

TS0065UK05

# RS 300÷800/E-EV BLU Series

## Low NOx Modulating Gas Burners



RS 300/E BLU	500/1350 ÷ 3800 kW
RS 400/E BLU	800/1800 ÷ 4500 kW
RS 500/E BLU	1000/2500 ÷ 5170 kW
RS 800/E BLU	1200/3500 ÷ 8100 kW
RS 300/EV BLU	500/1350 ÷ 3800 kW
RS 400/EV BLU	800/1800 ÷ 4500 kW
RS 500/EV BLU	1000/2500 ÷ 5170 kW
RS 800/EV BLU	1200/3500 ÷ 8100 kW

The RS/E and RS/EV 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 1350 to 8100 kW, and they have been designed for use in hot water boilers or industrial steam generators.

Operation can be “two stage progressive” or alternatively “modulating” with the installation of a PID logic regulator on the RS/E series burners while RS/EV series is fully “modulating”.

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 an high efficiency system level and the stability setting, obtaining fuel consumption and operating costs reduction.

The burner operation can be intermittent or continuous by menu setting.

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



## Technical Data

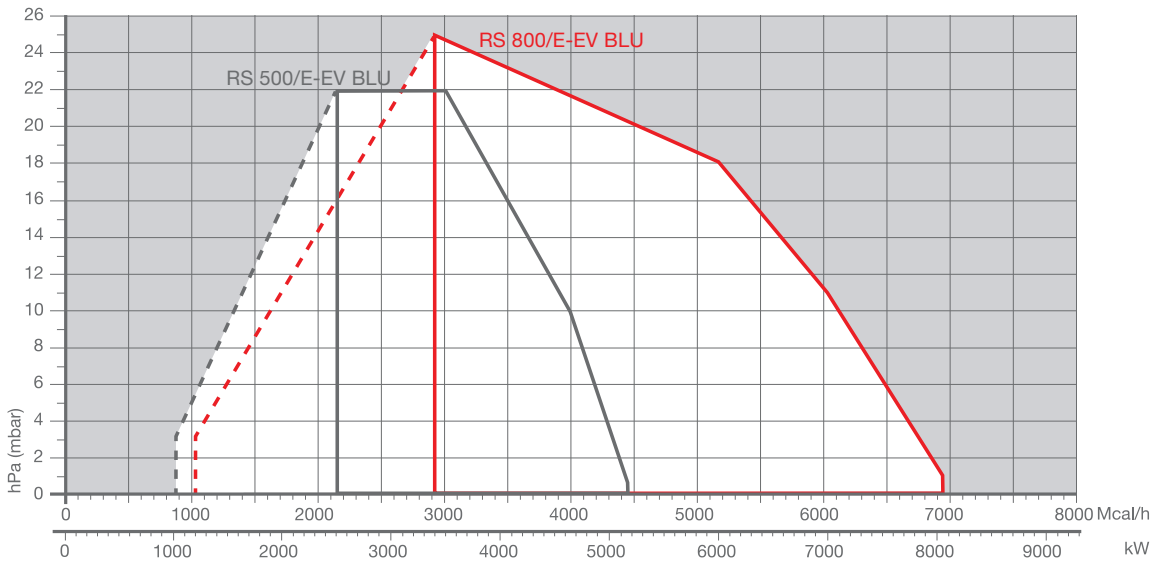
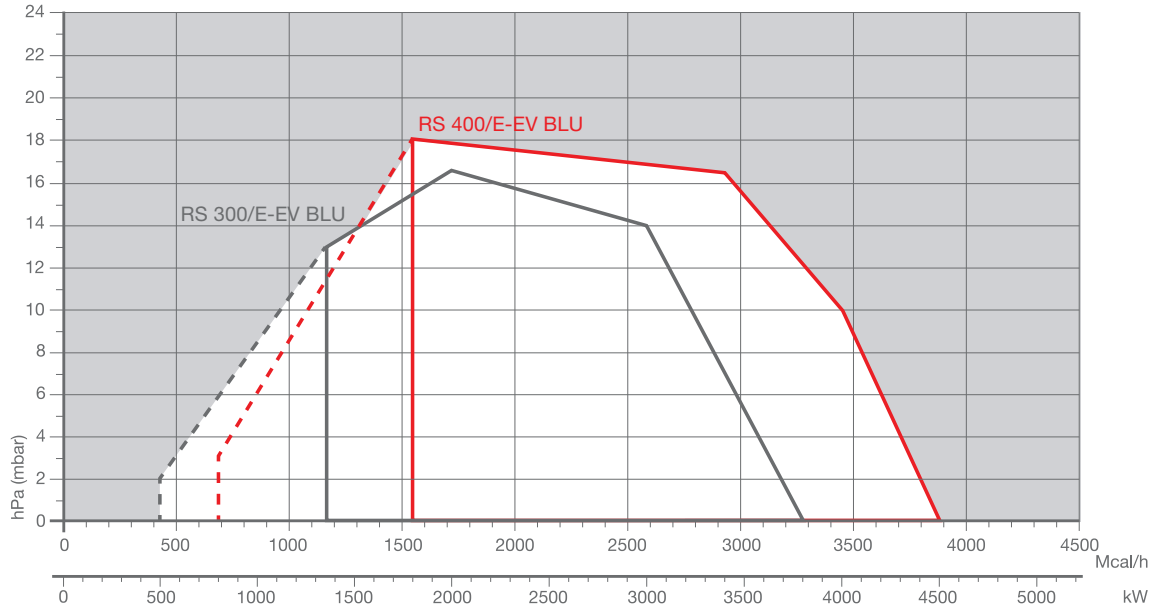
MODEL		RS 300/E - EV BLU	RS 400/E - EV BLU	RS 500/E - EV BLU	RS 800/E - EV BLU
Burner operation mode		Modulating			
Modulation ratio at max. output		5 ÷ 1			
Servomotor	type	SQM45 (air) - SQM48 (gas)			
	run time s	--			
Heat output	kW	500/1350÷3800	800/1800÷4500	1000/2500÷5170	1200/3500÷8100
	Mcal/h	430/1161÷3268	688/1548÷3870	860/2150÷4470	1032/3010÷6966
Working temperature	°C min./max.	0/60			
<b>FUEL/AIR DATA</b>					
Net calorific value G20 gas	kWh/Nm <sup>3</sup>	10			
G20 gas density	kg/Nm <sup>3</sup>	0,71			
G20 gas delivery	Nm <sup>3</sup> /h	50/135÷380	80/180÷450	100/250÷516	120/350÷80
Net calorific value G25 gas	kWh/Nm <sup>3</sup>	8,6			
G25 gas density	kg/Nm <sup>3</sup>	0,78			
G25 gas delivery	Nm <sup>3</sup> /h	58/156÷442	93/209÷523	116/290÷601	139/407÷942
Net calorific value LPG gas	kWh/Nm <sup>3</sup>	25,8			
LPG gas density	kg/Nm <sup>3</sup>	2,02			
LPG gas delivery	Nm <sup>3</sup> /h	--			
Fan	type	Reverse curve blades			Forward curve blades
Air temperature	max °C	60			
<b>ELECTRICAL DATA</b>					
Electrical supply	Ph/Hz/V	3N/50/230-400 (±10%)		3N/50/400 (±10%)	
Auxiliary electrical supply	Ph/Hz/V	1/50/230 ~ (±10%)			
Control box	type	Included in LMV 51 (RS/E) and LMV 52 (RS/EV) B.M.S.			
Total electrical power	kW	6	9	10,5	25
Auxiliary electrical power	kW	--			
Protection level	IP	54			
Motor electrical power	kW	4,5	7,5	9,2	21
Rated motor current	A	15,8 - 9,1	23 - 16	31 - 18	39,6
Motor start up current	A	7 x In		8 x In	6 x Nom
Motor protection level	IP	54		55	
Ignition transformer	type	--			
	V1 - V2	230V - 1x8 kV			
	I1 - I2	1A - 20mA			
Operation		Intermittent (at least one stop every 24 h) or Continuous (at least one stop every 72 h)			
<b>EMISSIONS</b>					
Sound pressure	dB (A)	82	85	87	88
Sound power	W	--			
CO emission	mg/kWh	< 10			
NOx emission	mg/kWh	< 80			
<b>APPROVAL</b>					
Directive		90/396 - 89/336 (2004/108) - 73/23 (2006/95) EC			
Conforming to		EN 676			
Certification		CE 0085B00341		in progress	

### Reference conditions:

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

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## FIRING RATES





## GAS TRAINS

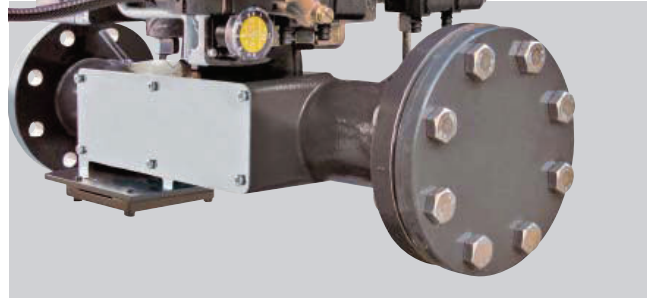
The burners are fitted with a butterfly valve to regulate the fuel, controlled by the main management module of burner through a high precision servomotor.

Fuel can be supplied either from the right or left sides, on the basis of the application requirements.

A maximum gas pressure switch stops the burner in case of excess pressure in the fuel line.

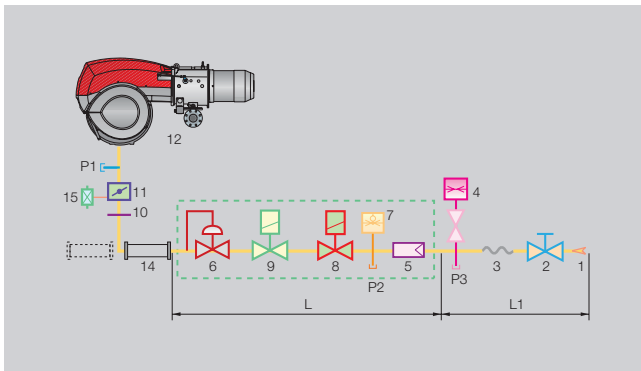
The gas train can be selected to best fit system requirements depending on the fuel output and pressure in the supply line.

