# Technical Data Leaflet

Gas

TS0045UK03

# RS/1 Series

## One Stage Gas Burners


| | | | | |
|---|---|---|---|---|
| RS 34/1 MZ | 70 | ÷ | 390 | kW |
| RS 44/1 MZ | 101 | ÷ | 550 | kW |

The RS/1 series of burners covers a firing range from 70 to 550 kW, and they have been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.
Operation is “one stage”; the burners are fitted with a microprocessor control panel which supplies indication of operation and diagnosis of fault cause. Optimisation of sound emissions is guaranteed by the special design of the air suction circuit.
The elevated performance of the fans and combustion head, guarantee flexibility of use and excellent working at all firing rates.
The exclusive design ensures reduced dimensions, simple use and maintenance. A wide range of accessories guarantees elevated working flexibility.

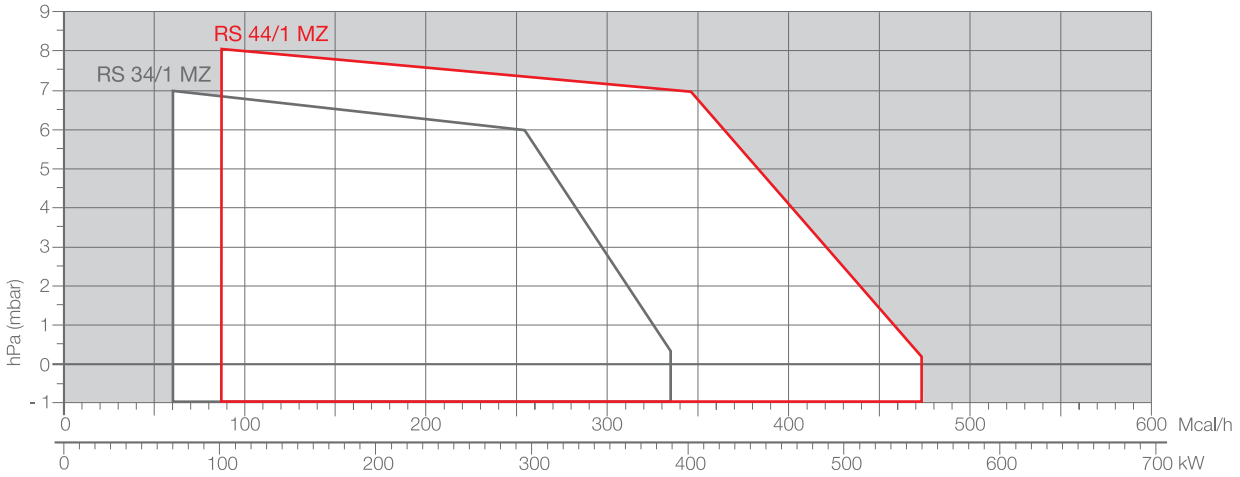
RIELLO BURNERS

# Technical Data

| MODEL | | | RS 34/1 MZ | RS 44/1 MZ |
|---|---|---|---|---|
| Burner operation mode | | | One stage | |
| Modulation ratio at max. output | | | -- | |
| Servomotor | | type | -- | |
| | run time | s | -- | |
| Heat output | | kW | 70÷390 | 101÷550 |
| | | Mcal/h | 60÷335 | 87÷473 |
| Working temperature | | °C min./max. | 0/40 | |
| FUEL/AIR DATA | | | | |
| Net calorific value G20 gas | | kWh/Nm³ | 10 | |
| G20 density gas | | kg/Nm³ | 0,71 | |
| G20 gas delivery | | Nm³/h | 7÷39 | 10÷55 |
| Net calorific value G25 gas | | kWh/Nm³ | 8,6 | |
| G25 density gas | | kg/Nm³ | 0,78 | |
| G25 delivery gas | | Nm³/h | 8÷45 | 12÷64 |
| Net calorific value LPG gas | | kWh/Nm³ | 25,8 | |
| LPG gas density | | kg/Nm³ | 2,02 | |
| LPG gas delivery | | Nm³/h | 3÷15 | 4÷21 |
| Fan | | type | Centrifugal with forward curve blades | |
| Air temperature | | Max. °C | 60 | |
| ELECTRICAL DATA | | | | |
| Electrical supply | | Ph/Hz/V | 1/50-60/220-230~(±10%) | |
| Auxiliary electrical supply | | Ph/Hz/V | 1/50-60/220-230~(±10%) | |
| Control box | | type | RMG | |
| Total electrical power | | kW | 0,6 | 0,7 |
| Auxiliary electrical power | | kW | 0,3 | 0,28 |
| Protection level | | IP | 40 | 40 |
| Motor electrical power | | kW | 0,3 | 0,42 |
| Rated motor current | | A | 3,2 | 3,5 |
| Motor start current | | A | 15 | 17 |
| Motor protection level | | IP | 54 | 54 |
| | | type | | |
| Ignition transformer | | V1 - V2 | 230V - 1x15 kV | 230V - 1x15 kV |
| | | I1 - I2 | 1A - 25 mA | 1A - 25 mA |
| Operation | | | Intermittent (at least one stop every 24 h) | |
| EMISSIONS | | | | |
| Sound pressure | | dBA | 70 | 72 |
| Sound power | | 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 | | | CE 0085BR0380 | CE 0085BR0380 |

