TECHNICAL DOCUMENTATION

- ROBOT S5

Date	Revisions	Revisions Reasons	Issue	Checked by	Approved by
02/05/2017	01	Technical document number insertion	Baldinini F.	Baldinini F.	Baldinini F.
11/07/2018	02	Index realization	Baldinini F.	Baldinini F.	Baldinini F.
12/12/2018	03	Bug correction on buttons numbers …	Baldinini F.	Baldinini F.	Baldinini F.

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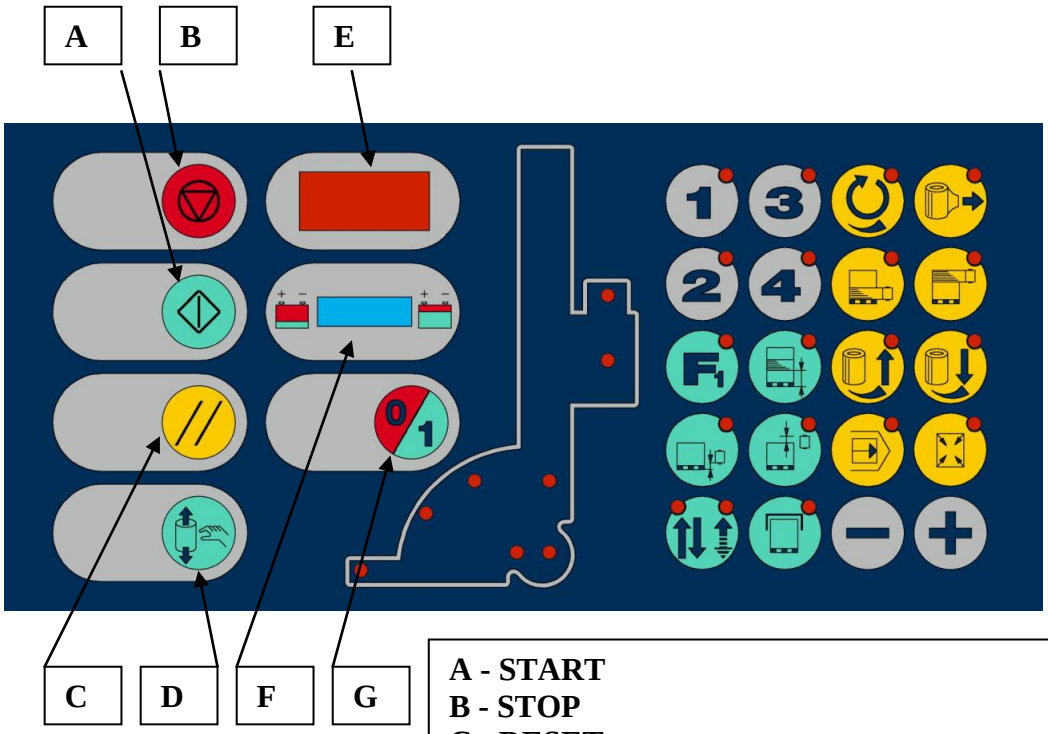
DISPLAY PANEL DESCRIPTION



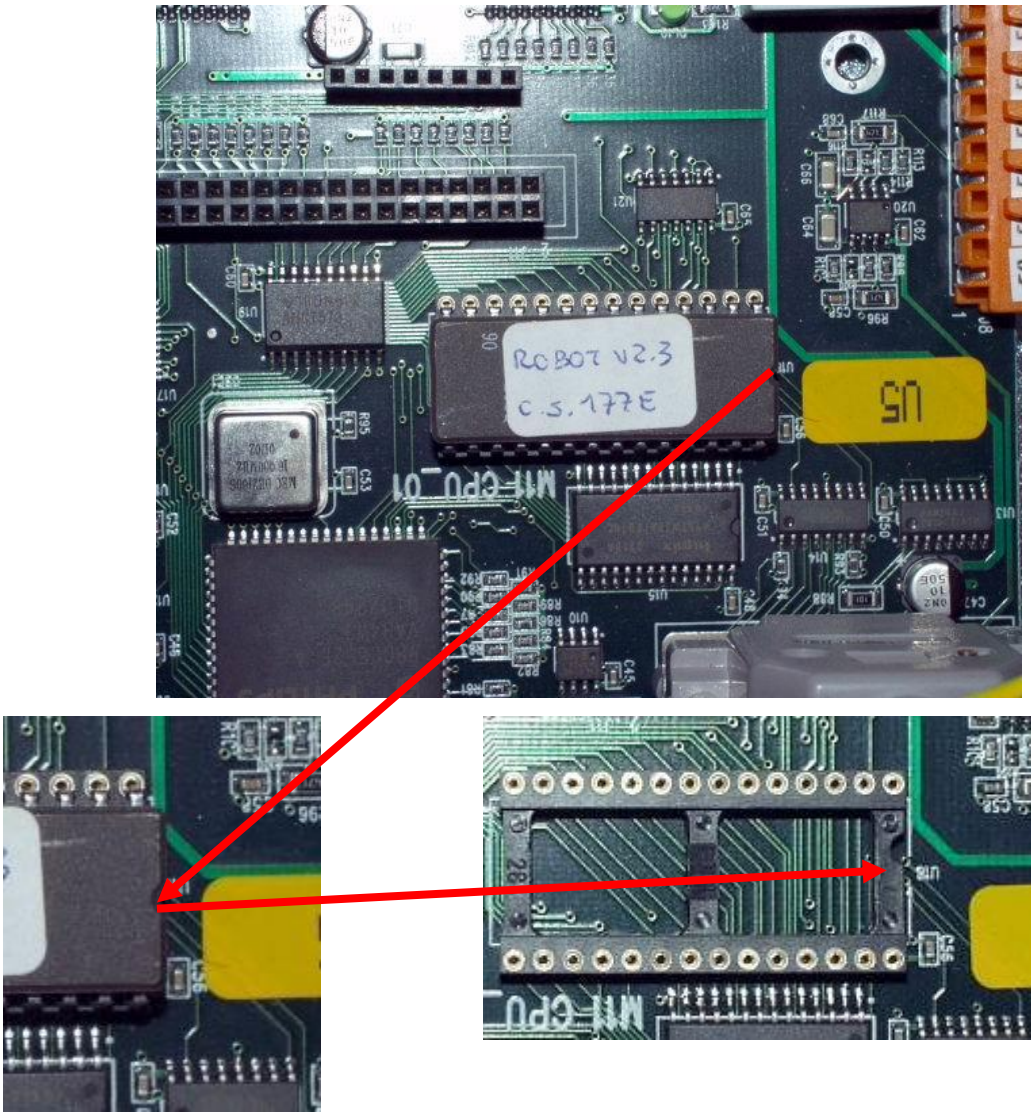
A - START
B - STOP
C - RESET
D - UPWARD / DOWNWARD MANUAL BUTTON
E – DISPLAY
F – BATTERY CHARGE LEVEL
G – ON / OFF

