ALTO

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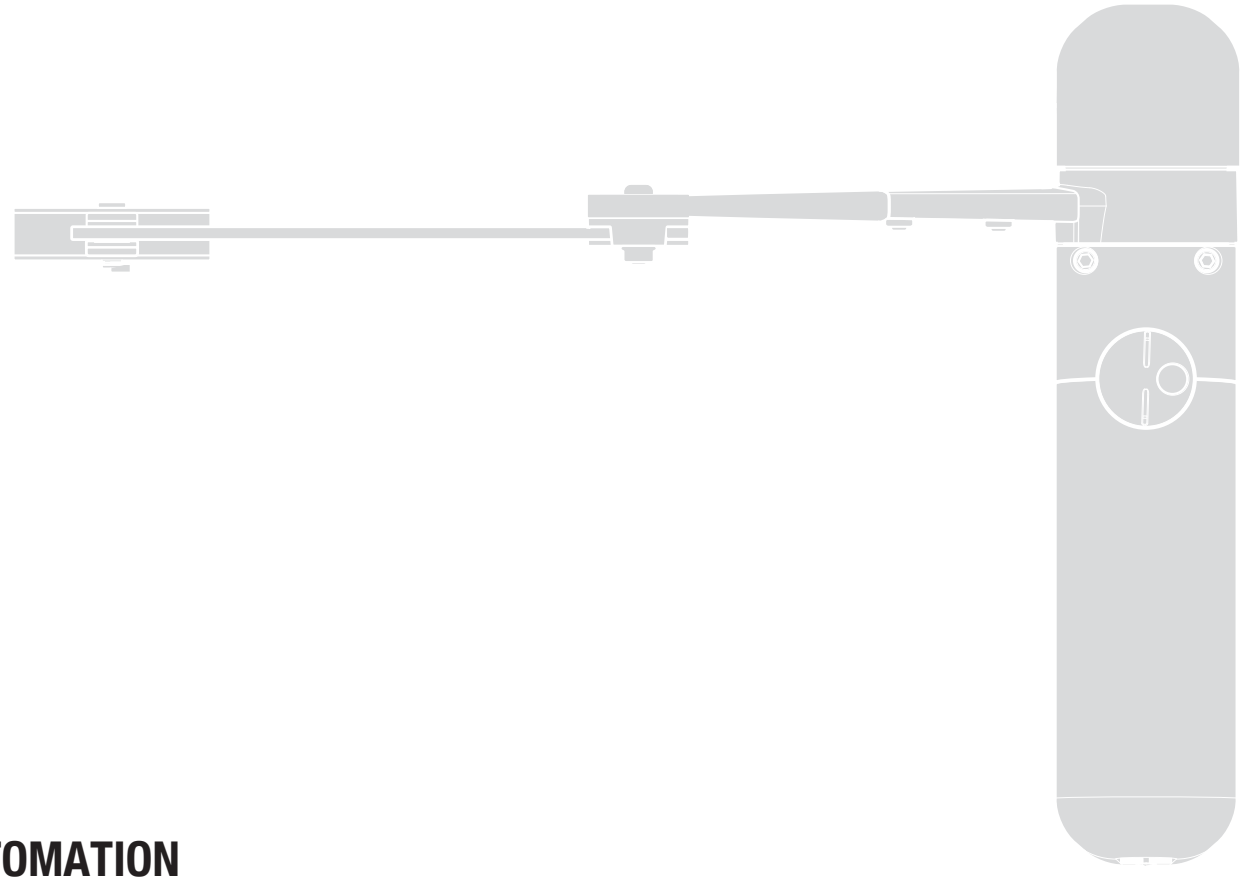


GATE AUTOMATION

Instructions and warnings for installation and use

Nice Your Smart Home

GENERAL SAFETY WARNINGS AND PRECAUTIONS (Instructions translated from Italian)

—— 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 door 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

Important notes on manual consultation

- ❏ In this manual, the text “ALTO system” refers to the entire series of devices that make up the automation.
- ❏ This manual describes how to set up a complete automation, such as that shown in **fig. 4**. Some of these devices and accessories are optional and may not be present in the kit. For a complete description, refer to the Nice Home product catalogue or visit the website www.niceforyou.com.
- ❏ In the first section of the manual (up to chapter 10) all subjects are dealt with in the same order as they are to be performed. Therefore, to facilitate installation and programming, and to ensure personal safety, read the manual first, to ensure full comprehension of the tasks to be performed, and then perform the work itself, completing all tasks in the order in which they are described.

KNOWLEDGE OF THE PRODUCT AND PREPARATION FOR INSTALLATION

— STEP 2 —

2.1 - PRODUCT DESCRIPTION AND INTENDED USE

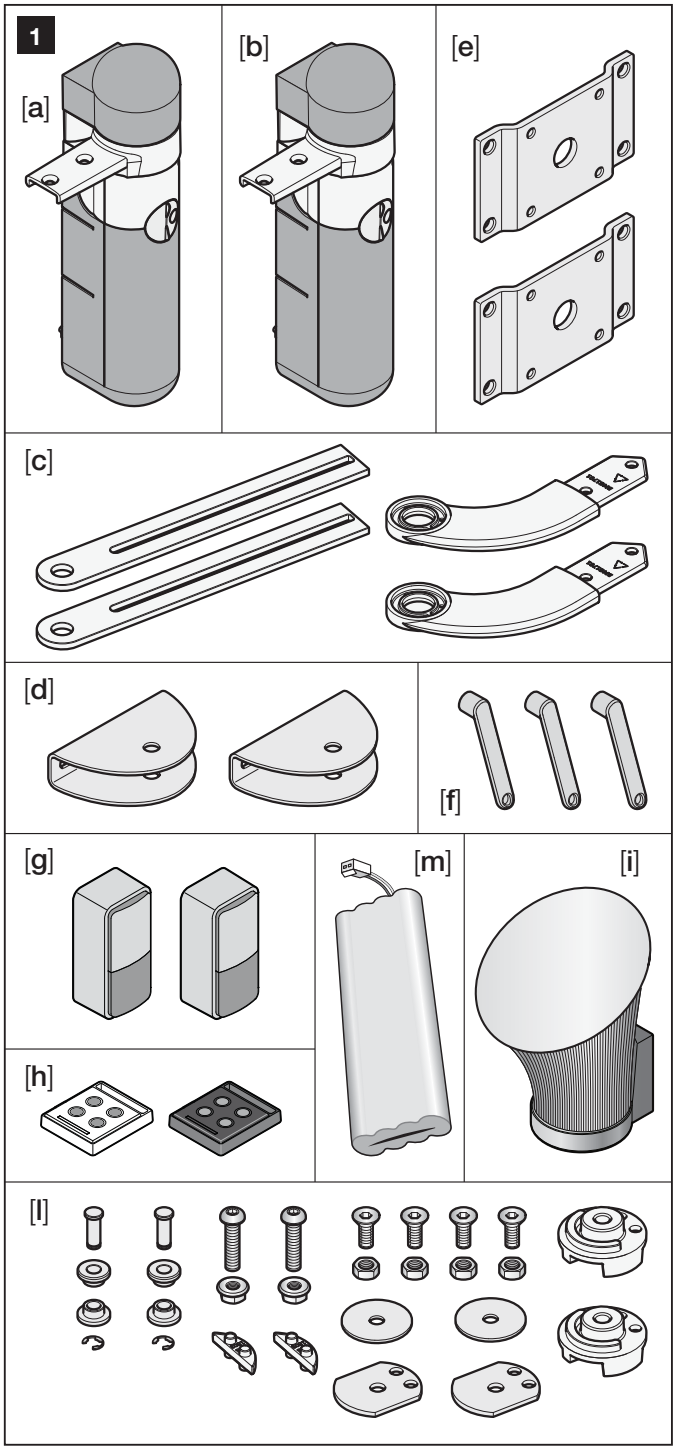
The series of devices and accessories stated in this manual (some of which are optional and not present in the kit), make up the automation system named “ALTO”, designed for a gate or door with one or two swing leafs. **Any other use than as specified herein or in environmental conditions other than as stated in this manual is to be considered improper and is strictly prohibited!**
The main part of the automation comprises one or two electromechanical gearmotors (depending on the number of leafs to be automated), each equipped with a DC motor and epicyclical gear reducer. The geamotors have an articulated arm, the length of which can be shortened during installation when there is a fixed obstacle over the gearmotor (wall, pole or other) preventing complete rotation of the arm and therefore maximum leaf opening.
The ALTO100C is equipped with a control unit that powers and manages operation of all connected devices. The control unit implements “ECS-Bus” technology, which enables connection and communication between multiple devices, using a single bus cable with 2 internal wires. The control unit incorporates a radio receiver for reception of the commands sent by the user by means of the ECCO5... transmitter. The system can memorise up to 256 transmitters (if memorised in “Mode I”) and up to 6 pairs of PH200 photocells.
The automation can be powered by the mains (230 V) or alternatively by the SOLEKIT photovoltaic system. If powered by the mains, a backup battery (mod. PR200, optional accessory) can be installed in the control unit to enable a number of emergency manoeuvres following a power failure (black-out). During the power failure, or at any other time, the gate leafs can be moved manually if required, by first releasing the gearmotor using the relative key.

2.2 - DEVICES AND ACCESSORIES REQUIRED TO SET UP A COMPLETE SYSTEM

Fig. 1 illustrates all devices and accessories required to set up a complete system, such as that shown in **fig. 4**.

[**a**] - Electromechanical gearmotor ALTO100C with control unit
[**b**] - Electromechanical gearmotor ALTO100M without control unit
[**c**] - Curved arms + slotted arms
[**d**] - Front brackets (for fixture of gearmotor to the gate)
[**e**] - Rear supports (for fixture of gearmotor to wall)
[**f**] - Keys for manual release of gearmotors
[**g**] - Pair of photocells PH200 (wall-mounted)
[**h**] - Hand-held transmitter ECCO5...
[**i**] - Flashing light FL200
[**l**] - Metal hardware (screws, washers and elbow fitting for arms)
[**m**]- Buffer battery PR200

Warning! - Some devices and accessories stated herein are optional and may not be present in the kit (refer to the Nice Home product catalogue).



English

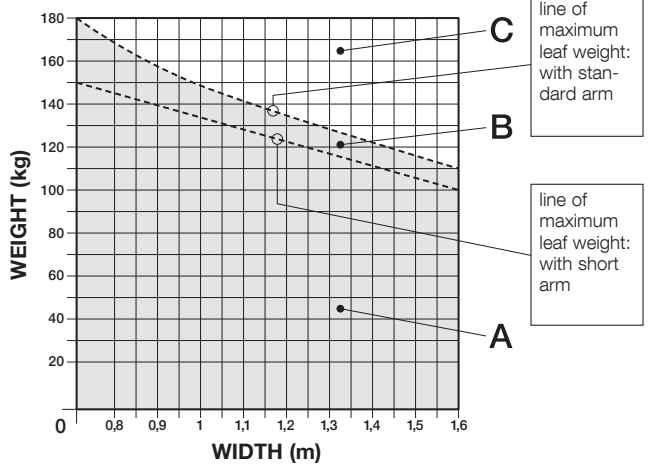
— STEP 3 —

CHECKS AND PROCEDURES PRIOR TO INSTALLATION

3.1 - CHECKING SUITABILITY OF GATE TO BE AUTOMATED AND RELATIVE ENVIRONMENT

- Ensure that the mechanical structure of the gate complies with current national standards and that it is suitable for automation. For this check, refer to the information specified on the gate dataplate. **Important** - This "ALTO" system cannot be used to automate a gate that is not already efficient and safe; furthermore it cannot solve defects caused by incorrect gate installation or poor maintenance.
- Ensure that the gate leafs move regularly and smoothly, by performing the following test: manually move the leafs in both directions and ensure that movement is free of friction throughout all points of travel (there must be no points requiring a different level of force).
- Ensure that the gate leafs are perfectly balanced, by performing the following test: manually move the leafs to any position; take away the hands and ensure that the leafs remain stationary.
- If there is a fixed obstacle in the zone of the column (where the gearmotor is to be installed) it is important to check whether this will enable complete arm rotation and therefore the maximum leaf opening angle. For this check, refer to point 5 of paragraph 3.2.
- In the vicinity of the post where the gearmotor is to be installed, ensure that there is sufficient space to perform the manual gearmotor release procedure.
- Ensure that the surfaces chosen for device installation are solid and can guarantee a stable fixture.
- Ensure that all devices to be installed are in a sheltered location and protected against the risk of accidental impact.
- Ensure that the area is fitted with floor-mounted stops (not supplied), to limit opening and closing.