The gas trains are “Multibloc” and “Composed” type (assembly of the single components) without seal control. This function is included in the burner management module.

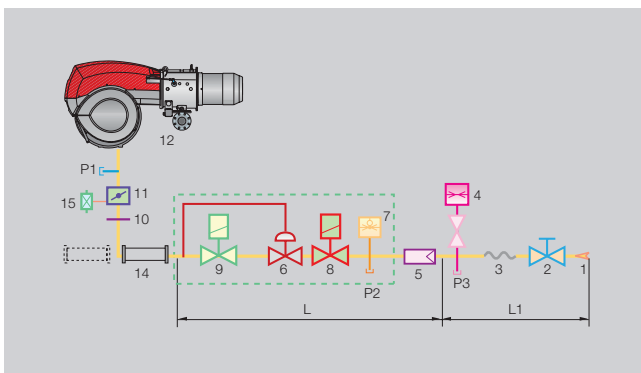


Example of RS 300-400-500/E-EV BLU gas adjustment butterfly valve.

### MULTIBLOC gas train type MBC 1200



### COMPOSED gas train type MBC 1900 - 3100 - 5000

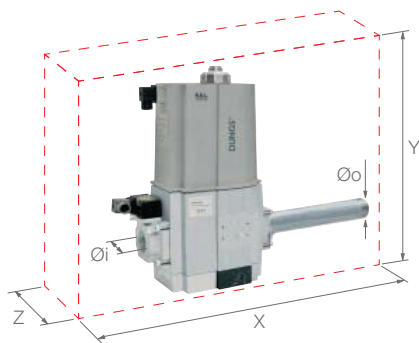


- |    |                                                                                  |
|----|----------------------------------------------------------------------------------|
| 1  | Gas input pipework                                                               |
| 2  | Manual valve                                                                     |
| 3  | Anti-vibration joint                                                             |
| 4  | Pressure gauge with pushbutton cock                                              |
| 5  | Filter                                                                           |
| 6  | Pressure regulator (vertical)                                                    |
| 7  | Minimum gas pressure switch                                                      |
| 8  | VS safety solenoid (vertical)                                                    |
| 9  | VR regulation solenoid (vertical)                                                |
| 9  | Two settings: - firing output (rapid opening)<br>- maximum output (slow opening) |
| 10 | Gasket and flange supplied with the burner                                       |
| 11 | Gas adjustment butterfly valve                                                   |
| 12 | Burner                                                                           |
| 14 | Gas train-burner adapter                                                         |
| 15 | Maximum gas pressure switch                                                      |
| P1 | Combustion head pressure                                                         |
| P2 | Pressure downstream from the regulator                                           |
| P3 | Pressure upstream from the filter                                                |
| L  | Gas train supplied separately, with the code given in the table                  |
| L1 | Installer's responsibility                                                       |

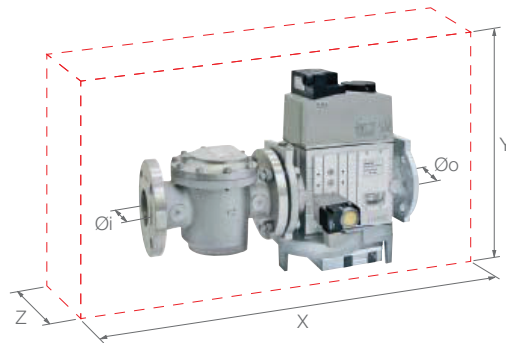
Gas trains are approved by standard EN 676 together with the burner.

The overall dimensions of the gas train depends on how they are constructed. The following table shows the maximum dimensions of the gas trains that can be fitted to RS/E-EV burners, intake and outlet diameters.

The maximum gas pressure of gas train "Multibloc" type is 360 mbar, and that one of gas train "Composed" type is 500 mbar. MULTIBLOC guarantees a range of pressure towards the burner from 3 to 60 mbar. For version DN 65 and DN 80 is from 20 to 40 mbar. The range of pressure in the MULTIBLOC with flange can be modified choosing the stabiliser spring (see gas train accessory).



Example of gas train "MULTIBLOC" type  
without seal control



Example of gas train "COMPOSED" type  
without seal control

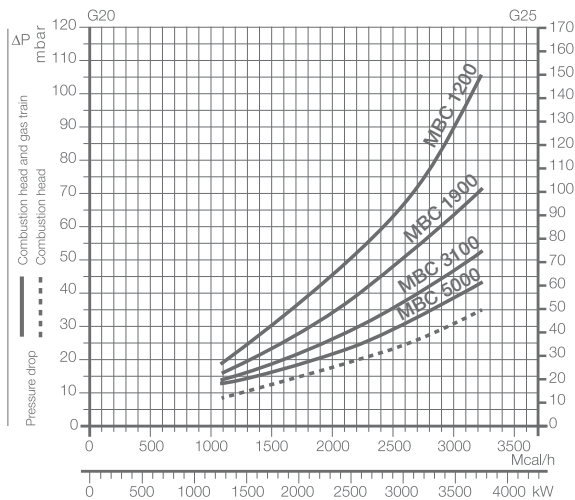
	NAME	CODE	Ø i	Ø o	X mm	Y mm	Z mm
COMPOSED GAS TRAINS	MBC 1200 SE 50	3970221	2"	2"	573	425	161
	MBC 1900 SE 65 FC	3970222	DN 65	DN 65	583	430	237
	MBC 3100 SE 80 FC	3970223	DN 80	DN 80	633	500	240
	MBC 5000 SE 100 FC	3970224	DN 100	DN 100	733	576	350

## PRESSURE DROP DIAGRAM

The diagrams indicate the minimum pressure drop of the burners with the various gas trains that can be matched with them; at the value of these pressure drop add the combustion chamber pressure.

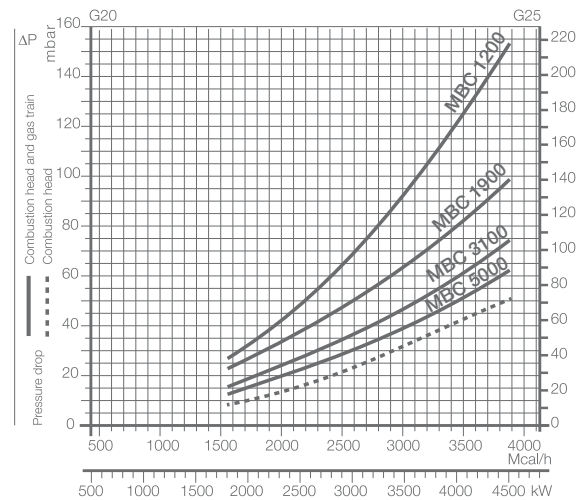
The value thus calculated represents the minimum required input pressure to the gas train.

RS 300/E-EV BLU (NATURAL GAS)



GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBC 1200 SE 50	3970221	3000826 (I)	(*)
MBC 1900 SE 65 FC	3970222	3010221 (I)	(*)
MBC 3100 SE 80 FC	3970223	3010222 (I)	(*)
MBC 5000 SE 100 FC	3970224	3010223 (I)	(*)

RS 400/E-EV BLU (NATURAL GAS)

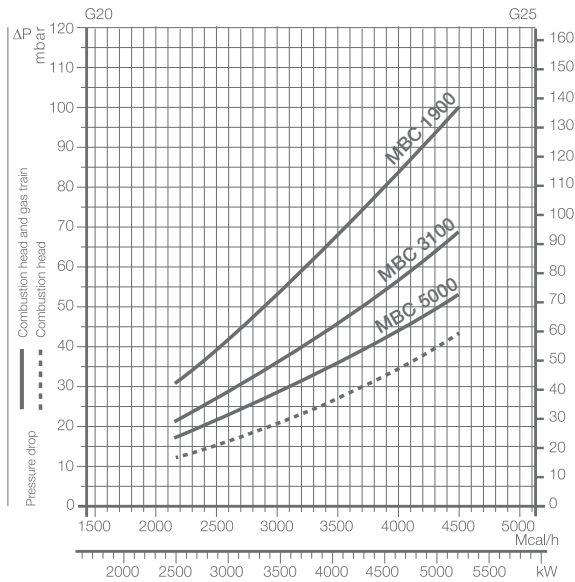


GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBC 1200 SE 50	3970221	3000826 (I)	(*)
MBC 1900 SE 65 FC	3970222	3010221 (I)	(*)
MBC 3100 SE 80 FC	3970223	3010222 (I)	(*)
MBC 5000 SE 100 FC	3970224	3010223 (I)	(*)

(I): adapter type "I" (see Gas Train Accessories paragraph).

(\*) The seal control is managed by the control box LMV51/LMV52.

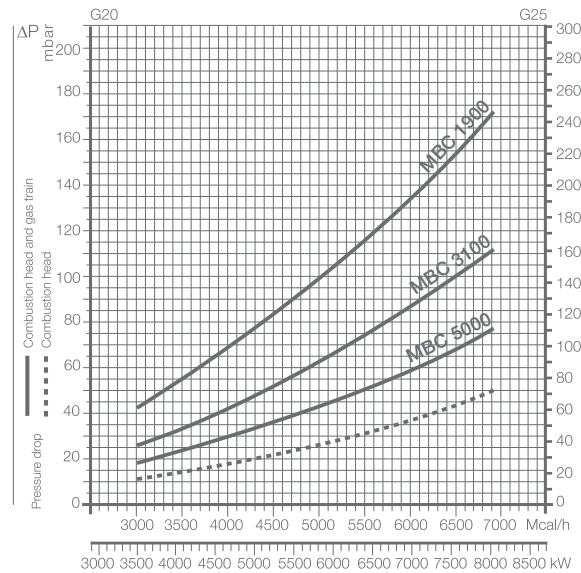
### RS 500/E-EV BLU (NATURAL GAS)



GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBC 1900 SE 65 FC	3970222	3010221 (I)	(*)
MBC 3100 SE 80 FC	3970223	3010222 (I)	(*)
MBC 5000 SE 100 FC	3970224	3010223 (I)	(*)

(I): adapter type "I" (see Gas Train Accessories paragraph).  
 (\*) The seal control is managed by the control box LMV51/LMV52.

