

## RLS/M MX SERIES

The RLS/M MX series of burners covers a firing range from 350 to 1840 kW, and they have been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.

Operation is “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 MX series burners guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.

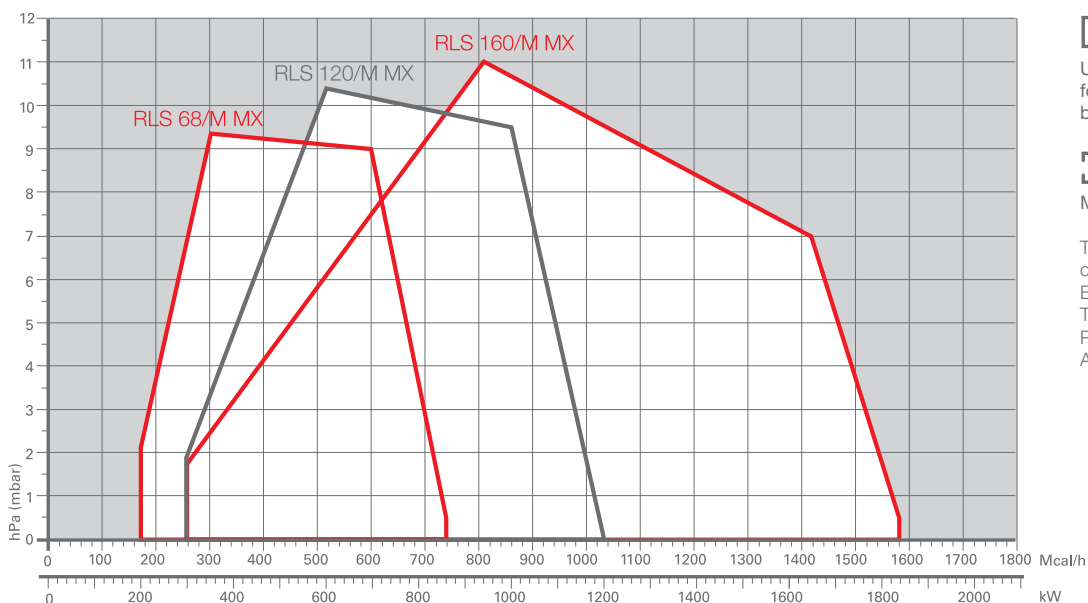
Optimisation of sound emissions is guaranteed by the special design of air suction circuit and the use of sound proofing material.

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



RLS 68/M MX	200/350 ÷ 860 kW
RLS 120/M MX	300/600 ÷ 1200 kW
RLS 160/M MX	300/930 ÷ 1840 kW

### FIRING RATES

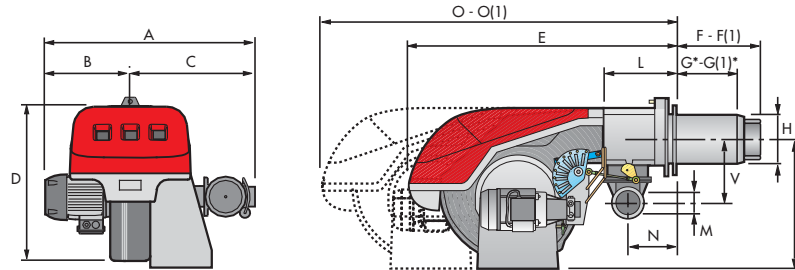


# Low NOx Modulating Dual Fuel Burners

## RLS/M MX SERIES

### Overall dimensions (mm)

#### BURNER

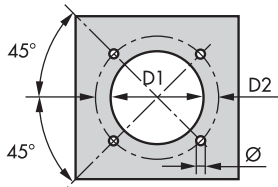


MODEL	A	B	C	D	E	F - F(1)	G* - G(1)*	H	I	L	M	N	O - O(1)	V
▶ RLS 68/M MX	691	296	395	555	840	260 - 395	200 - 335	189	430	214	2"	134	1161 - 1300	221
▶ RLS 120/M MX	733	338	395	555	840	260 - 395	200 - 335	189	430	214	2"	134	1161 - 1300	221
▶ RLS 160/M MX	843	366	477	555	863	373 - 503	272 - 402	221	430	237	2"	141	1442 - 1589	186

(1) Length with extended combustion head.

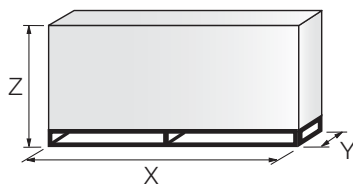
\* Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

#### BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
▶ RLS 68-120/M MX	195	275 - 325	M12
▶ RLS 160/M MX	230	325 - 368	M16

#### PACKAGING

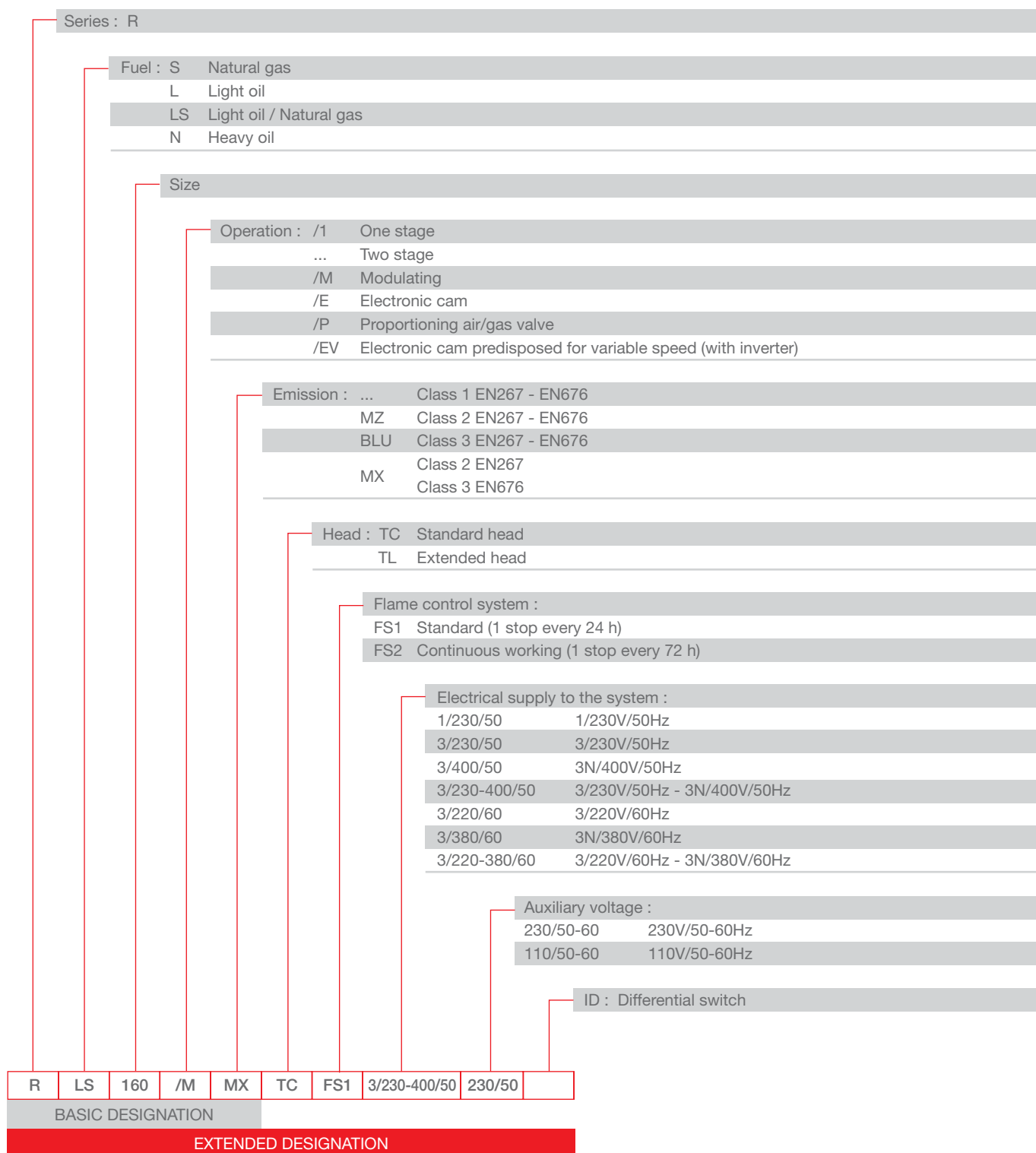


MODEL	X (1)	Y	Z	kg
▶ RLS 68/M MX	1400	975	645	70
▶ RLS 120/M MX	1400	975	645	76
▶ RLS 160/M MX	1400	975	645	95

(1) Length with standard and extended combustion head.

# Specification

## DESIGNATION OF SERIES



# Low NOx Modulating Dual Fuel Burners

## RLS/M MX SERIES

### Specification

#### STATE OF SUPPLY

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

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

#### Standard equipment:

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

## RLS/M MX SERIES

### Available models

#### Burners

CODE	MODEL						HEAT OUTPUT			TOTAL ELECTRICAL POWER (kW)	CERTIFICATION	NOTE
							(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)			
3898010	RLS 68/M MX	TC	FS1	3/230-400/50	230/50-60	200/350-860	17/30-73	27/40-100	2,2	CE 0085BP0175		
3898011	RLS 68/M MX	TL	FS1	3/230-400/50	230/50-60	200/350-860	17/30-73	27/40-100	2,2	CE 0085BP0175		
3898020	RLS 68/M MX	TC	FS2	3/230-400/50	230/50-60	200/350-860	17/30-73	27/40-100	2,2	CE 0085BP0175		
3898021	RLS 68/M MX	TL	FS2	3/230-400/50	230/50-60	200/350-860	17/30-73	27/40-100	2,2	CE 0085BP0175		
3898110	RLS 120/M MX	TC	FS1	3/230-400/50	230/50-60	300/600-1200	25/50-101	37/70-140	3,0	CE 0085BP0175		
3898111	RLS 120/M MX	TL	FS1	3/230-400/50	230/50-60	300/600-1200	25/50-101	37/70-140	3,0	CE 0085BP0175		
3898120	RLS 120/M MX	TC	FS2	3/230-400/50	230/50-60	300/600-1200	25/50-101	37/70-140	3,0	CE 0085BP0175		
3898121	RLS 120/M MX	TL	FS2	3/230-400/50	230/50-60	300/600-1200	25/50-101	37/70-140	3,0	CE 0085BP0175		
3898210	RLS 160/M MX	TC	FS1	3/400/50	230/50-60	300/930-1840	25/78-155	30/93-184	6,0	CE 0085BN0625		
20011635	RLS 160/M MX	TC	FS1	3/230/50	230/50-60	300/930-1840	25/78-155	30/93-184	6,0	CE 0085BN0625		
3898211	RLS 160/M MX	TL	FS1	3/400/50	230/50-60	300/930-1840	25/78-155	30/93-184	6,0	CE 0085BN0625		
20011642	RLS 160/M MX	TL	FS1	3/230/50	230/50-60	300/930-1840	25/78-155	30/93-184	6,0	CE 0085BN0625		
3898220	RLS 160/M MX	TC	FS2	3/400/50	230/50-60	300/930-1840	25/78-155	30/93-184	6,0	CE 0085BN0625		
20011644	RLS 160/M MX	TC	FS2	3/230/50	230/50-60	300/930-1840	25/78-155	30/93-184	6,0	CE 0085BN0625		
3898221	RLS 160/M MX	TL	FS2	3/400/50	230/50-60	300/930-1840	25/78-155	30/93-184	6,0	CE 0085BN0625		
20011645	RLS 160/M MX	TL	FS2	3/230/50	230/50-60	300/930-1840	25/78-155	30/93-184	6,0	CE 0085BN0625		

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm<sup>2</sup>/s (cSt).

Net calorific value G20 gas: 10 kWh/Nm<sup>3</sup>; 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

The burners of RLS/M MX series are in according to 90/396 - 2004/108 - 2006/95 - EC Directive and EN 267 - 676 Norm.

# Low NOx Modulating Dual Fuel Burners

## RLS/M MX SERIES

### Available models

#### Gas Trains

CODE	GAS TRAIN			VPS 50 Hz CODE	ADAPTER CODE RLS 68-120-160
	MODEL	Ø	C.T.		
3970258 *	MB 410/1 - RT 52	Rp 1" 1/2	-	3010123	3000843
3970554 *	MB 410/1 - RT 20	Rp 3/4"	-	3010123	3000824 + 3000843
3970600 *	MB 410/1 - RT 52	Rp 3/4"	-	3010123	3000824 + 3000843
3970230 *	MB 410/1 - RSM 20	Rp 3/4"	-	3010123	3000824 + 3000843
3970256 *	MB 412/1 - RT 52	Rp 1" 1/2	-	3010123	3000843
3970144 *	MB 412/1 - RT 20	Rp 1" 1/2	-	3010123	3000843
3970197 **	MB 412/1 CT RT 20	Rp 1" 1/2	◆	3010123	3000843
3970231 *	MB 412/1 - RSM 20	Rp 1" 1/2	-	3010123	3000843
3970180 *	MB 415/1 - RT 30	Rp 1" 1/2	-	3010123	3000843
3970198 **	MB 415/1 CT RT 30	Rp 1" 1/2	◆	3010123	3000843
3970250 *	MB 415/1 - RT 52	Rp 1" 1/2	-	3010123	3000843
3970253 **	MB 415/1 CT RT 52	Rp 1" 1/2	◆	-	3000843
3970232 *	MB 415/1 - RSM 30	Rp 1" 1/2	-	3010123	3000843
3970181 *	MB 420/1 - RT 30	Rp 2"	-	3010123	-
3970182 **	MB 420/1 CT RT 30	Rp 2"	◆	3010123	-
3970257 *	MB 420/1 - RT 52	Rp 2"	-	3010123	-
3970252 **	MB 420/1 CT RT 52	Rp 2"	◆	3010123	-
3970233 *	MB 420/1 - RSM 30	Rp 2"	-	3010123	-
3970234 **	MB 420/1 CT RSM 30	Rp 2"	◆	-	-
3970221 *	MBC 1200/1 - RSM 60	Rp 2"	-	3010367	-
3970225 **	MBC 1200/1 CT RSM 60	Rp 2"	◆	-	-
3970222 *	MBC 1900/1 - FSM 40	DN 65	-	3010367	3000825
3970226 **	MBC 1900/1 CT FSM 40	DN 65	◆	-	3000825
3970223 *	MBC 3100/1 - FSM 40	DN 80	-	3010367	3000826
3970227 **	MBC 3100/1 CT FSM 40	DN 80	◆	-	3000826
3970145 *	CB 512/1 - RSM 30	Rp 1" 1/2	-	3010367	3000843
20045589 **	CB 512/1 CT RSM 30	Rp 1" 1/2	◆	-	3000843
3970146 *	CB 520/1 - RSM 30	Rp 2"	-	3010367	-
3970160 **	CB 520/1 CT RSM 30	Rp 2"	◆	-	-
20044659 *	CB 525/1 - RSM 30	Rp 2"	-	3010367	-
20044660 **	CB 525/1 CT RSM 30	Rp 2"	◆	-	-
3970147 *	CB 5065/1 - FSM 30	DN 65	-	3010367	3000825
3970161 **	CB 5065/1 CT FSM 30	DN 65	◆	-	3000825
3970148 *	CB 5080/1 - FSM 30	DN 80	-	3010367	3000826
3970162 **	CB 5080/1 CT FSM 30	DN 80	◆	-	3000826

Please see designation of Gas Train Series in the page before the Catalogue index.

\* 230V/50Hz -220V/60Hz electrical supply.

\*\* 230V/50Hz electrical supply.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

C.T. Gas valve leak detection control device:

- gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

◆ gas train equipped with leak detection control device.

VPS Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).

## 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 68-120/M MX	21,2	5,00	3042582
	23,3	5,50	3042202
	25,5	6,00	3042583
	27,6	6,50	3042222
	29,7	7,00	3042584
	31,8	7,50	3042242
	33,9	8,00	3042585
	36,1	8,50	3042262
	38,2	9,00	3042586
	40,3	9,50	3042282
	42,4	10,00	3042292
	46,7	11,00	3042312
	50,9	12,00	3042322
	55,1	13,00	3042332
► RLS/M MX	59,4	14,00	3042352
	63,6	15,00	3042362
	67,9	16,00	3042382
	72,1	17,00	3042392
	76,4	18,00	3042412
	80,6	19,00	3042422
	84,8	20,00	3042442
► RLS 160/M MX	93,3	22,00	3042462
	101,8	24,00	3042472
	110,3	26,00	3042482
	118,8	28,00	20018051

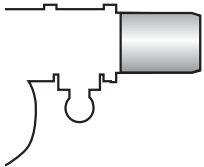
(\*) Nozzle rated delivery is referred to atomized pressure

# Low NOx Modulating Dual Fuel Burners

## RLS/M MX SERIES

### Burner accessories

#### Extended head kit



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

BURNER	STANDARD HEAD LENGTH (mm)	EXTENDED HEAD LENGTH (mm)	KIT CODE
RLS 68-120/M MX	260	395	3010360
RLS 160/M MX	373	503	3010441 *

\* Kit to be used on burners recognizable by a serial number that is over or equal to 02426XXXXXX, for burners with a serial number that is under or equal to 02416XXXXXX please use the Kit coded 3010340

#### 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/M MX	102	3000722

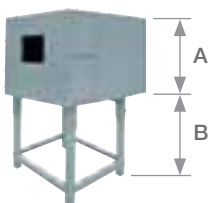
#### Continuous ventilation kit



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/M MX	3010094

#### Sound proofing box



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

BURNER	BOX TYPE	A (mm)	B (mm) min-max	[dB(A)] (*)	BOX CODE
► RLS 68-120-160/M MX	C4/5	850	160 - 980	10	3010404

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



## Burner accessories

### Accessories for modulating operation



To obtain modulating operation, the RLS/M MX 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	REGULATOR TYPE	REGULATOR CODE
► RLS/M MX	RWF 40	3010212



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

BURNER	PROBE TYPE	RANGE (°C) (bar)	PROBE CODE
► RLS/M MX	Temperature PT 100	-100 ÷ 500°C	3010110
► RLS/M MX	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
► RLS/M MX	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214



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	POTENTIOMETER KIT CODE
► RLS/M MX	3010021

### Head kit for “reverse flame chamber”



In certain cases, the use of the burner on reverse flame boilers can be improved by using an additional Pipes Kit.

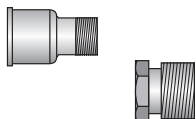
BURNER	KIT CODE
► RLS 68/M MX	20006401
► RLS 120/M MX	20006402
► RLS 160/M MX	3010249

# Low NOx Modulating Dual Fuel Burners








## RLS/M MX SERIES

### 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. Below are given the available adapters; please see on the Gas Train list the correct adapter codes to select.

ADAPTER	LENGTH mm	ADAPTER CODE
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

#### Stabiliser spring



Accessory springs are available to vary the pressure range of the gas train stabilisers. The following table shows these accessories with their application range. Please refer to the technical manual for the correct choice of spring.

GAS TRAIN	SPRING COLOUR	SPRING PRESSURE RANGE mbar	SPRING CODE
▶ MBC 1900/1 - 3100/1	White	4 - 20	3010381
	Red	20 - 40	3010382
	Black	40 - 80	3010383
	Green	80 - 150	3010384
▶ CB 512/1	Red	25 - 55	3010131
	Black	60 - 110	3010157
	Pink	90 - 150	3090486
▶ CB 520/1 - 525/1	Red	25 - 55	3010132
	Black	60 - 110	3010158
	Pink	90 - 150	3090487
	Red	25 - 55	3010133
▶ CB 5065/1 - 5080/1	Black	60 - 110	3010135
	Pink	100 - 150	3090456
	Grey	140 - 200	3090992

#### Seal control kit



To test the valve seals on the gas train, a special "seal control kit" is available. The valve seal control device is compulsory (EN 676) on gas trains to burners with a maximum output over 1200 kW. The seal control is type VPS 504.

GAS TRAIN	KIT CODE for 50 Hz operation	KIT CODE for 60 Hz operation
▶ MBC/1 type	3010367	20029057
▶ CB/1 type	3010367	20029057

## RLS/BP MX SERIES

RLS/BP MX series burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.

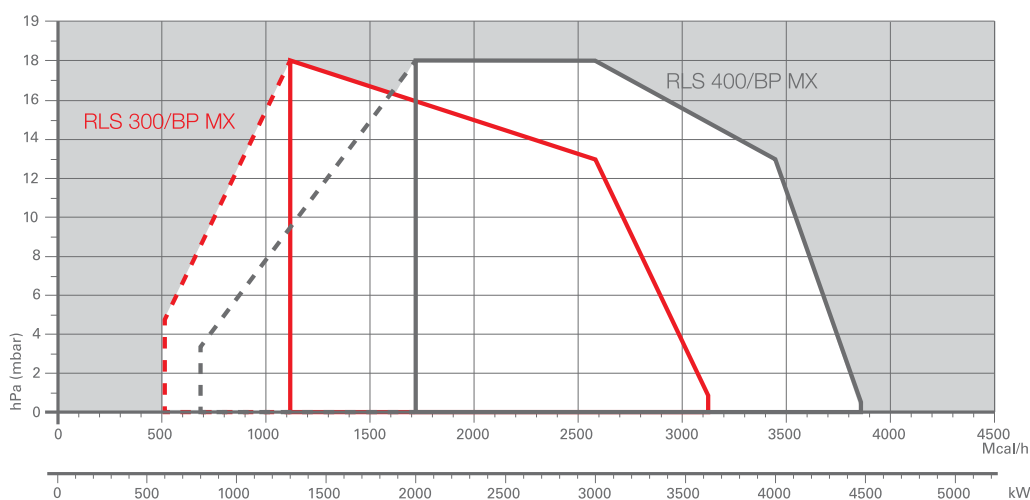
The series covers a firing range from 1250 to 4500 kW, and they have been designed for use in hot water boilers, overheated water boilers as well as steam boilers. Burners working is 2 stages on the oil side and two stages progressive on the gas side. Alternatively the gas working can be modulating with the installation of a PID logic regulator. Using a particular proportioning gas valve the burner keeps the desired air/gas ratio in every working condition.


The innovative combustion head which is able to reach good performances in term of Low NOx either during gas working or light oil working and reducing noise.



RLS 300/BP MX	600/1250 ÷ 3650 kW
RLS 400/BP MX	800/2000 ÷ 4500 kW

### FIRING RATES



 Useful working field for choosing the burner

 Modulation range

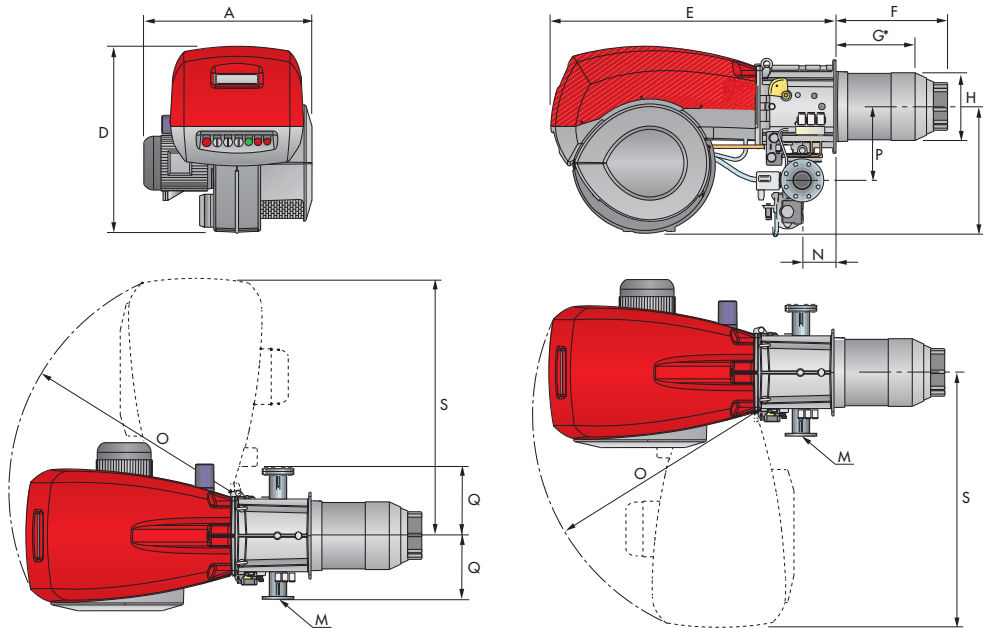
Test conditions conforming to EN267-EN676  
 Temperature: 20°C  
 Pressure: 1013,5 mbar  
 Altitude: 0 m a.s.l.

# Low NOx Modulating Dual Fuel Burners

## RLS/BP MX SERIES

### Overall dimensions (mm)

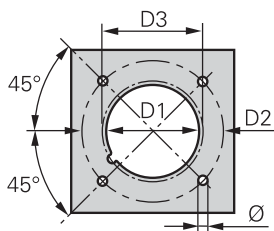
#### BURNER



MODEL	A	D	E	F	G*	H	I	M	N	O	P	Q	S
▶ RLS 300/BP MX	720	890	1325	508	365	313	605	DN80	164	1055	342	320	1175
▶ RLS 400/BP MX	775	890	1325	508	365	313	605	DN80	164	1055	342	320	1175

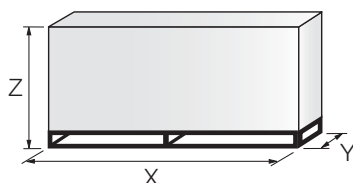
\* Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

#### BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	D3	Ø
▶ RLS 300/BP MX	350	452	354	M18
▶ RLS 400/BP MX	350	452	354	M18

#### PACKAGING



MODEL	X	Y	Z	kg
▶ RLS 300/BP MX	1960	970	1100	280
▶ RLS 400/BP MX	1960	970	1100	290

# Specification

## DESIGNATION OF SERIES



# Low NOx Modulating Dual Fuel Burners

## RLS/BP MX SERIES

### Specification

#### STATE OF SUPPLY

Monoblock forced draught gas burner with “two stage progressive” or “modulating” operation, fully automatic, made up of:

- Fan with reverse curve blades high performance with low sound emissions
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Low emission combustion head, that can be set on the basis of required output, fitted with:
  - stainless steel end cone, resistant to corrosion and high temperatures
  - ignition electrodes
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Module for air/fuel setting and output modulation with separated PID control of temperature or pressure, available as accessory for RLS/BP MX model
- Burner safety control box for controlling the system safety
- Ionization probe for flame detector
- Star/triangle starter for the fan motor (only for RLS 400/BP MX model)
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Lifting rings
- IP 54 electric protection level
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Three oil valves (1st and 2nd stage 3rd safety valve)
- UV photocell for flame detection
- Oil/Gas selector
- Flame inspection window
- Burner opening hinge.

#### Standard equipment:

- 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.

# Low NOx Modulating Dual Fuel Burners

## RLS/BP MX SERIES

**RIELLO**

## Available models

### Burners

CODE	MODEL	HEAT OUTPUT			TOTAL ELECTRICAL POWER (kW)	CERTIFICATION	NOTE
		(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)			
3898510	RLS 300/BP MX TC FS1 3/230-400/50 230/50-60	600/1250-3650	50/105-308	60/125-365	7,5	CE 0085 BP5534	
20006452	RLS 300/BP MX TC FS1 3/220-380/60 220/60	600/1250-3650	50/105-308	60/125-365	7,5	-	
3898612	RLS 400/BP MX TC FS1 3/400/50 230/50-60	800/2000-4500	68/169-380	80/200-450	11	CE 0085 BP5535	

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm<sup>2</sup>/s (cSt).

Net calorific value G20 gas: 10 kWh/Nm<sup>3</sup>; 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

The burners of RLS/BP MX series are in according to 90/396 - 2004/108 - 2006/95 - EC Directive and EN 267 - 676 Norm.

