



STARK

USER'S AND INSTALLER'S MANUAL



motorline[®]
PROFESSIONAL








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01. SAFETY INSTRUCTIONS

| | |
|---|---|
|  | This product is certified in accordance with European Community (EC) safety standards. |
| RoHS | This product complies with Directive 2011/65/EU of the European Parliament and of the Council, of 8 June 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment and with Delegated Directive (EU) 2015/863 from Commission. |
|  | (Applicable in countries with recycling systems). This marking on the product or literature indicates that the product and electronic accessories (eg. Charger, USB cable, electronic material, controls, etc.) should not be disposed of as other household waste at the end of its useful life. To avoid possible harm to the environment or human health resulting from the uncontrolled disposal of waste, separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources. Home users should contact the dealer where they purchased this product or the National Environment Agency for details on where and how they can take these items for environmentally safe recycling. Business users should contact their vendor and check the terms and conditions of the purchase agreement. This product and its electronic accessories should not be mixed with other commercial waste. |
|  | This marking indicates that batteries should not be discarded like other household waste at the end of their useful life. Batteries must be delivered to selective collection points for recycling. |
|  | The different types of packaging (cardboard, plastic, etc.) must be subject to selective collection for recycling. Separate packaging and recycle it responsibly. |
|  | This marking indicates that the product and electronic accessories (eg. charger, USB cable, electronic material, controls, etc.) are susceptible to electric shock by direct or indirect contact with electricity. Be cautious when handling the product and observe all safety procedures in this manual. |

01. SAFETY INSTRUCTIONS

GENERAL WARNINGS

- This manual contains very important safety and usage information. Read all instructions carefully before beginning the installation/usage procedures and keep this manual in a safe place that it can be consulted whenever necessary.
- This product is intended for use only as described in this manual. Any other enforcement or operation that is not mentioned is expressly prohibited, as it may damage the product and put people at risk causing serious injuries.
- This manual is intended firstly for specialized technicians, and does not invalidate the user's responsibility to read the "User Norms" section in order to ensure the correct functioning of the product.
- The installation and repair of this product may be done by qualified and specialized technicians, to assure every procedure are carried out in accordance with applicable rules and norms. Nonprofessional and inexperienced users are expressly prohibited of taking any action, unless explicitly requested by specialized technicians to do so.
- Installations must be frequently inspected for unbalance and the wear signals of the cables, springs, hinges, wheels, supports and other mechanical assembly parts.
- Do not use the product if it is necessary repair or adjustment is required.
- When performing maintenance, cleaning and replacement of parts, the product must be disconnected from power supply. Also including any operation that requires opening the product cover.
- The use, cleaning and maintenance of this product may be carried out by any persons aged eight years old and over and persons whose physical, sensorial or mental capacities are lower, or by persons without any knowledge of the product, provided that these are supervision and instructions given by persons with experienced in terms of usage of the product in a safe manner and who understands the risks and dangers involved.

- Children shouldn't play with the product or opening devices to avoid the motorized door or gate from being triggered involuntarily.
- If the power cable is damaged, it must be replaced by the manufacturer, after-sales service or similarly qualified personnel to avoid danger.
- The device must be disconnected from the electrical network when removing the battery.
- Ensure that blocking is avoided between the actuated part and its fixed parts due to the opening movement of the actuated part.

WARNINGS FOR TECHNICIANS

- Before beginning the installation procedures, make sure that you have all the devices and materials necessary to complete the installation of the product.
- You should note your Protection Index (IP) and operating temperature to ensure that is suitable for the installation site.
- Provide the manual of the product to the user and let them know how to handle it in an emergency.
- If the automatism is installed on a gate with a pedestrian door, a door locking mechanism must be installed while the gate is in motion.
- Do not install the product "upside down" or supported by elements do not support its weight. If necessary, add brackets at strategic points to ensure the safety of the automatism.
- Do not install the product in explosive site.
- Safety devices must protect the possible crushing, cutting, transport and danger areas of the motorized door or gate.
- Verify that the elements to be automated (gates, door, windows, blinds, etc.) are in perfect function, aligned and level. Also verify if the necessary mechanical stops are in the appropriate places.
- The control board must be installed on a safe place of any fluid (rain, moisture, etc.), dust and pests.
- You must route the various electrical cables through protective tubes, to protect them against mechanical exertions, essentially on

01. SAFETY INSTRUCTIONS

the power supply cable. Please note that all the cables must enter the control board from the bottom.

- If the automatism is to be installed at a height of more than 2,5m from the ground or other level of access, the minimum safety and health requirements for the use of work equipment workers at the work of Directive 2009/104/CE of European Parliament and of the Council of 16 September 2009.
- Attach the permanent label for the manual release as close as possible to the release mechanism.
- Disconnect means, such as a switch or circuit breaker on the electrical panel, must be provided on the product's fixed power supply leads in accordance with the installation rules.
- If the product to be installed requires power supply of 230Vac or 110Vac, ensure that connection is to an electrical panel with ground connection.
- The product is only powered by low voltage safety with control board (only at 24V motors).
- Parts/products weighing more than 20 kg must be handled with special care due to the risk of injury. It is recommended to use suitable auxiliary systems for moving or lifting heavy objects.
- Pay special attention to the danger of falling objects or uncontrolled movement of doors/gates during the installation or operation of this product.

WARNINGS FOR USERS

- Keep this manual in a safe place to be consulted whenever necessary.
- If the product has contact with fluids without being prepared, it must immediately disconnect from the power supply to avoid short circuits, and consult a specialized technician.
- Ensure that technician has provided you the product manual and informed you how to handle the product in an emergency.
- If the system requires any repair or modification, unlock the automatism, turn off the power and do not use it until all safety

conditions have been met.

