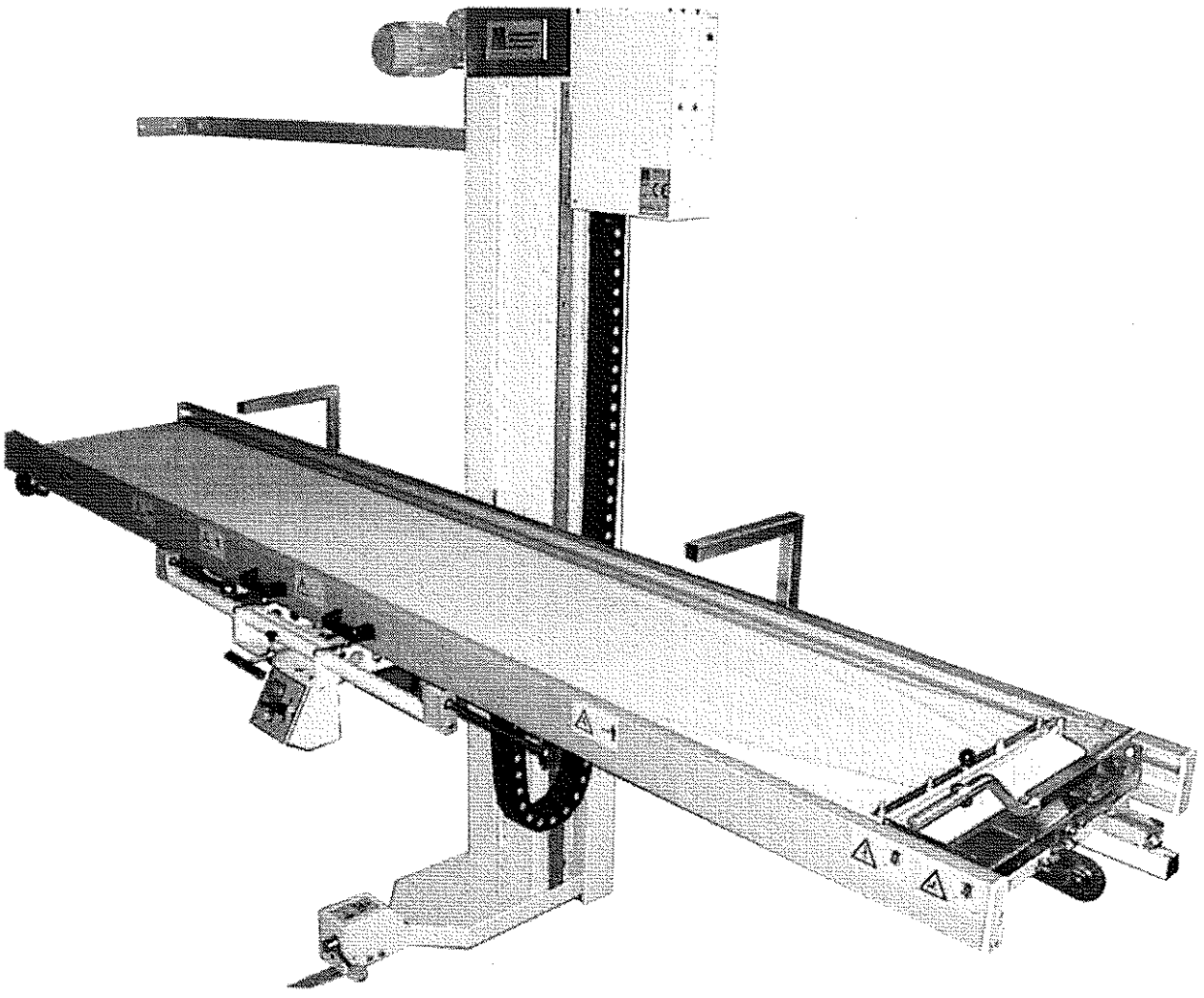
# INSTALLATION AND REGULATION MANUAL

# "Double"



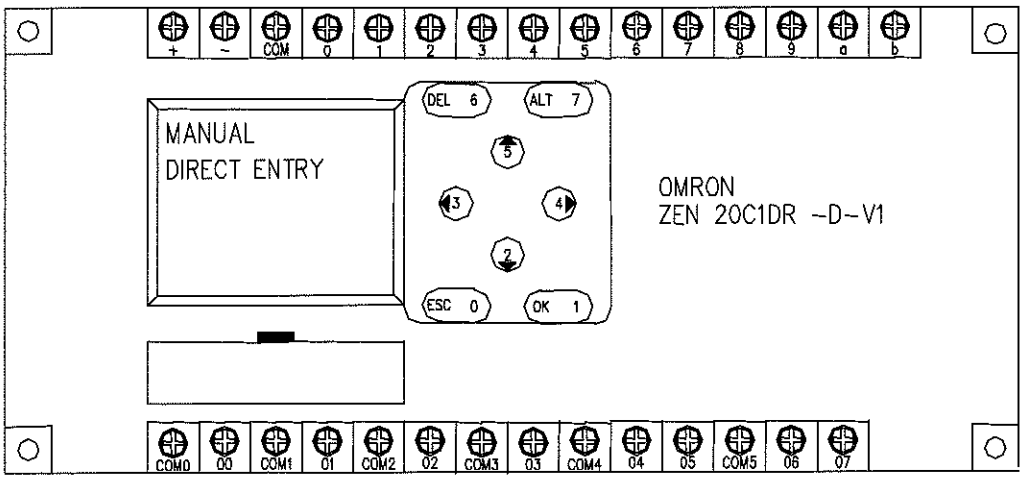
**MARDEN srl**
**Viale del Lavoro, 4**
**37050 Belfiore (Verona) ITALY**

Rev 1.01 (09-05)

