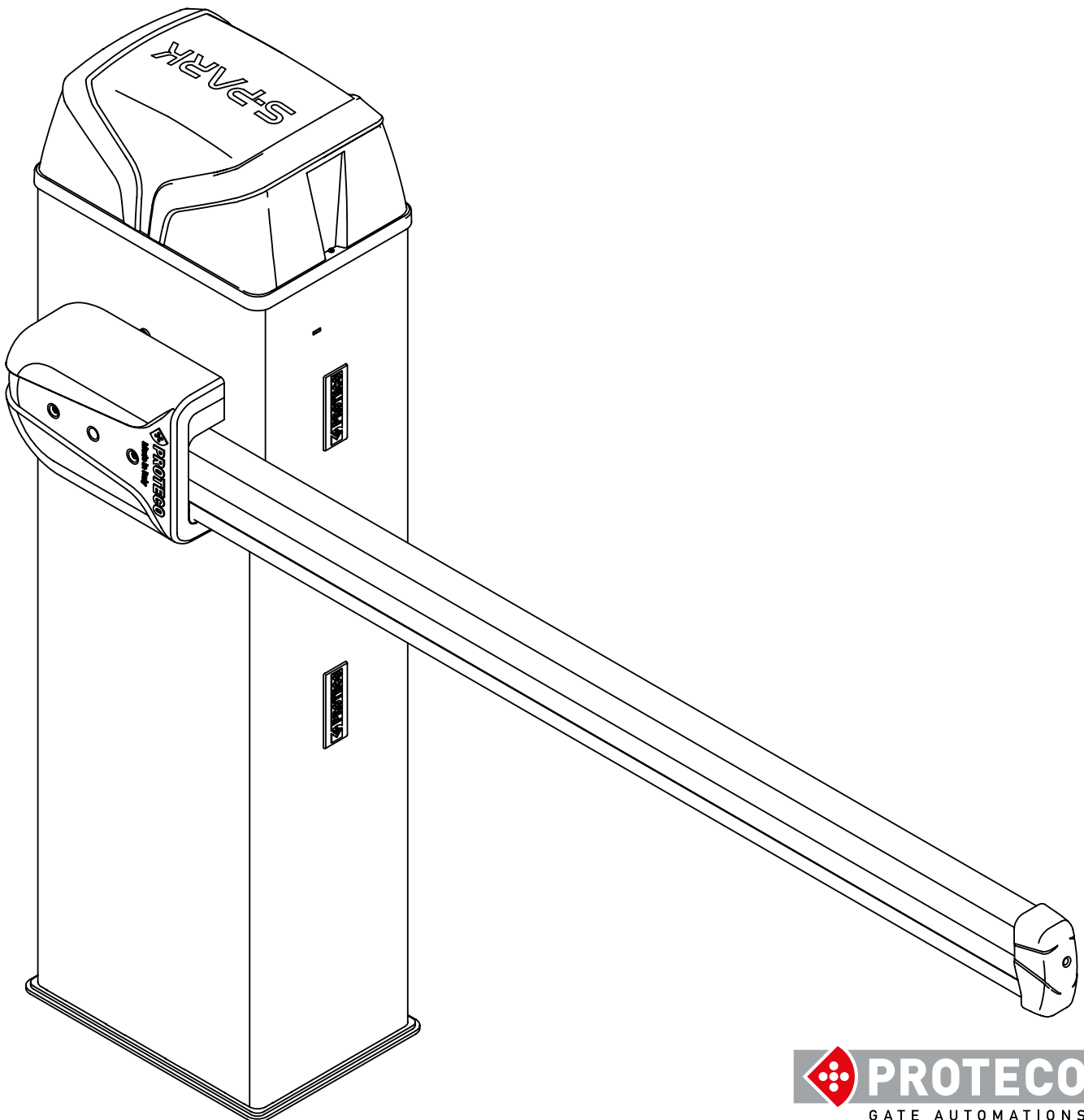


# S-PARK

## AUTOMATIC ROAD BARRIER

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User manual






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## 1. WARNING

This manual for S-Park series contains important information concerning personal safety. An incorrect installation or an improper use may lead to severe injuries. Read carefully and pay particular attention to the safety sections marked by the yellow triangle.


-  S-PARK series is projected to control transit areas; if necessary, provide a special and separate entry way for pedestrians.
-  The installation of automatic doors, gates and barriers must comply with the Machinery Directive 2006/42/CE and EN 12453 regulation, and performed by qualified personnel.
-  Make sure the main power line is equipped with state of the art safety grounding system; as well be sure the whole installation is protected by a power cut switch and against overcurrent.

Make sure the area is clear from flammable gases and/or electromagnetic interferences: it could lead to very dangerous injuries.

-  Switch the power and batteries OFF before any operation.

After installation, packaging and waste materials (cardboard, plastic, metal parts etc.) must be kept away from children as they could be potentially harmful.

Use only original spare parts. Any alteration to the system is prohibited. Proteco Srl will not respond in case of using additional and/or fake spares.

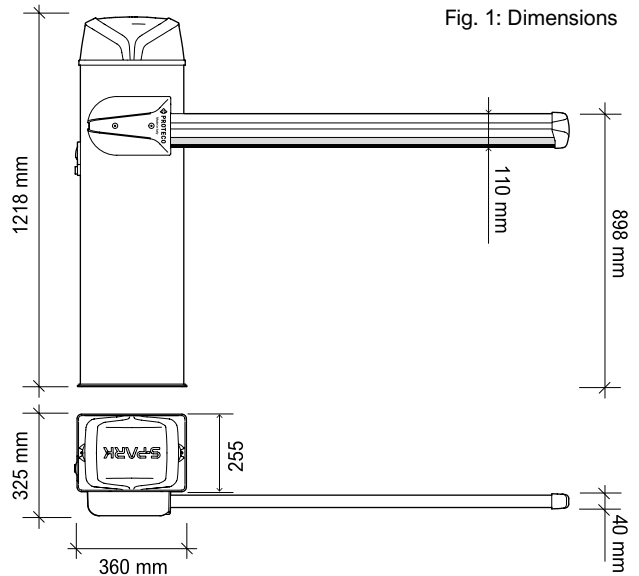
-  Before commissioning the system, deliver the last pages of this manual to the user (section 8. END USER'S TIPS starting from page 21).

Proteco S.r.l. reserves the right to make changes to the product without notice.

## 2. TECHNICAL FEATURES

### 2.1 Main features

	S-PARK 4 Boom up to 4 m	S-PARK 6 Boom from 4 to 6 m
Main power	230V 50/60 Hz	230V 50/60 Hz
Max. absorption	1,2A @ 230V	1,2A @ 230V
Motor power	24V dc	24V dc
Accessories	24V dc	24V dc
Torque	120 Nm	180 Nm
Opening time	2.5 ÷ 4 sec.	4.5 ÷ 6 sec.
Operating temperature	-25°C ÷ +55°C	-25°C ÷ +55°C
Duty cycle	80%	80%
	(max 200 cycles/hour)	(max 130 cycles/hour)
IP rating	54	54



### 2.2 Life line

The life of the barrier may be affected by multiple waste factors. The life expectation can be calculated using the following criteria.

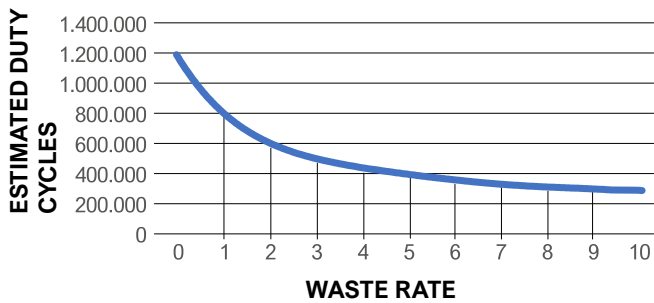
In order to get the barrier waste rate refer to the information included in **Table 1**, add together all values that comply with the installation scenario along with the accessories installed.

The result achieved will be a value between 0 and 10, and it represents the waste rate to be applied on the below graph to calculate the estimated life rate.

**ATTENTION: If the waste rate obtained is beyond 10, move to a superior barrier version in order to fulfill the expected performances .**

Table 1: Waste rate

	S-Park 4	S-Park 6
Boom from 3 to 4 m length	1	-
Boom from 5 to 6 m length	-	2
Photocell operation frequently cut	1	1
Normal operation frequently cut due to obstacle	0,5	1
Seaside areas	0,5	0,5
Sandy and dusty areas	1	1
Significantly windy areas	1	2
Articulated boom	2	2
Boom fitted with moving support	1	2
Boom fitted with hanging rack	1	1,5
Boom fitted with led strip	0,5	1
Outside temperatures often beyond 40° or below 0°	0,5	0,5

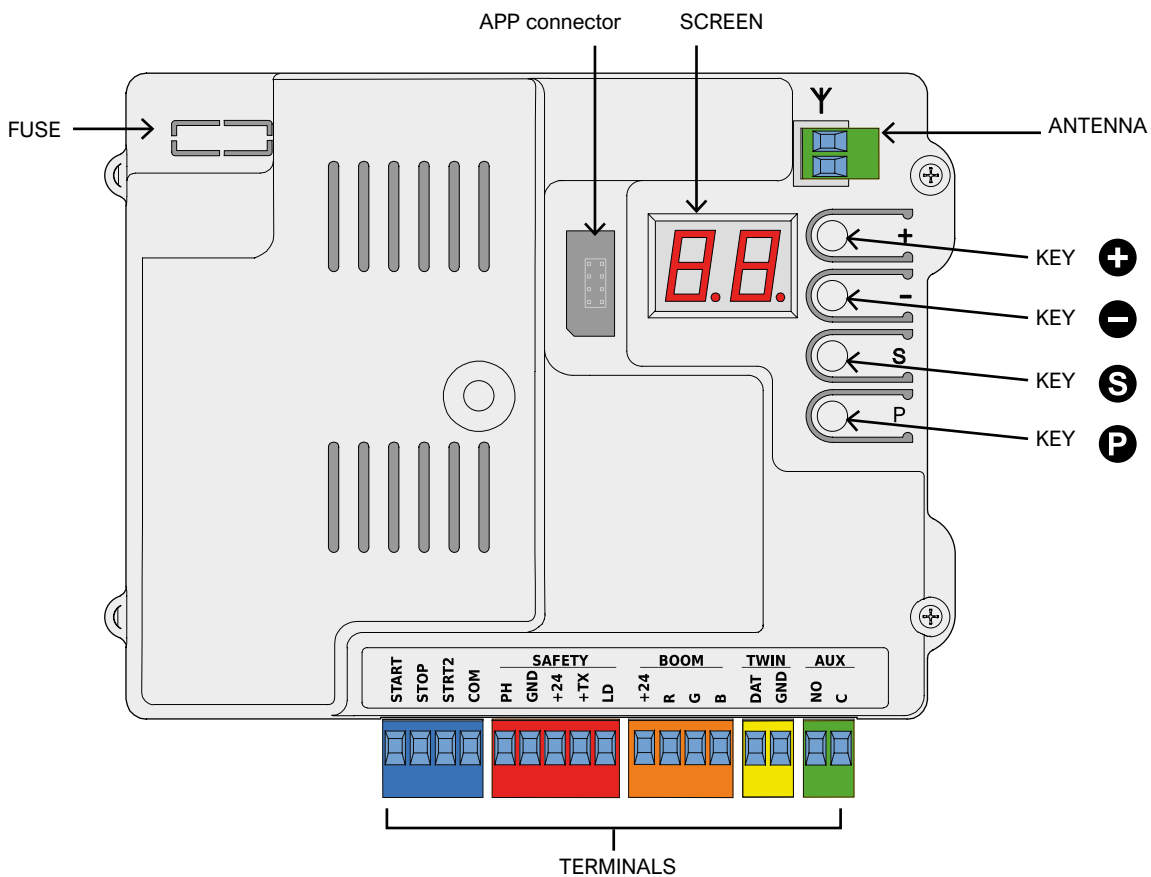


Follow the waste rate line on the bottom of the graph to get the estimated duty cycles.

