


# TECHNICAL DOCUMENTATION

## - SPIROR HP-DR




Date	Revisions	Revisions' reasons	Issued by	Checked by	Approved by
27/09/2012	00	Prima emissione	<i>Saravelli D.</i>	<i>Saravelli D.</i>	<i>Saravelli D.</i>
15/11/2017	01	General revision	<i>Baldinini F.</i>	<i>Baldinini F.</i>	<i>Baldinini F.</i>
19/07/2018	02	Index realization	<i>Baldinini F.</i>	<i>Baldinini F.</i>	<i>Baldinini F.</i>
23/04/2019	03	Added missing alarms	<i>Baldinini F.</i>	<i>Baldinini F.</i>	<i>Baldinini F.</i>
07/06/2019	04	Correction of unclear display of configuration parameters	<i>Baldinini F.</i>	<i>Baldinini F.</i>	<i>Baldinini F.</i>


 <b>Norm. Tecn.</b> <b>60.2.7_06</b>	<b>TECHNICAL DOCUMENTATION</b> <b>- SPIROR HP-DR -</b>	<b>Date</b> <b>June 2019</b>	<b>Rev.04</b>
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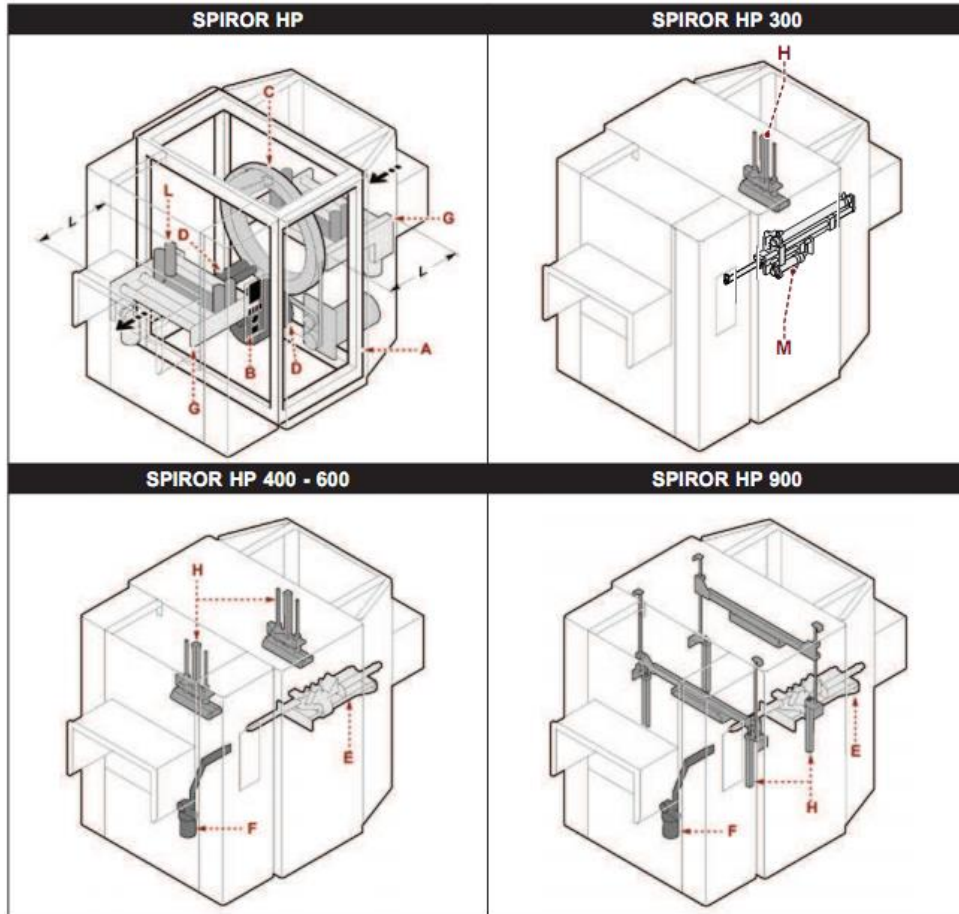
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**OPERATOR PANEL DESCRIPTION**

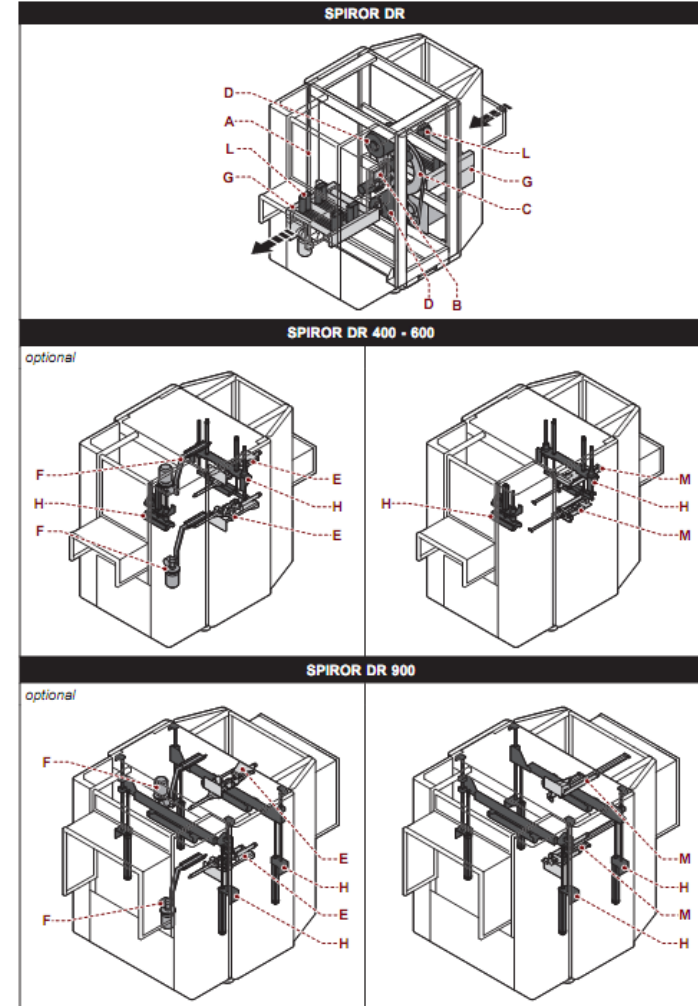
		<b>STOP CYCLE</b>
		<b>START CYCLE</b>
		<b>RESET</b>
		<b>EMERGENCY</b>
		<b>MAIN SWITCH I/O</b>

**MACHINE CONFIGURATIONS DETAIL**

**Spiror HP**



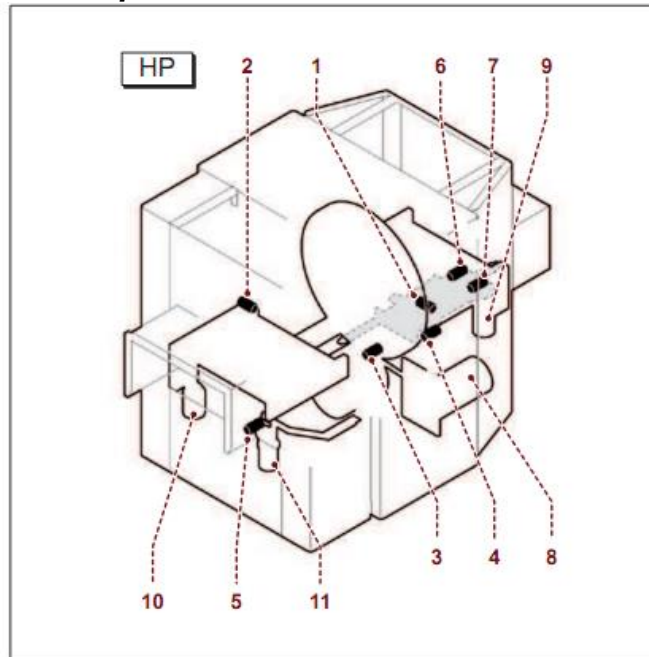
**Spiror HP-DR**



## ELETRICAL DEVICES DESCRIPTION

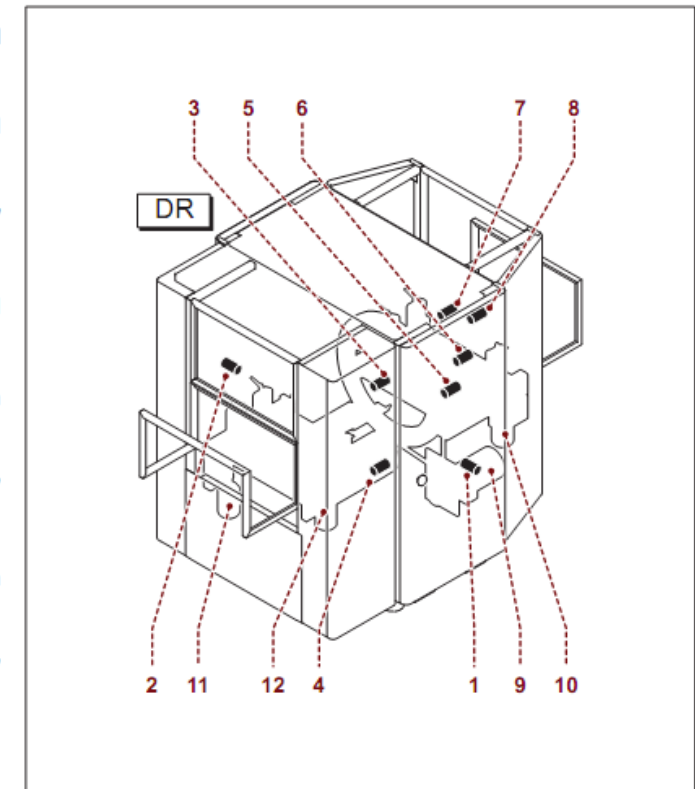
### Spiror HP

- 1) **Photocell**  
Detects the product in the infeed area.
- 2) **Photocell**  
Detects the product in the outfeed area.
- 3) **Sensor**  
Detects the reel in the "cycle start" position (rotation phase).
- 4) **Sensor**  
Detects the reel in the "Reel change phase" position.
- 5) **Sensor (model 400 - 600 - 900)**  
detects the cutting arm in the "bottom dead point" (Phase position).
- 6) **Sensor**  
Detects the clamp in the "forward" position.
- 7) **Sensor (model 400 - 600 - 900)**  
detects the clamp in the "closed" position.
- 8) **Electric motor**  
drives the rotating ring.
- 9) **Electric motor**  
drives the infeed roller.
- 10) **Electric motor**  
drives the outfeed roller.
- 11) **Electric motor (model 400 - 600 - 900)**  
drives the rotation of the cutting unit.



### Spiror HP-DR

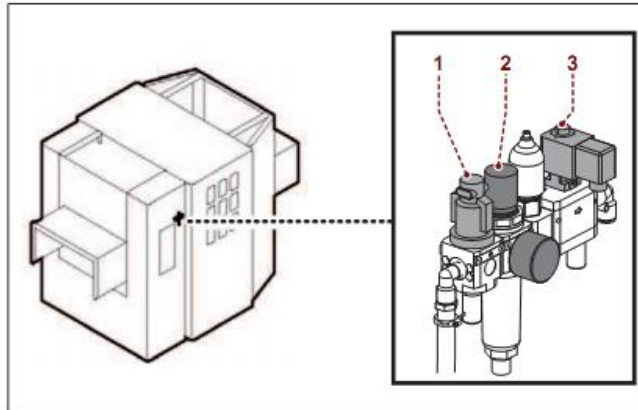
- 1) **Photocell**  
Detects the product in the infeed area.
- 2) **Photocell**  
Detects the product in the outfeed area.
- 3) **Sensor**  
Detects the reel in the "cycle start" position (rotation phase).
- 4) **Sensor**  
Detects the reel in the "Reel change phase" position.
- 5) **Sensor**  
Detects the lower cutting arm in "back" position.
- 6) **Sensor**  
Detects the lower clamp in "back" position.
- 7) **Sensor**  
Detects the upper cutting arm in "back" position.
- 8) **Sensor**  
Detects the upper clamp in "back" position.
- 9) **Electric motor**  
drives the rotating ring.
- 10) **Electric motor**  
drives the infeed roller.
- 11) **Electric motor**  
drives the outfeed roller.



## PNEUMATICS DEVICES DESCRIPTION

### Spiror HP e Spiror HP-DR

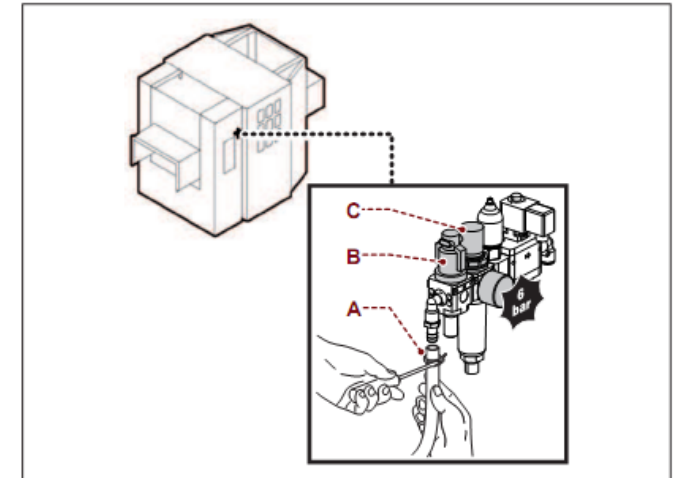
- 1) **Tap**  
to eliminate pneumatic pressure inside the machine.
- 2) **Pressure regulator with filter and pressure gauge**  
to adjust general pressure of the pneumatic plant.  
Turn knob to change the pressure values indicated on the pressure gauge.
- 3) **Solenoid valve (YV0)**  
to eliminate pneumatic pressure inside the machine in case of an emergency stop.



Compressed air operating pressure..... 6+10 bar (0,5+1,0 MPa)

Proceed as indicated.

1. Insert a flexible tube on the end of the rubber fitting and fasten it with a metallic screw clamp (A).
2. Check that the valve (B) is in the "OPEN" position.
3. Turn on the power supply line.
4. Check that the pressure gauge indicates at least 6 bar and use the knob (C) to compensate any pressure differences. Repeat this operation when the machine is running.