### Gas Trains

GAS TRAIN CODE *	GAS TRAIN MODEL	NATURAL GAS		SEAL CONTROL 50 Hz CODE	NOTE
		BURNER (type)	ADAPTER (code)		
3970215	VGD 50/P - FT 02	RLS 300/BP MX RLS 400/BP MX	3000826	3010367	(1) (2)
3970212	VGD 65/P - FT 02	RLS 300/BP MX RLS 400/BP MX	3010221 or 3010369**	3010367	(1) (2)
3970213	VGD 80/P - FT 02	RLS 300/BP MX RLS 400/BP MX	3010222	3010367	(1) (2)
3970214	VGD 100/P - FT 02	RLS 300/BP MX RLS 400/BP MX	3010223 or 3010370**	3010367	(1) (2)

Please see Designation of Gas Train Series in the page before the Catalogue index.

\* Gas trains are 230V/50Hz - 220V/60Hz electrical supply.

\*\* See adapter length on "Gas trains accessories" paragraph.

(1) Seal control to be ordered separately - see "Gas trains accessories" section.

(2) Adapter is necessary when the gas train has to be installed to the left of the burner to allow maintenance, or if is necessary to space out the gas train from burner.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

COMPOSED GAS TRAIN

LOW NOx DUAL FUEL

# Low NOx Modulating Dual Fuel Burners

## RLS/BP MX SERIES

### 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	GPH	RATED OUTPUT (kg/h)			NOZZLE CODE
		at 10 bar	at 12 bar	at 14 bar	
▶ RLS/BP MX	12,00	44,2	48,7	53,0	3009950
▶ RLS/BP MX	13,00	47,8	52,8	57,4	3009951
▶ RLS/BP MX	14,00	51,5	56,9	61,8	3009952
▶ RLS/BP MX	15,00	55,2	60,9	66,2	3009953
▶ RLS/BP MX	16,00	58,9	65,0	70,6	3009954
▶ RLS/BP MX	17,00	62,6	69,0	75,0	3009955
▶ RLS/BP MX	18,00	66,2	73,1	79,4	3009956
▶ RLS/BP MX	19,00	69,9	77,2	83,5	3009957
▶ RLS/BP MX	20,00	73,6	81,2	88,3	3009958
▶ RLS/BP MX	22,00	81,0	89,3	97,1	3009959
▶ RLS/BP MX	24,00	88,3	97,5	105,9	3009960
▶ RLS/BP MX	26,00	95,7	105,6	114,7	3009961
▶ RLS/BP MX	28,00	103,1	113,7	123,6	3009962
▶ RLS/BP MX	30,00	110,4	121,8	132,4	3009963
▶ RLS/BP MX	35,00	128,8	142,1	154,5	3009964
▶ RLS/BP MX	40,00	147,2	162,4	176,5	3009965
▶ RLS/BP MX	45,00	165,6	182,7	198,6	3009966
▶ RLS/BP MX	50,00	184,0	203,0	220,7	3009967
▶ RLS/BP MX	55,00	202,4	223,4	242,7	3009968
▶ RLS/BP MX	60,00	220,8	243,7	264,8	3009969
▶ RLS/BP MX	65,00	239,2	264,0	286,9	3009970
▶ RLS/BP MX	70,00	257,6	284,3	309,0	3009971

#### Fuel remote selection kit



BURNER	KIT CODE
▶ RLS 300-400/BP MX	3010372

#### 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 300-400/BP MX	180	20008903



## Burner accessories

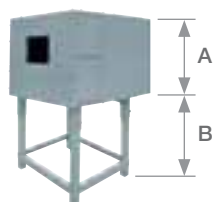
### Continuous ventilation kit



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 300-400/BP MX	3010030

### Sound proofing box



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

BURNER	BOX TYPE	A (mm)	B (mm) min-max	[dB(A)] (*)	BOX CODE
► RLS 300-400/BP MX	C7	1255	160 - 980	10	3010376

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

### Accessories for modulating operation



To obtain modulating operation, the RLS/BP MX 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	REGULATOR TYPE	REGULATOR CODE
► RLS 300-400/BP MX	RWF 40 Basic version with 3 position output	3010356
► RLS 300-400/BP MX	RWF 40 High version with additional modulating output and RS 485 Interface	3010357

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



BURNER	PROBE TYPE	RANGE (°C) (bar)	PROBE CODE
► RLS 300-400/BP MX	Temperature PT 100	-100 ÷ 500°C	3010110
► RLS 300-400/BP MX	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
► RLS 300-400/BP MX	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214

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	POTENTIOMETER KIT CODE
► RLS 300-400/BP MX	3010021

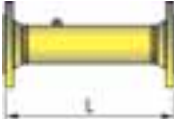


# Low NOx Modulating Dual Fuel Burners


## RLS/BP MX SERIES

### Gas train accessories

#### Adapters



If is necessary to space out the gas train from burner an extension adapter is available.

BURNER	GAS TRAIN	ADAPTER TYPE	DIMENSIONS	L mm	ADAPTER CODE
► RLS 300-400/BP MX	VGD 50* VGDF 65* VGDF 80* VGDF 100*	I	DN 80  DN 80	400	3010222

\* with and without seal control

#### 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.

GAS TRAIN	KIT CODE for 50 Hz operation	KIT CODE for 60 Hz operation
► VGD type	3010367	on demand

## RLS 500÷800/M MX SERIES

RLS/M MX burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.

The series covers a firing range from 1120 to 8000 kW, and it has been designed for use in hot water boilers, overheated water boilers as well as steam boilers.

Operation can be "two stage progressive" or alternatively "modulating", for both fuels, light oil and gas, with the installation of a PID logic regulator .

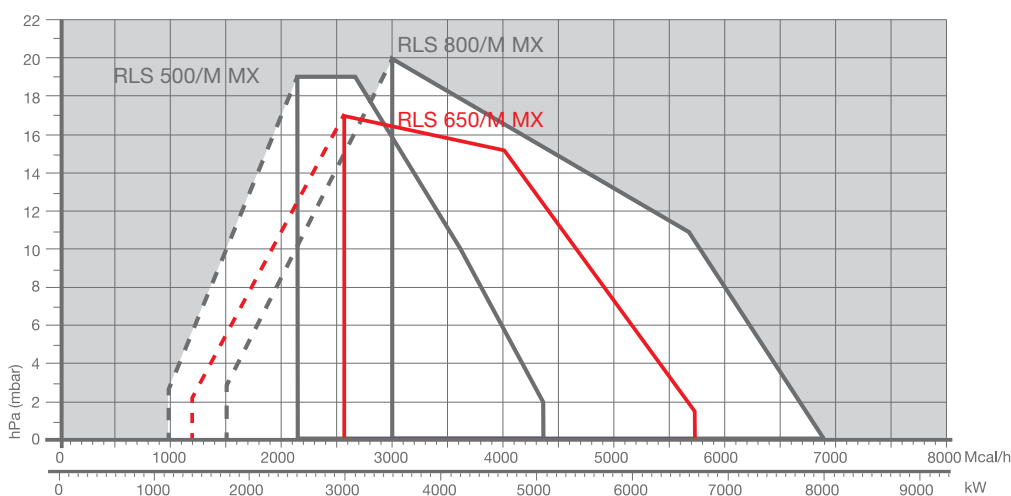
The mechanical cam device of regulation allows to catch up a high modulation ratio on all firing rates range. The burners can, therefore, supply with precision the demanded power, guaranteeing a high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.

The combustion head guarantees reduced polluting emissions (NOx < 80 mg/kWh on gas operation). An exclusive design guarantees low sound emissions, low electrical consumption, easy use and maintenance.



RLS 500/M MX	1120/2500 ÷ 5050 kW
RLS 650/M MX	1430/3000 ÷ 6550 kW
RLS 800/M MX	1750/3500 ÷ 8000 kW

### FIRING RATES



Useful working field for choosing the burner

Modulation range

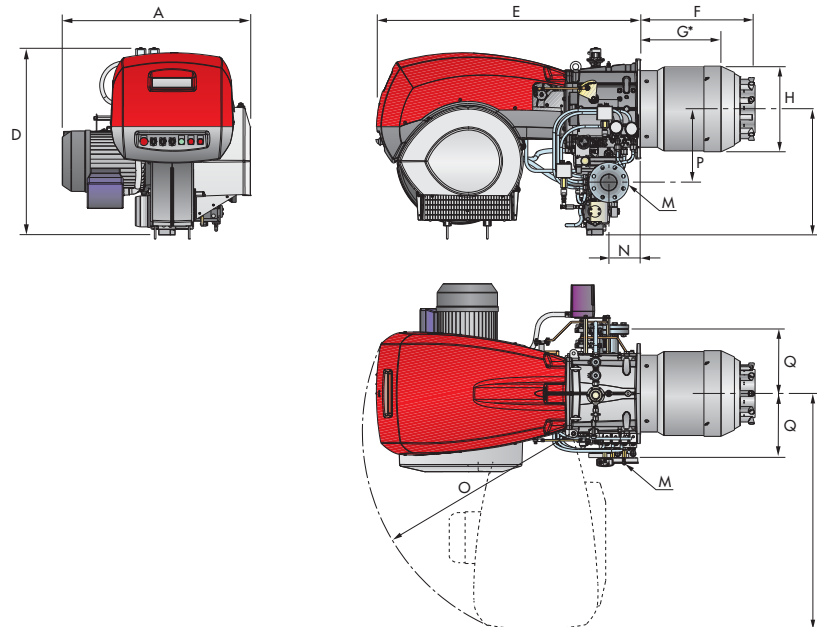
Test conditions conforming to EN267-EN676  
 Temperature: 20°C  
 Pressure: 1013,5 mbar  
 Altitude: 0 m a.s.l.

# Low NOx Modulating Dual Fuel Burners

## RLS 500÷800/M MX SERIES

### Overall dimensions (mm)

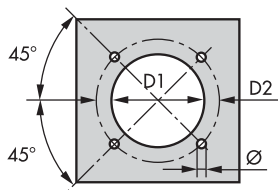
#### BURNER



MODEL	A	D	E	F	G*	H	I	M	N	O	P	Q	S
▶ RLS 500/M MX	900	890	1325	544	390	370	605	DN80	164	1055	342	320	1175
▶ RLS 650/M MX	880	950	1325	562	360	410	630	DN80	164	1055	427	320	1190
▶ RLS 800/M MX	940	937	1325	558	382	428	630	DN80	164	1055	427	320	1190

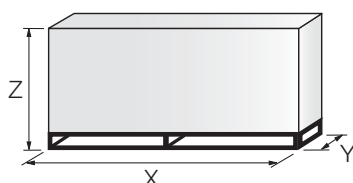
\* Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

#### BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
▶ RLS 500/M MX	390	452	M18
▶ RLS 650/M MX	440	495	M18
▶ RLS 800/M MX	440	495	M18

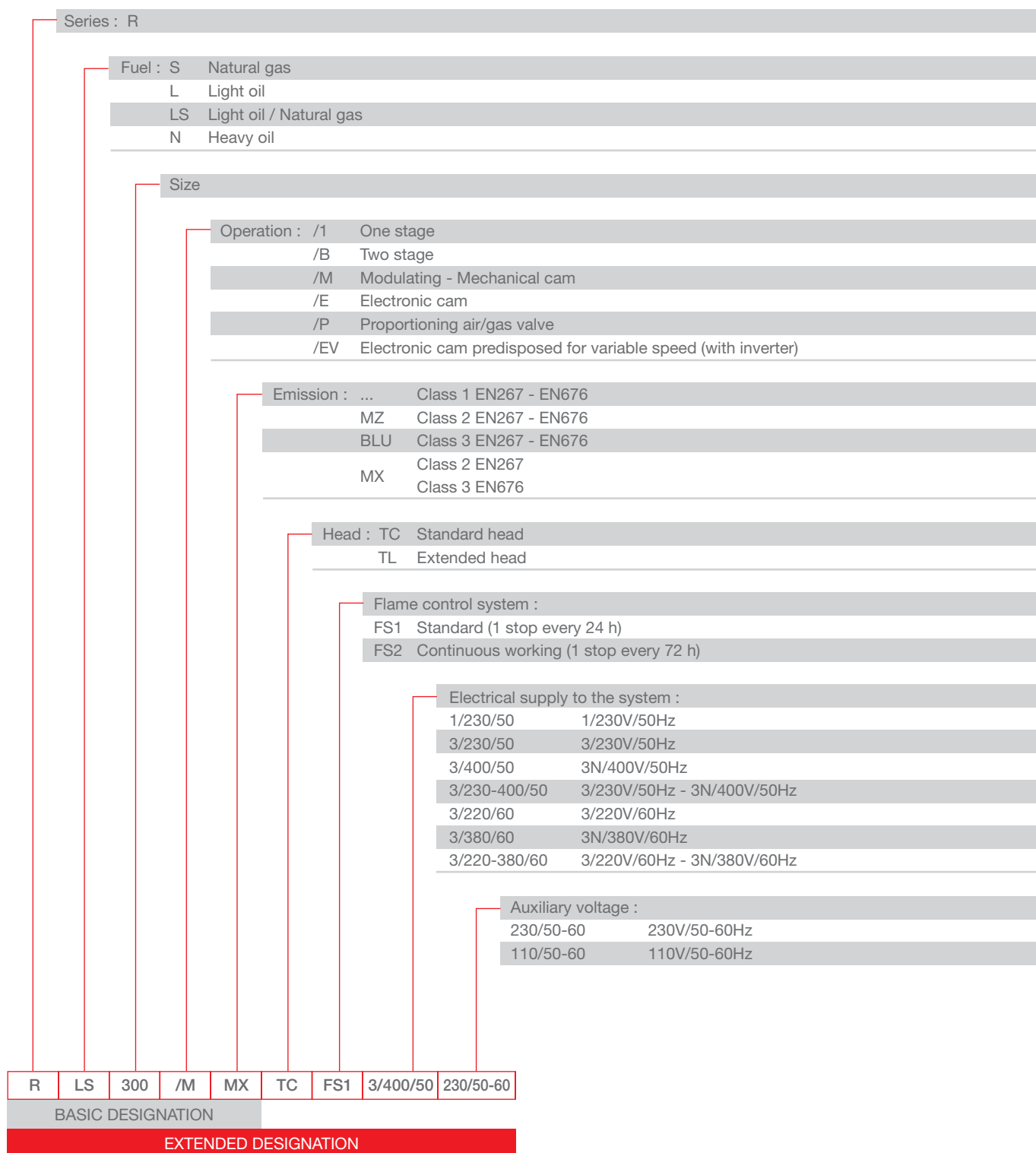
#### PACKAGING



MODEL	X	Y	Z	kg
▶ RLS 500/M MX	1960	970	1100	280
▶ RLS 650/M MX	2035	1195	1130	320
▶ RLS 800/M MX	2035	1195	1130	320

## Specification

### DESIGNATION OF SERIES



# Low NOx Modulating Dual Fuel Burners

## RLS 500÷800/M MX SERIES

### Specification

#### STATE OF SUPPLY

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

- High performance fan with forward curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase, 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
  - ignition by gas pilot with gas train for RLS 650 and RLS 800 models
  - flame stability disk
- Mechanical cam with gas and oil modulator
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of over pressure on the fuel supply line
- Flame control panel for controlling the system safety - Infrared flame detector
- Star/triangle starter for the fan motor - Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Light oil gears pump for high pressure fuel supply
- Dedicated pump starting motor
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Maximum an minimum oil pressure switches
- Oil pressure gauges on supply and return oil lines
- Oil/Gas selector
- Flame inspection window.

#### Standard equipment:

- 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
- Seal control pressure switch (for installation on gas train)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

# Low NOx Modulating Dual Fuel Burners

## RLS 500÷800/M MX SERIES

**RIELLO**

## Available models

### Burners

CODE	MODEL	HEAT OUTPUT			TOTAL ELECTRICAL POWER (kW)	CERTIFICATION	NOTE
		(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)			
3899612	RLS 500/M MX TC FS1 3/400/50 230/50-60	1120/2500-5050	95/211-426	112/250-505	15 (oil) 13 (gas)	CE 0085CL0207	(1)
20026139	RLS 650/M MX TC FS1 3/400/50 230/50-60	1430/3000-6550	121/253÷552	143/300÷655	23,5 (oil) 19,5 (gas)	CE 0085CL0422	(2)
3911112	RLS 800/M MX TC FS1 3/400/50 230/50-60	1750/3500-8000	148/295-675	175/350-800	26 (oil) 24 (gas)	CE 0085CL0422	(1)

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm<sup>2</sup>/s (cSt).

Net calorific value G20 gas: 10 kWh/Nm<sup>3</sup>; 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

(1) according to 90/396 - 2004/108 - 2006/95 - EC Directive and EN 267 - 676 Norm.

(2) according to 2009/142 EC - 2006/95 EC - 2004/108 - EC Directive and EN 267 - 676 Norm.

### Gas Trains

CODE	GAS TRAIN			VPS 50 Hz CODE	ADAPTER CODE RLS 500-650-800
	MODEL	Ø	C.T.		
3970221 *	MBC 1200/1 - RSM 60	Rp 2"	-	3010367	3000826 + 20042324
3970225 **	MBC 1200/1 CT RSM 60	Rp 2"	◆	-	3000826 + 20042324
3970222 *	MBC 1900/1 - FSM 40	DN 65	-	3010367	3010369
3970226 **	MBC 1900/1 CT FSM 40	DN 65	◆	-	3010369
3970223 *	MBC 3100/1 - FSM 40	DN 80	-	3010367	3010222 (1)
3970227 **	MBC 3100/1 CT FSM 40	DN 80	◆	-	3010222 (1)
3970224 *	MBC 5000/1 - FSM 80	DN 100	-	3010367	3010370
3970228 **	MBC 5000/1 CT FSM 80	DN 100	◆	-	3010370
3970147 *	CB 5065/1 - FSM 30	DN 65	-	3010367	3010221 or 3010369
3970161 **	CB 5065/1 CT FSM 30	DN 65	◆	-	3010221 or 3010369
3970148 *	CB 5080/1 - FSM 30	DN 80	-	3010367	3010222 (1)
3970162 **	CB 5080/1 CT FSM 30	DN 80	◆	-	3010222 (1)
3970149 *	CB 50100/1 - FSM 30	DN 100	-	3010367	3010223 or 3010370
3970163 **	CB 50100/1 CT FSM 30	DN 100	◆	-	3010223 or 3010370

Please see designation of Gas Train Series in the page before the Catalogue index.

\* 230V/50Hz - 220V/60Hz electrical supply.

\*\* 230V/50Hz electrical supply.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

C.T. Gas valve leak detection control device:

- gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

◆ gas train equipped with leak detection control device.

VPS Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).

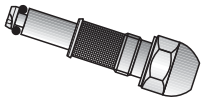
(1) To use if it is necessary to space out the gas train from the burner.

# Low NOx Modulating Dual Fuel Burners

## RLS 500÷800/M MX SERIES

### Burner accessories

#### Nozzles



Return nozzles without needle are used on RLS/M MX burners. The nozzle must be ordered as accessory. The following table shows the features and codes on the basis of the maximum required fuel output.

BURNER	NOZZLE TYPE	RATED DELIVERY (kg/h)	NOZZLE CODE
▶ RLS 500/M MX	N2	350	3045495
▶ RLS 500/M MX	N2	400	3045499
▶ RLS 500/M MX	N2	450	3045501
▶ RLS 500/M MX	N2	500	3045503
▶ RLS 650/M MX	N2	350	3045495
▶ RLS 650/M MX	N2	450	3045501
▶ RLS 650/M MX	N2	550	3045505
▶ RLS 650/M MX	N2	600	3045507
▶ RLS 800/M MX	B5	375	3009332
▶ RLS 800/M MX	B5	550	3009346
▶ RLS 800/M MX	B5	650	3009352
▶ RLS 800/M MX	B5	750	3009356

#### Accessories for modulating operation

##### POWER CONTROLLER



To obtain modulating operation, the RLS/M MX series of burners requires a regulator.

BURNER	REGULATOR TYPE	REGULATOR CODE
▶ RLS 500-650-800/M MX	RWF 40 Basic version with 3 position output	3010356
▶ RLS 500-650-800/M MX	RWF 40 High version with additional modulating output and RS 485 Interface	3010357

##### PROBE



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

BURNER	PROBE TYPE	RANGE (°C) (bar)	PROBE CODE
▶ RLS/M MX	Temperature PT 100	-100 ÷ 500°C	3010110
▶ RLS/M MX	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
▶ RLS/M MX	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214

##### ANALOG CONTROL SIGNAL CONVERTER



BURNER	TYPE (INPUT SIGNAL)	CODE
▶ All models	0/2 - 10 V (impedance 200 KΩ) 0/4 - 20 mA (impedance 250 Ω)	3010390



## Burner accessories

### POTENTIOMETER



BURNER	KIT CODE
All models	3010402

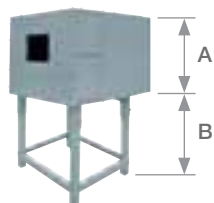
It is necessary for analogic control signal converter operation.

### Fuel remote selection kit



BURNER	KIT CODE
► All models	3010372

### Sound proofing box



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

BURNER	BOX TYPE	A (mm)	B (mm) min-max	[dB(A)] (*)	BOX CODE
► All models	C7	1255	160 - 980	10	3010376

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

### Spacer kit



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

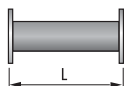
BURNER	SPACER THICKNESS S (mm)	KIT CODE
► All models	180	20008903

# Low NOx Modulating Dual Fuel Burners

## RLS 500÷800/M MX SERIES

### Gas train accessories

#### Adapters



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

ADAPTER	LENGTH mm	ADAPTER CODE
DN 80	300	3000826
1" 1/2	65	20042324
DN 65  DN 80	400	3010221
DN 80  DN 80	400	3010222
DN 100  DN 80	400	3010223
DN 65  DN 80	10	3010369
DN 100  DN 80	50	3010370

#### Stabiliser spring



To vary the pressure range of the gas train stabilisers, accessory springs are available. The following table shows these accessories with their application range. Please refer to the technical manual for the correct choice of spring.

GAS TRAIN	SPRING COLOUR	SPRING PRESSURE RANGE mbar	SPRING CODE
▶ CB 5065/1 - 5080/1	Red	25 - 55	3010133
	Black	60 - 110	3010135
	Pink	100 - 150	3090456
	Grey	140 - 200	3090992
▶ CB 50100/1	Red	25 - 55	3010134
	Black	60 - 110	3010136
	Pink	100 - 150	3090489
	Grey	140 - 200	3092174

#### Seal control kit



To test the valve seals on the gas train, a special "seal control kit" is available. The valve seal control device is compulsory (EN 676) on gas trains to burners with a maximum output over 1200 kW. The seal control is type VPS 504.

GAS TRAIN	KIT CODE for 50 Hz operation	KIT CODE for 60 Hz operation
▶ MBC/1 type	3010367	20029057
▶ CB/1 type	3010367	20029057

## RLS 1000-1200/M SERIES

The well-known RLS 300-800/M MX Burner Series, till now available up to 8 MW, has been upgraded with two new powerful burner models, the RLS 1000-1200/M models that extend his max output up to 12 MW and make the Burner Series even more complete and suitable for matching with the various Heat and Steam Generators in today's market.

The New Burner Models take the reliability of combustion and the solidity typical of Riello's Burners and match them with the most advanced solutions on Power Output Control and Ventilation Technology; as result a 12 MW output is supplied with a User Friendly monoblock machine assuring easiness of installation and servicing, and safe operation.

An easy access to internal components is ensured by the burner opening hinge.

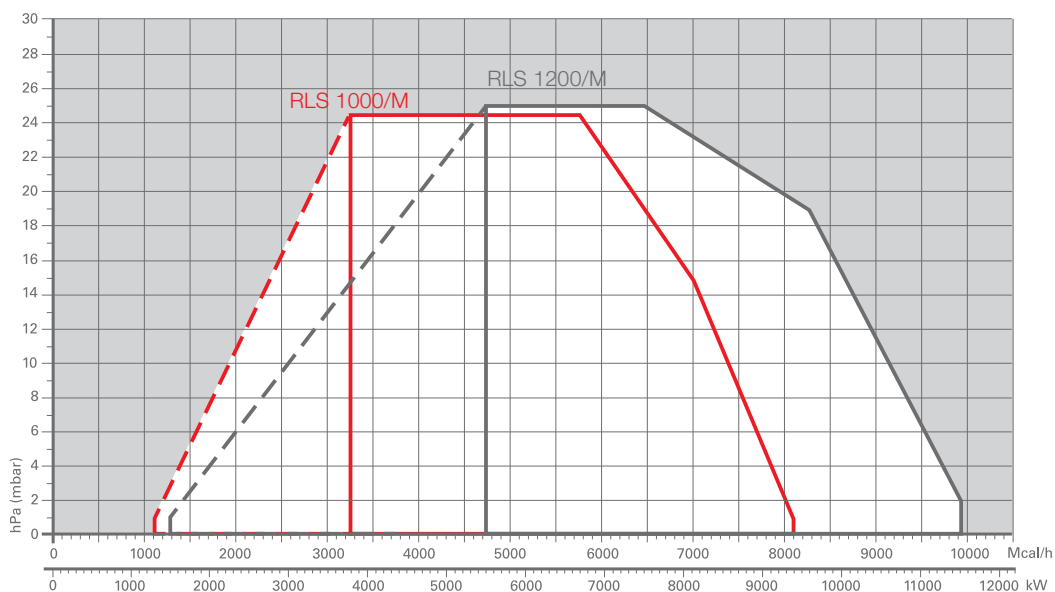
The New Dual Fuel Models are available with Modulating operation managed through Mechanical Cam, for a simple commissioning and to supply with precision the demanded power, guaranteeing high efficiency and setting stability, obtaining fuel consumption and operating costs reduction.



RLS 1000-1200/M models allow, at the gas side, Low NOx environmentally friendly emissions, according to the Class 3 of EN676 European Standard.



RLS 1000/M	1300/3800 ÷ 9400 kW
RLS 1200/M	1500/5500 ÷ 11500 kW

### FIRING RATES



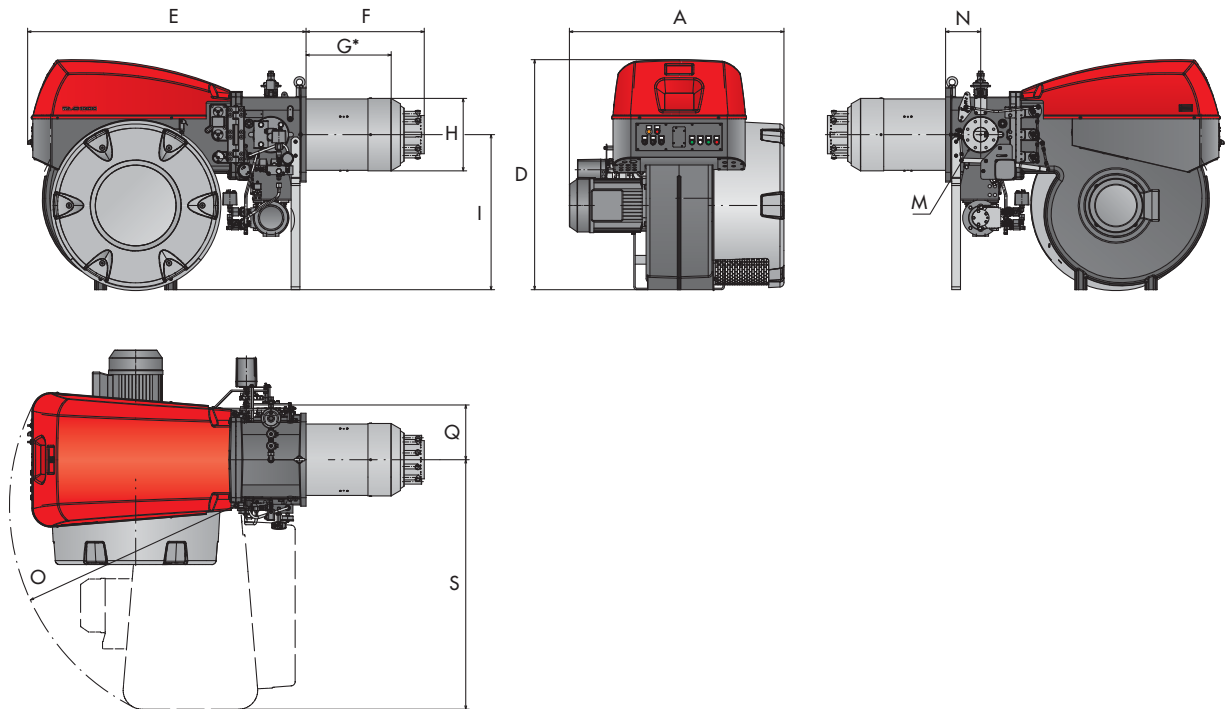
 Useful working field for choosing the burner  
 Modulation range  
 Test conditions conforming to EN676  
 Temperature: 20°C  
 Pressure: 1013,5 mbar  
 Altitude: 0 m a.s.l.

