

TS0088UK00

RS/E MZ Series

Modulating Gas Burners



RS 34/E MZ	70/130 ÷	390 kW
RS 44/E MZ	101/203 ÷	550 kW
RS 50/E MZ	85/290 ÷	580 kW
RS 64/E MZ	150/400 ÷	850 kW
RS 70/E MZ	135/465 ÷	814 kW
RS 100/E MZ	150/698 ÷	1163 kW
RS 130/E MZ	160/930 ÷	1512 kW
RS 190/E	470/1279 ÷	2290 kW
RS 250/E MZ	600/1250 ÷	2650 kW

The RS/E MZ burners series covers a firing range from 70 to 2650 kW, and it is based on a new Digital Burner Management System, Riello REC27, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.

Operation can be "two stage progressive" or, alternatively, "modulating" with the installation of a PID logic regulator and respective probes.

RS/E MZ burners series guarantees high efficiency levels in all the various applications, thus reducing fuel consumption and running costs.

The exclusive design ensures reduced dimensions, simple use and maintenance.

A wide range of accessories guarantees elevated working flexibility.



Technical Data

MODEL		RS 34/E MZ	RS 44/E MZ	RS 50/E MZ	RS 64/E MZ
Burner operation mode		Modulating (with regulator and probes accessories)			
Modulation ratio at max. output		6 ÷ 1			
Servomotor	type	SQN13.14 (air and gas)			SQM33.5 (air) - SQM33.4 (gas)
	run times	5...120			
Heat output	kW	70/130÷390	101/203÷550	85/290÷580	150/400÷850
	Mcal/h	60/112÷335	87/175÷473	73/249÷499	129/344÷731
Working temperature	°C min./max.	0/40			
FUEL/AIR DATA					
Net calorific value G20 gas	kWh/Nm³	10			
Density gas G20	kg/Nm³	0,71			
Output gas G20	Nm³/h	7/13÷39	10/20÷55	8,5/29÷58	15/40÷85
Net calorific value G25 gas	kWh/Nm³	8,6			
Density gas G25	kg/Nm³	0,78			
Output gas G25	Nm³/h	8/15÷45	12/24÷64	10/34÷68	17/47÷99
Net calorific value LPG gas	kWh/Nm³	25,8			
Density LPG gas	kg/Nm³	2,02			
Output LPG gas	Nm³/h	3/5÷15	4/8÷21	4/11÷23	6/16÷33
Fan	Type	(02)	(02)	(01)	(02)
Air temperature	Max. °C	60			
ELECTRICAL DATA					
Electrical supply	Ph/Hz/V	(04)	(04)	(06)	(05)
Auxiliary electrical supply	Ph/Hz/V	(04)	(04)	(03)	(03)
Control box	Type	REC27			
Total electrical power	kW	0,6	0,7	0,75	1,0
Auxiliary electrical power	kW	0,3	0,28	0,3	0,5
Protection level	IP	40	40	44	40
Motor electrical power	kW	0,3	0,42	0,45	1,1
Rated motor current	A	3,2	3,5	2 - 1,4	3 - 1,7
Motor start current	A	15	17	14 - 10	13,8 - 8
Motor protection level	IP	54			
Ignition transformer	V1 - V2	230V-1x15 kV	230V-1x15 kV	230V-1x8 kV	230V-1x15 kV
	I1 - I2	1A - 25 mA	1A - 25 mA	1A - 20 mA	1A - 25 mA
Operation		Intermittent (at least one stop every 24 h)			
EMISSIONS					
Sound pressure	dBA	70	72	72	76
Sound output	W	--			
CO Emission	mg/kWh	< 40			
NOx Emission	mg/kWh	< 120			
APPROVAL					
Directive		90/396 - 89/336 (2004/108) - 73/23 (2006/95) - 92/42 EC			
Conforming to		EN 676			
Certification		in progress			

- (01) Centrifugal with reverse curve blades
 (02) Centrifugal with forward curve blades
 (03) 1/50/230~(±10%)
 (04) 1/50-60/220-230~(±10%)
 (05) 3/50/230-400~(±10%)
 (06) 3/50-60/220-400~(±10%)
 (07) 3/50/400~(±10%)
 (08) 3/50/230~(±10%)

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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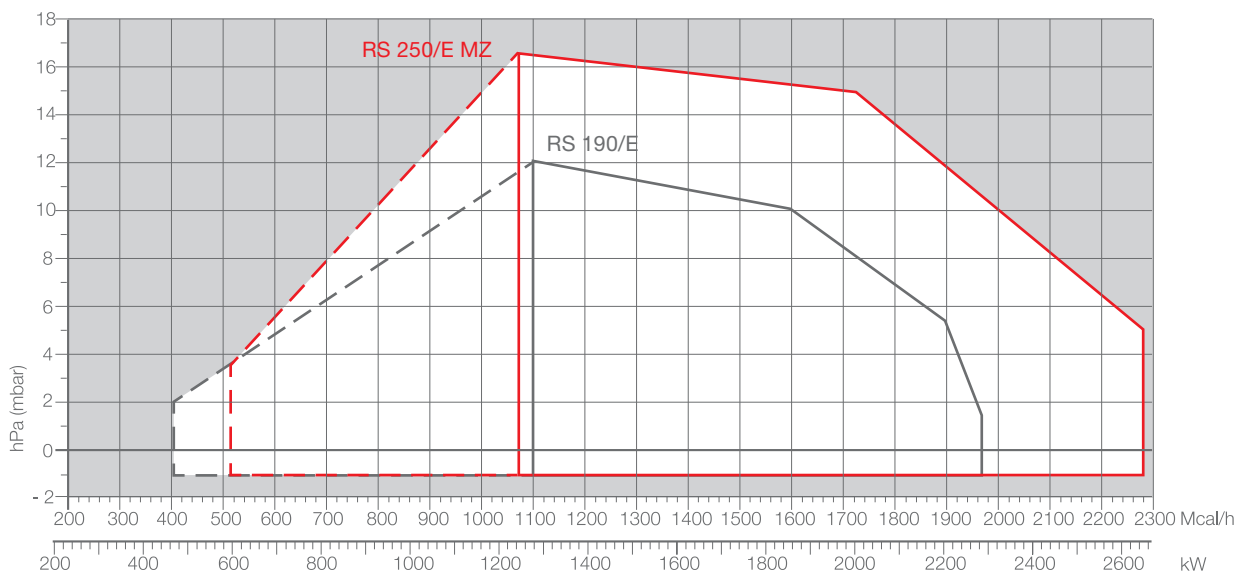
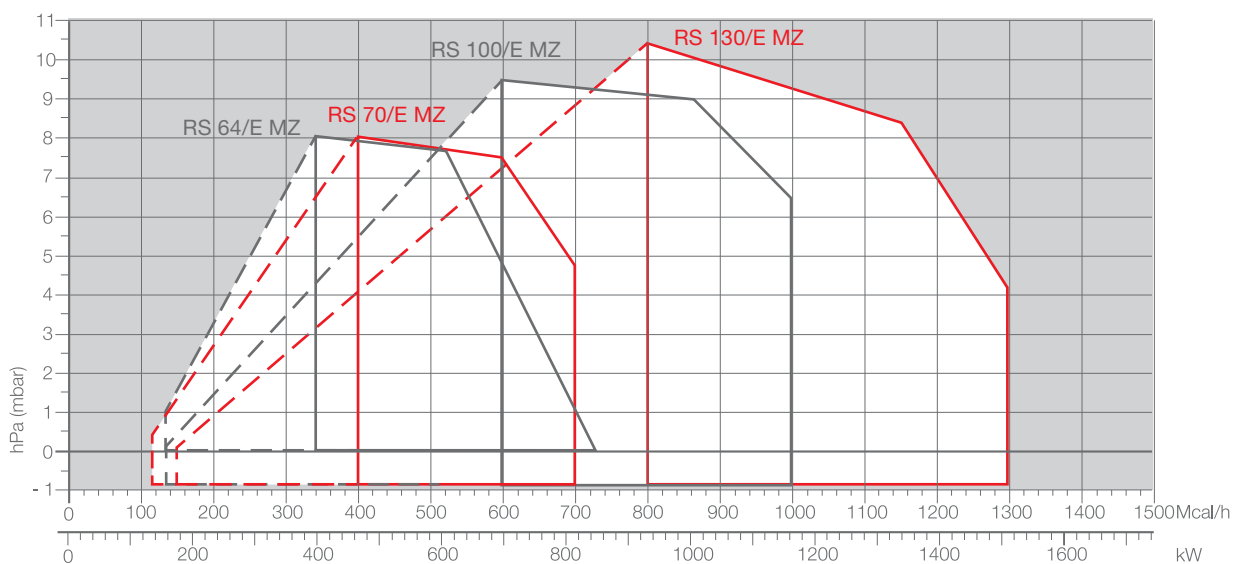
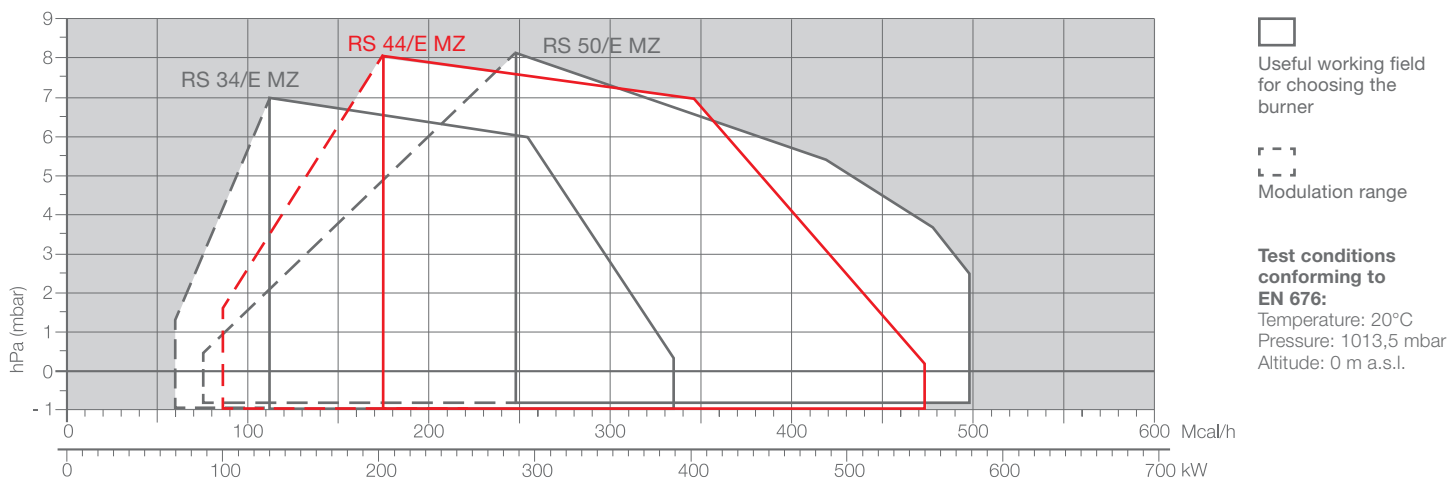
MODEL		RS 70/E MZ	RS 100/E MZ	RS 130/E MZ	RS 190/E	RS 250/E MZ
Burner operation mode		Modulating (with regulator and probes accessories)				
Modulation ratio at max. output		6 ÷ 1				
Servomotor	type	SQM33.5 (air) - SQM33.4 (gas)				
	run time s	5...120				
Heat output	kW	135/465÷814	150/698÷1163	160/930÷1512	470/1279÷2290	600/1250÷2650
	Mcal/h	116/400÷700	129/600÷1000	138/800÷1300	405/1100÷1970	516/1075÷2279
Working temperature	°C min./max.	0/40				
FUEL/AIR DATA						
Net calorific value G20 gas	kWh/Nm³	10				
Density gas G20	kg/Nm³	0,71				
Output gas G20	Nm³/h	13,5/46,5÷81,4	15/70÷116	16/93÷151	47/128÷229	60/125÷265
Net calorific value G25 gas	kWh/Nm³	8,6				
Density gas G25	kg/Nm³	0,78				
Output gas G25	Nm³/h	16/54÷95	17/81÷135	19/108÷176	55/149÷266	70/145÷308
Net calorific value LPG gas	kWh/Nm³	25,8				
Density LPG gas	kg/Nm³	2,02				
Output LPG gas	Nm³/h	5/18÷32	6/27÷45	6/36÷59	18/50÷89	23/48÷103
Fan	Type	(01)	(01)	(01)	(02)	(02)
Air temperature	Max. °C	60				
ELECTRICAL DATA						
Electrical supply	Ph/Hz/V	(05)	(05)	(05)	(05)	(07) (08)
Auxiliary electrical supply	Ph/Hz/V	(03)	(03)	(03)	(03)	(03)
Control box	Type	REC27				
Total electrical power	kW	1,6	2,0	2,8	5,3	6,5
Auxiliary electrical power	kW	0,5	0,5	0,6	0,8	1
Protection level	IP	44	44	44	44	44
Motor electrical power	kW	1,1	1,5	2,2	4,5	5,5
Rated motor current	A	4,8 - 2,8	5,9 - 3,4	8,8 - 5,1	15,8 - 9,1	12,3 21,3
Motor start current	A	25 - 14,6	27,7 - 16	57,2 - 33,2	126 - 73	83 143
Motor protection level	IP	54				
Ignition transformer	V1 - V2	230V-1x8 kV	230V-1x8 kV	230V-1x8 kV	230V-1x8 kV	230V-1x15 kV
	I1 - I2	1A - 20 mA	1A - 20 mA	1A - 20 mA	1A - 20 mA	1A - 20 mA
Operation		Intermittent (at least one stop every 24 h)				
EMISSIONS						
Sound pressure	dBA	75	77	78,5	81	83
Sound output	W	--				
CO Emission	mg/kWh	< 40				
NOx Emission	mg/kWh	< 120		< 130		< 120
APPROVAL						
Directive		90/396 - 89/336 (2004/108) - 73/23 (2006/95) - 92/42 EC				
Conforming to		EN 676				
Certification		in progress				

- (01) Centrifugal with reverse curve blades
 (02) Centrifugal with forward curve blades
 (03) 1/50/230~(±10%)
 (04) 1/50-60/220-230~(±10%)
 (05) 3/50/230-400~(±10%)
 (06) 3/50-60/220-400~(±10%)
 (07) 3/50/400~(±10%)
 (08) 3/50/230~(±10%)

Reference conditions:

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

FIRING RATES



GAS TRAINS

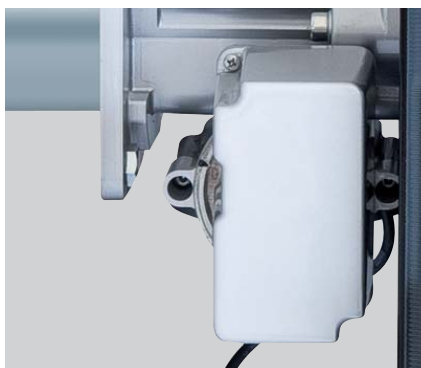
The burners are fitted with a butterfly valve to regulate the fuel, controlled by a stepper motor with high accuracy position and absence of joint clearance and mechanical hysteresis.

