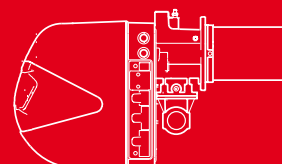
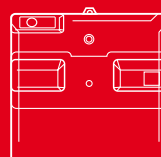




RS/1 Series

One Stage Gas Burners

RS 34/1 MZ	70 ÷ 390	kW
RS 44/1 MZ	101 ÷ 550	kW



The RS/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 control panel 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. A wide range of accessories guarantees elevated working flexibility.

Technical Data

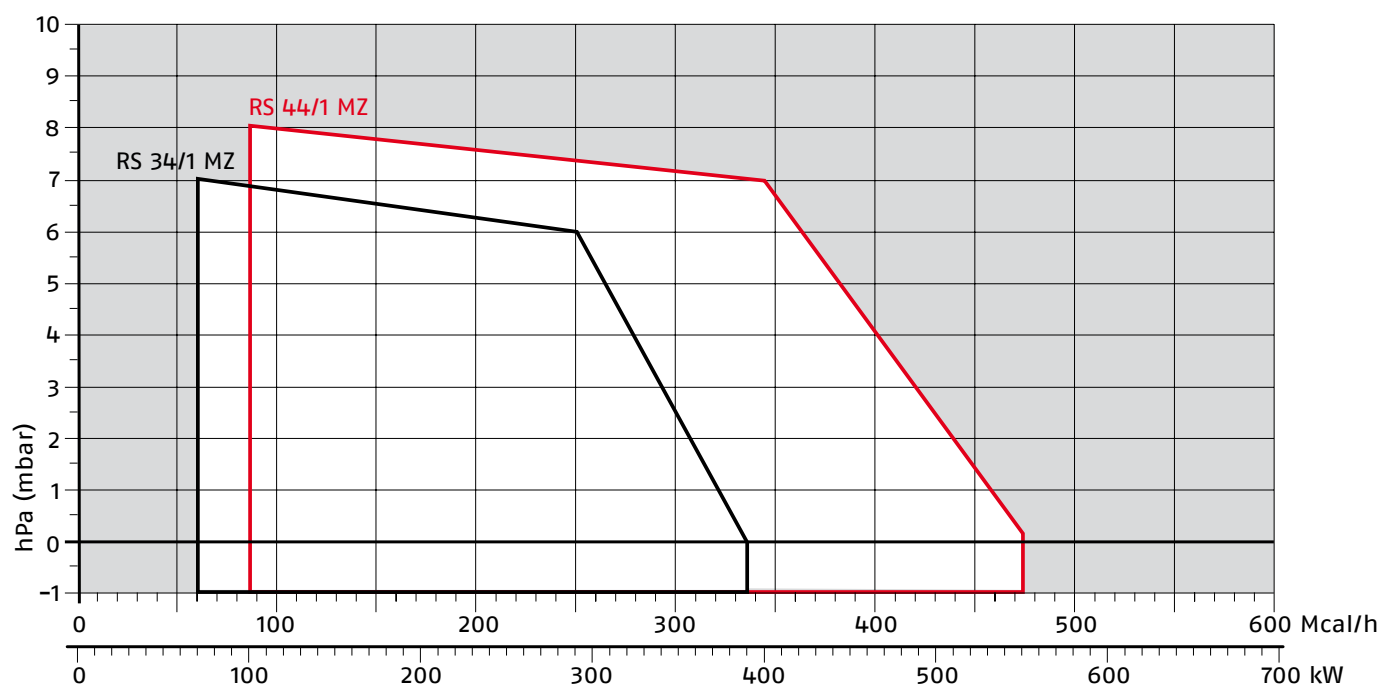
MODEL		RS 34/1 MZ		RS 44/1 MZ	
Burner operation mode		One stage			
Modulation ratio at max. output		--			
Servomotor	type	--			
run time	s	--			
Heat output	kW	70÷390		101÷550	
	Mcal/h	60÷335		87÷473	
Working temperature	°C min./max.	0/40			
FUEL/AIR DATA					
Net calorific value G20 gas	kWh/Nm3	10			
G20 density gas	kg/Nm3	0,71			
G20 gas delivery	Nm3/h	7÷39		10÷55	
Net calorific value G25 gas	kWh/Nm3	8,6			
G25 density gas	kg/Nm3	0,78			
G25 delivery gas	Nm3/h	8÷45		12÷64	
Net calorific value LPG gas	kWh/Nm3	25,8			
LPG gas density	kg/Nm3	2,02			
LPG gas delivery	Nm3/h	3÷15		4÷21	
Fan	type	Centrifugal with forward curve blades			
Air temperature	Max. °C	60			
ELECTRICAL DATA					
Electrical supply	Ph/Hz/V	1/50-60/220-230~(±10%)			
Auxiliary electrical supply	Ph/Hz/V	1/50-60/220-230~(±10%)			
Control box	type	RMG			
Total electrical power	kW	0,6		0,7	
Auxiliary electrical power	kW	0,3		0,28	
Protection level	IP	40		40	
Motor electrical power	kW	0,3		0,42	
Rated motor current	A	3,2		3,5	
Motor start current	A	15		17	
Motor protection level	IP	54		54	
Ignition transformer	V1 – V2	230V – 1x15 kV		230V – 1x15 kV	
	I1 – I2	1A – 25 mA		1A – 25 mA	
Operation	Intermittent (at least one stop every 24 h)				
EMISSIONS					
Sound pressure	dBA	70		72	
Sound power	W	--		--	
CO Emission	mg/kWh	< 40			
NOx Emission	mg/kWh	< 120			
APPROVAL					
Directive	2009/142 – 2004/108 – 2006/95 – 92/42 EC				
Conforming to	EN 676				
Certification	CE 0085BR0380		CE 0085BR0380		

Reference conditions:

Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l. - Noise measured at a distance of 1 meter.

Since the Company is constantly engaged in the production improvement, the aesthetic and dimensional features, the technical data, the equipment and the accessories can be changed. This document contains confidential and proprietary information of RIELLO S.p.A. Unless authorised, this information shall not be divulged, nor duplicated in whole or in part.

Firing Rates



☐ Useful working field for choosing the burner

Test conditions conforming to EN 676:

Temperature: 20°C

Pressure: 1013,5 mbar

Altitude: 0 m a.s.l.

Fuel Supply

GAS TRAINS

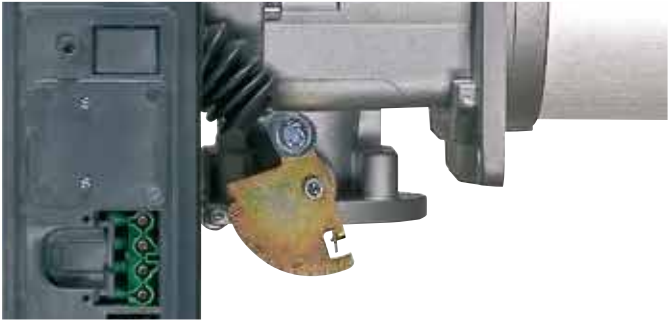
Fuel can be supplied either from the right or left hand sides.

The gas train can be selected to best fit system requirements depending on the fuel output and pressure in the supply line.

The gas train can be "Multibloc" type (containing the main components in a single unit) or "Composed" type (assembly of the single components).

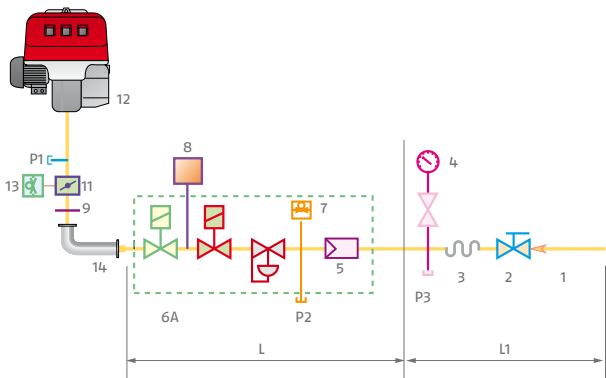
The gas train can be, also, "One stage" or "Two stage" type.

Conforming to EN676 Standard the one stage gas train can be used up to a capacity of 350 kW.

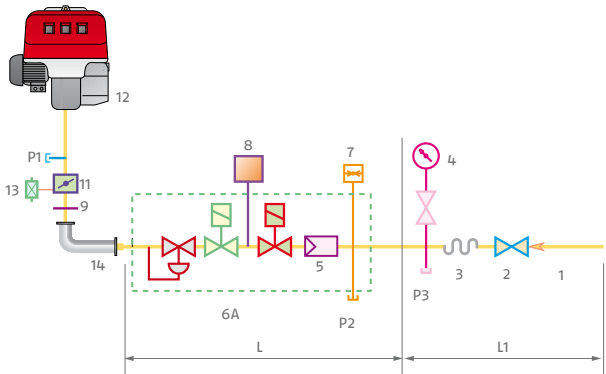


Example of the gas train connection flange of RS/1 burners.