# Low NOx Modulating Dual Fuel Burners

## RLS 1000-1200/M SERIES

### Overall dimensions (mm)

#### BURNER

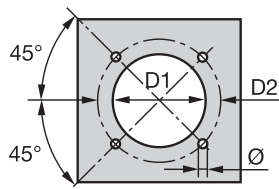


#### BURNER - BOILER MOUNTING FLANGE

MODEL	A	D	E	F	G*	H	I	M	N	O	Q	S
▶ RLS 1000/M	1223	1311	1574	674	485	413	884	DN80	200	1290	312	1422
▶ RLS 1200/M	1293	1311	1574	658	464	456	884	DN80	200	1290	312	1422

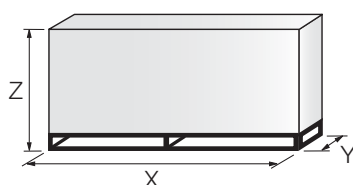
\* Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

#### BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
▶ RLS 1000/M	460	608	M20
▶ RLS 1200/M	500	608	M20

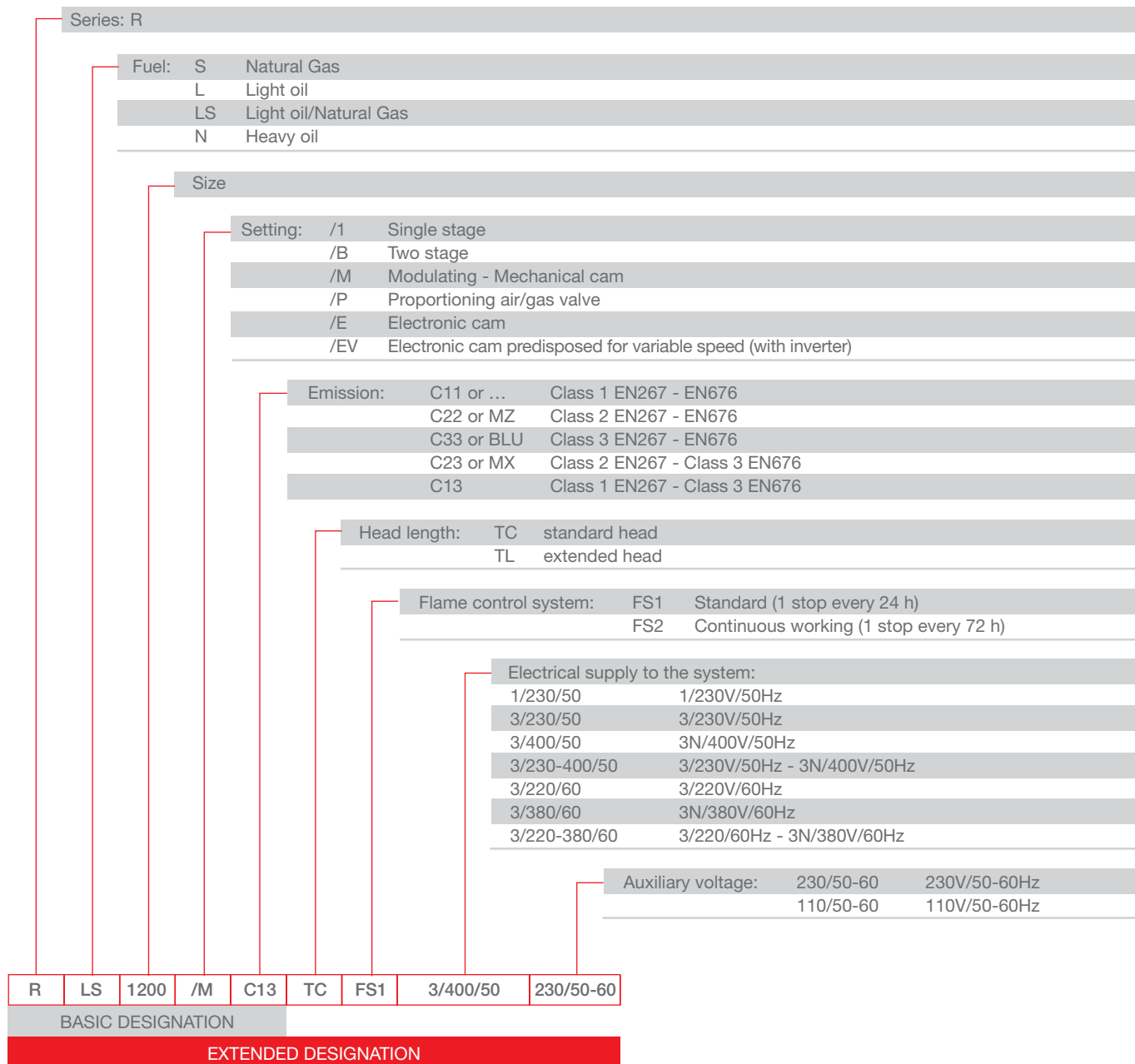
#### PACKAGING



MODEL	X	Y	Z	kg
▶ RLS 1000/M	2400	1400	1595	550
▶ RLS 1200/M	2400	1400	1595	600

# Specification

## DESIGNATION OF SERIES



# Low NOx Modulating Dual Fuel Burners

## RLS 1000-1200/M SERIES

### Specification

#### STATE OF SUPPLY

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

- High performance fan with reverse curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase, 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 pilot burner and gas train
  - flame stability disk
- Mechanical cam with gas and oil modulator
- Maximum gas pressure switch, with pressure test point, to stop the burner in the case of over pressure on the fuel supply line
- LFL Flame control panel for controlling the system safety
- Infrared flame detector
- Star/triangle starter for the fan motor
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Light oil gears pump for high pressure fuel supply
- Dedicated pump starting motor
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Maximum and minimum oil pressure switches
- Oil pressure gauges on supply and return oil lines
- Oil/Gas selector
- Flame inspection window.

#### Standard equipment:

- 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
- Seal control pressure switch (for installation on gas train)
- DN 80 gas supply connector for gas train connection
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

# Low NOx Modulating Dual Fuel Burners

## RLS 1000-1200/M SERIES

**RIELLO**

## Available models

### Burners

CODE	MODEL	HEAT OUTPUT			TOTAL ELECTRICAL POWER (kW)	CERTIFICATION	NOTE
		(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)			
20034254	RLS 1000/M C13 TC FS1 3/400/50 230/50-60	1300/3800-9400	110/320-793	130/380-940	26 (oil) 23 (gas)	in progress	
20034255	RLS 1200/M C13 TC FS1 3/400/50 230/50-60	1500/5500-11500	126/464-970	150/550-1150	31 (oil) 27 (gas)	in progress	

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm<sup>2</sup>/s (cSt).

Net calorific value G20 gas: 10 kWh/Nm<sup>3</sup>; 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

The burners of RLS/M C13 series are in according to 2009/142 EC - 2004/108 - 2006/95 - EC Directive and EN 267 - 676 Norm.

### Gas Trains

CODE	GAS TRAIN			VPS 50 Hz CODE	ADAPTER CODE *** RLS 1000-1200/M
	MODEL	Ø	C.T.		
3970221 *	MBC 1200/1 - RSM 60	Rp 2"	-	3010367	20042324 + 3000826
3970225 **	MBC 1200/1 CT RSM 60	Rp 2"	◆	-	20042324 + 3000826
3970222 *	MBC 1900/1 - FSM 40	DN 65	-	3010367	3010221 or 3010369
3970226 **	MBC 1900/1 CT FSM 40	DN 65	◆	-	3010221 or 3010369
3970223 *	MBC 3100/1 - FSM 40	DN 80	-	3010367	3010222 (1)
3970227 **	MBC 3100/1 CT FSM 40	DN 80	◆	-	3010222 (1)
3970224 *	MBC 5000/1 - FSM 80	DN 100	-	3010367	3010223 or 3010370
3970228 **	MBC 5000/1 CT FSM 80	DN 100	◆	-	3010223 or 3010370
3970147 *	CB 5065/1 - FSM 30	DN 65	-	3010367	3010221 or 3010369
3970161 **	CB 5065/1 CT FSM 30	DN 65	◆	-	3010221 or 3010369
3970148 *	CB 5080/1 - FSM 30	DN 80	-	3010367	3010222 (1)
3970162 **	CB 5080/1 CT FSM 30	DN 80	◆	-	3010222 (1)
3970149 *	CB 50100/1 - FSM 30	DN 100	-	3010367	3010223 or 3010370
3970163 **	CB 50100/1 CT FSM 30	DN 100	◆	-	3010223 or 3010370

Please see designation of Gas Train Series in the page before the Catalogue index.

\* 230V/50Hz - 220V/60Hz electrical supply.

\*\* 230V/50Hz electrical supply.

\*\*\* see Adapters models on Gas train accessories paragraph.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

C.T. Gas valve leak detection control device:

- gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

◆ gas train equipped with leak detection control device.

VPS Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).

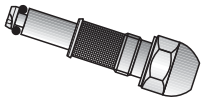
(1) To use if it is necessary to space out the gas train from the burner.

# Low NOx Modulating Dual Fuel Burners

## RLS 1000-1200/M SERIES

### Burner accessories

#### Nozzles



The oil nozzle must be ordered separately as accessory; for more information please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

#### Accessories for modulating operation

##### POWER CONTROLLER



To obtain modulating operation, the RLS/M series of burners requires a regulator.

BURNER	REGULATOR TYPE	REGULATOR CODE
▶ RLS 1000-1200/M	RWF 40 Basic version with 3 position output	3010356
▶ RLS 1000-1200/M	RWF 40 High version with additional modulating output and RS 485 Interface	3010357

##### PROBE



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

BURNER	PROBE TYPE	RANGE (°C) (bar)	PROBE CODE
▶ RLS/M	Temperature PT 100	-100 ÷ 500°C	3010110
▶ RLS/M	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
▶ RLS/M	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214

##### ANALOG CONTROL SIGNAL CONVERTER



BURNER	TYPE (INPUT SIGNAL)	CODE
▶ RLS 1000-1200/M	0/2 - 10 V (impedance 200 KΩ) 0/4 - 20 mA (impedance 250 Ω)	3010390

##### POTENTIOMETER



BURNER	KIT CODE
▶ RLS 1000-1200/M	in progress

It is necessary for analogic control signal converter operation.

#### Sound proofing box



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

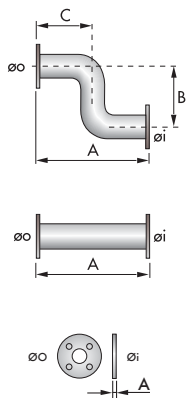
BURNER	AVERAGE NOISE REDUCTION [dB(A)] (*)	BOX CODE
▶ RLS 1000-1200/M	10	3010401

(\*) according to EN 15036-1 standard



## Gas train accessories

### Adapters



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

ADAPTER	DIMENSIONS			ADAPTER CODE		
	Øi DN	ØO DN	A mm		B mm	C mm
	65	80	400	-	-	3010221
	80	80	400	-	-	3010222
	100	80	400	-	-	3010223
	65	80	400	480	225	3010225
	80	80	400	480	225	3010226
	100	80	400	480	225	3010227
	65	80	10	-	-	3010369
	100	80	50	-	-	3010370
	-	-	300	-	-	3000826
	-	-	65	-	-	20042324

### Stabiliser spring



To vary the pressure range of the gas train stabilisers, accessory springs are available. The following table shows these accessories with their application range. Please refer to the technical manual for the correct choice of spring.

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

# Low NOx Modulating Dual Fuel Burners

## RLS 1000-1200/M SERIES

### Gas train accessories

#### Seal control kit



To test the valve seals on the gas train, a special “seal control kit” is available. The valve seal control device is compulsory (EN 676) on gas trains to burners with a maximum output over 1200 kW. The seal control is type VPS 504.

GAS TRAIN	KIT CODE for 50 Hz operation	KIT CODE for 60 Hz operation
▶ MBC/1 type	3010367	20029057
▶ CB/1 type	3010367	20029057

## RLS 300÷800/E-EV MX SERIES

RLS/E-EV MX series burners are characterised by a modular monoblock structure that means all necessary components can be combined in a single unit thus making installation easier, faster and, above all, more flexible.

The series covers a firing range from 1250 to 8000 kW, and they have been designed for use in hot water boilers, overheated water boilers as well as steam boilers. Operation can be “two stage progressive” or alternatively “modulating” for both fuels, light oil and gas, with the installation of a PID logic regulator on the RLS/E series burners while RLS/EV series is fully “modulating”.

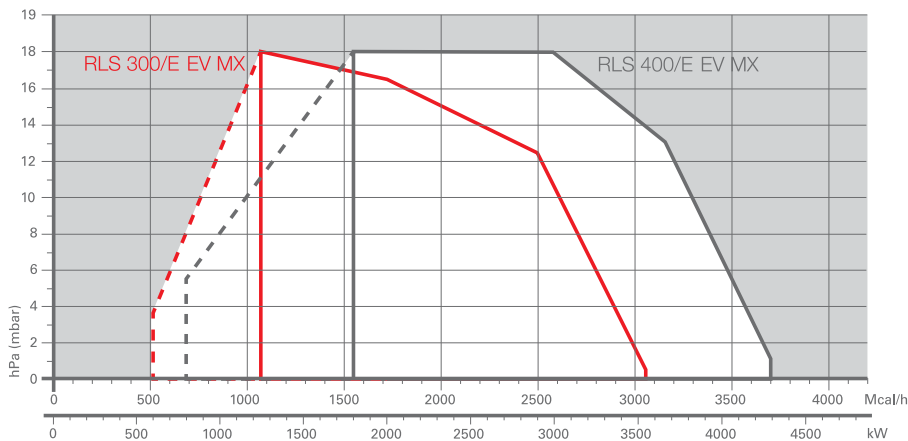
The burner can, therefore, supply with precision the demanded power, guaranteeing an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.


The innovative combustion head, adjustment system ensures perfect movement during modulation as well as reducing noise and pollutants.



RLS 300/E MX	600/1250 ÷ 3550 kW
RLS 400/E MX	800/1800 ÷ 4300 kW
RLS 500/E MX	1120/2500 ÷ 5050 kW
RLS 650/E MX	1430/3000 ÷ 6550 kW
RLS 800/E MX	1750/3500 ÷ 8000 kW
RLS 300/EV MX	600/1250 ÷ 3550 kW
RLS 400/EV MX	800/1800 ÷ 4300 kW
RLS 500/EV MX	1120/2500 ÷ 5050 kW
RLS 650/EV MX	1430/3000 ÷ 6550 kW
RLS 800/EV MX	1750/3500 ÷ 8000 kW

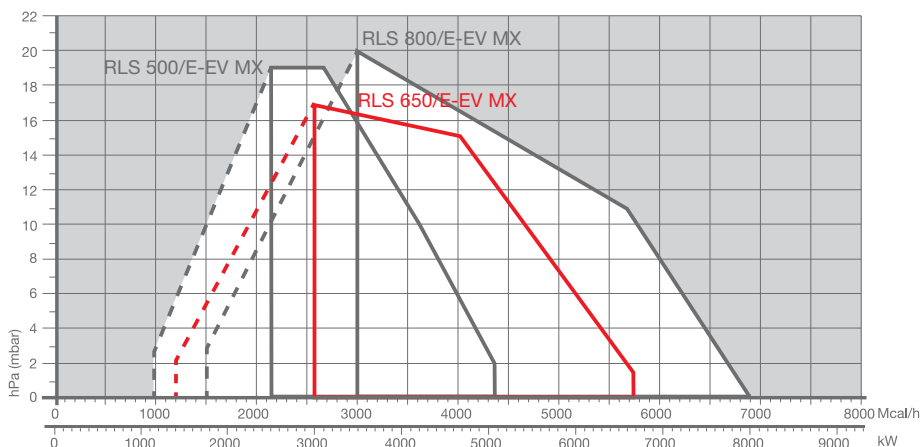
### FIRING RATES



 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.

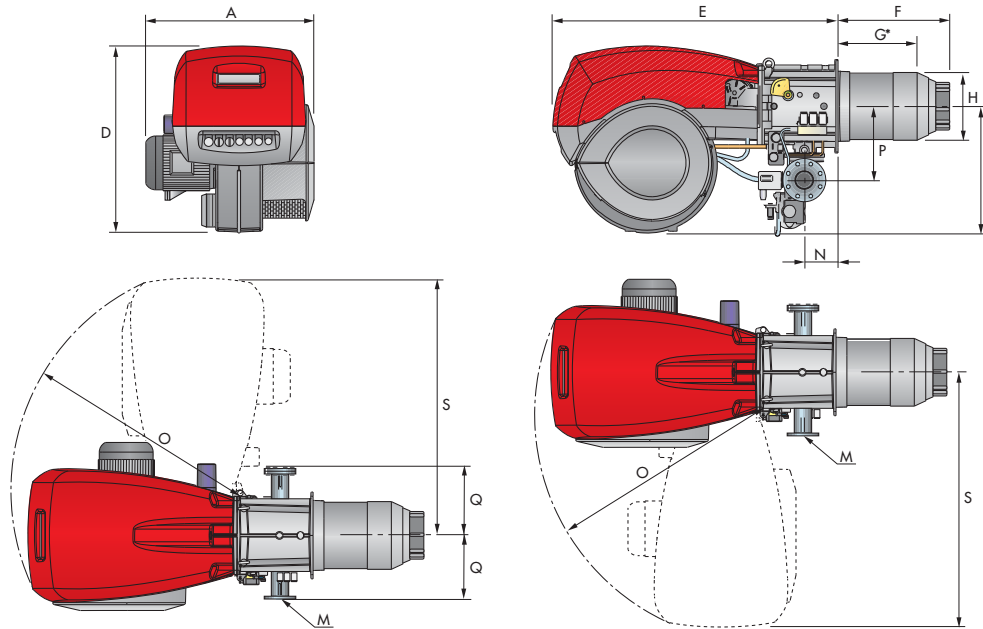


# Low NOx Modulating Dual Fuel Burners

## RLS 300-800/E-EV MX SERIES

### Overall dimensions (mm)

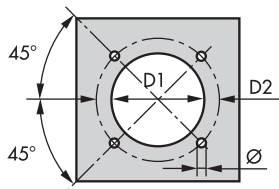
#### BURNER



MODEL	A	D	E	F	G*	H	I	M	N	O	P	Q	S
▶ RLS 300/E-EV MX	720	890	1325	508	365	313	605	DN80	164	1055	342	320	1175
▶ RLS 400/E-EV MX	775	890	1325	508	365	313	605	DN80	164	1055	342	320	1175
▶ RLS 500/E-EV MX	815	890	1325	544	390	370	605	DN80	164	1055	342	320	1175
▶ RLS 650/E-EV MX	880	950	1325	562	360	410	630	DN80	164	1055	427	320	1190
▶ RLS 800/E-EV MX	940	937	1325	558	382	428	630	DN80	164	1055	427	320	1190

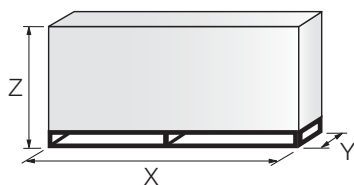
\* Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

#### BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
▶ RLS 300/E-EV MX	350	452	M18
▶ RLS 400/E-EV MX	350	452	M18
▶ RLS 500/E-EV MX	390	452	M18
▶ RLS 650/E-EV MX	440	495	M18
▶ RLS 800/E-EV MX	440	495	M18

#### PACKAGING



MODEL	X	Y	Z	kg
▶ RLS 300/E-EV MX	1960	970	1100	280
▶ RLS 400/E-EV MX	1960	970	1100	290
▶ RLS 500/E-EV MX	1960	970	1100	300
▶ RLS 650/E-EV MX	2035	1195	1130	320
▶ RLS 800/E-EV MX	2000	1180	1130	320

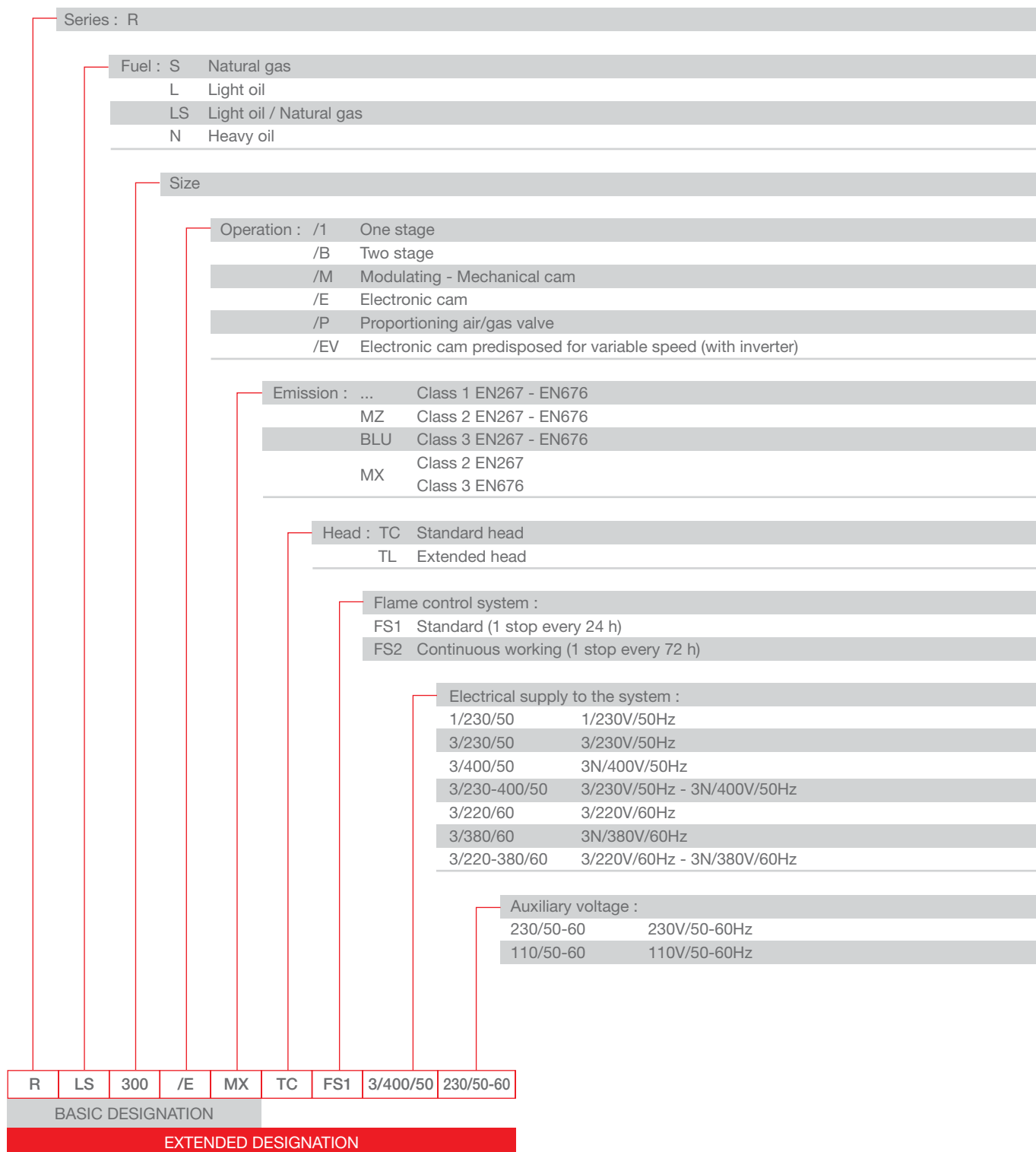
# Low NOx Modulating Dual Fuel Burners

## RLS 300-800/E-EV MX SERIES

**RIELLO**

# Specification

## DESIGNATION OF SERIES



LOW NOx DUAL FUEL

# Low NOx Modulating Dual Fuel Burners

## RLS 300-800/E-EV MX SERIES

### Specification

#### STATE OF SUPPLY

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

- High performance fan with low sound emissions, reverse curve blades for RLS 300-400/E-EV MX, forward curve blades for RLS 500-650-800/E-EV MX
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Separate light oil pump
- 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
  - ignition by gas pilot with gas train for RLS 650 and RLS 800 models
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Digital Burner management system for air/fuel setting; with output PID modulation control included on RLS/EV MX models, as accessory on RLS/E MX models
- AZL Display Interface, for combustion system commissioning and monitoring, included in RLS/EV models (Available as accessory for RLS/E BLU models)
- Electronic cam for controlling the system safety
- Infrared flame detector
- Star/triangle starter for the fan motor (burners with motor electrical power  $\geq 7,5$  kW - RLS/E versions)
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Oil/Gas selector
- Flame inspection window.

#### Standard equipment:

- 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
- Seal control pressure switch (for installation on gas train)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

# Low NOx Modulating Dual Fuel Burners

## RLS 300-800/E-EV MX SERIES

**RIELLO**

## Available models

### Burners

CODE	MODEL					HEAT OUTPUT			TOTAL ELECTRICAL POWER (kW)	CERTIFICATION	NOTE
						(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)			
3898530	RLS 300/E MX	TC	FS1	3/400/50	230/50-60	600/1250-3550	50/105-300	60/125-355	7,5	CE 0085BR0471	(1)(2)
3898632	RLS 400/E MX	TC	FS1	3/400/50	230/50-60	800/1800-4300	67/152-363	80/180-430	11,5	CE 0085BR0472	(1)(2)
3899632	RLS 500/E MX	TC	FS1	3/400/50	230/50-60	1120/2500-5050	95/211-426	112/250-505	15 (oil) 13 (gas)	CE 0085CL0207	(1)(2)
20026857	RLS 650/E MX	TC	FS1	3/400/50	230/50-60	1430/3000-6550	121/253-552	143/300-655	23,5 (oil) 19,5 (gas)	CE 0085CL0422	(2)(3)
3911132	RLS 800/E MX	TC	FS1	3/400/50	230/50-60	1750/3500-8000	148/295-675	175/350-800	26 (oil) 24 (gas)	CE 0085CL0422	(1)(2)
20022571	RLS 300/EV MX	TC	FS1	3/400/50	230/50-60	600/1250-3550	50/105-300	60/125-355	7,5	CE 0085BR0471	(1)(2)
20022570	RLS 400/EV MX	TC	FS1	3/400/50	230/50-60	800/1800-4300	67/152-363	80/180-430	11,5	CE 0085BR0472	(1)(2)
20005681	RLS 500/EV MX	TC	FS1	3/400/50	230/50-60	1120/2500-5050	95/211-426	112/250-505	15 (oil) 13 (gas)	CE 0085CL0207	(1)(2)
20026959	RLS 650/EV MX	TC	FS1	3/400/50	230/50-60	1430/3000-6550	121/253-552	143/300-655	23,5 (oil) 19,5 (gas)	CE 0085CL0422	(2)(3)
20011318	RLS 800/EV MX	TC	FS1	3/400/50	230/50-60	1750/3500-8000	148/295-675	175/350-800	26 (oil) 24 (gas)	CE 0085CL0422	(1)(2)

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm<sup>2</sup>/s (cSt).