- **PROGRAM 1**
- **PROGRAM 2**
- **PROGRAM 3**
- **PROGRAM 4**
- **TRACTION SPEED**
- **FILM PRE-STRETCH**
- **BOTTOM OVERWRAPS**
- **TOP OVERWRAPS**
- **F1 CYCLE – FOR BIG PRODUCTS**
- **RE-FORCE OVERWRAP**
- **UPWARD SPEED SPOOL CARRIAGE**
- **DOWNWARD SPEED SPOOL CARRIAGE**
- **GROUND START**
- **PHOTOCELL DELAY**
- **FILM / PRODUCTION DATA**
- **LOAD CELL SENSITIVITY (for PFS spool carriage only)**
- **WRAPPING CYCLE SELECTION**
- **TOP SHEET CYCLE SELECTOR**
- **INCREASING VALUE**
- **DECREASING VALUE**

EPROM FITTING ON THE CPU (M11)

You must respect the Cut-in of the Eprom!
The Reference point is not the Sticker on the EPRom!

The Cut-in of the EPRom must fit with the Cut-in of the Socket.

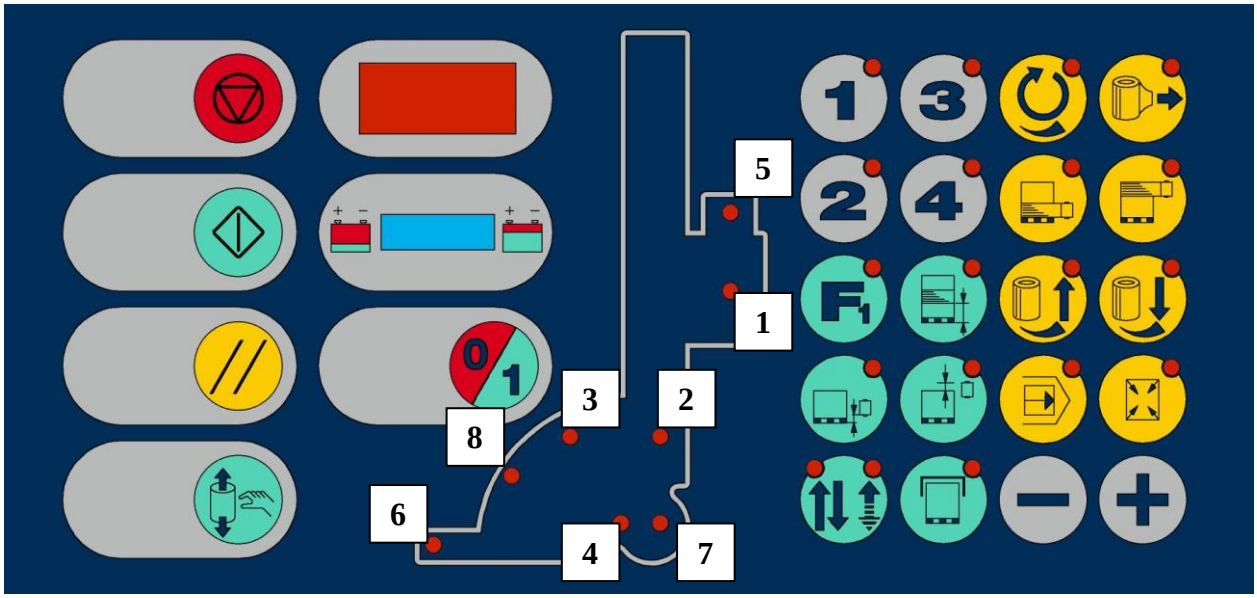


BATTERY CHARGE LEVEL DESCRIPTION

The battery charge level indicator got a double function:
A) During the working operation shows the value of the autonomy in the battery.
B) During the charging mode of the battery, the three leds switches on in sequence.

Led RED	Led YELLOW	Led GREEN	CHARGE LEVEL (JUST VIEW INDICATION FOR THE OPERATOR)
ON	ON	ON	**100%**
ON	ON	LAMP	**80—100%**
ON	ON	OFF	**60—80%**
ON	LAMP	OFF	**40—60%**
ON	OFF	OFF	**20—40%**
LAMP	OFF	OFF	**0—20%**

SINOPTICAL DISPLAY DESCRIPTION



The sinoptical panel will help the operator to find out the reason of a fault or the alarm on the machine.

1. **Drive card pre-stretch motor alarm**
2. **Drive card lifting spool carriage motor alarm**
3. **Emergency push button pressed**
4. **Drive card traction motor alarm**
5. **Cut film alarm**
6. **Bumper alarm**
7. **Traction clutch disconnected alarm**
8. **Open protection alarm**

FILM / PRODUCTION DATA

Pressing the push button " FILM / PRODUCTION DATA" you will access to the data related to the working cycle of the machine.
D1: partial counter cycle (re-settable)
D2: 3 thousand counter cycle, from 999 above (not re-settable)
D3: 3 unit counter cycle, from 0 to 999 (not re-settable)
D4: tension of the battery
SET: to re-set the partial counter.
When it is shown the message "SET" on the display, pressing simultaneously the buttons "**program 1**" & "**program 3**", you will re-set the partial counter (D1).