# CONTENTS

## 1 Asssembly of the machine

1) Positionate the top rail **(RS)** over and parallel at the ovens following the furnished measure, fixing it using the two brackets **(ST1-ST2). Fig. 1-2-3**
2) Insert the cart **(CAR)** inside the rail **(RS)** directing the long part in direction of the command side **(P1)**. Then install the two blocks that are necessary to stop the cart inside the rail at the two extremity of the rail **Fig. 3**
3) Fix the bracket **(ST3-ST4)** on the top rail **(RS)** using the furnished screws, fix the stainless steel rope in one bracket closing its extremity with the furnished clamp. Keeping the other side of the rope free, insert the galvanized rings, then screw the tie rod in the second bracket and fix the second side of the rope. Act on the tie rod to tight the rope. Fix the electric cable **CE** to the galvanized rings and to the plate **TV** using the colrings.
   ***ATTENTION: THE FIXING OF THE ELECTRIC CABLE MUST BE PERFORM SO TO AVOID BROKEN DOWN OF IT DURING THE LATERAL MOVEMENT OF THE MACHINE. Fig. 2***
4) Fix the extension **(PR)** and the rope tightener (TV) to the cart inside the top rail directing the rope tightener in up position and fixing it in the middle hole. **Fig 3**
5) Fix the bottom rail (RT) using the expansion cork and respecting the furnished measure. **Fig. 1** Positionate the column **(SMV)** on the floor, near the bottom rail **(RT)**, on the side where is fixed the wood beam **(TL)**. Lift the column in vertical position, insert the wheel onto the bottom rail, fix the extension **(PR)** with the two block in the back part of the column and block it in perpendicular position. Fig. 4
   ***ATTENTION: during the lifting operation of the column take care that its weight is very high***
6) Connect the extremity of the power cable on a line-protection switch, this must be put near the machine to facilitate the access in case of emergency. Connect the power cable as the diagram. **Fig 6**. Machine voltage: **Single-Phase 220 Volt**
7) Turn the main switch **(I0)** on the electric panel in 1 position. On the keyboard the red button lamp **(H12)** switch on. Fig 4-7
8) Check that the latch **(AS)**, for the manual ascent and descent of the horizontal structure near the keyboard **(P1)**, is tight and blocked with its clip.**(Fig 4-5)**
9) Check the emergency button **(SE)** on the keyboard **(P1)**. It must be unlocked so to permit to the operator to start the machine. If is blocked turn the button in the arrow. **Fig 7**
   Press the green start button **(Sst+H11)** on the keyboard **(P1)**. Its lamp come on while the red stop lamp **(H12)** switch off. **Fig 7**
   Open the electric panel and take a look to the plc **(ZEN)**.Following picture.



**10)** On the plc there is the list of the input and the output of it. Press the esc button and a new page switch on. In this page is possible switch the plc in automatic or manual function, and choose if the machine must have a direct entering or not.

**11)** At first is necessary bring the machine in manual function. To do this push and keep pushed the **ALT (7)** button and then press together the ∧ **(5)** button. The plc change state from automatic to manual and vice-versa. Choose manual state.

**12)** To bring down the structure, push the descent **(S2)** button and the exit button **(S4)** together on the keyboard **(P1)** to bring down the carriage of the column **(CA)**, so to facilitate the assembly of the horizontal structure **(SMO)**. **Fig. 4-5-7**

**13)** Turn off the power

**14)** Unscrew the screws that fix the brackets **(BO)** to the column carriage **(CA)**. **Fig 8**

**15)** Prepare the horizontal structure **(SMO)** regulating the tubes at the centre of it. Put the horizontal structure inside the column carriage keeping the tubes at the centre of the structure **(CA)**. Fix the brackets **(BO)**. Now the tubes must have the same distance from each side. **Fig 4**

**16)** After the fixing of the horizontal structure remove the aluminium traverse that keep united the two aluminium blocks under the structure. (The presence of this traverse is necessary to keep straight the tubes during the installation of the horizontal structure).

**17)** Insert the multi-pole socket of the horizontal structure in the plug of the column

**18)** Tight screw every screw and bolt that is possible.

Now is possible to select the ascent or the descent only when the carriage is completely re-entered and its cam push the Sc11 limit switch.

## 2 Regulation for double with sliding bar model.

1) At first turn on the power to the machine and take a look to the plc (ZEN). Press esc to avoid the page of the input and the output of the plc.
2) If the machine has four decks is necessary choose the direct entry of the carriage. To do this push and keep pushed the **ALT (7)** button and then press together the **DEL (6)** button. The display of the plc change its state. Change until on the second line of the display appear the write **DIRECT ENTRY**. This mean that the loading position of the horizontal structure has the same height of the first deck.
3) The height of the first deck of the oven is made by the **(Sc0)** limit switch, to regulate the height of the first deck, is necessary act on the **C4** cam. **Fig. 9**
4) The height of the last deck of the oven is made by the **(Sc8)** limit switch that act with the double cam **(C2)**, this cam must be regulated at the height of the last deck and when the machine reach this cam it can't go up anymore because this limit switch has the function to protect the cope of the oven. To bring the structure **(SMO)** at the maximum height is necessary that the carriage is totally re-entered, the horizontal structure must be completely pull back and then is possible lift up the structure until it reach the cam **C3** with the **(Sc13)** limit switch. **Fig 9**
5) The height of the central decks, is determined by the **(ScX)** limit switch, to regulate the height of the deck is necessary to act to the cams **C1** present in the left side of the column. **Fig.9**
6) The max height that the machine can reach is perform by the limit switch **(Sc13)** and its height must be regulate using the cam **C3**. Attention: this cam must be regulated so to don't disturb or hurt something that is present in the bakery. **Fig.9**
7) After this operations, bring the machine forward a deck and push the entrance button **(S3)** until the carriage enter the oven for a length of 10/20 cm. Centre the carriage at the centre of the deck, then sign with a pencil the pint where the latch of the bottom rail C. after this sign the other decks and after this operations perform an hole for every single sign with a diameter a little bit larger of the latch.
8) Now is possible to regulate the max entrance of the carriage. In this operation the plc must be in manual function so to regulate in a good way the course.
   Bring the structure in front of one deck, keeping attention to bring the latch of the bottom rail inside the notch.
   Press and keep pressed the entrance button **(S3)** until it stop itself with the limit switch **(Sc9).**
   If the carriage doesn't arrive at the end of the oven or if hurt the end of the oven it is possible act to the limit switch in the head of the horizontal structure.
9) After this last regulation push the exit button **(S4)** until the carriage stop itself.
10) Open the electric panel and act onto the buttons of the plc so to bring it in automatic function.
11) After this operations is possible assembly the cover that must be positionate in the back part of the column to cover this part.

