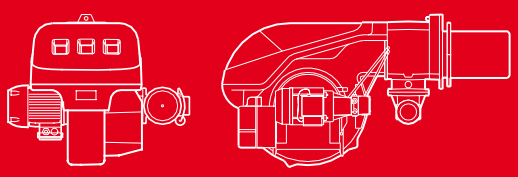
RLS Series

Two Stage Dual Fuel Burners

RLS 28	100/163	÷	325 kW
RLS 38	116/232	÷	442 kW
RLS 50	145/290	÷	581 kW
RLS 70	232/465	÷	814 kW
RLS 100	349/698	÷	1163 kW
RLS 130	465/930	÷	1395 kW



Energy For Life

The RLS series of burners covers a firing range from 163 to 1395 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam generators, diathermic oil boilers.
Operation is “two stage”; the burners are fitted with an electronic LED PANEL, which supplies complete indication of burner operation.
Optimisation of sound emissions is guaranteed by the use of fans with reverse curve blades and sound deadening material incorporated in 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			RLS 28	RLS 38	RLS 50
Burner operation mode				Two stage	
Modulating ratio at max. ouput				2:1	
Servomotor	type			LKS 210 - 08	
	run time	s		5	
Heat output		kW	100/163-325	116/232-442	145/290-581
		Mcal/h	86/140-303	100/200-380	125/249-500
Working temperature		°C min/max		0/40	
FUEL/AIR DATA					
Light oil net calorific value		kWh/kg		11,8	
Light oil viscosity at 20°C		mm^2/s (cSt)		4-6	
Light oil output		kg/h	8/14-28	10/20-37	12/25-49
Light oil max temperature		°C		60	
Pump	type			AL 65B	
	output	kg/h		63 (at 15 bar)	
Atomised pressure		bar		12	
Net calorific value G20 gas		kWh/Nm^3		10	
Density gas G20		kg/Nm^3		0,71	
Output gas G20		Nm^3/h	10/16-32,5	12/23-44	14,5/29-58
Net calorific value G25 gas		kWh/Nm^3		8,6	
Density gas G25		kg/Nm^3		0,78	
Output gas G25		Nm^3/h	12/19-38	13/27-51	17/33-68
Net calorific value LPG gas		kWh/Nm^3		25,8	
Density LPG gas		kg/Nm^3		2,02	
Output LPG gas		Nm^3/h	4/6-13	4/9-17	6/11-23
Fan		type		Centrifugal - with reverse curve blades	
Air temperature		max °C		60	
ELECTRICAL DATA					
Electrical supply		Ph/Hz/V	1/50/230 (±10%)		3N/50/230-400 (±10%)
Auxiliary electrical supply		Ph/Hz/V		1/50/230 (±10%)	
Control box		type		LFL 1.333	
Total electrical power		kW	0,53	0,76	0,91
Auxiliary electrical power		kW	0,19	0,25	0,17
Protection level		IP		44	
Fan electrical motor power		kW	0,25	0,42	0,65
Rated fan motor current		A	2,1	2,9	3 -1,7
Fan motor start current		A	4,8	11	13,8-8
Fan motor protection level		IP		44	
Pump electric motor power		kW		0,09	
Rated pump motor current		A		0,8	
Pump motor start current		A	-	-	-
Pump motor protection level		IP		44	
Ignition transformer		V1- V2		230 V - 2 x 5 kV	
		I1 - I2		1,9 A - 30 mA	
Operation				Intermittent (at least one stop every 24h)	
EMISSIONS					
Sound pressure		dBA	68	70	72
Sound power		W	-	-	-
Light oil - CO emissions		mg/kWh		< 20	
Light oil - Grade of smoke indicator		N° Bacharach		< 1	
Light oil - CxHy emissions		mg/kWh		< 10	
Light oil - NOx emissions		mg/kWh		< 190	
G20 gas - CO emission		mg/kWh		< 15	

MODEL		RLS 28	RLS 38	RLS 50
G20 gas - NOx emission	mg/kWh		< 80	
APPROVAL				
Directive			2006/42/EC - 2009/142/EC - 2014/30/UE - 2014/35/UE	
Conforming to			EN 267 - EN 676	
Certifications			CE 0063 AR 4637	

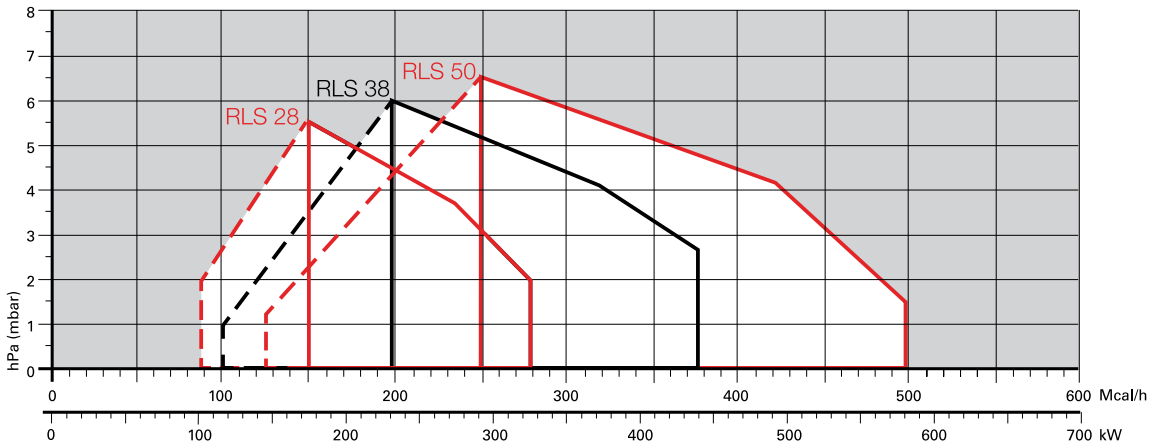
Reference conditions:
Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l.
Sound pressure level measured in manufacturers combustion laboratory, with burner operating on test boiler and at maximum rated output

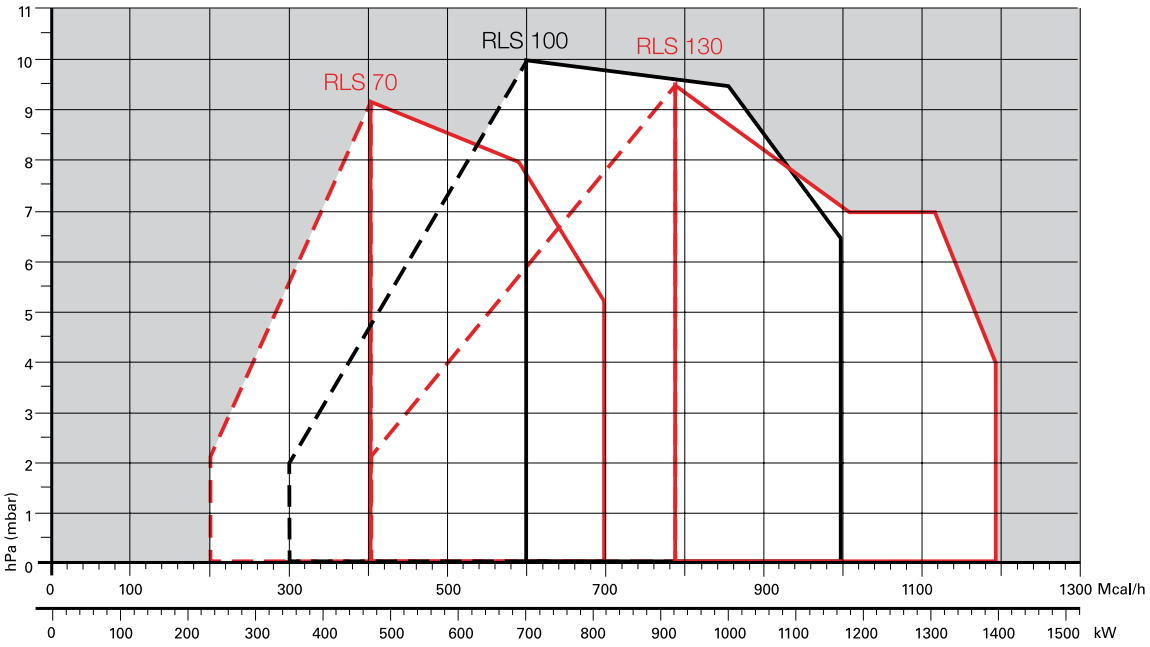
MODEL			RLS 70	RLS 100	RLS 130
Burner operation mode				Two stage	
Modulating ratio at max. ouput				2:1	
Servomotor	type			LKS 210 - 10	
	run time	s		5	
Heat output		kW	232/465-814	349/698-1163	465/930-1395
		Mcal/h	200/400-700	300/600-1000	400/800-1200
Working temperature		°C min/max		0/40	
FUEL/AIR DATA					
Light oil net calorific value		kWh/kg		11,8	
Light oil viscosity at 20°C		mm^2/s (cSt)		4-6	
Light oil output		kg/h	20/39-69	30/59-99	39/79-118
Light oil max temperature		°C		60	
Pump	type			AJ 6CC	
	output	kg/h		134 (at 20 bar)	
Atomised pressure		bar		12	
Net calorific value G20 gas		kWh/Nm^3		10	
Density gas G20		kg/Nm^3		0,71	
Output gas G20		Nm^3/h	23/46,5-81	35/70-116	46,5/93-139,5
Net calorific value G25 gas		kWh/Nm^3		8,6	
Density gas G25		kg/Nm^3		0,78	
Output gas G25		Nm^3/h	27/54-95	41/81-135	54/108-162
Net calorific value LPG gas		kWh/Nm^3		25,8	
Density LPG gas		kg/Nm^3		2,02	
Output LPG gas		Nm^3/h	9/18-32	14/27-45	18/36-54
Fan		type		Centrifugal - with reverse curve blades	
Air temperature		max °C		60	
ELECTRICAL DATA					
Electrical supply		Ph/Hz/V		3N/50/230-400 (±10%)	
Auxiliary electrical supply		Ph/Hz/V		1/50/230 (±10%)	
Control box		type		LFL 1.333	
Total electrical power		kW	1,8	2,2	3
Auxiliary electrical power		kW	0,33	0,33	0,43
Protection level		IP		44	
Fan electrical motor power		kW	1,1	1,5	2,2
Rated fan motor current		A	4,8 - 2,8	5,9 - 3,4	8,8 - 5,1
Fan motor start current		A	22,6 -13,2	29,5 -17	52,8 - 30,6
Fan motor protection level		IP	55	54	
Pump electric motor power		kW		0,37	
Rated pump motor current		A		2,4	
Pump motor start current		A	-	-	-
Pump motor protection level		IP		44	
Ignition transformer		V1- V2		230 V - 2 x 5 kV	
		I1 - I2		1,9 A - 30 mA	
Operation				Intermittent (at least one stop every 24h)	

