Technical Data Leaflet

Dual Fuel

TS0069UK02

RLS/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.

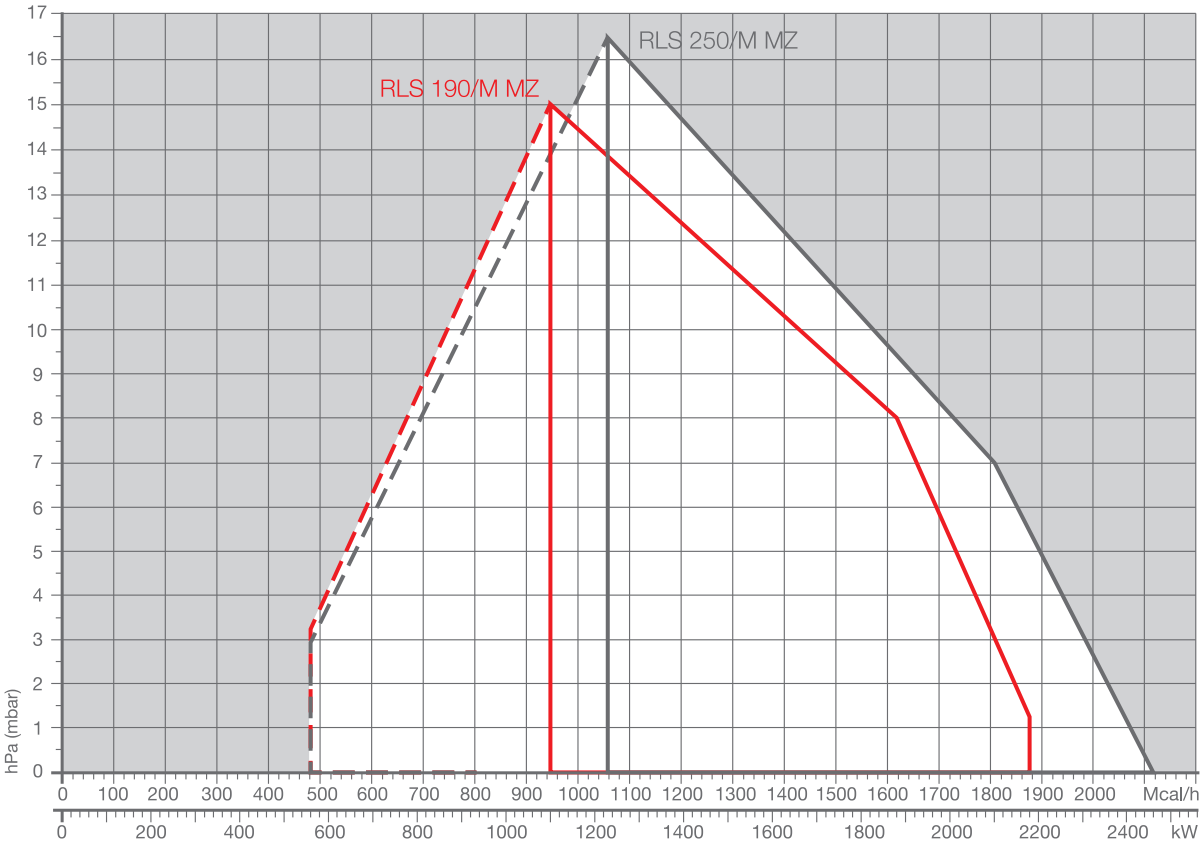
RIELLO BURNERS

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. ouput			2 ÷ 1 (oil) / 3 ÷ 1 (gas)	
Servomotor	type		SQN 31	
	run time	s	33	
Heat output		kW	550/1100÷2150	550/1230÷2460
		Mcal/h	473/946÷1849	473/1058÷2116
Working temperature		°C min/max	0/40	
FUEL/AIR DATA				
Light oil	net calorific value	kWh/kg	11,86	
	viscosity at 20°C	mm²/s (cSt)	4÷6	
	output	kg/h	46/93÷181	46/104÷207
Pump	type		J7	
	output	kg/h	230 (at 12 bar)	
Atomised pressure		bar	12	
Fuel temperature		max °C	60	
Fuel pre-heater			NO	
Net calorific value G20 gas		kWh/Nm³	10	
Density gas G20		kg/Nm³	0,71	
Output gas G20		Nm³/h	55/110÷215	55/123÷246
Net calorific value G25 gas		kWh/Nm³	8,6	
Density gas G25		kg/Nm³	0,78	
Output gas G25		Nm³/h	64/128÷250	64/143÷286
Net calorific value LPG gas		kWh/Nm³	25,8	
Density LPG gas		kg/Nm³	2,02	
Output LPG gas		Nm³/h	-	
Fan		type	Centrifugal with straight blades	
Air temperature		max °C	60	
ELECTRICAL DATA				
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)	
EMISSIONS				
Sound pressure		dBA	82,5 (gas) 85 (oil)	83 (gas) 85,4 (oil)
Sound power		W	-	
Light oil	- CO emissions	mg/kWh	< 10	
	- Grade of smoke indicator	N° Bacharach	< 2	
	- CxHy emissions	mg/kWh	< 2	
	- NOx emissions	mg/kWh	< 185	
G20 gas	- CO emission	mg/kWh	< 10	
	- NOx emission	mg/kWh	< 120	
APPROVAL				
Directive			90/396/EC - 89/336 (2004/108) EC - 73/23 (2006/95) EC	
Conforming to			EN 267 - EN 676	
Certifications			CE - 0085BP0439	in progress

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

FIRING RATES



Useful working field for choosing the burner

Modulation range

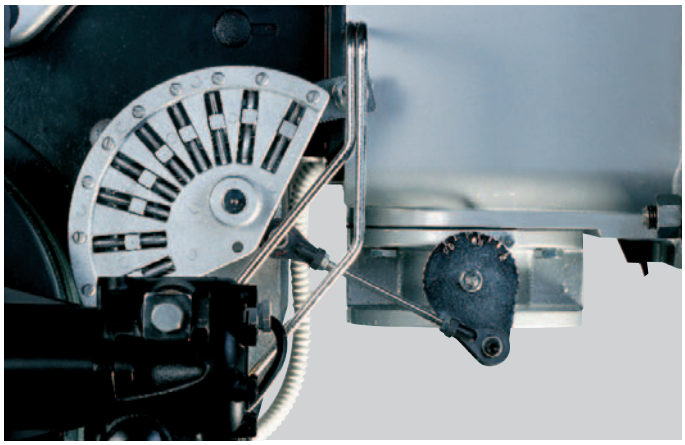
Test conditions conforming to EN 267 EN 676:
Temperature: 20°C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

Fuel Supply

GAS TRAINS

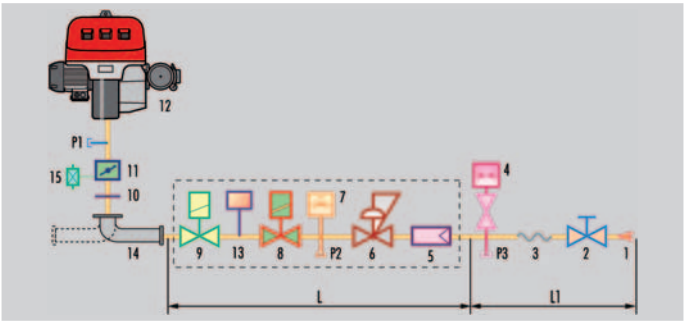
The burners are fitted with a butterfly valve to regulate the fuel, controlled by a variable profile cam servomotor.
Fuel can be supplied either from the right or left hand sides. A maximum gas pressure switch stops the burner in case of excess pressure in the fuel line.