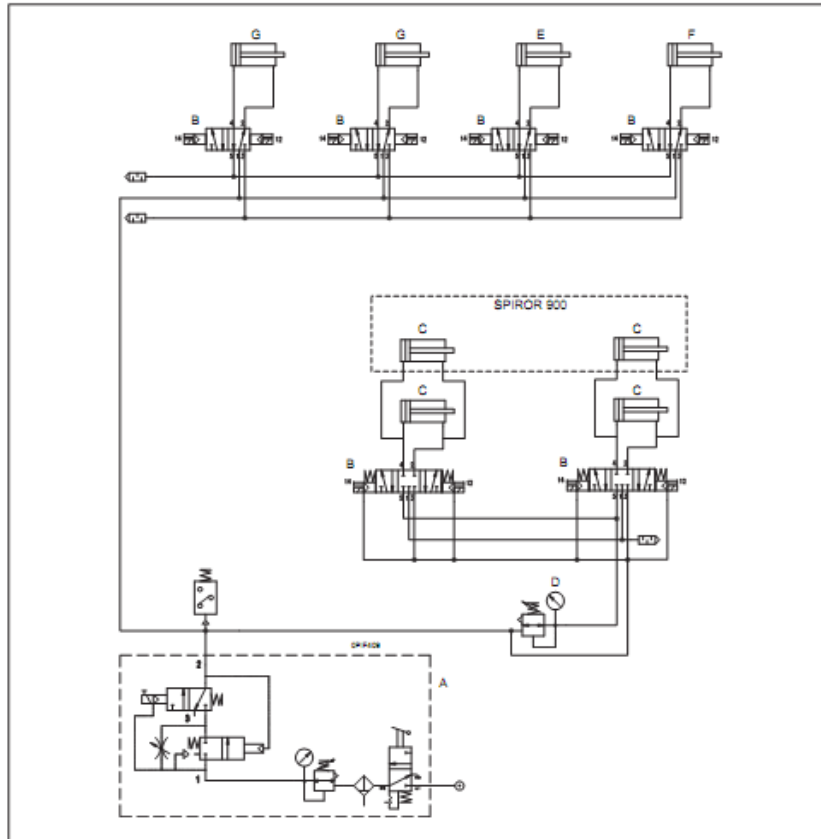


### Spiror HP

Description	Units of measurement	Value			
		Spiror HP 300	Spiror HP 400	Spiror HP 600	Spiror HP 900
Machine					
Operating pressure	bar		6 ± 1		
Allowed pressure (max)	bar		10		
Average air consumption	NI/min		20		

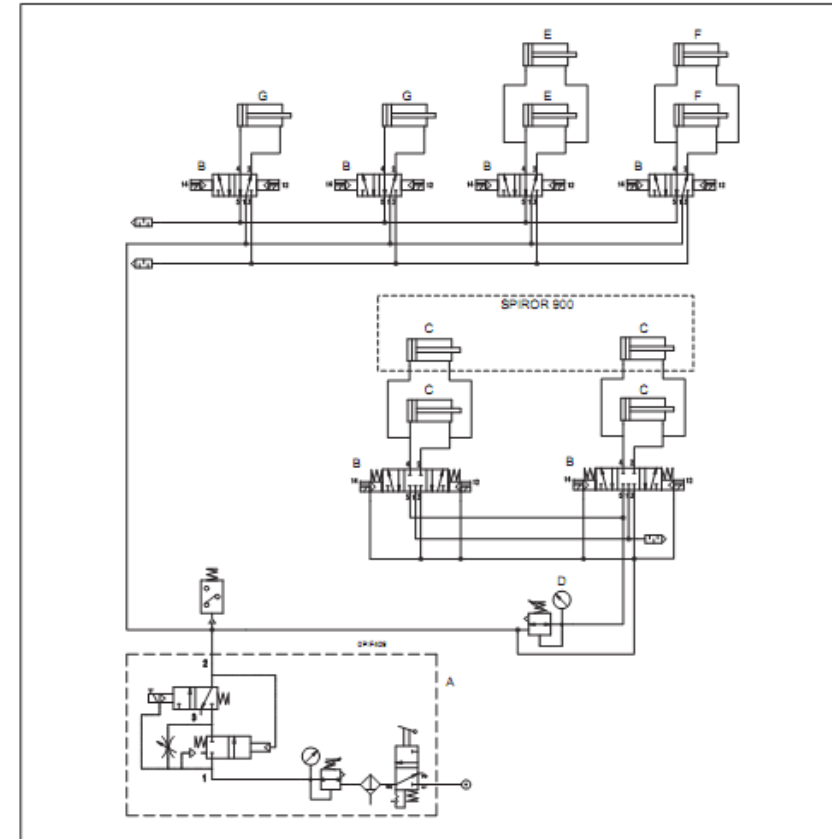
### Spiror HP-DR

Description	Units of measurement	Value		
		Spiror DR 400	Spiror DR 600	Spiror DR 900
Machine				
Operating pressure	bar		6 ± 1	
Allowed pressure (max)	bar		10	
Average air consumption	NI/min		20	



**Key**

- A) Air treatment unit.
- B) Solenoid valve.
- C) Presser drive pneumatic cylinder.
- D) Adjust / Pressure units thrust manometer.
- E) Open/close clamp pneumatic cylinder.
- F) Pneumatic cylinder forward / clamp backward.
- G) Self-centring guides pneumatic cylinder (optional).



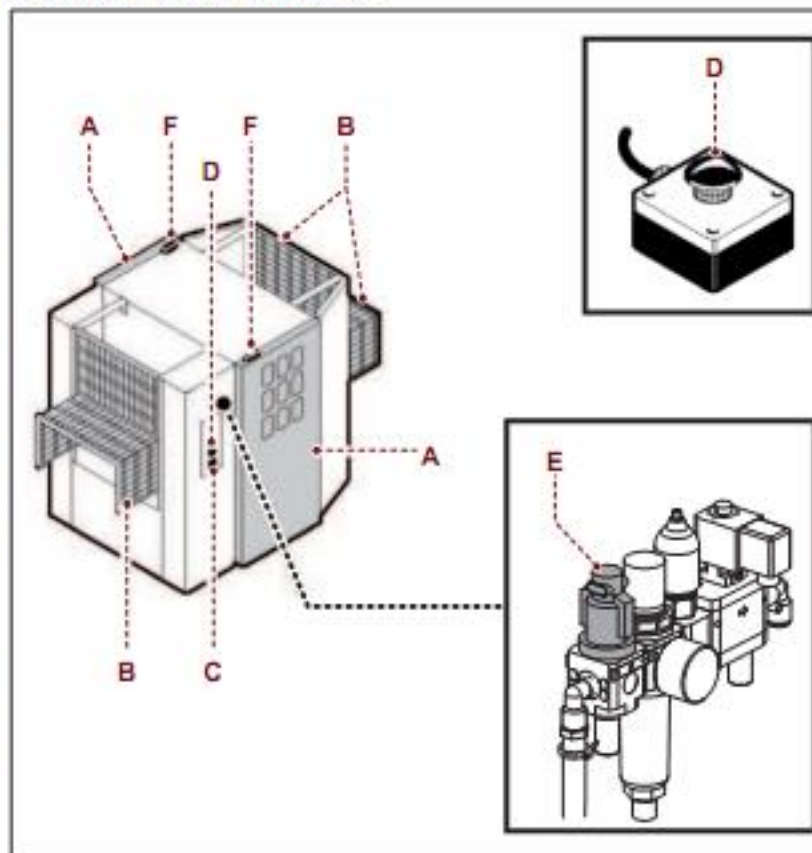
**Key**

- A) Air treatment unit.
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- D) Adjust / Pressure units thrust manometer.
- E) Open/close clamp pneumatic cylinder.
- F) Pneumatic cylinder forward / clamp backward.
- G) Self-centring guides pneumatic cylinder (optional).

## SAFETY DEVICES DESCRIPTION

The figure shows the positioning of the devices on board of the machine.

- A) **Interlocking mobile protection**  
when protections are opened, machine stops.  
Delayed opening of protections allows the operator to enter in total safety to perform the necessary operations of reel change and maintenance.
- B) **Fixed protections**  
prevent access to the moving components.
- C) **General switch**  
To turn the electric supply on and off. It can be padlocked to prevent unauthorised personnel from starting the machine during adjustments and maintenance.
- D) **Emergency button.**  
When pressed, it immediately stops the machine in phase and, after a few seconds, in emergency. To reset, turn the knob in the direction indicated by the arrow.
- E) **Pneumatic valve**  
disconnects the machine from the pneumatic supply, discharges the residual energy and locks it to avoid tampering.
- F) **Micro-switches on mobile protections**  
Block all machine functions as they open.



MACHINE TYPE SELECTION ACCORDING TO PRODUCT DIMENSIONS

*Spiror HP*

*Spiror HP-DR*

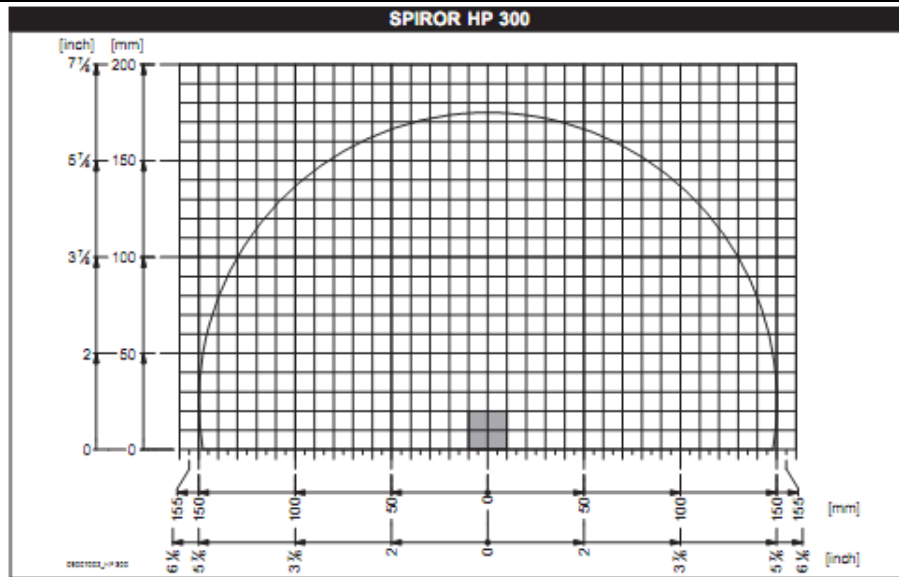
Product size

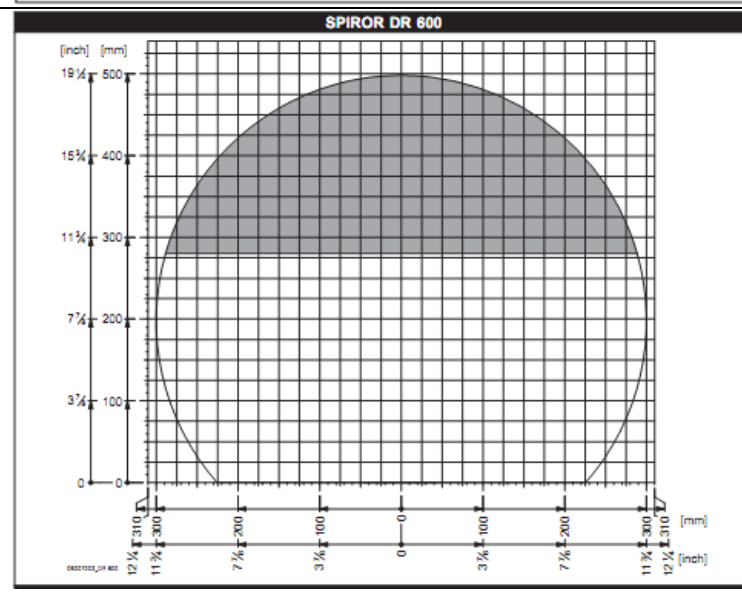
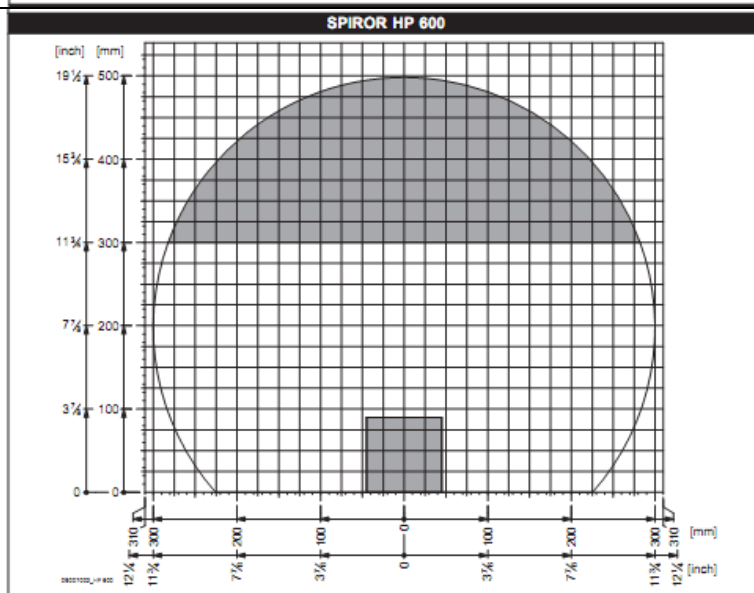
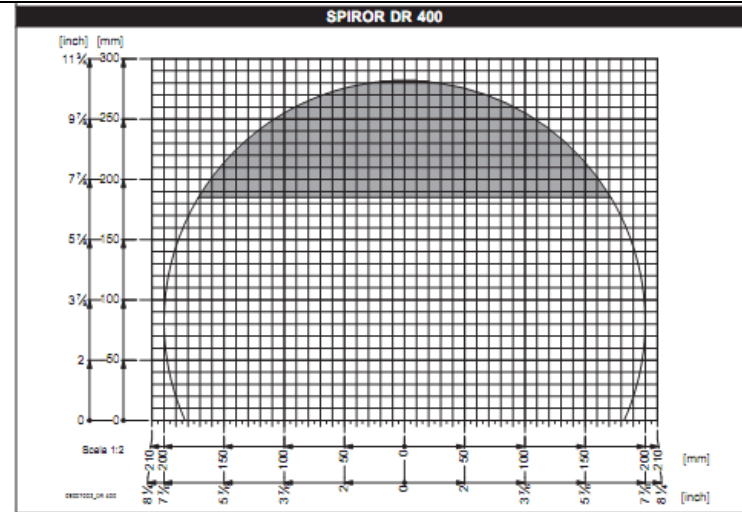
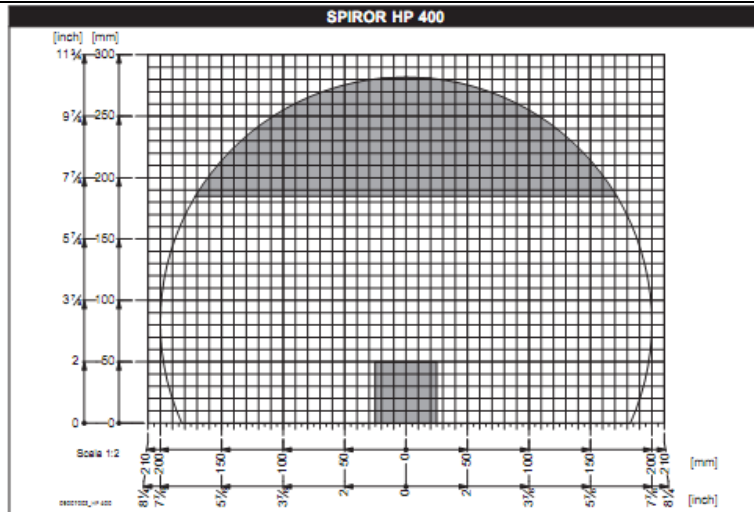
The dimensions (width and height or diameter) of the products' cross sections workable on each machine must remain within the respective diagrams; the same is to be said for the cross sections that are uniform on all the product's length.

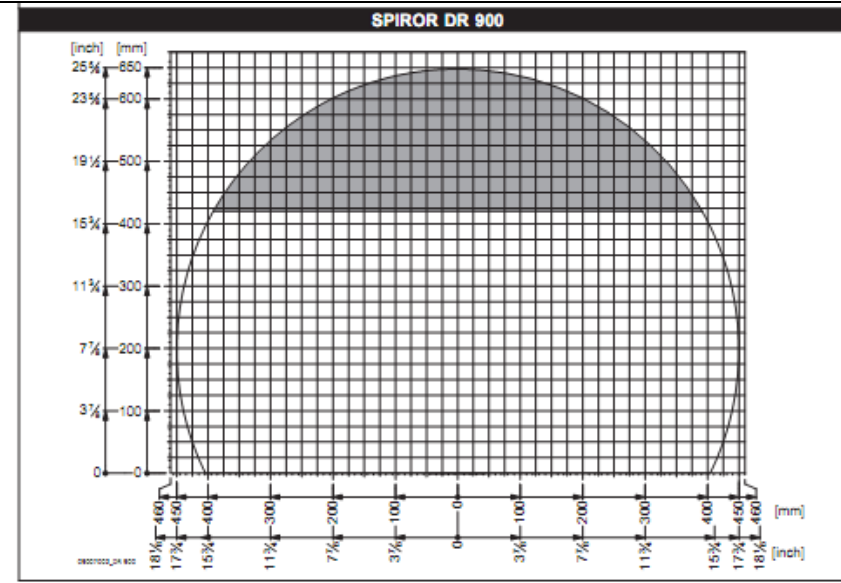
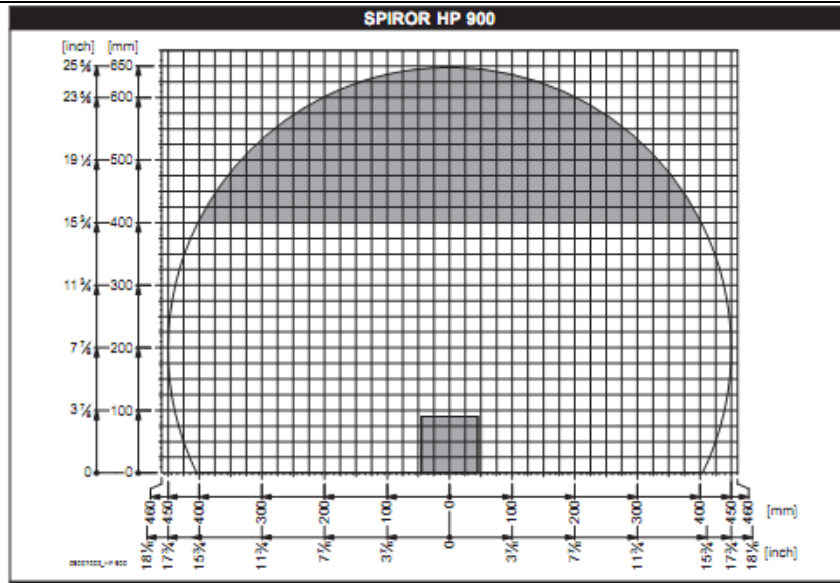
For best results from a qualitative point of view, the rotating ring diameter must be the smallest possible, compared to the product's cross section.