MODEL		RLS 70	RLS 100	RLS 130
EMISSIONS				
Sound pressure	dBA	74	77,5	80
Sound power	W	-	-	-
Light oil - CO emissions	mg/kWh		< 20	
Light oil - Grade of smoke indicator	N° Bacharach		< 1	
Light oil - CxHy emissions	mg/kWh		< 10	
Light oil - NOx emissions	mg/kWh		< 190	
G20 gas - CO emission	mg/kWh		< 15	
G20 gas - NOx emission	mg/kWh		< 80	
APPROVAL				
Directive		2006/42/EC - 2009/142/EC - 2014/30/UE - 2014/35/UE		
Conforming to		EN 267 - EN 676		
Certifications		CE 0063 5G 835/97 M		

Reference conditions:
Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l.
Sound pressure level measured in manufacturers combustion laboratory, with burner operating on test boiler and at maximum rated output

Firing rates





Useful working field for choosing the burner

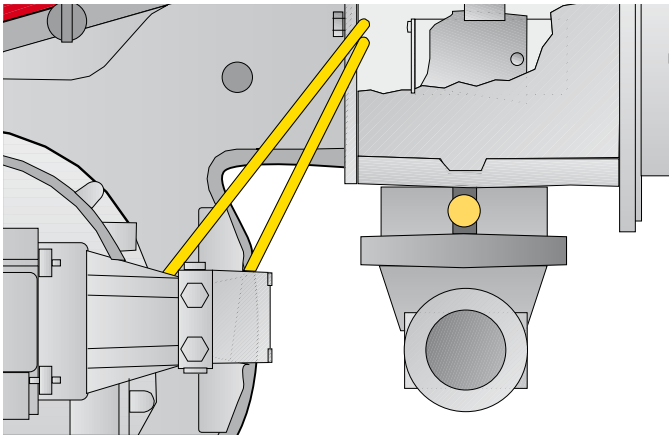
Modulation range

Test conditions conforming to EN267-EN676
Temperature: 20°C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

Fuel Supply

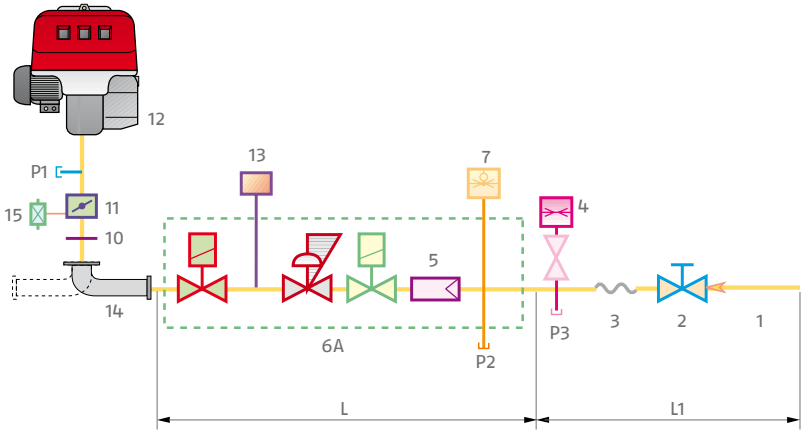
GAS TRAINS

The gas trains are fitted with a regulating valve to adjust fuel delivery in relation to heat required. This valve is controlled by the two-stages device fitted on the burner.
Fuel can be supplied either from the right or left sides, on the basis of the application requirements.
A maximum gas pressure switch stops the burner in case of excess of pressure in the supply 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 trains can be "Multibloc" type (containing the main components in a single unit) or "Composed" type (assembly of the single components).

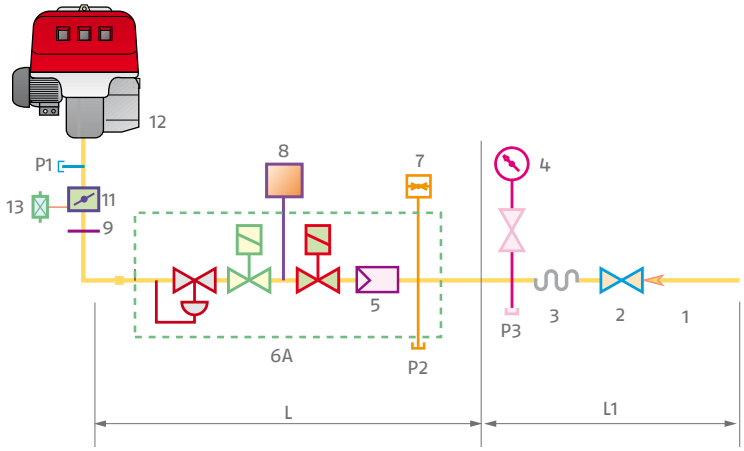


Example of gas inlet pipe burners for RLS 70-100-130

MB "THREADED"

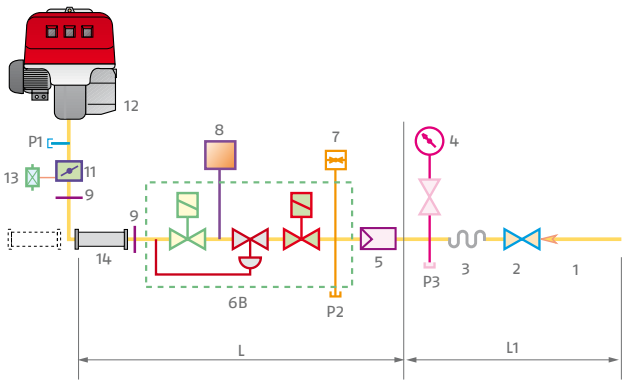


MBC "THREADED"

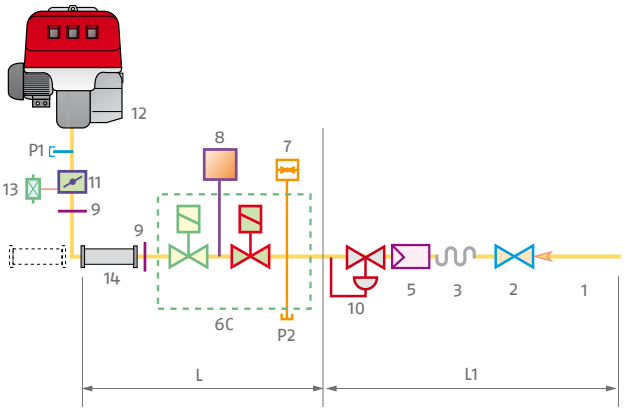


1	Gas input pipework
2	Manual valve
3	Anti-vibration joint
4	Pressure gauge with pushbutton cock
5	Filter
6A	Includes:
	- filter
	- operation valve
	- safety valve
	- pressure adjuster
6B	Includes:
	- operation valve
	- safety valve
	- pressure adjuster
6C	Includes:
	- safety valve
	- operation valve
6D	Includes:
	- safety valve
	- operation valve
	- pressure adjuster
	- filter
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 train-burner adaptor, supplied separately
12	Burner
13	Maximum gas pressure switch
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' responsability

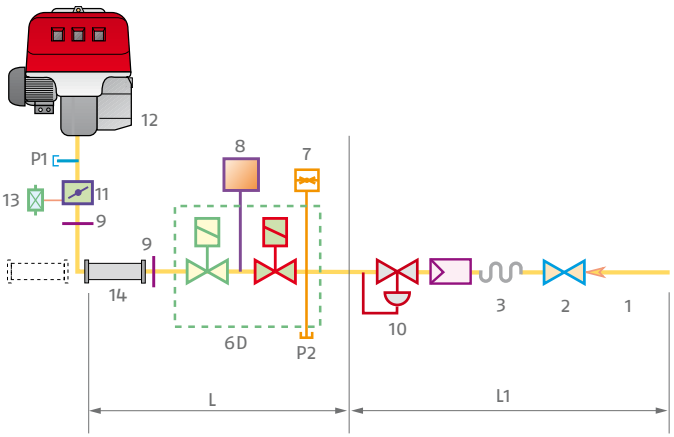
MBC "FLANGED"



DMV "FLANGED OR THREADED"



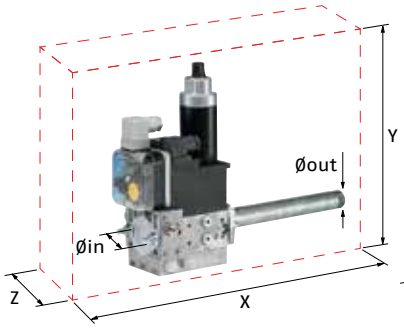
CB "FLANGED OR THREADED"



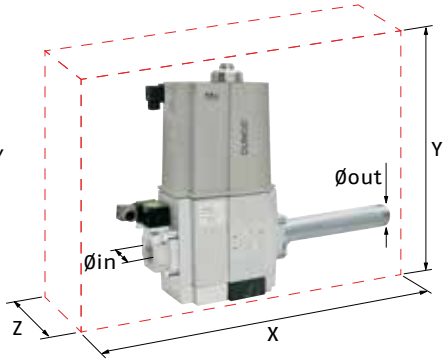
1	Gas input pipework
2	Manual valve
3	Anti-vibration joint
4	Pressure gauge with pushbutton cock
5	Filter
6A	Includes:
	- filter
	- operation valve
	- safety valve
	- pressure adjuster
6B	Includes:
	- operation valve
	- safety valve
	- pressure adjuster
6C	Includes:
	- safety valve
	- operation valve
6D	Includes:
	- safety valve
	- operation valve
	- pressure adjuster
	- filter
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 train-burner adaptor, supplied separately
12	Burner
13	Maximum gas pressure switch
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' responsability