### RS 800/E-EV BLU (NATURAL GAS)



GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBC 1900 SE 65 FC	3970222	3010221 (I)	(*)
MBC 3100 SE 80 FC	3970223	3010222 (I)	(*)
MBC 5000 SE 100 FC	3970224	3010223 (I)	(*)

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

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

MBC 1900-3100-5000 gas train: the minimum operating pressure (\*) is higher or equal to 15 mbar. The gas train has to be installed next to the burner (if needed, with the adapters listed in the catalogue) and it has to operate in its own working field.

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

## SELECTING THE FUEL SUPPLY LINES

The following diagram enables pressure drop in a pre-existing gas line to be calculated and to select the correct gas train.

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

### Control of the pressure drop in an existing gas line or selecting a new gas supply line.

The methane output equivalent is determined by the formula fig. A on the diagram and the conversion coefficient.

Once the equivalent output has been determined on the delivery scale ( $\dot{V}$ ), shown at the top of the diagram, move vertically downwards until you cross the line that represents the pipe diameter; at this point, move horizontally to the left until you meet the line that represents the pipe length.

Once this point is established you can verify, by moving vertically downwards, the pipe pressure drop of on the bottom scale below (mbar).

By subtracting this value from the pressure measured on the gas

meter, the correct pressure value will be found for the choice of gas train.

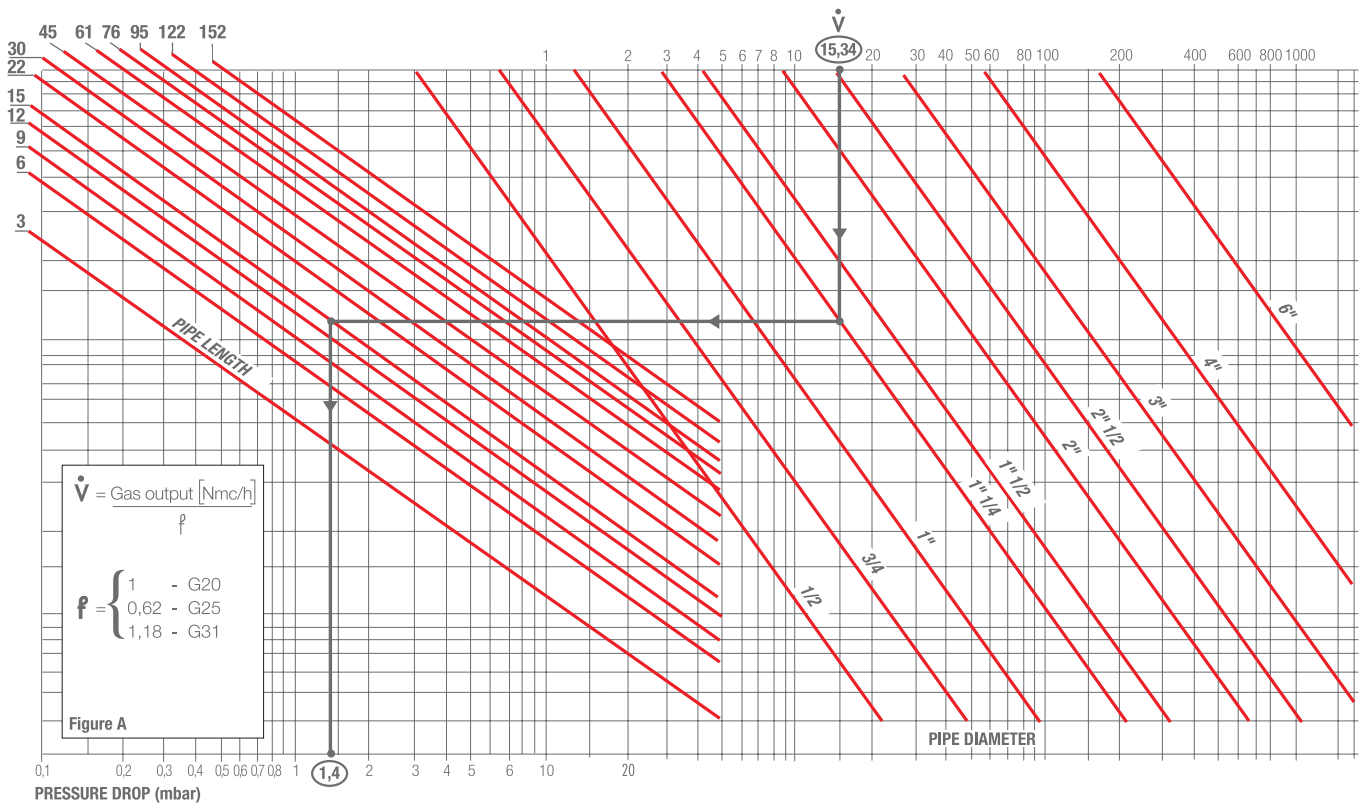
**Example:**

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

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

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

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



# Ventilation

The ventilation unit comes with a sound proofing radial regulating system. All the burners in the RS/E-EV series are fitted with fans with reverse curve blades, which give excellent performance and are fitted in line with the combustion head. The air flow and sound-deadening materials used in the construction are designed to reduce sound emissions to the minimum and guarantee high levels of performance in terms of output and air pressure.

A high precision servomotor through the main management module installed on each burner of RS/E-EV series, controls the air dampers position constantly, guaranteeing an optimal fuel-air mix.

The RS/EV is supplied with the "inverter" configuration, which means they are fitted with a device for varying the amount of combustion air through a variable speed action of the fan motor. The burner works at reduced speed, with further benefits in terms of sound emissions, especially during the night when the perception threshold is lower as well decreased power consumption.

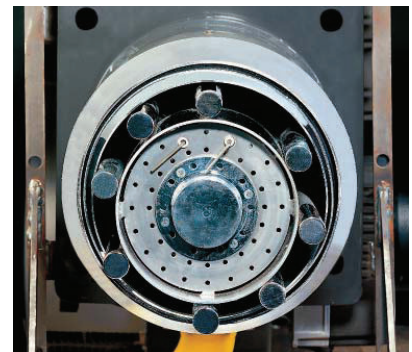


Example of fan motor.

# Combustion Head

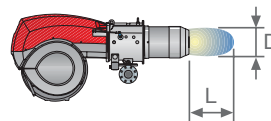
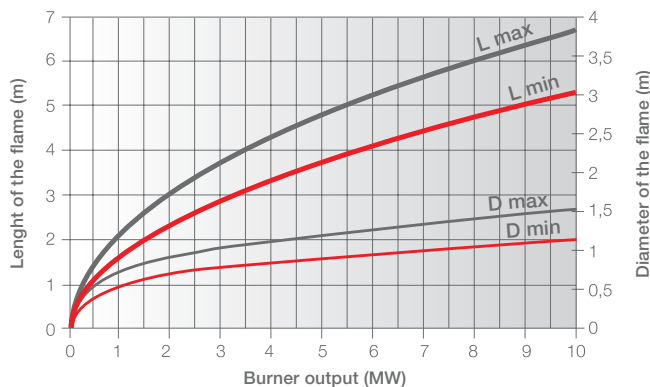
The innovative combustion head adjustment system ensures perfect movement during modulation as well as reducing noise and pollutants. Simple adjustment of the combustion head allows to adapt internal geometry of the head to the output of the burner.

The same adjustment servomotor for the air damper also varies, depending on the required output, the setting of the combustion head, through a simple lever. This system guarantees excellent mix on all firing rates range.



Example of a RS/E-EV BLU burner combustion head.

## DIMENSIONS OF THE FLAME



**Example:**  
 Burner thermal output = 6000 kW;  
 L<sub>flame</sub> (m) = 4,7 m (medium value);  
 D<sub>flame</sub> (m) = 1,2 m (medium value)



## Operation

### BURNER OPERATION MODE

Each RS/E - EV BLU series burner is equipped with an electronic microprocessor management panel, which controls the air damper servomotor as well the fuel servomotors.

Hysteresis is prevented by the precise control of the two servomotors and the software link by can - bus.

The high precision regulation is due to the absence of mechanical clearance normally found in mechanical regulation cams on traditional modulating burners.

For the burner commissioning it is necessary to use the AZL unit display. It must be ordered separately for /E models, while for /EV models it is included.

In the RS/E series burner the standard working is two stage progressive and the PID regulator, to control the boiler temperature or pressure, is available as accessory.

In the RS/EV series burner the PID regulator to control the boiler temperature or pressure is included in LMV52. The burner can work for a long time on intermediate output settings (see picture A).

Variable speed drive control (VSD) and Oxygen control are obtained by installation of a special kit. The display operating unit (AZL) is already on board.

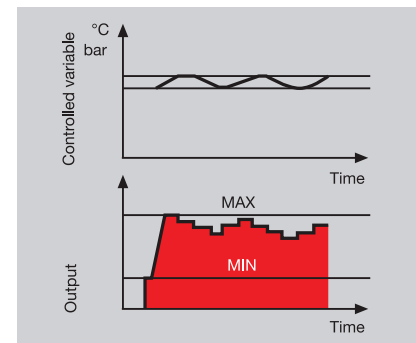
The display and operating unit (AZL) shows all operational parameters in real time, so as to keep a constant check on the burner:

- servomotor angle
- required set-point and actual set-point
- fuel consumption (RS/EV)
- smoke and environmental temperature (RS/EV)
- O<sub>2</sub> value (RS/EV)
- error checking, self diagnostic fault analysis.



Main management module for RS/E-EV BLU series.