Net calorific value G20 gas: 10 kWh/Nm<sup>3</sup>; 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

(1) according to 90/396 - 2004/108 - 2006/95 - EC Directive and EN 267 - 676 Norm.

(2) the burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

(3) according to 2009/142 EC - 2006/95 - 2004/108 - EC Directive and EN 267 - 676 Norm.

### Gas Trains

CODE *	GAS TRAIN		ADAPTER CODE
	MODEL	Ø	
3970250	MB 415/1 - RT 52	Rp 1" 1/2	3000843 + 3000826 + 20042324
3970257	MB 420/1 - RT 52	Rp 2"	3000826 + 20042324
3970221	MBC 1200/1 - RSM 60	Rp 2"	3000826 + 20042324
3970222	MBC 1900/1 - FSM 40	DN 65	3010369
3970223	MBC 3100/1 - FSM 40	DN 80	3010222 (1)
3970224	MBC 5000/1 - FSM 80	DN 100	3010370
3970145	CB 512/1 - RSM 30	Rp 1" 1/2	3000843 + 3000826 + 20042324
3970146	CB 520/1 - RSM 30	Rp 2"	3000843 + 3000826 + 20042324
20044659	CB 525/1 - RSM 30	Rp 2"	3000843 + 3000826 + 20042324
3970147	CB 5065/1 - FSM 30	DN 65	3010221 or 3010369
3970148	CB 5080/1 - FSM 30	DN 80	3010222 (1)
3970149	CB 50100/1 - FSM 30	DN 100	3010223 or 3010370

Please see designation of Gas Train Series in the page before the Catalogue index.

\* gas train are 230V/50Hz - 220V/60Hz electrical supply.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

The seal control function is managed by LMV control box, by installation on gas train of pressure switch supplied, as standard equipment, with the burner.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

● Not available.

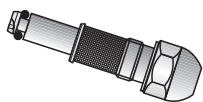
(1) To use if it is necessary to space out the gas train from the burner.

# Low NOx Modulating Dual Fuel Burners

## RLS 300-800/E-EV MX SERIES

### Burner accessories

#### Nozzles



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

BURNER	RATED DELIVERY (kg/h)	NOZZLE CODE
▶ RLS 300-400/E-EV MX	150	3009363
▶ RLS 300-400/E-EV MX	200	3009364
▶ RLS 300-400/E-EV MX	225	3009365
▶ RLS 300-400/E-EV MX	250	3009366
▶ RLS 300-400/E-EV MX	275	3009367
▶ RLS 300-400/E-EV MX	300	3009368
▶ RLS 400/E-EV MX	325	3009369
▶ RLS 400/E-EV MX	350	3009370
▶ RLS 400/E-EV MX	375	3009371
▶ RLS 400/E-EV MX	400	3009372
▶ RLS 400/E-EV MX	425	3009373
▶ RLS 500/E-EV MX	350	3045495
▶ RLS 500/E-EV MX	400	3045499
▶ RLS 500/E-EV MX	450	3045501
▶ RLS 500/E-EV MX	500	3045503
▶ RLS 650/E-EV MX	350	3045495
▶ RLS 650/E-EV MX	450	3045501
▶ RLS 650/E-EV MX	550	3045505
▶ RLS 650/E-EV MX	600	3045507
▶ RLS 800/E-EV MX	375	3009332
▶ RLS 800/E-EV MX	550	3009346
▶ RLS 800/E-EV MX	650	3009352
▶ RLS 800/E-EV MX	750	3009356

#### Accessories for modulating operation



To obtain modulating operation, the RLS/E MX series of burners requires a regulator. In RLS/EV models PID regulator is integrated inside LMV 52 control box.

BURNER	REGULATOR TYPE	REGULATOR CODE
▶ RLS 300-400-500-650-800/E MX	RWF 40 Basic version with 3 position output	3010356
▶ RLS 300-400-500-650-800/E MX	RWF 40 High version with additional modulating output and RS 485 Interface	3010357

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



BURNER	PROBE TYPE	RANGE (°C) (bar)	PROBE CODE
▶ RLS/E-EV MX	Temperature PT 100	-100 ÷ 500°C	3010110
▶ RLS/E-EV MX	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
▶ RLS/E-EV MX	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214



# Low NOx Modulating Dual Fuel Burners

## RLS 300-800/E-EV MX SERIES

**RIELLO**

## Burner accessories

### Variable Speed Drive (VSD) for RLS/EV series only



The motor speed variation for the RLS/EV MX burners series is obtained thanks to a frequency converter: variable speed drive (VSD). It always must be ordered with RLS/EV series.

BURNER	KIT CODE
▶ RLS 300-400/EV MX	3010379
▶ RLS 500/EV MX	20007233
▶ RLS 650/EV MX	20027615
▶ RLS 800/EV MX	3010468

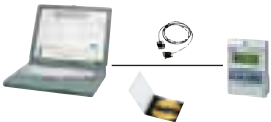
### Oxygen Control kit (QGO<sub>2</sub>)



The QGO<sub>2</sub> is an oxygen analyzer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.

BURNER	KIT CODE
▶ All models	3010378

### PC Interface Software (ACS 450)



PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.

BURNER	KIT CODE
▶ All models	3010388

### Kit efficiency with oxygen control kit (for RLS/EV only)



The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.

BURNER	KIT CODE
▶ All models	3010377

### LPG kit



For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner.

BURNER	KIT CODE
▶ RLS 300/E-EV MX	20039863 (*)
▶ RLS 400/E-EV MX	in progress
▶ RLS 500-650-800/E-EV MX	in progress

(\*) Certification in progress, CE approval on field is required.

# Low NOx Modulating Dual Fuel Burners

## RLS 300-800/E-EV MX SERIES

### Burner accessories

#### Display and Operating Unit (AZL)

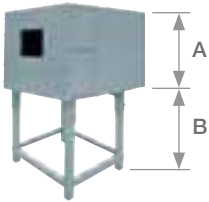


This tool is needed for combustion system commissioning and monitoring. The AZL is included in RLS/EV models.

BURNER	KIT CODE
► RLS 300-400-500-650-800/E MX	3010355
► All models *	3010469

\* for Russian language only

#### Sound proofing box



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

BURNER	BOX TYPE	A (mm)	B (mm) min-max	[dB(A)] (*)	BOX CODE
► All models	C7	1255	160 - 980	10	3010376

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

#### Spacer kit

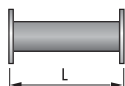


If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following table:

BURNER	SPACER THICKNESS S (mm)	KIT CODE
► All models	180	20008903

## Gas train accessories

### Adapters



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

ADAPTER	LENGTH mm	ADAPTER CODE
DN 80  2" 1/2	300	3000826
1" 1/2	35	3000843
1" 1/2	65	20042324
DN 65  DN 80	400	3010221
DN 80  DN 80	400	3010222
DN 100  DN 80	400	3010223
DN 65  DN 80	10	3010369
DN 100  DN 80	50	3010370

### Stabiliser spring



To vary the pressure range of the gas train stabilisers, accessory springs are available. The following table shows these accessories with their application range. Please refer to the technical manual for the correct choice of spring.

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



## RLS 1000-1200/E-EV SERIES

The well-known RLS 300-800/E-EV MX Burner Series, till now available up to 8 MW, has been upgraded with two new powerful burner models, the RLS 1000-1200/ E-EV models that extend his max output up to 12 MW and make the Burner Series even more complete and suitable for matching with the various Heat and Steam Generators in today's market.

The New Burner Models take the reliability of combustion and the solidity typical of Riello's Burners and match them with the most advanced solutions on Power Output Control and Ventilation Technology; as result a 12 MW output is supplied with a User Friendly monoblock machine assuring easiness of installation and servicing, and safe operation.

An easy access to internal components is ensured by the burner opening hinge.

The New Dual Fuel Models are available with Modulating operation that can be managed through Electronic Cam, for great performance and efficiency, and through Variable Speed Drive technology, to obtain both low noise emissions and electrical Power Saving.

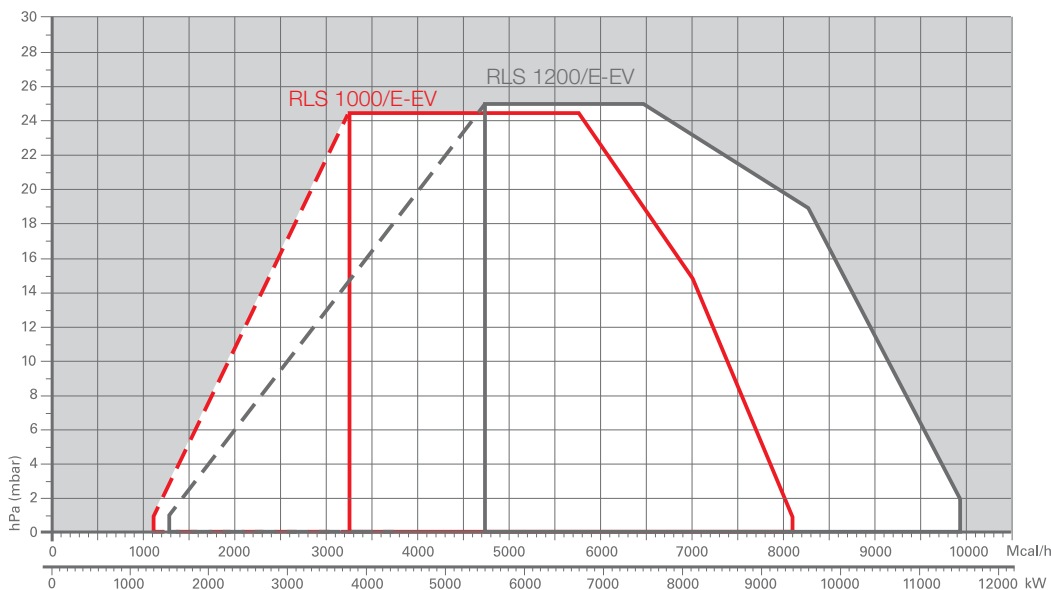
The demanded power is supplied with precision, guaranteeing high efficiency and setting stability, obtaining fuel consumption and operating costs reduction.



RLS 1000-1200/E-EV models allow, at the gas side, Low NOx environmentally friendly emissions, according to the Class 3 of EN676 European Standard.



RLS 1000/E	1300/3800 ÷ 9400 kW
RLS 1200/E	1500/5500 ÷ 11500 kW
RLS 1000/EV	1300/3800 ÷ 9400 kW
RLS 1200/EV	1500/5500 ÷ 11500 kW

### FIRING RATES



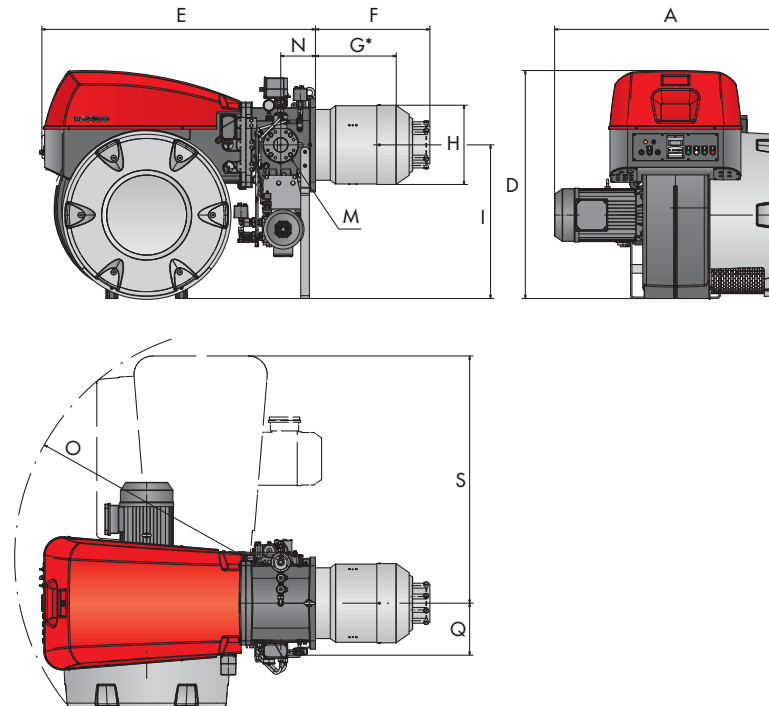
 Useful working field for choosing the burner  
 Modulation range  
 Test conditions conforming to EN676  
 Temperature: 20°C  
 Pressure: 1013,5 mbar  
 Altitude: 0 m a.s.l.

# Low NOx Modulating Dual Fuel Burners

## RLS 1000-1200/E-EV SERIES

### Overall dimensions (mm)

#### BURNER

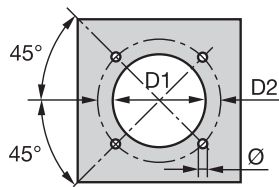


#### BURNER - BOILER MOUNTING FLANGE

MODEL	A	D	E	F	G*	H	I	M	N	O	Q	S
▶ RLS 1000/E-EV	1223	1311	1574	674	485	413	884	DN80	200	1330	299	1422
▶ RLS 1200/E-EV	1293	1311	1574	658	464	456	884	DN80	200	1330	299	1422

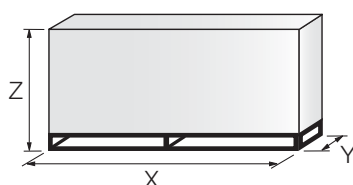
\* Maximum depth of the boiler door including the depth of the burner flange insulating gasket.

#### BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
▶ RLS 1000/E-EV	460	608	M20
▶ RLS 1200/E-EV	500	608	M20

#### PACKAGING



MODEL	X	Y	Z	kg
▶ RLS 1000/E-EV	2400	1400	1595	550
▶ RLS 1200/E-EV	2400	1400	1595	600

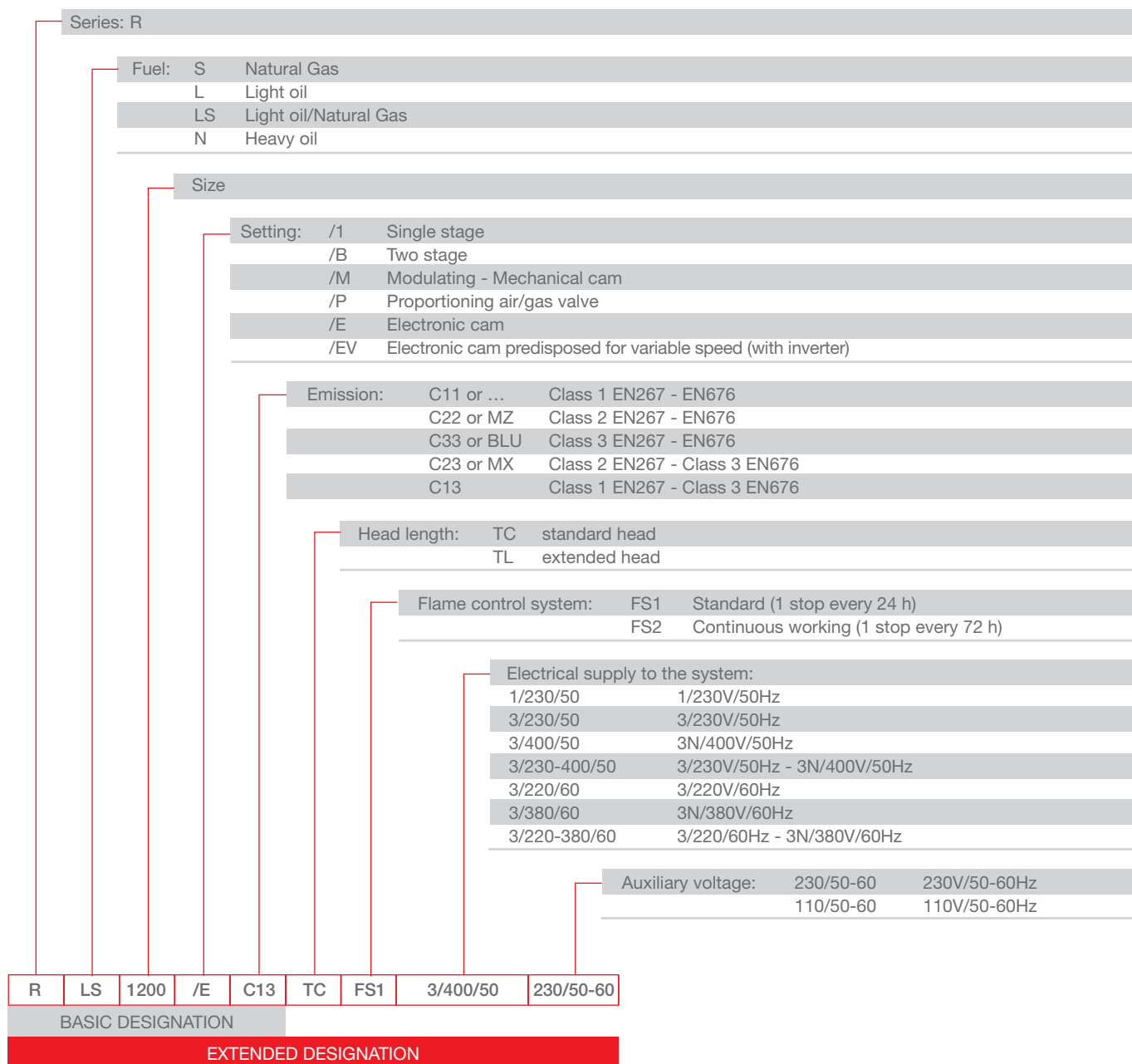
# Low NOx Modulating Dual Fuel Burners

## RLS 1000-1200/E-EV SERIES

**RIELLO**

# Specification

## DESIGNATION OF SERIES



LOW NOx DUAL FUEL

# Low NOx Modulating Dual Fuel Burners

## RLS 1000-1200/E-EV SERIES

### Specification

#### STATE OF SUPPLY

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

- High performance fan with reverse curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2800 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Separate light oil pump
- 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 pilot burner with gas train
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator (LMV 51.100 on RLS/E, LMV 52 on RLS/EV)
- AZL Display Interface, for combustion system commissioning and monitoring, included in both RLS1000-1200/E and /EV models
- Burner safety control included on Electronic Cam device
- Infrared flame detector
- Star/triangle starter for the fan motor
- Main electrical supply terminal board
- Burner on/off switch
- Auxiliary voltage led signal
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Gears pump for high pressure fuel supply
- Pump starting motor
- Oil safety valves
- Valve unit with double oil safety valve on the output circuit and double safety valve on the return circuit
- Oil/Gas selector
- Flame inspection window.

#### Standard equipment:

- 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
- Seal control pressure switch (for installation on gas train)
- DN 80 gas supply connector for gas train connection
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.



# Low NOx Modulating Dual Fuel Burners

## RLS 1000-1200/E-EV SERIES

**RIELLO**

## Available models

### Burners

CODE	MODEL	HEAT OUTPUT			TOTAL ELECTRICAL POWER (kW)	CERTIFICATION	NOTE
		(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)			
20034416	RLS 1000/E C13 TC FS1 3/400/50 230/50-60	1300/3800-9400	110/320-793	130/380-940	26 (oil) 23 (gas)	in progress	(1)
20034412	RLS 1200/E C13 TC FS1 3/400/50 230/50-60	1500/5500-11500	126/464-970	150/550-1150	31 (oil) 27 (gas)	in progress	(1)
20034417	RLS 1000/EV C13 TC FS1 3/400/50 230/50-60	1300/3800-9400	110/320-793	130/380-940	26 (oil) 23 (gas)	in progress	(1)
20034421	RLS 1200/EV C13 TC FS1 3/400/50 230/50-60	1500/5500-11500	126/464-970	150/550-1150	31 (oil) 27 (gas)	in progress	(1)

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm<sup>2</sup>/s (cSt).

Net calorific value G20 gas: 10 kWh/Nm<sup>3</sup>; 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

The burners of RLS/E-EV series are in according to 2009/142 EC - 2004/108 - 2006/95 - EC Directive and EN 267 - 676 Norm.

(1) - The burners are factory set for FS1 operation (1 stop every 24 h) but they can be switched to FS2 operation (continuous - 1 stop every 72 h) by changing the parameters through the AZL unit menu.

### Gas Trains

CODE *	GAS TRAIN		ADAPTER CODE **
	MODEL	Ø	
3970221	MBC 1200/1 - RSM 60	Rp 2"	20042324 + 3000826
3970222	MBC 1900/1 - FSM 40	DN 65	3010221 or 3010369
3970223	MBC 3100/1 - FSM 40	DN 80	3010222 (1)
3970224	MBC 5000/1 - FSM 80	DN 100	3010223 or 3010370
3970147	CB 5065/1 - FSM 30	DN 65	3010221 or 3010369
3970148	CB 5080/1 - FSM 30	DN 80	3010222 (1)
3970149	CB 50100/1 - FSM 30	DN 100	3010223 or 3010370

Please see designation of Gas Train Series in the page before the Catalogue index.

\* gas train are 230V/50Hz - 220V/60Hz electrical supply.

\*\* see Adapters models on Gas train accessories paragraph.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

The seal control function is managed by LMV control box, by installation on gas train of pressure switch supplied, as standard equipment, with the burner.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

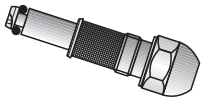
(1) To use if it is necessary to space out the gas train from the burner.

# Low NOx Modulating Dual Fuel Burners

## RLS 1000-1200/E-EV SERIES

### Burner accessories

#### Nozzles



The oil nozzle must be ordered separately as accessory; for more information please contact Riello Burners Commercial and Technical Department, our Application Engineers will be pleased to help you.

#### Accessories for modulating operation

The Module for air/fuel setting (LMV 51.100 on RLS/E, LMV 52 on RLS/EV) includes the output modulation with incorporated PID control of temperature or pressure of the heat generator.

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



BURNER	PROBE TYPE	RANGE (°C) (bar)	CODE
► All models	Temperature PT 100	-100 ÷ 500°C	3010110
	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214

#### Display and Operating Unit (AZL)



The AZL, Display and Operating Unit, is included in RLS 1000-1200/E-EV models. This tool is needed for combustion system commissioning and monitoring. A specific version with Russian language is available as accessory.

BURNER	KIT CODE
► All models *	3010469

\* for Russian language only

#### Variable Speed Drive (VSD) for RLS/EV series only

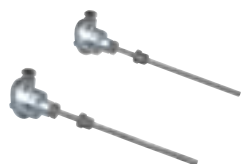


The motor speed variation for the RLS/EV burners series is obtained thanks to a frequency converter: variable speed drive (VSD). It always must be ordered with RLS/EV series.

BURNER	MAX POWER (kW)	KIT CODE
► RLS 1000/EV	22	3010468
► RLS 1200/EV	30	20030338

## Burner accessories

### Kit efficiency with oxygen control kit (for RLS/E-EV only)



The kit includes two temperature sensors: one for air and one for exhaust gas detection. They must be wired to oxygen control kit interface to allow the LMV 52 efficiency calculation. The value is showed on AZL display.

BURNER	KIT CODE
► All models	3010377

### PC Interface Software (ACS 450)



PC tool for convenient programming and burner settings, process visualization, data recording, selection of AZL language, software update AZL.

BURNER	CODE
► All models	3010388

### Oxygen Control kit (QGO<sub>2</sub>) for RLS/E-EV series only



The QGO<sub>2</sub> is an oxygen analyzer with relevant probe which controls and supervises the residual oxygen content in exhaust gases.

BURNER	KIT CODE
► All models	3010378

### Sound proofing box



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

BURNER	AVERAGE NOISE REDUCTION [dB(A)] (*)	BOX CODE
► All models	10	3010401

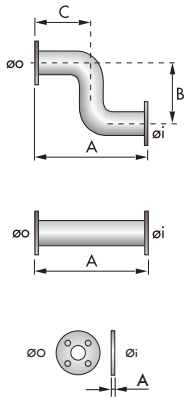
(\*) according to EN 15036-1 standard

# Low NOx Modulating Dual Fuel Burners

## RLS 1000-1200/E-EV SERIES

### Gas train accessories

#### Adapters



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

ADAPTER	DIMENSIONS					ADAPTER CODE
	Øi DN	ØO DN	A mm	B mm	C mm	
	65	80	400	-	-	3010221
	80	80	400	-	-	3010222
	100	80	400	-	-	3010223
	65	80	400	480	225	3010225
	80	80	400	480	225	3010226
	100	80	400	480	225	3010227
	65	80	10	-	-	3010369
	100	80	50	-	-	3010370
	-	-	300	-	-	3000826
	-	-	65	-	-	20042324

#### Stabiliser spring



To vary the pressure range of the gas train stabilisers, accessory springs are available. The following table shows these accessories with their application range. Please refer to the technical manual for the correct choice of spring.

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

## RLS SERIES

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.

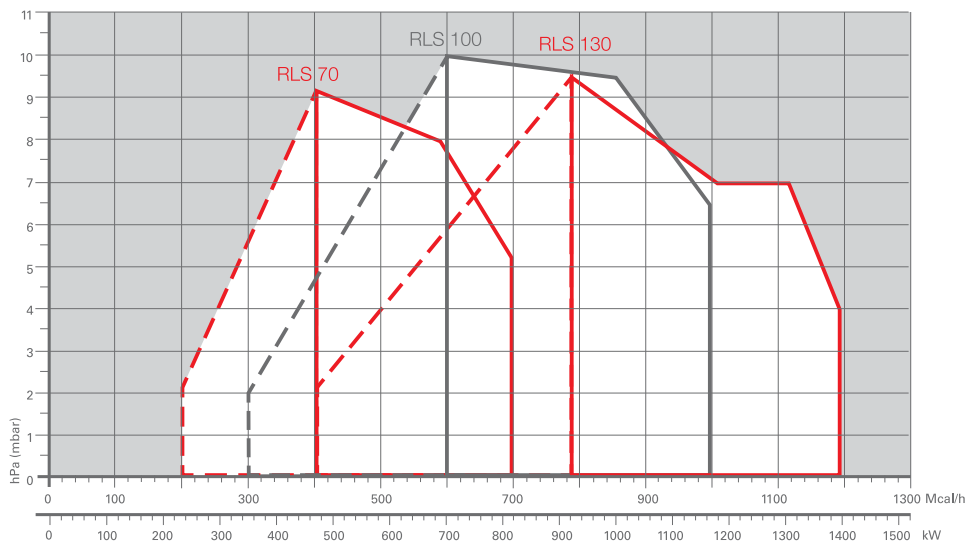
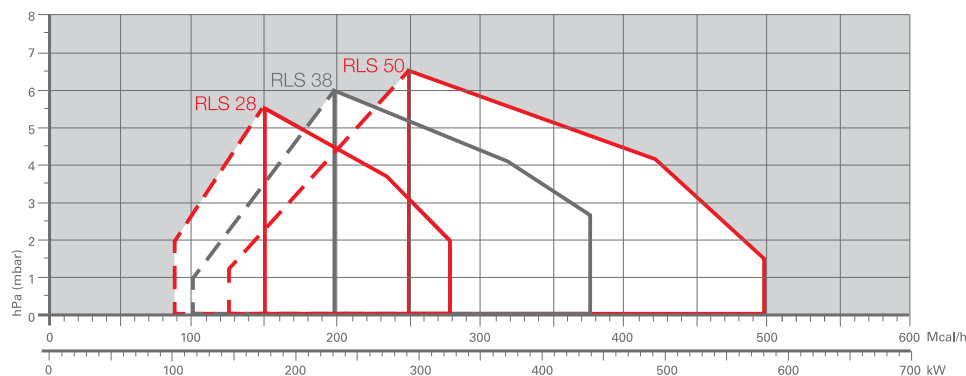
Operation is "two stage"; the burners are fitted with an electronic device LED PANEL, which supplies a diagnostic of burner status. Optimisation of sound emissions is guaranteed by the use of fans with reverse curve blades and sound deadening material incorporated in the air suction circuit. The elevated 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.



