MECHANICAL HAND FOR RUBBER PRESS AUTOMATIC LOADING AND UNLOADING

1 General description of the machine

This mechanical hand is a PLC-controlled Cartesian-axes machine with both electrical and pneumatic movements.
It is used for loading and automatically extracting rubber pieces pressed with vertical presses.
The mechanical hand draws raw rubber sheets leaning on a belt placed in the front part of the press and places them on the bottom die inside it. It draws pressed pieces placed on the internal upper die and places them on a conveyor belt for cooling and for evacuation outside the structure. The conveyor belt is in the front part of the press and inside the mechanical hand.
The mechanical hand is equipped with:

- A cutter, which allows to unroll a raw rubber reel and cut it in sheets with the adequate size for the piece to be pressed.
- A cutting device for cutting the pressed sheet during extraction, which allows a more rational palletization.

The mechanical hand is composed of:

- An electrical axis for the horizontal movement of the vertical axis and the pliers group
- An electrical axis for the vertical movement of the pliers group
- Two suction groups to draw raw sheets by means of suction cups
- Two pneumatic groups for the gripping-pliers rotation
- A group with six gripping-pliers baked piece plate
- A pneumatic group for the horizontal translation of the plate gripping-pliers
- A pressed plate supporting belt
- A transversal conveyor belt for raw sheets
- A group for approaching and moving away cutting blades and rolls
- A group with six cutting blades and rolls
- A longitudinal belt for pressed pieces for evacuation of the pressed plate
- An electrical control panel
- A programming key-board
- A push-button panel to control the movement of the mechanical hand
- A push-button panel to manually control the longitudinal belt for the evacuation of the pieces
- A group to control the correct position of the plate to be extracted
- A device for applying silicon to the bottom die
- A device for applying silicon to the upper level
- An electrical axis for moving the silicon applying device
- An electrical control panel for the upper silicon applying device

HANDLER USE ADVANTAGES:

- REDUCED THE TIME OF ITEMS REMOVE, because it’s made at the same time for all the items and not one by one as in a manual removing cycle.

- REDUCED MANUAL LABOUR:cycles are completely automated and therefore one operator can control several machines.

- REDUCED OPEN MOULD TIME, then smaller moulds cooling and smaller vulcanization time.

- ELIMINATION OF UNDUE CYCLE STOPS and their pertinent problems due to moulds cooling down, such as scraps due to insufficient heating, moulds cleaning and eventual removing of them, purges for cleaning the nozzle from prevulcanized material.

- REDUCED MACHINE DOWN TIME: it is no longer necessary to wait for the operator to remove moulded items.

- IMPROVED QUALITY AND CONSISTENCY OF MOULDED ITEMS: continuous extractor cycles eliminate hazardous open machine down time due to operator absence and/or extraction speed, thus preventing the mould from cooling off and/or the compound from curing in the injection pot and extruder, which may change the physicalchemical properties of the moulded item.

- THEY PROVIDE A RAPID RETURN ON INVESTMENT.

- IMPROVED PLANT OPERATING TIME: simplifing the machine work load programming, it's really easier to programm, because of costant cycle times.

- MORE FLEXIBILITY: the handlers can be simply coupled to similar machines, compatible to their pertinent electric and pneumatic connections taps: they can be used on several similar moulds with small differences in tap positions.

- REDUCED MANUAL LABOUR DEDICATED TO ITEMS TRIMMING: the handlers use allows to remove and part automatically the moulded items burr straight through during the removing cycle.