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).

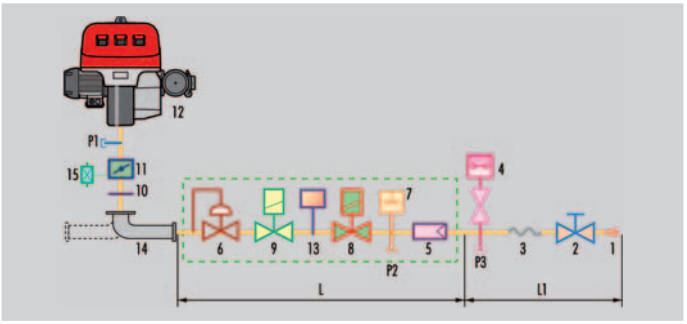


Example of the variable profile cam

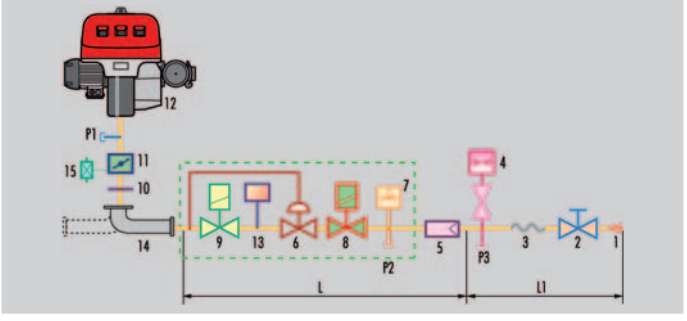
MULTIBLOC gas train type MBD 420



MULTIBLOC GAS TRAIN TYPE MBC 1200



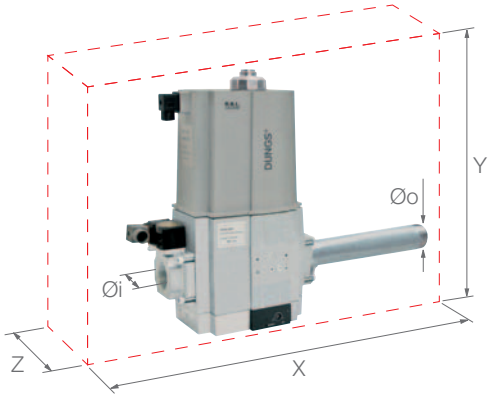
COMPOSED gas train type MBC 1900 - 3100



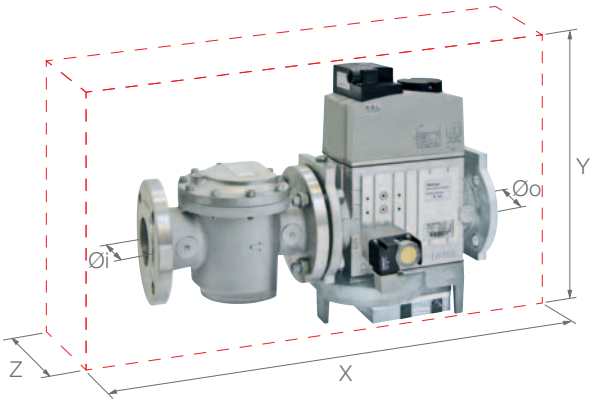
1	Gas input pipework
2	Manual valve
3	Anti-vibration joint
4	Pressure gauge with pushbutton cock
5	Filter
6	Pressure regulator (vertical)
7	Minimum gas pressure switch
8	VS safety solenoid (vertical)
9	VR regulation solenoid (vertical) Two settings: - firing output (rapid opening) - maximum output (slow opening)
10	Gasket and flange supplied with the burner
11	Gas adjustment butterfly valve
12	Burner
13	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 (in gas train with seal control)
14	Gas train-burner adapter
15	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

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



Example of gas train “MULTIBLOC” type without seal control



Example of gas train “COMPOSED” type without seal control

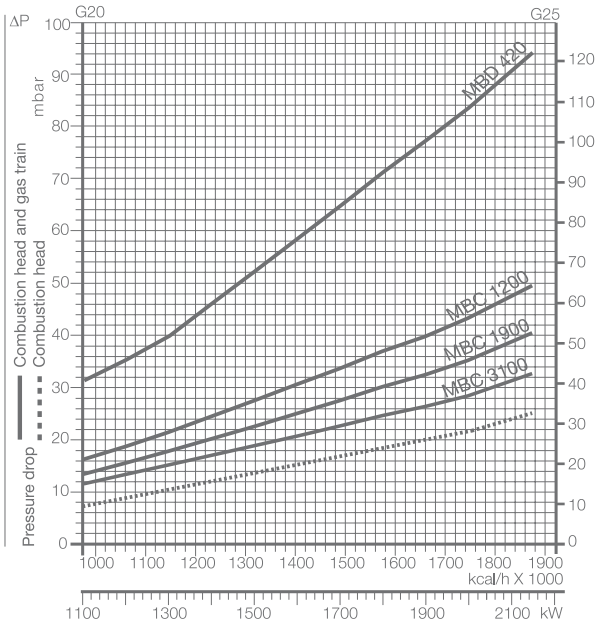
	NAME	CODE	Ø I	Ø O	X mm	Y mm	Z mm	OUTPUT PRESSURE RANGE (mbar)	SEAL CONTROL
MULTIBLOC GAS TRAINS	MBD 415	3970180	1”1/2	1”1/2	523	250	100	4 - 33	Accessory
	MBD 415 CT	3970198	1”1/2	1”1/2	523	250	227	4 - 33	Incorporated
	MBD 420	3970181 3970257 (1)	2”	2”	523	100	300	4 - 33	Accessory
	MBD 420 CT	3970182 3970252 (1)	2”	2”	523	227	300	4 - 33	Incorporated
	MBC 1200 SE 50	3970221	2”	2”	573	425	161	4 - 60	Accessory
	MBC 1200 SE 50 CT	3970225	2”	2”	573	426	290	4 - 60	Incorporated
COMPOSED GAS TRAINS	MBC 1900 SE 65 FC	3970222	DN 65	DN 65	583	430	237	20 - 40	Accessory
	MBC 1900 SE 65 FC CT	3970226	DN 65	DN 65	583	430	300	20 - 40	Incorporated
	MBC 3100 SE 80 FC	3970223	DN 80	DN 80	633	500	240	20 - 40	Accessory
	MBC 3100 SE 80 FC CT	3970227	DN 80	DN 80	633	500	320	20 - 40	Incorporated

(1) Gas Train S5 type for application with high pressure drop.

