TECHNICAL DOCUMENTATION

- ROTOPLAT 8

Date	Revisions	Revision reasons	Issue	Cheched by	Approved by
18/09/2014	00	First Issue	Garavelli D.	Garavelli D.	Garavelli D.
22/06/2016	01	Modify reset User password	Santandrea M.	Santandrea M.	Santandrea M.
03/11/2016	02	Unification documentation machines	Zavoli G.	Zavoli G.	Zavoli G.
12/04/2017	03	New carriages / Stretch control / Dip switches	Baldinini F.	Baldinini F.	Baldinini F.
18/09/2017	04	New photocell for black products	Baldinini F.	Baldinini F.	Baldinini F.
19/12/2017	05	Changing of some configuration parameters (P.I.D. and others)	Baldinini F.	Baldinini F.	Baldinini F.
21/02/2018	06	Changing of some configuration parameters (P17-P22-P34)	Baldinini F.	Baldinini F.	Baldinini F.
03/07/2018	07	Parameter introduction for ergonomic cycle, E71, E72 Alarms	Baldinini F.	Baldinini F.	Baldinini F.
10/07/2018	08	Index realization and new radio control	Baldinini F.	Baldinini F.	Baldinini F.
10/09/2018	09	LP basement and change in some configuration parameters	Baldinini F.	Baldinini F.	Baldinini F.
13/11/2018	10	Insertion of E67/E68 alarms and changing of some configuration parameters	Baldinini F.	Baldinini F.	Baldinini F.
02/05/2019	11	Insertion of configuration parameters P[40], P[41] and of E74 alarm	Baldinini F.	Baldinini F.	Baldinini F.
05/12/2019	12	Appendix 1 : Security Module for TP photocells	Baldinini F.	Baldinini F.	Baldinini F.
05/11/2020	13	Parameter P24 update	Baldinini F.	Baldinini F.	Baldinini F.
22/04/2021	14	New Kinko panel, modification of parameter P3, E60 alarm modification	Baldinini F.	Baldinini F.	Baldinini F.
24/05/2021	15	Mechanical roping device calibration, R-connect activation	Baldinini F.	Baldinini F.	Baldinini F.

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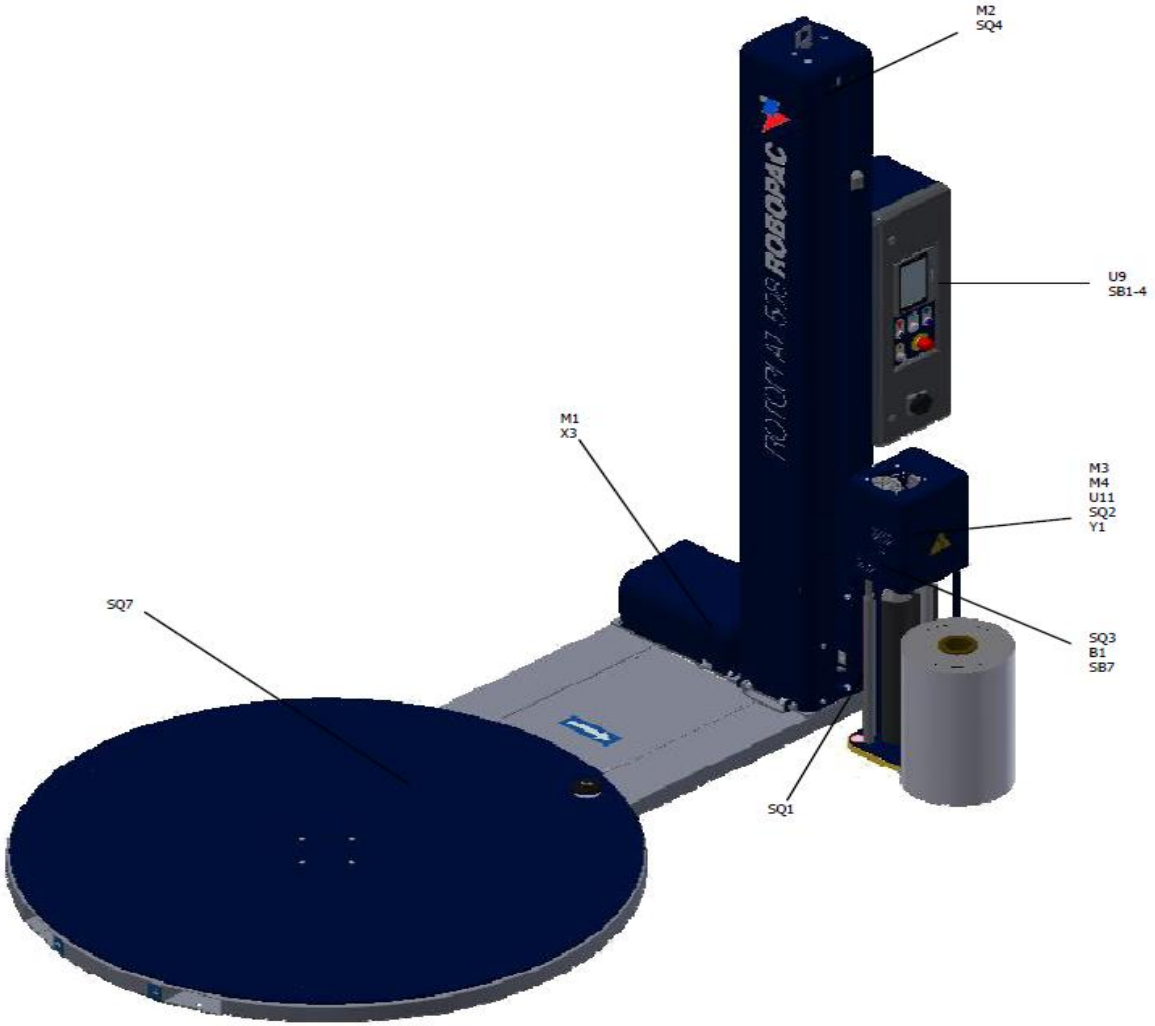
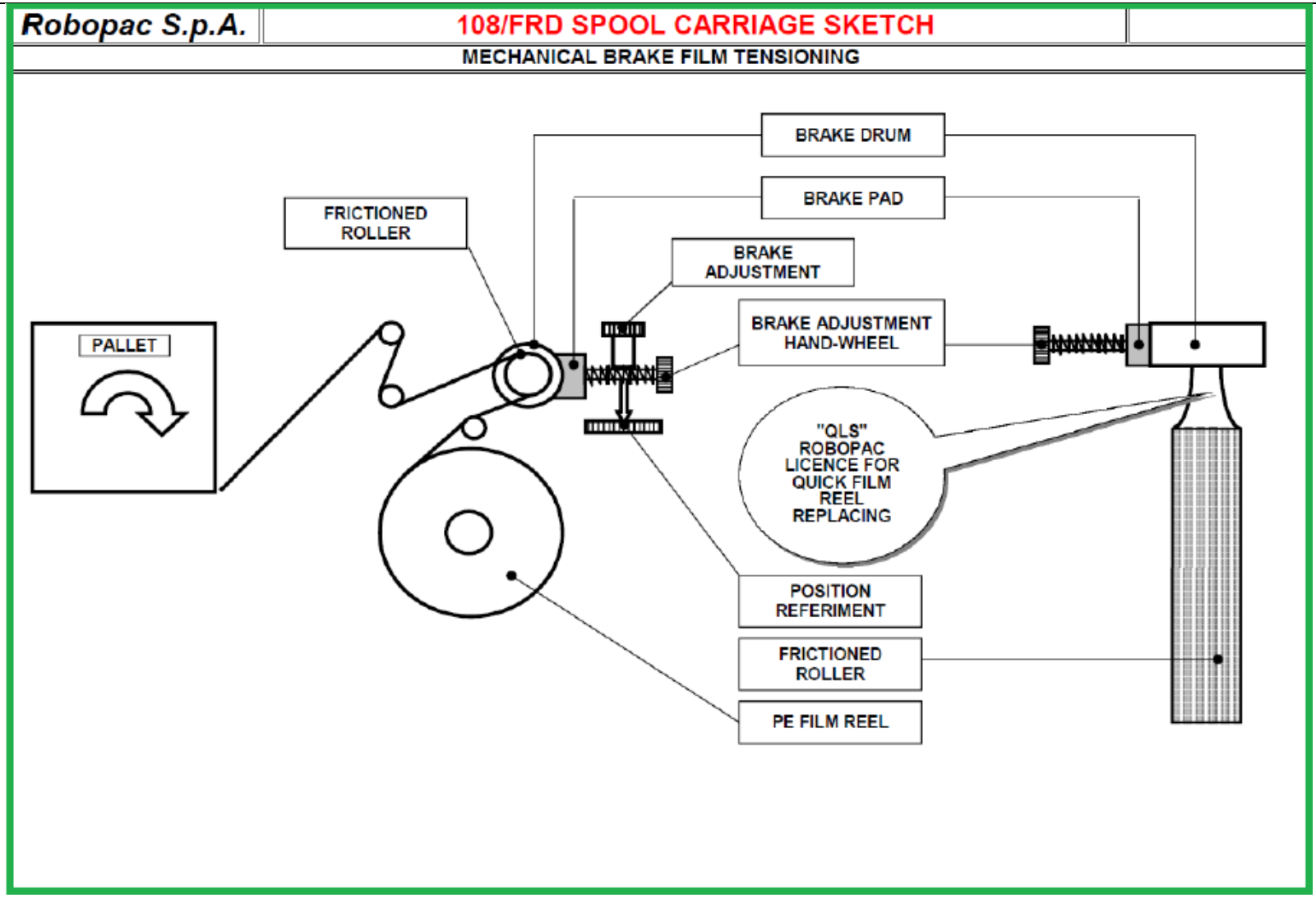
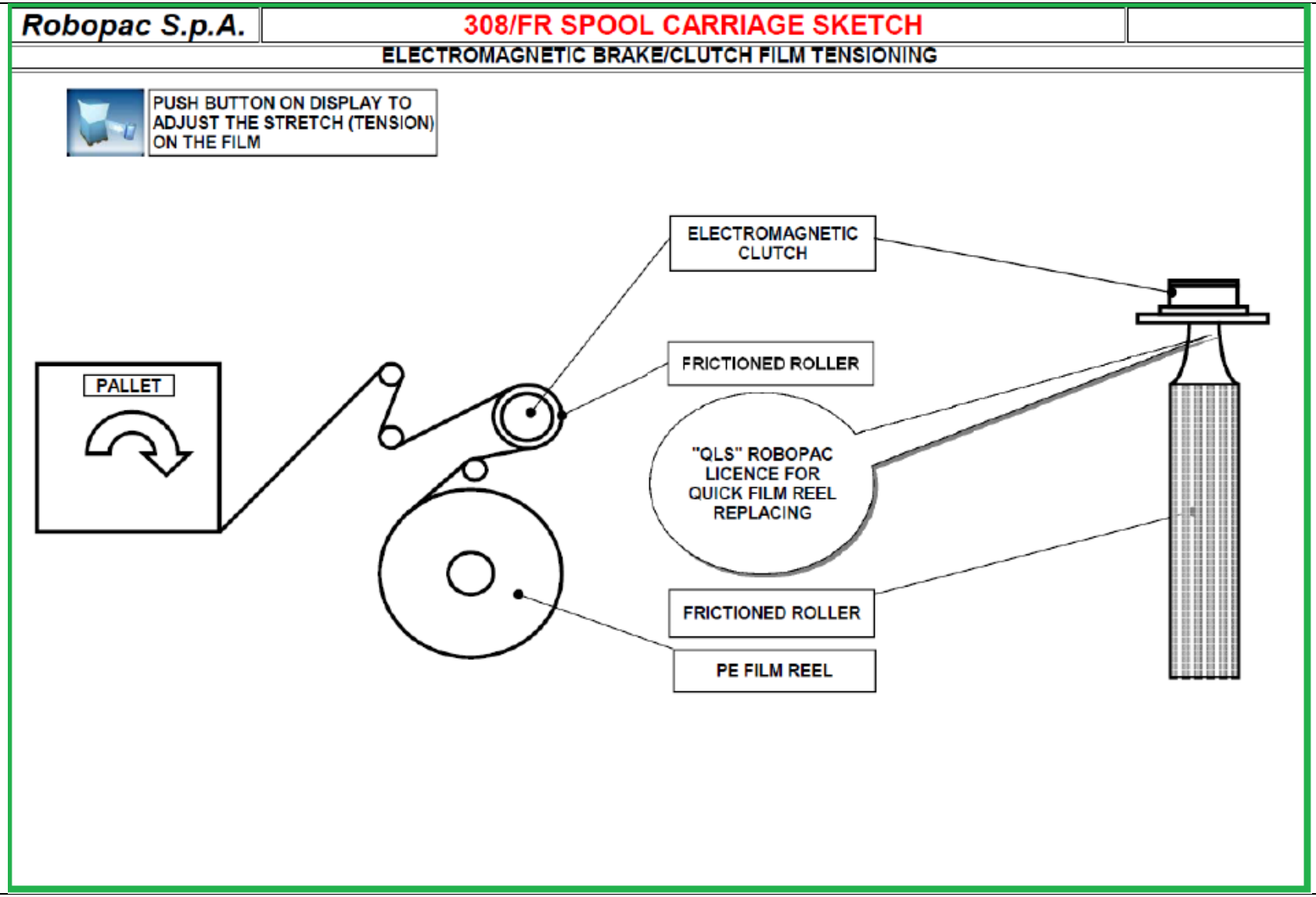
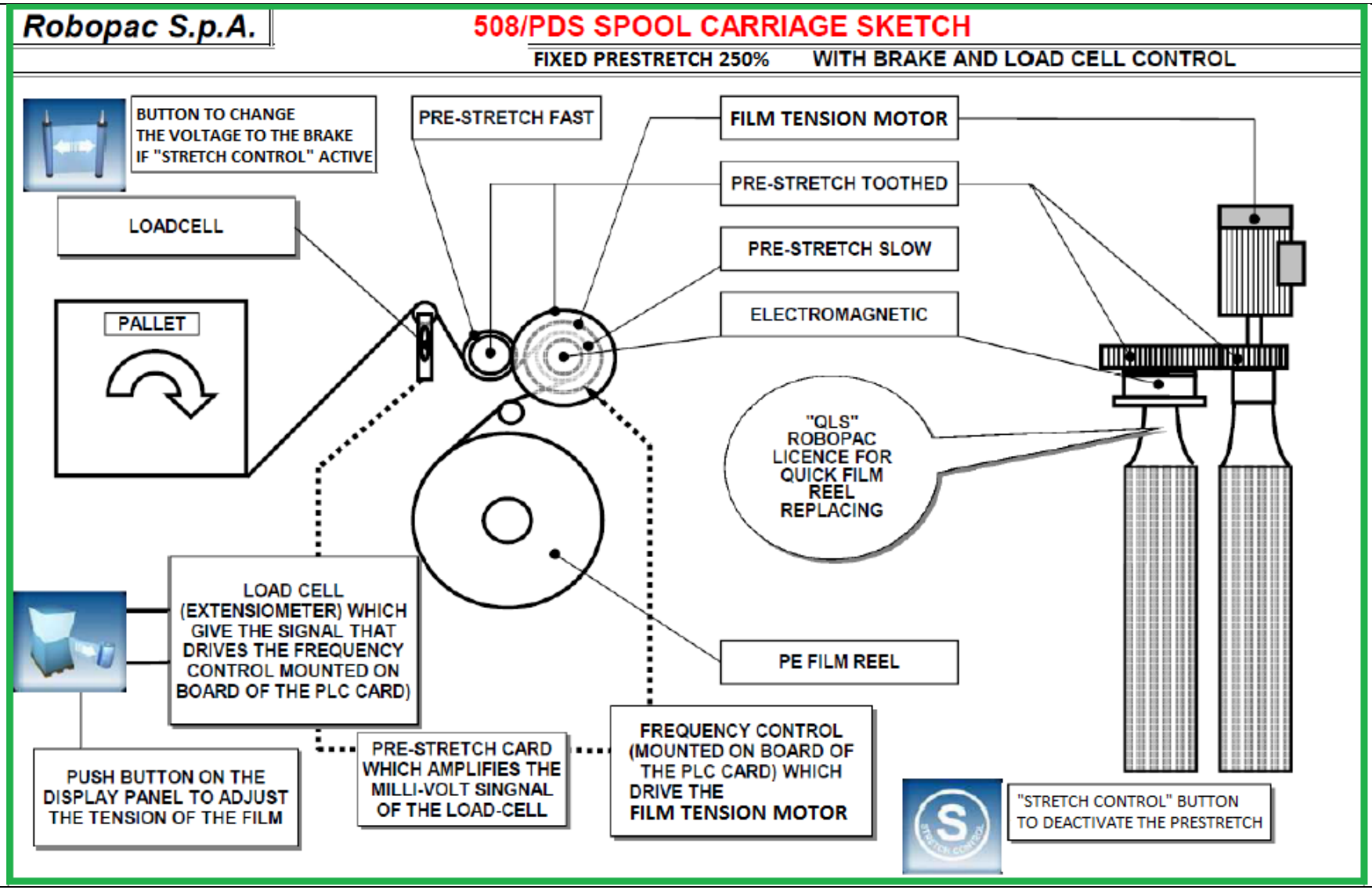
MACHINE LAY-OUT

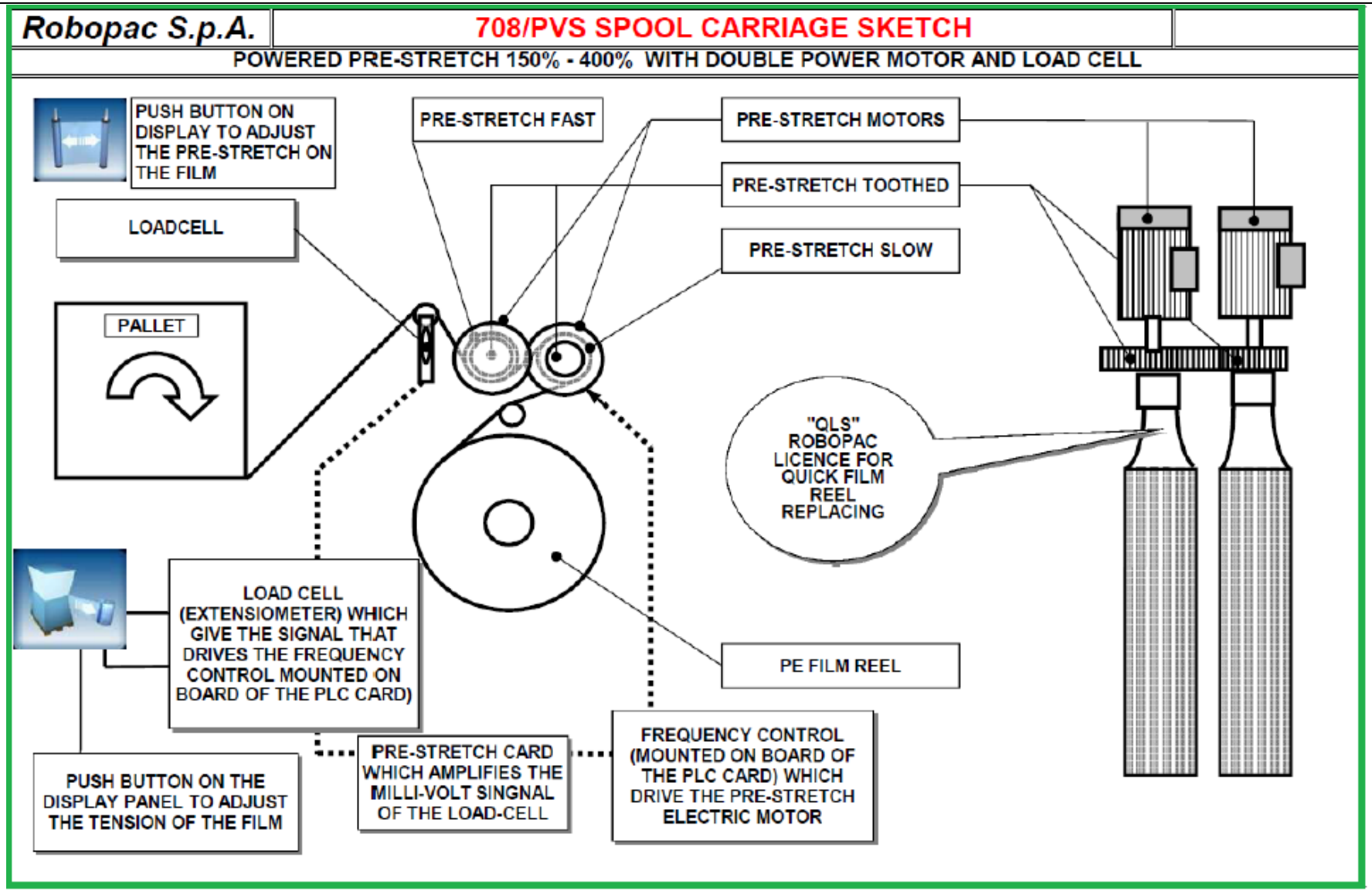


ROTOPLAT SERIES 8 CARRIAGE DESCRIPTION

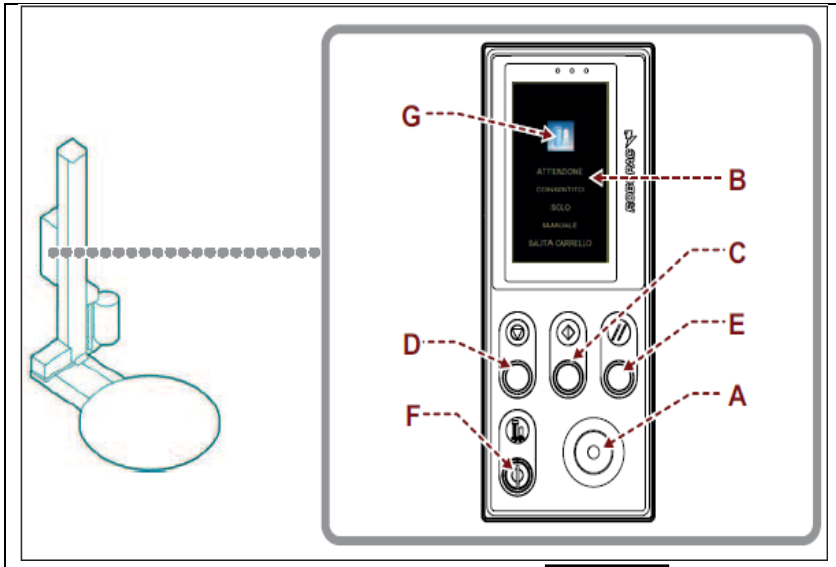



Robopac S.p.A.
308/FR SPOOL CARRIAGE SKETCH
ELECTROMAGNETIC BRAKE/CLUTCH FILM TENSIONING
PUSH BUTTON ON DISPLAY TO ADJUST THE STRETCH (TENSION) ON THE FILM
ELECTROMAGNETIC CLUTCH
FRICTIONED ROLLER
PALLET
"QLS" ROBOPAC LICENCE FOR QUICK FILM REEL REPLACING
FRICTIONED ROLLER
PE FILM REEL

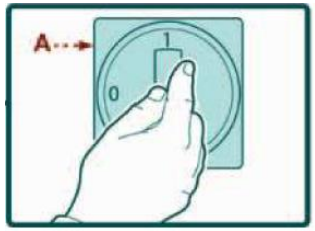

Robopac S.p.A.
508/PDS SPOOL CARRIAGE SKETCH
FIXED PRESTRETCH 250% WITH BRAKE AND LOAD CELL CONTROL
BUTTON TO CHANGE THE VOLTAGE TO THE BRAKE IF "STRETCH CONTROL" ACTIVE
LOADCELL
PALLET
PRE-STRETCH FAST
FILM TENSION MOTOR
PRE-STRETCH TOOTHED
PRE-STRETCH SLOW
ELECTROMAGNETIC
"QLS" ROBOPAC LICENCE FOR QUICK FILM REEL REPLACING
LOAD CELL (EXTENSIOMETER) WHICH GIVE THE SIGNAL THAT DRIVES THE FREQUENCY CONTROL MOUNTED ON BOARD OF THE PLC CARD)
PE FILM REEL
PUSH BUTTON ON THE DISPLAY PANEL TO ADJUST THE TENSION OF THE FILM
PRE-STRETCH CARD WHICH AMPLIFIES THE MILLI-VOLT SINGNAL OF THE LOAD-CELL
FREQUENCY CONTROL (MOUNTED ON BOARD OF THE PLC CARD) WHICH DRIVE THE FILM TENSION MOTOR
"STRETCH CONTROL" BUTTON TO DEACTIVATE THE PRESTRETCH


Robopac S.p.A.
708/PVS SPOOL CARRIAGE SKETCH
POWERED PRE-STRETCH 150% - 400% WITH DOUBLE POWER MOTOR AND LOAD CELL
PUSH BUTTON ON DISPLAY TO ADJUST THE PRE-STRETCH ON THE FILM
PRE-STRETCH FAST
PRE-STRETCH MOTORS
PRE-STRETCH TOOTHED
PRE-STRETCH SLOW
LOADCELL
PALLET
"QLS" ROBOPAC LICENCE FOR QUICK FILM REEL REPLACING
LOAD CELL (EXTENSIOMETER) WHICH GIVE THE SIGNAL THAT DRIVES THE FREQUENCY CONTROL MOUNTED ON BOARD OF THE PLC CARD)
PE FILM REEL
PUSH BUTTON ON THE DISPLAY PANEL TO ADJUST THE TENSION OF THE FILM
PRE-STRETCH CARD WHICH AMPLIFIES THE MILLI-VOLT SINGNAL OF THE LOAD-CELL
FREQUENCY CONTROL (MOUNTED ON BOARD OF THE PLC CARD) WHICH DRIVE THE PRE-STRETCH ELECTRIC MOTOR

OPERATOR PANEL DESCRIPTION



Pic.1



Pic.1a

“Stop cycle” button
It is used to stop the automatic wrapping Cycle

“Start cycle” push-button
It is used to start the automatic wrapping cycle

“Reset” push-button
It is used to reset the machine before restarting after an emergency stop or to restart it after stopping with power supply cut-off.