For cross sections smaller than those indicated, contact the manufacturer.

For products that intersect the sketched areas, contact the manufacturer.







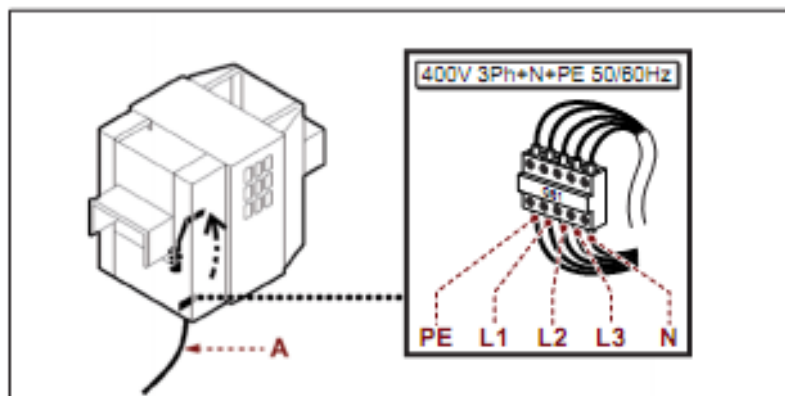
**POWER SUPPLY CONNECTION SPIROR HP & SPIROR DR**

Standard models work with a mains voltage of:

- 400 V 3Ph+N 50/60 Hz

Proceed as follows for electrical connections.

1. Check that the mains voltage (V) and frequency (Hz) correspond to those of the machine (see identification plate and wiring diagram).
2. Turn the mains switch to 0 (OFF).
3. Connect the power cable as shown in the figure.

** Important**

The earth wire (yellow and green) must be connected to its earth terminal PE.

Refer to the wiring diagram given in the machine powering page to check the correct dimensions of the power cable and protection device.

4. Turn on tension to machine and start rotation of the manual cutting unit; this must rotate counter clockwise; on the contrary, invert one of the phases on the power supply wire terminal.  
It is not valid for the 300 HP model and for the DR models with clamp units and standard cut.

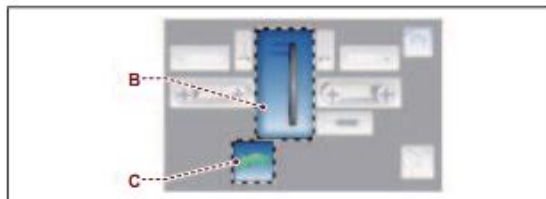
## FILM REEL LOADING AND ROUTE

### Spiror HP

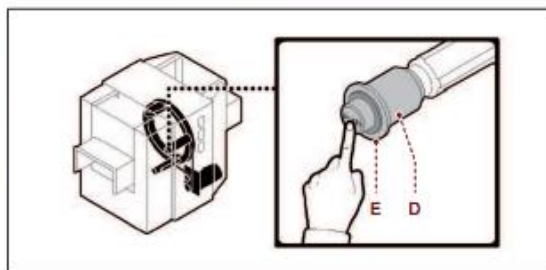
1. Press button (A) to access manual movements.



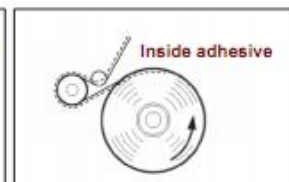
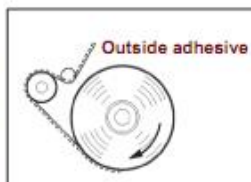
2. Select movement (B) and using button (C) bring the machine into the spool change position.



3. Open the mobile protection.
4. Press the button and take out flange (D).
5. Insert the reel on mandrill, put flange back on and repress the button.
6. Block the flange by pressing ring (E).
7. Close protection.
8. Press the "Reset" button.
9. The machine will automatically return to the start cycle position.



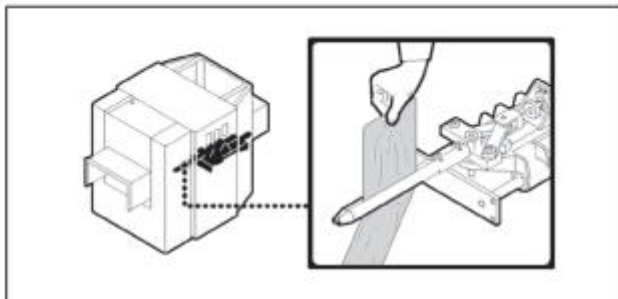
10. Open the protection.
11. Unwind the film and insert it between the rollers following the scheme in the figure (the sketched area indicates the adhesive side of the film).
12. If necessary, adjust film's wrapping tension (see "Film wrapping tension - Adjustment").



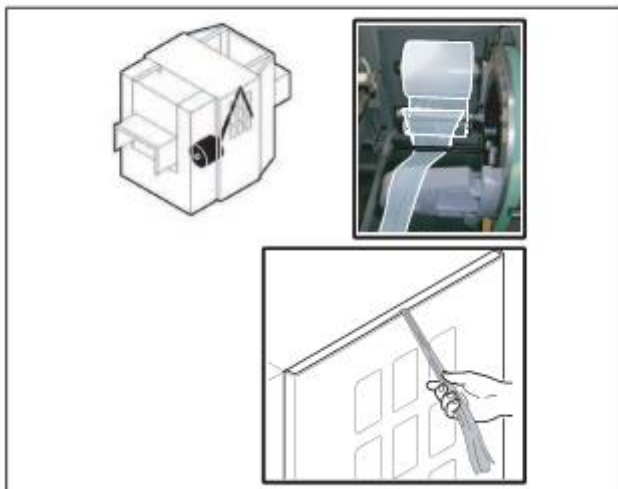
### Spiror HP-DR

**For models HP 400 - HP 600 - HP 900**

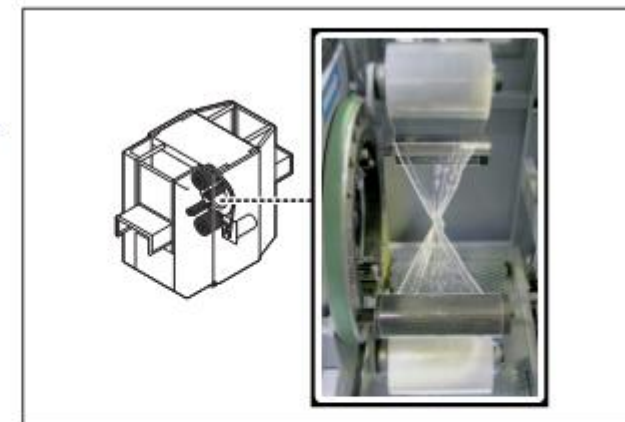
1. Manually open the clamp and insert the film end between the jaws.
2. Close the protection.
3. Press the "Reset" button.

**For model HP 300**

1. Close the protection.
2. Press the "Reset" button.
3. Press the film inserting button (F). The clamp forwards.
4. Open the protection.
5. Insert film in the clamp and hold the film end closing the protection.
6. Press the "Reset" button and remove the film end from the machine.

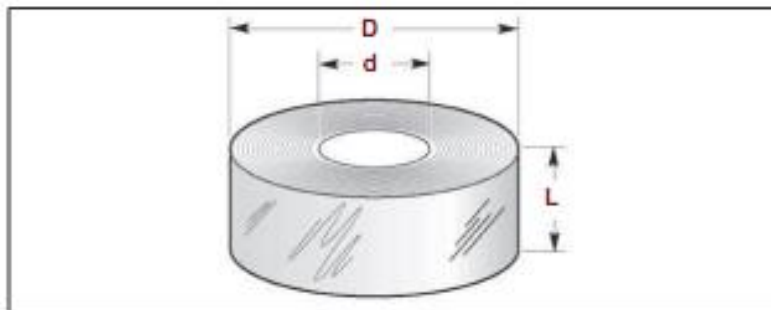
**For models DR 400 - DR 600 - DR 900**

1. Close the protection.
2. Press the "Reset" button.
3. Open the protection.
4. Tie-up the films' edges of the reels.



5. Press the "reset" button followed again by the "film insertion" button (F).



**FILM SPECIFICATION SPIROR HP & SPIROR DR**

Descrizione	Unità di misura	Valore
D) Diametro esterno max	mm	300
d) Diametro interno	mm	76
(opzionale)	mm	50
L) Larghezza	mm	125-250
Spessore film	$\mu$	17+50

**DESCRIPTION AND MAIN ELECTRICAL BOX LAYOUT – models till 2017 –**

**The part numbers are for information only.  
Always check and verify the codes on the  
wiring diagram supplied with the machine.**

**U3** - PLC TM238LFDC24DT

code 1373300006

**U4** – Expansion I/O PLC TM2DDI16DT

code 1371300006

**GS1** – Power supply SPD19-2402P

code 0001346659

**U1** – Rotation Inverter ATV312HU15M2

code 1730300015

**U2** – Conveyors Inverter ATV312H037M2

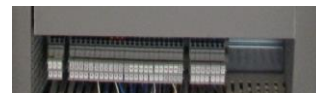
code 1730300016

**FR1 FR2** - Termic Relay LR2-D1306

code 0001339453

**K4 K5** – Relay Card (signals exchange)

code 1580310005



Connector

**DESCRIPTION AND MAIN ELECTRICAL BOX LAYOUT – models from 2017 –**

**The part numbers are for information only.  
Always check and verify the codes on the  
wiring diagram supplied with the machine.**



**G1** – Poer supply S8VKG12024  
code 1640300003



**A1** –PLC TM241CEC24T  
code 1373300008



**K1** – Power Relay CAD323BD  
code 0001303906



**U2-U3-U4** - Inverters – ATV320U07M2C, ATV320U04M2C  
codes 1730300031, 00L0362221

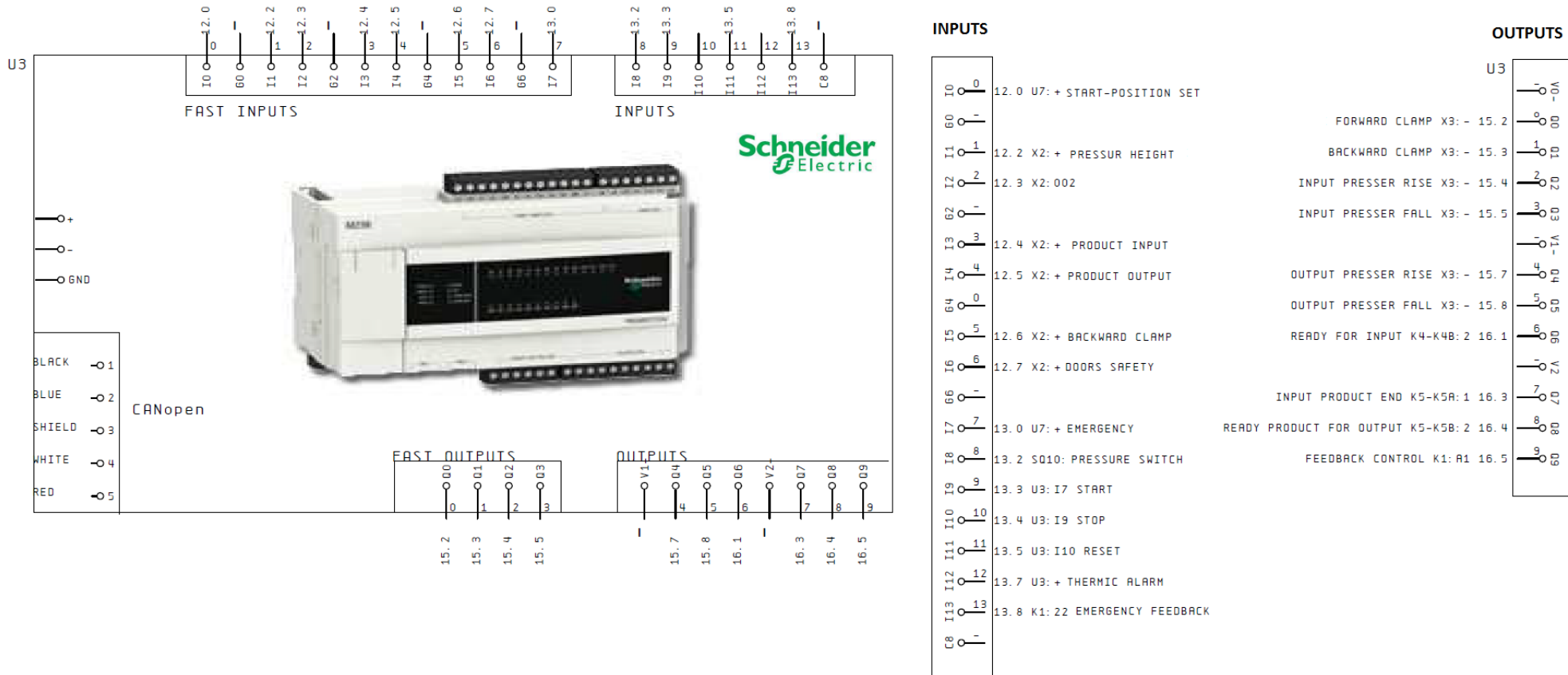


**F4 F5** - Termic Relay LRD07  
code 0001352466

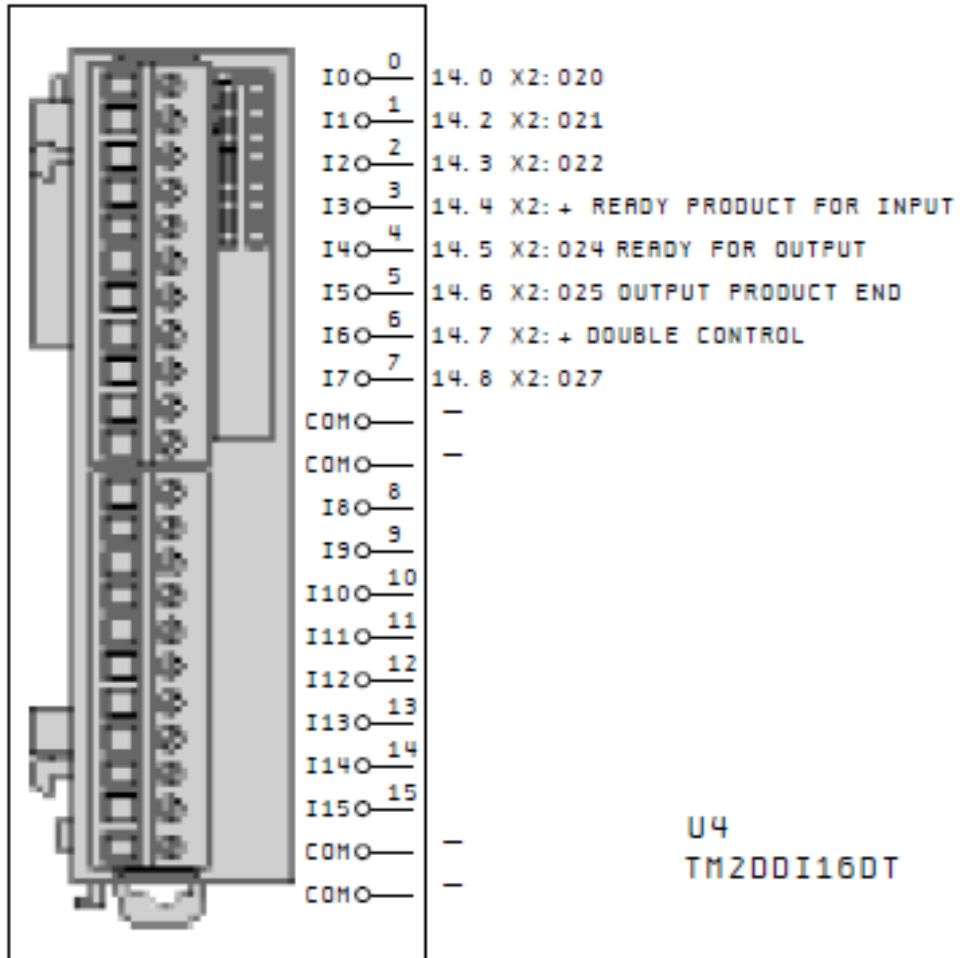
ELECTRONIC CARDS INPUT / OUTPUT DESCRIPTION (custom cards and Commercial components)

PLC SCHNEIDER

The input / output description are for information only. Always check and verify the input/output on the wiring diagram supplied with the machine.