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

# FIRING RATES




Useful working field for choosing the burner

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

# Fuel Supply

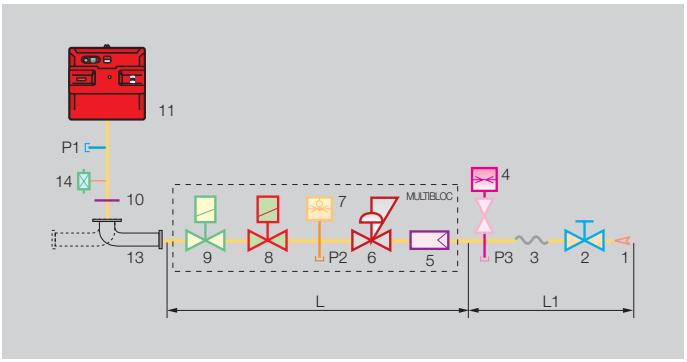
## GAS TRAINS

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

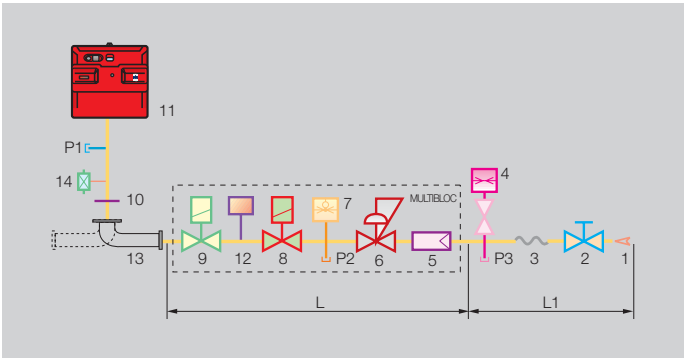
The gas train can be selected to best fit system requirements depending on the fuel output and pressure in the supply line.
The gas train can be “Multibloc” type (containing the main components in a single unit) or “Composed” type (assembly of the single components).
The gas train can be, also, “One stage” or “Two stage” type.
Conforming to EN676 Standard the one stage gas train can be used up to a capacity of 350 kW.

Example of the gas train connection flange of RS/1 burners.

### MULTIBLOC gas train without seal control

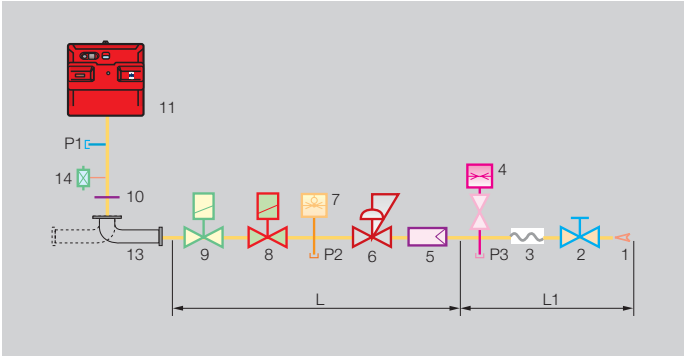



### MULTIBLOC gas train without seal control

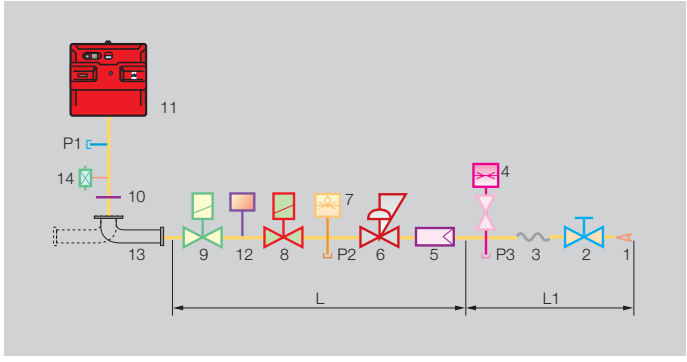



| | |
|---|---|
| 1 | Gas input pipework |
| 2 | Manual valve |
| 3 | Anti-vibration joint |
| 4 | Pressure gauge with pushbutton cock |
| 5 | Filter |
| 6 | Pressure regulator (vertical) |
| 7 | Minimum gas pressure switch |
| 8 | VS safety solenoid (vertical) |
| 9 | VR regulation solenoid (vertical)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

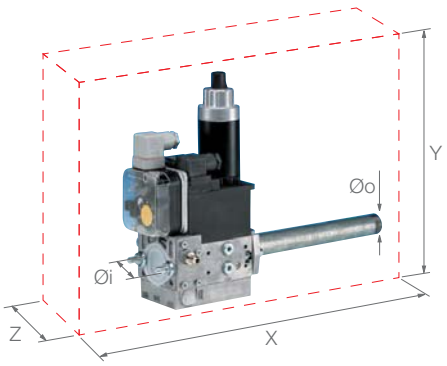
### COMPOSED gas train without seal control



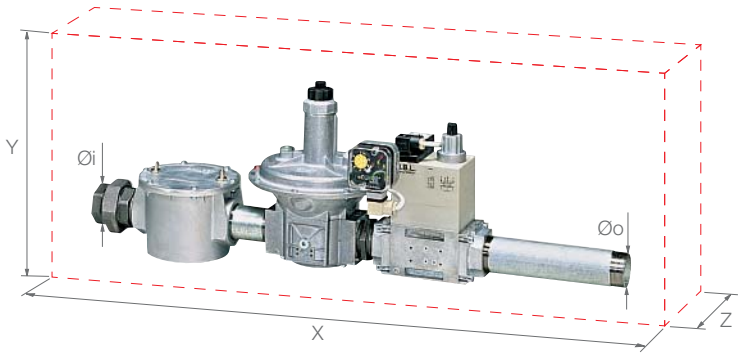

### COMPOSED gas train with seal control



Gas trains are approved by standard EN 676 together with the burner.
The overall dimensions of the gas train depends on how they are constructed. The following table shows the maximum dimensions of the gas trains that can be fitted to RS/1 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.




