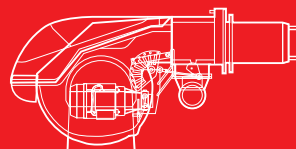
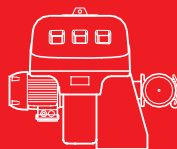




RLS 190÷250/M MZ Series

Modulating Dual Fuel Burners

RLS 190/M MZ	550/1100	÷	2150	kW
RLS 250/M MZ	550/1230	÷	2460	kW



The RLS/M MZ series of burners covers a firing range from 550 to 2460 kW, and they have been designed for use in hot or superheated water boilers, hot air or steam generators, diathermic oil boilers.

Operation is "two stage" at the oil side and "modulating" at the gas side with the installation of a PID logic regulator and respective probes.

RLS/M MZ series burners guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.

Optimisation of sound emissions is guaranteed by the special design of air suction circuit and the use of sound proofing material.

The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.

Technical Data

MODEL		RLS 190/M MZ	RLS 250/M MZ
Burner operation mode		Modulating gas side (with regulator and probes accessories) / two stage oil side	
Modulating ratio at max. output		2 ÷ 1 (oil) / 3 ÷ 1 (gas)	
Servomotor	type	SQN 31	
	run time	s	
Heat output	kW	550/1100÷2150	550/1230÷2460
	Mcal/h	473/946÷1849	473/1058÷2116
Working temperature	°C min/ max	0/40	
Light oil net calorific value	kWh/kg	11,86	
Light oil viscosity at 20°C	mm ² /s (cSt)	4÷6	
Light oil output	kg/h	46/93÷181	46/104÷207
Pump	type	J7	
	output	kg/h	
Atomised pressure	bar	12	
Fuel temperature	max °C	60	
Fuel pre-heater		NO	
Net calorific value G20 gas	kWh/Nm ³	10	
Density gas G20	kg/Nm ³	0,71	
Output gas G20	Nm ³ /h	55/110÷215	55/123÷246
Net calorific value G25 gas	kWh/Nm ³	8,6	
Density gas G25	kg/Nm ³	0,78	
Output gas G25	Nm ³ /h	64/128÷250	64/143÷286
Net calorific value LPG gas	kWh/Nm ³	25,8	
Density LPG gas	kg/Nm ³	2,02	
Output LPG gas	Nm ³ /h	-	
Fan	type	Centrifugal with straight blades	
Air temperature	max °C	60	
Electrical supply	Ph/Hz/V	3/50/230-400~(±10%)	3/50/230~(±10%) 3/50/400~(±10%)
Auxiliary electrical supply	Ph/Hz/V	1/50/230~(10%)	
Control box	type	LFL 1.333	
Total electrical power	kW	6	6 (gas) 7,5 (oil)
Auxiliary electrical power	kW	1,5	
Heaters electrical power	kW	-	
Protection level	IP	44	
Fan electrical motor power	kW	4,5	5,5
Rated fan motor current	A	15,8 - 9,1	21,3 - 12,3
Fan motor start current	A	126 - 72,8	144 - 83
Fan motor protection level	IP	54	
Pump electric motor power	kW	0,55	
Rated pump motor current	A	3,6	
Pump motor start current	A	9,5	
Pump motor protection level	IP	54	
Ignition transformer	V1- V2	230 V - 2 x 5 kV	
	I1 - I2	1,9 A - 30 mA	
Operation		Intermittent (at least one stop every 24 h)	
Sound pressure	dB (A)	82,5 (gas) 85 (oil)	83 (gas) 85,4 (oil)
Sound power	W	-	

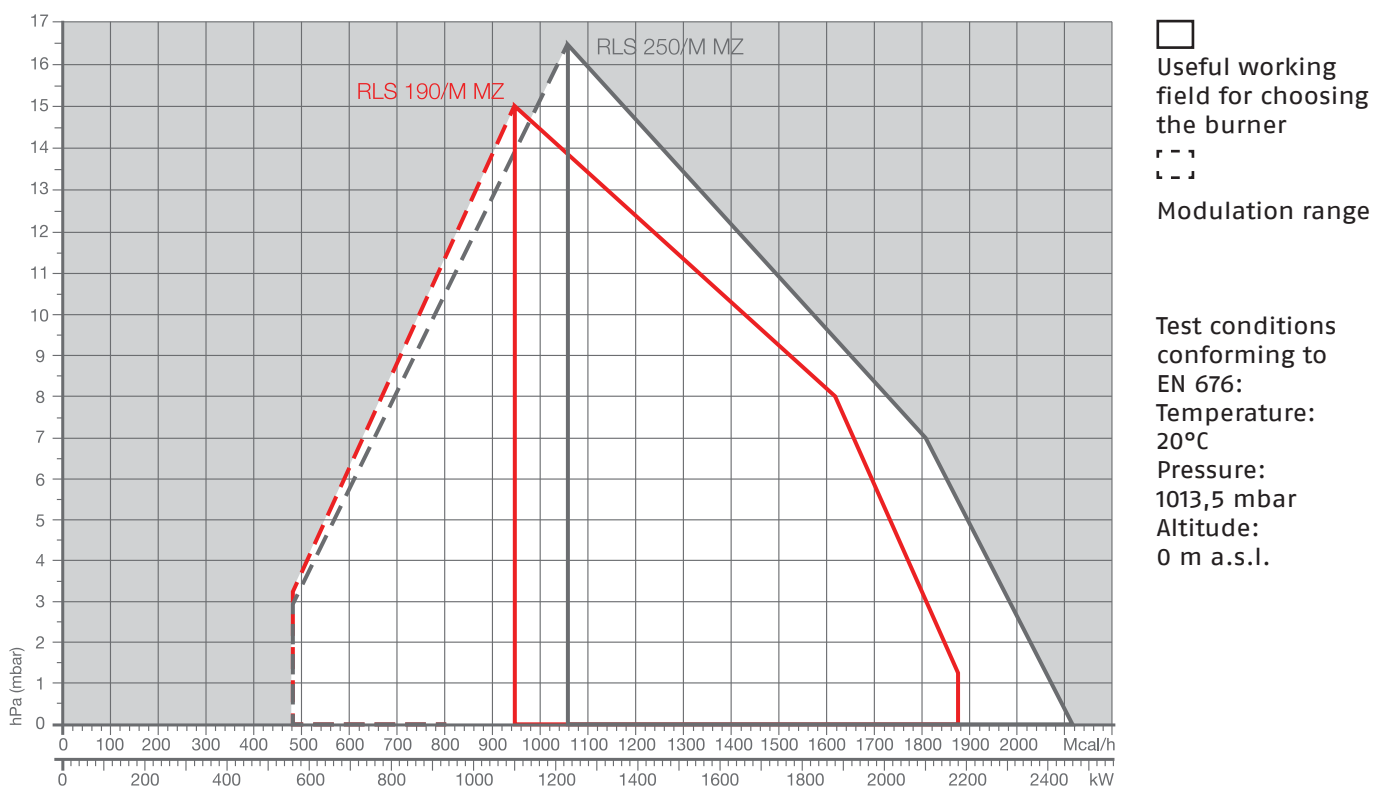
MODEL		RLS 190/M MZ	RLS 250/M MZ
Light oil - CO emissions	mg/kWh		< 10
Light oil - Grade of smoke indicator	No. Bacharach		< 2
Light oil - CxHy emissions	mg/kWh		< 2
Light oil - NOx emissions	mg/kWh		< 185
G20 gas - CO emission	mg/kWh		< 10
G20 gas - NOx emission	mg/kWh		< 120
Directive		2006/42 EC - 2009/142 EC - 2014/30 UE- 2014/35 UE	
Conforming to		EN 267 - EN 676	
Certifications		CE - 0085BP0439	CE-0085CM0153

Reference conditions:

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

Sound pressure measured in manufacturer's combustion laboratory, with burner operating on test boiler and at maximum rated output. The sound power is measured with the "Free Field" method, as per EN 15036, and according to an "Accuracy: Category 3" measuring accuracy, as set out in EN ISO 3746.

