

## ROTOR & ROLLER | ROTATING RACK OVEN



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**ROTOR**



**ROLLER**

THE ROTATING RACK OVEN IS A CONVECTION OVEN WITH FORCED AIR CIRCULATION. ROTOR IS A REAR OVEN WITH BACK BURNER AND HEAT EXCHANGER, TO REDUCE OVERALL DIMENSIONS.

ROLLER HAS A FRONTAL BURNER AND HEAT EXCHANGER, TO SATISFY SPECIFIC OPERATING AND POSITIONING REQUIREMENTS. THIS PERMITS TO SET INTO LINE MORE UNITS, SIDE BY SIDE. ITS VERSATILITY MAKES IT SUITED FOR SEVERAL BREAD TYPES AND PASTRY PRODUCTS, BOTH OF SMALL AND MEDIUM-SIZED.

THE BALANCED INFLOW OF HOT AIR, COMBINED WITH THE ROTATION OF THE RACK AND A CONTROLLED STEAM INPUT, GRANTS CONSTANT, EVEN BAKING, ENHANCING THE RISING AND FRAGRANCE OF THE PRODUCT. PERFECTLY STABLE BAKING GRANTS TO OBTAIN VOLUMINOUS AND SOFT BREAD, OF ANY SHAPE AND KIND.

THE AIR IS CHANNLED INTO THE BAKING CHAMBER THROUGH SPECIAL DUCTS AND A SERIES OF INLETS WITH ADJUSTABLE SHUTTERS, REALIZING THE HEAT ABSORBED FROM THE HEAT EXCHANGER. THE AIR IS HEATED IN A PROPER HEAT EXCHANGER PROVIDED WITH A HEAT RESISTANT SURFACE THAT ALLOWS A BIG THERMICAL EXCHANGE. LOW AIR CIRCULATION SPEED AND A SPECIAL HEAT EXCHANGER SYSTEM GUARANTEE BAKING STABILITY AND REDUCED CONSUMPTION.

ADVANCED TECHNOLOGY, QUALITY MATERIALS AND HIGH THERMIC EFFICIENCY ENSURE EVEN BAKING AND LOW CONSUMPTION. MADE IN STAINLESS STEEL WITH A MODULAR CONSTRUCTION SYSTEM THAT REDUCES INSTALLATION TIME AND OFFERS INCREASED PROTECTION AND LONGEVITY AGAINST THE STRUCTURAL THERMIC EXPANSION THAT OCCURS DURING THE OPERATION.

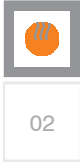
THE SPECIAL STRUCTURE AND THE COMBINATION OF THE COMPONENTS MINIMIZE HEAT LOSS AND OPTIMIZE ENERGY CONSUMPTION. THE RESULT: MAXIMUM FUEL SAVINGS FOR A MORE ECONOMIC PLANT.

THE OVEN HAS A PERFECT THERMIC ISOLATION, NO TOXIC MATERIALS ARE EMPLOYED. THE POWERFUL STEAM DEVICE, INSIDE THE BAKING CHAMBER, OPERATES THROUGH A PROGRAMMABLE TIMER SYSTEM, PROVIDES THE ADEQUATE QUANTITY OF STEAM FOR EVEN THE MOST DEMANDING APPLICATIONS EVEN DURING CONTINUOUS OPERATIONS.

THE OVEN CAN WORK WITH GAS OR DIESEL BURNERS, AS WELL AS BY ELECTRIC ENERGY. IT IS AVAILABLE IN TWO VERSIONS: WITH MECHANICAL OR DIGITAL PROGRAMMABLE PANEL.

POWER THREE-PHASE + NEUTRAL 230V OR OF 400V, WITH A FREQUENCY OF 50 OR 60 HZ. SPECIAL POWER ON REQUEST.

