

## RS 310-410-510-610/M MZ SERIES

The RS 310-410-510-610/M Z burners series covers a firing range from 1300 to 6300 kW, and it has been designed for use in low or medium temperature hot water boilers, hot air or steam boilers, diathermic oil boilers.

Operation can be "two stage progressive" or, alternatively, "modulating" with the installation of a PID logic regulator or by external 4-20 mA/0-10 V signal.

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

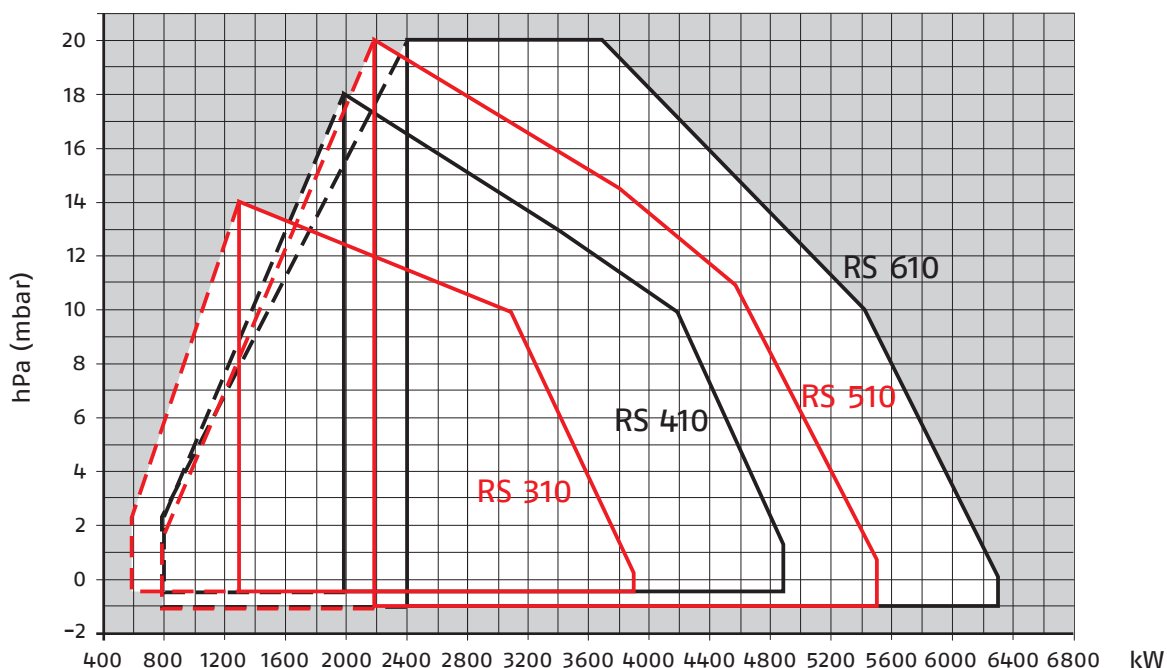
FS1 and FS2 versions are available for intermittent and continuous operation applications.

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

A wide range of accessories guarantees elevated working flexibility.



RS 310/M MZ	600/1300 ÷ 3900	kW
RS 410/M MZ	800/2000 ÷ 4900	kW
RS 510/M MZ	802/2200 ÷ 5520	kW
RS 610/M MZ	820/2400 ÷ 6300	kW