- In the event of tripping of circuits breakers or fuse failure, locate the malfunction and solve it before resetting the circuit breaker or replacing the fuse. If the malfunction is not repairable by consult this manual, contact a technician.
- Keep the operation area of the motorized gate free while the gate in in motion, and do not create strength to the gate movement.
- Do not perform any operation on mechanical elements or hinges if the product is in motion.

RESPONSABILITY

- Supplier disclaims any liability if:
 - Product failure or deformation result from improper installation use or maintenance!
 - Safety norms are not followed in the installation, use and maintenance of the product.
 - Instructions in this manual are not followed.
 - Damaged is caused by unauthorized modifications
 - In these cases, the warranty is voided.

MOTORLINE ELECTROCELOS SA.

Travessa do Sobreiro, nº29
4755-474 Rio Côvo (Santa Eugénia)
Barcelos, Portugal

SYMBOLS LEGEND:



• Important safety notices



• Useful information



• Programming information



• Potentiometer information



• Connectors information



• Buttons information

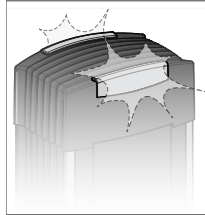
02. AUTOMATION

TECHNICAL SPECIFICATIONS



Stark is designed to automate high weight sliding gates(max 8000kg) and is provided with a control board with frequency inverter, allowing better management and control over the motor.

To identify the different phases of operation, STARK is provided with two LED RGB:



By opening course:
Flashing light turn flashing GREEN light

By the pause time while open:
Flashing light turn BLUE light

By closing course:
Flashing light turn flashing RED light

General advantages of automation:

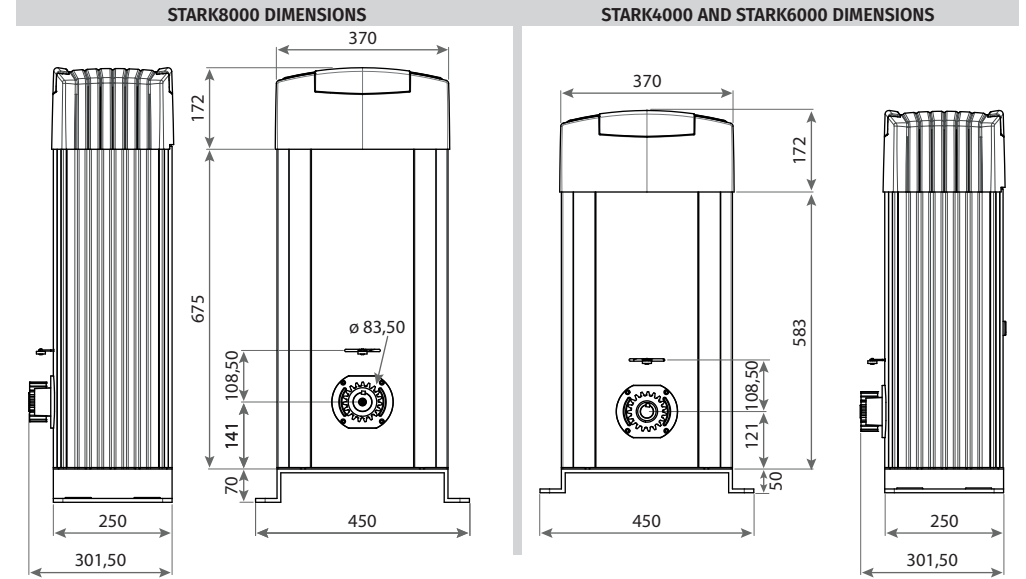
- Opening and closing speed control as well as opening and closing slowdown speed
- Partial opening
- Human presence
- Flashing light output
- Photocell and safety edge inputs
- Emergency stop
- Acceleration and deceleration ramp control
- Automatic closing

Automation technical specifications:

| | STARK4 | STARK6 | STARK8 |
|---------------------------------|-------------------------------|---------|---------------------|
| • Power Supply | 230Vac/50Hz (MC112) | | 230Vac/50Hz (MC113) |
| | 400Vac/50Hz (MC410) | | |
| • Motor | Δ 3x 230Vac ou 3x 400Vac/50HZ | | |
| • Nominal power | 750W | 1100W | 1500W |
| • Current | 4A | 6A | 8A |
| • Working temperature | -20°C +50°C | | |
| • Speed | 180 mm/s | | 120mm/s |
| • Maximum weight of gate | 4000 kg | 6000 kg | 8000 kg |
| • Protection class | X4 | | |
| • Force (50Hz frequency) | 3000N | 4700N | 7600N |
| • Maximum force applied to gate | 450kg | 525kg | 600kg |
| • Working frequency | 50% | | |
| • Noise | ≤ 60dB | | |
| • Accessory power supply | 24Vdc/200mA | | |

