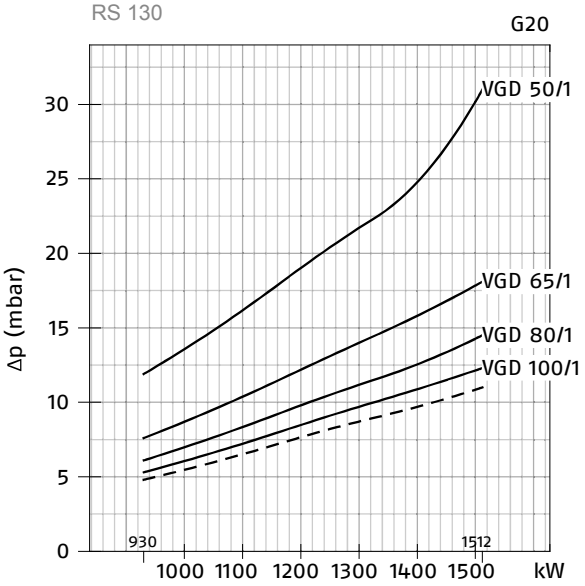
- - - - Combustion head

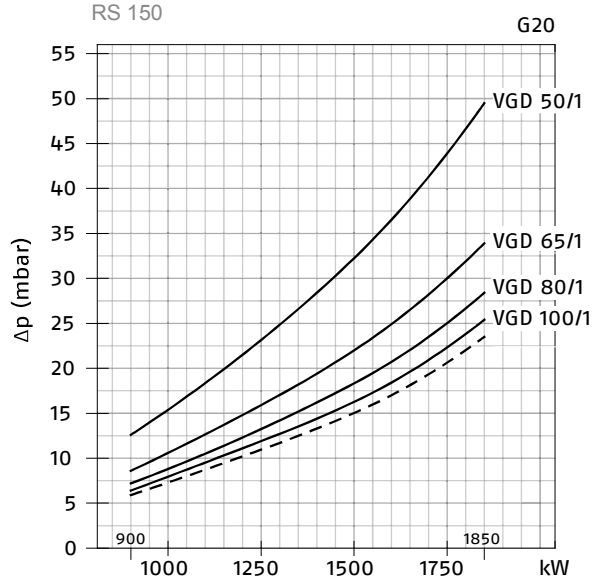


VGD SERIES GAS TRAIN

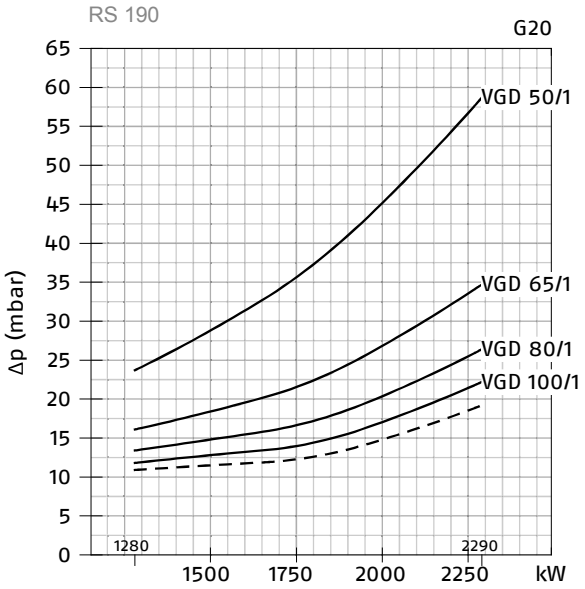








Please note: the diagrams indicate the minimum gas pressure drops of the burners equipped with the gas trains to be used (approved according to the EN 676 standard); in order to obtain the minimum pressure required at gas train inlet, combustion chamber counterpressure (expressed in mbar) must be added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