THE MACHINE COMPILES WITH THE EUROPEAN DIRECTIVES APPLICABLE AND THE GUARANTEE IS 2 YEARS FOR ALL THE PARTIES, EXCLUDING THOSE SUBJECT TO NORMAL WEAR AND TEAR.



## STRUCTURE

The oven is made of stainless steel AISI 430, with thickness of mm 1; 2, 3, 4, or 5 depending on the parts.

The different thickness, the particular folding system and the special combination of its parts optimize the functioning and cut down the loss of heat. The façade is of stainless steel of mm 1,5. The heat exchanger is of AISI 310, high temperature steel, with thickness of mm. 2.

The steam generators are made of iron (Fe).

The standard outside covering is made of painted galvanized sheet iron or stainless steel on request. All the parts are fixed with screws. By the thermic dilatation, this system is more reliable and allows durability and longevity.



## HEAT EXCHANGER

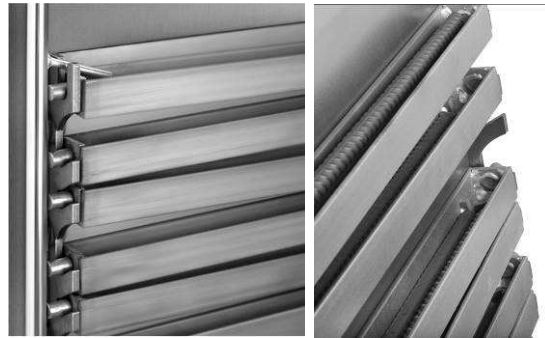
This is the part of the oven that allows to the combustion gas to heat the air that gets in touch with the baking product. It is situated in the back part of the oven (ROTOR back side burner) or in the lateral part (ROLLER front side burner).

It is built in heat resistant stainless steel AISI 310 and steel pipes in considerable number (30 pipes) in order to increase the surface of thermic exchange.

The combustion gases accomplish a long path inside the exchanger – 4 turns - until the chimney exit. The path of the air is due to a ventilator that is situated on the exchanger and that send the air into the baking chamber.

## STEAM DEVICE

It produces the required steam and introduces it in the baking chamber. It consists of "U" iron elements, over posed and canted alternatively to the left and right, so that the water, introduced in several points by means of pipes, flows downward. These elements are heated at high temperature, producing therefore the water vaporization. These elements are removable for easy clean. Under the iron elements there is a small basin to collect and expel the exceeding water. The vaporizer is placed into the baking chamber, near the heat exchanger and behind its protection panel. The steam generator has a very important mass, for example in the model 68 (60x80) there are 4 modules with a total weight of 198 kg. The results are: a perfect distribution of steam throughout the baking chamber, instant and plenty of saturated steam which coats the bread, shiny and well developed bread, no stop baking even with short cycles and high steam injections without any problem.



## THE AIR CIRCULATION

The impeller allows the circulation of the hot air in the oven; it is installed above the heat exchanger with the suction point mounted on a collector connecting it to the baking chamber. It is a centrifugal type ventilator with the motor directly connected to the impeller shaft.

See the table for details. It is possible to have the speed variator as optional. The same color on all types of product all over (on the trays and on the different floors of the rack), an even thickness of the crust thanks to the efficiency of the heat exchanger (4 turns), the particular construction system of the baking chamber (the proportion on the volume, the different thickness and combination on the materials and their particular folding system), the slow ventilation speed and a perfectly controlled air flow (adjustable blowing slots fitted with air flow direction guides).



## STEAM EXTRACTOR

It is an extractor installed above the extractor hood that operates by opening the door during the operation of oven's unloading. For details see the table.

## ROTARY TOOL DRIVE

These mechanisms generate the rotation of the trolley inside the baking chamber. It consists of two worm gear reducers coupled by means of a connecting bell that allows a high reduction rate. The reducers kinematics consists of an endless screw and a rim. The total transmission rate is 400:1. The gear motor is provided with a controlled safety friction clutch so that by low couple there is the immediate. The Rack suspension system or turntable suitable for a rack loading up to 300 kg totally.