PRESSURE DROP DIAGRAM

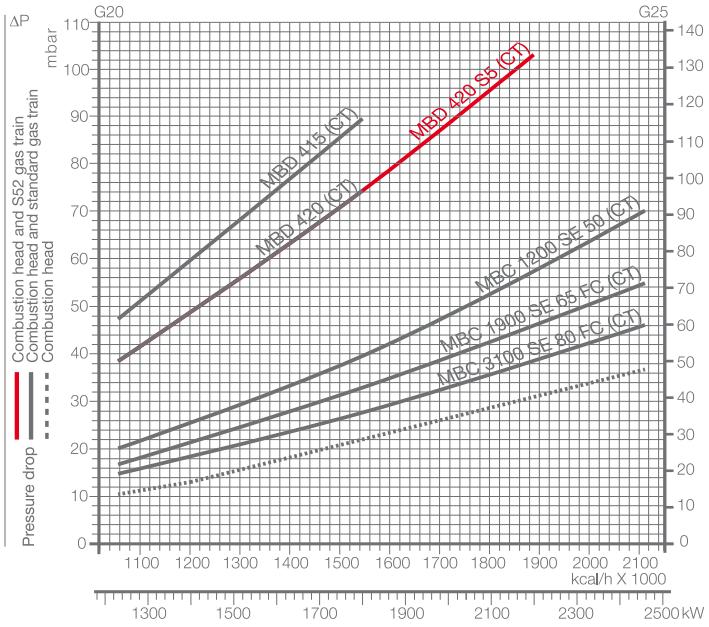
The diagrams indicate the minimum pressure drop of the burners with the various gas trains that can be matched with them; at the value of these pressure drop add the combustion chamber pressure. The value thus calculated represents the minimum required input pressure to the gas train.

RLS 190/M MZ (NATURAL GAS)



GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 420	3970181	-	-
MBD 420 CT	3970182	-	Incorporated
MBC 1200 SE 50	3970221	-	-
MBC 1200 SE 50 CT	3970225	-	Incorporated
MBC 1900 SE 65 FC	3970222	3000825	-
MBC 1900 SE 65 FC CT	3970226	3000825	Incorporated
MBC 3100 SE 80 FC	3970223	3000826	-
MBC 3100 SE 80 FC CT	3970227	3000826	Incorporated

RLS 250/M MZ (NATURAL GAS)



GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 415	3970180	3000843	-
MBD 415 CT	3970198	3000843	Incorporated
MBD 420	3970181 3970257 (1)	-	-
MBD 420 CT	3970182 3970252 (1)	-	Incorporated
MBC 1200 SE 50	3970221	-	-
MBC 1200 SE 50 CT	3970225	-	Incorporated
MBC 1900 SE 65 FC	3970222	3000825	-
MBC 1900 SE 65 FC CT	3970226	3000825	Incorporated
MBC 3100 SE 80 FC	3970223	3000826	-
MBC 3100 SE 80 FC CT	3970227	3000826	Incorporated

(1) Gas Train S5 type for application with high pressure drop.

Please contact the Riello Burner Technical Office for different pressure levels from those above indicated and refer to the technical manual for the correct choice of the spring.

MBC 1200 gas train: the minimum operating pressure (*) is higher or equal to 10 mbar. The gas train has to be installed next to the burner (if needed, only with the adapters listed in the catalogue) and it has to operate in its own working field.

MBC 1900-3100 gas train: the minimum operating pressure (*) is higher or equal to 15 mbar. The gas train has to be installed next to the burner (if needed, with the adapters listed in the catalogue) and it has to operate in its own working field.

(*) it is the upstream gas train pressure in full load operation conditions.

SELECTING THE FUEL SUPPLY LINES

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

Control of the pressure drop in an existing gas line or selecting a new gas supply line.
The methane output equivalent is determined by the formula fig. A on the diagram and the conversion coefficient.

Once the equivalent output has been determined on the delivery scale ($\dot{V}$), shown at the top of the diagram, move vertically downwards until you cross the line that represents the pipe diameter; at this point, move horizontally to the left until you meet the line that represents the pipe length.
Once this point is established you can verify, by moving vertically downwards, the pipe pressure drop of on the botton scale below (mbar).
By subtracting this value from the pressure measured on the gas meter, the correct pressure value will be found for the choice of gas train.

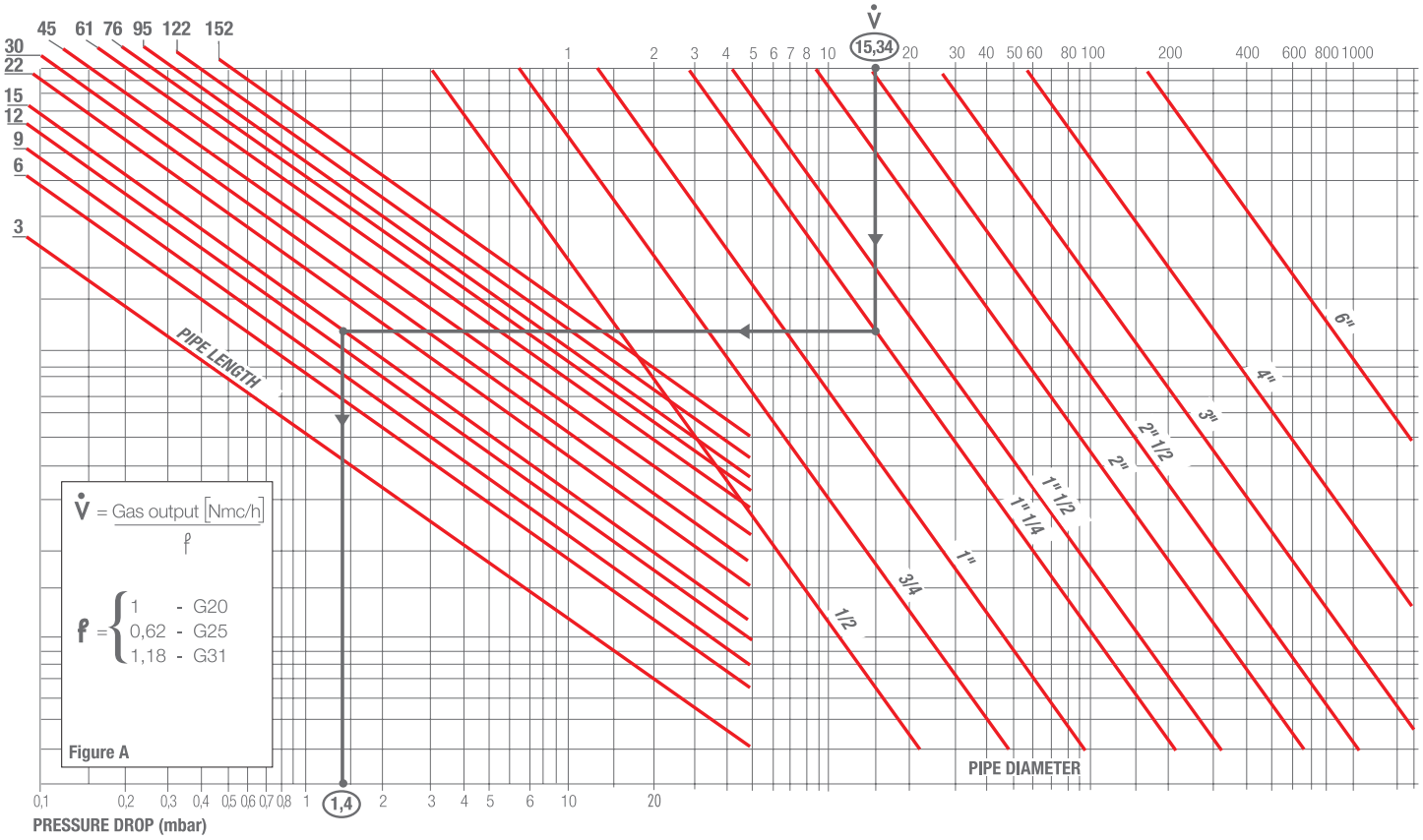
Example:

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

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

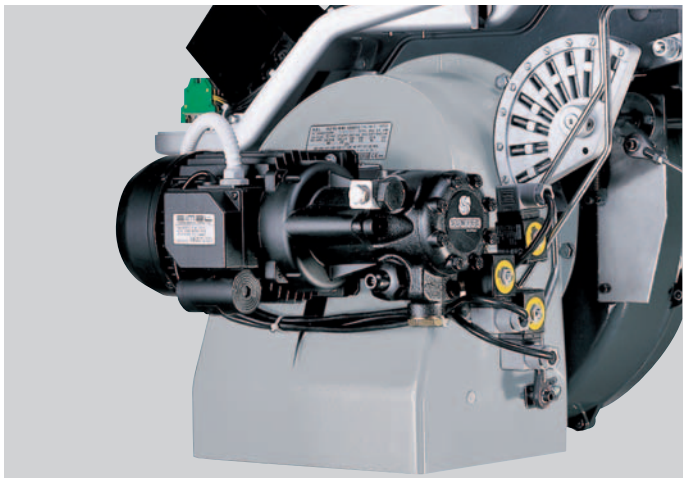
- once the value of 15.34 has been identified on the output scale ($\dot{V}$), moving vertically downwards you cross the line that represents 1" 1/4 (the chosen diameter for the piping);
- from this point, move horizontally to the left until you meet the line that represents the length of 15 m of the piping;
- move vertically downwards to determine a value of 1.4 mbar in the pressure drop botton scale;
- subtract the determined pressure drop from the meter pressure, the correct pressure level will be found for the choice of gas train;

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



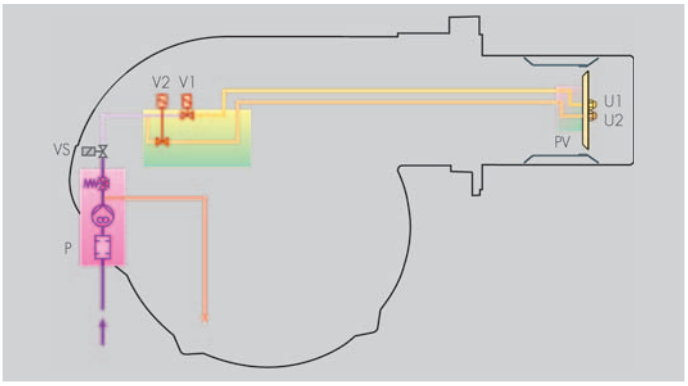
HYDRAULIC CIRCUITS

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 trough the valves and to the nozzle.
Delivery valves open contemporary to the air damper opening, controlled by a servomotor.
The pumping group is fitted whit a pump, an oil filter and a regulating valve: through this it is possible to manually adjusts atomised pressure, which in factory is preset at 12 bar.



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

RLS 190/M - 250/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

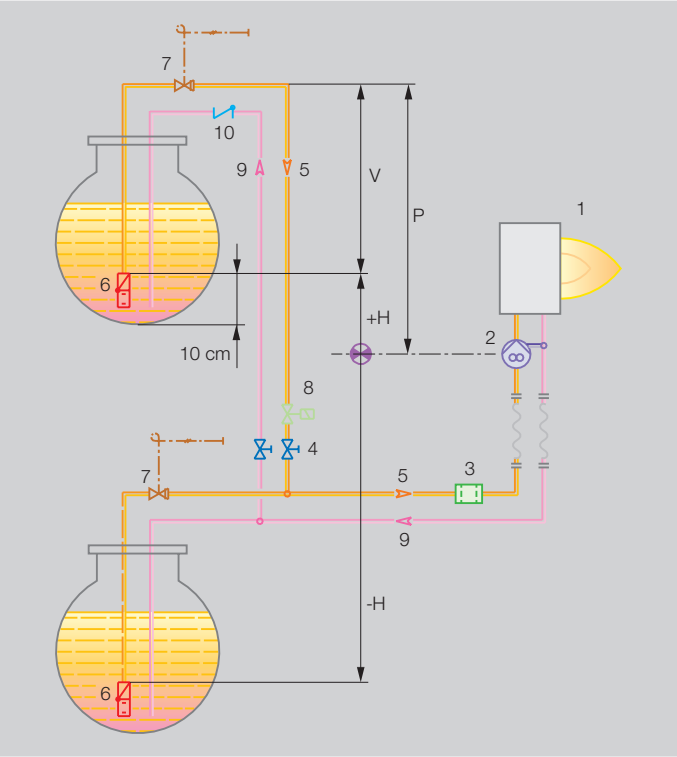
DIMENSIONING OF THE FUEL SUPPLY LINES

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 190/M MZ			RLS 250/M MZ	
Diameter piping	Ø12 mm	Ø14 mm	Ø16 mm	Ø16 mm	Ø18 mm
+H, -H (m)	L max (m)	L max (m)	L max (m)	L max (m)	L max (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

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.

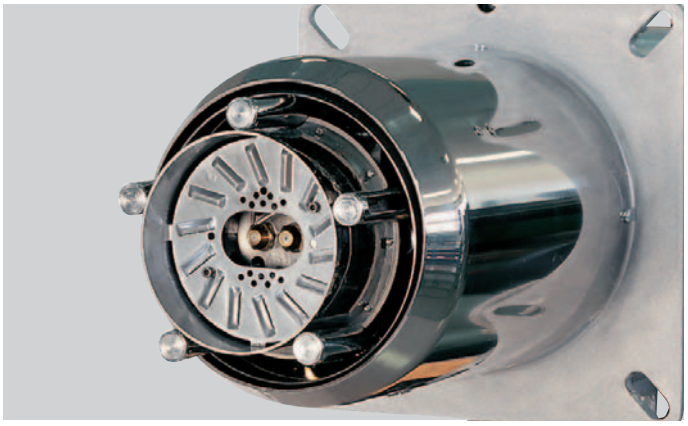
Ventilation

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

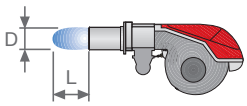
Combustion Head

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.

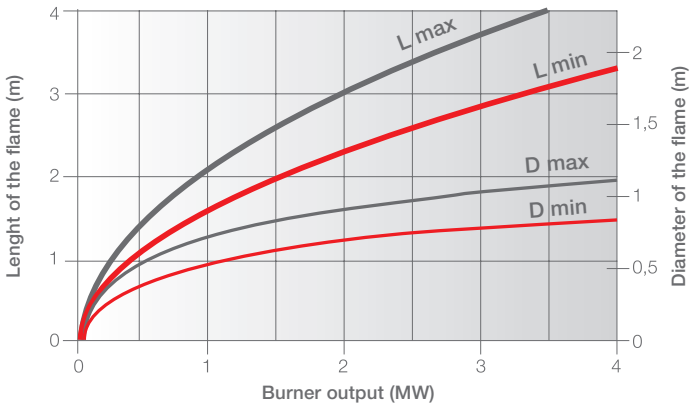


Example of RLS 190/M MZ burner combustion head

DIMENSIONS OF THE FLAME



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

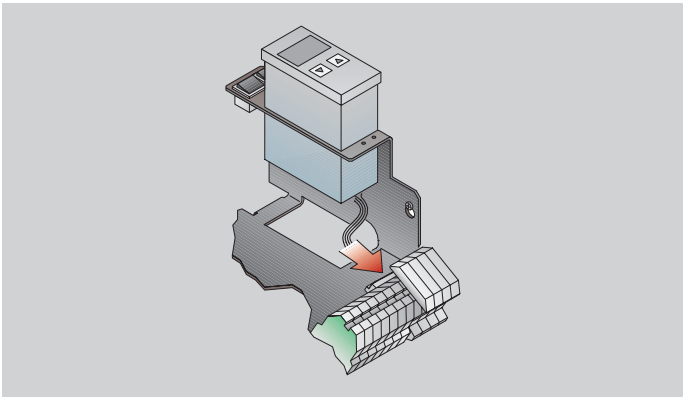


BURNER OPERATION MODE

The RLS/M MZ 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 3:1.
The air is adapted to the servomotor rotations.