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

## FIRING RATES



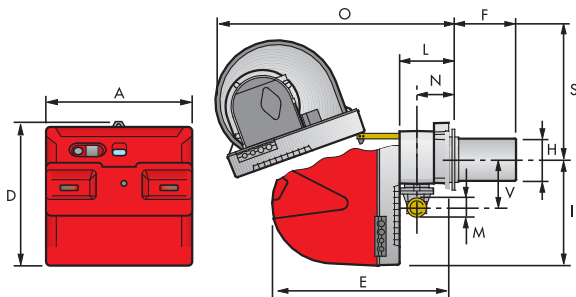
# Two Stage Dual Fuel Burners

## RLS SERIES

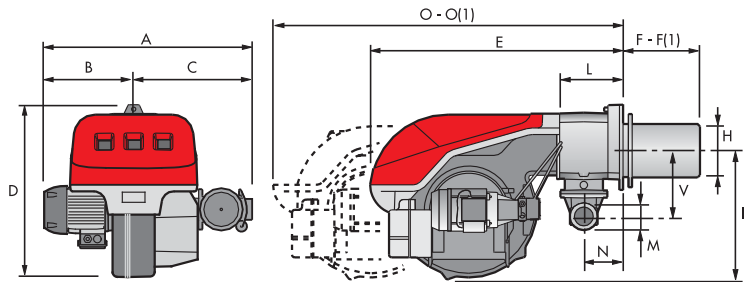
### Overall dimensions (mm)

#### BURNER

RLS 28 - 38 - 50



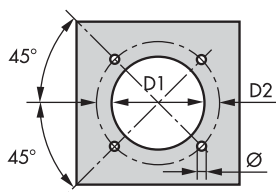
RLS 70 - 100 - 130



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

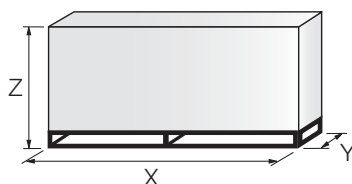
(1) Length with extended combustion head

#### 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

# 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									
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	28			TC		FS1	3/230-400/50	230/50	
BASIC DESIGNATION					EXTENDED DESIGNATION					

# Two Stage Dual Fuel Burners

## RLS SERIES

### Specification

#### STATE OF SUPPLY

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.

#### 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.



## RLS SERIES

## Available models

### Burners

CODE	MODEL					HEAT OUTPUT			TOTAL ELECTRICAL POWER (kW)	CERTIFICATION
						(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)		
3483201	RLS 28	TC LP FS1	1/230/50	230/50	100/163-325	8,5/13,7-27,4	10/16-33	0,53	CE 0063AR4637	
20008836	RLS 28	TC LP FS1	1/220/60	220/60	100/163-325	8,5/13,7-27,4	10/16-33	0,53	-	
3484101	RLS 38	TC LP FS1	1/230/50	230/50	116/232-442	9,8/19,6-37,3	12/23-44	0,76	CE 0063AR4637	
3484601	RLS 50	TC LP FS1	3/230-400/50	230/50	145/290-581	12,3/24,5-49	15/29-58	0,91	CE 0063AR4637	
20008911	RLS 50	TC LP FS1	3/220-380/60	220/60	145/290-581	12,3/24,5-49	15/29-58	0,91	-	
3485001	RLS 70	TC LP FS1	3/230-400/50	230/50	232/465-814	19/39-69	23/47-81	2,0	CE 0063AS4863	
3091489	RLS 70	TC LP FS1	3/208-230/380-460/60	230/50-60	232/465-814	19/39-69	23/47-81	2,0	-	
3485201	RLS 100	TC LP FS1	3/230-400/50	230/50	349/698-1163	29,5/59-98	35/70-116	2,4	CE 0063AS4863	
3091842	RLS 100	TC LP FS1	3/220/60	230/50	349/698-1163	29,5/59-98	35/70-116	2,5	-	
3091589	RLS 100	TC LP FS1	3/208-230/380-460/60	230/50-60	349/698-1163	29,5/59-98	35/70-116	2,7	-	
3485401	RLS 130	TC LP FS1	3/230-400/50	230/50	465/930-1395	39/78-118	47/93-140	3,2	CE 0063AS4863	
20019826	RLS 130	TC LP FS1	3/208-230/380-460/60	230/50-60	465/930-1395	39/78-118	47/93-140	3,2	-	

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm<sup>2</sup>/s (cSt).

Net calorific value G20 gas: 10 kWh/Nm<sup>3</sup>; 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

The burners of RLS series are in according to 90/396 - 2004/108 - 2006/95 - EC Directive and EN 267 - 676 Norm.

### Gas Trains

CODE	GAS TRAIN				VPS 50 Hz CODE	ADAPTER CODE	
	MODEL	Ø	C.T.			RLS 28-38-50	RLS 70-100-130
3970084 *	MB 405/2 - RSD 20	Rp 1/2"	-	3010123	20044756	●	
3970537 *	MB 407/2 - RSD 20	Rp 3/4"	-	3010123	3000824	●	
3970556 *	MB 407/2 - RT 20	Rp 3/4"	-	3010123	3000824	●	
3970534 *	MB 410/2 - RSD 20	Rp 3/4"	-	3010123	3000824	3000824 + 3000843	
3970557 *	MB 410/2 - RT 20	Rp 3/4"	-	3010123	3000824	3000824 + 3000843	
3970152 *	MB 412/2 - RT 20	Rp 1" 1/2	-	3010123	-	3000843	
3970183 *	MB 415/2 - RT 20	Rp 1" 1/2	-	3010123	-	3000843	
3970184 *	MB 420/2 - RT 20	Rp 2"	-	3010123	3000822	-	
3970185 **	MB 420/2 CT RT 20	Rp 2"	◆	-	3000822	-	
3970153 *	CB 512/2 - RT 32	Rp 1" 1/2	-	3010367	-	3000843	
20045590 **	CB 512/2 CT RT 32	Rp 1" 1/2	◆	-	-	3000843	
3970154 *	CB 520/2 - RT 32	Rp 2"	-	3010367	3000822	-	
20045591 **	CB 520/2 CT RT 32	Rp 2"	◆	-	3000822	-	
3970155 *	CB 5065/2 - FT 32	DN 65	-	3010367	3000825	3000825	
3970167 **	CB 5065/2 CT FT 32	DN 65	◆	-	3000825	3000825	
3970156 *	CB 5080/2 - FT 32	DN 80	-	3010367	3000826 + 3000822	3000826	
3970168 **	CB 5080/2 CT FT 32	DN 80	◆	-	3000826 + 3000822	3000826	

Please see designation of Gas Train Series in the page before the Catalogue index.

\* 230V/50Hz - 220V/60Hz electrical supply.

\*\* 230V/50Hz electrical supply.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

C.T. Gas valve leak detection control device:

- gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

◆ gas train equipped with leak detection control device.

VPS Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).

● Not available.

# Two Stage Dual Fuel Burners

## RLS SERIES

### Burner accessories

#### Degassing unit

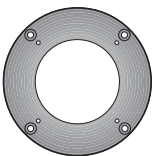


To solve problem of air in the oil sucked, two versions of degassing unit are available.

BURNER	FILTER	FILTERING DEGREE (µm)	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).

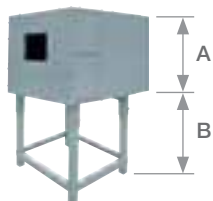
#### Connection flange kit



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.

BURNER	BOX TYPE	A (mm)	B (mm) min-max	[dB(A)] (*)	BOX CODE
▶ RLS 28 - 38 - 50	C1/3	650	372 - 980	10	3010403
▶ RLS 70 - 100 - 130	C4/5	850	160 - 980	10	3010404

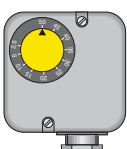
(\*) Average noise reduction according to EN 15036-1 standard

#### 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

## Burner accessories

### Nozzles type 60° B

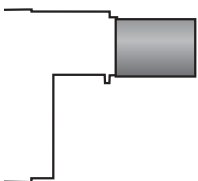


The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

NOTE: each burner needs N° 2 nozzles.

BURNER	RATED DELIVERY (kg/h) 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

# Two Stage Dual Fuel Burners

## RLS SERIES

### 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

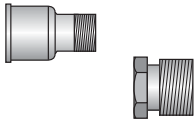


Accessory springs are available to vary the pressure range of the gas train stabilisers.

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

## Gas train accessories

### Adapters



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

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



## RLS/M MZ SERIES

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.

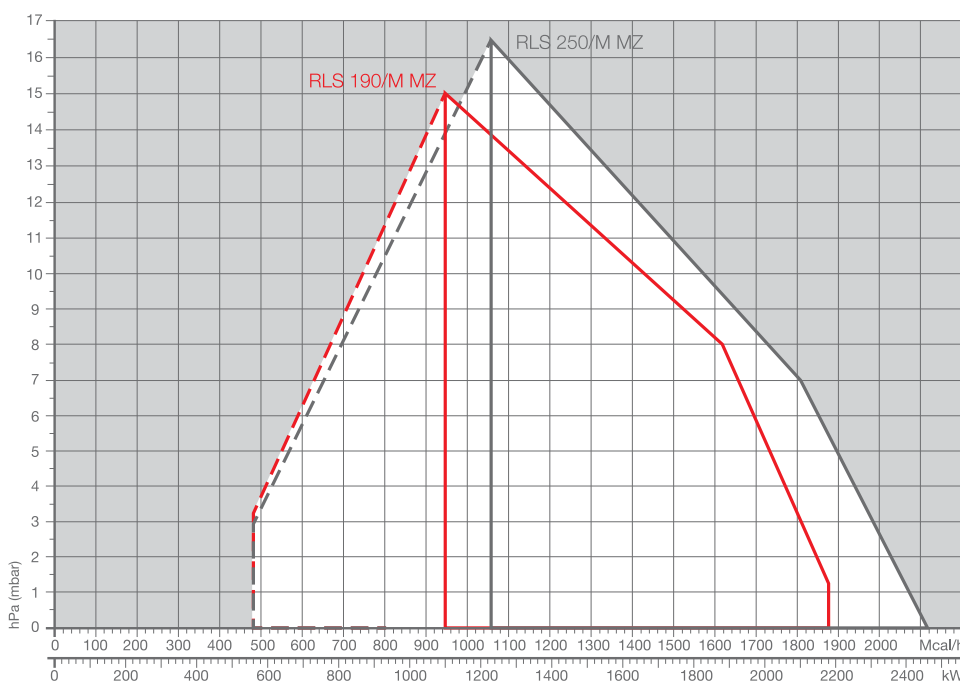
Optimisation of sound emissions is guaranteed by the special design of air suction circuit and the use of sound proofing material.

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



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

### FIRING RATES



Useful working field for choosing the burner

Modulation range

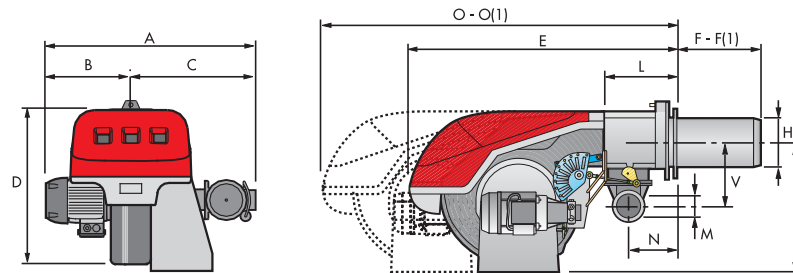
Test conditions  
conforming to EN267-  
EN676  
Temperature: 20°C  
Pressure: 1013,5 mbar  
Altitude: 0 m a.s.l.

# Modulating Dual Fuel Burners

## RLS/M MZ SERIES

### Overall dimensions (mm)

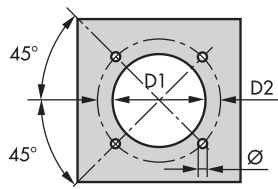
#### BURNER



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

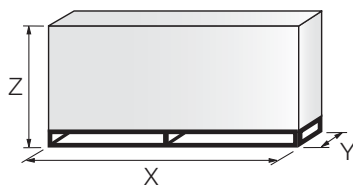
(1) Length with extended combustion head.

#### 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

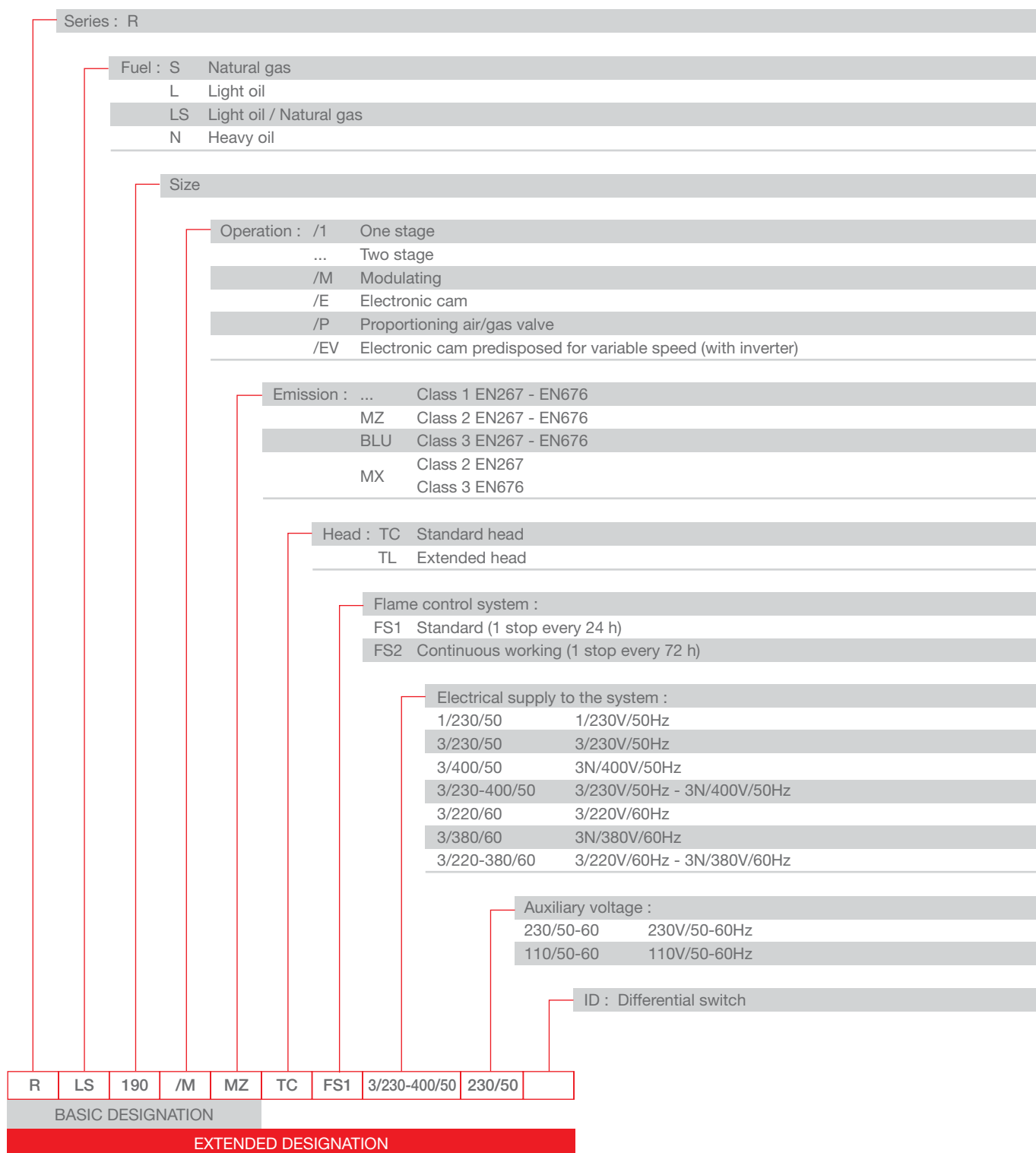


Model	X	Y	Z	kg
► RLS 190/M MZ	1400	975	645	95
► RLS 250/M MZ	1400	1000	765	100



# Specification

## DESIGNATION OF SERIES



# Modulating Dual Fuel Burners

## RLS/M MZ SERIES

# Specification

### STATE OF SUPPLY

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

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

#### Standard equipment:

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

## RLS/M MZ SERIES

### Available models

#### Burners

CODE	MODEL	HEAT OUTPUT			TOTAL ELECTRICAL POWER (kW)	CERTIFICATION	NOTE
		(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)			
3488110	RLS 190/M MZ TC FS1 3/400/50 230/50-60	550/1100-2150	46/93-181	55/110-215	6,0	CE 0085BP0439	
20011625	RLS 190/M MZ TC FS1 3/230/50 230/50-60	550/1100-2150	46/93-181	55/110-215	6,0	CE 0085BP0439	
3482810	RLS 250/M MZ TC FS1 3/400/50 230/50-60	550/1230-2460	46/104-208	55/123-246	7,5 (oil) 6,0 (gas)	CE 0085CM0153	
20004704	RLS 250/M MZ TC FS1 3/230/50 230/50-60	550/1100-2150	46/93-181	55/110-215	7,5 (oil) 6,0 (gas)	CE 0085CM0153	

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm<sup>2</sup>/s (cSt).

Net calorific value G20 gas: 10 kWh/Nm<sup>3</sup>; 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

The burners of RLS/M MZ series are in according to 90/396 - 2004/108 - 2006/95 - EC Directive and EN 267 - 676 Norm.

# Modulating Dual Fuel Burners

## RLS/M MZ SERIES

### Available models

#### Gas Trains

CODE	GAS TRAIN			VPS 50 Hz CODE	ADAPTER CODE	
	MODEL	Ø	C.T.		RLS 190	RLS 250
3970256 *	MB 412/1 - RT 52	Rp 1" 1/2	-	3010123	3000843	●
3970144 *	MB 412/1 - RT 20	Rp 1" 1/2	-	3010123	3000843	●
3970197 **	MB 412/1 CT RT 20	Rp 1" 1/2	◆	-	3000843	●
3970231 *	MB 412/1 - RSM 20	Rp 1" 1/2	-	3010123	3000843	●
3970180 *	MB 415/1 - RT 30	Rp 1" 1/2	-	3010123	3000843	
3970198 **	MB 415/1 CT RT 30	Rp 1" 1/2	◆	-	3000843	
3970250 *	MB 415/1 - RT 52	Rp 1" 1/2	-	3010123	3000843	
3970253 **	MB 415/1 CT RT 52	Rp 1" 1/2	◆	-	3000843	
3970232 *	MB 415/1 - RSM 30	Rp 1" 1/2	-	3010123	3000843	
3970181 *	MB 420/1 - RT 30	Rp 2"	-	3010123	-	
3970182 **	MB 420/1 CT RT 30	Rp 2"	◆	-	-	
3970257 *	MB 420/1 - RT 52	Rp 2"	-	3010123	-	
3970252 **	MB 420/1 CT RT 52	Rp 2"	◆	-	-	
3970233 *	MB 420/1 - RSM 30	Rp 2"	-	3010123	-	
3970234 **	MB 420/1 CT RSM 30	Rp 2"	◆	-	-	
3970221 *	MBC 1200/1 - RSM 60	Rp 2"	-	3010367	-	
3970225 **	MBC 1200/1 CT RSM 60	Rp 2"	◆	-	-	
3970222 *	MBC 1900/1 - FSM 40	DN 65	-	3010367	3000825	
3970226 **	MBC 1900/1 CT FSM 40	DN 65	◆	-	3000825	
3970223 *	MBC 3100/1 - FSM 40	DN 80	-	3010367	3000826	
3970227 **	MBC 3100/1 CT FSM 40	DN 80	◆	-	3000826	
3970224 *	MBC 5000/1 - FSM 80	DN 100	-	3010367	3000826 + 3010370	
3970228 **	MBC 5000/1 CT FSM 80	DN 100	◆	-	3000826 + 3010370	
3970145 *	CB 512/1 - RSM 30	Rp 1" 1/2	-	3010367	3000843	
20045589 **	CB 512/1 CT RSM 30	Rp 1" 1/2	◆	-	3000843	
3970146 *	CB 520/1 - RSM 30	Rp 2"	-	3010367	-	
3970160 **	CB 520/1 CT RSM 30	Rp 2"	◆	-	-	
20044659 *	CB 525/1 - RSM 30	Rp 2"	-	3010367	-	
20044660 **	CB 525/1 CT RSM 30	Rp 2"	◆	-	-	
3970147 *	CB 5065/1 - FSM 30	DN 65	-	3010367	3000825	
3970161 **	CB 5065/1 CT FSM 30	DN 65	◆	-	3000825	
3970148 *	CB 5080/1 - FSM 30	DN 80	-	3010367	3000826	
3970162 **	CB 5080/1 CT FSM 30	DN 80	◆	-	3000826	

Please see designation of Gas Train Series in the page before the Catalogue index.

\* 230V/50Hz -220V/60Hz electrical supply.

\*\* 230V/50Hz electrical supply.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

C.T. Gas valve leak detection control device:

- gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

◆ gas train equipped with leak detection control device.

VPS Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).

● Not available.

## Burner accessories

### Nozzles type 60° B



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

NOTE: each burner needs N° 2 nozzles.

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

(\*) Nozzle rated delivery is referred to atomized pressure

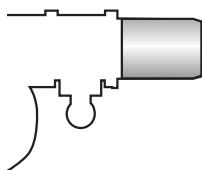
### LPG kit

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

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

(\*) Without CE certification

### Extended head kit



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

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

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

# Modulating Dual Fuel Burners

## RLS/M MZ SERIES

### Burner accessories

#### 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

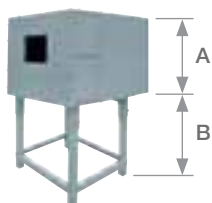


Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor. The KITS available for the various burners are listed below.

BURNER	KIT CODE
► RLS 190/M MZ	3010021
► RLS 250/M MZ	3010416

## Burner accessories

### Sound proofing box



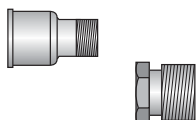
If noise emission needs reducing even further, sound-proofing boxes are available.

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

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

## Gas train accessories

### Adapters



In certain cases, an adapter must be fitted between the gas train and the burner, when the diameter of the gas train is different from the set diameter of the burner.

Below are given the available adapters; please see on the Gas Train list the correct adapter codes to select.

ADAPTER	LENGTH mm	ADAPTER CODE
 DN 65 2" 1/2 2"	300	3000825
 DN 65 2" 1/2 1" 1/2		
 DN 80 2" 1/2 2"	300	3000826
 1" 1/2 2"	35	3000843
 DN 100 DN 80	50	3010370

# Modulating Dual Fuel Burners

## RLS/M MZ SERIES

### Gas train accessories

#### Seal control kit



To test the valve seals on the gas train, a special “seal control kit” is available. The valve seal control device is compulsory (EN 676) on gas trains to burners with a maximum output over 1200 kW. The seal control is type VPS 504.

GAS TRAIN	KIT CODE for 50 Hz operation	KIT CODE for 60 Hz operation
▶ MB/1 type	3010123	20050030
▶ MBC/1 type	3010367	20029057
▶ CB/1 type	3010367	20029057

#### Stabiliser spring



Accessory springs are available to vary the pressure range of the gas train stabilisers. The following table shows these accessories with their application range. Please refer to the technical manual for the correct choice of spring.

GAS TRAIN	SPRING COLOUR	SPRING PRESSURE RANGE mbar	SPRING CODE
▶ MBC 1900/1 - 3100/1 MBC 5000/1	White	4 - 20	3010381
	Red	20 - 40	3010382
	Black	40 - 80	3010383
▶ CB 512/1	Green	80 - 150	3010384
	Red	25 - 55	3010131
	Black	60 - 110	3010157
▶ CB 520/1 - 525/1	Pink	90 - 150	3090486
	Red	25 - 55	3010132
	Black	60 - 110	3010158
▶ CB 5065/1 - 5080/1	Pink	90 - 150	3090487
	Red	25 - 55	3010133
	Black	60 - 110	3010135
	Pink	100 - 150	3090456
	Grey	140 - 200	3090992



## GI/EMME 300÷900 SERIES

The GI/EMME 300-900 series of burners covers a firing range from 175 to 922 kW.

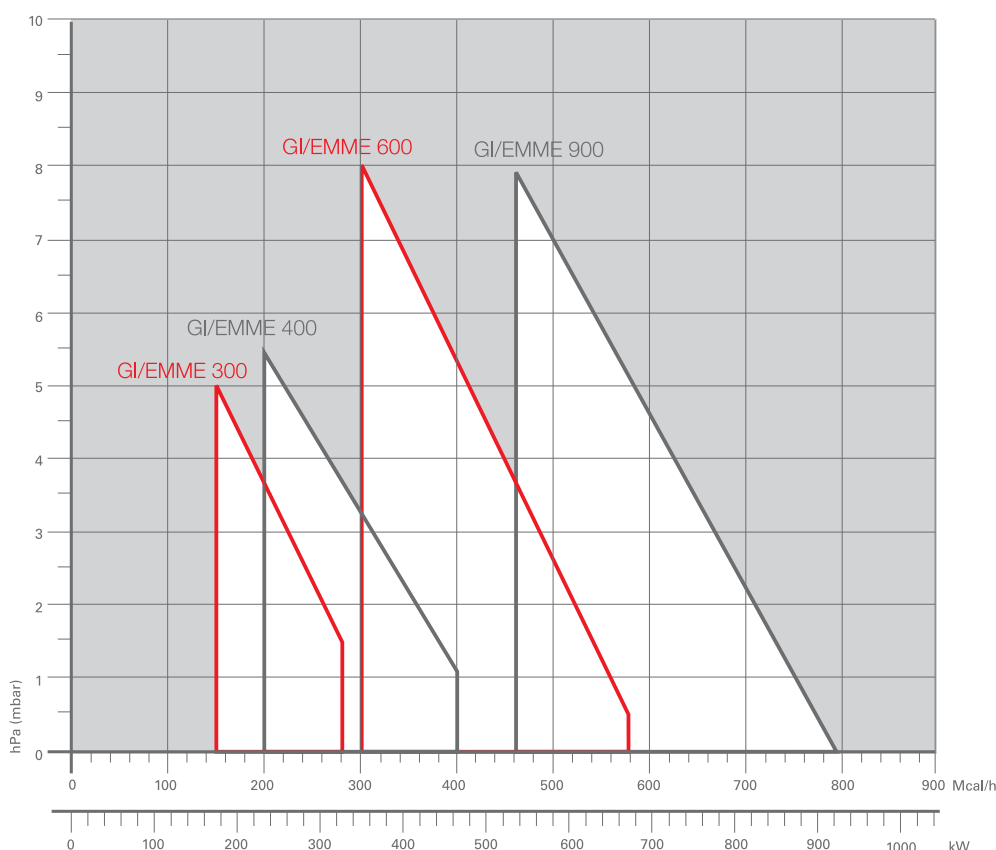
They have been designed for middle and high output users and they are in particular suitable for matching with pressurized boilers.

Their use allow to have a high safety in operation, guaranteed from the double fuel supply. Two options of operation are available: only gas and only light oil, thus settable by a selector and a terminal board. Light oil circuit is fitted with his own electric motor: this permits pump stop during gas operation preventing danger of pumping seizure. A wide range of accessories and gas trains suitable to the burners guarantee an elevated working flexibility.