GRAPH 1 (see paragraph 3.2)



3.2 - CHECKING THE PRODUCT APPLICATION LIMITS

1 - **Suitability of the product for gate automation**. For this check, refer to **Graph 1** as follows:
a) - measure the width of the gate leaf and determine its weight.
b) - note these two values in **Graph 1** and check the point at which the two values intersect:
• **if the point is located within area "A"** = the gate can be automated using standard length arms (supplied as standard) or short arms (the length of the arm is established during the phase prior to installation - paragraph 3.4);
• **if the point is located within area "B"** = the gate can be automated using standard length arms (supplied as standard);
• **if the point is located within area "C"** = this product cannot be used to automate the gate.

2 - **Maximum leaf height**. The "ALTO" system can automate leafs with a height of up to 200 cm.

3 - **Maximum leaf width**. The "ALTO" system can automate leafs with a width of up to 160 cm (see **Graph 1**).

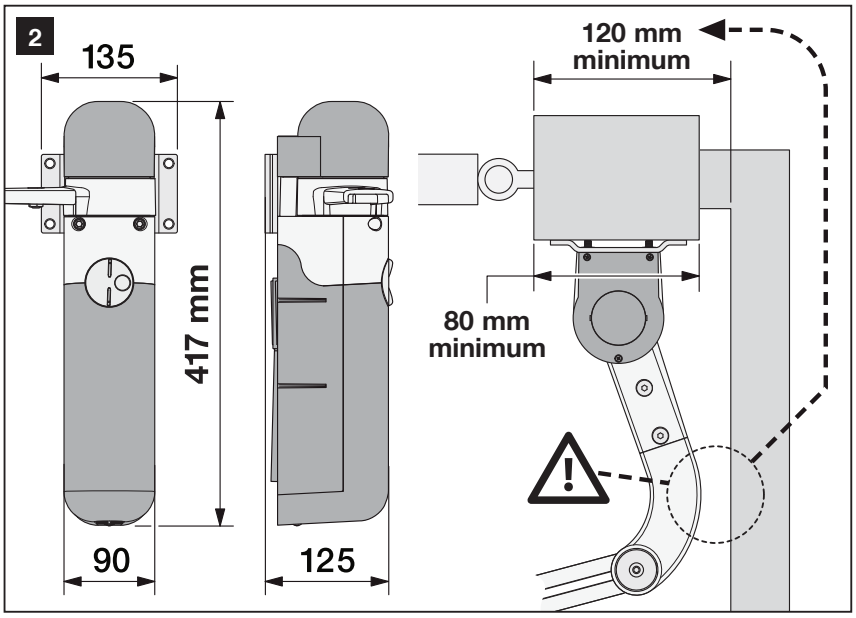
4 - **Maximum leaf weight**. The maximum weight of the leaf depends on its length. To calculate the maximum admissible weight with the "ALTO" system, proceed as follows:
a) - measure the width of the gate leaf and note the value in **Graph 1**. Starting from this value, trace a vertical line until it intersects with the two traced lines.
b) - trace a horizontal line from each point of intersection, until the two maximum admissible weights are shown (depending on the length of the arm used to install the gearmotor: with standard length arms, the weight may vary from 110 to 180 kg; with short arms, the weight may vary from 100 to 150 kg).

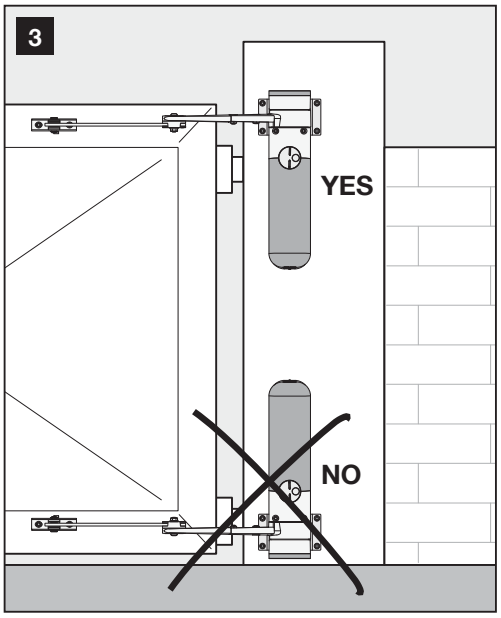
5 - **Gearmotor overall dimensions**. On the basis of the overall dimensions stated in **fig. 2**, check that there is sufficient space on the leaf and post to enable gearmotor installation. In particular, ensure the following:
• the width of the post must be greater than 80 mm (**fig. 2**). **Caution!** – any lower widths would prevent installation of the gearmotor.
• the distance between the edge of the post (the side closest to the hinge pin) and any fixed obstacle present behind the post, must be greater than 120 mm (**fig. 2**). **Caution!** – any lower widths would prevent installation of the gearmotor.

6 - **Gearmotor positioning**. Never install the gearmotor upside down (see **fig. 3**).

7 - **Maximum leaf opening angle**. If the gearmotor is installed with a standard length arm (supplied as standard) a leaf opening angle of 110° is possible. Otherwise, if the short arm is used, the leaf opening angle is reduced to 90°. The length of the arm is established during the phase prior to installation - see paragraph 3.4.

8 - **Mechanical stops**. The gearmotors in the "ALTO" system do not implement mechanical systems to limit leaf travel on closing or opening. Therefore, to enable installation of the "ALTO" system, some floor-mounted stops on opening and closing must be fitted (these stops are not supplied in the kit and are not part of the Nice Home product range).





9 - **Product durability**. The lifetime is the average economic duration of the product. The value of lifetime is strongly influenced by the intensity of the manoeuvres, i.e. the sum of all factors that contribute to product wear; these values are shown in **Table 1** and we therefore recommend making an estimate of the automation lifetime after commissioning, using the following calculation:

01. In **Table 1**, locate the values "Leaf length" and "Leaf weight" of your gate and note the corresponding "Severity index", taking care to check the length of the arm on which the gearmotor is installed. In the specific context, if there are other factors that influence stress of the manoeuvre, locate the relative values in Table 1 and add them to the sum obtained beforehand.

***Example**: • "Leaf length" = 1,5 m; "leaf weight" = 92 kg; "arm length" = standard; therefore,* ***severity index = 55%**.*
Presence of factors influencing stress on the manoeuvres: • "ambient temperature..." = No; "solid leaf" = Yes; "arm length" = standard; therefore, ***severity index = 15%**; "Installation in windy zone" = Yes; "arm length" = standard; therefore,* ***severity index = 15%. • TOTAL INDEX: 55% + 15% + 15% = 85%**.*

02. In **Graph 2**, note the total value of severity obtained (in the example = 85%) and trace a vertical line from this point, until it intersects the curve in the graph. Then, from the point of intersection, trace a horizontal line through to the vertical axis of the graph. The value obtained (number of manoeuvre cycles) represents the estimated durability of the product.

Example: total severity index = 85%. In Graph 1, this corresponds to approximately 51,000 manoeuvre cycles (= product durability).

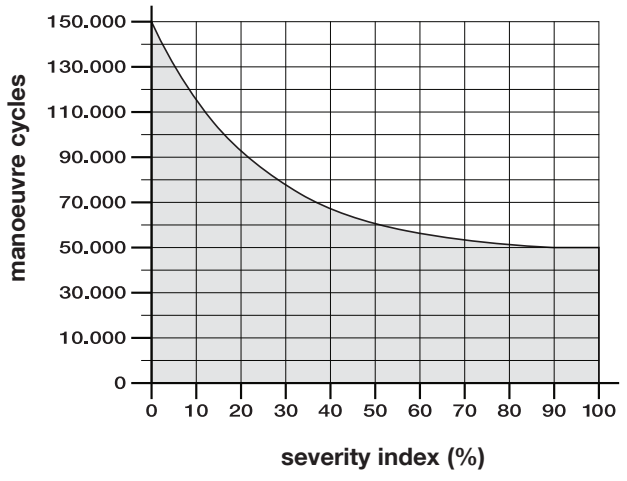
The lifetime values specified in the graph are only obtainable if the maintenance schedule is strictly observed (see paragraph 10.1). The estimation of lifetime is made on the basis of design calculations and the results of tests performed on prototypes. As it is only an estimation, it does not represent any form of guarantee on the effective lifetime of the product.

3.3 - PRELIMINARY CHECKS FOR INSTALLATION

3.3.1 - Ensure all equipment and materials for work are available

Before starting work, ensure that you have all equipment and materials required to complete the work. Ensure that all items are in good condition and comply with local safety standards.

GRAPH 2 (see paragraph 3.2 - 9)



3.3.2 - Establish the position of devices in the system

To establish the installation position of each device envisaged in the system, refer to **fig. 4.** This illustrates a system set up using the components supplied in the kit as well as other optional devices and accessories. The figure shows an ideal layout of the devices. The devices used are:

a - Electromechanical gearmotor with control unit ALTO100C
b - Electromechanical gearmotor without control unit ALTO100M
c - Pair of photocells PH200 (wall-mounted)
d - Flashing light FL200
e - Opening travel limit stops *(these are not part of the Nice Home product range; they may also constitute "natural" obstacles, such as a wall, edge of a flower bed etc.)*
f - Closing travel limit stop *(this is not part of the Nice Home product range)*

When selecting the position of each device, take special care to observe the following:

- **Gearmotors** – the gearmotor with control unit must be positioned on the leaf closest to the zone where the power supply is located.
- **PH200 photocells** – the two photocells (TX and RX) must be positioned: **a**) at a height of 40-60 cm from the ground; **b**) to the sides of the zone to be protected; **c**) outside the gate, i.e. on the side of the public road; **d**) trim with the gate (max. 15 cm from the latter); **e**) the TX photocell (transmitting) must be directed at the RX photocell (receiving), with a maximum tolerance of 5°.
- **FL200 flashing light** – this must be positioned in the vicinity of the gate; it must also be easily visible from any point of access to the gate. **Note** – the device can be fixed to a horizontal or vertical surface.
- **Other fixed type control devices** – these must be positioned in view of the automation, far from all moving parts at a minimum height of 1.5 m from the ground; they must also not be accessible by unauthorised persons.

3.3.3 - Setting the route of the connection cables

To establish the route of each connection cable and thus dig the raceways for the cable ducting, the following constraints must be taken into account:

a) **points envisaged for device installation** (read paragraph 3.3.2);
b) **the envisaged connection between all devices and terminals involved** (see **fig. 26**);
c) **"ECSBus" technology**. This technology enables the connection and communication between several devices (including the control unit by means of the BUS terminal) with a single cable containing 2 electrical wires (carrying the electric power and data communication signals). This cable can only be used to connect Nice Home devices compatible with the ECSBus protocol: for example the photocells, safety devices, control buttons, indicator lights etc. (for information on compatible devices, refer to the Nice Home catalogue or visit the website www.niceforyou.com). "ECSBus" technology offers the possibility of using different layouts for device connections. Some examples are shown in **fig. 5**.

After considering points **a, b, c**, observe **fig. 6** and on a piece of paper draw a similar layout, adapting it to the specific needs of your systemThis layout will serve as a guideline to dig the raceways for the cable ducting and to make a complete list of the cables required.

3.3.4 - Selecting and sizing all connection cables

To select the type of cables and cut these to an adequate length, consult **Table 2**; then, with the aid of the previously drawn layout (ref. paragraph 3.3.3), make on-site measurements to establish the length of each cable. **Caution!** - No cable must exceed the specific maximum length stated in **Table 2**.