The duty cycles obtained may be compromised if the maintenance plan is not carefully respected.

Duty cycles are determined on the base of design analysis, project calculations and tests carried out at factory. Therefore the duty cycles achieved are a mere estimation.

## 2.3 Electronics



START commands	START, START2 (pedestrian opening), STOP
Radio	433 MHz embedded radio receiver, storage up to 96 random o rolling codes
Safety devices	Closing photocell, loop detector (configurable)
Additional appliances	TWINNING (mirror barriers), timer, light sensor
Outputs	RGB led signalling strip AUX output
Optional interfaces	Expansion connector for optional modules Connector for home automation usb key / APP
Main functions	Operation mode, Obstacle detection, Follow me closing, Startup automatic closing, Pre-blinking, Maintenance countdown, Maintenance alert, Installation date

### 3. INSTALLATION

#### 3.1 Introduction

For a proper installation, strictly follow the following procedure, respecting the below chronological order:

- Prepare a strong basement using ferro concrete.
- Fix the cabinet to ground.
- Fit the boom and accessories.
- Adjust and balance the spring.
- Proceed to self-learning programming and adjust settings.

Additional information:

- TWINNING function, it allows to manage two mirror barriers.
- RGB led signalling strip available to complete the boom.
- Photocells and similar safety obstacle detection devices can be fitted.

#### 3.2 Preliminary checks

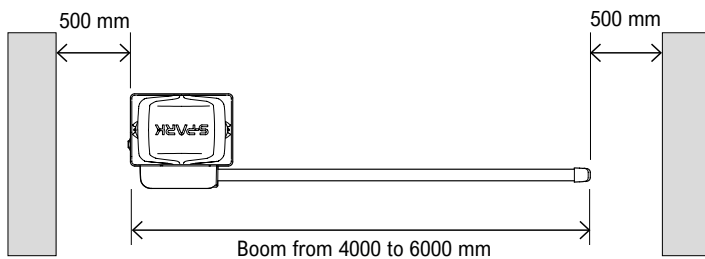
Before proceeding to installation, it is necessary to double check the good condition of every component of the barrier and make sure the site is suitable for installation purposes.

- All components must be integral and suitable to use.
- Make sure the installation site complies with system's dimensions.
- Make sure the concrete basement grants stability and solidity.
- Make sure the area around the barrier is clear enough to allow easy and safe manual operation.

#### 3.3 General layout

As shown in the below plan view, a safety clearance of 500 mm all around the barrier area has been left. While the boom length can be adjusted, the concrete basement remains fixed as it is built (Picture 2).

Picture 2: Overall layout



#### 3.4 Basement preparation

It is absolutely key to build a solid concrete basement (at least EN206 C25/30 proof).

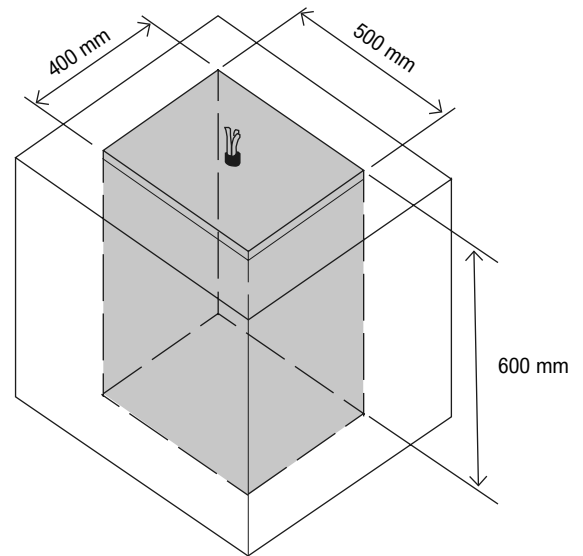
Basement dimensions must be no less than 400x500mm and no less than 600mm deep. We recommend to consider an extra concrete surface of 200 mm all around the basement. (Picture 3)

Pay attention while arising the basement, since **the concrete work cannot impede** to stud the fixing screws.

#### Do not forget wirings!

While preparing the concrete basement keep a duct of the proper dimension to connect the main power and any possible additional devices.

Picture 3: dimensions

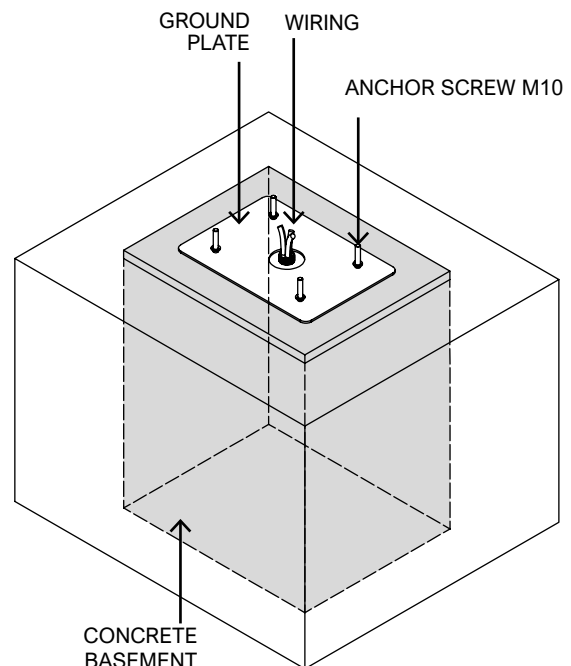


Fit anchor screws M10 with nut and washer. Nut and washer must be positioned in the same way for each single bolt, in order to create a balanced support for ground plate fixing.

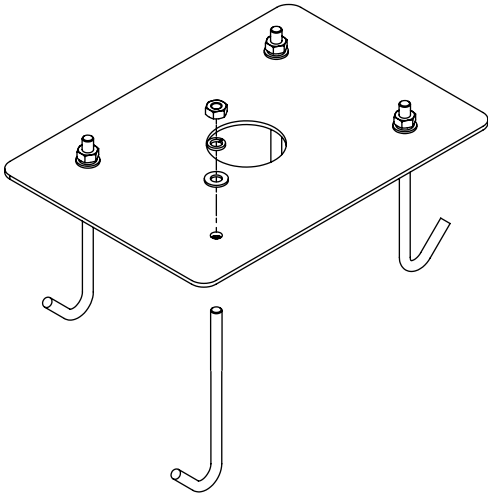
Insert anchor screws M10 through the ground plate holes, fit washers and nuts M10 to protruding part of anchor screws, as shown below. (Picture 5)

Pour the concrete, flush the surface and fix the ground plate. **Be careful not to soil the upper face of the plate and the threads of the anchor screws. Wait a few days before proceeding with the installation of the S-Park.**

Picture 4: Cabinet foundation



Picture 5: Ground plate

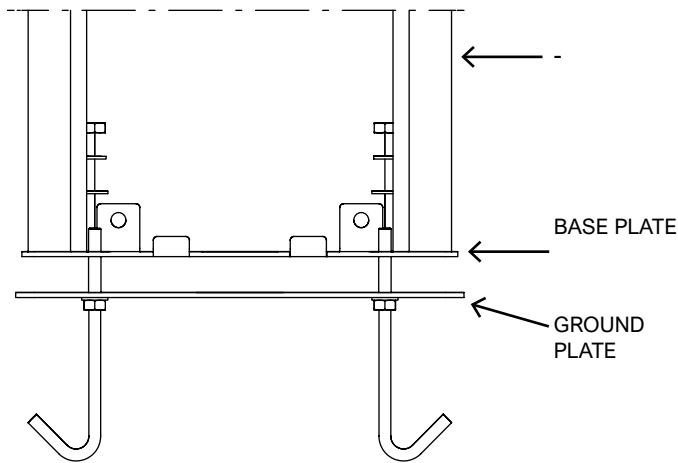


### 3.5 Fixing the barrier on ground

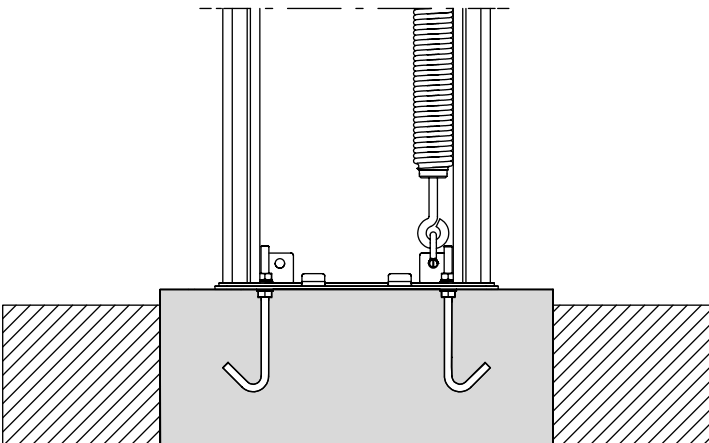
Remove washers and bolts M10 screwed on ground plate, lay the cabinet on the concrete basement and match protruding anchor screws to slots of cabinet floor. (Picture 6)

Use flat washers M10, grover washers and bolts M10 provided to fix the cabinet to the ground plate.  
**Keep the barrier's door facing inside the property.**

Picture 6: Cabinet fixing

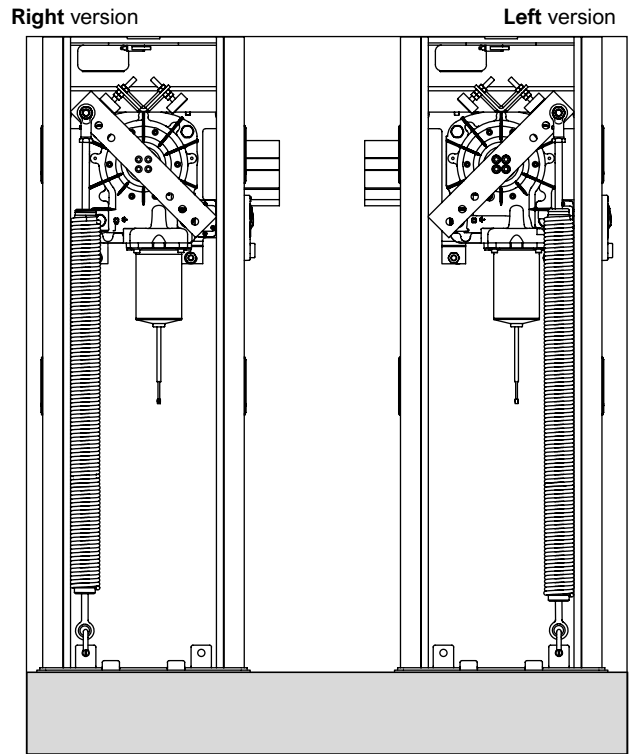


Picture 7: Cabinet to the ground plate



### 3.6 Balancing of the boom

#### 3.6.1 Right hand and Left hand mounting



Picture 8: RIGHT (RH) and LEFT (LH) barrier version

The barrier is available in one single version and can switch from right to left hand and viceversa.

Once the barrier hand is determined, proceed to fit the spring accordingly as shown in the above picture.

If you need to change the opening orientation, complete the installation first and then follow the instructions rotating to 90° the equalizer lever before repositioning the boom and spring.