CYCLE PARAMETER RANGE

PARAMETER	*MIN. – MAX.*	*STEP*	*MEASURE UNIT*
Bottom over wraps	0 – 10	1	Rounds
Top over warps	0 – 10	1	Rounds
Photocell delay	- 20 – 100	1	cms
Ground start (offset)	0 -- 230	1	cms
Re-force over wrap	45 -- 300	1	cms
Rotation speed	38 – 80	1	mt /minute
Upward speed spool carriage	1.6 – 6.0	0.1	mt/ minute
Downward speed spool carriage	1.6 – 6.0	0.1	mt/ minute
Altimeter	0 - 255	1	cms

FRD SPOOL CARRIAGE

PARAMETER	*MIN. – MAX.*	*STEP*	*MEASURE UNIT*
FILM TENSION	Mechanical		
PRE-STRETCH	Not available		

FR SPOOL CARRIAGE

PARAMETER	*MIN. – MAX.*	*STEP*	*MEASURE UNIT*
FILM TENSION	0 – 100	10	Without dimension
PRE-STRETCH	Not available	10	%

FS SPOOL CARRIAGE

PARAMETER	*MIN. – MAX.*	*STEP*	*MEASURE UNIT*
FILM TENSION	Not available		
PRE-STRETCH	0 -- 200	10	%

PFS SPOOL CARRIAGE

PARAMETER	*MIN. – MAX.*	*STEP*	*MEASURE UNIT*
FILM TENSION	0 – 100	10	Without dimension
PRE-STRETCH	0 -- 250	10	%

POWER SAVE FUNCTION

If the Robot is inactive for more than 15 minutes (cycles are not performed and push buttons on the panel are not pressed) the machine goes in a condition of saving energy. In such condition all the LED's will be off and the display will shows a blinking. To go out of such condition is enough to press an any key. If, before the power save is activated it occurs an alarm, the function is not activated.

KEYBOARD LOCK & UNLOCK PROCEDURE

It is possible to lock the machine and leave the possibility to the operator to use the machine with tht four pre-set programs and Stop, Start & Emergency.
To lock and unlock the keyboard it is necessary to perform the following operations:

1. Turn OFF the machine.
2. Press and keep pressed the push button "bottom over wraps".
3. Press and keep pressed the push button "top over wraps".
4. Tun ON the machine.
5. Press the push button RESET

To unlock the keyboard, perform the same operations from point 1.

WRAPPING CYCLE WITHOUT PHOTOCELL READING (ALTIMETER)

It is possible to exclude the functioning of the photocell that detect the product and work with the altimeter planning the high of the product manually in centimetres.
To carry out the special cycle you must perform the following operations:

1. The machine have to be in STOP mode.
2. Press and keep pressed for about 4 seconds the push button "photocell delay" until the related led will start to blink.
3. The display will shows a value that will correspond to the high of the product to wrap in centimetres.
4. To modify the value play with push buttons '+' & '-'.
5. To return back to the standard cycle with photocell reading, press again the push button "Photocell delay" for about 4 second until the related led will not blinks anymore.

The type of operation (with photocell or with product height) is memorized together with the cycle parameters. It will therefore be possible to have cycle 1 which works with the photocell and cycle 2 with the setting of the product height. This setting is retained even when the machine is turned off.

MACHINE PARAMETER SETTING

To set the parameter of the machine, it is necessary to perform the following procedure:

1. Turn OFF the machine.
2. Press & keep pressed the push button "**film pre-stretch**"
3. Turn ON the machine.
4. The display will show the message 'P1' alternatively to the related parameter value.
5. Press the push button "**top over wraps**" until you will see the message 'SET' on the display.
6. Press simultaneously the buttons **"program 1"** & **"program 3"**
7. The display will show the message 'dEF' for 1 second approx.
8. To run the parameters list, press the push button "**top over wraps**".
9. To modify the value of the parameter, play with push buttons '**+**' & '**-**'
10. Turn OFF the machine.

INTERNAL PARAMETER TABLE							
SPOOL CARRIAGE TYPE							
PARAM	***RANGE***	***DEF***	***FRD***	***FR***	***FS***	***PFS***	***PARAMETER DESCRIPTION***
P1	0 - 1	1					Enable break/cut film alarm (=1 to train/it)
P2	0 – 1	1					Enable cut film device (=1 to train/it)
P3	0 - 4	1					Spool carriage type (1=FRD; 2=FR; 3=FS; 4=PFS)
P4	0 – 1	0					Beeper (acoustic signal) operating during the whole cycle
P5	0 - 1	0					Enable the display with USA measures.
P6	0 - 255	142	--	60	142	142	Maximum tension (V max.) of the friction
P7	0 - 1	1					Enable of counter-corner malfunction alarm.
P8	10 - 80	30					Upward distance of the spool carriage for program F1 (not working on 2.4 software release).
P9	0 - 50	20					Photocell sensitivity
P10	60 - 250	60					Diameter of cylindrical products on program 4
P11	0 - 100	50	Any	Any	Any	50	Traction motor brake connection delay time on packing cycle start (PFS carriage only).
P12	0 - 30	0				EU=0 USA=8	Delay time before film tear (sec/10)
P13	0 - 80	0	0	0	0	EU=70 USA=45	Minimum traction speed value after film tear
SET							***To return to parameters default values.***

FUNCTIONAL DESCRIPTION OF THE SOFTWARE SUITABLE TO PACK CYLINDRICAL OR SMALL PRODUCTS SETTABLE ON PROGRAM 4

Introduction

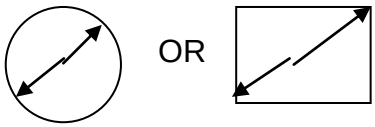
The a.m. software allow you to pack cylindrical or small products on the **program 4**. Compared to the standard software, the release **r2.4** allow the machine to work with products that them shape will not permit the counter corner sensor to work properly.

Enable the special program 4

To enable the packing cycle for cylindrical products or small products, it is necessary go inside the "programming mode" (please refer to "HIDDEN FUNCTIONS" described in the Technical specifications Robot 2002).