Power cable – The power cable on the ALTO100C gearmotor serves to make provisional connections to the mains (for example, to perform programming and the operation tests). Then, to test and start-up the auto-

TABLE 1 - Severity index (see paragraph 3.2-9)

1a - Leaf length	1b - Leaf weight	Severity index	
		STANDARD arm length	SHORT arm length
< 1,2 m	> 100 kg	55%	65%
	< 100 kg	30%	50%
1,2 - 1,6 m	> 80 kg	55%	65%
	< 80 kg	40%	50%
2 - Ambient temperature: over 40°C or lower than 0°C or humidity greater than 80%		15%	15%
3 - Solid leaf		15%	10%
4 - Installation in windy zone		15%	10%

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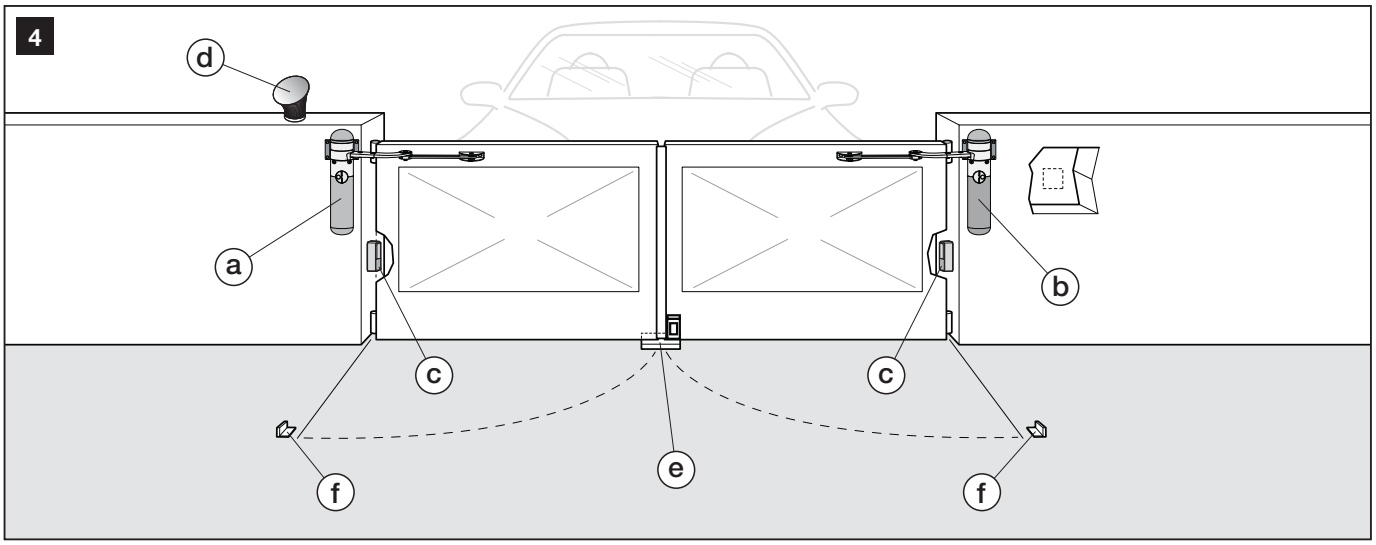

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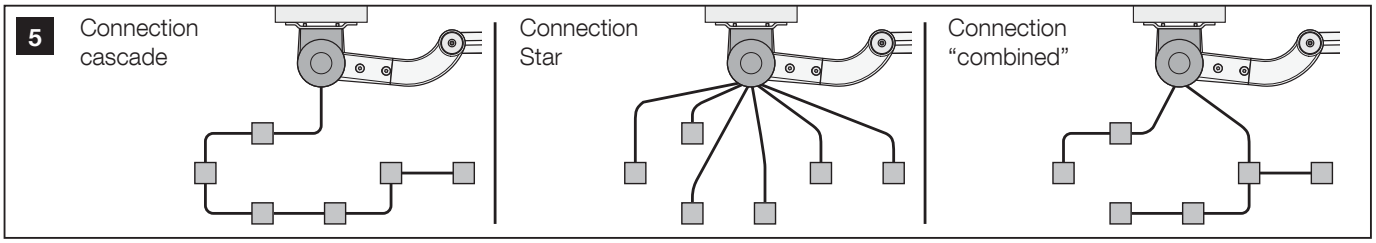

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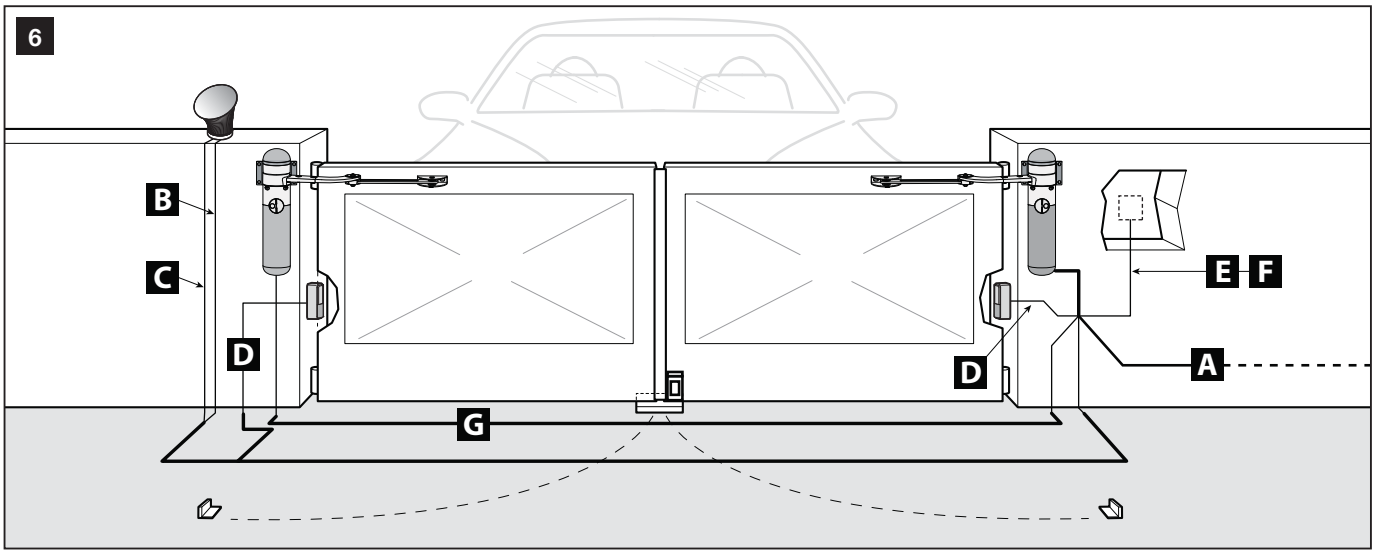


TABLE 2 - Electric cable specifications (ref. **fig. 6** and paragraph 3.3.4)

Connection	**Type of cable** (minimum section values)	**Max. admissible length**
A - Power line	cable 3 x 1,5 mm² *(note 1)*	30 m *(note 2)*
B - FLASH Flashing light output	cable 2 x 0.5 mm²	20 m
C - Radio aerial	RG58 shielded cable type	20 m (less than 5 m recommended)
D - BUS input/output *(note 4)*	cable 2 x 0.5 mm²	20 m *(note 3)*
E - STOP Input	cable 2 x 0.5 mm²	20 m *(note 3)*
F - SbS Input	cable 2 x 0.5 mm²	20 m *(note 3)*
G - Motor output without control unit	cable 3 x 1 mm²	10 m

Note 1 *- External cable diameter: Maximum 11 mm.*

Note 2 *- If the power cable is longer than 30 m, a cable with a larger section is required (e.g. 3x2.5mm²) and safety earthing is necessary in the vicinity of the automation.*

Note 3 *- For these connections (D, E, F) a single cable with multiple internal wires may be used. This enables grouping of multiple connections: for example, the STOP and SbS inputs can be connected to the accessory device with a cable of 4 x 0.5 mm².*

Note 4 *- For information on "ECSBus" technology, refer to paragraph 3.3.3*

WARNING! – The cables used must be suited to the installation environment: for example, for indoor environments cable types H03VV-F are recommended, and for outdoor environments, cable types H07RN-F.

mation, it must be connected permanently to the mains, using the specific cable stated in Table 2. This cable must be used on the system.

3.3.5 - Installation site preparation work

Prepare the area for subsequent installation of the devices, completing all preliminary work, such as:
- digging of raceways for protection ducting of electric cables (external ducting may be used as an alternative);
- laying of ducting and fixture in raceways;
- routing of cables through ducting. **Caution! - In this phase, do not make any electrical connections.**
- Etc.

Warning:
- The hoses and ducting serve to protect electrical cables and prevent accidental damage in the event of impact.
- Position the ends of the ducting at the points envisaged for fixture of the various components.
- When laying pipelines, take into account the risk of possible deposits of water in the branch wells, where condensate may form in the pipelines and the control unit with possible damage to the electronic circuits.

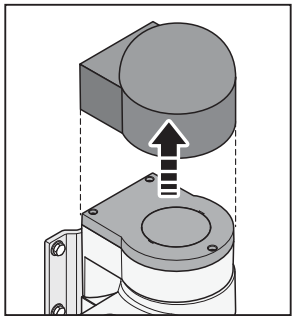
3.4 - VERY IMPORTANT!

DETERMINING THE INSTALLATION PROCEDURE TO FOLLOW (with standard arm or short arm)

IMPORTANT PREMISE – The gearmotor arm can be shortened with respect to the standard length as supplied. A shorter length may be required where there is a fixed obstacle (wall, post, etc.) is located behind the post (where the gearmotor is to be installed), preventing complete movement of the arm. Therefore, before starting installation the following procedure should be performed to then decide whether to use procedure 4.1 and 4.2 (the latter requires shortening of the arm).

Warning – Incorrect installation may cause serious physical injury to those working on or using the system.

• Before starting work, remove the protective cover on top of the motor. (figure on the right).



01. Assemble the components making up the gearmotor arm.

a) - Refer to **fig. 7**, but without inserting the stop benzing (**fig. 8**); this will be inserted later. **Caution!** - position the elbow fitting of the arm so that is curved towards the leaf of the gate (**fig. 9**) when the gearmotor is installed.

02. Establishing the height from the ground of the gearmotor when installed on the post.

a) - Place the gearmotor on the post and position it so that the bracket (fixing the arm to the leaf) is located on the **upper section** of the leaf, in a sturdy zone, for example the load-bearing frame (**fig. 10**). If another similarly strong area of the leaf is selected to fix the bracket of the arm, it is important to ensure that the distance from the ground of the lower section of the gearmotor is at least 40 cm.
Warning – Never install the gearmotor upside down (see **fig. 3**).

b) - Keeping the gearmotor in this position, check that it is perfectly level, and, using a pencil, trace a line on the post passing along the upper edge of the bracket for fixing the gearmotor to the post. Then remove the gearmotor.

03. Setting the required maximum leaf opening angle.

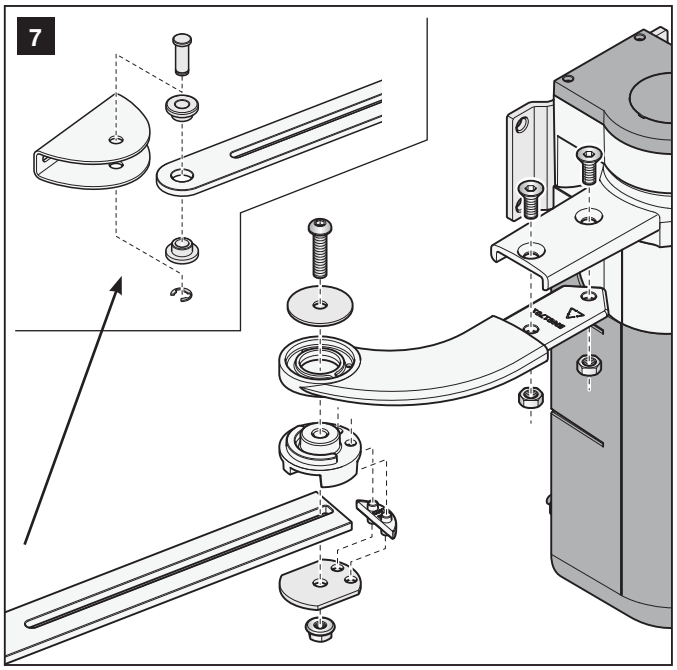
a) - Move the gate leaf to the required maximum opening position (without exceeding 110°) and block with a stop on the ground, to secure it provisionally in place. **Caution! – To ensure correct system operation, mechanical stops must be mounted on the floor or wall at the maximum leaf opening and closing points.** These stops are not supplied in the pack and are not part of the Nice Home product range.

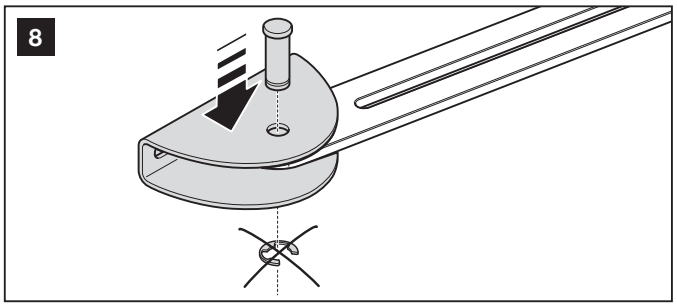
b) - Measure the leaf opening angle.