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

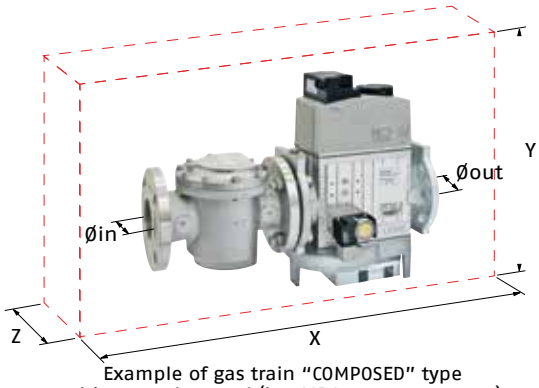
The overall dimensions of the gas train depends on how they are constructed. The following table shows the maximum dimensions of the gas trains that can be fitted to RLS burners, intake and outlet diameters and seal control if fitted.
Please note that the seal control can be installed as an accessory, if not already installed on the gas train.
The maximum gas pressure of gas train "Multibloc" type is 300 mbar, and that one of gas train "Composed" type is 500 mbar.



Example of gas train "MULTIBLOC" type MB

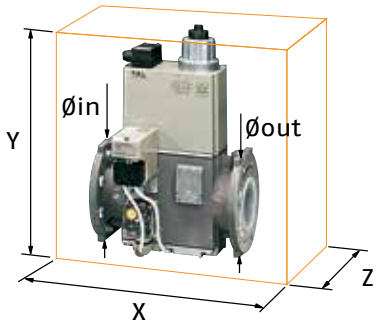


Example of gas train "MULTIBLOC" type without seal control (i.e. MBC 1200)



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 405/1 - RT 20	3970500	Rp ¾"	Rp ¾"	371	186	92
MB 407/1 - RT 20	3970553	Rp ¾"	Rp ¾"	371	196	92
MB 407/1 - RT 52	3970599	Rp ¾"	Rp ¾"	371	196	92
MB 407/1 - RSM 20	3970229	Rp ¾"	Rp ¾"	371	196	92
MB 410/1 - RT 52	3970258	Rp 1" ½	Rp 1" ½	405	217	116
MB 410/1 - RT 20	3970554	Rp ¾"	Rp ¾"	405	217	116
MB 410/1 - RT 52	3970600	Rp ¾"	Rp ¾"	405	217	116
MB 410/1 - RSM 20	3970230	Rp ¾"	Rp ¾"	405	221	116
MB 412/1 - RT 52	3970256	Rp 1" ½	Rp 1" ½	433	217	116
MB 412/1 - RT 20	3970144	Rp 1" ½	Rp 1" ½	433	217	116
MB 412/1 CT RT 20	3970197	Rp 1" ½	Rp 1" ½	523	217	116
MB 412/1 - RSM 20	3970231	Rp 1" ½	Rp 1" ½	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

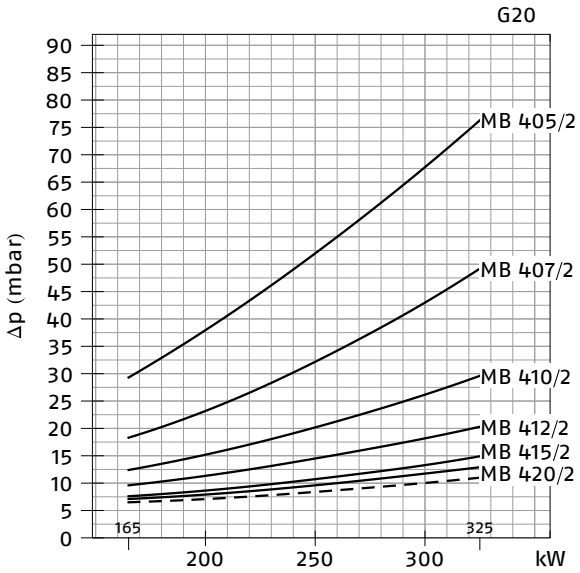
GAS TRAIN						
MODEL	CODE	Ø in	Ø out	X mm	Y mm	Z mm
CB 512/1 - RSM 30	3970145	Rp 1-1/2"	Rp 1-1/2"	891	261	245
CB 512/1 - CT RSM 30	20045589	Rp 1-1/2"	Rp 1-1/2"	891	261	245
CB 520/1 - RSM 30	3970146	Rp 2"	Rp 2"	986	328	255
CB 520/1 - CT RSM 30	3970160	Rp 2"	Rp 2"	986	328	255
CB 525/1 - RSM 30	20044659	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

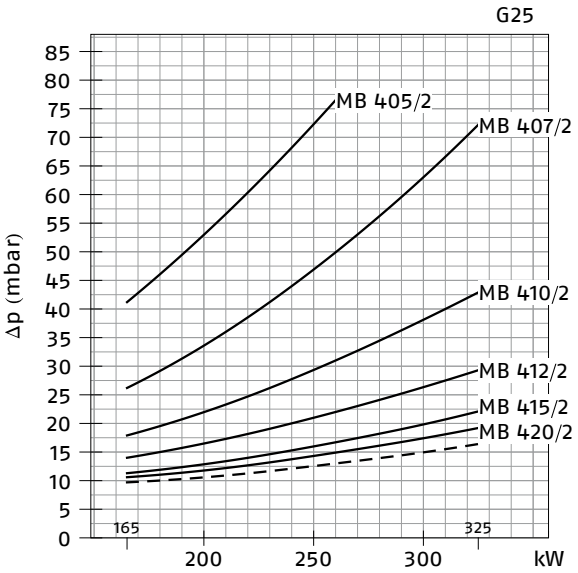
GAS TRAIN						
MODEL	CODE	Ø in	Ø out	X mm	Y mm	Z mm
DMV 512/1 - RSM - 0	20043035	Rp 1-1/2"	Rp 1-1/2"	490	292	245
DMV 512/1 -CT RSM - 0	20043036	Rp 1-1/2"	Rp 1-1/2"	490	292	245
DMV 512/1 - CQ RSM - 2	20043037	Rp 1-1/2"	Rp 1-1/2"	490	292	245
DMV 520/1 - RSM - 0	20043038	Rp 2"	Rp 2"	490	292	255
DMV 520/1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

RLS 28 (NATURAL GAS)





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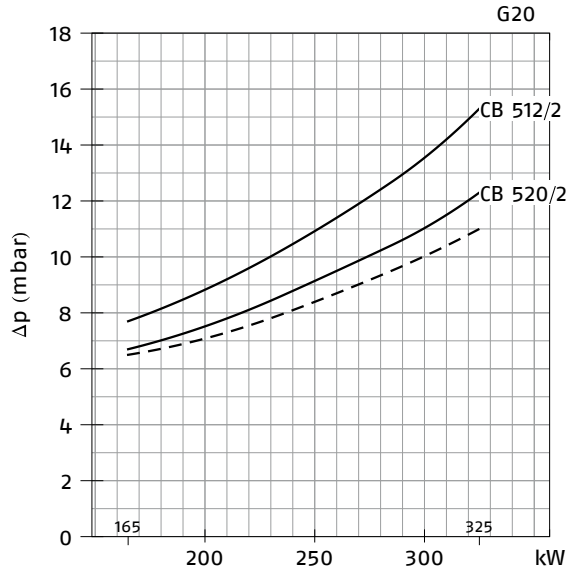
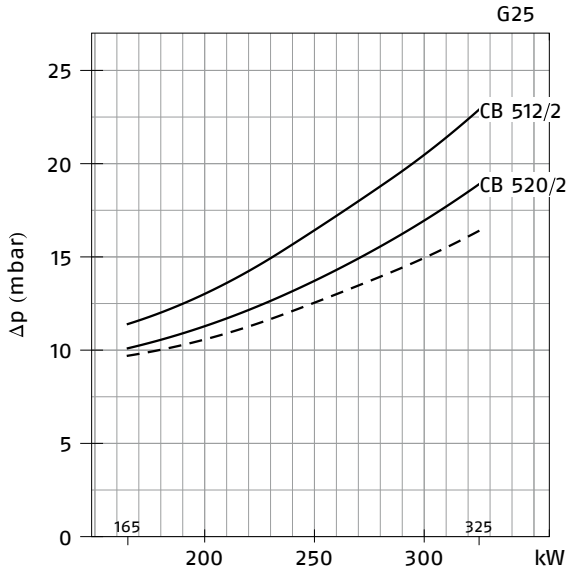
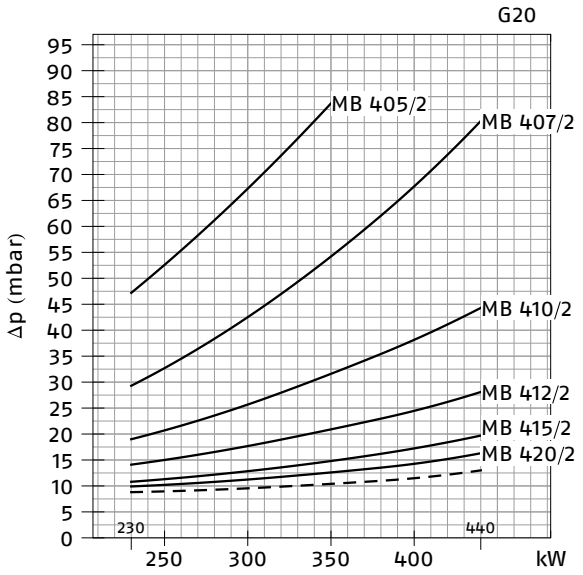
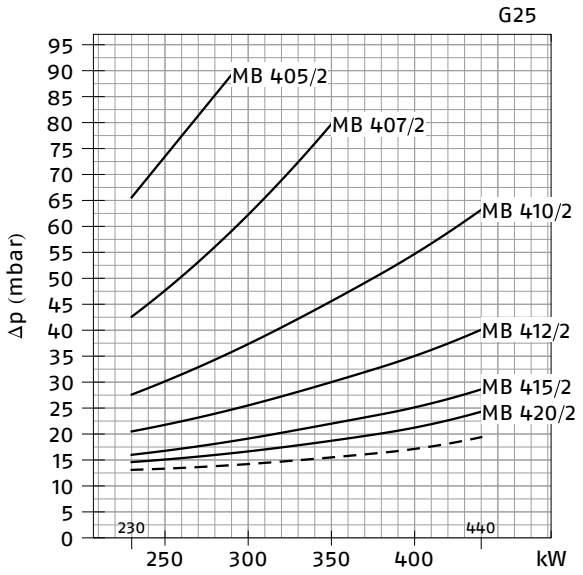