1. Switch on the machine pressing in the same time the push button "**film pre-stretch**"
2. Move to parameter P10 using the push button "**top over wraps**"
3. Set the diameter of the cylindrical product in cm or the diagonal in cm of the small product. To modify the value, use the "**+**" & "**-**" push buttons. (please refer to the below example):

Example:



4. Memorise the modified value pressing the push button No.8 **(top over wraps).**
   Note.: The Software will accept values bigger than 60 cm only.
5. Switch off the machine.

Effect of the new software on machine's functions

After you enabled the special function, it will be possible to pack cylindrical products or small products using the **Program 4.** The other programs (1,2,3) will have the standard functioning for squared products where the counter corner sensor is able to work properly. The related counter corner alarm (E33) will be active.

Important information:

The machine will never pack cylindrical products that its diameter is smaller than cm 61 and squared products that their sides are smaller than cm.60x60 (i.e. the diagonal smaller than cm 84).

CYCLE DEFAULT SETTING AND COUNTERS RESET

To re-set the parameter to the producer default perform the following procedure:

1. Turn OFF the machine.
2. Press and keep pressed the push buttons **"program 1"** & **"p5rogram 3"**
3. Turn ON the machine.
4. The dispaly will shows the messages 'rx.x', 'SET', 'RES'.
5. Turn OFF the machine.

PR-ES/2-24dc PRE-STRETCH BOARD TUNINIG – LOAD CELL

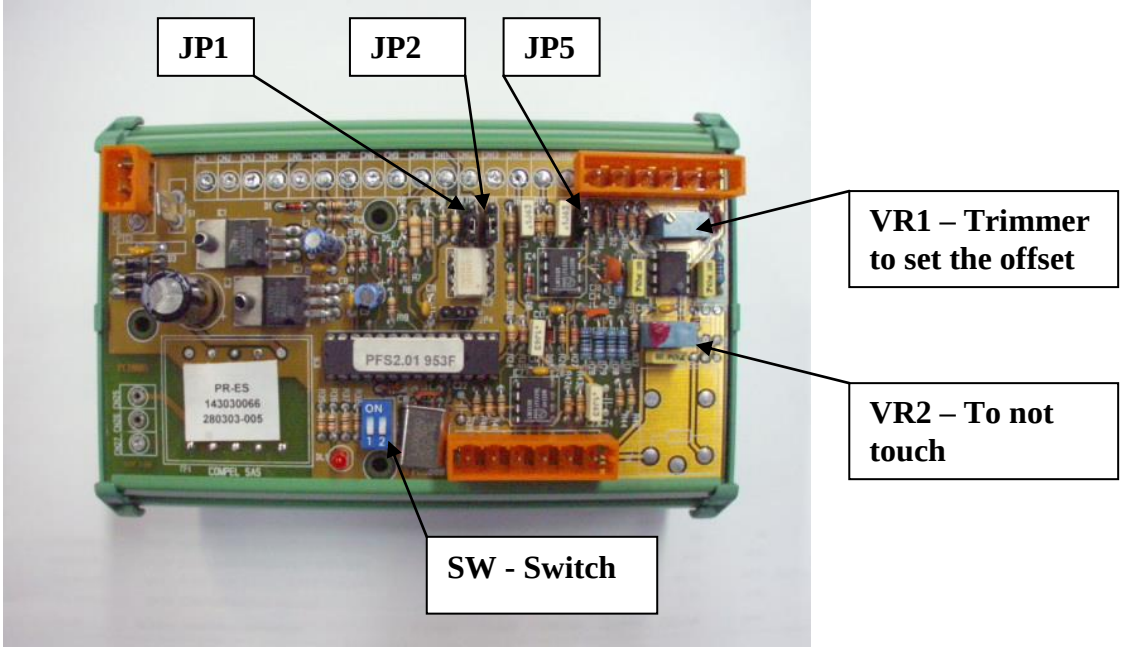
SETTING OF THE SWITCHES & BRIDGES

MACHINE MODEL	SW1(1)	SW1(2)	JP1	JP2	JP5
ROBOT PFS	*OFF*	*OFF*	*1-2*	*1-2*	*2-3*

Tuning procedure (OFFSET)

1. Make sure that the load cell is free and in “0” position (the film must not applied on the roller).
2. Switch on the machine and start one cycle (rise-up the machine from the floor, set slow turntable speed and higher number of bottom over wrap).
3. Turn the VR1 trimmer counter clockwise direction until the roller will start to rotate (if the roller is moving, pass throughout the next operation).
4. Turn the VR1 trimmer clockwise direction until the roller will stop moving.
5. Press STOP button to finish the cycle.
6. Turn again the VR1 trimmer clockwise direction until the red led will regular flashing.

In case the red led doesn’t regular flashing, when the extensiometer is free, repeat the whole offset tuning procedure.