MB "THREADED"

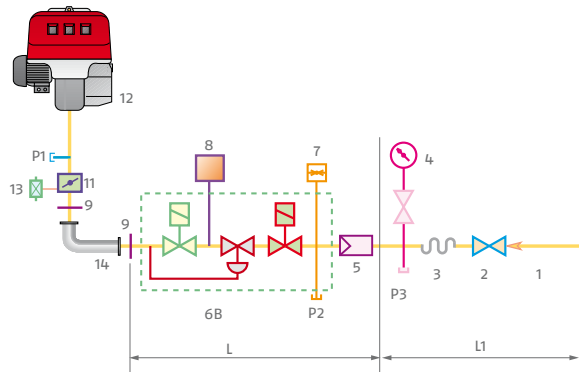


MBC "THREADED"

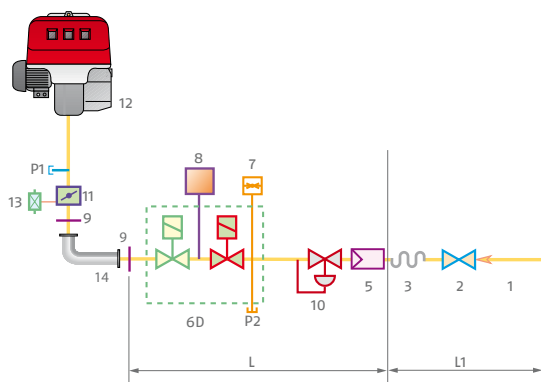


1	Gas input pipework
2	Manual valve
3	Anti-vibration joint
4	Pressure gauge with pushbutton cock
5	Filter
6A	Includes:
	- filter
	- operation valve
	- safety valve
	- pressure adjuster
7	Minimum gas pressure switch
8	Leak detection device, supplied as an accessory or incorporated, based on the gas train code.
9	Gasket, for "flanged" versions only
10	Pressure adjuster
11	Gas adjuster butterfly valve
12	Burner
13	Maximum gas pressure switch
14	Gas train-burner adaptor, supplied separately
P1	Combustion head pressure
P2	Upstream pressure of valves
P3	Upstream pressure of the filter
L	Gas train supplied separately, with the code given in the table.
L1	Installer's responsibility

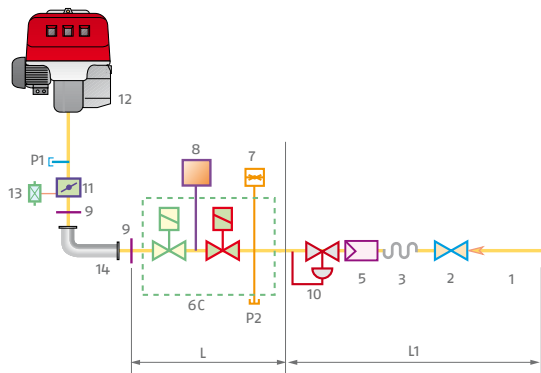
MBC "FLANGED"



CB "FLANGED OR THREADED"



DMV "FLANGED OR THREADED"

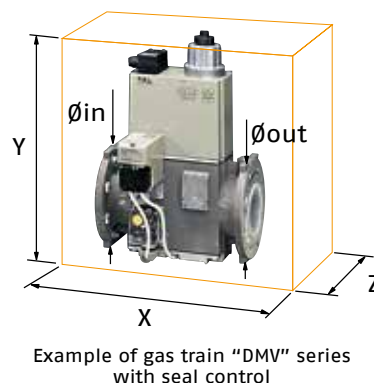
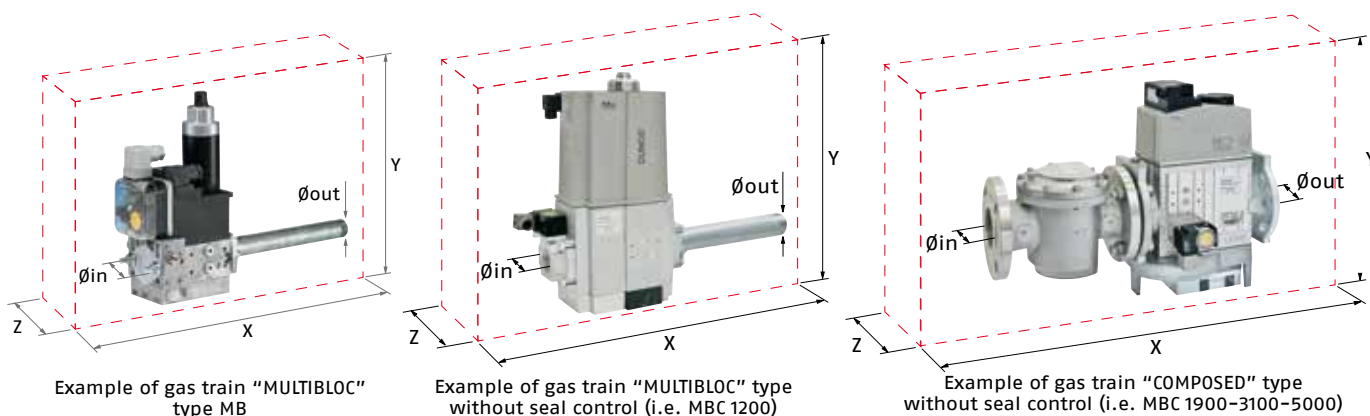


1	Gas input pipework
2	Manual valve
3	Anti-vibration joint
4	Pressure gauge with pushbutton cock
5	Filter
6A	Includes:
	- filter
	- operation valve
	- safety valve
	- pressure adjuster
6B	Includes:
	- operation valve
	- safety valve
	- pressure adjuster
6C	Includes:
	- operation valve
	- safety valve
7	Minimum gas pressure switch
8	Leak detection device, supplied as an accessory or incorporated, based on the gas train code.
9	Gasket, for "flanged" versions only
10	Pressure adjuster
11	Gas adjuster butterfly valve
12	Burner
13	Maximum gas pressure switch
14	Gas train-burner adaptor, supplied separately
P1	Combustion head pressure
P2	Upstream pressure of valves
P3	Upstream pressure of the filter
L	Gas train supplied separately, with the code given in the table
L1	Installer' responsibility

Gas trains are approved by standard EN 676 together with the burner.

The overall dimensions of the gas train depends on how they are constructed. The following table shows the maximum dimensions of the gas trains that can be fitted to RS/1 burners, intake and outlet diameters and seal control if fitted.

Please note that the seal control can be installed as an accessory, if not already installed on the gas train. The maximum gas pressure of gas train "Multibloc" type is 360 mbar, and that one of gas train "Composed" type is 500 mbar. The range of pressure in the MULTIBLOC with flange can be modified choosing the stabiliser spring (see gas train accessory).



GAS TRAIN						
MODEL	CODE	Ø in	Ø out	X mm	Y mm	Z mm
MB 405/1 - RT 20	3970500	Rp 3/4"	Rp 3/4"	371	186	92
MB 407/1 - RT 20	3970553	Rp 3/4"	Rp 3/4"	371	196	92
MB 407/1 - RT 52	3970599	Rp 3/4"	Rp 3/4"	371	196	92
MB 407/1 - RSM 20	3970229	Rp 3/4"	Rp 3/4"	371	196	92
MB 410/1 - RT 52	3970258	Rp 1" 1/2	Rp 1" 1/2	405	217	116
MB 410/1 - RT 20	3970554	Rp 3/4"	Rp 3/4"	405	217	116
MB 410/1 - RT 52	3970600	Rp 3/4"	Rp 3/4"	405	217	116
MB 410/1 - RSM 20	3970230	Rp 3/4"	Rp 3/4"	405	221	116
MB 412/1 - RT 52	3970256	Rp 1" 1/2	Rp 1" 1/2	433	217	116
MB 412/1 - RT 20	3970144	Rp 1" 1/2	Rp 1" 1/2	433	217	116
MB 412/1 CT RT 20	3970197	Rp 1" 1/2	Rp 1" 1/2	523	217	116
MB 412/1 - RSM 20	3970231	Rp 1" 1/2	Rp 1" 1/2	433	217	116
MB 415/1 - RT 30	3970180	Rp 1" 1/2	Rp 1" 1/2	523	250	100
MB 415/1 CT RT 30	3970198	Rp 1" 1/2	Rp 1" 1/2	523	250	229
MB 415/1 - RT 52	3970250	Rp 1" 1/2	Rp 1" 1/2	523	250	100
MB 415/1 CT RT 52	3970253	Rp 1" 1/2	Rp 1" 1/2	523	250	229
MB 415/1 RSM 30	3970232	Rp 1" 1/2	Rp 1" 1/2	523	250	100
MB 420/1 RT 30	3970181	Rp 2"	Rp 2"	523	300	100
MB 420/1 CT RT 30	3970182	Rp 2"	Rp 2"	523	300	229

GAS TRAIN						
MODEL	CODE	Ø in	Ø out	X mm	Y mm	Z mm
MB 420/1 RT 52	3970257	Rp 2"	Rp 2"	523	300	100
MB 420/1 CT RT 52	3970252	Rp 2"	Rp 2"	523	300	229
MB 420/1 RSM 30	3970233	Rp 2"	Rp 2"	523	300	100
MB 420/1 CT RSM 30	3970234	Rp 2"	Rp 2"	523	300	229

GAS TRAIN						
MODEL	CODE	Ø in	Ø out	X mm	Y mm	Z mm
MBC 1200/1 - RSM 60	3970221	Rp 2"	Rp 2"	528	424	161
MBC 1200/1 CT RSM 60	3970225	Rp 2"	Rp 2"	528	424	290
MBC 1900/1 - FSM 40	3970222	DN 65	DN 65	613	430	237
MBC 1900/1 CT FSM 40	3970226	DN 65	DN 65	613	430	298
MBC 3100/1 - FSM 40	3970223	DN 80	DN 80	633	500	240
MBC 3100/1 CT FSM 40	3970227	DN 80	DN 80	633	500	319
MBC 5000/1 - FSM 80	3970224	DN 100	DN 100	733	576	280
MBC 5000/1 CT FSM 80	3970228	DN 100	DN 100	733	576	348