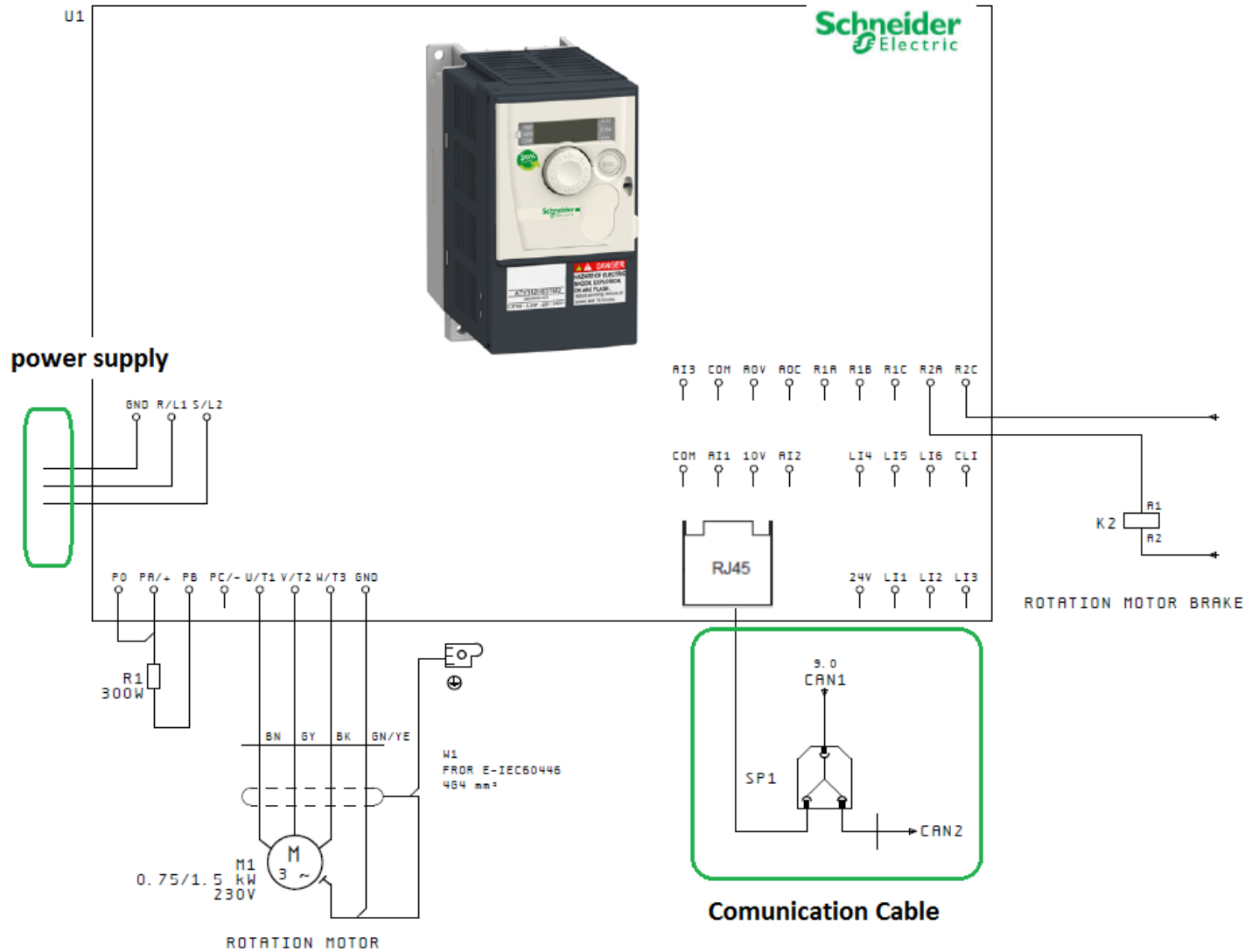


Use the PLC LEDs to check the input / output states

**PLC SCHNEIDER – INPUT OUTPUT EXPANSION MODULE**

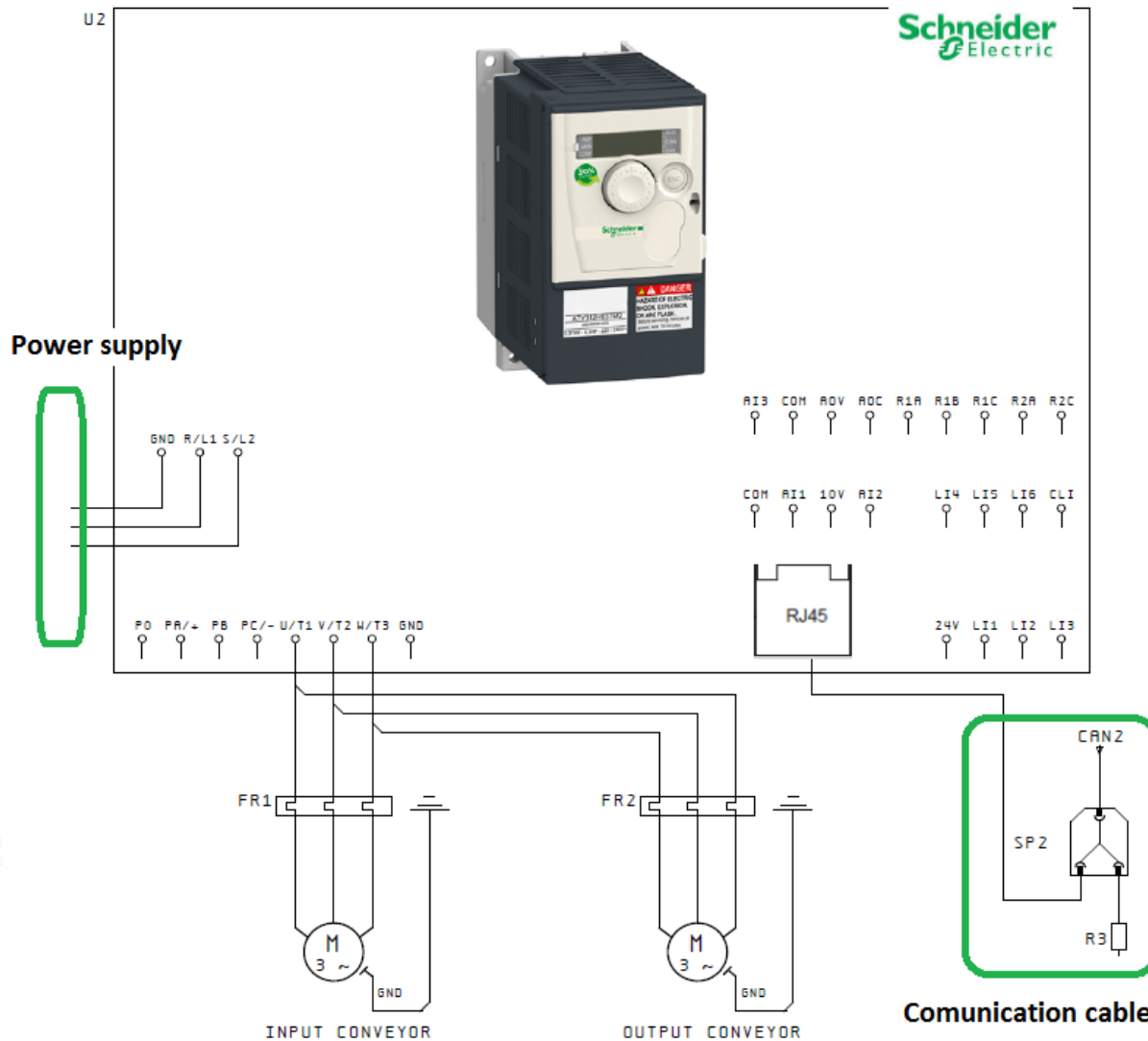
**Use the PLC LEDS to check the input / output states**

**ROTATION INVERTER**



**Communication Cable**

**CONVEYORS INVERTER**



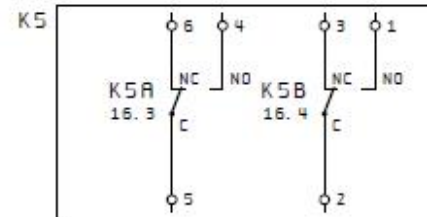
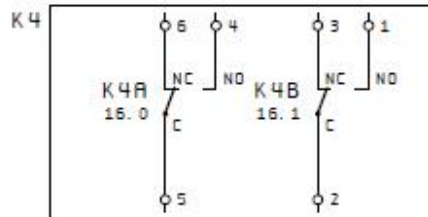
**SIGNAL EXCHANGE CARDS**

"SIGNAL FROM "WRAPPING MACHINE" TO CUSTOMER "CONVEYOR""

K4




K5



INPUT PRODUCT  
END

READY FOR  
INPUT



READY PRODUCT  
FOR OUTPUT

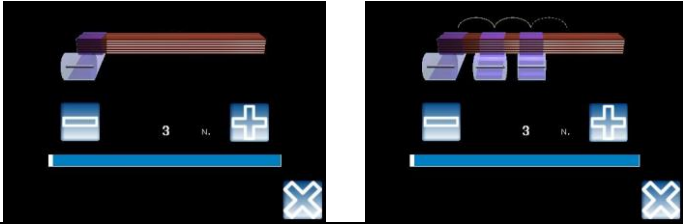
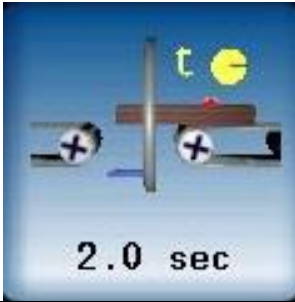
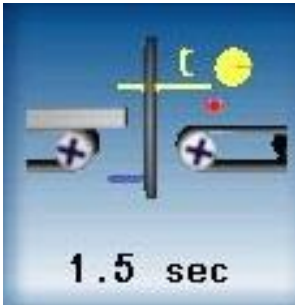
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## “POWER SAVE” FUNCTION

If the machine is not active for about 15 minutes (the machine doesn't make any packing cycle, and nobody push buttons of the operator panel), it goes in energy saving mode. In this condition the touch-screen panel goes in stand-by mode (blank page). To exit from this condition, it is necessary to press on the touch-screen or each one of the push buttons on the operator panel.








**CYCLE PARAMETERS RANGE**

Parameter	Min. – Max.	Machine model	Step	Measure unit
Ring rotation speed 	0 – 260	Spiror HP 300	1	Rpm
	0 – 200	Spiror HP 400		
	0 – 180	Spiror HP 600		
	0 – 130	Spiror HP 900		
	0 – 220	Spiror HP-DR 400		
	0 – 180	Spiror HP-DR 600		
	0 – 130	Spiror HP-DR 900		
Conveyors speed 	18 -- 58	Spiror HP 300	1	mt/min
	14 – 40	Spiror HP 400		
	12 -- 34	Spiror HP 600		
	10 -- 29	Spiror HP 900		
	20 -- 80	Spiror HP-DR 400		
	16 -- 60	Spiror HP-DR 600		
	10 -- 50	Spiror HP-DR 900		

<p>Over-wraps</p> 	<p>1 – 15</p>	<p>All</p>	<p>1</p>	<p>Rounds</p>
<p>Head over-wraps positioning time</p> 	<p>0 – 9.9</p>	<p>All</p>	<p>0,1</p>	<p>Seconds</p>
<p>Tail over-wraps positioning time</p> 	<p>0 – 9.9</p>	<p>All</p>	<p>0,1</p>	<p>Seconds</p>

<p>Memorized wrapping programs</p> <table border="1"> <tr> <td><b>1</b></td> <td>PRODUCT1</td> <td><b>6</b></td> <td>PRODUCT6</td> </tr> <tr> <td><b>2</b></td> <td>PRODUCT2</td> <td><b>7</b></td> <td>PRODUCT7</td> </tr> <tr> <td><b>3</b></td> <td>PRODUCT3</td> <td><b>8</b></td> <td>PRODUCT8</td> </tr> <tr> <td><b>4</b></td> <td>PRODUCT4</td> <td><b>9</b></td> <td>PRODUCT9</td> </tr> <tr> <td><b>5</b></td> <td>PRODUCT5</td> <td><b>10</b></td> <td>PRODUCT10</td> </tr> </table> 	<b>1</b>	PRODUCT1	<b>6</b>	PRODUCT6	<b>2</b>	PRODUCT2	<b>7</b>	PRODUCT7	<b>3</b>	PRODUCT3	<b>8</b>	PRODUCT8	<b>4</b>	PRODUCT4	<b>9</b>	PRODUCT9	<b>5</b>	PRODUCT5	<b>10</b>	PRODUCT10	<p>20</p>	<p>All</p>	
<b>1</b>	PRODUCT1	<b>6</b>	PRODUCT6																				
<b>2</b>	PRODUCT2	<b>7</b>	PRODUCT7																				
<b>3</b>	PRODUCT3	<b>8</b>	PRODUCT8																				
<b>4</b>	PRODUCT4	<b>9</b>	PRODUCT9																				
<b>5</b>	PRODUCT5	<b>10</b>	PRODUCT10																				
<p>Type of working cycle</p> 	<p>5</p>	<p>All</p>	 Complete packing with head and tail over-wraps of the product  Head and tail over-wraps packing of the product  Complete packing with equidistant over-wraps of the product  Packing with equidistant bands  By-pass cycle (Product not wrapped)																				

## USE OF THE TOUCH SCREEN PASSWORDS

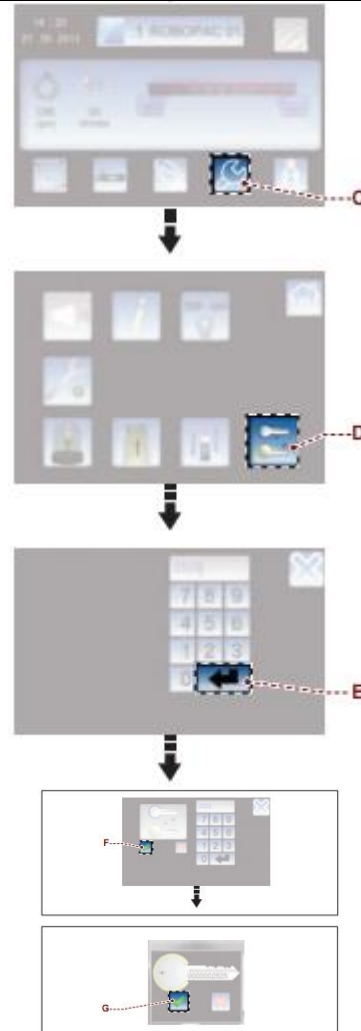
 <p>Operator panel locked</p>	<p><b>MACHINE'S RESPONSIBLE SECTION</b></p> 	<p><b><u>RESPONSIBLE SECTION</u></b> (Responsible / Machine's user) Password = 1111</p>	 <p><b>Machine's packing mode</b></p>	
	<p>Use of the machine limited to the setting of the packing cycle and setting of a different access password</p>	<p><b>ROBOPAC's DISTRIBUTOR SECTION</b></p> 	<p><b><u>DISTRIBUTOR SERVICEMAN SECTION (MACHINE'S MAINTENANCE)</u></b> (Robopac's distributor) Password = 6161</p>	 <p><b>Distributor's serviceman password confirmation.</b></p>
	<p>Use of the machine like "USER" and access to the main functions of service for diagnostics and maintenance.</p>	<p><b>ROBOPAC SECTION</b></p> 	<p><b><u>ROBOPAC SERVICEMAN SECTION</u></b></p> <p>To be used by ROBOPAC's service engineers only</p>	 <p><b>ROBOPAC's serviceman password confirmation.</b></p>

## RESPONSIBLE PASSWORD CHANGE AND ITS RESET

### Enter with password 1111 Machine Responsible

#### Password change

1. Touch the key (C) to display the software setting page of the machine manager.
2. Touch the (D) key to display the keypad, type the new password and confirm by touching the key (Enter) (E).