GI/EMME 300	107/175 ÷ 332 kW
GI/EMME 400	116/232 ÷ 465 kW
GI/EMME 600	174/348 ÷ 665 kW
GI/EMME 900	250/525 ÷ 922 kW

### FIRING RATES



Useful working field for choosing the burner

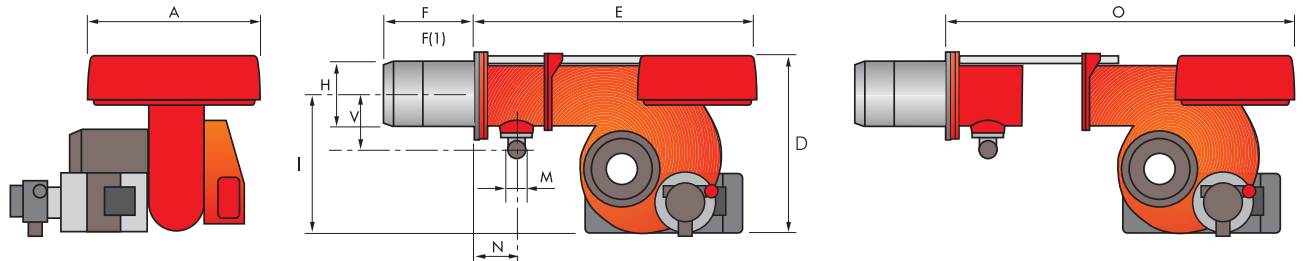
Test conditions conforming to EN267-EN676  
 Temperature: 20°C  
 Pressure: 1013,5 mbar  
 Altitude: 0 m a.s.l.

# Two Stage Dual Fuel Burners

## GI/EMME 300÷900 SERIES

### Overall dimensions (mm)

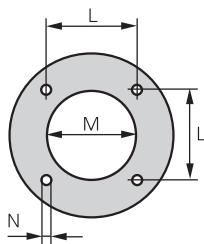
#### BURNER



MODEL	A	D	E	F - F(1)	H	I	M	N	O	V
▶ GI/EMME 300	410	397	610	185 - 320	140	292	1"1/2	97	978	165
▶ GI/EMME 400	410	397	610	187 - 320	150	292	1"1/2	97	1018	165
▶ GI/EMME 600	410	437	645	187 - 320	155	332	1"1/2	97	1063	165
▶ GI/EMME 900	410	485	770	227 - 360	175	370	2"	131	1260	195

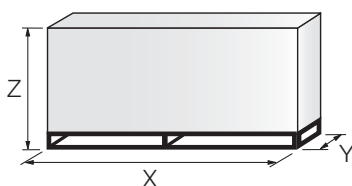
(1) Length with extended combustion head

#### BURNER - BOILER MOUNTING FLANGE



MODEL	L	M	N
▶ GI/EMME 300	160	155	M10
▶ GI/EMME 400	160	165	M10
▶ GI/EMME 600	160	165	M10
▶ GI/EMME 900	195	185	M12

#### PACKAGING



MODEL	X	Y	Z	kg
▶ GI/EMME 300	835	530	453	42
▶ GI/EMME 400	835	530	453	49
▶ GI/EMME 600	880	530	500	64
▶ GI/EMME 900	1030	530	435	88

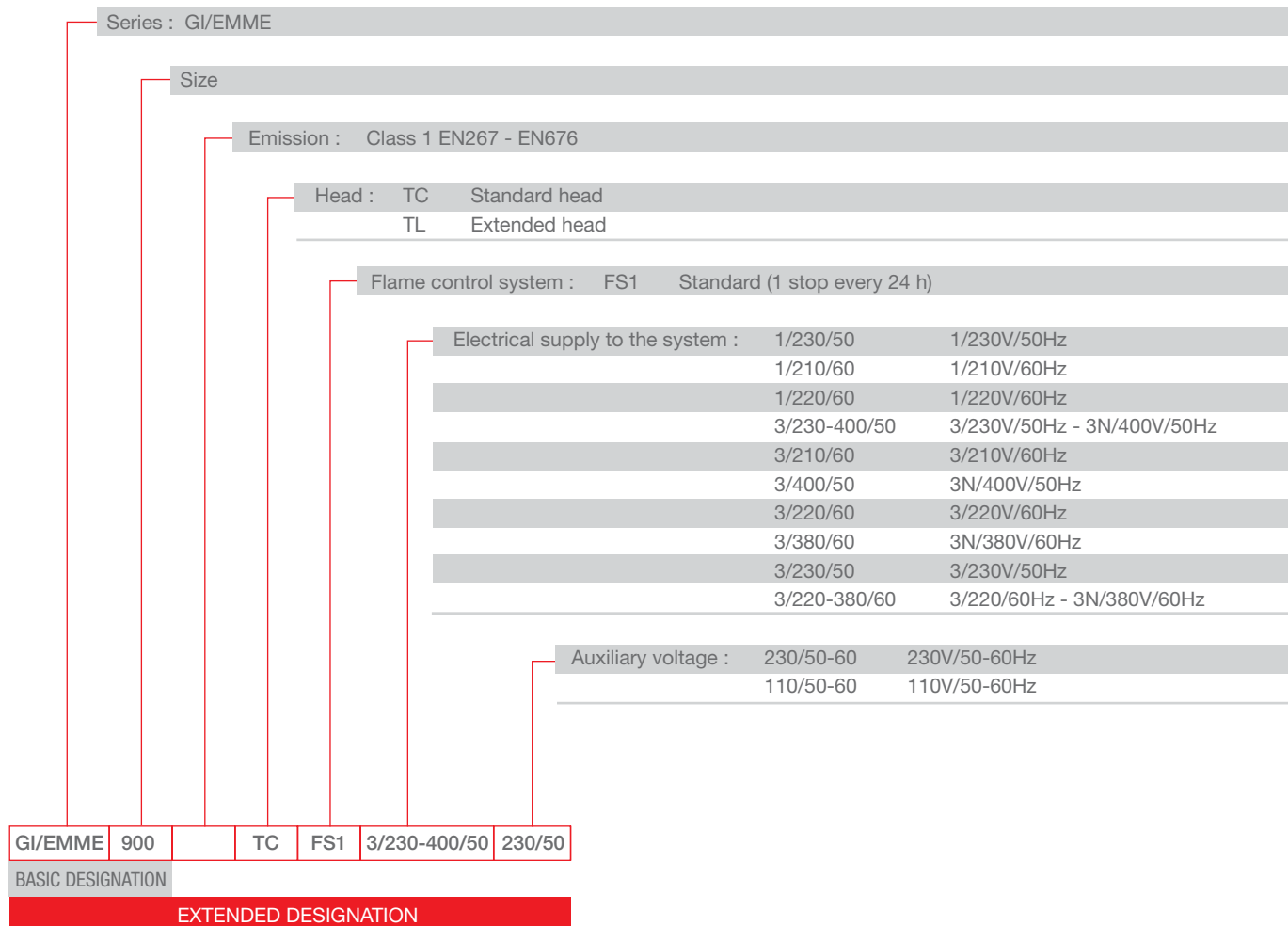
# Two Stage Dual Fuel Burners

## GI/EMME 300÷900 SERIES

**RIELLO**

# Specification

## DESIGNATION OF SERIES



DUAL FUEL

# Two Stage Dual Fuel Burners

## GI/EMME 300÷900 SERIES

### Specification

#### STATE OF SUPPLY

Monoblock forced draught dual fuel burner, two stage operation, made up of:

- Air suction circuit
- Fan with forward curved blades
- Air damper for setting controlled by a servomotor
- Combustion head, that can be set on the basis of required output
- Minimum air pressure switch
- Fan electrical motor
- Pump electrical motor
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and a a vacuumeter
  - internal by-pass for single pipe installation
- Valve unit with a double oil safety valve on the output circuit
- UV photocell for flame detection
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) protection level.

#### Standard equipment:

- 1 gas train flange
- 1 flange gasket
- 1 insulating screen
- 2 flexible hoses for connection to the oil supply circuit
- 2 nipples for connection to the pump
- 3 wiring looms fittings for electrical connections
- 8 screws for fixing the burner flange to the boiler
- 1 LPG kit
- Instruction manual for installation, use and maintenance
- Spare parts catalogue.

# Two Stage Dual Fuel Burners

## GI/EMME 300÷900 SERIES

**RIELLO**

## Available models

### Burners

CODE	MODEL					HEAT OUTPUT			TOTAL ELECTRICAL POWER (kW)	CERTIFICATION	NOTE
						(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)			
3483681	GI/EMME 300	TC	FS1	1/220/60	220/60	107/175-340	9/15-29	11/17,5-34	0,5	-	
3483621	GI/EMME 300	TC	FS1	1/230/50	230/50	107/175-332	9/15-28	11/17,5-33	0,5	CE-0085AQ0711	
3484271	GI/EMME 400	TC	FS1	1/210/60	120/60	116/232-465	10/20-39	12/23-46,5	0,62	-	
3484221	GI/EMME 400	TC	FS1	1/230/50	230/50	116/232-465	10/20-39	12/23-46,5	0,62	CE-0085AQ0711	
3484281	GI/EMME 400	TC	FS1	3/220-380/60	220/60	116/232-465	10/20-39	12/23-46,5	0,62	-	
3484871	GI/EMME 600	TC	FS1	3/210/60	120/60	174/348-697	15/30-60	17/35-70	1,1	-	
3484881	GI/EMME 600	TC	FS1	3/220-380/60	220/60	174/348-697	15/30-60	17/35-70	1,1	-	
3484821	GI/EMME 600	TC	FS1	3/230-400/50	230/50	174/348-665	15/30-56	17/35-66,5	1,1	CE-0085AQ0711	
3485971	GI/EMME 900	TC	FS1	3/210/60	120/60	262/523-1045	22/44-88	26/52-105	2	-	
3485981	GI/EMME 900	TC	FS1	3/220-380/60	220/60	262/523-1045	22/44-88	26/52-105	2	-	
3485921	GI/EMME 900	TC	FS1	3/230-400/50	230/50	250/525-922	21/44-78	25/52,5-92	2	CE-0085AQ0711	

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm<sup>2</sup>/s (cSt).

Net calorific value G20 gas: 10 kWh/Nm<sup>3</sup>; 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

The burners of GI/EMME series are in according to 2004/108, 2006/95 Directive and EN 267, EN 676 Norm.

# Two Stage Dual Fuel Burners

## GI/EMME 300÷900 SERIES

### Available models

#### Gas Trains

CODE	GAS TRAIN			VPS 50 Hz CODE	ADAPTER CODE		
	MODEL	Ø	C.T.		GI/EMME 300-400	GI/EMME 600	GI/EMME 900
3970084 *	MB 405/2 - RSD 20	Rp 1/2"	-	3010123	20044756	●	●
3970537 *	MB 407/2 - RSD 20	Rp 3/4"	-	3010123	3000824		3000824 + 3000843
3970556 *	MB 407/2 - RT 20	Rp 3/4"	-	3010123	3000824		3000824 + 3000843
3970534 *	MB 410/2 - RSD 20	Rp 3/4"	-	3010123	3000824		3000824 + 3000843
3970557 *	MB 410/2 - RT 20	Rp 3/4"	-	3010123	3000824		3000824 + 3000843
3970152 *	MB 412/2 - RT 20	Rp 1" 1/2	-	3010123	-		3000843
3970183 *	MB 415/2 - RT 20	Rp 1" 1/2	-	3010123	-		3000843
3970184 *	MB 420/2 - RT 20	Rp 2"	-	3010123	3000822		-
3970185 **	MB 420/2 CT RT 20	Rp 2"	◆	-	3000822		-
3970153 *	CB 512/2 - RT 32	Rp 1" 1/2	-	3010367	-		3000843
20045590 **	CB 512/2 CT RT 32	Rp 1" 1/2	◆	-	-		3000843
3970154 *	CB 520/2 - RT 32	Rp 2"	-	3010367	3000822		-
20045591 **	CB 520/2 CT RT 32	Rp 2"	◆	-	3000822		-
3970155 *	CB 5065/2 - FT 32	DN 65	-	3010367	3000825		3000825
3970167 **	CB 5065/2 CT FT 32	DN 65	◆	-	3000825		3000825
3970156 *	CB 5080/2 - FT 32	DN 80	-	3010367	3000826 + 3000822		3000826
3970168 **	CB 5080/2 CT FT 32	DN 80	◆	-	3000826 + 3000822		3000826

Please see designation of Gas Train Series in the page before the Catalogue index.

\* 230V/50Hz - 220V/60Hz electrical supply.

\*\* 230V/50Hz electrical supply.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

C.T. Gas valve leak detection control device:

- gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

◆ gas train equipped with leak detection control device.

VPS Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).

● Not available.

# Two Stage Dual Fuel Burners

## GI/EMME 300÷900 SERIES

**RIELLO**

## Burner accessories

### Nozzles type 60° B

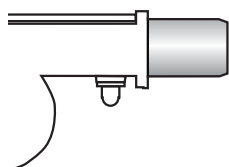


The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

NOTE: each burner needs N° 2 nozzles.

BURNER	RATED DELIVERY (kg/h) AT 12 bar	GPH	NOZZLE CODE
▶ GI/EMME 300	6,8	1,75	3042110
▶ GI/EMME 300	7,8	2,00	3042126
▶ GI/EMME 300	8,7	2,25	3042127
▶ GI/EMME 300 - 400	9,7	2,50	3042140
▶ GI/EMME 300 - 400	11,6	3,00	3042158
▶ GI/EMME 300 - 400	13,6	3,50	3042162
▶ GI/EMME 300 - 400 - 600	15,6	4,00	3042172
▶ GI/EMME 400 - 600	17,5	4,50	3042182
▶ GI/EMME 400 - 600	19,4	5,00	3042192
▶ GI/EMME 400 - 600	21,3	5,50	3042202
▶ GI/EMME 600 - 900	23,3	6,00	3042212
▶ GI/EMME 600 - 900	27,1	7,00	3042232
▶ GI/EMME 600 - 900	29,1	7,50	3042242
▶ GI/EMME 900	33	8,50	3042262
▶ GI/EMME 900	36,8	9,50	3042282
▶ GI/EMME 900	38,8	10,00	3042292
▶ GI/EMME 900	42,3	11,00	3042312
▶ GI/EMME 900	46,5	12,00	3042322

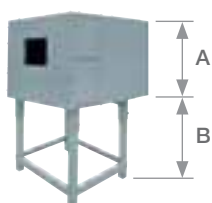
### Extended head kit



“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
▶ GI/EMME 300	185	320	3000836
▶ GI/EMME 400	187	320	3010001
▶ GI/EMME 600	187	320	3010002
▶ GI/EMME 900	227	360	3010003

### Sound proofing box



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

BURNER	BOX TYPE	A (mm)	B (mm) min-max	[dB(A)] (*)	BOX CODE
▶ GI/EMME 300 - 400 - 600 - 900	C1/3	650	372 - 980	10	3010403

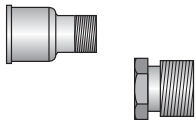
(\*) Average noise reduction according to EN 15036-1 standard

# Two Stage Dual Fuel Burners

## GI/EMME 300÷900 SERIES

### Gas train accessories

#### Adapters



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

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

#### 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
▶ GI/EMME 300	MB 407/2 - MB 410/2 MB 412/2 - MB 415/2	3010123	20050030
	CB 512/2	3010125	20050033
	MB 410/2 - MB 412/2 MB 415/2 - MB 420/2	3010123	20050030
▶ GI/EMME 400	CB 512/2 - CB 520/2	3010125	20050033
	MB 410/2 - MB 412/2 MB 415/2 - MB 420/2	3010123	20050030
▶ GI/EMME 600	CB 512/2 - CB 520/2	3010125	20050033
	MB 412/2 - MB 415/2 MB 420/2	3010123	20050030
▶ GI/EMME 900	CB 512/2 - CB 520/2 - CB 5065/2	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



## GI/EMME 1400÷4500 SERIES

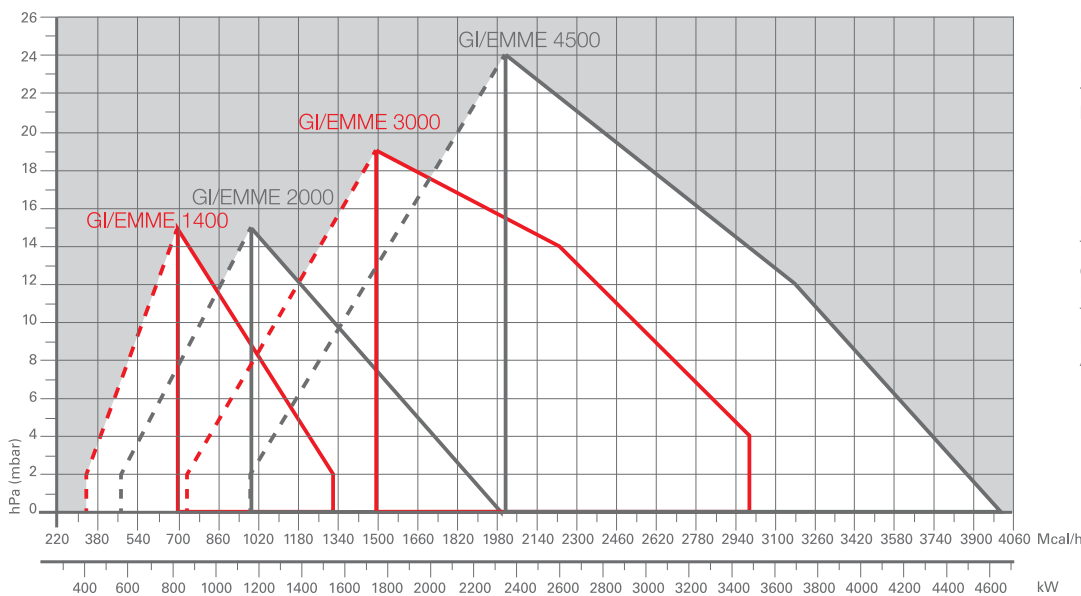
The GI/EMME 1400-4500 series of burners covers a firing range from 820 to 4650 kW. They have been designed for high output users and they are suitable for matching with every kind of boilers, with normal or pressurized combustion chamber.

Operation can be "two stage progressive" or, alternatively, "modulating" with the installation of a PID logic regulator and respective probes. Two options of operation are available: only gas and only light oil, thus settable by a manual switch. Light oil circuit is fitted with his own electric motor: this permits pump stop during gas operation preventing danger of pumping seizure and avoiding oil circulation. A wide range of accessories and gas trains suitable to the burners guarantee an elevated working flexibility.



GI/EMME 1400	407/820 ÷ 1540 kW
GI/EMME 2000	581/1163 ÷ 2325 kW
GI/EMME 3000	872/1744 ÷ 3488 kW
GI/EMME 4500	1163/2350 ÷ 4650 kW

### FIRING RATES

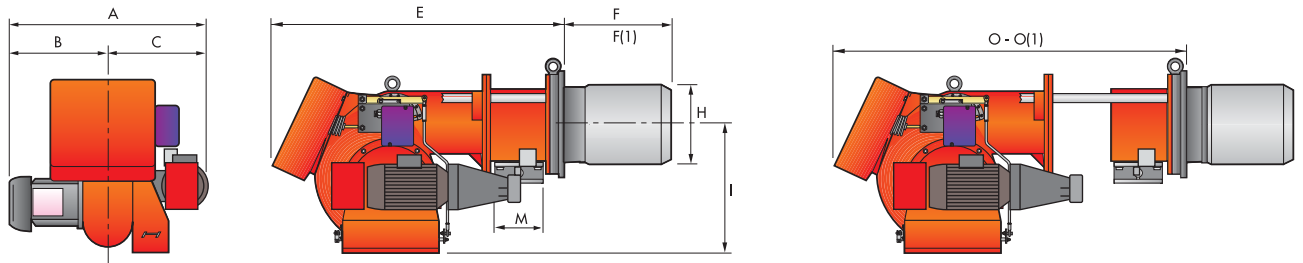


# Modulating Dual Fuel Burners

## GI/EMME 1400÷4500 SERIES

### Overall dimensions (mm)

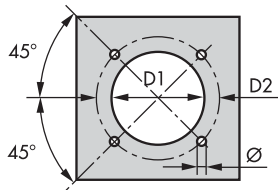
#### BURNER



MODEL	A	B	C	E	F - F(1)	H	I	M	O - O(1)
GI/EMME 1400	858	376	482	1090	385 - 495	250	467	2"	1407 - 1585
GI/EMME 2000	878	396	482	1090	385 - 495	260	467	DN 80	1407 - 1585
GI/EMME 3000	985	447	538	1320	476 - 606	336	525	DN 80	1796 - 2000
GI/EMME 4500	1046	508	538	1320	476 - 606	336	525	DN 80	1796 - 1926

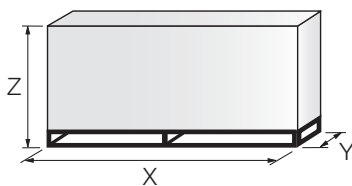
(1) Length with extended combustion head

#### BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
▶ GI/EMME 1400	255	368	M16
▶ GI/EMME 2000	265	368	M16
▶ GI/EMME 3000	340	438	M20
▶ GI/EMME 4500	340	438	M20

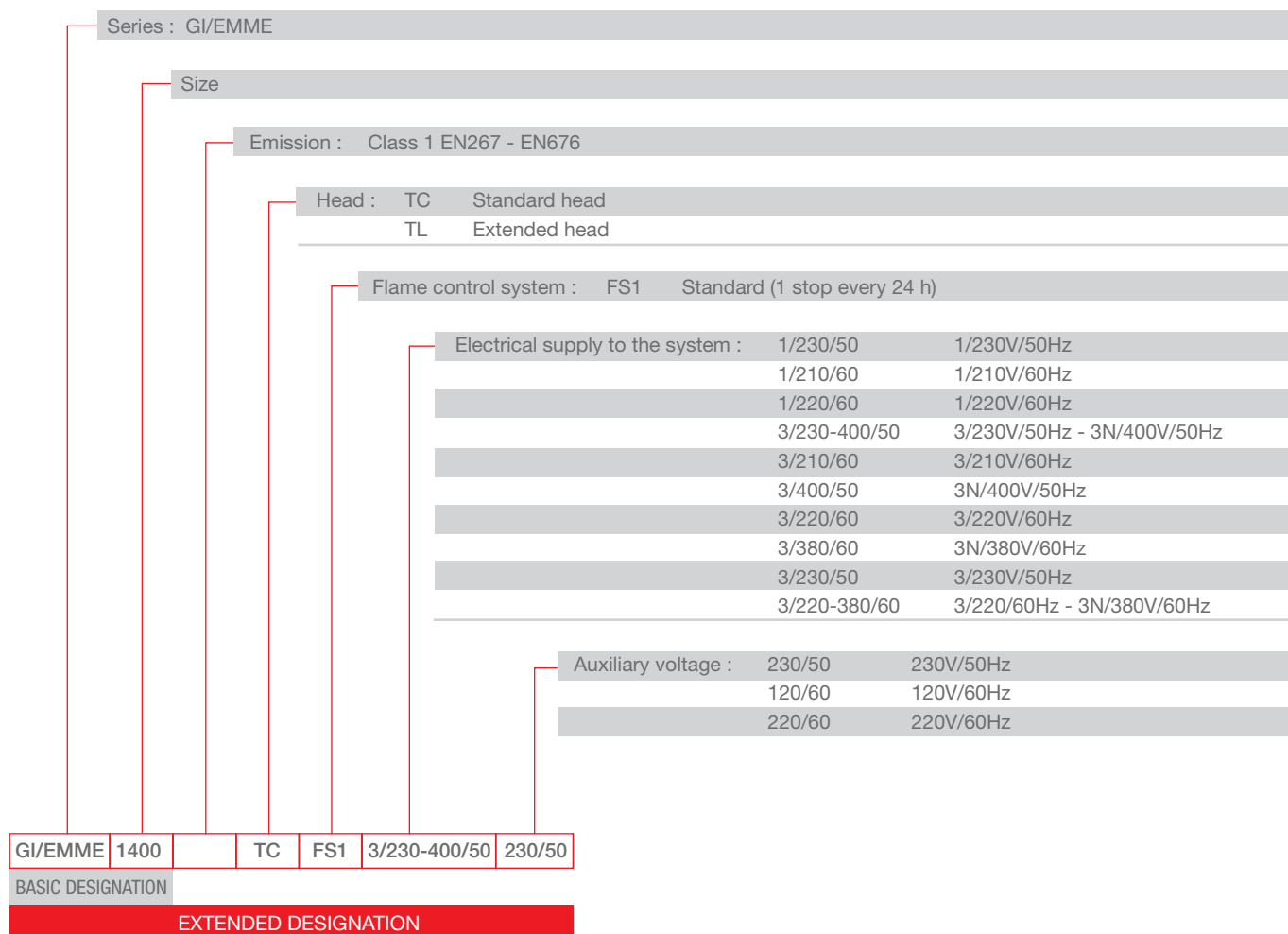
#### PACKAGING



MODEL	X	Y	Z	kg
▶ GI/EMME 1400	1670	1010	780	190
▶ GI/EMME 2000	1670	1010	780	200
▶ GI/EMME 3000	2000	1160	870	280
▶ GI/EMME 4500	2000	1160	870	500

## Specification

### DESIGNATION OF SERIES



# Modulating Dual Fuel Burners

## GI/EMME 1400÷4500 SERIES

### Specification

#### STATE OF SUPPLY

Monoblock forced draught dual fuel burner, two stage progressive or modulating operation with a kit, made up of:

- Air suction circuit
- Fan with forward curved blades
- Air damper for setting and butterfly valve for regulating fuel output controlled by a servomotor
- Combustion head, that can be set on the basis of required output
- Maximum gas pressure switch
- Minimum air pressure switch
- Fan electrical motor
- Pump electrical motor
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and a a vacuumeter
  - internal by-pass for single pipe installation
- Valve unit with a double oil safety valve on the output circuit and safety valve on the return circuit
- UV photocell for flame detection
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) protection level.

