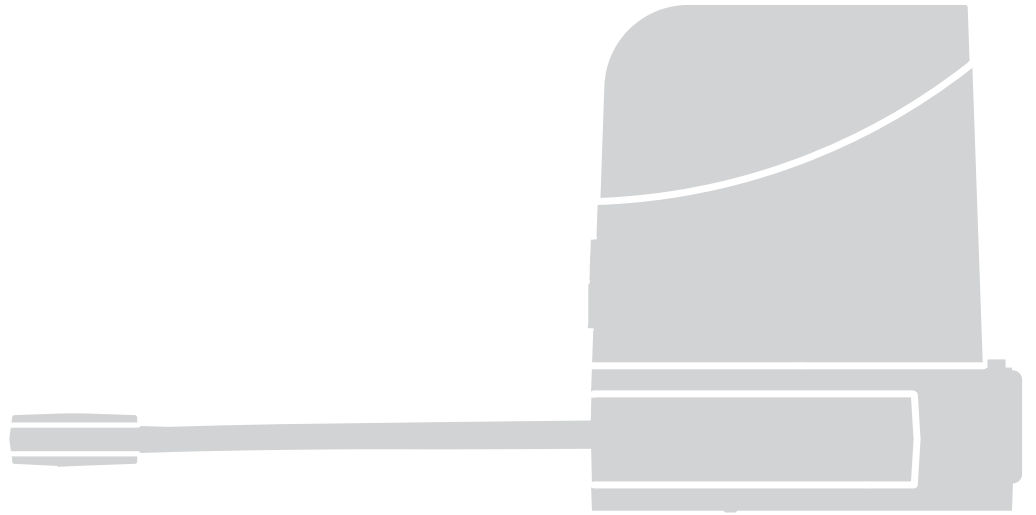


Maestro200

CE



Instructions and warnings for installation and use.

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— STEP 1 —

CAUTION - Important safety instructions. Observe all the instructions as improper installation may cause serious damage

CAUTION - Important safety instructions. It is important to comply with these instructions to ensure personal safety. Store these instructions

- Before commencing the installation, check the "Product technical specifications", in particular whether this product is suitable for automating your guided part. Should it be unsuitable, DO NOT proceed with the installation
- The product cannot be used before it has been commissioned as specified in the "Testing and commissioning" chapter

CAUTION - According to the most recent European legislation, the implementation of an automation system must comply with the harmonised standards set forth in the Machinery Directive in force, which allow for declaring the presumed conformity of the automation. On account of this, all operations regarding connection to the mains electricity, as well as product testing, commissioning and maintenance, must be performed exclusively by a qualified and skilled technician!

- Before proceeding with the product's installation, check that all materials are in good working order and are suitable for the intended applications
- The product is not intended for use by persons (including children) with reduced physical, sensory or mental capacities, nor by anyone lacking sufficient experience or familiarity with the product
- Children must not play with the appliance
- Do not allow children to play with the control devices of the product. Keep the remote controls out of reach of children

CAUTION - In order to avoid any danger from inadvertent resetting of the thermal cut-off device, this appliance must not be powered through an external switching device, such as a timer, or connected to a supply that is regularly powered or switched off by the circuit

- Provide a disconnection device (not supplied) in the plant's mains power supply, with a contact opening distance that ensures complete disconnection under the conditions envisaged by Overvoltage Category III
- Handle the product with care during installation, taking care to avoid crushing, knocks, falls or contact with liquids of any kind. Keep the product away from sources of heat and open flames. Failure to observe the above can damage the product and increase the risk of danger or malfunctions. If this should happen, stop installation immediately and contact the Customer Service
- The manufacturer assumes no liability for damage to property, items or persons resulting from non-compliance with the assembly instructions. In such cases the warranty does not cover material defects
- The weighted sound pressure level of the emission A is lower than 70 dB(A)
- Cleaning and maintenance to be carried out by the user must not be effected by unsupervised children
- Before intervening on the system (maintenance, cleaning), always disconnect the product from the mains power supply
- Check the system periodically, in particular all cables, springs and supports to detect possible imbalances, signs of wear or damage. Do not

use if repairs or adjustments are necessary, because a failure with the installation or an incorrectly balanced automated system may lead to injury

- The packaging materials of the product must be disposed of in compliance with local regulations
- Keep persons away from the gate when it is moved through the control elements
- When performing a manoeuvre, keep an eye on the automated mechanism and keep all bystanders at a safe distance until the movement has been completed
- Do not operate the automation if anyone is working on it; disconnect the power supply before permitting any work to be carried out

INSTALLATION PRECAUTIONS

- Prior to installing the drive motor, check that all mechanical components are in good working order and properly balanced, and that the automation moves correctly
- If the gate being automated has a pedestrian door, the system must include a control device inhibiting the operation of the motor when the pedestrian door is open
- Make sure that the controls are kept at a safe distance from moving parts, while allowing a good view of these. Unless a selector is used, the controls should be installed at least 1.5 m from the ground and must not be accessible
- If the opening movement is controlled by a fire-prevention system, make sure that any windows larger than 200 mm are closed by the control elements
- Prevent and avoid any form of trapping between the moving and fixed parts during manoeuvres
- Permanently affix the manual operation label next to the element enabling the manoeuvre itself
- After installing the drive motor, make sure that the mechanism, protective system and all manual manoeuvres operate properly

KNOWLEDGE OF THE PRODUCT AND PREPARATION FOR INSTALLATION

NOTE TO MANUAL

- This manual describes how to implement a complete and optimal automation, like that shown in fig. 1, using all the Nice Home devices which form part of the automation system known as "MAESTRO200". Some of these devices are optional and may not be present in this kit. For a complete overview of the devices, see the Nice Home product catalogue.
- This manual is designed as a step-by-step guide. Therefore, for the safety and ease of assembly and programming work, we advise you to carry out all the operations described in the same order in which they are presented.

— STEP 2 —

2.1 - PRODUCT DESCRIPTION AND INTENDED USE

The devices in this kit, plus other accessories (some optional and some not included), together form the automation system called "MAESTRO200", designed for automation of a hinged gate for "residential" use. **All uses other than the intended use described and use in environmental conditions other than those described in this manual should be considered improper and forbidden!**

The main automation component is made up of an electromechanical gearmotor, provided with a 24 V direct current motor and a reduction unit with worm screws; it is equipped with a mechanical release and key which allows you to manually move the gate in the event of a lack of power supply. The gearmotor is equipped with a command control unit that manages the operation of all of the automation. The command control

unit is made up of an electronic board and an integrated radio receiver, to receive commands sent by the user via the transmitter. It can memorise up to 256 ECCO5... transmitters (if these are memorised in "Mode I") and up to 6 PH200 photocell pairs. Connection of the control unit to the various devices takes place via a single cable with two electrical conductors ("ECSbus" system). Furthermore, the control unit can be powered by a fixed electrical network (230 V) or, alternatively, by the Nice Home SOLEKIT solar power system. If powered from the grid, it can host a buffer battery (mod. PR300, optional accessory) which ensures that the automation can execute certain manoeuvres, during the hours following a loss of power (electrical black-out). During the black-out, or at any other time, it is possible to move the gate manually also, by first releasing the gearmotor using the appropriate key (see chapter 11.3 - Usage guide).

2.2 - DEVICES REQUIRED TO CREATE A FULL SYSTEM

The **fig. 2** shows all the devices required to create a full system, such as that shown in **fig. 1**. The devices are:

- 2 electromechanical MAESTRO200C and MAESTRO200M gearmotors, complete with mounting brackets
- 3 release keys
- 1 pair of PH200 photocells (made up of a TX and an RX)
- 2 ECCO5... radio transmitters
- 1 FL200 flashing indicator with built-in antenna
- Brackets for fixing and curved anti-shear arms: the screws needed to fasten the slotted arms are not provided, because they vary according to the material and thickness of the doors.
- Metal hardware

Note - Some devices and accessories mentioned in this manual are optional and may not be present in the kit. For a complete overview, see the Nice Home product catalogue or visit www.niceforyou.com.

— STEP 3 —

3.1 - CHECK SUITABILITY OF GATE TO BE AUTOMATED AND OF THE ENVIRONMENT

- Ensure that the mechanical structure of the gate is suitable for automation and complies with local standards. To verify this, refer to the technical data on the label of the gate. **Important** - This product cannot automate a gate that is not already secure and efficient; moreover, it cannot resolve defects caused by improper installation of the gate or from its poor maintenance.
- Manually move the gate leaf in both directions (open/closed) and make sure that the movement takes place with a constant friction at every point in its course (there should be no points that require more effort nor less).
- If there is an access door in the gate, or within the range of movement of the gate, make sure that it does not obstruct normal travel and, if necessary, provide an appropriate interlock system.
- Manually bring the door of the gate into any position; then, leave it closed and make sure that it does not move.
- Ensure that the environment in which the gearmotor is to be installed has sufficient space to be able to perform the manual manoeuvre of releasing the gearmotor.
- Make sure that the surfaces selected for the installation of the devices, are strong and can ensure a stable attachment; for the photocells, choose a flat surface that can ensure a correct alignment of the pair (Tx and Rx).
- Ensure that all devices to be installed are in a sheltered location and protected against the risk of accidental impact.

3.2 - PRODUCT APPLICATION LIMITS

Before proceeding with installation perform the following checks in the suggested order and check their compliance with both the data in this paragraph and the technical data in the chapter "Product technical specifications":

- 1 - Check that the gate leaf has dimensions and weight which fall within the following limits:
 - maximum length **2.2 m**
 - maximum weight **150 kg**
 - opening angle **110°**
- 2 - Check that the maximum and minimum temperatures of the installation environments are within the temperature limits specified for operating this product. Refer to the technical data contained in the chapter "Product technical specifications".
- 3 - Taking into account the direction from which the (pre-existing) electric line which is to power the product originates, decide to which leaf you intend to affix the gearmotor with the Control unit.

- 4 - Check, on each leaf and on the wall (or pillar) adjacent, that there is enough space to attach the gearmotor, referring to the values indicated in **fig. 3-4-6-7** and to the following notes:

- a) **Fig. 3:** shows the measurements of the total size of the gearmotor.
 - b) **Fig. 4:** shows the horizontal space in which the rear support of the gearmotor is to be placed. The exact location in which to place the support must be calculated by referring to point O2 of STEP 5.
 - c) **Fig. 6:** shows the maximum distance required "B" between the leaf pivot point and the wall surface to which the rear support of the gearmotor will be attached.
 - d) **Fig. 7:** shows the minimum distance required "E" (400 mm) between the gearmotor arm and any possible obstacle in the vicinity (wall, flowerbed edging, etc.) when the leaf is fully open.
- Note – This measurement must be taken starting from the centreline of the gearmotor.*

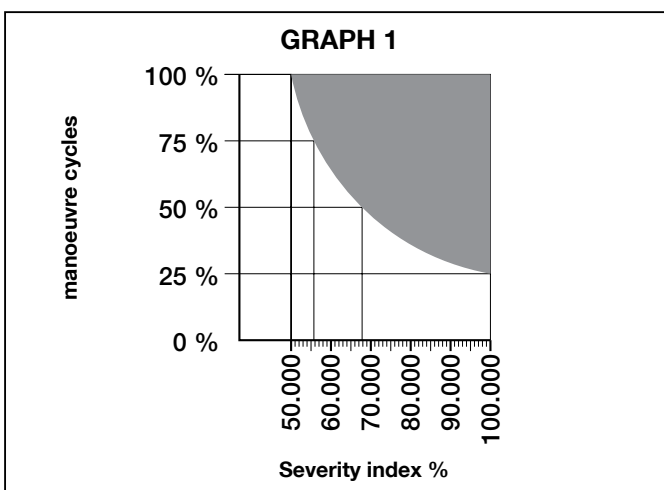
3.3 - PRODUCT DURABILITY

Durability is the average economic life span of the product. The value of the life span is strongly influenced by the intensity of the manoeuvres, i.e. the sum of all factors that contribute to product wear, see Table 1. To estimate the life span of your automated device, proceed as follows:

01. Add up all the values of the entries in **Table 1**;
02. In **Graph 1**, from the value obtained above, trace a vertical line until it intersects the curve; from this point trace a horizontal line until it intersects the line of the "manoeuvre cycles". The obtained value is the estimated life span of your product.

The lifetime values specified in the graph are only obtainable if the maintenance schedule is strictly observed. See chapter 9 - Maintenance schedule. The estimation of durability is made on the basis of design calculations and the results of tests performed on prototypes. As it is only an estimation, it does not represent any form of guarantee on the effective life span of the product.

TABLE 1		
	Severity index	
Leaf length m	1 - 1,5 m	10%
	1,5 - 2,2 m	25%
Leaf weight Kg	< 80 kg	10%
	80 - 150 kg	25%
Surrounding temperature greater than 40°C or lower than 0°C or humidity greater than 80%		15 %
Solid leaf		15 %
Installation in suction cup area		15 %



Example of durability calculation: automation of a gate with a door 1.8m long with a weight of 100 kg, installed in a windy area. Table 1 shows the "severity index" for this type of installation: 25% ("Door length"), 10% ("Door weight") and 15% ("Installation in windy area"). These indicators must be added together to obtain the overall severity index, which is in this case 50%. With the value identified (50%), look at the vertical axis of Graph 1 ("severity index"), and identify the value corresponding to the number of "manoeuvre cycles" our product will be able to perform in its life span, about 72,000 cycles.

— STEP 4 —

4.1 - WORKS PRIOR TO INSTALLATION

4.1.1 - Establish the position of the devices in the system

With reference to **fig. 1** and **fig. 5**, locate the approximate position for installation of each device envisaged in the system. The **fig. 1** shows a system built with this product plus other optional accessories from the Nice Home line. The various elements are positioned according to a standard and usual layout. The devices used are:

- a) - 1 FL200 flashing indicator with built-in antenna
- b) - 1 pair of PH200 photocells (made up of a TX and an RX)
- c) - MAESTRO200C gearmotor with incorporated CL205 control unit
- d) - MAESTRO200M gearmotor
- e) - Closure stop (not supplied)

WARNING! - Some of these devices are optional and may not be present in this package (see the Nice Home product catalogue).

WARNINGS:

- The gearmotors must be affixed to the column/wall, laterally to the respective gate leaves;
- Fixed type control devices must be positioned:
 - in view of the automation;
 - away from its moving parts;
 - at a minimum height of 1.5 m from the floor/ground;
 - not accessible to strangers.

4.1.2 - Establish the position of all the connecting cables

Refer to the instructions in section 4.2 to determine the space in which to dig the routes for the cable ducts for the electrical cables.

4.1.3 - Obtain the tools and materials required for the work

Before beginning work, make sure you have all the tools and materials required to carry out the work. Make sure that these are in good condition and comply with local safety regulations.

4.1.4 - Carry out the preparatory works

Prepare the environment for the subsequent installation of the devices, carrying out preliminary work such as, for example:

- excavation of routes for the cable ducting for the electrical cables (alternatively, external raceways may be used);
- installation of the cable ducting and their attachment in the concrete;
- sizing of all electrical cables to the desired length (see section 4.2) and their passage in the ducting.

Caution! - At this stage do not implement any type of electrical connection.

Warnings:

- Ducting and raceways are used to protect the electrical cables from damage due to accidental impacts.
- When laying the ducting, also take into account that due to possible deposits of water in the routing ducts, the ducting might create condensation in the control unit, with consequent damage to the electronic circuits.
- Place the ends of the ducting in the vicinity of the points provided for affixing the devices.

4.2 - ELECTRICAL CABLES PREPARATION

To prepare all connection cables, proceed as follows.

- a) - Observe **fig. 5** to understand how the various devices should be connected to the control unit and the terminals to be used for each connection. **Important** - Only devices which support "ECSbus" technology can be connected to the "ECSbus" terminal.
- b) - Observe **fig. 1** to understand how to position the electrical cables in the environment. Then, draw a similar diagram on paper, adapting it to the specific needs of your system. **Note** - This diagram will be useful, both to guide the excavation of the routes for the cable ducting, and for drawing up a complete list of the cables required.
- c) - Read **Table 2** to determine the type of cables to use; then use the diagram you just drew and the environmental measurements to determine the length of each individual cable. **Caution!** - Each cable must not exceed the maximum length indicated in **Table 2**.

WARNING - The "ECSbus" technology allows you to connect multiple devices together, using, between one device and the next, a single "bus" cable, with two internal electrical conductors. The connection between the devices can adopt a "cascade", a "star" or a "mixed" configuration, between the first two.