### “MODULATING” OPERATION



Picture A

### CONTROL BOX MANAGEMENT TABLE

FUNCTION	LMV 51	LMV 52
Intermittent operation	●	●
Continuous operation	●	●
Intermittent operation flame detector	Ionisation Probe	Ionisation Probe
Continuous operation flame detector	Ionisation Probe / Infrared Detector	Ionisation Probe / Infrared Detector
Numbers of regulating stepper actuators	4	5
Variable Speed Drive (VSD)	-	○
Input O <sub>2</sub> probe	-	○
Built in O <sub>2</sub> regulator	-	○
Single fuel operation	●	●
Double fuel operation (different timing for oil and gas)	●	●
Gas valve proving system	●	●
Built in temperature pressure PID regulator	○	●
External analog modulation	●	●
Analog 4÷20 mA output load signal	On demand	●
Efficiency Indication	-	○
External e-Bus Interface (AZL)	○	●
Commissioning PC Interface (AZL)	○	○
Commissioning Interface Display (AZL)	○	●

### CONTROL BOX MANAGEMENT VERSION TABLE

	RS/E version	RS/EV version
LMV 51	●	
LMV 52		●

- Included in supply
- As accessory

### FAN SPEED CONTROL (ON DEMAND)

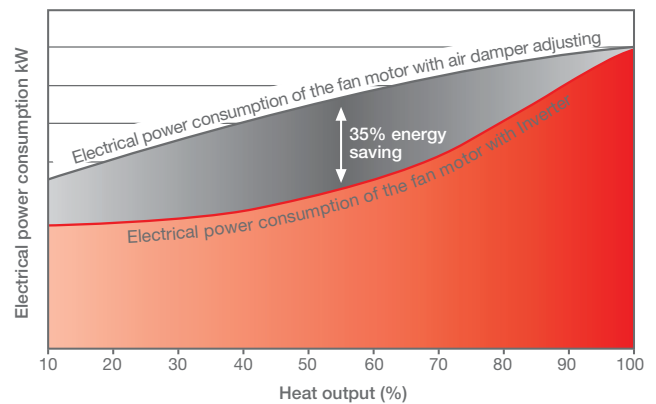
The inverter device fitted to the RS/EV series burner acts on the electrical supply frequency of the fan motor to adjust the air flow through the motor speed variation.

The main advantages of speed control:

- lower sound emissions
- electric power saving.

The fan motor supplies just the necessary air flow, thus reducing sound emissions and avoiding energy loss due to the air damper regulation mechanism. The inverter technology can save up to 35% of the energy costs.

A safety device to verify the correct speed of the motor is mounted on the air suction circuit of the burner.

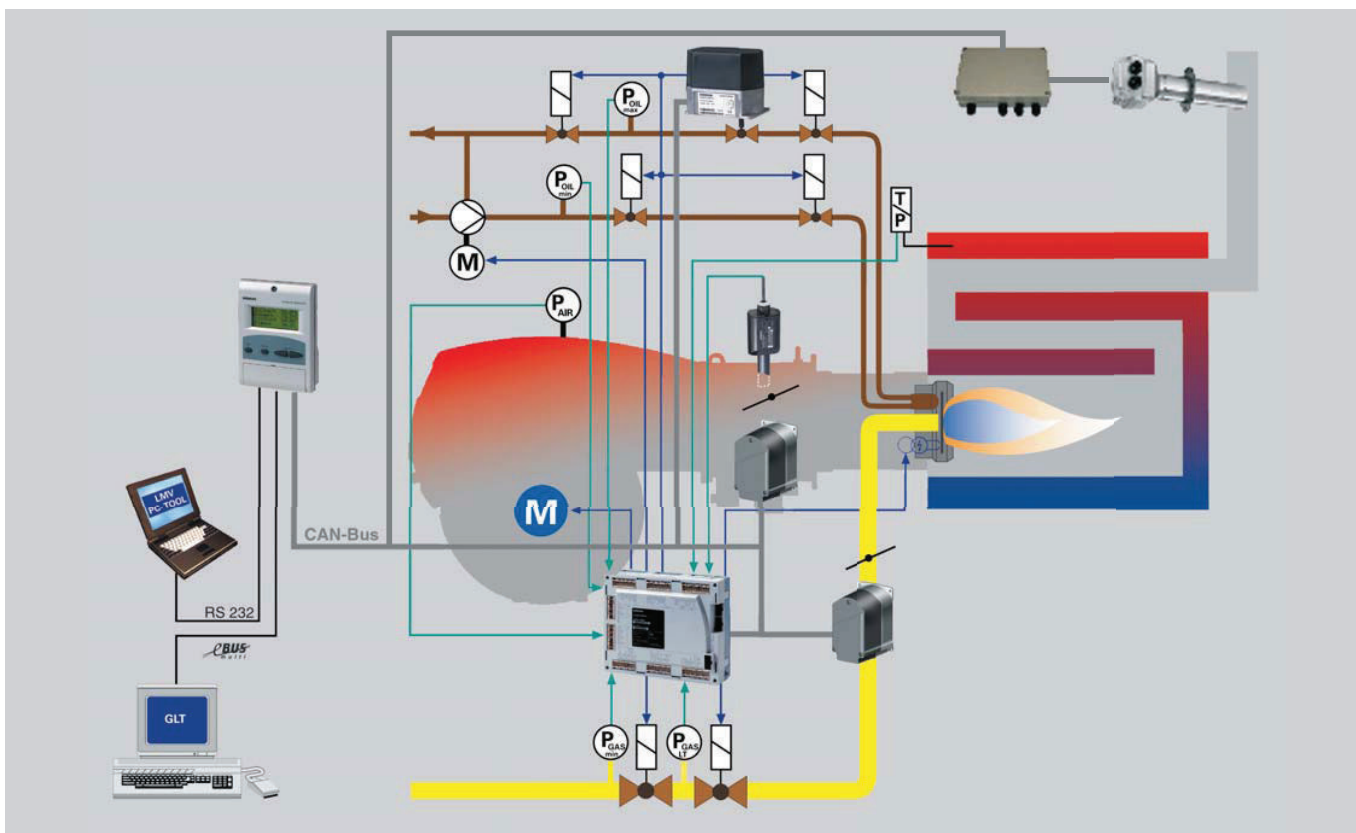


### BURNER MANAGEMENT SYSTEM

The new electronic cam is a microprocessor based burner management system with matching system components for the control and supervision of forced draft burners.

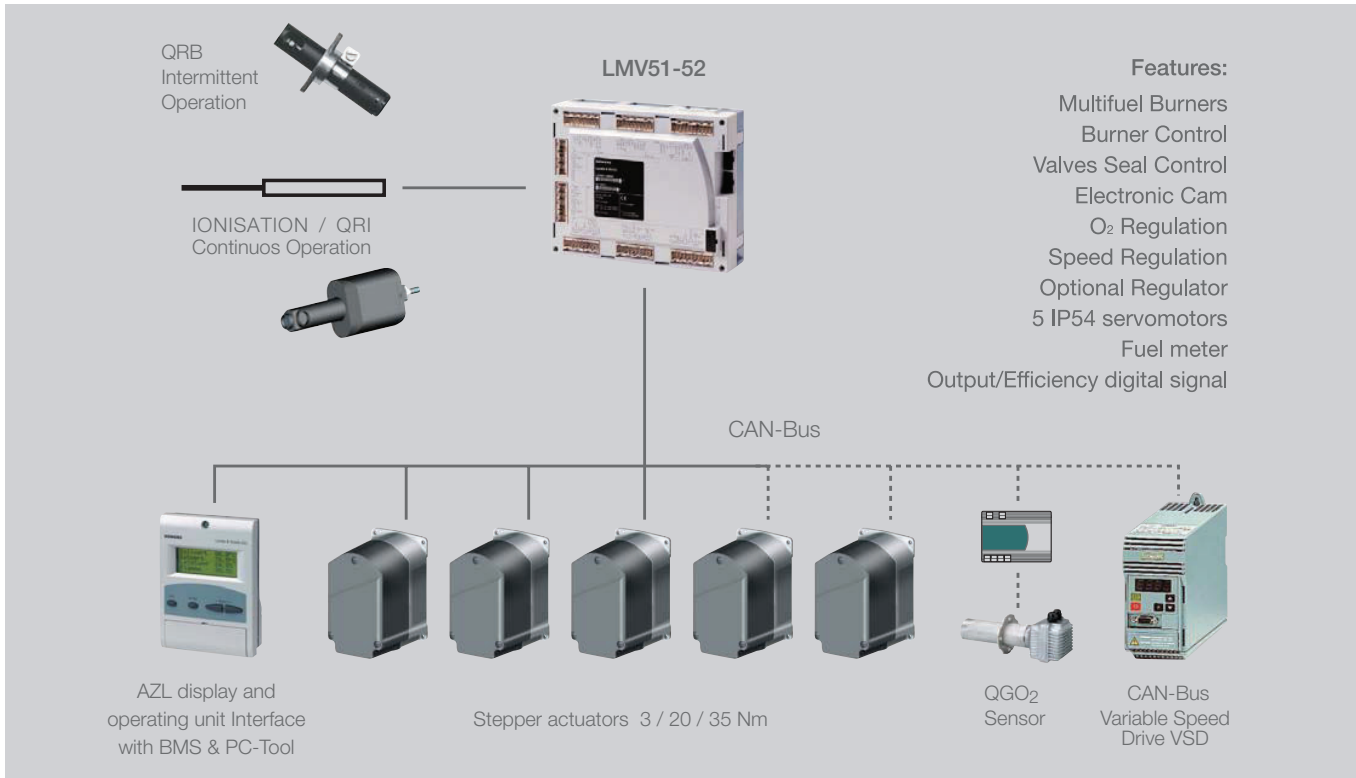
The system components are interconnected via a bus system.

Communication between the individual bus users takes place via a reliable system-based data bus. All safety-related digital outputs of the system are permanently monitored via e contact feedback network.



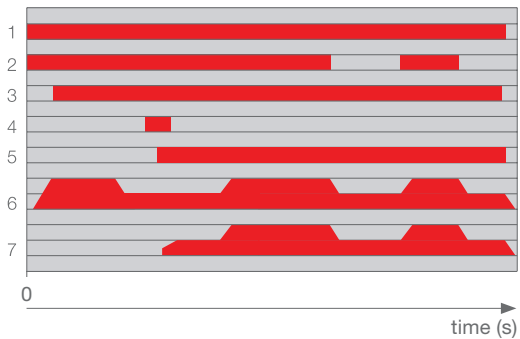
Example of burner management system in dual fuel burner configuration.