Firing Rates



Fuel Supply

GAS TRAIN DESIGNATION

Series:	MB
	MBC
	CB
	DMV

Size:	415	420							
		1200	1900	3100	5000				
	512	-	520	525	5065	5080	50100	50125	50150

Operation:	/1	1st stage mode opening
	/2	2nd stage mode opening

Leak detection control:	-	0
	CT	leak detection control device installed on the gas train
	CQ	equipped with pressure switch for leak detection control

Joint type:	R	threaded joint
	F	standard flange ISO

Electrical connection:	T	Terminals - Terminal strip
	SM	Medium voltage plug

Standard output pressure range:	-	without pressure governor
	0	with governor and air/gas proportional pressure
	2	with governor and output pressure up to 20 mbar
	3	with governor and output pressure up to 30 mbar
	4	with governor and output pressure up to 40 mbar
	5	with governor and output pressure up to 50 mbar
	6	with governor and output pressure up to 60 mbar
	8	with governor and output pressure up to 80 mbar

Valve control:	0	shared
	2	separate

MBC	1200	/1	CT	R	SM	6	0
BASIC DESIGNATION				EXTENDED DESIGNATION			

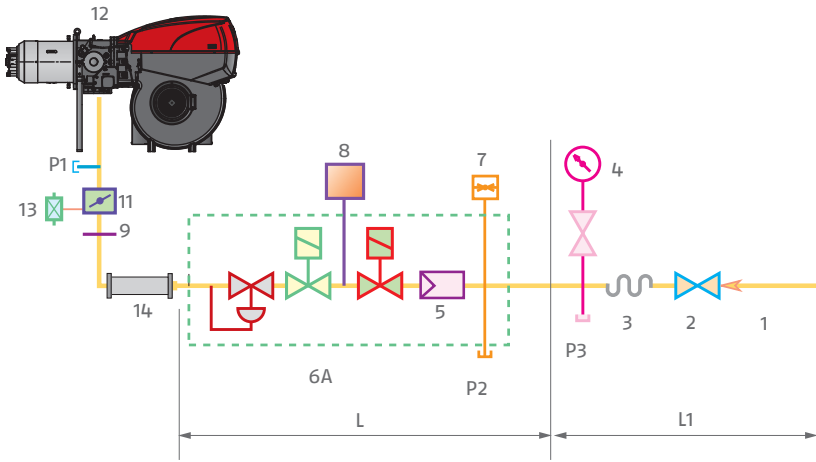
GAS TRAINS

The burners are fitted with a butterfly valve to regulate the fuel, controlled by a variable profile cam servomotor. Fuel can be supplied either from the right or left hand sides. A maximum gas pressure switch stops the burner in case of excess pressure in the fuel line.

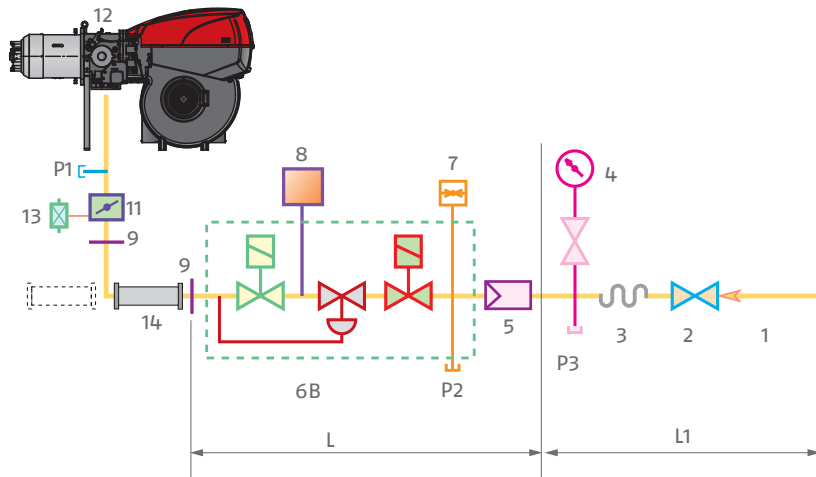
The gas train can be selected to best fit system requirements depending on the fuel output and pressure in the supply line.

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

MB "THREADED"

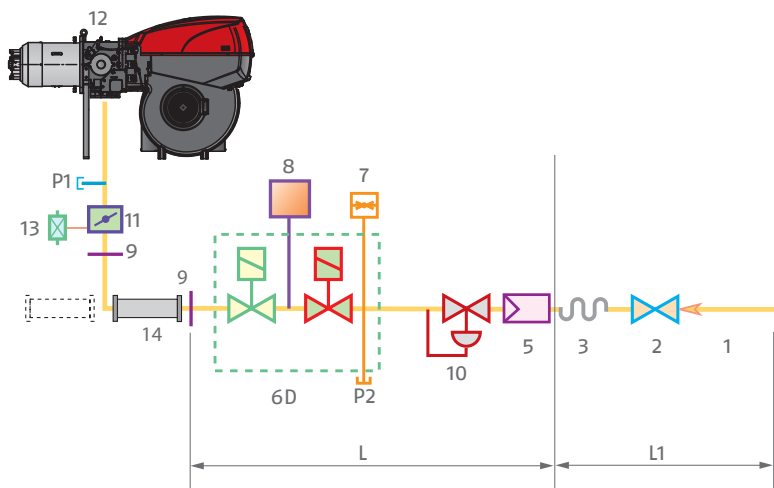


MBC "FLANGED"

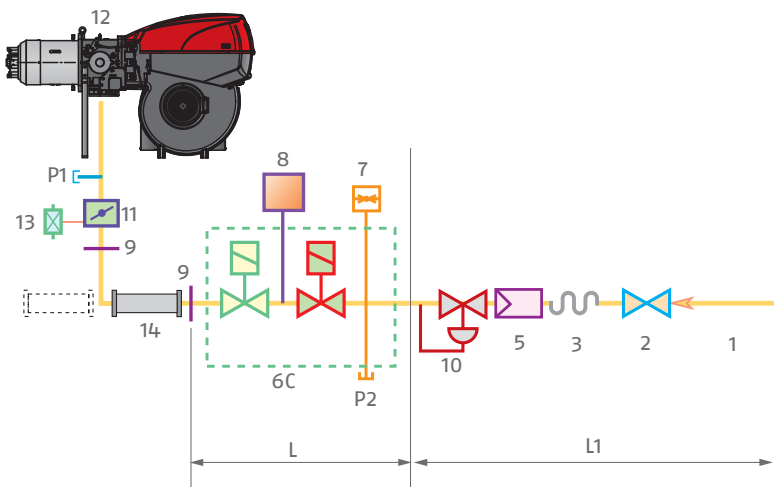


- 1** Gas input pipework
- 2** Manual valve
- 3** Anti-vibration joint
- 4** Pressure gauge with pushbutton cock
- 5** Filter
- 6A** Includes:
 - filter
 - operation valve
 - safety valve
 - pressure adjuster
- 6B** Includes:
 - operation valve
 - safety valve
 - pressure adjuster
- 7** Minimum gas pressure 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 from the regulator
- P3** Pressure upstream from the filter
- L** Gas train supplied separately, with the code given in the table
- L1** Installer' responsibility

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
- 6C** Includes:
 - safety valve
 - operation valve
- 6D** Includes:
 - safety valve
 - operation 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 adjustment butterfly valve
- 12** Burner
- 13** Maximum gas pressure switch
- 14** Gas train-burner adaptor, supplied separately
- P1** Combustion head pressure
- P2** Upstream pressure from the regulator
- P3** Pressure upstream from the filter
- L** Gas train supplied separately, with the code given in the table
- L1** Installer' responsibility

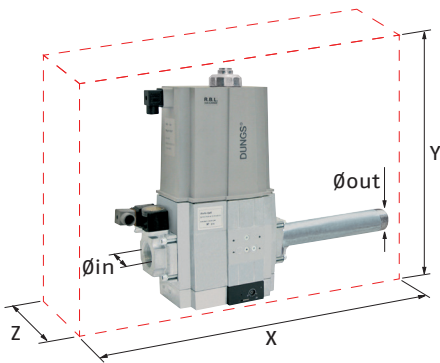
Gas trains are approved by standard EN 676 together with the burner. The overall dimensions of the gas train depends on how they are constructed. The following table shows the maximum dimensions of the gas trains that can be fitted to RLS/M MZ burners, intake and outlet diameters and seal control if fitted.

The maximum gas pressure of gas train "MULTIBLOC" type is 360 mbar, and that one of gas train "COMPOSED" type is 500 mbar.

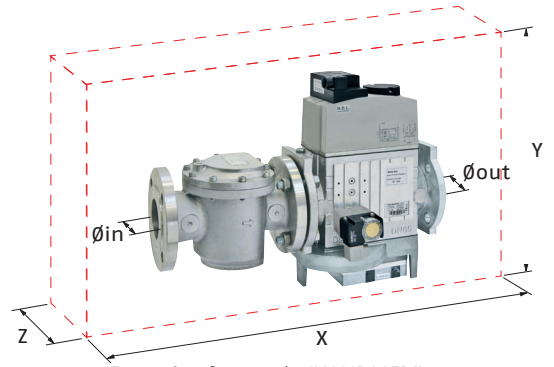
"MULTIBLOC" guarantees a range of pressure towards the burner from 4 to 60 mbar. For version DN 65 and DN 80 is from 20 to 40 mbar. For version DN 100 is from 40 to 80 mbar. The range of pressure in the "MULTIBLOC" with flange can be modified choosing the stabiliser spring (see gas train accessory).

The maximum gas pressure of gas train "CB" series is 500 mbar. "CB" gas train guarantees a range of pressure towards the burner from 10 to 30 mbar. The range of pressure can be modified choosing the stabilizer spring (see accessories).