## INSULATION

A high insulation is assured using compressed panels and flocks of rock wool. Our experience taught us that the compressed panels give a heat barrier, but the flock wool allows thermic inertia. No toxic materials are employed, particularly asbestos.

## CONTROL PANEL

The oven is provided with a control board very easy user impact, showing by means of ideograms all functions.

It has one digital and one mechanical thermo regulator, timers for baking and steam, on/off switches and emergency stop key.

On request the oven is available with the electromechanical controls or with digital and programmable panel.



## PERFORMANCE

- Maximum baking temperature is 300°C.
- Time of continuous running is 24h/24h.
- Temperature decreasing when opening the door is around 20° C.
- Average gradient of temperature rise around 8-10° C/min.
- Rack rotation speed is 3.625 tr/min.
- The temperature of external panels surface is not exceeding 25°C the ambient temperature.
- Rack suspension system or turntable suitable for a total rack loading up to 300 kg.
- Insulation with compressed panels and flocks of rock wool. No toxic materials are employed, particularly asbestos.
- Door passage in mm. 57: 650x1840, 68: 750x1840, 89: 945x1840, 810: 945x1840, 812: 945x1840.
- Maximum rotation diagonal in mm: 57: 880 (900-20), 68: 1070, 89: 1245, 810: 1340, 812: 1610.
- The CE Declaration of Conformity is submitted with the machine.

## STEAM SYSTEM, HIGH PERFORMANCE STEAM DEVICE

Our experience allowed us to realize a high performance steam system. This modular system is made up of consists of a set of U elements, arranged vertically and alternate. The water, injected at several levels, flows cascading all along their length (ml 26,25 long), in the model ROTOR 68.

The surface of steam generator is doubled thanks to the employ of structured cylindrical elements inside the U channels (in the circular surface the rate surface/volume increases). By this system also the mass becomes relevant, for instance in the model ROTOR 68 the total weight of the steam generators is 198 kg. The surface is necessary to produce the most possible quantity of steam, while the volume (mass allows the heat keeping for a faster recovery of the temperature. It is necessary a large quantity of instant steam to optimize the baking of the crust.

Not only the quantity of steam increases thanks to a bigger surface of the steam generator, but also the transformation of the water in steam happens instantly. The rapidity in the steam generation and its abundance give to the bread a shiny crust, avoiding any de hydration problems and the formation of bubbles.

The evidences are stated by the results. The model ROTOR 68 transforms 4 l water in steam in only 20 seconds. The recovery of temperature happens in 6-10 minutes, according to the type of product and to the oven.

Thanks to its modular characteristic the steam system may be increased up to 46% in the mass (kg 290 in ROTOR 68) and 92% in the generation surface.



## PACKAGE

The oven is delivered:

- fully disassembled with components in wooden crates with following dimensions in cm. :
- |                  |          |                                    |
|------------------|----------|------------------------------------|
| 115x225x225      | Kg. 1350 | model ROTOR 50x70;                 |
| 145x225x225      | Kg. 1480 | model ROTOR 60x80;                 |
| 145x225x225      | Kg. 1650 | model ROLLER 60x80;                |
| 147x225x225      | Kg. 1820 | model ROTOR 80x80, 80x90, 60x100;  |
| 147x225x225      | Kg. 1880 | model ROLLER 80x80, 80x90, 60x100; |
| 147x225x225      | Kg. 2050 | model ROTOR 80x100;                |
| 115x225x225x2box | Kg. 2300 | model ROTOR 80x120.                |

- partially assembled (semi assembled. Motors, fans, panel and electric box not installed. For container shipment or track long time transport);

- fully assembled.





## GUARANTIES

The guaranties are 2 years on all the parts (except consumable) and 3 years on heat exchanger.

