RIELLO BURNERS

CE

TWO STAGE DUAL FUEL BURNERS

RLS SERIES		
▸ 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

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 device STATUS PANEL, which supplies complete diagnostic functions: hour meter, ignition meter, identification of trouble shooting.
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	RLS 70	RLS 100	RLS 130
	Operation			Two stage					
	Modulating ratio at max. ouput			2:1					
	Servomotor	type		LKS 210 - 08			LKS 210 -10		
		run time	s	5					
	Heat output		kW	100/163-325	116/232-442	145/290-581	232/465-814	349/698-1163	465/930-1395
			Mcal/h	86/140-303	100/200-380	125/249-500	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					
		Viscosity at 20°C	mm²/s (cSt)	4-6					
		Delivery	kg/h	8/14-28	10/20-37	12/25-49	20/39-69	30/59-99	39/79-118
		Max temperature	°C	60					
	Pump	type		AL 65B			AJ 6CC		
		delivery	kg/h	63 (at 15 bar)			134 (at 20 bar)		
	Atomised pressure		bar	12					
	G20	Net calorific value	kWh/Nm³	10					
		Density	kg/Nm³	0,71					
		Delivery	Nm³/h	10/16-32,5	12/23-44	14,5/29-58	23/46,5-81	35/70-116	46,5/93-139,5
	G25	Net calorific value	kWh/Nm³	8,6					
		Density	kg/Nm³	0,78					
		Delivery	Nm³/h	12/19-38	13/27-51	17/33-68	27/54-95	41/81-135	54/108-162
	LPG	Net calorific value	kWh/Nm³	25,8					
		Density	kg/Nm³	2,02					
		Delivery	Nm³/h	4/6-13	4/9-17	6/11-23	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	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	1,8	2,2	3
	Auxiliary electrical power		kW	0,19	0,25	0,17	0,33	0,33	0,43
	Protection level		IP	44					
	Fan electrical motor power		kW	0,25	0,42	0,65	1,1	1,5	2,2
	Rated fan motor current		A	2,1	2,9	3 -1,7	4,8 - 2,8	5,9 - 3,4	8,8 - 5,1
	Fan motor start current		A	4,8	11	13,8-8	22,6 -13,2	29,5 -17	52,8 - 30,6
	Fan motor protection level		IP	44			55	54	
	Pump electric motor power		kW	0,09			0,37		
	Rated pump motor current		A	0,8			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					
	Working			Intermittent (at least one stop every 24h)					
Emissions	Sound pressure		dBA	68	70	72	74	77,5	80
	Sound power		W	-	-	-	-	-	-
	Light oil	CO emissions	mg/kWh	< 20					
		Grade of smoke indicator	N° Bacharach	< 1					
		CxHy emissions	mg/kWh	< 10					
		NOx emissions	mg/kWh	< 190					
	G20	CO emissions	mg/kWh	< 15					
		NOx emissions	mg/kWh	< 80					
Approval	Directive			90/396/EC - 89/336 (2004/108) EC - 73/23/EC - 92/42/EC					
	Conforming to			EN 267 - EN 676					
	Certifications			CE 0063 AR 4637			CE 0063 AS 4863 - DIN 5G 835/97 M		

Reference conditions:
Ambient temperature: 20°C
Pressure: 1000 mbar
Altitude: 100 m a.s.l.
Sound pressure level measured in manufacturers combustion laboratory, with burner operating on test boiler and at maximum rated output