***NOTE***: If the oven has only three decks is necessary differentiate the loading position from the first deck height. To do this push and keep pushed the **ALT (7)** button and then press together the **DEL (6)** button. The display of the plc change its state. Change until on the second line of the display appear a gap with no write. In this case the cam pushed by the limit switch **(Sc0)** must regulated at the height that is more comfortable to the operator to load the bread onto the carriage while the height of the first deck must be regulated with the first cam c1 at the left of the column.

## 3 Regulation for double with fixed bar.

1) At first turn on the power to the machine and take a look to the plc (ZEN). Press esc to avoid the page of the input and the output of the plc.
2) If the machine has four decks is necessary choose the direct entry of the carriage. To do this push and keep pushed the **ALT (7)** button and then press together the **DEL (6)** button. The display of the plc change its state. Change until on the second line of the display appear the write **DIRECT ENTRY**. This mean that the loading position of the horizontal structure has the same height of the first deck.
3) The height of the first deck of the oven is made by the **(Sc0)** limit switch, to regulate the height of the first deck, is necessary act on the **C4** cam. **Fig. 9**
4) The height of the other decks of the oven is made by the **(ScX)** limit switch that act with the cams **(C1)**, this cam must be regulated at the height of the decks **Fig.9**
5) The max height that the machine can reach is perform by the limit switch **(Sc13)** and its height must be regulate using the cam **C3**. Attention: this cam must be regulated so to don't disturb or hurt something that is present in the bakery. **Fig.9**
6) After this operations, bring the machine forward a deck and push the entrance button **(S3)** until the carriage enter the oven for a length of 10/20 cm. Centre the carriage at the centre of the deck, then sign with a pencil the pint where the latch of the bottom rail C. after this sign the other decks and after this operations perform an hole for every single sign with a diameter a little bit larger of the latch.
7) Now is possible to regulate the max entrance of the carriage. In this operation the plc must be in manual function so to regulate in a good way the course.
   Bring the structure in front of one deck, keeping attention to bring the latch of the bottom rail inside the notch.
   Press and keep pressed the entrance button **(S3)** until it stop itself with the limit switch **(Sc9).**
   If the carriage doesn't arrive at the end of the oven or if hurt the end of the oven it is possible act to the limit switch in the head of the horizontal structure.
8) After this last regulation push the exit button **(S4)** until the carriage stop itself.
9) Open the electric panel and act onto the buttons of the plc so to bring it in automatic function.
10) After this operations is possible assembly the cover that must be positionate in the back part of the column to cover this part.

***NOTE***: If the oven has only three decks is necessary differentiate the loading position from the first deck height. To do this push and keep pushed the **ALT (7)** button and then press together the **DEL (6)** button. The display of the plc change its state. Change until on the second line of the display appear a gap with no write. In this case the cam pushed by the limit switch **(Sc0)** must regulated at the height that is more comfortable to the operator to load the bread onto the carriage while the height of the first deck must be regulated with the first cam c1 at the left of the column.