Fuel can be supplied either from the right or left hand sides.

A maximum gas pressure switch stops the burner in case of excess pressure in the fuel line (as accessory on RS 34-44/E MZ).

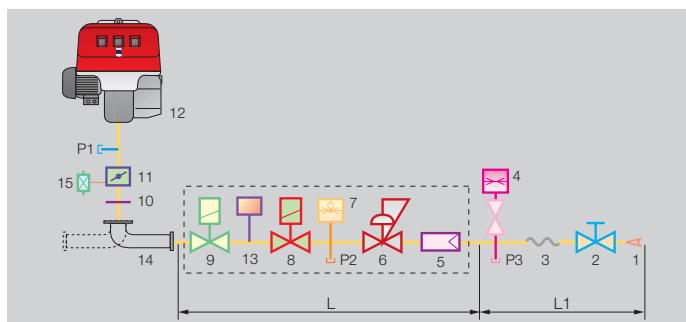
The gas train can be selected to best fit system requirements depending on the fuel output and pressure in the supply line.

The gas train can be "Multibloc" type (containing the main components in a single unit) or "Composed" type (assembly of the single components).

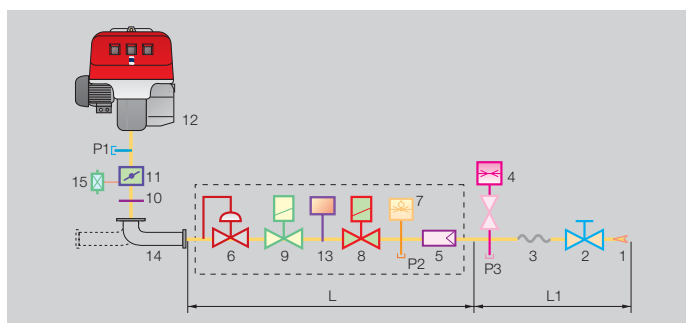


Example of fuel adjusting stepper motors on RS 34-44/E MZ and RS 190/E MZ burners.

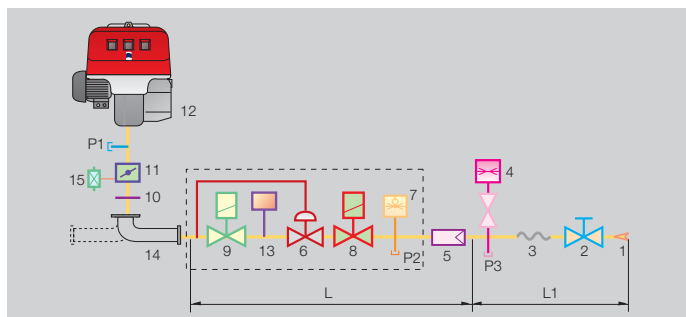
MULTIBLOC gas train type MBD



MULTIBLOC gas train type MBC 1200



COMPOSED gas train



- | | |
|----|--|
| 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) |
| 10 | Two settings: - firing output (rapid opening)
- maximum output (slow opening) |
| 11 | Gasket and flange supplied with the burner |
| 12 | Gas adjustment butterfly valve |
| 13 | Seal control mechanism for valves 8-9. According to standard EN 676, the seal control is compulsory for burners with maximum output above 1200 kW (in gas train with seal control) |
| 14 | Gas train-burner adapter |
| 15 | Maximum gas pressure switch (accessory on RS 34-44/E MZ) |
| 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 |

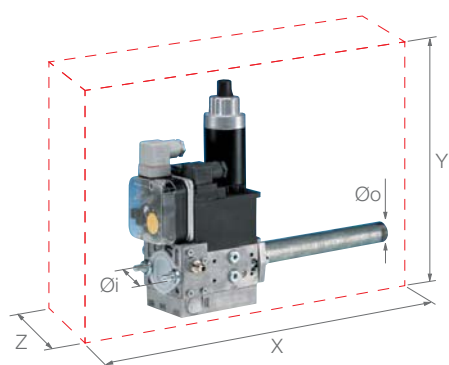
Gas trains are approved by standard EN 676 together with the burner.

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 burners, intake and outlet diameters and seal control if fitted.

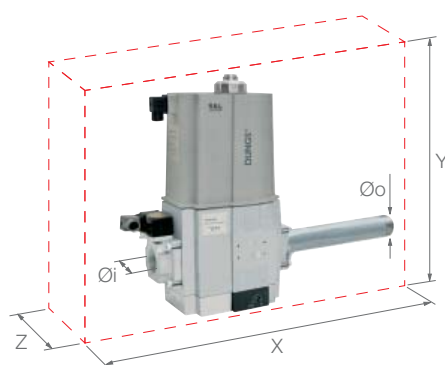
Please note that the seal control can be installed as an accessory, if not already installed on the gas train.

The maximum gas pressure of gas train "Multibloc" type is 360 mbar, and that one of gas train "Composed" type is 500 mbar.

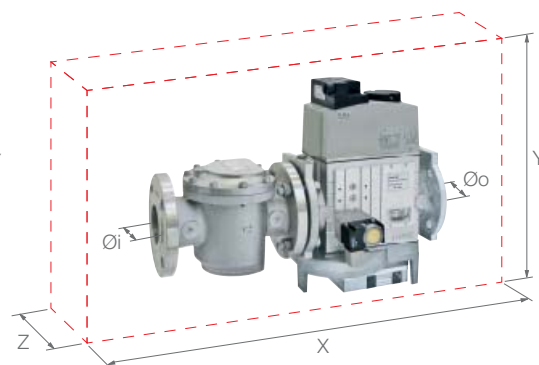
The range of pressure in the MULTIBLOC with flange can be modified choosing the stabiliser spring (see gas train accessory).



Example of gas train "MULTIBLOC" type MBD



Example of gas train "MULTIBLOC" type MBC 1200



Example of gas train "COMPOSED" type MBC 1900 - 3100

	NAME	CODE	Ø i	Ø o	X mm	Y mm	Z mm	OUTPUT PRESSURE RANGE (mbar)	SEAL CONTROL
MULTIBLOC GAS TRAINS	MBC 120	3970602 (1)	3/4"	3/4"	371	186	120	4 - 50	(4)
	MBD 407	3970599 (1)	3/4"	3/4"	371	196	120	4 - 50	(3)
	MBD 410	3970258 (1)	1"	3/4"	405	217	145	4 - 50	(3)
	MBD 412	3970256 (1)	1"1/4	1"1/4	433	217	145	4 - 50	(3)
	MBD 415	3970250 (1)	1"1/2	1"1/2	523	250	100	4 - 50	(3)
	MBD 420	3970257 (1)	2"	2"	523	300	100	4 - 50	(3)
	MBC 1200 SE 50	3970221 (2)	2"	2"	573	425	161	4 - 60	(3)
COMPOSED GAS TRAINS	MBC 1900 SE 65 FC	3970222 (2)	DN 65	DN 65	583	430	237	20 - 40	(3)
	MBC 3100 SE 80 FC	3970223 (2)	DN 80	DN 80	633	500	240	20 - 40	(3)

(1) Gas Train with 6-pin plug to install for connection to the burner.

(2) Gas Train with 6-pin plug installed for connection to the burner.

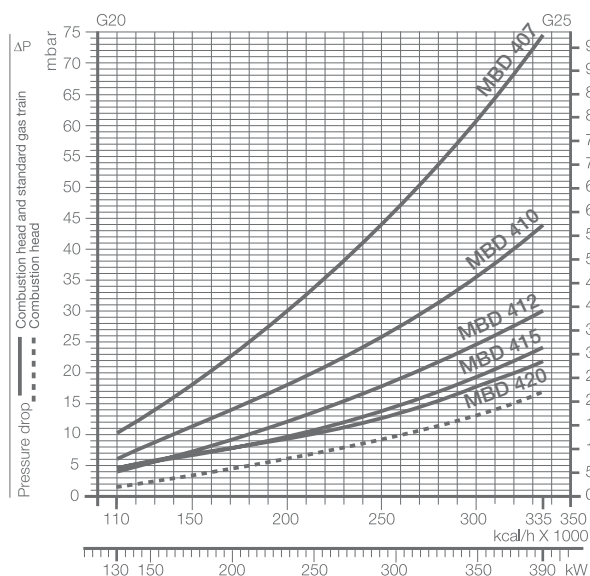
(3) Included on REC 27 standard functions.

(4) Integrated seal control is not available with this gas train.

PRESSURE DROP DIAGRAM

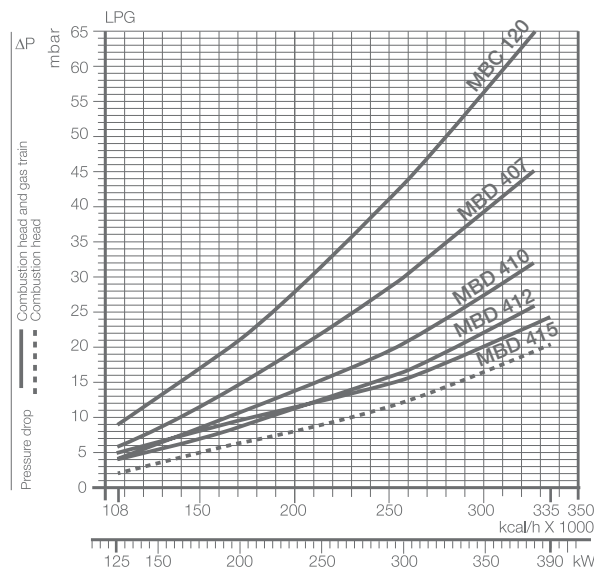
The diagrams indicate the minimum pressure drop of the burners with the various gas trains that can be matched with them; at the value of these pressure drop add the combustion chamber pressure. The value thus calculated represents the minimum required input pressure to the gas train.

RS 34/E MZ (NATURAL GAS)



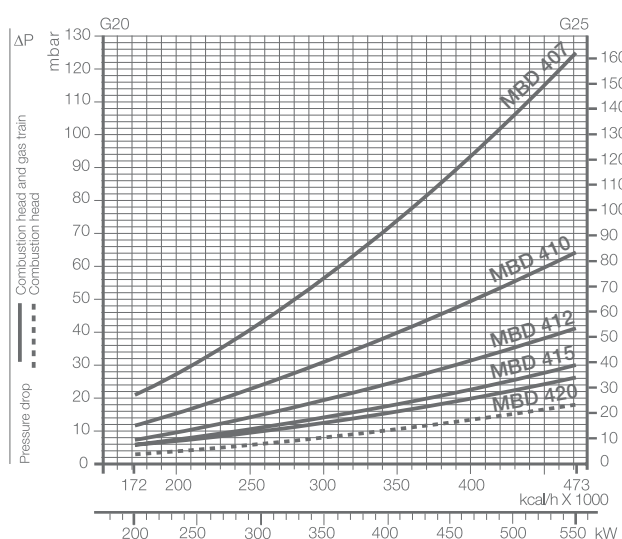
GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBC 120	3970602 (1)	3000824	(3)
MBD 407	3970599 (1)	3000824	(2)
MBD 410	3970258 (1)	-	(2)

RS 34/E MZ (LPG)



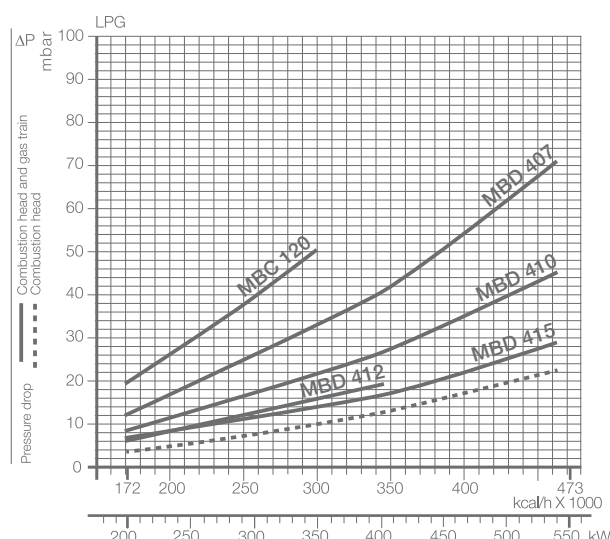
GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 412	3970256 (1)	-	(2)
MBD 415	3970250 (1)	-	(2)
MBD 420	3970257 (1)	3000822	(2)

RS 44/E MZ (NATURAL GAS)



GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBC 120	3970602 (1)	3000824	(3)
MBD 407	3970599 (1)	3000824	(2)
MBD 410	3970258 (1)	-	(2)

RS 44/E MZ (LPG)

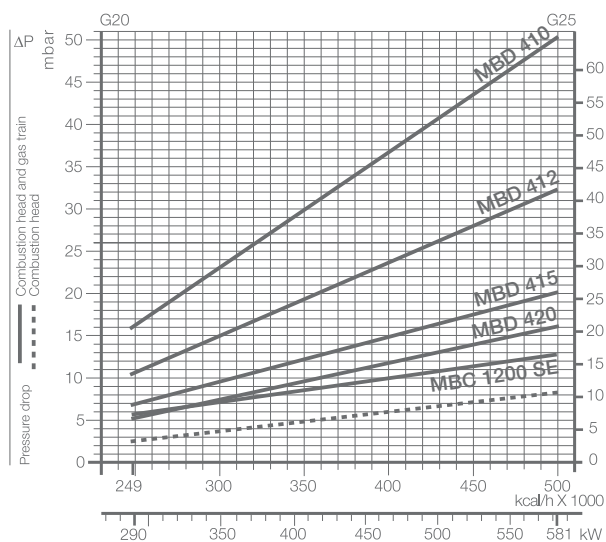


GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 412	3970256 (1)	-	(2)
MBD 415	3970250 (1)	-	(2)
MBD 420	3970257 (1)	3000822	(2)

(1) Gas Train with 6-pin plug to install for connection to the burner.
(2) Included on REC 27 standard functions.

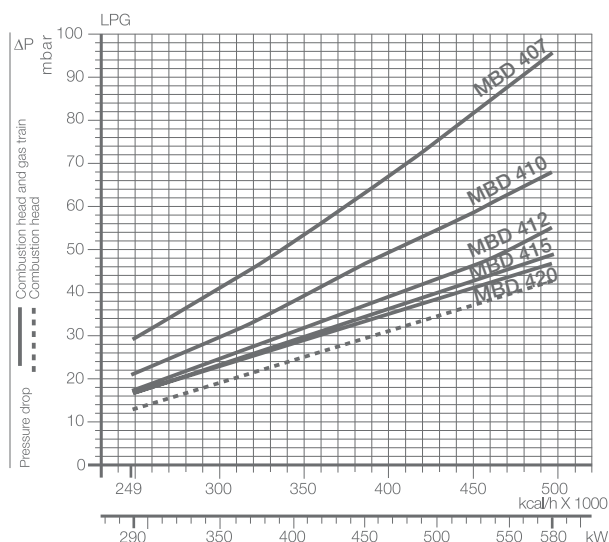
(3) Integrated seal control is not available with this gas train.