Example of gas train “MULTIBLOC” type without seal control




Example of gas train “COMPOSED” type without seal control

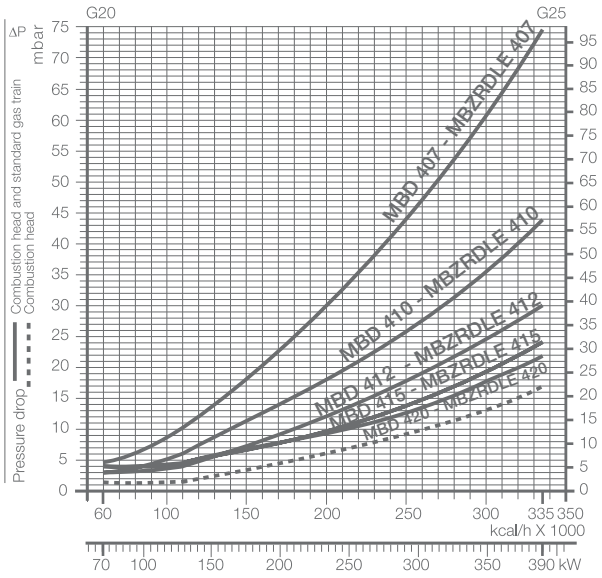
| | | NAME | CODE | Ø i | Ø o | X mm | Y mm | Z mm | OUTPUT PRESSURE RANGE (mbar) | SEAL CONTROL |
|---|---|---|---|---|---|---|---|---|---|---|
| ONE STAGE GAS TRAINS | MULTIBLOC GAS TRAINS | MBD 405 | 3970500 (1)<br>3970553 (1) | 3/4” | 3/4” | 371 | 186 | 120 | 4 - 20 | Accessory |
| | | MBD 407 | 3970229 (2)<br>3970599 (1)(3)<br>3970554 (1) | 3/4” | 3/4” | 371 | 196 | 120 | 4 - 20 | Accessory |
| | | MBD 410 | 3970230 (2)<br>3970600 (1)(3)<br>3970144 (1) | 1” | 3/4” | 405 | 217 | 145 | 4 - 20 | Accessory |
| | | MBD 412 | 3970231 (2)<br>In progress (1)(3) | 1”1/4 | 1”1/4 | 433 | 217 | 145 | 4 - 20 | Accessory |
| | | MBD 412 CT | 3970197 (1)<br>3970180 (1) | 1”1/4 | 1”1/4 | 433 | 217 | 262 | 4 - 20 | Incorporated |
| | | MBD 415 | 3970232 (2)<br>3970250 (1)(3) | 1”1/2 | 1”1/2 | 523 | 250 | 100 | 4 - 33 | Accessory |
| | | MBD 415 CT | 3970198 (1)<br>3970253 (1)(3) | 1”1/2 | 1”1/2 | 523 | 250 | 227 | 4 - 33 | Incorporated |
| | | MBD 420 | 3970181 (1)<br>3970233 (2)<br>3970182 (1) | 2” | 2” | 523 | 300 | 100 | 4 - 33 | Accessory |
| | | MBD 420 CT | 3970234 (2)<br>3970252 (1)(3) | 2” | 2” | 523 | 300 | 227 | 4 - 33 | Incorporated |
| TWO STAGE GAS TRAINS | MULTIBLOC GAS TRAINS | MBZRDLE 407 | 3970046 (1) | 3/4” | 3/4” | 371 | 256 | 120 | 4 - 20 | - |
| | | MBZRDLE 410 | 3970079 (1) | 1” | 3/4” | 405 | 315 | 145 | 4 - 20 | - |
| | | MBZRDLE 412 | 3970152 (1) | 1”1/4 | 1”1/4 | 433 | 315 | 145 | 4 - 20 | - |
| | | MBZRDLE 415 | 3970183 (1) | 1”1/2 | 1”1/2 | 523 | 350 | 100 | 4 - 33 | - |
| | | MBZRDLE 420 | 3970184 (1) | 2” | 2” | 523 | 410 | 100 | 4 - 33 | - |
| | | MBZRDLE 420 CT | 3970185 (1) | 2” | 2” | 523 | 410 | 227 | 4 - 33 | Incorporated |

(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) Gas Train S52 type for application with high combustion head pressure drop.

# PRESSURE DROP DIAGRAM

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

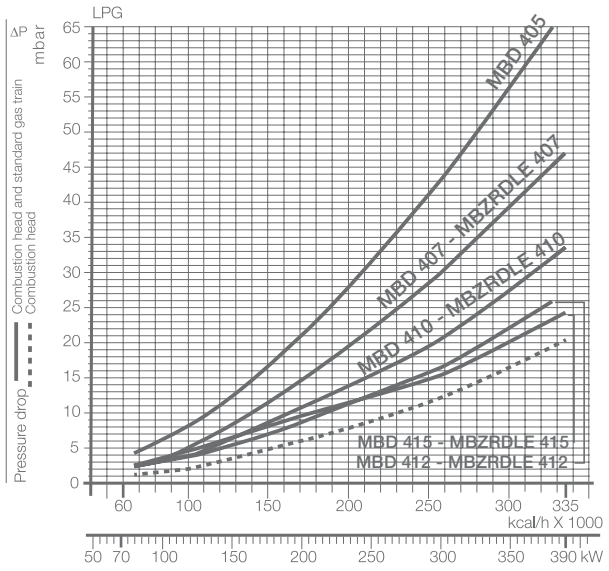
## RS 34/1 MZ (NATURAL GAS)




| GAS TRAIN | CODE | ADAPTER | SEAL CONTROL |
|---|---|---|---|
| MBD 405 | 3970500 (1) | 3000824 | Accessory |
| | 3970553 (1) | 3000824 | Accessory |
| MBD 407 | 3970229 (2) | 3000824 | Accessory |
| | 3970599 (1)(3) | 3000824 | Accessory |
| MBZRDLE 407 | 3970046 (1) | 3000824 | Accessory |
| | 3970554 (1) | 3000824 | Accessory |
| MBD 410 | 3970230 (2) | 3000824 | Accessory |
| | 3970600 (1)(3) | 3000824 | Accessory |
| MBZRDLE 410 | 3970079 (1) | 3000824 | Accessory |
| MBD 412 | 3970144 (1)<br>3970231 (2) | -- | Accessory<br>Accessory |
| MBD 412 CT | 3970197 (1) | - | Incorporated |

(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.