**4 Figures**

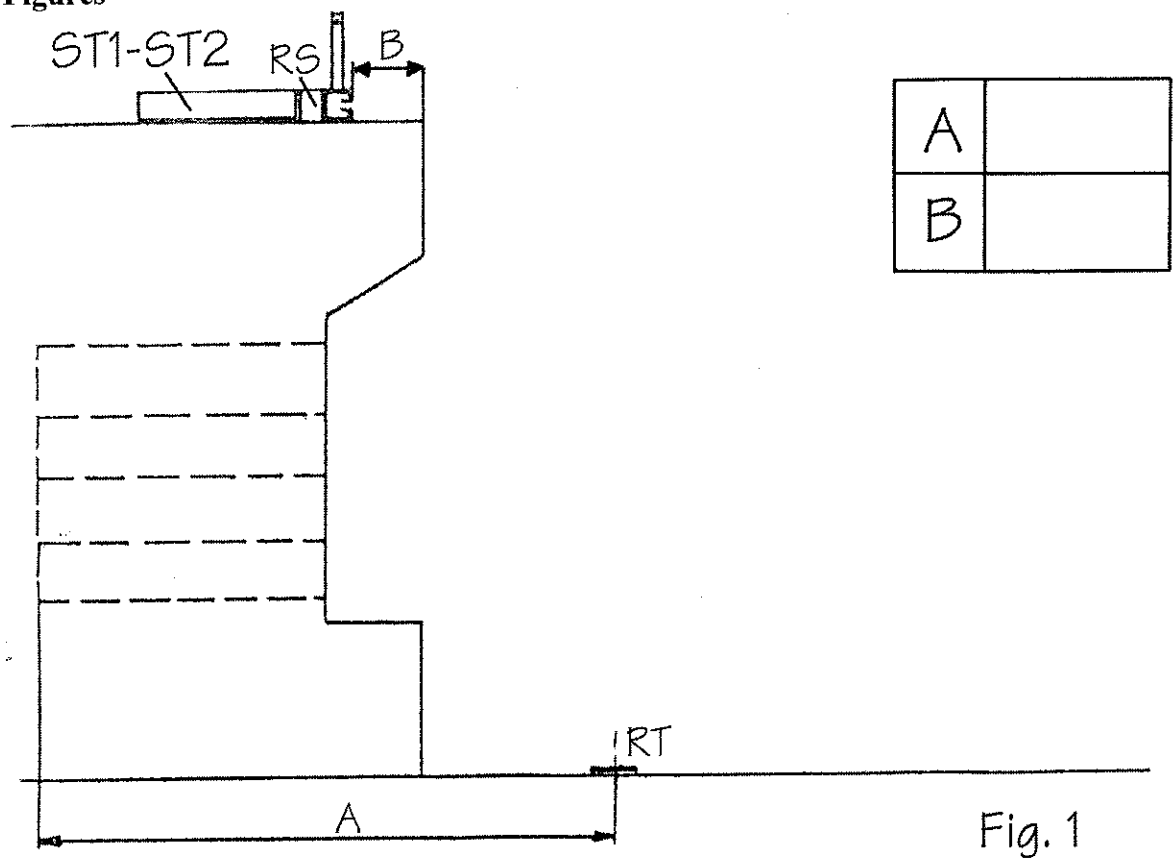



Fig. 1

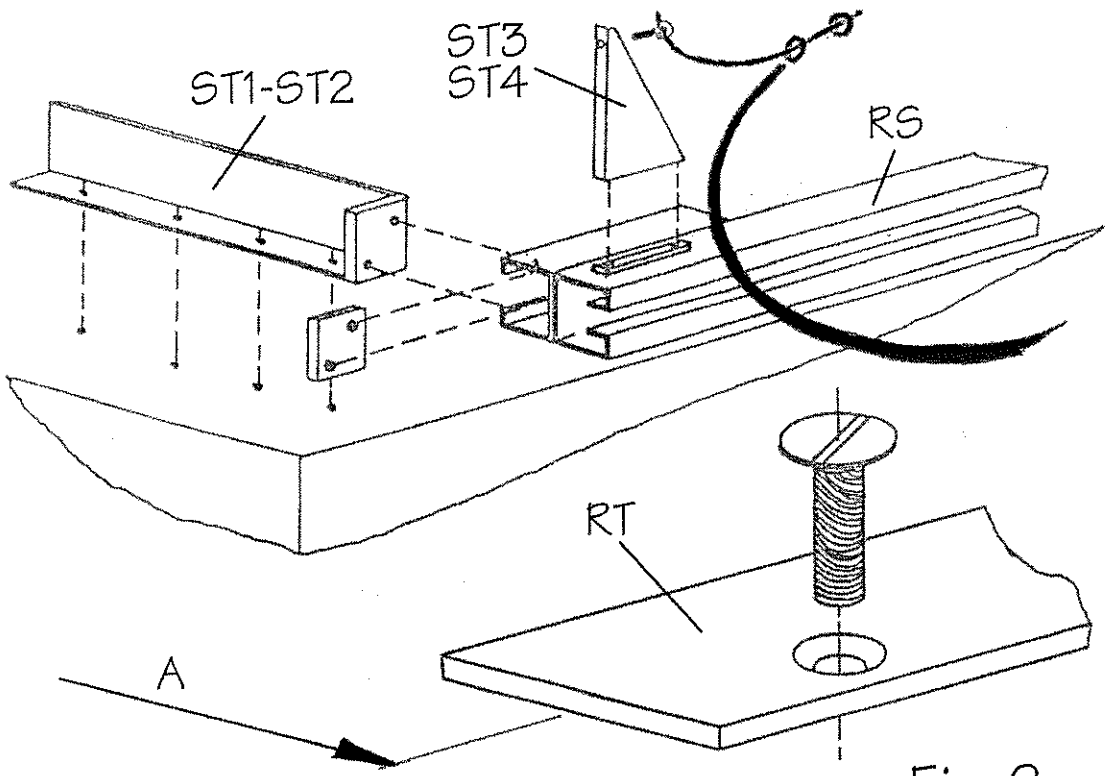



Fig. 2

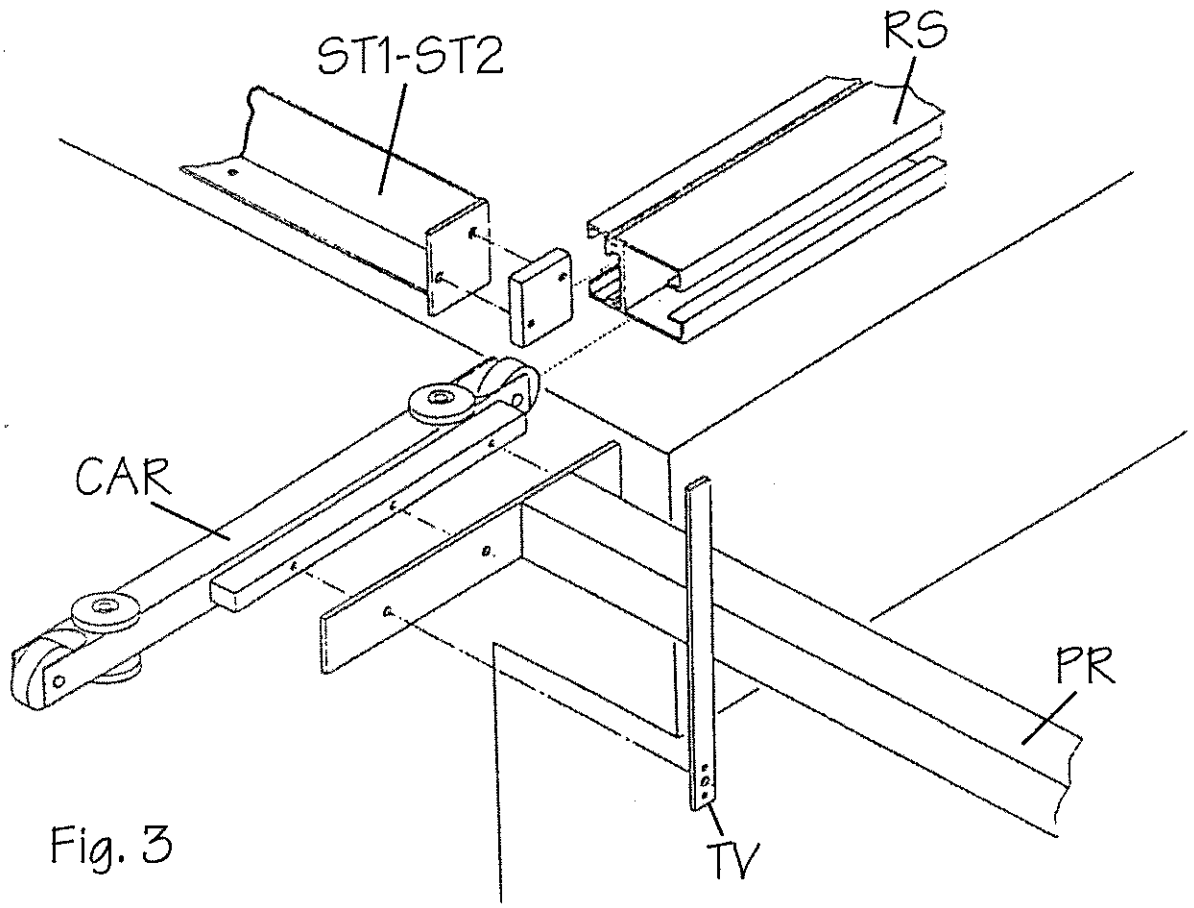



Fig. 3