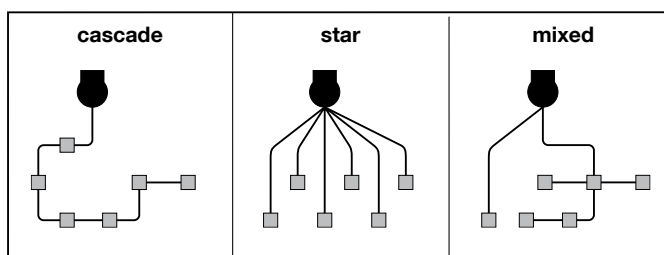


TABLE 2 – Technical specifications of electric cables

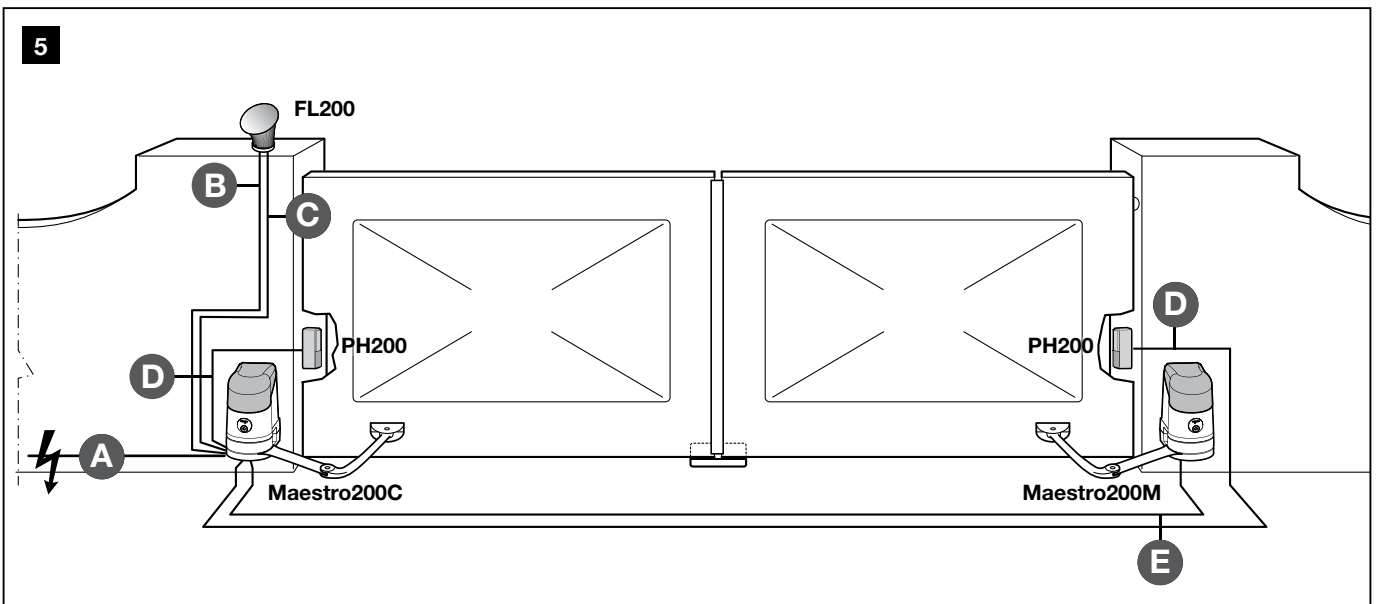
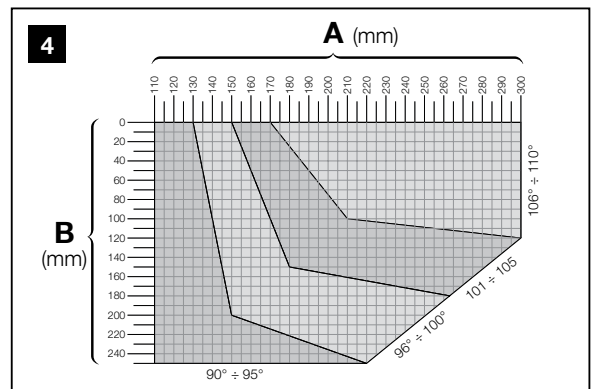
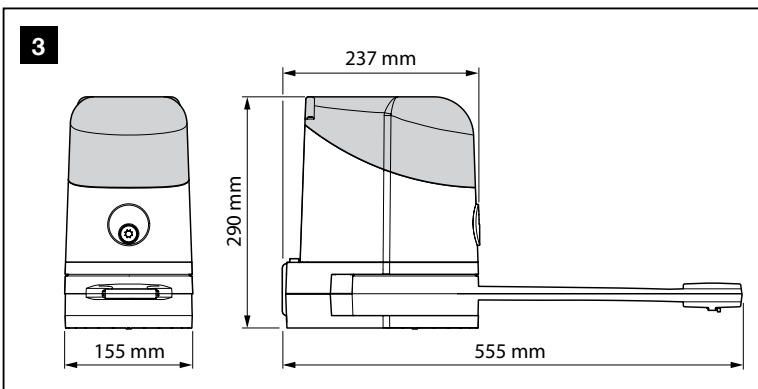
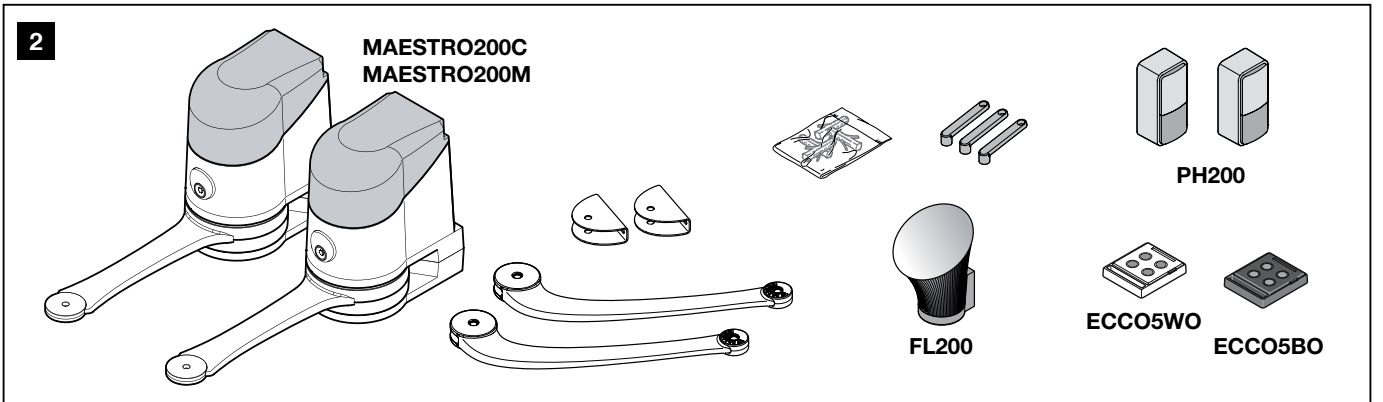
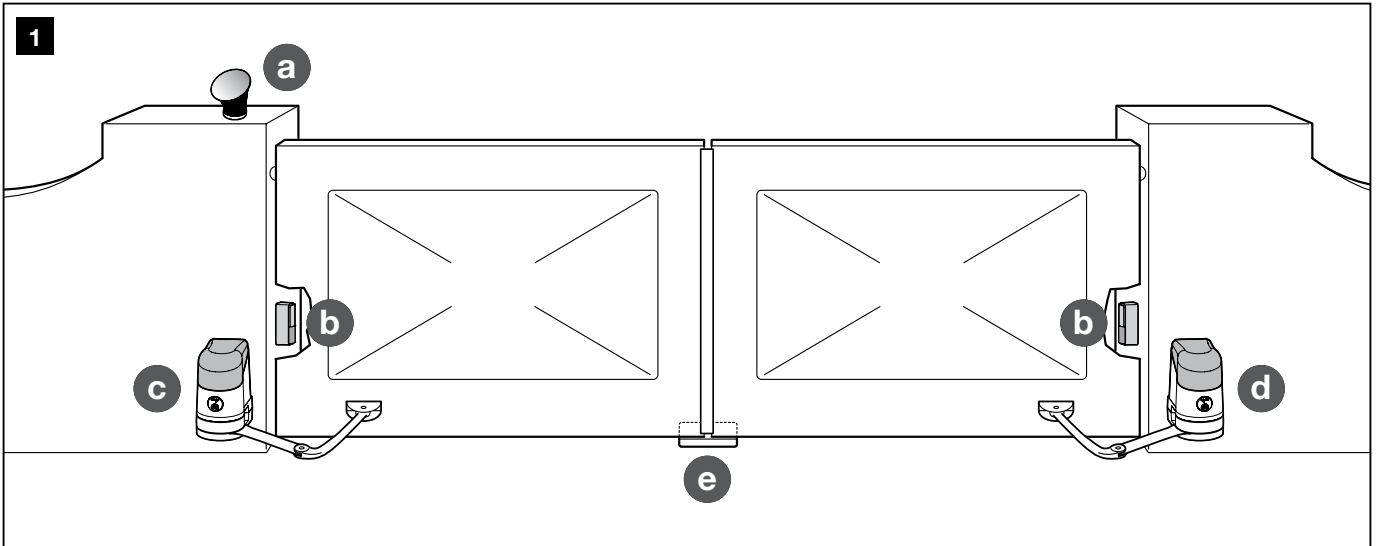
Connection	Cable type (minimum gauge values)	Maximum admissible length
A - Electric power line	Cable 3 x 1.5 mm ²	30 m (note 1)
B - FLASH flashing indicator output	Cable 2 x 1 mm ²	6 m
C - Antenna cable	RG58 type shielded cable	20m (less than 5m recommended)
D - ECSbus devices cable	Cable 2 x 0.5 mm ²	20 m (note 2)
- STOP input	Cable 2 x 0.5 mm ²	20 m (note 3)
- SbS input	Cable 2 x 0.5 mm ²	20 m (note 3)
E - Gearmotor power supply cable	Cable 3 x 1.5 mm ²	10 m

Note 1 - A power supply cable longer than 30m may be used provided it has a larger gauge (3 x 2.5mm²), and that a safety earthing system is provided near the automation.

Note 2 - If the "ECSbus" cable is longer than 20m, up to 40 m, a larger gauge (2 x 1mm²) cable is needed.

Note 3 - These two cables may be replaced by a single 4 x 0.5 mm² cable.

CAUTION! - The cables used must be suited to the type of environment of the installation site.



— STEP 5 —

IMPORTANT!

- The following assembly steps illustrate installation of the MAESTRO200M / MAESTRO200C gearmotor.
 - For correct system operation it is necessary to supply mechanical stops, on the ground or wall, positioned at the maximum Opening and Closing points of the door. **Note** - These end stops are not included in the kit and do not form part of the Nice Home product range.

WARNINGS

- **Incorrect installation may cause serious physical injury to those working on or using the system.**
- **Before starting automation assembly, carry out the preliminary checks as described in STEP 3.**

5.1 - MAESTRO200C and MAESTRO200M GEARMOTOR INSTALLATION

01. Measure distance "B" (fig. 6).
02. Move the leaf to the desired maximum opening position, and check whether the angle value found falls within the values listed in **Graph 4**.
03. As shown in **fig. 4**, using value "B" and the opening angle, determine value "A". *Example: if "B" is 100mm and the angle required is equal to 100°, the distance "A" is around 180 mm.*
04. Affix the gearmotor mounting bracket to the wall, in a horizontal position, as shown in **fig. 8, 9** and **10**. Use suitable anchors, screws and washers (*not supplied*).
05. Remove the mechanical stop located on the underside of the motor, using a 13mm wrench (**fig. 11**): loosen and unscrew the self-locking nut of the screw of the mechanical stop.
06. Insert the back of the gearmotor into the space provided on the mounting bracket, taking care to line up the holes on the motor with those on the bracket (**fig. 12**).
07. Support the gearmotor with one hand and with the other hand insert the two screws supplied into the holes. *Note – If the screws do not go in easily, use a hammer and a hex nut driver to insert them fully (see **fig. 13**). Then, fasten the screws with suitable nuts; to do this, use an Allen wrench to hold the head of the screw and a (10 mm) hex nut screwdriver, with external dimensions not exceeding 14.5 mm, to tighten the nut.*
08. Now, affix the curved arm to the gearmotor. **IMPORTANT!** – The arm must be positioned with the curvature pointing towards the gate leaf. Then align the holes on the two arms and insert the pin supplied and the ringed stop. (**fig. 14**).
09. To secure the attachment bracket to the gate leave, proceed in the following way:
 - a) Insert the bracket to the end of the curved arm, aligning the respective holes, and insert the pin supplied (without ring stop - **fig. 15**).
 - b) Release the gearmotor using the required key (refer to chapter 11.2).
 - c) Move the gate leaf into the fully closed position required, and extend the arm to its full length (**fig. 16**). Then, bring the latter to the leaf, until the mounting bracket is fully locked onto it.
 - d) Now, using a pencil, mark the drilling points and then drill the leaf using a drill. *Note – The screws required for leaf-fixture of the bracket are not included in the pack, as their type depends on the material and thickness of the gate or door in which they are inserted.*
10. Detach the bracket from the arm of the gearmotor, and affix it to the gate leaf. **Important** – Check that the bracket sits perfectly level.
11. Attach the gearmotor arm to the bracket by inserting the pin and the ring stop supplied.
12. **CAUTION! – If, in your installation environment, there are no mechanical stops placed on the ground, refer to STEP 5.2.**
13. Finally, still with the gearmotor released, manually move the two gate leaves into the position shown in **fig. 17** and lock the gearmotor using the appropriate key (refer to the chapter 11.2). Now, using just a slight movement, move the gate leaf a few centimetres in the direction of full opening, until you hear a click.
14. **If the gate to be automated is a dual leaf type, repeat the same operations describe in this STEP 5 to also install the second gearmotor.**

5.2 - ADJUSTING THE OPENING MECHANICAL LIMIT SWITCH

If, in your installation environment, there are no mechanical stops placed on the ground, designed to stop the wings of the gate at the end of their opening movement, it is necessary to adjust the mechanical stop on the bottom side of each motor, in the following manner:

01. With the gearmotor released, manually move the leaf to the Open position.
02. Locate the centrepoint (axis) of the gearmotor arm, and mark it using a piece of adhesive tape placed in the fixed part of the gearmotor, above the arm (**fig. 18**).
03. Now close the gate leaf.
04. In order to facilitate mounting the mechanical stop, we recommend that you add a piece of adhesive tape, up to the base of the gearmotor, as shown in **fig. 19**.
05. Place the mechanical stop in the following way: if you are working on the gearmotor that moves the left-hand leaf, the mechanical stop must be fixed to the left of the adhesive tape, adjacent to it; conversely, if you are working on the gearmotor on the right the mechanical stop should be attached to the right of the adhesive tape, adjacent to it (**fig. 20**). Then fasten it using its self-locking nut (**fig. 21**).
06. Now, by moving the gate leaf manually, check that the latter stops exactly at the desired maximum opening point. If this is not the case, move the mechanical stop by one or two "teeth"; then check the maximum opening position again.
07. Finally, with the gearmotor still released, manually move the gate leaf to around half its travel, and lock the gearmotor using the appropriate key (refer to chapter "Manually releasing and locking the gearmotor" in the "Usage Guide"). Now, using just a slight movement, move the gate leaf a few centimetres in the direction of full opening until you hear a click.