**ATTENTION: FOR SAFETY REASONS REMOVE THE BOOM JUST WHEN IN VERTICAL POSITION**

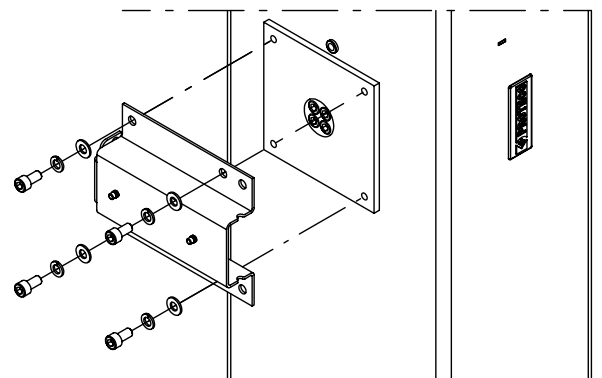
#### 3.6.2 Mounting of the boom

After determining the closing orientation, if necessary cut the boom according to the length needed.

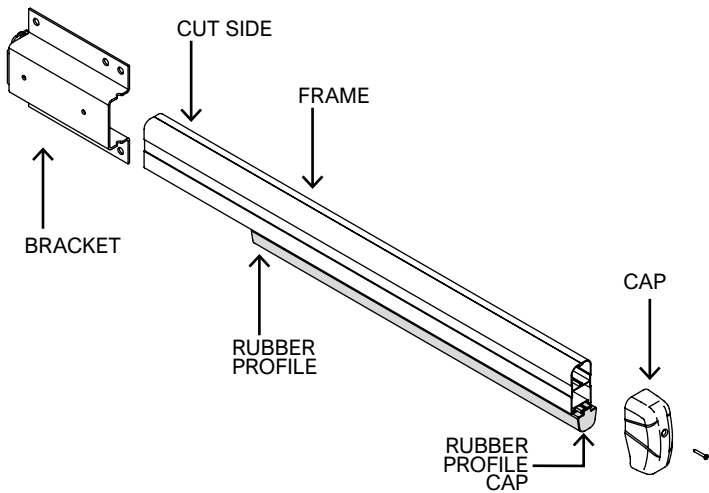
We recommend to fit the cut side of the boom to the fixing plate. Fix the bracket to the barrier plate: leave screws a bit loose, in order to make the boom insertion as easy as possible.

Fit the boom inside the bracket and screw the 4 sets of washers and screws M10. (Picture 9)

Picture 9: bracket mounting



Picture 10

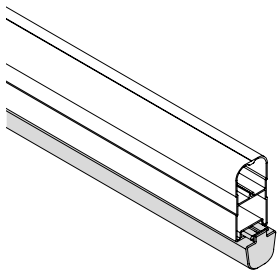


Adjust the rubber profile a bit shorter than the boom's length (about 19cm shorter). **(Picture 10)**

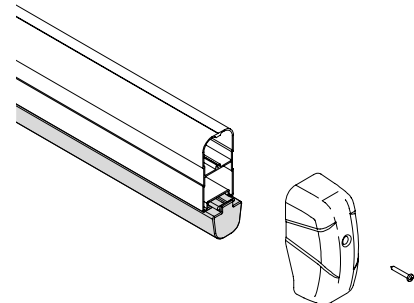
Fit the rubber profile into the according compartment inside the boom's frame, and lead it till the end, then adjust leaving a gap of 1 cm. **(Picture 10/11)**

Now fit the rubber profile cap and fix it with silicone. Then proceed to fit the boom cap and fix it with the provided self-threading 3,5x32mm screw, refer to **Picture 12**.

Picture 11

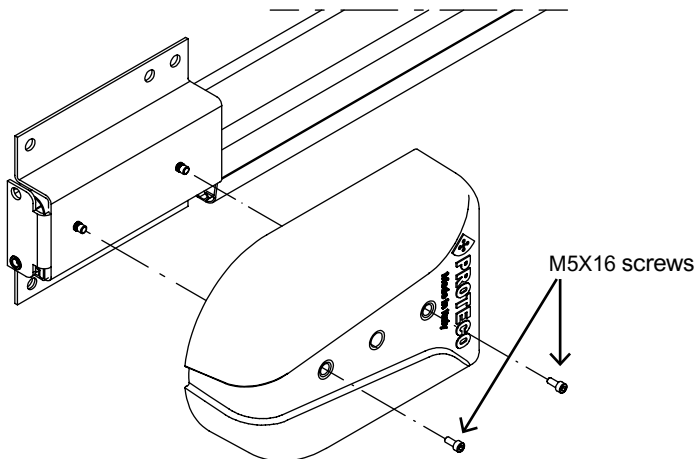


Picture 12



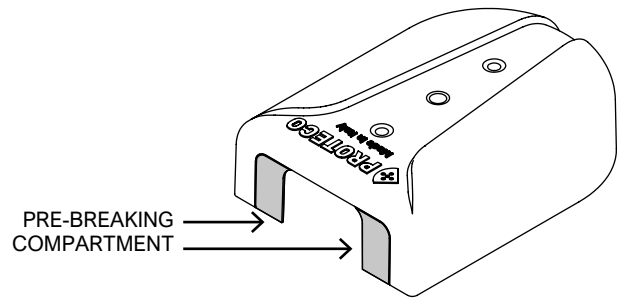
Finally, fix the anti-shearing cover with the two M5 screws supplied, using the two inserts on the bracket. **(Picture 13)**

Picture 13



**ATTENTION:**  
BEFORE FITTING THE BRACKET COVER, BREAK THE PLASTIC COMPARTMENT AS SHOWN IN PICTURE 14.

Picture 14



### 3.6.3 Manual operation

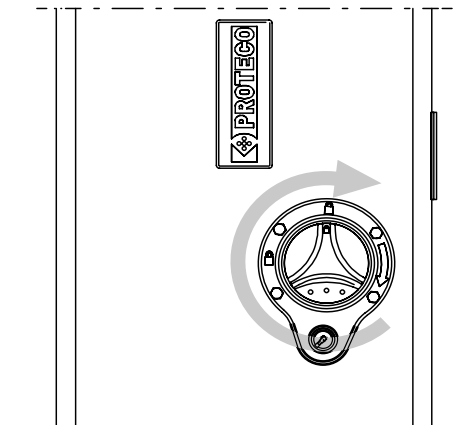
In order to facilitate adjustments, balancing, spring and limit switch regulation, put the barrier in manual operation mode.



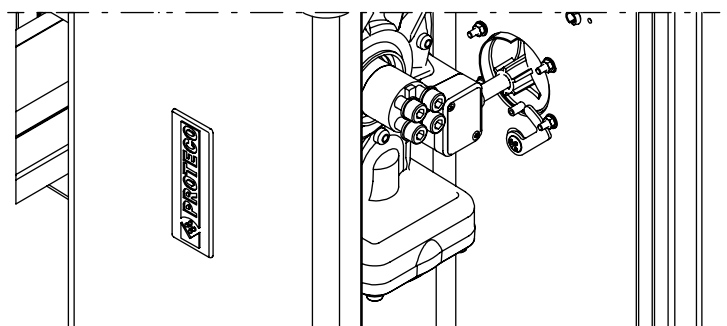
Put the barrier to manual operation mode just after completing the whole installation. Be careful when releasing the boom, it could accidentally lift up and be dangerous.

Use the lock located on the right side of the cabinet. Turn the key anticlockwise to release the handle. Rotate the handle clockwise all the stroke long to unlock the barrier: now it is possible to manually move the boom.

Picture 15



Picture 16



In order to lock the barrier again, turn counterclockwise the handle until the two symbols of locked padlock are in line. Finally, turn the key of the lock clockwise to lock the handle, and remove the key from the barrel. The barrier is provided with one key set to manage both the lock and cabinet's door.

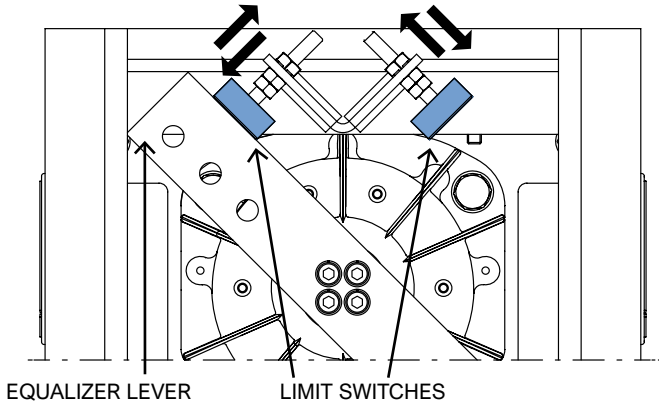


### 3.6.4 Limit switches

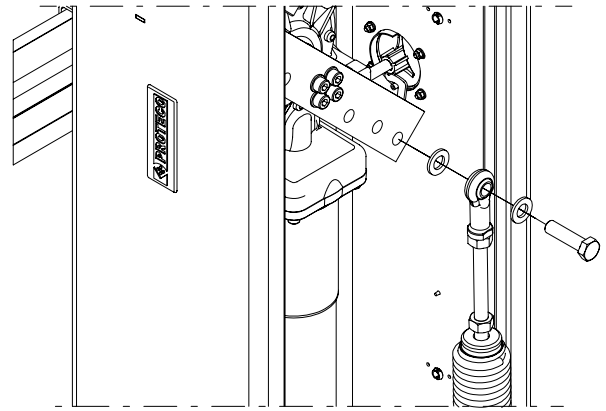
In order to adjust the stroke of the boom, open the cabinet door, unlock the automation as explained above and use the two threaded pins on the "V" reinforcement positioned above the gearbox.

Turn the two pins clockwise / counterclockwise to increase or decrease the stroke of the boom and evaluate the most correct position according to the inclination of the ground where the barrier will be fitted.

Picture 17



Picture 18



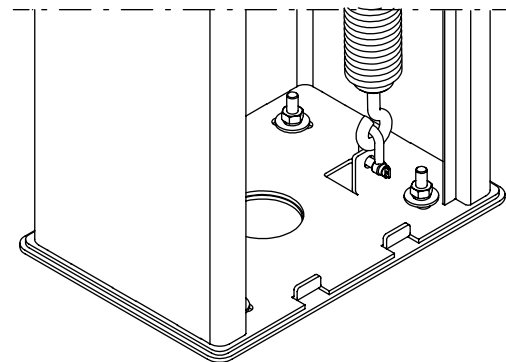
- Make sure the barrier is unlocked and put the boom to vertical position.
- Lock it again.
- Drive the M12 hexagonal screw through the spring hole, and put a washer as spacer. The screw's head must be oriented as shows **Picture 18**.
- Fit the spring to the equalizer lever, using the proper hole. Put a washer in order to facilitate rotation.
- Tighten bolt and washer M12.

### 3.6.5 Mounting and adjusting of the spring

**Before proceeding to balancing, make sure the spring is fitted to the proper hole, considering the boom weight and length and possible accessories, as outlined in Table 2.**

There are three different springs (A/B/C) that can be matched to three different holes (1/2/3). **Example:** if matching all the data you get as result A3, it means spring A (MM010) fitted to hole 3. Looking at the equalizer lever you will find 3 holes on the right side and 3 holes on the left side. If the boom closes to the right side, use the holes on the left side of the equalizer lever and viceversa.

Picture 19



- Use the hook to secure the spring to barrier's plate, as shows **Picture 19**.