## ELECTRONIC CAM PLATFORM



## START UP CYCLE

### RS 300-400-500-800/E-EV BLU

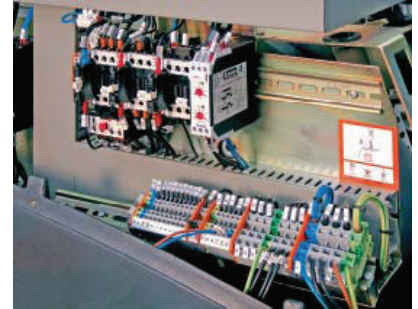


- 1 Closing thermostat
- 2 Closing thermostat
- 3 Fan motor working
- 4 Ignition transformer
- 5 Valves open
- 6 Actuators
- 7 Flame max. - min.

# Wiring Diagrams

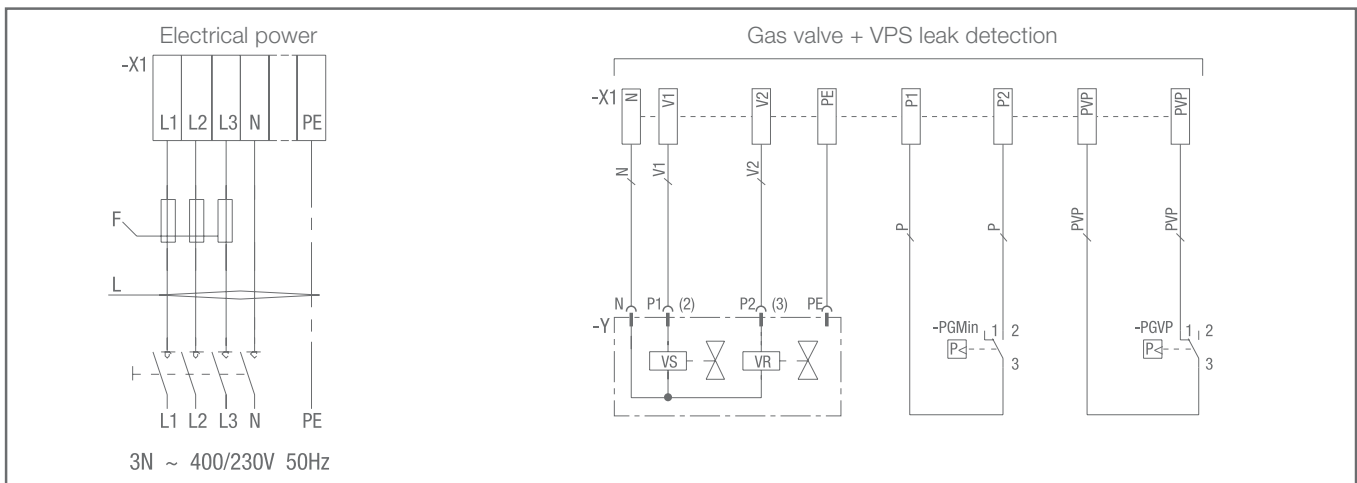


Electrical connections must be made by qualified and skilled personnel, according to the local norms.

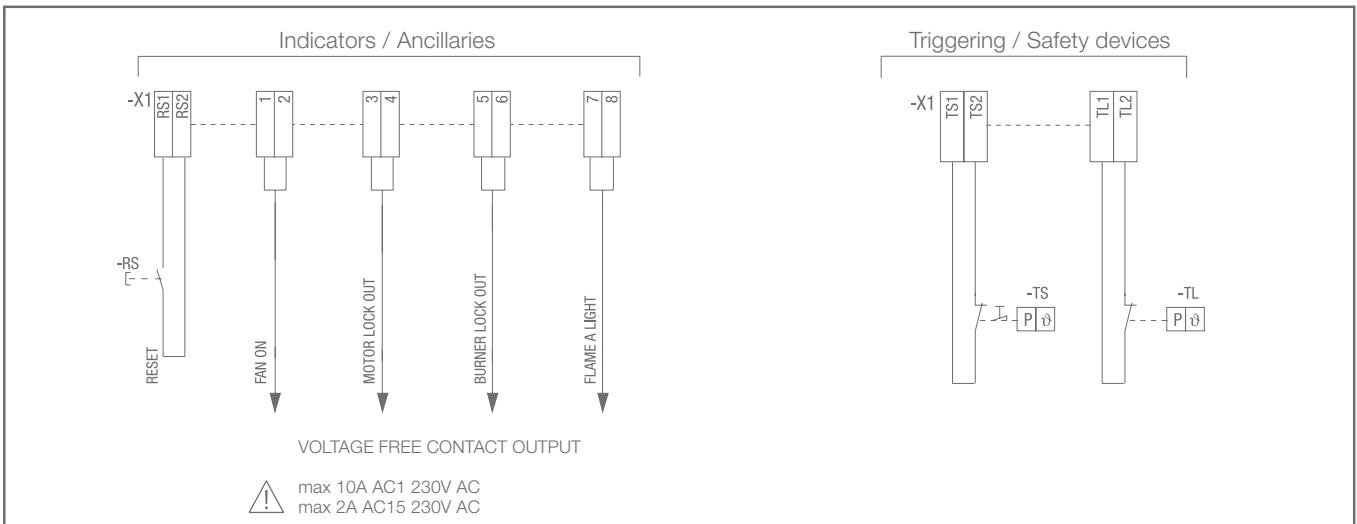


Example of the terminal board for electrical connections on RS/E-EV.

## RS/E-EV BLU THREE PHASE SUPPLY AND GAS TRAIN CONNECTIONS



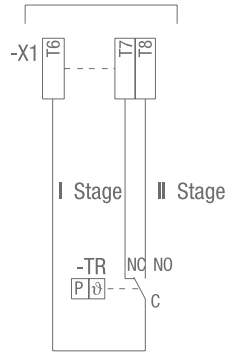
## RS/E-EV BLU OUTPUT / INPUT CONNECTIONS



## INPUT CONNECTIONS

### FOR RS/E BLU

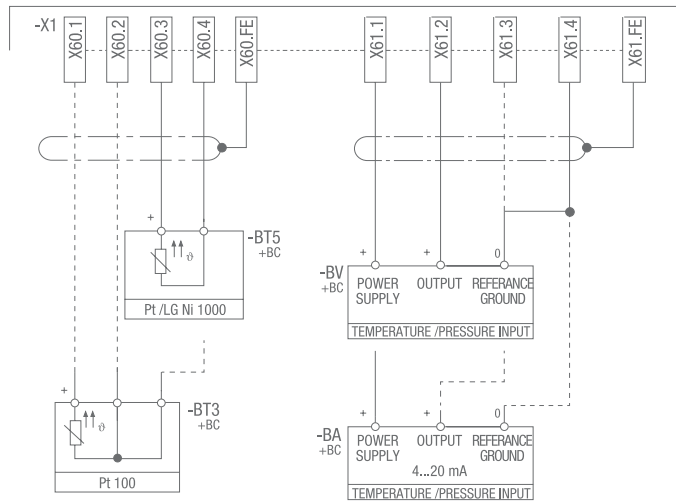
Power regulation with 3-position contact