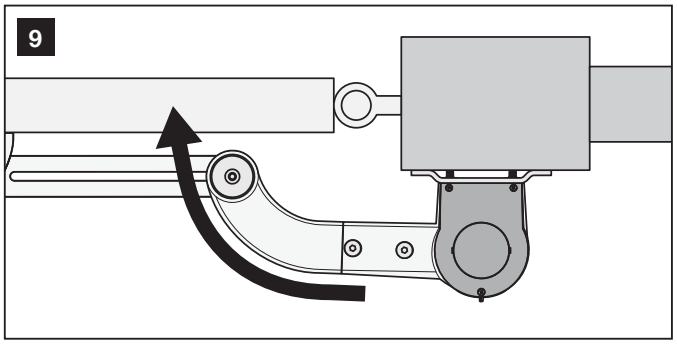
04. Calculate value "A" (fig. 11), i.e. the horizontal distance between the leaf hinge pin and the point on the post where the vertical axis of the gearmotor is to be positioned.

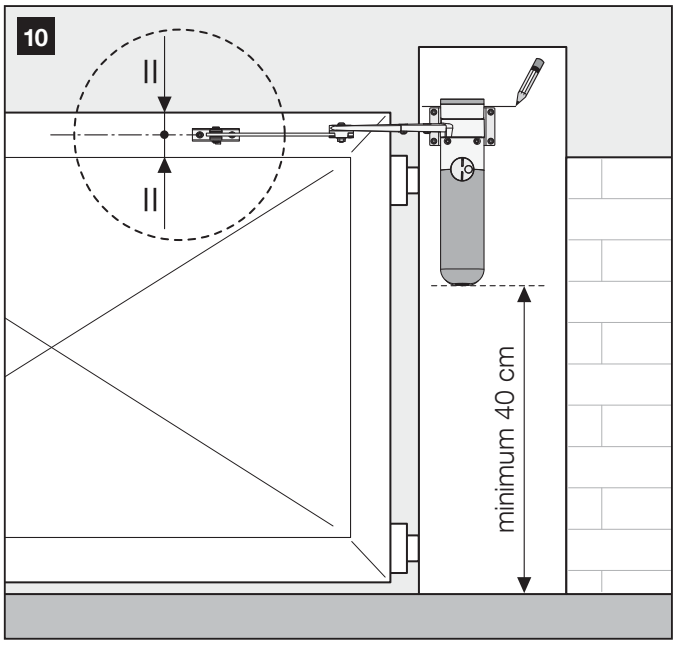
a) - On **Graph 3** locate the line marked with the same maximum opening angle as that measured.

b) - On the post, measure **value B** (**fig. 11**), i.e. the distance between the fulcrum of leaf rotation (centre of the hinge pin) and the post surface where the gearmotor is to be fixed.









c) - On **Graph 3** note the obtained **value B** on the horizontal axis and from this point, trace a vertical line until it intersects the line with your maximum leaf opening angle (see example in graph).

d) - On **Graph 3** trace a horizontal line passing through each point of intersection created between the previously traced vertical line and the line with your maximum leaf opening angle.
Then on the vertical axis, read all values of "**A**" including those between the traced horizontal lines (see example in graph) and where feasible select the **minimum possible value**. This will be the required **value A**.

e) - On the post, note the selected value "A" and trace a vertical line from this point (**fig. 11**). The line must intersect the horizontal line already present; these two lines will serve as a reference for subsequent fixture of the gearmotor.

f) - Lastly, release the gearmotor with reference to the chapter "Manually locking and releasing the gearmotor", in the "Operation Manual".

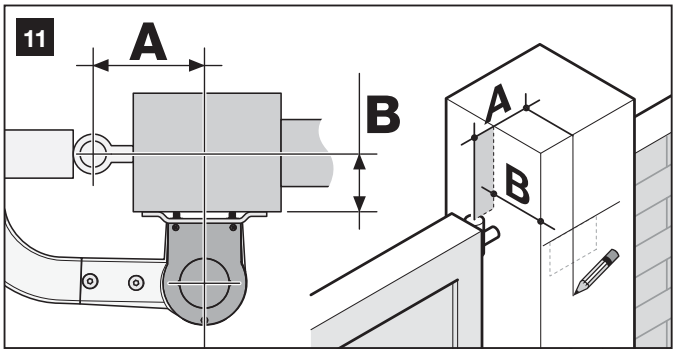
05. Determining the procedure to be followed to complete gearmotor installation.

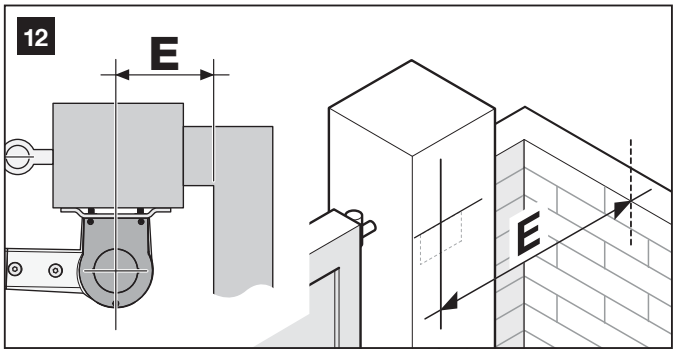
CAUTION, VERY IMPORTANT!

At this point if there is a wall, pole or other fixed element behind the post, to determine whether this may obstruct complete rotation of the arm, measure distance E (fig. 12), i.e. the space between the previously traced vertical line on the post at the closest point of the obstacle. Then,

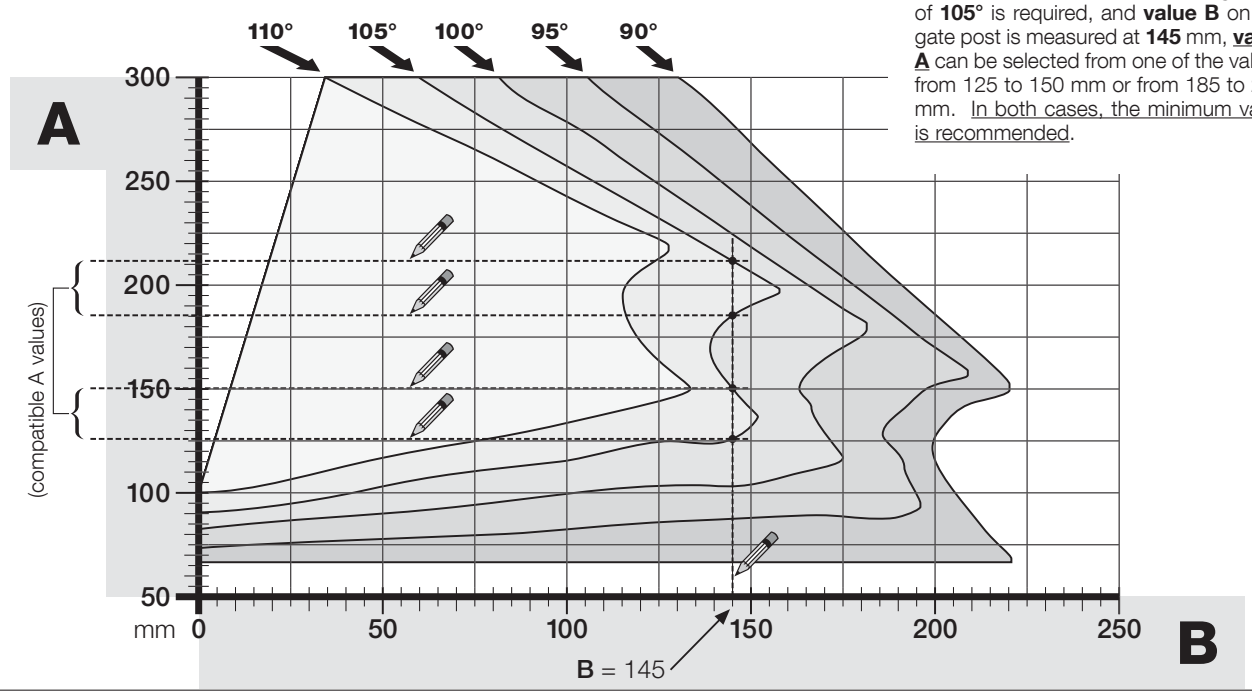
- if distance E is between 80 mm (minimum) and 299 mm (maximum), continue installation according to procedure 4.1B. (this envisages shortening of the arm);

- if distance E is equal to or greater than 300 mm, continue installation according to procedure 4.1A (this envisages the standard arm length as supplied).





GRAPH 3 (see paragraph 3.4)



EXAMPLE: if a maximum opening angle of **105°** is required, and **value B** on the gate post is measured at **145** mm, **value A** can be selected from one of the values from 125 to 150 mm or from 185 to 210 mm. In both cases, the minimum value is recommended.

Caution! • All installation operations and connections must be performed with the automation disconnected from the mains; if the backup battery PR200 is fitted, this must be disconnected. • Incorrect installation could cause serious physical injury.

—— STEP 4 ——

INSTALLING THE GEARMOTORS
ALTO100C / ALTO100M

4.1A - INSTALLATION WITH STANDARD LENGTH ARMS

CAUTION! - This procedure is an alternative to procedure 4.1B. To understand which procedure to follow, read the instructions stated in paragraph 3.4.

IMPORTANT!
This procedure illustrates installation of the gearmotor ALTO100C. The same instructions apply to installation of gearmotor ALTO100M, if the gate has two leafs.

01. Fixing the gearmotor to the post (fig. 13).

a) - Place the gearmotor against the post (*****) aligning its central vertical axis with the vertical line previously traced on the post (paragraph 3.4). Then align the upper edge of the rear gearmotor bracket with the previously traced horizontal line on the post (paragraph 3.4).
In this phase, ensure that the gearmotor is perfectly level; an offset gearmotor could cause malfunctions of the automation.
(*****) **Warning!** - If the post surface width is between 80 and 135 mm, before proceeding with installation, the rear gearmotor fixing bracket must be turned through 90°. Then follow the instructions in **fig. 21**.

b) - Mark the fixing points, drill the holes in the post and insert the plugs; then secure the gearmotor using adequate screws and washers. ***Note*** *- The screws are not included in the kit as their type depends on the material and thickness of the post in which they are fixed.*

c) - For increased stability of the gearmotor, adjust its rear feet so that they are placed against the post. This adjustment can be made later, when the control unit is removed from its seat for the first time (paragraph 5.4).

02. Fixing the arm on the leaf (fig. 13).

a) - Move the gate leaf to the maximum leaf closing position against the travel limit stop.

b) - Extend the arm and move it up towards the leaf, placing the fixing bracket on the arm. Then, **firmly press the curved arm against the leaf (fig. 13-6a), until the two arms are completely extended; apply force at the joining point (elbow fitting). Caution! - the arms are completely extended only when the elbow blocks against its stop.**

d) - Ensure that the gearmotor arm is level (**fig. 13-6b**) and use a pencil to mark **the centre** of the slots on the bracket (**fig. 13-7**), to enable subsequent fine adjustments of leaf closure.

e) - Keeping the bracket in contact with the leaf (for example using a clamp), attempt a complete leaf opening and closing manoeuvre, reaching both mechanical stops. **Caution! - During this test, if a fixed obstacle behind the gearmotor prevents complete rotation of the arm, suspend installation and perform procedure 4.2.**

f) - Drill the leaf at the marked points; remove the bracket from the arm and fix it to the gate leaf with adequate screws. ***Note*** *- The screws are not included in the kit as their type depends on the material and thickness of the post in which they are fixed.*

g) - Fix the arm to the bracket, inserting the pin and stop benzing. **Important** - Check that the bracket and arm are perfectly level. If necessary, loosen the bracket screws and level as required.

h) - Permanently anchor the travel stops to the floor, in the same position as established at the beginning of paragraph 3.4.

03. Checking perfect leaf closure.

a) - Close the leaf completely and ensure that it is placed against the travel stop; then shake by hand to check and ensure that the gearmotor remains firmly in position. If this is not so, proceed as described below; otherwise skip to phase 04:
1. remove the slotted arm from the fixing bracket on the leaf;
2. loosen the bracket screws and move it by a few millimetres in the direction of the gearmotor;
3. refit the slotted arm on the bracket, close the leaf and ensure that it is aligned in contact with the travel stop and aligned with the other leaf (if present). **Caution!** - If necessary, repeat point 2 to obtain perfect closure.

04. Permanently fixing the bracket on the leaf.

a) - Remove the slotted arm from the fixing bracket on the leaf (if not already performed in phase 03).

b) - Drill a hole in the leaf at the same point as the hole at the centre of the bracket and insert a screw. Permanently fix the bracket by tightening the three screws fully down.

c) - Fix the slotted arm to the bracket, inserting the pin and stop benzing.

05. Manually locking the gearmotor

a) - Manually move the leaf to approximately mid-travel and lock the gearmotor by means of the special key (refer to chapter “Manually locking and releasing the gearmotor” in the “Operation Manual”). Then manually move the leaf by a few centimetres in the opening direction.