5.3 - MAESTRO200C and MAESTRO200M GEARMOTOR CONNECTION

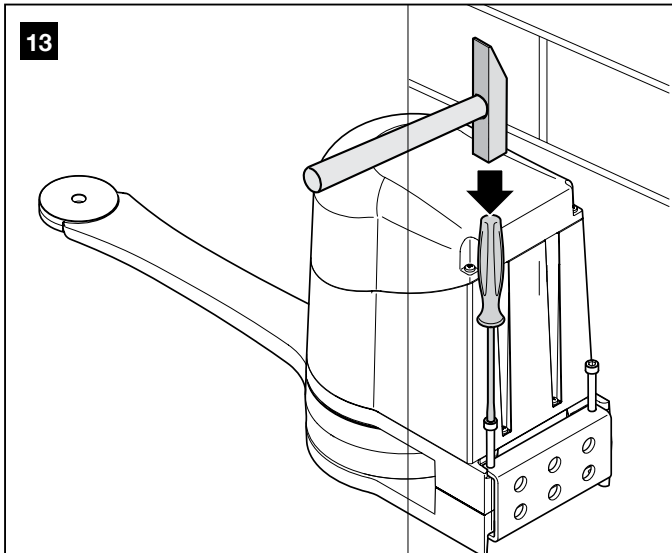
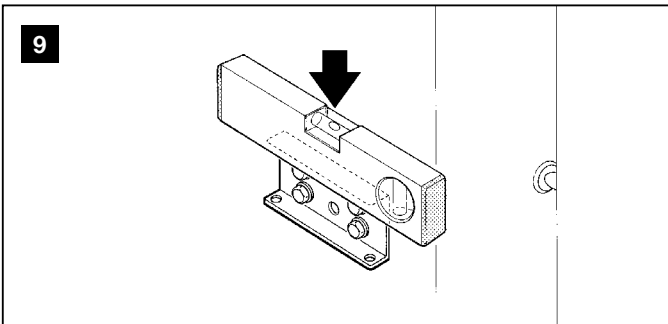
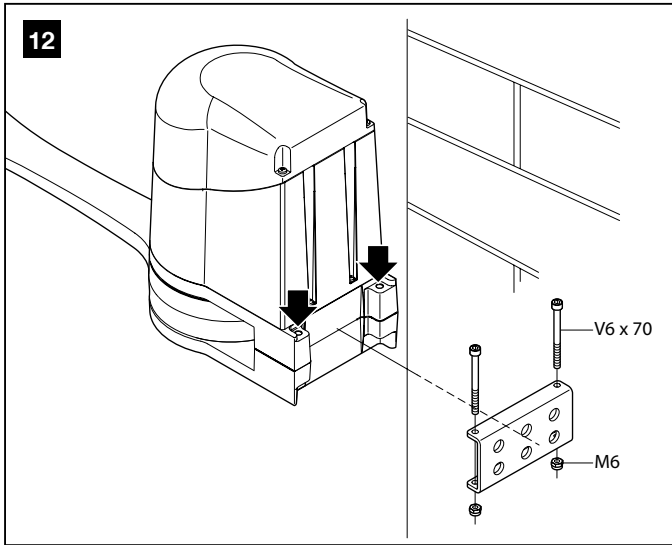
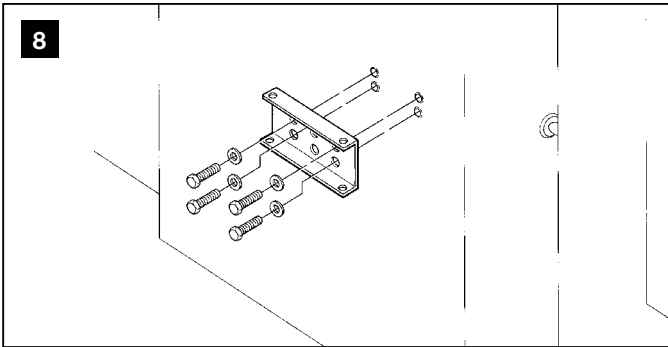
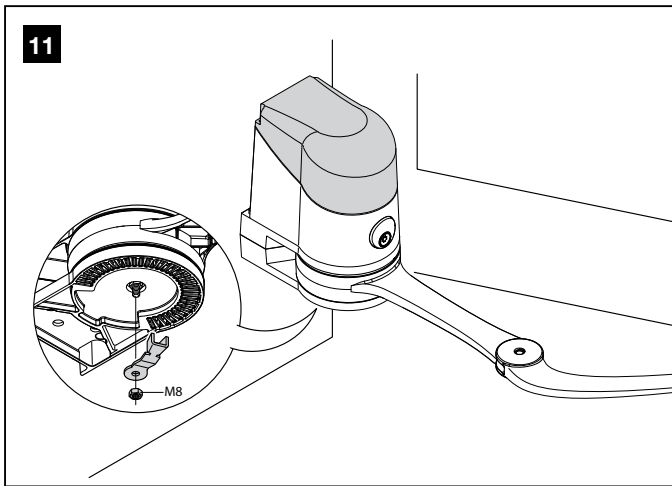
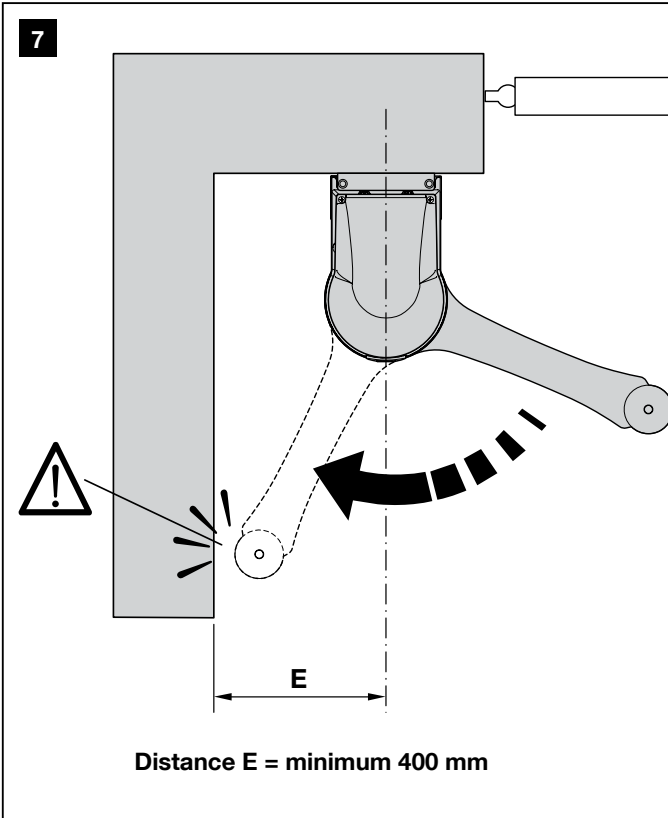
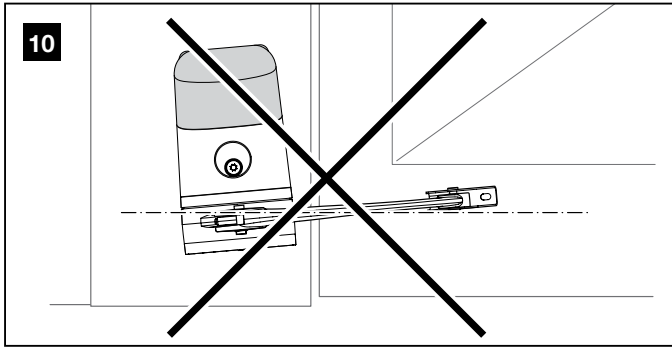
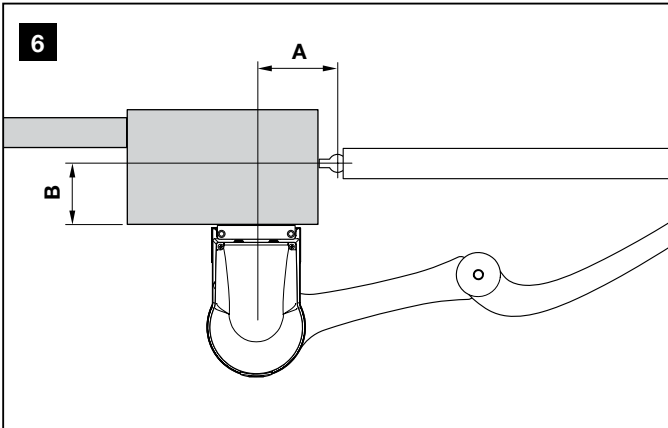
CAUTION! – All electrical connections must be made while disconnected from the grid and disconnected from the backup battery (if any).

To make the electrical connections, remove the top cover of the gearmotor as shown in **fig. 23**.

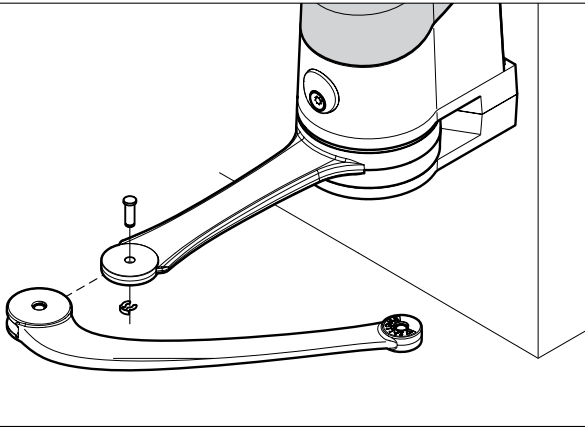
- **MAESTRO200C:** thread the cable through the appropriate duct located on the back of the gearmotor, and make the electrical connections as shown in **fig. 24**, replace the cover.
- **MAESTRO200C:** thread the cables through the appropriate duct located on the back of the gearmotor, and make the electrical connections as shown in **fig. 22**, replace the cover.

Bearing in mind that:

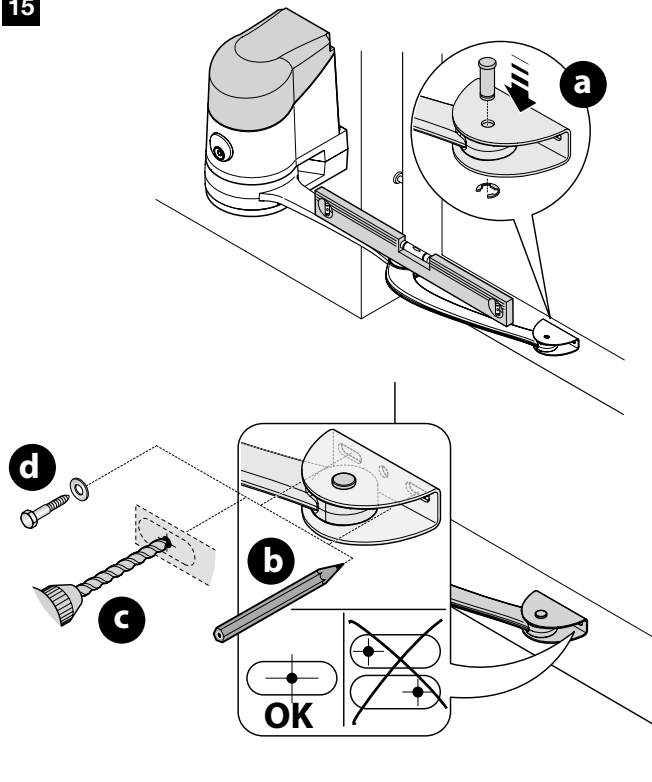
01. To facilitate connection operations, you can remove the terminals. After having made the connections, insert the terminals back into their dedicated seats.
02. The WU100SK cable is connected as shown in detail (B) in **fig. 22**.
03. Remember that in order to avoid the risk of the two leaves colliding, the MAESTRO200C command unit first commands the motor connected to the M2 output to open, and then the motor connected to M1, whilst during closing, the reverse happens. Then, make sure that the (outer) terminal M1 is connected the motor that drives the leaf resting on the mechanical stop, and terminal M2 to the top leaf. If you are using only one motor (gate with only one leaf), connect it to terminal M2, leaving terminal M1 free.
04. The grey terminals (SbS) and red (stop) of the KS200KIT key selector switch (optional accessory), are connected respectively to the grey terminals (SbS) and red (stop) of the control unit. You do not need to observe any polarity for the connection.
05. If you are using an external antenna (optional accessory), you will need to connect the control unit core and the screen of the shielded cable as shown in detail (A) in **fig. 22**.