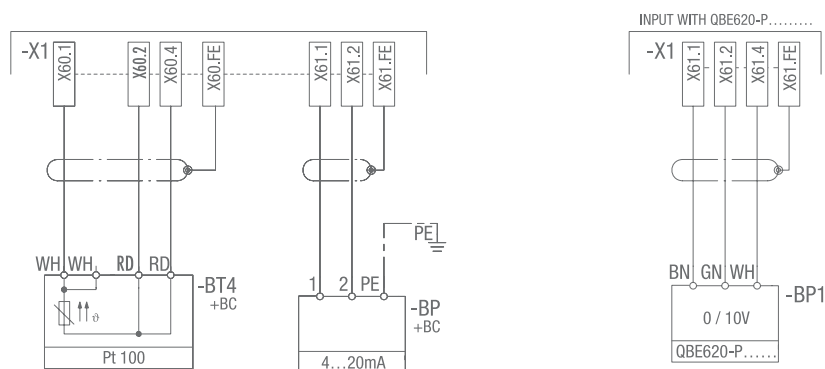
Two stage progressive position

### FOR RS/EV BLU

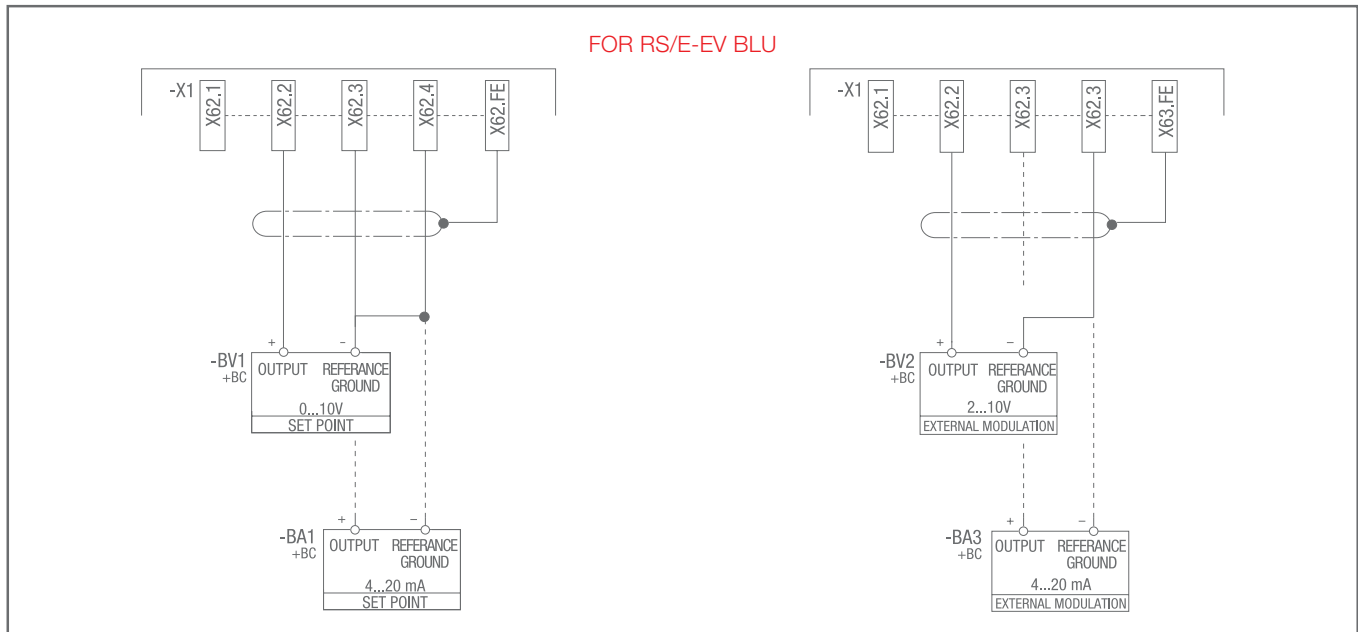
Possibility of probe input



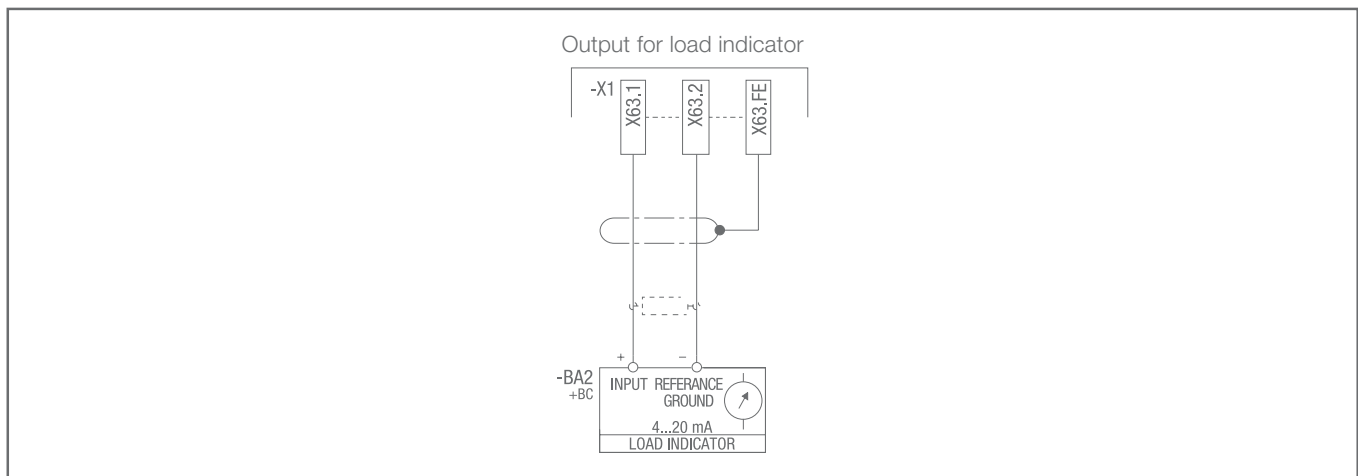
Possibility of Riello probe input



## INPUT CONNECTIONS



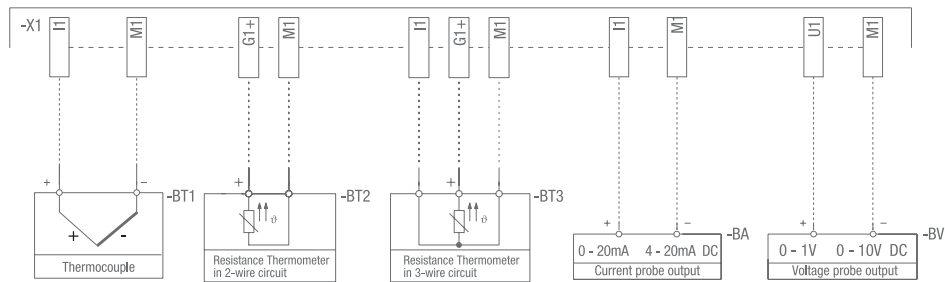
## RS/EV BLU OUTPUT CONNECTIONS



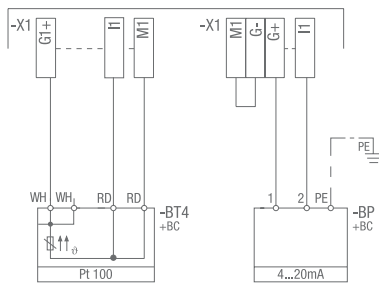
## OPTIONAL CONNECTIONS

FOR RS/E BLU WITH RWF40 POWER CONTROL KIT

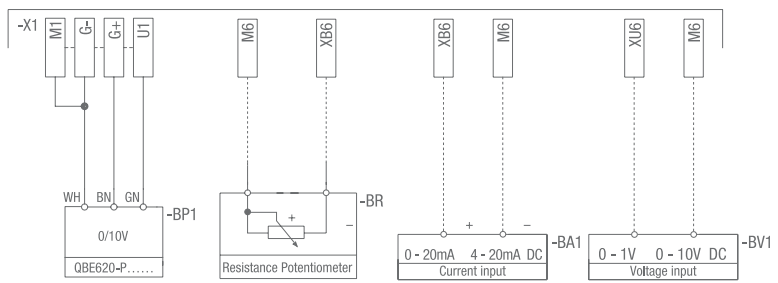
Possibility of probe input



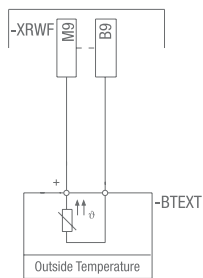
Possibility of Riello probe input only and with kit RWF40



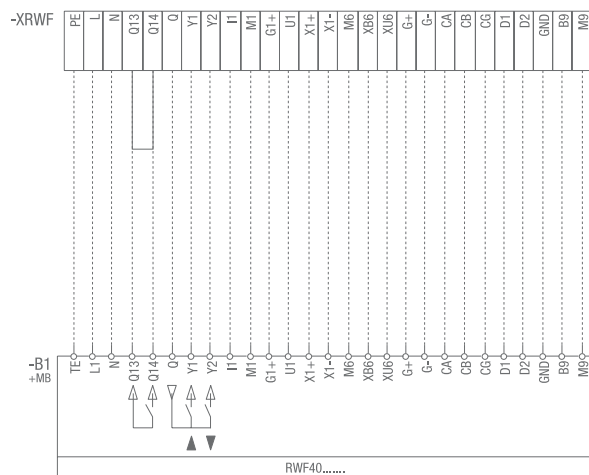
Possibility of setpoint input and setpoint shift



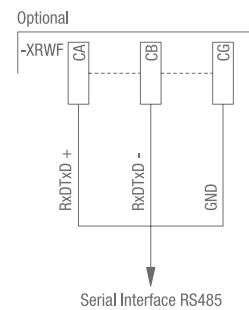
Climatic compensation



RWF40 power controller

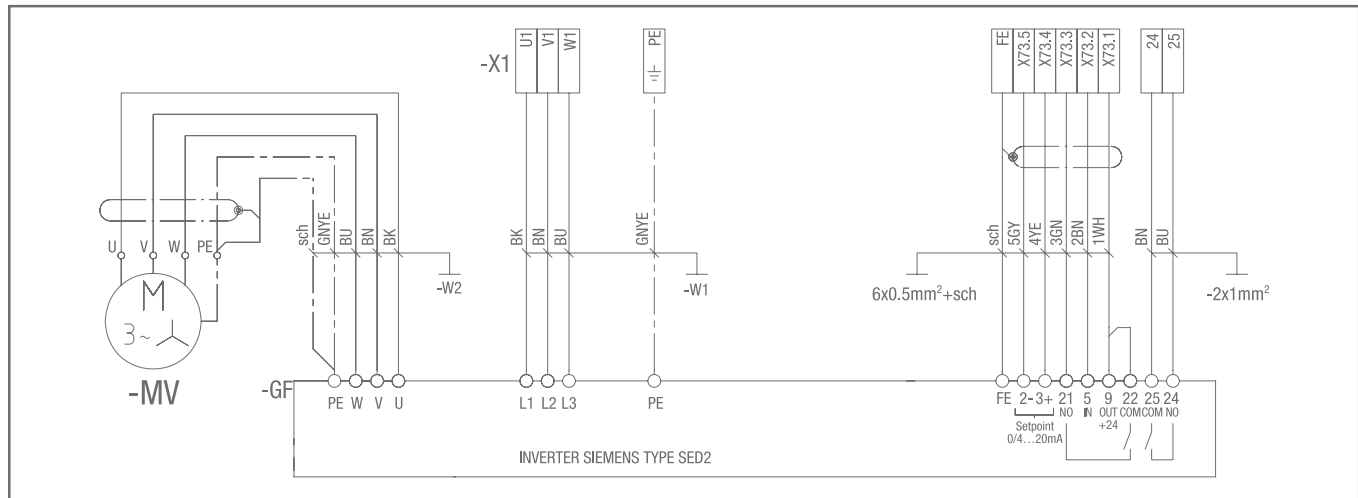


RWF 40 (High version)