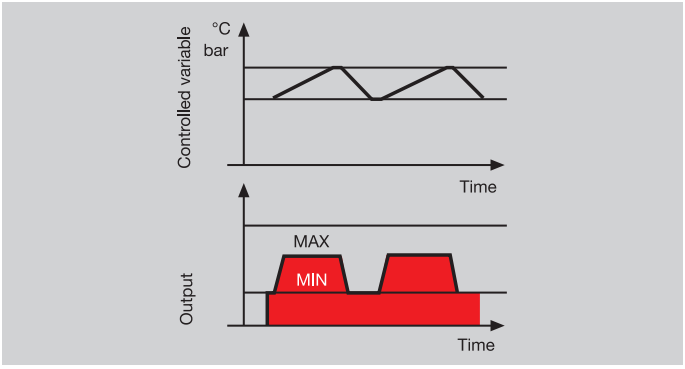
On “two stage” operation, the burner gradually adjusts output to the requested level, by varying between the two pre-set levels (see picture A).

In “modulating” operation, normally required in steam generators, in superheater 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).



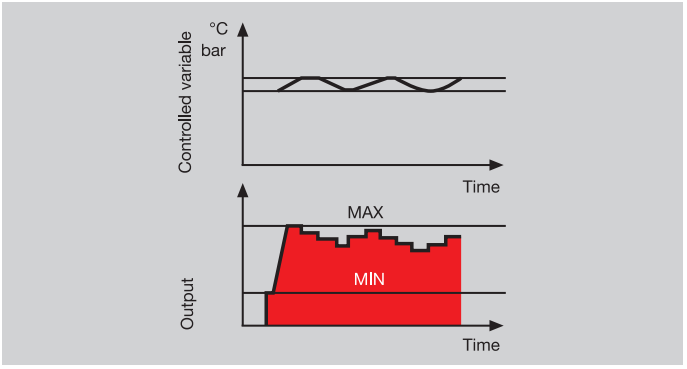
Example of regulator installation.

“TWO STAGE PROGRESSIVE” OPERATION



Picture A

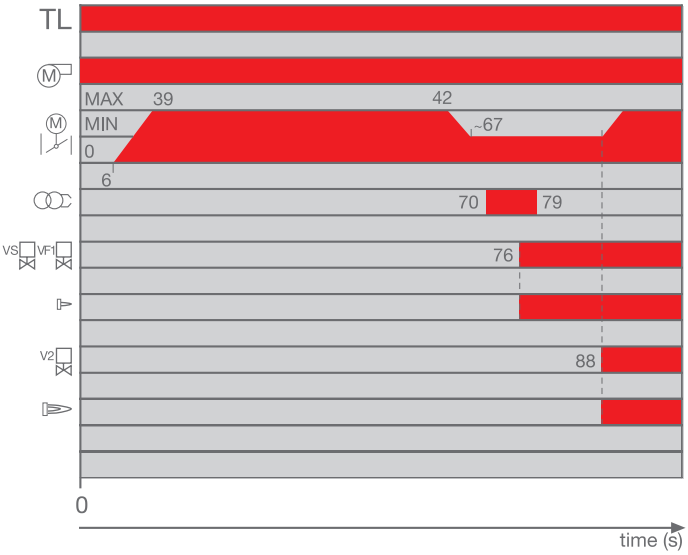
“MODULATING” OPERATION



Picture B

START UP CYCLE

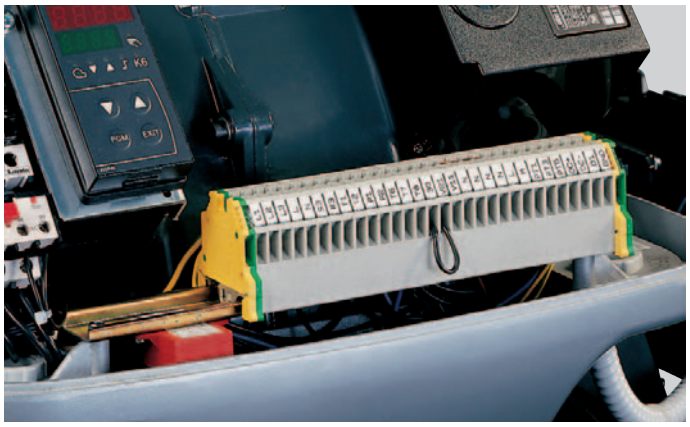
RLS 190/M - 250/M MZ



0”	Thermostat closes. The motor starts running.
6”-39”	The servomotor opens the air damper.
39”-42”	Pre-purge with air damper open.
42”-67”	The servomotor takes the air damper to the firing position.
70”	Pre-ignition
76”	Solenoid security valve VS and V1 1st stage valve open; 1st stage flame
79”	After 3” firing the ignition transformer switches off (if flame is detected, otherwise there is a lock-out)
88”	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.

Burner Wiring

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

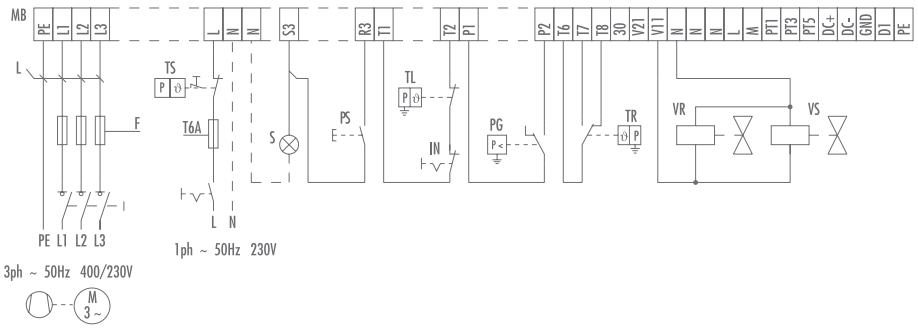


Example of the terminal board for electrical connections for the RLS 190/M MZ model