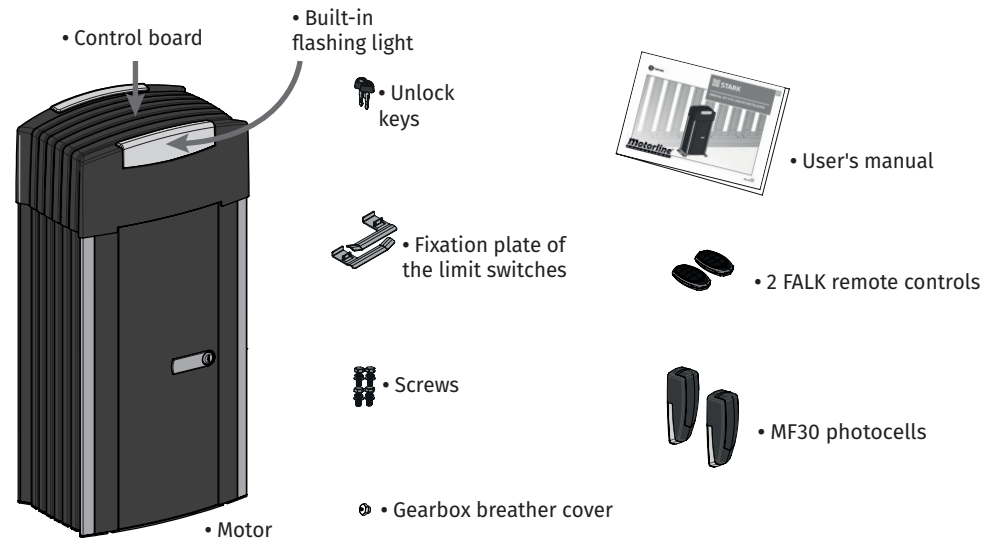
02. AUTOMATION

DIMENSIONS



KIT COMPONENTS

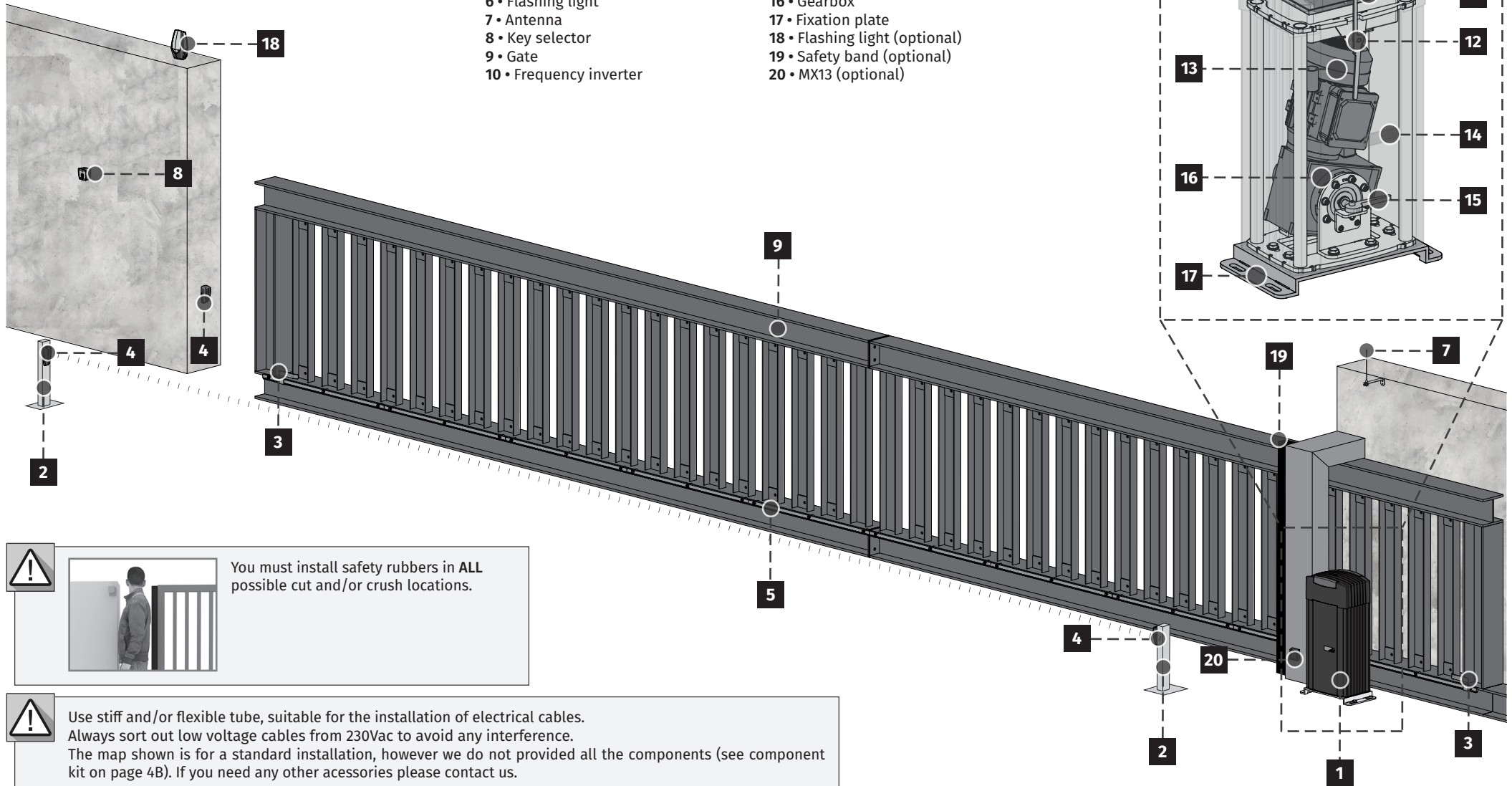
You should check if the following items are in the automation kit before you start the installation.