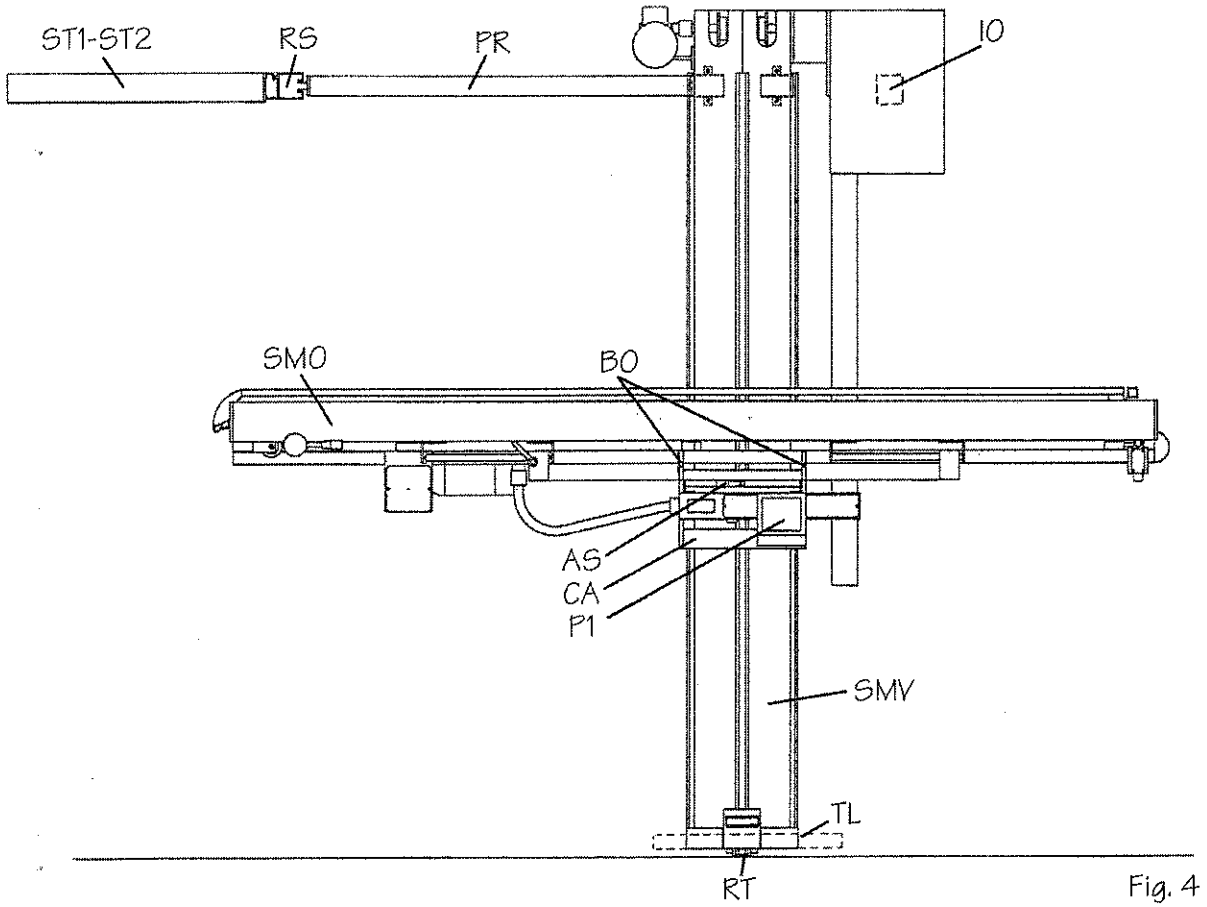



Fig. 4

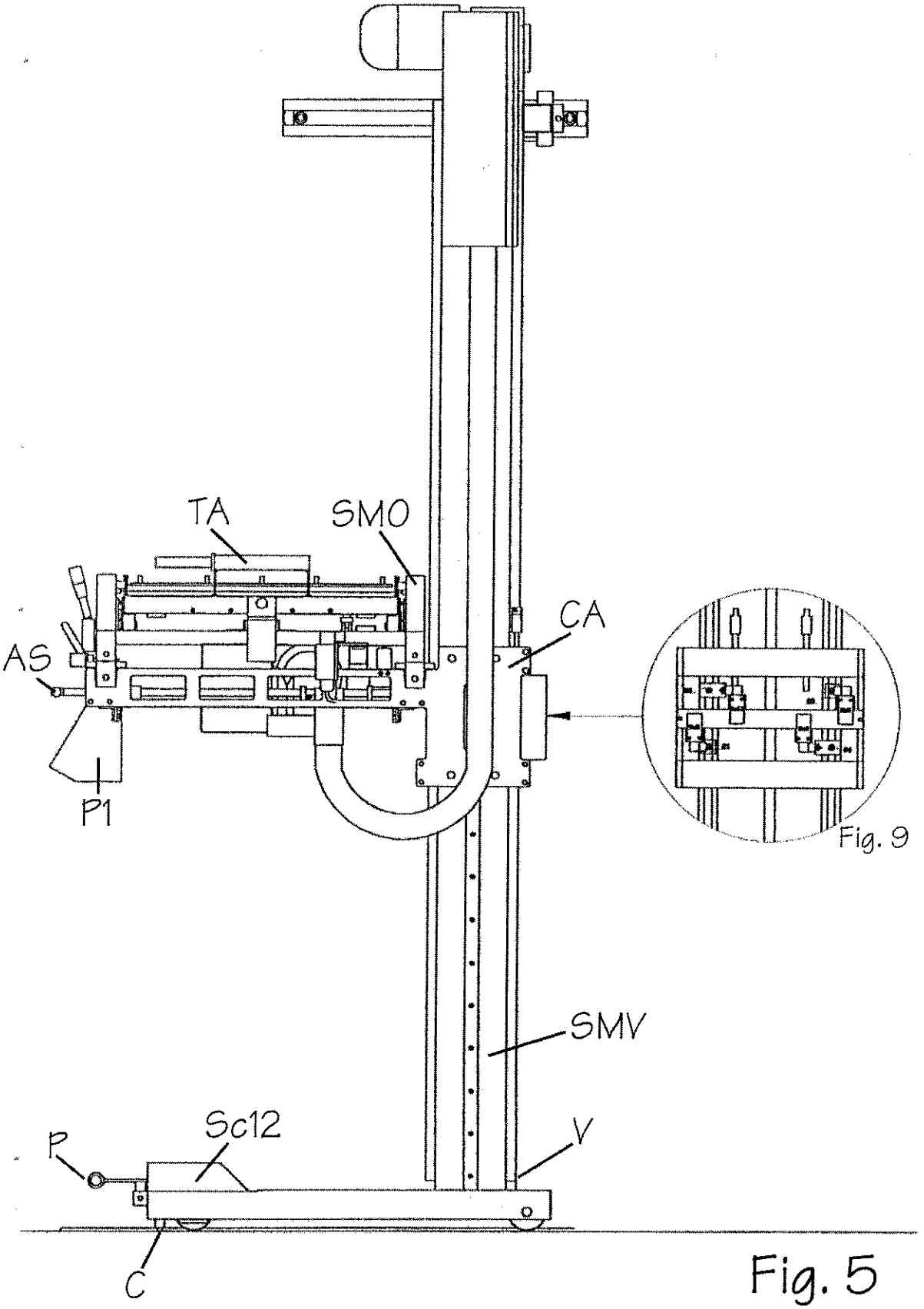



Fig. 9

Fig. 5

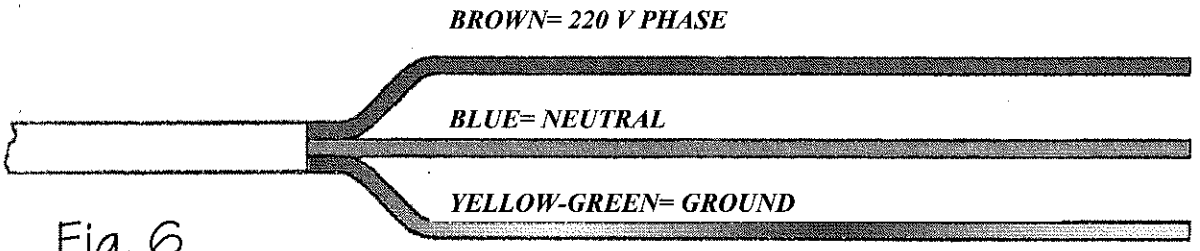
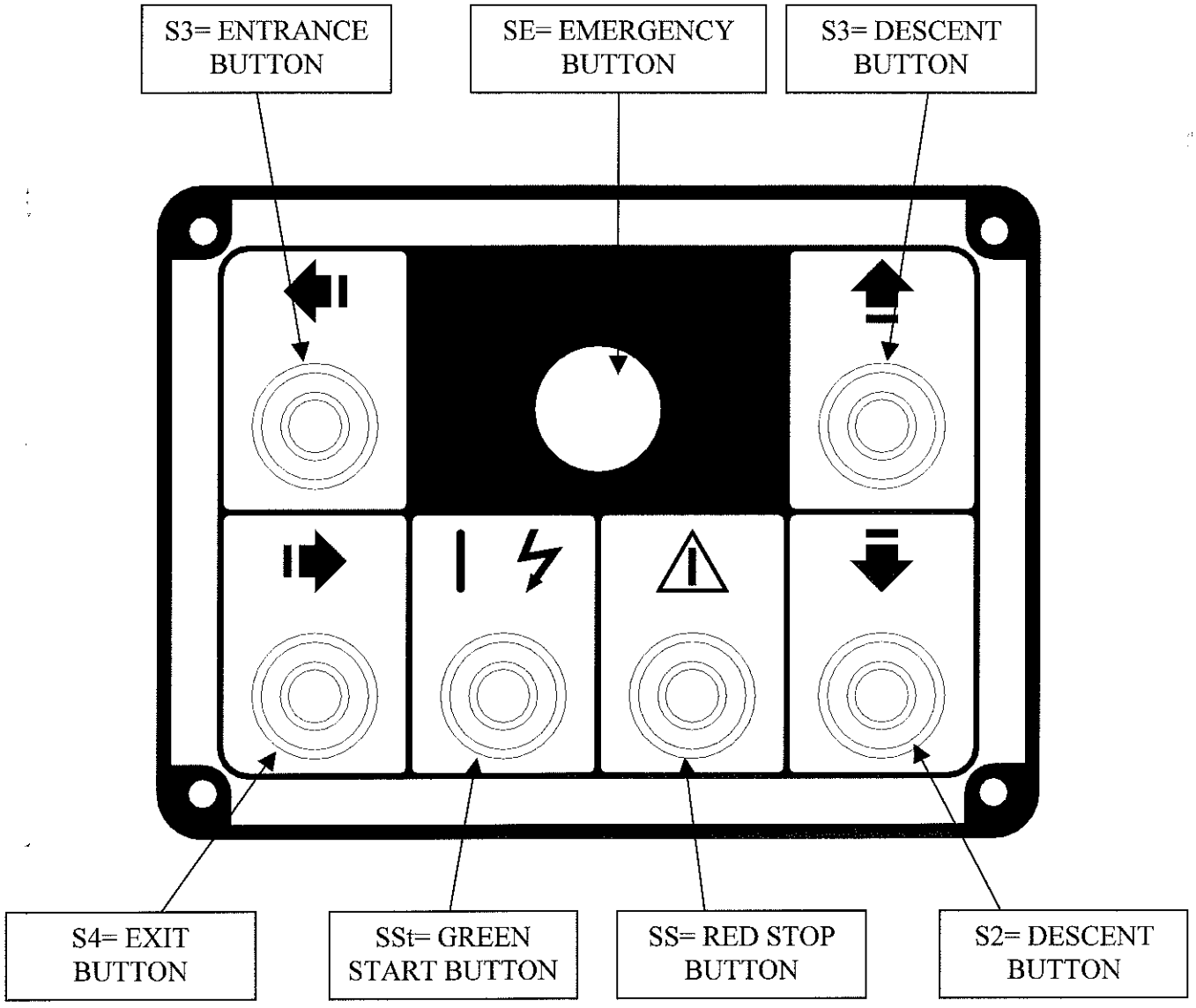

BROWN= 220 V PHASE
BLUE= NEUTRAL
YELLOW-GREEN= GROUND

Fig. 6


S3= ENTRANCE BUTTON
SE= EMERGENCY BUTTON
S3= DESCENT BUTTON
S4= EXIT BUTTON
SSt= GREEN START BUTTON
SS= RED STOP BUTTON
S2= DESCENT BUTTON