Key selector for emergency interruption
It is used to momentarily interrupt the emergency of the carriage.
Turn the key to the position I (JOG), the user interface shows the page on “Safety interrupted” which allows, by pressing the pushbutton **(G)**, to lift the trolley only

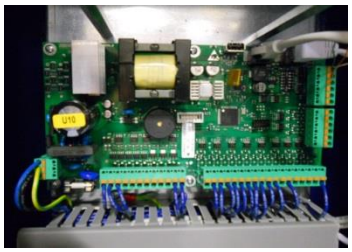
Emergency stop push-button
It is used to stop with a voluntary action, in case of imminent risk, the organs of the machine that may pose a rick.
For further details consult the paragraph “Description of safety devices”

Main switch for machine’s ON / OFF
Turn main switch **(A)) (Pic. 1a)** on **I** (ON) to turn on electric power supply.

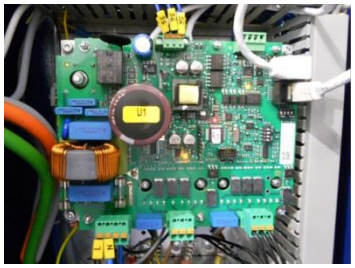
Buzzer

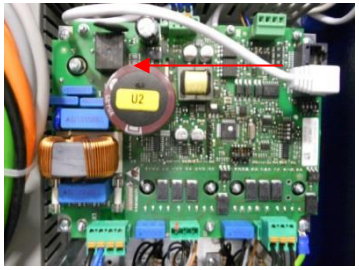
DESCRIPTION AND MAIN ELECTRICAL PANEL LAYOUT

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



U10 - -PLC Card PLC01ROB_1
code 1430300238





U1 - -Inverter Card INV01ROB_2
code 1430300271

U2 - Inverter Card INV01ROB_2
code 1430300271

K1 - -Inverters Enable - code 00L0116056

K1 - Filter - code 00L0116090

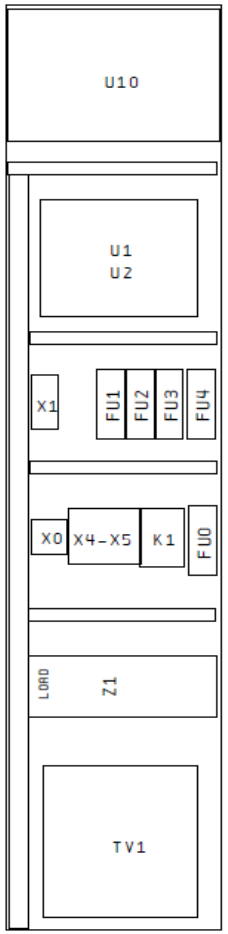
Z1 - Main filter-

code 00L0202680

code 00L0287639 (Rif. BM 1415)

DESCRIPTION AND MAIN ELECTRICAL PANEL LAYOUT (USA version only)

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

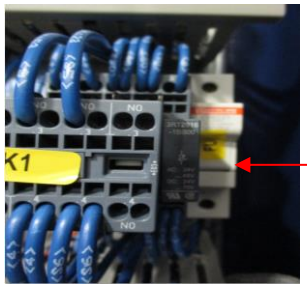


FU1 - Inverter U1 Fuse (10,3X38 RIT 8A 600V CC UL/CSA)
code 0001304312

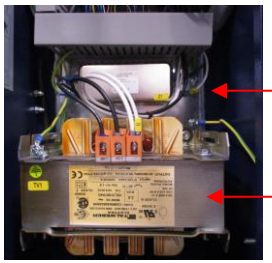
FU2 - Inverter U2 Fuse (10,3X38 RIT 8A 600V CC UL/CSA)
code 0001304312

FU3 - PLC U10 Fuse (10,3X38 RIT 1A 600V CC UL/CSA)
code 0001304300

FU4 - 24VDC Fuse (10,3X38 RIT 4A 600V CC UL/CSA)
code 0001304307



FU0 - Power Fuse (10,3X38 RIT 10A 600V CC UL/CSA)
code 0001304313

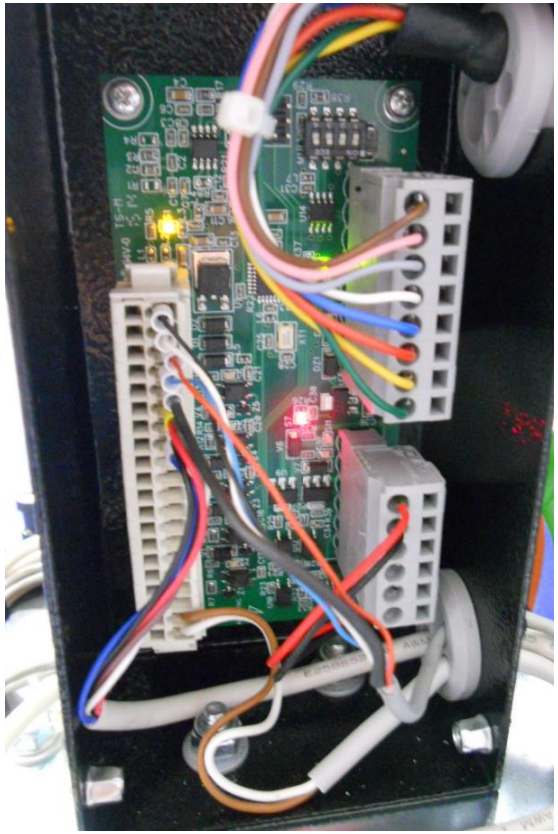


Z1 - Main Filter code 00L0202680

Not provide 00L0287639 code because no UL

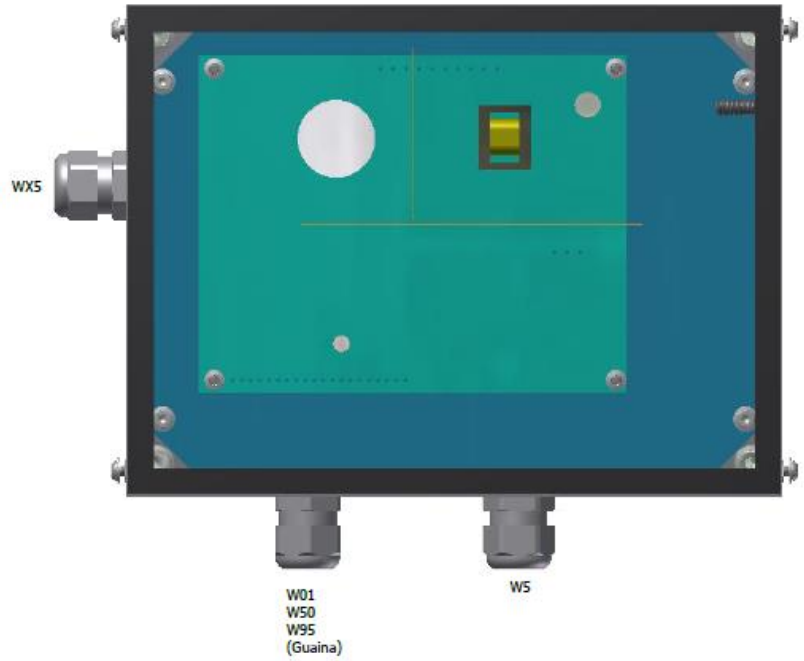
TV1 - Power Auto-Transformer 2500VA 120/240
code 00L0198704

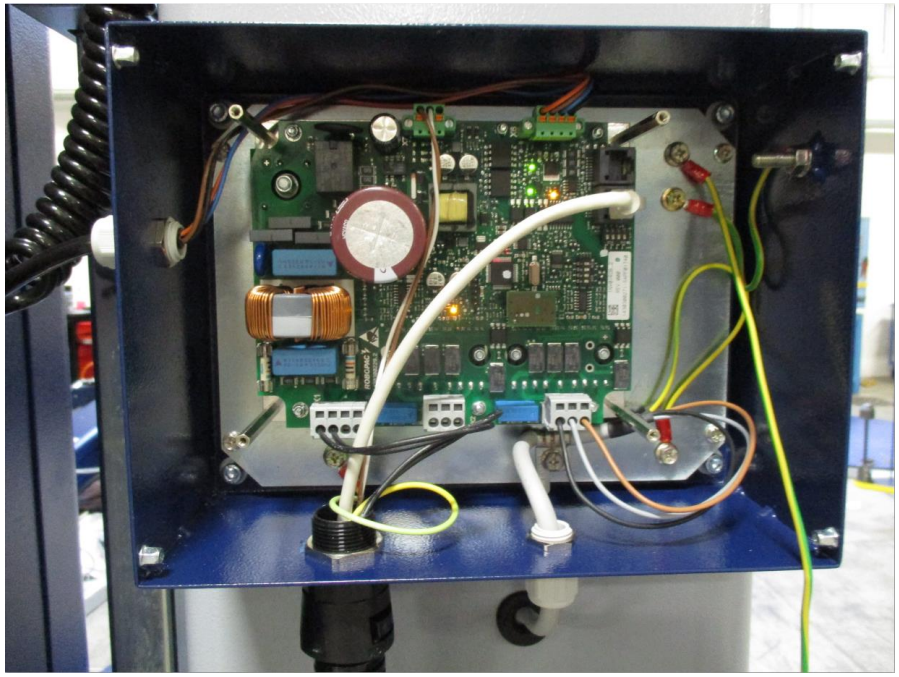
ELECTRICAL PANEL ON CARRIAGE DESCRIPTION



Expansion Card PRES03ROB **U11**
code 1430300220

ELECTRICAL PANEL ON MECHANICAL PRESSURE DESCRIPTION

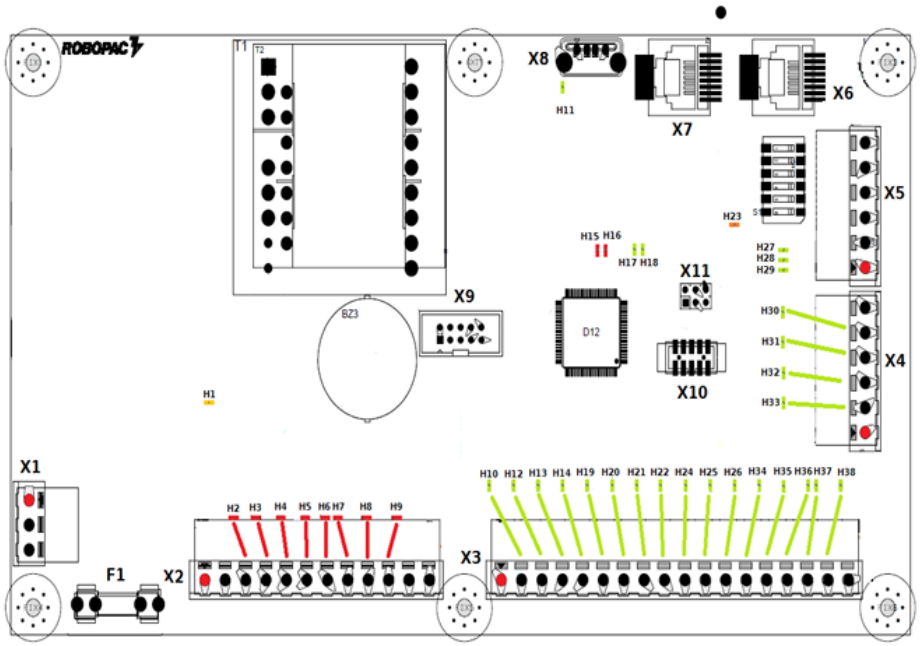




Inverter Card INV01ROB_2 **U5**
code 1430300271

ELECTRONIC CARDS DESCRIPTION

PLC Main Board (U10) - – CODE 1430300238



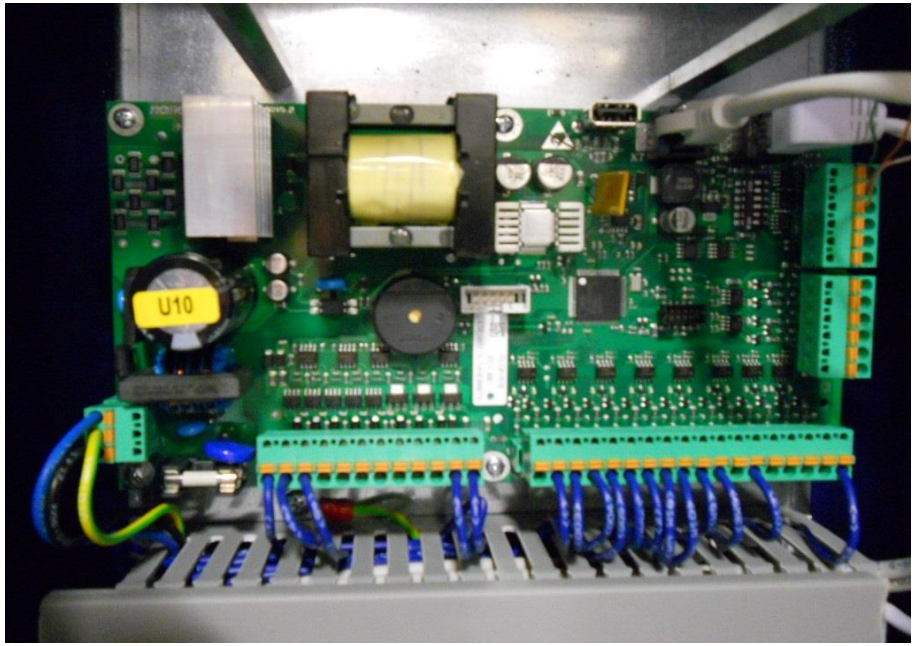


Table description U10 - Connectors and leds

X1	220Vac Power Supply
X2	Digital output terminal board (1-8)
X3	Digital input terminal board (1-16)
X4	Fast input terminal board (1-4)
X5	MB1 Communications
X6	MB2 + CAN Communications
X7	MB2 + CAN Communications
X8	USB for SW update
X9	RDMS Connector
X10	Debug
X11	ISP
H1	24V Led
H2..9	Output LED (see arrows)
H11	USB LED (blinking during programming)
H15	Start Status
H16	Error LED
H17	SUP status LED
H18	Microcontroller LED
H23	3,3V Led
H27	MB1 Led
H28	MB2 Led
H29	CAN Led
H30..33	Fast input LED (see arrows)
Hxx	Digital input LED (see arrows)

(FRD-FR Carriage)

Table description status inputs – X3 Connector

INPUT Number	Input Description	Led Status	Contact Type
H10	Emergency	ON	N.C.
H12	RESET	OFF	N.O.
H13	START	ON	N.O.
H14	STOP	ON	N.C.
H19	Carriage Safety Exception	ON	N.C.
H20	Carriage Emergency	ON	N.C.
H21	Turtanble phase	ON	N.O.
H22	ForkLift Safety	ON	N.O.
H24	High Endstroke Carriage	ON	N.C.
H25	Low Endstroke Carriage	ON	N.C.
H26	Product Height Photocell	ON	N.O.
H34	Emergency FeedBack	ON	N.O.
H35	Up-Down Pressure Pedal	ON	N.O.
H36	Conveyor Safety Sensor	ON	N.O.
H37	Libero	OFF	N.O.
H38	Stop Remote Control	ON	N.O.

Table description status ouputs – X2 Connector

Output Number	Output Description
H2	FeedBack Control
H3	Table motor Brake
H4	Pressure Fall (Optional)
H5	Pressure Rise (Optional)
H6	Roping Device Fall (Optional)
H7	Roping Device Rise (Optional)
H8	Free
H9	Clutch (FR Carriage Only)

(PDS-PVS Carriage)

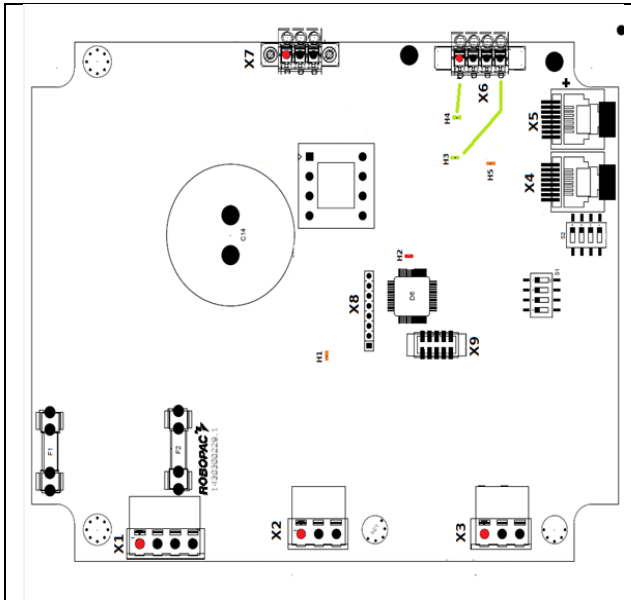
Table description status inputs – X3 Connector

INPUT Number	Input Description	Led Status	Contact Type
H10	Emergency	ON	N.C.
H12	RESET	OFF	N.O.
H13	START	ON	N.O.
H14	STOP	ON	N.C.
H19	Carriage Safety Exception	ON	N.C.
H20	Carriage Emergency	ON	N.C.
H21	Turtanble phase	ON	N.O.
H22	ForkLift Safety	ON	N.O.
H24	High Endstroke Carriage	ON	N.C.
H25	Low Endstroke Carriage	ON	N.C.
H26	Free	OFF	N.O.
H34	Emergency FeedBack	ON	N.O.
H35	Up-Down Pressure Pedal	ON	N.O.
H36	Conveyor Safety Sensor	ON	N.O.
H37	Libero	OFF	N.O.
H38	Stop Remote Control	ON	N.O.

Table description status ouputs – X2 Connector

Output Number	Output Description
H2	FeedBack Control
H3	Table motor Brake
H4	Pressure Fall (Optional)
H5	Pressure Rise (Optional)
H6	Roping Device Fall (Optional)
H7	Roping Device Rise (Optional)
H8	Free
H9	Free

Inverter Card INV01ROB_2 (U1) – CODE 1430300271



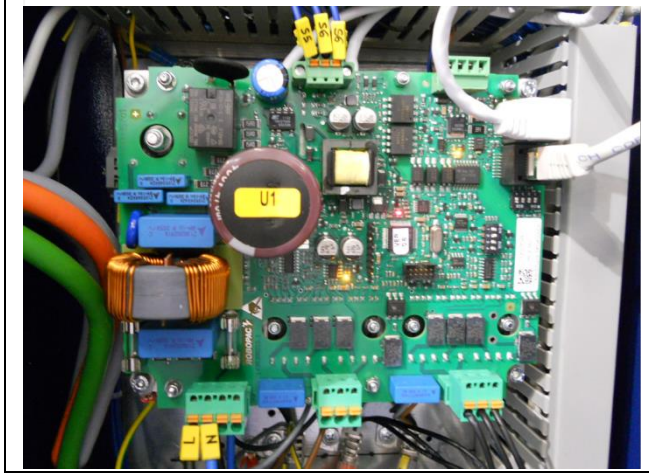
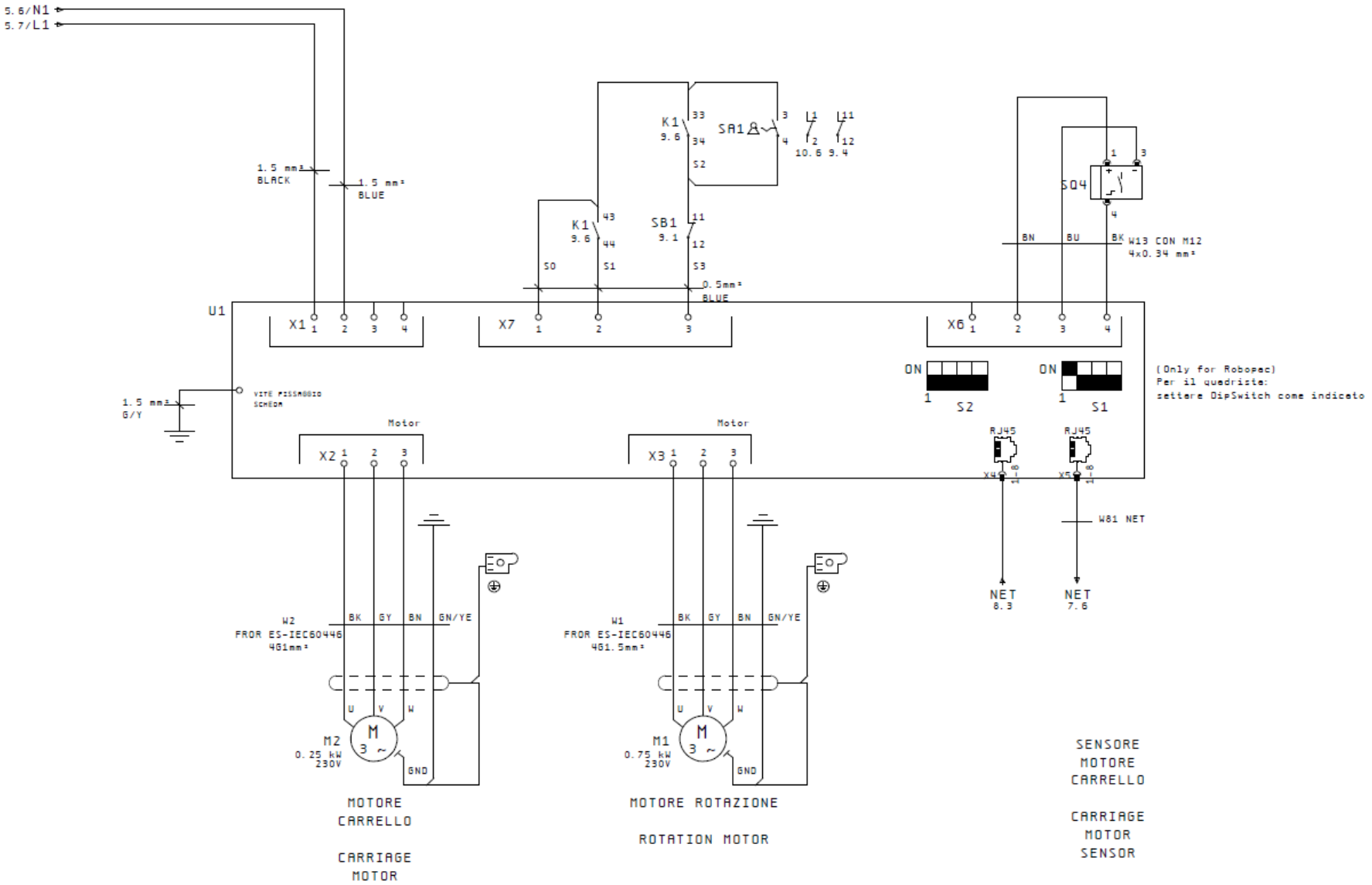


Table description: status input (U1) Table Rotation Motor and Carriage Lift Motor.