**ATTENTION: The barrier's plate is provided with two fixing points, on the left and right side. Make sure spring is hooked to the proper fixing point according to the barrier's hand.**

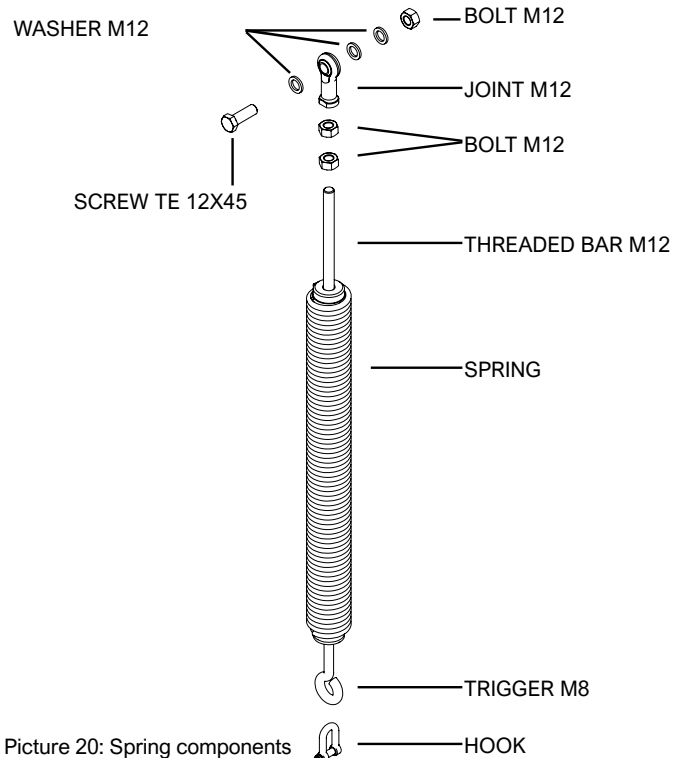
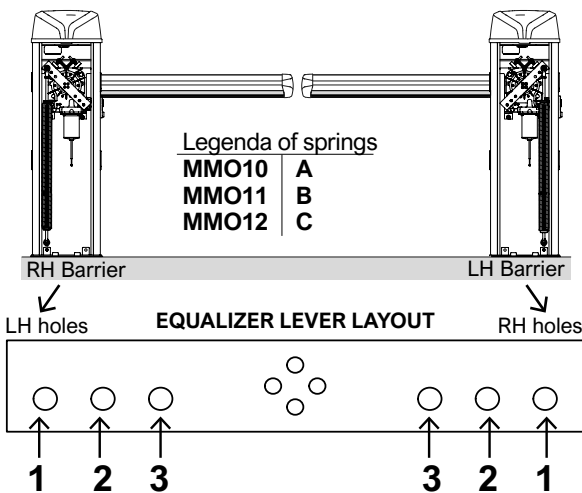


Table 2: Guideline to matching of spring and equalizer lever hole

BOOM FEATURES	2-3m	3-4m	4-5m	5-6m
BOOM (integrated with rubber profile)	A 2	A 1	B 2	B 1
BOOM + LED STRIP	A 2	A 1	B 2	B 1
BOOM + MOVING SUPPORT	A 1	B 3	B 1	C 1
BOOM + HANGING RACK	A 2	B 2	B 1	C 1
BOOM+HANGING RACK+MOVING SUPPORT	A 1	B 2	B 1	-
ARTICULATED BOOM	B 2	B 1	C 3	C 2
BOOM + LED STRIP + MOVING SUPPORT	A 1	B 3	B 1	C 1
BOOM + LED STRIP + HANGING RACK	A 2	B 2	B 1	C 1
BOOM + LED STRIP + HANGING RACK	A 1	B 2	B 1	-
ARTICULATED BOOM + LED STRIP	A 1	B 1	C 2	C 1

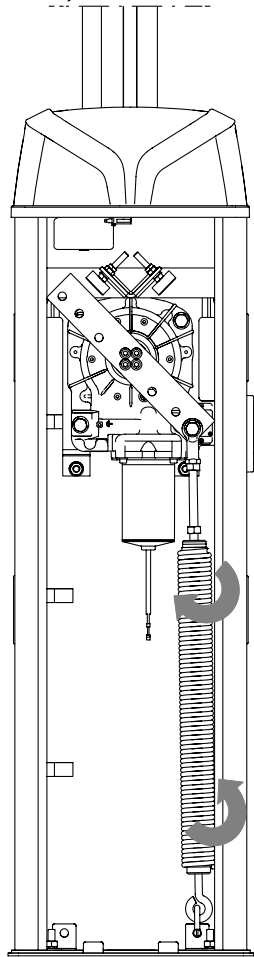
Picture 20: Spring components

### 3.6.6 Balancing (boom in unlocked mode)

ATTENTION: IT IS MANDATORY TO PROCEED TO BALANCING BEFORE ACTIVATING THE BARRIER, IN ORDER TO AVOID INCORRECT OPERATION. Balancing must be performed just after completing the whole barrier installation. **Unlock the barrier as previously outlined (Refer to chapter 3.6.3 Manual operation, p. 8).**

For a proper balancing adjust the tension of the spring:

- rotate the spring anticlockwise to decrease the tension
- rotate the spring clockwise to increase the tension.

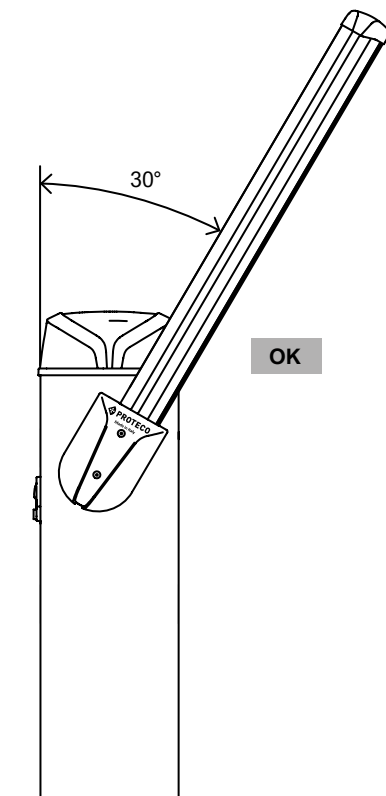


Picture 21

Move the boom manually to 30° position, as shows **Picture 22**.

Make sure the boom remains still keeping the position. If the boom moves to opening position, decrease the spring tension. If the boom moves to closing position, increase the spring tension.

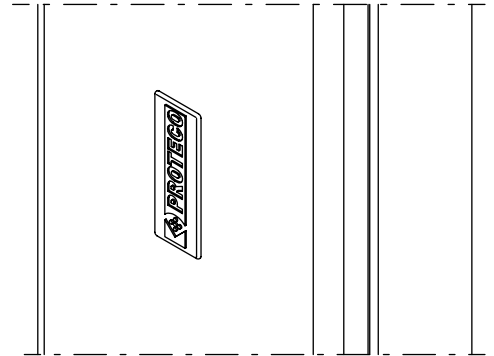
Picture 22



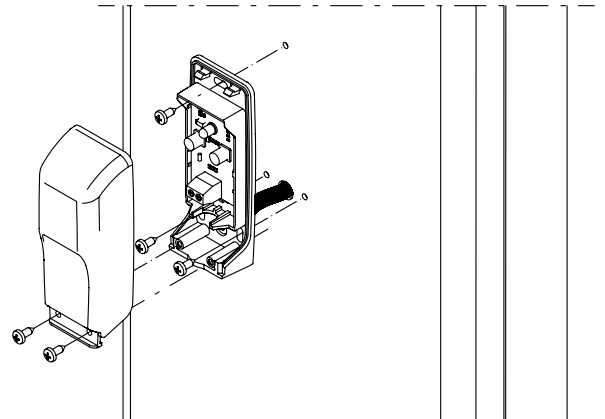
### 3.6.7 Photocells RF40

The cabinet is provided with pre-drilled housings for RF40 photocell mounting, protected by plastic covers. Remove covers using a flathead screwdriver.

Picture 23



Use the big central hole to drive the power cable through. The remaining holes are supposed to fix the photocell's base (use 3,5x9,5 self-threading screws provided). Once the base is fixed complete with cover (use 3,5x9,5 self-threading screws provided) and screw. **Put photocells at the most suitable height according to your needs.** Refer to [Chapter 3.7.4 Wiring diagram](#) p. 12.

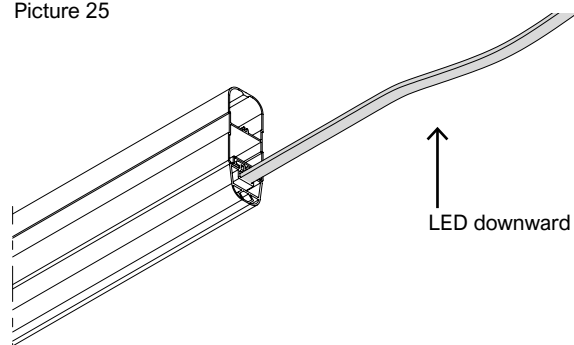


Picture 24

### 3.6.8 Led strip

The LED strip increases the visibility of the barrier during operation. Drive the LED strip through the proper compartment inside the rubber profile. LED lights have to be downward oriented, refer to **Picture 25**

Picture 25

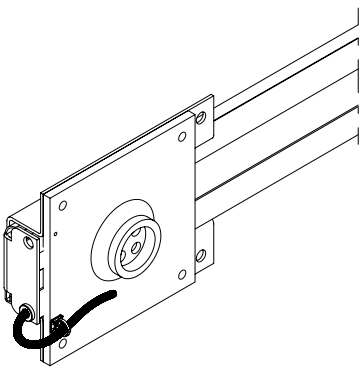


If the LED strip struggles when passing through the compartment, put a little oil to facilitate the insertion. Then drive the power wire through the bracket, before fitting the boom.

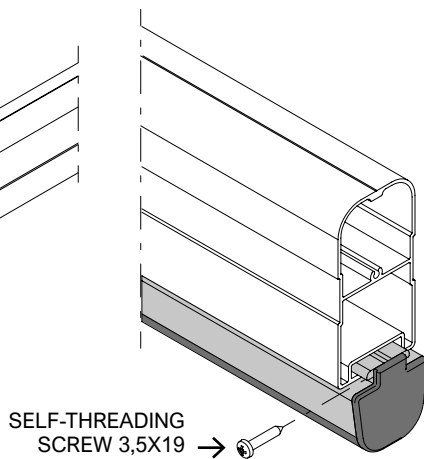
Fix the wire exactly as shown in **Picture 27**, then drive it through one of the cabinet's holes, the most suitable one according to installation features and proceed to wiring (refer to Chapter 3.7). Fix the cap to the rubber profile using the provided 3,5x19 screw. (**Picture 26**)

**ATTENTION:** If for any reason the LED strip has been cut, put silicone on the cut side before fitting the cap to the rubber profile.

Picture 27



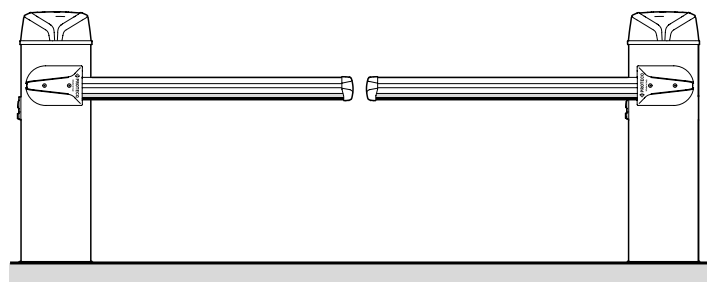
Picture 26



### 3.6.9 Boom accessories

If you plan to fit the boom with any accessory, do it before proceeding to programming.