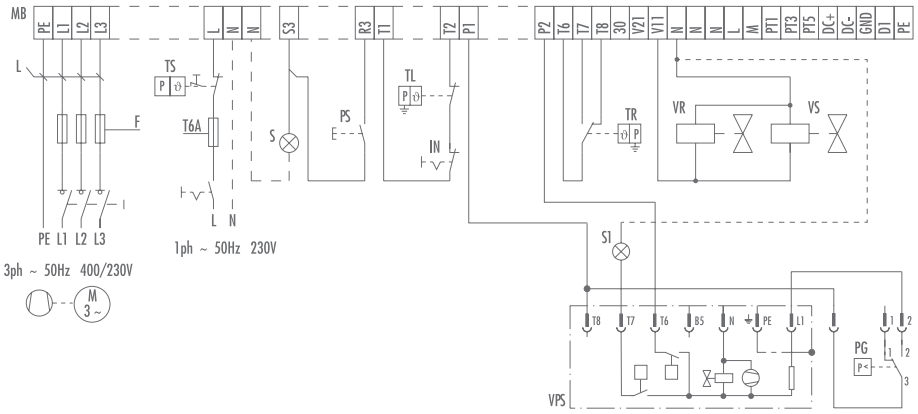
TWO STAGE PROGRESSIVE OPERATION

RLS 190/M MZ

WITHOUT SEAL CONTROL



WITH SEAL CONTROL

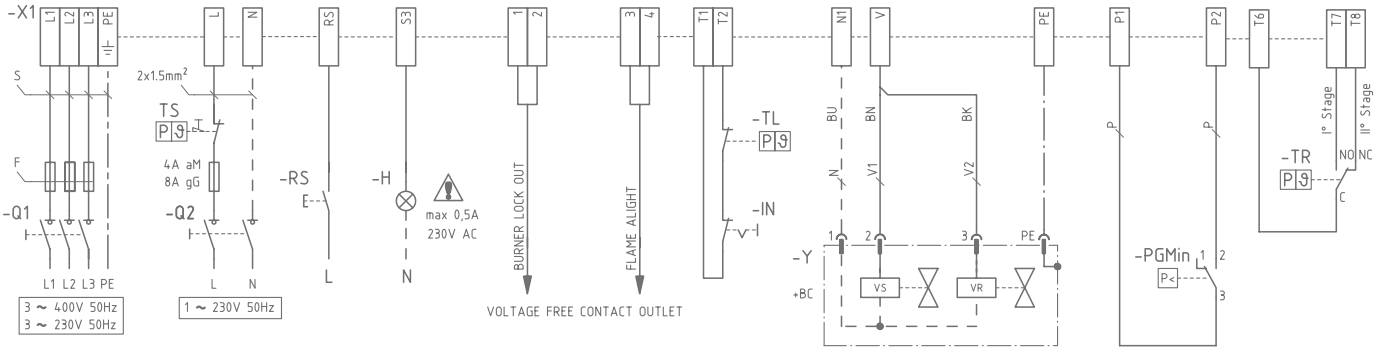


MB	Burner terminal board
TS	Safety thermostat
S	External lock-out signal
S1	External lock-out signal on the seal control
IN	Manual switch
TL	Threshold thermostat
TR	High/low flame setting thermostat
T6A	6A fuse

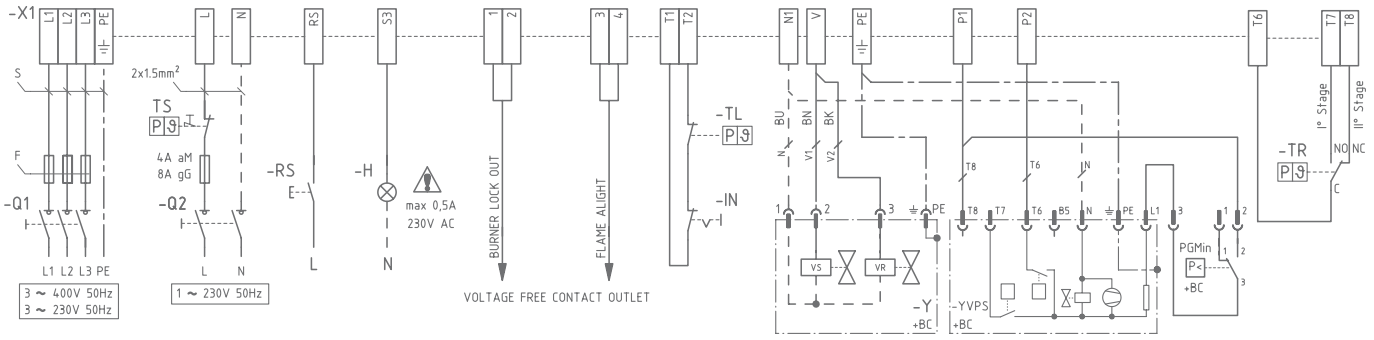
F	Fuse (see table A)
L	Lead section (see table A)
PG	Minimum gas pressure switch
PS	Lock-out reset button
VR	Adjustment valve
VS	Safety valve
VPS	Seal control

RLS 250/M MZ

WITHOUT SEAL CONTROL



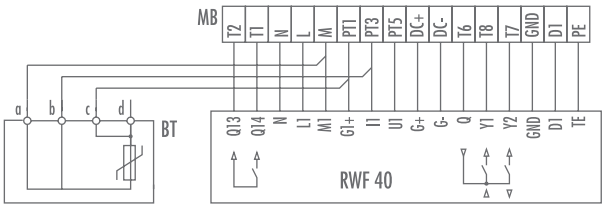
WITH SEAL CONTROL



F	Fuse (see table A)
H	Remote lock-out signal
IN	Burner manual stop switch
PGMin	Minimum gas pressure switch
Q1	Three-phase disconnect switch
Q2	Single-phase disconnect switch
RS	Remote lock-out reset button
S	Lead section (see table A)
TL	Limit pressure switch/thermostat
TR	Control pressure switch/thermostat
TS	Safety pressure switch/thermostat
VS	Safety valve
V1	1st stage adjustment valve
V2	2nd stage adjustment valve
Y	Gas adjustment valve + gas safety valve
YVPS	Gas leak detection control device
X1	Main supply terminal strip

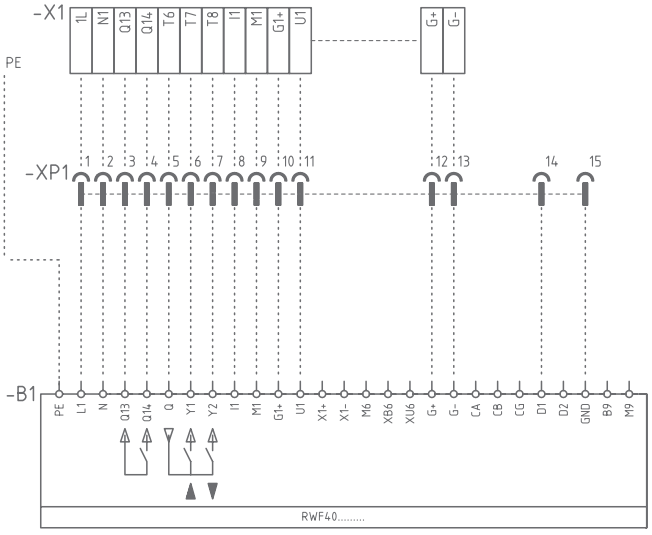
"MODULATING" OPERATION – TEMPERATURE PROBE

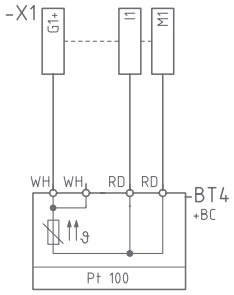
RLS 190/M MZ



MB	Burner auxiliary terminal board
S	External lock-out signal
IN	Manual switch
BT	Temperature probe
F	Fuse (see table A)
L	Lead section (see table A)
RWF40	Regulator (installed on the burner)