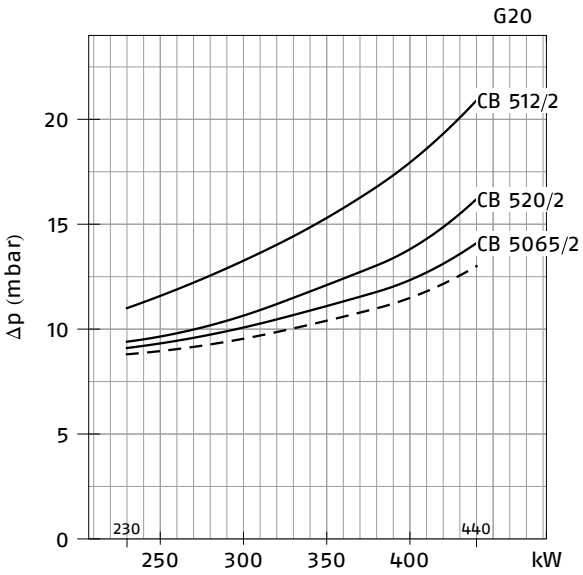
Combustion head + gas butterfly valve + gas train
Combustion head + gas butterfly valve

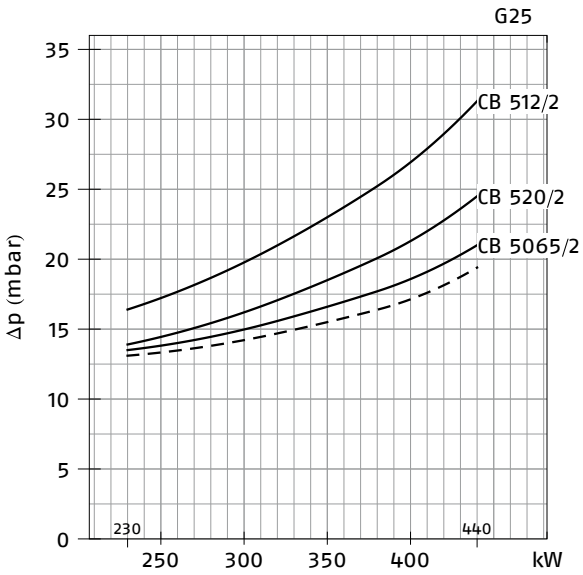
RLS 38 (NATURAL GAS)





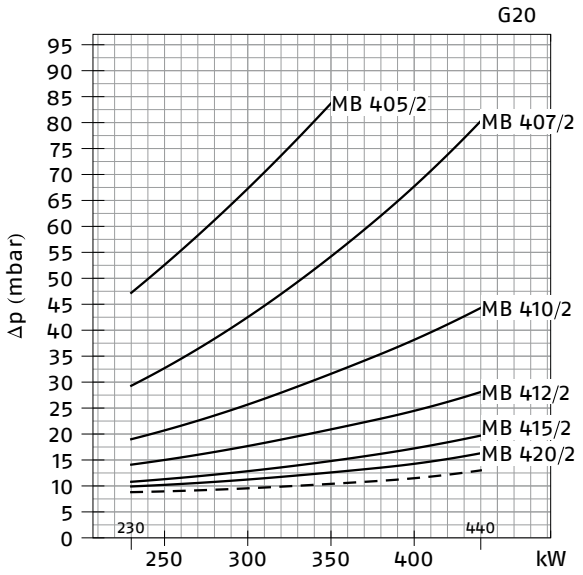
RLS 38 (NATURAL GAS)

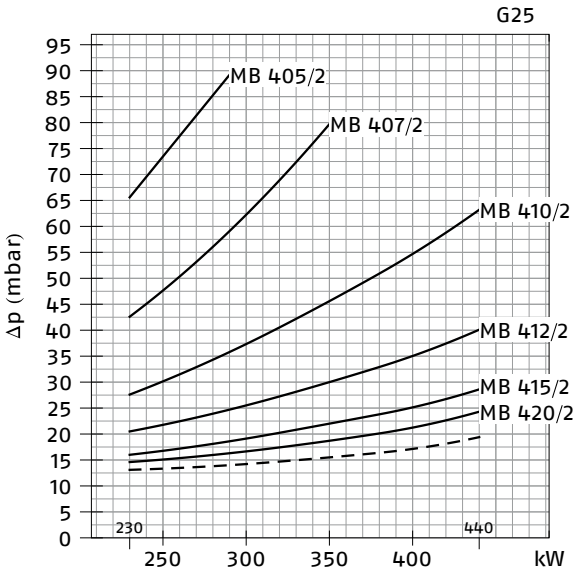




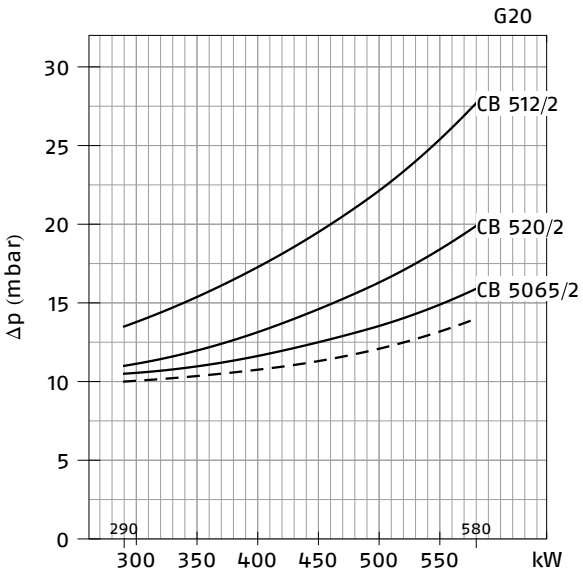
Combustion head + gas butterfly valve + gas train
Combustion head + gas butterfly valve

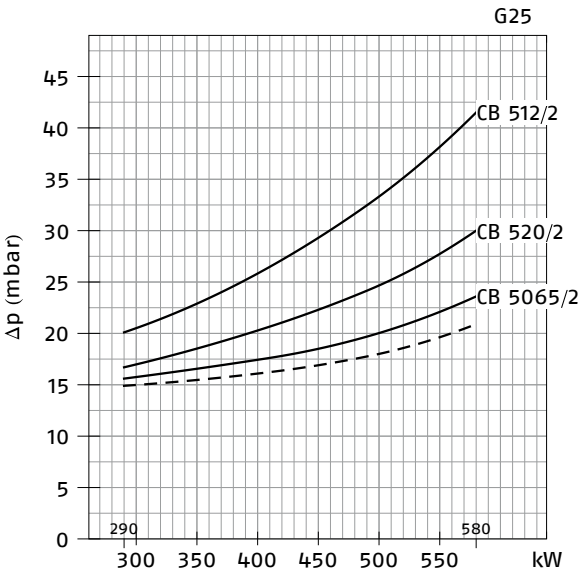
RLS 50 (NATURAL GAS)





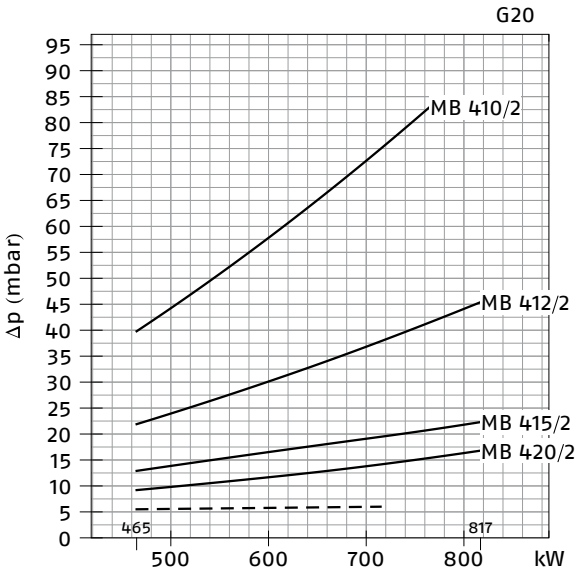
RLS 50 (NATURAL GAS)