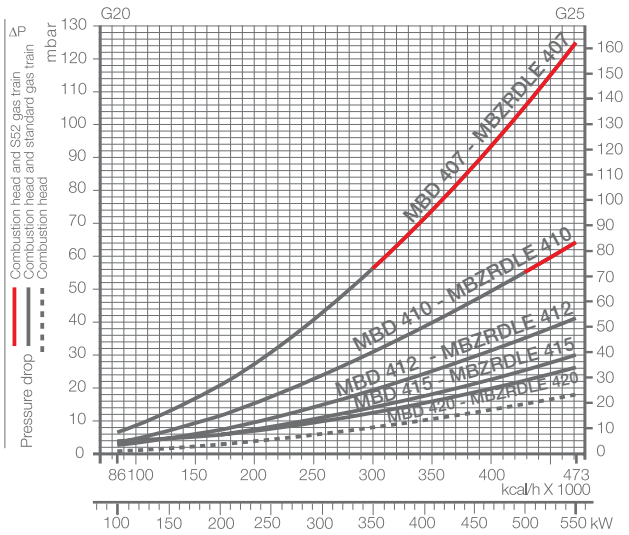
## RS 34/1 MZ (LPG)




| GAS TRAIN | CODE | ADAPTER | SEAL CONTROL |
|---|---|---|---|
| MBZRDLE 412 | 3970152 (1) | - | Accessory |
| MBD 415 | 3970180 (1)<br>3970232 (2) | -- | Accessory<br>Accessory |
| MBD 415 CT | 3970198 (1)<br>3970253 (1)(3) | -- | Incorporated<br>Incorporated |
| MBZRDLE 415 | 3970183 (1) | - | Accessory |
| MBD 420 | 3970181 (1)<br>3970233 (2) | 3000822<br>3000822 | Accessory<br>Accessory |
| MBD 420 CT | 3970182 (1)<br>3970234 (2)<br>3970252 (1)(3) | 3000822<br>3000822<br>3000822 | Incorporated<br>Incorporated<br>Incorporated |
| MBZRDLE 420 | 3970184 (1) | 3000822 | Accessory |
| MBZRDLE 420 CT | 3970185 (1) | 3000822 | Incorporated |

(3) Gas Train S52 type for application with high combustion head pressure drop.

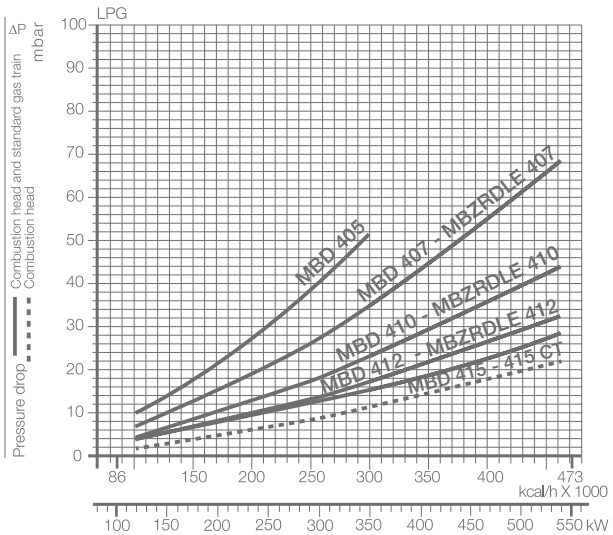
## RS 44/1 MZ (NATURAL GAS)




| GAS TRAIN | CODE | ADAPTER | SEAL CONTROL |
|---|---|---|---|
| MBD 405 | 3970500 (1) | 3000824 | Accessory |
| | 3970553 (1) | 3000824 | Accessory |
| MBD 407 | 3970229 (2) | 3000824 | Accessory |
| | 3970599 (1)(3) | 3000824 | Accessory |
| MBZRDLE 407 | 3970046 (1) | 3000824 | Accessory |
| | 3970554 (1) | 3000824 | Accessory |
| MBD 410 | 3970230 (2) | 3000824 | Accessory |
| | 3970600 (1)(3) | 3000824 | Accessory |
| MBZRDLE 410 | 3970079 (1) | 3000824 | Accessory |
| MBD 412 | 3970144 (1) | -- | Accessory |
| | 3970231 (2) | | Accessory |
| MBD 412 CT | 3970197 (1) | - | Incorporated |
| MBZRDLE 412 | 3970152 (1) | - | Accessory |
| | 3970180 (1) | - | Accessory |

(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 44/1 MZ (LPG)




| GAS TRAIN | CODE | ADAPTER | SEAL CONTROL |
|---|---|---|---|
| MBD 415 | 3970232 (2) | - | Accessory |
| | 3970250 (1)(3) | - | Accessory |
| MBD 415 CT | 3970198 (1) | -- | Incorporated |
| | 3970253 (1)(3) | | Incorporated |
| MBZRDLE 415 | 3970183 (1) | - | Accessory |
| MBD 420 | 3970181 (1) | 3000822 | Accessory |
| | 3970233 (2) | 3000822 | Accessory |
| MBD 420 CT | 3970182 (1) | 3000822 | Incorporated |
| | 3970234 (2) | 3000822 | Incorporated |
| | 3970252 (1)(3) | 3000822 | Incorporated |
| MBZRDLE 420 | 3970184 (1) | 3000822 | Accessory |
| MBZRDLE 420 CT | 3970185 (1) | 3000822 | Incorporated |

(3) Gas Train S52 type for application with high combustion head pressure drop.