## PROTECTION AND SAFETY DEVICES

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**Safety thermostat:** this device guards against overcoming of the temperature inside the oven over the 300 °C, the thermostat switches off automatically the voltage of the burner and stops any burner functions.

**Microswitch:** the door is connected with a microswitch. By opening the door interferes the micro switch and it stops immediately the rotation of the trolley and the ventilator, and it turns on the steam extractor.

**Steam extractor:** it is an extractor fan, installed above the hood, that operates by opening the door during the operation of oven's loading and unloading.

**Inside door handle:** it is installed on the door, on the baking chamber side. It avoids that the operator, for any reason, remains closed inside the baking chamber.

**friction clutch of the gear motor:** friction of the gear motor that allows the stop by low couple.

**Over pressure block:** it has been installed above the combustion chamber, in the fumes pipe, to reduce quickly the pressure inside the combustion chamber. If the pressure increase over the calibration value, the block opens discharging upstream, in safety conditions for the operator, resetting the correct pressure inside the combustion chamber; at this point the block closes automatically.

**Steam breather:** the steam breather is an opening situated inside, on the bottom of the baking chamber. This, through a pipeline is connected with the steam extractor hood. When in the baking chamber the steam production reaches a limit value, this breather lets go out the exceeding quantity.

## CE COMPLIANT

The rotating rack oven is complying with the CEE European norms:

2006/42 EEC	Machine Directive
2006/95 EEC	Regulation on Low Voltage
2004/108 EEC	Directive concerning the Electromagnetic Compatibility
2009/142 EEC	Appliances burning gaseous fuels
89/109 EEC	Directive concerning materials and the objects have to be in contact with alimentary products
and in accordance	Rules EN 203

## CONNECTION

**Hydraulic connection:** the connection is necessary for the vaporizer of the oven and must have a minimum diameter of 12 mm and provide filtered water. The outline connection is 1/2 inc.

The water pressure reaching the vaporizer is between 1.0 and 3.0 bar.

The input connection is on the ceiling (Ø 1/2") (1) and the output connection is under the burner (h mm 50, Ø 3/4") (2).

**Steam exhaust to the draught hood:** the exit diameter is 18 cm. (26 cm for the model 812). In the coupling area with the exterior piping (this must have a min. section of 0.035 m<sup>2</sup>) it is better to install a box with dimensions of mm 400 x 500 x 400. The piping of steam exhaust must be slightly inclined to avoid the condensate returns in the oven, with a depression within 0.1 - 0.4 mbar.

**Evacuation of the combustion products:** the exit diameter is 20 cm. (23 cm for the model 812). It is necessary to consider that - in order to obtain a good functioning of the plant - on the base of the chimney there must be a depression within 0.1 - 0.2 mbar. If possible, avoid to install curves in the piping. If chimney and piping are outside the building, it is good standard to cover them with heat insulator materials to obtain a good draught also in the cold season and to avoid steam condensations.

**Electrical connection:** verify that the voltage of the electric line to the electric box corresponds to the voltage required in the electrical diagram and on the label. Normally and if there isn't any different request, the connection is 3 phases + ground + neutral (5, 35 amp, 2,5 mm), 400 voltage and 50 Hz. Standard the box can be placed on the ceiling or on the left side.