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

GAS TRAINS

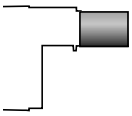
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)				
						RS 70	RS 100	RS 130	RS 150	RS 190
MB SERIES ONE STAGE GAS TRAIN										
MB 410/1-RT 52	**3970258***		Rp 1" ¼	-	3010123	3000843	●	●	●	●
MB 410/1-RT 20	**3970554***		Rp ¾"	-	3010123	3000824+ 3000843	●	●	●	●
MB 410/1-RT 52	**3970600***		Rp ¾"	-	3010123		●	●	●	●
MB 410/1-RSM 20	**3970230***		Rp ¾"	-	3010123		●	●	●	●
MB 412/1-RT 52	**3970256***		Rp 1" ½	-	3010123	3000843				
MB 412/1-RT 20	**3970144***		Rp 1" ½	-	3010123	3000843				
MB 412/1 CT RT 20	**3970197****		Rp 1" ½	♦	♦	3000843				
MB 412/1-RSM 20	**3970231***		Rp 1" ½	-	3010123	3000843				
MB 415/1-RT 30	**3970180***		Rp 1" ½	-	3010123	3000843				
MB 415/1 CT RT 30	**3970198****		Rp 1" ½	♦	♦	3000843				
MB 415/1-RT 52	**3970250***		Rp 1" ½	-	3010123	3000843				
MB 415/1 CT RT 52	**3970253****		Rp 1" ½	♦	♦	3000843				
MB 415/1-RSM 30	**3970232***		Rp 1" ½	-	3010123	3000843				
MB 420/1-RT 30	**3970181***		Rp 2"	-	3010123	□	□	□	□	□
MB 420/1 CT RT 30	**3970182****		Rp 2"	♦	♦	□	□	□	□	□
MB 420/1-RT 52	**3970257***		Rp 2"	-	3010123	□	□	□	□	□
MB 420/1 CT RT 52	**3970252****		Rp 2"	♦	♦	□	□	□	□	□
MB 420/1-RSM 30	**3970233***		Rp 2"	-	3010123	□	□	□	□	□
MB 420/1 CT RSM 30	**3970234****		Rp 2"	♦	♦	□	□	□	□	□
VGD SERIES ONE STAGE GAS TRAIN										
VGD 50/1-RT 122	**20137718***		Rp 2"	-	3010123+ 20186306	□	□	□	□	□
VGD 50/1 CT RT 122	**20169190****		Rp 2"	♦	♦	□	□	□	□	□
VGD 65/1-FT 122	**20140762***	(5)	DN65	-	3010123	3000826				
VGD 65/1 CT FT 122	**20169191****	(5)	DN65	♦	♦	3000826				
VGD 80/1-FT 122	**20140763***		DN80	-	3010123	3000826				
VGD 80/1 CT FT 122	**20169192****		DN80	♦	♦	3000826				
VGD 100/1-FT 122	**20169193***		DN100	-	3010123	●	●	3000826+3010223		

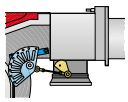
Description (1)	Code	Note	Ø Gas train	Valve seal control (2)	VPS kit code (3)	Burner-gas train adapter (4)				
						RS 70	RS 100	RS 130	RS 150	RS 190
VGD 100/1 CT FT 122	**20169194****		DN100	♦	♦	●	●	3000826+3010223		

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

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

ACCESSORIES

Drawing	Burner model	Specification	Note	Code
		EXTENDED HEAD KIT Burners standard head can be transformed into "extended head" versions by using the special kit. Here the kits available for the various burners are listed, showing the original and the extended lengths.		
	RS 70	Standard head length = 250 mm - Extended head length = 385 mm		**3010117**
	RS 100	Standard head length = 250 mm - Extended head length = 385 mm		**3010118**
	RS 130	Standard head length = 280 mm - Extended head length = 415 mm		**3010119**
	RS 150	Standard head length = 280 mm - Extended head length = 415 mm		**20052186**
	RS 190	Standard head length = 370 mm - Extended head length = 520 mm	(1)	**3010443**
		SPACER KIT If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available.		
	RS 70-150	Spacer thickness S = 135 mm		**3010129**
	RS 190	Spacer thickness S = 102 mm		**3000722**
	RS 70-130	CLEAN CONTACTS KIT Each burner can be equipped with a single kit.		**20123294**
	All models	CONTINUOUS VENTILATION KIT If the burner requires continuous ventilation in the stages without flame, a special kit is available.		**3010094**
	All models	SOUND PROOFING BOX If noise emission needs reducing even further, sound-proofing boxes are available. When a lower “B” dimension is required, it is available the box support kit code 20065135 which allows to reduce it at the fixed dimension of 55 mm. The sound-proofing boxes are not suitable for outdoor use. Box type: C4/5 Dimensions: A = 850 mm, B (min-max) = 160-980 mm, C = 110 mm D = 980 mm, E = 930 mm Average noise reduction according to EN 15036-1 Standard = 10 dB(A).		**3010404**
	All models	GROUND FAULT INTERRUPTER KIT A ground fault interrupter kit is available as a safety device in case of electrical system fault.		**3010329**
		LPG KIT For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.		
	RS 70	Kit code for standard head.		**20008175**
	RS 70	Kit code for extended head.		**20008176**
	RS 100	Kit code for standard head.		**20008177**
	RS 100	Kit code for extended head.		**20008178**
	RS 130	Kit code for standard head.		**20008179**
	RS 130	Kit code for extended head.		**20008180**
	RS 150	Kit code for standard head.		**20050064**
	RS 150	Kit code for extended head.		**20050065**
	RS 190	Kit code for standard and extended head.		**3010166**
	All models	GAS MAX PRESSURE SWITCH If necessary a gas max pressure switch kit is available and connectable to the burner electrical wiring trough plugs & sockets system.		**3010493**