RS 50/E MZ (NATURAL GAS)



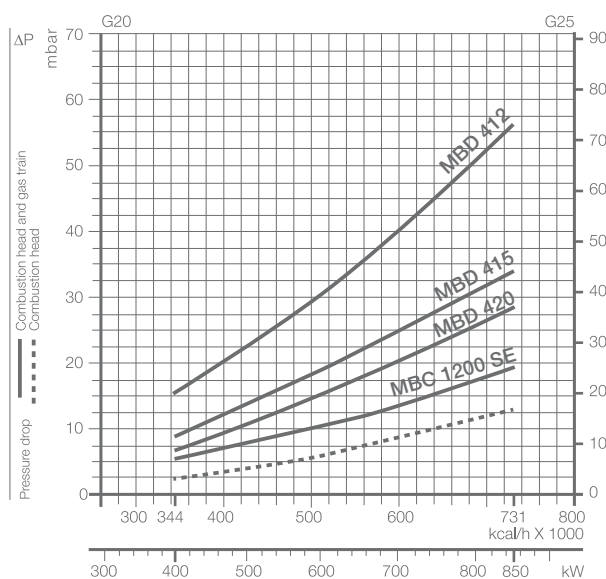
GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 407	3970599 (1)	3000824	(3)
MBD 410	3970258 (1)	-	(3)
MBD 412	3970256 (1)	-	(3)

RS 50/E MZ (LPG)



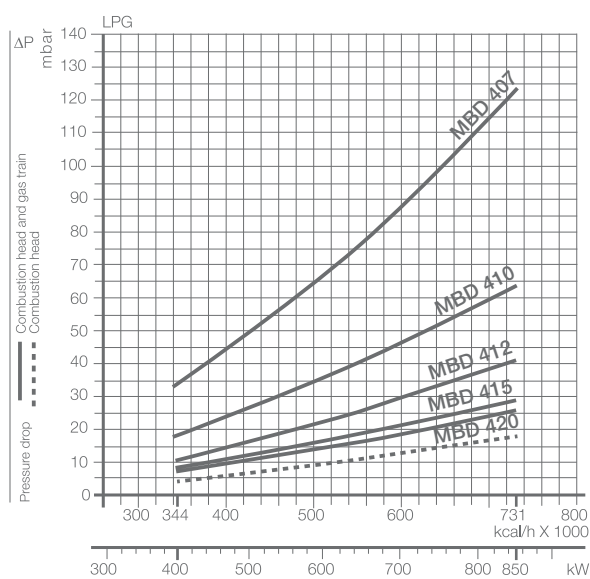
GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 415	3970250 (1)	-	(3)
MBD 420	3970257 (1)	3000822	(3)
MBC 1200 SE	3970221 (1)	3000822	(3)

RS 64/E MZ (NATURAL GAS)



GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 407	3970599 (1)	3000824 + 3000843	(3)
MBD 410	3970258 (1)	3000824 + 3000843	(3)
MBD 412	3970256 (1)	3010126	(3)

RS 64/E MZ (LPG)

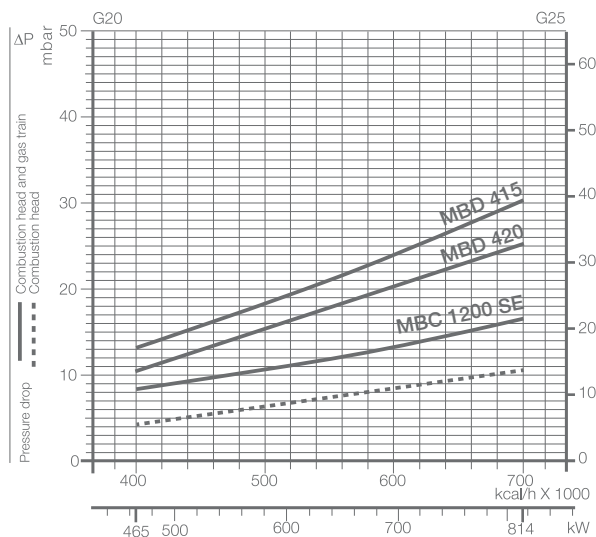


GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 415	3970250 (1)	3000843	(3)
MBD 420	3970257 (1)	-	(3)
MBC 1200 SE	3970221 (2)	-	(3)

(1) Gas Train with 6-pin plug to install for connection to the burner.
 (2) Gas Train with 6-pin plug installed for connection to the burner.

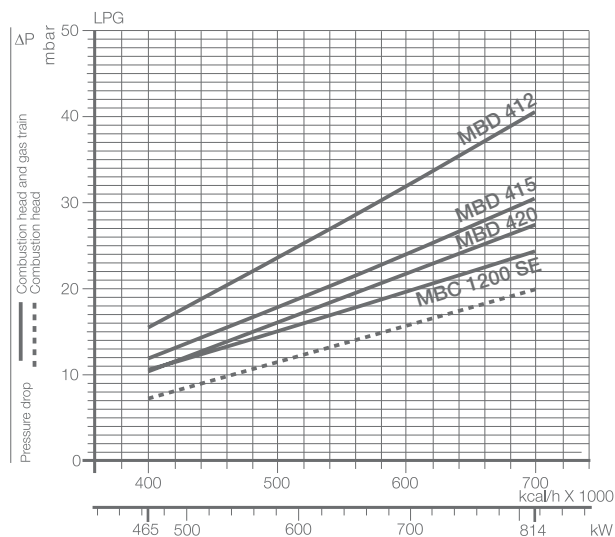
(3) Included on REC 27 standard functions.

RS 70/E MZ (NATURAL GAS)



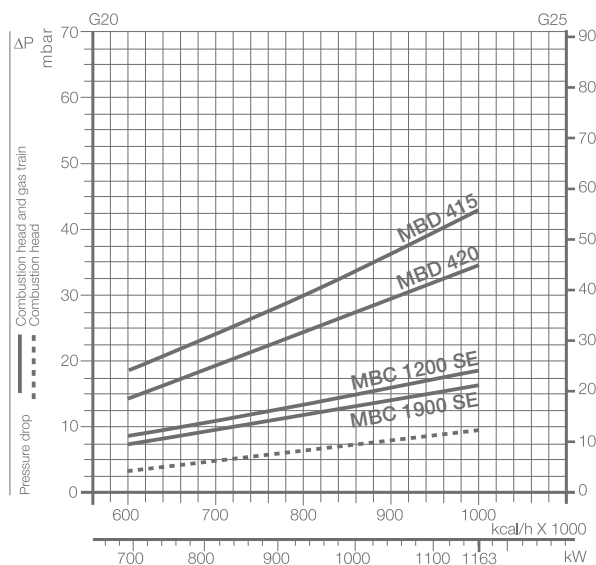
GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 412	3970256 (1)	3010126	(3)
MBD 415	3970250 (1)	3000843	(3)

RS 70/E MZ (LPG)



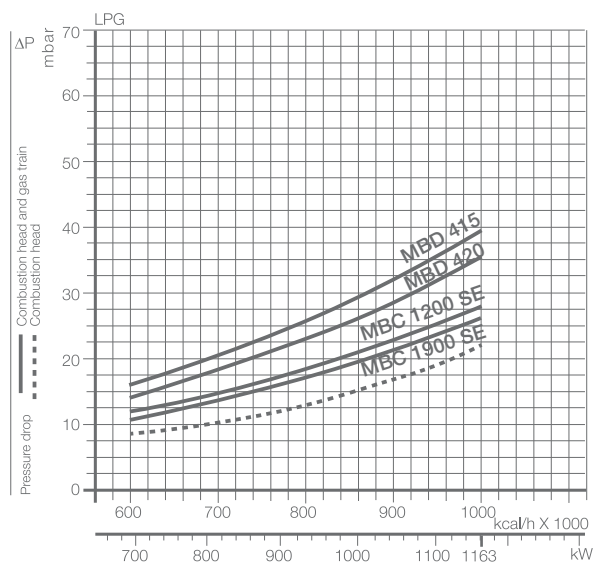
GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 420	3970257 (1)	-	(3)
MBC 1200 SE	3970221 (2)	-	(3)

RS 100/E MZ (NATURAL GAS)



GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 415	3970250 (1)	3000843	(3)
MBD 420	3970257 (1)	-	(3)

RS 100/E MZ (LPG)

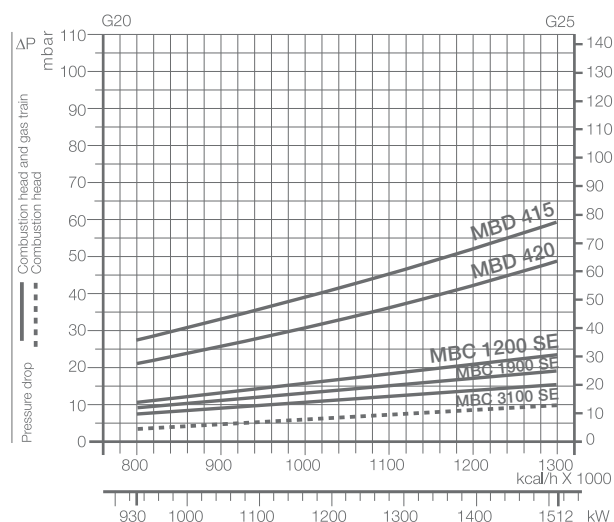


GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBC 1200 SE	3970221 (2)	-	(3)
MBC 1900 SE	3970222 (2)	3000825	(3)

(1) Gas Train with 6-pin plug to install for connection to the burner.
 (2) Gas Train with 6-pin plug installed for connection to the burner.

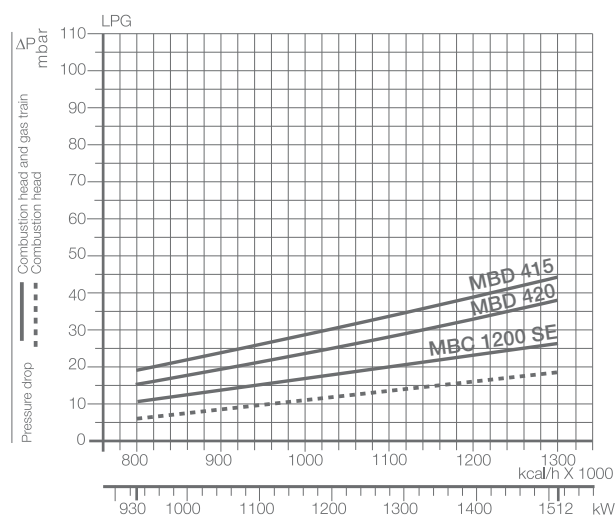
(3) Included on REC 27 standard functions.

RS 130/E MZ (NATURAL GAS)



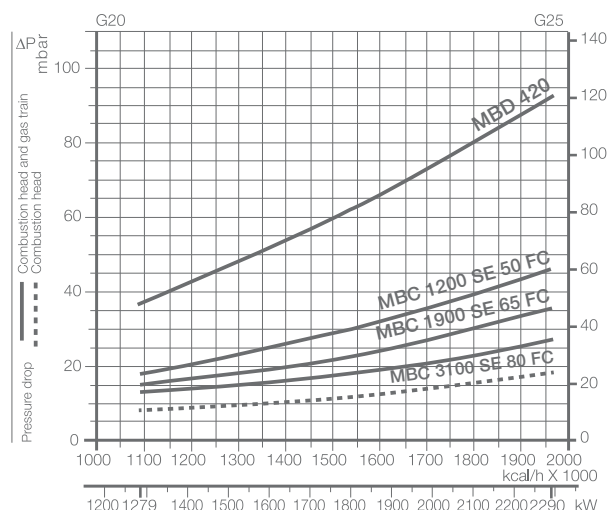
GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 415	3970250 (1)	3000843	(3)
MBD 420	3970257 (1)	-	(3)
MBC 1200 SE	3970221 (2)	-	(3)

RS 130/E MZ (LPG)



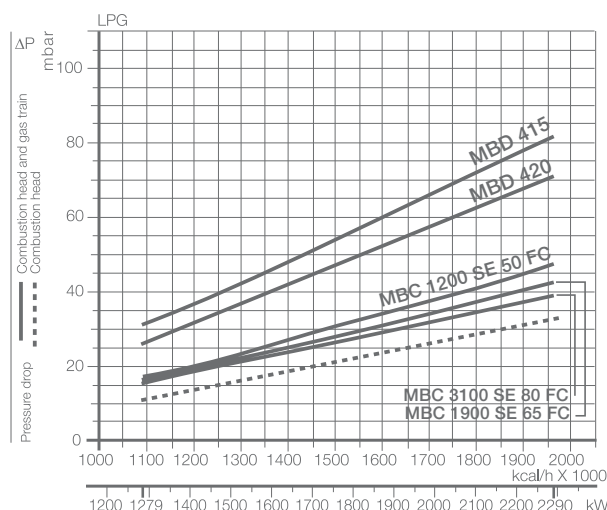
GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBC 1900 SE	3970222 (2)	3000825	(3)
MBC 3100 SE	3970223 (2)	3000826	(3)

RS 190/E (NATURAL GAS)



GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 415	3970250 (1)	3000843	(3)
MBD 420	3970257 (1)	-	(3)
MBC 1200 SE	3970221 (2)	-	(3)

RS 190/E (LPG)

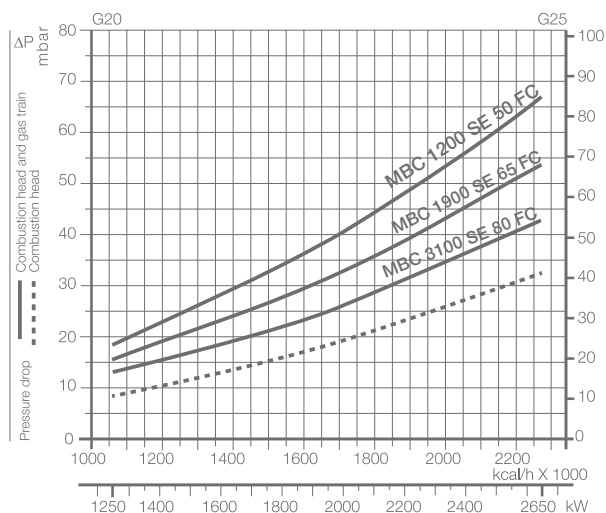


GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBC 1900 SE	3970222 (2)	3000825	(3)
MBC 3100 SE	3970223 (2)	3000826	(3)

(1) Gas Train with 6-pin plug to install for connection to the burner.
 (2) Gas Train with 6-pin plug installed for connection to the burner.