03. INSTALLATION

INSTALLATION MAP

- 1 • Stark
- 2 • Photocell support column
- 3 • Plate of limit switch
- 4 • Photocell
- 5 • Steel rack
- 6 • Flashing light
- 7 • Antenna
- 8 • Key selector
- 9 • Gate
- 10 • Frequency inverter
- 11 • Control board
- 12 • Cover unlocker
- 13 • Motor
- 14 • Keylock (motor access)
- 15 • Automation unlocker
- 16 • Gearbox
- 17 • Fixation plate
- 18 • Flashing light (optional)
- 19 • Safety band (optional)
- 20 • MX13 (optional)



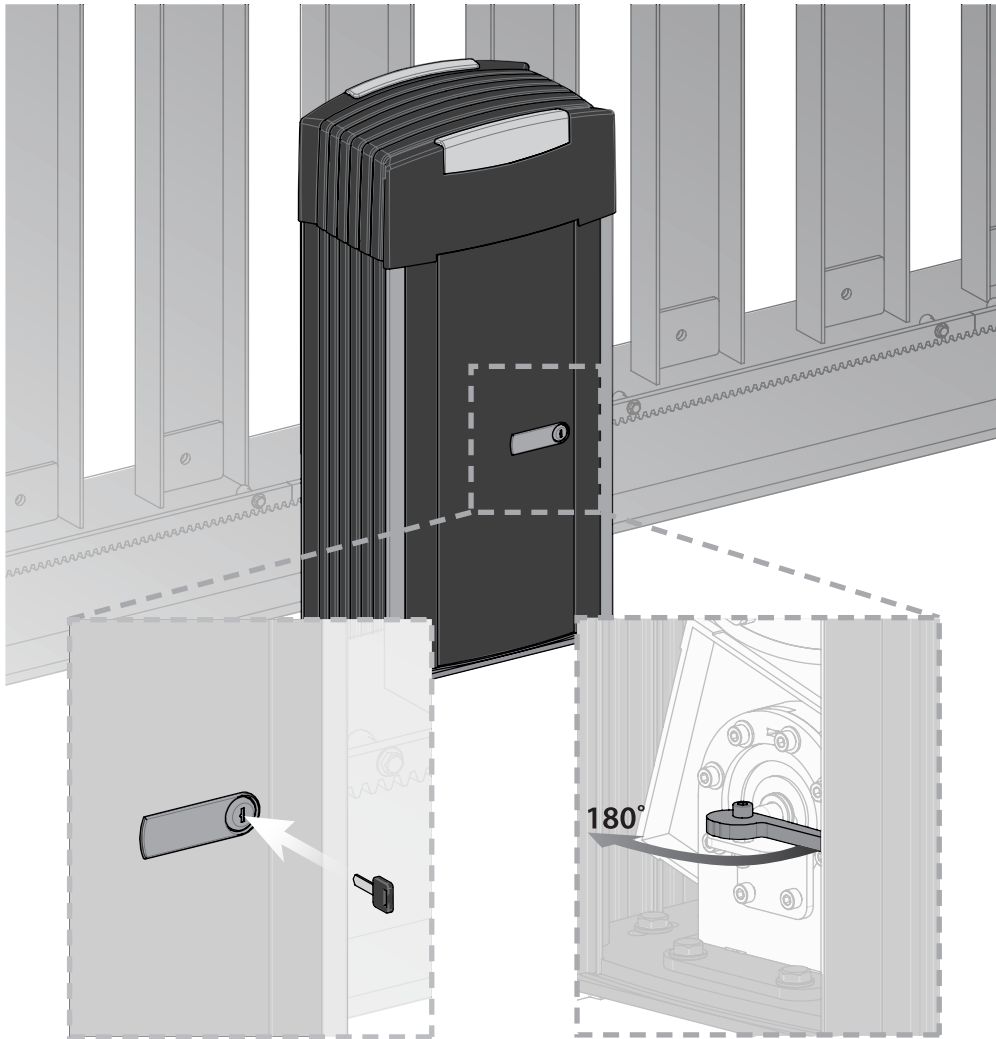
You must install safety rubbers in **ALL** possible cut and/or crush locations.



Use stiff and/or flexible tube, suitable for the installation of electrical cables. Always sort out low voltage cables from 230Vac to avoid any interference. The map shown is for a standard installation, however we do not provided all the components (see component kit on page 4B). If you need any other accessories please contact us.

03. INSTALLATION

UNLOCK MOTOR

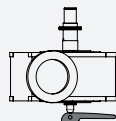


1 Insert the key and turn it 90°.

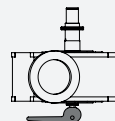
2 Turn the unlocker 180°.



After following these steps, it is possible manually open/close the gate.
In order to automation return to normal operation, you have to turn the the unlocker 180°.