REMOTE CONTROL INSTALLATION

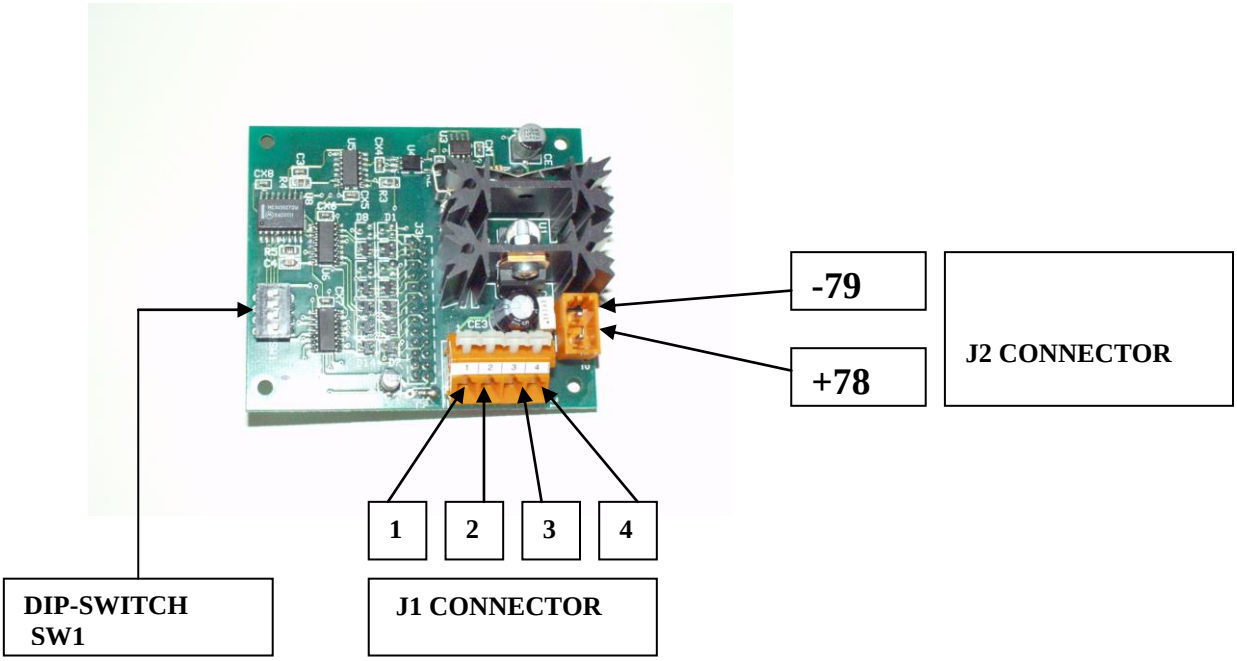


Fig.2

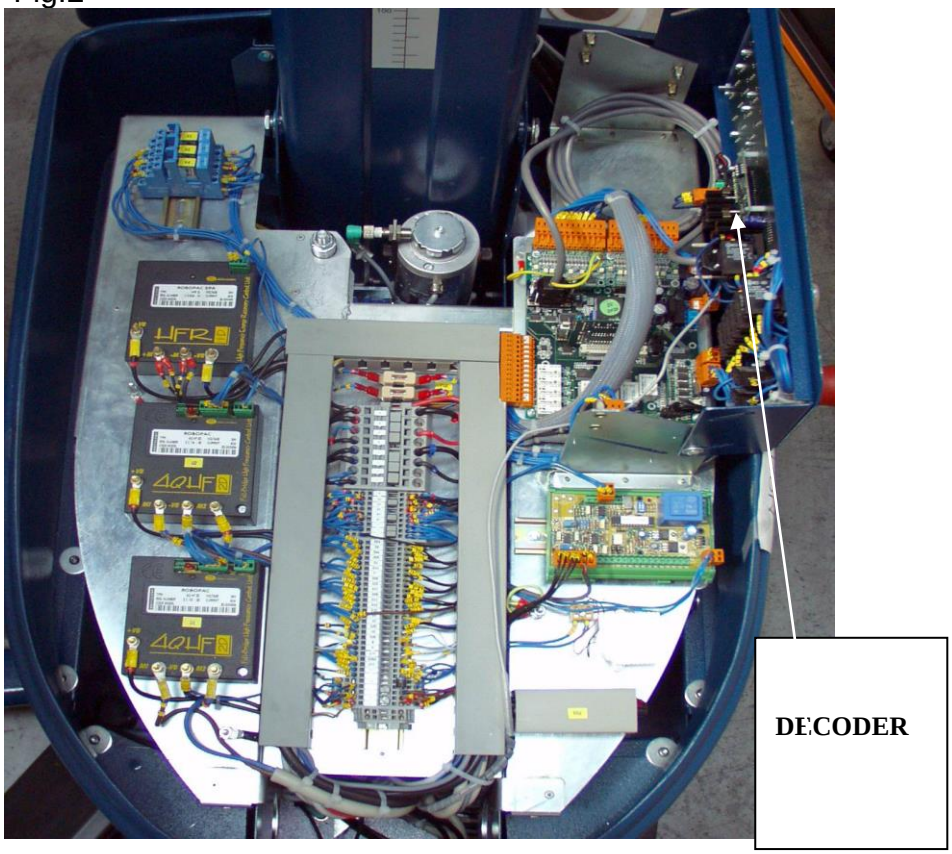
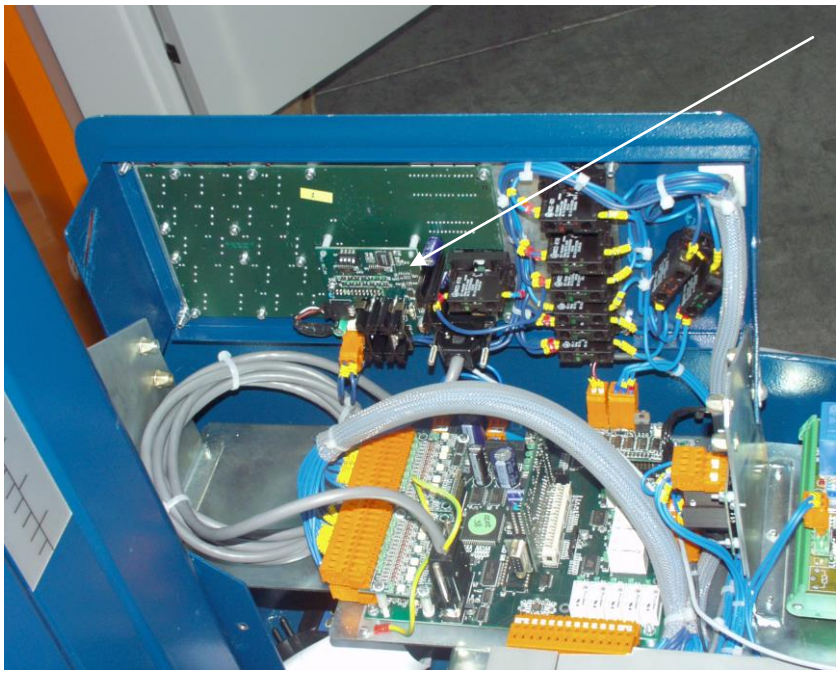


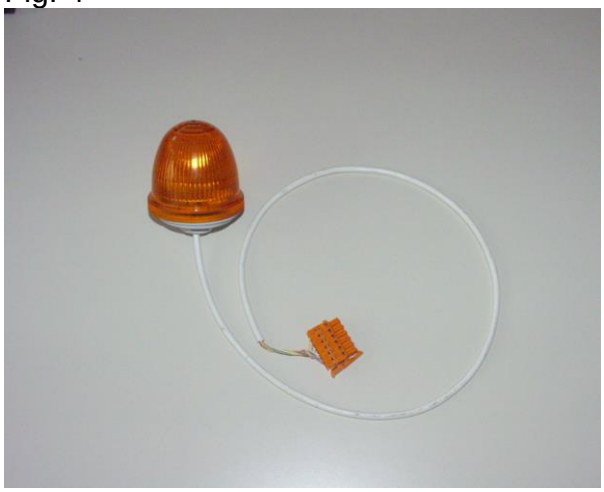
Fig. 3



Remove the Ovolux indicator

Remove the ovolux indicator from the tip of the pole (see Fig.4).