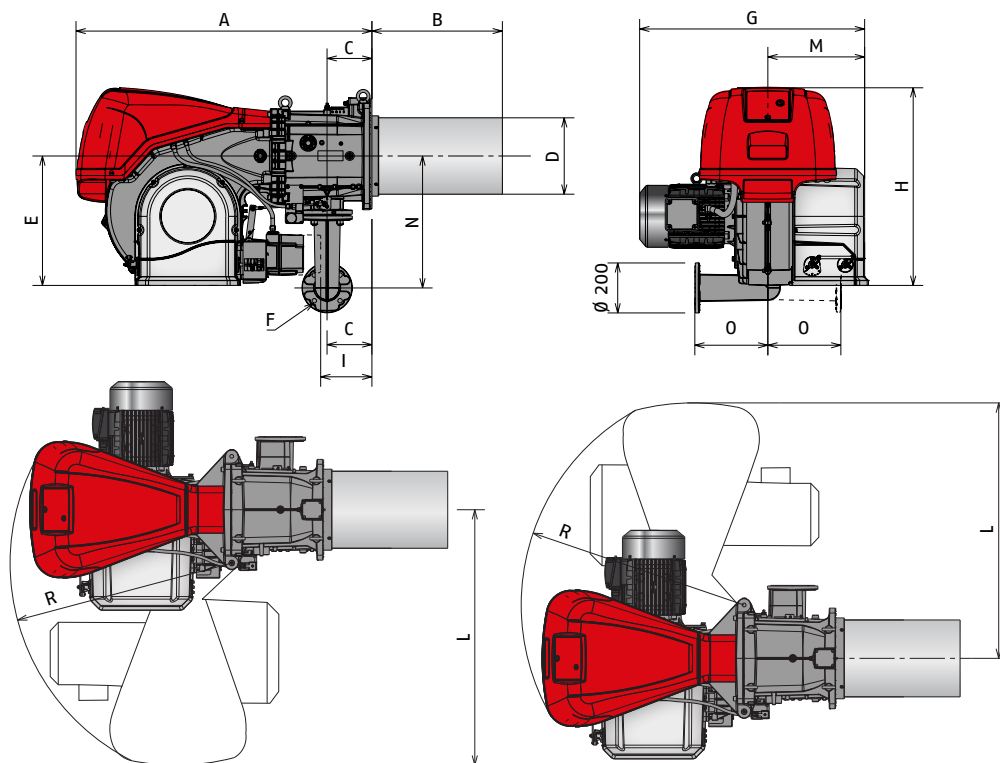


# Modulating Gas Burners

## RS 310-410-510-610/M MZ SERIES

### Overall dimensions (mm)

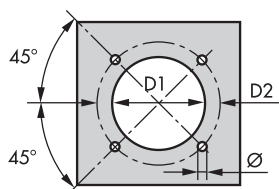
#### BURNERS



Model	A	B	C	D	E	F	G	H	I*	L	M	N	O	P	R
▶ RS 310/M MZ	1178	519	178	306	520	DN65	890	790	177	1015	400	528	290	177	890
▶ RS 410/M MZ	1178	519	178	306	520	DN65	908	790	177	1015	400	528	290	177	890
▶ RS 510/M MZ	1178	519	178	306	520	DN65	908	790	177	1015	400	528	290	177	890
▶ RS 610/M MZ	1178	519	178	330	520	DN65	980	790	177	1015	400	528	290	177	890

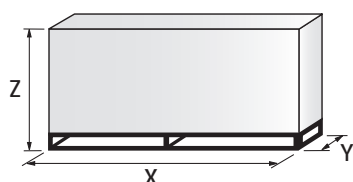
\* Maximum position for the extraction of the servomotor cover in mechanical cam models.

#### BURNER - BOILER MOUNTING FLANGE



Model	D1	D2	Ø
▶ RS 310/M MZ	335	452	M18
▶ RS 410/M MZ	335	452	M18
▶ RS 510/M MZ	335	452	M18
▶ RS 610/M MZ	350	452	M18

#### PACKAGING



Model	X	Y	Z	kg
▶ RS 310/M MZ	2040	1180	1125	250
▶ RS 410/M MZ	2040	1180	1125	250
▶ RS 510/M MZ	2040	1180	1125	250
▶ RS 610/M MZ	2040	1180	1125	280