### 3.6.10 Mirror barriers (TWINNING)



Mirror barriers installed on the same drive way (as shows the above picture) can work simultaneously if wired together on TWIN terminals. The master barrier will command the slave barrier; slave barrier may only stop if detecting an obstacle during operation. Any safety and command devices shall be wired to the master barrier only. As well the master barrier is the only one that shall perform pedestrian opening, terminal START2.

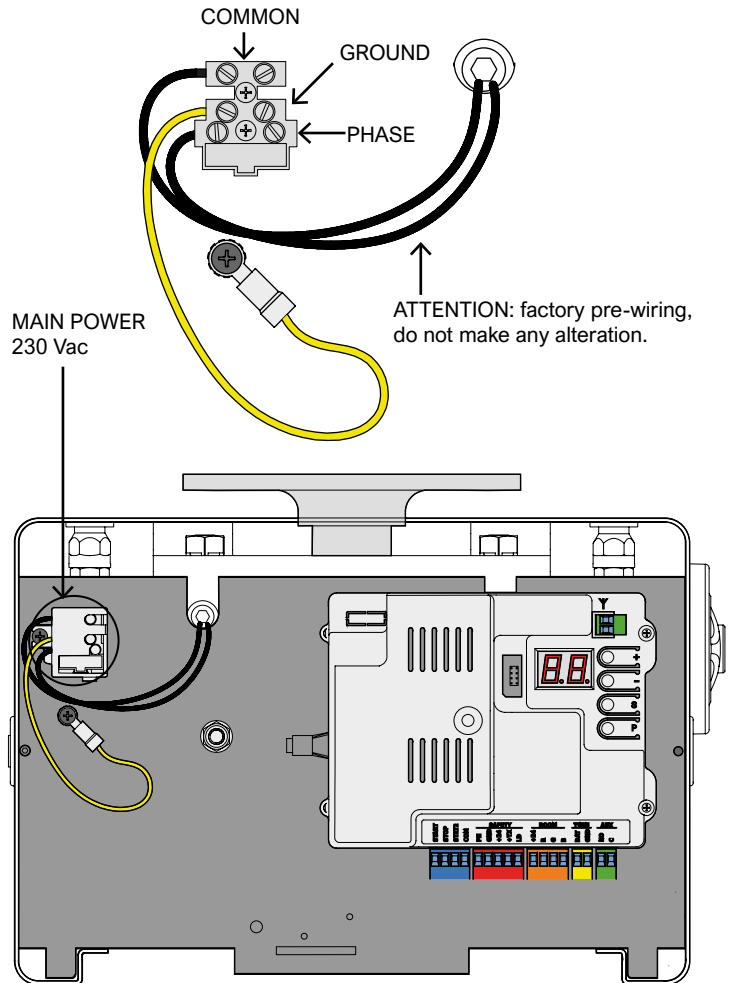
Master barrier settings	Slave barrier settings
Set function H.6 to 1	Perform C.1 programming
	Set function P.2 to 0
	Set function H.6 to 2

Refer to **Chapter 3.8.1.9 DAT + GND (TWIN)**, p. 25.  
S-PARK - rev.1.1\_06\_2020

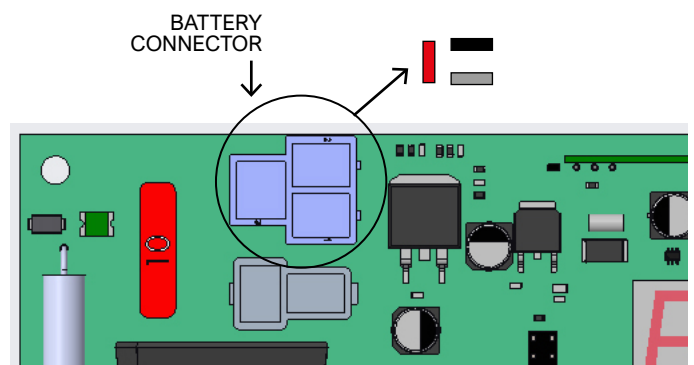
## 3.7 Wirings

### 3.7.1 Main power 230V

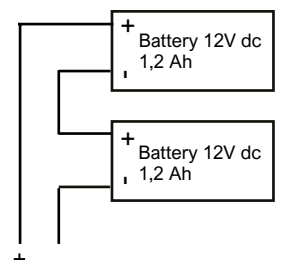
The main power terminal is located on the upper side of the cabinet, close to control unit:



### 3.7.2 Back-up batteries

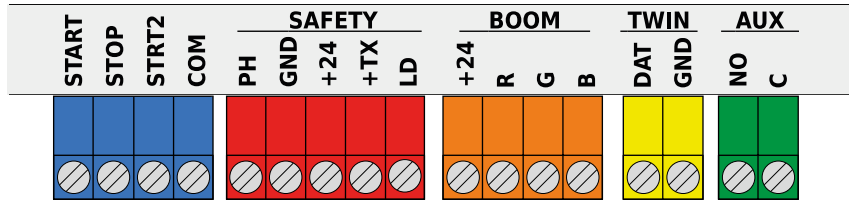


Use two 12V / 1,2Ah batteries wired in series;  
Wire cable + (red) to red faston  
Wire cable - (black) to black faston.  
Grey faston remains free.





### 3.8 Legenda of terminals



#### 3.8.1 START – wired command contacts (key switch, key pad, timer)

Any start command contact shall be wired on this terminal, refer to [Chapter C.5 Inputs set up](#) p. 18.

Any pulse below 10 seconds is considered a regular START command, including automatic closing mode (L.1 automatic closing); any pulse over 10 seconds activates the timer mode and the barrier will remain in opening position according to the timer settings.

Wire N.O. contacts between START (or START2) and COM. Any additional contact shall be wired in parallel.

#### 3.8.2 STOP – emergency push button or similar devices

Any stop command contact shall be wired on this terminal. Multiple stop contacts shall be wired in series.

Wire N.C. contacts between STOP and COM.

If N.C. contact opens the barrier stops. If no STOP contact is wired, deactivate [parameter P. 1 STOP contact set up](#) p. 18, otherwise no operation will start.

Any single STOP pulse immediately stops the operation.

#### 3.8.3 STRT2 (START2: pedestrian opening)

The operation logic is the same of START.

Just set the pedestrian automatic closing, [parameter L.2 Pedestrian automatic closing](#) p. 18.

In case of mirror barriers installation (TWINNING set up), STRT2 will open just the master barrier.

#### 3.8.4 PH – Closing photocell (N.C. dry contact)

Any closing photocell and similar devices shall be wired on this terminal, N.C. contacts.

Wire the receiver's N.C. contact between PH and GND.

Additional photocells shall be wired in series.

Power the receiver on +24 (and GND), while the transmitter on +TX (and GND).

Refer to [chapter 3.7.4 Wiring diagram](#) p. 12 to get the complete wiring view.

#### 3.8.5 +24 (SAFETY) Closing photocell (power)

This terminal permanently powers at 24Vdc, 0,5A all safety devices. On the contrary, +TX terminal cuts power during photocell test.

#### 3.8.6 +TX - Closing photocell (cuts power during photocell test)

This terminal powers at 24Vdc, – 0,3A all safety devices, but unlike +24 (SAFETY) cuts the power during photocell test.

#### 3.8.7 LD (Loop Detector)

This terminal can manage both N.O. and N.C. contacts; loop detector works as closing photocells do, but in addition can also command an opening start pulse.

Wire the loop detector between LD and GND, and activate [parameter P.3 LD set up](#) p. 19 choosing the desired function and contact.

#### 3.8.8 +24, R, G and B (BOOM) LED signalling strip

Wire the LED strip to BOOM terminal, according to colors: black wire to +24, red wire to R, yellow wire to G and white wire to B.

The LED strip lights up showing the different operation modes; [parameter P.4 LED strip configuration p. 19](#), allows to set up the signalling mode.

This configuration has to be set when boom is in closing position. +24Vdc, 0,5A voltage is permanent on terminal +24.

It is possible to keep the boom lit during night: fit a light sensor, N.O. dry contact and wire it in series to +24 terminal (BOOM).

Then activate [parameter P.5 light sensor mode](#) p. 19.

It is possible as well to wire the light sensor's contact between START2 and COM, or between LD and GND; in this case LD and START2 lose their initial function.

#### 3.8.9 DAT and GND (TWINNING)

These terminals are used to activate the TWINNING function in case of a mirror barrier installation.

Wire DAT to DAT and GND to GND of both barriers, then set up [parameter H.6 Master/Slave mode](#) p. 18.

If the distance between the two barriers is more than 14m, use a screened cable: shield to GND and core to DAT.

#### 3.8.10 AUX – Relay output

This terminal AUX allows the connection of a relay (N.O. contact) that can feature several functions.

Refer to [Chapter A.6 AUX configuration](#) p. 17.

Contacts can max. bear 250V ac/dc, 10 A.

It's a dry contact, therefore it cannot power direct any device.

Use an external power supply, or in alternative +24V from +24 SAFETY terminal able to power up to 300 mA.

### 3.9 Quickstart guide

Once the installation is mechanically and electrically completed, close the cabinet door and proceed to the following steps:

- Boom programming: [perform C.1](#) p. 17.  
**IMPORTANT:** the programming procedure has to be repeated every time anything on the boom changes: weight, length, balancing, limit switch, run.
- Adjust settings.
- Store remote controls if expected.  
Refer to parameter [A.1 Remote control storage](#) as START function or [A.2 Remote control storage as START2 pedestrian function](#) p. 16 - 17.
- Double check the overall operational status – **safety devices particularly.**

Refer to [Chapter 4.1 Working cycle](#) p. 14, to get a closer detailed view of the boom operation logic.

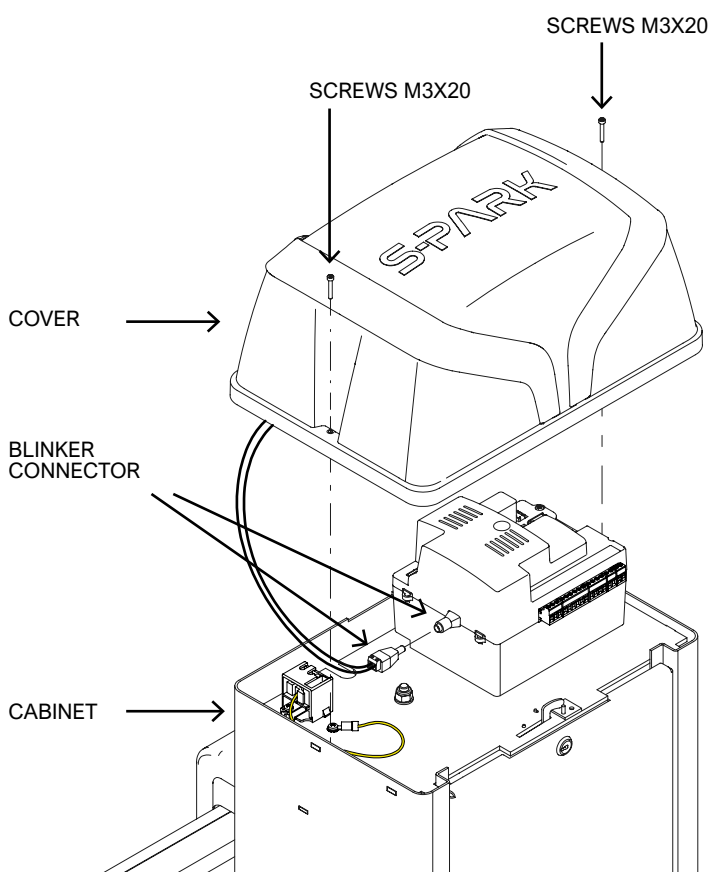
Refer to [Chapter 5. Programming](#) p. 15 for settings configuration.