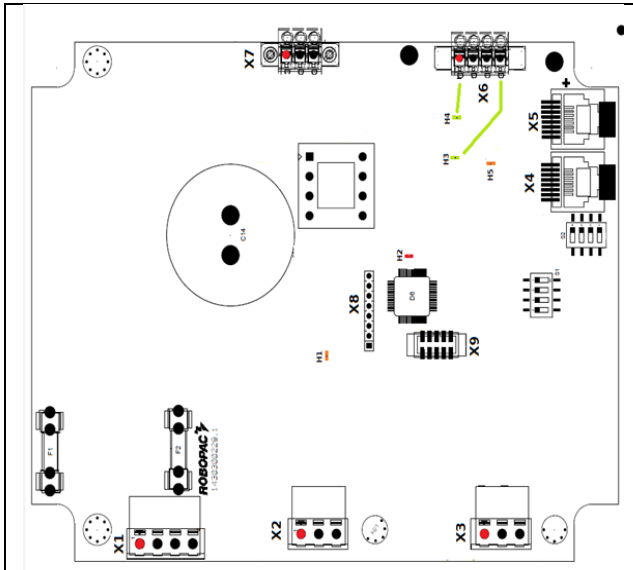
LED Number	Input description	Led Status	Contact Type
H1	230 VAC Power	ON	
H2	Error Led	1 regular blink	
H3	Input 1 on X6 – Carriage Motor Sensor	OFF	N.O.
H4	Input 2 on X6	N/A	
H5	24V Modbus Power	ON	

Table description (U1): X1 – X2 – X3 – X4 – X5 – X6 – X7 – X8 – X9 Connectors

Connector Number	Description
X1	230 VAC – Card Power Supply
X2	Motor 2 – Carriage Lift
X3	Motor 1 – Table Rotation
X4	Communication Out
X5	Communication In
X6	Digital Inputs
X7	Driver Enable
X8	SD for SW update
X9	Debug


5.6/N1
5.7/L1
1.5 mm²
BLACK
1.5 mm²
BLUE
K1
9.6
33
34
S2
SA1
3
4
1
2
11
12
10.6 9.4
K1
9.6
43
44
S0
S1
SB1
9.1
11
12
S3
0.5mm²
BLUE
SQ4
1
3
4
BN
BU
BK W13 CON M12
4x0.34 mm²
U1
X1 1 2 3 4
X7 1 2 3
X6 1 2 3 4
ON
1
S2
ON
1
S1
(Only for Robopac)
Per il quadrista:
settare DipSwitch come indicato
1.5 mm²
G/Y
VITE PISSM0810
SCHEDM
Motor
X2 1 2 3
Motor
X3 1 2 3
RJ45
RJ45
X4
X5
W81 NET
NET
8.3
NET
7.6
W2
FROR ES-IEC60446
4G1mm²
BK GY BN GN/YE
U V W
M2
0.25 kW
230V
M
3 ~
GND
W1
FROR ES-IEC60446
4G1.5mm²
BK GY BN GN/YE
U V W
M1
0.75 kW
230V
M
3 ~
GND
MOTORE
CARRELLO
CARRIAGE
MOTOR
MOTORE ROTAZIONE
ROTATION MOTOR
SENSORE
MOTORE
CARRELLO
CARRIAGE
MOTOR
SENSOR

Inverter card INV01ROB_2 (U2) – CODE 1430300271



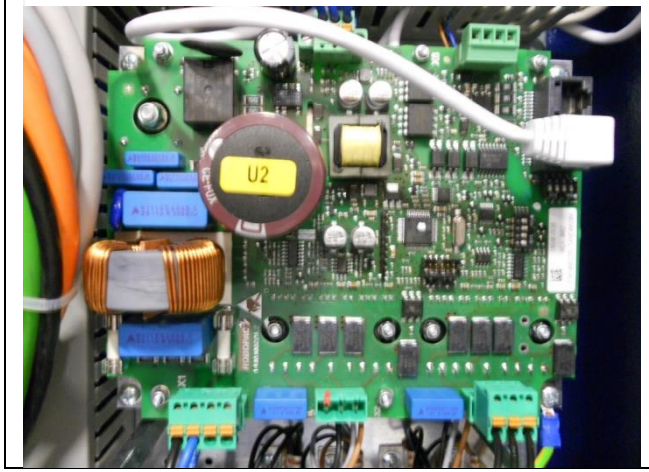
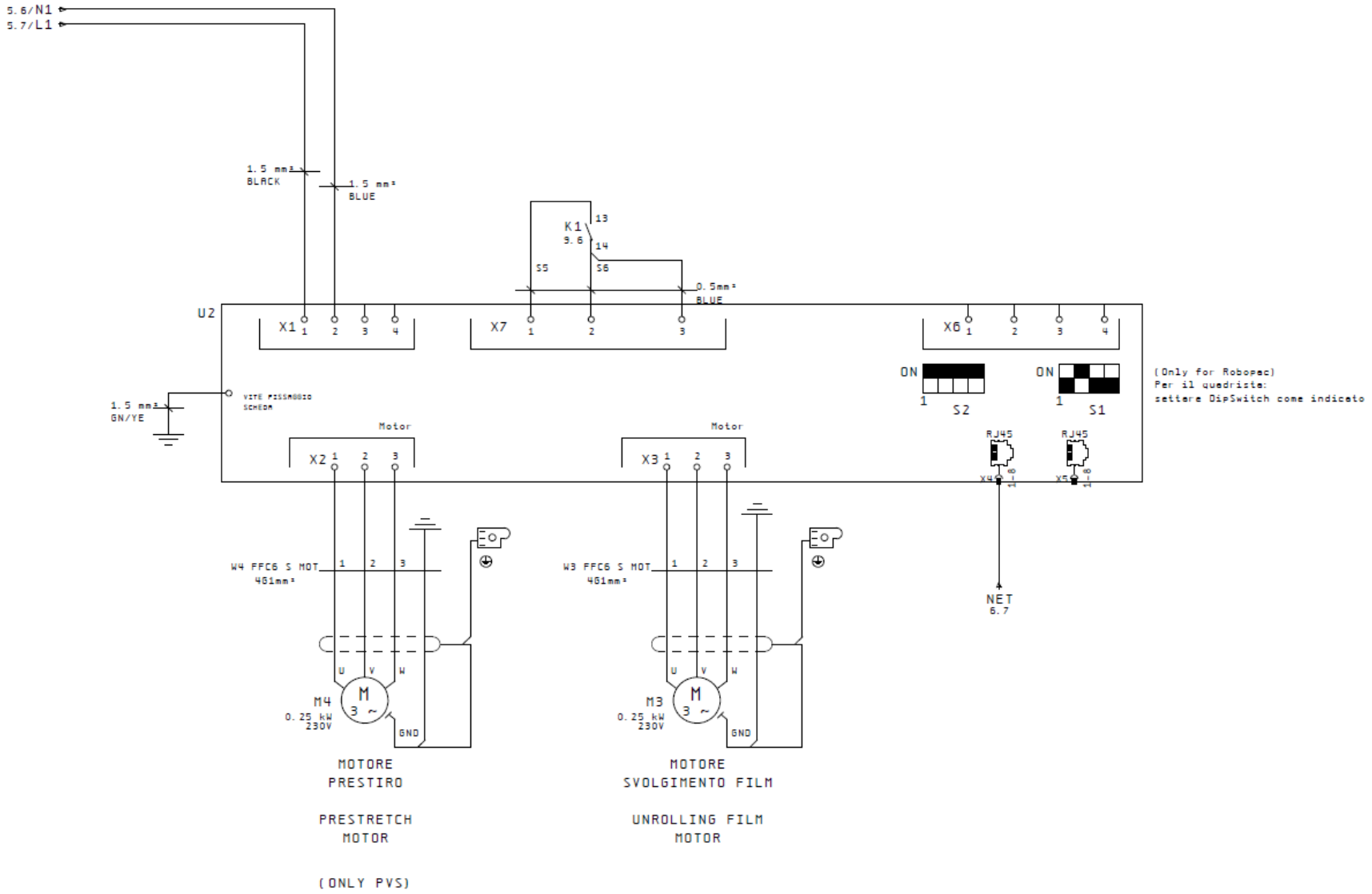


Table description status input (U2) Unrolling Film Motor and Pre-Stretch Film Motor (Optional)

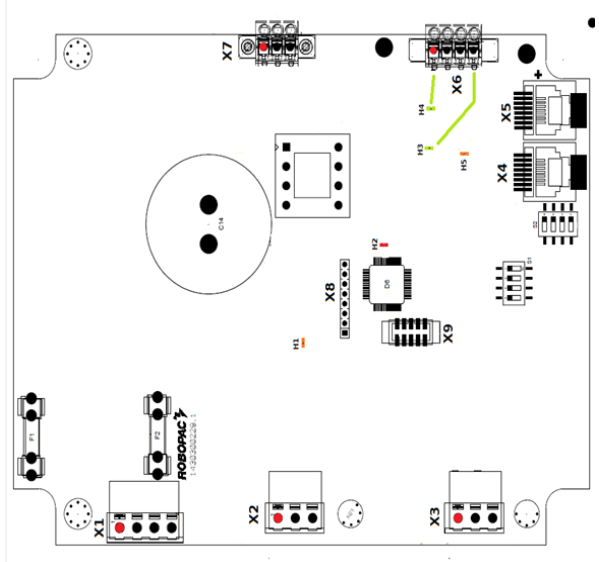
LED Number	Input description	Led Status	Contact Type
H1	230 VAC Power	ON	
H2	Error Led	1 regular blink	
H3	Input 1 on X6	OFF	N.O.
H4	Input 2 on X6	N/A	
H5	24V Modbus Power	ON	

Table description (U2): X1 – X2 – X3 – X4 – X5 – X6 – X7 – X8 – X9 Connectors

Connector Number	Description
X1	230 VAC – Card Power Supply
X2	Motor 4 – Pre-Stretch Film Motor
X3	Motor 3 – Unrolling Film Motor
X4	Communication Out
X5	Communication In
X6	Digital Inputs
X7	Driver Enable
X8	SD for SW update
X9	Debug


5.6/N1
5.7/L1
1.5 mm²
BLACK
1.5 mm²
BLUE
K1
9.6
13
14
S5
S6
0.5mm²
BLUE
U2
X1
X7
X6
ON
S2
S1
(Only for Robopac)
Per il quadrista:
settare DipSwitch come indicato
1.5 mm²
GN/YE
Motor
X2
X3
RJ45
X4
X5
W4 FFC6 S MOT
461mm²
W3 FFC6 S MOT
461mm²
NET
6.7
M4
0.25 kW
230V
M3
0.25 kW
230V
GND
MOTORE
PRESTIRO
PRESTRETCH
MOTOR
(ONLY PVS)
MOTORE
SVOLGIMENTO FILM
UNROLLING FILM
MOTOR

Inverter Card INV01ROB_2 (U5) – CODE 1430300271



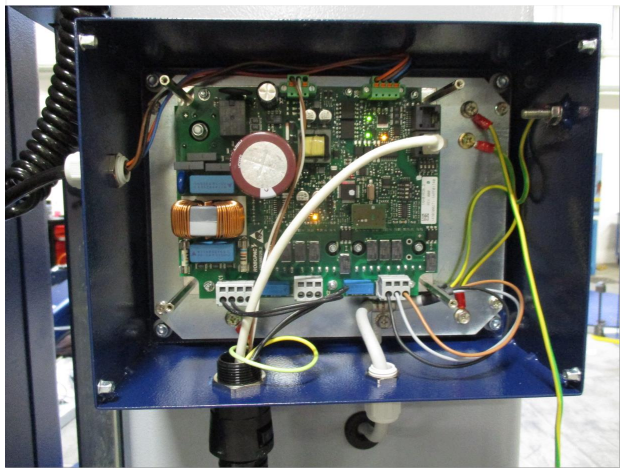
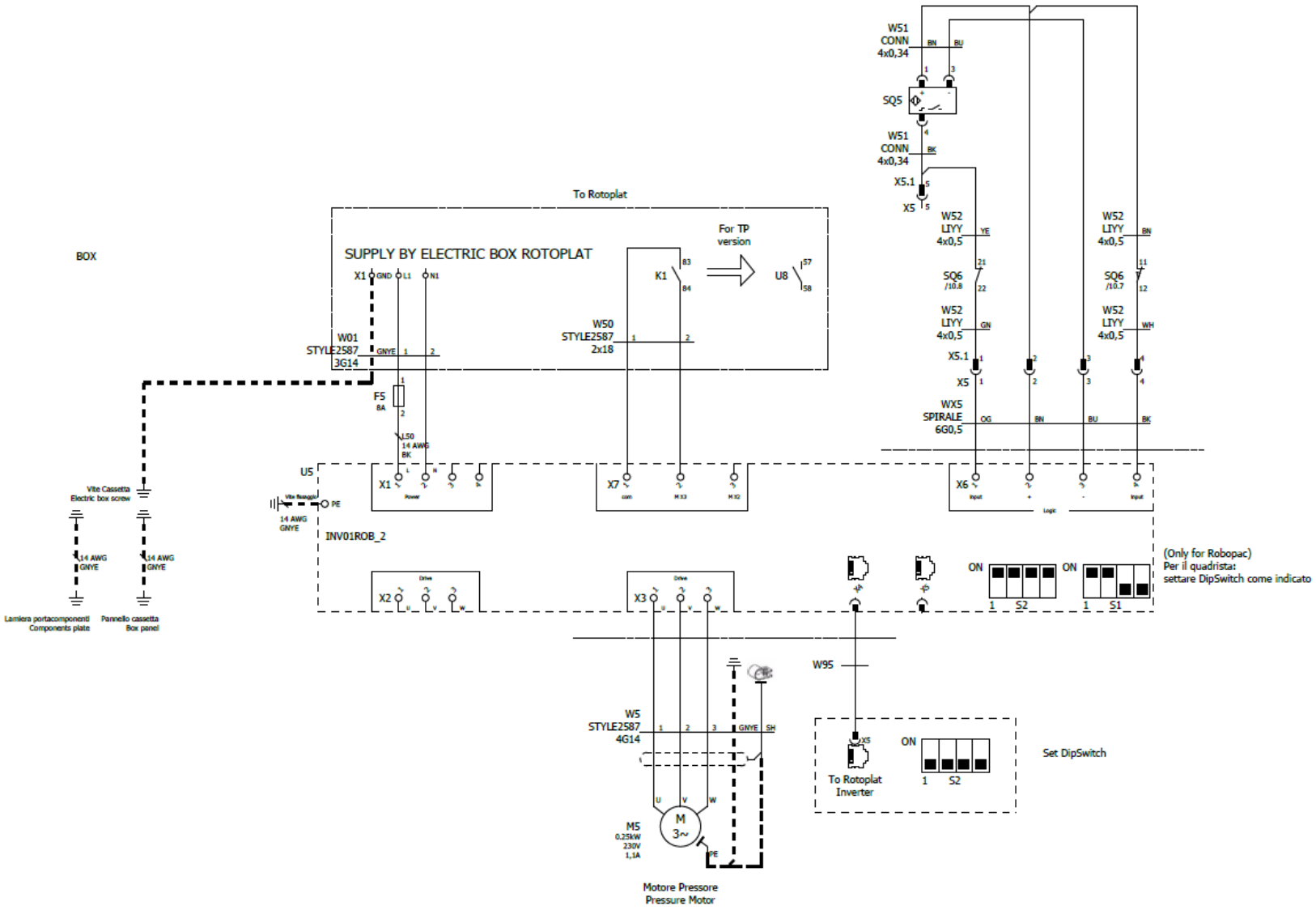


Table description status input (U5) Mechanical Pressure Platen Motor (Optional)

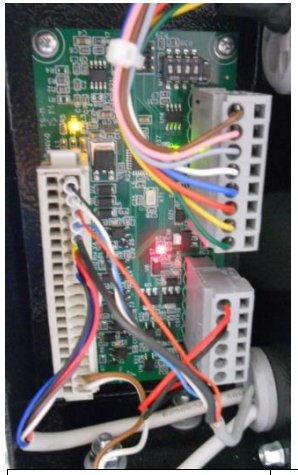
LED Number	Input description	Led Status	Contact Type
H1	230 VAC Power	ON	
H2	Error Led	1 lampeggio regolare	
H3	Input 1 – Pressure Platen High Limit Switch	ON	N.C.
H4	Input 2 – Pressure Platen Low Limit Switch	ON	N.C.
H5	24V Modbus Power	ON	

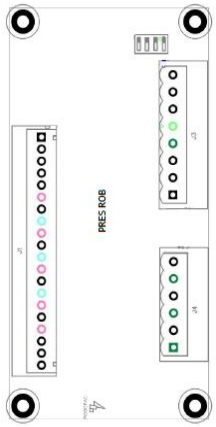
Table description (U5): X1 – X2 – X3 – X4 – X5 – X6 – X7 – X8 – X9 Connectors

Connector Number	Description
X1	230 VAC – Card Power Supply
X2	Motor 6 – Free
X3	Motor 5 – Pressure Platen Motor
X4	Communication Out
X5	Communication In
X6	Digital Inputs
X7	Driver Enable
X8	SD for SW update
X9	Debug


BOX
To Rotoplat
SUPPLY BY ELECTRIC BOX ROTOPLAT
For TP version
W01 STYLE2587 3G14
W50 STYLE2587 2x18
F5 8A
W51 CONN 4x0,34
SQ5
X5.1
X5
W52 LIYY 4x0,5
SQ6
WX5 SPIRALE 6G0,5
U5
INV01ROB_2
Vite Cassetta Electric box screw
14 AWG GNYE
Lamiera portacomponenti Components plate
Pannello cassetta Box panel
(Only for Robopac)
Per il quadrista:
settare DipSwitch come indicato
W95
W5 STYLE2587 4G14
M5 0,25kW 230V 1,1A
Motore Pressore Pressure Motor
To Rotoplat Inverter
Set DipSwitch

Expansion Card PRES03ROB (U11) - – CODE 1430300220





J1 Connector (Pin)	Signal Description
0V (1)	0V Load Cell Power (Black)
In+ (2)	Signal LoadCell (+ mv) (White)
In- (3)	Signal LoadCell (- mv) (Red)
12V (4)	12V Load Cell Power (Bleu)
SCH (5)	Cable shield

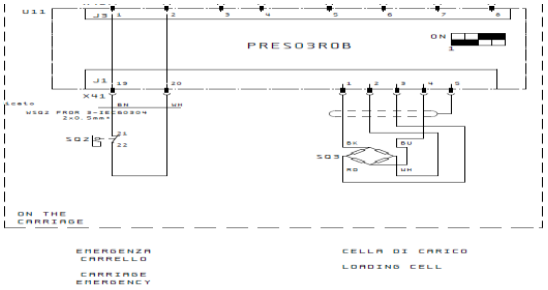
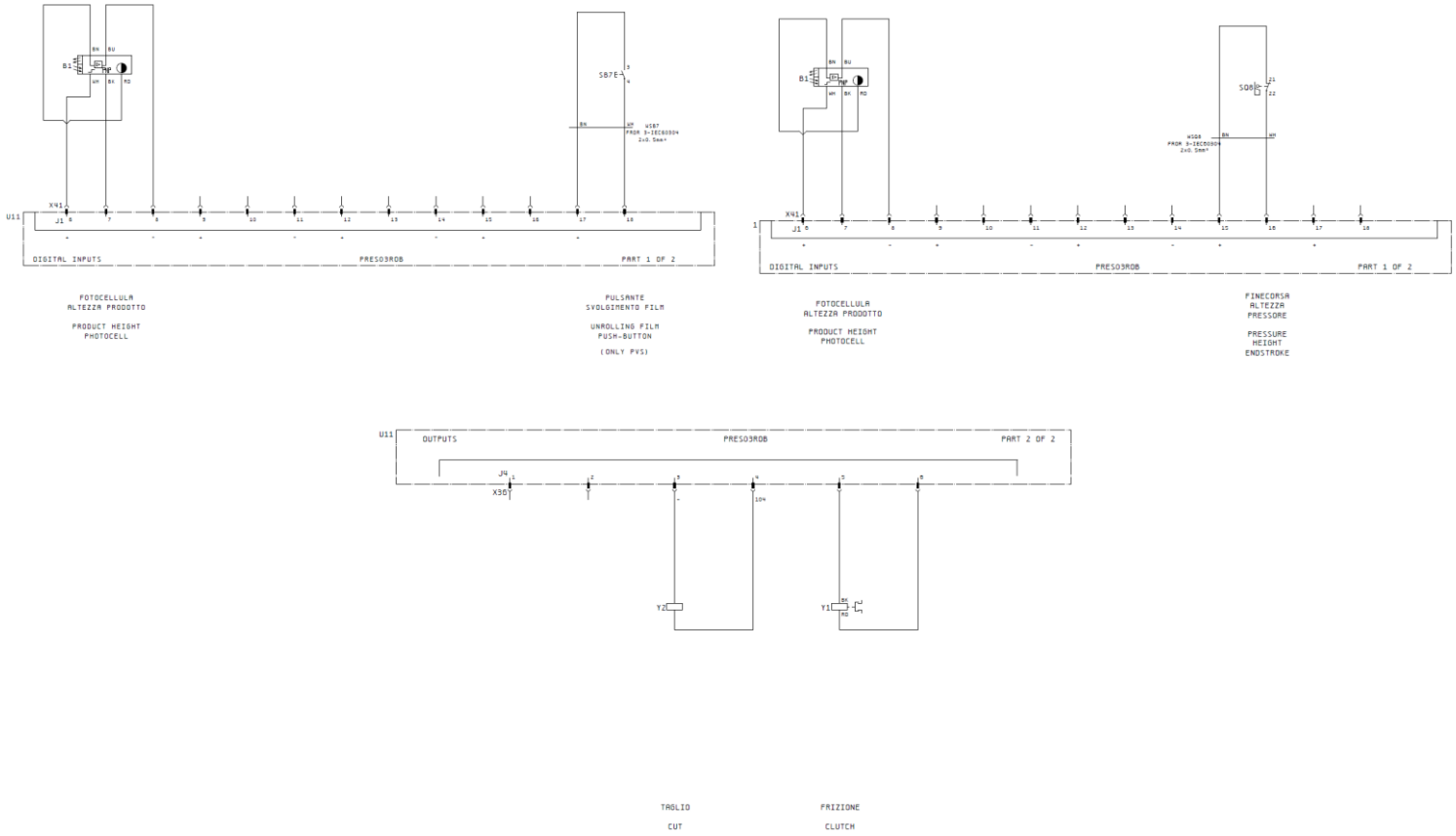


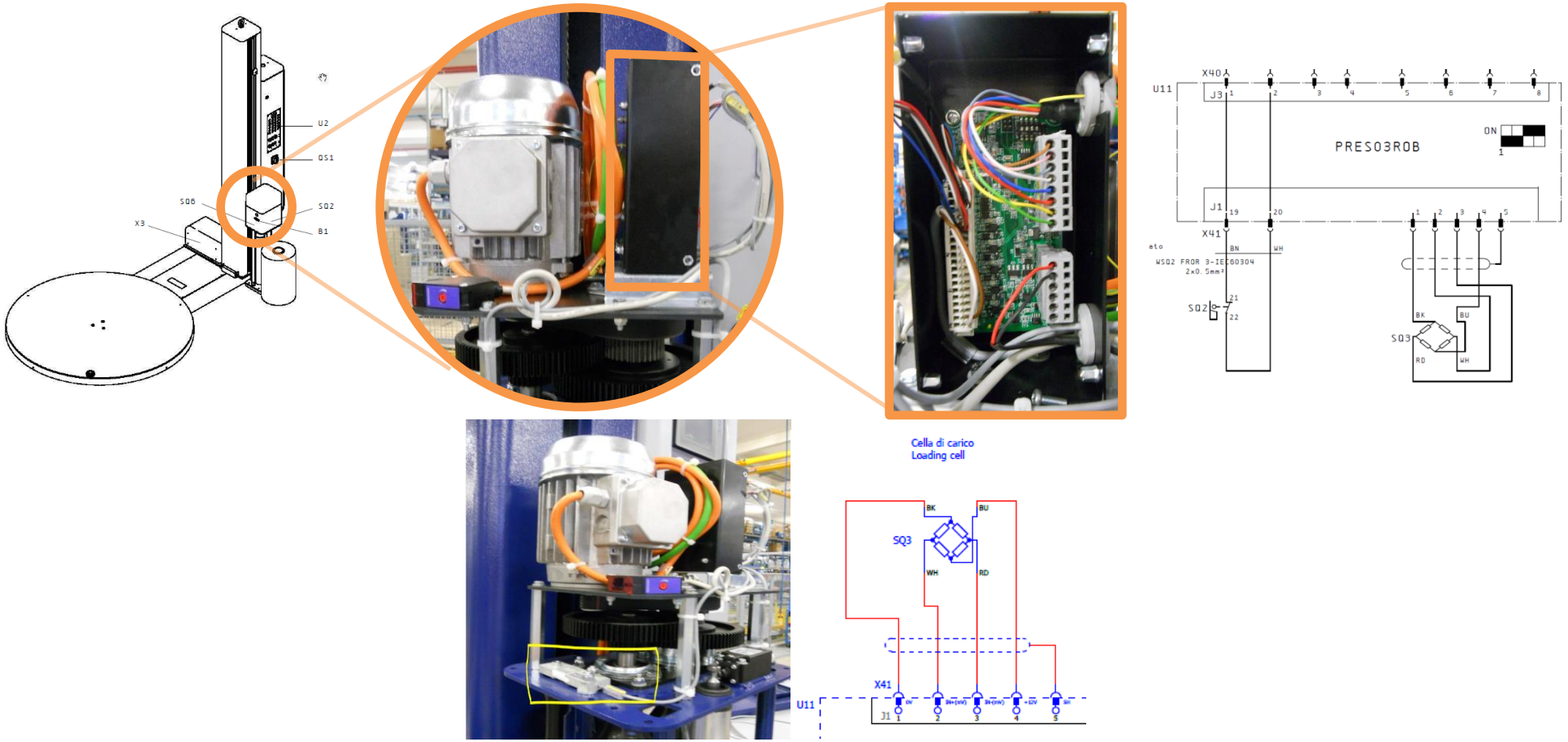
Table description status input/output (U11)

J1 Connector (Pin)	Input Description	Led Status	Contact Type
+ (6)	+24 VDC		
In1 (7)	Product Height Photocell	ON	N.O.
- (8)	0 VDC		
+ (15)	+24 VDC		
In2 (16)	Pressure Height Endstroke (Optional)	OFF	N.C.
+ (17)	+24 VDC		
In3 (18)	Unrolling Film Push-Button (PVS Only)	ON	N.O.
+ (19)	+24 VDC		
In4 (20)	Carriage Emergency	OFF	N.C.
J4 Connector (Pin)	**Output Description**		
Out1 - S10 (6)	Clutch (PDS Only)		
Out2 - S11 (4)	Cutting film (Optional)		


U11
X41
J1
DIGITAL INPUTS
PRESS3ROB
PART 1 OF 2
FOTOCELLULA
ALTEZZA PRODOTTO
PRODUCT HEIGHT
PHOTOCELL
PULSANTE
SVOLGIMENTO FILM
UNROLLING FILM
PUSH-BUTTON
(ONLY PVS)
FINECORSA
ALTEZZA
PRESSORE
PRESSURE
HEIGHT
ENDSTROKE
OUTPUTS
PART 2 OF 2
J4
X30
Y2
Y1
TAGLIO
CUT
FRIZIONE
CLUTCH

Check function of load cell (on PRES03ROB card on carriage)

To verify the correct operation of the load cell must be checked on the card on carriage, which between the Blue and Black wires of the same there are the 12 VDC representing the power.
Among White and Red wires must detect the output signal of the cell that will vary from 0 mV to 24 mV DC DC (being the ratio of 2 mV x Volt DC power supply) applying by hand a variable traction roller anchored to the cell to simulate the film's shooting.