## RS 310-410-510-610/M MZ SERIES

### Specification

#### DESIGNATION OF SERIES

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

Series: R									
Fuel: S Natural Gas									
L Light oil									
LS Light oil/Natural Gas									
N Heavy oil									
Size:									
Setting: /1 Single stage					/E Electronic cam				
/B Two stage					/P Proportioning air/gas valve				
/M Modulating-Mechanical cam					/EV Electronic cam predisposed for variable speed (with inverter)				
Emission: ... or CO1					Class 1 EN267 - EN676				
MZ					Class 2 EN267 - EN676				
BLU					Class 3 EN267 - EN676				
MX					Class 2 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				
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					3/220/60Hz - 3N/380V/60Hz				
Auxiliary voltage: 230/50-60					230V/50-60H				
					110/50-60 110V/50-60Hz				
R	S	510	/M	MZ	TC	FS1	3/230-400/50	230/50-60	
BASIC DESIGNATION					EXTENDED DESIGNATION				

GAS

### Specification

#### STATE OF SUPPLY

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

- High performance fan with low sound emissions, forward curve blades.
- Air suction circuit lined with sound-proofing material
- Air damper for air setting controlled by a high precision servomotor
- Air pressure switch
- Fan starting motor at 2900 rpm, three-phase 230/400 - 400/690 V with neutral, 50 Hz
- 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 sensor for flame detection (or UV sensor on demand)
  - flame stability disk
- Maximum gas pressure switch, with pressure test point, for halting the burner in the case of over pressure on the fuel supply line
- Burner safety control box for controlling the system safety: RMG/M and LFL for FS1 intermittent operation and LGK for FS2 continuous operation for RS 310-410-510-610/M models;
- Star/delta starter for the fan motor (Direct starter fan motor for RS 310-410 models)
- Main electrical supply terminal board
- Burner on/off switch
- Manual or automatic output increase/decrease switch
- Contacts motor and thermal relay with release button
- Burner failure led signal and lighted release button
- Burner opening hinge
- Lifting rings
- IP 54 electric protection level

#### Standard equipment:

Gasket for gas train adaptor

Adaptor for gas train

Screws for fixing the gas train adaptor: M 16 x 70

Thermal insulation screen

M 18 x 60 screws to secure the burner flange to the boiler

Cable grommets kit for optional electrical wiring input

M16 x 6 studs for fixing the gas elbow to the pipe coupling

M16 nuts to fix the gas elbow to the pipe coupling

Instruction handbook for installation, use and maintenance

Spare parts catalogue

#### Gas train

Fuel supply line, in the MULTIBLOC configuration (for a diameter of 1-1/2" and 2") or COMPOSED configuration (from a diameter of DN 65 until a diameter of DN 125), fitted with:

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

## RS 310-410-510-610/M MZ SERIES

### Specification

**Conforming to:**

- 2004/108 EC directive (electromagnetic compatibility)
- 2006/95 EC directive (low voltage)
- 2009/142 EC directive (gas)
- 2006/42 EC directive (machine)
- EN 676 (gas burners).

**Available accessories to be ordered separately:**

- Power controller
- Probe
- Analog control signal converter
- Potentiometer
- Continuous ventilation kit
- UV cell kit
- PC interface kit
- Sound proofing box
- Spacer kit
- Adapters
- Seal Control kit
- Stabiliser spring.