(3) Included on REC 27 standard functions.

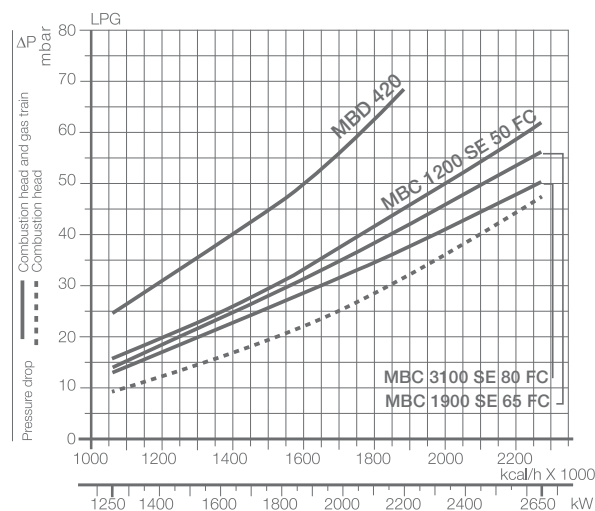
RS 250/E MZ (NATURAL GAS)



GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 420	3970257 (1)	-	(3)
MBC 1200 SE	3970221 (2)	-	(3)

(1) Gas Train with 6-pin plug to install for connection to the burner.
 (2) Gas Train with 6-pin plug installed for connection to the burner.

RS 250/E MZ (LPG)



GAS TRAIN	CODE	ADAPTER	SEAL CONTROL
MBD 420	3970257 (1)	-	(3)
MBC 1200 SE	3970221 (2)	-	(3)
MBC 1900 SE	3970222 (2)	3000825	(3)
MBC 3100 SE	3970223 (2)	3000826	(3)

(3) Included on REC 27 standard functions.

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.

In LPG plants, Multibloc gas trains do not operate below 0°C. They are only suitable for gaseous LPG (liquid hydrocarbons destroy the seal materials).

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

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

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

SELECTING THE FUEL SUPPLY LINES

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

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

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

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

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

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

By subtracting this value from the pressure measured on the gas

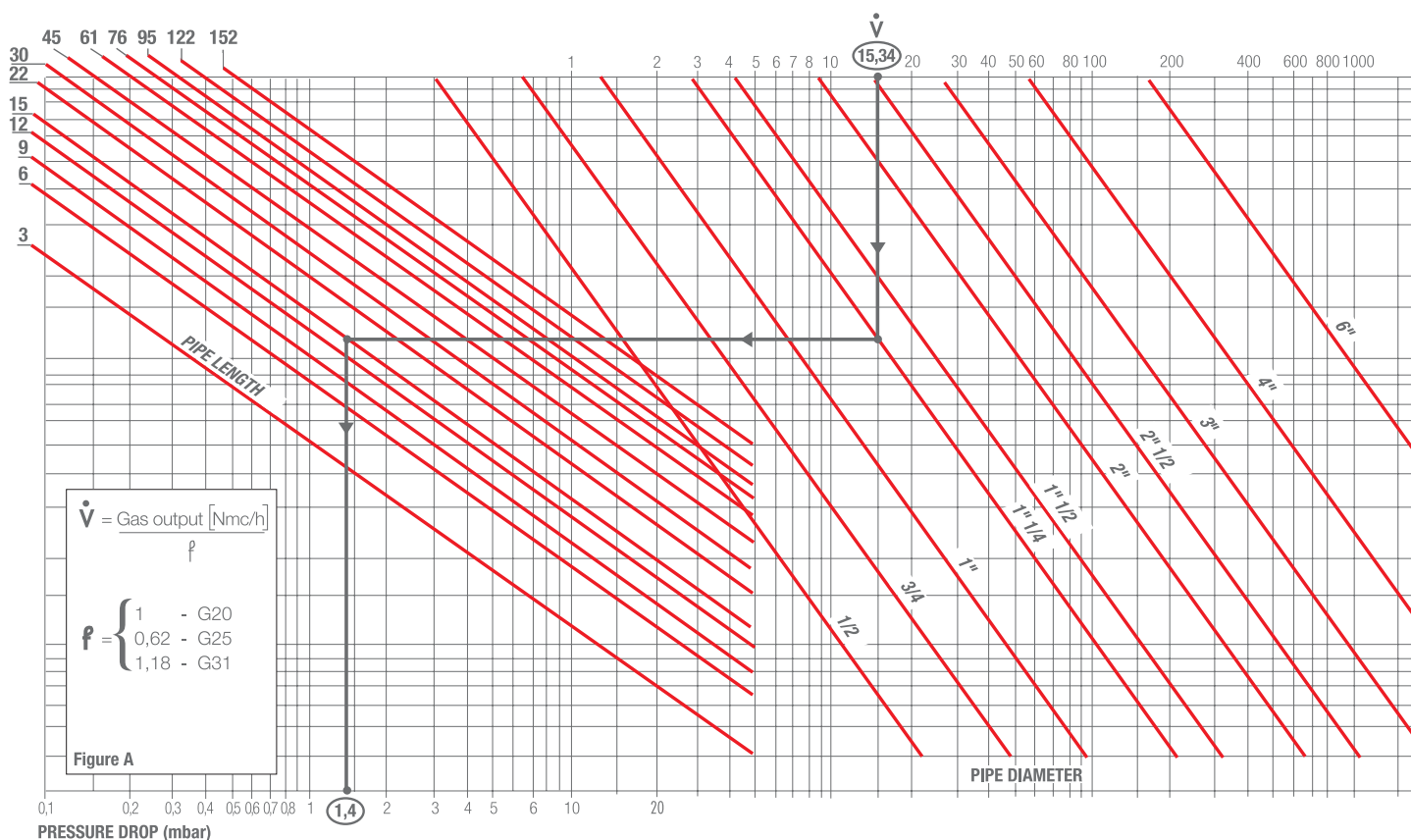
meter, the correct pressure value will be found for the choice of gas train.

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)

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

- 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;

$$\text{correct pressure} = (20 - 1.4) = 18.6 \text{ mbar}$$



Ventilation

The ventilation circuit produces low noise levels with high performance pressure and air output, inspite of the compact dimensions.

In the RS 34-44-64-190-250/E models, noise has been reduced by the special design of the air suction circuit.

On RS 50-70-100-130/E models, the use of reverse curve blades and sound-proofing material keeps extremely noise level very low.

A stepper motor with high accuracy position and absence of joint clearance and mechanical hysteresis controls the air regulations, ensuring high fuel efficiency at all firing ranges.

A minimum air pressure switch stops the burner when there is an insufficient quantity of air at the combustion head.

The RS 34/E MZ and RS 44/E MZ are realised with a structure made by an innovative technology based on a new fibreglass reinforced polyamide material, with high thermal and mechanical characteristics, instead of the traditional aluminium.

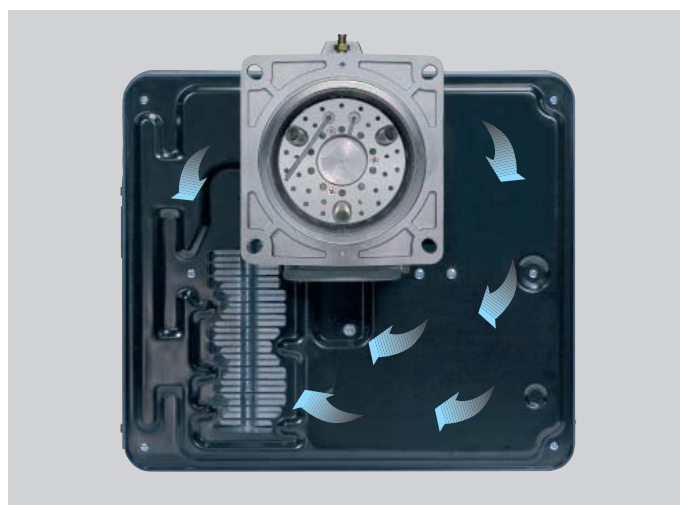
This allows big advantages in terms of lay-out rationalisation, weight and dimensions reduction.

In order to guarantee the correct exercise temperature for the internal burner components in every working conditions, the new structure includes an innovative patented cooling technology.

Between the burner front base and the reinforcing steel front plate, had been create an air cavity offering an high thermal insulation against the front boiler reflection heat, and to further improve the insulation efficiency the innovative **HCS (Housing Cooling System)** technology had been developed. Inside the front base cavity an air circulation is activated with continuous air volume refresh to obtain an active cooling system and avoid any heat transfer to the electrical component housing.



Example of stepper motor for air flow setting on RS 250/E MZ burner.



Example of HCS (Housing Cooling System) working concept.

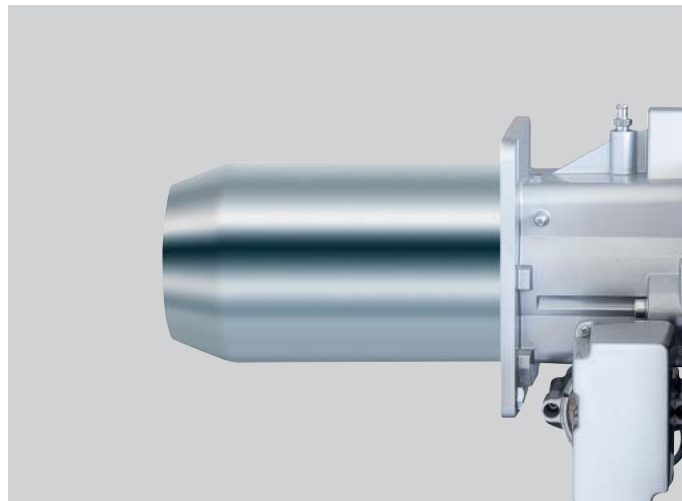
> Combustion Head

Different lengths of the combustion head can be chosen for the RS/E MZ series of burners.

The choice depends on the thickness of the front panel and the type of boiler.

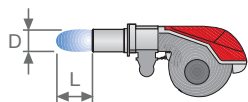
Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct.

The internal positioning of the combustion head can easily be adjusted to the maximum defined output by adjusting a screw fixed to the flange.



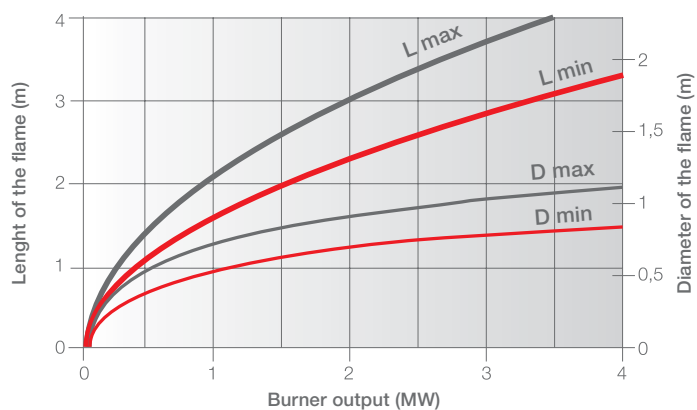
Example of a RS/E MZ burner combustion head.

DIMENSIONS OF THE FLAME



Example:

Burner thermal output = 2000 kW;
 L_{flame} (m) = 2,7 m (medium value);
 D_{flame} (m) = 0,8 m (medium value)

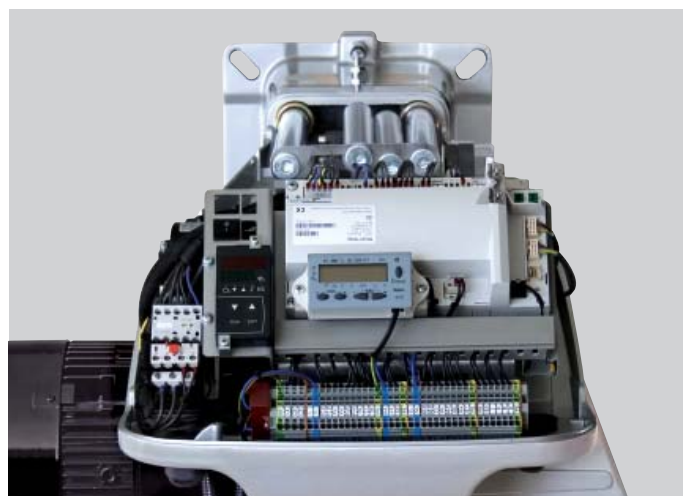


Operation



The models of RS/E MZ series of burners are based on a new Digital Burner Management System, Riello REC27, which is able to manage the air-fuel ratio by independent servomotors in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range.

The new Combustion Management System includes the standard function of a Flame Control Panel and offers many advantages such as, for example, a simple and fast commissioning, the burner status and fault causes diagnostic to facilitate the maintenance, the Integrated Gas Valves Proving function.