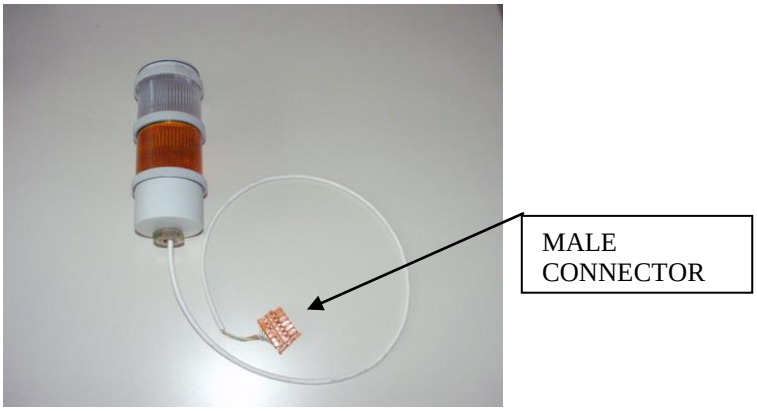
Fig. 4



Fit the tower indicatod + receiver

Assemble the TWS tower indicator complete with infrared receiver; insert the male connector in the female connector on the tip of the pole (see Fig.5).

Fig.5



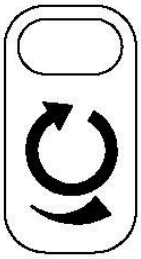
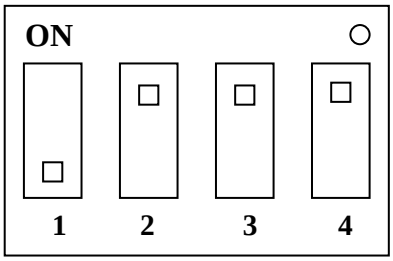
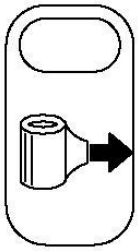
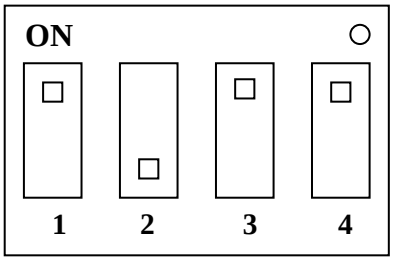
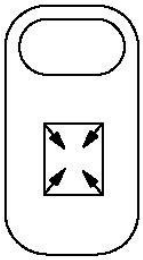
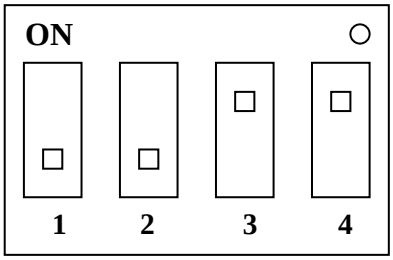
Remote control configuration and tuning

The supplied remote control (Fig.6) can drive a single machine. The following remote control configuration procedure couples a single remote control to each machine for a maximum of 8 pairs; this permits the use of up to 8 machines in the same room without the interference of one machine's remote control on another machine. A four way Dip-Switch (SW1) is found on the decoder board (see Fig.1) whose settings determine the machine channel.

The following table (Tab.1) indicates the 8 possible positions of the Dip-Switch coupled with the 8 keys on the remote control. Chose the required configuration and after having set the Dip-switch simultaneously press the – (minus) and + (plus) keys for 5 seconds; press the key coupled with the chosen configuration within 3 seconds (except for – and +).

See Fig.6

Tab.1

Key function	Key symbol	Dip-Switch SW1 position
Traction speed (1)		
Film pull (2)		
Cell sensitivity (3)		

Tab.1

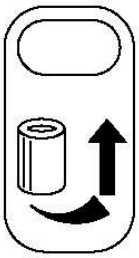
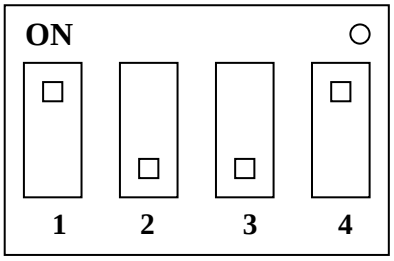
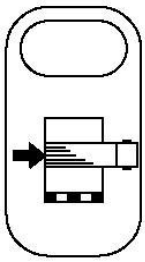
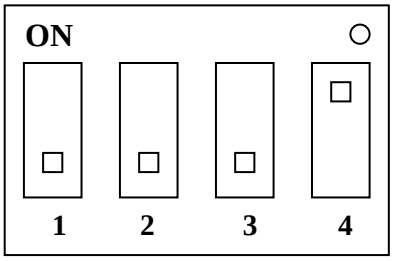
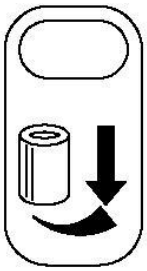
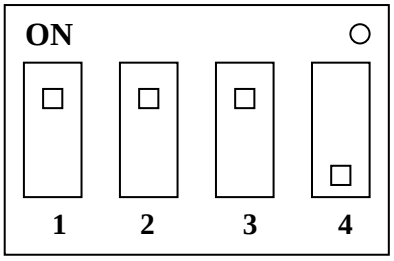
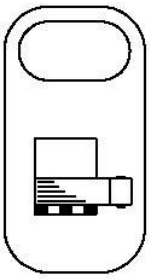
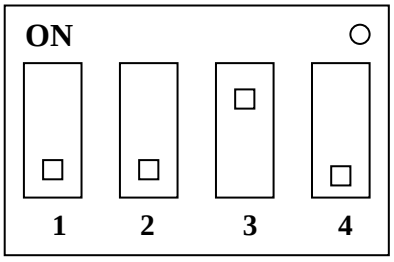
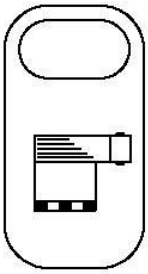
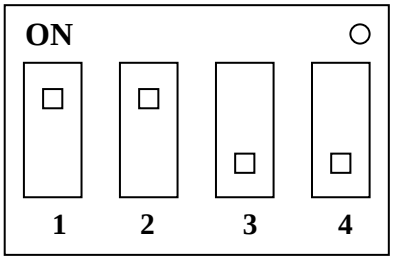
Key function	Key symbol	Dip-Switch SW1 position
Carriage ascent speed (4)		
Carriage stop (5)		
Carriage descent speed (6)		
Low revolutions (7)		
High revolutions (8)		