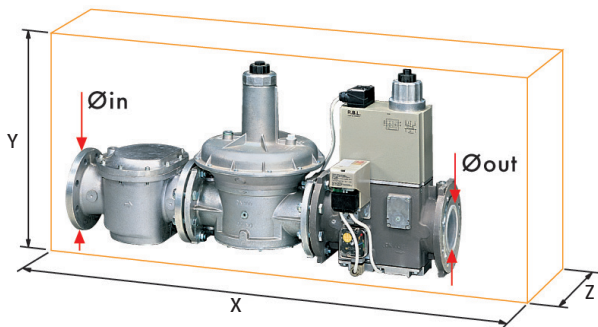
The maximum gas pressure of gas train "DMV" series is 500 mbar. "DMV" gas train is supplied without pressure governor.



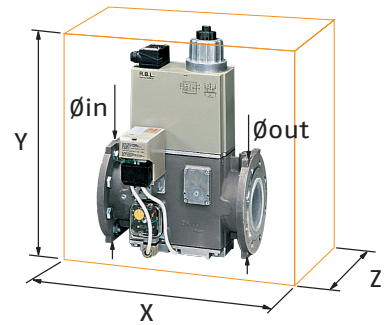
Example of gas train "MULTIBLOC" type without seal control (i.e. MBC 1200)



Example of gas train "COMPOSED" type without seal control (i.e. MBC 1900-3100-5000)



Example of gas train "CB" series with seal control



Example of gas train "DMV" series with seal control

GAS TRAIN						
MODEL	CODE	Ø in	Ø out	X mm	Y mm	Z mm
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	289	100
MB 420/1 CT RT 30	3970182	Rp 2"	Rp 2"	523	289	229
MB 420/1 RT 52	3970257	Rp 2"	Rp 2"	523	289	100
MB 420/1 CT RT 52	3970252	Rp 2"	Rp 2"	523	289	229
MB 420/1 RSM 30	3970233	Rp 2"	Rp 2"	523	289	100
MB 420/1 CT RSM 30	3970234	Rp 2"	Rp 2"	523	289	229

GAS TRAIN						
MODEL	CODE	∅ in	∅ 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	∅ in	∅ out	X mm	Y mm	Z mm
CB 512/1 - RSM 30	3970145	Rp 1-1/2"	Rp 1-1/2"	891	261	245
CB 512/1 - CT RSM 30	20045589	Rp 1-1/2"	Rp 1-1/2"	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

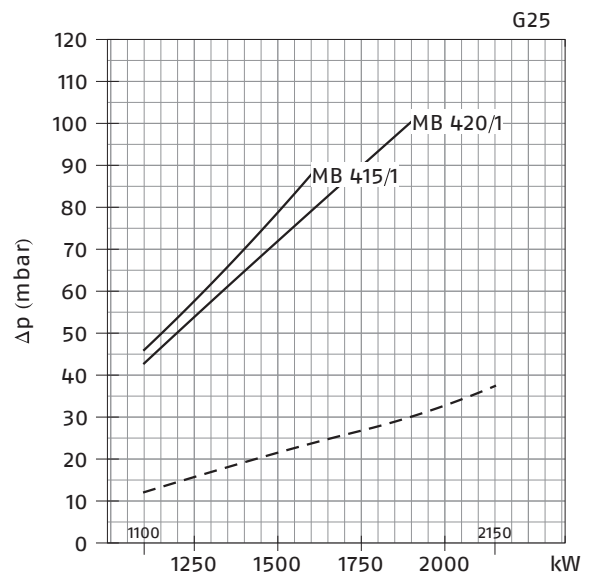
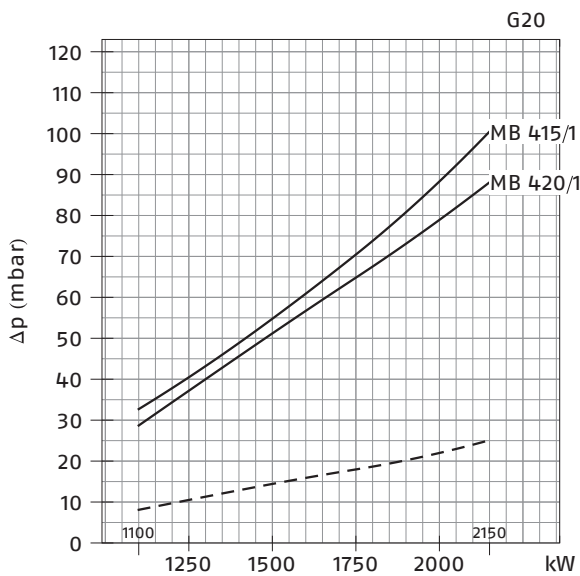
GAS TRAIN						
MODEL	CODE	∅ in	∅ out	X mm	Y mm	Z mm
DMV 512/1 - RSM - 0	20043035	Rp 1-1/2"	Rp 1-1/2"	490	292	245
DMV 512/1 -CT RSM - 0	20043036	Rp 1-1/2"	Rp 1-1/2"	490	292	245
DMV 512/1 - CQ RSM - 2	20043037	Rp 1-1/2"	Rp 1-1/2"	490	292	245
DMV 520/1 - RSM - 0	20043038	Rp 2"	Rp 2"	490	292	255
DMV 520/1 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

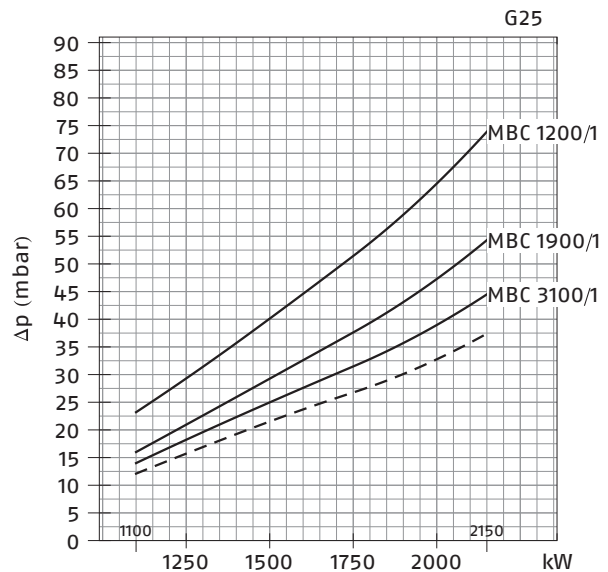
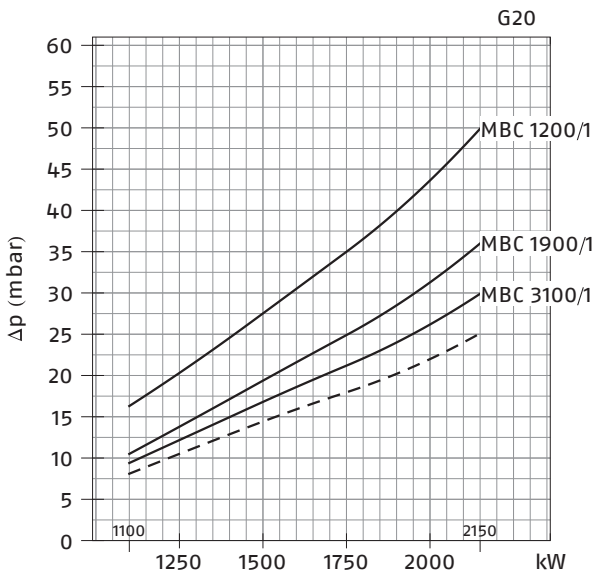
The diagrams indicate the minimum pressure drop of the burners with the various gas trains that can be matched with them; at the value of these pressure drop add the combustion chamber pressure. The value thus calculated represents the minimum required input pressure to the gas train.

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.