### 3.10 Locking the upper top cover

After completing the whole barrier installation and regulation, close the cabinet door without locking.

Proceed to wire the blinker integrated in the cover to the control unit. Fit the upper cover and secure it with screws M3, refer to [Picture 28](#). Lock the cabinet door by key, in this way the embedded safety microswitch will activate.

The microswitch allows to carry out maintenance in safety conditions, since it stops any possible commands from remote (additional information available at [Chapter P6 Door switch set up](#) p. 19).



Picture 28

## 4. OPERATION

### 4.1 Working cycle

During normal operation the barrier could be in one of the following mode:

- **STILL MODE:** Just when the barrier is in STILL mode it is possible to program it or adjust settings.  
The blinker is OFF and the display is in stand-by “ \_ \_ “.
- **OPENING MODE:** The blinker flashes slowly and the display shows “/ \” opening.  
If during opening the barrier detects an obstacle, the boom reverts to closing position, remains still for 10 seconds (the display shows count-down) and then starts to open again.
- **AUTOMATIC CLOSING COUNTDOWN:**  
When countdown begins the blinker starts flashing briefly for a few seconds switching then to fixed light.  
If a start command is sent during countdown, the automatic closing is suspended.  
Refer to [Chapter C.5 Working logic](#), p. 18.
- **CLOSING MODE:** If during closing the barrier detects an obstacle or photocell's beam is cut, the boom reverts to OPENING position.

#### 4.1.1 LED strip signalling mode - legenda

Barrier's status	Signalling
Unidentified position (no full duty cycle has been performed yet)	Red light ON, blinker may slowly flash. The boom might be in low position, <a href="#">refer to chapter P.4</a> , p. 19.
Still mode, not in opening position	Red light ON, blinker may slowly flash. The boom might be in low position, <a href="#">refer to chapter P.4</a> , p. 19.
During opening	Red light ON.
Opening position, NO automatic closing or automatic closing countdown over 5 seconds	Green light ON.
In opening position, automatic closing countdown below 5 seconds	Red light ON.
During closing	Red light flashing

#### 4.1.2 Automatic closing after power cut

Once the power supply is restored, after 15 seconds the barrier starts closing, if all the following conditions have been fulfilled:

- Parameter [H.4 Automatic closing after power cut](#) p. 18 is activated.
- Parameter [C.4 LH and RH boom configuration](#) p. 18 is not set to position 2 (factory setting).
- No wired/radio command is sent, no key is pressed.

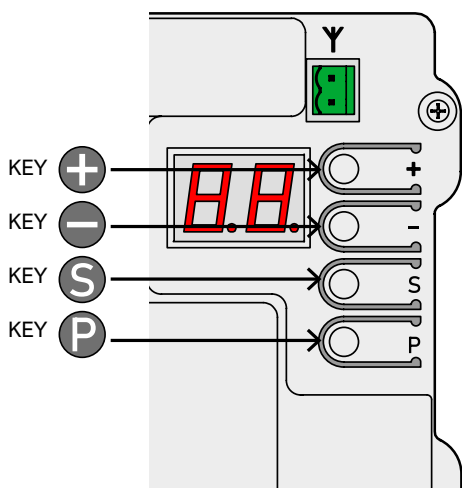
During the 15 seconds the system double check that all the a.m. tips have been respected.

If this is the case, the blinker will flash shortly to confirm closing will start soon.

### 4.1.3 Programming keys

Pressing any key during operation the barrier stops. With an exception for key **+**: if pressed during countdown the barrier starts immediately working again, refer to Chapter [4.1 Working cycle](#) p. 14.

When barrier is in still mode, the display may show “- -” flashing, or just “-” if energy save is on and in this circumstance it is possible to handle the following service keys and functions:



Keys (OPERATION MODE)	Functions
<b>+</b>	START pulse
<b>-</b>	START2 pedestrian pulse
<b>S</b> together with <b>+</b> (press <b>S</b> and while holding press <b>+</b> )	Opening command
<b>S</b> together with <b>-</b>	Closing command
<b>P</b> (hold it pressed for short seconds)	Programming menu: the display shows <b>A.1</b>

In programming mode the display alternately shows the outstanding parameter and its value.

Ex.: parameter **H.2** / value 1, the display reads first “**H.2**” and after “**01**”. In this circumstance it is possible to handle the following programming keys and functions:

Keys (PROGRAMMING MODE)	Functions
<b>+</b>	This key increases the value of the parameter.
<b>-</b>	This key decreases the value of the parameter till 0
<b>P</b>	This key switches from menu to menu (ex. <b>H.3 - J.1</b> ). From U.x menu the control unit returns back to <b>A.1</b> .
<b>S</b>	This key switches from parameter to parameter (ex. <b>H.3 - H.4</b> ). From last parameter the control unit returns back to the first one (ex. <b>H.6 - H.1</b> ).
<b>P</b> together with <b>S</b>	This key quits the programming and returns to operation mode.

## 5. PROGRAMMING

### 5.1 Settings' configuration

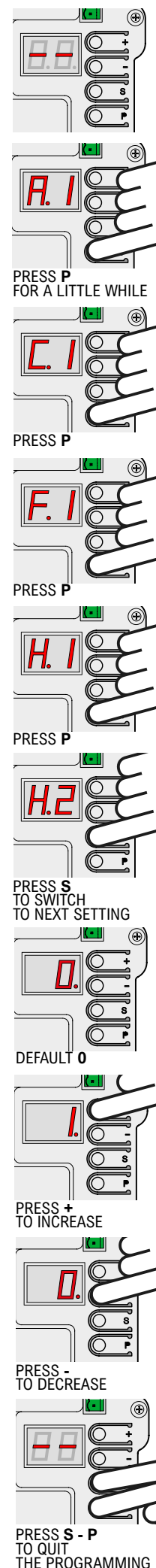
Proceed to programming only when the barrier is in still mode (any key pressed during operation stops the barrier).

Press key **+** and hold shortly (a quick pulse is insufficient): display reads “**A.1**”.

Press **P** as many times as finding the desired parameter expressed by an alphabetical letter (left side of the display).

Then press **S** as many times as finding the figure corresponding to the desired parameter (right side of the display).

Ex.: if you wish to set parameter **H2**, press **P** three times (scrolling through **C.1**, **F.1** and **H.1**), then press **S** again to move to **H.2**.



Once the desired parameter is reached, use **+** and **-** to increase or decrease the value.

**Pay attention:** when display reads the desired parameter, wait a little while to read the according value.

The screen first reads the parameter and after its value.

If you wish to move to another parameter, follow the procedure previously mentioned.

To quit the programming press **P** and **S** together.

The control unit, however, automatically quits the programming after two minutes of inactivity.

Some parameters are merely functions and therefore are not matched to any value.

These functions usually require a longer or shorter pressure of key **+** to confirm execution. Unlike other functions as **A.1**, **A.2** and **A.3** that do only require a radio signal.

## 5.2 Settings' list

Here below you will find a resume of all available parameters and functions.  
More details are found in Chapter [5.3 Settings' description](#) p. 16.

	ID	DESCRIPTION	Default	LINK
A	<a href="#">A.1</a>	Store a remote control as "START" command		<a href="#">C.5</a>
	<a href="#">A.2</a>	Store a remote control as START2 pedestrian command		<a href="#">C.5</a> <a href="#">P.5</a>
	<a href="#">A.3</a>	Store a remote control as AUX / 2nd channel		<a href="#">A.6</a>
	<a href="#">A.4</a>	Delete a single remote control		
	<a href="#">A.5</a>	Delete all remote controls		
	<a href="#">A.6</a>	AUX / 2nd channel output configuration	1	<a href="#">A.3</a> <a href="#">U.4</a>
C	<a href="#">C.1</a>	Automatic programming		<a href="#">C.4</a>
	<a href="#">C.3</a>	Reset (factory default)		
	<a href="#">C.4</a>	Lh and RH boom configuration	2	<a href="#">C.1</a>
	<a href="#">C.5</a>	Working logic configuration	0	
F	<a href="#">F.1</a>	Obstacle detection	5	
H	<a href="#">H.1</a>	Pre- blinking	0	
	<a href="#">H.2</a>	Fixed-light blinker	0	
	<a href="#">H.3</a>	"Follow me" closing	0	
	<a href="#">H.4</a>	Automatic closing after power cut	1	
	<a href="#">H.6</a>	TWINNING (master/slave barriers configuration)	0	
L	<a href="#">L.1</a>	Automatic closing	8	
	<a href="#">L.2</a>	Automatic closing pedestrian opening	12	
P	<a href="#">P.1</a>	STOP	0	
	<a href="#">P.2</a>	PH (closing photocell)	1	
	<a href="#">P.3</a>	LD (loop detector)	0	<a href="#">P.5</a>
	<a href="#">P.4</a>	Boom light mode when in closing position (optional led strip)	1	<a href="#">P.5</a>
	<a href="#">P.5</a>	Light sensor	0	<a href="#">P.4</a>
	<a href="#">P.6</a>	Cabinet safety switch	1	
U	<a href="#">U.1</a>	Overall cycles performed		
	<a href="#">U.2</a>	Cycles performed since last maintenance		<a href="#">U.4</a>
	<a href="#">U.3</a>	Maintenance countdown	1	<a href="#">U.4</a>
	<a href="#">U.4</a>	Maintenance recall	0	
	<a href="#">U.5</a>	Installation date		
	<a href="#">U.6</a>	Trouble shooting and "dead man" functions		

## 5.3 Setting's description

### 5.3.1 A. RADIO

This menu includes procedures about how to store radio devices, remote controls mainly.

Every remote control stored is automatically identified by a progressive number: if by accident a remote control is lost it can be deleted from the control unit memory.

It is possible to store up to 96 different users; when a remote control is deleted its radio position still remains available for a new remote control storage.


Any key of the remote control can be set up as follows:

- START command, corresponding to a wired contact to START terminal
- START2 pedestrian command, corresponding to a wired contact to START2 (STR2) terminal
- AUX feature, known as well as 2nd radio channel, matchable to AUX output.

Choose the function you need before starting storing any key of the remote control.

There are three different settings available ([A.1](#), [A.2](#) and [A.3](#)) corresponding to different functions.


### A.1 Store a remote control as START command

Set [A.1](#). Press the remote control (the display reads "Y-") together with  to store.

If successful the display will show the radio position matched to the remote control.

In case of an already existing remote control, the display will only show its radio position (01, 02, ...).

If storage capacity is full the display will read "FF".

It is important to press the remote control's key and  together, otherwise the storage will not be successful and the control unit might save any incoming undesired radio signal.

If you have additional remote controls to store, repeat the same procedure.



## A.2 Store a remote control as START2 pedestrian command

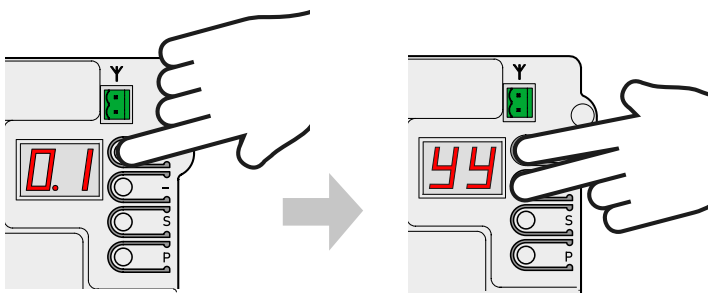
Set **A.2** and repeat the same procedure here above.  
For more details refer to [Chapter 3.8.1.3 STRT2 \(START2\)](#) p. 13.