06. On 2-leaf gates.

a) - If the gate has two leafs, install the other gearmotor repeating all operations described in paragraph 3.4 and in this paragraph.

4.1B - INSTALLATION WITH THE SHORT ARM

CAUTION! - This procedure is an alternative to procedure 4.1A. To understand which procedure to follow, read the instructions stated in paragraph 3.4.

IMPORTANT!
This procedure illustrates installation of the gearmotor ALTO100C. The same instructions apply to installation of gearmotor ALTO100M, if the gate has two leafs.

01. Setting a new maximum leaf opening angle (maximum 90°).

a) - Without taking into account the previously established maximum opening angle (paragraph 3.4), move the leaf to a new maximum opening position, ensuring that **the angle does not exceed 90°**. Lock the leaf in this position with a floor-mounted stop, fixed provisionally.

02. Calculating the measurement for shortening the slotted arm.

a) - On the surface of the post where the gearmotor is to be fixed, delete the previously traced vertical line (paragraph 3.4).

b) - On the post, measure **value B** (**fig. 11**), i.e. the distance between the fulcrum of leaf rotation (centre of the hinge pin) and the post surface where the gearmotor is to be fixed.

c) - On **Graph 4** note the obtained **value B** on the horizontal axis and from this point trace a vertical line.

d) - Place the gearmotor on the post, positioning its rear bracket (used for fixture) as close as possible to the leaf hinge pin, i.e. aligned and trim with the post**.**

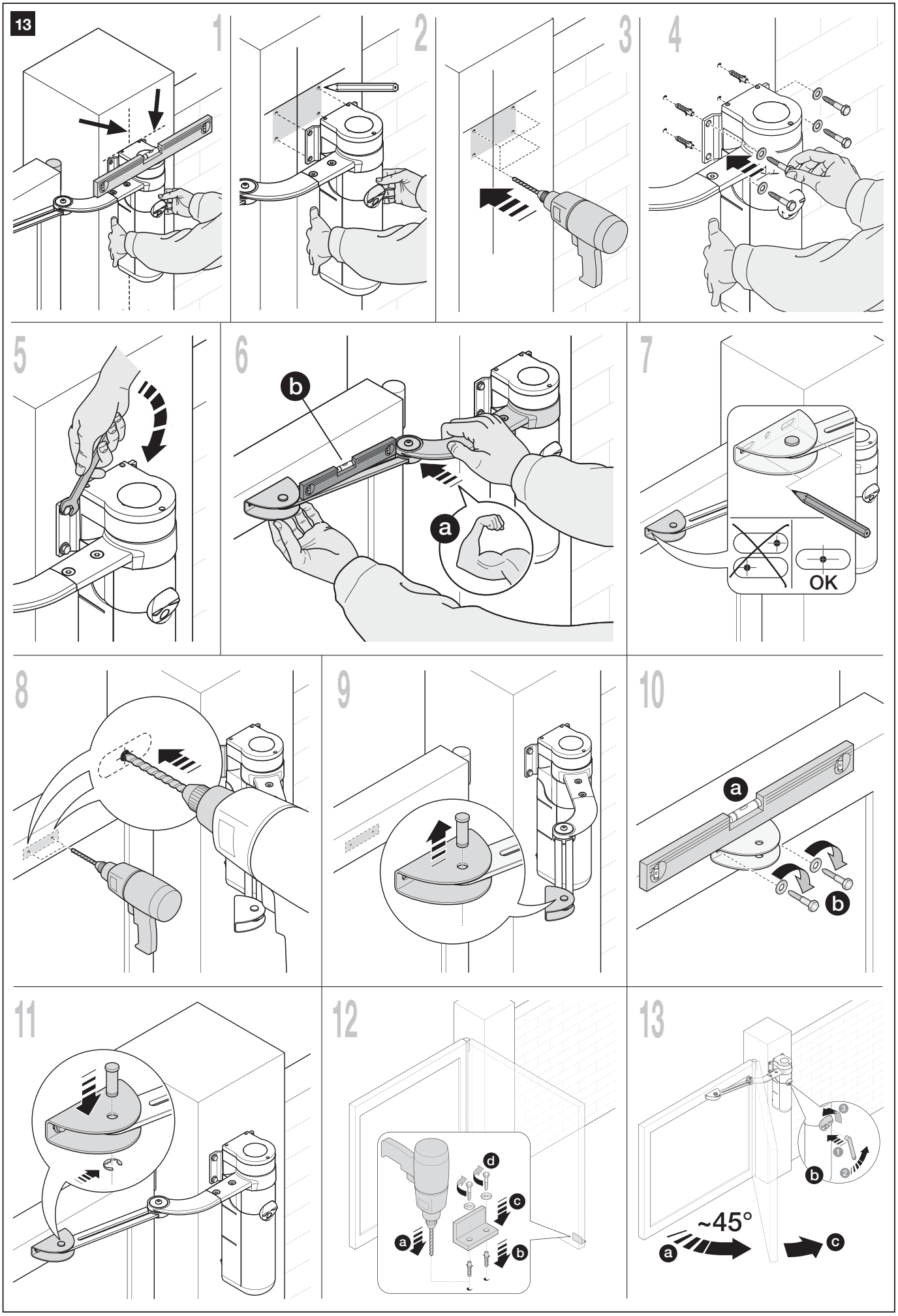
e) - Keeping the gearmotor in this position, check that it is perfectly level, and, using a pencil, trace a vertical line on the post, corresponding to the central vertical axis of the fixing bracket. The line must intersect the horizontal line already present; these two lines will serve as a reference for subsequent fixture of the gearmotor. Then remove the gearmotor.

f) - On the post, measure **value A** (**fig. 11**), i.e. the distance between the fulcrum of leaf rotation (centre of the hinge pin) and the previously traced vertical line.

g) - On **Graph 4** note **value A** found on the vertical axis, and from this point trace a horizontal line until it intersects the previously traced vertical line. The point of intersection of the two lines defines **value C, i.e. the distance required between the two pins of the slotted arm** (**fig. 14**).

03. Fixing the gearmotor to the post (fig. 15).

a) - Place the gearmotor against the post (*****) aligning its central vertical axis with the vertical line previously traced on the post. Then align the upper edge of the rear gearmotor bracket with the previously traced horizontal line on the post (paragraph 3.4).
In this phase, ensure that the gearmotor is perfectly level; an offset gearmotor could cause malfunctions of the automation.


13
1
2
3
4
5
6
b
a
7
OK
8
9
10
a
b
11
12
d
c
a
b
13
3
1
2
b
~45°
a
c

(*) **Warning!** - If the post surface width is between 80 and 135 mm, before proceeding with installation, the rear gearmotor fixing bracket must be turned through 90°. Then follow the instructions in **fig. 21**.

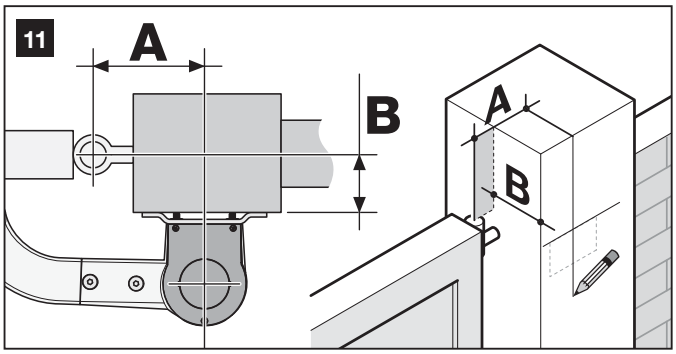
b) - Mark the fixing points, drill the holes in the post and insert the plugs; then secure the gearmotor using adequate screws and washers. ***Note*** - *The screws are not included in the kit as their type depends on the material and thickness of the post in which they are fixed.*

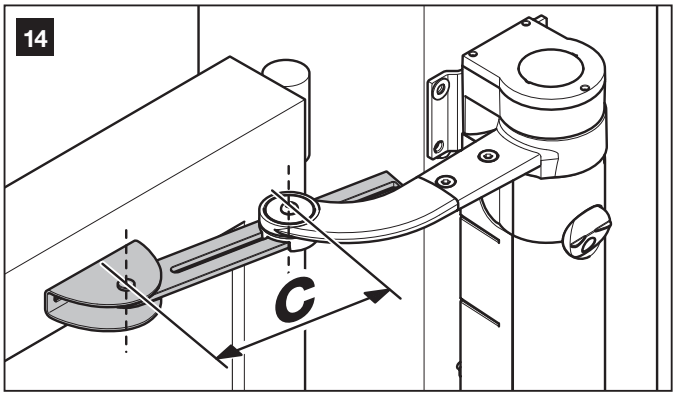
c) - For increased stability of the gearmotor, adjust its rear feet so that they are placed against the post. This adjustment can be made later, when the control unit is removed from its seat for the first time (paragraph 5.4).

04. Shortening the length of the slotted arm (fig. 16).

a) - Loosen the nut of the slotted arm, remove the stop and move the two pins apart, checking that the distance between them is the same as the obtained **value C**. Then tighten the nut, but only provisionally.

05. Checking that the length of the slotted arm is sufficient (fig. 17 and 18).





a) - Move the gate leaf to the maximum leaf closing position against the travel limit stop.

b) - Extend the arm and move it up towards the leaf, placing the fixing bracket on the arm. Then, **firmly press the curved arm against the leaf (fig. 17-1a), until the two arms are completely extended; apply force at the joining point (elbow fitting). Caution! - the arms are completely extended only when the elbow blocks against its stop.**

c) - Ensure that the gearmotor arm is level (**fig. 17-1b**) and use a pencil to mark **the centre** of the slots on the bracket (**fig. 17-2**), to enable subsequent fine adjustments of leaf closure.

d) - Then provisionally fix the bracket on the leaf with a clamp or adhesive tape and move the leaf to the maximum opening position, against the floor-mounted travel stop.

e) - With the leaf in this position, check the gate as shown in **fig. 18-1**: stretch a piece of string passing exactly above the two pins of the slotted arm through to the leaf hinge pin. If the string is found between the hinge pin and post in the area of the hinge pin (position "BB" in **fig. 18-2**), **extend** the slotted arm by a few millimetres (value "C") and repeat the check. Repeat the procedure several times if necessary until the string is located between the gate transit zone and the leaf hinge pin (position "AA" in **fig. 18-2**), and until the arm no longer comes into contact with the fixed obstacle behind the post.

06. Cutting the slotted arm (fig. 19).

After ensuring correct operation of the entire arm, cut the excessive part of the slotted arm as described below.

a) - Trace a line on the slotted arm in the exact position specified in phase 1 in **fig. 19.** Then remove the arm from the bracket and cut the excess section of the arm.

b) - After removing any burrs found after cutting, re-assemble the arm components with reference to **fig. 7**.

07. Fixing the arm on the leaf (fig. 20).

a) - Drill the leaf at the marked points; remove the bracket from the arm and fix it to the gate leaf with adequate screws. ***Note*** - *The screws are not included in the kit as their type depends on the material and thickness of the post in which they are fixed.*

b) - Fix the arm to the bracket, inserting the pin and stop benzing. **Important** - Check that the bracket and arm are perfectly level. If necessary, loosen the bracket screws and level as required.

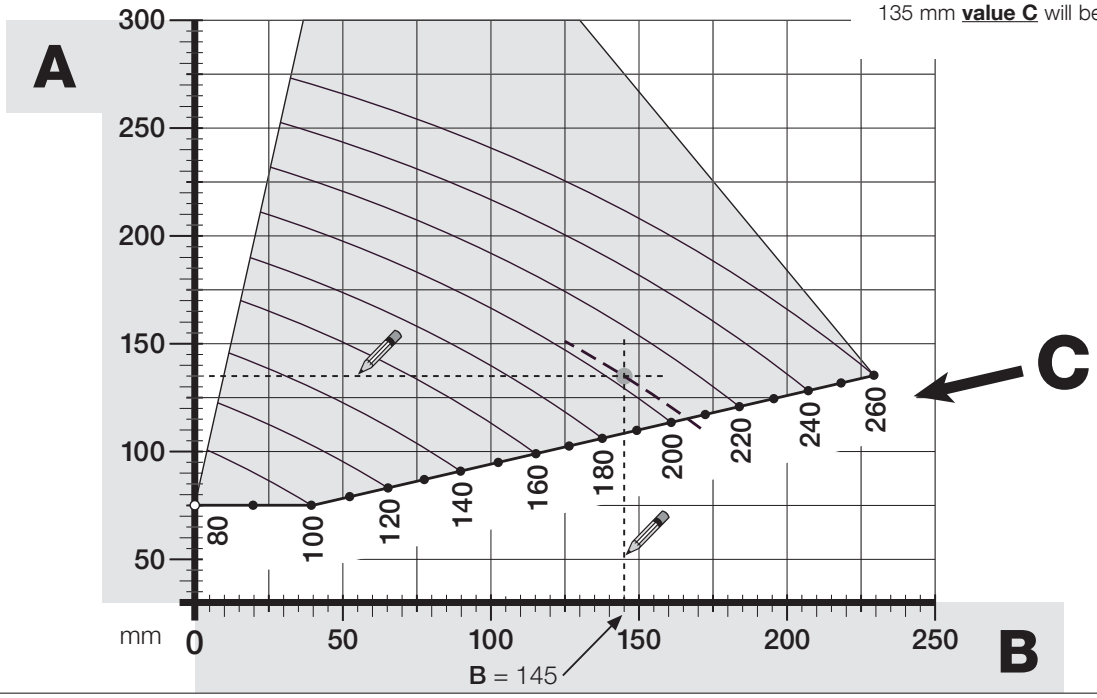
c) - Permanently anchor the travel stops to the floor, in the same position as established at the beginning of paragraph 3.4.