GAS TRAIN						
MODEL	CODE	Ø in	Ø out	X mm	Y mm	Z mm
CB 512/1 - RSM 30	3970145	Rp 1" ½	Rp 1" ½	891	261	245
CB 512/1 - CT RSM 30	20045589	Rp 1" ½	Rp 1" ½	891	261	245
CB 520/1 - RSM 30	3970146	Rp 2"	Rp 2"	986	328	255
CB 520/1 - CT RSM 30	3970160	Rp 2"	Rp 2"	986	328	255
CB 525/1 - RSM 30	20044659	Rp 2"	Rp 2"	1025	356	285
CB 525/1 - CT RSM 30	20044660	Rp 2"	Rp 2"	1025	356	285
CB 5065/1 - FSM 30	3970147	DN 65	DN 65	906	356	285
CB 5065/1 CT FSM 30	3970161	DN 65	DN 65	906	356	285
CB 5080/1 - FSM 30	3970148	DN 80	DN 80	934	416	285
CB 5080/1 CT FSM 30	3970162	DN 80	DN 80	934	416	285
CB 50100/1 - FSM 30	3970149	DN 100	DN 100	1054	501	350
CB 50100/1 CT FSM 30	3970163	DN 100	DN 100	1054	501	350
CB 50125/1 - FSM 30	20015871	DN 125	DN 125	1164	780	400
CB 50125/1 CT FSM 30	3970196	DN 125	DN 125	1164	780	400

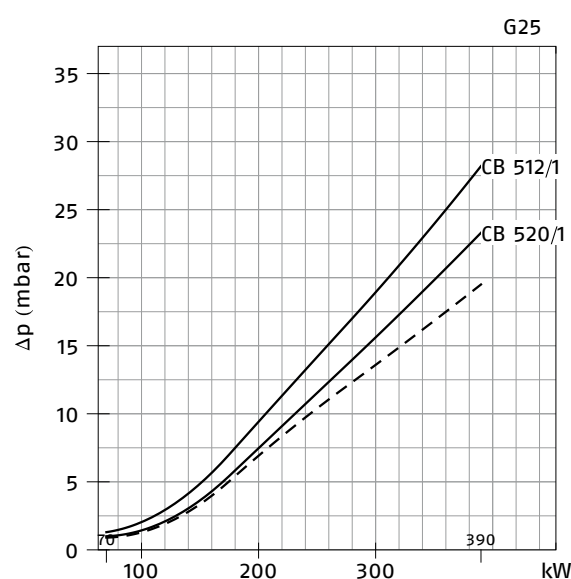
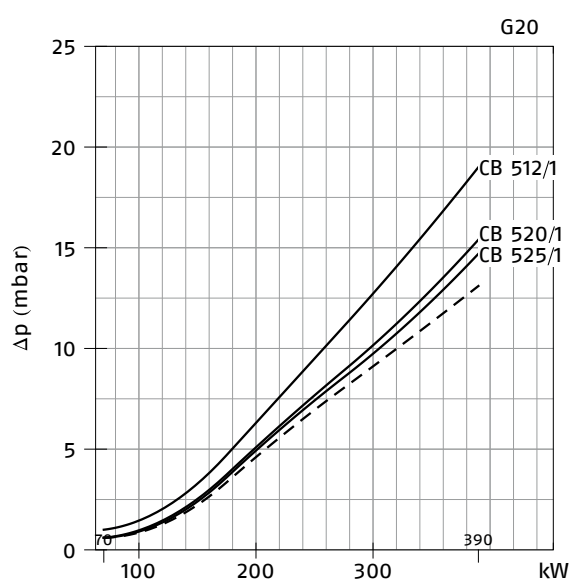
GAS TRAIN						
MODEL	CODE	Ø in	Ø out	X mm	Y mm	Z mm
DMV 512/1 - RSM - 0	20043035	Rp 1" ½	Rp 1" ½	490	292	245
DMV 512/1 - CT RSM - 0	20043036	Rp 1" ½	Rp 1" ½	490	292	245
DMV 512/1 - CQ RSM - 2	20043037	Rp 1" ½	Rp 1" ½	490	292	245
DMV 520/1 - RSM - 0	20043038	Rp 2"	Rp 2"	490	292	255
DMV 520/1 CT RSM - 0	20043039	Rp 2"	Rp 2"	490	292	255
DMV 520/1 CQ RSM - 2	20043040	Rp 2"	Rp 2"	490	292	255
DMV 525/1 - RSM - 0	20043053	Rp 2"	Rp 2"	530	338	270
DMV 525/1 CT RSM - 0	20043054	Rp 2"	Rp 2"	530	338	270
DMV 525/1 CQ RSM - 2	20043055	Rp 2"	Rp 2"	530	338	270
DMV 5065/1 - FSM - 0	20043041	DN 65	DN 65	290	338	270
DMV 5065/1 CT FSM - 0	20043042	DN 65	DN 65	290	338	270
DMV 5065/1 CQ FSM - 2	20043043	DN 65	DN 65	290	338	270
DMV 5080/1 - FSM - 0	20043044	DN 80	DN 80	310	397	290
DMV 5080/1 CT FSM - 0	20043045	DN 80	DN 80	310	397	290
DMV 5080/1 CQ FSM - 2	20043046	DN 80	DN 80	310	397	290
DMV 50100/1 - FSM - 0	20043047	DN 100	DN 100	350	449	307
DMV 50100/1 CT FSM - 0	20043048	DN 100	DN 100	350	449	307
DMV 50100/1 CQ FSM - 2	20043049	DN 100	DN 100	350	449	307
DMV 50125/1 - FSM - 0	20043050	DN 125	DN 125	400	554	333
DMV 50125/1 CT FSM - 0	20043051	DN 125	DN 125	400	554	333
DMV 50125/1 CQ FSM - 2	20043052	DN 125	DN 125	400	554	333

Pressure Drop Diagram

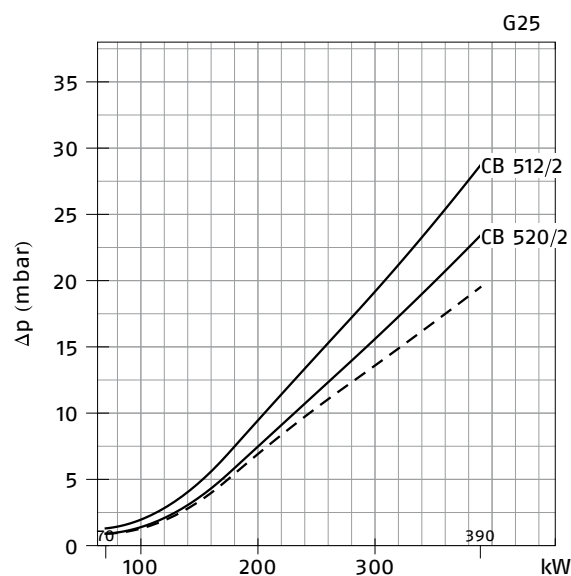
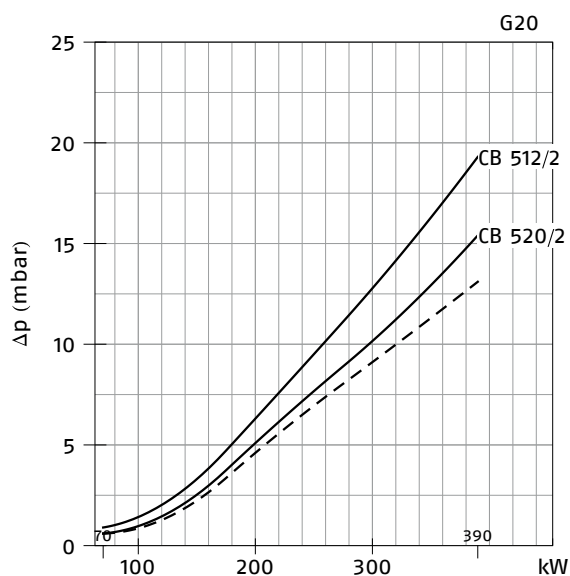
The diagrams indicate the minimum pressure drop of the burners with the various gas trains that can be matched with them; at the value of these pressure drop add the combustion chamber pressure. The value thus calculated represents the minimum required input pressure to the gas train.

The minimum input gas pressure required is 15 mbar while burner operating. In particular, the pressure difference between gas train upstream and downstream has to remain always over pressure drop values indicated below.

RS 34/1 MZ (NATURAL GAS)

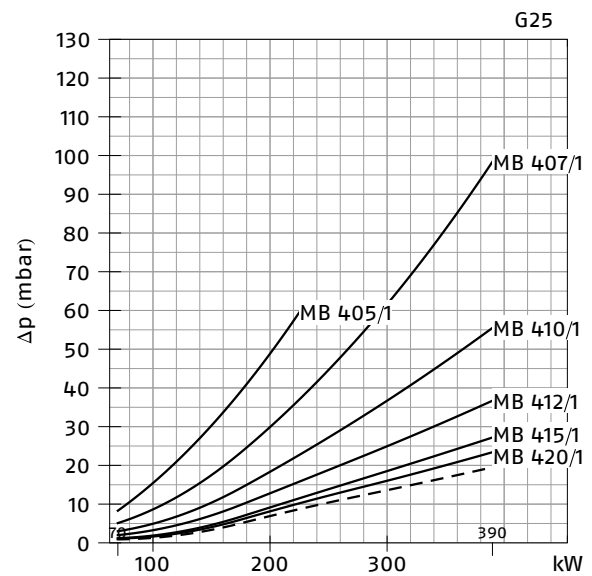
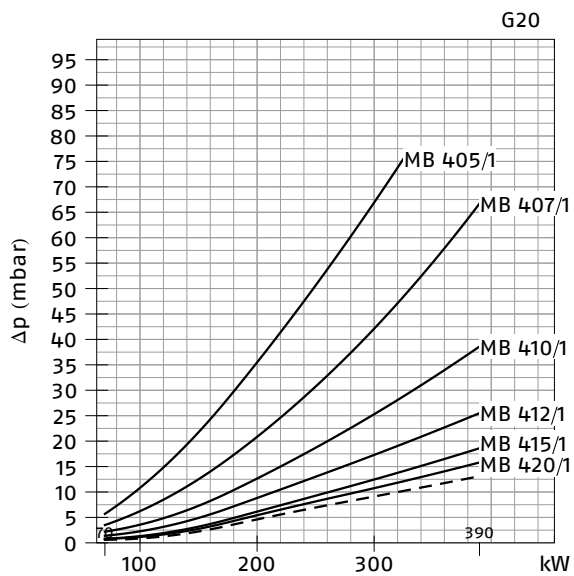