## A.3 Store a remote control as AUX/2nd radio channel

Set **A.3** and repeat the same procedure as per **A.1** here above.  
At the same time set parameter **A.6** according to the desired configuration or in alternative use a **MRX-01** optional interface card module duly set up.

## A.4 Delete a single remote control

Every remote control stored is matched to a radio position identified by a number.  
Set **A.4**, press **+** or **-** to find the remote control you need to delete then press both keys together and hold until the display flashes "44".  
If there is just remote control stored, the display will show just that one.



## A.5 Delete all remote controls

Set **A.5**, the display will show "-.", press **+** to confirm you wish to delete all remote controls stored and hold **-** during 5 seconds; if all remote controls have been successfully deleted, the display flashes "44".

## A.6 AUX /2nd radio channel output configuration

The **AUX** is a multifunction output: it can be used as maintenance recall, refer to chapter ([U.4 maintenance recall](#) p. 19).  
Or it can set up the following modes/functions:

A.6	AUX - Functions/Modes
0	AUX output is OFF. AUX output is ON if U.4 maintenance recall is activated
1 (default)	2nd channel / MONOSTABLE: the output is activated by a remote control stored in A.3 AUX. The contact closes when giving and holding a start pulse with the remote control. The contact opens just when the remote control's key is released.
2	2nd channel /BISTABLE: the output is activated by a remote control stored in A.3 AUX. The contact closes or opens when giving a start pulse with the remote control.
3	SIGNALLING BOOM IN VERTICAL POSITION: the output is activated when the boom is in vertical position. If the control unit came about to be powered it may not detect the boom position, therefore the signalling light may remain switched off.
4	SIGNALLING BOOM IN HORIZONTAL POSITION: the output is activated when the boom is in horizontal position. If the control unit came about to be powered it may not detect the boom position, therefore the signalling light may remain switched off.
5	COURTESY LIGHT (30"): the output is activated when the contact closes and remains closed during the whole working cycle. The contact opens after 30 seconds after working cycle is completed.
6	COURTESY LIGHT (60"): the output is activated when the contact closes and remains closed during the whole working cycle. The contact opens after 60 seconds after working cycle is completed.
7	COURTESY LIGHT (90"): the output is activated when the contact closes and remains closed during the whole working cycle. The contact opens after 90 seconds after working cycle is completed.

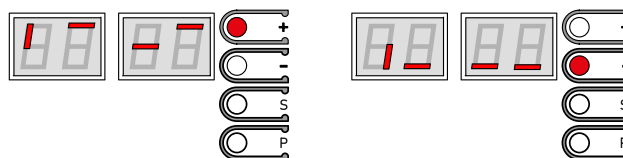
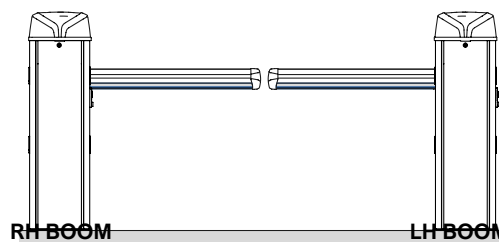
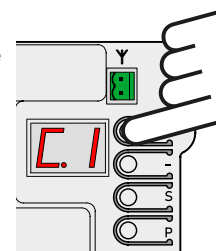
## 5.3.2 C. Programming

### C.1 Boom automatic learning

Boom automatic learning must be performed just when installation is fully completed (balancing included).  
The control unit learns about the mechanical features of the boom: working cycle, speed, torque.  
If for any reason mechanical features should change (new accessories fitted that may affect the boom weight) the automatic learning procedure shall be repeated.

Learning logic: the procedure expects 3-opening steps and 3-closing steps.  
If for any reason one of the steps is cut, procedure shall be repeated in full.

Set **C.1** and press **+** holding during 5 seconds.  
If **C.4** is not configured yet, the display will show the boom hand (boom has to be in horizontal position).  
Press **+** to set a RH boom or **-** to set a LH boom.  
If **C.4** is configured the display remains clear.  
Boom performs 6 steps; every step is shown on the display (01, 02, 03...) with a short pause in between.  
In any moment it is possible to stop the boom operation, just pressing any key.



Step (01), boom slowly opens until detecting the mechanical limit switch.

If the boom works to the opposite direction, stop the operation and properly set up **C.4**. Then repeat **C.1**.

Step (02), boom slowly lows down until detecting the closing position; the following steps are meant to set speed, torque and double check all settings.

The automatic learning is successfully completed when display shows "44" flashing.

### C.3 Reset (factory default)

Set **C.3**, press **+**, hold during 5 seconds to confirm reset (return to factory settings).

Parameters **U.5**, **U.1** and **U.2 CANNOT** be reset and no remote control previously stored can be deleted.

Now repeat **C.1 procedure**.

Reset is successfully completed when display shows "44" flashing.

### C.4 LH and RH boom configuration

This parameter shows the boom opening direction or the boom position.

Looking from inside the property (cabinet's door inside the property) and boom in horizontal position, values are intended as follows:

C.4	Boom configuration
0	RH barrier
1	LH barrier
2 (default)	No configuration is set

### C.5 Working logic configuration

It is possible to set 3 different working logics:

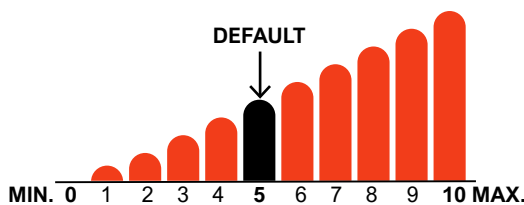
C.5	Working logic
0 (default)	SEQUENTIAL Every START command stops or reverts the working cycle according to the sequence: <b>OPEN – STOP – CLOSE – OPEN ...</b>
1	PRIORITY TO OPENING Every START command gives priority to opening; boom automatically closes according to the time set (refer to <b>L.1 Automatic closing</b> )
2	STEP BY STEP START terminal commands the opening; START2 terminal commands the closing. Automatic closing activates if configured, refer to <b>L.1 Automatic closing</b> and <b>L.2 Automatic closing pedestrian opening</b>

## 5.3.3 F. Torque

### F.1 Obstacle detection

Obstacle detection is a safety feature that complies with outstanding regulations and makes the barrier area more protected and safer. If during operation any speed alteration or sudden stress are detected, the barrier stops in order to avoid or limit damages to persons or objects.

This feature can be adjusted on different sensitivity levels: 0 = detection is OFF while 10 = maximum detection sensitivity; factory value (default) is set to 5.



## 5.3.4 H. SPECIAL FUNCTIONS

### H.1 Pre-blinking in closing

Pre-blinking feature warns the user that closing will start soon. Receiving a start command the blinker starts flashing during a few seconds before boom starts closing. Pre-blinking time is adjustable, from 0 to 8 seconds.

### H.2 Fixed-light blinker

If you wish to switch the blinker to fixed-light mode, set H.2 to 1.

### H.3 “Follow me” closing

This function allows the barrier to immediately close after cutting the photocell beam.

H.3	“Follow me” closing - Functions
0 (default)	The function is OFF. The barrier closes according to the automatic closing time set up.
1	The barrier closes 2 seconds after completing the opening.
2 ... 10	The barrier closes according to the delay time set, from 2 to 10 seconds when photocell beam is cut and before the opening is completed.

### H.4 Automatic closing after power cut

If you set H.4 to 1, in case of power cut the barrier will close 15 seconds after power is restored.

This function can be activated only if conditions included in chapter **4.1.2 Automatic closing after power cut**, p. 14 are applied.

The factory setting is 1 (default).

### H.6 Master/slave barrier configuration

This parameter allows to set up TWINNING feature in case of a double barrier installation (mirror barriers).

H.6	Master/slave (TWINNING)
0 (default)	TWINNING OFF
1	Set 1 to configure the master barrier
2	Set 2 to configure the slave barrier

## 5.3.5 L. Working times

### L.1 Automatic closing

This parameter sets the automatic closing time, adjustable from 0 = automatic closing OFF to 99 seconds.

### L.2 Automatic closing (pedestrian opening)

This parameter sets the automatic closing time for pedestrian opening, adjustable from 0 = automatic closing OFF to 99 seconds.

**L.1** and **L.2** are totally independent one to the other: they can be set up in different ways with different times, as well **L.1** can be ON while **L.2** can be switched OFF, and viceversa.

## 5.3.6 P. SAFETY

### P.1 STOP

The factory setting is 0 = output OFF.

If you wish to connect a stop device, set **P.1** to 1 position.

### P.2 (closing photocell)

When **P.2** is set to 0 = output OFF

It is highly recommended to set **P.2** to:

1 = closing photocell ON (photocell test is OFF)

or

2 = closing photocell ON (photocell test is ON)

The photocell test is a safety provision that helps detecting a faulty or unsafety photocell.

The test works as follows: before closing, the control unit switches the power off from TX photocell terminal, in this way the photocell has no other option but to open the contact.

If the contact doesn't open in short time, it means the photocell is faulty and the barrier remains still.

### P.3 LD loop detector

P.3 allows to fit to LD terminal a vehicle detector (loop detector) that works exactly as a safety device, like closing photocell. In addition it can command a START pulse: when the vehicle approaches the barrier, a START command is given and the barrier opens.

Settings available:

P.3	LD output / features and contacts (N.O./N.C.)
0 (default)	The contact is OFF.
1	N.O. (normally opened) START command. The closed contact makes the barrier opening.
2	N.O. SAFETY mode The closed contact makes the barrier reverting exactly as a closing photocell.
3	N.C. (normally closed) START command See setting 1 above.
4	N.C. (normally closed) SAFETY mode See setting 2 above

### P.4 LED signalling strip (optional)

Boom can be fitted with a RGB led strip that makes the operation more visible.

The LED strip can be adjusted in 4 different signalling modes when boom is in closing position.

Refer to be below table:

P.4	Signalling mode when boom in closing position
0	OFF
1	Lit (red light); flashing if battery powered
2 (default)	Lit (red light).
3	Flashing (red light)

### P.5 Light sensor

It is possible to wire a light sensor or daily/weekly timer to switch the LED signalling strip OFF during day hours.

There are two possible configurations:

- Wiring the N.O. contacts of the sensor/timer in series to COMMON (terminal BOOM+24)
- Wiring the N.O. contacts of the sensor/timer between GND and STRT2 or LD, setting P.5 accordingly; in this case the wired terminal loses its original function.

P.5	Light sensor possible configurations
0 (default)	No light sensor is wired to STRT2 or LD.
1	Light sensor is wired between STRT2 and COM. START2 no longer works as pedestrian contact.
2	Light sensor is wired between LD and GND. LD no longer works as Loop detector.

### P.6 Cabinet's safety switch

The barrier may develop extremely dangerous circumstances during operation.

That's why if cabinet is opened the barrier immediately stops working (just figure out if accidentally a radio start command is given, how dangerous it could be).

However barrier can be managed in "dead man" mode using on board keys.

P.6 safety function may be switched OFF setting P.6 to 0 position; by default P.6 is ON (P.6=1).

## 5.3.7 U. Maintenance

### U.1 Overall cycles performed

This feature allows to display the overall cycles performed. No possibility of reset.

Cycles are displayed 2 by 2 figures:

Ex.: if the barrier totally performed 823.605 cycles, the screen will read:

00. 82 36 0.5.

If you wish to scroll figures just press key  $\oplus$ .

### U.2 Cycles performed since last maintenance service

This feature allows to display the overall cycles performed since last maintenance service.

Cycles can be reset when a maintenance service has been carried out (if U.3 is updated and set up).