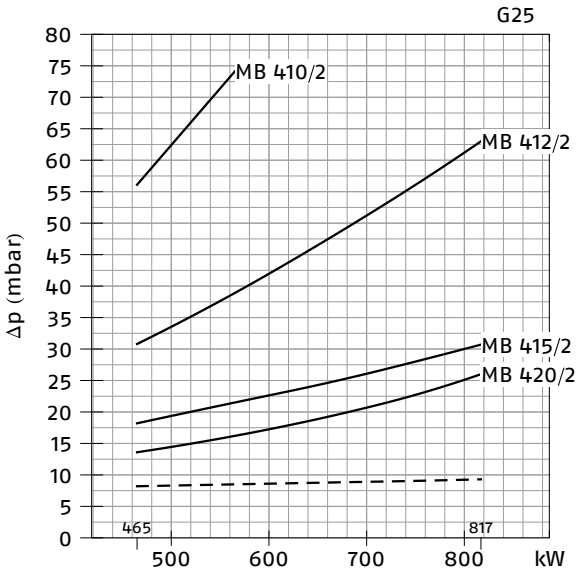




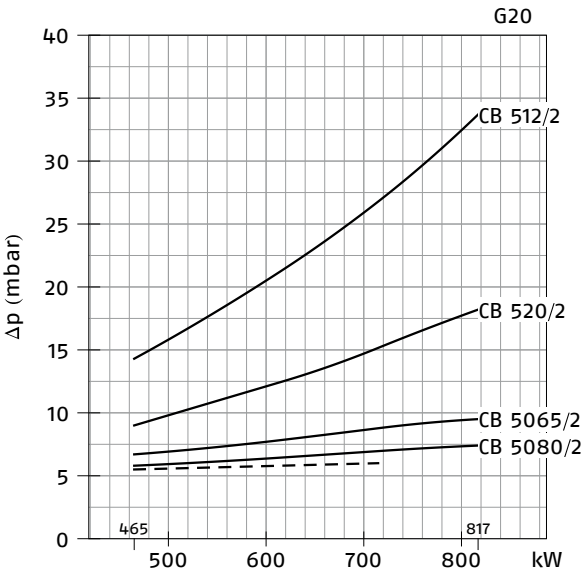
Combustion head + gas butterfly valve + gas train
Combustion head + gas butterfly valve

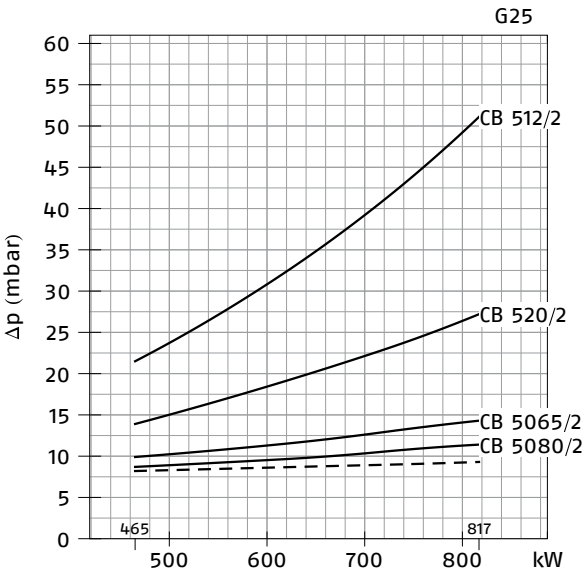
RLS 70 (NATURAL GAS)





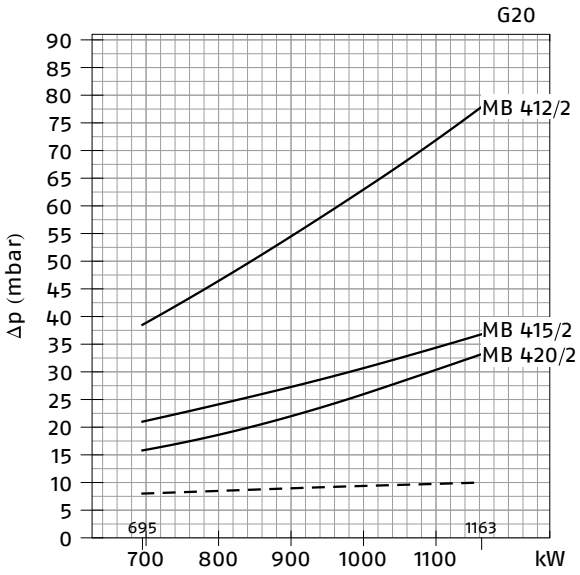
RLS 70 (NATURAL GAS)

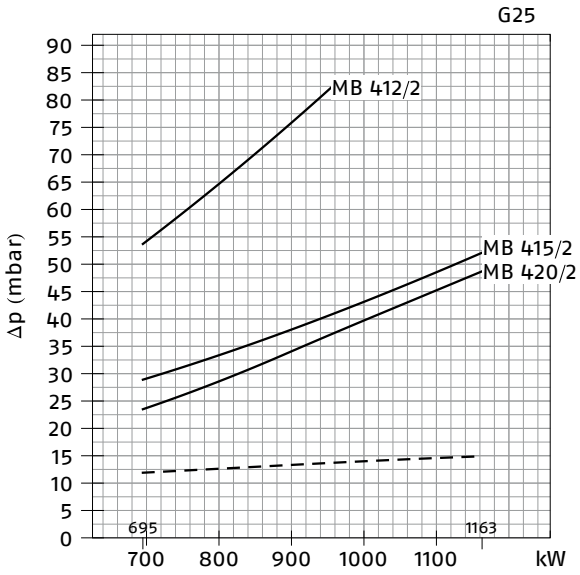




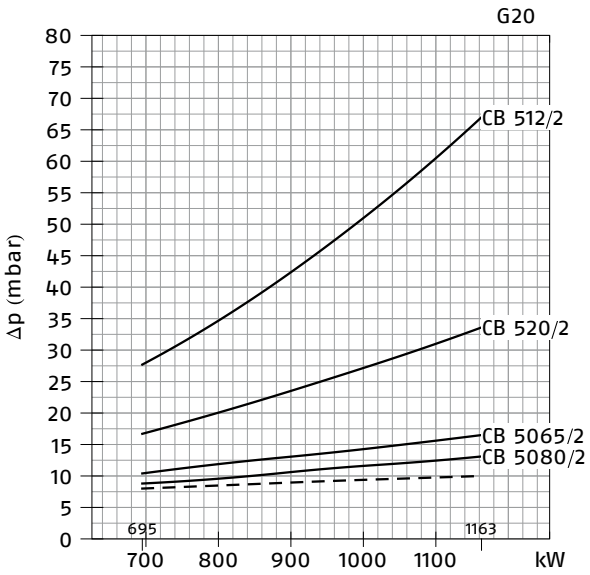
Combustion head + gas butterfly valve + gas train
Combustion head + gas butterfly valve

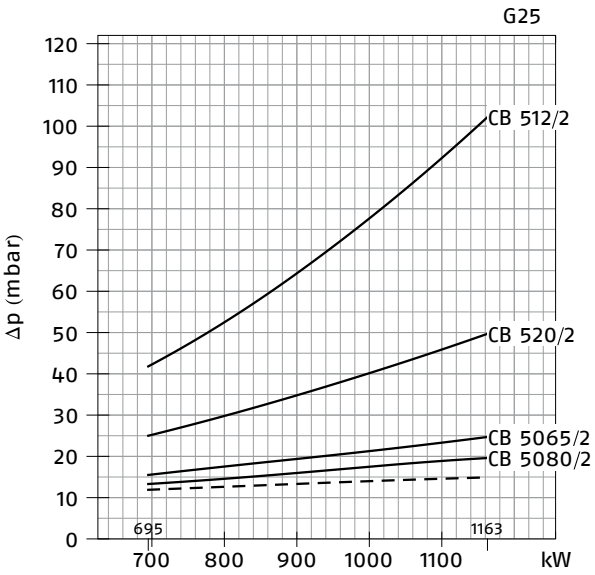
RLS 100 (NATURAL GAS)





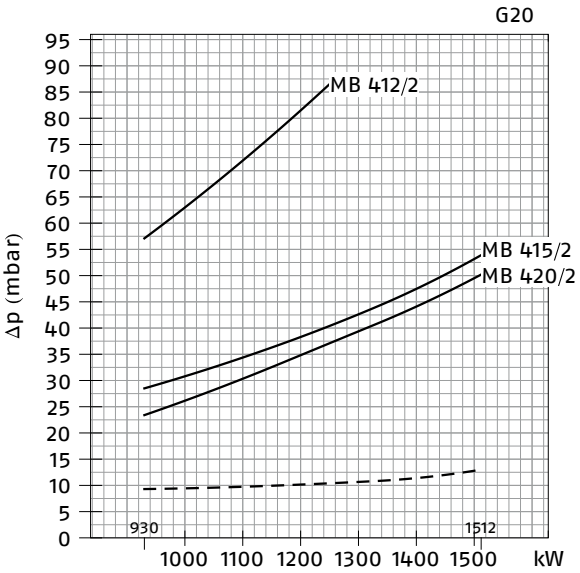
RLS 100 (NATURAL GAS)

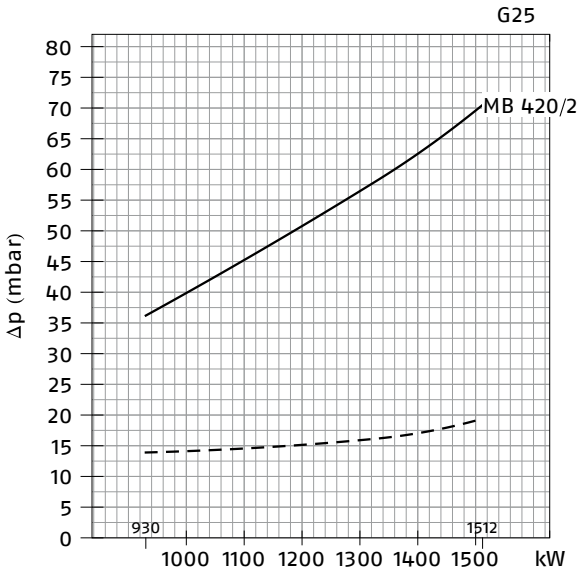




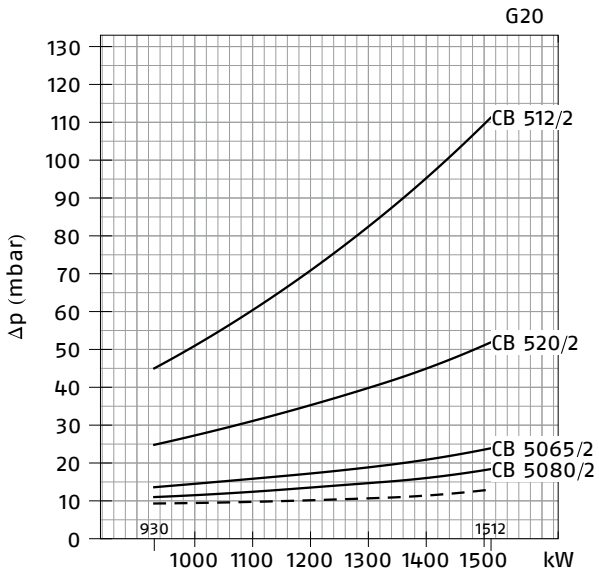
Combustion head + gas butterfly valve + gas train
Combustion head + gas butterfly valve