RLS 190/M (NATURAL GAS)

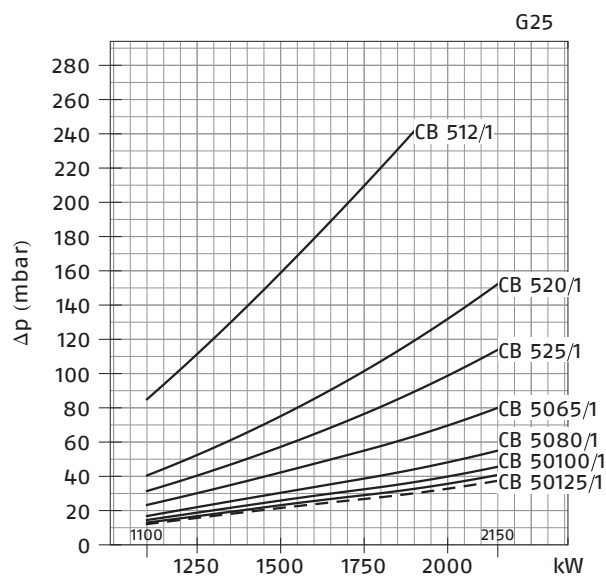
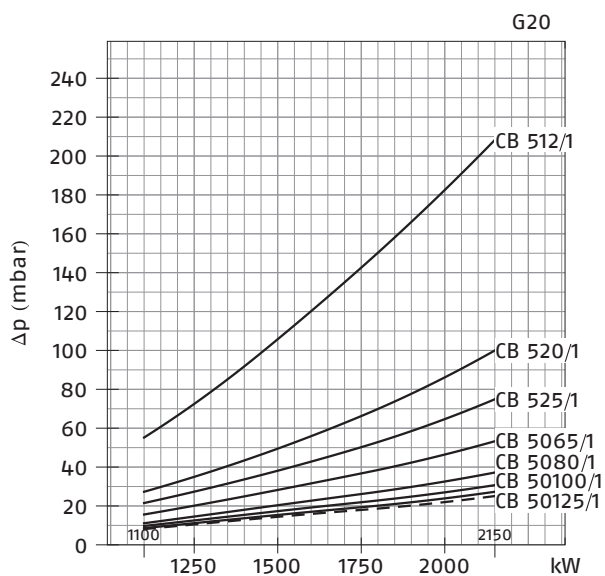


RLS 190/M (NATURAL GAS)

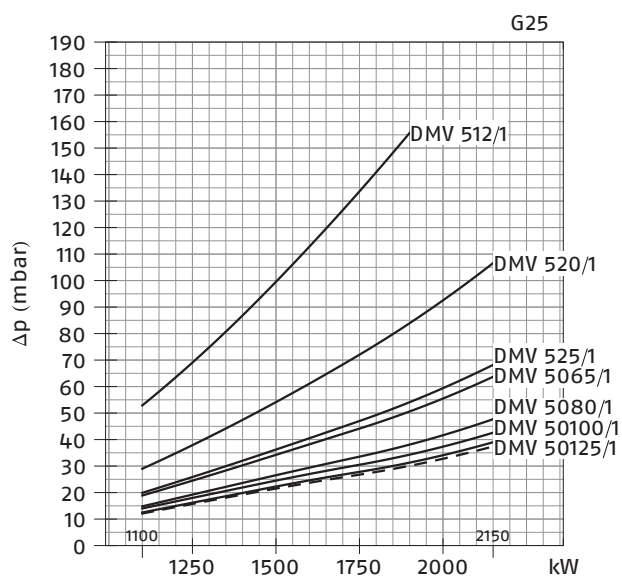
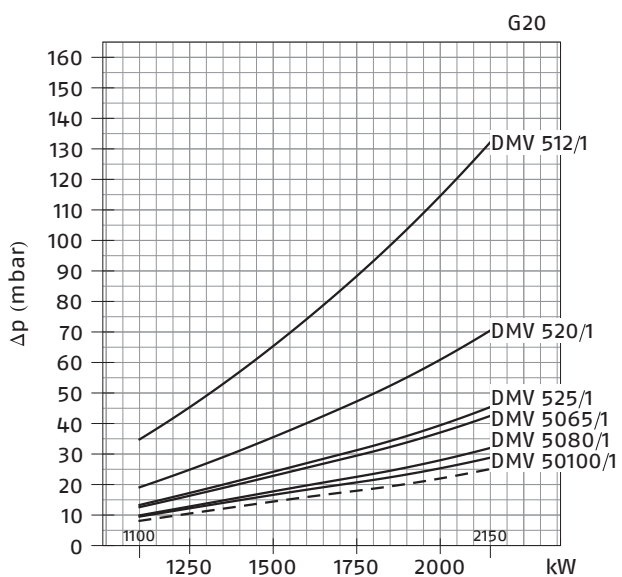


- Combustion head + gas butterfly valve + gas train
- - - Combustion head + gas butterfly valve

RLS 190/M (NATURAL GAS)

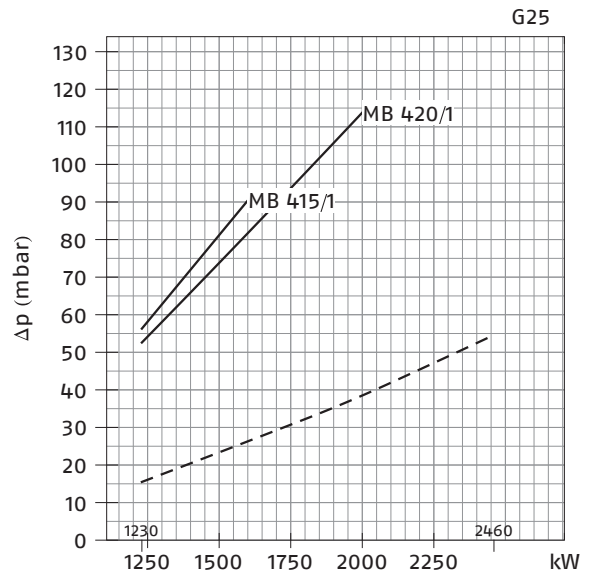
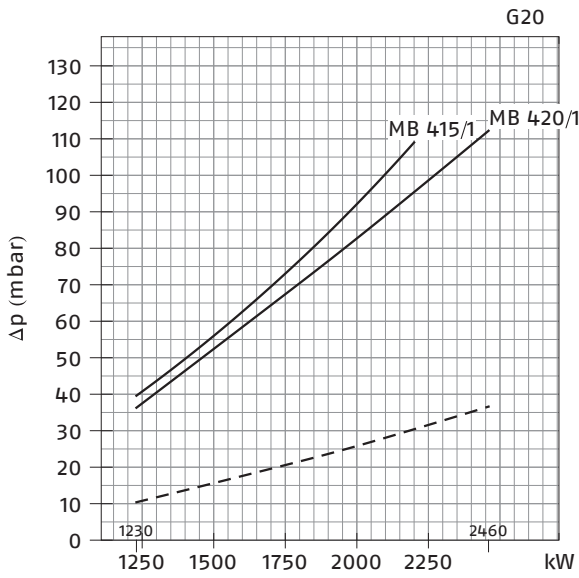


RLS 190/M (NATURAL GAS)

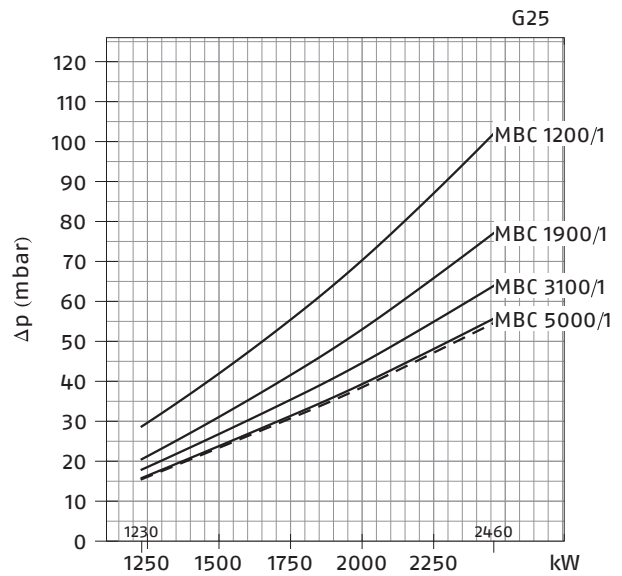
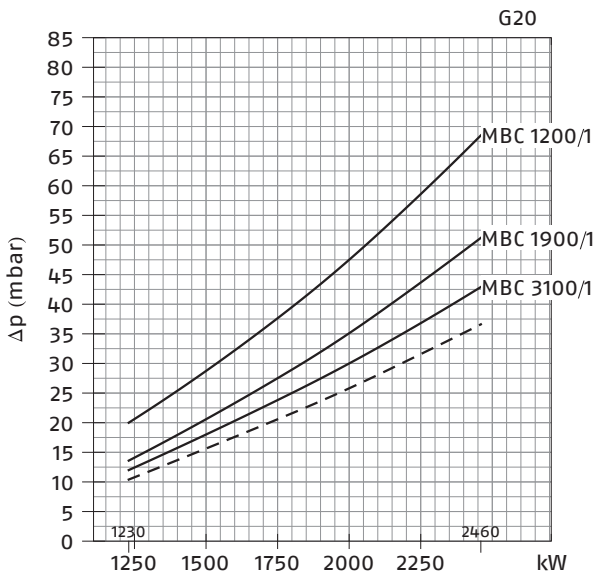


- Combustion head + gas butterfly valve + gas train
- - - Combustion head + gas butterfly valve

RLS 250/M (NATURAL GAS)