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

# SELECTING THE FUEL SUPPLY LINES

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

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

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

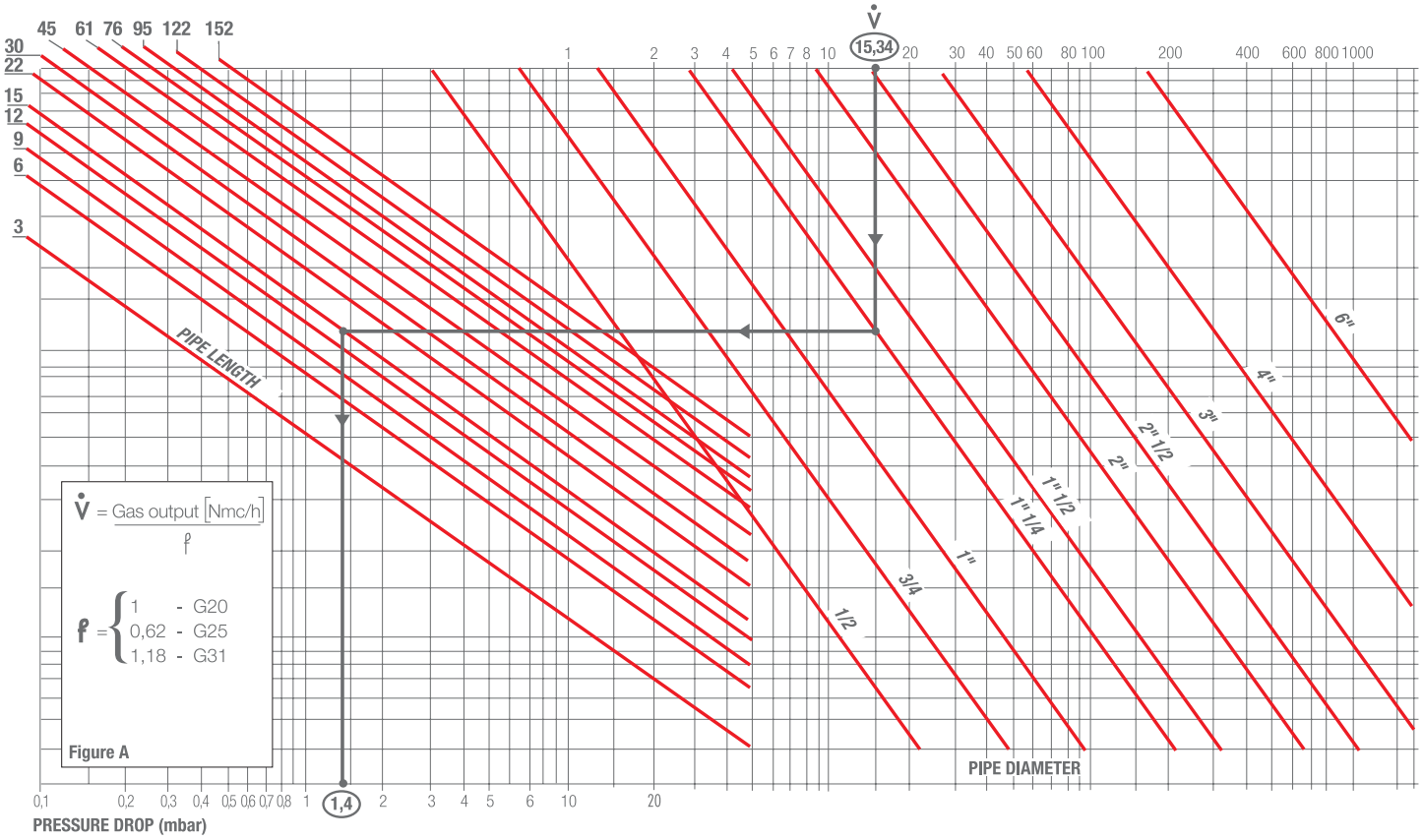
**Example**:

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

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

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

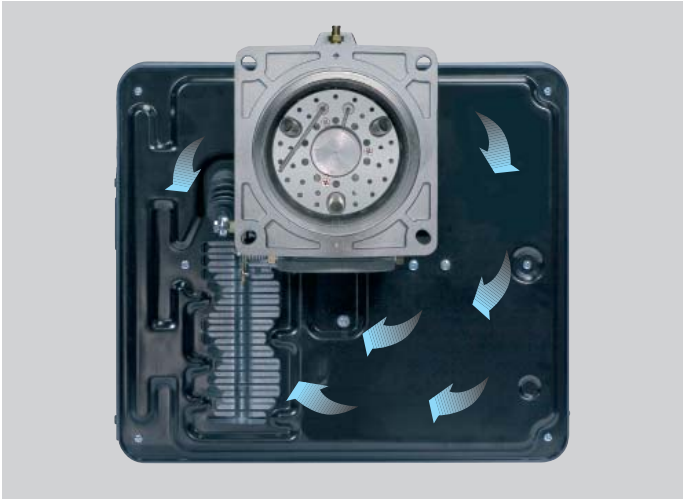
- correct pressure = ( 20-1.4 ) = 18.6 mbar



# Ventilation

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

The RS 34-44/1 MZ models, noise has been reduced by the special design of the air suction circuit.
The RS 34/1 MZ and RS 44/1 MZ are realised with a new 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 HCS (Housing Cooling System) working concept.

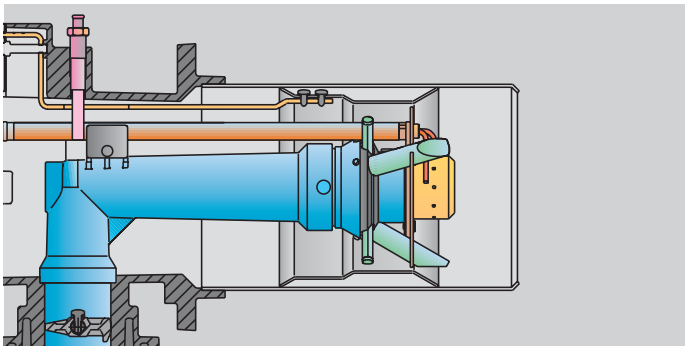
# Combustion Head

Different lengths of the combustion head can be chosen for the RS/1 series of burners.

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

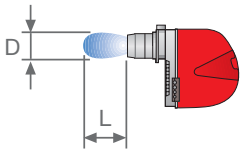
Depending on the type of generator, check that the penetration of the head into the combustion chamber is correct.

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

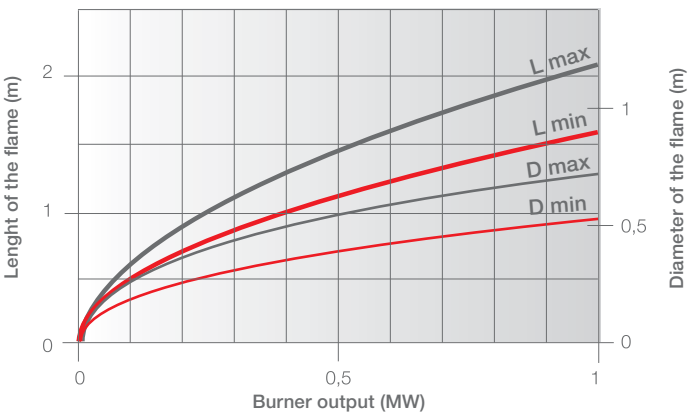


Example of a RS/1 burner combustion head.