**Gas connection:** the burner need a connection of 1/2, 3/4 or 1 inch (see the its manual).



## TECHNICAL FEATURES



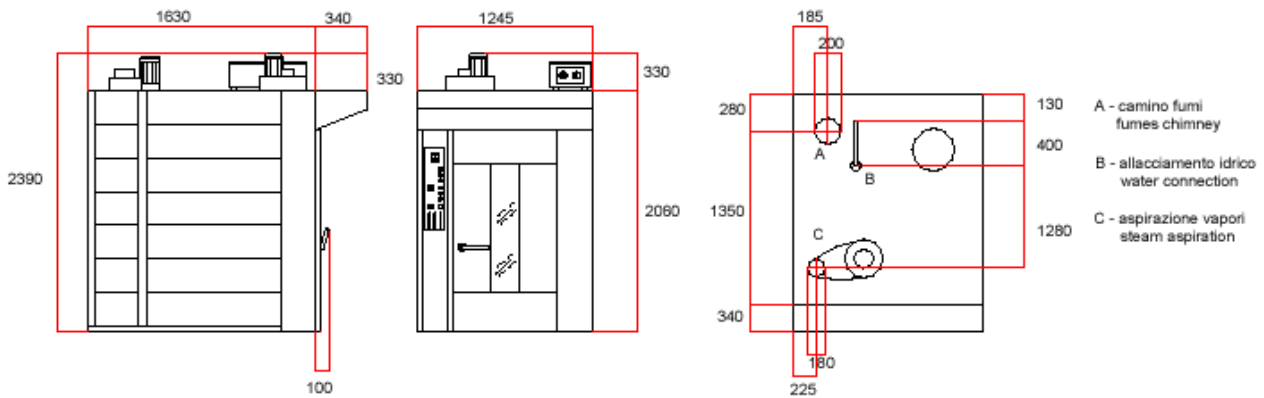
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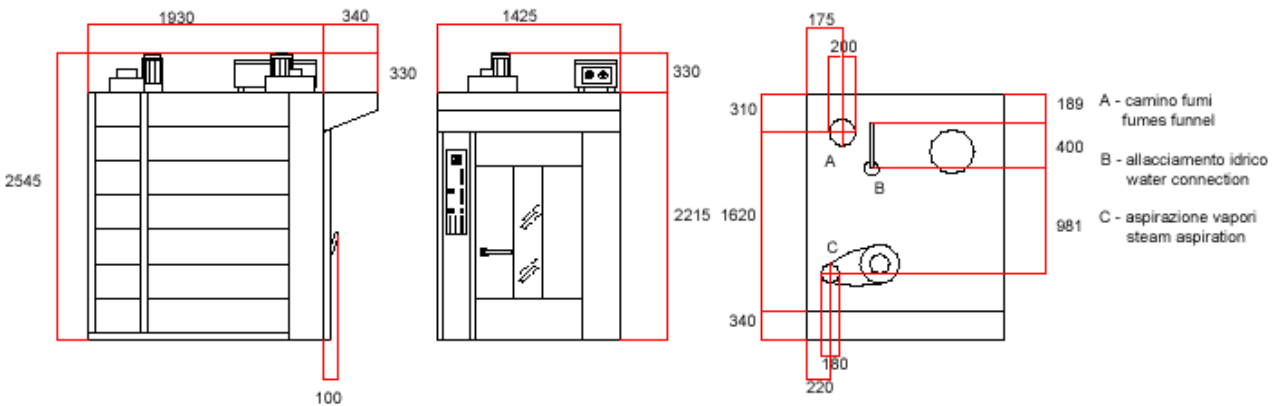
MODEL	TRAYS DIMENSIONS		POWER			BAKING SURFACE	DIMENSIONS	WEIGHT
	cm	nr	kw	kcal	Electric kw			
ROTOR 57	50x70	18	1,7	45000	15X2400W 36.0	6,3	1239x1619x2068+330	1180
ROTOR 68	60x80	18	2,5	58000	18X3000W 54.0	8,6	1440x1930x2220+330	1360
ROTOR 610	60x100	18	3,0	70000	18X3400W 61.2	10,8	1630x2140x2220+350	1630
ROTOR 89	80x90	18	3,0	70000	18X3400W 61.2	13,0	1630x2140x2220+350	1630
ROTOR 810	80x100	18	3,0	75000	18x3400W 61.2	14.4	1725x2225x2220+350	1820
ROTOR 812	80x120	18	3,8	100000	24X4200W100.8	17,2	2000x3000x2600+370	2100