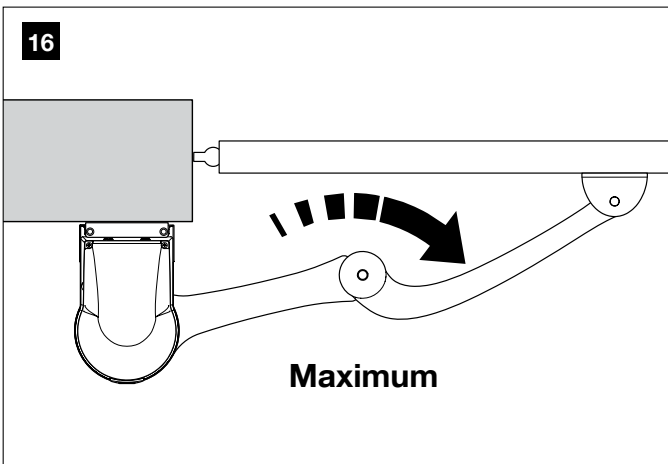
14



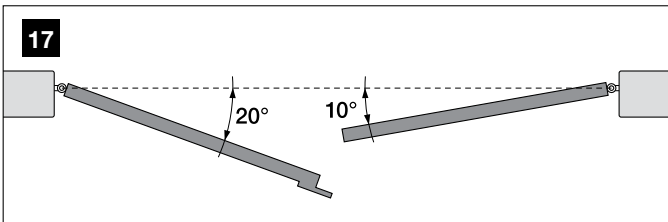
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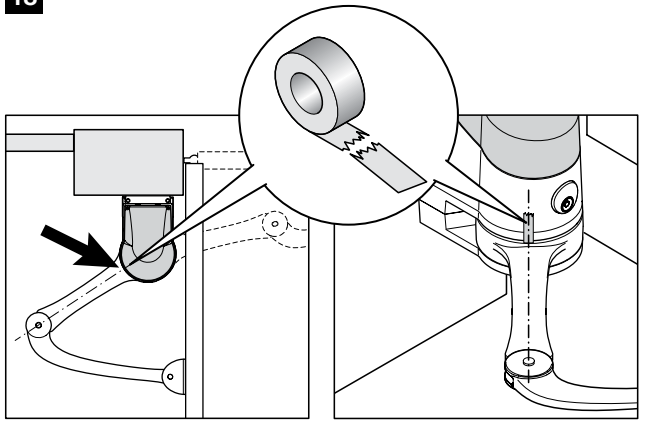
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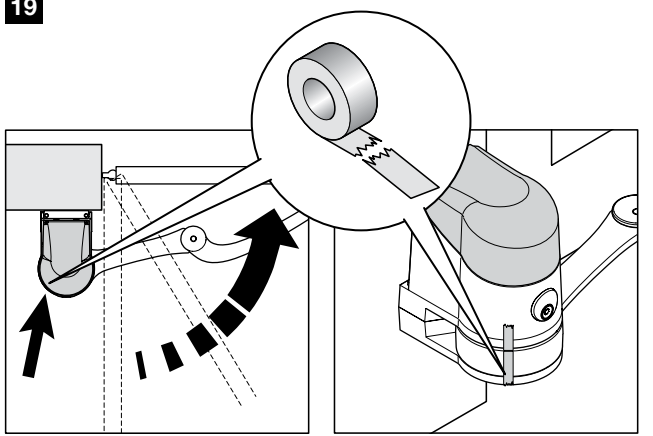
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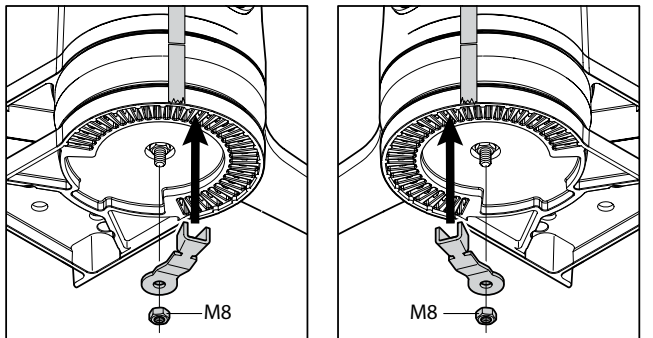
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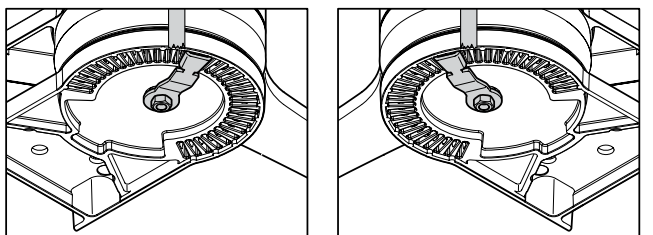
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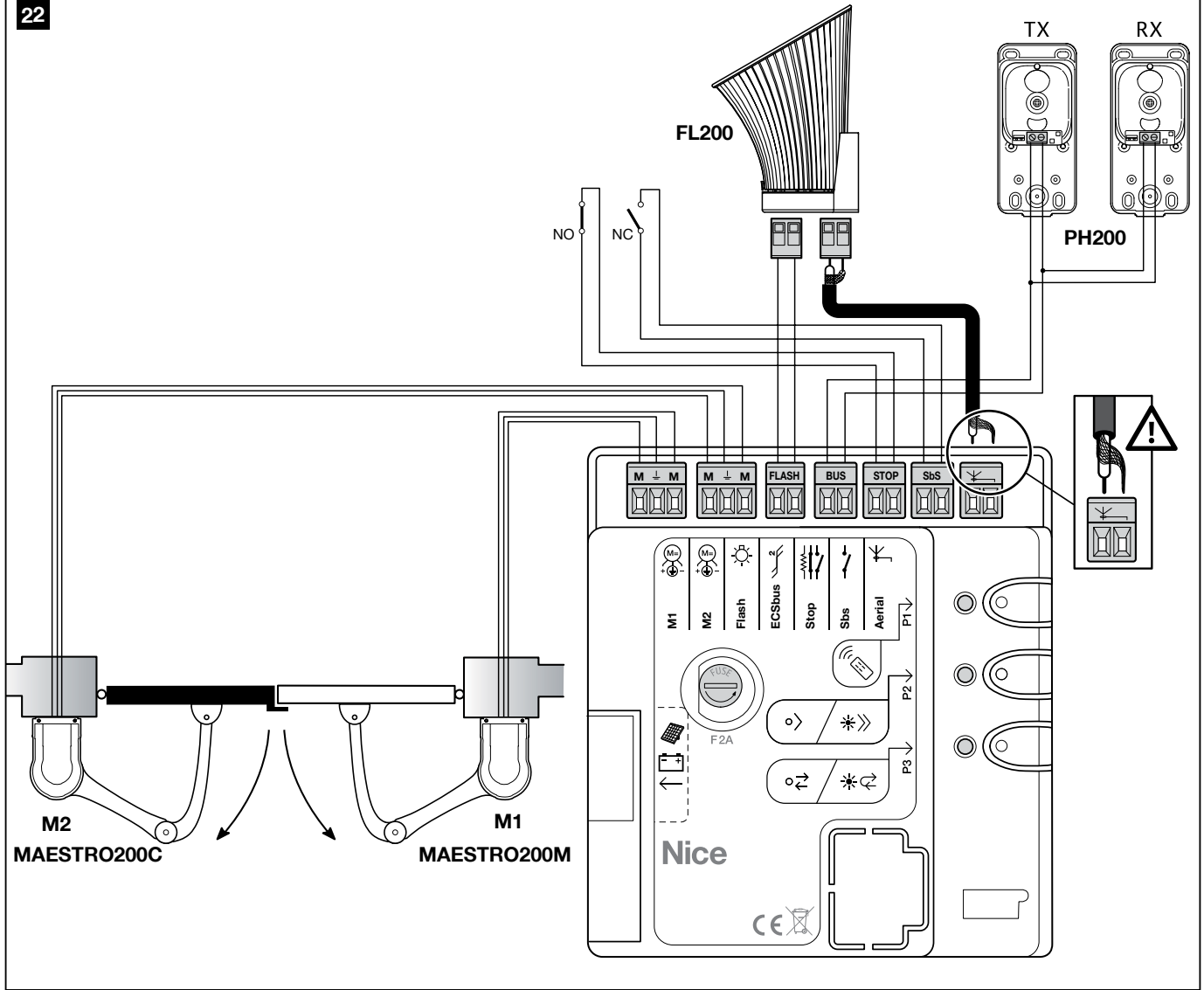
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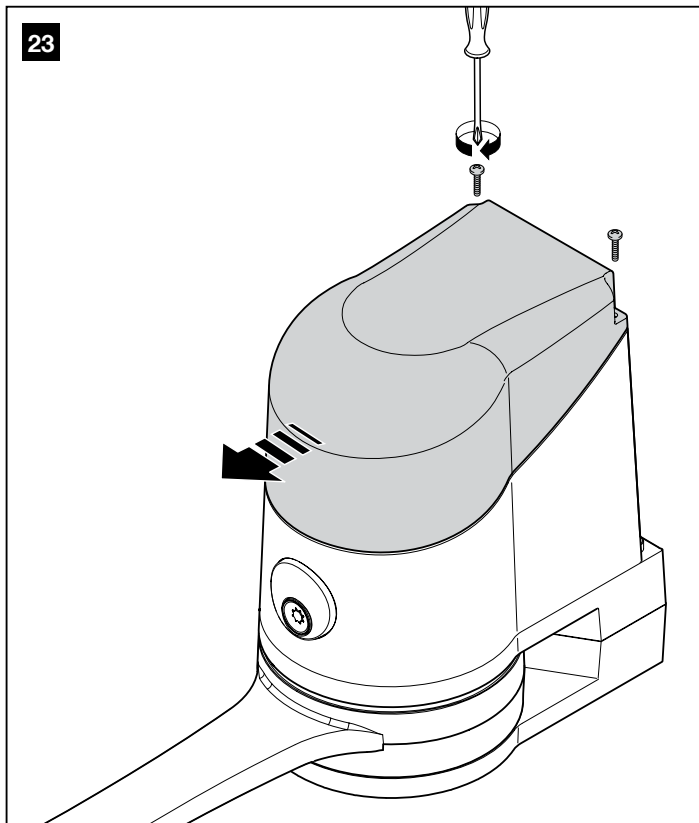
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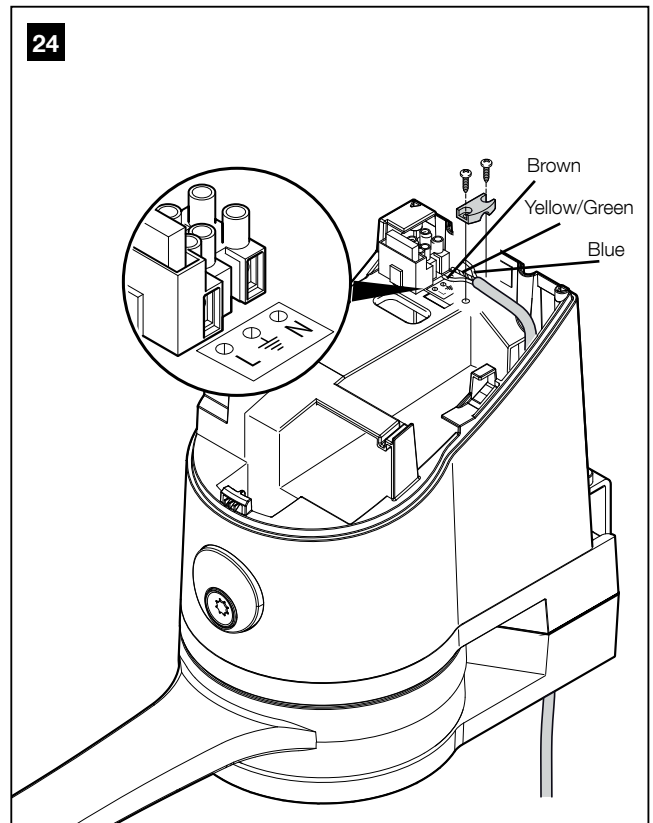
22



23



24



— STEP 6 —

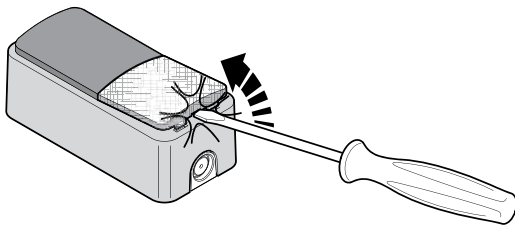
6.1 - INSTALL AND CONNECT PH200 PHOTOCELLS (fig. 25)

⚠ • position each photocell 40/60 cm above the ground • position them on the opposite sides of the zone to be protected • position them as close as possible to the gate (maximum distance = 15 cm) • a tube for passing the cables must be present in the fastening point • orient the TX transmitter towards the central zone of the RX receiver (allowed misalignment: maximum 5°)

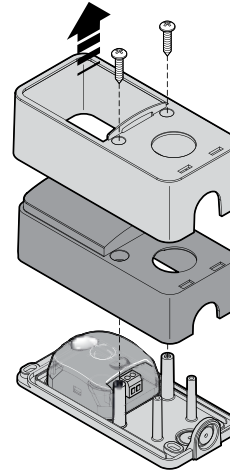
- 01. Remove the front glass (Phase 01 - Fig. 25)
- 02. Remove the upper casing then the internal casing of the photocell (Phase 02 - Fig. 25)
- 03. Perforate the lower casing in the point where the cables should pass (Phase 03 - Fig. 25)

- 04. - Position the lower casing in the point where the tube for the passage of the cables arrives and mark the perforation points (Phase 04 - Fig. 25)
 - Use a percussion drill to drill the wall with a 5 mm bit. Insert the 5 mm wall plugs (Phase 04 - Fig. 25)
 - Pass the electrical cables through the relevant holes and fasten the lower casing with the screws (Phase 04 - Fig. 25)
- 05. - Connect the electrical cable to the terminals of the TX and RX, which must be connected in parallel to each other then connected to the terminal on the control unit (Fig. 22). It is not necessary to observe any polarity.
 - Put back in place, in the following order, the inner casing followed by the upper casing to be fastened with the two screws then, lastly, insert the cover and exert slight pressure to close it (Phase 05 - Fig. 25).

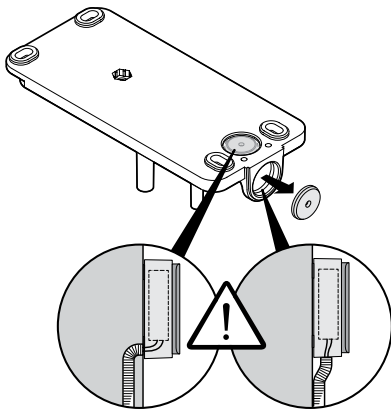
25 01.



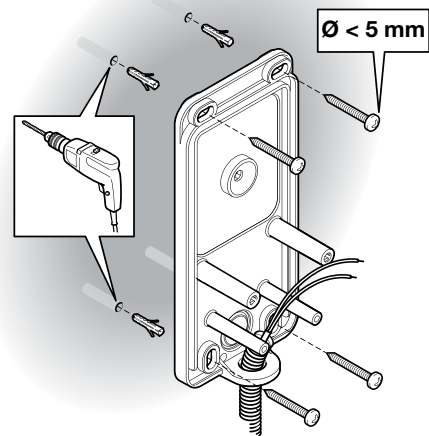
02.



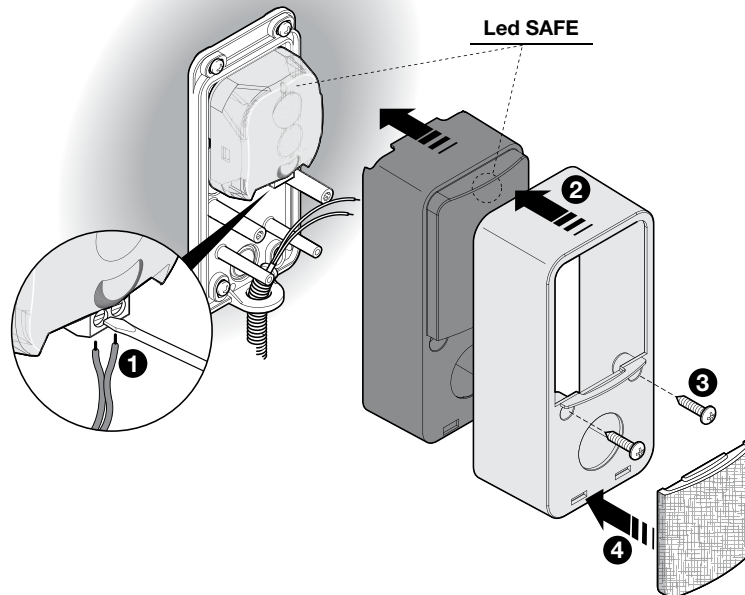
03.



04.



05.



6.2 - INSTALL AND CONNECT FL200 FLASHING INDICATOR (fig. 26)

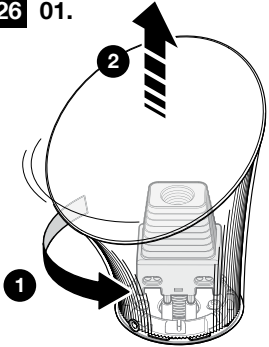
⚠ • The flashing light must be positioned near the gate in a clearly visible position. It can be fasted to a horizontal or vertical surface.

• For connection to the Flash terminal, no polarity needs to be observed; instead for connection of the shielded aerial cable, it is necessary to connect the cable and sheath as shown in Fig. 22.

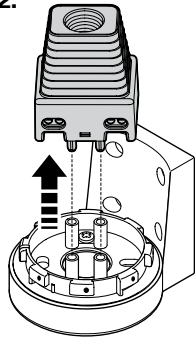
Choose the most suitable position in which to install the flashing light: it must be positioned near the gate in a clearly visible position. It can be fasted to a horizontal or vertical surface.

For the installation procedure see Fig. 26.

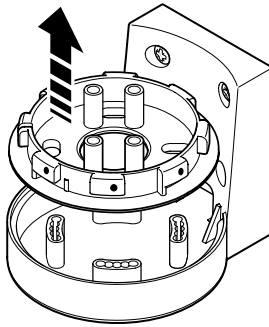
26 01.



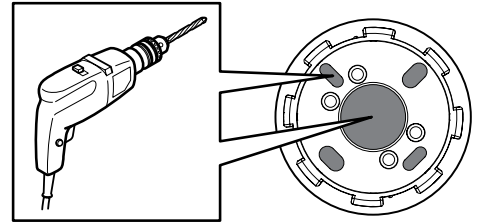
02.



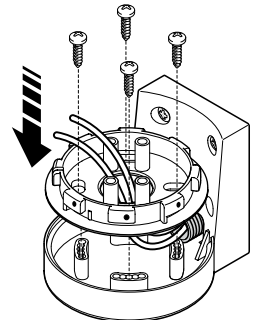
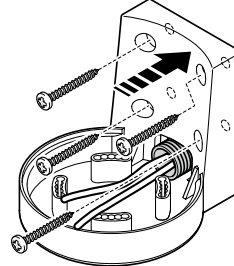
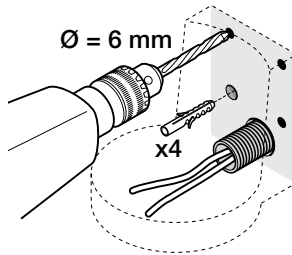
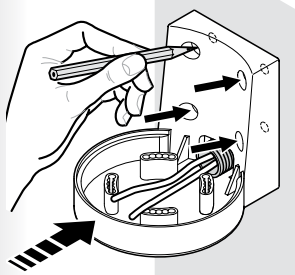
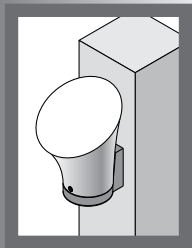
03.



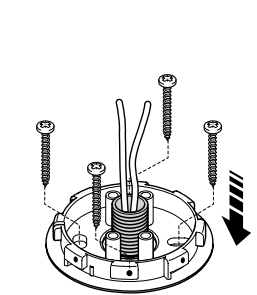
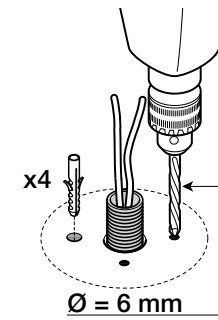
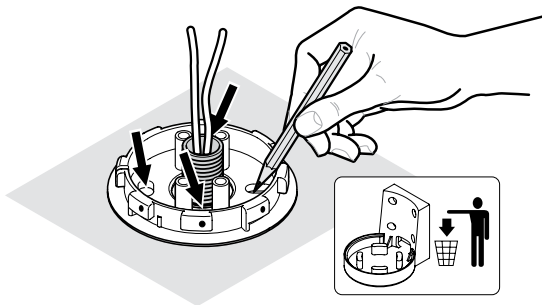
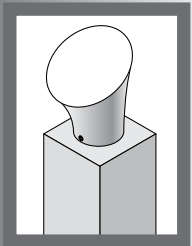
04.



