

# SILLEM POLISHING MACHINE

## PLANT DESCRIPTION

The machine for polishing and satin finishing the bottom and the wall of stainless steel bowls (sinks) is composed of a rotating table with a vertical axis and eight different work stations placed in front of the table positions. The machine is suitable for the automatic polishing of bowls' bottoms and walls through rotating brushes (tools).

It is mainly composed of a steel structure including a basement and an upper part designed to contain the rotating table with vertical axis.

The machine's rotating table includes eight stations, seven of which complete with faceplate, and a station for the manual loading and unloading of the items to be polished.

The working stations are placed in the peripheral part of the machine, in the structure surrounding the table; each working station is subdivided in operating units with axis and polishing brushes.

The working units are equipped with tool holder heads with double or single mandrel and with cylindrical brushes or mushroom brushes.

The work stations 233P-277P in the positions 1-5-7 are equipped with a two-mandrel tool holder head on which cylindrical brushes for the polishing of the bowl's wall are mounted.

The work stations 233F-277F in the positions 3-4-6 are equipped with a single mandrel tool holder head on which a mushroom brush for the polishing of the bowl's bottom is applied.

The working station 277P in the position 2 is equipped with a tool holder head with two mandrels. One of them is equipped with a mushroom brush for the polishing of the bowl's bottom, while the other has a tool (cylindrical brush) for the polishing of the bowl's wall.

The polishing brushes are powered by engines at alternating current with variable speed operated by inverters.

The axis of the working stations are powered by engines at alternating current with variable speed operated by inverters, by engines at alternating current with constant speed and by hydraulic engines.

The rotating table is powered by an engine at alternating current with variable speed through inverters.

The loading-unloading of the items is carried out manually from the outside of the protection cabin, through a dedicated opening.

The area destined to the operator for the manual loading and unloading activity of the items being polished (stainless steel bowls for sinks) is separated from the other areas of the machine where the bowls are polished and is protected by an interlocked mobile transparent shielding and by an optoelectronic barrier (station to be found in position 8 of the table).

The mobile interlocked shielding is operated by a pneumatic actuator component and is opened automatically at the end of the cycle, when the table stops in the position of loading-unloading.

The shielding closing command is carried out automatically when the cycle start command is activated on the operating board located in front of the mobile shielding, outside the optoelectronic protection barrier.

The machine is completely protected by fixed soundproof panels forming a fairing protection cabin.

In correspondence of the different working stations, the fairing cabin is equipped with interlocked mobile door-shaped screens allowing to safely enter inside the machine when tooling operations or installation and/or replacement of the polishing brushes are required.

The electric/electronic equipment of the machine is composed of:

- A metallic electric cubicle separated from the machine, containing the electromechanical operating devices, the electronic drivings to move the table, the axis and the brushes of the aggregates (only for those working at variable speed), the electric-electronic devices (including PLC and personal computer PC) for the management of the machine logic and of the working programmes;
- An operating control panel located in a fixed position in front of the machine on the side of the manual loading-unloading item position, outside the optoelectronic protection barrier and some fixed shieldings composing the fairing and protection cabin of the machine; to simplify the operator's work during tooling operations, the above mentioned control panel can be removed from its usual position after being electrically disconnected through an appropriate connector and utilized, through a suitable electric connection, by a single working unit;
- A keyboard with a monitor and PC located inside the cubicle and accessible through a mobile panel and a flap;
- An optoelectronic barrier aimed to repair the area destined to the manual item loading and unloading activity (stainless steel bowls for sinks);
- A section with engines, actuators, devices and components distributed and cabled at machine's edge.

In accordance with the regulation on the electric equipment of the machines, the input electric device of the whole electric/electronic machine's equipment is composed of an automatic switch functioning as a manual operated lockable disconnecter.

The machine is equipped with an adequate dust suction plant.

Moreover, the machine has a paste spreader tool; the paste is necessary in the process of bowls' polishing.

As foreseen in the present instruction manual, the machine is designed to be utilized by a single operator, duly trained and aware of all possible risks.

## A2 – PLANT COMPONENTS

The plant is composed of:

- A rotating table mod. 135 S/8, equipped with 8 tool holders



- Seven working stations, tool holders, around the table

Position 1 – unit 233P (wall polishing)

Position 2 – unit 277P (wall and bottom polishing – radius area)

Position 3 – unit 233F (bottom and radius area polishing)

Position 4 – unit 277F (bottom polishing)

Position 5 – unit 233P (wall polishing)

Position 6 – unit 233F (bottom polishing)

Position 7 – unit 277P (wall polishing)

Position 8 – manual sinks' loading and unloading

- A portable push-button panel equipped with a connector used to manually move a single working unit at a time



- A cubicle
- A Personal Computer



An operator carries out manually the loading/unloading operations from the predisposed station no. 8

The working stations 233P-277P in the positions 1-5-7 are equipped with a two-mandrel tool holder head on which the tools for the polishing of the bowl's wall are mounted( cylindrical brush).



The working stations 233F-277F in the positions 3-4-6 are equipped with a single mandrel tool holder head on which a tool for the polishing of the bowl's bottom is installed (mushroom brush)



The working station 277P in the position 2 is equipped with a two-mandrel tool holder head on which both a tool for the polishing of the bowl's bottom (mushroom brush) and a tool for the polishing of the bowl's wall (cylindrical brush) are installed.



The tool holders (no. 8) are positioned at an equal distance on the rotating table.



The rotating table is powered by an engine Magnetic BLQ 84/P with a Brevini adaptor and has a fix rotation sense (clockwise, view from above). The rotation of the working head and the vertical approach/departure movement of the same from the bowl are obtained hydraulically in the positions 1-3-5-6 and electrically in the resting ones. The brushes rotation speed is constant (1700 t/min). the brushes working pressure can be

regulated. The plant is equipped with a PC for the keying in and the management of the working programmes.