Drawing	Burner model	Specification	Note	Code
		TOWN GAS KIT For burning town gas, a special kit is available to be fitted to the combustion head on the burner. Kit code for standard and extended head.		
	RS 70	Kit code for standard and extended head.	(2)	**3010286**
	RS 100	Kit code for standard and extended head.	(2)	**3010287**
	RS 130	Kit code for standard and extended head.	(2)	**3010288**
	RS 190	Kit code for standard and extended head.	(2)	**3010297**
		VIBRATION REDUCTION KIT The kit allow you to improve flame stability in some applications, where the boiler/flue assembly is liable to resonate.		
	RS 70 TC-TL	Kit code for standard and extended head.	(3)	**3010201**
	RS 100 TC- TL	Kit code for standard and extended head.	(3)	**3010202**
	RS 130 TC	Kit code for standard head.	(3)	**3010373**
	RS 130 TL	Kit code for extended head.	(3)	**3010374**
	RS 190 TC	Kit code for standard head.	(3)	**3010375**
	All models	DN80 GAS FLANGE KIT To modify the standard Rp 2” burner gas input connection in to DN80 connection, a specific gas flange is available.		**3010439**
	All models	PROTECTION KIT (ELECTROMAGNETIC INTERFERENCES) When the burner is installed in a room particularly subject to electromagnetic interference (signals emitted over 10 V/m) due for example to INVERTER presence or in systems where the lengths of the thermostat connections is over 20 meters, this specific protection kit is available as an interface between the thermostatic controls and the burner.		**3010386**
	RS 190	HEAD KIT FOR “REVERSE FLAME CHAMBER” In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional cylinder. Standard head length with cylinder 493 mm.	(4)	**3010241**
	All models	PC INTERFACE KIT To connect the control box to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.		**3002719**

(1) Kit to be used on burners recognizable by a serial number that is over or equal to 02426XXXXXX, for burners with a serial number that is under or equal to 02416XXXXXX please use the Kit coded 3010196.
(2) Without CE certification.
(3) CE approved.
(4) CE approval on field is required.

STATE OF SUPPLY

Monoblock forced draught gas burner with two stage operation, fully automatic, made up of:
– Air suction circuit lined with sound-proofing material
– Fan with reverse curve blades (RS 70-100-130 models) or straight blades (RS 150-190 models)
– Air damper for air flow setting and butterfly valve for regulating fuel output on 1st and 2nd stage controlled by a servomotor with variable cam
– Starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
– Combustion head, that can be set on the basis of required output, fitted with:
  • stainless steel end cone, resistant to corrosion and high temperatures
  • ignition electrodes
  • ionisation probe
  • gas distributor
  • flame stability disk
– Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
– Microprocessor-based burner safety control box, with diagnostic functions
– Burner on/off selection switch
– 1st - 2nd stage manual switch
– Flame inspection window
– Slide bars for easier installation and maintenance
– Protection filter against radio interference
– IP 44 electric protection level.

STANDARD EQUIPMENT

– 1 gas train flange
– 1 flange gasket
– 4 screws for fixing the flange
– 1 thermal screen
– 4 screws for fixing the burner flange to the boiler
– 2 slide bar extensions (for extended head models and RS 150-190 model)
– Instruction handbook for installation, use and maintenance
– Spare parts catalogue.