3. If it is correct, confirm by touching key (F), confirm again in the pop-up window by touching key (G).

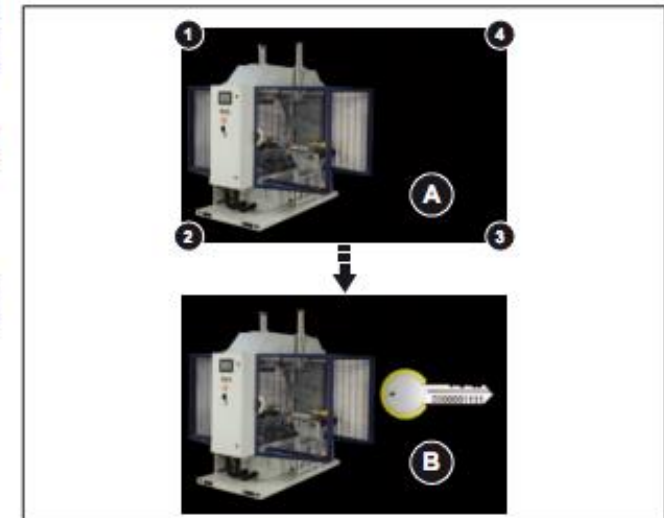
#### Default password reset


If you need to restore the default password in case you have forgotten the password set or for other reasons, proceed as indicated:

1. When the software starts, it will display the page (A); touch the keys 4 on display corners in the sequence indicated.








**Note:** Carry out the operations quickly; the page will remain displayed for 5 seconds.

The operation has been completed successfully if the page (B) containing the password is displayed.

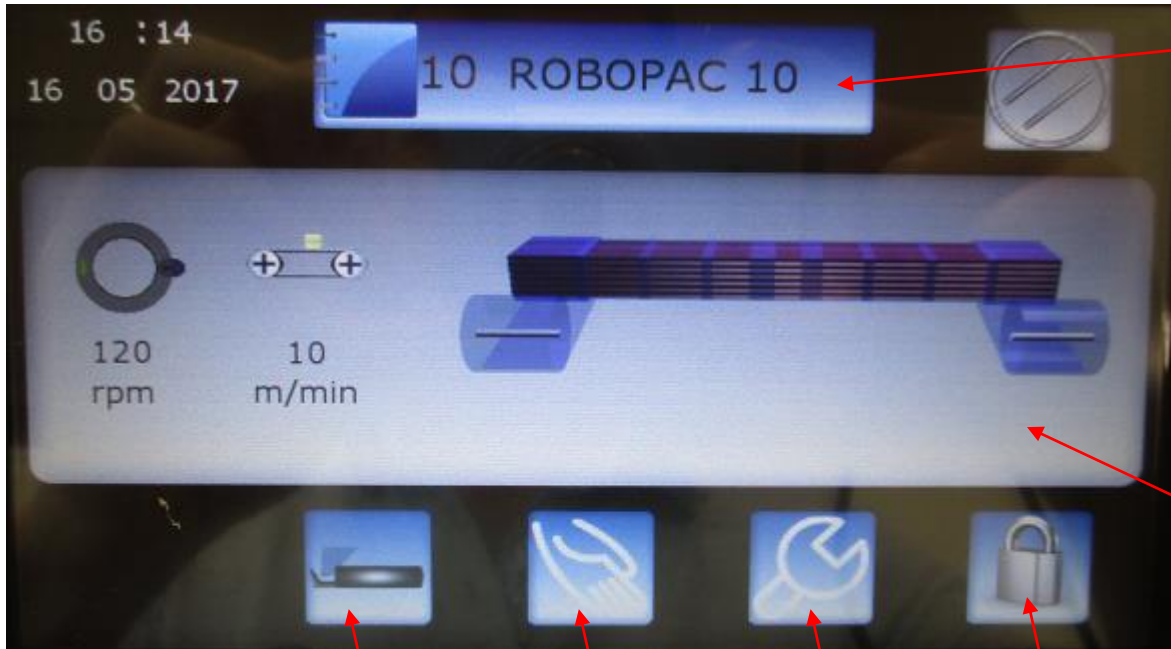


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## GENERAL FUNCTIONS AVAILABLE ON TOUCH-PANEL

	Enable manual functions
	Close window
	Instruments
	Information
	Back to previous page
	Main page
	Back to Main page

MACHINE USER SECTION – NO PASSWORD



It's possible TO CHANGE the cycle working number memorized previously

1	PRODUCT1	6	PRODUCT6
2	PRODUCT2	7	PRODUCT7
3	PRODUCT3	8	PRODUCT8
4	PRODUCT4	9	PRODUCT9
5	PRODUCT5	10	PRODUCT10

**IT'S NOT POSSIBLE**  
To change the active cycle working parameters

**GRAY BACKGROUND**

Manual Clump Button

Manual Operations

Service Area

Password insertion

## Manual Operations

### Description of control panel manual controls

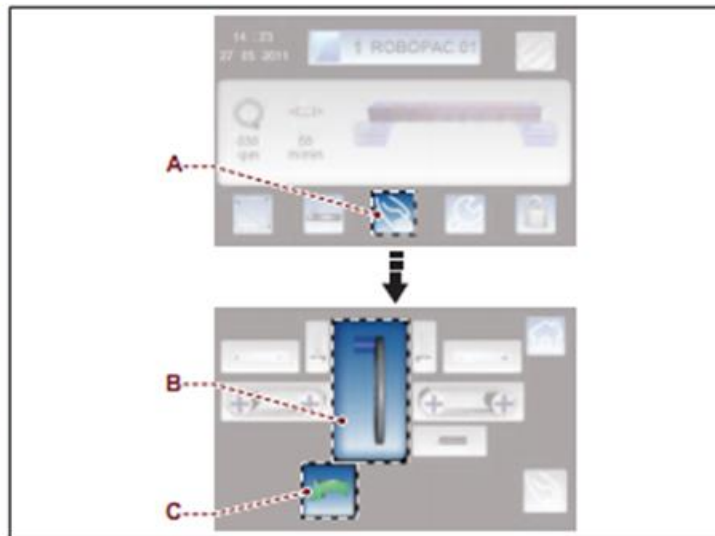
Manual controls are to be used to individually operate the machine moving parts, in case of service or control before the automatic cycle start-up.

By touching the key (A) on the main page, you can access the manual movements.

By touching the image of the object you want to move, you will enable the keys corresponding to the possible movement.

- 1) Rotation of the reel change / wheel.
- 2) Incoming product pressure unit ascent/descent.
- 3) Outgoing product pressure unit ascent/descent.
- 4) The product infeed/outfeed pulling unit forward/backward.
- 5) Clamping unit exit/retraction.
- 6) Enlargement / narrowing of the incoming product self-setting units (optional for Orbit only).
- 7) Enlargement / narrowing of the outfeed product self-setting units (optional for Orbit only).
- 8) Rotation or Forward/reverse of the cutting group.

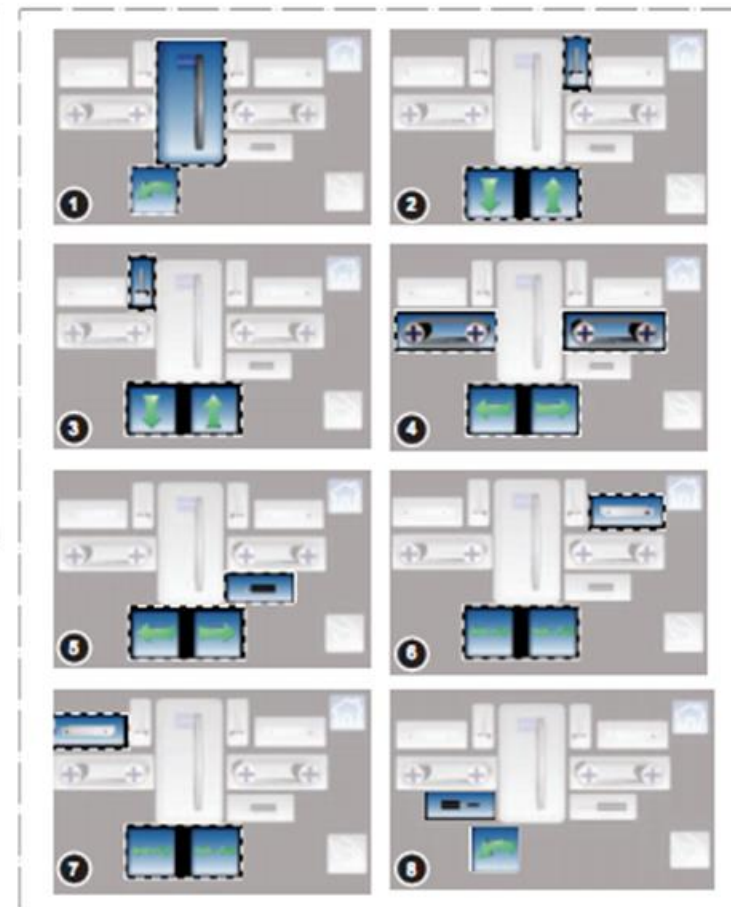
The cutting group changes among the various available machine models.



For example, by touching the image of the wheel (B) it will be displayed the key (C) (blue, therefore enabled).

(C) key (if present) moves the wheel.

(C) key (impulse key) moves the wheel for "reel change".

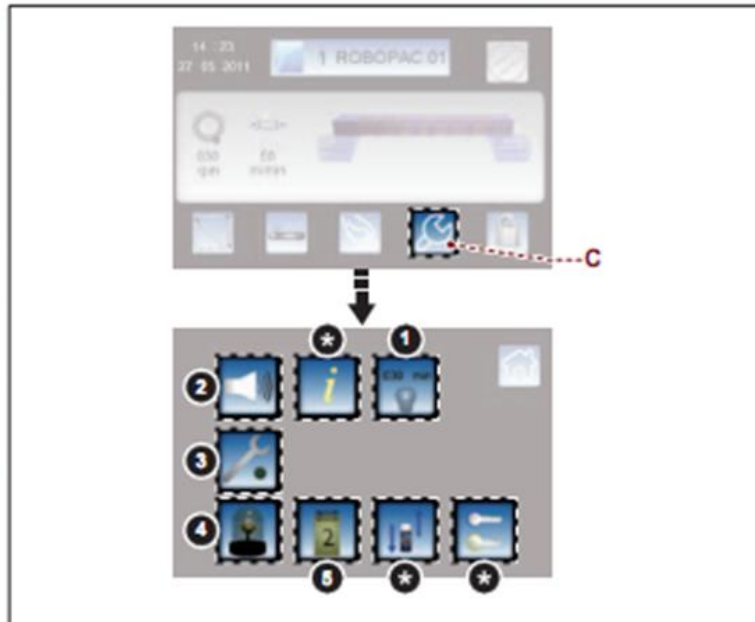


## Service Area

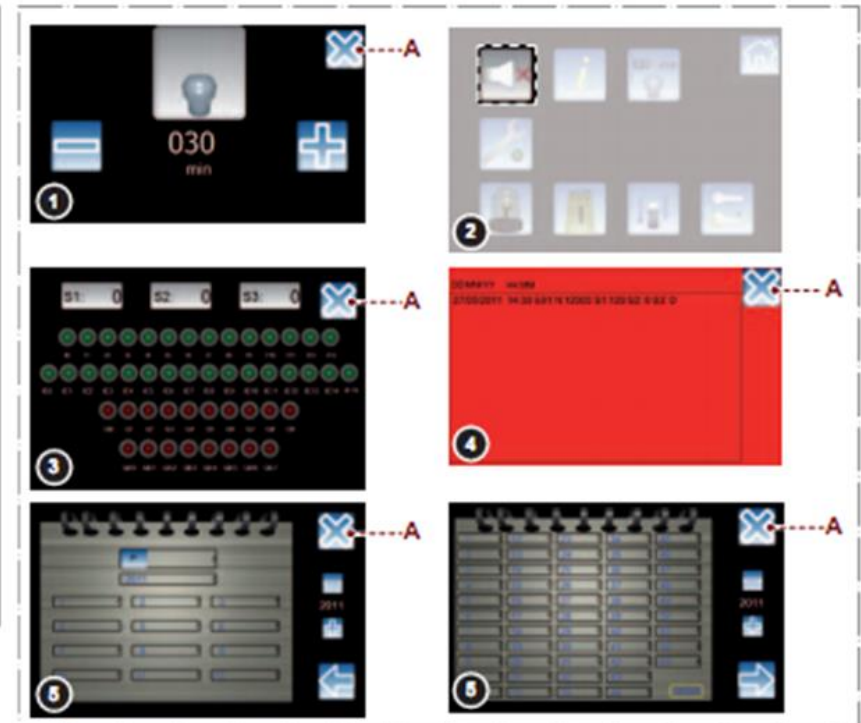
### Software settings and displays

By touching the key (C) from the main page, it is possible to:

- 1) Set the backlighting time of the display.
  - 2) Enable / disable the sound by pressing the keys.
  - 3) Display information on machine status for assistance purposes.
  - 4) Display a summary of machine last 30 alarms tripped.
  - 5) Display statistics on use, useful for assistance.
- \*) These buttons are only displayed if the machine manager enters the software via passwords



- Change the various parameters, confirm with "ESC" push-button (A).



**MACHINE RESPONSIBLE SECTION – PASSWORD 1111**

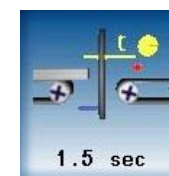
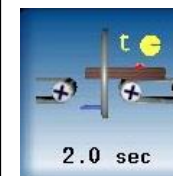
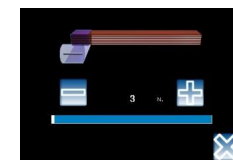
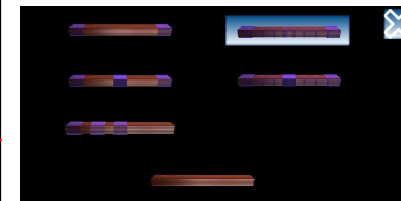



It's possible TO CHANGE the cycle working number memorized previously

**IT'S POSSIBLE**

To change the active cycle working parameters

**BLUE BACKGROUND**






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## TOUCH SCREEN PANEL REPLACEMENT / SOFTWARE DOWNLOAD

### Weintek Panel (ie code 1400300002)

If you need to replace the touch screen panel and if it is not already programmed or if you need to upgrade the software, follow the steps below

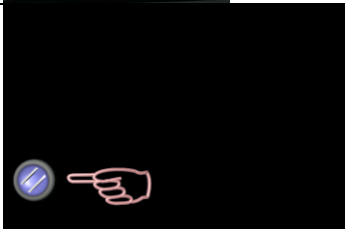
		<ol style="list-style-type: none"> <li>1. <b>Turn the machine ON.</b></li> <li>2. Insert the USB pen drive into the related slot.</li> </ol>
	<ol style="list-style-type: none"> <li>3. Wait a bit of time till display the page on the shown on the side:</li> <li>4. Press the button <b>“Download”</b> (press it within 10 seconds upon the windows appear, due past that time, the windows closes. The time remaining to windows closing, it is displayed like <i>“Time remaining”</i>).</li> </ol>	



5. Insert the password: **111111**, select the options “Download project files” and “Download history files” and press the button OK.