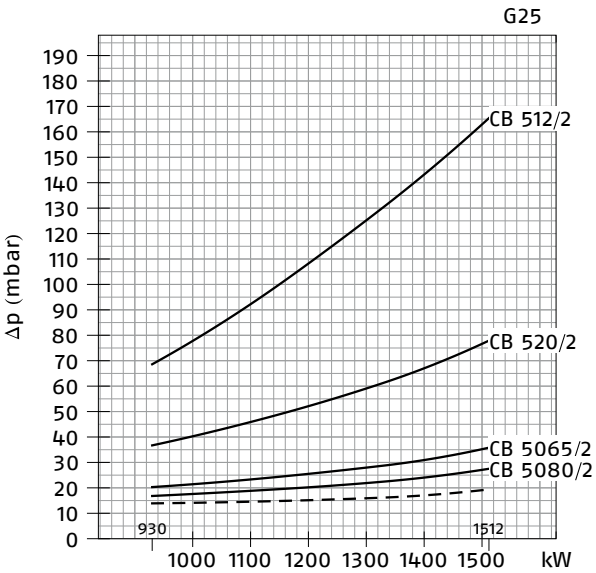
RLS 130 (NATURAL GAS)





RLS 130 (NATURAL GAS)



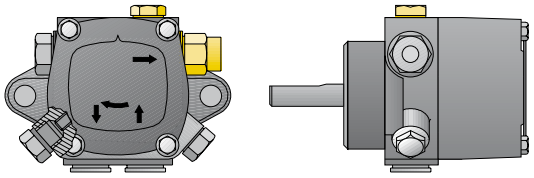


Combustion head + gas butterfly valve + gas train
Combustion head + gas butterfly valve

GAS TRAIN	ADAPTER CODE			
MODEL	RLS 28	RLS 38-50	RLS 70	RLS 100-130
MB 405/2 - RSD 20	20044756		●	●
MB 407/2 - RSD 20	3000824		●	●
MB 407/2 - RT 20			●	●
MB 410/2 - RSD 20			3000824+ 3000843	●
MB 410/2 - RT 20				●
MB 412/2 - RT 20	-	-	3000843	
MB 415/2 - RT 20	-	-		
MB 420/2 - RT 20	3000822		-	-
MB 420/2 CT RT 20			-	-
CB 512/2 - RT 32	-	-	3000843	
CB 512/2 CT RT 32	-	-		
CB 520/2 - RT 32	3000822		-	-
CB 520/2 CT RT 32			-	-
CB 5065/2 - FT 32	●	3000825		
CB 5065/2 CT FT 32	●			
CB 5080/2 - FT 32	●	●	3000826	
CB 5080/2 CT FT 32	●	●		

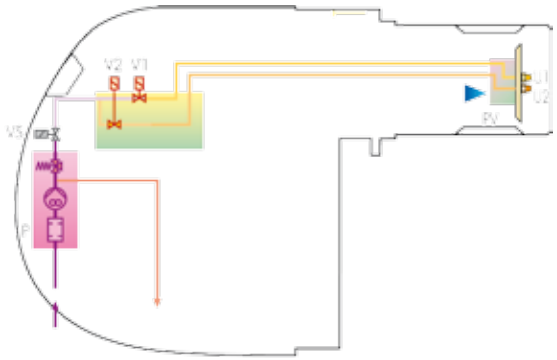
Hydraulic Circuits

The burners are fitted with three valves (a safety valve and two oil delivery valves).
A control device, on the basis of required output, regulates oil delivery valves opening, allowing light oil passage trough the valves and the nozzle.
Delivery valves opening supplies the two-stage hydraulic ram which regulates air delivery in relation to the fuel burnt.
The pumping group is fitted whit a pump, an oil filter and a regulating valve, that adjust atomised pressure.

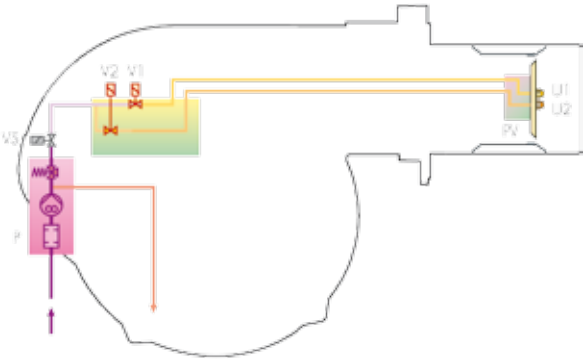


Example of light oil pump of RLS 70-100-130 burners

RLS 28-38-50



RLS 70-100-130



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

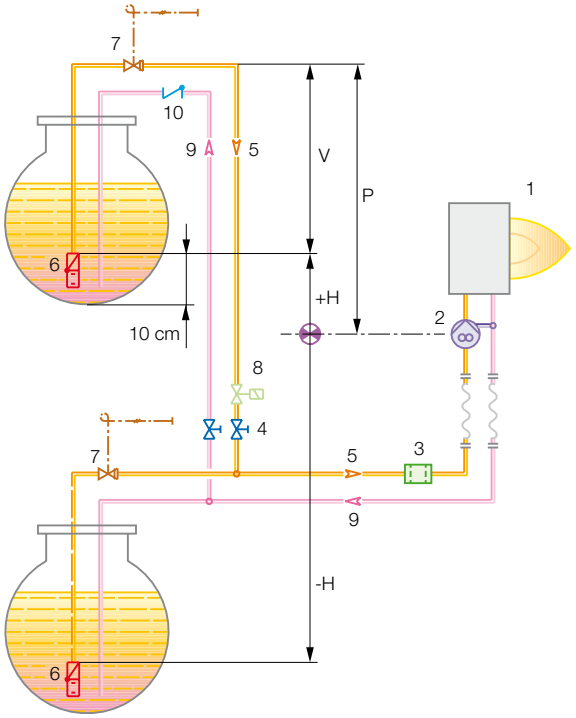
DIMENSIONING OF THE FUEL SUPPLY LINES

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

The table shows the choice of piping diameter for the various burners, 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 28 - 38 - 50			RLS 70 - 100 - 130	
Diameter piping	Ø8 mm	Ø10 mm	Ø12 mm	Ø12 mm	Ø14 mm	Ø16 mm
+H, -H (m)	L max (m)	L max (m)	L max (m)	L max (m)	L max (m)	L max (m)
+4,0	35	90	152	71	138	150
+3,0	30	80	152	62	122	150
+2,0	26	69	152	53	106	150
+1,5	22	54	141	49	98	150
+1,0	21	59	130	44	90	150
+0,5	19	53	119	40	82	150
0	17	48	108	36	74	137
-0,5	15	43	97	32	66	123
-1,0	13	37	83	28	56	109
-1,5	11	32	74	24	49	95
-2,0	9	27	64	19	42	81
-3,0	4	16	42	10	26	53
-4,0	-	6	20	-	10	25

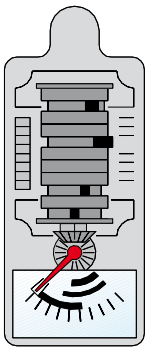


H	Difference in height pump-foot valve
Ø	Internal pipe diameter
P	Height ≤ 10 m
V	Height ≤ 4 m
1	Burner
2	Burner pump
3	Filter
4	Manual shut off valve
5	Suction pipework
6	Bottom valve
7	Remote controlled rapid manual shut off valve (compulsory in Italy)
8	Type approved shut off solenoid valve (compulsory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

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 guarantees low noise levels with high performances in pressure and air delivery, in spite of compact dimensions.
The use of reverse curve blades and sound proofing material keeps noise level very low.
The result is a powerful yet quiet burner with increased combustion performance.
A servomotor allows to have a right air flow in any operation state and the closure of the air damper when burner is in stand-by.



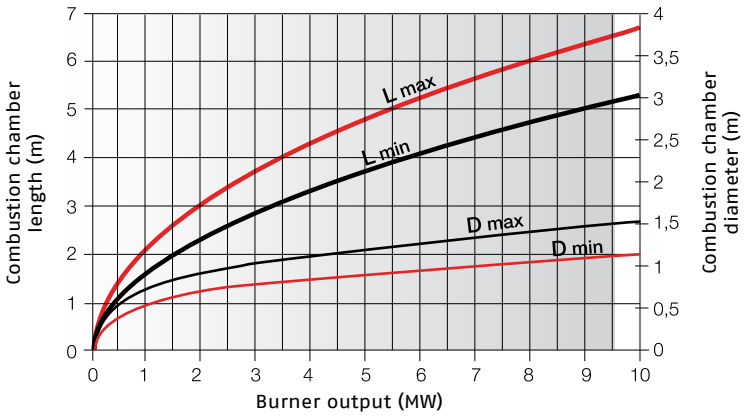
Example of the servomotor for air regulation on RLS 70-100-130 burners.

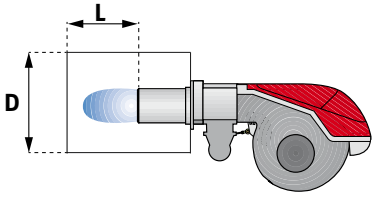
Combustion Head

Different lengths of the combustion head can be supplied (with application of a specific "extended head kit") for the RLS series of burners.
The selection depends on the thickness of the front panel and on 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 position of the combustion head can easily be adjusted to the maximum defined output by regulating a screw fixed to the flange.

Example of RLS 130 burners combustion head.