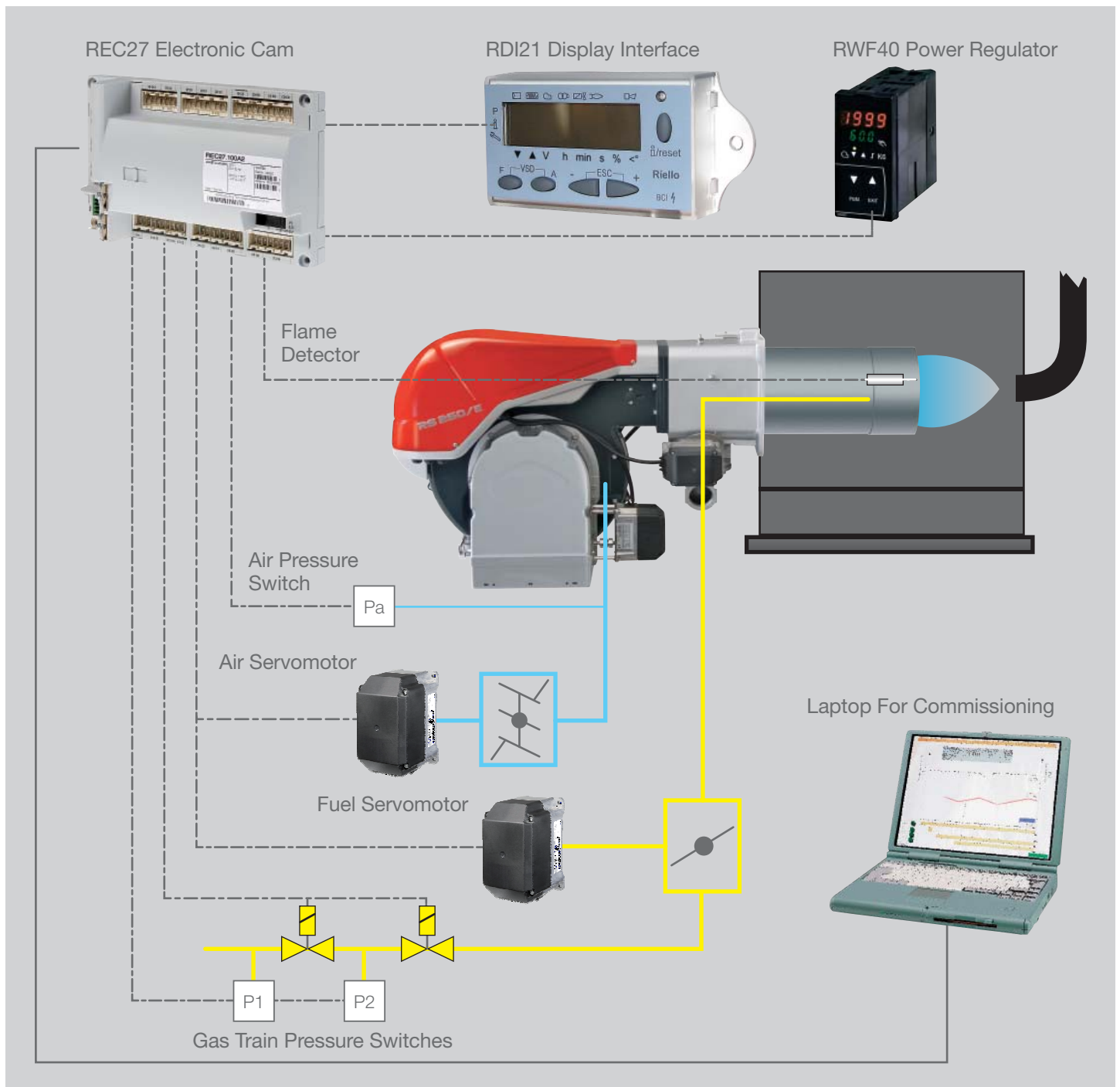


Example of Riello REC27, Digital Burner Management System, installed on a RS 44/E MZ and RS 190/E burner models.

The REC27.100A2 Digital Burner Management System, also called Electronic Cam, is a microprocessor-based device that controls the complete burner operating cycle, included the valves proofing test before the start-up, and the correct air-fuel mixing in every point of modulation range.

The actuators, connected to the air damper and fuel adjusting device with absence of joint clearance and mechanical hysteresis, are stepper motors with high accuracy position while the Display Interface RDI21 is the operating unit to easily adjust the system.

Operation can be "two stage progressive" or "modulating" with the installation of RWF40 electronic modulator and related temperature or pressure probe.



REC27.100A2 Digital Burner Management System Layout.

The electronic cam REC27.100A2 offers many advantages compared with the traditional burner control systems.

INTEGRATED CONTROL

REC27.100A2 Digital Burner Management System includes burner flame control functions for intermittent operation (LFL types) and air-fuel ratio control.

ENERGY SAVING

Closed air damper during burner stand-by phase to avoid the combustion chamber cooling.
Specific configuration for Variable Speed Drive operation to reduce electrical consumption and noise levels.

SAFE OPERATION

Access to the internal parameter is possible through protection levels password for a safe operation.

OPERATION

Two stage progressive or modulating operation with the installation of a PID electronic regulator.

REMOTE LOCKOUT RESET

SPECIFIC VERSION ON DEMAND

For Variable Speed Drive and Continuous operation.

ABSENCE OF JOINT CLEARANCE AND MECHANICAL HYSTERESIS

The connection to the air and fuel adjusting device is done with the absence of joint clearance and mechanical hysteresis, which allows to keep a constant air/fuel setting in order to assure the maintenance of combustion parameters.
As a result the seasonal efficiency of the combustion system improves and a safe operation is guaranteed.

EASY COMMISSIONING AND BURNER SETTING

An interface display is used for the burner commissioning and setting and allows, thanks to the self-adjusting function, a very easy start-up. The burner commissioning is based on a 9 points adjusting curve and the setting is very easy. For a quick setting only three points must be adjusted: P0 (ignition), P1 (low fire) and P9 (high fire), then the REC27 calculates the points in between with a linear interpolation; if necessary all points can be corrected (fuel or air).

INDEPENDENT IGNITION POINT POSITION

The Ignition point has an independent position in order to obtain the best burner start up control.

FLEXIBLE ADJUSTING

The air and fuel servomotors are stepper motor actuators with independent position for each point of adjusting curve; this devices allow an extremely flexible adjusting of combustion parameters.

VALVE PROOFING SYSTEM INCLUDED AS A STANDARD

The digital burner management system REC 27 includes as standard the valves proofing function that, in order to guarantee a safe operation of each burner start up, performs a leakage test before every burner start-up.
The gas valves proofing is selectable (active or inactive); a simple pressure switch has to be ordered as accessory for burners with maximum output < 1200 kW.

SAME ELECTRONIC CONTROL FOR ALL THE MODELS

The digital burner management system REC 27 is the same in all the models of RS/E series, so it will be very easy to set-up each model.

ADDITIONAL INFORMATION

Through the digital control and the interface display is possible to obtain information on burner status, operation and diagnostic functions with error history.

ADDITIONAL PARAMETERS INDICATION

The digital burner management system REC 27 gives some others additional parameters indication like operation hours, load level indication, flame signal intensity.

SYSTEM CONNECTIONS

Possible connection to a PC for burner setting and operation monitoring. Possible remote interface of burner operating signals via BUS protocol communication. Interfaces device available for Modbus connection to Building Management System or other OEM equipment

CONTINUOUS VENTILATION

For burners that can be damaged by heat continuous purging may be required. In this case, the fan operates in all phases. For this purpose, the fan contactor has to be connected to X3-05, terminal 3, tapped after the unit fuse and the safety loop.

For checking the air pressure switch, a pressure switch relief valve must be connected to fan contactor X3-05, terminal 1. When output X3-05, terminal 1, is activated, the relief valve diverts the fan pressure to the air pressure switch and, when deactivated, ensures that no pressure will be fed to the switch.

START WITHOUT PRE-PURGING

The prepurging function can be deactivated; when prepurging is activated, it will be performed in accordance with the adjusted prepurge time. If not activated, it will nevertheless be performed if one or several of the following conditions apply:

- Alterable lockout position
- After an off time of >24 hours
- In the event of a power failure (power-on)
- In the event of shutdown due to an interruption of gas supply (safety shutdown)

FORCED INTERMITTENT OPERATION (< 24 HOURS)

With the forced intermittent operation, the unit will shut down for a moment after 23 hours and 45 min of uninterrupted operation. Forced intermittent operation is a standard feature.

ADJUSTABLE PARAMETERS

The service operator, through access with the correct password, has the possibility to adjust some characteristic parameters of the Digital Burner Management System during the burner set-up and maintenance in order to optimise the burner operation in function of the installation requirements.

Here below some examples of adjustable parameters:

- Electrical Supply Frequency (50 Hz - 60 Hz)
- Fuel counter adjustment (impulses / Volume flow unit)
- Errors history reset
- Remote control management (Off, Modbus, Reserved)
- Total working hours reset
- Total ignition number reset
- Pre-ventilation time (20 s 60 min)
- Pre-ignition time (0,2 s 60 min)
- Post-combustion time (0,2 s 60 min)
- Post-ventilation time (0,2 s 108 min)
- Minimum and Maximum modulation limit (20-100%)
- Display light intensity

DISPLAY INTERFACE

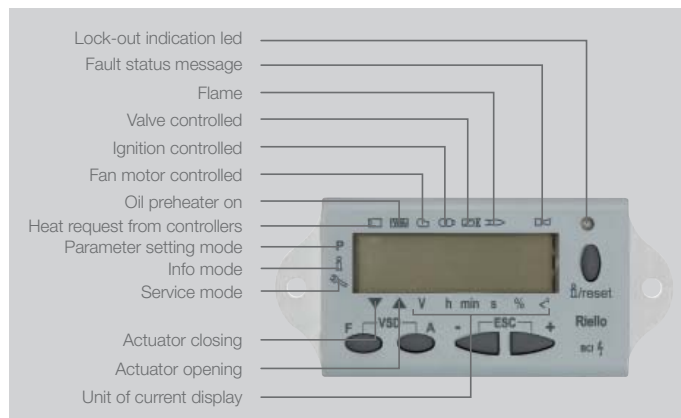
The RDI21 display allows an easy interface with the REC27 electronic cam.

It is a "Non-language" display; there are only symbols and parameter numbers with certain values displayed.

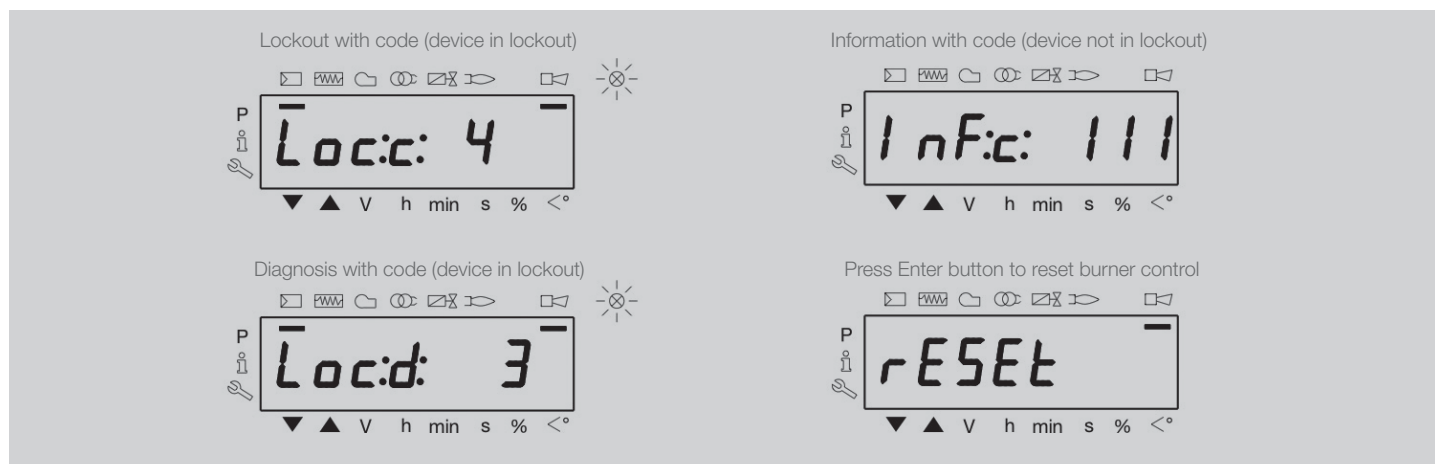
Only English international abbreviations are used instead of numbers: this solution significantly improves the understanding of the information; here below some examples are listed:

- OFF
- RUN
- OP (Operation)
- SER (Service)
- INF (Information)
- ERR (Error)
- LOC (Lockout)
- CODE (Password input)

In case of burner fault, a led highlights the lock-out status.



Example of RDI21 display and related symbols.



Example of RD121 display Status and Fault information.

REMOTE CONNECTIONS

It is possible to connect the REC27 electronic cam to a data network based on a Modbus system by using of its Modbus functionality. This facilitates implementation of the following applications:

- Visualisation of plant states
- Plant control
- Logging

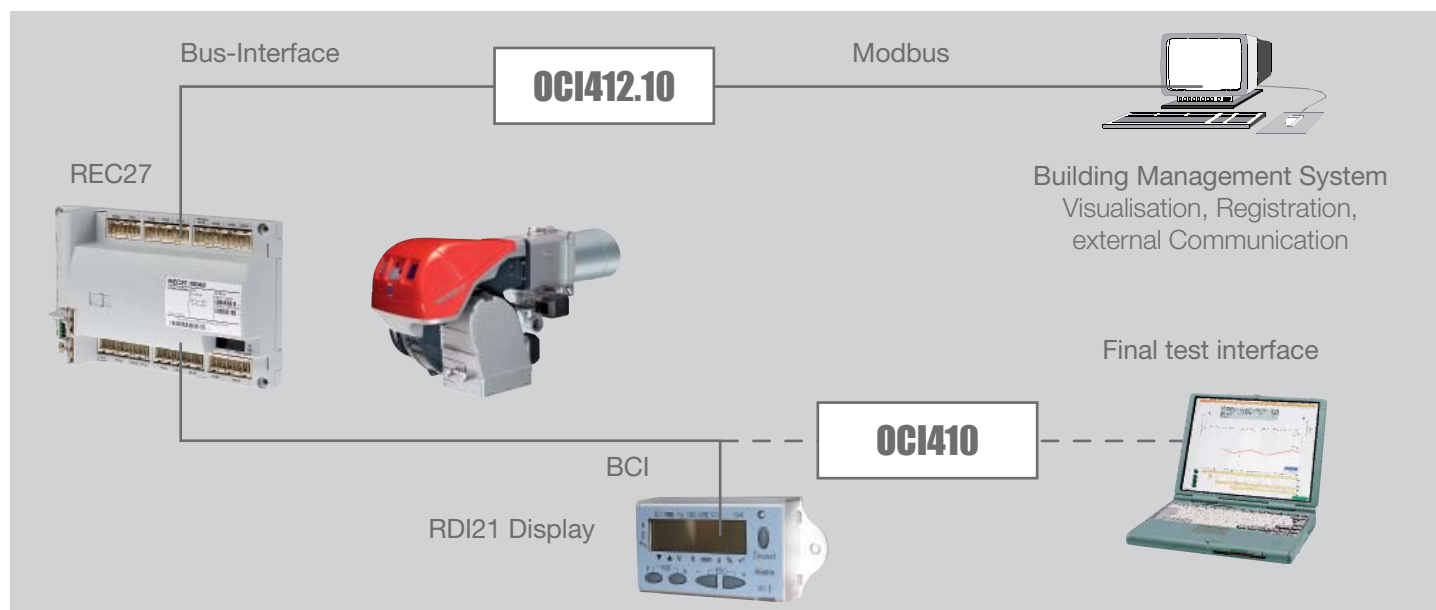
The physical connection to the Modbus system is made via an external OCI module.

The transmission mode used is RTU (Remote Terminal Unit).

The data are transmitted in binary format (hexadecimal) with 8 Bits.

The LSB (least significant bit) is transmitted first.