# Modulating Gas Burners

## RS 310-410-510-610/M MZ SERIES

### Available models

#### Burners

CODE	MODEL				HEAT OUTPUT NATURAL GAS		TOTAL ELECTRICAL POWER (KW)	CERTIFICATION	NOTE
					(KW)	(Nm <sup>3</sup> /h)			
20061373	RS 310/M MZ	TC	FS1	3/400/50	600/1300-3900	60/130-390	8,8	CE-0085C90166	(1) (4)
20068343	RS 310/M MZ	TC	FS1	3/230/50	600/1300-3900	60/130-390	9,1	CE-0085C90166	(1)
20068351	RS 310/M MZ	TC	FS1	3/400/50	600/1300-3900	60/130-390	9,1	CE-0085C90166	(1)
20074141	RS 310/M MZ	TC	FS1	3/400/50	600/1300-3900	60/130-390	9,1	CE-0085C90166	(2) (4)
20074137	RS 310/M MZ	TC	FS1	3/230/50	600/1300-3900	60/130-390	9,1	CE-0085C90166	(2)
20074138	RS 310/M MZ	TC	FS1	3/400/50	600/1300-3900	60/130-390	9,1	CE-0085C90166	(2)
20074149	RS 310/M MZ	TC	FS2	3/400/50	600/1300-3900	60/130-390	9,1	CE-0085C90166	(3) (4)
20074145	RS 310/M MZ	TC	FS2	3/230/50	600/1300-3900	60/130-390	9,1	CE-0085C90166	(3)
20074146	RS 310/M MZ	TC	FS2	3/400/50	600/1300-3900	60/130-390	9,1	CE-0085C90166	(3)
20067141	RS 410/M MZ	TC	FS1	3/400/50	800/2000-4900	80/200-490	10,6	CE-0085C90166	(1) (4)
20068356	RS 410/M MZ	TC	FS1	3/230/50	800/2000-4900	80/200-490	10,8	CE-0085C90166	(1)
20068361	RS 410/M MZ	TC	FS1	3/400/50	800/2000-4900	80/200-490	10,8	CE-0085C90166	(1)
20074142	RS 410/M MZ	TC	FS1	3/400/50	800/2000-4900	80/200-490	10,8	CE-0085C90166	(2) (4)
20074139	RS 410/M MZ	TC	FS1	3/230/50	800/2000-4900	80/200-490	10,8	CE-0085C90166	(2)
20074140	RS 410/M MZ	TC	FS1	3/400/50	800/2000-4900	80/200-490	10,8	CE-0085C90166	(2)
20074150	RS 410/M MZ	TC	FS2	3/400/50	800/2000-4900	80/200-490	10,8	CE-0085C90166	(3) (4)
20074147	RS 410/M MZ	TC	FS2	3/230/50	800/2000-4900	80/200-490	10,8	CE-0085C90166	(3)
20074148	RS 410/M MZ	TC	FS2	3/400/50	800/2000-4900	80/200-490	10,8	CE-0085C90166	(3)
20068027	RS 510/M MZ	TC	FS1	3/400/50	802/2200-5520	80.2/220-552	14	CE-0085C90166	(1) (4)
20074143	RS 510/M MZ	TC	FS1	3/400/50	802/2200-5520	80.2/220-552	14	CE-0085C90166	(2) (4)
20074151	RS 510/M MZ	TC	FS2	3/400/50	802/2200-5520	80.2/220-552	14	CE-0085C90166	(3) (4)
20066706	RS 610/M MZ	TC	FS1	3/400/50	820/2400-6300	82/240-630	16,9	CE-0085C90166	(1) (4)
20074144	RS 610/M MZ	TC	FS1	3/400/50	820/2400-6300	82/240-630	16,9	CE-0085C90166	(2) (4)
20074152	RS 610/M MZ	TC	FS2	3/400/50	820/2400-6300	82/240-630	16,9	CE-0085C90166	(3) (4)

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

The burners of RS/M MZ series are in according to 2009/142 - 2004/108 - 2006/95 - 2006/42 EC Directives.

- (1) with RMG control box
- (2) with LFL control box
- (3) with LGK control box
- (4) Star delta starter