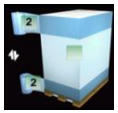
SAFETY DEVICES DESCRIPTION STATUS (U8 – U7)

The Machine is ON

After push button Reset pressed (not Emergency – Safety Transpallet not actived)

Safety photocell Transpallet actived

LIST OF RECIPES DATA

Parameter		Min. – Max.	Step	Unit of measure / Notes	
Packaging cycle type		Up and Down cycle			
		Up only cycle Or Down only cycle			
		Top sheet cycle			
		Activation of ergonomic ascent at the end of the cycle and setting of the altitude 1 - 160	1	**ON** **BLUE COLOURED BUTTON**	OFF GREY COLOURED BUTTON
		Packaging cycle with Pressure platen	Option activation	**ON** **BLUE COLOURED BUTTON**	OFF GREY COLOURED BUTTON
		Packaging cycle with Roping unit	Option activation	**ON** **BLUE COLOURED BUTTON**	OFF GREY COLOURED BUTTON
	 	Packaging Cycle with Automatic Cutting Film	Option activation	**ON** **BLUE COLOURED BUTTON**	OFF GREY COLOURED BUTTON
Bottom wraps		0 – 20	1	Wraps	
Top wraps		0 – 20	1	Wraps	

Photocell delay		0 – 100	1	cm
Offset from the ground		0 -- 300	1	cm
Reinforcement height and reinforcement wraps		 0 -- 310	1	cm
		 0 – 20	1	Wraps
Table Rotation speed		5 – 12	1	Rpm
Carriage up/down speed		 1.5 – 5.5  1.5 – 5.5	0.1	m/minute
Altimeter (reported to P35)		0 – 320 (reported to P35)	1	cm
Pressure Device Parameters	 	0 - 300	1	cm
Roping Device Parameters		0 - 20	1	Wraps
FRD CARRIAGE – (ROTOPLAT 108)				
Force to Load		Meccanico		
FR CARRIAGE – (ROTOPLAT 308)				
Force to Load		0 – 100	1	Dimensionless

PDS CARRIAGE – (ROTOPLAT 508)

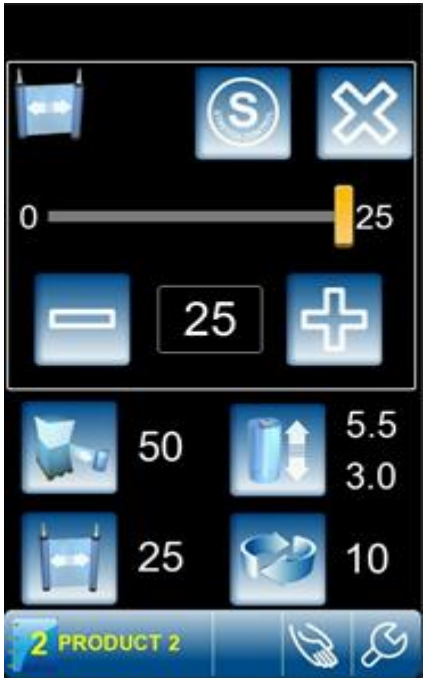
Force to Load	0 – 100	1	Dimensionless
Pre-stretch film	0 -- 25	1	%

Stretch control off.
Pre-stretch is always set to maximum.
The obtained pre-stretch depends on the gear ratio applied on the carriage (200% - 250% - 300%).

Standard operations includes 250% maximum applied pre-stretch.

While pressing for about 4 sec.

the icon enables the management of the shot into 4 values (Bottom wraps – Carriage up - Top wraps – Carriage down)



Stretch control on.
It's possible to DEACTIVATE the prestretch.
With values from 0 to 6/7/8/9
(it depends on many elements) the prestretch is DEACTIVATED, with values over that value the Prestretch is ACTIVATED
The obtained pre-stretch depends on the gear ratio applied on the carriage (200% - 250% - 300%). Standard operations includes 250% maximum applied pre-stretch.

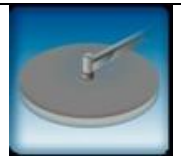
While pressing for about 4 sec.

the icon enables the management of the pre-stretch into 2 values (Carriage up – Carriage down)

PVS CARRIAGE– (ROTOPLAT 708)

Force to Load	0 – 100	1	Dimensionless
Pre-stretch	150 -- 400	10	%

MACHINE OPTIONS

Optional function	Description	Mechanical settings	Electrical settings	Pneumatic settings
	Pneumatic pressure platen	✔	✘	✘
	Mechanical pressure platen	✔	✘	N/A
	Roping Device unit	✔	✘	✘
 	Automatic Cutting Device unit	✔	✔	✔

OPERATOR PANEL PASSWORD USE

Proceed as follows to change the operator panel password:

From the main page (the one that appears when the machine is turned on), press the "TOOLS" icon.

In the applications page, press the "ACCOUNT" icon.

In the account page, press the "USER" icon until the required user icon is displayed (see specifications below). Press the button to confirm

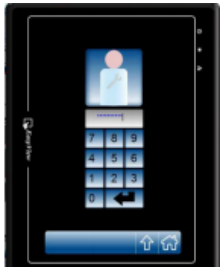
Default "CUSTOMER USER" password reset procedure (factory settings).

If the first level password is lost (**CUSTOMER USER operator**), the default password can be reset (**1111**).

Open the RESET page and press the four corners of the TOUCH screen operator panel, starting from the top left in counter-clockwise order, within 5 seconds. When finished, the panel will beep and display a key for several seconds. The new default password (**1111**) will appear to confirm the new settings..

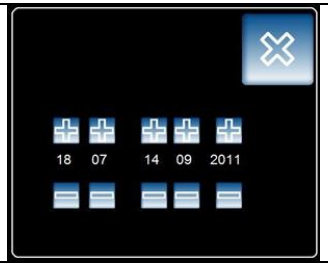
The key with password **1111** appears on the touch screen panel display to confirm that the password was reset to DEFAULT

Enter the new password and press ENT.
The new password is displayed in the image below (example 2222). Press the green button to confirm changes or press the red button to keep the current password.

<table>
<tr><td rowspan="2">MACHINE USER
CUSTOMER
SELECTION</td><td>  </td><td>  </td><td>No access password to higher use levels.
Touch-screen operator panel locked..</td><td rowspan="2"> 
Machine use for packaging.</td></tr>
<tr><td>  </td><td>  </td><td><u>CUSTOMER USER</u>
(Machine manager/User)
Enter password = 1111</td></tr>
<tr><td colspan="5">Utilizzo della macchina limitato alla impostazione dei valori di ciclo ed impostazione di una diversa password di accesso.</td></tr>
<tr><td>ROBOPAC
DEALER
SECTION</td><td>  </td><td>  </td><td><u>MAINTENANCE TECHNICIAN USER</u>
(Robopac dealer)
Password = 6161</td><td> 
Maintenance technician password accepted confirmation.</td></tr>
<tr><td colspan="5">Possibilità di utilizzo della macchina come “Utente cliente” ed accesso alle funzioni ed alla diagnostica per la manutenzione.</td></tr>
<tr><td>ROBOPAC
SECTION</td><td>  </td><td colspan="2"><u>ROBOPAC TECHNICIAN USER</u>

For exclusive ROBOPAC technician use</td><td> 
ROBOPAC technician password accepted confirmation.</td></tr>
</table>

INITIAL TOUCH SCREEN PANEL SETTINGS (ROBOPAC USE ONLY)

	Press the configuration button		
	Insert the USB key containing file erw0.erp in the panel (in the Robopac access EXMEM folder). Press the user key until the user with the Robopac symbol appears		
	Enter password **3333** and press  **Enter** The correct password is confirmed by the user image with the Robopac "lightening bolt" in the tool bar.		
	Press the HMI key		
	Press the date and time settings key Set the time and date and press the close key  followed by the  HOME key		

VARIOUS TOUCH SCREEN OPERATOR PANEL FUNCTIONS

HMI Setting

Press the "Beeper" key to turn off panel key touch beep.

Press the padlock key to lock/unlock program editing by the base operator.

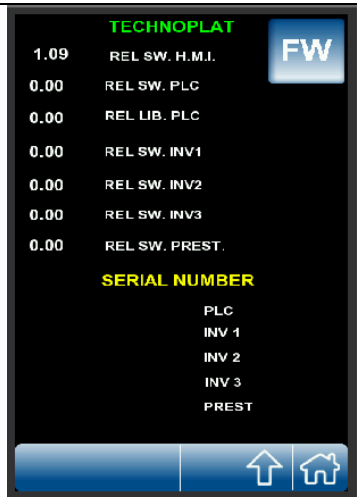
Press the flag key to change the panel display language

SW / HW Information

Press the info key. 

The screen displays the PLC software (SW + library), 3 inverters (main, carriage and pressure platen) and touch screen panel versions.

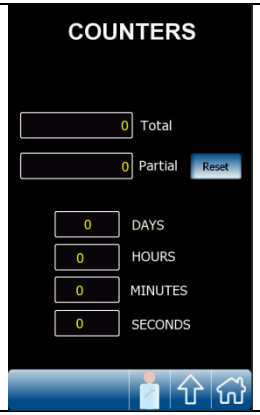
Press the FW key to display touch screen panel version details at the bottom.



Counter Reset

Press the reset key to the left of the 'Total' to reset all screen values.

The reset key to the left of 'Partial" ONLY resets the partial counter.



MACHINE CONFIGURATION AND INTERNAL PARAMETER LIST

To edit the parameters in the list below, we suggest you contact a Robopac technician

Machine Configuration Parameters *(Vers. Sw Pack_Rotoplat_S8_09.0) --- Machine until June 2017 ---*

PARAMETER	DESCRIPTION	VALUE	508 (DEF)	108	308	708
1	Carriage Type	1 = 108 FRD 2 = 308 FR 4 = 508 PDS 5 = 708 PVS	4	1	2	5
2	Cutting Film function Enable	0-1	0	0	0	0
3	Film Brake Alarm On	0-1	1	0	0	1
4	Beep during Cycle ON	0-1	0	0	0	0
5	Pressure Platen Function	0 = Not present 1 = Pneumatic 2 = Mechanical	0	0	0	0
6	Enable U.S.A. display	0-1	0	0	0	0
7	Enable Roping Device Unit function	0-1	0	0	0	0
8	Reel Height (cm) It's the dimension of the film SPOOL	0-100	50	50	50	50
9	Stretch during the cutting cycle Tension of the film during the cutting cycle	0-100	20	20	20	20
10	Film tail length during the cutting cycle	0-100	60	60	60	60
11	K_PID (Curve PID/Drive) Never change, inside software parameter	0-100	45	45	45	45
12	K_P1 (Proportional to Drive=0) Never change, inside software parameter	0-200	41	41	41	41
13	K_P2 (Proportional to Drive =100) Never change, inside software parameter	0-200	20	20	20	20
14	K_I1 (Integral to Drive = 0) Never change, inside software parameter	0-200	26	26	26	26

15	K_I2 (Integral to Drive = 100) Never change, inside software parameter	0-200	8	8	8	8
16	K_GAIN Never change, inside software parameter	0-200	133	133	133	133
17	K_TMIN (Minimum Drive) Never change, inside software parameter	0-200	25	25	25	18
18	K_PMIN (Costant pre-stretch) Never change, inside software parameter	0-200	30	30	30	30
19	Enable Simulation	0-1	0	0	0	0
20	Max Cell Drive Changing in load cell sensibility, high value – hight sensibility, low value – low sensibility	0-100	31	31	31	31
21	Enabling Configuration Doors-Windows DW	0-1	0	0	0	0
22	Maximum friction voltage (FR) Maximum value of the clutch in FR carriage (50 = 12 VDC, 100 = 24VDC)	0-100	50	50	50	50
23	Pre-stretch value (PDS)	0=150% 1=200% 2=250% 3=300%	2	2	2	2
24	Table diameter	0=1650 mm 1=1800 mm 2=2200 mm 3=2400 mm	0	0	0	0
25	Pressure platen delay (sec)	0-30	10	10	10	10
26	Restart Time	0 = Disattivato xx = secondi attesa	0	0	0	0
27	Enable Conveyor	0-1	0	0	0	0
28	Enable Forklift TP	0-1	0	0	0	0

29	Carriage gear motor	1=500 mm 2=750 mm 3= HD 500 mm 4=HD 750 mm 5=INOX	1	1	1	1
30	Enable Special Cycles	0-1	0	0	0	0
31	Enable Self-braking motor	0-1	0	0	0	0
32	Enabling Home Recipes	0-1	0	0	0	0
33	Enable PluriBall	0-1	0	0	0	0
34	Unrolling film Delay	0-30	0	0	0	0
35	Mast Height	0=2000 mm 1=2200 mm 2=2400 mm 3=2800 mm 4=3100 mm	1	1	1	1
36	Product Height Photocell Filter (sec/10)	0-50 (sec/10)	3	3	3	3
37	Beeper Selection (0=ext , 1=int)	0 - External 1 - Internal	0	0	0	0

Machine Configuration Parameters *(Vers. Sw Pack_Rotoplat_S8_10.1) --- Machines from June 2017 ---*

PARAMETER	DESCRIPTION	VALUE	508 (DEF)	108	308	708
1	Carriage Type	1 = 108 FRD 2 = 308 FR 4 = 508 PDS 5 = 708 PVS	4	1	2	5
2	Cutting Film function Enable	0-1	0	0	0	0
3	Film Brake Alarm On	0-1	1	0	0	1
4	Beep during Cycle ON	0-1	0	0	0	0
5	Pressure Platen Function	0 = Not present 1 = Pneumatic 2 = Mechanical	0	0	0	0
6	Enable U.S.A. display	0-1	0	0	0	0
7	Enable Roping Device Unit function	0 = NO 1 = Pneumatic 2 = Mechanic	0	0	0	0
8	Reel Height (cm) It's the dimension of the film SPOOL	0-100	50	50	50	50
9	Stretch during the cutting cycle Tension of the film during the cutting cycle	0-100	20	20	20	20
10	Film tail length during the cutting cycle	0-100	60	60	60	60
11	K_PID (Curve PID/Drive) Never change, inside software parameter	0-100	0	0	0	0
12	K_P1 (Proportional to Drive=0) Never change, inside software parameter	0-200	100	100	100	100
13	K_P2 (Proportional to Drive =100) Never change, inside software parameter	0-200	50	50	50	50
14	K_I1 (Integral to Drive = 0) Never change, inside software parameter	0-200	36	36	36	36

15	K_I2 (Integral to Drive = 100) Never change, inside software parameter	0-200	0	0	0	0
16	K_GAIN Never change, inside software parameter	0-200	100	100	100	100
17	K_TMIN (Minimum Drive) Never change, inside software parameter	0-200	24	24	24	20
18	K_PMIN (Costant pre-stretch) Never change, inside software parameter	0-200	30	30	30	30
19	Enable Simulation	0-1	0	0	0	0
20	Max Cell Drive Changing in load cell sensibility, high value – hight sensibility, low value – low sensibility	0-100	36	36	36	36
21	Enabling Configuration Doors-Windows DW	0-1	0	0	0	0
22	Maximum friction voltage (FR) Maximum value of the clutch in FR carriage (50 = 12 VDC, 100 = 24VDC)	0-100	50	50	50	50
23	Pre-stretch value (PDS)	0=150% 1=200% 2=250% 3=300%	2	2	2	2
24	Table diameter	0=1650 mm 1=1800 mm 2=2200 mm 3=2400 mm	0	0	0	0
25	Pressure platen delay (sec)	0-30	10	10	10	10
26	Restart Time	0 = Disattivato xx = secondi attesa	0	0	0	0
27	Enable Conveyor	0-1	0	0	0	0
28	Enable Forklift TP	0-1	0	0	0	0

29	Carriage gear motor	1=500 mm 2=750 mm 3= HD 500 mm 4=HD 750 mm 5=INOX	1	1	1	1
30	Enable Special Cycles	0-1	0	0	0	0
31	Enable Self-braking motor	0-1	0	0	0	0
32	Enabling Home Recipes	0-1	0	0	0	0
33	Enable PluriBall	0-1	0	0	0	0
34	Unrolling film Delay	0-30	0	0	0	0
35	Mast Height	0=2000 mm 1=2200 mm 2=2400 mm 3=2800 mm 4=3100 mm	1	1	1	1
36	Product Height Photocell Filter (sec/10)	0-50 (sec/10)	3	3	3	3
37	Beeper Selection (0=ext , 1=int)	0 - External 1 - Internal	0	0	0	0
38	Max roping range	0-500	256	256	256	256
39	Roping stop advance	0-20	10	10	10	10

Machine Configuration Parameters *(Vers. Sw Pack_Rotoplat_S8_11.0) --- Machines from July 2018 ---*

PARAMETER	DESCRIPTION	VALUE	508 (DEF)	108	308	708
1	Carriage Type	1 = 108 FRD 2 = 308 FR 4 = 508 PDS 5 = 708 PVS	4	1	2	5
2	Cutting Film function Enable	0-1	0	0	0	0
3	Film Brake Alarm On	0=disabled 1=enabled with CELL 2=enabled with ENCODER (r-connect) 3=enabled with CELL + ENCODER	1	0	0	1
4	Beep during Cycle ON	0-1	0	0	0	0
5	Pressure Platen Function	0 = Not present 1 = Pneumatic 2 = Mechanical	0	0	0	0
6	Enable U.S.A. display	0-1	0	0	0	0
7	Enable Roping Device Unit function	0 = NO 1 = Pneumatic 2 = Mechanic	0	0	0	0
8	Reel Height (cm) It's the dimension of the film SPOOL	0-100	50	50	50	50
9	Stretch during the cutting cycle Tension of the film during the cutting cycle	0-100	20	20	20	20
10	Film tail length during the cutting cycle	0-300	110	110	110	110
11	K_PID (Curve PID/Drive) Never change, inside software parameter	0-100	0	0	0	0
12	K_P1 (Proportional to Drive=0) Never change, inside software parameter	0-200	100	100	100	100
13	K_P2 (Proportional to Drive =100) Never change, inside software parameter	0-200	50	50	50	50
14	K_I1 (Integral to Drive = 0) Never change, inside software parameter	0-200	36	36	36	36

15	K_I2 (Integral to Drive = 100) Never change, inside software parameter	0-200	0	0	0	0
16	K_GAIN Never change, inside software parameter	0-200	100	100	100	100
17	K_TMIN (Minimum Drive) Never change, inside software parameter	0-200	45	45	45	40
18	K_PMIN (Costant pre-stretch) Never change, inside software parameter	0-200	30	30	30	30
19	Enable Simulation	0-1	0	0	0	0
20	Max Cell Drive Changing in load cell sensibility, high value – hight sensibility, low value – low sensibility	0-100	36	36	36	36
21	Basement type	0=STD 1=DW 2=Roll container 3=LP 4=HD 5=TP/TP3	0	0	0	0
22	Maximum friction voltage (FR) Maximum value of the clutch in FR carriage (50 = 12 VDC, 100 = 24VDC)	0-100	70	70	70	70
23	Pre-stretch value (PDS)	0=150% 1=200% 2=250% 3=300%	2	2	2	2
24	Table diameter	0=1650, 1=1800, 2=2200 3=2400, 4=2800	0	0	0	0
25	Pressure platen delay (sec)	0-30	10	10	10	10
26	Restart Time	0 = Disattivato xx = secondi attesa	0	0	0	0
27	Enable Conveyor	0-1	0	0	0	0
28	FREE	0-0	0	0	0	0

29	Carriage gear motor	1=500 mm 2=750 mm 3= HD 500 mm 4=HD 750 mm 5=INOX	1	1	1	1
30	Enable Special Cycles	0-1	0	0	0	0
31	Enable Self-braking motor	0-1	0	0	0	0
32	Enabling Home Recipes	0-1	0	0	0	0
33	Enable PluriBall	0-1	0	0	0	0
34	MLC Enable To enable the function Multi Layer Control	0-1	1	1	1	1
35	Mast Height	0=2000 mm 1=2200 mm 2=2400 mm 3=2800 mm 4=3100 mm	1	1	1	1
36	Product Height Photocell Filter (sec/10)	0-50 (sec/10)	3	3	3	3
37	Beeper Selection (0=ext , 1=int)	0 - External 1 - Internal	0	0	0	0
38	Max roping range	0-500	256	256	256	256
39	Roping stop advance	0-20	10	10	10	10
40	Product absence alarm enabling	0 – 1	0	0	0	0
41	Film weight (grams / 5 meters)	10 – 100	55	55	55	55

To edit the parameters in the list below, we suggest you contact a Robopac technician

Motors Parameters

PARAMETER	DESCRIPTION	VALUE	DEFAULT VALUES				
			TABLE ROTATION	CARRIAGE LIFT MOTOR	FILM DRIVE MOTOR	FILM PRE-STRETCH MOTOR	PRESSURE PLATEN MOTOR (OPT)
1	FW version						
2	Bootloader version						
3	Minimum frequency	0-20 (Hz)	0	0	0	0	0
4	Maximum frequency	0-100 (Hz)	100	100	100	100	100
5	Acceleration	0-999 (Hz/sec)	12	200	170	170	200
6	Deceleration	0-999 (Hz/sec)	12	200	170	170	200
7	Maximum current	0-10 (A)	7	5	5	5	5
8	Average current	0-100 (dA)	50	25	25	25	20
9	Rated frequency	0-100 (Hz)	50	72	72	72	50
10	Boost voltage	0-100 (%)	5 ***	5	5	5	5
11	Point 1 frequency	0-100 (Hz)	10 ***	10	10	10	10
12	Point 1 voltage	0-100 (%)	20 ***	16	16	16	20
13	Motor type	0-5	0	3	0	0	0
14	Positioning on	0-1	0	1	0	0	0
15	I Max Low Frequency	0-100	50	25	25	25	20
16	Feedback Value	0-6	0	1	0	0	0
17	Early low speed	0-999	0	35	0	0	0
18	Low speed value	0-999 (dHz)	50	220	50	50	0
19	Fast deceleration (Hz/sec)	0-999 (Hz/sec)	100	65	65	65	100
20	Communication Timeout	0-100 (ms)	30	30	30	30	30

(Vers. Sw Pack_Rotoplat_S8_09.0)

For Carriage 750 PVS USA change the following parameters of the lifting motor :

P4 = 85 , P5 = 25, P6 = 400, P8 = 30. P10 = 35, P11 = 25, P12 = 40, P15 =30

(Vers. Sw Pack_Rotoplat_S8_10.1) --- Machine starting from June 2017 ---

For Carriage 750 PVS USA change the following parameters of the lifting motor :

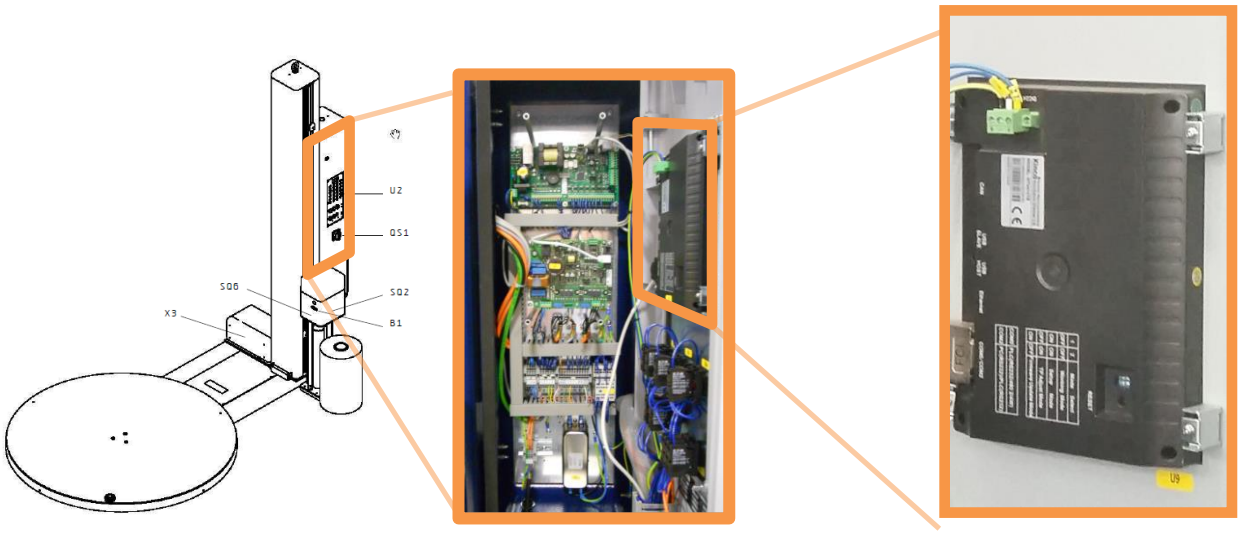
P4 = 85 , P5 = 25, P6 = 400, P8 = 30. P10 = 35, P11 = 25, P12 = 40, P15 =30

***** For ROTOPLAT HP and LP change the following Table motor parameters**
P10=20
P11=10
P12=25

PROCEDURE FOR REPLACING, LOADING SOFTWARE AND CALIBRATION OF ELECTRONIC CARDS

TOUCH SCREEN PANEL (U9)

In case you need to perform a software update on both touch screen panel (HMI) and the PLC card, you must always start from the download of the panel software.