## DIMENSIONS OF THE FLAME




**Example**:
Burner thermal output = 500 kW;
**L** flame (m) = 1,3 m (medium value);
**D** flame (m) = 0,45 m (medium value)



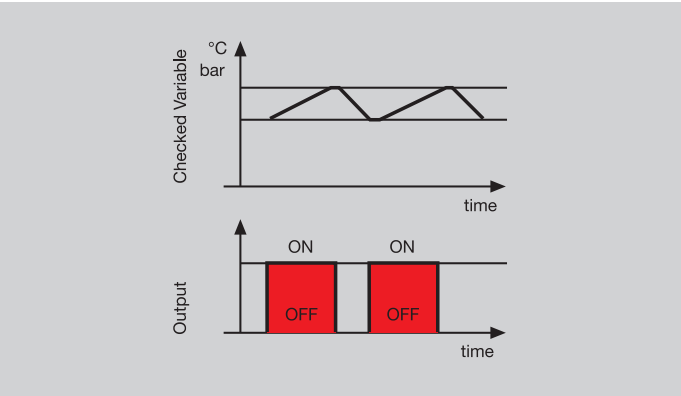
# Operation

## BURNER OPERATION MODE

The burner of RS/1 series is one stage working.

On “one stage” operation, the burner adjusts output to the requested level, by varying between on-off phases (see picture A).

### “ONE STAGE” OPERATION




Picture A

All RS/1 series burners are fitted with a new microprocessor control panel for the supervision during intermittent operation.
For helping the commissioning and maintenance work, there are two main elements:

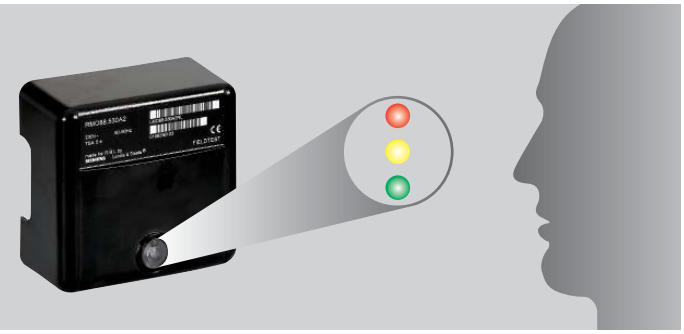

The lock-out reset button is the central **operating element** for resetting the burner control and for activating / deactivating the diagnostic functions.

The multi-color LED is the central **indication element** for visual diagnosis and interface diagnosis.

Both elements are located under the transparent cover of lock-out reset button, as showed below.

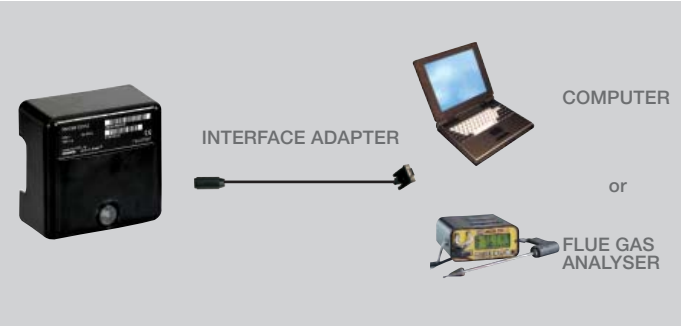

There are two diagnostic choices, for indication of operation and diagnosis of fault cause:

### VISUAL DIAGNOSIS



## INTERFACE DIAGNOSIS

by the interface adapter and a PC with dedicated software or by a predisposed flue gas analyzer (see paragraph accessories).




## INDICATION OF OPERATION

In normal operation, the various status are indicated in the form of colour codes according to the table below.
The interface diagnosis (with adapter) can be activated by pressing the lock-out button for > 3 seconds.

| COLOR CODE TABLE | |
|---|---|
| Operation status | Color code table |
| Stand-by | |
| Pre-purging | |
| Ignition phase | |
| Flame OK | |
| Poor flame | |
| Undervoltage, built-in fuse | |
| Fault, alarm | |
| Flame simulation | |

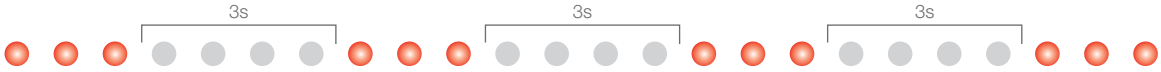
LED off

## DIAGNOSIS OF FAULT CAUSES

After lock-out has occurred, the red signal lamp is steady on. In this status, the visual fault diagnosis according to the error code table can be activated by pressing the lock-out reset button for > 3 seconds.
The interface diagnosis (with adapter) can be activated by pressing again the lock-out button for > 3 seconds.

The flashing of red LED are a signal with this sequence:

(e.g. signal with n° 3 flashes – faulty air pressure monitor)



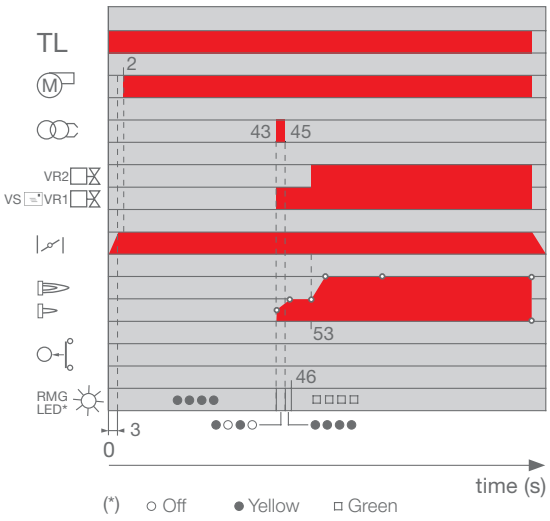

( LED off)

## ERROR CODE TABLE

| POSSIBLE CAUSE OF FAULT | | FLASH CODE |
|---|---|---|
| No establishment of flame at the end of safety time: | - faulty or soiled fuel valves<br>- faulty or soiled flame detector<br>- poor adjustment of burner, no fuel<br>- faulty ignition equipment | 2x flashes |
| Faulty air pressure monitor | | 3x flashes |
| Extraneous light or simulation of flame on burner start up | | 4x flashes |
| Loss of flame during operation: | - faulty or soiled fuel valves<br>- faulty or soiled flame detector<br>- poor adjustment of burner | 7x flashes |
| Wiring error or internal fault | | 10x flashes |