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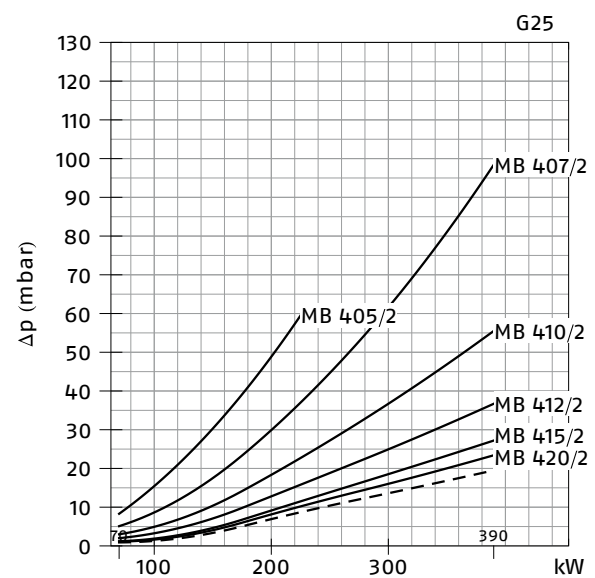
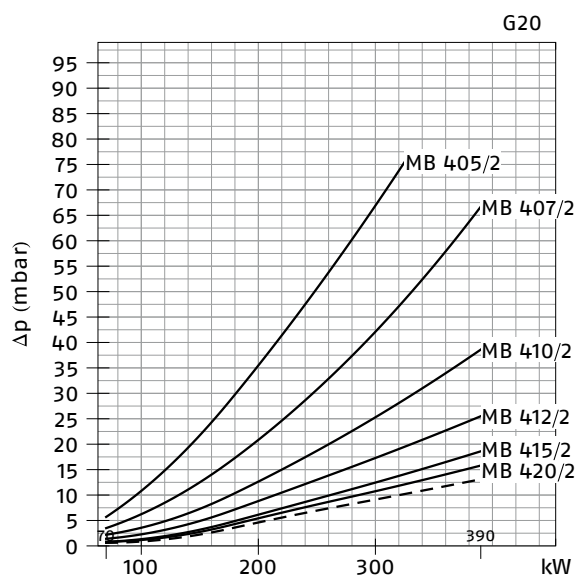


— Combustion head + gas butterfly valve + gas train
- - - Combustion head + gas butterfly valve

RS 34/1 MZ (NATURAL GAS)

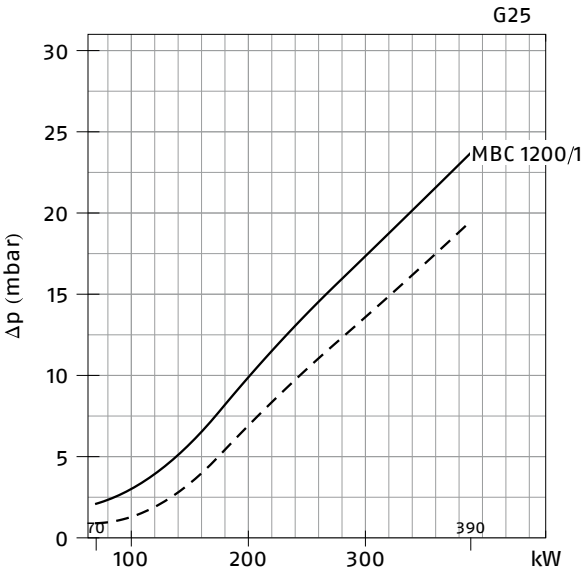
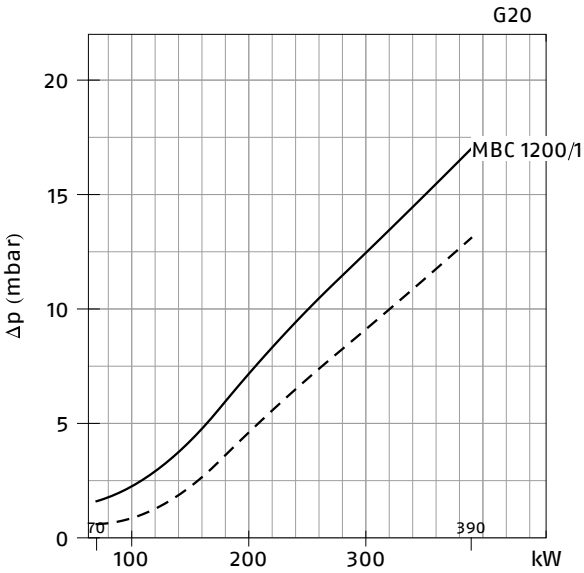


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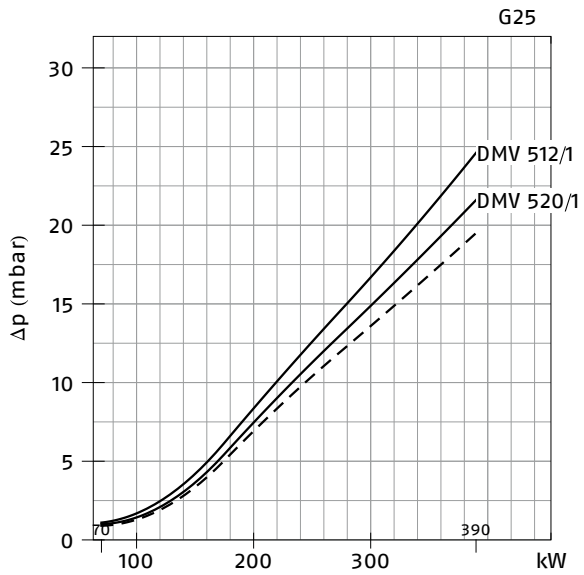
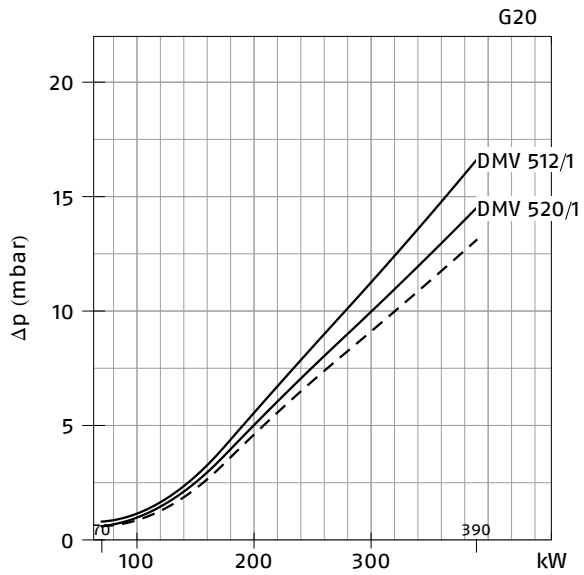


— Combustion head + gas butterfly valve + gas train
 - - - Combustion head + gas butterfly valve

RS 34/1 MZ (NATURAL GAS)

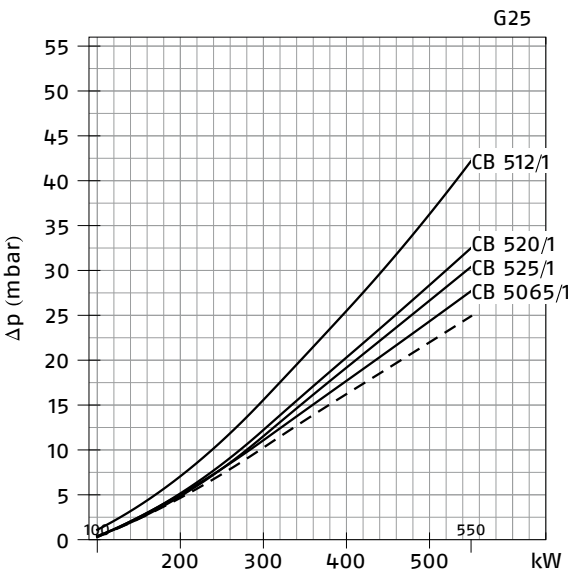
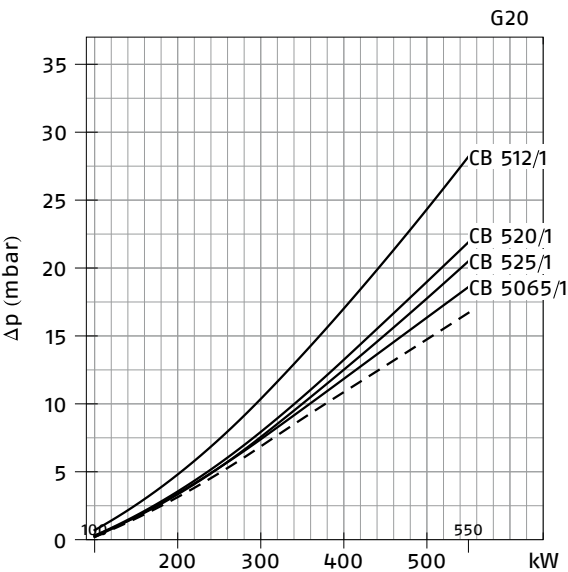