New installation MT4414TE-RO KINCO --- till January 2021

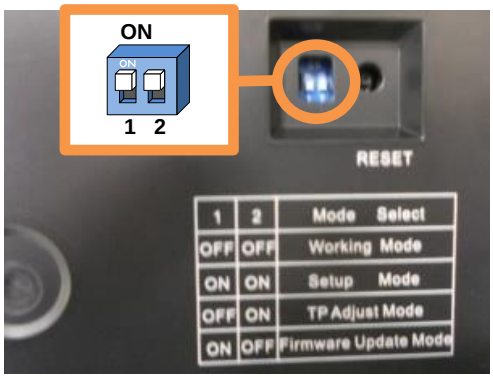
CODE : 1490300020

The new Touch Screen panel is supplied as a spare part WITHOUT software

- Mount mechanically the new touch-screen panel in place of the faulty part.
- Wire electrically the new touch-screen panel.
- Switch on the machine

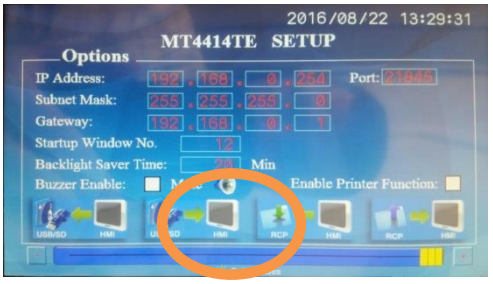
Install the touch-screen panel software by following this procedure:

Set the dip switches 1 and 2 to ON to enable the Setup Mode, then press the RESET pushbutton



(Old bootloader Kinco Panel)

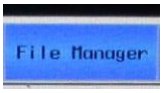
On the HMI screen, press the "USB/SD → HMI" button to open the file manager:

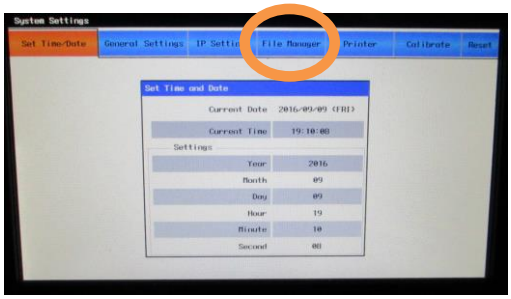


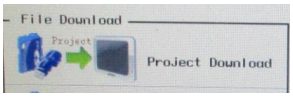
(New bootloader Kinco Panel)

On the HMI screen, press 

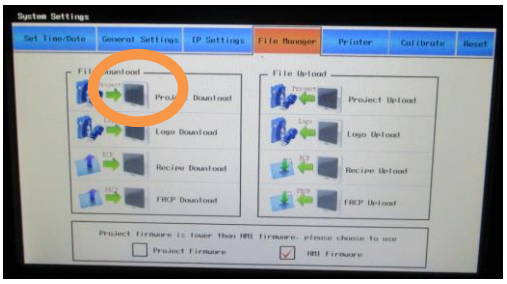
button to open the System Setting.

From the System Setting page, press the button 



From the File Manager page, press the button 

to open the page copy of the file:



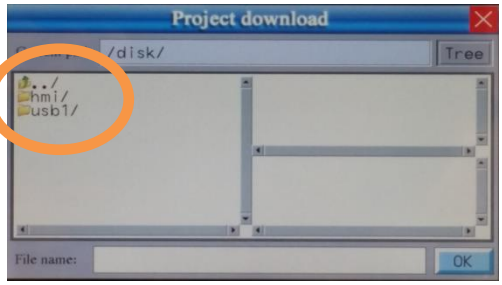
Retrieve the USB pen drive containing the original software versions which is supplied with the machine.

Robopac provides the original machine software with the USB 2.0 pen drive housed in the switchboard with all the technical machine documentation.
N.B.: In case it's necessary to create a new installation support (e.g: the original pen drive is lost) with a commercial pen drive:

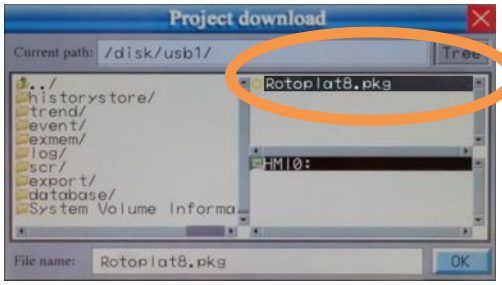
- *use a USB 2.0 pen drive only*
- *copy the PLC board software files provided by Robopac at first directory level of pen drive*

Insert the USB pen drive containing the original software version (file named ROTOPLAT8.pkg) into USB plug (USB HOST) of the touch-screen panel

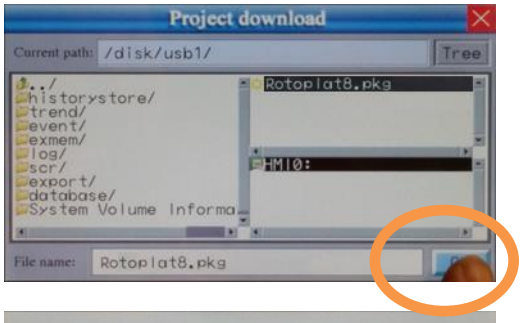
On the left screen side, press **'usb1 /'**.



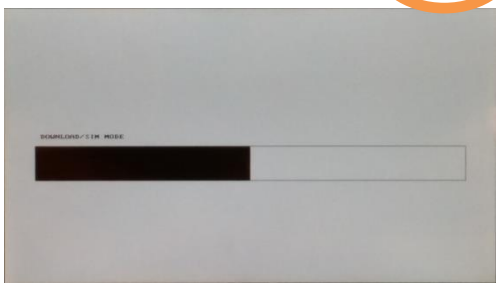
On the right screen side, select the file "**ROTOPLAT8.pkg**".



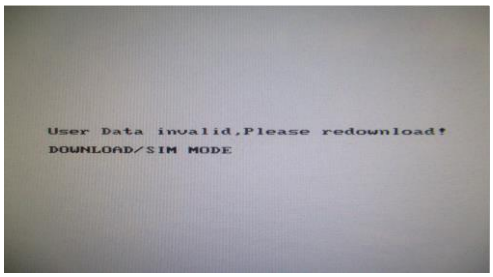
Press the OK button

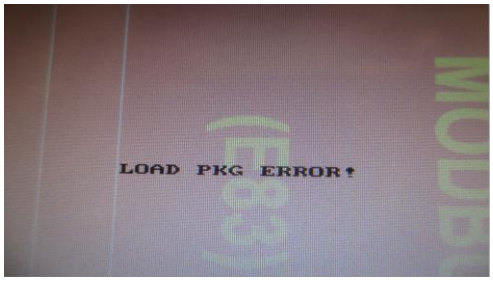


Wait for the end of the procedure

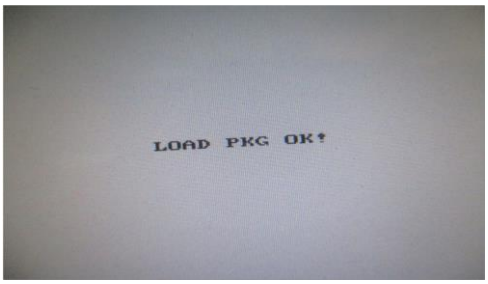


If at the end of the procedure the following messages appear loading has failed and must repeat the procedure as if you were installing a new panel.

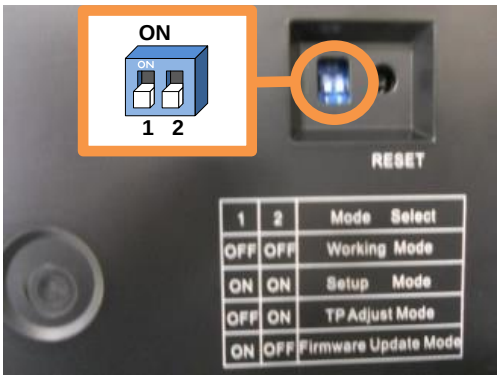




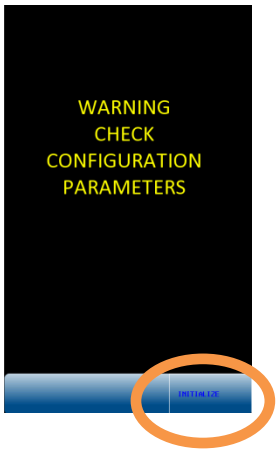
If at the end of the procedure the following message loading was successful



When the loading is complete, enable the Working Mode by putting the dip switches 1 and 2 to OFF, then press the RESET pushbutton.



If the panel is not initialized (update of previous software release) the warning page shown aside could appear. In this case, press the "INITIALIZE" button (at the lower right corner) to initialize the HMI, then turn off and on the machine. The warning window should no longer appear (HMI correctly initialized).
If the warning window doesn't appear, go ahead and press the RESET button.



The software installation procedure is now complete.

It's now necessary to run the **Default Parameters** and configuration of machine parameters and **Default Recipes** (see procedures) to fully restore the machine operation.

New installation K-GL070E-RO KINCO --- since January 2021

CODE : 1490300034

The new Touch Screen panel is supplied as a spare part WITHOUT software

- Mount mechanically the new touch-screen panel in place of the faulty part.
- Wire electrically the new touch-screen panel.

Install the touch-screen panel software by following this procedure:

Retrieve the USB pen drive containing the original software versions which is supplied with the machine.

Robopac provides the original machine software with the USB 2.0 pen drive housed in the switchboard with all the technical machine documentation.

N.B.: In case it's necessary to create a new installation support (e.g: the original pen drive is lost) with a commercial pen drive:

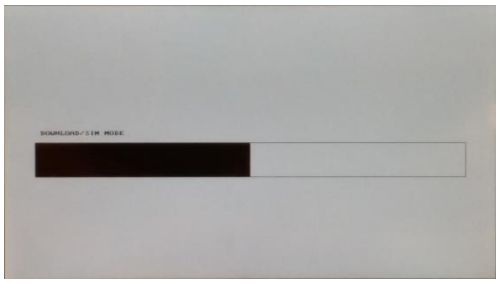
- *use a USB 2.0 pen drive only*
- *copy the PLC board software files provided by Robopac at first directory level of pen drive*

Insert the USB pen drive containing the original software version (file named ROTOPLAT8.pkg) into USB plug (USB HOST) of the touch-screen panel

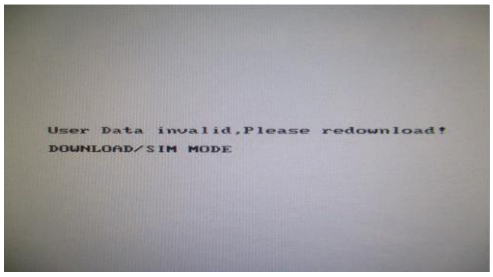
Switch on the machine

THE DOWNLOAD PROCEDURE IS AUTOMATIC

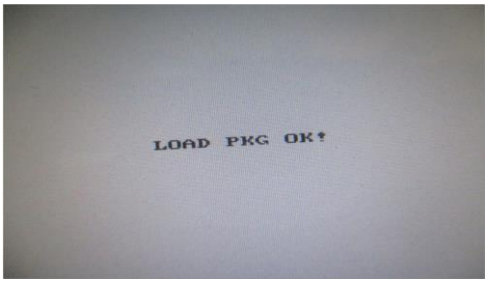
Wait for the end of the procedure



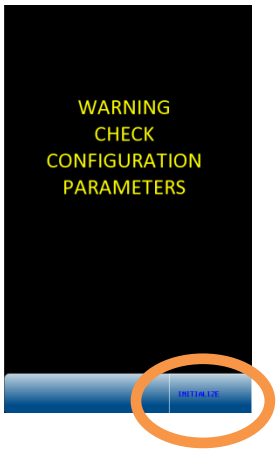
If at the end of the procedure the following messages appear loading has failed and must repeat the procedure as if you were installing a new panel.



If at the end of the procedure the following message loading was successful



If the panel is not initialized (update of previous software release) the warning page shown aside could appear. In this case, press the "INITIALIZE" button (at the lower right corner) to initialize the HMI, then turn off and on the machine. The warning window should no longer appear (HMI correctly initialized).
If the warning window doesn't appear, go ahead and press the RESET button.



The software installation procedure is now complete.

It's now necessary to run the **Default Parameters** and configuration of machine parameters and **Default Recipes** (see procedures) to fully restore the machine operation.

Software update

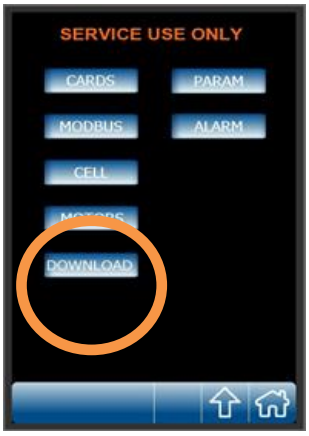
With the machine switched on, insert the USB pen drive containing the updated version of the panel software (file name: “ROTOPLAT8.pkg”) into the USB port (“USB HOST”) of the touch-screen panel.

On startup screen, press the “Configuration” button: 

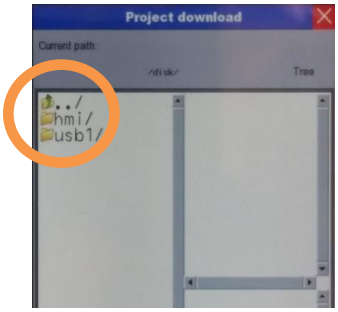
On Configuration page, press the “Service” button: 

On Service page, press the “Download” 

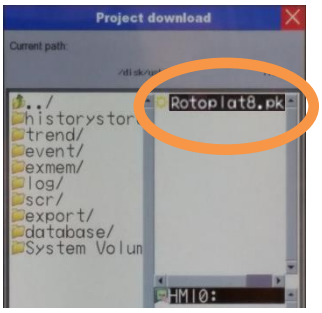
button to open the file manager:



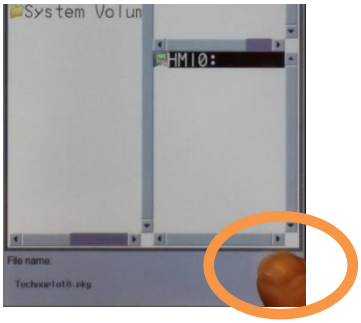
On the file manager left panel, press “**usb1/**”.



On the file manager right panel, select the file **“ROTOPLAT8.pkg**”.

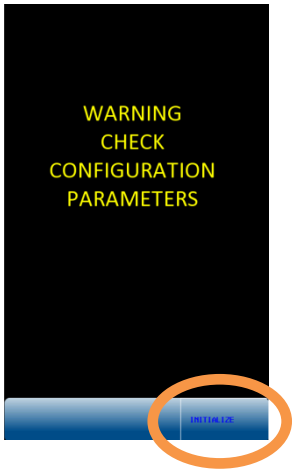


Press the “**OK**” button and wait until the software update ends.



When loading ends, a communication error page could appear.
Switch off and on the machine to reinitialize the communication and cancel the error.

If the panel is not initialized (update of previous software release) the warning page shown aside could appear. In this case, press the "INITIALIZE" button (at the lower right corner) to initialize the HMI, then turn off and on the machine. The warning window should no longer appear (HMI correctly initialized).
If the warning window doesn't appear, go ahead and press the RESET button.



It's now necessary to run the **Default Parameters** and configuration of machine parameters and **Default Recipes** (see procedures) to fully restore the machine operation.

Default Parameters and re-configuration of machine parameters

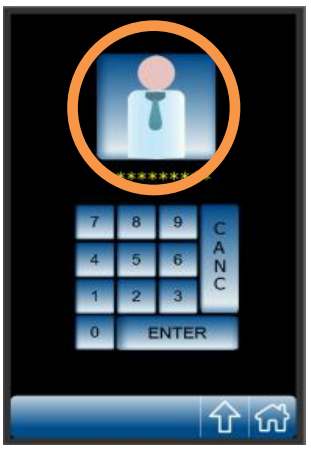
After the software installation on touch screen panel (USB HOST), it's necessary to execute the "Machine Parameters Default" by following this procedure:

On startup screen press the Configuration button 

On Configuration page press the user password selection button 

Select the "maintenance technician" user level by pressing the user icon  until the icon  appears.

Now, on the onscreen keyboard  enter the password **6161**, then press  .

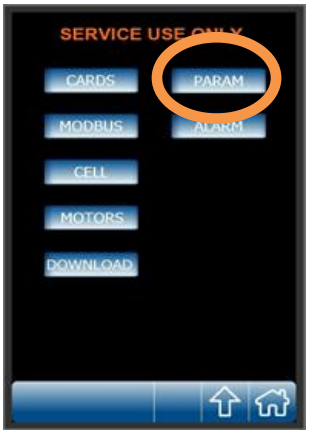


If the password is correctly entered and accepted, the Configuration page returns, with the “maintenance technician” icon on the bottom status bar.

Press now the Service button:

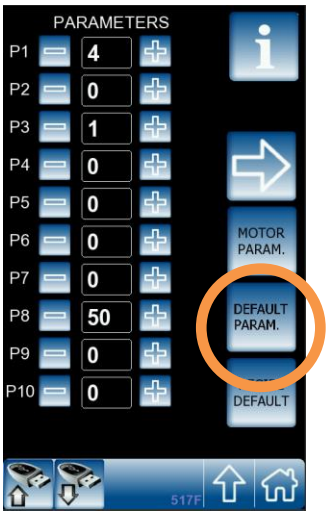
On “Service” page, press the “PARAM”  button

to enter the Page 1 of Machine Parameters.



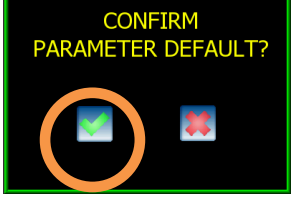
Press the 

button to start the procedure for setting all machine parameters with their default values.



Confirm with the green button  to complete the **Parameters Default** procedure. In this way, the Parameters Default is performed.

Press the red button  *to abort the **Parameters Default** procedure.*

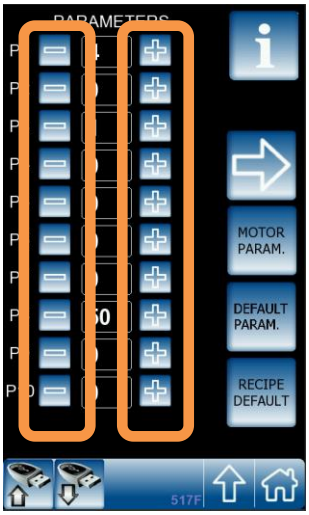


Depending on machine configuration, use the  and  buttons to modify the appropriate parameter values.

The new parameter value is automatically saved.

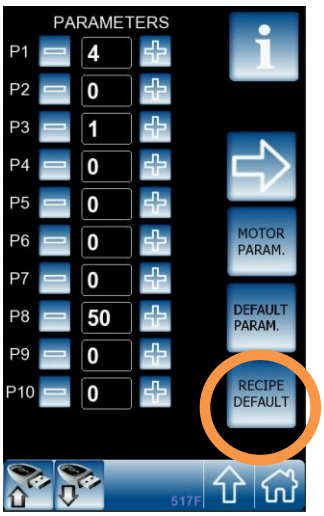
The Info button  shows the various parameters name.

Press the  button to change the parameters page.



Recipes Default

After the Parameters Default procedure, or to reinitialize all work program recipes, it's necessary to perform the Recipes Default procedure in the following way:



Press the "RECIPE DEFAULT" 

button to start the procedure for setting all work program recipes with their default values.

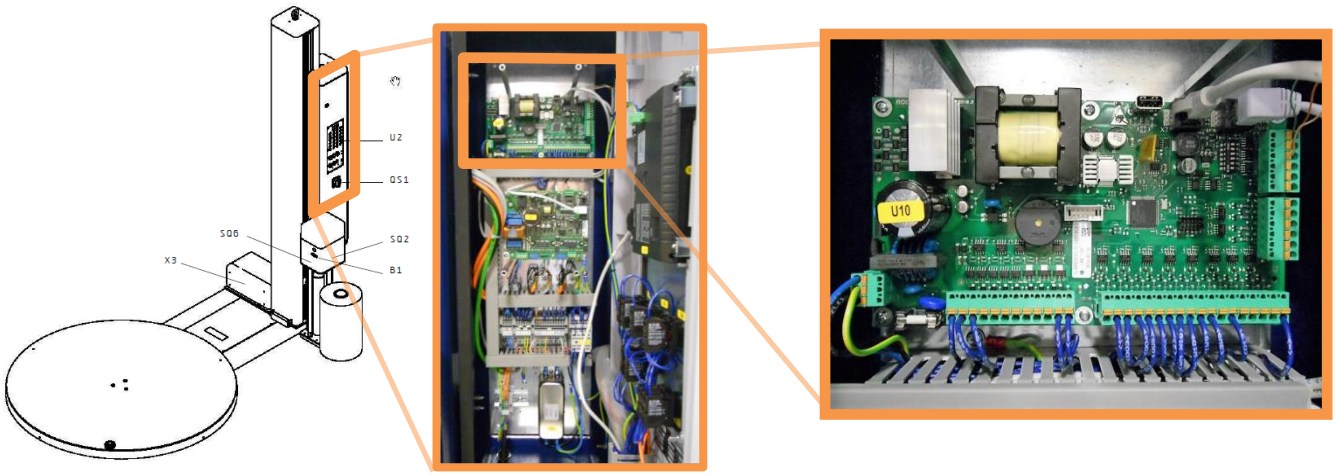
Confirm with the green button  to complete the **Recipe Default** procedure. In this way, the Recipes Default is performed.

Press the red button  *to abort the* ***Recipe Default*** *procedure.*

PLC CARD (U10)

New Installation or Software Update

This electronic card is supplied as spare part WITHOUT software.



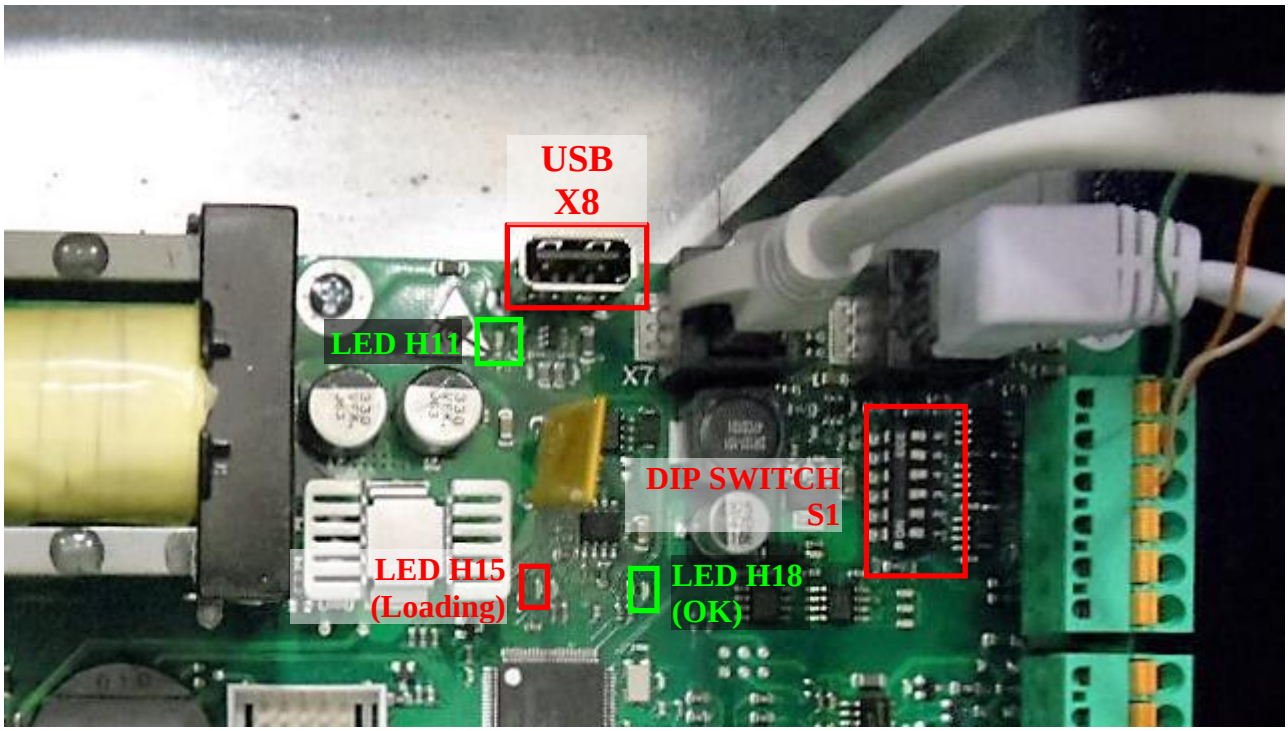
- Switch off the machine.
- Mount mechanically the new card in place of the faulty card.
- Wire electrically the new card.

Follow the PLC card software loading procedure as described below:

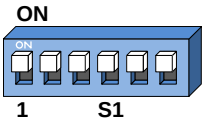
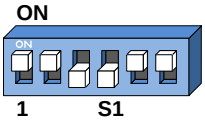
Retrieve the USB pen drive containing the original software versions which is supplied with the machine.