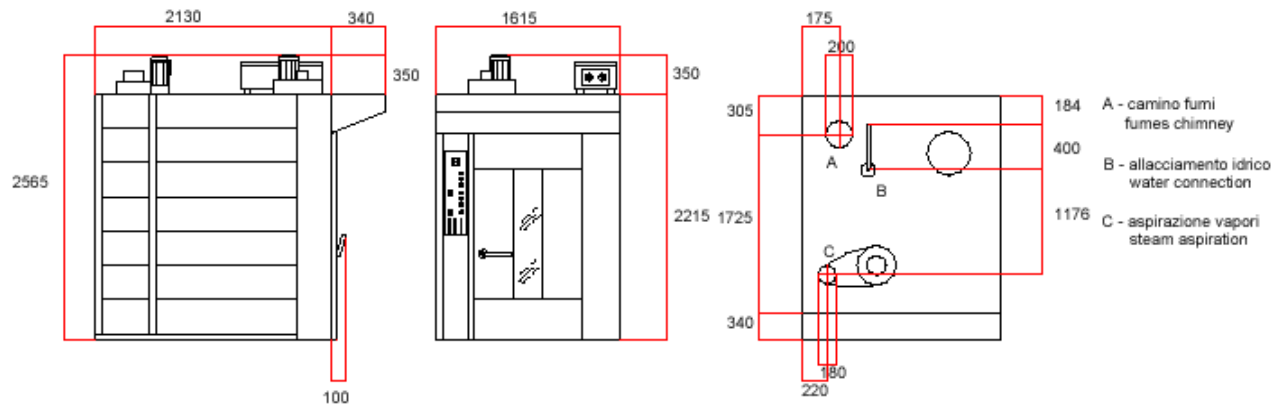
MODEL	TRAYS DIMENSION		POWER			BAKING SURFACE	DIMENSIONS	WEIGHT
	cm	nr	kw	kcal	Electric kw			
ROLLER 68	60x80	18	2,5	58000	18X3000W 54.0	8.6	1910x1550x2220+330	1530
ROLLER 610	60x80	18	3,0	70000	18X3400W 61.2.0	10.8	2110x1750x2220+350	1760
ROLLER 89	60x100	18	3,0	70000	18X3400W 61.2	13.0	2110x1750x2220+350	1730