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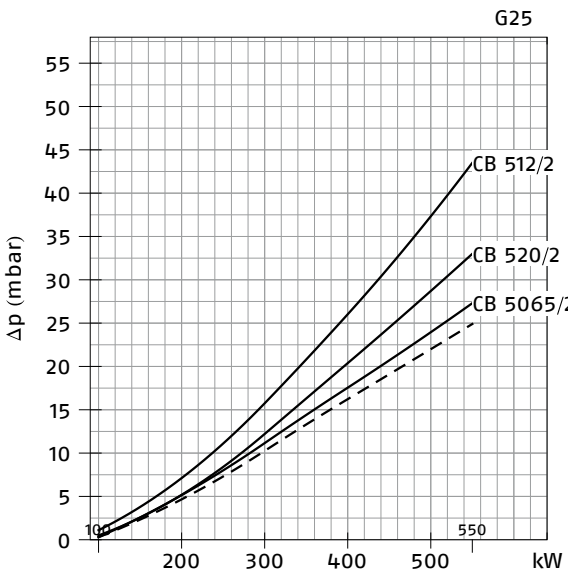
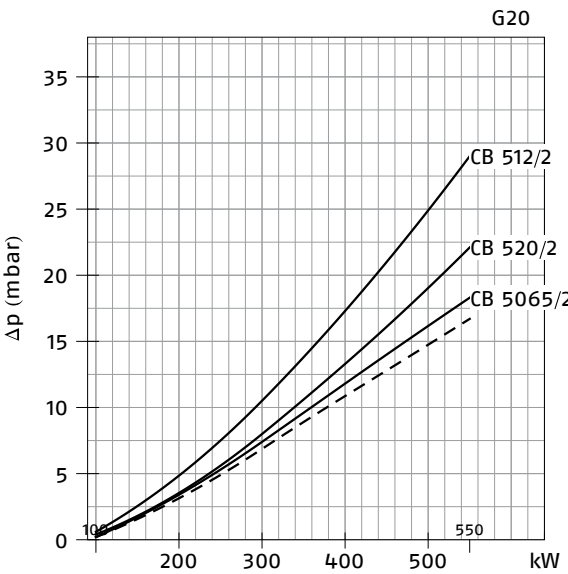


— Combustion head + gas butterfly valve + gas train
- - - Combustion head + gas butterfly valve

RS 44/1 MZ (NATURAL GAS)

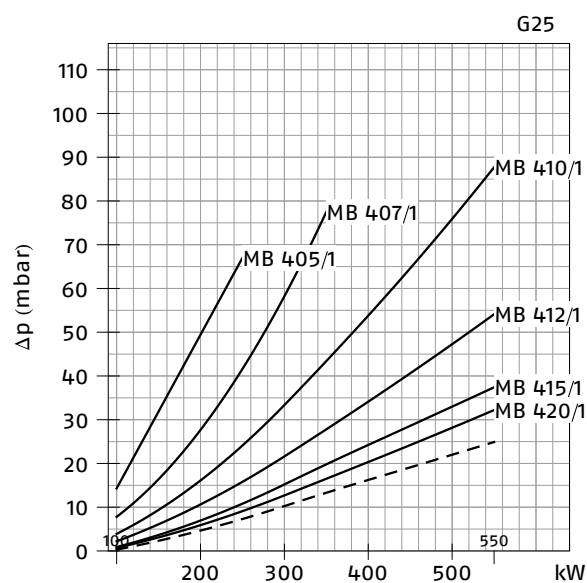
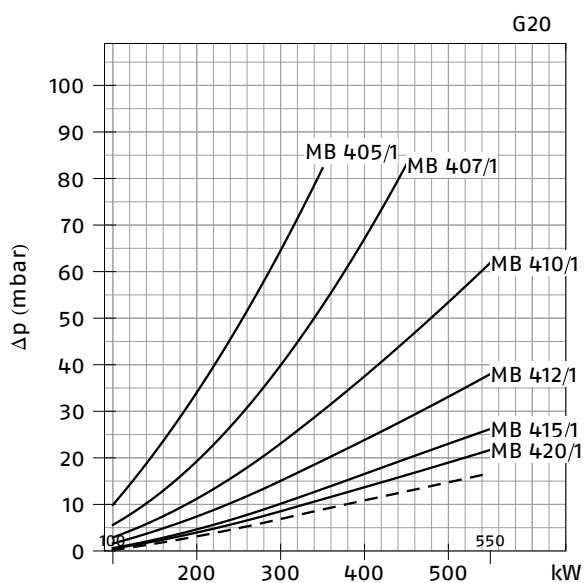


RS 44/1 MZ (NATURAL GAS)

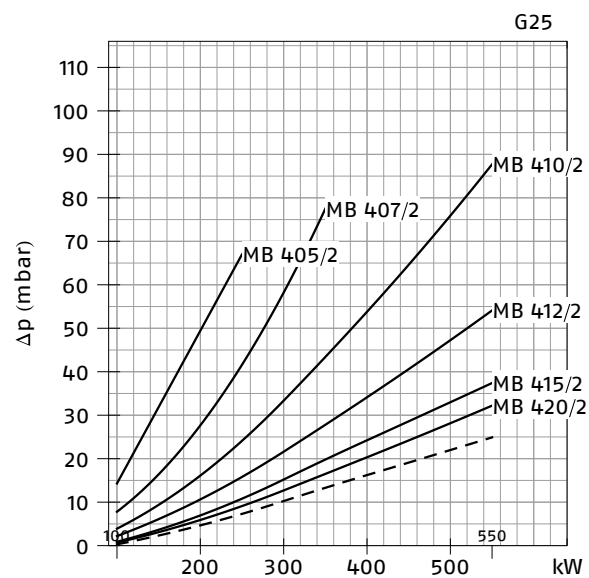
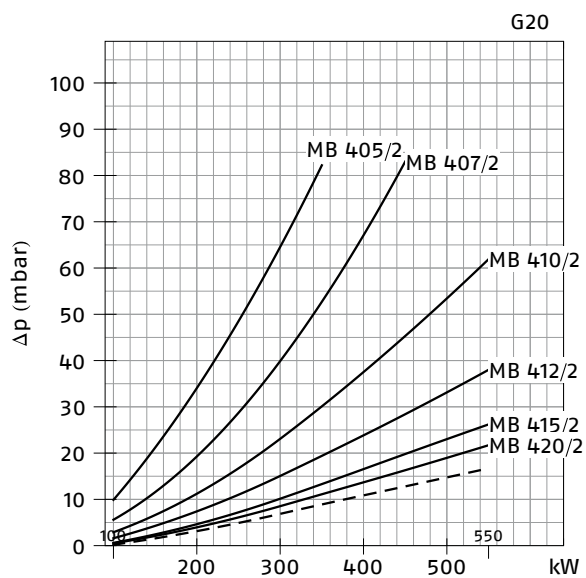


— Combustion head + gas butterfly valve + gas train
- - - Combustion head + gas butterfly valve

RS 44/1 MZ (NATURAL GAS)

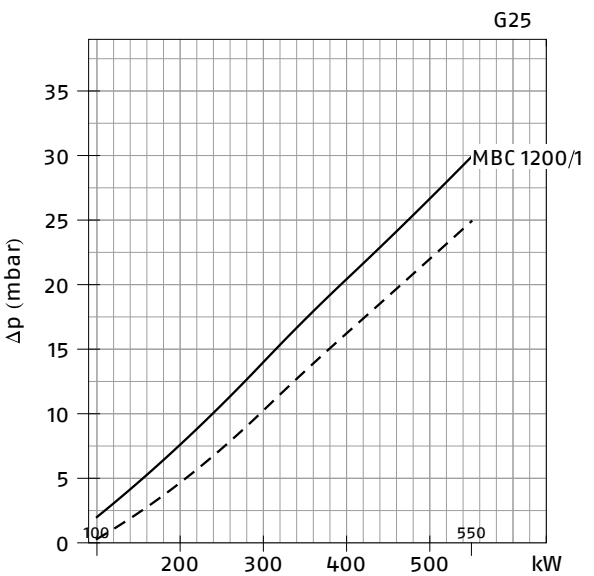
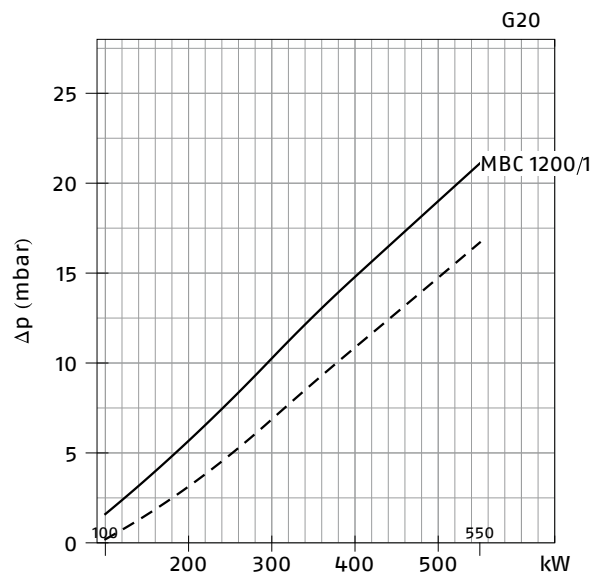


RS 44/1 MZ (NATURAL GAS)