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.
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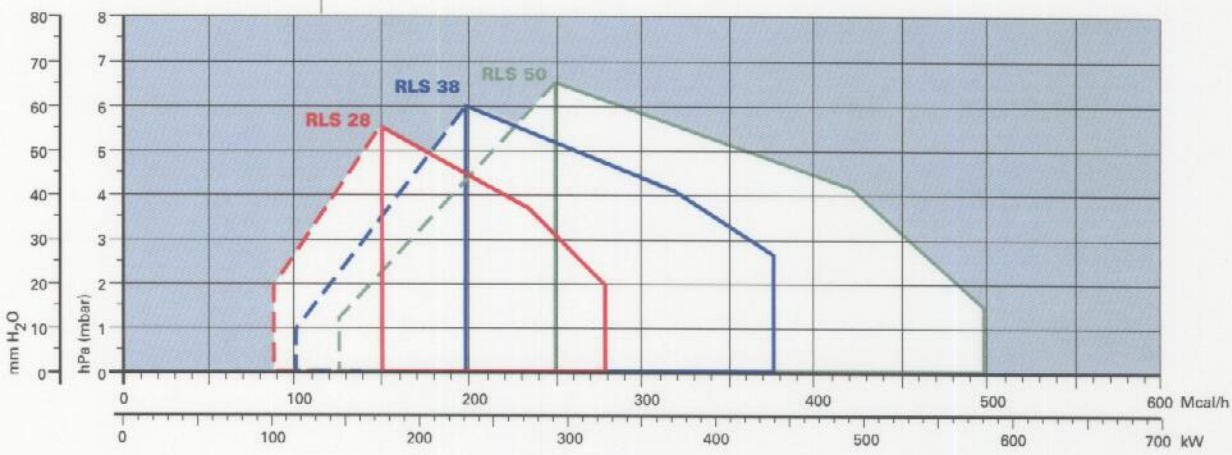
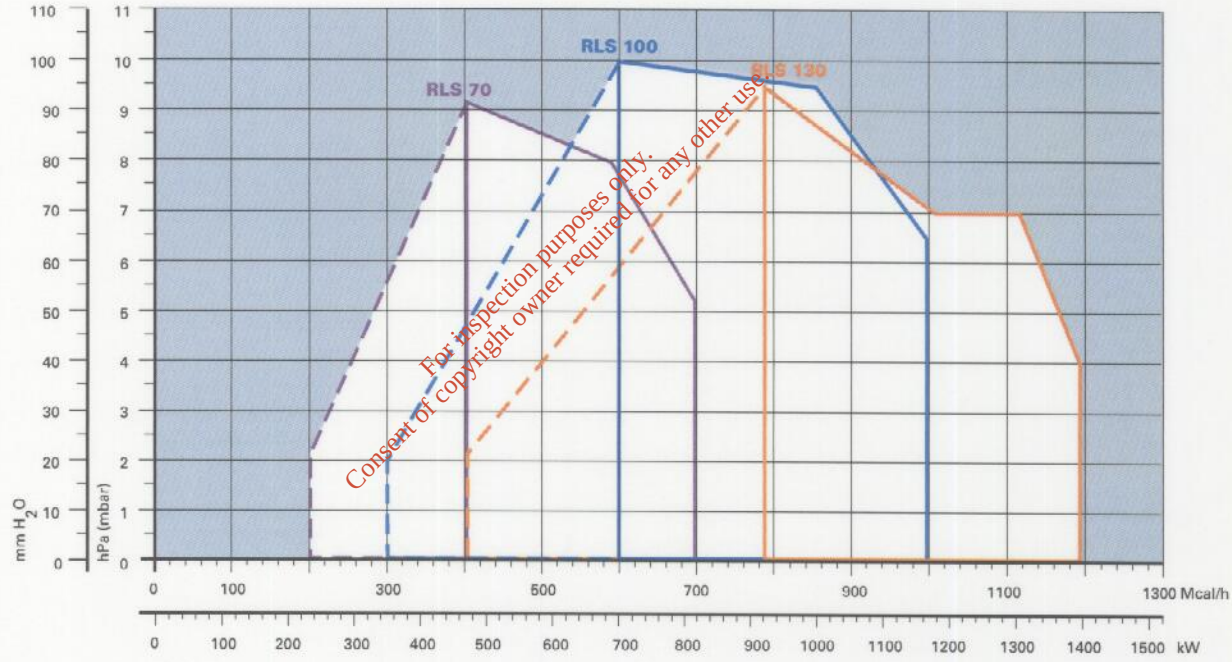
FIRING RATES





Useful working field for choosing the burner

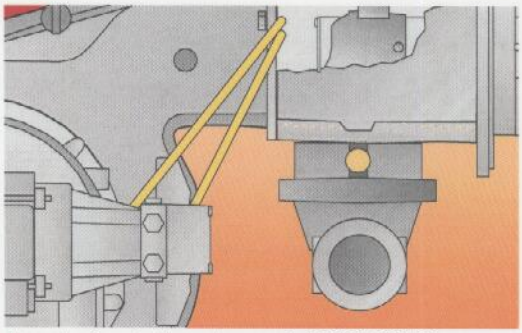
Modulating range

Test conditions conforming to EN 267 - EN 676:
Temperature: 20°C
Pressure: 1013.5 mbar
Altitude: 100 m a.s.l.