LOCKED



UNLOCKED

6A

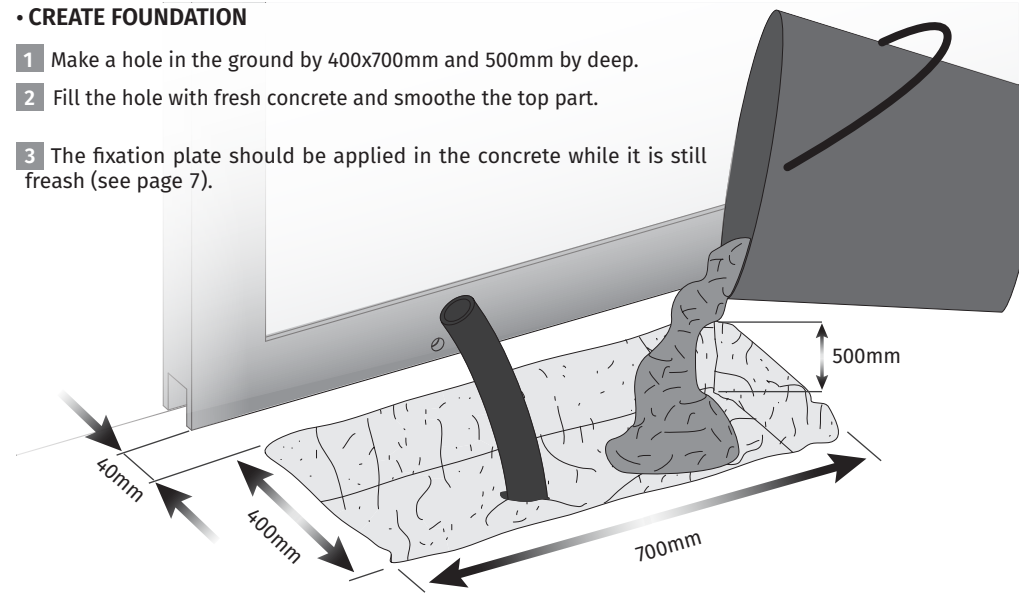
EN

03. INSTALLATION

FOUNDATION

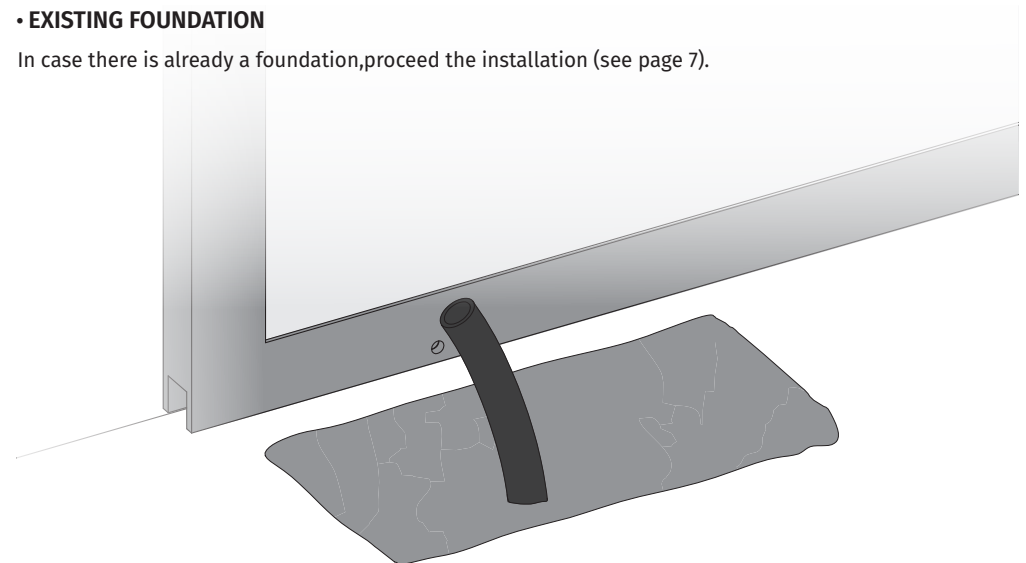
• CREATE FOUNDATION

- 1 Make a hole in the ground by 400x700mm and 500mm by deep.
- 2 Fill the hole with fresh concrete and smoothe the top part.
- 3 The fixation plate should be applied in the concrete while it is still fresh (see page 7).



• EXISTING FOUNDATION

In case there is already a foundation, proceed the installation (see page 7).

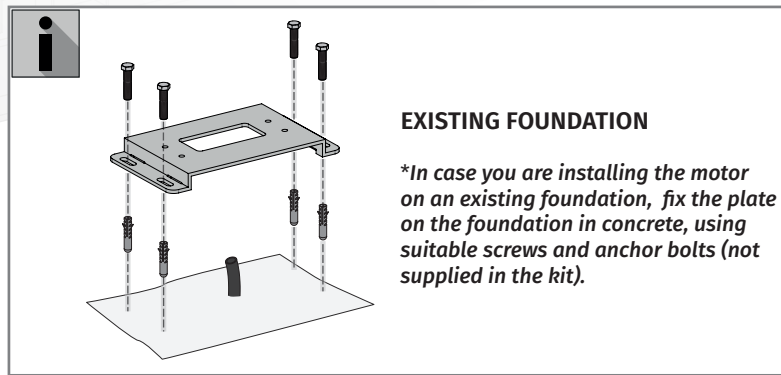
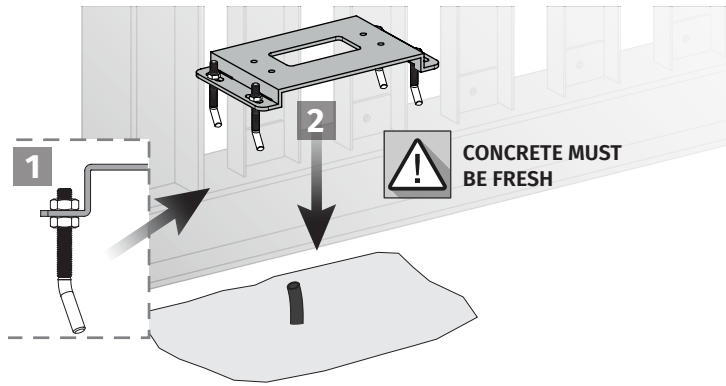