#### Standard equipment:

- 1 flange (for GI/EMME 1400)
- 1 gas train flange
- 8 screws for fixing the burner flange to the boiler (for GI/EMME 1400)
- 12 screws for fixing the burner flange to the boiler
- 1 insulating screen
- 2 flexible hoses for connection to the oil supply circuit
- 2 nipples for connection to the pump
- 4 wiring looms fittings for electrical connections
- 2 pin extensions
- 8 washers (for GI/EMME 1400)
- 12 washers
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

# Modulating Dual Fuel Burners

## GI/EMME 1400÷4500 SERIES

**RIELLO**

## Available models

### Burners

CODE	MODEL	HEAT OUTPUT			MOTORS ELECTRICAL POWER (kW)	CERTIFICATION	NOTE
		(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)			
3486683	GI/EMME 1400 TC FS1 3/220-380/60 220/60	415/814-1660	35/69-140	41/81-166	3 + 1,1	-	
3486655	GI/EMME 1400 TC FS1 3/230-400/50 230/50	407/820-1540	34/69-130	41/82-154	3 + 1,1	(1)	
3486684	GI/EMME 1400 TL FS1 3/220-380/60 220/60	415/814-1660	35/69-140	41/81-166	3 + 1,1	-	
3486656	GI/EMME 1400 TL FS1 3/230-400/50 230/50	407/820-1540	34/69-130	41/82-154	3 + 1,1	(1)	
3487683	GI/EMME 2000 TC FS1 3/220-380/60 220/60	590/1163-2370	50/98-200	59/116-237	4 + 1,1	-	
3487657	GI/EMME 2000 TC FS1 3/230-400/50 230/50	581/1163-2325	49/98-196	58/116-233	4 + 1,1	(2)	
3487659	GI/EMME 2000 TC FS1 3/400/50 230/50	581/1163-2325	49/98-196	58/116-233	4 + 1,1	(2)	*
3487684	GI/EMME 2000 TL FS1 3/220-380/60 220/60	590/1163-2370	50/98-200	59/116-237	4 + 1,1	-	
3487658	GI/EMME 2000 TL FS1 3/230-400/50 230/50	581/1163-2325	49/98-196	58/116-233	4 + 1,1	(2)	
3487660	GI/EMME 2000 TL FS1 3/400/50 230/50	581/1163-2325	49/98-196	58/116-233	4 + 1,1	(2)	*
3488783	GI/EMME 3000 TC FS1 3/220-380/60 220/60	890/1744-3560	75/147-300	89/174-356	9 + 1,5	-	
3488757	GI/EMME 3000 TC FS1 3/230-400/50 230/50	872/1744-3488	74/147-294	87/174-349	9 + 1,5	(3)	
3488759	GI/EMME 3000 TC FS1 3/400/50 230/50	872/1744-3488	74/147-294	87/174-349	9 + 1,5	(3)	*
3488784	GI/EMME 3000 TL FS1 3/220-380/60 220/60	890/1744-3560	75/147-300	89/174-356	9 + 1,5	-	
3488758	GI/EMME 3000 TL FS1 3/230-400/50 230/50	872/1744-3488	74/147-294	87/174-349	9 + 1,5	(3)	
3488760	GI/EMME 3000 TL FS1 3/400/50 230/50	872/1744-3488	74/147-294	87/174-349	9 + 1,5	(3)	*
3489085	GI/EMME 4500 TC FS1 3/220/60 220/60	1190/2325-5100	100/196-430	119/233-510	15 + 1,5	-	*
3489063	GI/EMME 4500 TC FS1 3/230/50 230/50	1163/2350-4650	98/198-392	116/235-465	15 + 1,5	(4)	*
3489087	GI/EMME 4500 TC FS1 3/380/60 220/60	1190/2325-5100	100/196-430	119/233-510	15 + 1,5	-	*
3489065	GI/EMME 4500 TC FS1 3/400/50 230/50	1163/2350-4650	98/198-392	116/235-465	15 + 1,5	(4)	*
3489086	GI/EMME 4500 TL FS1 3/220/60 220/60	1190/2325-5100	100/196-430	119/233-510	15 + 1,5	-	*
3489064	GI/EMME 4500 TL FS1 3/230/50 230/50	1163/2350-4650	98/198-392	116/235-465	15 + 1,5	(4)	*
3489088	GI/EMME 4500 TL FS1 3/380/60 220/60	1190/2325-5100	100/196-430	119/233-510	15 + 1,5	-	*
3489066	GI/EMME 4500 TL FS1 3/400/50 230/50	1163/2350-4650	98/198-392	116/235-465	15 + 1,5	(4)	*

(1) CE 0085AQ0712.

(2) CE 0085AQ0712.

(3) CE 0085AQ0712.

(4) CE 0085AQ0712.

\* Star delta starter.

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm<sup>2</sup>/s (cSt).

Net calorific value G20 gas: 10 kWh/Nm<sup>3</sup>; 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

The burners of GI/EMME series are in according to 90/396 - 2004/108 - 2006/95 EC Directive and EN 267-676 Norm.

# Modulating Dual Fuel Burners

## GI/EMME 1400÷4500 SERIES

### Available models

#### Gas Trains

CODE	GAS TRAIN			VPS 50 Hz CODE	ADAPTER CODE			
	MODEL	Ø	C.T.		GI/EMME 1400	GI/EMME 2000	GI/EMME 3000	GI/EMME 4500
3970256 *	MB 412/1 - RT 52	Rp 1" 1/2	-	3010123	3000843	●	●	●
3970144 *	MB 412/1 - RT 20	Rp 1" 1/2	-	3010123	3000843	●	●	●
3970197 **	MB 412/1 CT RT 20	Rp 1" 1/2	◆	-	3000843	●	●	●
3970231 *	MB 412/1 - RSM 20	Rp 1" 1/2	-	3010123	3000843	●	●	●
3970180 *	MB 415/1 - RT 30	Rp 1" 1/2	-	3010123	3000843	3010128 + 20042324 + 3000843		●
3970198 **	MB 415/1 CT RT 30	Rp 1" 1/2	◆	-	3000843	3010128 + 20042324 + 3000843		●
3970250 *	MB 415/1 - RT 52	Rp 1" 1/2	-	3010123	3000843	3010128 + 20042324 + 3000843		●
3970253 **	MB 415/1 CT RT 52	Rp 1" 1/2	◆	-	3000843	3010128 + 20042324 + 3000843		●
3970232 *	MB 415/1 - RSM 30	Rp 1" 1/2	-	3010123	3000843	3010128 + 20042324 + 3000843		●
3970181 *	MB 420/1 - RT 30	Rp 2"	-	3010123	-	3010128		●
3970182 **	MB 420/1 CT RT 30	Rp 2"	◆	-	-	3010128		●
3970257 *	MB 420/1 - RT 52	Rp 2"	-	3010123	-	3010128		●
3970252 **	MB 420/1 CT RT 52	Rp 2"	◆	-	-	3010128		●
3970233 *	MB 420/1 - RSM 30	Rp 2"	-	3010123	-	3010128		●
3970234 **	MB 420/1 CT RSM 30	Rp 2"	◆	-	-	3010128		●
3970221 *	MBC 1200/1 - RSM 60	Rp 2"	-	3010367	-	3010128		
3970225 **	MBC 1200/1 CT RSM 60	Rp 2"	◆	-	-	3010128		
3970222 *	MBC 1900/1 - FSM 40	DN 65	-	3010367	3000825	3000831		
3970226 **	MBC 1900/1 CT FSM 40	DN 65	◆	-	3000825	3000831		
3970223 *	MBC 3100/1 - FSM 40	DN 80	-	3010367	3000826	3000832		
3970227 **	MBC 3100/1 CT FSM 40	DN 80	◆	-	3000826	3000832		
3970224 *	MBC 5000/1 - FSM 80	DN 100	-	3010367	●	3010127		
3970228 **	MBC 5000/1 CT FSM 80	DN 100	◆	-	●	3010127		
3970145 *	CB 512/1 - RSM 30	Rp 1" 1/2	-	3010367	3000843	3010128 + 20042324 + 3000843		●
20045589 **	CB 512/1 CT RSM 30	Rp 1" 1/2	◆	-	3000843	3010128 + 20042324 + 3000843		●
3970146 *	CB 520/1 - RSM 30	Rp 2"	-	3010367	-	3010128		
3970160 **	CB 520/1 CT RSM 30	Rp 2"	◆	-	-	3010128		
20044659 *	CB 525/1 - RSM 30	Rp 2"	-	3010367	-	3010128		
20044660 **	CB 525/1 CT RSM 30	Rp 2"	◆	-	-	3010128		
3970147 *	CB 5065/1 - FSM 30	DN 65	-	3010367	3000825	3000831		
3970161 **	CB 5065/1 CT FSM 30	DN 65	◆	-	3000825	3000831		
3970148 *	CB 5080/1 - FSM 30	DN 80	-	3010367	3000826	3000832		
3970162 **	CB 5080/1 CT FSM 30	DN 80	◆	-	3000826	3000832		
3970149 *	CB 50100/1 - FSM 30	DN 100	-	3010367	●	●	3010127	
3970163 **	CB 50100/1 CT FSM 30	DN 100	◆	-	●	●	3010127	

Please see designation of Gas Train Series in the page before the Catalogue index.

\* 230V/50Hz -220V/60Hz electrical supply.

\*\* 230V/50Hz electrical supply.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

C.T. Gas valve leak detection control device:

- gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

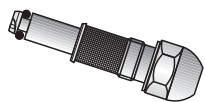
◆ gas train equipped with leak detection control device.

VPS Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).

● Not available.

## Burner accessories

### Nozzles type B5-SA 45°



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° 1 nozzle.

BURNER	RATED DELIVERY (kg/h)	NOZZLE CODE (1)	NOZZLE CODE (2)
▶ GI/EMME 1400	70	3009303	3045471
▶ GI/EMME 1400	80	3009305	3045472
▶ GI/EMME 1400	90	3009307	3045473
▶ GI/EMME 1400 - 2000	100	3009310	3045475
▶ GI/EMME 1400 - 2000	125	3009312	3045477
▶ GI/EMME 2000 - 3000	150	3009314	3045479
▶ GI/EMME 2000 - 3000	175	3009316	3045481
▶ GI/EMME 2000 - 3000 - 4500	200	3009318	3045483
▶ GI/EMME 3000 - 4500	225	3009320	3045485
▶ GI/EMME 3000 - 4500	250	3009322	3045487
▶ GI/EMME 3000 - 4500	275	3009324	3045489
▶ GI/EMME 3000 - 4500	300	3009326	3045491
▶ GI/EMME 4500	325	3009328	3045493
▶ GI/EMME 4500	350	3009330	3045495
▶ GI/EMME 4500	375	3009332	3045497
▶ GI/EMME 4500	400	3009334	3045499

(1) Nozzles Bergonzo B5 45° - without "SA" needle code.

(2) Nozzles Fluidics N2 45° - without needle code.

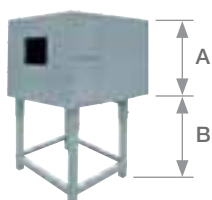
### Spacer kit



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

BURNER	SPACER THICKNESS S (mm)	KIT CODE
▶ GI/EMME 1400 - 2000	102	3000722
▶ GI/EMME 3000 - 4500	130	3000751

### Sound proofing box



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

BURNER	BOX TYPE	A (mm)	B (mm) min-max	[dB(A)] (*)	BOX CODE
▶ GI/EMME 1400 - 2000 - 3000 - 4500	C7	1255	160 - 980	10	3010376

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

# Modulating Dual Fuel Burners

## GI/EMME 1400÷4500 SERIES

### Burner accessories

#### Accessories for modulating operation



To obtain modulating operation, the GI/EMME series of burners requires a regulator.

BURNER	REGULATOR TYPE	REGULATOR CODE
▶ GI/EMME 1400 - 2000 - 3000 - 4500	RWF 40	3010211



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

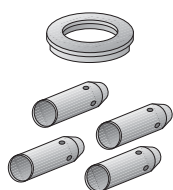
BURNER	PROBE TYPE	RANGE (°C) (bar)	PROBE CODE
▶ GI/EMME 1400 - 2000 GI/EMME 3000 - 4500	Temperature PT 100	-100 ÷ 500°C	3010110
	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214



Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.

BURNER	POTENTIOMETER KIT CODE
▶ GI/EMME 1400 - 2000 - 3000 - 4500	3010021

#### LPG kit



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

BURNER	KIT CODE FOR 'STANDARD HEAD' (*)	KIT CODE FOR 'EXTENDED HEAD' (*)
▶ GI/EMME 1400 - 2000	3010063	3010063
▶ GI/EMME 3000	3090223	3090223
▶ GI/EMME 4500	3090937	3090937

(\*) Without CE certification

#### Burner support



For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.

BURNER	SUPPORT CODE
▶ GI/EMME 1400 - 2000 - 3000 - 4500	3000731



## Gas train accessories

### Adapters



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

ADAPTER	LENGTH mm	ADAPTER CODE
 DN 65 2" 1/2 2"	300	3000825
 DN 65 2" 1/2 1" 1/2		
 DN 80 2" 1/2 2"	300	3000826
 DN 80 1" 1/2 2"	35	3000843
 DN 65 DN 80	320	3000831
 DN 80 DN 80	320	3000832
 DN 100 DN 80	320	3010127
 DN 80 DN 65 2" 1/2 2"	540	3010128

### Stabiliser spring



To vary the pressure range of the gas train stabilisers, accessory springs are available. The following table shows these accessories with their application range. Please refer to the technical manual for the correct choice of spring.

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

# Modulating Dual Fuel Burners

## GI/EMME 1400÷4500 SERIES

### Gas train accessories

#### Seal control kit



To test the valve seals on the gas train, a special “seal control kit” is available. The valve seal control device is compulsory (EN 676) on gas trains to burners with a maximum output over 1200 kW. The seal control is type VPS 504.

GAS TRAIN	KIT CODE for 50 Hz operation	KIT CODE for 60 Hz operation
▶ MB/1 type	3010123	20050030
▶ MBC/1 type	3010367	20029057
▶ CB/1 type	3010367	20029057

## ENNE/EMME SERIES

The ENNE/EMME 1400-4500 series of burners covers a firing range from 814 to 5000 kW.

They have been designed for high output users and they are suitable for matching with every kind of boilers, with normal or pressurized combustion chamber.

Operation can be "two stage progressive" or, alternatively, "modulating" with the installation of a PID logic regulator and respective probes. Two fuel options are available: only gas and only heavy oil, thus settable by a manual switch. Heavy oil circuit is fitted with his own electric motor: this permits pump stop during gas operation preventing danger of pumping seizure and avoiding oil circulation. A wide range of accessories and gas trains suitable to the burners guarantee an elevated working flexibility.



ENNE/EMME 1400	407/814 ÷ 1628 kW
ENNE/EMME 2000	581/1163 ÷ 2325 kW
ENNE/EMME 3000	872/1744 ÷ 3488 kW
ENNE/EMME 4500	1163/2325 ÷ 5000 kW

### FIRING RATES



□ Useful working field for choosing the burner

▭ Modulation range

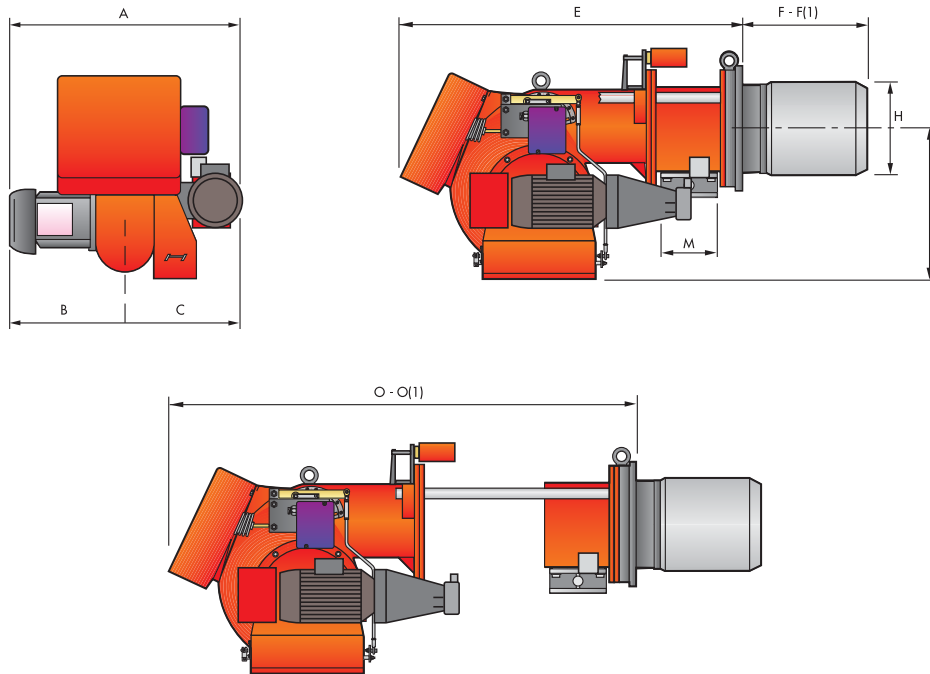
Test conditions conforming to EN267-EN676  
 Temperature: 20°C  
 Pressure: 1013,5 mbar  
 Altitude: 0 m a.s.l.

# Modulating Dual Fuel Burners

## ENNE/EMME SERIES

### Overall dimensions (mm)

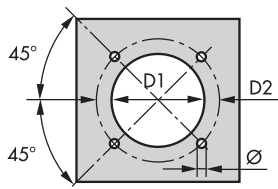
#### BURNER



MODEL	A	B	C	E	F - F(1)	H	I	M	O - O(1)
▶ ENNE/EMME 1400	892	376	516	1090	385 - 495	250	467	2"	1475 - 1585
▶ ENNE/EMME 2000	912	396	516	1090	385 - 495	260	467	DN80	1475 - 1585
▶ ENNE/EMME 3000	1000	447	553	1320	476 - 606	336	525	DN80	1796 - 1926
▶ ENNE/EMME 4500	1061	508	553	1320	476 - 606	336	525	DN80	1796 - 1926

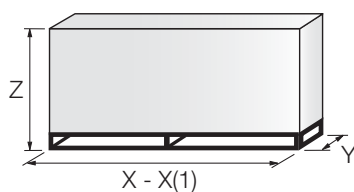
(1) Length with extended combustion head

#### BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
▶ ENNE/EMME 1400	255	368	M16
▶ ENNE/EMME 2000	265	368	M16
▶ ENNE/EMME 3000	340	438	M20
▶ ENNE/EMME 4500	340	438	M20

#### PACKAGING

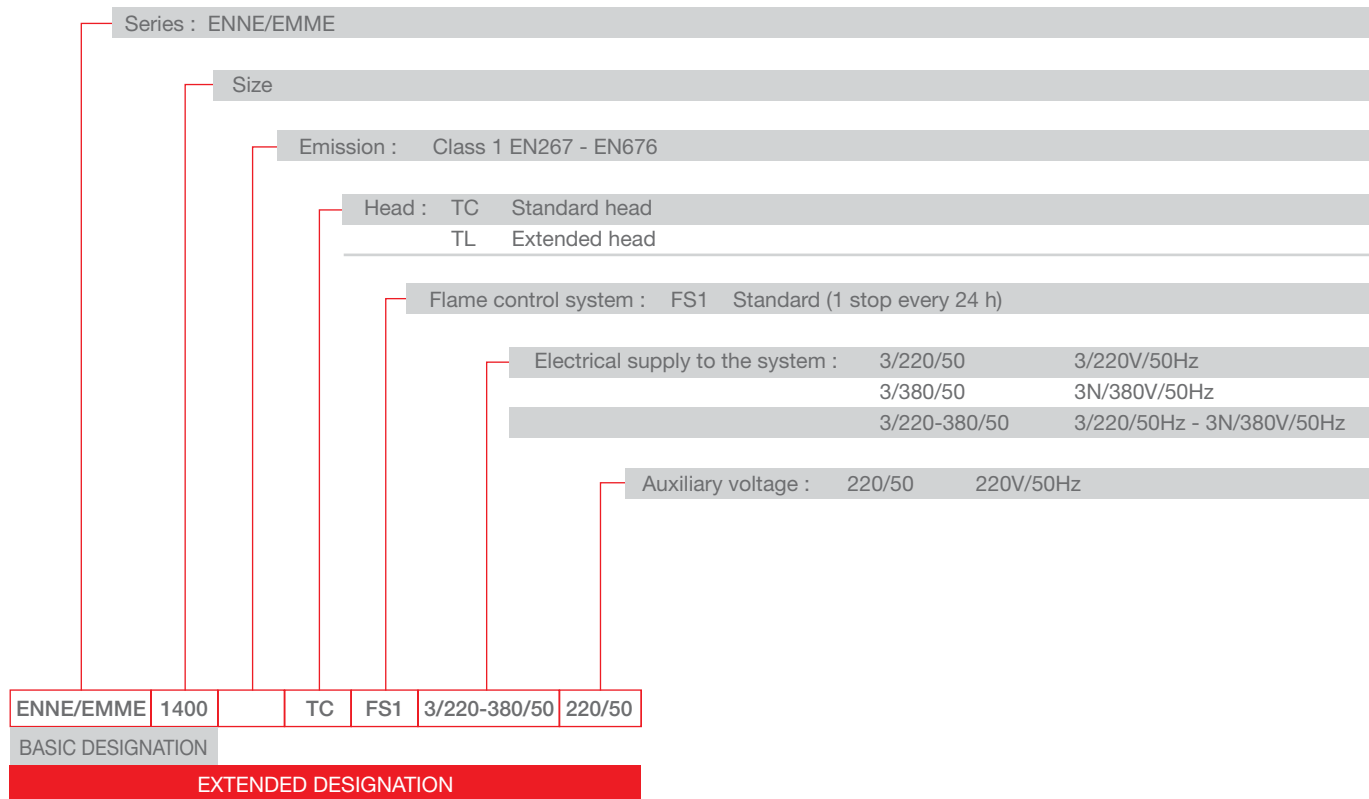


MODEL	X - X(1)	Y	Z	Kg
▶ ENNE/EMME 1400	1670 - 1670	1010	780	265
▶ ENNE/EMME 2000	1670 - 1670	1010	780	265
▶ ENNE/EMME 3000	2000 - 2000	1160	870	280
▶ ENNE/EMME 4500	2000 - 2000	1160	870	500

(1) Length with extended combustion head

## Specification

### DESIGNATION OF SERIES



# Modulating Dual Fuel Burners

## ENNE/EMME SERIES

# Specification

## STATE OF SUPPLY

Monoblock forced draught dual fuel burner, two stage progressive or modulating operation with a kit, made up of:

- Air suction circuit
- Fan with forward curved blades
- Air damper for setting and butterfly valve for regulating fuel output controlled by a servomotor
- Combustion head, that can be set on the basis of required output
- Maximum gas pressure switch
- Minimum air pressure switch
- Fan electrical motor
- Dedicated 1400 rpm low speed pump motor
- Gears pump for high pressure fuel supply, fitted with:
  - filter
  - pressure regulator
  - connections for installing a pressure gauge and a a vacuumeter
  - internal by-pass for single pipe installation
- Preheater unit
- Valve unit with a double oil safety valve on the output circuit and safety valve on the return circuit
- Heavy oil heating cartridges factory installed on pump and valves group
- UV photocell for flame detection
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) protection level.

### Standard equipment:

- 1 gas train flange
- 12 screws for fixing the burner flange to the boiler
- 1 insulating screen
- 2 flexible hoses for connection to the oil supply circuit
- 2 nipples for connection to the pump
- 4 wiring looms fittings for electrical connections
- 2 pin extensions
- 8 washers
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

# Available models

## Burners

CODE	MODEL	HEAT OUTPUT			TOTAL ELECTRICAL POWER (kW)	CERTIFICATION	NOTE
		(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)			
3486701	ENNE/EMME 1400 TC FS1 3/230-400/50 230/50	407/814-1628	35/70-140	41/81-163	3 + 1,1		
3486702	ENNE/EMME 1400 TL FS1 3/230-400/50 230/50	407/814-1628	35/70-140	41/81-163	3 + 1,1		
3487801	ENNE/EMME 2000 TC FS1 3/230-400/50 230/50	581/1163-2325	50/100-200	58/116-233	4 + 1,1		
3487802	ENNE/EMME 2000 TL FS1 3/230-400/50 230/50	581/1163-2325	50/100-200	58/116-233	4 + 1,1		
3488801	ENNE/EMME 3000 TC FS1 3/230-400/50 230/50	872/1744-3488	75/150-300	87/174-349	9 + 2,2		
3488802	ENNE/EMME 3000 TL FS1 3/230-400/50 230/50	872/1744-3488	75/150-300	87/174-349	9 + 2,2		
3489201	ENNE/EMME 4500 TC FS1 3/230/50 230/50	1163/2325-5000	100/200-430	116/233-500	12 + 2,2		(1)
3489202	ENNE/EMME 4500 TL FS1 3/230/50 230/50	1163/2325-5000	100/200-430	116/233-500	12 + 2,2		(1)
3489203	ENNE/EMME 4500 TC FS1 3/400/50 230/50	1163/2325-5000	100/200-430	116/233-500	12 + 2,2		(1)
3489204	ENNE/EMME 4500 TL FS1 3/400/50 230/50	1163/2325-5000	100/200-430	116/233-500	12 + 2,2		(1)

(1) Star delta starter.

Net calorific value light oil: 11,8 kWh/kg; 10.200 kcal/kg - Viscosity up to 20°E (150 mm<sup>2</sup>/s, cSt), Type BUNKER B / USA n° 5 (with separate 1400 rpm low speed pump, heavy oil heating cartridges factory installed on pump and valves group).

Net calorific value G20 gas: 10 kWh/Nm<sup>3</sup>; 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

The burners of ENNE/EMME series are in according to 90/396 - 2004/108 - 2006/95 EC Directive and EN 267-676 Norm.

# Modulating Dual Fuel Burners

## ENNE/EMME SERIES

### Available models

#### Gas Trains

CODE	GAS TRAIN			VPS 50 Hz CODE	ADAPTER CODE			
	MODEL	Ø	C.T.		ENNE/EMME 1400	ENNE/EMME 2000	ENNE/EMME 3000	ENNE/EMME 4500
3970256 *	MB 412/1 - RT 52	Rp 1" 1/2	-	3010123	3000843	●	●	●
3970144 *	MB 412/1 - RT 20	Rp 1" 1/2	-	3010123	3000843	●	●	●
3970197 **	MB 412/1 CT RT 20	Rp 1" 1/2	◆	-	3000843	●	●	●
3970231 *	MB 412/1 - RSM 20	Rp 1" 1/2	-	3010123	3000843	●	●	●
3970180 *	MB 415/1 - RT 30	Rp 1" 1/2	-	3010123	3000843	3010128 + 20042324 + 3000843		●
3970198 **	MB 415/1 CT RT 30	Rp 1" 1/2	◆	-	3000843	3010128 + 20042324 + 3000843		●
3970250 *	MB 415/1 - RT 52	Rp 1" 1/2	-	3010123	3000843	3010128 + 20042324 + 3000843		●
3970253 **	MB 415/1 CT RT 52	Rp 1" 1/2	◆	-	3000843	3010128 + 20042324 + 3000843		●
3970232 *	MB 415/1 - RSM 30	Rp 1" 1/2	-	3010123	3000843	3010128 + 20042324 + 3000843		●
3970181 *	MB 420/1 - RT 30	Rp 2"	-	3010123	-	3010128		●
3970182 **	MB 420/1 CT RT 30	Rp 2"	◆	-	-	3010128		●
3970257 *	MB 420/1 - RT 52	Rp 2"	-	3010123	-	3010128		●
3970252 **	MB 420/1 CT RT 52	Rp 2"	◆	-	-	3010128		●
3970233 *	MB 420/1 - RSM 30	Rp 2"	-	3010123	-	3010128		●
3970234 **	MB 420/1 CT RSM 30	Rp 2"	◆	-	-	3010128		●
3970221 *	MBC 1200/1 - RSM 60	Rp 2"	-	3010367	-	3010128		
3970225 **	MBC 1200/1 CT RSM 60	Rp 2"	◆	-	-	3010128		
3970222 *	MBC 1900/1 - FSM 40	DN 65	-	3010367	3000825	3000831		
3970226 **	MBC 1900/1 CT FSM 40	DN 65	◆	-	3000825	3000831		
3970223 *	MBC 3100/1 - FSM 40	DN 80	-	3010367	3000826	3000832		
3970227 **	MBC 3100/1 CT FSM 40	DN 80	◆	-	3000826	3000832		
3970224 *	MBC 5000/1 - FSM 80	DN 100	-	3010367	●	3010127		
3970228 **	MBC 5000/1 CT FSM 80	DN 100	◆	-	●	3010127		
3970145 *	CB 512/1 - RSM 30	Rp 1" 1/2	-	3010367	3000843	3010128 + 20042324 + 3000843		●
20045589 **	CB 512/1 CT RSM 30	Rp 1" 1/2	◆	-	3000843	3010128 + 20042324 + 3000843		●
3970146 *	CB 520/1 - RSM 30	Rp 2"	-	3010367	-	3010128		
3970160 **	CB 520/1 CT RSM 30	Rp 2"	◆	-	-	3010128		
20044659 *	CB 525/1 - RSM 30	Rp 2"	-	3010367	-	3010128		
20044660 **	CB 525/1 CT RSM 30	Rp 2"	◆	-	-	3010128		
3970147 *	CB 5065/1 - FSM 30	DN 65	-	3010367	3000825	3000831		
3970161 **	CB 5065/1 CT FSM 30	DN 65	◆	-	3000825	3000831		
3970148 *	CB 5080/1 - FSM 30	DN 80	-	3010367	3000826	3000832		
3970162 **	CB 5080/1 CT FSM 30	DN 80	◆	-	3000826	3000832		
3970149 *	CB 50100/1 - FSM 30	DN 100	-	3010367	●	●	3010127	
3970163 **	CB 50100/1 CT FSM 30	DN 100	◆	-	●	●	3010127	

Please see designation of Gas Train Series in the page before the Catalogue index.