SUGGESTED COMBUSTION CHAMBER DIMENSIONS





Example:
Burner thermal output = 3500 kW;
L Combustion Chamber (m) = 3,5 m (medium value);
D Combustion Chamber (m) = 1 m (medium value)

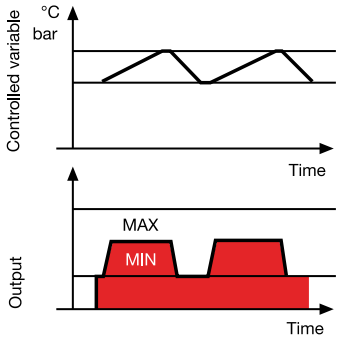
Operation

BURNER OPERATION MODE

With two-stage operation, the RLS series of burners can follow the temperature load requested by the system. A modulation ratio of 2:1 is reached thanks to the nozzles when burner is supplied with light oil and to the two-stage gas train when burner is supplied from gas; the air is adapted to the servomotor rotations.

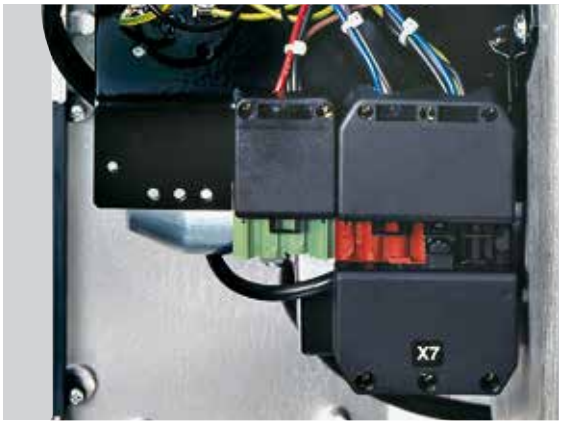
On "two-stage" operation, the burner gradually adjusts output to the requested level, by varying between two pre-set levels.

"TWO STAGE" OPERATION



Burner Wiring

Electrical connections must be made by qualified and skilled personnel, according to the local norms.



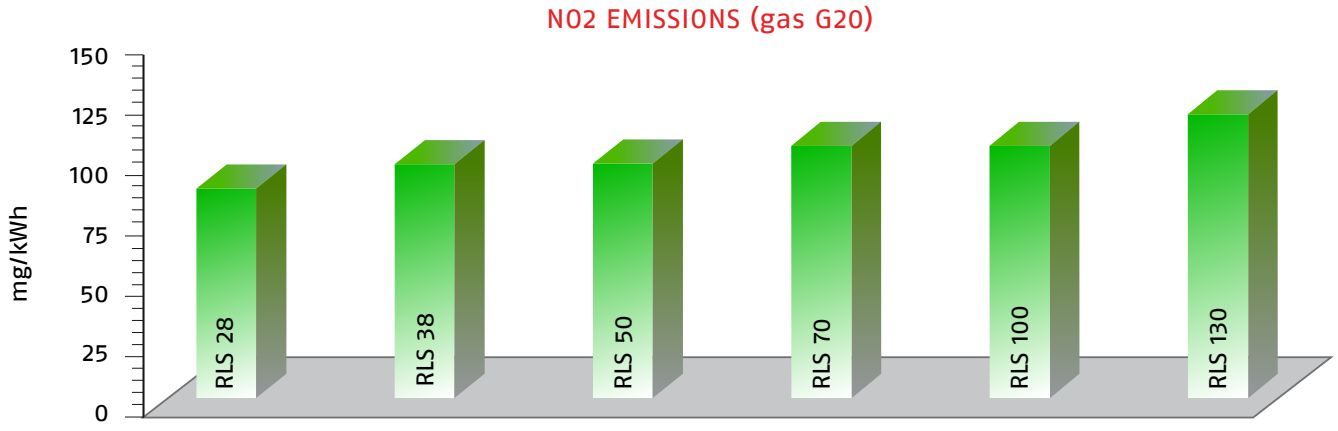
Example of the terminal board for electrical connections for RLS 28-38 burner models

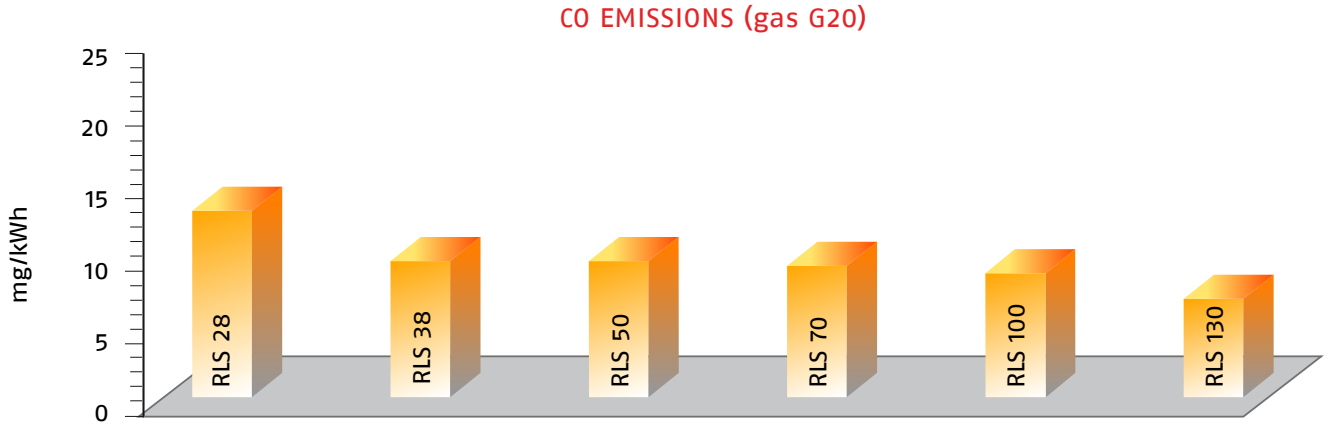
The following table shows the supply lead sections and the type of fuse to be used.

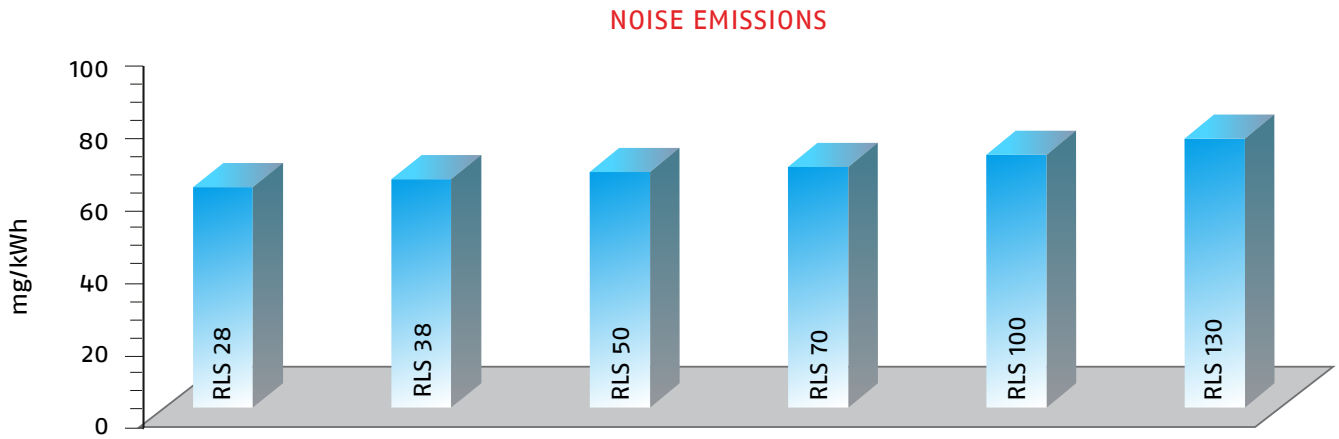
MODEL	V	F (A)	L (mm²)
RLS 28	230	T6	1,5
RLS 38	230	T6	1,5
RLS 50	230	T10	1,5
	400	T6	1,5
RLS 70	230	T10	1,5
	400	T6	1,5
RLS 100	230	T10	1,5
	400	T6	1,5
RLS 130	230	T10	1,5
	400	T6	1,5

V = Electrical supply F = Fuse L = Lead section

Emissions





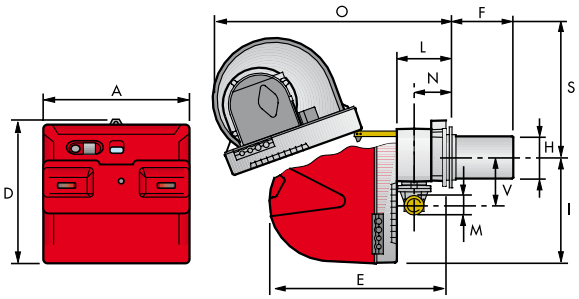


The noise emissions have been measured at the maximum output.