FUEL SUPPLY

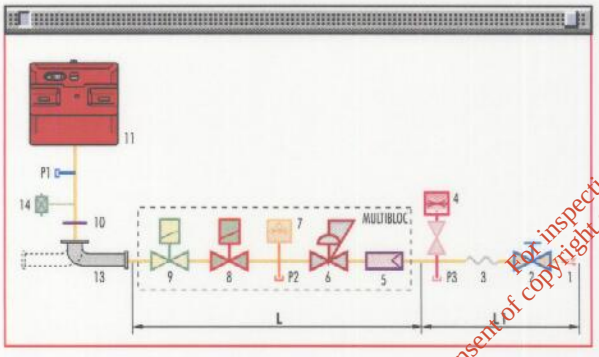
GAS TRAIN

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).

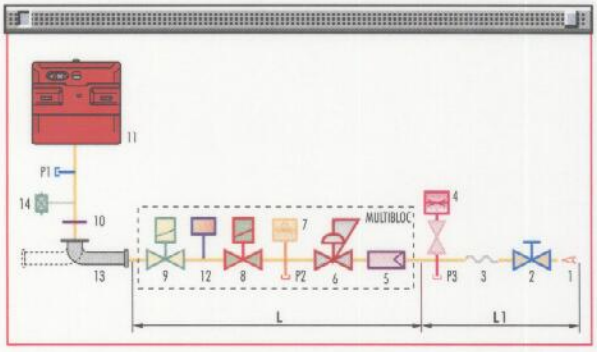


Example of gas inlet pipe burners for RLS 70-100-130

MULTIBLOC gas train without seal control

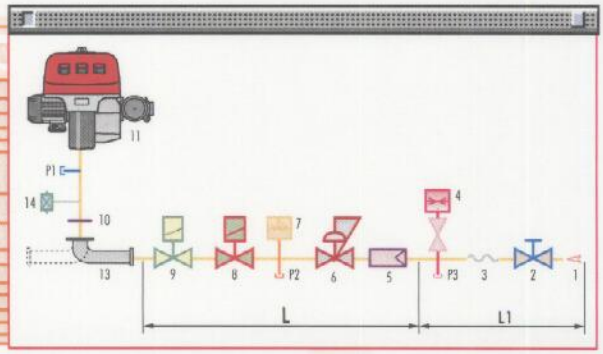


MULTIBLOC gas train with seal control

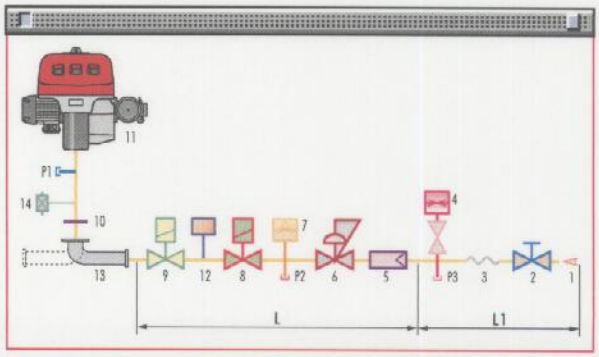


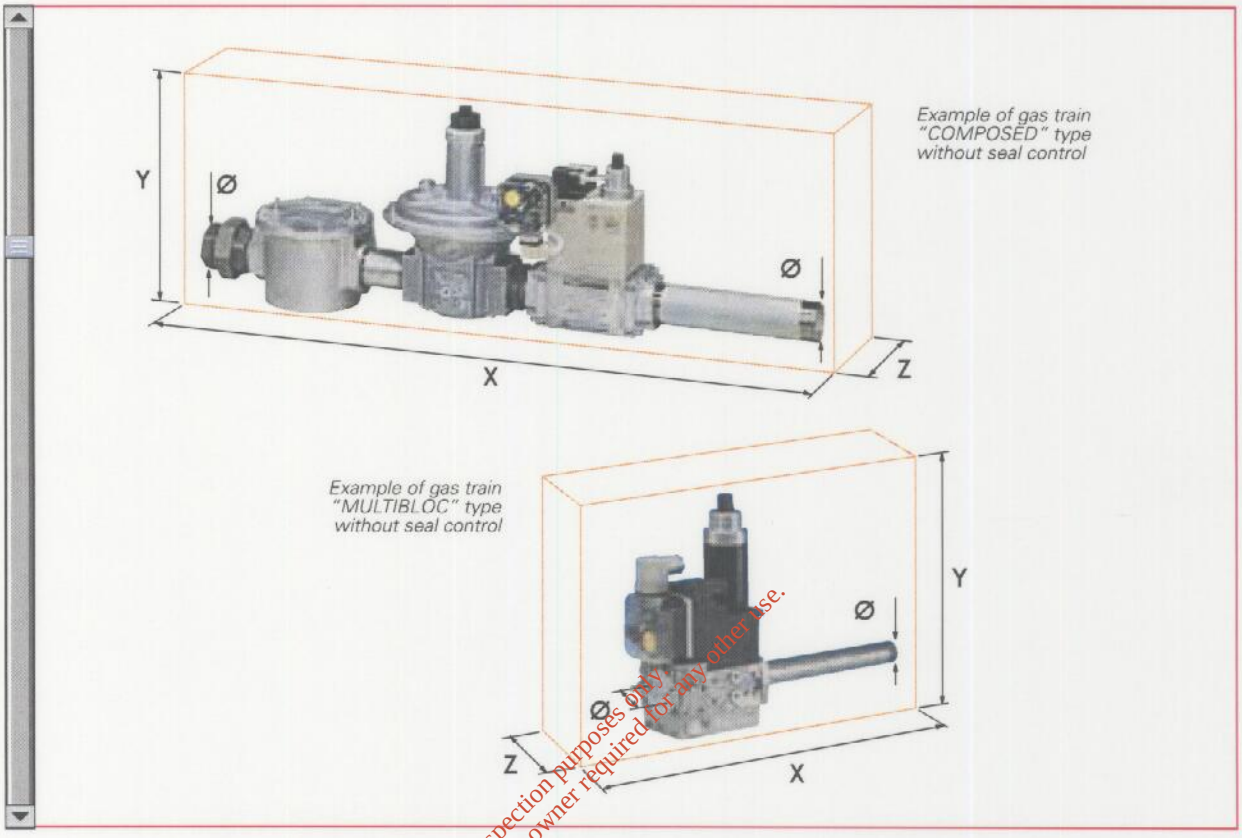
1	Gas input pipework
2	Manual valve
3	Anti-vibration joint
4	Pressure gauge with pushbutton cock
5	Filter
6	Pressure regulator (vertical)
7	Minimum gas pressure switch
8	VS safety solenoid (vertical)
9	VR regulation solenoid (vertical). Three adjustments: - ignition delivery (rapid opening) - 1st stage delivery (slow opening) - 2nd stage delivery ((slow opening)
10	Gasket and flange supplied with the burner
11	Burner
12	Seal control mechanism for valves 8-9. According to standard EN 676, the seal control is compulsory for burners with maximum output above 1200 kW
13	Gas train-burner adapter.
14	Maximum gas pressure switch
P1	Combustion head pressure
P2	Pressure downstream from the regulator