Robopac provides the original machine software with the USB 2.0 pen drive housed in the switchboard with all the technical machine documentation.
N.B.: In case it's necessary to create a new installation support (e.g: the original pen drive is lost) with a commercial pen drive:

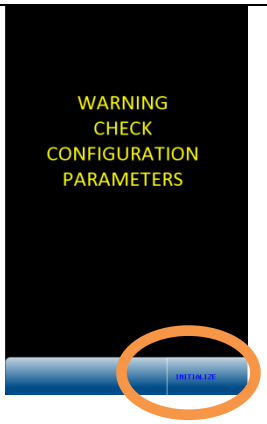
- *use a USB 2.0 pen drive only*
- *copy the PLC board software files provided by Robopac at first directory level of pen drive*



- Insert the USB pen drive into the port (X8 - USB), highlighted in red.
- Switch on the machine by turning the main switch.
- The green LED H11 begins to flash, indicating that the software download is in progress.
- The red LED H15 goes off as soon as the download of the software is successfully completed, and simultaneously the green LED H18 begins to flash.
- Switch off the machine.
- Remove the USB pen drive.
- Place the S1 switches of the card as follows:

Machine model: **FRD - FR**	
Machine model: **PDS – PVS**	

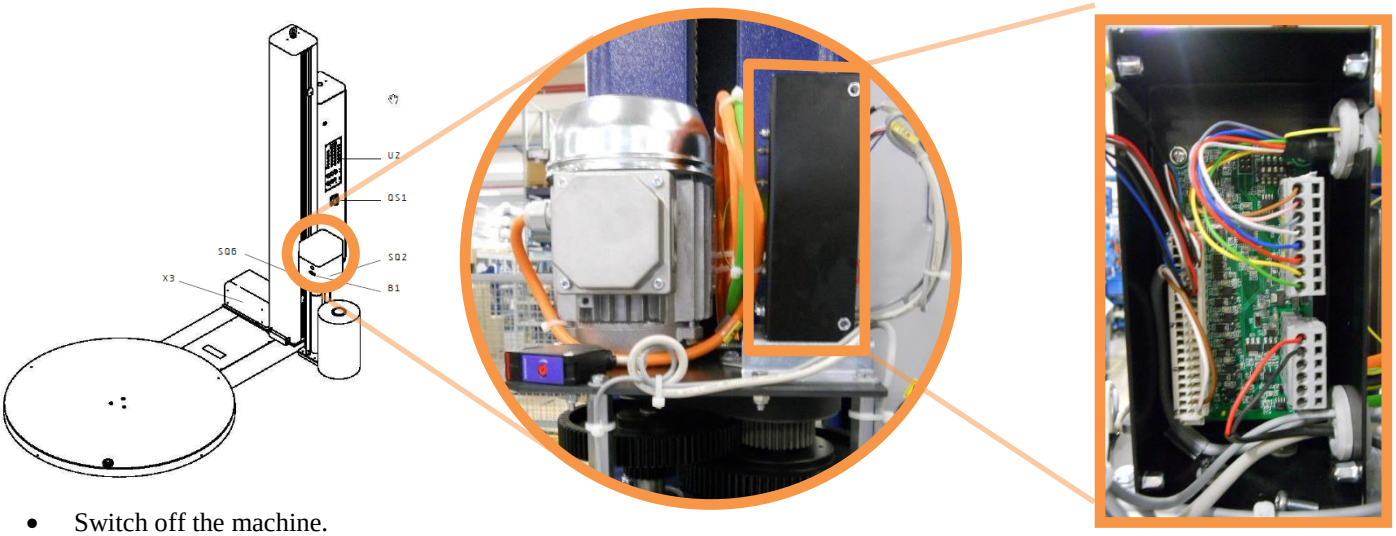
If the panel is not initialized (update of previous software release) the warning page shown aside could appear. In this case, press the "INITIALIZE" button (at the lower right corner) to initialize the HMI, then turn off and on the machine. The warning window should no longer appear (HMI correctly initialized).
If the warning window doesn't appear, go ahead and press the RESET button.



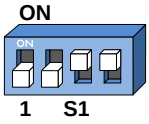
EXPANSION CARD (U11)

New Installation on the carriage of the PDS - PVS version machines.

This electronic card is provided as spare part COMPLETE with software.



- Switch off the machine.
- Mount mechanically the new card in place of the faulty card.
- Wire electrically the new card.
- Place the S1 switches of the card as follows:



- Switch on the machine.
- Remove the film from the last carriage reel (the one connected to the load cell)
- Calibrate the load cell by following the procedure below:

On startup screen, press the “Configuration” button 

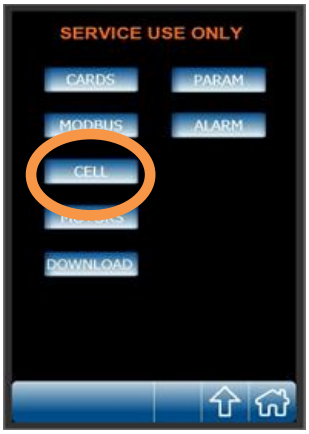
On Configuration page press the user password selection button  .

With the onscreen keyboard  enter the password **1111**, then press  .

If the password is correctly entered and accepted, the Configuration page returns, with the “maintenance technician” icon on the bottom status bar.

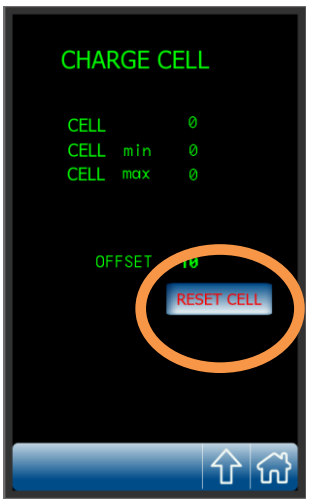
Press now the Service button: 

LOAD CELL Calibration



On “Service” page press the “CELL” button 

To access the Load Cell Calibration page.



Press the Reset Cell button 

to perform the calibration.

The new “CELL min” value must be about 10 units higher than the present value of “CELL”, while the “CELL max” value is equal to:

*CELL min + (internal machine parameter P20) * 10*

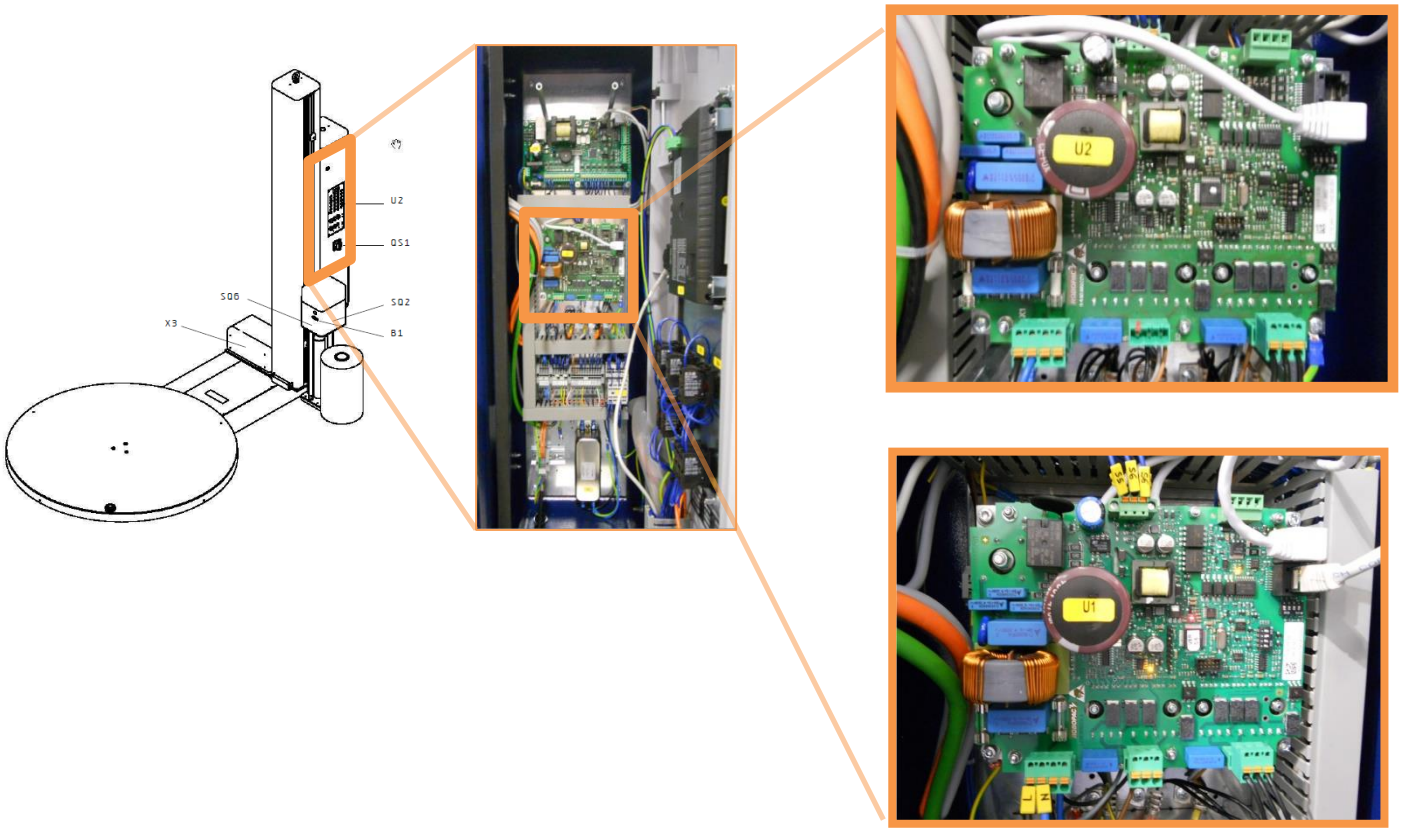
N.B.: CELL values are acceptable when in range:

CELL min	CELL max
– 35	+ 15

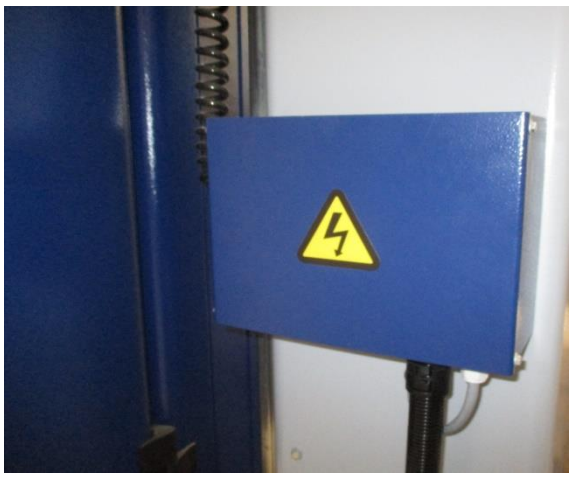
INVERTER CARD (U1 – U2 – U5)

New Installation

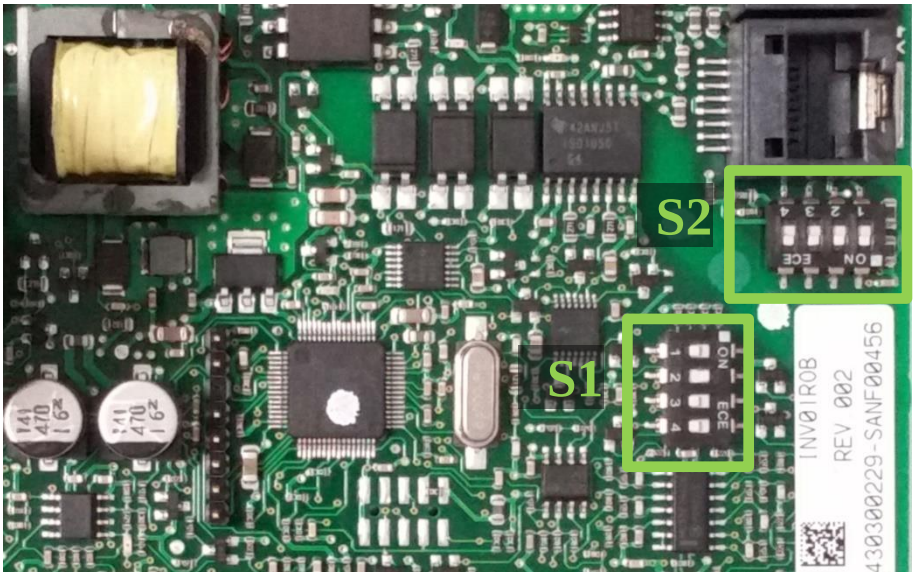
This electronic card is provided as spare part COMPLETE with software.

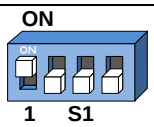
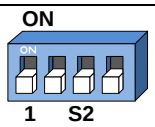
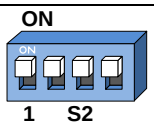
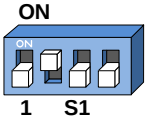
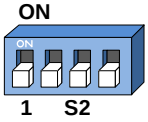
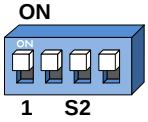
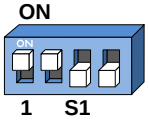
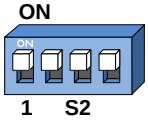


Mechanical Pressure Unit (Optional)



- Switch off the machine.
- Mount mechanically the new card in place of the faulty card.
- Wire electrically the new card.
- Place the S1 and S2 switches of the card as follows:

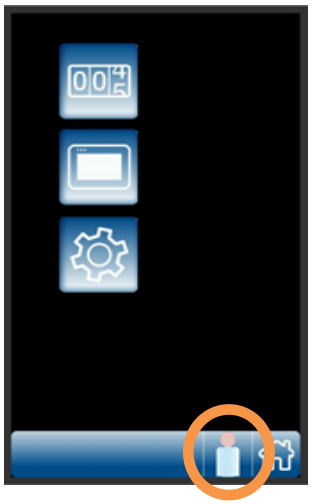


Inverter Card U1 - Table Rotation Motor - Carriage Up/Down Motor		 **if U2 and/or U5 PRESENT**	 **if U2 and U5 NOT PRESENT**
Inverter Card U2 (Pre-stretch Motors) - PDS Pre-stretch Reel Motor - PVS Pre-stretch Reel Motor		 **if U5 PRESENT**	 **if U5 NOT PRESENT**
Inverter Card U5 (Pressor Motor) - Pressor Lifting Motor (OPTIONAL)			

- Switch on the machine
- Set the card configuration using the following procedure:

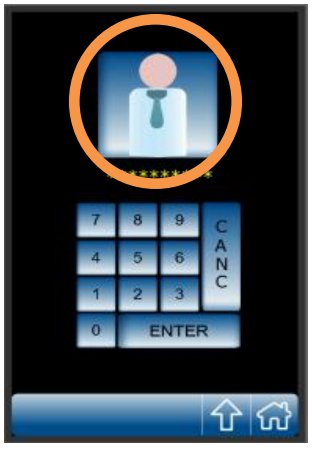
On startup screen press the Configuration button 

On Configuration page press the user level password selection button  .



Select the “maintenance technician” user level by pressing the user icon  until the icon  appears.

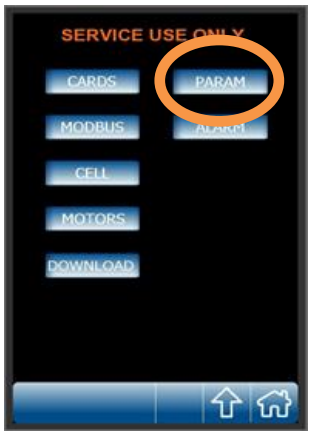
Now, on the onscreen keyboard  enter the password **6161**, then press  .



If the password is correctly entered and accepted, the Configuration page returns, with the “maintenance technician” icon on the bottom status bar.

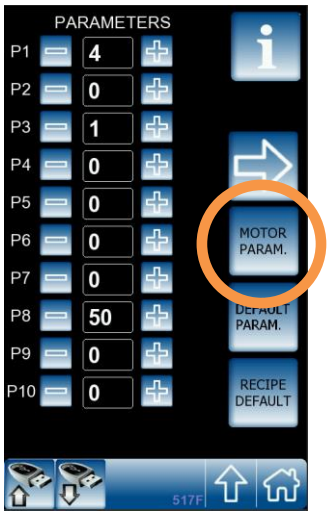
:

Press now the Service button: 



On “Service” page, press the “PARAM” button 

to enter the Page 1 of Machine Parameters.

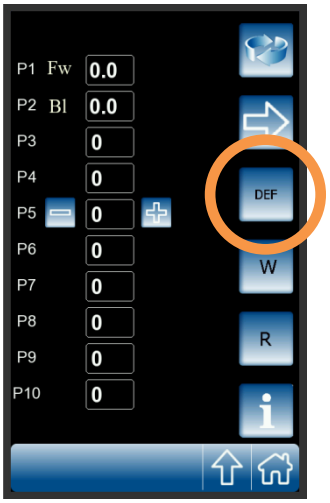


Press the 

button to start the procedure for setting all machine parameters with their default values.

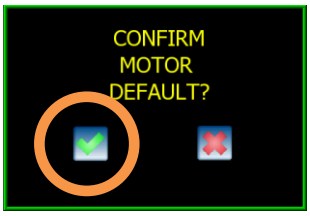
The “DEF” 

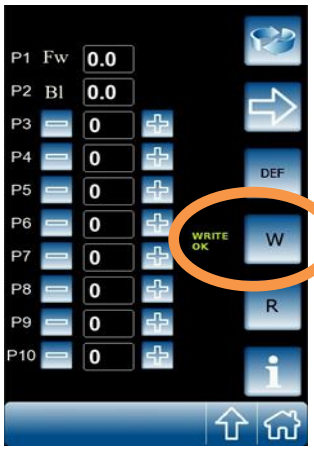
button starts the procedure for setting ALL motor parameters with their default values.



Confirm with the green button  to complete the **Motors Parameters Default** procedure. In this way, the new card configuration is finished.

Press the red button  *to abort the **Motors Parameters Default** procedure.*





To send the new inverter board the default parameters necessary press the W button until the message “WRITE OK” appears on the screen, to confirm the new value has been correctly written.

In this way, the new card configuration is finished.

Motor parameters modification

Normally the modification of motors parameter is not necessary and it has to be specified by Service staff. At “maintenance technician” user level, the only modifiable parameter is the “Acceleration” parameter P5. To modify any other parameter, please contact Service staff.

The button at the top right shows the motor that is currently selected, in the following order:

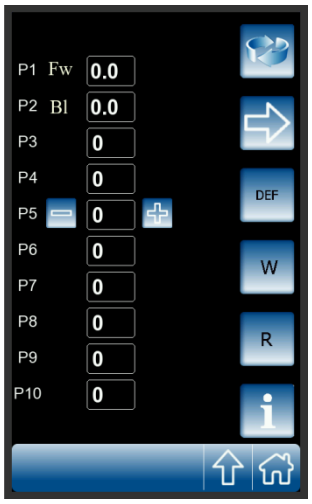

Turntable motor parameters


Roll Carriage Up/Down motor parameters


Stretch control motor parameters


Pre-stretch control motor parameters

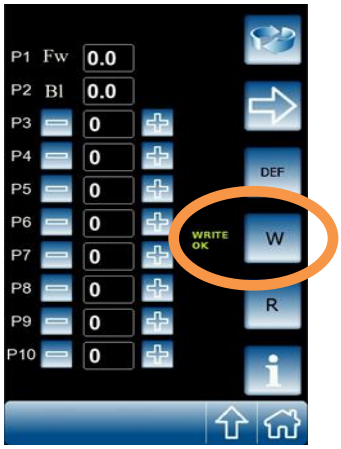

Vertical pressure platen motor parameters



Press the  button to display the next page.
Each engine has 20 parameters (2 pages)

The Info button  displays the name of various parameters.

At "Robopac technician" user level, if it is necessary to change the value of a motor parameter, after the parameter modification by the  and  keys, it’s necessary to press the  button until the message “WRITE OK” appears on the screen, to confirm the new value has been correctly written.



PRODUCT HEIGHT DETECTION PHOTOCELL CALIBRATION

Standard photocell (for clear products)

Adjust the photocell sensitivity trimmer to load centre

Dark product photocell

Suppression distance setting

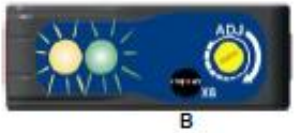
1. *Object detection*
Position object to detect in front of the sensor at the distance required.
Turn distance adjustment trimmer (ADJ) to minimum: yellow LED OFF and green LED ON.

Rotate trimmer in a clockwise direction until the yellow LED and green LED turn ON. *Object detection condition* (A status of position indicator)

A

2. *Background suppression*
Remove object and ensure that the background is in front of the sensor: yellow LED OFF and green LED ON.

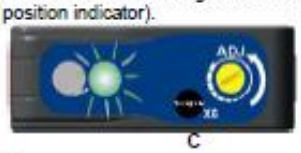
Rotate trimmer in a clockwise direction until the yellow LED and green LED turn ON: *background detection condition* (B status of position indicator).



B

The trimmer reaches maximum level with yellow LED OFF if the background is outside the operating range.

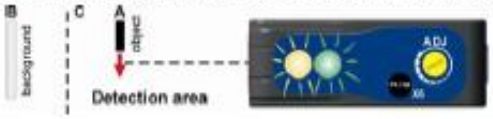
Rotate trimmer in an anticlockwise direction until yellow LED turns OFF and green LED ON: *condition where background is outside operating range* (C status of position indicator).



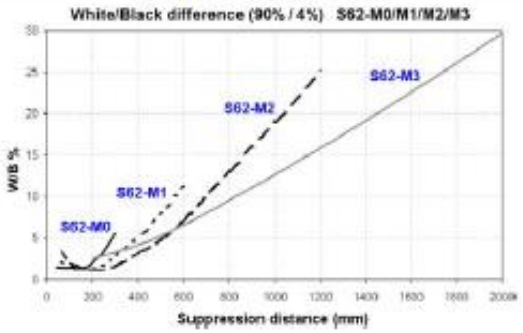
C

3. *Setting and control*
Rotate trimmer in an anticlockwise direction until the indicator reaches an intermediate point between position A and C.

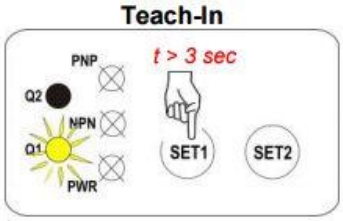
If position A and C are close to each other, leave trimmer on position C.
The sensor is now ready to function correctly and in stable conditions:



DETECTION DIAGRAM



Photocell for black products S65

	Place the target at the center of the pallet
	Keep pressed the Set1 button for more than 3 seconds, till led Q1 flashing
	Release the button, target detected

REMOTE CONTROL INSTALLATION & SETTING --- until September 2016 ---

To install the remote control it is necessary to perform the procedure of RX & TX codes in self-learning of the receiver.

New code setting

1.1. Set the dip switch 1 & 2 to OFF.
1.2. For the channel 1, press the button P1 till the related led will become ON (LED1).
1.3. Press the (START) push button of the remote and keep it pressed until the second led will become ON too (the second led makes a blink).
1.4. Release the (START) push button of the remote
1.5. The receiver will confirm the successful setting by a double blinks (2) of the two leds
1.6. In case of failed setting, the receiver will turn OFF the related led of the channel and will not make any double blink of setting confirmation. If the memory of the codes is full, the receiver will advise this event by seven (7) blinks of the two leds.
1.7. For the channel 2, press the push button P2; the other operations works the same as above (setting the STOP push button of the remote).

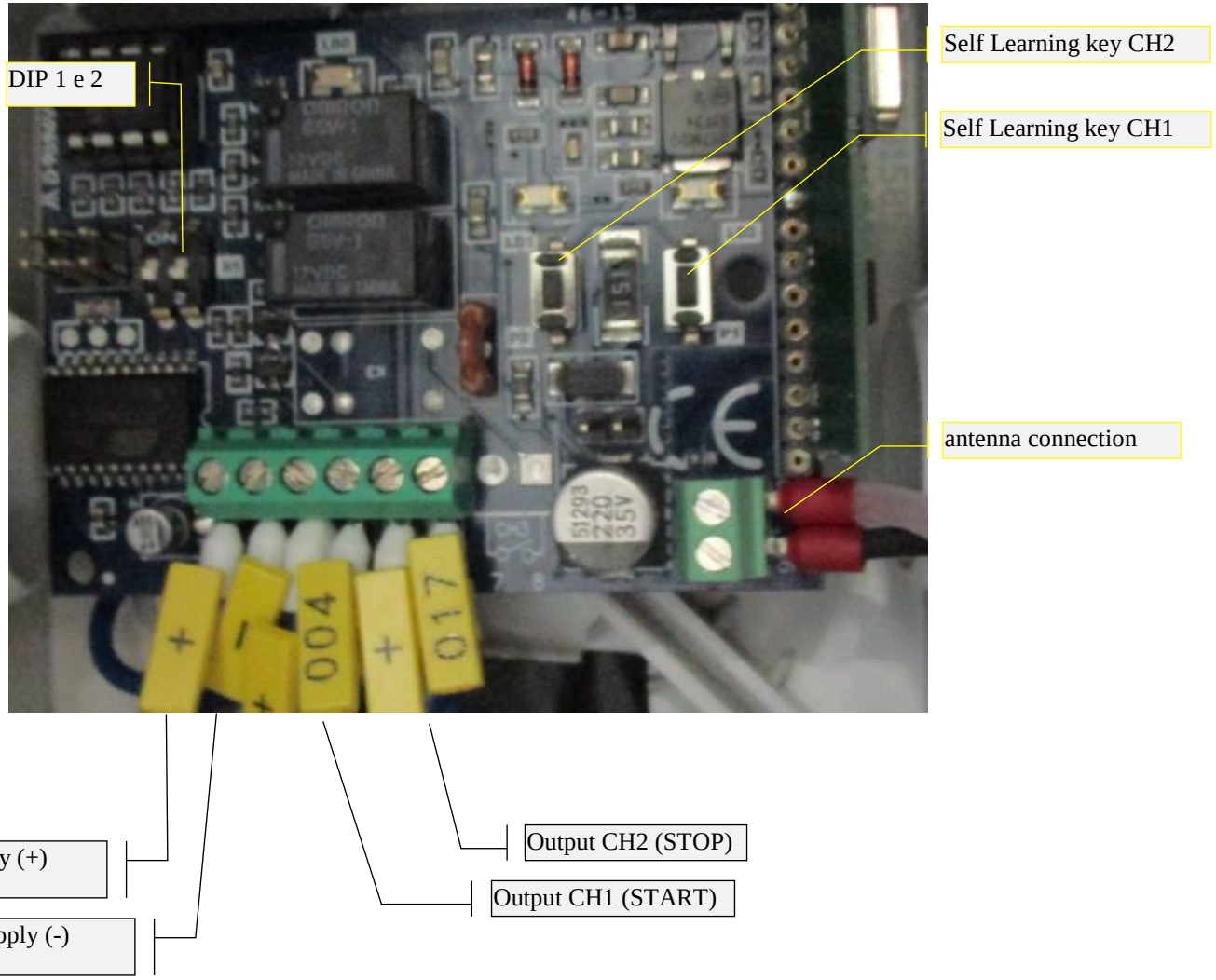
Set code deleting

2.1. Press the push button P1 (or P2) until the related led will become ON LED1 (or LED2).
2.2. Press the push button Ch.1 (or Ch.2) of the remote.
2.3. The receiver will confirm the successful deleting by five (5) blinks of the two leds
2.4. In case of failure on the receiver the related led of the selected channel and will not make the five blinks of confirmation.