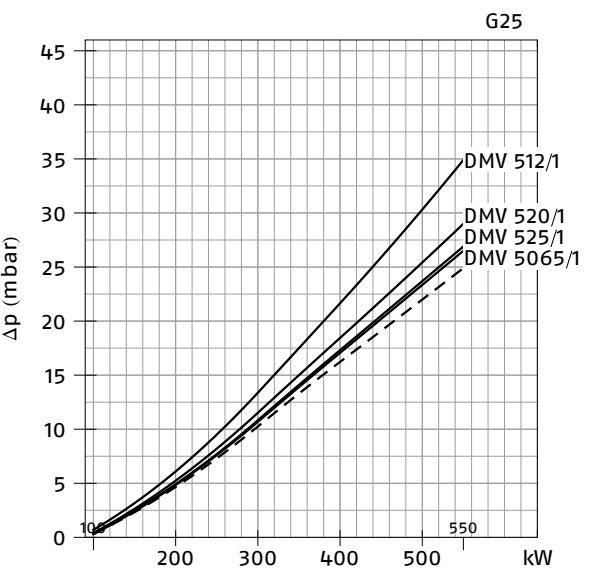
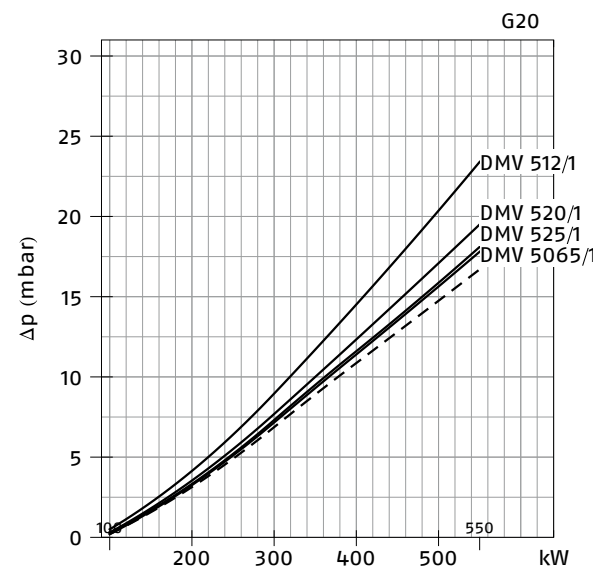


— Combustion head + gas butterfly valve + gas train
 - - - Combustion head + gas butterfly valve

RS 44/1 MZ (NATURAL GAS)



RS 44/1 MZ (NATURAL GAS)



— Combustion head + gas butterfly valve + gas train
- - - Combustion head + gas butterfly valve

Selecting the Fuel Supply lines

The following diagram enables pressure drop in a pre-existing gas line to be calculated and to select the correct gas train.

The diagram can also be used to select a new gas line when fuel output and pipe length are known. The pipe diameter is selected on the basis of the desired pressure drop. The diagram uses methane gas as reference; if another gas is used, conversion coefficient and a simple formula (on the diagram) transform the gas output to a methane equivalent (refer to figure A). Please note that the gas train dimensions must take into account the back pressure of the combustion chamber during operations.

Control of the pressure drop in an existing gas line or selecting a new gas supply line.

The methane output equivalent is determined by the formula fig. A on the diagram and the conversion coefficient.

Once the equivalent output has been determined on the delivery scale ($\dot{V}$), shown at the top of the diagram, move vertically downwards until you cross the line that represents the pipe diameter; at this point, move horizontally to the left until you meet the line that represents the pipe length.

Once this point is established you can verify, by moving vertically downwards, the pipe pressure drop of on the bottom scale below (mbar).

By subtracting this value from the pressure measured on the gas meter, the correct pressure value will be found for the choice of gas train.

Example: - gas used G25
- gas output 9.51 mc/h
- pressure at the gas meter 20 mbar
- gas line length 15 m
- conversion coefficient 0.62 (see figure A)

- equivalent methane output $\dot{V} = \left[\frac{9.51}{0.62} \right] = 15.34$ mc/h

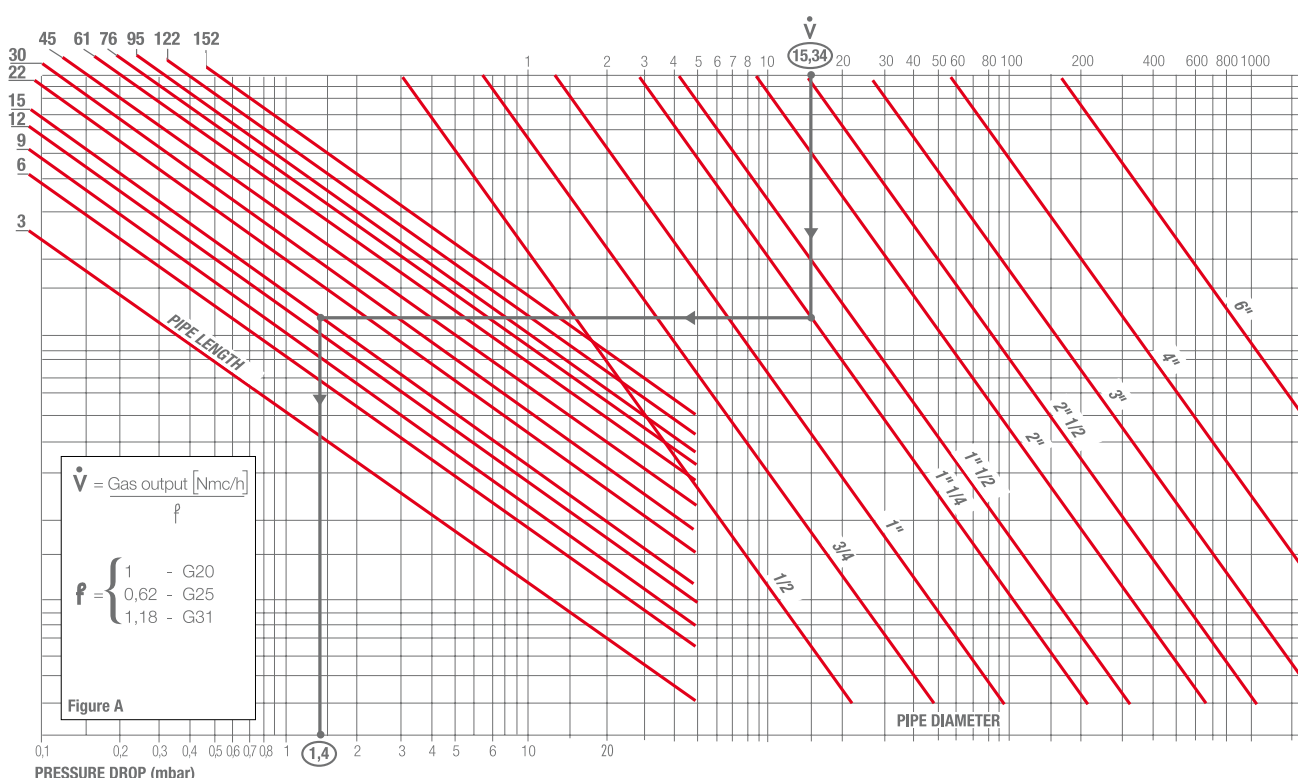
- once the value of 15.34 has been identified on the output scale ($\dot{V}$), moving vertically downwards you cross the line that represents 1" 1/4 (the chosen diameter for the piping);

- from this point, move horizontally to the left until you meet the line that represents the length of 15 m of the piping;

- move vertically downwards to determine a value of 1.4 mbar in the pressure drop bottom scale;

- subtract the determined pressure drop from the meter pressure, the correct pressure level will be found for the choice of gas train;

- correct pressure = (20-1.4) = 18.6 mbar



Ventilation

The ventilation circuit produces low noise levels with high performance pressure and air output, inspite of the compact dimensions.

The RS 34-44/1 MZ models, noise has been reduced by the special design of the air suction circuit.

The RS 34/1 MZ and RS 44/1 MZ are realised with a new structure made by an innovative technology based on a new fibreglass reinforced polyamide material, with high thermal and mechanical characteristics, instead of the traditional aluminium.

This allows big advantages in terms of lay-out rationalisation, weight and dimensions reduction.

In order to guarantee the correct exercise temperature for the internal burner components in every working conditions, the new structure includes an innovative patented cooling technology.

Between the burner front base and the reinforcing steel front plate, had been create an air cavity offering an high thermal insulation against the front boiler reflection heat, and to further improve the insulation efficiency the innovative **HCS (Housing Cooling System)** technology had been developed. Inside the front base cavity an air circulation is activated with continuous air volume refresh to obtain an active cooling system and avoid any heat transfer to the electrical component housing.



Example of HCS (Housing Cooling System) working concept.

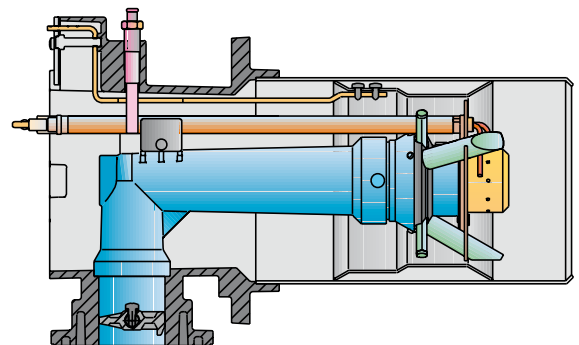
Combustion Head

Different lengths of the combustion head can be chosen for the RS/1 series of burners.

The choice depends on the thickness of the front panel and the type of boiler.

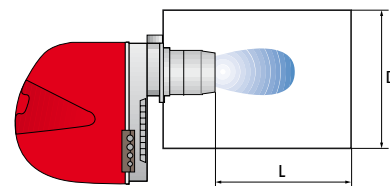
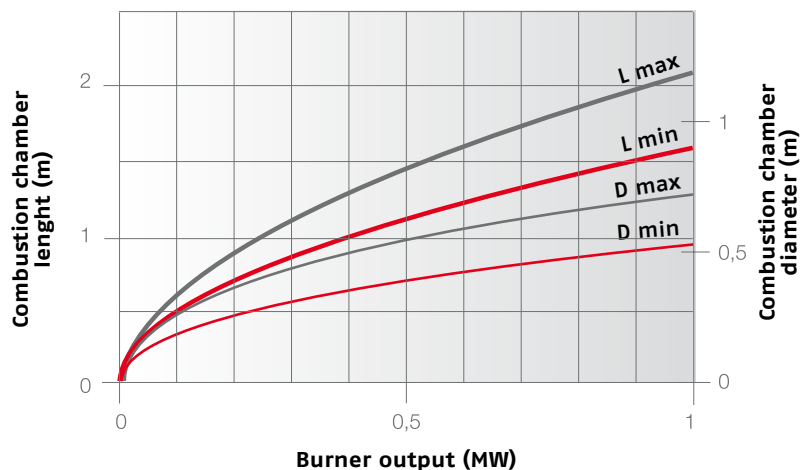
Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct.