If you wish to reset press  $\oplus$  and  $\ominus$  together holding for 3 seconds: display will flash "99" to confirm reset successfully completed

### U.3 Maintenance countdown

This feature allows to set the number of cycles till next maintenance service (starting from a minimum of 1000 cycles and so on).

U.3 will accordingly and automatically update U.1 and U.2 if activated, at every closing operation.

It is also possible to warn the end user that maintenance service is needed.

To set this function, set parameter U.4.

### U.4 Maintenance recall

As previously explained in parameter U.3, it is possible to set a visible flashing "maintenance recall".

Refer to the below table to set the desired recall configuration:

U.4	Maintenance recall – signalling configuration
0 (default)	OFF – factory setting No maintenance recall has been activated.
1	SPECIAL FLASHING DURING AUTOMATIC CLOSING TIME When boom in vertical position, the flashing light on the cabinet permanently flashes. To activate this mode the automatic closing time shall be set no less than a couple of seconds, otherwise signalling will not be sufficiently visible.
2	SPECIAL FLASHING DURING OPENING When boom is opening, the flashing light on the cabinet permanently flashes.
3	AUX OUTPUT AUX output activates (the contact closes) when maintenance service is needed.

### U.5 Installation date

This feature allows to load the installation date.

The display will show the installation date in 3 different steps: the first figure shown is the day (from 1 to 31); pressing **+** the month shows up (from 1 to 12); pressing again **+** the year shows up with two dots.

Pressing **+** the sequence START.

EX.: if your installation date is 14-03-2019 the sequence displayed will be:

**14. 03 1.9.**

If you wish to set installation date, press together **+** and **-** holding during 4 seconds; screen will read "d", use **+** or **-** to load the day, from 1 to 31; save pressing **S**.

Screen will read "n", use **+** or **-** to load the month, from 1 to 12; save pressing **S**.

Screen will read "Y", use **+** or **-** to load the year. Save pressing **S**. Installation date loading completed.

### U.6 Trouble shooting and "dead man" functions

Set U.6 and press **+** to confirm.

This feature allows to display the status of all inputs and at the same time allows to command direct the boom in "dead man" mode (key permanently pressed).

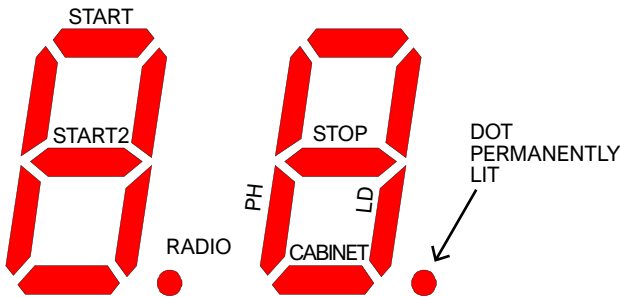
Press (and hold) **+** to lift the boom and **-** to lower it.

Release the key to stop the boom.

**Attention:** during all these operations, **safety devices are not working, be careful.**

The screen displays the status of every single input, everyone identified by a symbol.

If the input is "active" the according symbol will be lit.



START, START2 (LH symbol), when lit the input is active; Radio dot lights up when receiving a radio signal, saved or unknown.

PH, LD (RH symbol), when lit the input is not active (safety contact impedes the operation).

CABINET, when lit the cabinet's door is not closed.

If one of the **P**. settings is OFF ([Chapter 5.3.6 SAFETY](#) p. 18), the screen will not show any status (symbol permanently switched off).

The red dot on the right remains permanently lit to confirm programming is ON.

To quit press **P** and **S** together.

## 6. DISPLAY

The display shows the barrier status.

If no key is pressed, after 8 hours the display switches off; shortly press any key to light the display up.

As soon as control unit is powered, the display reads "8.8." (all segments are lit so as to detect a possible fault).

After that the display reads firmware version (ex. "1.0", or "2.3" and similars).

If control unit is brand new and no programming has been carried out yet, the display reads "EE" for a half second.

As last step, control unit goes to STAND-BY mode and display reads "--" flashing.

The remaining messages are listed in the below table.

### 6.1 Messages

During normal operation messages may show up.

Refer to the below table indicating possible messages and according meaning:

Messages	Meaning
Vertical segments that move from center outwards	The barrier is opening
Vertical segments that move from center inwards	The barrier is closing
-S (start)	Receiving a START command
-P (start2 / parziale)	Receiving a START2 command (pedestrian)
-H (halt / stop)	Receiving a STOP pulse
CO (case open)	Cabinet's door opened
PC (photo close)	Closing photocell is working
Ld (loop detector)	Loop detector LD ( <a href="#">3.8.1.7 LD loop detector</a> p. 13) is detecting a vehicle
Pair of figures (ex. 02)	Receiving a radio signal by a saved remote control (remote control saved on radio position 2). Usually S or -P show up to confirm which kind of remote control has been used.
-C	A timer has been wired to START or START2, automatic closing is stopped
-L	Permanent LD signal ( <a href="#">3.8.1.7 LD loop detector</a> p. 13) that stops automatic closing

### 6.2 Faults

The display shows faults and anomalies that may stop the barrier operation: the fault message is coded with two "dots" matched to figures or letters.

Refer to the below table:

DISPLAY message	FAULT
oE (encoder)	Obstacle detected due to a sudden slow run of the barrier.
oA (amperometric)	Obstacle detected due to a sudden motor absorption increase
o5 (standstill)	Obstacle detected due to motor standstill
oC (voltage overcharge)	Obstacle detected due to motor voltage overcharge (max. limit rate)
Ld (loop detector)	Loop detector operating
PC (photo close)	Closing photocell operating
AH (abort halt/stop)	STOP pulse
AC (abort cabinet)	Cabinet's door is opened
AU (abort user)	Operation interrupted using onboard keys
FC (photocell test failed)	Photocell test detected a faulty photocell
EC (over current)	Motor absorbs too much current
EY (overheating)	Component overheating
EF (start fail)	Barrier fails to start
EU (timeout)	Time exceeded
EN (encoder wiring)	Motor and/or encoder are not properly wired

## 7. MAINTENANCE

**ATTENTION! - Maintenance must be performed by qualified personnel in compliance with outstanding safety regulations of current legislation.**

Maintenance service has to be regular every 6 months.

Before proceeding double check the following conditions:

- Switch the power OFF.
- Check the good condition of every component.
- Check all screws are properly tight (especially the equalizer lever and boom bracket).
- Check spring turns are regularly distanced without deformation.
- Check the correct position of limit switches inside the cabinet.
- Release and check the correct boom balancing, and possible friction during manual opening and closing.
- If boom is not properly balanced as per balancing instructions, put the boom to vertical position and adjust the spring accordingly. Then double check the balancing again.
- Lock the barrier and proceed to general test.

### 7.1 Manual operation check

- Check the manual release system: put the boom in closing position, unlock and test manual operation. Manual operation has to be easy and effortless.
- Boom has to open without friction nor interruption.
- Handle rotation has to be effortless without frictions.

Record every single intervention in the space provided, chapter **8.3 Maintenance**, service and repairs must be documented and the owner must keep the related documents.

## 8. END USER'S TIPS

Dear user, it is highly recommended to read the following pages because they may contain essential information for the safety of people and things, and in compliance with applicable laws. Store these pages in a safe place for future reference.

### 8.1 Warnings



Keep the system away from children under 8.



Children and People with reduced physical, sensory, mental or limited experience and / or knowledge can use automation only if they are provided with supervision or specific instructions regarding the safe use of the same.



The use of this product for purposes other than those described above and installation executed in a manner other than as instructed in this technical manual are prohibited.



Do not, for any reason, access the internal parts of the automation: they are dangerous and there are no components that can be repaired or replaced by unqualified personnel.

Use remote controls or other control devices only when the automation is visible and there are no dangerous situations.

Do not allow children to play near the automation area.

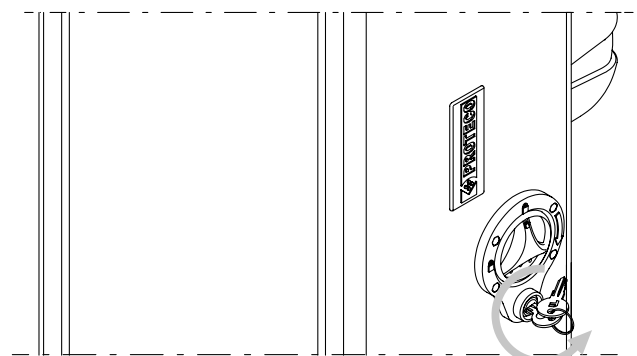
### 8.2 Boom manual release

To unlock the automation, use the lock located on the right side of the cabinet. Turn the supplied key anticlockwise by 180 ° to release the handle.

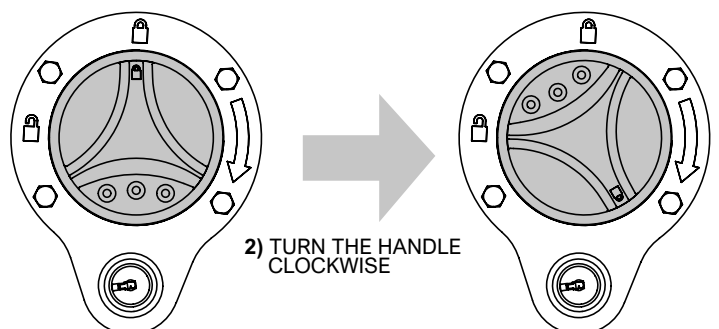
Turn the handle fully clockwise to unlock the automation.

These operations must be carried out in the event of power cut or operating anomalies.

**ATTENTION: HOLD THE BOOM WITH YOUR HAND, IT COULD ACCIDENTALLY MOVE.**



1) TURN THE KEY COUNTERCLOCKWISE



2) TURN THE HANDLE CLOCKWISE

Picture 29: Locked

Picture 30: Unlocked



## 8.4 Disposal

### 8.4.1 Barrier disposal

Barrier's components, remote controls and similar devices included, have to be disposed according to the current regulation, since their content may be harmful for the environment.

Most of the materials used are similar to municipal solid waste. They can be recycled through separate collection and disposal in authorized centers.

Other components (electronic boards, batteries, etc.) may instead contain polluting substances.

That's why they must be removed and delivered to authorized companies for collection and disposal.

**Check the outstanding local disposal regulations.**

### 8.4.2 Packaging disposal

Packaging components (cardboard, plastics, etc.) are similar to solid urban waste and can be easily disposed, simply carrying out separate collection for recycling.

**Check the outstanding local disposal regulations.**

**DO NOT DISPERSE IN THE ENVIRONMENT!**

## COMPLIANCE DECLARATION

Manufacturer: **PROTECO S.r.l.**  
Address: Via Neive, 77 - 12050 CASTAGNITO (CN) - ITALY

declares that

The product type: **S-PARK** road barrier automation  
Models: **S-PARK 4 - S-PARK 6**

Is built to be integrated into a machine or to be assembled with other machinery to create a machine under provisions of 2006/42/EC Machinery Directive.

It complies with the essential requirements of EEC Directives:


<b>2014/30/UE (EMC)</b>	<b>2014/35/UE (LVD)</b>
<b>2014/53/UE (RED)</b>	<b>2011/65/CE (RoHS2)</b>

The product also complies with **EN 60335-1** and **EN 60335-2-103** standards.

The manufacturer declares that the start-up of the machinery is not permitted unless the machine, in which the product is incorporated or of which is becoming a component, has been identified and declared as conformed to 2006/42/EC Machinery Directive.

Castagnito, 22 Luglio 2020

Marco Gallo  
Amministrazione Delegato





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