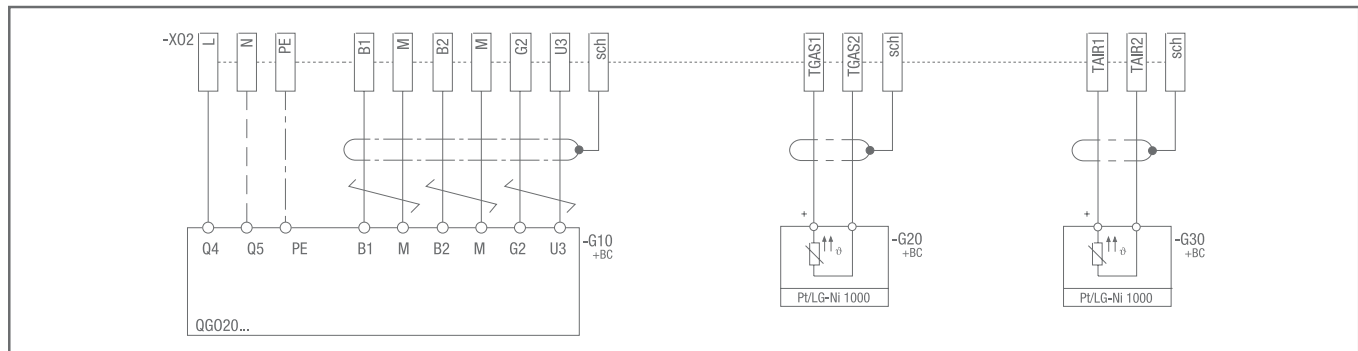


Note: for others probe input ask Riello technical dept

## RS/EV BLU VARIABLE SPEED DRIVE CONNECTIONS



## RS/EV BLU OXYGEN CONTROL KIT CONNECTION



<b>BA</b>	DC input 0...20 mA, 4...20 mA
<b>BA1</b>	DC input 0...20 mA, 4...20 mA for modifying the remote setpoint
<b>BA2</b>	Load indicator
<b>BA3</b>	DC dispositive for the external modulation output 4...20 mA
<b>B1</b>	RWF 40 power controller
<b>BP</b>	Pressure probe
<b>BP1</b>	Pressure probe
<b>BR</b>	Potentiometer for modifying the set point
<b>BT1</b>	Thermocouple probe
<b>BT2</b>	Probe Pt 100 with 2 wires
<b>BT3</b>	Probe Pt 100 with 3 wires
<b>BT4</b>	Probe Pt 100 with 3 wires
<b>BT5</b>	PT/LG-Ni1000 probe
<b>BTEXT</b>	External probe for the climatic compensation of the remote setpoint
<b>BV</b>	DC voltage input 0...1 V, 0...10 V

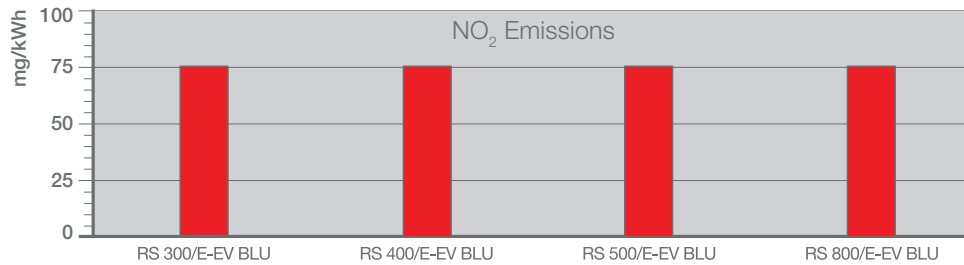
<b>BV1</b>	DC voltage input 0...1 V, 0...10 V for modifying the remote setpoint
<b>BV2</b>	DC voltage input 2...10V
<b>GF</b>	Variable speed drive
<b>G10</b>	O <sub>2</sub> sensor, OGO20.. type
<b>G20</b>	Flue gases air temperature control probe
<b>G30</b>	Air temperature control probe
<b>MV</b>	Fan motor
<b>PGMin</b>	Minimum gas pressure switch
<b>PGVP</b>	Gas pressure switch for leak detection control device
<b>RS</b>	Remote lock-out reset button
<b>TL</b>	Load limit remote control system
<b>TR</b>	High-low mode load remote control system
<b>TS</b>	Safety control device system
<b>X1</b>	Main supply terminal strip
<b>X2</b>	RWF 40 power controller terminal strip
<b>Y</b>	Gas adjustment valve + gas safety valve

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

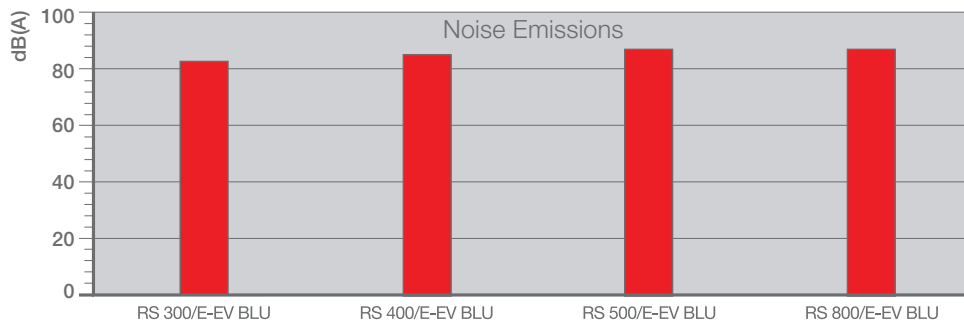
MODEL	F (A)	L (mm <sup>2</sup> )	W1 (mm <sup>2</sup> )	W2 (mm <sup>2</sup> )	MODEL	F (A)	L (mm <sup>2</sup> )	W1 (mm <sup>2</sup> )	W2 (mm <sup>2</sup> )
▶ RS 300/E BLU	12 aM	4			▶ RS 500/E BLU	25 aM	6		
▶ RS 300/EV BLU	12 gG	4	4	4	▶ RS 500/EV BLU	25 gG	6	6	6
▶ RS 400/E BLU	20 aM	6			▶ RS 800/E BLU	50 aM	10		
▶ RS 400/EV BLU	20 gG	6	4	4	▶ RS 800/EV BLU	50 gG	10	16	16

F = Fuse    L = Lead section    W1 = Variable speed drive supply    W2 = Fan motor supply

## Emissions



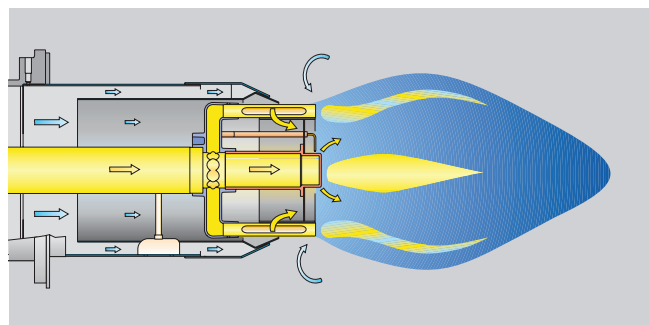
The noise emissions have been measured at the maximum output.



The RS/E-EV BLU series reduces polluting emissions with its exclusive design which optimises air/fuel mixture.

The gas in the combustion head is distributed through openings which are perpendicular to the air flow; part of the fuel is injected directly into the centre of the flame.

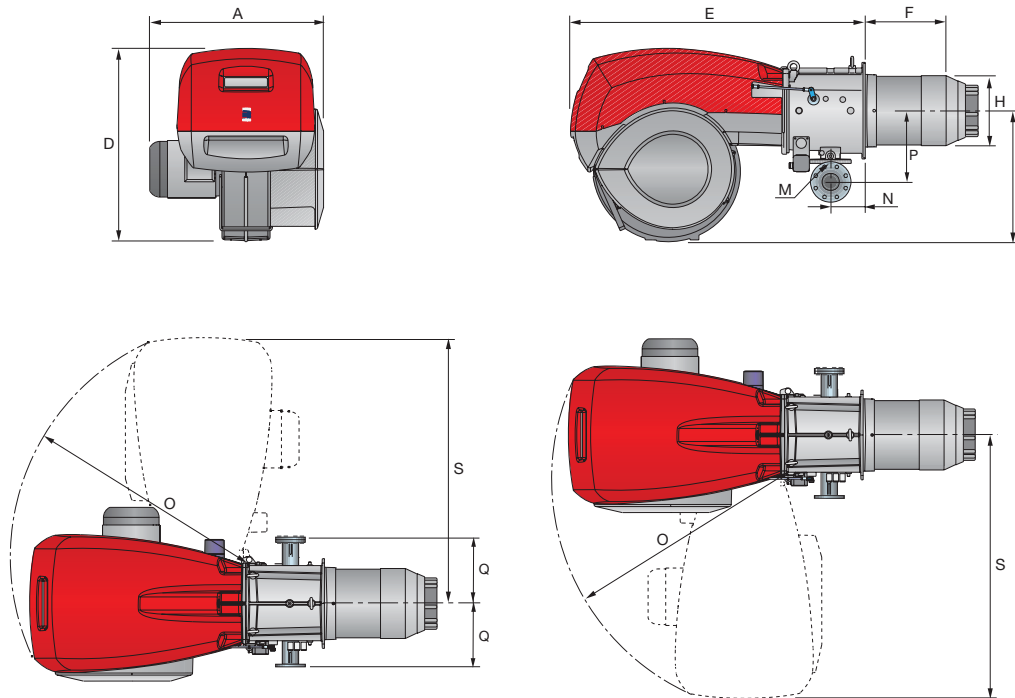
This results in low flame temperature combustion to prevent the formation of NO. Gradual and progressive combustion throughout the flame prevents areas of high oxidation inside the flame. Emissions are further reduced by the re-circulation of combustion gases due to the high velocity of air leaving the combustion head. Pollution levels are below even the most severe standards requirement.



# Overall Dimensions (mm)

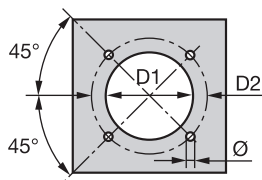


## BURNERS



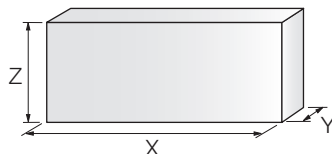
MODEL	A	D	E	F	H	I	M	N	O	P	Q	S
▶ RS 300/E-EV BLU	720	867	1325	373	313	588	DN80	164	1055	342	320	1175
▶ RS 400/E-EV BLU	775	867	1325	373	313	588	DN80	164	1055	342	320	1175
▶ RS 500/E-EV BLU	775	867	1325	357	370	588	DN80	164	1055	342	320	1175
▶ RS 800/E-EV BLU	940	867	1325	418	363	588	DN80	164	1055	427	320	1175

## BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
▶ RS 300/E-EV BLU	400	452	M18
▶ RS 400/E-EV BLU	400	452	M18
▶ RS 500/E-EV BLU	400	452	M18
▶ RS 800/E-EV BLU	400	495	M18

## PACKAGING



MODEL	X	Y	Z	kg
▶ RS 300/E-EV BLU	1960	970	940	230
▶ RS 400/E-EV BLU	1960	970	940	240
▶ RS 500/E-EV BLU	1960	970	940	250
▶ RS 800/E-EV BLU	2035	1090	1195	300

## Burner Accessories

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



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

BURNER	KIT CODE
▶ RS 300-400/EV BLU	3010379
▶ RS 500/EV BLU	3010455
▶ RS 800/EV BLU	3010468

### Accessories for modulating operation

#### POWER CONTROLLER



To obtain modulating operation, the RS/E BLU series of burners requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range. In RS/EV models PID regulator is integrated inside LMV 52 control box.