The internal positioning of the combustion head can easily be adjusted to the maximum defined output by adjusting a screw fixed to the flange.



Example of a RS/1 burner combustion head.

DIMENSIONS OF THE COMBUSTION CHAMBER



Example:
 Burner thermal output = 500 kW;
 L Combustion chamber (m) = 1,3 m (medium value);
 D Combustion chamber (m) = 0,45 m (medium value)

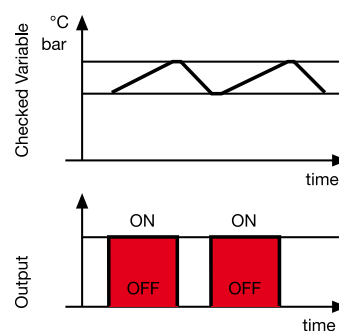
Operation

BURNER OPERATION MODE

The burner of RS/1 series is one stage working.

On "one stage" operation, the burner adjusts output to the requested level, by varying between on-off phases (see picture A).

"ONE STAGE" OPERATION



Picture A

All RS/1 series burners are fitted with a new microprocessor control panel for the supervision during intermittent operation.

For helping the commissioning and maintenance work, there are two main elements:



The lock-out reset button is the central **operating element** for resetting the burner control and for activating / deactivating the diagnostic functions.



The multi-color LED is the central **indication element** for visual diagnosis and interface diagnosis.

Both elements are located under the transparent cover of lock-out reset button, as showed below.



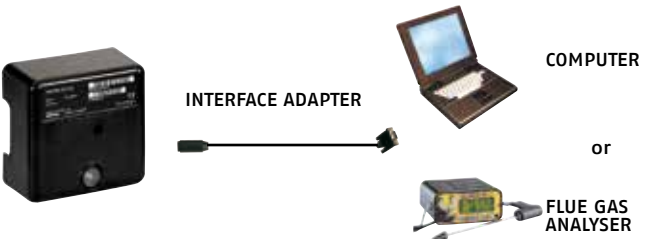
There are two diagnostic choices, for indication of operation and diagnosis of fault cause:

VISUAL DIAGNOSIS



INTERFACE DIAGNOSIS

by the interface adapter and a PC with dedicated software or by a predisposed flue gas analyzer (see paragraph accessories).



INDICATION OF OPERATION

In normal operation, the various status are indicated in the form of colour codes according to the table below. The interface diagnosis (with adapter) can be activated by pressing the lock-out button for > 3 seconds.

COLOR CODE TABLE								
Operation status	Color code table							
Stand-by	●	●	●	●	●	●	●	●
Pre-purging	●	●	●	●	●	●	●	●
Ignition phase	●	●	●	●	●	●	●	●
Flame OK	●	●	●	●	●	●	●	●
Poor flame	●	●	●	●	●	●	●	●
Undervoltage, built-in fuse	●	●	●	●	●	●	●	●
Fault, alarm	●	●	●	●	●	●	●	●
Flame simulation	●	●	●	●	●	●	●	●
● LED off								

DIAGNOSIS OF FAULT CAUSES

After lock-out has occurred, the red signal lamp is steady on. In this status, the visual fault diagnosis according to the error code table can be activated by pressing the lock-out reset button for > 3 seconds. The interface diagnosis (with adapter) can be activated by pressing again the lock-out button for > 3 seconds. The flashing of red LED are a signal with this sequence: (e.g. signal with n° 3 flashes – faulty air pressure monitor)

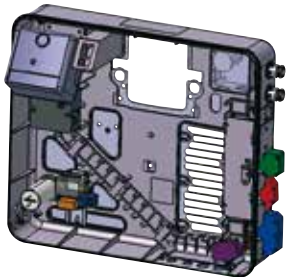


ERROR CODE TABLE

POSSIBLE CAUSE OF FAULT		FLASH CODE
No establishment of flame at the end of safety time:	- faulty or soiled fuel valves - faulty or soiled flame detector - poor adjustment of burner, no fuel - faulty ignition equipment	2x flashes
Faulty air pressure monitor		3x flashes
Extraneous light or simulation of flame on burner start up		4x flashes
Loss of flame during operation:	- faulty or soiled fuel valves - faulty or soiled flame detector - poor adjustment of burner	7x flashes
Wiring error or internal fault		10x flashes

Burner Wiring

All models of the RS/1 burner series have an easily accessible control panel for the electrical components housing and wiring. Thanks to the new structure concept, they have a extremely clean electrical layout to optimise the commissioning and maintenance speed. On these models the electrical connection are done by a Plug&Socket system, accessible from the external of the cover, and some of the main components as the air pressure switch and the gas max pressure switch (accessory) are connected to the burner electrical wiring trough plugs & sockets system in order to facilitate the connection in case of maintenance. The electrical wiring of all RS/1 burner models are very easy to do following the wiring diagrams included in the instruction handbook. Electrical connections must be made by qualified and skilled personnel, according to the local norms.

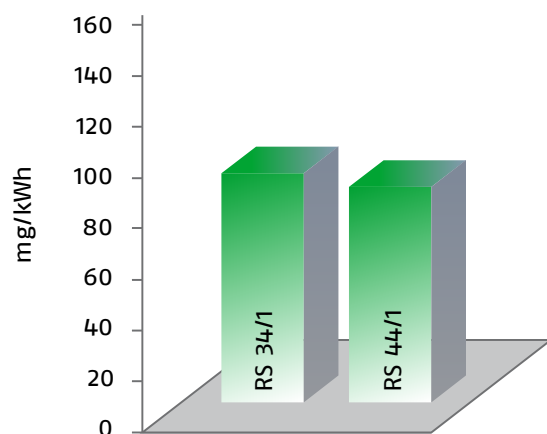


Example of electrical components housing and Plug&Socket system for electrical connection of RS 34-44/1 MZ.

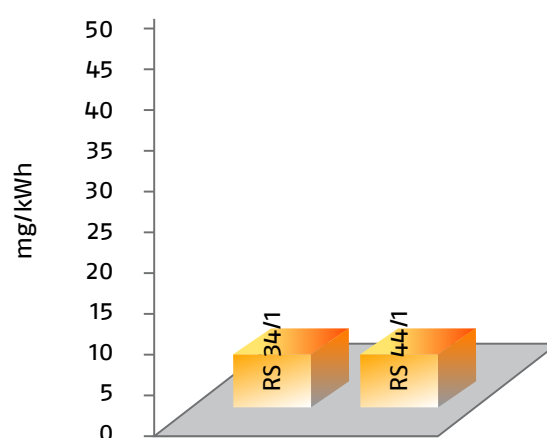
Emissions

The emission data has been measured in the various models at maximum output, according to EN 676 standard. The NO_x emissions of RS 34-44/1 MZ models are conforming to the class 2 of EN 676.

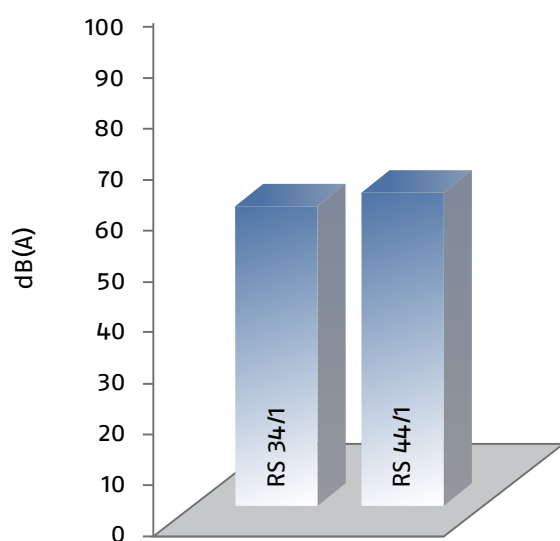
NO₂ EMISSIONS (gas G20)



CO EMISSIONS (gas G20)

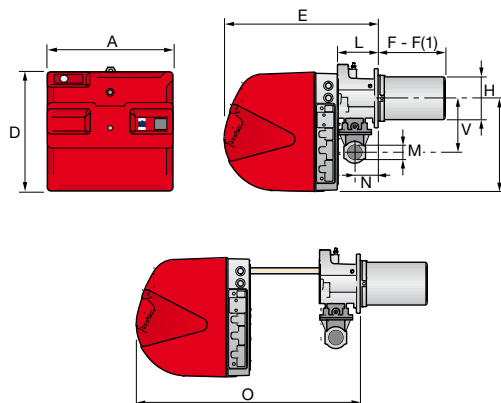


NOISE EMISSIONS



Overall Dimensions (mm)

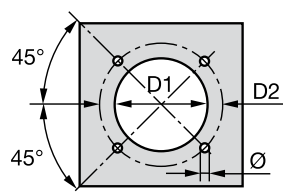
BURNERS



MODEL	A	D	E	F - F(1)	H	I	L	M	N	O	S	V
► 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

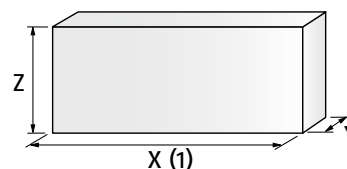
(1) dimension with extended head

BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
► RS 34/1 MZ	160	224	M8
► RS 44/1 MZ	160	224	M8

PACKAGING



MODEL	X (1)	Y	Z	kg
► RS 34/1 MZ	1000	485	500	32
► RS 44/1 MZ	1000	485	500	33

(1) dimension with standard and extended head

Installation Description

Installation, start up and maintenance must be carried out by qualified and skilled personnel.
All operations must be performed in accordance with the technical handbook supplied with the burner.