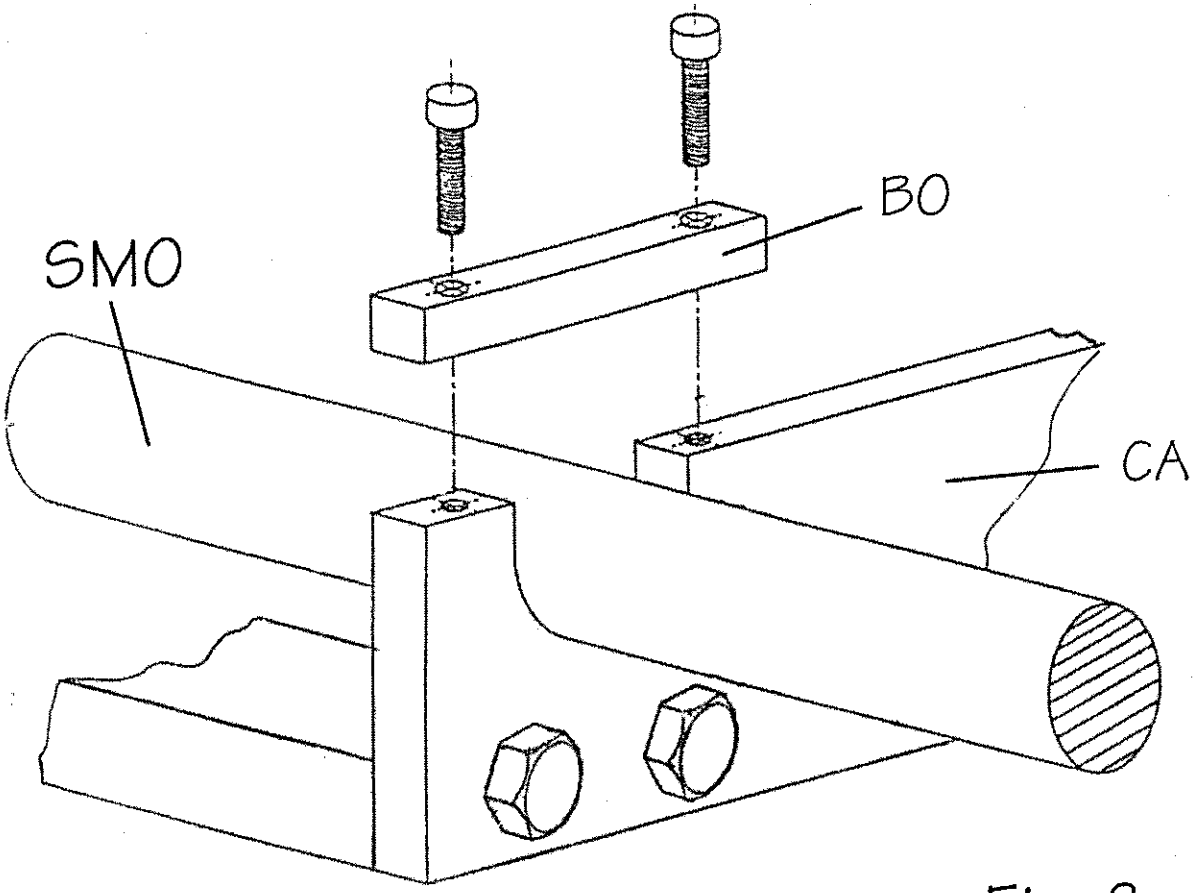
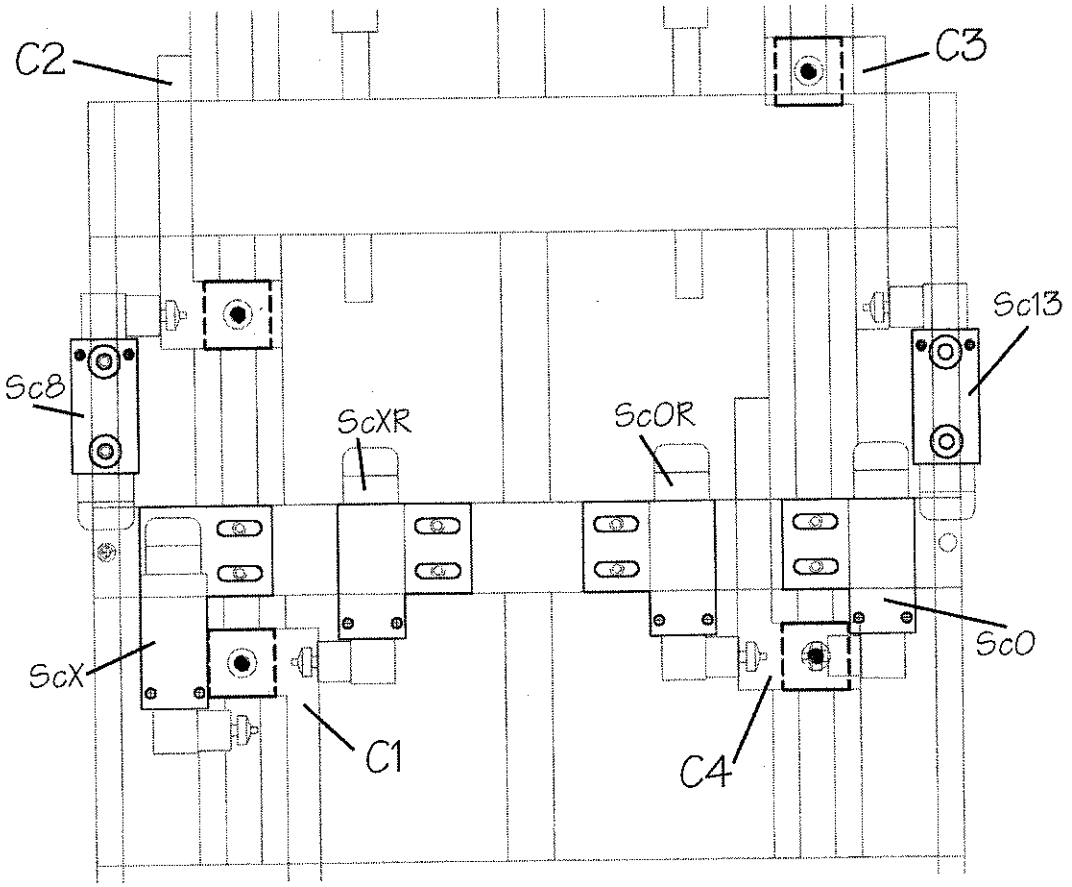



Fig. 8



# 5 Slowing down regulation

This Plc permit to the operator to regulate some parameters that in some situations must be modify.