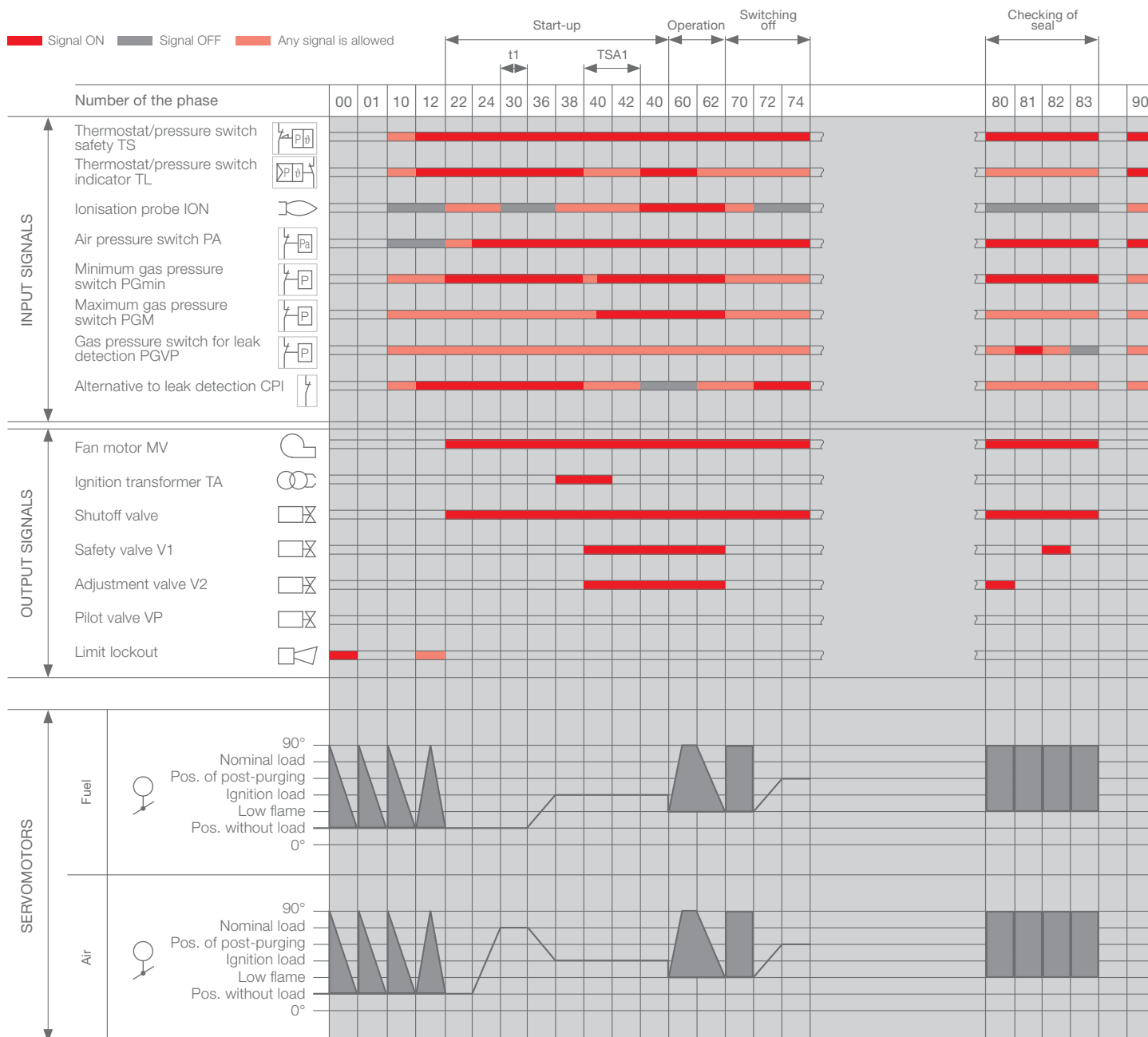
ASCII mode is not supported.



REC27 Remote Connections layout.

START UP CYCLE

RS 34-44-50-64-70-100-130-250/E MZ - RS 190/E



LIST OF THE PHASES

Ph00	Lockout phase
Ph01	Safety phase
Ph10	t10 = closure in pause
Ph12	Standby
Ph22	t22 = Uphill train of the fan motor (fan motor = ON, safety valve = ON)
Ph24	The burner moves to the pre-purging position
Ph30	t1 = pre-purging time
Ph36	The burner moves to the ignition position
Ph38	t3 = pre-ignition time
Ph40	TSA1 = safety time 1 (ignition transformer ON)
Ph42	TSA1 = safety time 1 (ignition transformer OFF), t42 = pre-ignition time OFF

Ph44	t44 = interval time 1
Ph60	Operation
Ph62	t62 = max. time to reach the low flame (the burner moves to the switch-off position)
Ph70	t13 = post-combustion time
Ph72	The burner moves to the post-purging position
Ph74	t8 = post-purging time
Ph80	t80 = emptying time (valve leak detection)
Ph81	t81 = atmospheric test time (valve leak detection)
Ph82	t82 = filling time (valve leak detection)
Ph83	t83 = pressure test time (valve leak detection)
Ph90	Standby time due to lack of gas

Ph = phase

Burner Wiring

All models of the RS/E burner series have an easily accessible control panel for the electrical components housing and wiring. In particular the RS 34-44/E MZ models, thanks to the new structure concept, have a extremely clean electrical layout to optimise the commissioning and maintenance speed.

On these models the electrical connection are done by a Plug&Socket system, accessible from the external of the cover, and some of the main components as the servomotor, the air pressure switch, the electronic regulator (accessory) and the gas max pressure switch (accessory) are connected to the burner electrical wiring trough plugs & sockets system in order to facilitate the connection in case of maintenance.

The electrical wiring of all RS/E burner models are very easy to do following the wiring diagrams included in the instruction handbook. Electrical connections must be made by qualified and skilled personnel, according to the local norms.



Example of the terminal board for electrical connections for the RS 70-100-130-190-250/E MZ models.



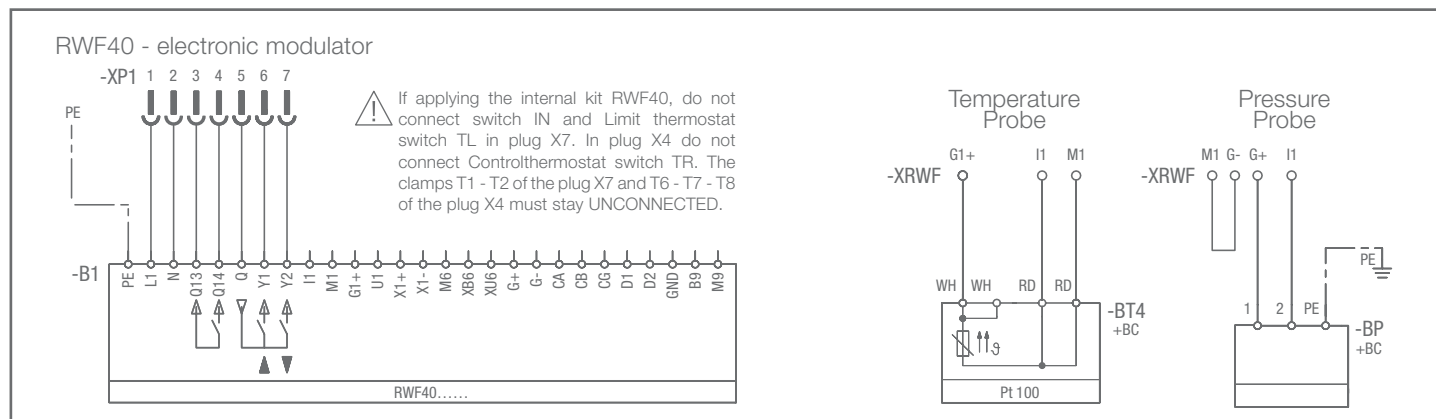
Example of Plug&Socket system for electrical connection of RS 34-44/E MZ.

WIRING LAYOUT KEY

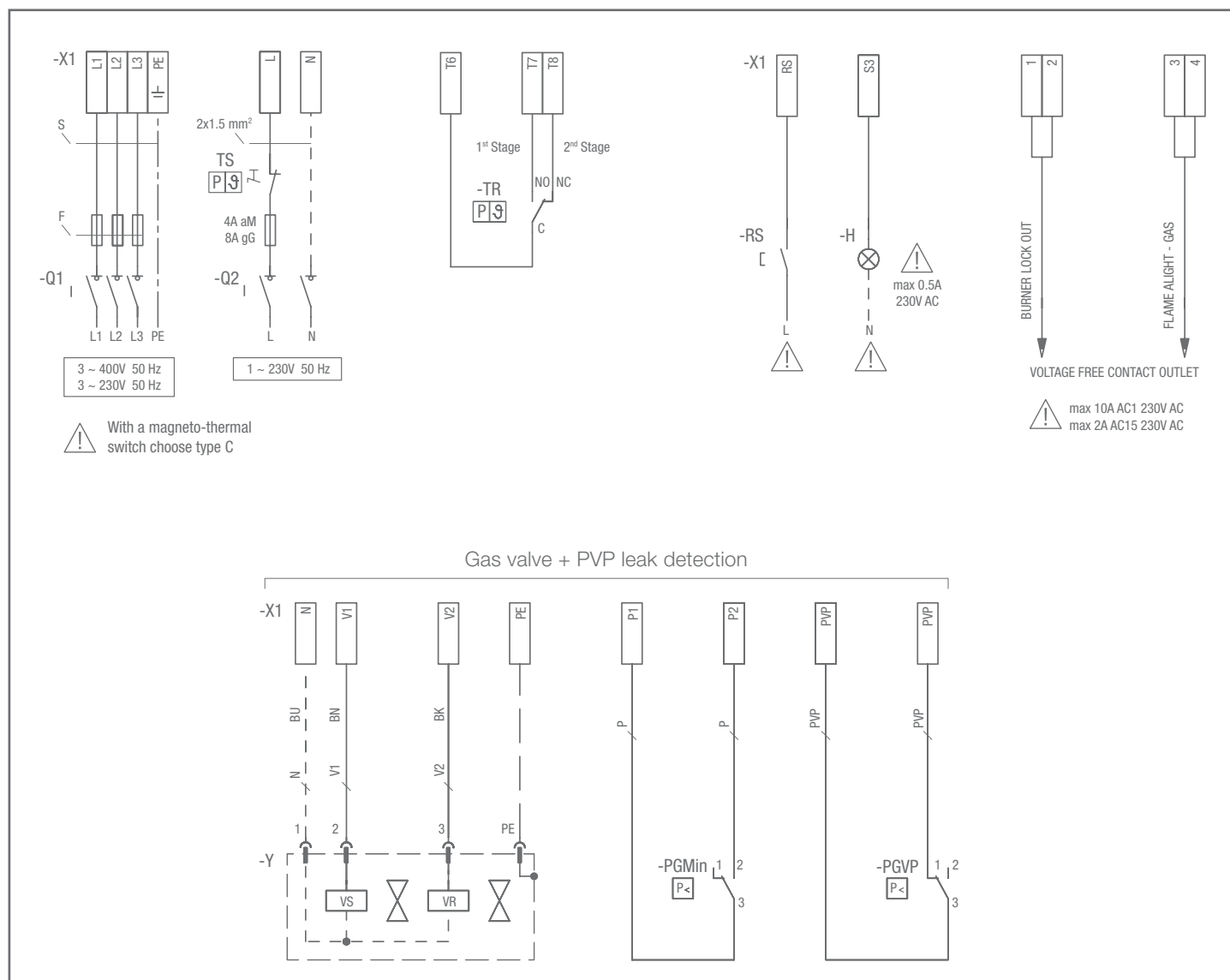
+BC	Boiler components
B1	Output regulator RWF40
BP	Pressure probe
BT4	Probe Pt 100, 3 wires
F1	Fan motor thermal relay
G1	Load indicator
H	Remote lockout signal
h1	Hour counter
IN	Manual burner arrest switch
K1	Burner lockout clean contact relay
K2	Flame present clean contact relay
PGMin	Minimum gas pressure switch
PGVP	Gas pressure switch for valve leak detection control device
Q1	Three-phase disconnecting switch

Q2	Single phase disconnecting switch
RS	Remote burner reset button
TL	Limit thermostat/pressure switch
TR	Adjustment thermostat/pressure switch
TS	Safety thermostat/pressure switch
X1	Burner terminal strip
X4	4 pole plug
X5	5 pole plug
X6	6 pole plug
X7	7 pole plug
XP1	Connector for output power regulator kit RWF40
XRWF	Terminal board for output power regulator RWF40
Y	Gas adjustment valve + gas safety valve

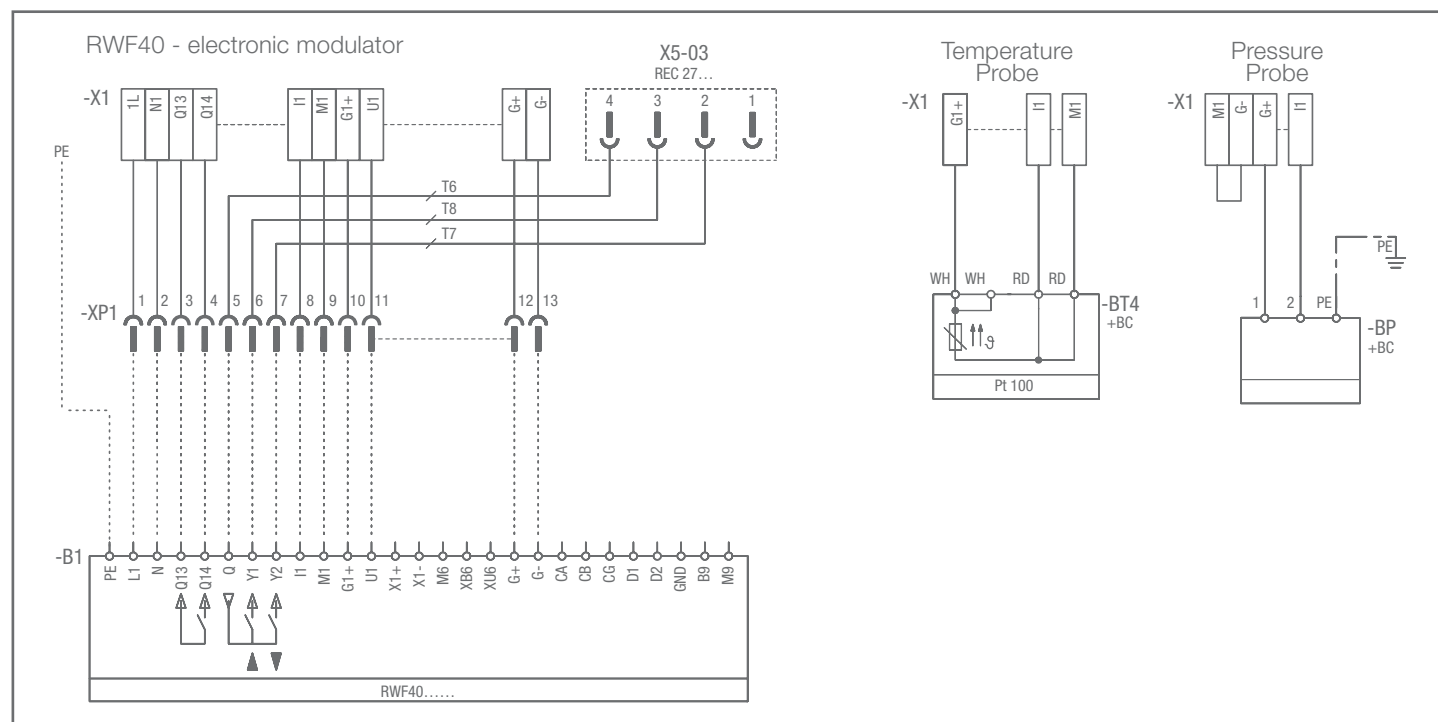
RS 34-44/E MZ ONE PHASE - RS 44-50-64/E MZ THREE PHASE