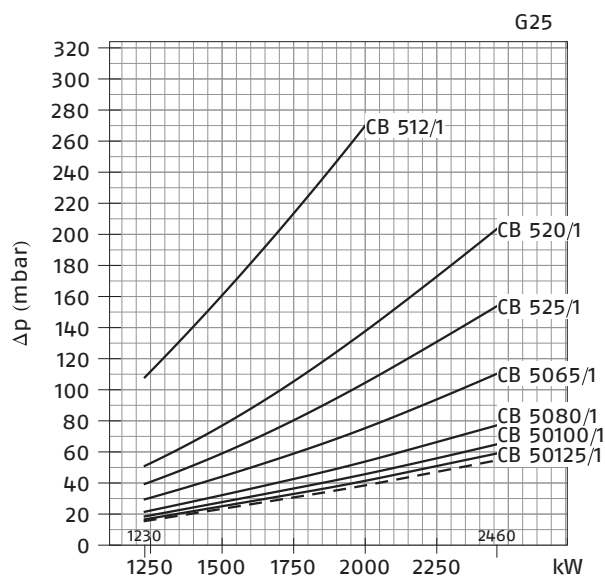
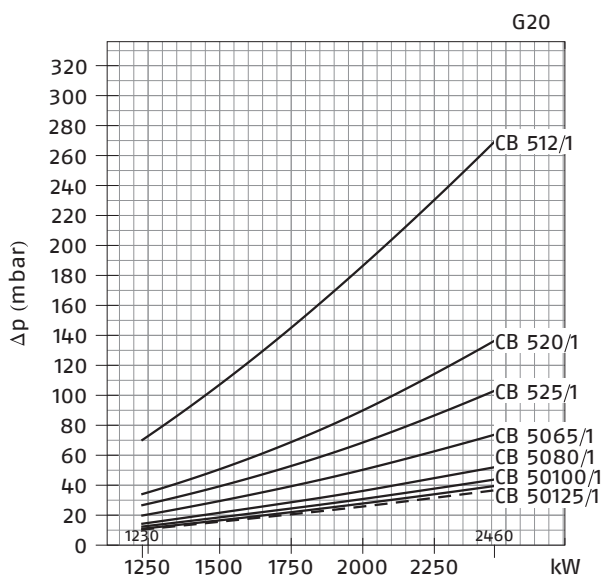


RLS 250/M (NATURAL GAS)

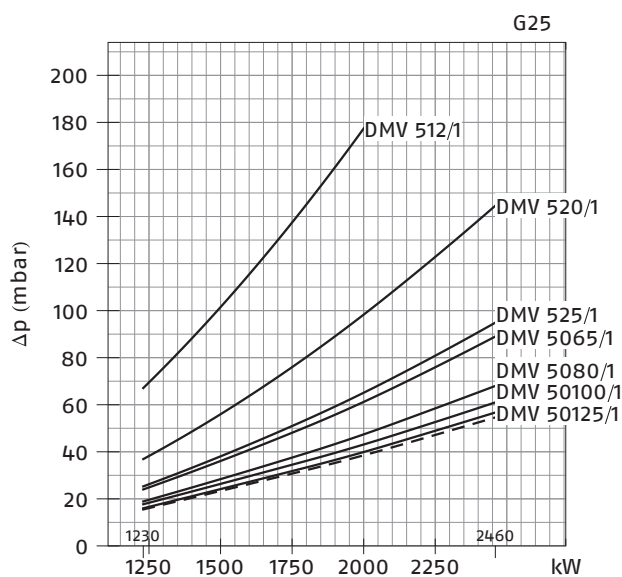
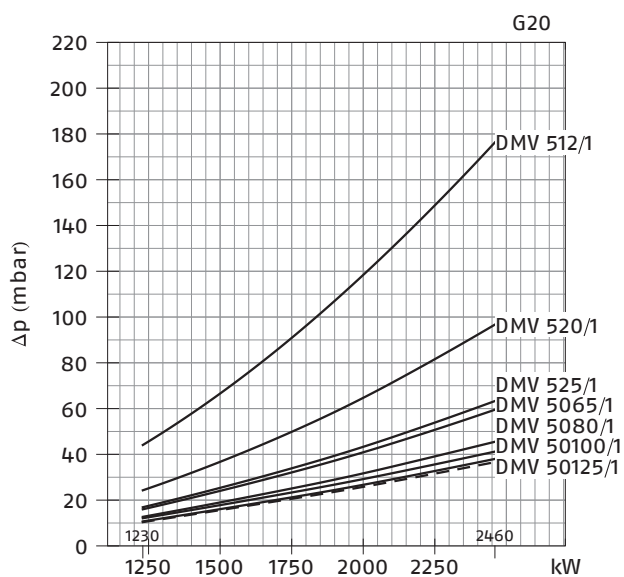


— Combustion head + gas butterfly valve + gas train
 - - - Combustion head + gas butterfly valve

RLS 250/M (NATURAL GAS)



RLS 250/M (NATURAL GAS)



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

GAS TRAIN		ADAPTER	
CODE	MODEL	CODE	
		RLS 190/M	RLS 250/M
3970180	MB 415/1 – RT 30	3000843	
3970198	MB 415/1 CT RT 30		
3970250	MB 415/1 – RT 52		
3970253	MB 415/1 CT RT 52		
3970232	MB 415/1 – RSM 30		
3970181	MB 420/1 – RT 30	-	-
3970182	MB 420/1 CT RT 30	-	-
3970257	MB 420/1 – RT 52	-	-
3970252	MB 420/1 CT RT 52	-	-
3970233	MB 420/1 – RSM 30	-	-
3970234	MB 420/1 CT RSM 30	-	-
3970221	MBC 1200/1 – RSM 60	-	-
3970225	MBC 1200/1 CT RSM 60	-	-
3970222	MBC 1900/1 – FSM 40	3000825	
3970226	MBC 1900/1 CT FSM 40		
3970223	MBC 3100/1 – FSM 40	3000826	
3970227	MBC 3100/1 CT FSM 40		
3970224	MBC 5000/1 – FSM 80	I	3000826 + 3010370
3970228	MBC 5000/1 CT FSM 80	I	
3970145	CB 512/1 – RSM 30	3000843	
20045589	CB 512/1 CT RSM 30		
3970146	CB 520/1 – RSM 30	-	-
3970160	CB 520/1 CT RSM 30	-	-
20044659	CB 525/1 – RSM 30	-	-
20044660	CB 525/1 CT RSM 30	-	-
3970147	CB 5065/1 – FSM 30	3000825	
3970161	CB 5065/1 CT FSM 30		
3970148	CB 5080/1 – FSM 30	3000826	
3970162	CB 5080/1 CT FSM 30		
3970149	CB 50100/1 – FSM 30	3000826 + 3010370	
3970163	CB 50100/1 CT FSM 30		
20015871	CB 50125/1 – FSM 30	3000826 + 3010224	
3970196	CB 50125/1 CT FSM 30		

GAS TRAIN		ADAPTER	
CODE	MODEL	CODE	
		RLS 190/M	RLS 250/M
20043035	DMV 512/1 - RSM -0		
20043036	DMV 512/1 CT RSM -0	3000843	
20043037	DMV 512/1 CQ RSM -2		
20043038	DMV 520/1 - RSM -0		
20043039	DMV 520/1 CT RSM -0	-	-
20043040	DMV 520/1 CQ RSM -2	-	-
20043053	DMV 525/1 - RSM -0	-	-
20043054	DMV 525/1 CT RSM -0	-	-
20043055	DMV 525/1 CQ RSM -2	-	-
20043041	DMV 5065/1 - FSM -0	3000825	
20043042	DMV 5065/1 CT FSM -0		
20043043	DMV 5065/1 CQ FSM -2		
20043044	DMV 5080/1 - FSM -0	3000826	
20043045	DMV 5080/1 CT FSM -0		
20043046	DMV 5080/1 CQ FSM -2		
20043047	DMV 50100/1 - FSM -0	3000826 + 3010370	
20043048	DMV 50100/1 CT FSM -0		
20043049	DMV 50100/1 CQ FSM -2		
20043050	DMV 50125/1 - FSM -0	3000826 + 3010224	
20043051	DMV 50125/1 CT FSM -0		
20043052	DMV 50125/1 CQ FSM -2		

Key to layout

I Not available

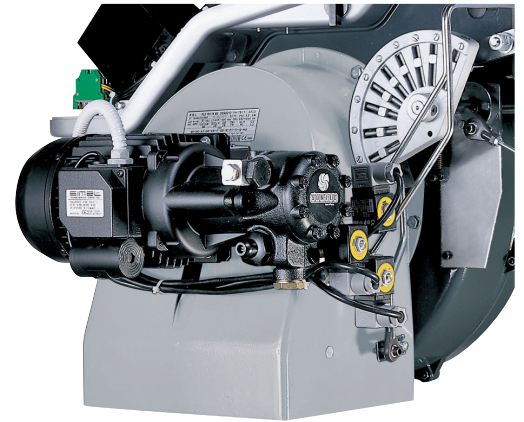
Hydraulic Circuit

The burners are fitted with three valves (a safety valve and two oil delivery valves) along the oil line from the pump to the nozzle.

A thermostatic control device, on the basis of required output, regulates oil delivery valves opening, allowing light oil passage through the valves and to the nozzle.