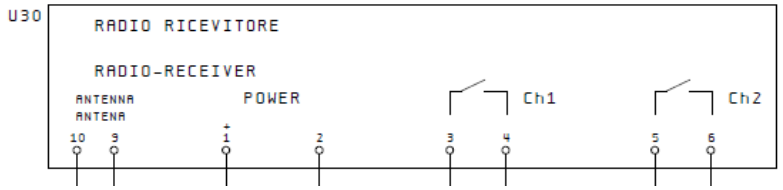
All set code deleting

3.1. Press the push button P1 until the LED1 will become ON and keep it pressed until it will become OFF again..
3.2. On the receiver will become ON the LED1, and after 7 seconds will become OFF again giving confirmation of the deleted codes.

RECEIVER RADIO CARD (code 1430300157)



RECEIVER RADIO CARD DESCRIPTION



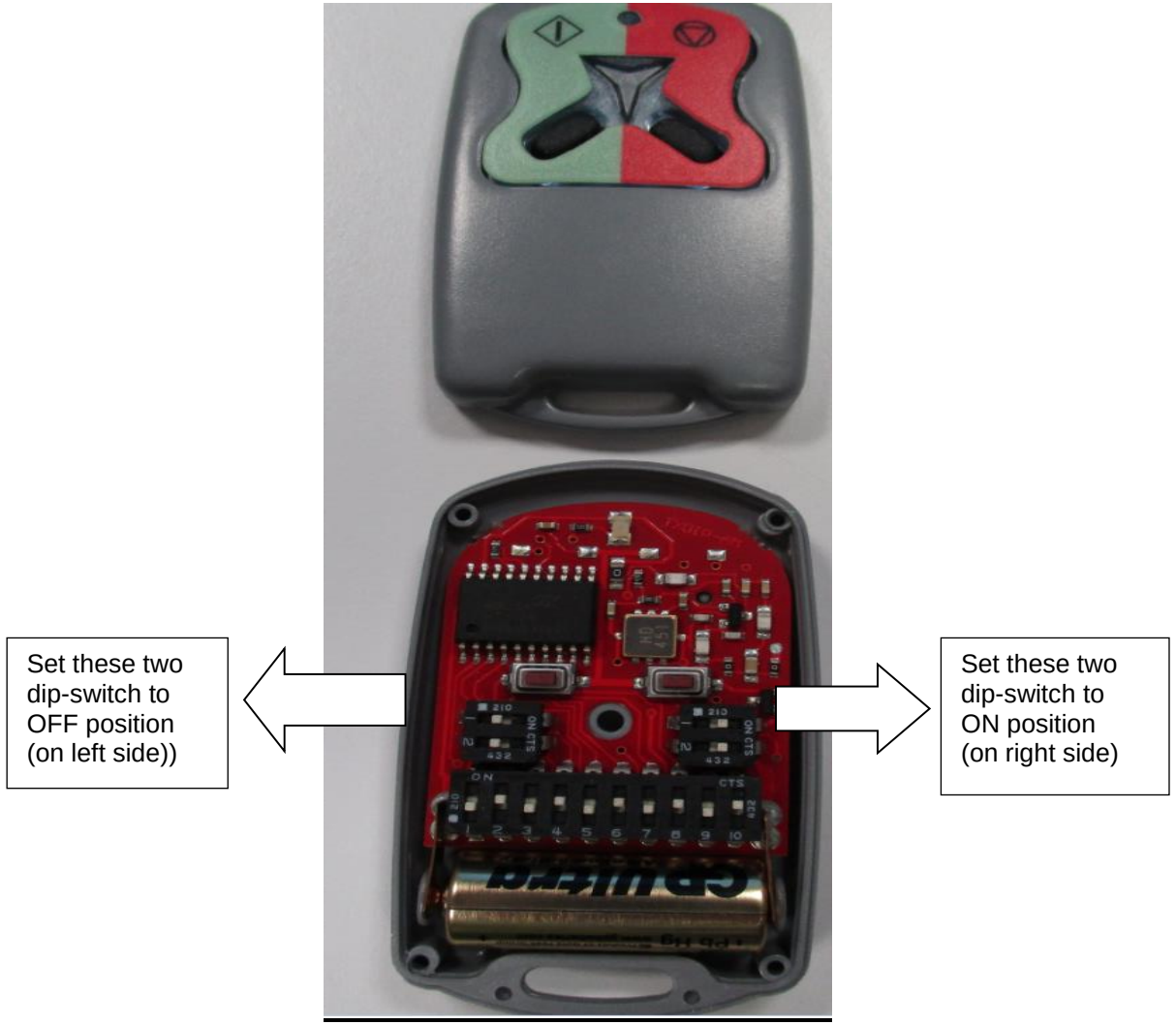
ELECTRICAL CONNECTION

9,10	Central “Antenna” – Sock “Antenna”
3,4	N.O. contact channel 1 (START)
5,6	N.O. contact channel 2 (STOP)
1	0 V ac,dc
2	+12V,+24V ac,dc

TECHNICAL CHARACTERISTICS

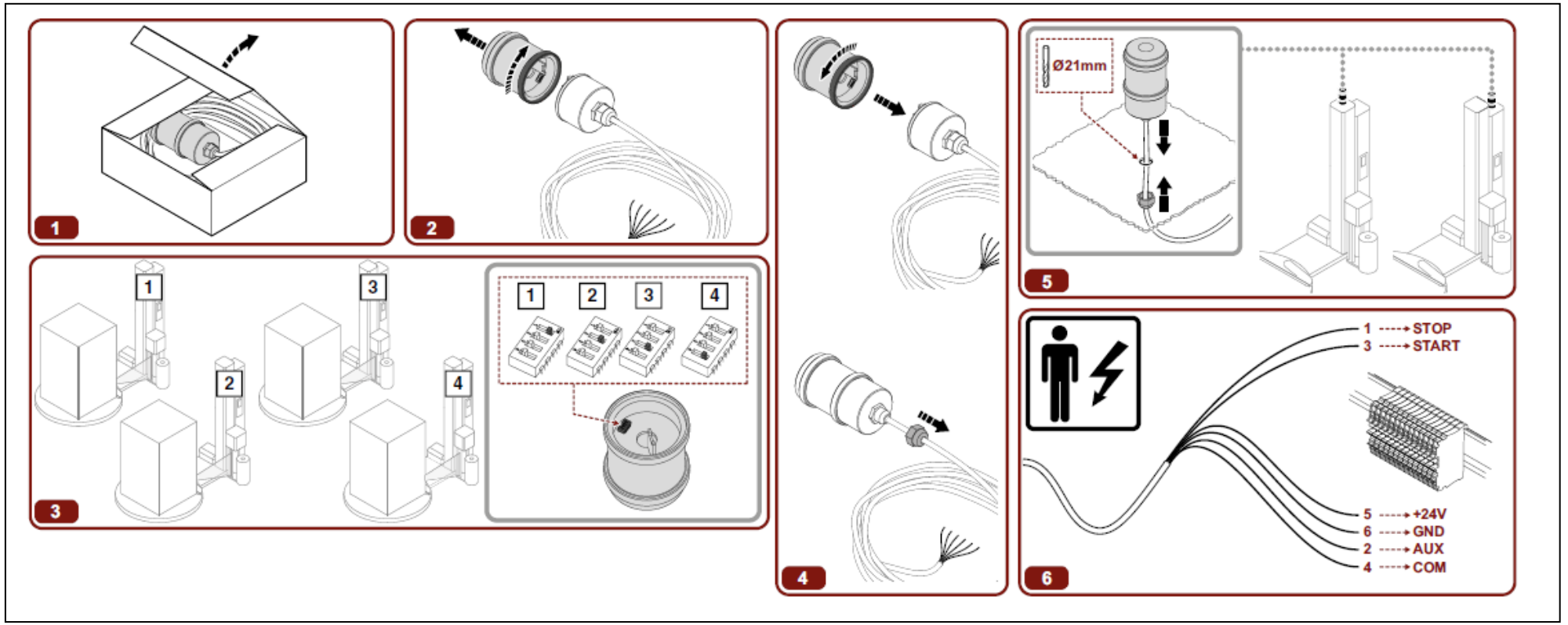
Power supply	+12V,+24V ac,dc
Consumption	50 mA
Receiver Frequency	433.92 MHz e 30.875 MHz
Min / Max. temperature of workng	-25°C +70°C
Dimensions	+12V,+24V ac,dc

REMOTE CONTROL EMITTER CARD CONFIGURATION (code 0590300000)

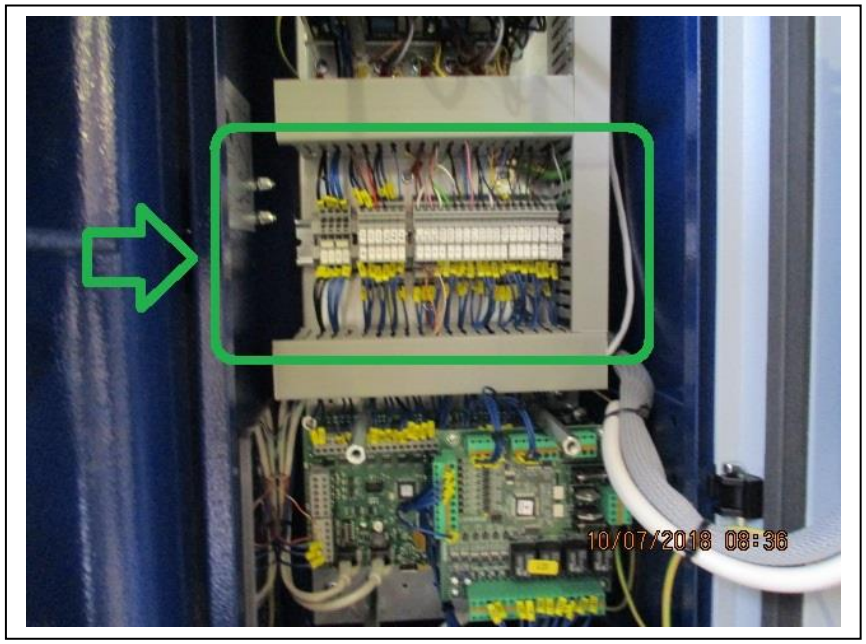


NEW RADIO CONTROL INSTALLATION --- from September 2016 ---

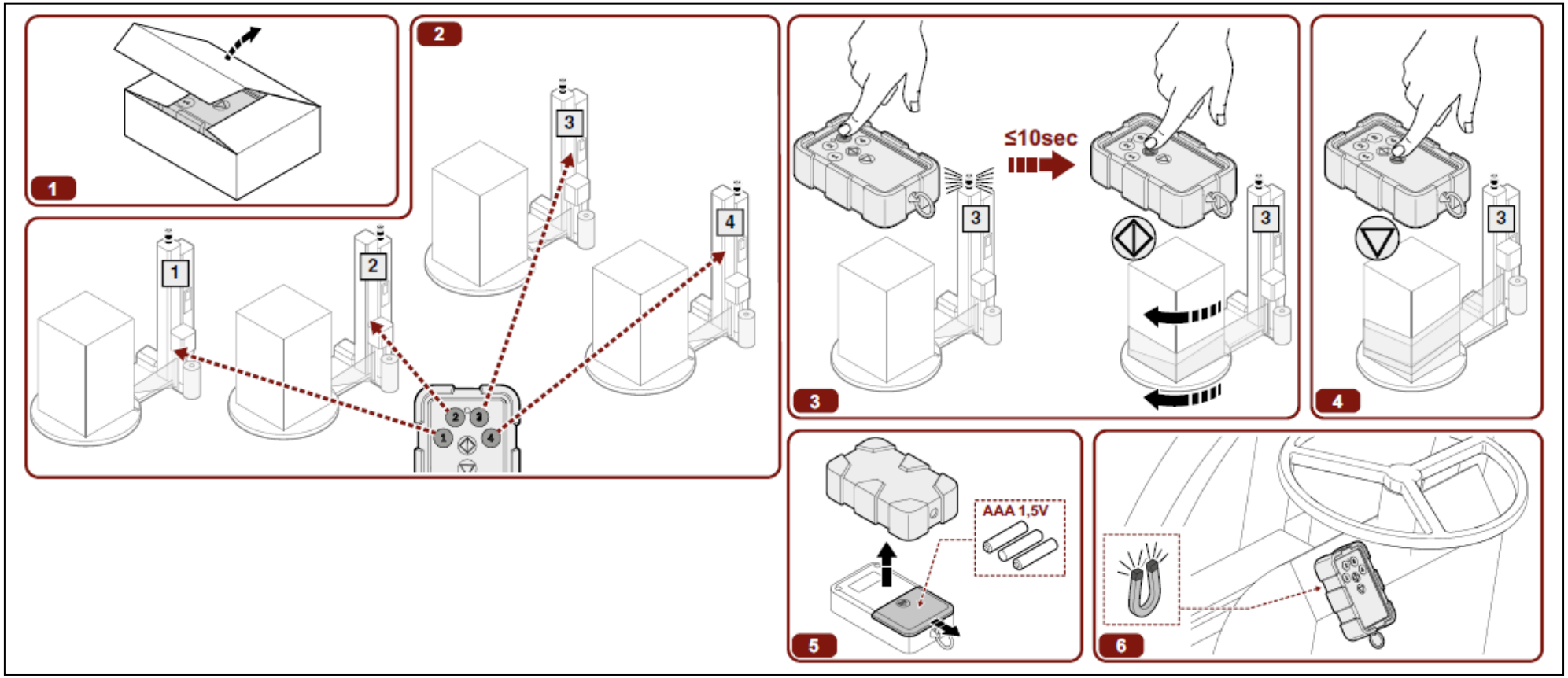
RECEIVER Installation



Check the wiring diagram for the correct connection to machine connector



TRANSMITTER Installation

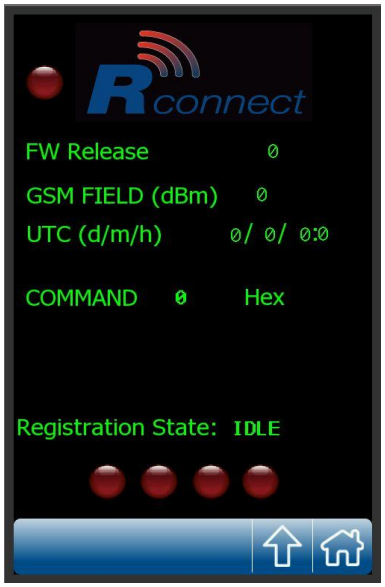


MECHANICAL ROPING DEVICE CALIBRATION

If setting a percentage value of the mechanical roping device (for example 25% or 65% …)
the device does not reach the correct position but “oscillates” around the set height --- > roping device calibration is required

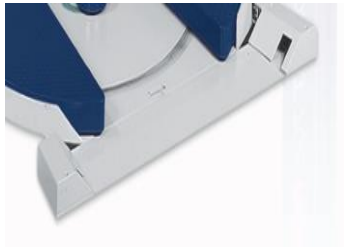
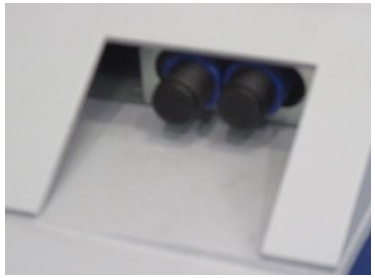
- check the value of the parameter P38 (max roping stroke)
- set the roping device to 50%
- start the cycle
- stop the cycle when the roping reaches the set height
- enter with the Service PSW 6161 
- select the manual roping device page and press ROPING SETUP
- check the COUNT value (it has to be COUNT = P38/2)
- if COUNT < P38/2 decrement P39 of P38/2 – COUNT
- se COUNT > P38/2 increase P39 of COUNT – P38/2

R-CONNECT DEVICE ACTIVATION

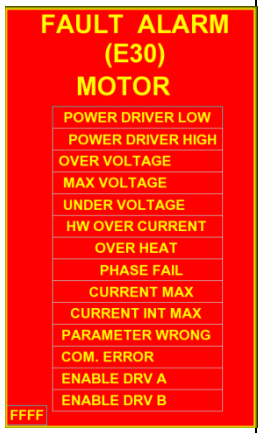
	R-Connect devices registration check that the FW Release and GSM field fields have values other than 0 Check that the LED at the top next to the Rconnect logo is GREEN (Modbus OK) Press the 'REGISTER' button and wait until all 4 LEDs are green	

ALARM LIST AND TROUBLESHOOTING

Alarm code	Alarm description	Troubleshooting	Cause of the fault	Solution
	Emergency push button pressed			Turn and lift the mushroom head button and press RESET
		Check the SB1 emergency press button contact	Contact broken	Replace the SB1 emergency limit stop contact
	Carriage descent Safety Alarm 	Carriage descent emergency	Obstacle between floor and carriage	If the obstacle cannot be manually removed, turn the key button and manually lift the carriage.
		Check the conditions of the limit stop connected to the emergency plate.	The safety limit stop connected to the metallic plate is broken	Replace the mechanical limit stop

TRANSPALLET ALARM (E 03)	Forklift photocell alarm  	Check emergency photocell alignment with the reflector.	Incorrect photocell alignment with reflector	Newly align the photocells
		Check correct emergency photocell operations	Photocells damages or wiring disconnected	Replace the emergency photocell or fix wiring
			The machine PLC main board is defective	Replace the PLC main board.
	Roller lock forklift photocell alarm	Check photocell alignment with the reflector	Improper alignment photocell with reflector	Newly align the photocell.
		Check correct emergency photocell operations	Photocells damages or wiring disconnected	Replace the emergency photocell or fix wiring.
			The machine PLC main board is defective	Replace the PLC main board.

	Active protection barriers.	Remove any obstacle that blocks the barriers photocells.	Probable misalignment of the barriers photocells	



Motor Index:
1 = Table rotation
2 = Carriage
3 = Stretch
4 = Pre-Stretch
5 = Top Platten (Pressure)

Fault motore

POWER DRIVER LOW/HIGH
Incorrect voltage Motor Enable

ENABLE DRV A/B
Absence Motor Enable

OVER / MAX / UNDER VOLTAGE
Incorrect voltage Motor supply

OVER HEAT
High temperature

PHASE FAIL
Motor incorrectly connected

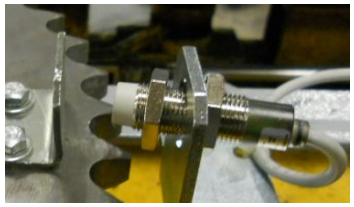
CURRENT (INT) MAX
Overcurrent (short / full) of the motor (as a function of motor parameters)

HW OVER CURRENT
Instantaneous overcurrent (non programmable)

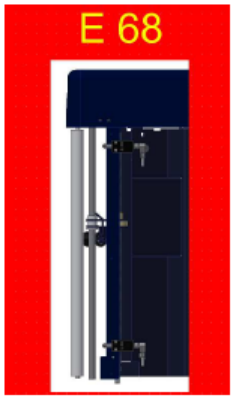
COMM.ERROR
Comunication error (see error 83)

Disconnect the motor indicated in the error message from the inverter card and start a cycle.	If the error message no longer appears, it could be a motor fault	Replace the motor.
	If the message persists, it could be an inverter card fault	Replace the inverter card.
Possible gear motor fault.	Possible gear motor fault.	Replace the gear motor

FILM BREAK ALARM (E60)	Film break alarm for carriages with load cell			Replace the film reel on the carriage or re-attach the edge of the film to the product and press START.
		Check correct load cell operations (extensometer)	The load cell value is not correct	Make the load cell calibration
			The load cell does not send the signal to the signal amplifier board.	Replace the load cell (extensometer).
			The load cell correctly operates	Replace the cell signal amplifier/pre-stretch motor inverter board.
		If present the film consumption sensor (r-connect) and the parameter P3 = 2 or P3 = 3	The film consumption sensor is not working properly	Check the mechanical position of the sensor
				Check the electrical connections of the sensor
				Replace the film consumption sensor

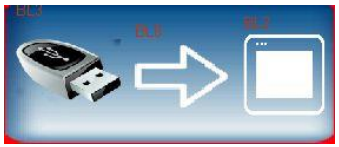
TURNTABLE PHASE ALARM (E61)	Table rotation alarm  	Check revolution counter sensor position (the alarm appears with there is no PLC input signal for at least 2 table revolutions)	Incorrect sensor position.	Correctly reposition the sensor
		Check correct sensor operations	Possible sensor and relevant wiring fault	Replace the sensor
		Check IN08 input on the PLC board	Possible PLC board fault	Replace the PLC board.
SPEED CARRIAGE ALARM (E 64)	Carriage speed alarm 	The carriage is not lifted at the set speed. Check correct carriage encoder positioning.	Incorrect sensor position.	Correctly reposition the sensor
		Check correct carriage encoder operations and wiring	Possible encoder sensor fault or wiring fault.	Replace the sensor or restore wiring
		Check the carriage speed encoder sensor input on the U1 board (lower level). The H3 led blinks quickly.	Possible U1 board fault (lower level).	Replace the U1 board (lower level).

TOP PLATEN ALARM (E 65)	Top platen (Pressure) blocked alarm  	The pressure platen did not reach the product (or limit stop) within the set time. Check motor drive	Possible motor fault.	Replace the motor
		Check pressure sensors on plate and limit stop	Possible sensor or limit stop and relevant wiring fault	Replace the sensor or limit stop or restore wiring

	MECHANIC roping Alarm	Roping hardware alarm: example overload, voltage, brake.	Problem with the roping fuse	Check the fuse correct position and / or change it
			Problem with the cables of the roping device group	Check and fix the correct wiring connection
	MECHANIC roping position Alarm	The roping failed to reach the set altitude within 10 seconds.	Mechanic problem	Check for any mechanical obstructions
			Encoder sensor problem	Check correct position and operation of the encoder sensor
			Wrong value of the P39 parameter (roping stop)	Change the parameter P39

E71	Presser Position Alarm	Attempt to start the DW cycle with the presser in the high position	Lower the presser and start the cycle	
		The presser is in the low position but the pressure height limit switch remains active	Check the status of the limit switch and its correct connection to the U11 board (input In2 - PIN 16)	Change the limit switch or check the connections
				Replace the U11 board
E72	Roller Conveyor Photocell	Attempt to start a packing cycle with the roller conveyor unlocked	Lower the roller blocking lever and start the cycle	
		The locking lever is lowered but the roller photocell does not detect it	Check the status of the photocell and its correct connection to the U10 board (input 15 - led H36)	Replace the photocell or check the connections
				Replace the U10 board
	Product presence alarm	Attempt to start the cycle WITHOUT the pallet present on the platform (parameter P [40] active) or pallet lower than 50 centimeters	Place a correct pallet on the platform	Restart a cycle
		The pallet is present but the photocell does not detect it	Check the state of the photocell and its correct connection to the U11 board (input 7) in the case of PDS-PDS or on the U10 board (overridden I2) in the FR-FRD case	Replace the photocell or restore the wiring
				Replacing the U10 / U11 board

 **INVERTER1** (Table Rotation + Carriage) **INVERTER2** (Stretch + pre-Stretch) **INVERTER3** (Top Platten) **PRES03ROB** (Control Card for load cell) **HMI** (Touch screen Panel)	The screen shows the electronic cards that show the communication alarm simultaneously.	Check connections with the various devices **Note. To exit the alarm screen, press the button hidden in the upper right vertex**	Possible communication wire fault	Replace connection wire
		Try connecting one device at a time. **Note. To exit the alarm screen, press the button hidden in the upper right vertex**	Possible electronic board fault	Replace the electronic board.

	Wrong configuration of parameters The list of parameters is not 'consistent with the value of Csum stored.	When the machine turn on it was found a discrepancy between the configuration parameters stored in the memory and the set.	Possible is a "damaging the machine configuration parameters	Restore the correct parameters by copying from the USB stick with the machine  Or, to manually set the parameters, press the button 
E90	Emergency Feedback alarm	During machine start up, checking the status of contactor has failed.	Check the contactor release and / or its connections.	Replace the contactor, or restore correct wiring.