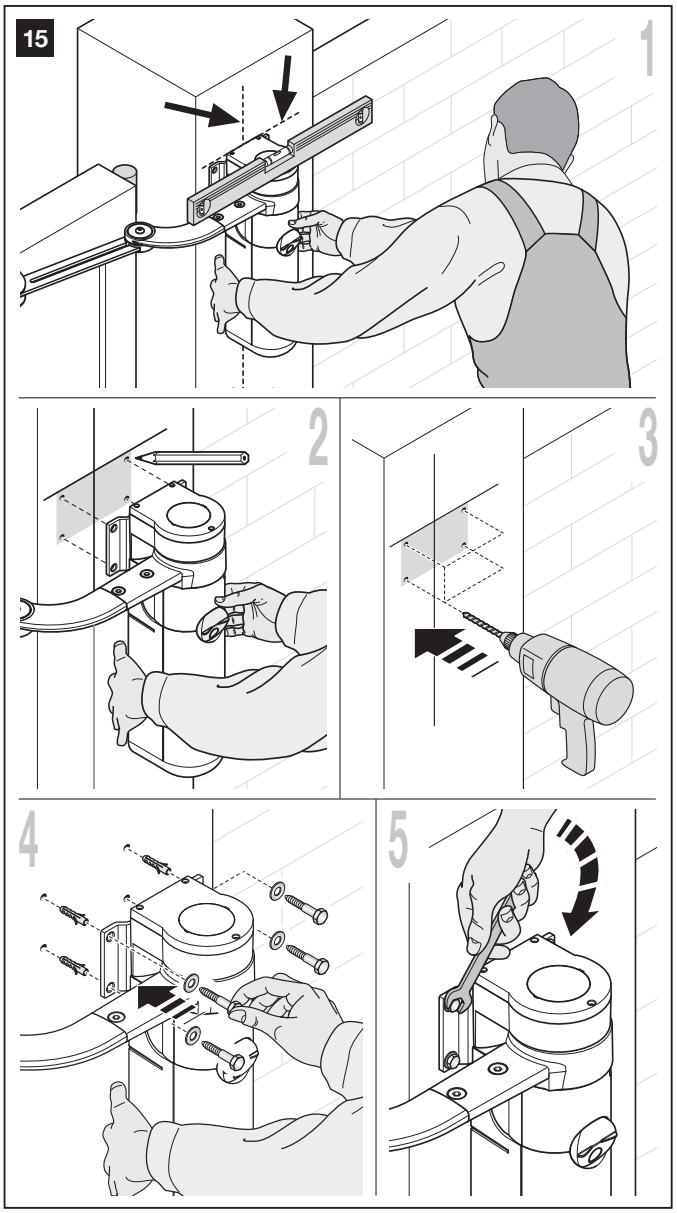
08. Checking perfect leaf closure.

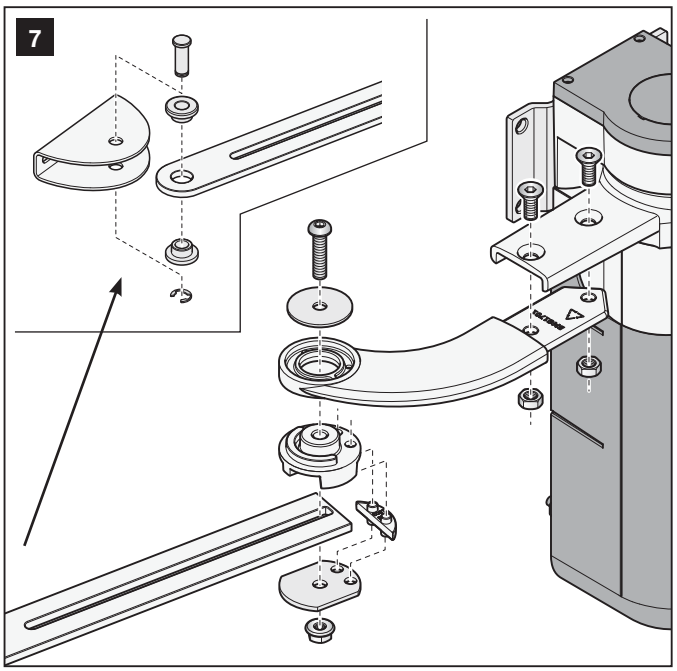
a) - Close the leaf completely and ensure that it is placed against the travel stop; then shake by hand to check and ensure that the gearmotor remains firmly in position. If this is not so, proceed as described below; otherwise skip to phase 09:
1. remove the slotted arm from the fixing bracket on the leaf;
2. loosen the bracket screws and move it by a few millimetres in the direction of the gearmotor;

GRAPH 4 (see paragraph 4.1B)

EXAMPLE: if **value B** on the gate post is measured at **145** mm and **value A** is 135 mm **value C** will be 210 mm







3. refit the slotted arm on the bracket, close the leaf and ensure that it is aligned in contact with the travel stop and aligned with the other leaf (if present). **Caution!** - If necessary, repeat point 2 to obtain perfect closure.

09. <u>Permanently fixing the bracket on the leaf.</u>

a) - Remove the slotted arm from the fixing bracket on the leaf (if not already performed in phase 08).

b) - Drill a hole in the leaf at the same point as the hole <u>at the centre of the bracke</u>t and insert a screw. Permanently fix the bracket by tightening the three screws fully down.

c) - Fix the slotted arm to the bracket, inserting the pin and stop benzing.

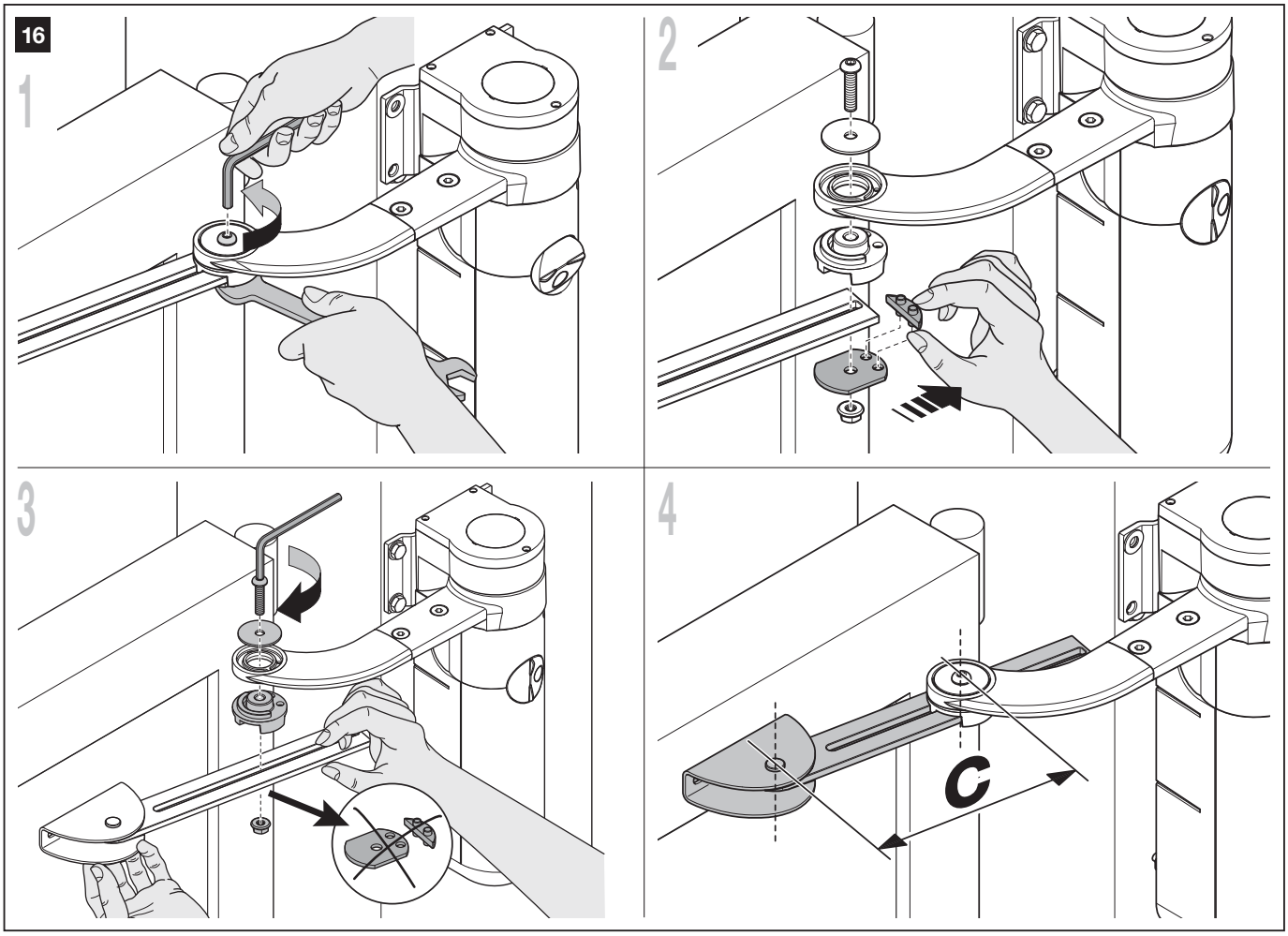
10. <u>Manually locking the gearmotor</u>

a) - Manually move the leaf to approximately mid-travel and lock the gearmotor by means of the special key (refer to chapter “Manually locking and releasing the gearmotor” in the “Operation Manual”). Then manually move the leaf by a few centimetres in the opening direction.

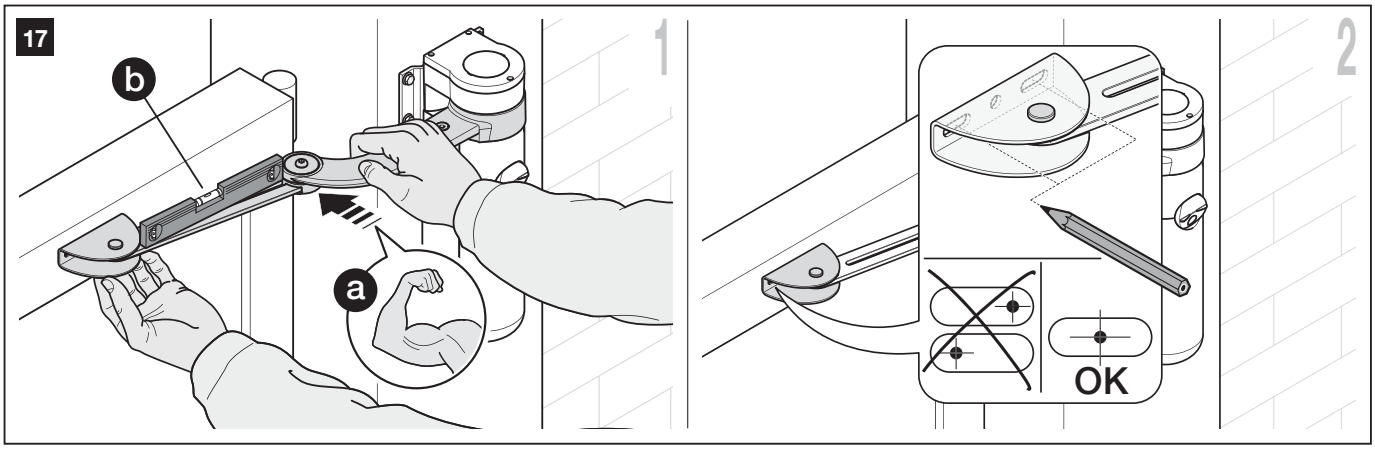
11. <u>On 2-leaf gates.</u>

a) - If the gate has two leafs, install the other gearmotor repeating all operations described in paragraph 3.4 and in this paragraph.