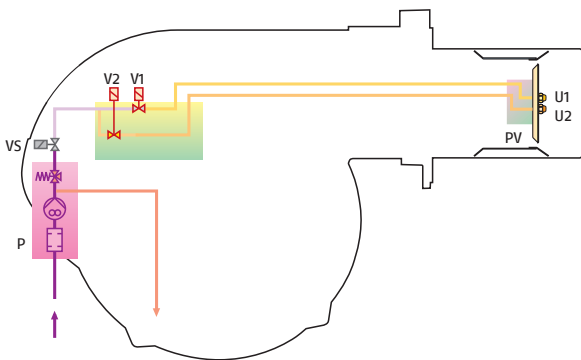
Delivery valves open contemporary to the air damper opening, controlled by a servomotor.

The pumping group is fitted with a pump, an oil filter and a regulating valve: through this it is possible to manually adjust atomised pressure, which in factory is preset at 12 bar.



Example of light oil pump of RLS 190/M MZ burner

RLS/M MZ



P Pump with filter and pressure regulator on the output circuit

VS Safety valve on the output circuit

V1 1st stage valve

V2 2nd stage valve

PV Nozzle holder

U1 1st stage nozzle

U2 2nd stage nozzle

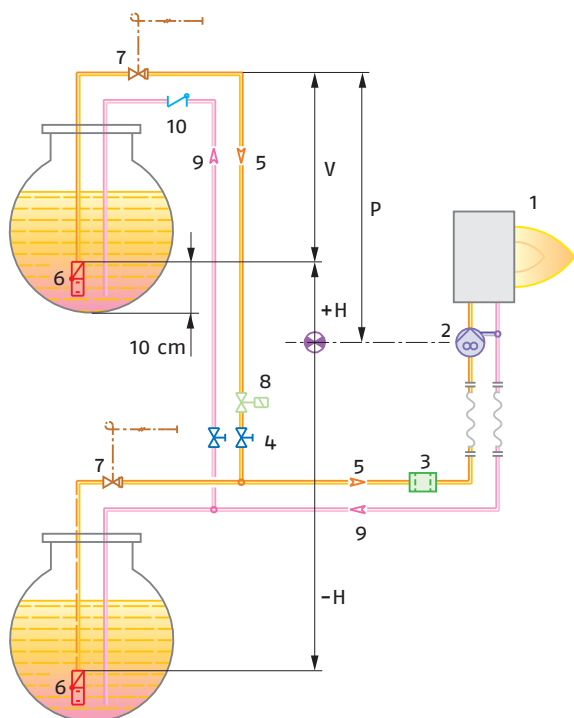
Selecting the Fuel Supply lines

The fuel feed must be completed with the safety devices required by the local norms.

The table shows the choice of piping diameter, depending on the difference in height between the burner and the tank and their distance.

Maximum Equivalent Length For The Piping L[M]

MODEL	RLS 190/M MZ			RLS 250/M MZ	
DIAMETER PIPING	Ø12mm	Ø14mm	Ø16mm	Ø16mm	Ø18mm
+H, -H (m)	Lmax (m)	Lmax (m)	Lmax (m)	Lmax (m)	Lmax (m)
+4,0	71	138	150	84	132
+3,0	62	122	150	78	123
+2,0	53	106	150	72	114
+1,0	44	90	150	66	105
+0,5	40	82	150	60	96
0	36	74	137	54	87
-0,5	32	66	123	48	78
-1,0	28	58	109	42	69
-2,0	19	42	81	36	60
-3,0	10	26	53	25	43
-4,0	-	10	25		



H	Difference in height pump-foot valve
Ø	Internal pipe diameter
P	Max. height 10 m
V	Height 4 m
1	Burner
2	Burner pump
3	Filter
4	Manual shut off valve
5	Suction pipework
6	Bottom valve
7	Remote controlled rapid manual shut off valve (compulsory in Italy)
8	Type approved shut off solenoid valve (compulsory in Italy)
9	Return pipework
10	Check valve

Note: With ring distribution oil systems, the feasible drawings and dimensioning are the responsibility of specialised engineering studios, who must check compatibility with the requirements and features of each single installation.

Ventilation

The ventilation circuit produces low noise levels with high performances pressure and air output, in despite of the compact dimensions. The special design of the air suction circuit and the use of sound-proofing material keeps noise level very low. A variable profile cam connects the fuel and air regulations, ensuring high fuel efficiency at all firing ranges. A minimum air pressure switch stops the burner when there is an insufficient quantity of air at the combustion head.



Example of the servomotor for air/gas setting

Combustion Head

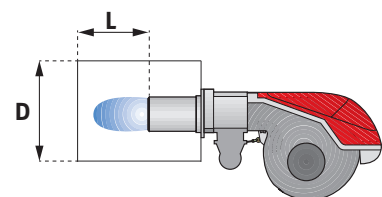
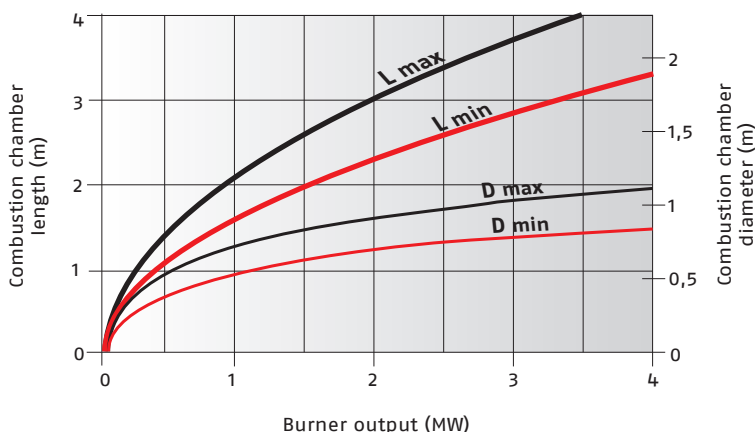
Different lengths of the combustion head can be chosen for the RLS/M MZ series of burners. The choice depends on the thickness of the front panel and the type of boiler. Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct. The internal positioning of the combustion head can easily be adjusted to the maximum defined output by adjusting a screw fixed to the flange.

Note: The burners of RLS/M MZ series are not suitable to be installed on boiler with "reverse flame chamber".



Example of RLS 190/M MZ burner combustion head.

SUGGESTED COMBUSTION CHAMBER DIMENSIONS

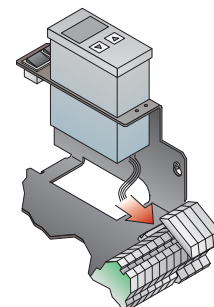


Example:
 Burner thermal output = 2000 kW;
 L Combustion Chamber (m) = 2,7 m (medium value);
 D Combustion Chamber (m) = 0,8 m (medium value)

Operation

BURNER OPERATION MODE

The RLS/M MX series of burners can have "two stage" operation at the oil side and "modulating" operation at the gas side with the installation of a PID logic regulator and respective probes. When burner is supplied with light oil a modulation ratio of 2:1 is reached thanks to the "two nozzles" solution; when burner is supplied with gas modulation ratio is 6:1. The air is adapted to the servomotor rotations.

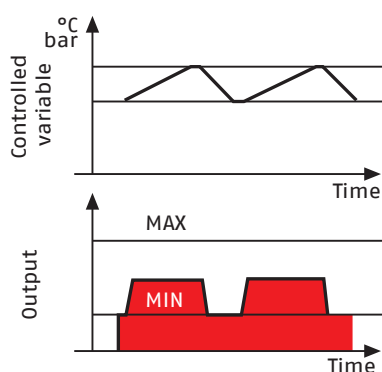


Example of a regulator

On "two stage" operation, the burner gradually adjusts output to the requested level, by varying between the two pre-set levels (see picture A).

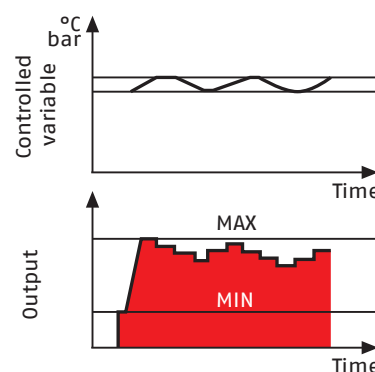
In "modulating" operation, normally required in steam generators, in superheated boilers or diathermic oil burners, a specific regulator and probes are required. These are supplied as accessories that must be ordered separately. The burner can work for long periods at intermediate output levels (see picture B).