RS 70-100-130-250/E MZ, RS 190/E THREE PHASE



RS 70-100-130-250/E MZ, RS 190/E THREE PHASE



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

MODEL	V	F (A)	L (mm ²)
► RS 34/E MZ	230	T6	1,5
► RS 44/E MZ	230	T6	1,5
► RS 44/E MZ	230	T6	1,5
	400	T6	1,5
► RS 50/E MZ	230	T6	1,5
	400	T6	1,5
► RS 64/E MZ	230	T10	1,5
	400	T6	1,5
► RS 70/E MZ	230	T10	1,5
	400	T6	1,5

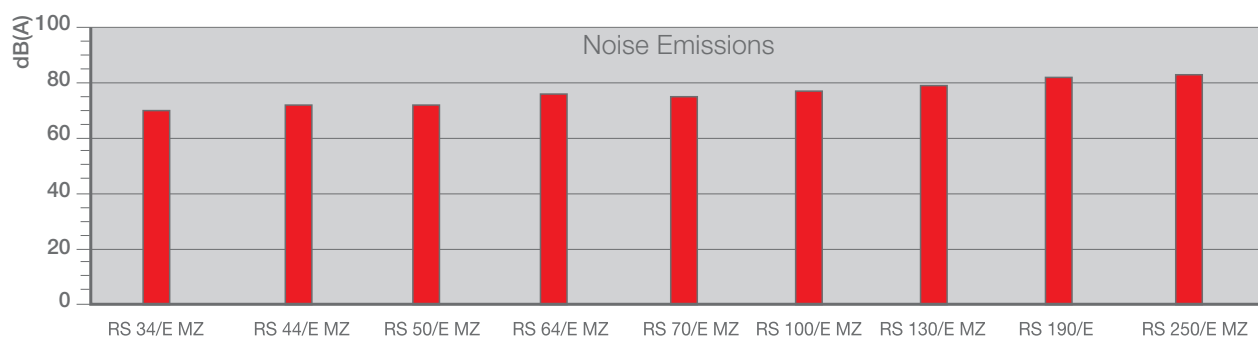
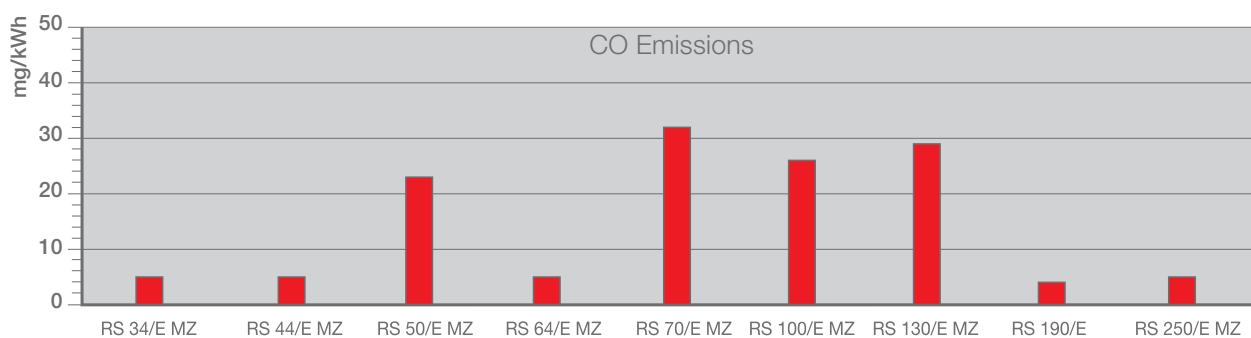
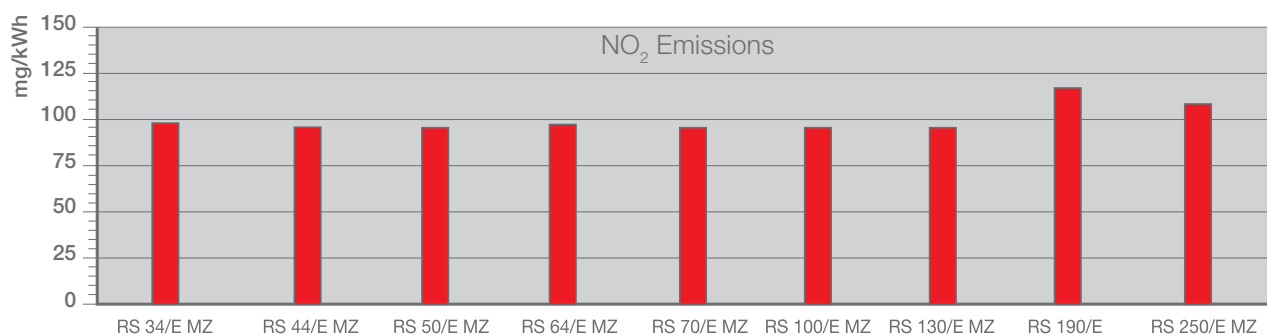
MODEL	V	F (A)	L (mm ²)
► RS 100/E MZ	230	T16	1,5
	400	T10	1,5
► RS 130/E MZ	230	T16	1,5
	400	T10	1,5
► RS 190/E	230	T25	2,5
	400	T25	2,5
► RS 250/E MZ	230	25A aM - 40A gG	6
	400	16A aM - 32A gG	4

V = Electrical supply F = Fuse L = Lead section

Emissions

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

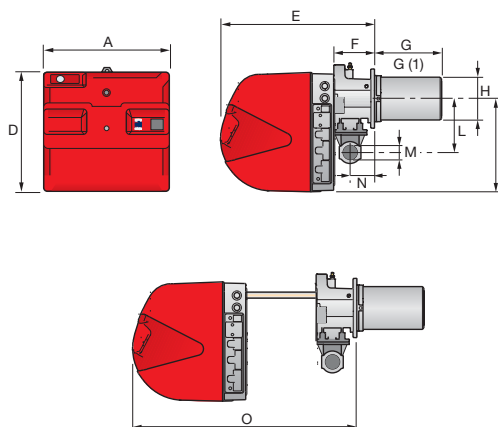
The NO_x emissions are conforming to the class 2 of EN 676 (class 1 for RS 190/E model).



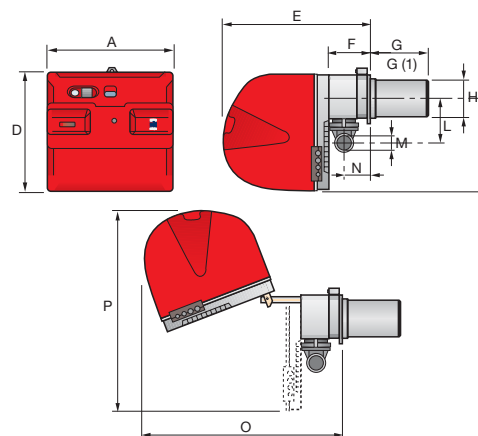
Overall Dimensions (mm)

BURNERS

RS 34-44/E MZ



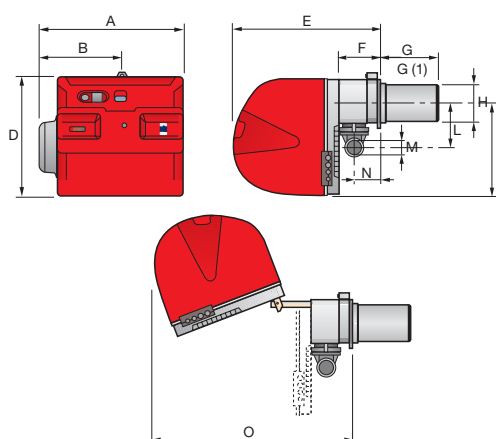
RS 50/E MZ



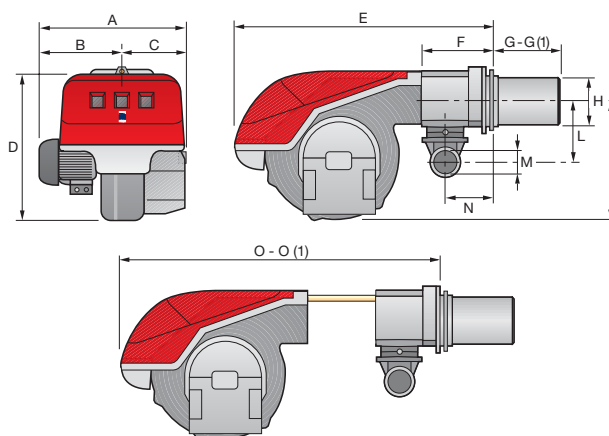
MODEL	A	D	E	F	G - G(1)	H	I	L	M	N	O	P
► RS 34/E MZ	442	422	508	138	216 - 351	140	305	177	1"1/2	84	780	-
► RS 44/E MZ	442	422	508	138	216 - 351	152	305	177	1"1/2	84	780	-
► RS 50/E MZ	476	474	580	164	216 - 351	152	352	168	1"1/2	108	810	719

(1) dimension with extended head

RS 64/E MZ



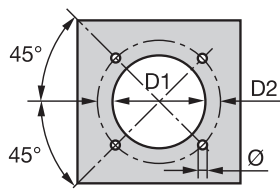
RS 70-100-130-250/E MZ - RS 190/E



MODEL	A	B	C	D	E	F	G - G(1)	H	I	L	M	N	O - O(1)
► RS 64/E MZ	533	300	-	490	640	222	250 - 385	179	352	221	2"	134	810 - -
► RS 70/E MZ	527	312	215	555	840	214	250 - 385	179	430	221	2"	134	1161 - 1296
► RS 100/E MZ	527	312	215	555	840	214	250 - 385	179	430	221	2"	134	1161 - 1296
► RS 130/E MZ	553	338	215	555	840	214	280 - 415	189	430	221	2"	134	1161 - 1296
► RS 190/E	675	370	305	555	856	230	372 - 530	222	436	223	2"	150	1328 - -
► RS 250/E MZ	732	427	305	555	872	230	370 - 520	222	436	264	2"	150	1322 - 1467

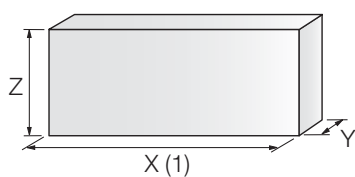
(1) dimension with extended head

BURNER - BOILER MOUNTING FLANGE



MODEL	D1	D2	Ø
► RS 34/E MZ	160	224	M8
► RS 44/E MZ	160	224	M8
► RS 50/E MZ	160	224	M8
► RS 64/E MZ	185	275-325	M12
► RS 70/E MZ	185	275-325	M12
► RS 100/E MZ	185	275-325	M12
► RS 130/E MZ	195	275-325	M12
► RS 190/E	230	325-368	M16
► RS 250/E MZ	230	325-368	M16

PACKAGING



MODEL	X (1)	Y	Z	kg
► RS 34/E MZ	1000	485	500	39
► RS 44/E MZ	1000	485	500	40
► RS 50/E MZ	1200	502	630	48
► RS 64/E MZ	1200	580	630	50
► RS 70/E MZ	1405	700	660	78
► RS 100/E MZ	1405	700	660	81
► RS 130/E MZ	1405	700	660	84
► RS 190/E	1405	1000	660	89
► RS 250/E MZ	1405-1420	1000	660	125

(1) dimension with standard and extended head

Installation Description

Installation, start up and maintenance must be carried out by qualified and skilled personnel.
All operations must be performed in accordance with the technical handbook supplied with the burner.

BURNER SETTING

All the burners have slide bars, for easier installation and maintenance.

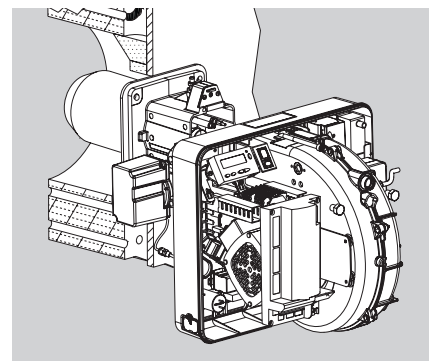
After drilling the boilerplate, using the supplied gasket as a template, dismantle the blast tube from the burner and fix it to the boiler.

Adjust the combustion head.

Fit the gas train, choosing this on the basis of the maximum output of the boiler and considering the enclosed diagrams.

Refit the burner casing to the slide bars.

Close the burner, sliding it up to the flange.



ELECTRICAL CONNECTIONS AND START UP

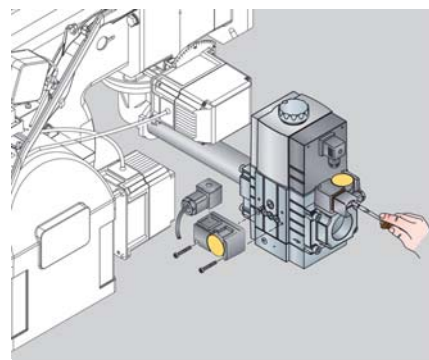
Make the electrical connections to the boiler following the wiring diagrams included in the instruction handbook.

Turn the motor to check rotation direction (if it is a three-phase motor).

Perform a first ignition calibration on the gas train.

On start up, check:

- Gas pressure at the combustion head (to max. and min. output)
- Combustion quality, in terms of unburned substances and excess air.

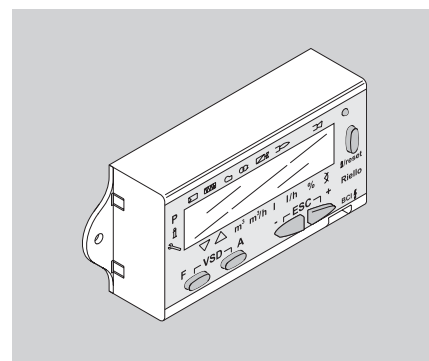
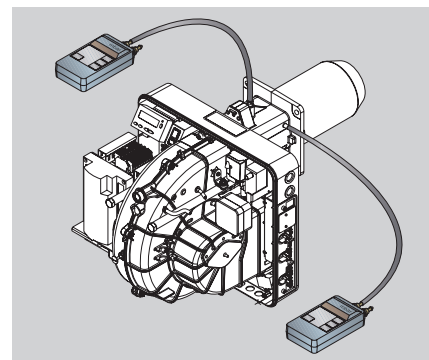


BURNER MAINTENANCE

The maintenance of RS/M burners is very simple thanks to the sliding bars system that allows an easy access to the internal components.