\* 230V/50Hz -220V/60Hz electrical supply.

\*\* 230V/50Hz electrical supply.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

C.T. Gas valve leak detection control device:

- gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

◆ gas train equipped with leak detection control device.

VPS Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).

● Not available.



## Burner accessories

### Nozzles type B5-AA 45°



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° 1 nozzle.

BURNER	RATED DELIVERY (kg/h)	NOZZLE CODE (1)	NOZZLE CODE (2)
▶ ENNE/EMME 1400	70	3009203	3045426
▶ ENNE/EMME 1400	80	3009205	3045427
▶ ENNE/EMME 1400	90	3009207	3045428
▶ ENNE/EMME 1400 - 2000	100	3009209	3045430
▶ ENNE/EMME 1400 - 2000	125	3009211	3045432
▶ ENNE/EMME 1400 - 2000 - 3000	150	3009213	3045434
▶ ENNE/EMME 2000 - 3000	175	3009215	3045436
▶ ENNE/EMME 2000 - 3000 - 4500	200	3009800	3045438
▶ ENNE/EMME 3000 - 4500	225	3009801	3045440
▶ ENNE/EMME 3000 - 4500	250	3009802	3045442
▶ ENNE/EMME 3000 - 4500	275	3009803	3045444
▶ ENNE/EMME 3000 - 4500	300	3009804	3045446
▶ ENNE/EMME 4500	325	3009805	3045448
▶ ENNE/EMME 4500	350	3009806	3045450
▶ ENNE/EMME 4500	375	3009807	3045452
▶ ENNE/EMME 4500	400	3009808	3045454
▶ ENNE/EMME 4500	425	3009809	3045455
▶ ENNE/EMME 4500	450	3009810	3045456

(1) Nozzles Bergonzo B5 45° - with "AA" needle code.

(2) Nozzles Fluidics W2 45° - with "AA" needle code.

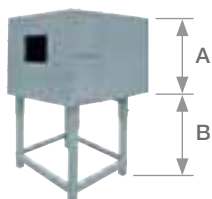
### Spacer kit



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

BURNER	SPACER THICKNESS S (mm)	KIT CODE
▶ ENNE/EMME 1400 - 2000	102	3000722
▶ ENNE/EMME 3000 - 4500	130	3000751

### Sound proofing box



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

BURNER	BOX TYPE	A (mm)	B (mm) min-max	[dB(A)] (*)	BOX CODE
▶ ENNE/EMME 1400-2000-3000-4500	C7	1255	160 - 980	10	3010376

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

# Modulating Dual Fuel Burners

## ENNE/EMME SERIES

### Burner accessories

#### Accessories for modulating operation



To obtain modulating operation, the ENNE/EMME series of burners requires a regulator.

BURNER	REGULATOR TYPE	REGULATOR CODE
▶ ENNE/EMME 1400 - 2000 - 3000 - 4500	RWF 40	3010211



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

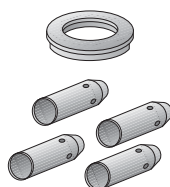
BURNER	PROBE TYPE	RANGE (°C) (bar)	PROBE CODE
▶ ENNE/EMME 1400 - 2000 ENNE/EMME 3000 - 4500	Temperature PT 100	-100 ÷ 500°C	3010110
	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214



Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.

BURNER	POTENTIOMETER KIT CODE
▶ ENNE/EMME 1400 - 2000 - 3000 - 4500	3010021

#### LPG kit



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

BURNER	KIT CODE FOR STANDARD HEAD	KIT CODE FOR EXTENDED HEAD
▶ ENNE/EMME 1400 - 2000	3010063	3010063
▶ ENNE/EMME 3000	3090223	3090223
▶ ENNE/EMME 4500	3090937	3090937

## Burner accessories

### Self-cleaning filter



For cleaning heavy oil from dirty particles and impurities, it is equipped with a thermostatic heater for oil with 60°E viscosity at 50°C.

FILTER TYPE	FILTERING DEGREE (µm)	FILTER CODE
▶ Ø = 1"1/2 (60°E at 50°C)	300	3010022

HEATER / THERMOSTAT TYPE	HEATER / THERMOSTAT CODE
▶ Thermostatic heater with LED	3010060
▶ Heater	3010061
▶ Thermostat (two-stage / regulable)	3010062

### Degasing unit



In modulating burner, gas separator bottle connects the burner circuit to the main ring circuit. It allows to recover heat in excess by discharge of the gas from the return circuit.

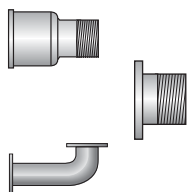
BURNER	DEGASING UNIT CODE
▶ ENNE/EMME 1400 - 2000	3000748
▶ ENNE/EMME 3000 - 4500	3010012

# Modulating Dual Fuel Burners

## ENNE/EMME SERIES

### Gas train accessories

#### Adapters



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

ADAPTER	LENGTH mm	ADAPTER CODE
 DN 65 2" 1/2 2"	300	3000825
 DN 80 2" 1/2 1" 1/2	300	3000826
 1" 1/2 2"	35	3000843
 DN 65 DN 80	320	3000831
 DN 80 DN 80	320	3000832
 DN 100 DN 80	320	3010127
 DN 80 DN 65 2" 1/2 2"	540	3010128

#### Stabiliser spring



To vary the pressure range of the gas train stabilisers, accessory springs are available. The following table shows these accessories with their application range. Please refer to the technical manual for the correct choice of spring.

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

## Gas train accessories

### Seal control kit



To test the valve seals on the gas train, a special “seal control kit” is available. The valve seal control device is compulsory (EN 676) on gas trains to burners with a maximum output over 1200 kW. The seal control is type VPS 504.

GAS TRAIN	KIT CODE for 50 Hz operation	KIT CODE for 60 Hz operation
▶ MB/1 type	3010123	20050030
▶ MBC/1 type	3010367	20029057
▶ CB/1 type	3010367	20029057



## MODUBLOC MB LSE SERIES

The MODUBLOC MB LSE series of burners are characterised by a monoblock structure that means all necessary components can be combined in a single unit, making installation easier and faster. The series covers a firing range from 3558 to 9580 kW, and they have been designed for use in hot water boilers or industrial steam generators.

Adjustment is modulating, through an innovative electronic module, which gives control of the air/fuel ratio and PID control of the generator temperature or pressure.

The mechanisms of regulation allow to catch up a high modulation ratio on all firing rates range.

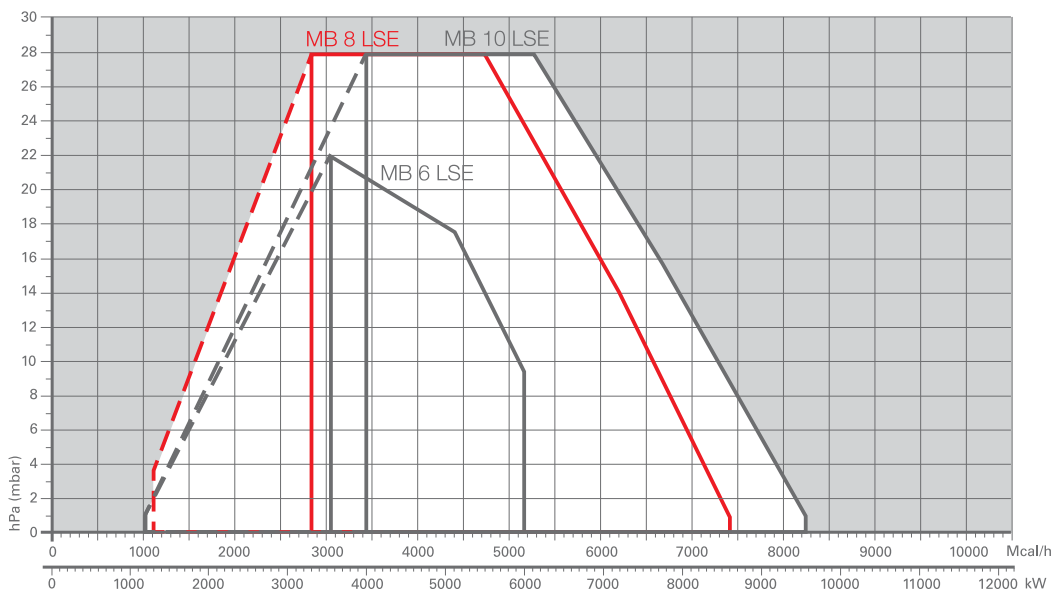
The burner can, therefore, supply with precision the demanded power, guaranteeing a high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.

An exclusive design, with fan unit fitted on line with the combustion head, guarantees low sound emissions, reduced dimensions, easy use and maintenance.



<b>MB 6 LSE</b>	1186/3558 ÷ 6000 kW
<b>MB 8 LSE</b>	1300/3300 ÷ 8600 kW
<b>MB 10 LSE</b>	1185/4000 ÷ 9580 kW

### 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.

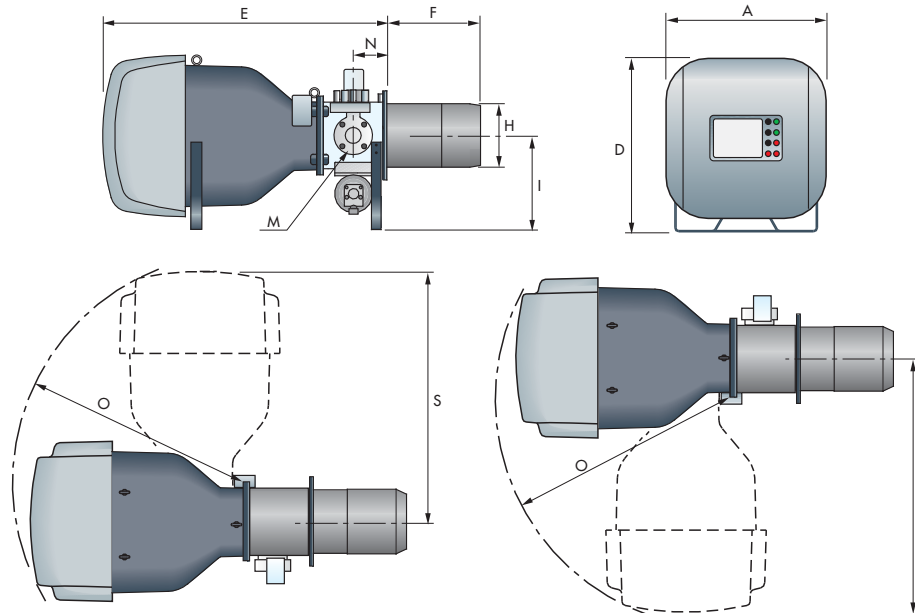
# Modulating Dual Fuel Burners

## MODUBLOC MB LSE SERIES

### Overall dimensions (mm)

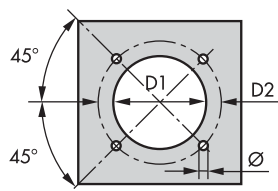
#### BURNER

MB 6-8-10 LSE



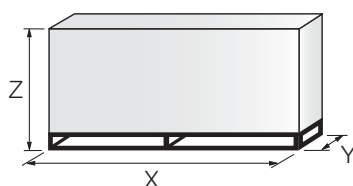
MODEL	A	D	E	F	H	I	M	N	O	S
▶ MB 6 LSE	840	910	1470	511	336	490	DN80	183	1205	1330
▶ MB 8 LSE	1007	1079	1900	545	413	575	DN80	208	1570	1740
▶ MB 10 LSE	1007	1079	1900	545	413	575	DN80	208	1570	1740

#### BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
▶ MB 6 LSE	350	496	M20
▶ MB 8 LSE	418	608	M20
▶ MB 10 LSE	418	608	M20

#### PACKAGING

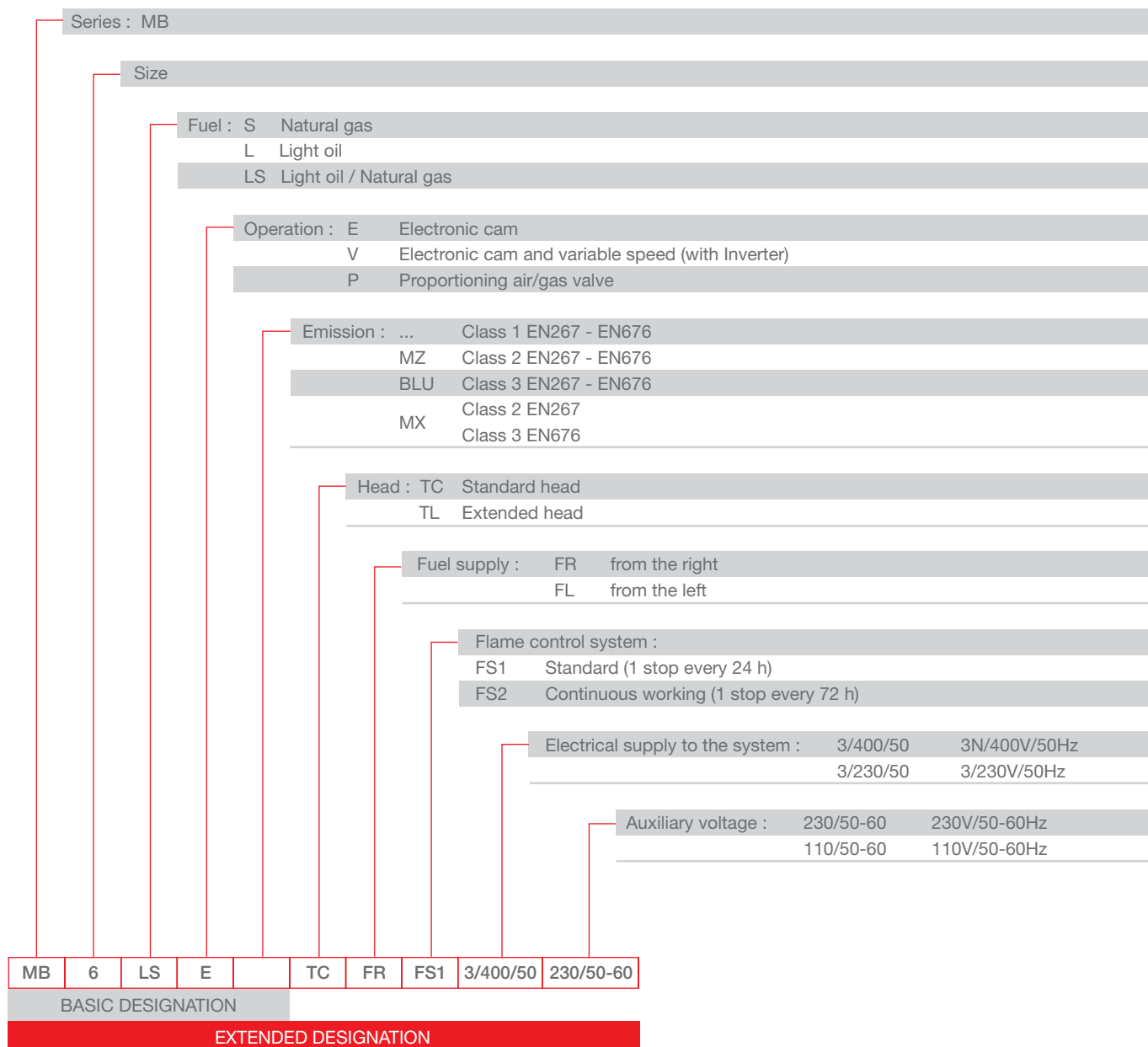


MODEL	X	Y	Z	kg
▶ MB 6 LSE	2120	1005	1175	630
▶ MB 8 LSE	2700	1170	1350	750
▶ MB 10 LSE	2700	1170	1350	775



# Specification

## DESIGNATION OF SERIES



# Modulating Dual Fuel Burners

## MODUBLOC MB LSE SERIES

### Specification

#### STATE OF SUPPLY

Monoblock forced draught dual-fuel burner modulating operation, made up of:

- Fan with reverse curve blades
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor
- Pump starting motor
- Mobile combustion head, that can be set on the basis of required output
- Gears pump for high pressure fuel supply
- Valve unit
- Automatic setting for light oil and gas delivery, controlled by a high precision servomotor
- Safety oil pressure switch
- Pressure gauge for delivery pressure
- Pressure gauge for return pressure
- Minimum oil pressure switch
- Maximum gas pressure switch
- Module for air/fuel setting and output modulation
- Burner safety control box
- Photocell for flame detection
- Star/triangle starter for the fan motor
- Main electrical supply terminal board
- Pump motor starter
- Burner on/off switch
- Auxiliary voltage led signal
- Manual or automatic output increase/decrease switch
- Burner working led signal
- Contacts motor and thermal relay with release button
- Motor internal thermal protection
- Motor failure led signal
- Burner failure led signal and lighted release button
- Led signal for correct rotation direction of fan and pump motor
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP X0D (IP 40) protection level.

#### Standard equipment:

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

# Modulating Dual Fuel Burners

## MODUBLOC MB LSE SERIES

**RIELLO**

## Available models

### Burners

CODE	MODEL	HEAT OUTPUT			TOTAL ELECTRICAL POWER (kW)	CERTIFICATION	NOTE
		(kW)	LIGHT OIL (kg/h)	NATURAL GAS (Nm <sup>3</sup> /h)			
3486100	MB6LSE TC FR FS1 3/400/50 230/50-60	1186/3558-6000	100/300-506	119/356-600	17	(1) - (2)	
3486105	MB6LSE TC FL FS1 3/400/50 230/50-60	1186/3558-6000	100/300-506	119/356-600	17	(1) - (2)	
3486200	MB8LSE TC FR FS1 3/400/50 230/50-60	1300/3300-8600	110/278-728	130/330-860	22	(3)	
3486210	MB8LSE TC FR FS2 3/400/50 230/50-60	1300/3300-8600	110/278-728	130/330-860	22	(3)	
3486205	MB8LSE TC FL FS1 3/400/50 230/50-60	1300/3300-8600	110/278-728	130/330-860	22	(3)	
3486215	MB8LSE TC FL FS2 3/400/50 230/50-60	1300/3300-8600	110/278-728	130/330-860	22	(3)	
3486300	MB10LSE TC FR FS1 3/400/50 230/50-60	1185/4000-9580	100/337-808	119/400-958	25	(4)	
3486310	MB10LSE TC FR FS2 3/400/50 230/50-60	1185/4000-9580	100/337-808	119/400-958	25	(4)	
3486305	MB10LSE TC FL FS1 3/400/50 230/50-60	1185/4000-9580	100/337-808	119/400-958	25	(4)	
3486315	MB10LSE TC FL FS2 3/400/50 230/50-60	1185/4000-9580	100/337-808	119/400-958	25	(4)	

Light oil net calorific value: 11,8 kWh/kg - 10.200 kcal/kg - Viscosity at 20°C: 4-6 mm<sup>2</sup>/s (cSt).

Natural gas net calorific value: 10 kWh/Nm<sup>3</sup> - 8.600 kcal/Nm<sup>3</sup> - Density: 0,71 kg/Nm<sup>3</sup>.

The burners of MB LSE series are in according to 2006/95 - 2004/108 - 98/37 - 90/396 EC Directive and EN 267 - 676 Norm.

(1) CE 0085AU2360.

(2) DIN 5G933/99 M.

(3) CE 0085BO0170.

(4) CE 0085BO0163.

### Gas Trains

CODE	GAS TRAIN			VPS 50 Hz CODE	ADAPTER CODE *** MB 6-8-10 LSE
	MODEL	Ø	C.T.		
3970221 *	MBC 1200/1 - RSM 60	Rp 2"	-	3010367	3000826
3970225 **	MBC 1200/1 CT RSM 60	Rp 2"	◆	-	3000826
3970222 *	MBC 1900/1 - FSM 40	DN 65	-	3010367	3010369
3970226 **	MBC 1900/1 CT FSM 40	DN 65	◆	-	3010369
3970223 *	MBC 3100/1 - FSM 40	DN 80	-	3010367	3010222 (1)
3970227 **	MBC 3100/1 CT FSM 40	DN 80	◆	-	3010222 (1)
3970224 *	MBC 5000/1 - FSM 80	DN 100	-	3010367	3010370
3970228 **	MBC 5000/1 CT FSM 80	DN 100	◆	-	3010370
3970147 *	CB 5065/1 - FSM 30	DN 65	-	3010367	3010221 or 3010369
3970161 **	CB 5065/1 CT FSM 30	DN 65	◆	-	3010221 or 3010369
3970148 *	CB 5080/1 - FSM 30	DN 80	-	3010367	3010222 (1)
3970162 **	CB 5080/1 CT FSM 30	DN 80	◆	-	3010222 (1)
3970149 *	CB 50100/1 - FSM 30	DN 100	-	3010367	3010223 or 3010370
3970163 **	CB 50100/1 CT FSM 30	DN 100	◆	-	3010223 or 3010370
20015871 *	CB 50125/1 - FSM 30	DN 125	-	3010367	3010224
3970196 **	CB 50125/1 CT FSM 30	DN 125	◆	-	3010224

Please see designation of Gas Train Series in the page before the Catalogue index.

\* 230V/50Hz - 220V/60Hz electrical supply.

\*\* 230V/50Hz electrical supply.

\*\*\* see Adapter models on Gas train accessories paragraph.

The valve seal control device is compulsory (conforming to EN 676) on gas trains to burners with a maximum output over 1200 kW.

To select the gas train please refer to the technical data leaflet and/or instruction manual.

C.T. Gas valve leak detection control device:

- gas train not equipped with leak detection control device; this device can be ordered separately - see VPS column - and installed later.

◆ gas train equipped with leak detection control device.

VPS Valve leak detection control device. Supplied separately from the gas train (please see Gas train accessories paragraph for both 50 Hz and 60 Hz codes).

(1) To use if it is necessary to space out the gas train from the burner.

# Modulating Dual Fuel Burners

## MODUBLOC MB LSE SERIES

### Burner accessories

#### DTI module (Data Transfer Interface)



This electronic module can transfer multiple signals from different local modules to a BMS supervisor software system (Building Management System).

BURNER	MODULE CODE
▶ MB 6 - 8 - 10 LSE	3010234

#### I/O digital module



Digital modules I/O transfer in-coming and out-going information from the system in general to a remote supervisor system.

BURNER	MODULE CODE
▶ MB 6 - 8 - 10 LSE	3010233

#### I/O analogic module



I/O Analog modules transfer in-coming and out-going information to a remote supervisor system.

BURNER	MODULE CODE
▶ MB 6 - 8 - 10 LSE	3010232

#### EGA module (Exhaust Gas Analyser)



Four different EGA modules are available to measure some of the exhaust gas substances and their temperature.

BURNER	ANALYSED GAS	MODULE CODE
▶ MB 6 - 8 - 10 LSE	CO, CO <sub>2</sub> , O <sub>2</sub>	on demand
▶ MB 6 - 8 - 10 LSE	CO, CO <sub>2</sub> , O <sub>2</sub> , NO	20019488
▶ MB 6 - 8 - 10 LSE	CO, CO <sub>2</sub> , O <sub>2</sub> , SO <sub>2</sub>	on demand
▶ MB 6 - 8 - 10 LSE	CO, CO <sub>2</sub> , O <sub>2</sub> , NO, SO <sub>2</sub>	on demand

#### Belden 9501 type leads



All the connections for the above modules must be done using a BELDEN 9501 type lead (available in coils of 50 m).

BURNER	LEAD CODE
▶ MB 6 - 8 - 10 LSE	3010239

## Burner accessories

### Accessories for modulating operation



Main management module allows a modulating operation with use of probes chosen on the basis of the application.

BURNER	PROBE TYPE	RANGE (°C) (bar)	PROBE CODE
▶ MB 6 - 8 - 10 LSE	Temperature	0 ÷ 400°C	3010187
▶ MB 6 - 8 - 10 LSE	Pressure	0 ÷ 3 bar	3010246
▶ MB 6 - 8 - 10 LSE	Pressure	0 ÷ 18 bar	3010186
▶ MB 6 - 8 - 10 LSE	Pressure	0 ÷ 30 bar	3010188

### Return nozzles



The following list shows the features and codes on the basis of the maximum required fuel output.

NOTE: each burner needs N° 1 nozzle.

BURNER	RATED DELIVERY (kg/h)	NOZZLE CODE (1)	NOZZLE CODE (2)	BURNER	RATED DELIVERY (kg/h)	NOZZLE CODE (1)	NOZZLE CODE (2)
▶ MB 6 LSE	350	3009806	3045450	▶ MB 10 LSE	400	3009808	3045454
	375	3009807	3045452		425	3009809	3045455
	400	3009808	3045454		450	3009810	3045456
	425	3009809	3045455		475	3009811	3045457
	450	3009810	3045456		500	3009812	3045458
	475	3009811	3045457		525	3009813	3045459
	500	3009812	3045458		550	3009814	3045460
	300	3009804	3045446		575	3009815	3045461
325	3009805	3045448	600		3009816	3045462	
350	3009806	3045450	650		3009817	3045463	
375	3009807	3045452	700		3009818	3045464	
400	3009808	3045454	750		3009819	3045465	
425	3009809	3045455	800		3009820	-	
450	3009810	3045456	850		3009821	-	
▶ MB 8 LSE	475	3009811	3045457		900	3009822	-
	500	3009812	3045458				
	525	3009813	3045459				
	550	3009814	3045460				
	575	3009815	3045461				
	600	3009816	3045462				
	650	3009817	3045463				
	700	3009818	3045464				

(1) Nozzles Bergonzo B5 45° - with "AA" needle code.

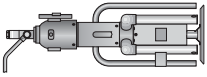
(2) Nozzles Fluidics W2 45° - with "AA" needle code.

# Modulating Dual Fuel Burners

## MODUBLOC MB LSE SERIES

### Burner accessories

#### LPG kit



For burning LPG gas, a special kit is available.

BURNER	KIT CODE
▶ MB 6 LSE	3010190
▶ MB 8 - 10 LSE	3010296

#### Burner support



For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need for forklift trucks.

BURNER	SUPPORT CODE
▶ MB 6 - 8 - 10 LSE	3010385

#### Sound proofing box



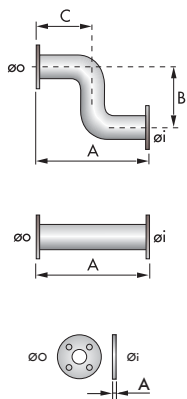
If noise emission needs reducing even further, sound-proofing boxes are available.

BURNER	AVERAGE NOISE REDUCTION [dB(A)] (*)	BOX CODE
▶ MB 6 - 8 - 10 LSE	10	3010401

(\*) according to EN 15036-1 standard

## Gas train accessories

### Adapters



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

ADAPTER	DIMENSIONS			ADAPTER CODE		
	Øi DN	ØO DN	A mm			
	65	80	400	-	3010221	
	80	80	400	-	3010222	
	100	80	400	-	3010223	
	65	80	400	480	225	3010225
	80	80	400	480	225	3010226
	100	80	400	480	225	3010227
	65	80	10	-	-	3010369
	100	80	50	-	-	3010370
	-	-	300	-	-	3000826

### Stabiliser spring



To vary the pressure range of the gas train stabilisers, accessory springs are available. The following table shows these accessories with their application range. Please refer to the technical manual for the correct choice of spring.

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

# Modulating Dual Fuel Burners

## MODUBLOC MB LSE SERIES

### Gas train accessories

#### Seal control kit



To test the valve seals on the gas train, a special “seal control kit” is available. The valve seal control device is compulsory (EN 676) on gas trains to burners with a maximum output over 1200 kW. The seal control is type VPS 504.

GAS TRAIN	KIT CODE for 50 Hz operation	KIT CODE for 60 Hz operation
▶ MBC/1 type	3010367	20029057
▶ CB/1 type	3010367	20029057