"TWO-STAGE PROGRESSIVE" OPERATION



Picture A

"MODULATING" OPERATION

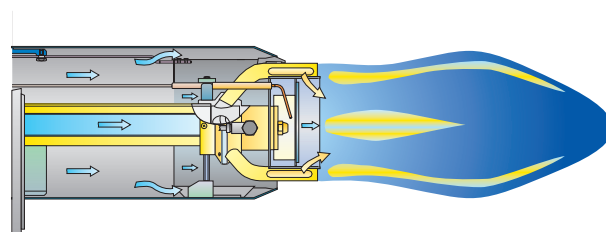


Picture B

Safe and Green

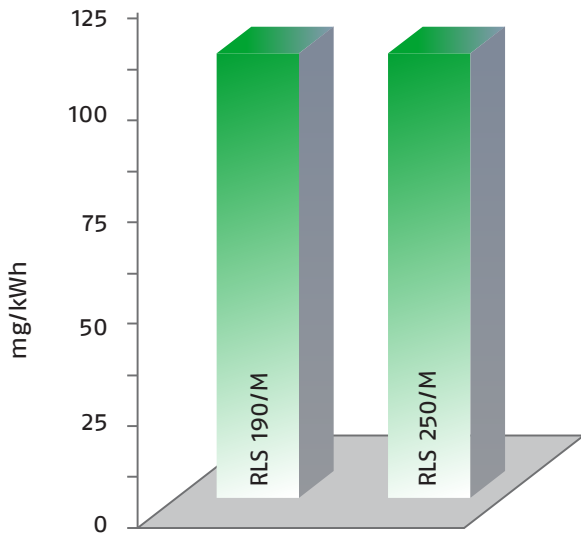
In the RLS/M MX burners part of the gas is distributed through outlets which are perpendicular to the air flow, while the remaining gas is injected directly into the centre of the flame.

This prevents no homogeneous concentrations in the flame with areas of high oxidation, producing very stable flame with gradual and progressive combustion as the flame develops, thus giving polluting emission values below even the most restrictive norm values.

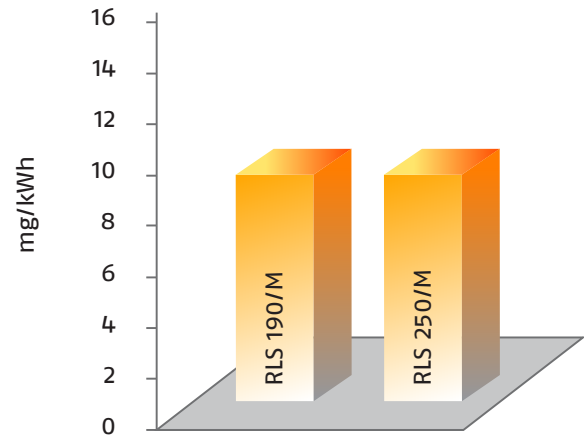


Emission

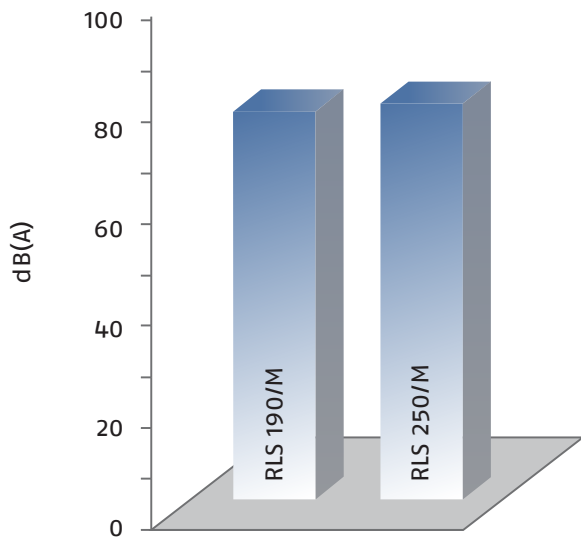
NO₂ EMISSIONS (gas G20)



CO EMISSIONS (gas G20)



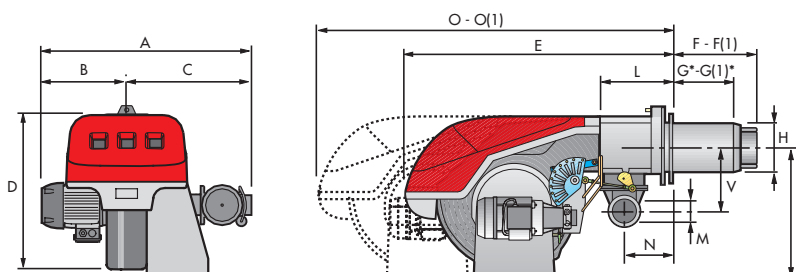
NOISE EMISSIONS



The noise emissions have been measured at the maximum output.

Overall Dimensions (mm)

BURNERS

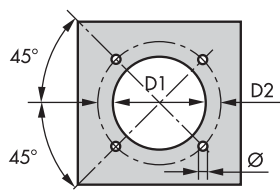


MODEL	A	B	C	D	E	F - F(1)	G* - G(1)*	H	I	L	M	N	O - O (1)	V
RLS 190/M MZ	843	366	477	555	863	412 - 542	272 - 402	222	430	237	2"	141	1442 - 1587	186
RLS 250/M MZ	904	427	477	555	863	412 - 542	272 - 402	222	435	237	2"	141	1442 - 1587	186

(1) Length with extended combustion head.

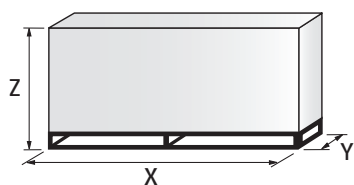
* Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

BURNER - BOILER MOUNTING FLANGE



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

PACKAGING



MODEL	X (1)	Y	Z	kg
RLS 190/M MZ	1400	975	645	95
RLS 250/M MZ	1400	1000	765	100

(1) Length with standard and extended combustion head.

Burner Accessories

Nozzles type 60° B



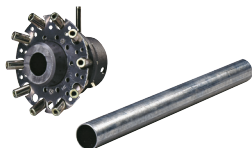
The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

NOTE: each burner needs N° 2 nozzles.

BURNER	RATED DELIVERY kg/h (*)	GPH	NOZZLE
RLS 190/M MZ	42,4	10,00	3042292
	46,7	11,00	3042312
	48,37	12,00	3042322
	52,79	13,00	3042332
	56,86	14,00	3042352
	60,92	15,00	3042362
	64,98	16,00	3042382
RLS 190/M MZ RLS 250/M MZ	69,04	17,00	3042392
	73,10	18,00	3042412
	77,16	19,00	3042422
	81,22	20,00	3042442
	89,34	22,00	3042462
	97,47	24,00	3042472
	101,53	26,00	3042482
RLS 250/M MZ	105,59	28,00	20018051
	122	30,00	3042502
	130,1	32,00	3042512
	142,1	35,00	3042522

(*) Nozzle rated delivery is referred to atomized pressure

LPG kit

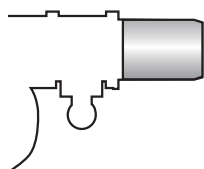


For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner, as given in the following table:

BURNER	KIT CODE FOR "STANDARD HEAD" (*)	KIT CODE FOR "EXTENDED HEAD" (*)
RLS 190/M MZ	3091796	3091796
RLS 250/M MZ	in progress	in progress

(*) Without CE certification

Extended head kit

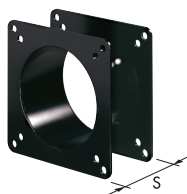


"Standard head" burners can be transformed into "extended head" versions, by using the special kit. The kits available for the various burners, giving the original and the extended lengths, are listed below.

BURNER	STANDARD HEAD LENGTH (mm)	EXTENDED HEAD LENGTH (mm)	KIT CODE
RLS 190/M MZ	412	542	3010440 *
RLS 250/M MZ	412	542	20029376

* Kit to be used on burners recognizable by a serial number that is over or equal to 02426XXXXXX, for burners with a serial number that is under or equal to 02416XXXXXX please use the Kit coded 3010366

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
RLS 190/M - 250/M MZ	102	3000722

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
RLS 190/M - 250/M MZ	3010094

Accessories for modulating operation

REGULATOR



To obtain modulating operation, the RLS/M MZ series of burners requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range.

BURNER	TYPE	CODE
RLS 190/M - 250/M MZ	RWF 50.2	20099869
	RWF 55.5	20099905

PROBE



The relative temperature or pressure probes fitted to the regulator must be chosen on the basis of the application.

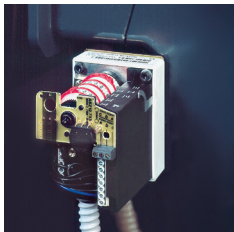
TYPE	RANGE (°C) (bar)	CODE
Temperature PT 100	-100 ÷ 500°C	3010110
Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214
Pressure 4 ÷ 20 mA	0 ÷ 25 bar	3090873

ANALOG CONTROL SIGNAL CONVERTER



BURNER	TYPE (INPUT SIGNAL)	CODE
RLS 190/M - 250/M MZ	0/2 - 10 V (impedance 200 KΩ) 0/4 - 20 mA (impedance 250 Ω)	3010415

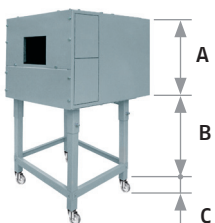
POTENTIOMETER KIT



Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor. The KITS available for the various burners are listed below.