In particular the RS 34-44/E MZ models have a new sliding bars system to make easier the access to the combustion head.

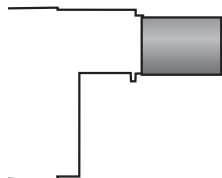
The RS 190/E and RS 250/E MZ have new reinforced sliding bars that make very strong the burner structure during maintenance.



Burner Accessories



Extended heads



“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
► RS 34/E MZ	216	351	in progress
► RS 44/E MZ	216	351	in progress
► RS 50/E MZ	216	351	in progress
► RS 64/E MZ	250	385	in progress
► RS 70/E MZ	250	385	in progress
► RS 100/E MZ	250	385	in progress
► RS 130/E MZ	280	415	in progress
► RS 190/E	372	530	in progress
► RS 250/E MZ	370	520	in progress

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
► RS 34/E MZ - 44/E MZ - RS 50/E MZ	90	3010095
► RS 64/E MZ - RS 70/E MZ - 100/E MZ - 130/E MZ	135	3010129
► RS 190/E - 250/E MZ	110	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
► RS 34/E MZ - 44/E MZ	3010449
► RS 50/E MZ - 70/E MZ - 100/E MZ - 130/E MZ - 190/E - 250/E MZ	3010094

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
► RS 34-44-50-64/E MZ	C1/3	10	3010403
► RS 70-100-130-250/E MZ - RS 190/E	C4/5	10	3010404

(*) according to EN 15036-1 standard

Accessories for modulating operation

REGULATOR



To obtain modulating operation, the RS/E series of burners requires a regulator with three point outlet controls. On RS 34/E MZ - 44/E MZ - 250/E MZ the regulator is connected to the burner electrical wiring by plug-in system in order to make the connection easier and faster.

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

The following table lists the accessories for modulating operation with their application range.

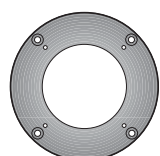
BURNER	TYPE	CODE
► RS 34/E MZ - 44/E MZ	RWF 40	3010417
► RS 50-64-70-100-130-250/E MZ - RS 190/E	RWF 40	3010414

PROBE



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

Connection flange kit



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

BURNER	KIT CODE
► RS 34/E MZ - 44/E MZ - RS 50/E MZ	3010138

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'
► RS 34/E MZ	in progress	in progress
► RS 44/E MZ	in progress	in progress
► RS 50/E MZ	in progress	in progress
► RS 64/E MZ	in progress	in progress
► RS 70/E MZ	in progress	in progress
► RS 100/E MZ	in progress	in progress
► RS 130/E MZ	in progress	in progress
► RS 190/E	in progress	in progress
► RS 250/E MZ	in progress	in progress

Town gas kit



For burning Town gas, a special kit is available:

BURNER	KIT CODE FOR 'STANDARD HEAD' (*)	KIT CODE FOR 'EXTENDED HEAD' (*)
► RS 50/E MZ	in progress	in progress
► RS 70/E MZ	in progress	in progress
► RS 100/E MZ	in progress	in progress
► RS 130/E MZ	in progress	in progress
► RS 190/E	in progress	in progress

(*) Without CE certification

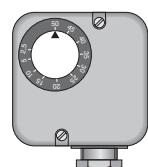
Ground fault interrupter kit



A "Ground fault interrupter kit" is available as a safety device for electrical system fault.

BURNER	KIT CODE
► RS 34/E MZ - 44/E MZ	3010448
► RS 50/E MZ - RS 64/E MZ	3010321
► RS 70-100-130-250/E MZ - RS 190/E	3010329

Gas max pressure switch



If necessary a Gas max pressure Switch kit is available and connectable to the burner electrical wiring trough Plugs & Sockets system.

BURNER	KIT CODE
► RS 34/E MZ - 44/E MZ	3010418

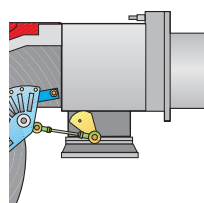
Volt free contact kit



A volt free contact kit is available for installation onto the burner. It can be used for a remote interface between burner operating signals. Every burner can be equipped with a single kit for a remote check of the flame presence signal and the burner lockout indication.

BURNER	KIT CODE
► RS 34/E MZ - 44/E MZ	3010419

DN80 gas flange kit



To modify the standard 2" burner gas input connection in to DN80 connection, a specific gas flange is available.

BURNER	KIT CODE
► RS 64-70-100-130-250/E MZ - RS 190/E	3010439

OCI410 interface for ACS410 software kit



Interface kit between burner management system and PC. It facilitates viewing, handling and recording setting parameters on site.

BURNER	KIT CODE
► RS 34-44-64-70-100-130-250/E MZ - RS 190/E	3010436

OCI412 interface kit



Interface kit between the REC27.100A2 and a Modbus system, such as a building automation and control system (BACS).

The Modbus interface is based on the RS-485 standard.

BURNER	KIT CODE
► RS 34-44-64-70-100-130-250/E MZ - RS 190/E	3010437

Gas Train Accessories

Stabiliser spring

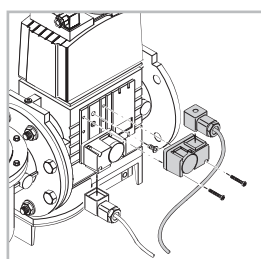


Accessory springs are available to vary the pressure range of the gas train stabilisers. The following table shows these accessories with their application range.

GAS TRAIN	SPRING	SPRING CODE
► MBC 1900 MBC 3100 MBC 5000	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.

PVP (Pressure Valve Proving) kit *



The seal control function is included on Burner Digital Management System, it is only necessary to add the PVP kit on the gas train.

The PVP is included as standard equipment on RS 130/E-250/E MZ and RS 190/E models.

BURNER	KIT CODE
► MBD type - MBC type **	3010344

* not necessary for the RS 130/E-250/E MZ and RS 190/E models where is included as a standard.

** MBC 120 model excluded (integrated seal control is not available with this gas train).

Adapters



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

BURNER	GAS TRAIN	DIMENSIONS	ADAPTER CODE
► RS 34/E MZ	MBC 120 - MBD 407	3/4"  1" 1/2	3000824
	MBD 420	2"  1" 1/2	3000822
► RS 44/E MZ	MBC 120 - MBD 407	3/4"  1" 1/2	3000824
	MBD 420	2"  1" 1/2	3000822
► RS 50/E MZ	MBC 120 - MBD 407	3/4"  1" 1/2	3000824
	MBD 420 - MBC 1200	2"  1" 1/2	3000822
► RS 64/E MZ	MBD 407	3/4"  1" 1/2	3000824
		1" 1/2  2"	3000843
	MBD 415	1" 1/2  2"	3000843
► RS 70/E MZ	MBD 412	1" 1/4  2"	3010126
	MBD 415	1" 1/2  2"	3000843
	MBD 415	1" 1/2  2"	3000843
► RS 100/E MZ	MBC 1900	 1" 1/2	3000825
		DN 65  2" 1/2  2"	
	MBD 415	1" 1/2  2"	3000843
► RS 130/E MZ	MBC 1900	 1" 1/2	3000825
		DN 65  2" 1/2  2"	
	MBC 3100	DN 80  2" 1/2  2"	3000826
	MBD 415	1" 1/2  2"	3000843
► RS 190/E	MBC 1900	 1" 1/2	3000825
		DN 65  2" 1/2  2"	
	MBC 3100	DN 80  2" 1/2  2"	3000826
► RS 250/E MZ	MBC 1900	DN 65  2" 1/2  1" 1/2	3000825
	MBC 3100	DN 80  2" 1/2  2"	3000826

Specification

DESIGNATION OF SERIES

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

Series: R									
Fuel: S Natural Gas									
SP LPG									
L Light oil									
LS Light oil/Methane									
N Heavy oil									
Size									
Setting: /1 Single stage									
... Two stage									
/M Modulating									
Emission: ... Class 1 EN267 - EN676									
MZ Class 2 EN267 - EN676									
BLU Class 3 EN267 - EN676									
MX Class 1 EN267									
Class 3 EN676									
Head length: TC standard head									
TL extended head									
Flame control system:									
FS1 Standard (1 stop every 24 h)									
FS2 Continuous working (1 stop every 72 h)									
Electrical supply to the system:									
1/230/50 1/230V/50Hz									
1/220-230/50-60 1/220-230V/50-60Hz									
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									
3/220-400/50-60 3/220-230V/50-60Hz									
3/380-400V/50-60Hz									
Auxiliary voltage:									
230/50-60 230V/50-60Hz									
220-230/50-60 220-230V/50-60Hz									
110/50-60 110V/50-60Hz									
ID: Differential switch									
R	S	50	/E	MZ	TC	FS1	3/230-400/50	230/50-60	
BASIC DESIGNATION									
EXTENDED DESIGNATION									

AVAILABLE BURNER MODELS

RS 34/E MZ	TC	FS1	1/220-230/50-60	220-230/50-60
RS 34/E MZ	TL	FS1	1/220-230/50-60	220-230/50-60
RS 44/E MZ	TC	FS1	1/220-230/50-60	220-230/50-60
RS 44/E MZ	TL	FS1	1/220-230/50-60	220-230/50-60
RS 44/E MZ	TC	FS1	3/220-400/50-60	220-230/50-60
RS 44/E MZ	TL	FS1	3/220-400/50-60	220-230/50-60
RS 50/E MZ	TC	FS1	3/230-400/50	230/50-60
RS 50/E MZ	TL	FS1	3/230-400/50	230/50-60
RS 64/E MZ	TC	FS1	3/230-400/50	230/50-60
RS 64/E MZ	TL	FS1	3/230-400/50	230/50-60
RS 70/E MZ	TC	FS1	3/230-400/50	230/50-60
RS 70/E MZ	TL	FS1	3/230-400/50	230/50-60
RS 100/E MZ	TC	FS1	3/230-400/50	230/50-60
RS 100/E MZ	TL	FS1	3/230-400/50	230/50-60
RS 130/E MZ	TC	FS1	3/230-400/50	230/50-60
RS 130/E MZ	TL	FS1	3/230-400/50	230/50-60
RS 190/E	TC	FS1	3/230-400/50	230/50-60
RS 250/E MZ	TC	FS1	3/230/50	230/50-60
RS 250/E MZ	TL	FS1	3/230/50	230/50-60
RS 250/E MZ	TC	FS1	3/400/50	230/50-60
RS 250/E MZ	TL	FS1	3/400/50	230/50-60

Other versions are available on request.

PRODUCT SPECIFICATION

RS 34/E MZ - 44/E MZ models

Burner

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Microprocessor-based Digital Burner Management System (Electronic Cam)
- Display Interface operating unit to adjust the system
- Air suction circuit
- High performance fan with straight blades
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- Starting motor at 2800 rpm, single-phase/220-230V/50-60Hz or three-phase/380-400V/50-60Hz
- 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
 - ionisation probe
 - gas distributor
 - flame stability disk
- Exclusive patented HCS (Housing Cooling System) with high thermal insulation and air circulation with continuous air volume refresh for an active cooling system and avoid heat transfer to the electrical component housing
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Plugs and sockets for electrical connection, accessible from the external of the cover
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) electric protection level.

Gas train:

Fuel supply line in the MULTIBLOC configuration (from a diameter of 3/4" until a diameter of 2") fitted with:

- MULTIBLOC with integrated filter
- minimum gas pressure switch.

Conforming to:

- 89/336 (2004/108) EC directive (electromagnetic compatibility)
- 73/23 (2006/95) EC directive (low voltage)
- 92/42/EC directive (performance)
- 90/396/EC directive (gas)
- EN 676 (gas burners).

Standard equipment:

- 1 gas train gasket
- 1 flange gasket
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- 3 plugs for electrical connection (RS 34-44/E MZ single-phase)
- 4 plugs for electrical connection (RS 44/E MZ three-phase)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Extended head kit
- Spacer kit
- Continuous ventilation kit
- Sound-proofing box
- RWF 40 output regulator
- Temperature probe -100 ÷ 500°C

- Pressure probe 0 ÷ 2.4 bar
- Pressure probe 0 ÷ 16 bar
- Connection flange kit
- LPG kit
- Ground fault interrupter kit
- Gas max pressure switch
- Volt free contact kit
- OCI410 interface for ACS410 software kit
- OCI412 modbus interface kit
- Gas train adapter
- PVP (pressure valve proving) kit.

RS 50/E MZ - 64/E MZ - 70/E MZ - 100/E MZ - 130/E MZ - 190/E - 250/E MZ models

Burner

Monoblock forced draught Low NOx gas burner with two stage progressive or modulating operation, with a specific kit, fully automatic, made up of:

- Microprocessor-based Digital Burner Management System (Electronic Cam)
- Display Interface operating unit to adjust the system
- Air suction circuit lined with sound-proofing material
- Fan with reverse curve blades (straight blades on the RS 64/E MZ - 190/E - 250/E MZ models) high performance with low sound emissions
- Air damper for air flow setting and butterfly valve for regulating fuel output controlled by independent stepper motor actuators
- 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
 - ionisation probe
 - 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
- Burner on/off selection switch
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 44 electric protection level.

Gas train:

Fuel supply line in the MULTIBLOC configuration (from a diameter of 3/4" until a diameter of 2") fitted with:

- MULTIBLOC with integrated filter
- minimum gas pressure switch

Fuel supply line the COMPOSED configuration (from a diameter of DN 65 until a diameter of DN 80), fitted with:

- filter
- MULTIBLOC
- minimum gas pressure switch.

Conforming to:

- 89/336 (2004/108) EC directive (electromagnetic compatibility)
- 73/23 (2006/95) EC directive (low voltage)
- 92/42/EC directive (performance)
- 90/396/EC directive (gas)
- EN 676 (gas burners).

Standard equipment:

- 1 gas train gasket
- 1 flange gasket
- 4 screws for fixing the flange
- 1 thermal screen
- 4 screws for fixing the burner flange to the boiler
- Wiring loom fittings for the electrical connection
- 2 slide bar extensions (for extended head models and RS 190/E - 250/E MZ models)
- Pressure switch for valve proofing system (RS 130/E MZ - 190/E - 250/E MZ models)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:

- Extended head kit
- Spacer kit
- Continuous ventilation kit
- Sound-proofing box
- RWF 40 output regulator
- Temperature probe $-100 \div 500^{\circ}\text{C}$
- Pressure probe $0 \div 2.4 \text{ bar}$
- Pressure probe $0 \div 16 \text{ bar}$
- Connection flange kit
- LPG kit
- Town gas kit
- Ground fault interrupter kit
- OCI410 interface for ACS410 software kit
- OCI412 modbus interface kit
- Gas train adapter
- DN80 gas flange kit
- PVP (pressure valve proving) kit
- Stabiliser spring.

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