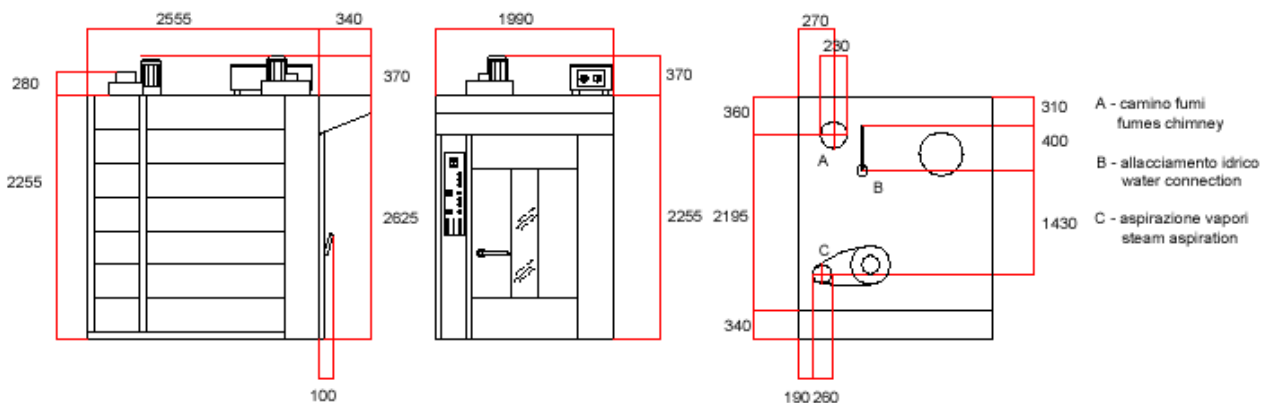
ROTOR 57



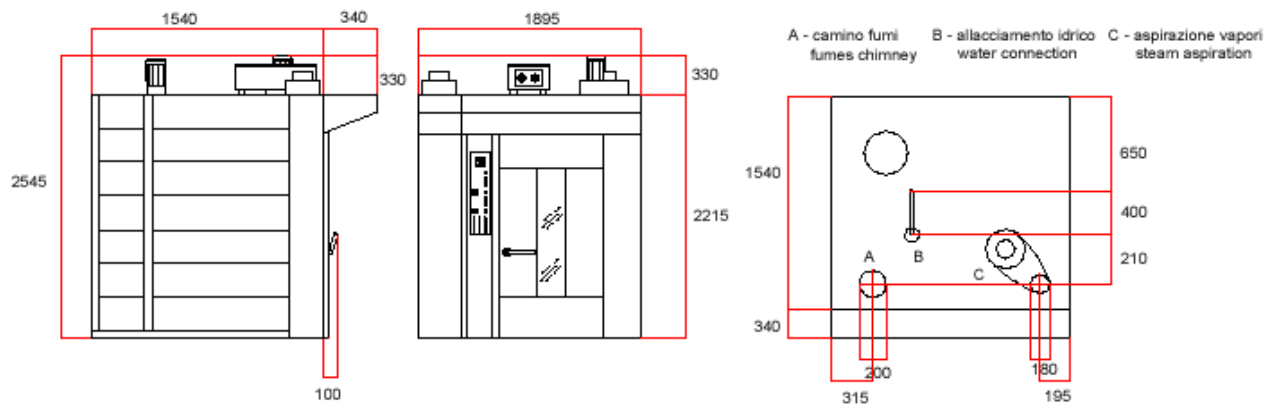
ROTOR 68



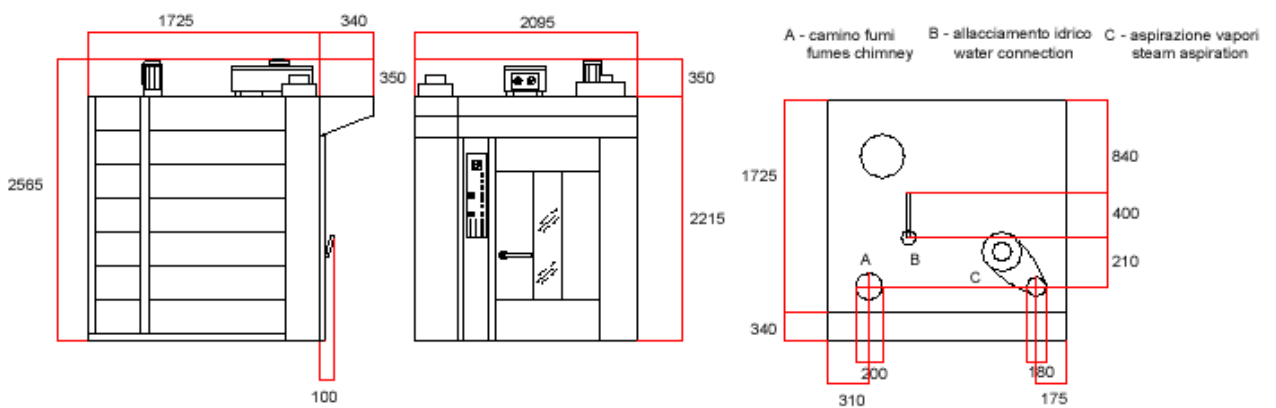
ROTOR 89



ROTOR 812



ROLLER 68



ROLLER 89





## FUELS

The oven is functioning with a burner using following fuels (see the manual of the burner):

- Diesel
- Gas methane
- LPG (Liquefy Petrol Gas)