## 5.1 Inversion movement time regulation (T0)

1) To regulate the inversion movement time of the carriage, the operator must push the **OK (1)** button to enter in the settings menu of the machine. Press the ∨ **(2)** until the write **PARAMETER** start to blink. Then press the **OK (1)** button.
2) Press the > **(4)** button so to move the blinking part from **0** of the write **T0,** to the value of the contactor present in the third line of the display
3) Press **OK (1)** so to permit to the operator to enter in the channel to modify the parameter. To modify the value of the setting, use the < **(3)** and > **(4)** buttons to change the digit, use the ∧ **(5)** and ∨ **(2)** buttons to modify the value of the digit.
4) Once that the setting of the value is end, press the **OK (1)** button to confirm the choice.
5) Press **ESC (0)** two times to return to the main page of the display.

## 5.2 Max entrance slowing down regulation (C0)

1) To regulate the slowing down of the max entrance of the carriage, the operator must push the **OK (1)** button to enter in the settings menu of the machine. Press the ∨ **(2)** until the write **PARAMETER** start to blink. Then press the **OK (1)** button.
2) In the new display, press the **OK (1)** button so to make blink the **0** of the write **T0.**
3) Press the < **(3)** button so to move the blinking part in the **T** part of the write **T0;** then move the ∧ **(5)** button so to change the write from **T0** to **C0.**
4) Press the **OK (1)** button so to confirm the choice of the contactor and so to permit to the operator to change the value of this setting.
5) Press the > **(4)** button so to move the blinking part from **0** of the write **C0** to the value of the contactor present in the third line of the display
6) Press **OK (1)** so to permit to the operator to enter in the channel to modify the parameter. To modify the value of the setting, use the < **(3)** and > **(4)** buttons to change the digit, use the ∧ (5) ∨ (2) buttons to modify the value of the digit.
7) Once that the setting of the value is end, press the OK (1) button to confirm the choice.
8) Press ESC (0) two times to return to the main page of the display.

## 5.3 Glass slowing down regulation (C1)

1) To regulate the slowing down of the glass, the operator must push the **OK (1)**button to enter in the settings menu of the machine. Press the ∨ **(2)** until the write parameter start to blink. Then press the **OK (1)** button.
2) In the new display, press the **OK (1)** button so to make blink the **0** of the write **T0.**
3) Press the < **(3)** button so to move the blinking part in the **T** part of the write **T0;** then move the ∧ **(5)** button so to change the write from **T0** to **C0.**
4) Press the button > **(4)** to move the blinking part from **C** to **0** of the write **C0** and then press the ∧ **(5)** so to change the contactor from **C0** to **C1.**
5) Press the **OK (1)** button so to confirm the choice of the contactor and so to permit to the operator to change the value of this setting.
6) Press the > **(4)** button so to move the blinking part from **1** of the write **C1** to the value of the contactor present in the third line of the display
7) Press OK **(1)** so to permit to the operator to enter in the channel to modify the parameter. To modify the value of the setting, use the < **(3)** and > **(4)** buttons to change the digit, use the ∧ **(5)** and ∨ **(2)** buttons to modify the value of the digit.
8) Once that the setting of the value is end, press the **OK (1)** button to confirm the choice.
9) Press **ESC (0)** two times to return to the main page of the display.

## 5.4 Activation time for the automatic return of the belt (C2)

1) To regulate the activation time for the automatic return of the belt, the operator must push the **OK (1)**button to enter in the settings menu of the machine. Press the ∨ **(2)** until the write parameter start to blink. Then press the **OK (1)** button.
2) In the new display, press the **OK (1)** button so to make blink the **0** of the write **T0.**
3) Press the < **(3)** button so to move the blinking part in the **T** part of the write **T0;** then move the ∧ **(5)** button so to change the write from **T0** to **C0.**
4) Press the button > **(4)** to move the blinking part from **C** to **0** of the write **C0** and then press the ∧ **(5)** so to change the contactor from **C0** to **C2.**
5) Press the **OK (1)** button so to confirm the choice of the contactor and so to permit to the operator to change the value of this setting.

6) Press the > (4) button so to move the blinking part from **2** of the write **C2** to the value of the contactor present in the third line of the display
7) Press **OK** (1) so to permit to the operator to enter in the channel to modify the parameter. To modify the value of the setting, use the < (3) and > (4) buttons to change the digit, use the ∧ (5) ∨ (2) buttons to modify the value of the digit.
8) Once that the setting of the value is end, press the **OK** (1) button to confirm the choice.
9) Press **ESC** (0) two times to return to the main page of the display.

### 5.5 Default value

| SYMBOL | NAME | VALUE |
|---|---|---|
| T0 | Inversion movement time regulation | 0.50 |
| C0 | Max entrance slowing down regulation | 100 |
| C1 | Glass slowing down regulation | 1 |
| C2 | Activation time for the automatic return of the belt | 500 |

## 6 Transfer the program from the memory to the new Plc.

1) To transfer the program that is present in the furnished memory to the new plc :
2) Insert the memory in the lodging under the display.
3) Push the **OK** (1) button so to enter in the setting menu of the machine.
4) During the blinking of the write program press the **OK** (1) button; in the new display push the ∨ (2) button so to move the blinking part to the write **CASSETTE**, then press the **OK** (1) button and in the new display press ∨ (2) button so to move the blinking part in the write **LOAD**. Press the **OK** (1) button so to visualize the new display; here press the **OK** (1) button so to load the program in the new Plc.
5) After this operations press the **ESC** (0) button so to return in the setting menu page.
6) Here press the ∨ (2) so to move the blinking part to the write **RUN**; here press the **OK** (1) button so to start the new program present in the Plc.
7) At the end press the esc button so to return to the main display of the plc and remove the memory from the lodging.
8) Now is possible to start to work with the machine

*NOTE*: after this operations the value setted in the precedent chapter return to default value so it is necessary to re-set them to the wanted value.