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6B

03. INSTALLATION

MOTOR INSTALLATION

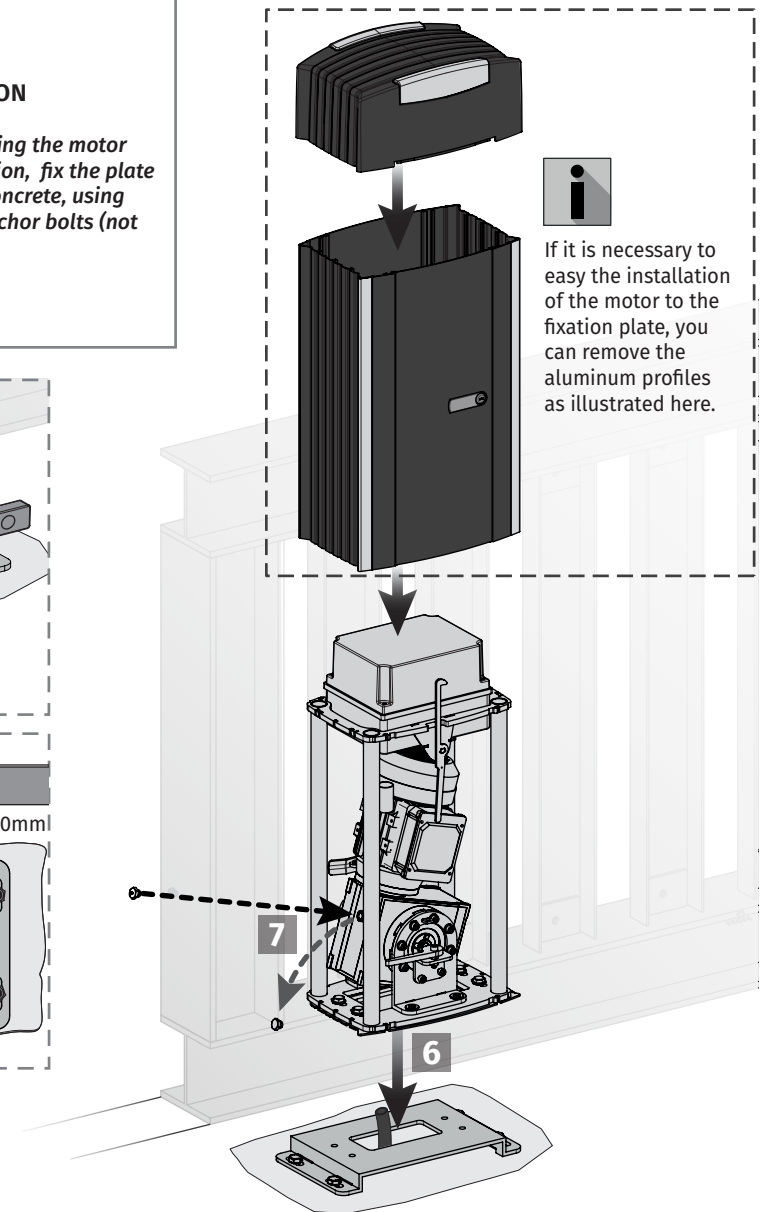
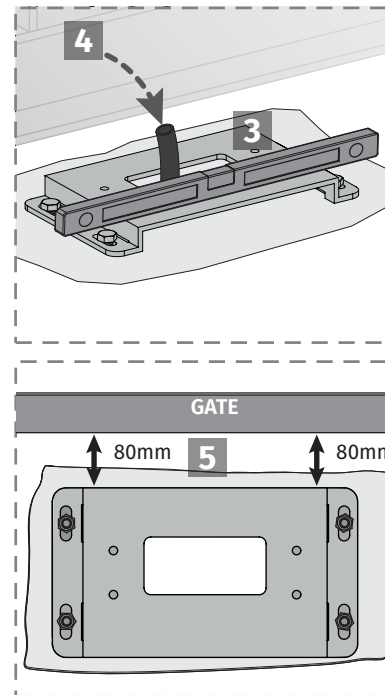


! Be careful with the importance of this installation, as it will be exposed to motions of heavy loads. The screws and steel anchors must be appropriate to the floor and weight of the gate.

- 1 Place the screws and anchor bolts into the four holes of the fixation plate and tighten.
- 2 With the concrete still fresh, apply the fixation plate.
**In case you are installing the motor on an existing foundation, fix the plate on the foundation in concrete, fasten the suitable screws and anchor bolts (not supplied in the kit).*

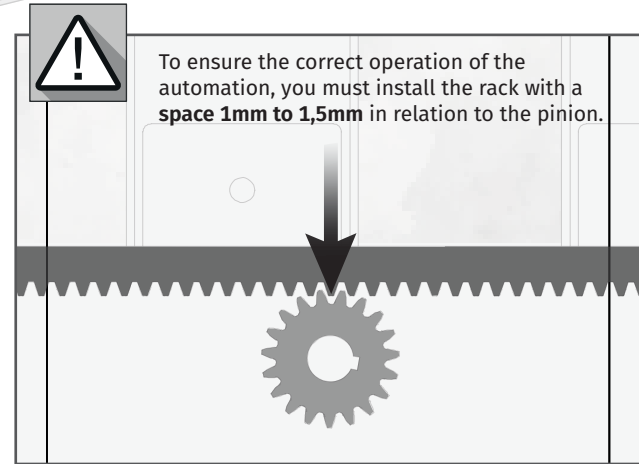
NOTE • It is important to leave one or more tubes to run electrical cables through the fixation plate.

- 3 With a level, verify if the fixation plate is perfectly horizontal. The fixation plate should be placed parallel to the gate to ensure that the steel rack and pinion fit perfectly.
- 4 Route the electrical cables to connect the motor to the accessories and power supply. Leave the cables with a length that ensure easy connection to the control board.
- 5 Adjust the distance between the fixation plate and the gate. The recommended distance is 80mm, considering that the screws are centered with the fixation plate holes, allowing adjustment (if necessary).
- 6 Place the motor in the fixation plate, leaving it centered and tighten the screws.
- 7 Replace the screw for with gearbox breather cover (supplied on the kit).