Fig. 6

Simultaneously press and hold FOR 5 SECONDS (keys - and +) then another key coupled to the Dip-Switch SW1 configuration.

ALARM LIST

- **E01** Emergency push button pressed alarm
- **E10** Bumper crash alarm.
- **E11** Protection opened alarm
- **E12** Traction motor brake connected alarm
  (enabled for machine equipped with the manual traction brake un-locker)
- **E30** Traction motor alarm
- **E31** Lifting motor spool carriage alarm
- **E32** PFS motor alarm
- **E33** Counter-corner fault alarm
- **E34** Spool carriage lifting encoder alarm
- **E60** Film breakage alarm
- **E70** Function not enabled alarm
- **E80** Charge battery alarm
- **E90** Discharged battery alarm

JP1 JUMPER CORRECT WORKING POSITION

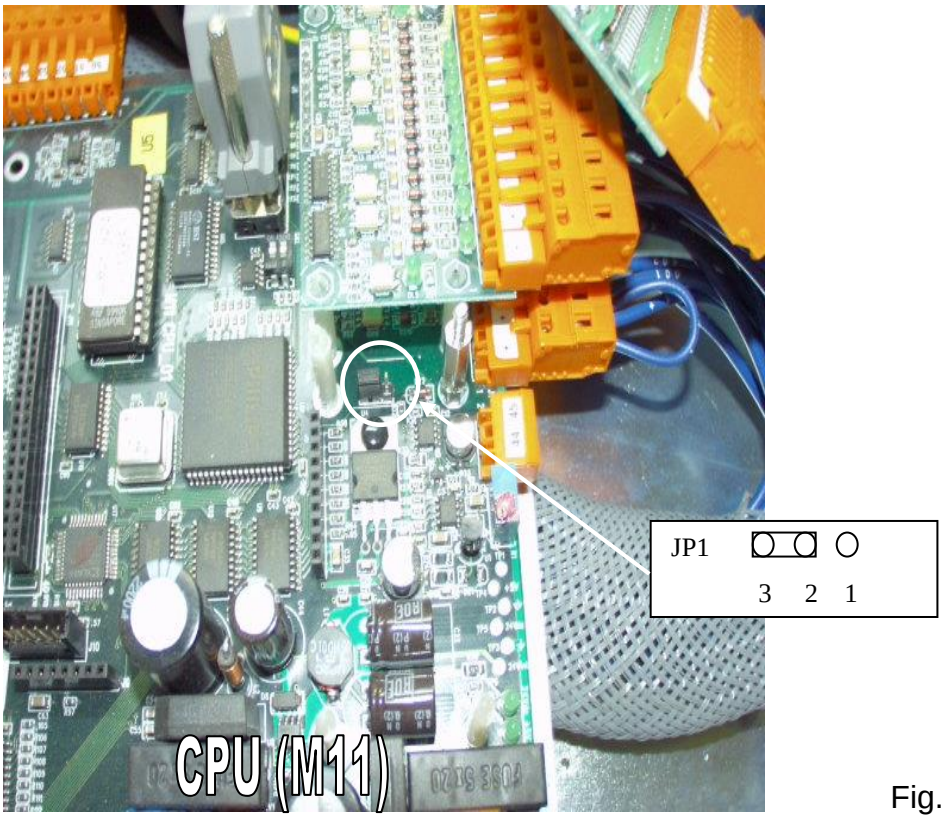


Fig.9

Check that the JP1 jumper on the board CPU M11 (see above picture) is inserted between pins 2 & 3 (feeding 24Vdc).