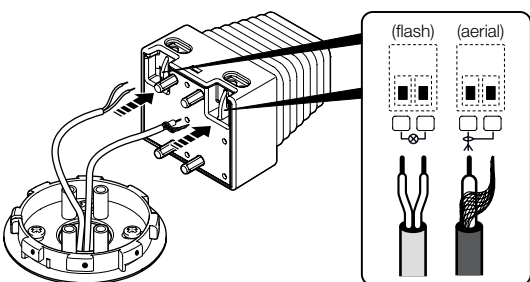
05. A



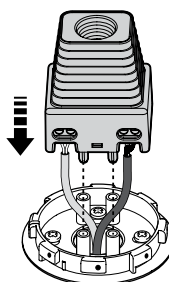
05. B



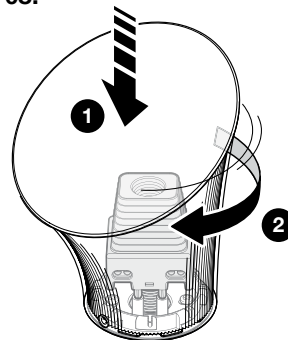
06.



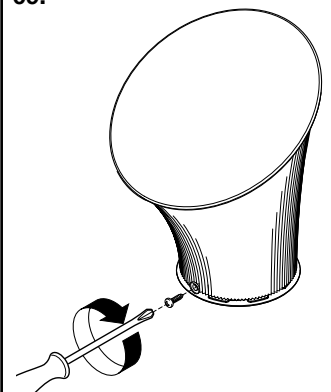
07.



08.



09.





— STEP 7 —

7.1 - POWER SUPPLY CONNECTION**WARNINGS!**

– The PVC power cable is suitable for indoor installations. For installation outdoors, you must protect the entire cable with a protective duct. Alternatively, you can replace the cable with one of type H07RN-F.

– The final connection of the automation to the electrical mains or substitution of the cable supplied must be performed exclusively by a qualified and expert electrician, in compliance with local safety standards and the following instructions.

• For operational and programming tests of the automation, use the cable supplied, inserting the plug into an electrical socket. If the socket is far from the automation, use a suitable extension lead.

• For the test and commissioning phase of the automation you must connect the control unit permanently to the mains power supply, replacing the supplied cable with another of suitable length. To make the connection between the cable and the gearmotor control unit, proceed as described below:

WARNING:

Provide a device inside the electricity supply line that ensures complete disconnection of the automation mechanism from the grid. The disconnection device must have contacts with an opening distance large enough to permit complete disconnection under the conditions sanctioned by overvoltage category III, in accordance with installation regulations. The device ensures quick, safe disconnection from the power supply if needed, and must therefore be positioned in view of the automation mechanism. If, on the other hand, it is located in a position which is not visible, there must be a system for preventing accidental or unauthorized reconnection with the power grid to prevent this risk. The disconnection device is not supplied with the product.

01. Make sure that the gearmotor plug is not plugged into the wall socket.
02. Disconnect the power supply terminal electrical cable from the gearmotor.
03. Loosen the collar found under the terminal and remove the electric cable.
Replace it with a permanent power supply cable.
04. Connect the electric cable to the gearmotor power supply terminal.
05. Tighten the collar to secure the electric cable.

7.2 - PRELIMINARY CHECKS

As soon as the control unit is electrically powered, you are advised to carry out some simple tests:

01. Check that the **ECSbus led [A]** (fig. 27) is flashing steadily, at a speed of around one flash per second.
02. Check that the **SAFE led [B]** (fig. 27) on the photocells is flashing (both on TX and RX); the type of flash is not important as this depends on other factors; it is simply important that it is not either permanently lit or unlit.
03. If the above conditions are not satisfied, it is advisable to switch off the power supply to the control unit and check the electrical connections more carefully. For other useful information see also chapters 10.5 "Troubleshooting" and 10.6 "Diagnostics and signals".

7.3 - CONNECTED DEVICES RECOGNITION

Once the initial checks are complete, you need to allow the control unit to recognise the devices connected to it on the "ECSbus" and "STOP" terminals.

01. On the control unit, press and hold down **P2 [A]** (fig. 28) for at least 3 seconds, then release it.
02. Wait a few seconds until the control unit has completed the device recognition procedure.
03. On recognition completion the **STOP led [B]** (fig. 28) must remain lit, whilst the **P2 led [C]** (fig. 28) must go out. If the **P2 led** flashes, it means that an error has occurred; see section 10.5 "Troubleshooting".

The phase of self-learning the devices connected can be repeated at any time also after installation (such as in the case that a photocell is added); it is sufficient to repeat it from point 01.

7.4 - GATE LEAF OPEN AND CLOSURE ANGLES RECOGNITION

After self-learning the devices, the control unit must recognise the leaf opening and closing angles. In this phase the opening angle of the leaves from the mechanical end closing stop up to the mechanical opening stop is detected. The presence of fixed and sufficiently robust mechanical stops is essential.

01. Carry out motors release using the appropriate keys (see paragraph 11.3 - Usage guide) and move the leaves to mid-course, in such a way that they are free to move in the opening and closing directions; then release the motors.
02. On the control unit press and release **P3 [B]** (fig. 28); wait for the control unit to perform the recognition: closure of motor M1 up to the mechanical stop, closure of motor M2 up to the mechanical stop, opening of the motor M2 and the motor M1 up to the mechanical opening stop; full closure of M1 and M2.
 - If the first manoeuvre of one or both wings is not a closure, press **P3** to stop the recognition phase and then invert the polarity of the opening motor(s) by swapping over the two brown and blue wires on the terminal.
 - If the first motor to carry out a closing move is not M1, press **P3** to stop the recognition phase and then swap the motors connections on the terminals.
 - If during the recognition phase a device actuates (photocells, key selector switch, P3 pressed, etc.) the recognition phase will be stopped immediately. It will then be necessary to repeat it in full.
03. If the **P3 led [A]** (fig. 28) flashes at the conclusion of the recognition process, it means that an error has occurred; see section 10.5 "Troubleshooting".

The recognition stage of the opening angles can be repeated again at any time, even after the installation (for example, if one of the opening stops is moved); it is sufficient to repeat the procedure starting from step 1.

7.5 - RADIO TRANSMITTERS CHECK

To check the transmitters, you just need to press on one of its 4 keys, check that the led flashes and that the automation carries out the command sent.

The command associated to each key depends on the way in which they were stored (see paragraph 10.4 "Memorisation of radio transmitters").

7.6 - ADJUSTMENTS**7.6.1 - Leaf speed selection**

Leaf opening and closing can be done in two speeds: "slow" or "fast". To move between one speed and the other, quickly press **P2** (fig. 28); the corresponding **P2 led** (fig. 28) lights up or goes out; when the led is off the speed is "slow", when the led is lit the speed is "fast".

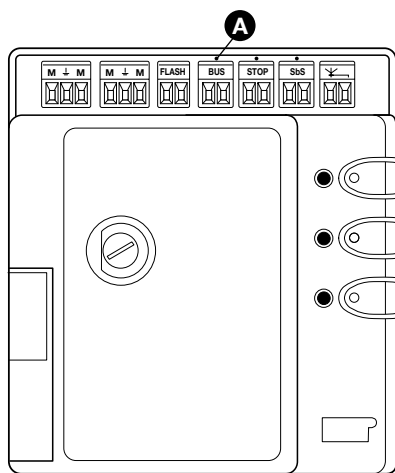
7.6.2 - Selecting the operating cycle type

The closing and opening of the gate can be performed according to two different operating cycles:

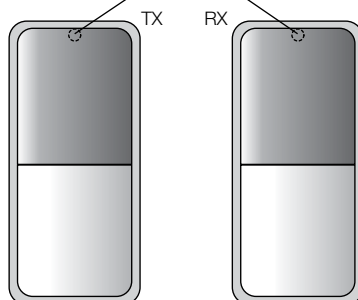
- single cycle (semiautomatic): with one command the gate opens, and will remain open until the next command causing it to close.
- Complete cycle (automatic closure): with one command, the gate opens and recloses automatically after a short space of time (for the duration see paragraph 10.1 "Parameter adjustment using radio transmitter").

To move between one operating cycle and the other, quickly press **P3** (fig. 28); the corresponding led (fig. 28) lights up or goes out; when the led is off the cycle is "single", when the led is lit the cycle is "complete".

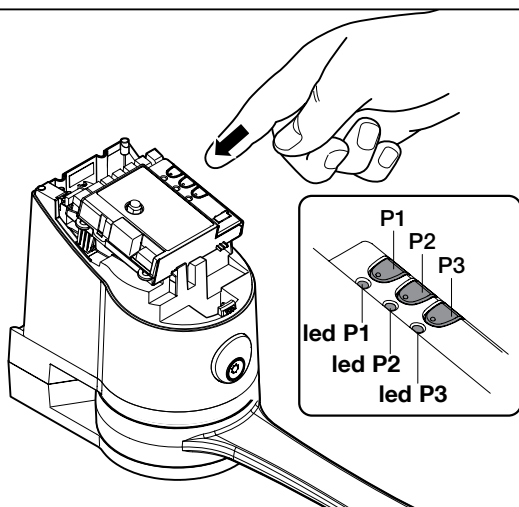
27



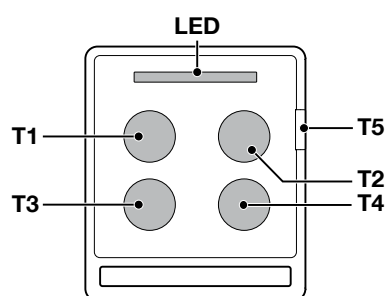
B



28



29



TESTING AND COMMISSIONING

— STEP 8 —

These are the most important stage in the automation system installation procedure in order to ensure the maximum safety levels.

Testing can also be adopted as a method of periodically checking that all the various devices in the system are functioning correctly.

⚠ CAUTION! – The system must be tested by skilled and qualified personnel, who is responsible for defining the tests adopted in relation to the risks present, and for ensuring observance of all legal provisions, standards and regulations, with particular reference to all requirements of the EN 13241-1, EN 12445 and EN 12453 standards which defines the test methods for testing gate automations.

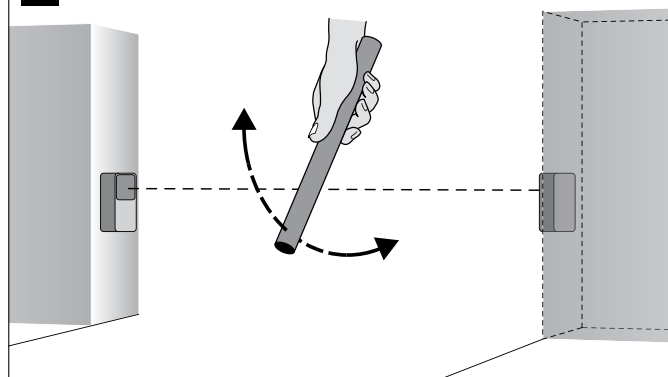
8.1 - TESTING

01. Ensure that you have strictly complied with the instructions and warnings in STEP 1.
02. Using the selector switch or the radio transmitter, carry out testing of opening and closing the gate and check that the movement of the leaves corresponds to what is expected. It is useful to perform several tests to evaluate the freedom of movement of the gate and any adjustment or installation faults, as well as the presence of particular points of friction.
03. Check the proper operation of all the safety devices, one by one (photocells, safety edges, etc.). In particular, each time a device is activated, the ECSbus led on the control unit flashes longer, confirming that the control unit has recognised this.
04. To check the photocells and make sure that there is no interference with other devices, pass a 5 cm diameter, 30 cm long cylinder (fig. 30) on the optical axis, first near TX, then near RX and finally at the mid-point between them and make sure that in all these cases the

device is triggered, switching from the active to the alarm status and vice-versa; finally, make sure that it causes the intended action in the control unit; for example that it causes the reversal of the movement during the closing manoeuvre.

05. Measure the force as specified in the standard EN 12445. If the motor force control is used as an auxiliary function for reduction of impact force, test and identify the setting that obtains the best results.

30



8.2 - COMMISSIONING

Commissioning can take place only after all testing phases have been terminated successfully. Partial or "makeshift" commissioning is strictly prohibited.

01. Draw up the technical dossier of the automation that should include as a minimum: overall design (for example fig. 1), electrical connec-

tions wiring diagram (for example **fig. 5**), risk analysis and related adopted solutions, manufacturer conformance declaration for all the devices used (use Annex 1, "CE conformity declaration for all MAES-TRO200 components").

02. Post a label on the door providing at least the following data: type of automation, name and address of manufacturer (person responsible for the "commissioning"), serial number, year of manufacture and CE mark.
03. Permanently affix the label present in the package to the gate, concerning the manual operations of releasing and locking the gearmotor.

04. Prepare the declaration of conformity of the automation system and deliver it to the owner (use Annex 1).
05. Compile the usage guide for the automation system and deliver it to the owner; for this purpose, Annex "Usage guide" can be used as an example.
06. Prepare the maintenance schedule of the automation system and deliver it to the owner; it must provide all directions regarding the maintenance of all the automation devices.
07. Before commissioning the automation, ensure that the owner is adequately informed of all associated residual risks and hazards.



MAINTENANCE

— STEP 9 —

The maintenance operations must be performed in strict compliance with the safety directions provided in this manual and according to the applicable legislation and standards.

The automation devices do not require special maintenance operations; however periodically check, at least once every six months, the perfect

efficiency of all the devices.

For this purpose, to perform all the tests and checks provided for in paragraph 8.1 "Testing" and carried out as provided for in paragraph "User-admissible maintenance operations".

If other devices are present, follow the steps as laid out in the relevant maintenance schedule.



DISPOSAL OF THE PRODUCT

This product is an integral part of the automation system it controls and must be disposed of along with it.

As with installation operations, disposal operations must be performed by qualified personnel at the end of the product's useful life.

This product is made of various types of materials, some of which can be recycled while others must be scrapped. Seek information on the recycling and disposal systems required by local regulations in your area for this product category.

Caution! – some parts of the product may contain pollutants or hazardous substances which, if released into the environment, may cause serious damage to the environment or human health.

As indicated by the symbol on the side, disposal of this product as domestic waste is strictly prohibited. Separate waste into categories for disposal, according to the methods established by local regulations, or return the product to the retailer when purchasing a new version.



Caution! – Local legislation may envisage serious fines in the event of abusive disposal of this product.

FURTHER DETAILS

— STEP 10 —

10.1 - ADVANCED ADJUSTMENTS

10.1.1 - Parameter adjustment using radio transmitter

Using the radio transmitter you can adjust certain operating parameters on the control unit: there are eight parameters.

- 1) Pause time: duration for which the leaves remain open (in the case of automatic closure).
- 2) Pedestrian opening: pedestrian opening mode of the leaves.
- 3) Motor force: maximum force above which the control unit detects an obstacle, and reverses the movement.
- 4) "Step-by-Step (SbS)" function: sequence of movements associated to each "Step-by-Step" command.
- 5) SbS input configuration on control unit: allows you to program the SbS input functionality, as described in Table 4.
- 6) Flash output configuration. Allows you to program the Flash output functionality, as shown in Table 4.
 - a) flashing indicator: the output emits one flash per second during the manoeuvre (paragraph 10.6.2).
 - b) courtesy light functionality, the output activates at the start of the manoeuvre and goes out automatically after 60 seconds have expired following completion of the manoeuvre.
 - c) gate open indicator functionality: the output has the following behaviour:
 - off when gate closed,
 - flashes slowly during the opening manoeuvre,
 - flashes quickly during the closing manoeuvre,
 - steady on in all other cases.

Note - Before to modifying the operation of the Flash output, check that the device connected to the output meets the specifications given in the chapter "Product components technical specifications".

- 7) Discharging Motor 1 and Motor 2 when closing: adjusts the length of the "brief reverse" of the motors after execution of the closing manoeuvre,

in order to reduce the final residual force.

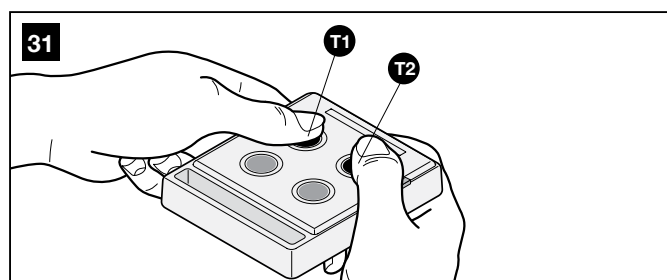
- 8) Discharging Motor 1 and Motor 2 when opening: adjusts the length of the "brief reverse" of the motors after execution of the opening manoeuvre, in order to reduce the final residual force. The parameters adjustment operation can be carried out by any one of radio transmitters, as long as it is stored in mode 1 (see paragraph 10.4.1 "Mode 1 memorisation").