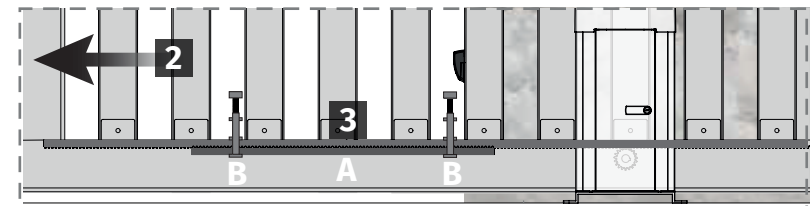
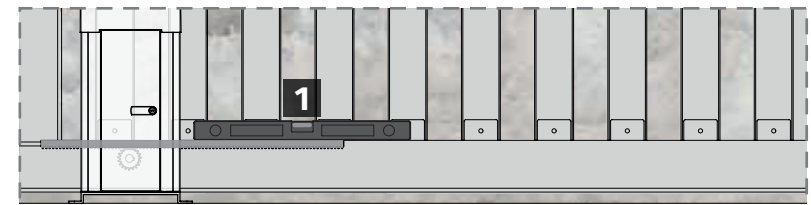
03. INSTALLATION

INSTALLATION OF STEEL GEAR RACK



**Put the gate open and unlock the motor (page 6A).
Fix the steel rack with suitable supports for installation.**

- 1 Place a piece of rack on top of the pinion and fix it to the gate.
NOTE - Level it horizontally with a level, before fixing.
- 2 Close the gate a bit until it is possible to apply another piece of rack on the pinion, and fix it to the gate.
- 3 To synchronize the teeth with the piece already installed, use an additional piece of rack (A) and place it under the union of the other two, holding them with clamps (B).
- 4 Open the gate to support the point of the new piece of rack on top of the pinion and weld the spacer.
- 5 Remove the piece of auxiliary rack and open the gate until the other end of the rack stands on top of the pinion. Weld the spacer.
- 6 Repeat the previous steps for each meter of the rack you need install.
- 7 Manually, test the movement of the gate with all racks installed and in case of finding some friction between the rack and pinion, adjust the rack.



During the course of the gate, all elements of the rack must mesh properly with the pinion!
Do not weld the spacers to the rack!
Do not use mass or other types of lubricant between rack and pinion, because it can damage the automation!

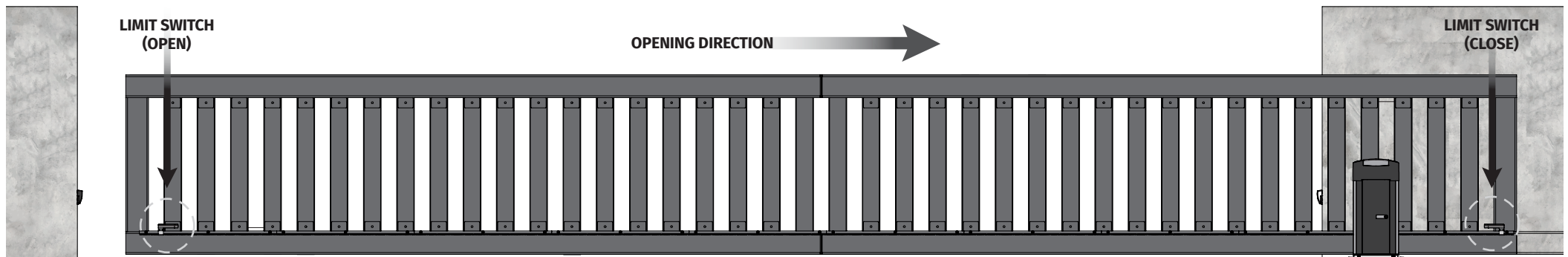
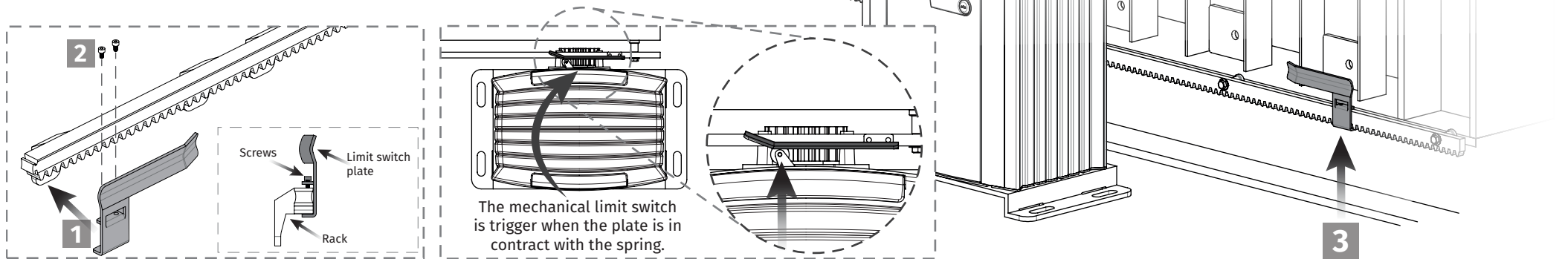
03. INSTALLATION

INSTALLATION OF THE LIMIT SWITCHES

- 1 Place the opening limit switch plate in the rack so that it can trigger the limit switch before the gate gets to opening stopper by 20 to 30mm.
- 2 Fix the opening limit switch plate to the rack with the screws supplied in the kit.
- 3 Move the gate to the closed position and repeat steps 1 and 2 to fix the closing limit switch plate to the rack.



The limit switch must be tuned for the gate stop before it hits the opening and closing stoppers. Manually, test the activation of the limit switches with the gate unlocked, before you connect it to the electric power, in order to prevent problems due to bad installation. Check the illustrations to identify the correct installation of limit switch plates.



04. MAINTENANCE

MAINTENANCE

• Lubricate

Lubricate with fine oil all systems/axis of movement of the gate.