## RS 310-410-510-610/M MZ SERIES

### Available models

#### Gas Trains

CODE	GAS TRAIN			VPS Code	ADAPTER CODE			
	MODEL	Ø	C.T.		RS 310	RS 410	RS 510	RS 610
3970180*	MB 415/1 - RT 30	Rp 1" 1/2	-	3010123	3000826 + 20064220	●	●	●
3970198**	MB 415/1 CT RT 30	Rp 1" 1/2	◆	-		●	●	●
3970250*	MB 415/1 - RT 52	Rp 1" 1/2	-	3010123		●	●	●
3970253**	MB 415/1 CT RT 52	Rp 1" 1/2	◆	-		●	●	●
3970232*	MB 415/1 - RSM 30	Rp 1" 1/2	-	3010123	3000826 + 20042324	●	●	●
3970181*	MB 420/1 - RT 30	Rp 2"	-	3010123		●	●	●
3970182**	MB 420/1 CT RT 30	Rp 2"	◆	-		●	●	●
3970257*	MB 420/1 - RT 52	Rp 2"	-	3010123		●	●	●
3970252**	MB 420/1 CT RT 52	Rp 2"	◆	-	3000826 + 20042324	●	●	●
3970233*	MB 420/1 - RSM 30	Rp 2"	-	3010123		●	●	●
3970234**	MB 420/1 CT RSM 30	Rp 2"	◆	-		●	●	●
3970221*	MBC 1200/1 - RSM 60	Rp 2"	-	3010367		3000826 + 20042324		
3970225**	MBC 1200/1 CT RSM 60	Rp 2"	◆	-	3000826 + 20042324			
3970222*	MBC 1900/1 - FSM 40	DN 65	-	3010367	3010221			
3970226**	MBC 1900/1 CT FSM 40	DN 65	◆	-	3010221			
3970223*	MBC 3100/1 - FSM 40	DN 80	-	3010367	3010222			
3970227**	MBC 3100/1 CT FSM 40	DN 80	◆	-	3010222			
3970224*	MBC 5000/1 - FSM 80	DN 100	-	3010367	3010222 - 3010370			
3970228**	MBC 5000/1 CT FSM 80	DN 100	◆	-	3010222 - 3010370			
3970145*	CB 512/1 - RSM 30	Rp 1" 1/2	-	3010367	3000826 + 20064220	●	●	
20045589**	CB 512/1 CT RSM 30	Rp 1" 1/2	◆	-		●	●	
3970146*	CB 520/1 - RSM 30	Rp 2"	-	3010367	3000826 + 20042324	●	●	
3970160**	CB 520/1 CT RSM 30	Rp 2"	◆	-		●	●	
20044659*	CB 525/1 - RSM 30	Rp 2"	-	3010367	3000826 + 20042324			
20044660**	CB 525/1 CT RSM 30	Rp 2"	◆	-	3000826 + 20042324			
3970147*	CB 5065/1 - FSM 30	DN 65	-	3010367	3010221			
3970161**	CB 5065/1 CT FSM 30	DN 65	◆	-	3010221			
3970148*	CB 5080/1 - FSM 30	DN 80	-	3010367	3010222			
3970162**	CB 5080/1 CT FSM 30	DN 80	◆	-	3010222			
3970149*	CB 50100/1 - FSM 30	DN 100	-	3010367	3010223 - 3010370			
3970163**	CB 50100/1 CT FSM 30	DN 100	◆	-	3010223 - 3010370			
20015871*	CB 50125/1 - FSM 30	DN 125	-	3010367	3010224			
3970196**	CB 50125/1 CT FSM 30	DN 125	◆	-	3010224			

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

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

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

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

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

C.T. Gas valve leak detection control device:

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

◆ gas train equipped with leak detection control device.

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

● Not available.

# Modulating Gas Burners

## RS 310-410-510-610/M MZ SERIES

### Burner accessories

#### Accessories for modulating operation

##### POWER CONTROLLER



To obtain modulating operation, the RS/M BLU series of burners requires a regulator with three point outlet controls. The following table lists the accessories for modulating operation with their application range.