CORRECT WORKING POSITION OF THE BRIDGE No.3 OF THE INTERNAL BATTERY CHARGER BOARD

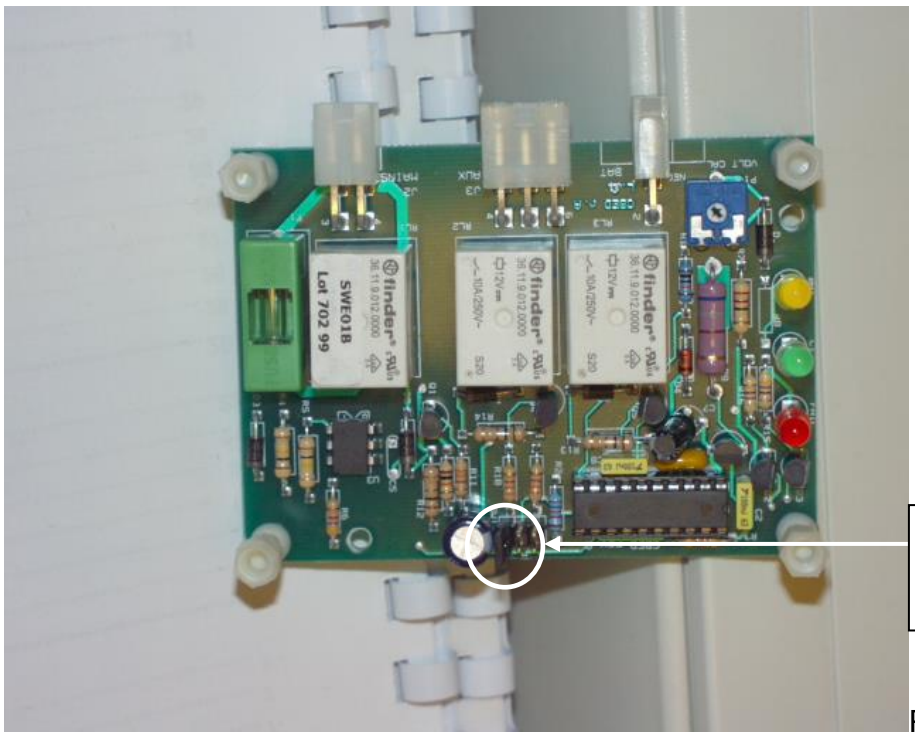
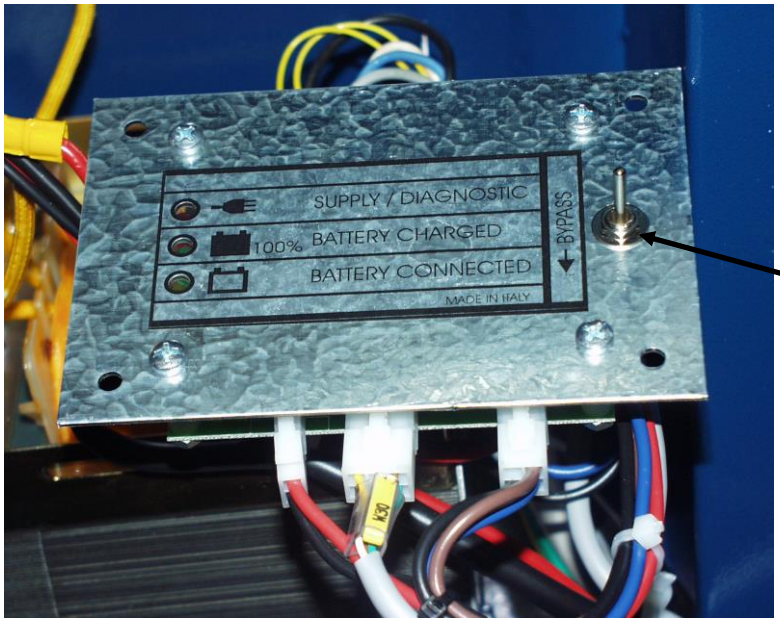


Fig.10

Check that on internal battery charger board the bridge No.3 has been closed as shown in the above picture.

BATTERY CHARGER DISPLAY



Selector to start manually the re-charging cycle of the battery if its charge level is too low to start it automatically on the connection to the power supply 230 Volt.

Charge phase indication:

The green LED “BATTERY CHARGED” shows the phase of the charging:

- OFF = starting charge.
- BLINKING = ending charge.
- ON = charging finished correctly.

In case the charging operation ends due a fault or a malfunction, the green LED will stay OFF even the charging has been arrived to the phase of ending charge.

Battery charge diagnostic:

When a fault is noticed the internal battery charger will switched OFF and the green LED "BATTERY CHARGED" will not turned on at the end of the charging battery cycle. The red LED "SUPPLY/DIAGNO" will flashes showing which fault has been noticed and it will be activated the relay "Fail" as remote information. This situation will stay in this condition until the tension of net will be removed. To the following charging battery cycle the battery charger board will delete all the alarms.

The possible faults are the following:

1. Maximum charging time passed (14 hours from beginning of the charging).
2. Battery tension excessive during the position. (>2,85 V/el)
3. Low battery tension or too high battery tension on start charging cycle. (<1,4 V/el, >3,0 V/el)

Red led diagnostic system “SUPPLY/DIAGNO” :

If the internal battery charger stops before the end of the charging for a whatever reason, the red LED shows it through a number of blinks (repeated continuously with an interval between a group and the other) that it allows the operator to know the reason of the fault.

The codes of fault are the followings:

Red LED ON continuously : normal condition, means net feeding connected.

Red LED OFF : no net feeding connected, new charging cycle ready to start.

2 blinks: Battery tension too high (on the start even the charging phases).
The limit is 2,85 V/el.

3 blinks: Battery tension too low on start (on the start even the charging phases).
The limit is 1,4 V/el.

4 blinks: Maximum charging time passed without the tension of the battery has been grooved-up (14 ore).

No net power supply:
As soon the power feeding is missing the card opens all the relays, turn off the LEDS "SUPPLY" and "BATERY CHARGED". It Stays in standby in powersave (<10mA) waiting for a new battery charging cycle, that will begin to the next connection to the net. It remains however turned on the led "BATTERY CONNECTED", that is directly connected to the battery. It remains however turned on the led "BATTERY CONNECTED", that is directly connected to the battery.

Relay "Fail"
Its normal condition is disconnected. It is activated if the charging cycle ends because a fault. It is back in normal condition as sonn the feeding power is missing.

Relay "Rete"
It is connected when the power supply is connected. It is disconnected when the power supply is disconnected.

TROUBLESHOOTING FOR INTERNAL BATTERY CHARGER

FAULT	DIAGNOSTIC	POSSIBLE CAUSES
Battery connected	No led ON	Battery damaged or fuse of the damaged
Battery connected, power supply connected.	Yellow led ON, red led OFF	Power supply disconnected Charging wire damaged Net fuse damaged Thermal safety of the transformator arrived
End charging tension too high	Green led OFF (after it blinks) when the charging is over the red led blinks twice	Power tension out of range or plug-in on primary of the transformator not correct
End charging tension too low	Green led OFF (after it blinks) when the charging is over the red led blinks three times	Power tension out of range or plug-in on primary of the transformator not correct
Maximum time	Green led OFF (after it blinks) when the charging is over the red led blinks four times.	Battery damaged or power tension too low