BURNER SETTING

All the burners have slide bars, for easier installation and maintenance.

After drilling the boilerplate, using the supplied gasket as a template, dismantle the blast tube from the burner and fix it to the boiler.

Adjust the combustion head.

Fit the gas train, choosing this on the basis of the maximum output of the boiler and considering the enclosed diagrams.

Refit the burner casing to the slide bars.

Close the burner, sliding it up to the flange.

ELECTRICAL CONNECTIONS AND START UP

Make the electrical connections to the boiler following the wiring diagrams included in the instruction handbook.

Perform a first ignition calibration on the gas train.

On start up, check:

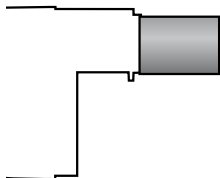
- Gas pressure at the combustion head (to max. and min. output)
- Combustion quality, in terms of unburned substances and excess air.

BURNER MAINTENANCE

The maintenance of RS/1 burners is very simple thanks to the sliding bars system that allows an easy access to the internal components.

Burner Accessories

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.

BURNER	'STANDARD HEAD' LENGTH (mm)	'EXTENDED HEAD' LENGTH (mm)	KIT CODE
► RS 34/1 MZ	216	351	3010428
► RS 44/1 MZ	216	351	3010429

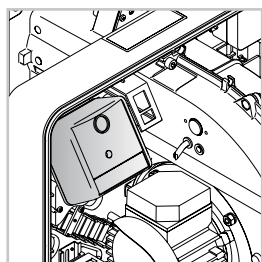
Spacer kit



If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table:

BURNER	SPACER THICKNESS S (mm)	KIT CODE
► RS 34/1 MZ – 44/1 MZ	90	3010095

Post-ventilation kit



To prolong ventilation for approximately 5 seconds after opening of thermostats chain, a special kit is available.

BURNER	KIT CODE
► RS 34/1 MZ – 44/1 MZ	3010452

Continuous ventilation kit



If the burner requires continuous ventilation in the stages without flame, a special kit is available as given in the following table:

BURNER	KIT CODE
► RS 34/1 MZ – 44/1 MZ	3010449

Sound proofing box



If noise emission needs reducing even further, sound-proofing boxes are available, as given in the following table:

BURNER	BOX TYPE	AVERAGE NOISE REDUCTION [dB(A)] (*)	BOX CODE
► RS 34/1 MZ – 44/1 MZ	C1/3	10	3010403

(*) according to EN 15036-1 standard

LPG kit

For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner, as given in the following table:

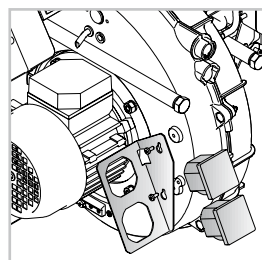
BURNER	KIT CODE
► RS 34/1 MZ	3010423
► RS 44/1 MZ	3010424

Town gas kit

For burning Town gas, a special kit is available:

BURNER	KIT CODE FOR 'STANDARD HEAD' (*)	KIT CODE FOR 'EXTENDED HEAD' (*)
► RS 34/1 MZ	in progress	in progress
► RS 44/1 MZ	in progress	in progress

(*) Without CE certification

Hours counter kit

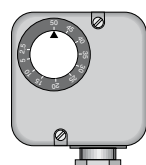
To measure the burner working time a hours counter kit is available.

BURNER	KIT CODE
► RS 34/1 MZ – 44/1 MZ	3010450

Ground fault interrupter kit

A "Ground fault interrupter kit" is available as a safety device for electrical system fault.

BURNER	KIT CODE
► RS 34/1 MZ – 44/1 MZ	3010448

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.

BURNER	KIT CODE
► RS 34/1 MZ – 44/1 MZ	3010418

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.

BURNER	KIT CODE
► RS 34/1 MZ – 44/1 MZ	3010419

PC interface kit



To connect the flame 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.

BURNER	KIT CODE
► RS 34/1 MZ – 44/1 MZ	3002719

Gas Train Accessories

Adapters



When the diameter of the gas train is different from the set diameter of the burners, an adapter must be fitted between the gas train and the burner. The following table lists the adapters for various burners.

BURNER	GAS TRAIN	DIMENSIONS	ADAPTER CODE
► RS 34/1 MZ	MBD 405 - 407 - 410	3/4"  1" 1/2	3000824
	MBZRDLE 407 - 410	3/4"  1" 1/2	3000824
	MBD 420 - 420 CT	2"  1" 1/2	3000822
	MBZRDLE 420 - 420 CT	2"  1" 1/2	3000822
► RS 44/1 MZ	MBD 407 - 410	3/4"  1" 1/2	3000824
	MBZRDLE 407 - 410	3/4"  1" 1/2	3000824
	MBD 420 - 420 CT	2"  1" 1/2	3000822
	MBZRDLE 420 - 420 CT	2"  1" 1/2	3000822

Seal control kit



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 sealing control is type VPS 504.

GAS TRAIN	KIT CODE
► MBD 405 - MBD 407 - MBZRDLE 407 - MBD 410 - MBZRDLE 410 MBD 412 - MBZRDLE 412 - MBD 415 - CB 40/1	3010123
► MBZRDLE 415 - CB 40/2 - MBZRDLE 420 - CB 50/2	3010125

Specification

DESIGNATION OF SERIES

A specific index guides your choice of burner from the various models available in the RS/1 series. Below is a clear and detailed specification description of the product.

Series:R									
Fuel: S Natural Gas									
SP LPG									
L Light oil									
LS Light oil/Methane									
N Heavy oil									
Size									
Setting: /1 Single stage									
... Two stage									
/M Modulating									
Emission: ... Class 1 EN267 - EN676									
MZ Class 2 EN267 - EN676									
BLU Class 3 EN267 - EN676									
MX Class 1 EN267									
Class 3 EN676									
Head length: TC standard head									
TL extended head									
Flame control system:									
FS1 Standard (1 stop every 24 h)									
FS2 Continuous working (1 stop every 72 h)									
Electrical supply to the system:									
1/230/50 1/230V/50Hz									
1/220-230/50-60 1/220-230V/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 3/220V/60Hz - 3N/380V/60Hz									
3/220-400/50-60 3/220-230V/50-60Hz									
3/380-400V/50-60Hz									
Auxiliary voltage:									
230/50-60 230V/50-60Hz									
220-230/50-60 220-230V/50-60Hz									
110/50-60 110V/50-60Hz									
ID: Differential switch									
R	S	34	/1	MZ	TC	FS1	1/230/50	230/50-60	
BASIC DESIGNATION									
EXTENDED DESIGNATION									

AVAILABLE BURNER MODELS

RS 34/1 MZ	TC	FS1	1/220-230/50-60	220-230/50-60
RS 34/1 MZ	TL	FS1	1/220-230/50-60	220-230/50-60
RS 44/1 MZ	TC	FS1	1/220-230/50-60	220-230/50-60
RS 44/1 MZ	TL	FS1	1/220-230/50-60	220-230/50-60

Other versions are available on request.

PRODUCT SPECIFICATION

RS 34/1 MZ – 44/1 MZ models

Burner

Monoblock forced draught gas burner with one stage operation, fully automatic, made up of:

- Air suction circuit
- 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 flame control panel, 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.

Gas train

Fuel supply line, in the MULTIBLOC configuration (from a diameter of 3/4" until a diameter 2") fitted with:

- Filter
- Stabiliser
- Minimum gas pressure switch
- Safety valve
- One stage or two stage working valve with ignition gas output regulator.

Conforming to:

- 89/336 (2004/108) EC directive (electromagnetic compatibility)
- 73/23 (2006/95) EC directive (low voltage)
- 92/42/EC directive (performance)
- 90/396/EC directive (gas)
- EN 676 (gas burners).

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
- 3 plugs for electrical connection
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Extended head kit
- Spacer kit
- Sound-proofing box
- LPG kit
- Hours counter kit
- Ground fault interrupter kit
- Gas max pressure switch
- Volt free contact kit
- Interface adapter kit
- Gas train adapter
- Seal control kit.

Riello Burners a world of experience in every burner we sell.

11/2015

TS0045UK05



[1]



[2]

[1] BURNERS PRODUCTION PLANT
S. PIETRO, LEGNAGO (VERONA) – ITALIA

[2] HEADQUARTER BURNERS DIVISION
S. PIETRO, LEGNAGO (VERONA) – ITALIA

Across the world, Riello sets the standard in reliable and high efficiency burner technology.

With burner capacity from 5 kW to 48 MW, Riello gas, oil, dual fuel and Low Nox burners deliver unbeatable performance across the full range of residential and commercial heating applications, as well as in industrial processes.

With headquarter in Legnago, Italy, Riello has been manufacturing premium quality burners for over 90 year. The manufacturing plant is equipped with the most innovative systems of assembling lines and modern manufacturing cells for a quick and flexible response to the market.

Besides, the Riello Combustion Research Centre, located in Angiari, Italy, represents one of the most modern facility in Europe and one of the most advanced in the world for the development of the combustion technology.

Today, the company's presence on worldwide markets is distinguished by a well-constructed and efficient sales network, alongside many important Training Centres located in various countries to meet its customers' needs. Riello has 13 operational branches abroad (in Europe, America and Asia), with customers in over 60 countries.

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