BURNER	KIT CODE
RLS 190/M - 250/M MZ	3010416

Sound proofing box



If noise emission needs reducing even further, sound-proofing boxes are available.

In case of generator heights, where a lower dimension "B" is required, ask for the Box Support Kit code 20065135.

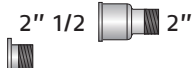

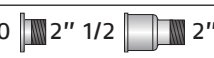
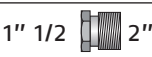
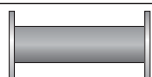
BURNER	BOX TYPE	A (mm)	B (mm) min-max	C (mm)	[dB(A)] (*)	BOX CODE
RLS 190-250/M MZ	C4/5	850	160 - 980	110	10	3010404

(*) Average noise reduction according to EN 15036-1 standard

Gas Train Accessories

Adapters

In certain cases, an adapter must be fitted between the gas train and the burner, when the diameter of the gas train is different from the set diameter of the burner. Below are given the available adapters; please see on the Gas Train list the correct adapter codes to select.

ADAPTER	LENGTH mm	ADAPTER CODE
DN 65 	300	3000825
DN 80 	300	3000826
	300	3000826
	35	3000843
	320	3010224

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 seal control is type VPS 504.

GAS TRAIN	KIT CODE	
	FOR 50 Hz OPERATION	FOR 60 Hz OPERATION
MB/1 type	3010123	20050030
MBC/1 type	3010367	20029057
CB/1 type	3010367	20029057

Stabiliser spring



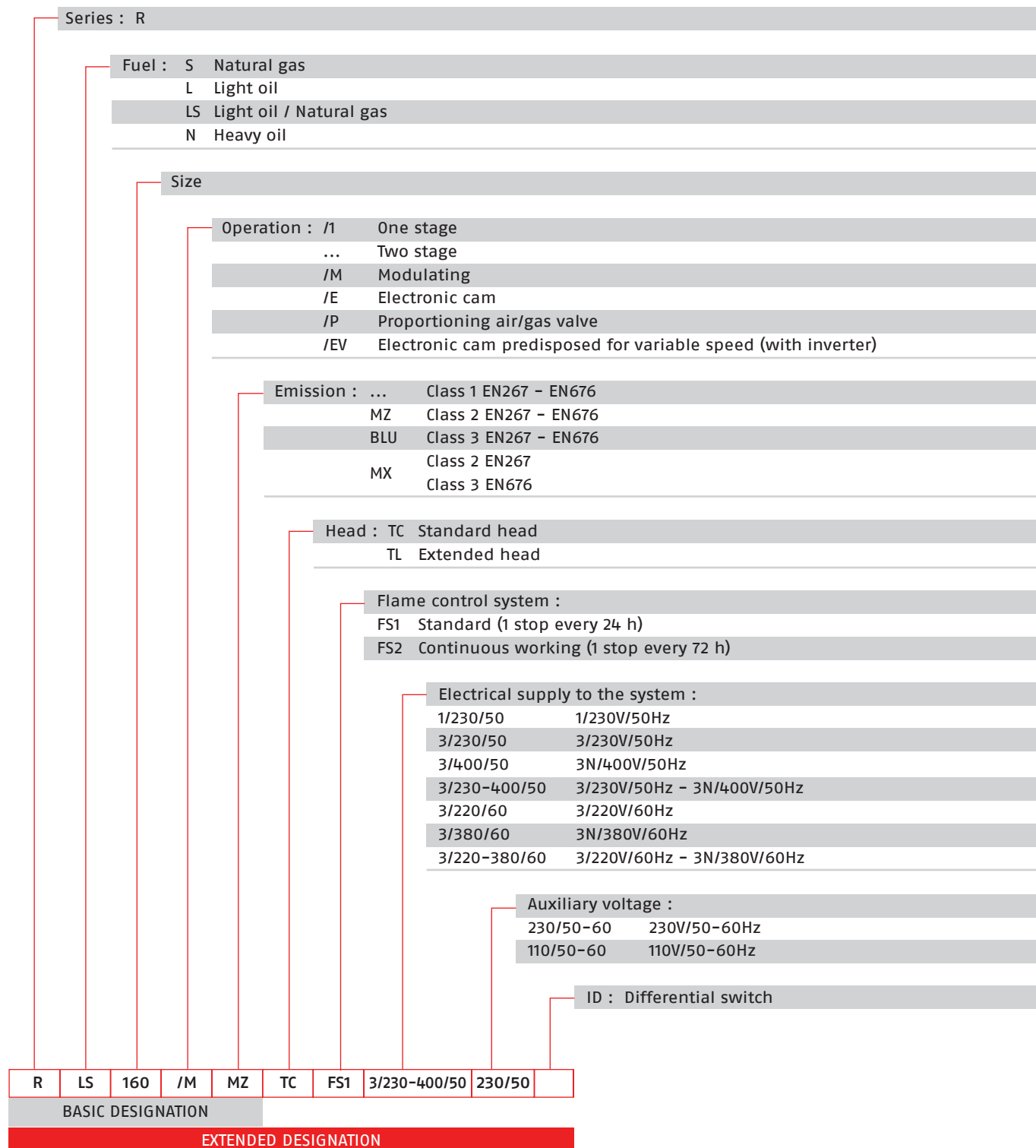
Accessory springs are available to vary the pressure range of the gas train stabilisers.

The following table shows these accessories with their application range. Please refer to the technical manual for the correct choice of spring.

GAS TRAIN	SPRING COLOUR	SPRING PRESSURE RANGE mbar	SPRING CODE
MBC 1900/1 - 3100/1 MBC 5000/1	White	4 - 20	3010381
	Red	20 - 40	3010382
	Black	40 - 80	3010383
	Green	80 - 150	3010384
CB 512/1	Red	25 - 55	3010131
	Black	60 - 110	3010157
	Pink	90 - 150	3090486
CB 520/1 - 525/1	Red	25 - 55	3010132
	Black	60 - 110	3010158
	Pink	90 - 150	3090487
CB 5065/1 - 5080/1	Red	25 - 55	3010133
	Black	60 - 110	3010135
	Pink	100 - 150	3090456
	Grey	140 - 200	3090992
CB 50100/1	Red	25 - 55	3010134
	Black	60 - 110	3010136
	Pink	100 - 150	3090489
	Grey	140 - 200	3092174
CB 50125/1	Red	25 - 55	3010315
	Yellow	30 - 70	3010316
	Black	60 - 110	3010317
	Pink	100 - 150	3010318

Specification

DESIGNATION OF SERIES



Available burner models

RLS 190/M MZ	TC	FS1	3/400/50	230/50-60
RLS 190/M MZ	TC	FS1	3/230/50	230/50-60
RLS 250/M MZ	TC	FS1	3/400/50	230/50-60
RLS 250/M MZ	TC	FS1	3/230/50	230/50-60

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm²/s (cSt).

Net calorific value G20 gas: 10 kWh/Nm³; 8.600 kcal/Nm³ - Density: 0,71 kg/Nm³.

The burners of RLS/M MZ series are in according to 2009/142/EC - 2014/30/UE - 2014/35/UE - 2006/42/EC Directives and EN 267 - 676 Norm.

Product specification

Monoblock forced draught dual fuel burner with two stage operation at the oil side and two stage progressive or modulating operation at the gas side, with a specific kit, fully automatic, made up of:

- air suction circuit lined with sound-proofing material
- centrifugal fan with high performance and low sound emissions
- air damper for air flow setting and butterfly valve for regulating gas output controlled by a servomotor with variable cam
- starting motor at 2800 rpm, three-phase 400V with neutral, 50Hz
- low emission combustion head, that can be set on the basis of required output, fitted with:
 - stainless steel end cone, resistant to corrosion and high temperatures
 - ignition electrodes
 - gas distributor
 - flame stability disk
- maximum gas pressure switch to stop the burner in the case of excess pressure on the fuel supply line
- minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- gears pump for high pressure fuel supply
- pump starting motor
- oil safety valves
- two oil valves (1st and 2nd stage)
- burner safety control box
- UV photocell for flame detection
- burner on/off selection switch
- manual or automatic output increase/decrease selection switch
- Oil/Gas selector
- flame inspection window
- slide bars for easier installation and maintenance
- protection filter against radio interference
- IP 44 electric protection level.

Conforming to:

- 2014/30/UE directive (electromagnetic compatibility)
- 2014/35/UE directive (low voltage)
- 2009/142/EC directive (gas)
- 2006/42/EC directive (machine)
- EN 676 (gas burners)
- EN 267 (light oil burners)

Standard equipment:

- 1 gas train flange
- 1 flange gasket
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for connection to the pump with gaskets
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

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

05/2016
TS0069UK03



[1]

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.



[2]

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.

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

[2] HEADQUARTER BURNERS DIVISION
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