6. Select the folder **disk\_a\_1** as shown in the sketch on the side (usbdisk\disk\_a\_1).
7. Press the button **OK**.



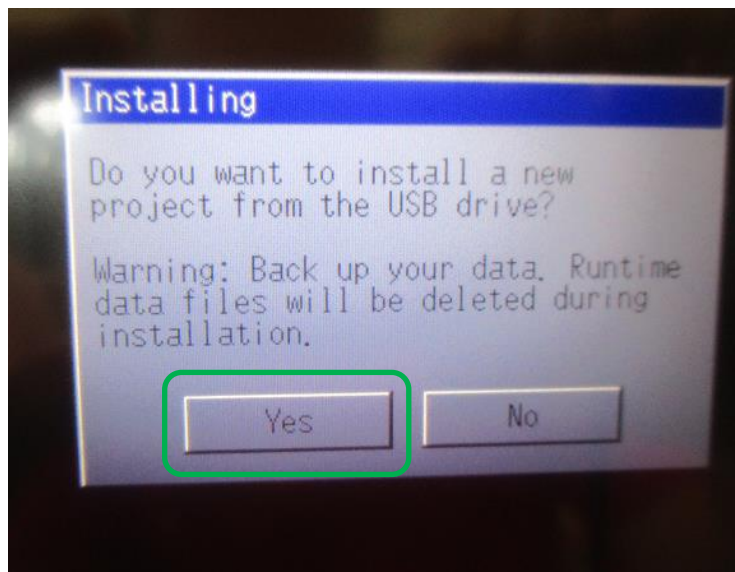
8. Completed the download, wait for software re-start till display the message **RESET**:

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**Schneider Electric Panel (ie code 1490300027) – NEW**

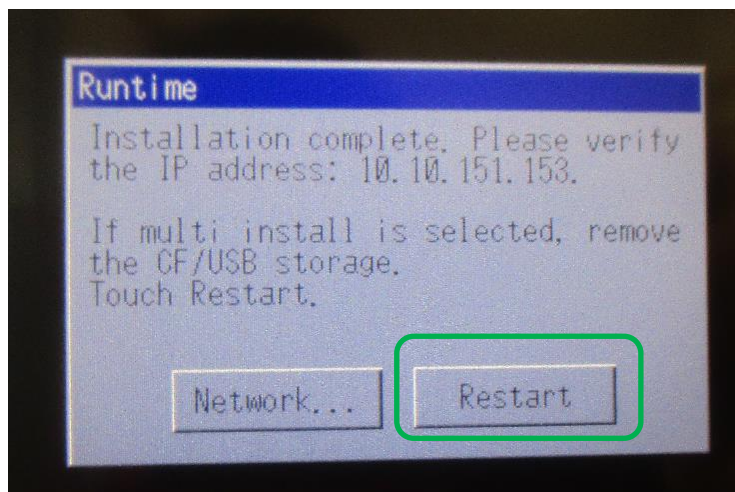
Prepare the USB key with correct software inside:  
on the USB you need to copy the files (ask to ROBOPAC service) without main folders "USB"

- 1) turn on the machine
- 2) insert the USB pen
- 3) wait and press "YES"

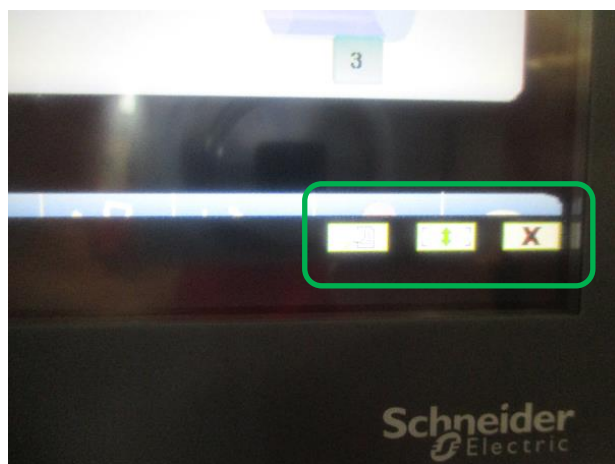


- 4) wait the software download and after 5 MINUTES press "RESTART"


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5) when on the bottom right on the panel the three symbols below are displayed ... turn off the machine

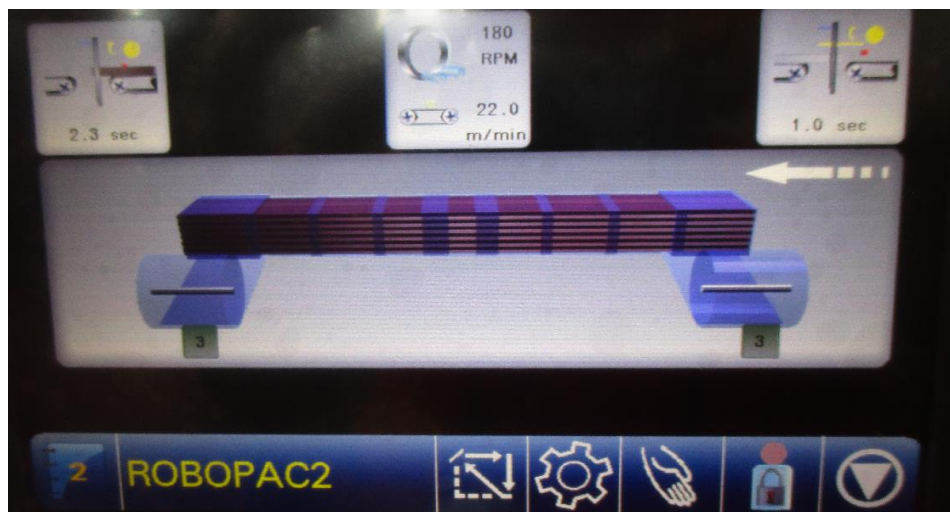


6) extract the USB pen

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7) turn on the machine

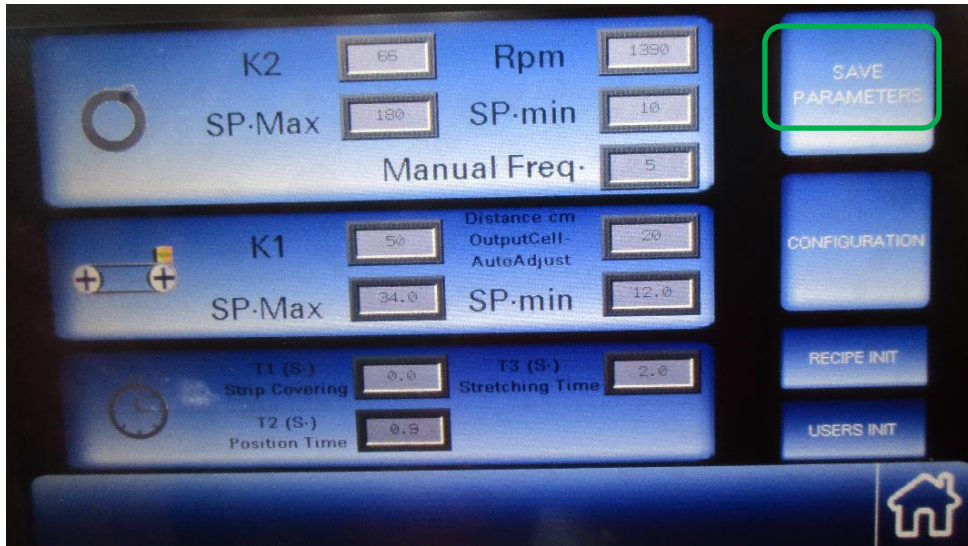
8) if after turning on of the machine the working page below is displayed



the panel update is finished

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9) if the page below with SAVE PARAMETERS is displayed




press the button SAVE PARAMETERS

10) turn off the machine

11) turn on the machine

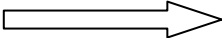
the panel update is finished

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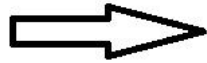
## PLC REPLACEMENT / SOFTWARE DOWNLOAD

### SCHNEIDER ELECTRIC TM238LFDC24DT (ie code 1373300006)

If the PLC is to be replaced, it is always advisable to inform the ROBOPAC TECHNICAL SERVER of the machine serial number, The PLC will be sent with the correct software inside

Machine serial number  PLC with the correct software inside

In case the PLC is not already programmed or if a software update has to be made and the PLC can not be replaced Contact the Robopac technical service to update



Upgrade via

LOADER DEVICE  
M238 TM2USBABDEV1  
SCHNEIDER

code 1374300001

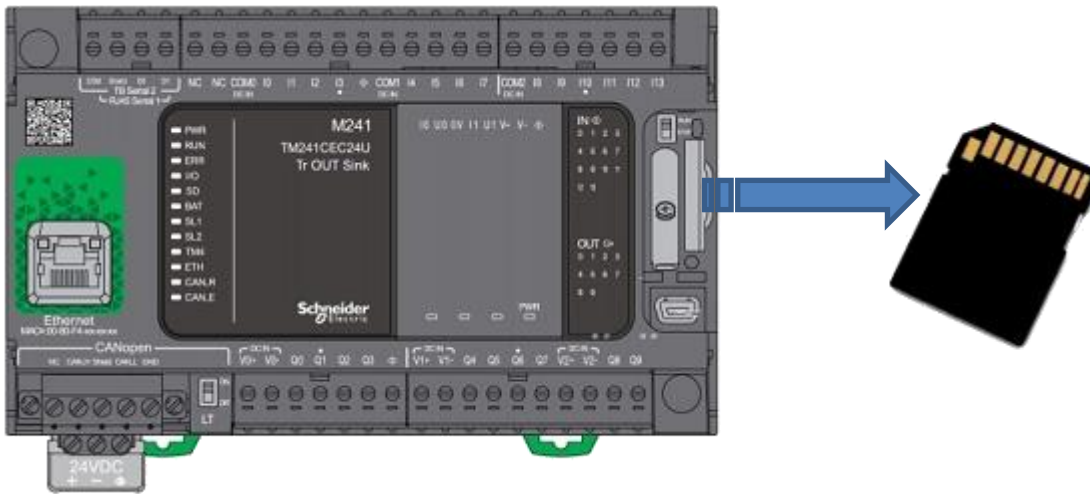


Upgrade via

Development environment SCHNEIDER

**SCHNEIDER ELECTRIC TM241CEC24T (ie code 1373300008) – NEW**

1- Insert an empty SD CARD on the SD PLC port, the PLC has to be OFF



2- Enter with password 1111



3- Press the button below



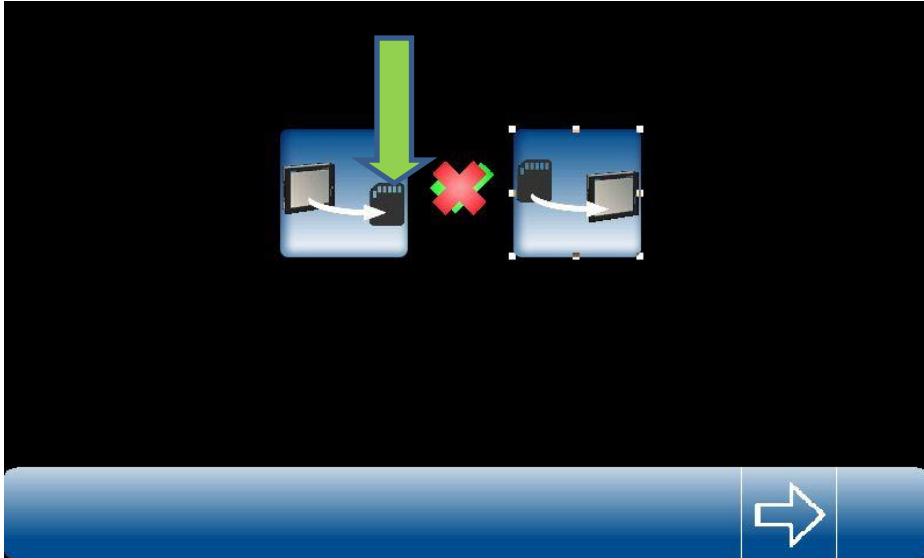
4- Press the button below



5- Save the data inside the SD pressing the button below

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A GREEN V is displayed if the procedure has been successful. A RED X is displayed if the procedure failed



6 - Copy the contents of the SD to PC and empty the SD


7 - Save the contents of the sd folder (ask for ROBOPAC assistance) inside the sd card

8 - Turn off the machine

9 - Insert the SD card into the PLC

10 - Turn on the machine

11 - The "SD" LED starts blinking

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12 - If the "SD" LED remains on and the "ERR" LED blinks, it means the process is successful

13 - Turn off the machine

14 - Remove the SD card

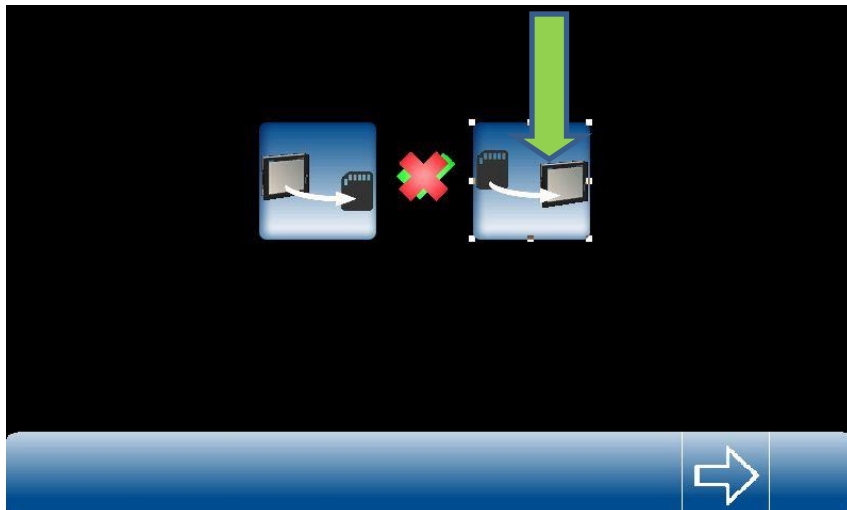
15 - Turn on the machine and the new software is automatically loaded

16 - Copy the data stored on PC to SD in step 6

17 - Repeat steps 1-2-3-4

18 - Save the SD data in the PLC by pressing the button below

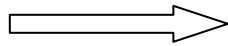
A GREEN V is displayed if the procedure has been successful. A RED X is displayed if the procedure failed



## INVERTER REPLACEMENT

If you need to replace an INVERTER, it is advisable to contact the ROBOPAC TECHNICAL SERVICE  
The inverter function (Rotation, Conveyors ...) the INVERTER will be sent to with the correct PARAMETERS inside

Machine serial number  
+  
INVERTER function  
(Rotation, Conveyors ...)



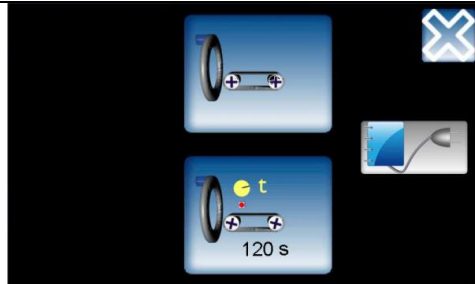
correct INVERTER  
with correct parameters inside



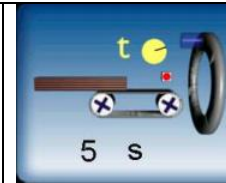
**IN-FEED AND OUT-FEED PRODUCT TIME SETTING - variable with SERVICE password 6161**



Press this icon



Press on this icon to set the value of "time-out" which stops the conveyors if nobody load other products on them.



Press on this icon to set the value of "discharge time" product.



Use this window to set the value of "time-out" conveyors

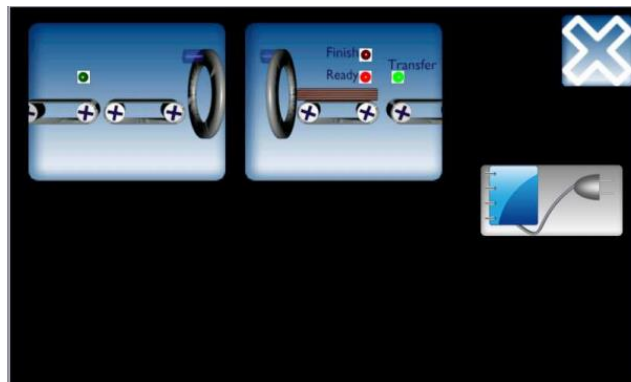
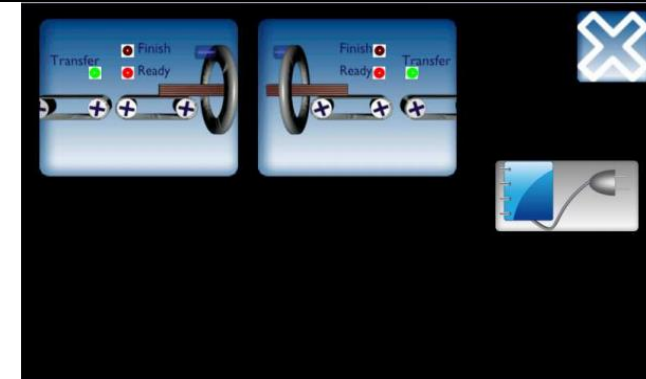
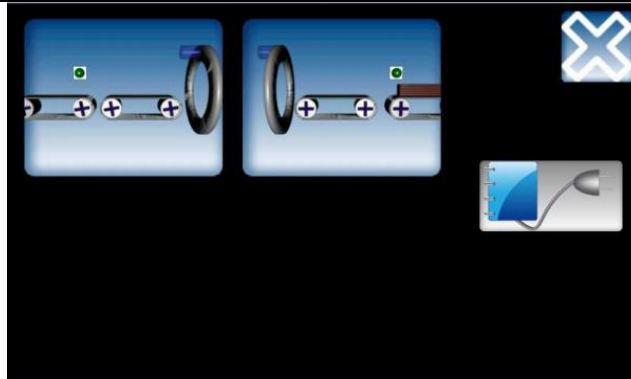


Use this window to set the value of "discharge time" product


SIGNAL EXCHANGE SETTINGS FOR IN LINE MACHINE - variable with SERVICE password 6161



Press this icon



Select the suitable exchange signals according the line configuration and make the correct wiring of the contacts in the main connector of the electric box.