BURNER	TYPE	CODE
▶ All models	RWF 50.2 - Basic version with 3 position output	20073595
	RWF 55.5 - Complete with RS-485 interface	20074441
	RWF 55.6 - Complete with RS-485/ PROFIBUS interface	20074442

##### PROBE



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

BURNER	TYPE	RANGE (°C) (BAR)	CODE
▶ All models	Temperature PT 100	-100 ÷ 500°C	3010110
	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214
	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3090873

##### ANALOG CONTROL SIGNAL CONVERTER



BURNER	TYPE (INPUT SIGNAL)	CODE
▶ RS 310-410-510-610/M	0/2 - 10 V (impedance 200 K $\Omega$ )	20074479
	0/4 - 20 mA (impedance 250 $\Omega$ )	

##### POTENTIOMETER

BURNER	CODE
▶ RS 310-410-510-610/M	20074487

### 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	CODE
▶ RS 310-410-510-610/M	20074542



## Burner accessories

### Uv cell kit



A UV cell is available for the supervision of the flame alternatively to ionisation probe for special applications.

BURNER	CODE
▶ RS 310-410-510-610/M	20074548 - 20079707

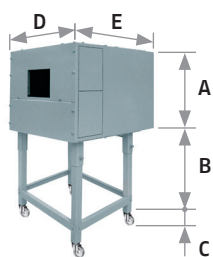
### Pc interface kit



To connect the 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	CODE
▶ RS 310-410-510-610/M	3002719

### Sound proofing box

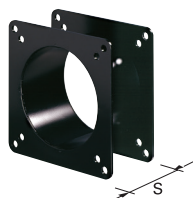


If noise emission needs reducing even further, sound-proofing boxes are available. In case of generator heights, where a lower dimension "B" is required, ask for the Box Support Kit code 20065135. The useful dimensions are 40 mm less than the total dimensions indicated in the table (A, D, E). Not suitable for outdoor use.

BURNER	BOX TYPE	A (mm)	B (mm) min. - max	C (mm)	D (mm)	E (mm)	[dB(A)] (*)	CODE
▶ All models	C7	1255	160 - 980	110	1140	1345	10	3010376

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

### Spacer kit



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

BURNER	Spacer thickness S (mm)	CODE
▶ All models	180	20008903




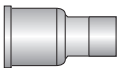
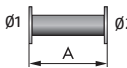
# Modulating Gas Burners

## RS 310-410-510-610/M MZ SERIES

### Gas train accessories

#### Adapters

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

ADAPTER	DIMENSIONS				ADAPTER CODE
	ø1 DN	ø2 DN	A mm	B mm	
1" 1/2  2"	-	-	65	-	20064220
2"  2"	-	-	65	-	20042324
DN 80  2" 1/2  2"	-	-	300	-	3000826
	65	80	400	-	3010221
	80	80	400	-	3010222
	100	80	400	-	3010223
	125	80	320	-	3010224

#### Seal control kit



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

The seal control is type VPS 504.

GAS TRAIN	Kit code for 50 Hz operation
▶ MB type	3010123
▶ MCB - CB - DMV type	3010367

## RS 310-410-510-610/M MZ SERIES

### Stabiliser spring



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

GAS TRAIN	SPRING COLOUR	SPRING Pressure range mbar	SPRING CODE
MBC 1900/1 - 3100/1 MBC 5000/1	White	4 - 20	3010381
	Red	20 - 40	3010382
	Black	40 - 80	3010383
CB 512/1	Green	80 - 150	3010384
	Red	25 - 55	3010131
	Black	60 - 110	3010157
CB 520/1 - 525/1	Pink	90 - 150	3090486
	Red	25 - 55	3010132
	Black	60 - 110	3010158
CB 5065/1 - 5080/1	Pink	100 - 150	3090487
	Red	25 - 55	3010133
	Black	60 - 110	3010135
CB 50100/1	Pink	100 - 150	3090456
	Grey	140 - 200	3090992
	Red	25 - 55	3010134
CB 50125/1	Black	60 - 110	3010136
	Pink	100 - 150	3090489
	Grey	140 - 200	3092174
CB 50125/1	Red	25 - 55	3010315
	Yellow	30 - 70	3010316
	Black	60 - 110	3010317
	Pink	100 - 150	3010318