P3	Pressure upstream from the filter
L	Gas train supplied separately, with the code given in the table
L1	Installer's responsibility

COMPOSED gas train without seal control



COMPOSED gas train with seal control





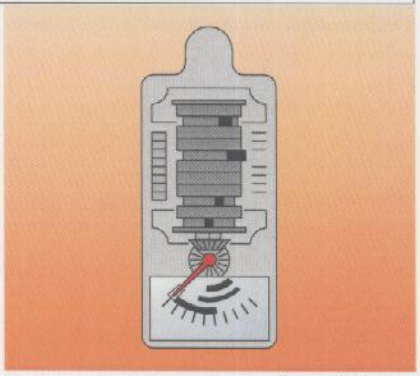
Gas trains are approved by standard EN 676 together with the burner.

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.

	Name	Code	Ø i	Ø o	X mm	Y mm	Z mm	Seal Control
MULTIBLOC GAS TRAINS	**MBZRDLE 407**	3970046	3/4"	3/4"	195	235	120	-
	MBZRDLE 410	3970079	1"	3/4"	195	235	145	-
	MBZRDLE 412	3970152	1"1/4	1"1/2	433	290	145	-
	MBZRDLE 415	3970183	1"1/2	121/2	523	346	100	-
	MBZRDLE 420	3970184	2"	2"	523	400	100	-
	MBZRDLE 420 CT	3970185	2"	2"	523	400	227	Incorporated
COMPOSED GAS TRAINS	**CB 40/2**	3970153	1"1/2	1"1/2	1013	346	195	-
	CB 50/2	3970154	2"	2"	1150	354	250	-
	CB 50/2 CT	3970166	2"	2"	1150	354	320	Incorporated
	CBF 65/2	3970155	DN 65	DN 65	1166	475	285	-
	CBF 65/2 CT	3970167	DN 65	DN 65	1166	475	285	Incorporated
	CBF 80/2	3970156	DN 80	DN 80	1246	425	285	-
	CBF 80/2 CT	3970168	DN 80	DN 80	1246	425	285	incorporated