MODEL	DIESEL	MANUFACTURER	NOZZLE	KW min-max	KG/H min-max
57	40 F 5	RIELLO	0.75x 60°	30-60	2.5-5
68	40 F 10	RIELLO	1.50x 60°	54-107	4.5-9
88	40 F 10	RIELLO	1.75x 60°	54-107	4.5-9
89	40 F 10	RIELLO	1.75x 60°	54-107	4.5-9
610	40 F 10	RIELLO	1.75x 60°	54-107	4.5-9
810	40 F 10	RIELLO	1.75x 60°	54-107	4.5-9
812	40 F 20	RIELLO	2.50x 60°	95-202	8-17

MODEL	GAS	MANUFACTURER	KW min-max	Kcal/H min-max
57	40 FS 5	RIELLO	23-58	20000-50000
68	40 FS 8	RIELLO	46-93	40000-80000
88	40 FS 8	RIELLO	46-93	40000-80000
89	40 FS 8	RIELLO	46-93	40000-80000
610	40 FS 8	RIELLO	46-93	40000-80000
810	40 FS 15	RIELLO	81-175	70000-150500
812	40 FS 15	RIELLO	81-175	70000-150500

**ATTENTION:** The ovens can work or are changed with electric power any time.

MODEL	ELECTRIC	POWER max	POWER working
57	E	(15+1X2400W) 36.0	(8X2400W) 18.0
68	E	(18+2X3000W) 54.0	(9X3000W) 27.0
88	E	(18+2X3400W) 61.2	(9X3400W) 30.6
89	E	(18+2X3400W) 61.2	(9X3400W) 30.6
610	E	(18+2X3400W) 61.2	(9X3400W) 30.6
810	E	(24X3400W) 81.6	(12X3400W) 54.4
812	E	(24X4200W) 100.8	(12X4200W) 67.2

MODEL	DESCRIPTION	POWER		POWER		
		Volt	HZ	KW	RPM	Amp
57 - 68 - 610 - 89 - 810	STEAM EXTRACTOR	230/400	50	0.37	1380	2.10/1.20
57 - 68 - 610 - 89 - 810	STEAM EXTRACTOR	230/400	60	0.37	1660	2.10/1.20
57 - 68 - 610 - 89 - 810	STEAM EXTRACTOR	208	60	0.37	1690	1.92
812	STEAM EXTRACTOR	230/400	50	0.55	1380	2.74/1.58
812	STEAM EXTRACTOR	230/400	60	0.55	1660	2.74/1.58
57	AIR CIRCULATION	230/400	50	0.75	1400	3.30/1.90
57	AIR CIRCULATION	230/400	60	0.75	1680	3.30/1.90
68	AIR CIRCULATION	230/400	50	1.50	1400	6.40/3.70
68	AIR CIRCULATION	230/400	60	1.50	1680	6.40/3.70
610 - 89 - 810 - 812	AIR CIRCULATION	230/400	50	2.20	1400	9.20/5.30
610 - 89 - 810 - 812	AIR CIRCULATION	230/400	60	2.20	1680	9.20/5.30
610 - 89 - 810 - 812	AIR CIRCULATION	208	60	2.20	1700	11.70
57	ROTING RACK TOOL	230/400	50	0.09	1350	0.70/0.40
57	ROTING RACK TOOL	230/400	60	0.09	1620	0.70/0.40
68	ROTING RACK TOOL	230/400	50	0.18	1350	1.18/0.68
68	ROTING RACK TOOL	230/400	60	0.20	1620	1.18/0.68
610 - 89 - 810 - 812	ROTING RACK TOOL	230/400	50	0.25	1350	1.53/0.91
610 - 89 - 810 - 812	ROTING RACK TOOL	230/400	60	0.30	1620	1.58/0.91
610 - 89 - 810 - 812	ROTING RACK TOOL	208	60	0.22	1630	1.7

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