## START UP CYCLE

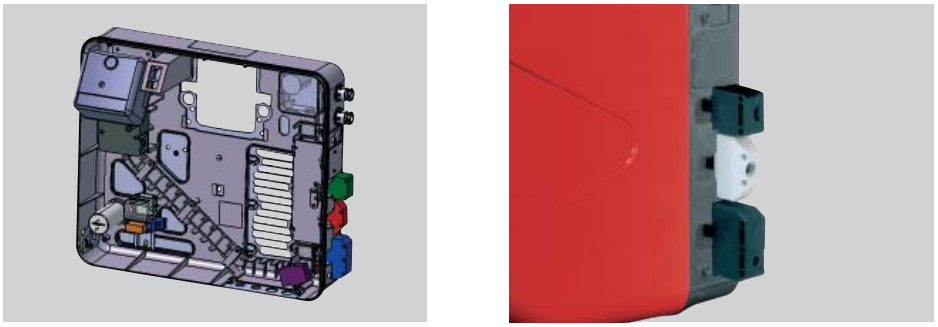
RS 34/1 MZ - 44/1 MZ




| | |
|---|---|
| 0 s | The burner begins the firing cycle. |
| 2 s | The motor starts: pre-purge phase. |
| 43 s | Ignition electrode sparks; safety valve VS and adjustment valve VR open. |
| 45 s | The spark goes out. |
| 53 s | Output can be increased; start up cycle is concluded. |

# Burner Wiring

All models of the RS/1 burner series have an easily accessible control panel for the electrical components housing and wiring.
Thanks to the new structure concept, they 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 air pressure switch 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/1 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 electrical components housing and Plug&Socket system for electrical connection of RS 34-44/1 MZ.

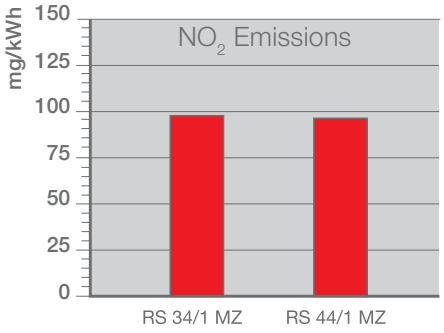
The following table shows the supply lead sections and the type of fuse to be used.

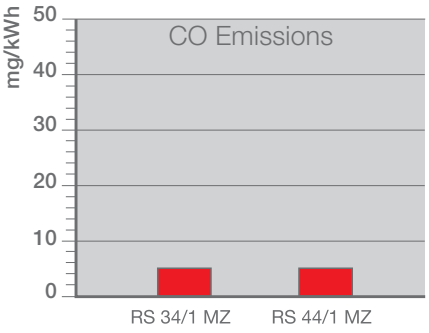
| MODEL | V | F (A) | L (mm²) |
|---|---|---|---|
| ▶ RS 34/1 MZ | 230 | T6 | 1,5 |
| ▶ RS 44/1 MZ | 230 | T6 | 1,5 |

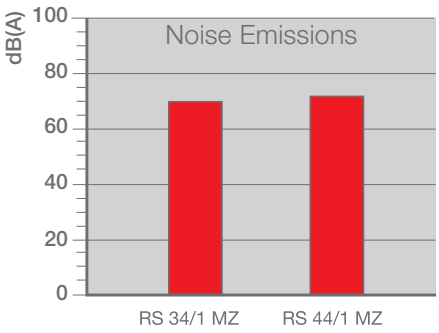
V = Electrical supply F = Fuse L = Lead section

# Emissions

The emission data has been measured in the various models at maximum output, according to EN 676 standard.
The NOx emissions of RS 34-44/1 MZ models are conforming to the class 2 of EN 676.

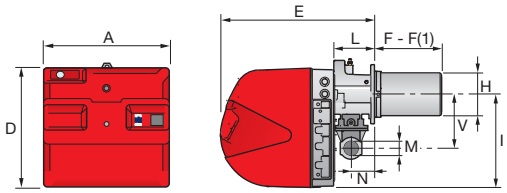


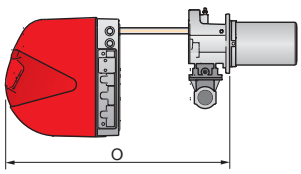




# Overall Dimensions (mm)

## BURNERS

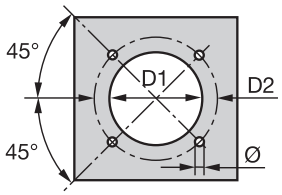



| MODEL | A | D | E | F - F(1) | H | I | L | M | N | O | S | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ▶ RS 34/1 MZ | 442 | 422 | 508 | 216 - 351 | 140 | 305 | 138 | 1”1/2 | 84 | 780 | - | 177 |
| ▶ RS 44/1 MZ | 442 | 422 | 508 | 216 - 351 | 152 | 305 | 138 | 1”1/2 | 84 | 780 | - | 177 |

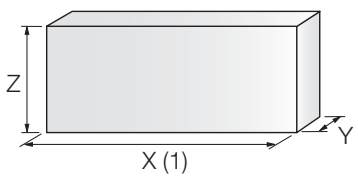
(1) dimension with extended head

## BURNER - BOILER MOUNTING FLANGE




| MODEL | D1 | D2 | Ø |
|---|---|---|---|
| ▶ RS 34/1 MZ | 160 | 224 | M8 |
| ▶ RS 44/1 MZ | 160 | 224 | M8 |

## PACKAGING




| MODEL | X (1) | Y | Z | kg |
|---|---|---|---|---|
| ▶ RS 34/1 MZ | 1000 | 485 | 500 | 32 |
| ▶ RS 44/1 MZ | 1000 | 485 | 500 | 33 |

(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.

Perform a first ignition calibration on the gas train.

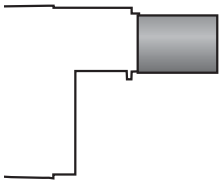
On start up, check:
- Gas pressure at the combustion head (to max. and min. output)
- Combustion quality, in terms of unburned substances and excess air.