Rotoplat 508 – 708	The machine does not pre-stretch/stretch film	Visually inspect roller conditions	Rollers are dirty	Clean with pressurised air (do not use thinners)
			Rollers are worn	Replace rollers
		Make sure the film path between the carriage rollers is correct and that the amount of film is suited to a high performance machine.	Possible improper machine use.	Correctly load film on the machine and make sure it is threaded through the path indicated in the machine manual.
		Make sure the brake/friction installed on the carriage is not excessively worn, dirty or mechanically or electrically damaged.	The brake/friction is worn, dirty or damaged.	Replace the brake/friction.
		Check PLC board output and brake/friction power voltage.	The brake/friction does not receive correct electricity (24 V for PDS carriage and 7 V for FE carriage during the automatic cycle with maximum drive value)	Replace the PRES03ROB board (U11).
			The brake/friction receives correct electricity	Replace the brake/friction.
Rotoplat 108 – 308 508 – 708	The carriage remains still (does not lift or lower)	Check the mechanical high and low limit stops	One or both mechanical limit stops are defective.	Replace defective mechanical limit stops.
		Make sure the high and low position limit stops correctly send the signal to the power board.	Possible high and low mechanical limit stop electrical fault or wires disconnected	Replace the mechanical limit stop or restore wiring
		Check PLC board operating conditions	Possible PLC board fault	Replace the PLC board.

Rotoplat 108 – 308 508 – 708	Film breaks during product wrapping or not appropriately applied to the load (too tight or too loose)	Make sure film is correctly applied on the carriage and, especially, that it "embraces" the last roller where the film sensitivity sensor is installed.	Incorrect film threading on the reel carriage	Correctly load film on the machine and make sure it is threaded through the path indicated in the machine manual.
		Visually inspect roller conditions	Rollers are dirty and mark film	Clean with pressurised air (do not use thinners)
		Make sure the film sensitivity sensor (extensometer) is not mechanically damaged or incorrectly installed (the dancer roller must be free to move a few millimetres in the upper and lower housings)	The film sensitivity sensor is too tight or mechanically damaged.	Loosen the screws that secure the film sensitivity sensor to the carriage frame and make sure it is correctly installed. If the tool is mechanically damaged, replace it.
		Make sure the film sensitivity sensor (extensometer) is not electrically damaged	Film sensitivity sensor electrical fault	Calibrate the tool (extensometer)
		Make sure the load cell/pre-stretch motor inverter (extensometer) signal amplifier board is not electrically defective	Film sensitivity sensor electrical fault	Calibrate the tool (extensometer)

APPENDIX 1 : Security module SG BWS T4 for TP photocells

Below is an extract from the technical manual of the SG BWS T4 safety module for TP photocells

for a more in-depth analysis of the component, please read the technical manual of the component (ask Robopac service)

INSTRUCTION MANUAL

> SG-BWS-T4
Safety Control Unit

DATALOGIC

4.3. Minimum connections (1 photocell, no EDM, automatic restart)

The control unit terminals layout and the minimum connection to check system operation are shown below. The photocells power (blue and brown wires) must be connected to the same power supply of SG-BWS-T4.

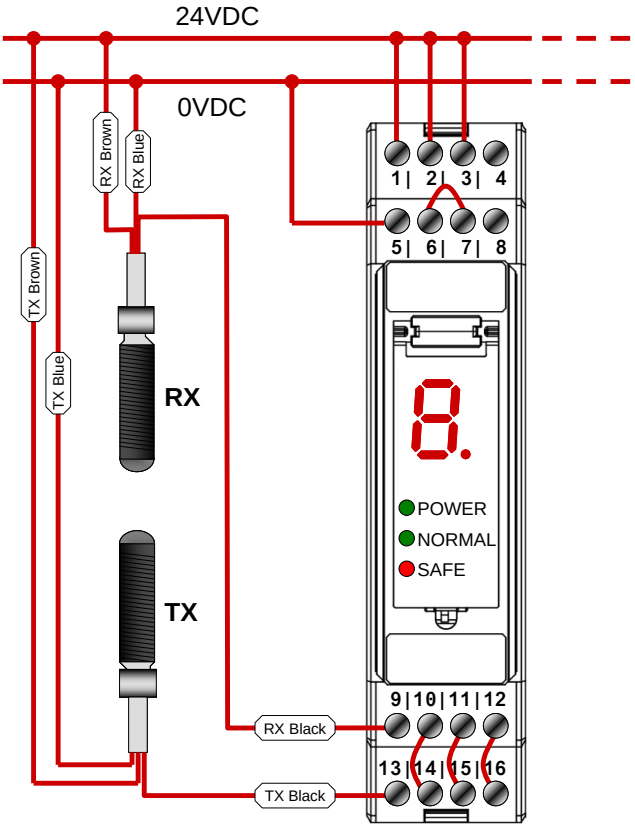


Fig. 13 Minimum connection for function test

SIGNAL	CONTACT	CONNECTION
VDC	1	24 Vdc ext.
START/TEST/RESET	2	24 Vdc ext.
EDM ENABLE	3	24 Vdc ext.
OV	5	0 Vdc ext.
MAN/AUTO	6	OSSD1 (7)
RX1	9	PNP output of receiver photocell 1 (black)
RX2	10	TX2 (14)
RX3	11	TX3 (15)
RX4	12	TX4 (16)
TX1	13	TEST of emitter photocell 1 (black)

Tab. 5 Minimum connection details for function test

4.5. Connecting the safety photocells:

0 to 4 safety photocells can be connected to the SG-BWST-4.
Connections required for installing 4 photocells:

SIGNAL	CONTACT	CONNECTION
RX1	9	PNP output of receiver photocell 1 (black)
RX2	10	PNP output of receiver photocell 2 (black)
RX3	11	PNP output of receiver photocell 3 (black)
RX4	12	PNP output of receiver photocell 4 (black)
TX1	13	TEST of emitter photocell 1 (black)
TX2	14	TEST of emitter photocell 2 (black)
TX3	15	TEST of emitter photocell 3 (black)
TX4	16	TEST of emitter photocell 4 (black)

Tab. 7 Safety photocells connections

If not all 4 photocells are installed, it is necessary to make a jumper to connect the set of TXn-RXn contacts not in use.
The diagram below shows an example where two sets of photocells are connected. **The control unit does not power** the photocells, it is hence necessary to **connect all power cables** (brown and blue cables) **to the same power supply as SG-BWS-T4.**

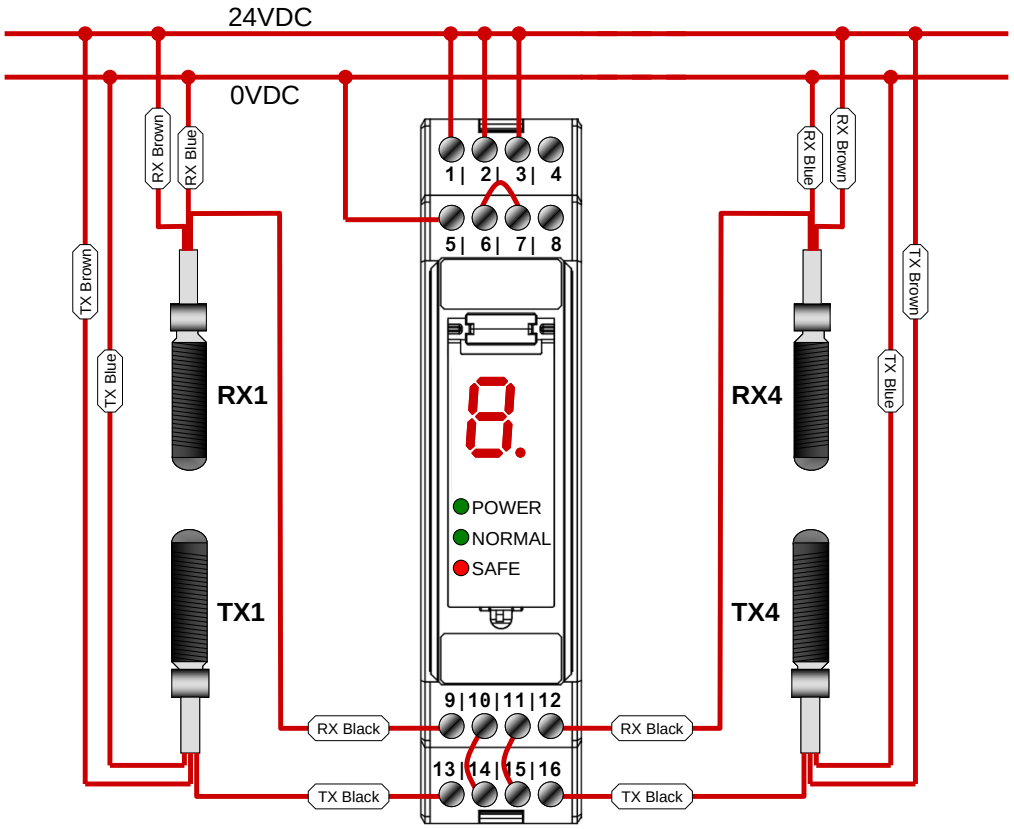
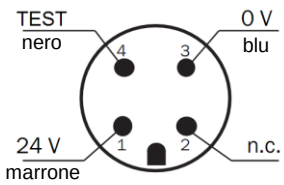


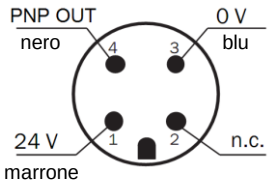
Fig. 15 Safety photocells connection

Photocell connectors are hard-wired as follows:

EMITTER



RECEIVER



4.6. Connecting the safety photocells for SG-BWS-T4-2 model:

0 to 8 safety photocells can be connected to the SG-BWS-T4 in series of 2.
Connections required for installing 8 photocells:

SIGNAL	CONTACT	CONNECTION
RX2	9	PNP output of receiver photocell 2 (black)
RX4	10	PNP output of receiver photocell 4 (black)
RX6	11	PNP output of receiver photocell 6 (black)
RX8	12	PNP output of receiver photocell 8 (black)
TX1	13	TEST of emitter photocell 1 (black)
TX3	14	TEST of emitter photocell 3 (black)
TX5	15	TEST of emitter photocell 5 (black)
TX7	16	TEST of emitter photocell 7 (black)

Tab. 8 Safety photocells connections

If not all 8 photocells are installed, it is necessary to make a jumper to connect the set of TXn-RXn contacts not in use.
To each TXn-RXn can also be connected a single TX/RX couple as in SG-BWS-T4 model.
The diagram below shows an example where 4 sets of photocells are connected in series of 2.
The control unit does not power the photocells, it is hence necessary to **connect all power cables** (brown and blue cables) **to the same power supply as SG-BWS-T4.**

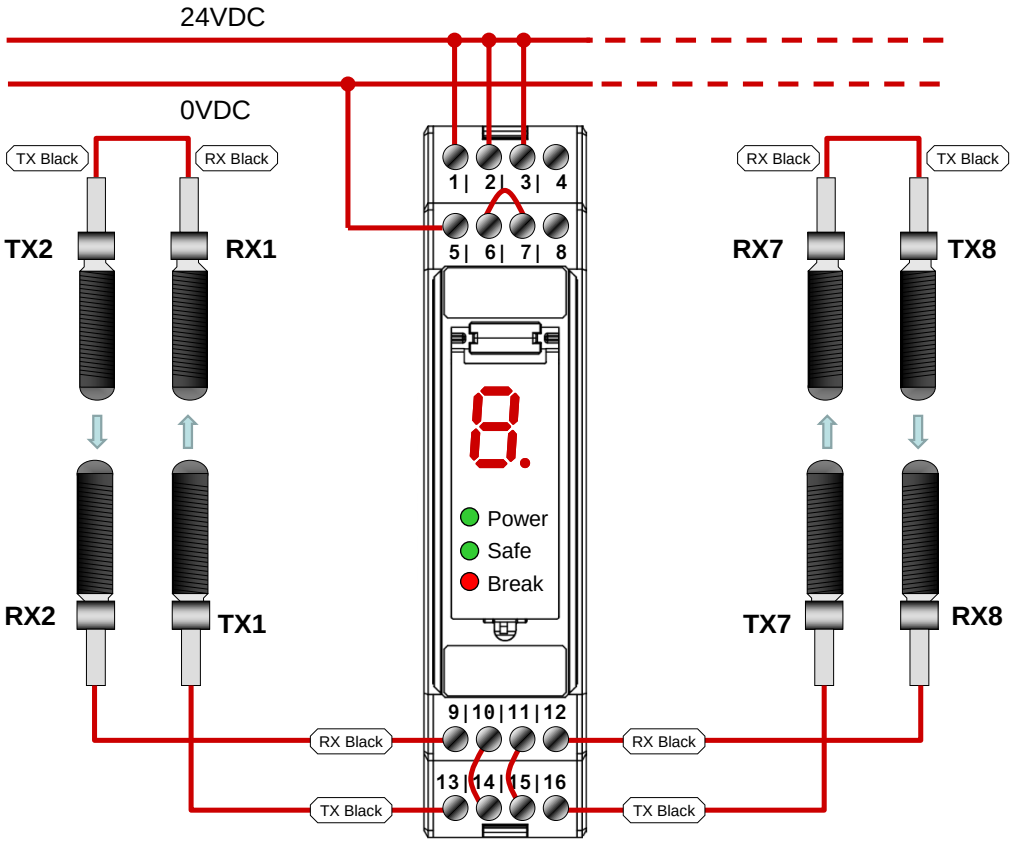


Fig. 16 Safety photocells series connection for SG-BWS-T4-2 model only

Carefully check there is no mutual interference between photocells connected in series on the same channel. This can be achieved mounting Transmitters and Receivers on opposite side as in Fig. 16

4.7. Connecting the external relays and EDM

To use the EDM function available in the BW-ST4, simply connect devices as shown below.

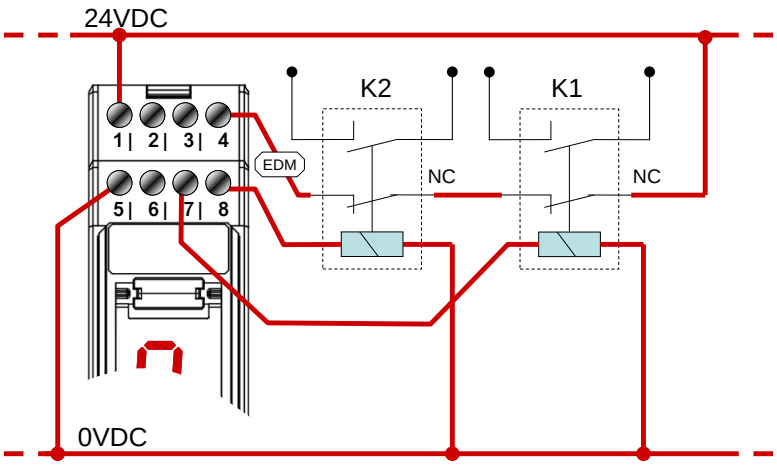
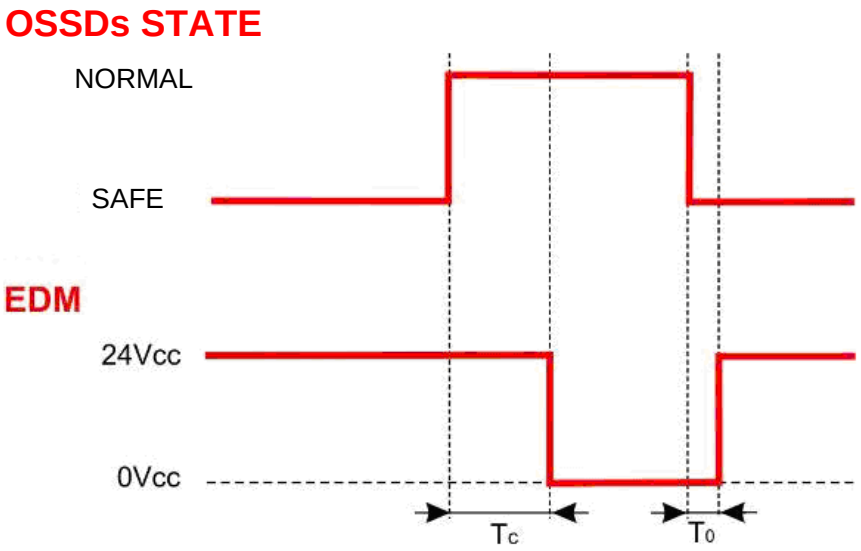


Fig. 17 EDM connections

External devices monitoring (EDM) checks whether the relays (or other control devices) have really opened the power circuit due to a dangerous condition detected by the safety sensors. This function monitors normally closed contacts upon OSSD status change.
EDM function is enabled, terminal 3 is left disconnected (see 4.3 “Complete list of connections”). Activation is confirmed by the decimal point (dot) being displayed on control unit screen.
If EDM is not used, it will be necessary to leave terminal 4 disconnected or consider 0VDC (see 4.3).



$T_C \geq$ 350 msec: time after SAFCN OFF-ON switch when EDM test is performed.

$T_0 \geq$ 100 msec: time after SAFCN ON-OFF switch when EDM test is performed.

Fig. 18 EDM Timings

To exploit the EDM function available in the SG-BWS-T4 system, you simply have to connect in series the two NC contacts of the external relays, then connect the free ends respectively to 24V and contact 4 of control unit, as shown in the above diagram.

- **Test function**

  The Test command temporarily disables beam emission in order to check switching to SAFE status. This function can be activated by opening (for at least 0.5 seconds) an NC outer contact (START/TEST/RESET push-button).

  The TEST signal is active low.

  When this function is activated, ESPE switches to SAFE status and displays the relevant warning (see section 6 “Diagnostics and warnings”).

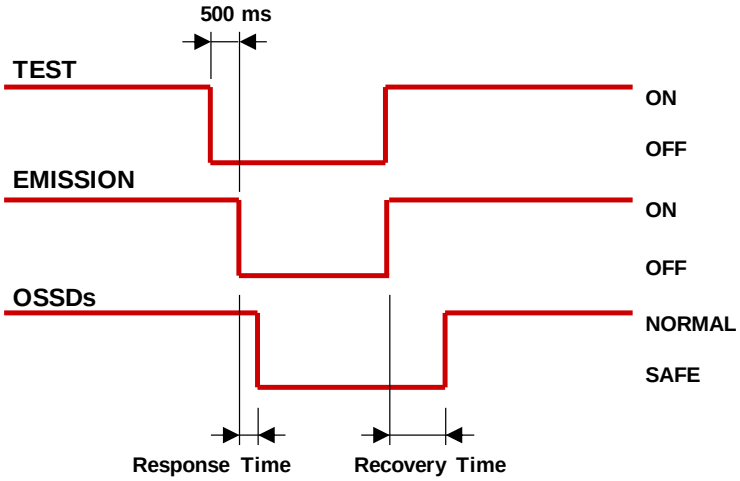


Fig. 20 Test function timings

- **Reset function**

  The same push-button can be used to reset the system after a lockout and the relevant error warning. Hold the push-button for **at least 5s** to activate the **reset function**.

  If the push-button is held depressed when device is being turned on, the control unit switches to “alignment” mode: please refer to paragraph 5.2 “Safety devices alignment”.

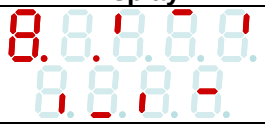
  The RESET signal is active low.

5. COMMISSIONING

Before commissioning a system protected by SG-BWS-T4 it shall be inspected and checked by a qualified technician who shall state its suitability. Please refer, for further details on this subject, the instructions given under paragraph 3.1 "Safety information".

5.1. Screen indications upon switch-on

As soon as control unit is powered, all 7 display segments will turn on. The display will then switch off and all segments are quickly activated one after the other. The display will then switch off again meaning that the device is ready for use. When the display does not switch off, there is an error in the device (see section 6 "Diagnostics and warnings").
The meaning of displayed values is as follows:

Display	Meaning
	7-segment display test routine. All segments are activated one after the other.
 Nothing on screen (only decimal point if EDM on)	The device is ready for use
Any other view	System failure. Refer to section 6 "Diagnostics and warnings"

Tab. 9 Startup visualization sequence

5.2. Safety devices alignment

Once all components are in place and connected, emitters and receivers shall be mutually aligned.
In alignment mode, the SAFCN safety outputs are open. The alignment mode and relevant procedure are described here below:

- **Cut off control unit power supply.**
- **Hold the Test push-button depressed (open Test contact).**
- **Power on the control unit.**
- **The 7-segment display shows the first device to be aligned (Photocells 1-4, light curtains 5-6)**
- **Align the indicated device until display will indicate the following device to be aligned or alignment completed warning (A flashing).**

When alignment is completed, cut off control unit power, release Test push-button (close the contact) and restore control unit power.
The control unit will run the initial test routines and display a countdown, the display will then turn off and the control unit will switch to NORMAL OPERATION status (● **NORMAL)**.
Now carry out the following inspections:

- **The ESPE stays in ●SAFE mode during photocells and light curtains beam interruption using the suitable "Test Piece", along the entire protected area.**
- **Enabling the TEST function, the SAFCN outputs should open (●SAFE and the controlled machine stops).**
- **The response time upon machine STOP (including response time of the ESPE and of the machine) is within the limits defined for the calculation of the safety distance (see section 3 "Installation").**
- **The safety distance between the dangerous areas and the safety sensors is in accordance with the instructions included in section 3 "Installation".**
- **Access of a person between sensors and machine dangerous parts is not possible nor is it possible for him/her to stay there.**
- **Access to the dangerous area of the machine from any unprotected area is not possible.**

During alignment or normal operation, make sure that the photocells connected to the same or other units do not interfere with each other. Should you find interference, change their position, for instance you could set some emitter sets on the side of the other receivers. In case of interference, the control unit will lock out and display the relevant error code.

6. DIAGNOSTICS AND WARNINGS

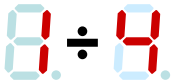
SG-BWS-T4 is equipped with a user interface featuring 3 LEDs and a 7-segment display.

LED	Indication
● Power	Device is powered correctly
● NORMAL	No danger: safety outputs closed
● SAFE	Danger or fault: safety outputs open
	The 7-segment display shows detailed information on control unit current status

Tab. 10 Signalling interface

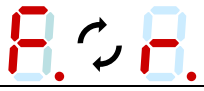
6.1. Normal operation signalling

The table below specifies all possible screen indications and the system status or failure associated to each of them.

INDICATION	STATUS	DESCRIPTION	TO DO
● POWER ○ NORMAL ○ SAFE 	Alignment	The display shows the first device to be aligned and then the others in a sequence (1 to 4).	Align the safety devices (see 5.2)
● POWER ○ NORMAL ○ SAFE 	Alignment	All connected devices are aligned	Close the Test contact (Pin 2) and restart the control unit to switch to normal operation (see 5.2)
● POWER ○ NORMAL ● SAFE 	SAFE	The indicated safety device beam is interrupted. If many devices are in this status, the first one is indicated, then the others in a sequence (1 to 4).	Clear the area or check device connections
● POWER ● NORMAL ○ SAFE 	NORMAL OPERATION	The device is in normal operating conditions and monitored area is safe.	
● POWER ✹ NORMAL ● SAFE 	Interlock	Waiting for the START command in manual reset mode	Push reset control
● POWER ●/○ NORMAL ○/● SAFE 	NORMAL OPERATION/ SAFE	The decimal point indicates that the EDM function is active (see 4.7)	
● POWER ○ NORMAL ● SAFE 	SAFE	TEST push-button pressed (contact 2 open)	Check TEST push-button connections (see 4.6)

Tab. 11 Normal operation signalling

6.2. Failure state signalling

INDICATION	STATUS	DESCRIPTION	TO DO
○ POWER ○ NORMAL ○ SAFE 	Off	Power disconnected or inner fuse blown due to overload.	Check power supply
● POWER ○ NORMAL ● SAFE 	FAILURE LOCKOUT	It is impossible to determine selected reset mode	Check MAN/AUTO switch connection (terminal 6, see 4.3)
● POWER ○ NORMAL ● SAFE 	FAILURE LOCKOUT	OSSD test routine has failed.	Check OSSD outputs connections (see 4.3). Make sure there is no short-circuit and check the features of the load downstream of the OSSD (see section 9)
● POWER ○ NORMAL ● SAFE 	FAILURE LOCKOUT	EDM test has failed	Check EDM connections (see 4.5) or disable EDM function (see 4.3) if you do not wish to use it.
● POWER ○ NORMAL ● SAFE 	FAILURE LOCKOUT	Start signal time-out tripped.	Make sure you hold the Start button depressed for less than 5s.
● POWER ○ NORMAL ● SAFE 	FAILURE LOCKOUT	One of microprocessor tests has failed	Disconnect power supply and reconnect it. If error persists, please contact the Technical Service.
● POWER ○ NORMAL ● SAFE 	FAILURE LOCKOUT	Test of indicated safety sensor has failed.	Make sure there is no interference across different photocell sets.

Tab. 12 Failure state signalling

9. TECHNICAL DATA

- **SG-BWS-T4**

Electrical data	
Supply voltage:	24 Vdc ± 15%
Power Consumption:	2.1 W max
Response Time:	SG-BWS-T4: 29 ms SG-BWS-T4-2: 33 ms
Safety category:	Type 4 (ref. EN 61496-1) SIL3 (ref. EN 62061) PL e – Cat. 4 (ref EN ISO 13849-1 2008)
Outputs:	2 PNP
Short-circuit protection:	1.4 A max
Output current:	0.5 A max / each output
Output voltage – status ON:	Vdd –1 V min
Output voltage – status OFF:	0.2 V max
Capacitive load:	2.2 uF @ 24Vdc max
Cables length (for power supply):	50 m. max
Pollution rating:	2
Mechanical and environmental data	
Operating temperature:	0…55°C
Storage temperature:	-25…+ 70 °C
Temperature rating:	T6
Humidity:	15…95 % (no condensation)
Mechanical protection:	IP 20 (EN 60529)
Vibrations:	Width 0.35 mm, frequency 10 … 55Hz; 20 sweep per axis, 1octave/min (EN 60068-2-6)
Shock resistance:	16 ms (10 G) 1,000 shocks per axis (EN 60068-2-29)
Housing material:	Nylon PA66
Weight:	125 g

Tab. 13 SG-BWS-T4 technical data