In the event that no transmitter stored in Mode 1, it is possible to memorise one just for this phase, and delete it straight afterwards (see paragraph 10.4.4 "Deleting a radio transmitter").

CAUTION! – When making adjustments using the transmitter, you must allow the command unit time to recognise the radio command; in practice, the keys must be pressed and released slowly, with at least one second of pressure, one second of release, and so on.

To program the parameters in Table 3:

01. Press **T1** and **T2** together (**fig. 31**) on the radio transmitter for at least 5 s.
02. Release the two keys.
03. Within three seconds, carry out the action set out in Table 6 based on the parameter to change.



Example: to adjust the pause time to 40 s.

01. Press the **T1** and **T2** keys and hold them down for at least 5s

02. Release **T1** and **T2**

03. Press **T1** three times

All the parameters can be adjusted as required without any contraindication; only the adjustment of the “motor force” could require special care:

- Do not use high force values to compensate for the fact that the gate has anomalous friction points. Excessive force can be detrimental to the functioning of the safety system or can damage the gate.
- If the “Motor force control” is used in support of the system for impact force reduction, the force measurement procedure must be performed after each adjustment, as envisaged by standard EN 12445.
- Weather conditions may affect the movement of the gate. Periodically you may need to readjust.

To program the parameters in Table 4:

01. Press **T1** and **T3** together (**fig. 32**) on the radio transmitter for at least 5 s.

02. Release the two keys.

03. Within three seconds, carry out the action set out in Table 4 based on the parameter to change.

Example: to adjust the closing discharge of motors 1 and 2 to level 4.

01. Press the **T1** and **T3** keys and hold them down for at least 5s

02. Release **T1** and **T3**

03. Press **T3** four times

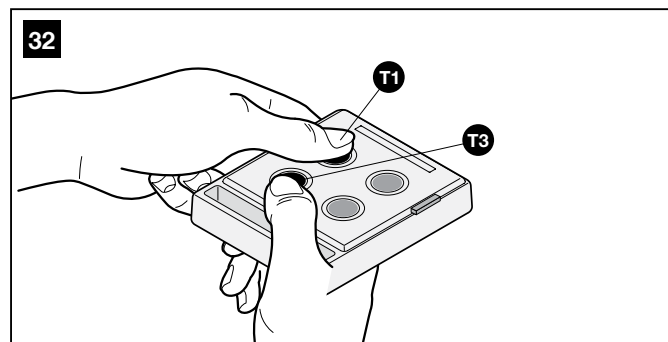


TABLE 3

Parameters	N°	Valore	Action: operation to be carried out at step 3 in the recognition phase
Pause time	1	10s	Press T1 once
	2	20s (*)	Press T1 twice
	3	40s	Press T1 three times
	4	80s	Press T1 four times
Pedestrian opening	1	Open 1 leaf halfway	Press T2 once
	2	Fully open 1 leaf (*)	Press T2 twice
	3	2 leaves partially opened to 1/4 of the full course	Press T2 three times
	4	2 leaves partially opened to half of the full course	Press T2 four times
Motor force	1	Low	Press T3 once
	2	Medium low (*)	Press T3 twice
	3	Medium high	Press T3 three times
	4	High	Press T3 four times
Step-by-Step (SbS) function	1	“Open”, “Stop”, “Close”, “Stop”	Press T4 once
	2	“Open”, “Stop”, “Close”, “Open” (*)	Press T4 twice
	3	“Open”, “Close”, “Open”, “Close”	Press T4 three times
	4	Open only	Press T4 four times

(*) Original factory value

TABLE 4

Parameters	N°	Value	Action to perform
SbS input configuration on the control unit	1	Step-by-Step (*)	Press T1 once
	2	pedestrian opening	Press T1 twice
Flash output configuration	1	Flashing light (*)	Press T2 once
	2	Courtesy light	Press T2 twice
	3	Gate open indicator	Press T2 three times
Motor 1 and Motor 2 discharge in closure	1	No discharge (*)	Press T3 once
	2	0.1s (Minimum)	Press T3 twice
	3	0.2s	Press T3 three times
	4	0.3s	Press T3 four times
	5	0.4s (Medium)	Press T3 five times
	6	0.5s	Press T3 six times
	7	0.6s	Press T3 seven times
	8	0.7s (Maximum)	Press T3 eight times
Motor 1 and Motor 2 discharge in opening	1	No discharge (*)	Press T4 once
	2	0.1s (Minimum)	Press T4 twice
	3	0.2s	Press T4 three times
	4	0.3s	Press T4 four times
	5	0.4s (Medium)	Press T4 five times
	6	0.5s	Press T4 six times
	7	0.6s	Press T4 seven times
	8	0.7s (Maximum)	Press T4 eight times

(*) Original factory value

10.1.2 - Checking adjustment using radio transmitter

With a radio transmitter which has been memorised in Mode 1, you can check at any time the adjusted values for each parameter using the following sequence.

To view the parameters in table 5:

01. Press **T1** and **T2** together on the radio transmitter for at least 5s.
02. Release the two keys.
03. Within three seconds, carry out the action set out in **Table 5** based on the parameter to change.
04. Release the key when the flashing indicator starts flashing.
05. Count the number of flashes and, based on the number, check in Table 3 for the corresponding value.

Example: If, after having pressed T1 and T2 for 5 s and then T1, the flashing indicator will emit three flashes; the pause time has been programmed at 40 s.

To view the parameters in table 6:

01. Press **T1** and **T3** together on the radio transmitter for at least 5s.
02. Release the two keys.
03. Within three seconds, carry out the action set out in **Table 6** based on the parameter to change.
04. Release the key when the flashing indicator starts flashing.
05. Count the number of flashes and, based on the number, check in Table 4 for the corresponding value.

TABLE 5	
Parameter	Action
Pause time	Press and hold T1
Pedestrian leaf	Press and hold T2
Motor force	Press and hold T3
“Step-by-Step (SbS)” function	Press and hold T4

TABLE 6	
Parameter	Action
SbS input configuration on the control unit	Press and hold T1
Flash output configuration	Press and hold T2
Discharge on close Motor 1 and Motor 2	Press and hold T3
Discharge on open Motor 1 and Motor 2	Press and hold T4

10.2 - OPTIONAL ACCESSORIES

In addition to the devices present in MAESTRO200, there are others available as optional accessories that can integrate with the automation system.

PR300: 24 V buffer battery; in the event of a lack of mains power supply, this ensures around ten full cycles.

SOLEKIT: 24 V solar energy system; useful in cases where power from the fixed electrical grid is unavailable.

DS100: digital selector switch which allows you, after having correctly entered the secret combination, to control the automation remotely. For programming see paragraph 10.4.6

10.2.1 - Installing the PR300 buffer battery (fig. 33)

CAUTION! - Electrical connection of the battery to the unit must be performed exclusively after completing all stages in installation and programming, as the battery is an emergency power supply.

To install and connect the PR300 buffer battery to the command unit, see fig. 33 and refer to the PR300 instruction manual.

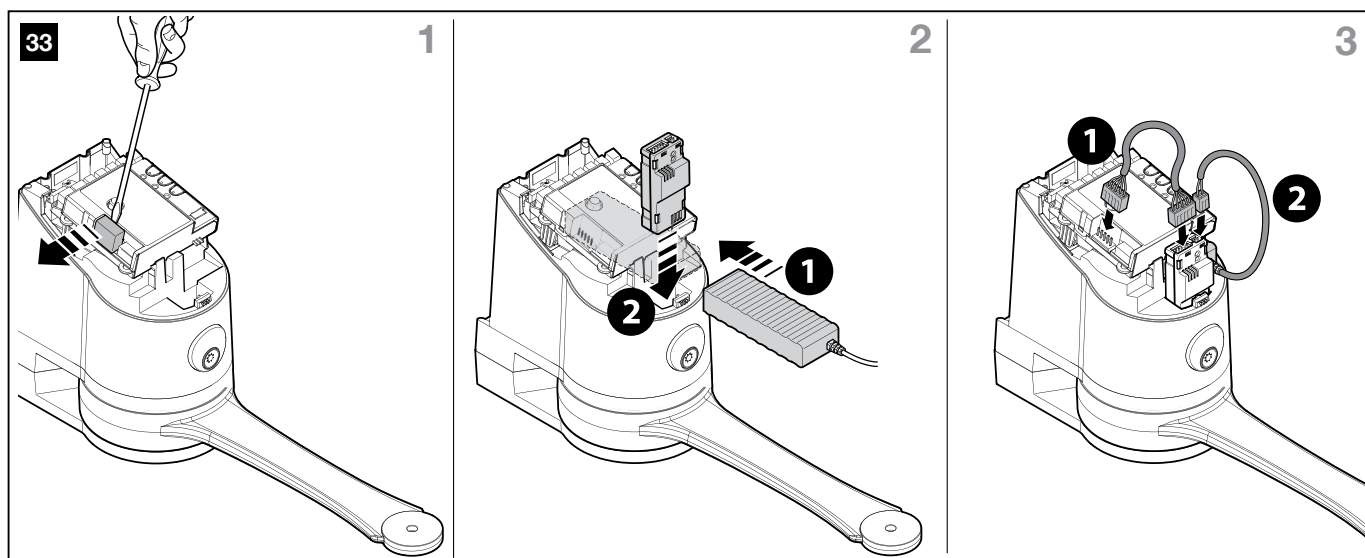
When automation is powered by the buffer battery, after 60 s following completion of a manoeuvre, the control unit automatically turns off the “ECSbus” output (and all the devices connected to it), the Flash output and all of the leds, excluding the ECSbus led that will flash more slowly; this is the “Standby” function. When a command arrives, the control unit will reset to normal functioning (after a brief delay). This feature is designed to reduce power consumption, as this is a very important consideration with battery power.

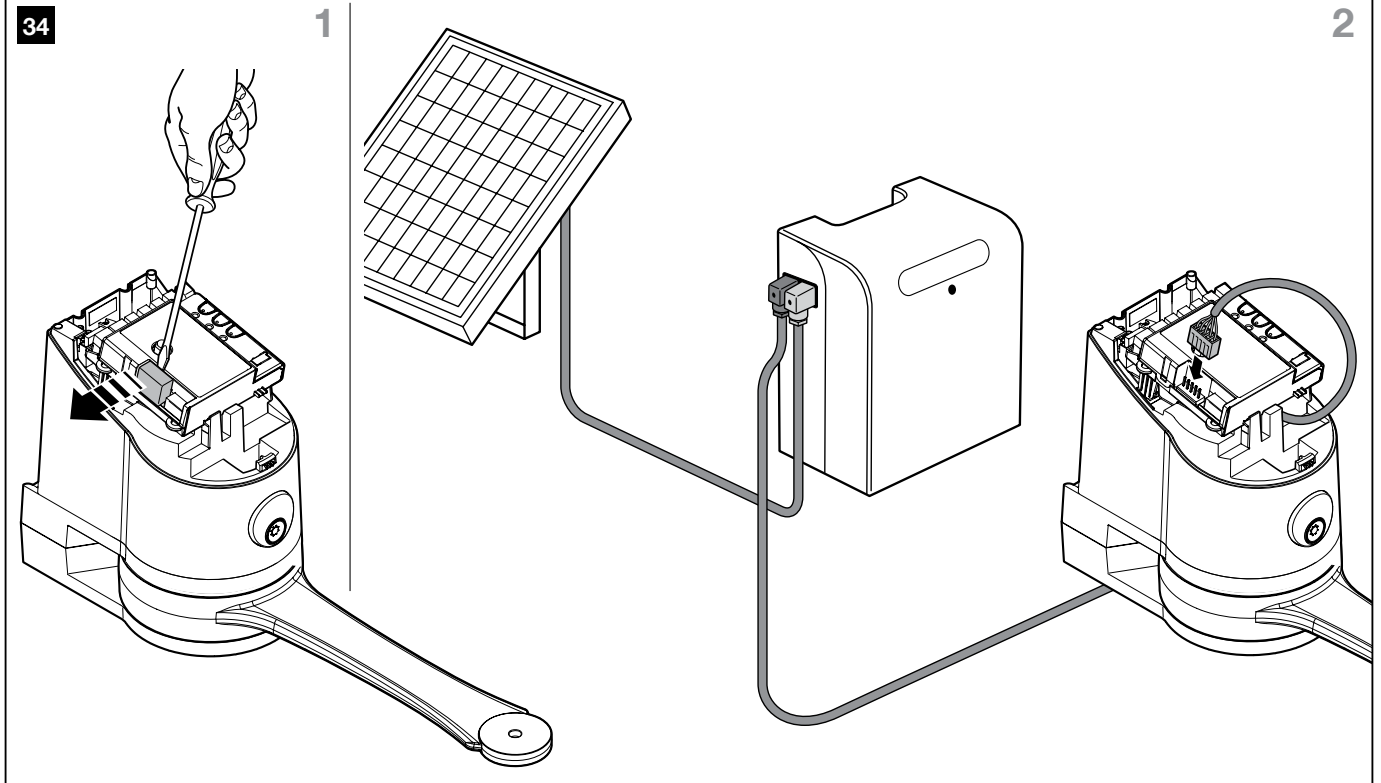
10.2.2 - Install the SOLEKIT solar power supply system (fig. 34)

CAUTION! - When the automation mechanism is powered exclusively by the “SOLEKIT” solar power supply system, IT MUST NOT BE POWERED by the electricity grid at the same time.

To connect the SOLEKIT solar power supply system to the control unit, see fig. 34 and refer to the SOLEKIT instruction manual.

When automation is powered by the solar panel, after 60 s following completion of a manoeuvre, the control unit automatically turns off the “ECSbus” output (and all the devices connected to it), the Flash output and all of the leds, excluding the ECSbus led that will flash more slowly; this is the “Standby” function. When a command arrives, the control unit will reset to normal functioning (after a brief delay). This feature is designed to reduce power consumption, as this is a very important consideration with solar power.





10.2.3 - Calculation of maximum number of cycles per day

This product is expressly designed to also be able to operate with the power supply system of the SOLEKIT solar energy model. Suitable technologies have been supplied to minimise the power consumption when the automation is stopped, by turning off all the devices that are not essential to the operation (for example the photocells or the key selector light). In this way all the available energy is stored in the battery, and will be used for the movement of the gate.

Caution! - When the automation mechanism is powered by SOLEKIT, it cannot and IT MUST NOT BE POWERED by the electricity grid at the same time.

Usage limits: maximum number of cycles per day, in a given period of the year.

The SOLEKIT solar-powered system allows full energy independence for the automation, whilst the energy produced by the solar energy panel and stored in the battery remains higher than that consumed by the gate manoeuvres. With a simple calculation it is possible to estimate the maximum number of cycles per day that the automation can execute in a given period of the year in order that this energy balance remains positive.

The first part of the **available energy calculation**, is explained in the SOLEKIT instruction manual; the second part of **calculation of energy consumed** and therefore, the maximum number of cycles per day, is explained in this chapter.

Establish the available energy

To determine the available energy (see also the SOLEKIT instruction manual) proceed as follows:

01. In the ground map supplied in the SOLEKIT kit instruction manual, locate the system installation point; then obtain the value of **Ea** and the degrees of **latitude** of the location (Ex. $Ea = 14$ and degrees = $45^{\circ}N$)
02. In the graphs (North or South) shown in the SOLEKIT kit instruction manual, locate the curve which relates to the degrees of **latitude** of the position (ex. $45^{\circ}N$)
03. Choose the **period of the year** for which you wish to do the calculation, or choose the **lowest point** of the curve if you wish to carry out the calculation for the **harshes period** of the year; then find the corresponding **Am** value (i.e., December, January: $Am = 200$)
04. Calculate the available energy value **Ed** (produced by the panel) by multiplying: $Ea \times Am = Ed$ (i.e. $Ea = 14$; $Am = 200$ thus $Ed = 2800$)

Establish the energy consumed

To calculate the energy consumed by the automation proceed as follows:

05. In the table below choose the box corresponding to the intersection of the row with the **weight** and the column with the **opening angle** of the gate. The box contains the **severity index** (K) of each

manoeuvre (i.e. WU200S with 130kg leaf and opening of 100° ; $K = 106$).

	Opening angle		
Leaf weight	$\leq 95^{\circ}$ ($B \approx 250$)*	$95-105^{\circ}$ ($B \approx 180$)*	$105-110^{\circ}$ ($B \approx 70$)*
< 75 kg	69	88	93
75-100 kg	85	108	115
100-125 kg	102	130	139
125-150 kg	118	151	161

(*) the value of B shown in the table represents the optimum value; in the event that B is less than this value, add 20% to the K value shown in the table.