## BURNER MAINTENANCE

The maintenance of RS/1 burners is very simple thanks to the sliding bars system that allows an easy access to the internal components.

# Burner Accessories

## Extended head kit



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

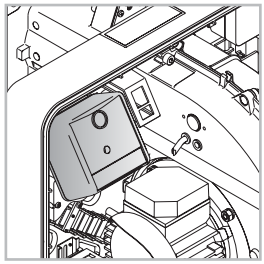
| BURNER | 'STANDARD HEAD' LENGTH (mm) | 'EXTENDED HEAD' LENGTH (mm) | KIT CODE |
|---|---|---|---|
| ▶ RS 34/1 MZ | 216 | 351 | 3010428 |
| ▶ RS 44/1 MZ | 216 | 351 | 3010429 |

## 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 34/1 MZ - 44/1 MZ | 90 | 3010095 |

## Post-ventilation kit



To prolong ventilation for approximately 5 seconds after opening of thermostats chain, a special kit is available.

| BURNER | KIT CODE |
|---|---|
| ▶ RS 34/1 MZ - 44/1 MZ | 3010452 |

## 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 34/1 MZ - 44/1 MZ | 3010449 |

## 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 34/1 MZ - 44/1 MZ | C1/3 | 10 | 3010403 |

(*) according to EN 15036-1 standard

## 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 |
|---|---|
| ▶ RS 34/1 MZ | 3010423 |
| ▶ RS 44/1 MZ | 3010424 |

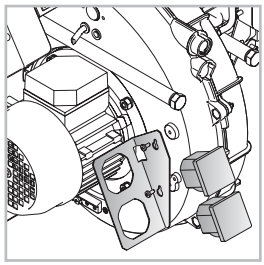
## Town gas kit

For burning Town gas, a special kit is available:

| BURNER | KIT CODE FOR 'STANDARD HEAD' (*) | KIT CODE FOR 'EXTENDED HEAD' (*) |
|---|---|---|
| ▶ RS 34/1 MZ | in progress | in progress |
| ▶ RS 44/1 MZ | in progress | in progress |

(*) Without CE certification

## Hours counter kit



To measure the burner working time a hours counter kit is available.

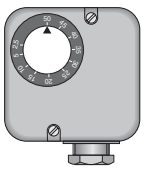
| BURNER | KIT CODE |
|---|---|
| ▶ RS 34/1 MZ - 44/1 MZ | 3010450 |

## Ground fault interrupter kit

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

| BURNER | KIT CODE |
|---|---|
| ▶ RS 34/1 MZ - 44/1 MZ | 3010448 |

## 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 34/1 MZ - 44/1 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 34/1 MZ - 44/1 MZ | 3010419 |

## PC interface kit

To connect the flame control panel to a personal computer for the transmission of operation, fault signals and detailed service information, an interface adapter with PC software are available.

| BURNER | KIT CODE |
|---|---|
| ▶ RS 34/1 MZ - 44/1 MZ | 3002719 |

# Gas Train Accessories

## Adapters

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

| BURNER | GAS TRAIN | DIMENSIONS | ADAPTER CODE |
|---|---|---|---|
| ▶ RS 34/1 MZ | MBD 405 - 407 - 410 | 3/4" 1" 1/2 | 3000824 |
| | MBZRDLE 407 - 410 | 3/4" 1" 1/2 | 3000824 |
| | MBD 420 - 420 CT | 2" 1" 1/2 | 3000822 |
| | MBZRDLE 420 - 420 CT | 2" 1" 1/2 | 3000822 |
| ▶ RS 44/1 MZ | MBD 407 - 410 | 3/4" 1" 1/2 | 3000824 |
| | MBZRDLE 407 - 410 | 3/4" 1" 1/2 | 3000824 |
| | MBD 420 - 420 CT | 2" 1" 1/2 | 3000822 |
| | MBZRDLE 420 - 420 CT | 2" 1" 1/2 | 3000822 |

## Seal control kit


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

| GAS TRAIN | KIT CODE |
|---|---|
| ▶ MBD 405 - MBD 407 - MBZRDLE 407 - MBD 410 - MBZRDLE 410 MBD 412 - MBZRDLE 412 - MBD 415 - CB 40/1 | 3010123 |
| ▶ MBZRDLE 415 - CB 40/2 - MBZRDLE 420 - CB 50/2 | 3010125 |

# Specification

## DESIGNATION OF SERIES

A specific index guides your choice of burner from the various models available in the RS/1 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<br>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<br>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 | 34 | /1 | MZ | TC | FS1 | 1/230/50 | 230/50-60 | |
|---|---|---|---|---|---|---|---|---|---|

BASIC DESIGNATION

EXTENDED DESIGNATION

## AVAILABLE BURNER MODELS

| | | | | |
|---|---|---|---|---|
| RS 34/1 MZ | TC | FS1 | 1/220-230/50-60 | 220-230/50-60 |
| RS 34/1 MZ | TL | FS1 | 1/220-230/50-60 | 220-230/50-60 |
| RS 44/1 MZ | TC | FS1 | 1/220-230/50-60 | 220-230/50-60 |
| RS 44/1 MZ | TL | FS1 | 1/220-230/50-60 | 220-230/50-60 |

Other versions are available on request.

# PRODUCT SPECIFICATION

**RS 34/1 MZ - 44/1 MZ models**

Burner
Monoblock forced draught gas burner with one stage operation, fully automatic, made up of:
- Air suction circuit
- High performance fan with straight blades
- Air damper for air flow setting
- Starting motor at 2800 rpm, single-phase / 220-230V / 50-60Hz
- 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
- Minimum air pressure switch stops the burner in case of insufficient air quantity at the combustion head
- Microprocessor-based flame control panel, with diagnostic functions
- Plug and socket for electrical connections accessible from the external of the cover
- 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 2") fitted with:
- Filter
- Stabiliser
- Minimum gas pressure switch
- Safety valve
- One stage or two stage working valve with ignition gas output regulator.

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
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:
- Extended head kit
- Spacer kit
- Sound-proofing box
- LPG kit
- Hours counter kit
- Ground fault interrupter kit
- Gas max pressure switch
- Volt free contact kit
- Interface adapter kit
- Gas train adapter
- Seal control kit.

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