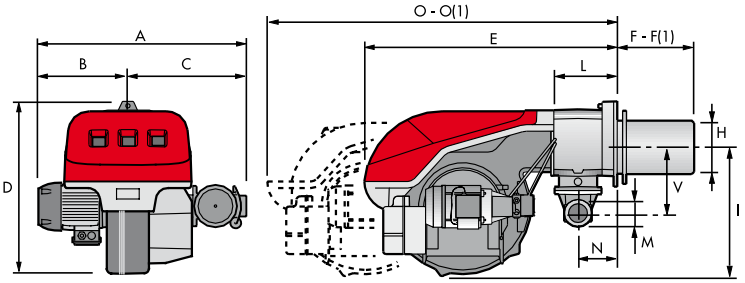
Overall Dimensions (mm)

BURNER

RLS 28 - 38 - 50



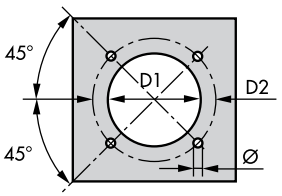
RLS 70 - 100 - 130



MODEL	A	B	C	D	E	F - F(1)	H	I	L	M	N	O - O(1)	S	V
RLS 28	476	-	-	474	580	191 - 326	140	352	164	1"1/2	108	810 - 810	367	168
RLS 38	476	-	-	474	580	201 - 336	152	352	164	1"1/2	108	810 - 810	367	168
RLS 50	476	-	-	474	580	216 - 351	152	352	164	1"1/2	108	810 - 810	367	168
RLS 70	691	296	395	555	840	250 - 385	179	430	214	2"	134	1161 - 1361	-	221
RLS 100	707	312	395	555	840	250 - 385	189	430	214	2"	134	1161 - 1361	-	221
RLS 130	733	338	395	555	840	250 - 385	189	430	214	2"	134	1161 - 1361	-	221

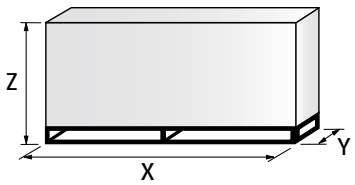
(1) Length with extended combustion head

BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
RLS 28	160	224	M8
RLS 38	160	224	M8
RLS 50	160	224	M8
RLS 70	185	275-325	M12
RLS 100	195	275-325	M12
RLS 130	195	275-325	M12

PACKAGING



MODEL	X	Y	Z	kg
RLS 28	1190	492	510	43
RLS 38	1190	492	510	45
RLS 50	1190	492	510	46
RLS 70	1405	1000	660	70
RLS 100	1405	1000	660	73
RLS 130	1405	1000	660	76

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 boiler output and following the diagrams included in the burner instruction handbook.

Refit the burner casing to the slide bars.

Install the nozzle choosing this on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.

Check the position of the electrodes.

Close the burner, sliding it up to the flange, keeping it slightly raised to avoid the flame stability disk rubbing against the blast tube.

ELECTRICAL AND HYDRAULIC CONNECTIONS AND START UP

The burners are supplied for connection to two pipes fuel supply system.

Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.

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

Prime the pump by turning the motor (after checking rotation direction if it is a three phase motor).

Adjust the gas train for first start.

On start up, check: Pressure pump and valve unit regulator (to max. and min.)
Gas pressure at the combustion head (to max. and min. output)
Combustion quality, in terms of unburned substances and excess air.

Burner Accessories

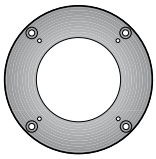
Degasing unit

To solve problem of air in the oil sucked, two versions of degassing unit are available.

BURNER	FILTER	FILTERING DEGREE (mm)	DEGASING UNIT CODE (*)
RLS 28 - 38 - 50 RLS 70 - 100	With filter	50 - 75	3010055
RLS 28 - 38 - 50 RLS 70 - 100	Without filter	-	3010054

(*) Max capability 80 kg/h (more filters are needed for higher flow).

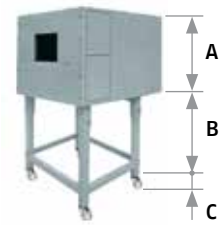
Connection flange kit



A kit is available for use where the burner opening on the boiler is of excessive diameter.

BURNER	KIT CODE
RLS 28 - 38 - 50	3010138

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 28 - 38 - 50	C1/3	650	372 - 980	110	10	3010403
RLS 70 - 100 - 130	C4/5	850	160 - 980	110	10	3010404

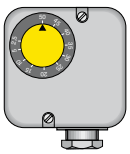
(*) Average noise reduction according to EN 15036-1 standard

LPG kit

For burning LPG gas, a dedicated kit is available with RLS dual fuel burners as standard equipment, if necessary it is available also as accessory as given in the following table:

BURNER	KIT CODE FOR "STANDARD HEAD"	KIT CODE FOR "EXTENDED HEAD"
RLS 28 - 38 - 50	3010304	3010304
RLS 70 - 100 - 130	3010305	3010305

Gas max pressure switch kit



If necessary a Gas max pressure Switch kit is available.

BURNER	KIT CODE
RLS 28 - 38 - 50 - 70 - 100 - 130	3010493

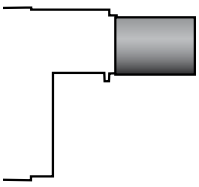
Nozzles type 60° B

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) AT 12 BAR	GPH	NOZZLE CODE
RLS 28	8,5	2,00	3042126
RLS 28-38	10,6	2,50	3042140
RLS 28-38-50	12,7	3,00	3042158
RLS 28-38-50	14,8	3,50	3042162
RLS 38-50	17	4,00	3042172
RLS 38-50	19,1	4,50	3042182
RLS 38-50-70	21,2	5,00	3042192
RLS 50-70	23,3	5,50	3042202
RLS 50-70	25,5	6,00	3042212
RLS 50-70	27,6	6,50	3042222
RLS 70-100	29,7	7,00	3042232
RLS 70-100	31,8	7,50	3042242
RLS 70-100	33,9	8,00	3042252
RLS 70-100	36,1	8,50	3042262
RLS 70-100-130	40,3	9,50	3042282
RLS 70-100-130	42,4	10,00	3042292
RLS 70-100-130	46,7	11,00	3042312
RLS 100-130	50,9	12,00	3042322
RLS 100-130	55,1	13,00	3042332
RLS 100-130	59,4	14,00	3042352
RLS 100-130	63,6	15,00	3042362
RLS 100-130	67,9	16,00	3042382
RLS 130	72,1	17,00	3042392

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 28	191	326	3010264
RLS 38	201	336	3010265
RLS 50	216	351	3010266
RLS 70	250	385	3010345
RLS 100	250	385	3010346
RLS 130	250	385	3010347

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

Gas train accessories

Seal control kit

To test the valve seals on the gas train, a special "seal control kit" is available.

BURNER	GAS TRAIN	KIT CODE FOR 50 Hz OPERATION	KIT CODE FOR 60 Hz OPERATION
RLS 28	MB 407/2 - MB 410/2 - MB 412/2 - MB 415/2 - MB 420/2	3010123	20050030
	CB 512/2 - CB 520/2	3010125	20050033
RLS 38	MB 410/2 - MB 412/2 - MB 415/2 - MB 420/2	3010123	20050030
	CB 512/2 - CB 520/2	3010125	20050033
RLS 50	MB 410/2 - MB 412/2 - MB 415/2 - MB 420/2	3010123	20050030
	CB 512/2 - CB 520/2	3010125	20050033
RLS 70	MB 415/2 - MB 420/2	3010123	20050030
	CB 512/2 - CB 520/2 - CB 5065/2 - CB 5080/2	3010125	20050033
RLS 100	MB 415/2 - MB 420/2	3010123	20050030
	CB 512/2 - CB 520/2 - CB 5065/2 - CB 5080/2	3010125	20050033
RLS 130	MB 415/2 - MB 420/2	3010123	20050030
	CB 512/2 - CB 520/2 - CB 5065/2 - CB 5080/2	3010125	20050033

Stabiliser spring

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

GAS TRAIN	SPRING COLOUR	SPRING PRESSURE RANGE mbar	SPRING CODE
CB 512/2	Red	25 - 55	3010131
	Black	60 - 110	3010157
	Pink	90 - 150	3090486
CB 520/2	Red	25 - 55	3010132
	Black	60 - 110	3010158
	Pink	90 - 150	3090487
CB 5065/2 - 5080/2	Red	25 - 55	3010133
	Black	60 - 110	3010135
	Pink	100 - 150	3090456
	Grey	140 - 200	3090992

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
2" 1" 1/2	70	3000822
3/4" 1" 1/2	31	3000824
DN 65 2" 1/2 2" / 2" 1/2 1" 1/2	300	3000825
DN 80 2" 1/2 2"	300	3000826
1" 1/2 2"	35	3000843
1/2" 1" 1/2	31	20044756

Specification

DESIGNATION OF SERIES

Series : R

Fuel : S Natural gas
L Light oil
LS Light oil / Natural gas
N Heavy oil

Size

Operation : /1 One stage
... Two stage
/M Modulating
/E Electronic cam
/P Proportioning air/gas valve
/EV Electronic cam predisposed for variable speed (with inverter)

Emission : ... Class 1 EN267 - EN676
MZ Class 2 EN267 - EN676
BLU Class 3 EN267 - EN676
MX Class 2 EN267
Class 3 EN676

Head : 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
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

Auxiliary voltage :

230/50-60	230V/50-60Hz
110/50-60	110V/50-60Hz

ID : Differential switch

R	LS	130			TC	FS1	3/230-400/50	230/50	

BASIC DESIGNATION

EXTENDED DESIGNATION

AVAILABLE BURNER MODELS

RLS 28	TC LP	FS1	1/230/50	230/50
RLS 28	TC LP	FS1	1/220/60	220/60
RLS 38	TC LP	FS1	1/230/50	230/50
RLS 50	TC LP	FS1	3/230-400/50	230/50
RLS 50	TC LP	FS1	3/220-380/60	220/60
RLS 70	TC LP	FS1	3/230-400/50	230/50
RLS 70	TC LP	FS1	3/208-230/380/60	230/50-60
RLS 100	TC LP	FS1	3/230-400/50	230/50
RLS 100	TC LP	FS1	3/220/60	230/50
RLS 100	TC LP	FS1	3/208-230/380/60	230/50-60
RLS 130	TC LP	FS1	3/230-400/50	230/50
RLS 130	TC LP	FS1	3/208-230/380/60	230/50-60

Other versions are available on request.

PRODUCT SPECIFICATION

Monobloc forced draught dual fuel burner, two stage operation, made up of:
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades
- Fan starting motor
- Air damper for air setting controlled by a servomotor
- Minimum air pressure switch
- Combustion head, that can be set on the basis of required output
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Two oil valves (1st and 2nd stage)
- Burner safety control box
- Electronic device to check all burners operational modes (Led Panel)
- UV photocell for flame detection
- Burner on/off switch
- Oil/Gas selector
- Manual 1st and 2nd stage switch
- Plugs for electrical connections (RLS 28-38-50)
- 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
- Kit for transformation to LPG
- Fairleads for electrical connections (for RLS 28-38-50 model)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

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

06/2016
TS0040UK03

[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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