16



17



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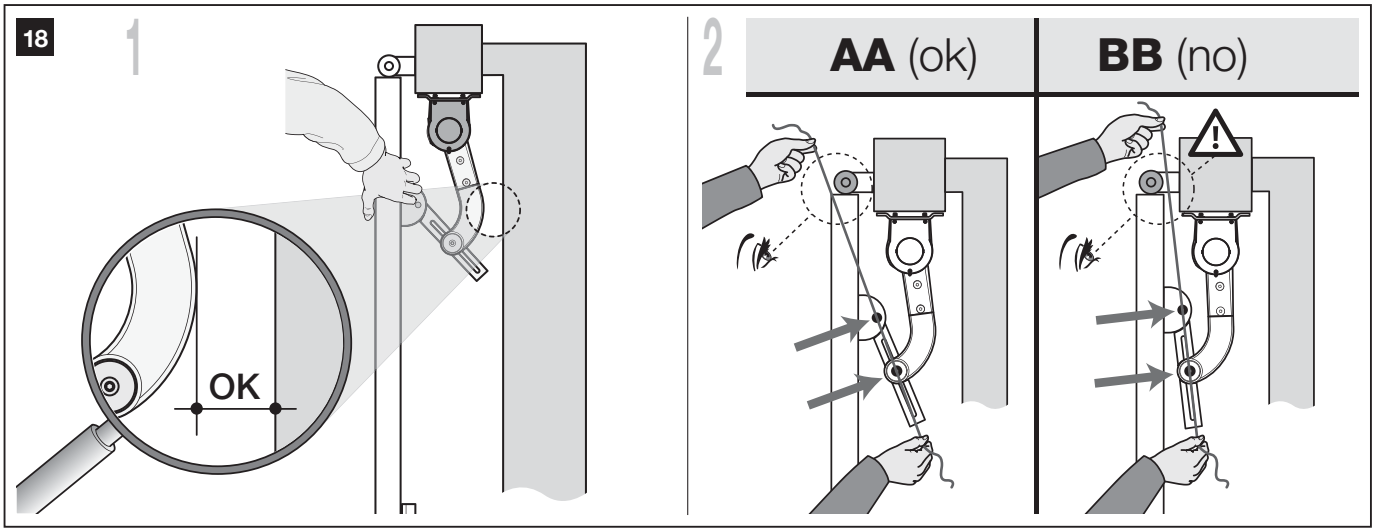
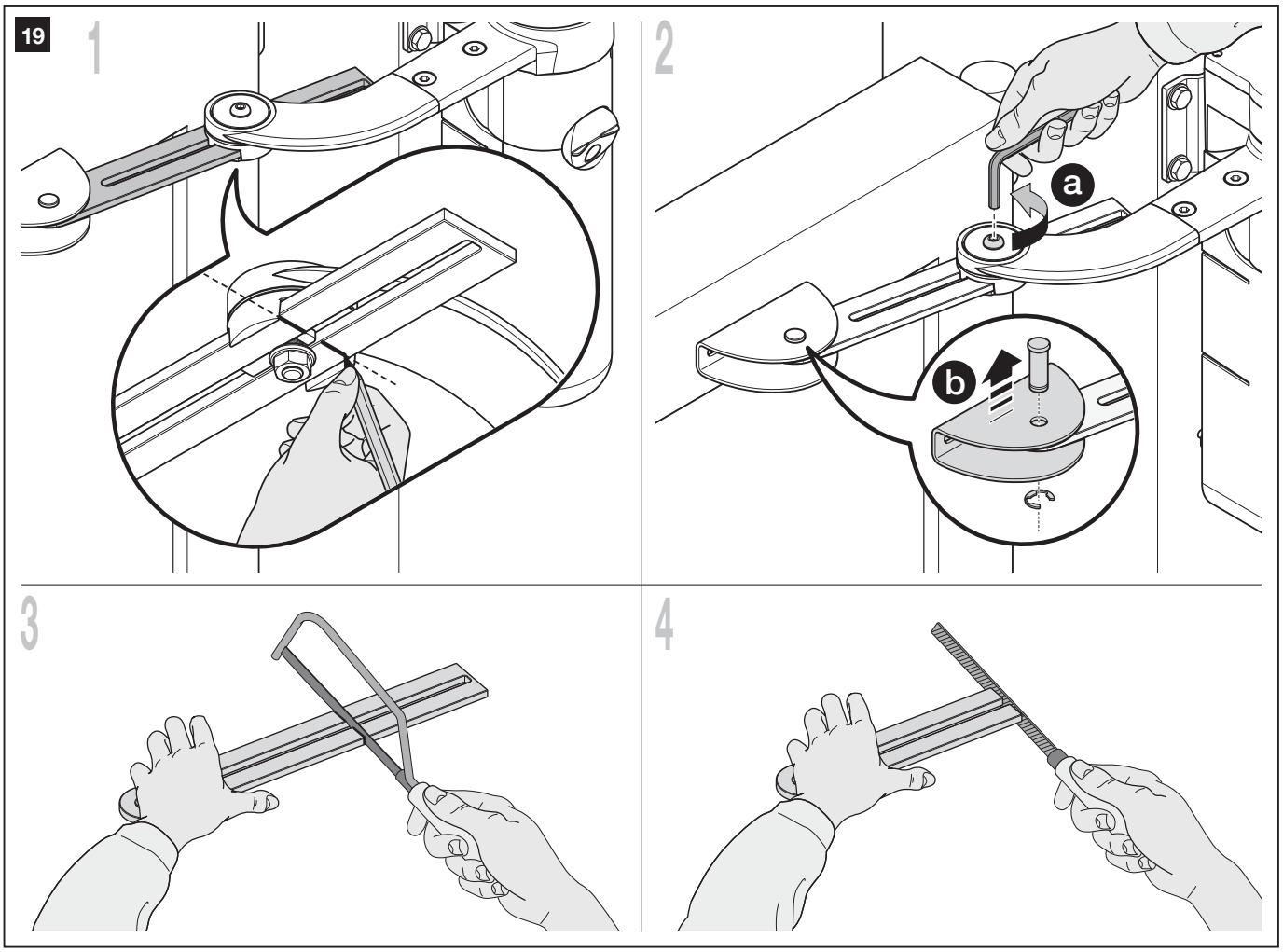
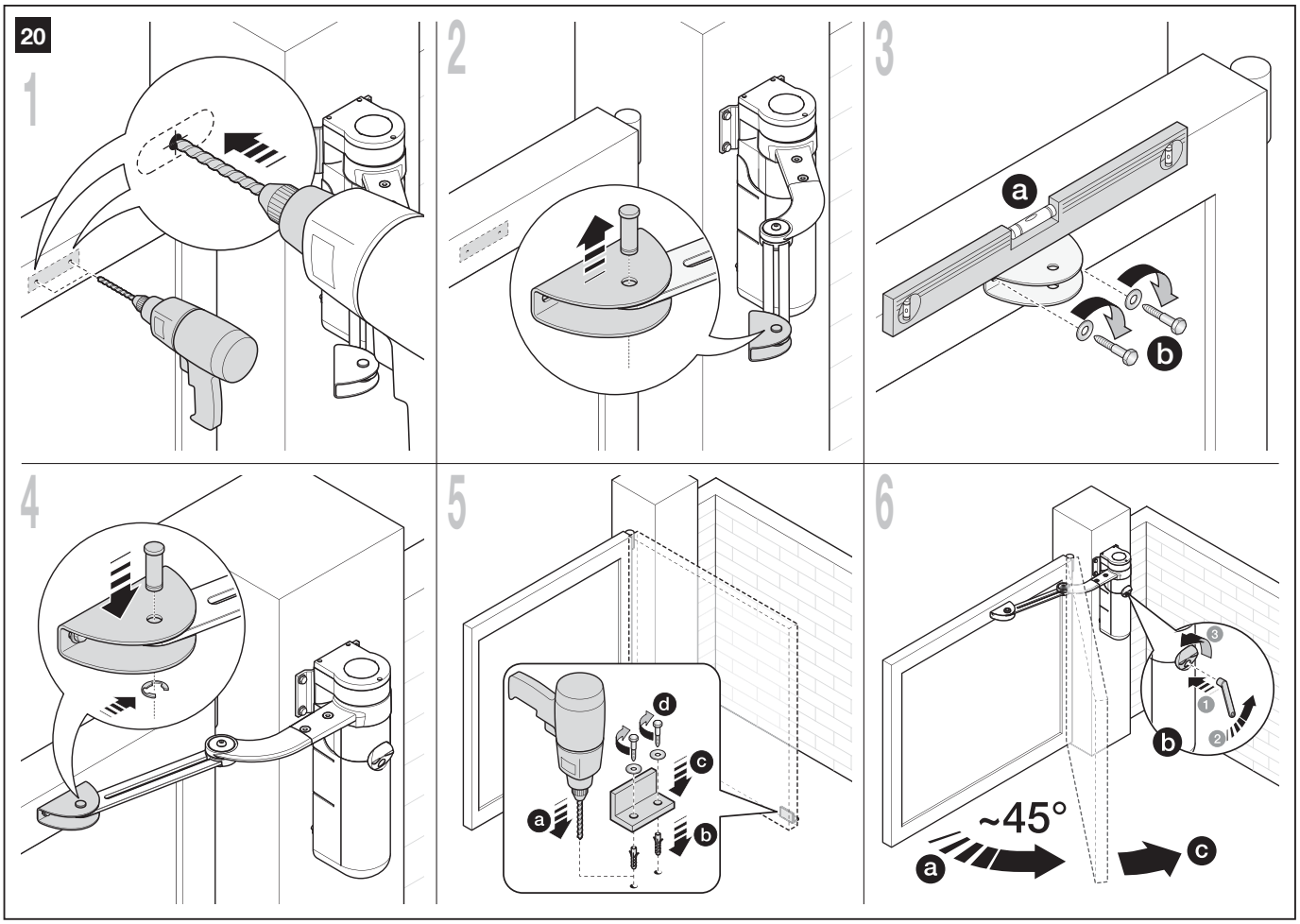
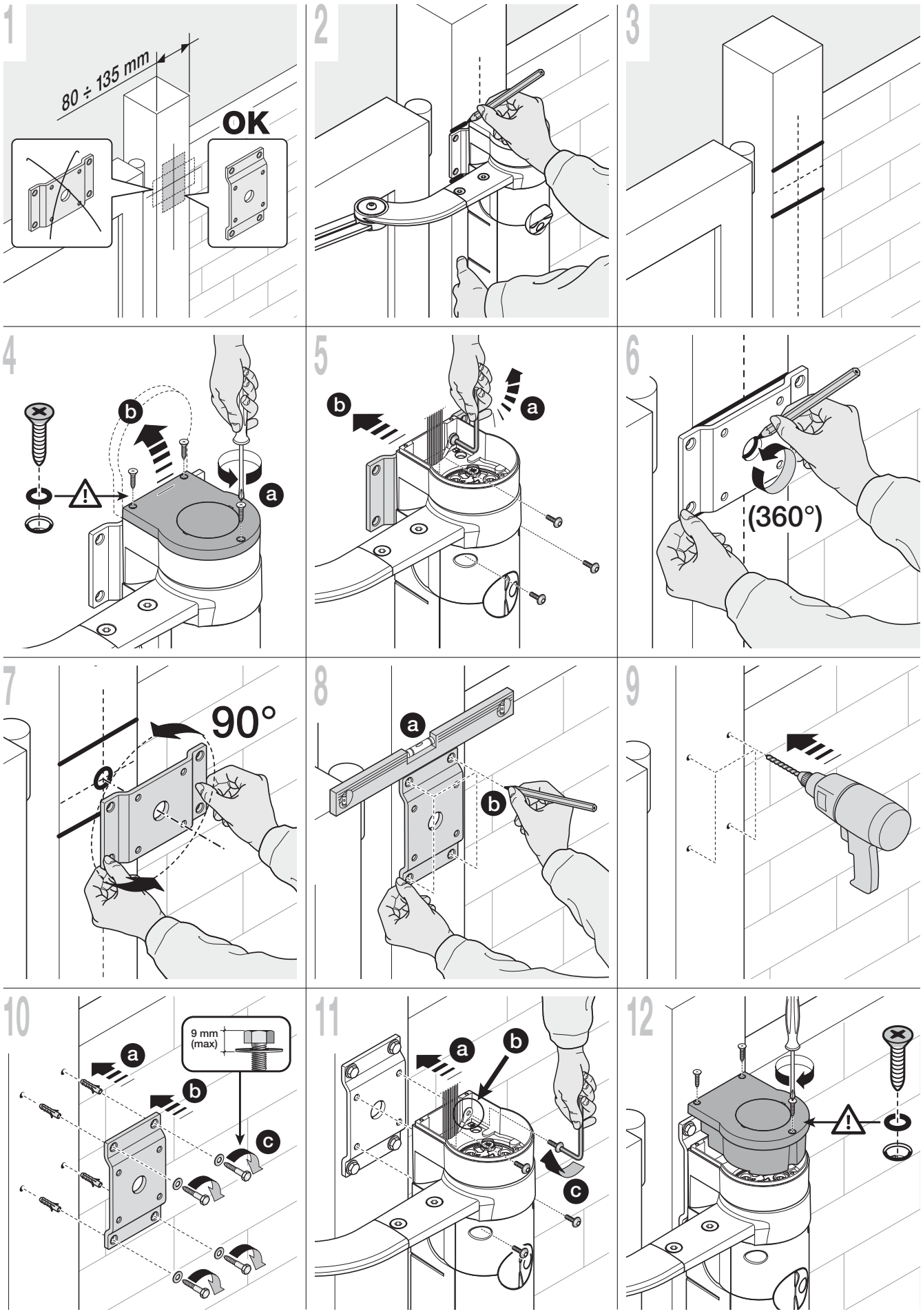