RLS 250/M MZ

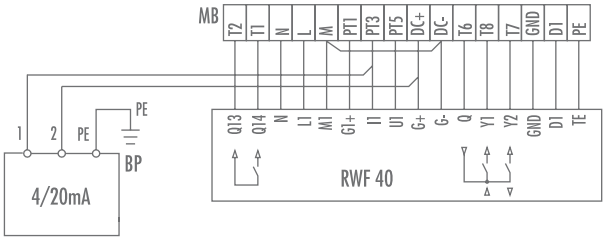




B1	Output power regulator RWF40
BT4	Probe Pt100 with 3 wires
X1	Main supply terminal strip
XP1	Socket for kit

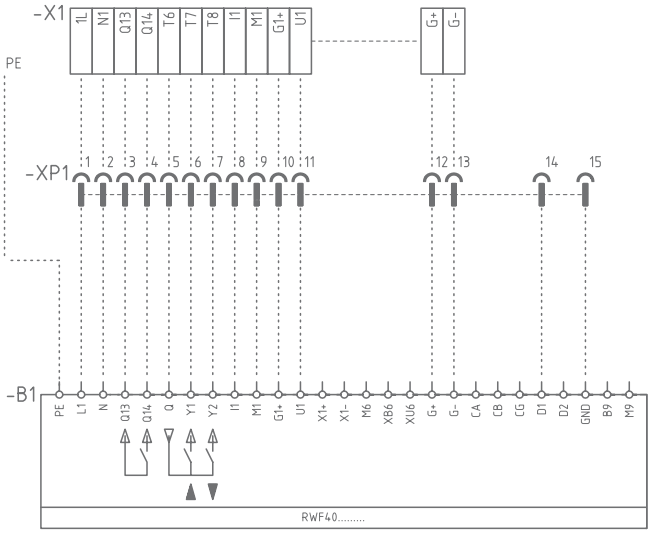
“MODULATING” OPERATION – PRESSURE PROBE

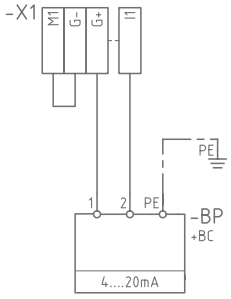
RLS 190/M MZ



MB	Burner auxiliary terminal board
S	External lock-out signal
IN	Manual switch
BP	Pressure probe
F	Fuse (see table A)
L	Lead section (see table A)
RWF40	Regulator (installed on the burner)

RLS 250/M MZ





B1	Output power regulator RWF40
BP	Pressure probe
X1	Main supply terminal strip
XP1	Socket for kit

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

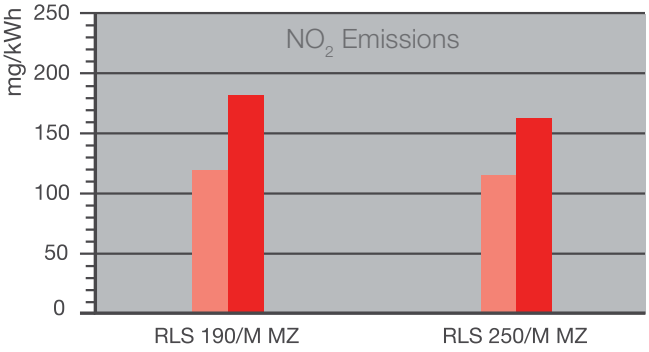
MODEL	V	F (A)	L (mm²)
▶ RLS 190/M MZ	230	16A aM 32A gG	4
	400	10A aM 20A gG	2,5

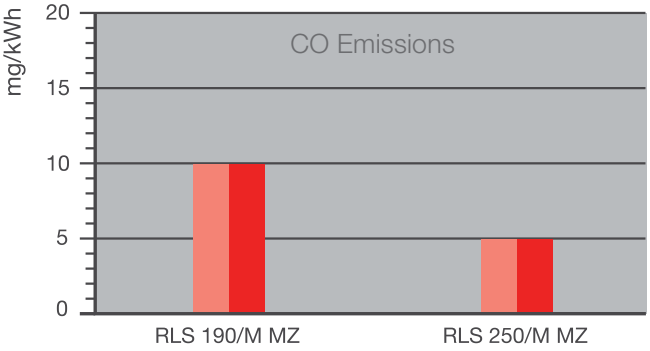
MODEL	V	F (A)	L (mm²)
▶ RLS 250/M MZ	230	25A aM 40A gG	6
	400	16A aM 32A gG	4

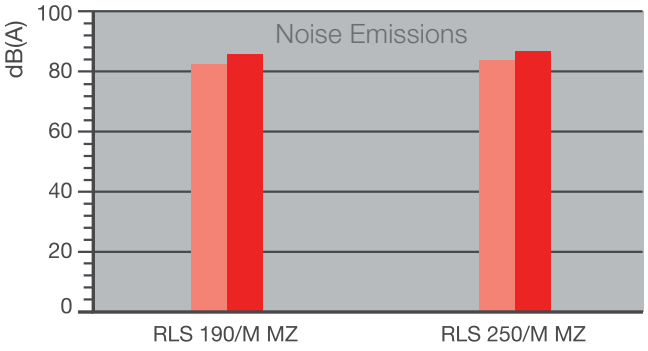
Table A: V = Electrical supply F = Fuse L = Lead section

Emissions

The emission data has been measured at maximum output, according to EN 676 and EN 267 standard.
The NOx emissions of RLS/M MZ burners are conforming to class 2 of EN 676 (gas) and Class 2 of EN 267 (oil).





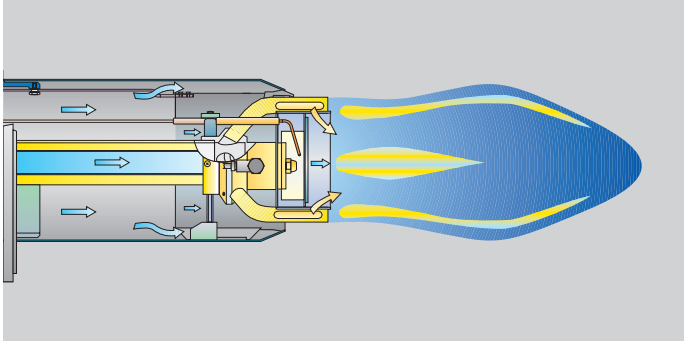


Gas working

Light oil working

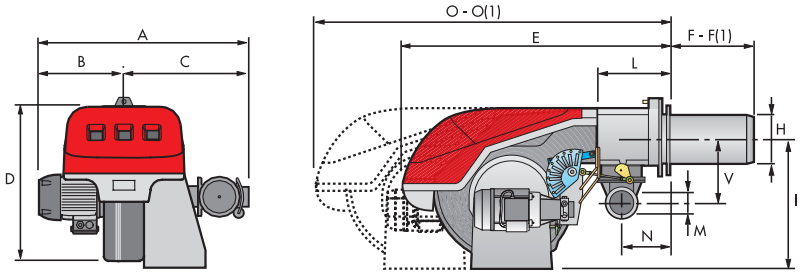
Combustion head operating diagram of RLS/M MZ model

In the RLS/M MZ 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.



Overall Dimensions (mm)

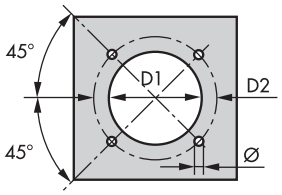
BURNERS



MODEL	A	B	C	D	E	F - F (1)	H	I	L	M	N	O - O (1)	V
▶ RLS 190/M MZ	843	366	477	555	863	412 - 542	222	430	237	Rp2	141	1442 - 1587	186
▶ RLS 250/M MZ	904	427	477	555	863	412 - 542	222	435	237	Rp2	141	1442 - 1587	186

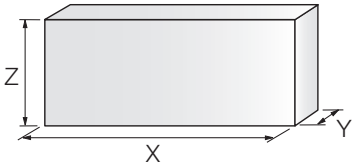
(1) Length with extended combustion head.