VENTILATION

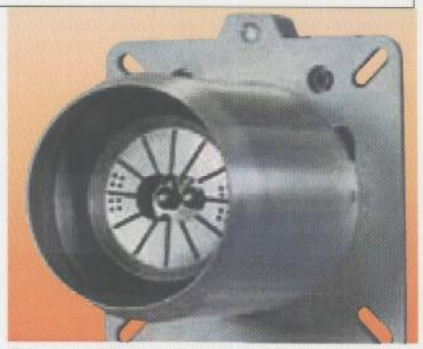
The ventilation circuit guarantees low noise levels with high performances in pressure and air delivery, in spite of compact dimensions.
The use of reverse curve blades and sound proofing material keeps noise level very low.
The result is a powerful yet quiet burner with increased combustion performance.
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.

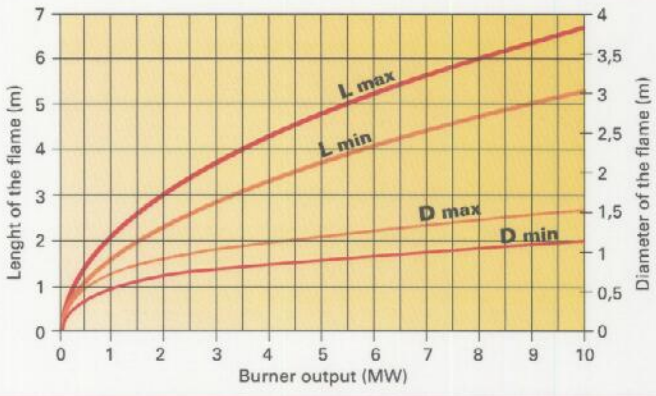
COMBUSTION HEAD

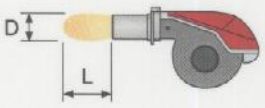
Different lengths of the combustion head can be supplied (with application of a specific "extended head kit") for the RLS series of burners.
The selection depends on the thickness of the front panel and on the type of boiler.
Depending on the type of generator, check that the penetration of the head 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.

Dimensions of the flame





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

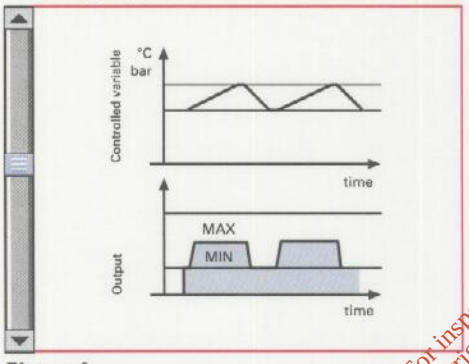
OPERATION

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 (see picture A).

Two stage operation



Picture A

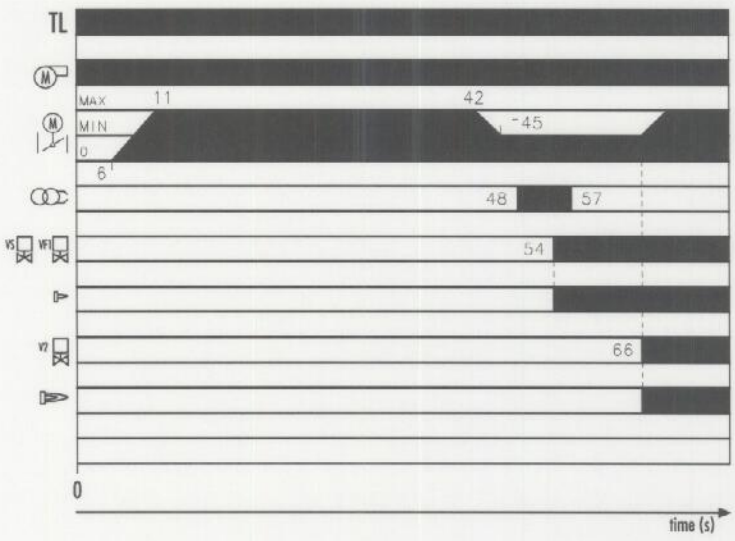
= Power on
= Fan motor blocked (red)
= Burner lock-out (red)
= 2nd stage operation
= 1st stage operation
= Burner operating

Picture B: *Layout of "Led Panel"*

The RLS burners are equipped with an exclusive electronic device "Led panel" that provides the six data items signalled by the leds lighting up of picture B.