06. In **table A** below, select the box corresponding to the intersection of the row with the value of **Ed** and the column with the value of **K**. The box contains the maximum possible number of cycles per day (e.g. $Ed = 2800$ and $K = 106$; daily cycles ≈ 22)

If the number obtained is too low for the intended use, or falls within the "not recommended usage area", you can evaluate the use of 2 or more solar power panels or a solar power panel of greater power. Contact the Nice Support Service for further information.

The method described, allows you to calculate the maximum possible number of cycles **per day** that the automation is capable of carrying out, according to the solar energy supplied. The calculated value should be considered as the average value and equal for all the days of the week. Considering the presence of the accumulator, which acts as an energy "store", and considering that the accumulator allows you independent automation even during long periods of bad weather (when the solar panel produces very little energy) it is therefore possible to occasionally exceed the maximum number of cycles per day, provided that the average on 10-15dd is within the limits.

In **table B** below the maximum possible number of cycles is shown, according to the **severity index** (K) of the manoeuvre, using the **stored solar energy** of the accumulator. It is assumed that initially the accumulator is fully charged (e.g., after a long period of good weather or after a refill with the optional power supply model PCB) and that the operations are carried out within a period of 30 days

When the accumulator has exhausted its energy, the led will start to report on the discharged status of the battery with a short flash every 5 seconds, accompanied by a "beep" sound.

TABLE A - Maximum number of cycles per day

To	K=70	K=80	K=90	K=100	K=110	K=120	K=130	K=140	K=150	K=160
9500	131	115	102	92	84	77	71	66	61	58
9000	124	109	97	87	79	73	67	62	58	54
8500	117	103	91	82	75	68	63	59	55	51
8000	110	96	86	77	70	64	59	55	51	48
7500	103	90	80	72	65	60	55	51	48	45
7000	96	84	74	67	61	56	52	48	45	42
6500	89	78	69	62	56	52	48	44	41	39
6000	81	71	63	57	52	48	44	41	38	36
5500	74	65	58	52	47	43	40	37	35	33
5000	67	59	52	47	43	39	36	34	31	29
4500	60	53	47	42	38	35	32	30	28	26
4000	53	46	41	37	34	31	28	26	25	23
3500	46	40	36	32	29	27	25	23	21	20
3000	39	34	30	27	25	23	21	19	18	17
2500	31	28	24	22	20	18	17	16	15	14
2000	24	21	19	17	15	14	13	12	11	11
1500	17	15	13	12	11	10	9	9	8	8
1000	10	9	8	7	6	6	5	5	Usage not recommended area	

TABLE B - Maximum number of cycles just on accumulator charge

K=70	K=80	K=90	K=100	K=110	K=120	K=130	K=140	K=150	K=160
794	695	618	556	505	463	428	397	371	348

10.3 - DEVICES ADDITION OR REMOVAL

Devices can be added to or removed from an automation which is automated with MAESTRO200 at any time.

Caution! – Do not add devices before you have checked that they are fully compatible with MAESTRO200; for details please refer to the NICE Support Service.

10.3.1 - ECSbus

ECSbus is a system which allows you to connect ECSbus devices using only two wires which carry both the power supply and the communication signals. All the devices are connected in parallel on the 2 wires of the ECSbus itself; each device is individually recognised because a univocal address is assigned to it during the installation.

The control unit, via the appropriate recognition phase, identifies one by one all connected devices and is able to detect with extreme safety all possible faults. For this reason, each time a device connected to ECSbus is added or removed the control unit must go through the recognition process; see paragraph 10.3.3 "Recognition of other devices" devices.

10.3.2 - STOP input

STOP is the input that stops movement immediately, (with a brief reverse of the manoeuvre). Devices with output featuring normally open "NO" contacts and devices , and with normally closed "NC" contacts, as well as devices with 8.2k Ω constant resistance output, like sensitive edges, can be connected to this input.

Multiple devices, even of different types, can be connected to the STOP input if suitable arrangements are made; see **Table 7**.

		1° dispositivo tipo:		
2nd device type:		NO	NC	8,2K Ω
	NO	In parallel (<i>note 2</i>)	(<i>note 1</i>)	In parallel
	NC	(<i>note 1</i>)	In series (<i>note 3</i>)	In series
	8,2K Ω	In parallel	In series	(<i>note 4</i>)

Note 1. NO and NC combinations are possible by placing the 2 contacts in parallel, taking care to place a 8.2k Ω resistance in parallel to the NC contact (thus enabling the combination of 3 devices: NO, NC and 8.2k Ω).

Note 2. Any number of NO devices can be connected to each other in parallel.

Note 3. Any number of NC devices can be connected to each other in series.

Note 4. Only two devices with 8.2k Ω constant resistance output can be connected in parallel; if needed, multiple devices must be connected "in

cascade" with a single 8.2 k Ω terminal resistance.

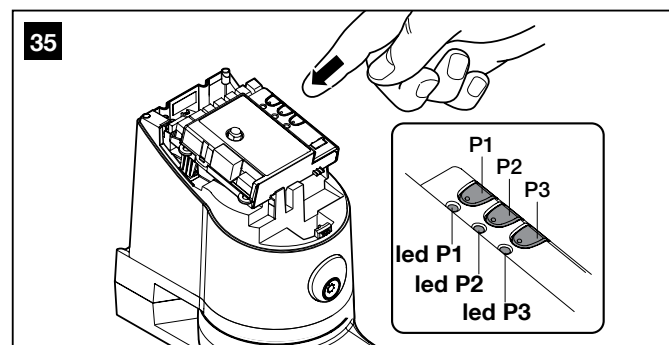
Caution! – If the STOP input is used to connect devices with safety functions, only the devices with 8.2 k Ω constant resistance output guarantee the failsafe category 3.

As in the case of ECSbus, the control unit recognises the type of device connected to the STOP input during the self-learning phase; after which a STOP command is activated whenever a variation with respect to the learned status is detected.

10.3.3 - Recognition of Other Devices

Normally the recognition of the devices connected to the ECSbus and the STOP input takes place during the installation stage. However, if new devices are added or old ones removed, the recognition process can be gone through again by proceeding in the following way:

01. On the control unit, press and hold the **P2 button (fig. 35)**, for at least three seconds, then release the button.
02. Wait a few seconds until the control unit has completed the device recognition procedure.
03. When the recognition procedure has completed, the **P2 led (fig. 35)** will go off. If the **P2 led** flashes, it means that an error has occurred; see section 10.5 "Troubleshooting".
04. After you have added or removed any devices, the automation system must be tested again according to the directions contained in paragraph 8.1 "Testing".



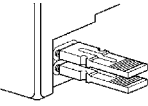
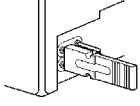
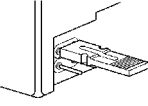
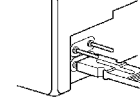
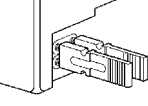
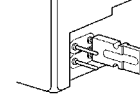
10.3.4 - Optional photocells addition

At any time, you can install additional photocells in addition to those already provided as standard with MAESTRO200.

For correct photocells recognition by the control unit, you need to carry out its addressing, through the use of suitable electrical jumpers. The addressing operation must be carried out both on TX and RX (setting the electrical jumpers in the same way) and by making sure there are no other couples of photocells with the same address. The photocells addressing serves both for correct recognition by other devices on the ECSbus, and to assign the function performed.

01. Open the photocell housing.
02. Locate the position in which they are installed according and install the jumper according to **Table 8**.
The unused jumpers are stored in a compartment on their reserve, to be able to be reused in the future
03. Carry out the recognition phase as described in paragraph 10.3.3 "Recognition of other devices".

TABLE 8

Photocell	Jumper	Photocell	Jumper
A Photocell h = 50cm activated when gate closes		D Photocell h = 100cm activated when gate opens and closes	
B Photocell h = 100cm activated when gate closes		E Right photocell activated when gate opens	
C Photocell h = 50cm activated when gate opens and closes		F Left photocell activated when gate opens	

10.4 - RADIO TRANSMITTERS MEMORISATION

The control unit incorporates a radio receiver for ECCO5 transmitters (various models). The transmitters supplied are not memorised, therefore it is first necessary to memorise the 1st transmitter (Mode 1).

If you want to memorise a new radio transmitter you have two possible choices:

• **Mode 1:** in this "mode" the radio transmitter is used in full, that is, all the keys carry out a predefined command. It is clear that in mode 1 a radio transmitter can be used to control a single automation; namely:ciòè:

Key	Paired command
T1	Step-by-Step (SbS)
T2	Partial open
T3	Open only
T4	Close only
T5	Auxiliary function: not present

• **Mode 2:** one of the four available commands can be assigned to each key. By using this mode correctly, you can also control 2 or more different automations; for example:

Key	Paired command
T1	"Open Only" command Automation No. 1
T2	"Close Only" command Automation No. 1
T3	"Step-by-Step (SbS)" command Automation No. 2
T4	"Step-by-Step (SbS)" command Automation No. 3
T5	Auxiliary function: not present

Naturally each transmitter is a specific case and in the same control unit there may be some stored in mode 1 and others in mode 2.

Overall, the memory capacity is 150 units; mode 1 memorisation occupies a unit for each transmitter while mode 2 occupies a unit for each key.

Caution! – Since the memorization procedures are timed (10s), you must read the instructions in the following paragraphs before you proceed with their execution.

10.4.1 - Mode 1 memorisation

01. Press **P1 (fig. 35)** for at least 3 s. When the **P1 led** lights up, release the key.
02. Within 10s, press any key on the radio transmitter to be memorised and hold it down for at least 3s. If the procedure was memorised correctly, the **P1 led** will flash 3 times.
03. If there are other transmitters to memorise, repeat step 2 within another 10 seconds; otherwise, the memorisation phase will stop automatically.

10.4.2 - Mode 2 memorisation

With memorisation of the radio transmitter in Mode 2, each key can be associated with any of the commands listed in table 10.

In Mode 2 each key requires its own memorisation phase.

01. If the transmitter to be memorised is already memorised (this is the case with the supplied transmitters that are already stored in mode 1) you must first delete the transmitter by performing the procedure described in: "10.4.4 - Deleting a radio transmitter".
02. Press **P1 (fig. 38)** on the control unit, the same number of times as your desired command, as shown in **Table 9** (e.g. 3 times for the "Open Only" command).
03. Check that **P1 led** emits a number of quick flashes which are equal to the selected command.
04. Within 10 seconds press the desired button on the transmitter to be memorised, holding it down for at least 2 seconds. If the procedure was memorised correctly, the **P1 led** will flash slowly 3 times.
05. If there are other transmitters to memorise for the same command type, repeat step 03 within another 10 seconds; otherwise, the memorisation phase will stop automatically.

TABLE 9

1 time	"Step-by-Step" command	Commands the automation as described in table 3 (Step-by-Step function)
2 times	"Pedestrian opening" command	Causes partial opening of one or two leaves as described in table 3 (Pedestrian Opening)
3 times	"Open only" command	Causes the leaves to open (open - stop - open etc.)
4 times	"Close only" command	Causes the leaves to close (close - stop - close etc.)
5 times	"Stop" command	Halts the manoeuvre
6 times	"Apartment block Step-by-Step" command	The command has no effect on opening, when closing the command causes the movement to reverse, that is, opens the leaves
7 times	"High priority Step-by-Step" command	Works also when the automation is locked
8 times	"Pedestrian opening 2" command	Causes partial opening of leaf M2, equal to halfway
9 times	"Pedestrian opening 3" command	Causes partial opening of both the leaves, equal to halfway
10 times	"Open + lock automation" command	Causes an opening manoeuvre and when this is complete, the automation is locked; the control unit will not accept any command other than "High priority Step-by-Step" and "Release" of the automation
11 times	"Close + lock automation" command	Causes a closure manoeuvre and when this is complete, the automation is locked; the control unit will not accept any command other than "High priority Step-by-Step" and "Release" of the automation
12 times	"Lock automation" command	Causes a halt of the manoeuvre and locks the automation; the control unit will not accept any command other than "High priority Step-by-Step" and "Release" of the automation
13 times	Release automation" command	Causes automation release and reset to normal operation

10.4.3 - "Remote" memorisation

You can store a new radio transmitter in the control unit, without pressing its keys directly. A previously memorised and operational "OLD" transmitter must be available. The "NEW" radio transmitter to be stored will "inherit" the characteristics of the OLD one; that is, if the OLD radio transmitter is memorised in mode 1, the NEW will be memorised in mode 1; in this case, during the programming phase, any key can be pressed on either of the two transmitters. If, on the other hand, the OLD radio transmitter is memorised in Mode 2, you must press the key with the command you want on the OLD transmitter, and on the NEW, the key to which you want to associate that command.

Holding the two transmitters, position yourself within the operating range of the automation and perform the following operations:

01. Press the key on the NEW radio transmitter and hold it down for at least 5s, then release it.
 02. Press the button on the OLD radio transmitter 3 times slowly.
 03. Press the key on the NEW radio transmitter once slowly.
- At this point, the NEW radio transmitter will be recognised by the control unit, and take on the characteristics that the OLD one had.

If there are other transmitters to memorise, repeat all the above steps for each new transmitter.

10.4.4 - Deleting a radio transmitter

If you have available only one radio transmitter, use this operation to delete it.

If the transmitter is memorised in Mode 1, one deletion phase is sufficient and at point 3 you may press any key. If the transmitter is stored in mode 2, a deletion phase is required for each memorised key.

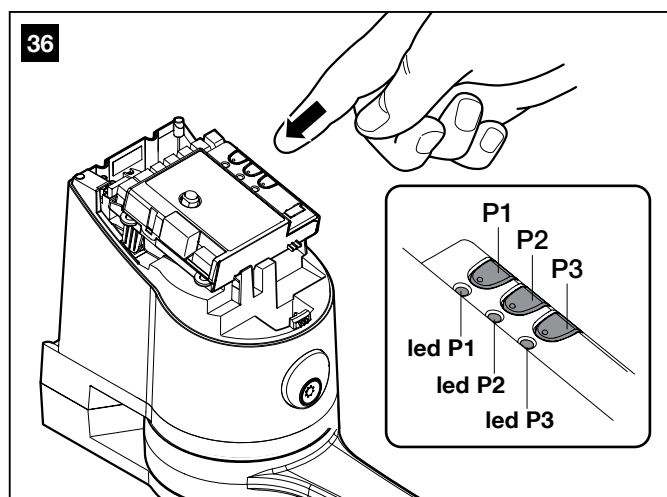
01. Press the **P1** key (fig. 36) on the control unit and hold it down.
02. Wait until the **led P1** lights up, within three seconds.
03. Press the key of the radio transmitter to be deleted for at least three seconds. If cancellation was successful the **led P1** will flash quickly five times. If **led P1** emits 1 slow flash, the deletion phase was unsuccessful because the transmitter is not memorised.
04. If there are other transmitters to delete, keeping **P1** depressed, repeat step 3 within another 10 seconds; otherwise, the deletion phase will stop automatically.

10.4.5 - Deleting all memorised radio transmitters

This operation deletes all memorised transmitters.

01. Press the **P1** key (fig. 36) on the control unit and hold it down.
02. Wait for the **P1 led** to light up, then wait for it to switch off and then wait for it to flash 3 times.
03. Release button **P1** exactly during the third flash.
04. Wait for around 4s for the deletion phase to finish; during this time the **P1 led** will flash very quickly.

If the procedure is successful, after a few moments the **P1 led** will flash slowly 5 times.



10.4.6 - Digital selector switch DS100 programming and deletion

Mode 1 memorisation – with this memorisation, the commands that can be sent by pressing the **A**, **B** or **C** buttons on the DS100 selector switch are:

- key **A** - "Step by Step" command,
- key **B** - "Pedestrian Opening" command,
- key **C** - "Open Only".

To memorise DS100:

01. Press **P1** (fig. 36) for at least 3 s. When the **P1 led** lights up, release the key.
02. Within 10 s, type in the factory combination 11 (or the secret combination, if the factory combination has been changed), and press any of the keys A, B or C on the DS100 selector switch for at least 3 s. If the procedure was memorised correctly, the **P1 led** will flash 3 times.
03. If there are other selector switches to memorise, repeat step 2 within another 10 seconds; otherwise, the memorisation will stop automatically.

Mode 2 memorisation – with this memorisation, the commands that can be sent by pressing the **A**, **B** or **C** buttons on the DS100 selector switch are those listed in **table 9**.