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## INTERNAL MACHINE'S PARAMETERS INPUT - variable with ROBOPAC password




The next procedure, must be made every time it is necessary to replace the PLC, the software of the machine has to be updated or if for some reasons the parameters are changed or reset.



Make sure that all the functions of the machines are in phase position, especially the ring must be in front to its phase sensor and the pneumatic cylinder of the cutting device is in the rear position.

Press **Reset** push button




Upon the machine displays the Main page, press the icon instruments “” to input the ROBOPAC's password  
 On the display will be shown the ACCOUNTS selection page

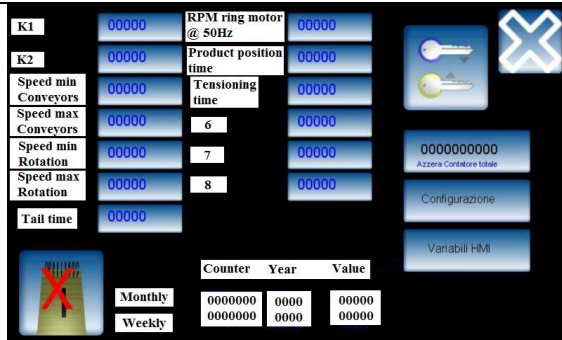


Press the icon  till get the icon  ROBOPAC' user.  
In the appropriate section, input the password  
**(please ask to ROBOPAC service dpt., each MACHINE has a different ROBOPAC PASSWORD)**


Get back to the Main page  “.  
Press icon  ” to access to the internal settings page.





Press icon “” to access to the internal parameters.




Functions configuration table	
K1	Conveyors "constant value" mechanical configuration
K2	Ring transmission "constant value" mechanical configuration
Speed min / max conveyors	Conveyor's speed configuration
Speed min / max rotation	Ring rotation speed configuration
Tail time	Film tail covering configuration time
RPM ring motor @ 50Hz	Ring speed configuration
Product position time	Head & Tail positioning time for over-wrapping
Tensioning time	Film stretch time configuration

Press icon  **Azzera contatore totale** to reset all the cycle counters (partial and total).  
**- FOR ROBOPAC USE ONLY -**

Press icon  **Configurazione** to switch to the page of the machine's functions configuration (see table).  
**- FOR ROBOPAC USE ONLY -**

Press icon  **Variabili H.M.I.** to the visualisation variables of the operator touch-panel for the several machine's model  
**- FOR ROBOPAC USE ONLY -**

Machine's production table				
		Counter	Year	Value
	Monthly	0000000	0000	00000
	Weekly	0000000	0000	00000



to reset the counters.



Norm. Tecn.  
60.2.7\_06

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### MECHANICAL CONFIGURATION / PROPORTIONAL GAINS – TAPE - ROLLERS, SPIROR HP

MACHINE Model	K1 – Conveyor	K2 - Rotation
Spiror HP 400	50	65
Spiror HP 600	50	66
Spiror HP 900	46	92
Spiror HP 300 PVC	31	42
Spiror HP 300 GALVANIZED	35	42
Spiror HP 300 TAPES	42	42
Spiror HP 400 TAPES	56	42

### MECHANICAL CONFIGURATION / PROPORTIONAL GAINS – TAPE – ROLLERS, SPIROR DR

MACHINE Model	K1 – Conveyor	K2 - Rotation
Spiror DR 400	28	65
Spiror DR 600	35	66
Spiror DR 900	34	92

### SPEEDS SPIROR HP

MACHINE Model	Minimum speed conveyors	Maximum speed conveyors	Minimum speed rotation ring	Maximum speed rotation ring	Manual frequency
Spiror HP 400	14 m/min.	40 m/min.	10 Rpm	200 Rpm	5 HZ
Spiror HP 600	12 m/min.	34 m/min.	10 Rpm	180 Rpm	5 HZ
Spiror HP 900	10 m/min.	29 m/min.	10 Rpm	130 Rpm	5 HZ
Spiror HP 300	18 m/min.	58 m/min.	10 Rpm	260 Rpm	5 HZ

### SPEEDS SPIROR DR

MACHINE Model	Minimum speed conveyors	Maximum speed conveyors	Minimum speed rotation ring	Maximum speed rotation ring	Manual frequency
Spiror DR 400	20 m/min.	80 m/min.	10 Rpm	220 Rpm	5 HZ
Spiror DR 600	16 m/min.	60 m/min.	10 Rpm	180 Rpm	5 HZ
Spiror DR 900	10 m/min.	50 m/min.	10 Rpm	130 Rpm	5 HZ



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### MOTOR TYPE

MACHINE Model	Spiror HP 400	Spiror HP 600	Spiror HP 900	Spiror HP 300
RPM ring motor @ 50 Hz	1390 Rpm	1390 Rpm	1390 Rpm	1390 Rpm

### TIMING

MACHINE Model	Tail time T1	Positioning time T2	Film stretch time T3
Spiror HP 400	0,9		
Spiror HP 600	0,9		
Spiror HP 900	1,5		0,5
Spiror HP 300	0,3		0,3

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Set the configuration values as indicated in the below table related to the machine's model and its configuration

<b>Machine's configuration description table</b>		
RollerMotorN.	Conveyor inverters number	1 / 2
Self centring	To select self centring devices on the conveyors	YES / NOT
Pressures	To activate the manual command of the pressures on the touch panel	YES / NOT
Semi-Auto model	To activate the manual command of start on touch panel or start with pedal	YES / NOT
Clamp unit type	To select the clamp unit type ("FINGER" / "SCISSORS")	FINGER / SCISSORS
Manual blade	Select enable of manual cycle with cutting blade	YES / NOT
Double reel	Suitable for machines equipped of double-reel machines	YES / NOT
Film break alarm	To select the option for the breaking/end film alarm	YES / NOT
PresserHeightFunction	Pressor height regulation	YES / NOT
RESET push button	Selection for display indication of RESET info (hand as vertical / hand as horizontal).	HORIZONTAL / VERTICAL
Start-up view	To select the kind of image on machine's switch ON in the touch-pane.	SPIROR / COMPACTA
300 HP model	Suitable for machines type SPIROR	YES / NOT
SPR	Exit cell	YES / NOT
Sealing	Welding unit present	YES / NOT
Recipe Remote	Remote recipes enabling	YES / NOT
ExternalCommunication	Communication with external machines	Wiring/PLC Communication / NOT



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60.2.7\_06

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### CONFIGURATION

Configurazione

	<b>Spiror 400 – 600 - 900</b>	<b>Spiror 300</b>
RollerMotorN.	1 / 2	1 / 2
Self centring	YES / NOT	YES / NOT
Pressures	YES	YES
Semi-Auto model	NOT	NOT
Clamp unit type	SCISSOR	FINGER
Manual blade	YES	YES
Double reel	YES / NOT	YES / NOT
Film break alarm	YES / NOT	YES / NOT
PresserHeightFunction	YES / NOT	YES / NOT
RESET push button	Vertical	Vertical
Start-up view	Spiror	Spiror
300 HP model	NOT	YES
SPR	NOT	NOT
Sealing	NOT	NOT
Recipe Remote	YES / NOT	YES / NOT
ExternalCommunication	Wiring/PLC Communication	Wiring/PLC Communication

Once the parameters are entered / updated, if present



the BUTTON = SAVE PARAMETERS press it to **MEMORIZE** the **PARAMETERS**

The screenshot shows a control interface with the following elements:

- K1 Parameters:** RPM 50Hz (1390), Sp.min (050), Sp.Max (200)
- K2 Parameters:** Sp.min (065), Sp.Max (014), (040)
- Time Settings:** Time (T1) (09), Time (T2) (00), Time (T3) (00)
- Buttons:** SAVE PARAMETERS, Azzera Contatore totale (0000000000), Configurazione
- Counter Table:**

	Counter	Year	Value
Monthly	0000000	0000	00000
Weekly	0000000	0000	00000

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**Updating panel and plc softwares with changes to fix the problem of data loss on the RAM of the plc.  
Procedure for machines already installed by the customer**

1 Turn on the machine normally and, when prompted by the operator panel, press the Reset button.

2 Upgrade the HMI device software by following the procedure above.

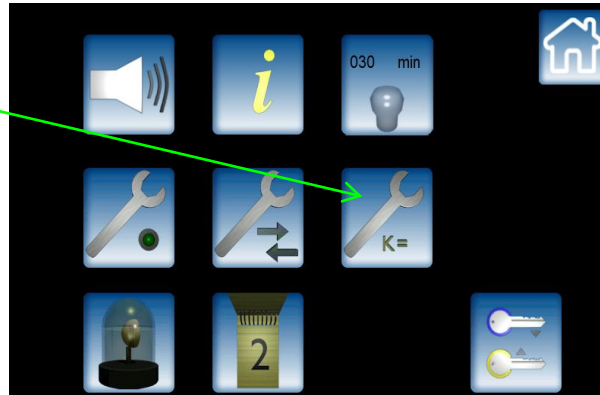


3 After the update of the touch insert "Service" operator with the password "6161"

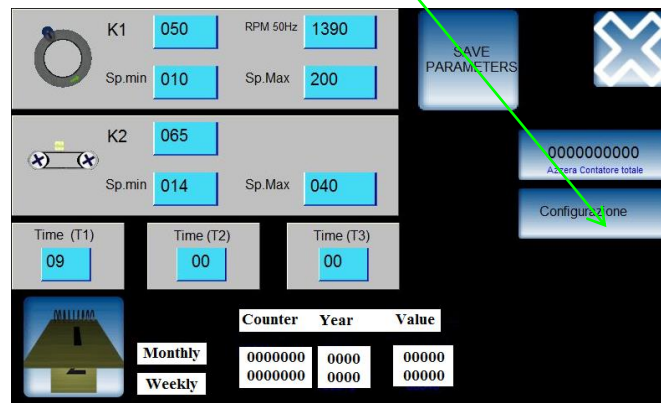


4 Press the SERVICE button

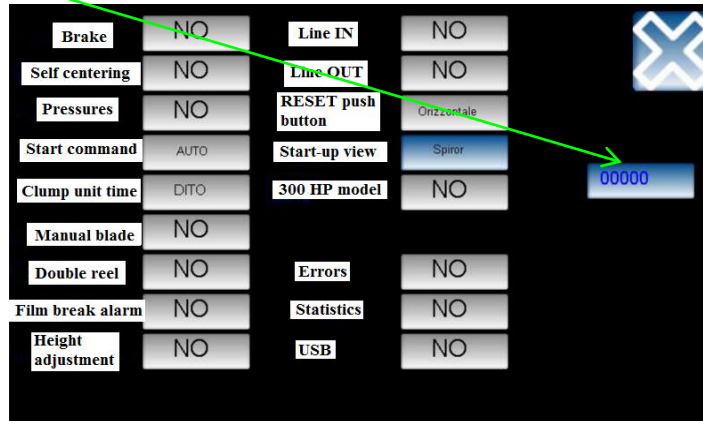
5 Press the button in the figure



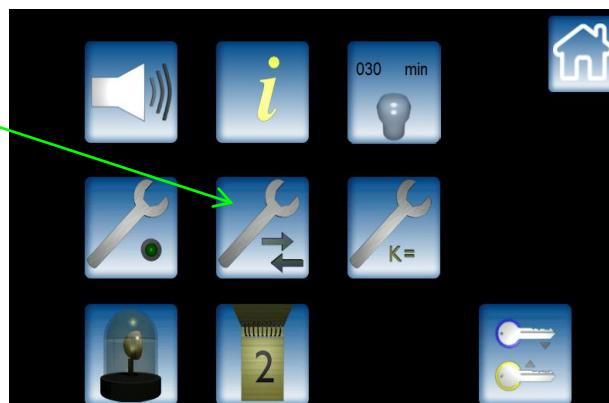
6 Note all data present in the blue boxes and press the button in the figure



7 Note the number in the indicated box

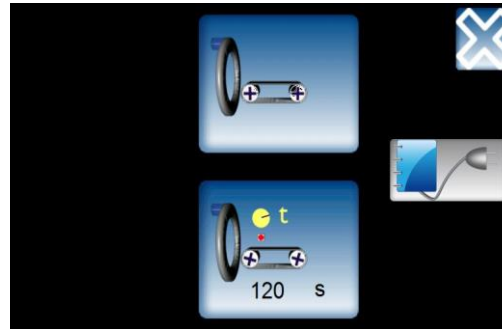


8 Press the button in the figure

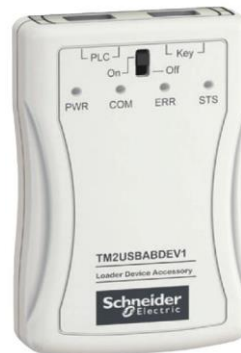



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9 Note the configuration for the machine input and output with the relative times.

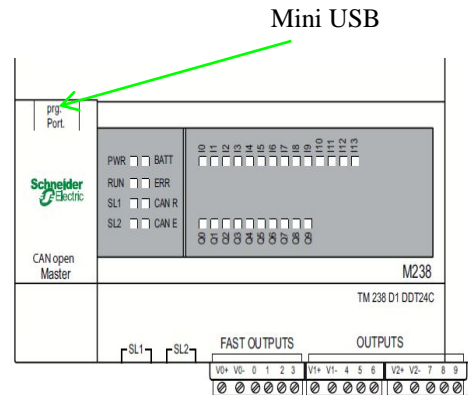


10 Take the Loader Device to upgrade the plc software, connect the supplied cable between the loader port "Plc" of the LOADER and the mini USB of the programmable logic and insert the USB key that is received on the "Key" port of the loader.



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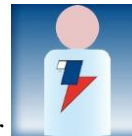
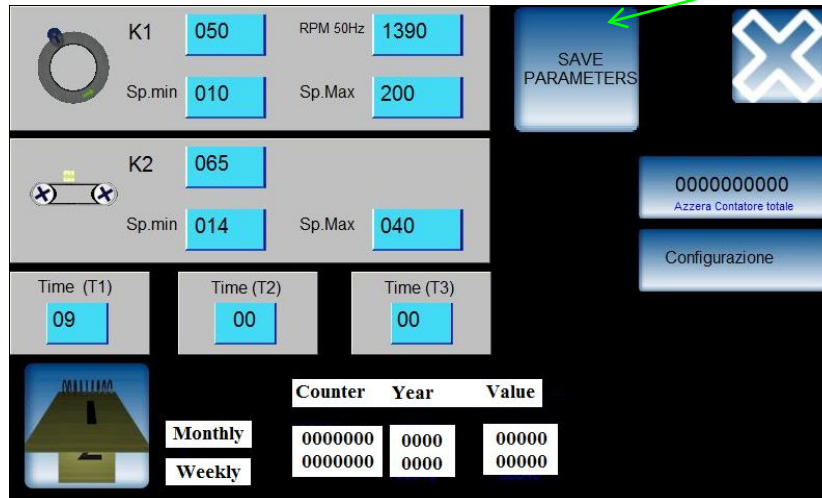
11 Turn the machine off and then on again, the Plc LED PWR lights up immediately and before the RUN LED turns on, bring the ON-OFF switch of the loader to the ON position. If the operation fails to repeat it.



12 Software unload begins when the COM and STS leds flash on the loader very quickly. If the discharge is successful, the STS LED flashes slowly for a few seconds and then the loader goes out completely, if the drain is not completed, the ERR LED blinks. Then turn off and repeat the operation from step 11.