• Check the steel rack

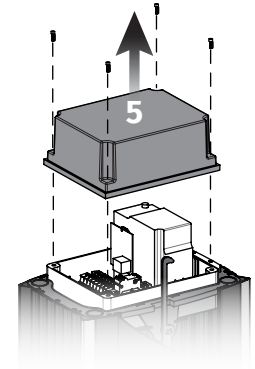
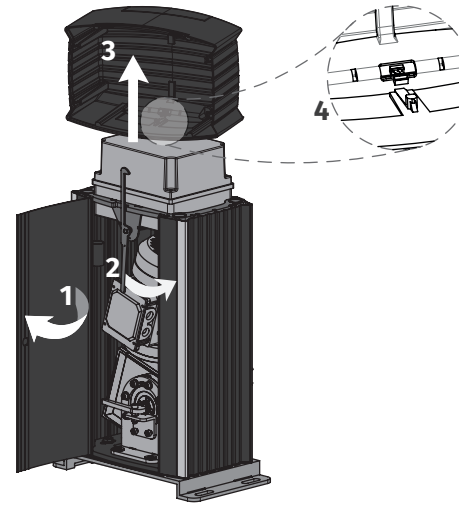
Check that the distance between rack and motor remains unchanged and that it engages the teeth of the motor pinion correctly (over time can happen some distortion). Verify if the steel rack remains fix to the gate.

• Check the support plate

Check all supports remains fix to the pillars and gate for the good functioning of the automation.



The maintenance measures must be made every 6 months to maintain the good functioning of the automation.



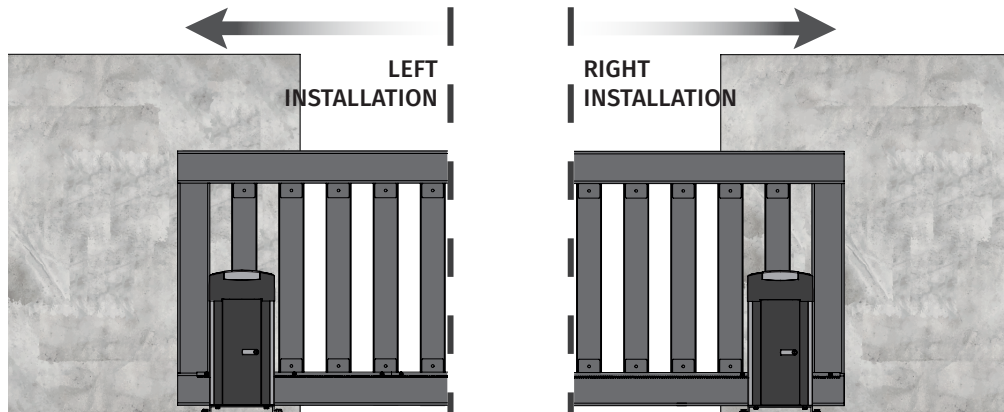
07. PROGRAMMATION

PERFORMANCE TEST

After installation of the control board and wiring, ensure that all connected components are working properly. To do this, follow the steps:

• LIMIT SWITCHES TEST

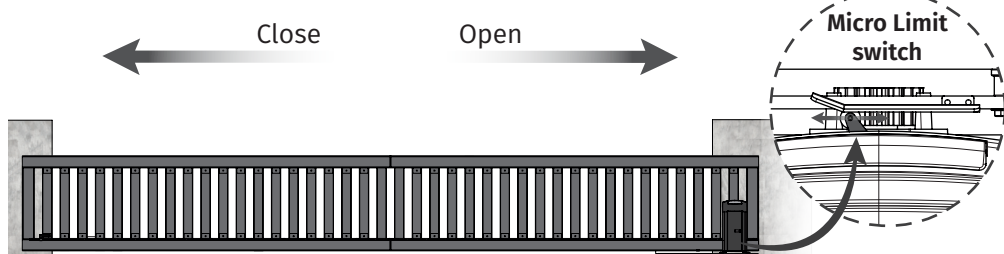
First, you must set whether the operator is installed to the right or left of the gate. This information will indicate which side of opening and closing.



This test will be exemplified with the operator installed on the right side.

Tilt the spring operator limit switch to the right until you hear a "click" sound. The display should show "C101"! Now tilt the spring limit switch to the left until you hear a "click" sound and show on the display "C202". If the "C202" appears first, you must change the cables.

Attention: When change the cables you must also change the limit switches cables and the motor wire to reverse the direction of motion.



Limit switches are an important motor safety system. It is of utmost importance that they are correctly connected to the control board, otherwise they may cause serious damage or injuries.

07. PROGRAMMATION

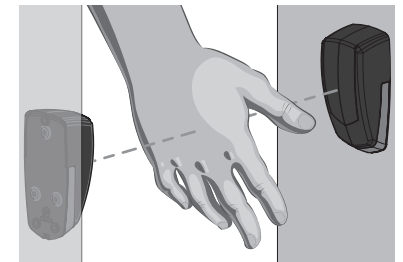
PERFORMANCE TEST

• PHOTOCELLS TEST

The photocells are a safety device that inform the control board that any object is obstructing the gate path. They send a signal so that the gate does not close preventing damage to this object.

The photocells are connected to the DS input of the control board (see page 15). This input has an assigned LED that informs us of the photocell connection status. This LED is always on when a safety device is connected (NC).

To test the connection of the photocells in the control board, simply interrupt the signal between the two photocells by placing your hand in front of one of them. A "click" sound will indicate that the signal has been interrupted and will show on the display "C888" while the photocells are interrupted. If it does not work this way, there is a problem connection between the photocells and the control board.



• COURSE PROGRAMMING

NOTE • It is not possible to deceleration more than 1.5 meters.

- 1 • Put the door (manually) in the closed position.
- 2 • Access menu **04.64**, set to **1** and press **ENTER**.
- 3 • Press **OP** button or press the remote control programmed in **MR13**.
- 4 • The gate will start to open.
- 5 • When you want to start deceleration on opening, press again on remote control the **OP** button. The gate will slow down.
- 6 • When the gate reaches the opening limit switch, it will start closing.
- 7 • When you want to start closing deceleration, press again on remote control the **OP** button. The gate will slow down.
- 8 • When the gate reaches the closing limit switch, the course programming is completed.