START UP CYCLE

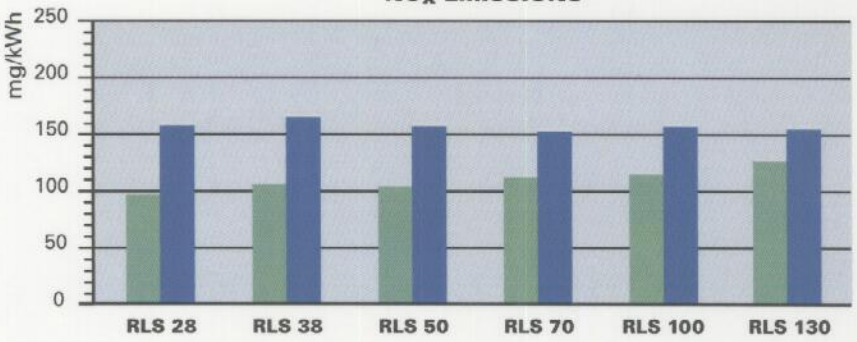
RLS 28 - 38 - 50 - 70 - 100 - 130



0"	Thermostat closes. The motor starts running.
6"-11"	The servomotor opens the air damper.
11"-42"	Pre-purge with air damper open.
42"-45"	The servomotor takes the air damper to the firing position.
48"	Pre-ignition
54"	Solenoid security valve VS and V1 1st stage valve open; 1st stage flame
57"	After 3" firing the ignition transformer switches off (if flame is detected, otherwise there is a lock-out)
66"	If heat request is not yet satisfied, 2nd stage solenoid valve V2 opens and at the same time servomotor open completely the air damper. The starting cycle comes to an end. 2nd stage flame.

EMISSIONS

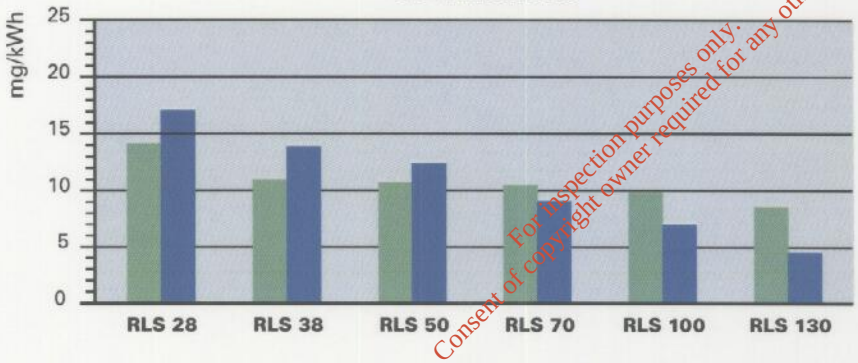
NO_x EMISSIONS



Gas working

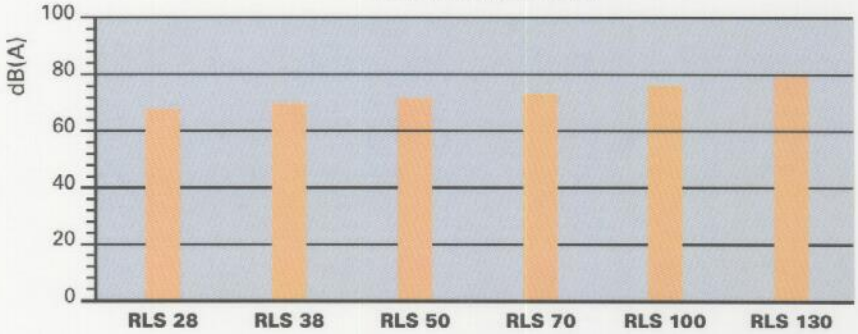
Light oil working

CO EMISSIONS



The emission data has been measured in the various models at maximum output, according to EN 676 and EN 267 standard.

NOISE EMISSIONS



PRODUCT SPECIFICATION

Burner:
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)
- Flame control panel
- 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:
- 89/336/EC - 2004/108/EC directive (electromagnetic compatibility)
- 73/23/EC directive (low voltage)
- 92/42/EC directive (performance)
- 98/37/EC directive (machinery)
- EN 267 (liquid fuel burners)
- EN 676 (gas fuel 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
- 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.

Available accessories to be ordered separately:
- Nozzles
- Head extension kit
- Degasing unit
- Sound proofing box
- Adapters
- Stabiliser spring
- Seal control kit.

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