13 Switch off and turn on the machine while waiting for the RUN LED on the plc to blink and then turn it off and on again. The plc RUN LED this time stays fixed and the machine display after loading the software the touch screen displays the following page:




14 Check that all parameters noted in the points 6,7 and 9 are correct. If they are ok press the button in the figure SAVE PARAMETERS then turn off and turn on finally the machine.







15 If the parameters are all zero it's needed to insert "Robopac" operator with the password "3333" and to insert one after one all noted parameters.

16 Press then the button "SAVE PARAMETERS" of the step punto 14 and then turn off and turn on finally the machine.

**ALARM LIST AND TROUBLESHOOTING WITH SOLUTIONS**



Alarm Code	Alarm Description	Troubleshooting	Cause	Solution
	Allarm reset	A machine alarm has now been activated and is no longer present	Indicates that there was an anomaly that generated an error but was immediately reset	As the figure says, press the blue Reset button.  Or send machine in emergency and re-reset
	Emergency button alarm	The button has been pressed	Emergency situation	Rotate and lift the button and press RESET
		Check the button contact of the emergency button SB1	Broken contact	Replace the contact of the emergency button SB1
		Check the correct operation of the PLC I0 input	Problem in connection or possible fault of the PLC input	Restore the connections or replace the PLC
	Lack of air alarm	Lack of air	Problem in the machine pneumatic system	Check machine inside and outside pneumatic system
		Pressure switch problem	Broken pressure switch or connection problems	Restore the connections or replace the pressure switch
		Check the correct operation of the PLC I8 input	Problem in connection or possible fault of the PLC input	Restore the connections or replace the PLC


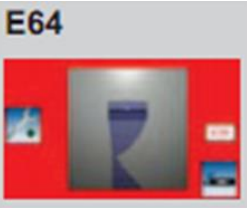
<p><b>E10</b></p> 	Open protection carter alarm	Protection carter open or badly closed	The carter is partially or completely open	Close properly the carter
		SQ1 micro switch not working or badly connected	Broken micro or connections problems	Restore the connections or replace the micro switch
		Check the correct operation of the PLC I6 input	Problem in connection or possible fault of the PLC input	Restore the connections or replace the PLC
<p><b>E15</b></p> 	Door open alarm	Alarm given by microswitch that checks that the safety of the doors has not been bypassed	Door security bypassed	Restore the safety of doors
			Micro S15.1 not working or badly wired, input I13 (es spiror)	Restore the connections to the micro or replace the micro
			Missing connection or failed PLC	Restore connections or replace the PLC
<p><b>E20</b></p> 	Thermal protections alarm	Power supply Q1 magnetotemic problem	Power supply problem	Check the machine power supply
			Machine excessive absorption	Check to have no abnormal absorption downstream of Q1
			Q1 problem or connection problem	Restore the connections or replace Q1

		Input conveyor FR1 magnetotemic problem	Problems on the U2 Inverter output connection or on U2 Inverter output	Restore the connections or replace the inverter
			M2 motor excessive absorption	Check to have no abnormal absorption on motor M2
			FR1 relay problem or connection problem	Restore the connections or replace FR1
		Output conveyor FR2 magnetotemic problem	Problems on the U2 Inverter output connection or on U2 Inverter output	Restore the connections or replace the inverter
			M3 motor excessive absorption	Check to have no abnormal absorption on motor M3
			FR2 relay problem or connection problem	Restore the connections or replace FR2
		Check the correct operation of the PLC I2 input	Problem in connection or possible fault of the PLC input	Restore the connections or replace the PLC
	Inverter alarm	Open the electrical box and check which inverter is in alarm	Problem in inverter power supply or output	Check inverter power supply and output components
			Inverter problem	Replace the inverter

	Ring not in phase and clump not back	Ring not in phase and clump not back	The ring is not in phase and the clump is not back or the sensors S1 and S5 are mechanically not in good position	Place the ring in phase and the clump back Adjust mechanically the sensors S1 and S5
		S1 sensor not working or badly wired	Fault sensor or connection problems (eg input I0)	Restore the connections to the sensor or replace the sensor S1
		S5 sensor not working or badly wired	Fault sensor or connection problems (eg input I5)	Restore the connections to the sensor or replace the sensor S1
		Problem at input I0 and / or I5 of the PLC	Missing connection or failed PLC	Restore the connections or replace the PLC
	Ring not in phase	When the cycle reset is pressed (key on the display with the rectangle), if the ring is not in phase it is set in motion at low speed to find the starting position. After 15 seconds if the ring does not meet the phase sensor, error 41 is generated	Sensor S1 too far from little plate	Approach the sensor S1 to the phase little plate
			Fault sensor S1 or connection problems	Restore the connections to the sensor or replace the sensor S1
			Missing connection I0 of the PLC or failed PLC	Restore the connections or replace the PLC
	Ring not in phase	When the cycle reset is pressed (key on the display with the rectangle), if the ring is not in phase it is set in motion at low speed to find the starting position. After 15 seconds if the ring does not meet the phase sensor, error 42 is generated	Sensor S1 too far from little plate	Approach the sensor S1 to the phase little plate
			Fault sensor S1 or connection problems	Restore the connections to the sensor or replace the sensor S1
			Missing connection I0 of the PLC or failed PLC	Restore the connections or replace the PLC

<p><b>E50</b></p>	<p>Can open communication alarm</p>	<p>The PLC does not see a device on the internal network</p>	<p>Connection problem between PLC and inverters and / or valve package</p>	<p>Restore the connections and / or replace cables</p>
			<p>Problem on an inverter (check the LED can open)</p>	<p>Replace inverter</p>
			<p>Problem on valve package (check the LED can open)</p>	<p>Replace valve pack</p>
			<p>PLC problem</p>	<p>Replace the PLC</p>
<p><b>E60</b></p>	<p>Input product photocell alarm</p>	<p>The input photocell B1 sees a product at the beginning of the cycle</p>	<p>A product is present in front of the photocell</p>	<p>Remove the product</p>
			<p>The reflector in front to B1 is badly aligned</p>	<p>Align the reflector</p>
		<p>The photocell B1 is not working or badly connected</p>	<p>Photocell B1 damaged or connection problem</p>	<p>Restore the connections or replace the B1 photocell</p>
		<p>Check the correct operation of the PLC I3 input</p>	<p>Problem in connection or possible fault of the PLC input</p>	<p>Restore the connections or replace the PLC</p>

	Output product photocell alarm	The output photocell B2 sees a product at the beginning of the cycle	A product is present in front of the photocell	Remove the product
			The reflector in front to B2 is badly aligned	Align the reflector
		The photocell B2 is not working or badly connected	Photocell B2 damaged or connection problem	Restore the connections or replace the B2 photocell
		Check the correct operation of the PLC I4 input	Problem in connection or possible fault of the PLC input	Restore the connections or replace the PLC
	Forward clump alarm	The clump is not in the correct backward home position	Pneumatic system problem (few air in the cylinder)	Check machine inside and outside pneumatic system
			Cylinder mechanical problem	Adjust or replace the cylinder
		The magnetic sensor SQ5 gives no signal	Sensor not in correct position	Adjust the magnetic sensor
		The magnetic sensor SQ5 is not working or badly connected	Magnetic sensor SQ5 damaged or connection problem	Restore the connections or replace the SQ5 magnetic sensor
		Check the correct operation of the PLC I5 input	Problem in connection or possible fault of the PLC input	Restore the connections or replace the PLC

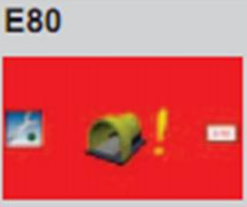



 <p><b>E63</b></p>	<p>Clamp forward or open alarm (low clamp in double film reel)</p>	<p>The clamp is not in the back and closed home position</p>	<p>Pneumatic system problem (few air in the cylinder)</p>	<p>Check machine inside and outside pneumatic system</p>
			<p>Cylinder mechanical problem</p>	<p>Adjust or replace the cylinder</p>
		<p>The sensor S4 and/or S5 give no signal</p>	<p>Sensor/s not in correct position</p>	<p>Adjust the sensors</p>
		<p>The sensor S4 and/or S5 are not working or badly connected</p>	<p>Sensor S4 and / or S5 damaged or connection problem</p>	<p>Restore the connections or replace the S4 and /or S5 sensors</p>
		<p>Check the correct operation of the PLC I8 and/or I9 input</p>	<p>Problem in connection or possible fault of the PLC input</p>	<p>Restore the connections or replace the PLC</p>
 <p><b>E64</b></p>	<p>Film broken or ended alarm (optional)</p>	<p>The film is broken</p>	<p>Sharp pallet spigoloso or not quality film</p>	<p>Attach the film and restart the machine</p>
		<p>The film is ended</p>	<p>The film spool is ended</p>	<p>Replace the film spool</p>
		<p>The film broken sensor is not in correct position</p>	<p>The film broken sensor is not reading correctly the film</p>	<p>Adjust the film broken sensor in correct position</p>
		<p>The film broken sensor is not working or badly connected</p>	<p>Damaged film broken sensor or connection problem</p>	<p>Restore the connections or replace the film broken sensor</p>
		<p>Check the correct operation of the PLC input</p>	<p>Problem in connection or possible fault of the PLC input</p>	<p>Restore the connections or replace the PLC</p>


<p><b>E65</b></p>	<p>Clamp forward or open alarm (top clamp in double film reel)</p>	<p>The clamp is not in the back and closed home position</p>	<p>Pneumatic system problem (few air in the cylinder)</p>	<p>Check machine inside and outside pneumatic system</p>
			<p>Cylinder mechanical problem</p>	<p>Adjust or replace the cylinder</p>
		<p>The sensor S13 and/or S16 give no signal</p>	<p>Sensor/s not in correct position</p>	<p>Adjust the sensors</p>
		<p>The sensor S13 and/or S16 are not working or badly connected</p>	<p>Sensor S13 and / or S16 damaged or connection problem</p>	<p>Restore the connections or replace the S13 and /or S16 sensors</p>
		<p>Check the correct operation of the PLC I1 and/or I2 input</p>	<p>Problem in connection or possible fault of the PLC input</p>	<p>Restore the connections or replace the PLC</p>
<p><b>E66</b></p>	<p>Top cut alarm (top cut in double film reel)</p>	<p>Cutting phase sensor is not in the home position</p>	<p>Pneumatic system problem (few air in the cylinder)</p>	<p>Check machine inside and outside pneumatic system</p>
			<p>Cylinder mechanical problem</p>	<p>Adjust or replace the cylinder</p>
		<p>The sensor S12 gives no signal</p>	<p>Sensor not in correct position</p>	<p>Adjust the sensor</p>
		<p>The sensor S12 is not working or badly connected</p>	<p>Sensor S12 damaged or connection problem</p>	<p>Restore the connections or replace the S12 sensor</p>
		<p>Check the correct operation of the PLC I0 input</p>	<p>Problem in connection or possible fault of the PLC input</p>	<p>Restore the connections or replace the PLC</p>

<p><b>E67</b></p>	<p>Cut alarm (low cut in double film reel)</p>	<p>Cutting phase sensor is not in the home position</p>	<p>Pneumatic system problem (few air in the cylinder)</p>	<p>Check machine inside and outside pneumatic system</p>
			<p>Cylinder mechanical problem</p>	<p>Adjust or replace the cylinder</p>
		<p>The sensor S2 gives no signal</p>	<p>Sensor not in correct position</p>	<p>Adjust the sensor</p>
		<p>The sensor S2 is not working or badly connected</p>	<p>Sensor S2 damaged or connection problem</p>	<p>Restore the connections or replace the S2 sensor</p>
		<p>Check the correct operation of the PLC I5 input</p>	<p>Problem in connection or possible fault of the PLC input</p>	<p>Restore the connections or replace the PLC</p>
<p><b>E68</b></p>	<p>Contrast alarm</p>	<p>The contrast is not forward</p>	<p>Pneumatic system problem (few air in the cylinder)</p>	<p>Check machine inside and outside pneumatic system</p>
			<p>Cylinder mechanical problem</p>	<p>Adjust or replace the cylinder</p>
		<p>B13 forward contrast sensor not detected</p>	<p>Sensor not in correct position</p>	<p>Adjust the sensor</p>
		<p>The sensor B13 is not working or badly connected</p>	<p>Sensor B13 damaged or connection problem</p>	<p>Restore the connections or replace the B13 sensor</p>
		<p>Problem at the J5 input of the U4 Remote Inputs module</p>	<p>Missing connection or U4 module faulty Remote inputs</p>	<p>Restore the connections or replace the U4 Remote Inputs module</p>

<p><b>E69</b></p>	Welder alarm	The welder is not in back home position	Pneumatic system problem (few air in the cylinder)	Check machine inside and outside pneumatic system
			Cylinder mechanical problem	Adjust or replace the cylinder
		B11 back welder sensor not detected	Sensor not in correct position	Adjust the sensor
		The sensor B11 is not working or badly connected	Sensor B11 damaged or connection problem	Restore the connections or replace the B11 sensor
		Problem at the J7 input of the U4 Remote Inputs module	Missing connection or U4 module faulty Remote inputs	Restore the connections or replace the U4 Remote Inputs module
<p><b>E70</b></p>	Temperature alarm	Welder iron or sealing bar has not reached the correct temperature selected to work	Wait a few more minutes	Restart the cycle
				Check the thermocouple wiring
				Replace the thermocouple

<p><b>E71</b></p>	<p>Muting barriers alarm</p>	<p>The muting barriers are broken</p>	<p>Inappropriate object between the barriers</p>	<p>Remove the inappropriate object between the barriers and restart the cycle</p>
			<p>Barriers not positioned correctly</p>	<p>Mechanically check the position of the barriers</p>
			<p>Missing connections</p>	<p>Check the wiring of the barriers</p>
			<p>Breaking of muting barriers</p>	<p>Replacement of barriers</p>
<p><b>E72</b></p>	<p>Broken thermocouple alarm</p>	<p>Sealing bar / welder temperature outside the acceptable range</p>	<p>The thermocouple detects temperature values outside the possible range of acceptable values</p>	<p>Check the thermocouple wiring</p>
			<p>Replace the thermocouple</p>	
<p><b>E74</b></p>	<p>Pedal alarm during the cycle</p>	<p>The pedal signal is lost during the automatic cycle</p>	<p>The foot has been removed from the pedal</p>	<p>Reset and restart the cycle</p>
			<p>The pedal does not signal the PLC or problems with the connections</p>	<p>Restore the connections to the pedal or replace it</p>
			<p>Missing connection or failed PLC</p>	<p>Restore the connections or replace the PLC</p>

<p><b>E80</b></p> 	Start pedal alarm	The Start pedal does not send correct signal	Pedal mechanical problem	Adjust the pedal mechanically
		Check the correct operation of the PLC input	The SB3 pedal does not send signal to the PLC or connection problems	Restore the connections or replace the pedal
			Problem in connection or possible fault of the PLC input	Restore the connections or replace the PLC
<p><b>E90</b></p>  <p><b>E99</b></p> 	Battery alarm	The PLC indicates that its internal battery is low	The battery is dead	Replace the battery
			The PLC is damaged	Replace the PLC
<p><b>E98</b></p> 	Phase sensor alarm	If both sensors B1 and B2 are not detected with the ring stopped, or one of them is not read for two seconds with the ring in movement	Badly positioned B1 / B2 sensors	Adjust the sensors
			B1 / B2 sensor faulty or connection problems	Restore the connections to the B1 / B2 sensors or replace them
			Missing connection or module A2 failure Safety inputs	Restore the connections or replace the A2 Safety Inputs module

<p>After the machine has been turned ON, an HOURGLASS is displayed and it's not possible to exit from this page</p> 	<p>One of the THREE needed inputs is not active</p>	<p>Doors security micro switch SQ1 not active or connection problem</p>	<p>Check the mechanical position, restore the micro connections or replace it</p>
		<p>Clump sensor SQ5 not active or connection problem</p>	<p>Check the mechanical position, restore the sensor connections or replace it</p>
		<p>Phase sensor SQ2 not active or connection problem</p>	<p>Check the mechanical position, restore the sensor connections or replace it</p>
	<p>Check the correct operation of the PLC 3 inputs</p>	<p>Problem in connection or possible fault of the PLC input</p>	<p>Restore the connections or replace the PLC</p>
	<p>Panel – PLC communication problem</p>	<p>Problem in connection or problem in panel or PLC</p>	<p>Restore the connections, replace the panel or replace the PLC</p>