BURNER	POWER CONTROLLER TYPE	CODE
▶ All models	RWF 40 - Basic version with 3 position output	3010356
	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)	CODE
▶ All models	Temperature PT 100	-100 ÷ 500°C	3010110
	Temperature PT 100 Ni1000	0-100 ÷ 500°C	3010377
	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214

### Display and Operating Unit (AZL) for RS/E models



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

BURNER	KIT CODE
▶ RS 300-400-500-800/E BLU	3010355
▶ All models *	3010469

\* for Russian language only

## Infrared Flame Detector (IFD)



For the supervision of gas, oil or other flame that emit infrared radiation, the RS/E-EV BLU series of burners can be equipped with infrared flame detector.

The infrared flame detector are suited for burners of any capacity, either in continuous or intermittent operation.

BURNER	CODE
► All models	3010354

## Oxygen Control kit (QGO<sub>2</sub>) for RS/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	CODE
► RS 300-400-500-800/EV BLU	3010378

## Kit efficiency with oxygen control kit (for RS/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
► RS 300-400-500-800/EV BLU	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

## Sound proofing box



If noise emission needs reducing even further, sound-proofing boxes are available, as given in the following table:

BURNER	BOX TYPE	AVERAGE NOISE REDUCTION [dB(A)](*)	BOX CODE
► All models	C7	10	3010376

(\*) according to EN 15036-1 standard

## LPG kit



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

BURNER	CODE
► RS 300-400-500/E-EV BLU	3010445 (*)
► RS 800/E-EV BLU	in progress

(\*) approval in progress.

## Continuous ventilation kit

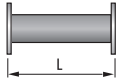


If the burner requires continuous ventilation in the stages without flame, a special kit is available as given in the following table:







BURNER	KIT CODE
► All models	3010094

# Gas Train Accessories

## Adapters



Below are given the adapters than can be fitted on the various burners:

BURNER	GAS TRAIN	ADAPTER TYPE	DIMENSIONS	L mm	ADAPTER CODE
► All models	MBC 1200 SE 50	I	2"  DN 80	300	3000826
	MBC 1900 SE 65 FC	I	DN 65  DN 80	400	3010221
	MBC 3100 SE 80 FC	I	DN 80  DN 80	400	3010222
	MBC 5000 SE 100 FC	I	DN 100  DN 80	400	3010223
	MBC 1900 SE 65 FC	I	DN 65  DN 80	10	3010369
	MBC 5000 SE 100 FC	I	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:

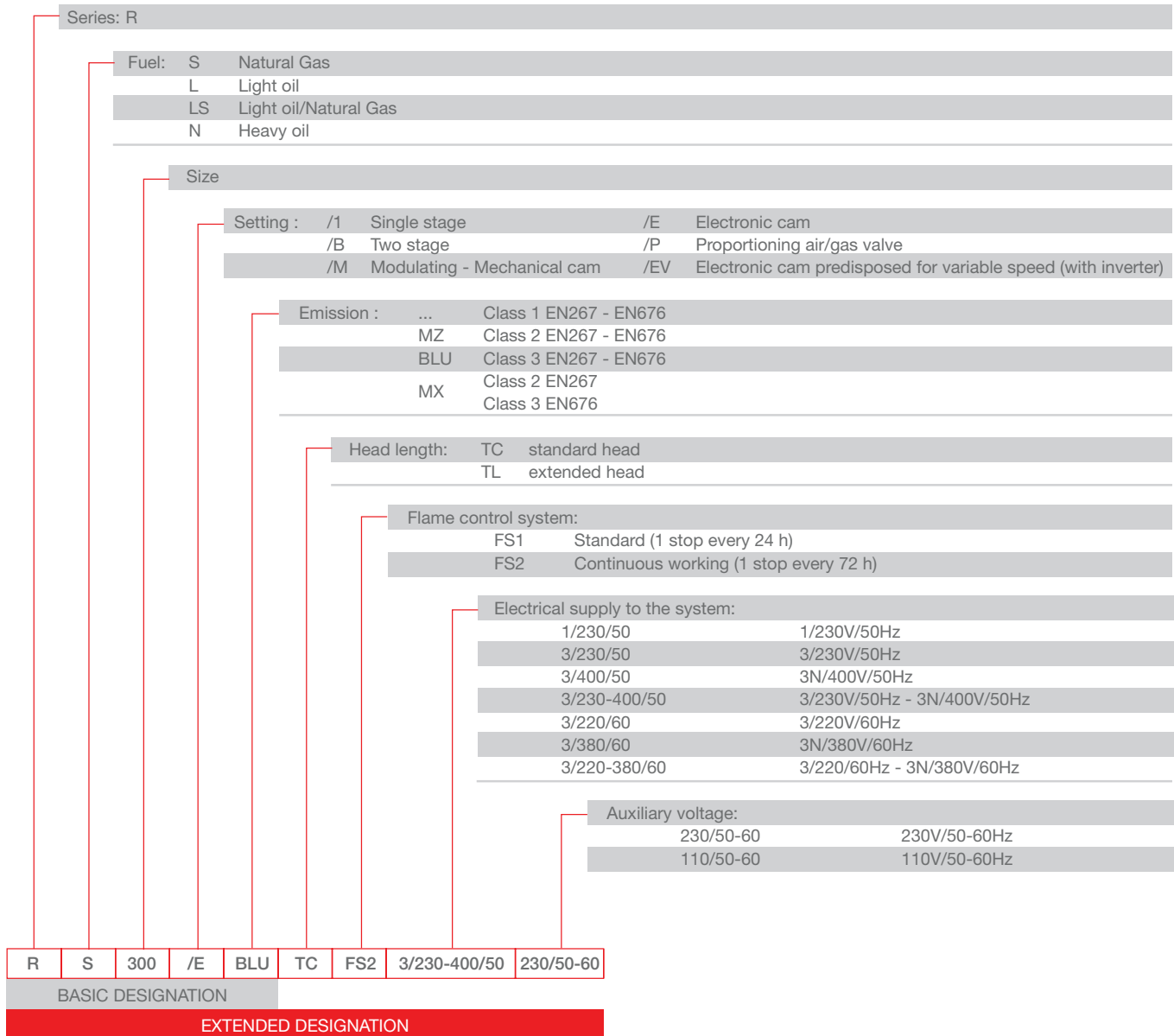
GAS TRAIN	SPRING	SPRING CODE
► MBC 1900 SE 65 FC MBC 3100 SE 80 FC MBC 5000 SE 100 FC	White from 4 to 20 mbar	3010381
	Red from 20 to 40 mbar	3010382
	Black from 40 to 80 mbar	3010383
	Green from 80 to 150 mbar	3010384

Please refer to the technical manual for the correct choice of spring.

## Specification

### DESIGNATION OF SERIES

A specific index guides your choice of burner from the various models available in the RS/E - RS/EV BLU series. Below is a clear and detailed specification description of the product.



## AVAILABLE BURNER MODELS

RS 300/E BLU	TC	FS1/FS2	3/230-400/50	230/50-60
RS 300/EV BLU	TC	FS1/FS2	3/230-400/50	230/50-60
RS 400/E BLU	TC	FS1/FS2	3/400/50	230/50-60
RS 400/EV BLU	TC	FS1/FS2	3/400/50	230/50-60
RS 500/E BLU	TC	FS1/FS2	3/400/50	230/50-60
RS 500/EV BLU	TC	FS1/FS2	3/400/50	230/50-60
RS 800/E BLU	TC	FS1/FS2	3/400/50	230/50-60
RS 800/EV BLU	TC	FS1/FS2	3/400/50	230/50-60

Other versions are available on request.

## PRODUCT SPECIFICATION

### Burner

Monoblock forced draught gas burner with 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 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50Hz
- Low emission mobile 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
- Automatic regulator for gas delivery, controlled by a high precision servomotor
- 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 RS/E BLU model
- Module for air/fuel setting and output modulation with incorporated PID control of temperature or pressure of the heat generator (RS/EV BLU)
- Flame control panel for controlling the system safety
- Ionization probe for flame detector
- Star/triangle starter for the fan motor (burners with motor electrical power > = 7,5 kW, RS/E)
- Main electrical supply terminal board
- 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
- Emergency button
- Coded connection plugs-sockets
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level
- Tee gas supply connector DN 80 for gas train connection (RS 300-400-500 models).

## Gas train

Fuel supply line in the Multibloc configuration (for a diameter of 2") or Composed configuration (from a diameter of DN 65 to a diameter of DN 100) fitted with:

- Filter
- Stabilizer
- Minimum gas pressure switch
- Safety valve
- One stage working valve with ignition gas output regulator.

Note: valve seal control already present inside burner control box.

## Conforming to:

- 89/336 (2004/108) EC directive (electromagnetic compatibility)
- 73/23 (2006/95) EC directive (low voltage)
- 90/396/EC directive (gas)
- EN 676 (gas burners)

## Standard equipment:

- 1 flange gasket
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- Seal control
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue
- Seal control pressure switch (for installation on gas train)
- Curve DN 80 for gas train connection (RS 800 model).

## Available accessories to be ordered separately:

- Variable speed drive (VSD) (for RS/EV only)
- RWF 40 PID regulator for RS/E BLU
- Pressure probe 0 ÷ 2.5 bar
- Pressure probe 0 ÷ 16 bar
- Temperature probe -100 ÷ 500°C
- Display and Operating Unit (AZL) for RS/E models
- Infrared flame detector (I.F.D.)
- Oxygen control kit (for RS/EV only)
- Kit efficiency with oxygen control kit (for RS/EV only)
- PC interface software (ACS 450)
- Sound proofing box
- LPG kit
- Continuous ventilation kit
- Adapters
- Stabiliser spring.



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