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	Y	Z	kg
▶ RLS 190/M MZ	1400	975	645	95
▶ RLS 250/M MZ	1400	1000	765	100

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.

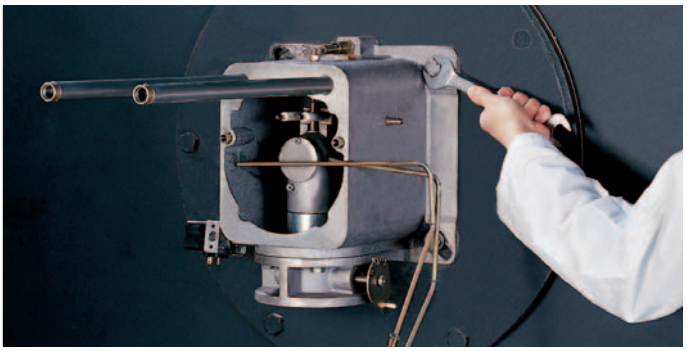
Fit the gas train choosing this on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.

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.

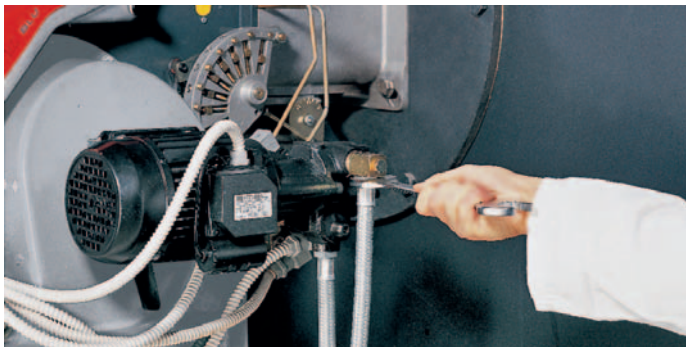
Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.

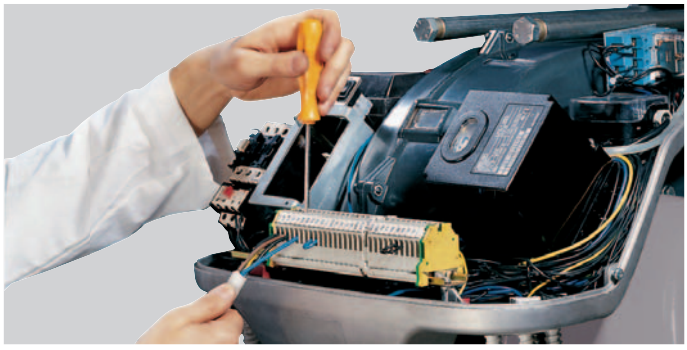
Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.

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

Nozzles type 60° B

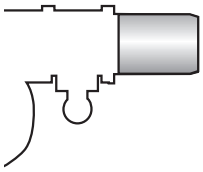
The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

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
▶ RLS 190/M MZ RLS 250/M MZ	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
	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
	105,59	28,00	3042492
▶ RLS 250/M MZ	122	30,00	3042502
	130,1	32,00	3042512
	142,1	35,00	3042522

(*) Nozzle rated delivery is reffered to atomized pressure

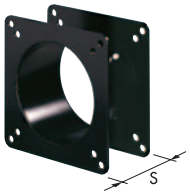
Extended head kit



"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	3010366
▶ RLS 250/M MZ	412	542	3010440

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 MZ	RWF 40	3010212
▶ RLS 250/M MZ	RWF 40	3010414

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

ANALOG CONTROL SIGNAL CONVERTER

BURNER	TYPE (INPUT SIGNAL)	CODE
▶ RLS 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 MZ	3010021
▶ RLS 250/M MZ	3010416

Sound proofing box

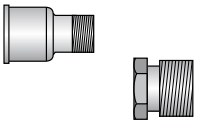
If noise emission needs reducing even further, sound-proofing boxes are available.

BURNER	BOX TYPE	AVERAGE NOISE REDUCTION [dB(A)] (*)	BOX CODE
▶ RLS 190/M MZ	C4/5	10	3010404
▶ RLS 250/M MZ	C7	10	3010376

(*) according to EN 15036-1 standard

Gas train accessories

Adapters



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

BURNER	GAS TRAIN	DIMENSIONS	ADAPTER CODE
▶ RLS 190/M MZ	MBC 1900 SE 65 FC MBC 1900 SE 65 FC CT	DN 65 2" 1/2 — 1" 1/2 / 2"	3000825
	MBC 3100 SE 80 FC MBC 3100 SE 80 FC CT	DN 80 2" 1/2 — 2"	3000826
▶ RLS 250/M MZ	MBD 415	1" 1/2 — 2"	3000843
	MBC 1900 SE 65 FC MBC 1900 SE 65 FC CT	DN 65 2" 1/2 — 1" 1/2 / 2"	3000825
	MBC 3100 SE 80 FC MBC 3100 SE 80 FC CT	DN 80 2" 1/2 — 2"	3000826

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.

BURNER	GAS TRAIN	KIT CODE
▶ RLS 190/M - 250/M MZ	MBC without CT	3010367
▶ RLS 190/M - 250/M MZ	MBD without CT	3010123

Stabiliser spring for multibloc composed

Accessory springs are available to vary the pressure range of the gas train composed. 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	SPRING CODE
▶ MBC 1900 SE 65 FC (CT)* ▶ MBC 3100 SE 80 FC (CT)*	White from 4 to 20 mbar	3010381
	Red from 20 to 40 mbar	3010382
	Black from 40 to 80 mbar	3010383
	Green from 80 to 150 mbar	3010384

* with and without seal control

Specification

DESIGNATION OF SERIES

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

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

Diagnostic : LP Led panel
ST Status panel

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	190	/M	MZ	TC		FS1	3/230-400/50	230/50	

BASIC DESIGNATION

EXTENDED DESIGNATION

AVAILABLE BURNER MODELS

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

Other versions are available on request.

PRODUCT SPECIFICATION

Burner:
Monoblock forced draught Low emission 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 230V or 400V, 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 valve
- two oil valves (1st and 2nd stage)
- flame control panel
- 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.

Gas train:
Fuel supply line, 1”1/2 - 2” configuration:
- MULTIBLOC with integrated filter
- minimum gas pressure switch.

Fuel supply line DN 65 - DN80 configuration:
- filter
- MULTIBLOC
- minimum gas pressure switch.

Conforming to:
- 89/336 (2004/108) EC directive (electromagnetic compatibility)
- 73/23 (2006/95) EC directive (low voltage)
- 92/42/EC directive (performance)
- 90/396/EC directive (gas)
- 98/37/EC directive (machinery)
- EN 676 (gas burners)
- EN 267 (oil 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
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:
- Nozzles
- Extended head kit
- Spacer kit
- Continuous ventilation kit
- RWF 40 output regulator
- Pressure probe 0 ÷ 2.4 bar
- Pressure probe 0 ÷ 16 bar
- Temperature probe -100 ÷ 500°C
- Analog control signal converter
- Potentiometer kit for the servomotor
- Sound proofing box
- Gas train adapter
- Seal control kit
- Stabiliser spring for MULTIBLOC composed

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