In Mode 2 each key requires its own memorisation phase.

To memorise DS100:

01. Press **P1** (fig. 36) on the control unit, the same number of times as your desired command, according to **Table 14** (e.g. 3 times for the "Open Only" command).
02. Check that **P1 led** emits a number of quick flashes which are equal to the selected command.
03. Within 10 s, type in the factory combination 11 (or the secret combination, if the factory combination has been changed), and press the

desired key for memorisation on the selector switch for at least 3 s. If the procedure was memorised correctly, the **P1 led** will flash slowly 3 times.

04. After 10 s the memorisation phase terminates automatically.

Deletion – if the DS100 selector switch is memorised in Mode 1, one deletion phase is sufficient and at step 3 any key, **A**, **B** or **C**, can be pressed. If the selector is memorised in Mode 2 a deletion phase is necessary for each key stored.

To delete DS100:

01. Press **P1 (fig. 36)** on the control unit and hold it down.

02. Wait until the **P1 led** lights up, within three seconds.

03. Type in the factory combination 11 (or the secret combination, if the factory combination has been changed), and press the desired key for deletion on the selector switch for at least three seconds. If cancellation was successful the **P1 led** will flash quickly five times.

04. If there are other selector switches to delete, keeping **P1** depressed, repeat step 3 within another 10 seconds; otherwise, the deletion will stop automatically.

For more information on the DS100 selector switch, refer to the product instruction manual, or visit www.niceforyou.com

10.5 - TROUBLESHOOTING

Table 10 contains instructions to help you solve malfunctions or errors that may occur during the installation stage or in case of failure.

10.6 - DIAGNOSTICS AND SIGNALS

A few devices give out special signals that allow you to recognise the operating status or possible malfunctions.

10.6.1 - Photocells

In the photocells, there is a **SAFE led [A] (fig. 38)** which allows you to check the operating state at any time, see **Table 11**.

TABLE 10 (fig. 37)

Symptoms	Probable cause and possible solution
The radio transmitter is not emitting a signal (the led [A] is not lit)	<ul style="list-style-type: none"> Check to see if the batteries are spend. Replace if necessary (see paragraph 11.4)
The manoeuvre does not start and the led "ECSbus" [B] does not flash	<ul style="list-style-type: none"> Make sure that the power supply cable is properly inserted into the electrical network socket Check to see if the fuses [E] or [F] are blown; if necessary, identify the reason for the failure and then replace the fuses with others of equal value
No manoeuvre starts and the flashing light is off	<ul style="list-style-type: none"> Make sure that the commands are actually received. If the command is delivered to the SbS input the relative "SbS" led [D] must light up; otherwise if the radio transmitter is used, the "ECSbus" led flashes slowly twice
No manoeuvre starts and the flashing light flashes a few times	<ul style="list-style-type: none"> Check that the STOP input is active, that is, the led "STOP" [C] is lit. If this does not happen, check the device connected to the STOP input The photocells test which is carried out at the start of each manoeuvre has not given a positive result; check them, referring also to compliance with Table 11
The manoeuvre starts but it is immediately followed by a reverse run	<ul style="list-style-type: none"> The selected force could be too low for this type of gate. Check to see whether there are any obstacles; if necessary increase the force as described on paragraph 10.1.1)
The manoeuvre is carried out but the flasher does not work	<ul style="list-style-type: none"> Make sure that there is voltage on the flashing light's FLASH terminal during the manoeuvre (being intermittent, the voltage value is not important: approximately 10-30 Vac); if there is voltage, the problem is due to the lamp; in this case replace the lamp with one having the same characteristics

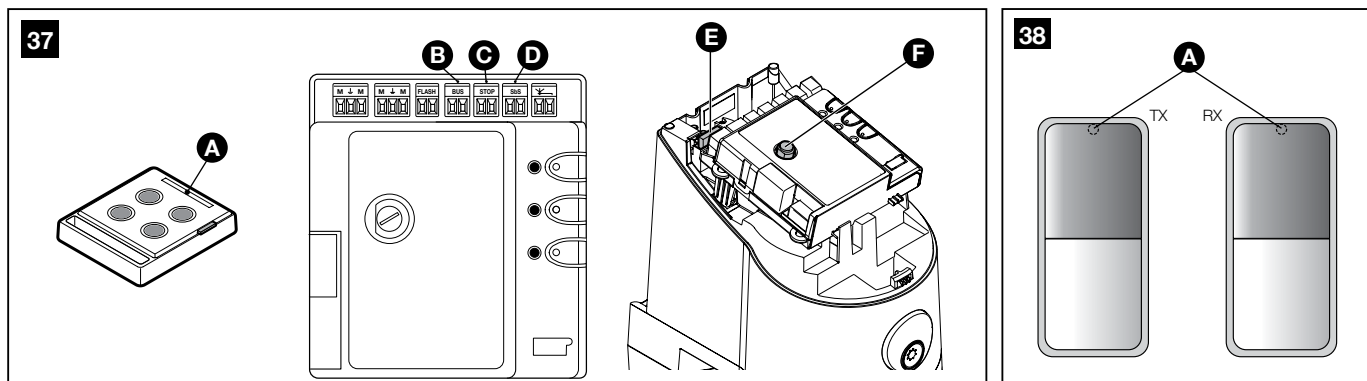


TABLE 11

"SAFE" led [A] - fig. 38	Status	Action
Off	The photocell has no power supply or is faulty	Check that on the terminals of the photocell there is a voltage of approximately 8-12 Vdc; if the voltage is correct, it is likely that the photocell is faulty.
3 quick flashes and 1 second pause	Device not recognised by control unit	Repeat the recognition procedure on the control unit. Check that all photocell pairs on the ECSbus have different addresses (see Table 8)
1 very slow flash	The RX is receiving optimum signal	Normal operation
1 slow flash	The RX is receiving good signal	Normal operation
1 quick flash	The RX is receiving poor signal	Normal operation but it is necessary to check the TX-RX alignment and correct cleaning of the glasses
1 very quick flash	The RX is receiving bad signal	It is at the limit of normal operation. It is necessary to check the TX-RX alignment and correct cleaning of the glasses
Always on	The RX is receiving no signal	Check for any obstruction between TX and RX. Check that the led on TX emits a slow flashing. Check the TX-RX alignment

10.6.2 - Flashing indicator

During the manoeuvre the flashing indicator flashes once every second. When something is wrong the flashes are more frequent (every half sec-

ond); the light flashes twice with a second's pause between flashes, see **Table 12**.

TABELLA 12

Quick flashes	Status	Action
1 flash 1 second pause 1 flash	Error on ECSbus	At the beginning of the manoeuvre, the verification of the devices present does not correspond to those learned; check and possibly try to redo the learning (10.3.3 "Recognition of other devices"). Some faulty devices may be present; check and replace them
2 flashes 1 second pause 2 flashes	Triggering of a photocell	At the start of the manoeuvre, one or more photocells are preventing movement; check to see if there are any obstacles. During the movement, although the obstacle is effectively present, no action is required
3 flashes 1 second pause 3 flashes	Action of the "motor force" limiting device	During the movement, the gate experienced excessive friction; identify the cause.
4 flashes 1 second pause 4 flashes	Activation of the STOP input	At the start of or during the manoeuvre, the STOP input was activated; identify the cause
5 flashes 1 second pause 5 flashes	Error in the internal parameters of the electronic control unit	Wait at least 30 seconds, then try giving a command; if the condition persists it means there is a serious malfunction and the electronic board has to be replaced
6 flashes 1 second pause 6 flashes	The maximum manoeuvre limit/hour has been exceeded	Wait for a few minutes until the manoeuvre limiting device drops to under the maximum limit
7 flashes 1 second pause 7 flashes	There is an error in the internal electric circuits	Disconnect all the power circuits for a few seconds and then try to give the command again. If the condition persists it means there is a serious malfunction and the electronic board has to be replaced
8 flashes 1 second pause 8 flashes	A command that does not permit other commands to be performed is already present	Check the type of command that is always present; for example, it could be a command from a timer on the "SbS" input
9 flashes 1 second pause 9 flashes	The automation is locked	Release the automation by sending an automation release command to the control unit

10.6.3 - Control unit

The control unit has a series of LEDs, each of which can give particular signals both during regular operation and when there is a problem, see **Table 13**.

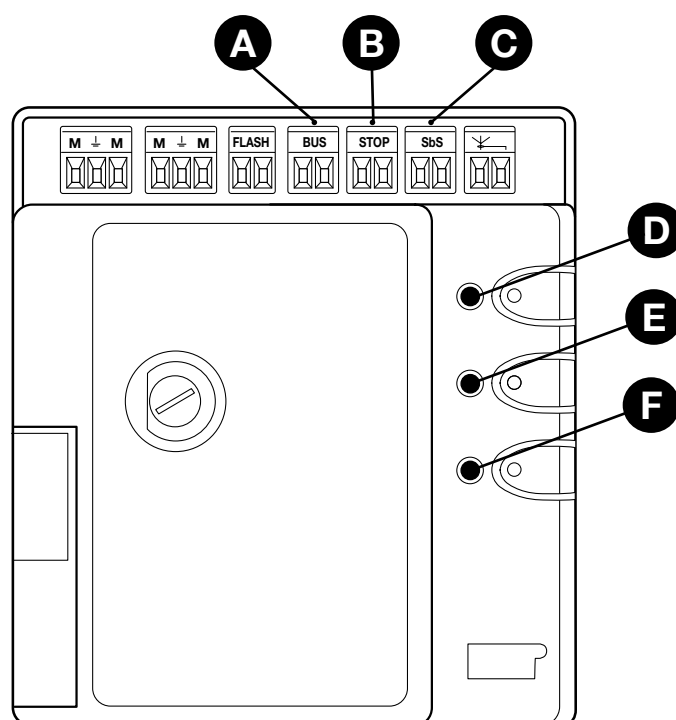
TABLE 13 (fig. 39)

ECSbus led [A]	Status	Action
Off The led flashes slowly	Malfunction	Make sure there is power supply; check to see if the fuses are blown; if necessary, identify the reason for the failure and then replace the fuses ones of the same type
On	Serious malfunction	There is a serious malfunction; try switching off the control unit for a few seconds; if the condition persists, it means there is a malfunction and the circuit board has to be replaced
One flash every second	All OK	Normal operation of control unit
2 long flashes	The status of the inputs has changed	This is normal when there is a change in one of the inputs: OPEN, STOP, triggering of photocells or the radio transmitter is in use
1 flash every 5 seconds	Automation in "standby" mode	All OK; when a command arrives, the control unit will reset to normal functioning (after a brief delay)
Series of flashes separated by a pause	This is the same signal as on the flasher, see Table 12	An overload has been detected and therefore the power supply to the ECSbus has been turned off. Check, possibly by disconnecting each device one at a time
Fast flashing	ECSbus short circuit	To switch on power to the ECSbus you simply need to give the command, for example, using the radio transmitter
Led STOP [B]	Status	Action
Off *	Activation of the STOP input	Check the devices connected to the STOP input
On	All OK	STOP Input active
Led SbS [C]	Status	Action
Off	All OK	SbS input not active
On	SbS input activation	Normal only if the device connected to the SbS input is definitely active

Led P1 [D]	Status	Action
Off *	All OK	No memorisation in progress
On	Memorisation in Mode 1	During memorisation in mode 1, it is normal for it to take a maximum of 10 s
Series of quick flashes, from 1 to 4	Memorisation in Mode 2	During memorisation in mode 2, it is normal for it to take a maximum of 10 s
5 quick flashes	Cancellation OK	Completion of deletion of a transmitter
1 slow flash	Wrong command	A command has been received from an unmemorised transmitter
3 slow flashes	Memorisation OK	Memorisation completed successfully
5 slow flashes	Cancellation OK	Completion of deletion of all transmitters
Led P2 [E]	Status	Action
Off *	All OK	"Slow" speed selected
On	All OK	"Fast" speed selected
1 flash per second	The device recognition phase has not been carried out, or there are errors in the data saved	It is possible that there are faulty devices. Check and if necessary repeat the device recognition phase (see paragraph 10.3.3 "Recognition of other devices")
2 flashes per second	Devices recognition phase in progress	Indicates that it is in the process of recognising the attached devices (this will take a maximum of a few seconds)
Led P3 [F]	Status	Action
Off *	All OK	Cycle operation
On	All OK	Complete cycle operation
1 flash per second	There is no memorised opening angle	Carry out the recognition phase (see chapter "3.5.2 - Leaf open and closure angles recognition").
2 flashes per second	Opening angles auto-recognition phase in progress	Indicates that the open angles self-learning phase is in progress

* or it could be in "Standby" mode

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TECHNICAL SPECIFICATIONS OF PRODUCT COMPONENTS

MAESTRO200 is manufactured by NICE S.p.A. (prov. of Treviso – Italy). Nice S.p.A., in order to improve its products, reserves the right to modify their technical characteristics at any time without prior notice. In any case, the manufacturer guarantees their functionality and fitness for the intended purposes. Note: all the technical characteristics refer to a temperature of 20°C.

Model	MAESTRO200M	MAESTRO200C
Type	Electromechanical gearmotor for automation of automatic gates and doors with incorporated command control unit, complete with radio receiver for "ECCO5..." transmitters.	
Technology adopted	24 V $\overline{\text{---}}$ motor, reducer with helical gears; mechanical release. A transformer inside the motor, but separate from the control unit, reduces the mains voltage to the nominal 24 V $\overline{\text{---}}$ voltage used in all of the automation system.	
Peak thrust	150 Nm	
Nominal torque	50 Nm	
Speed (no load)	3 RPM	
Nominal torque speed	2.7 RPM	
Maximum cycles frequency	20 cycles/hour at 50°C	
Maximum continuous cycle time	5 minutes	
Operating limits	The structural features make it suitable for use on gates with a weight of up to 150 kg and a leaf length of up to 2.2 m. Opening angle of 110°	
Mains powered MAESTRO200M - MAESTRO200C	230 V \sim (+10% -10%) 50/60Hz	24 V $\overline{\text{---}}$
Nominal absorbed power	150 W; at peak the power is 250 W for a maximum duration of 1s	
Nominal absorbed current		2 A, at peak power the maximum current is 4 A for a maximum duration of 1s
Emergency power supply	Provision for PR300 buffer battery	
FLASH output	For traffic lights: flashing light indicator lamp of 12 V maximum 21 W, Courtesy light lamp 24 V maximum 4 W, Gate open indicator lamp 24 V maximum 4 W	
ECSbus output	One output with maximum load of 15 ECSbus units	
"SbS" input	For normally open contacts (the closing of the contact causes the "Step-by-Step or Pedestrian Opening" command)	
"STOP" input	For normally closed or normally open contacts and/or for constant resistance of 8.2 K Ω , or normally closed contacts with self-recognition of the "normal" state (any variation from the memorised status causes the "STOP" command)	
Radio Antenna input	50 Ω for RG58 or similar type of cable	
Maximum cable length	Mains power supply: 30 m; inputs/outputs: 20 m with antenna cable preferably shorter than 5m (observe the warnings regarding minimum gauge and type of cables)	
Ambient operating temperature	-20°C ... 50°C	
Mounting	On a horizontal plane using the appropriate mounting plate	
Protection rating	IP54	
Dimensions / weight	237 x 155 x h 290 mm / 7 kg	237 x 155 x h 290 mm / 6.2 kg
Remote control compatibility	Using ECCO5... transmitters, the control unit is able to receive one or more of the following commands: "Step-by-Step", "Partial Open", "Open Only" and "Close Only"	
Memorisable ECCO5... transmitters	This range can vary if there are obstacles or electromagnetic disturbances, and is affected by the position of the receiving aerial incorporated in the flasher	
Programmable functions	"Cycle" or "Complete cycle" (automatic closure) functionality "Slow" or "fast" motors speed Pause time during "complete cycle", selectable from 10, 20, 40, 80 seconds Partial opening type selectable in 4 modes Obstacle detection system sensitivity, 4 selectable levels "Step-by-Step" command functionality selectable in 4 modes SbS input configuration on the control unit: Step-by-Step or pedestrian opening FLASH output configuration: flashing light, courtesy light or gate open indicator Motors discharge on closure selectable from 8 levels Motors discharge on opening selectable from 8 levels	
Self-programming functions	Auto-recognition of devices connected to the ECSbus output Auto-recognition of the type of "STOP" device (NO or NC contact or 8.2 K Ω resistance) Recognition of the opening angle for each motor Automation recognition with 1 or 2 motors	



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