19
1
2
a
b
3
4


20
1
2
3
a
b
4
5
a
b
c
d
6
~45°
a
b
c

21 **CAUTION! - <u>If the length</u> of the gate post <u>is between 80 and 135 mm</u>, the rear gearmotor fixing bracket should be turned through 90°** (ref. paragraphs 4.1A and 4.1B)**.**



— STEP 5 —

INSTALLING AND CONNECTING
OTHER DEVICES

As well as the gearmotor with control unit (ALTO100C) the "ALTO" system also comprises other optional devices and accessories which can be installed at any time on the automation. The devices required to set up a standard automation are described here in Step 5; the others (back-up battery PR200 and SOLEKIT photovoltaic power supply) are described in the chapter "Further details".

5.1 - CONNECTING THE GEARMOTOR ALTO100M

01. Remove the lower cover of the gearmotor without control unit, as shown in **fig. 22**;
02. (for the next phases, refer to **fig. 23**) Use a screwdriver to loosen the 4 screws of the ducting support and remove (**Caution!** - take care to conserve the 2 spacers).
03. Loosen the cable clamp and pass the connection cable underneath; connect the 3 electric wires to the terminal board taking care to observe the symbols on the label; then tighten down the cable clamp screws.
04. **Adjusting the gearmotor feet.** Before proceeding, adjust the height of the 2 feet at the rear of the gearmotor. These should touch the surface of the post to increase stability of the gearmotor. These should touch the surface of the post to increase stability of the gearmotor. Then use a hex wrench inside the gearmotor, to make adjustments as shown in phase 7 of **fig. 23**. **Caution! – Never tighten the feet more than necessary: they just need to touch the surface.**
05. Lastly, cut the edge of the cable ducting support; refit the 2 spacers, refit the ducting support and close the gearmotor.

5.2 - INSTALLING AND CONNECTING THE FLASHING LIGHT FL200

⚠ **• The flashing light must be positioned near the door 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. 25**(06) and **Fig. 26**.

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

For the installation procedure see **Fig. 25**.

5.3 - INSTALLING AND CONNECTING THE PAIR OF PHOTOCELLS PH200

Caution: disconnect the power supply to the system before performing any installation operations.

⚠ **• 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 door (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°)**

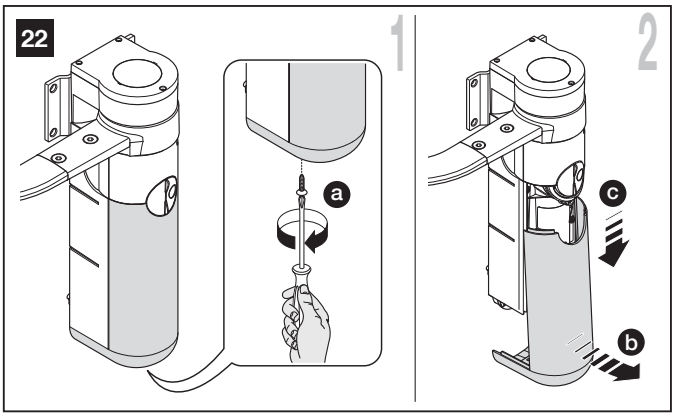
01. Remove the front glass (**Phase 01 - Fig. 24**)
02. Remove the upper casing then the internal casing of the photocell (**Phase 02 - Fig. 24**)
03. Perforate the lower casing in the point where the cables should pass (**Phase 03 - Fig. 24**)
04. - Position the lower casing in the point where the tube for the passage of the cables arrives and mark the perforation points (**Phase 04 - Fig. 24**)

- Use a percussion drill to drill the wall with a 5 mm bit. Insert the 5 mm wall plugs (**Phase 04 - Fig. 24**)

- Pass the electrical cables through the relevant holes and fasten the lower casing with the screws (**Phase 04 - Fig. 24**)

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. 26**). It is not necessary to observe any polarity.

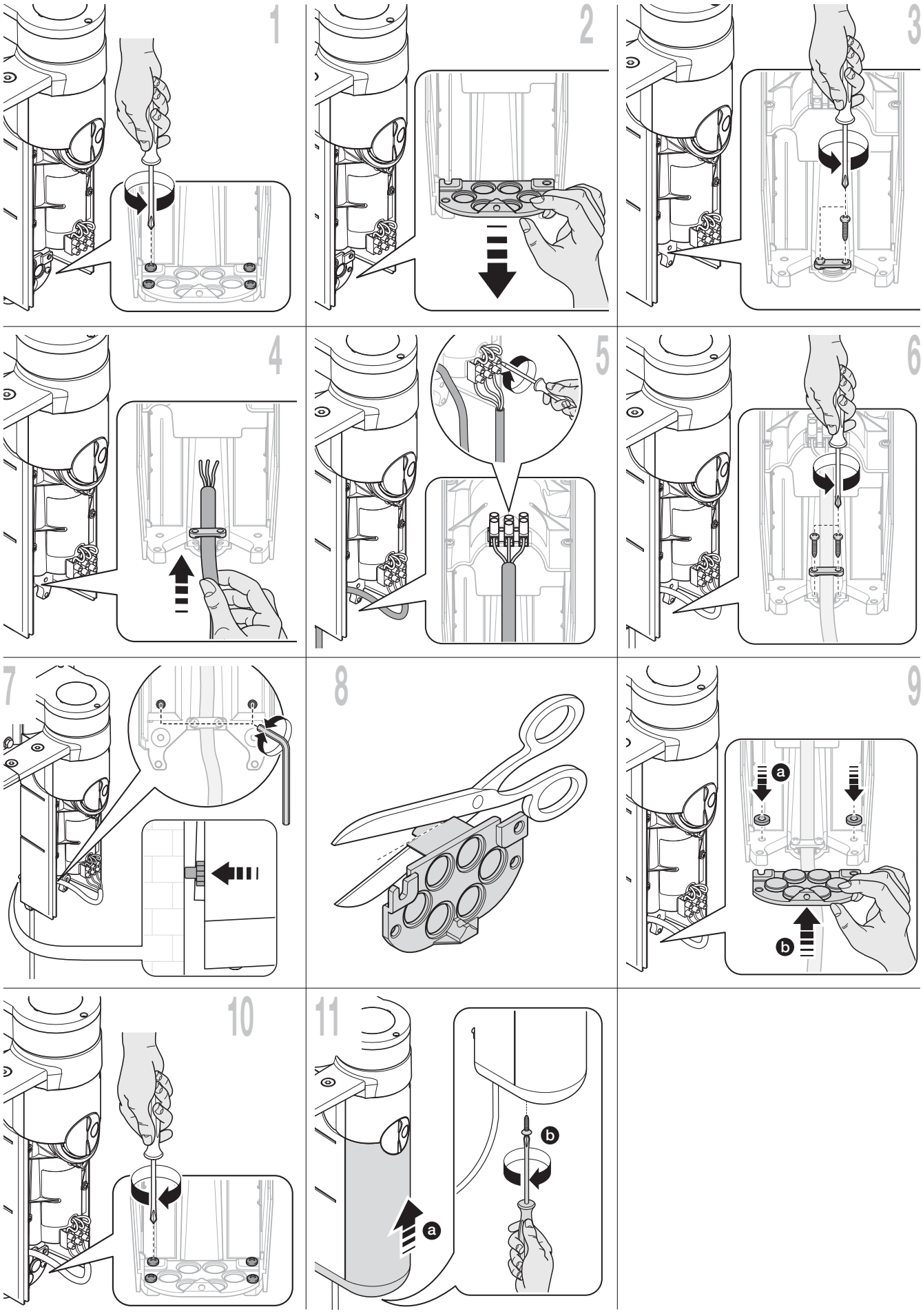
- Put back in place, in the following order, the inner casing followed by the upper casing to be fastened with the two screws then, lastly, insert the cover and exert slight pressure to close it (**Phase 05 - Fig. 24**).



5.4 - CONNECTING DEVICES TO CONTROL UNIT TERMINALS

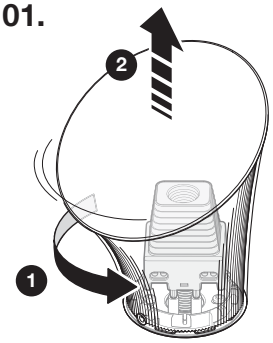
01. Remove the control unit from its seat with reference to the instructions in paragraph A.1 (chapter "Further details").
02. **Adjusting the gearmotor feet.** Before proceeding, adjust the height of the 2 feet at the rear of the gearmotor. These should touch the surface of the post to increase stability of the gearmotor. These should touch the surface of the post to increase stability of the gearmotor. Then use a hex wrench inside the gearmotor, to make adjustments as shown in phase 7 of **fig. 23**. **Caution! – Never tighten the feet more than necessary: they just need to touch the surface.**
03. Drill the rubber section of the hose connectors required and route the connection cables through the holes.
04. Re-connect the connector of the motor to the control unit (**caution**: take care to observe polarity: this can only be inserted in one direction) and insert the control unit in its seat.
05. Then refit the cable ducting support, securing it with the 4 screws. **Caution**! – Seal off any gaps to prevent the ingress of insects to the gearmotor.
06. Lastly strip the cables and connect each to the dedicated terminal, with reference to **fig. 26** and the following warnings.
• It is recommended to remove the terminals from the control unit, to make the connections and then refit the terminals in their seats.
• Always connect the cable of the antenna and cable from the motor without control unit in strict observance of the polarity indicated in **fig. 26**. All other connections can be made without the need to observe polarity.
• All devices compatible with ECSBus technology must be connected to the terminal "BUS" of the control unit (for further information on the technology, read paragraph 3.3.3).

23 **ALTO100M gearmotor connection** (ref. paragraph 5.1).

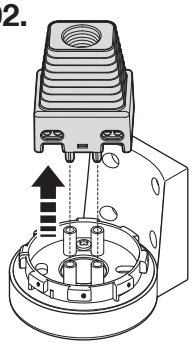


Installation and connection of FL200 flashing light (ref. paragraph 5.2).

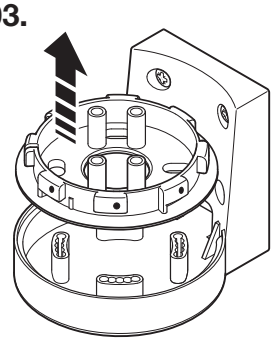
01.



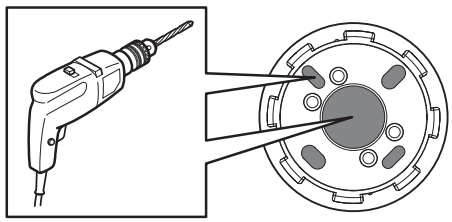
02.



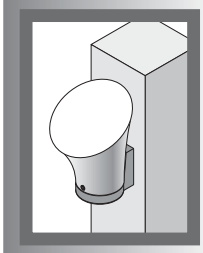
03.

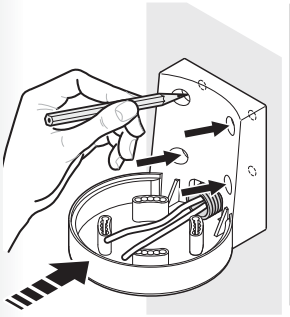


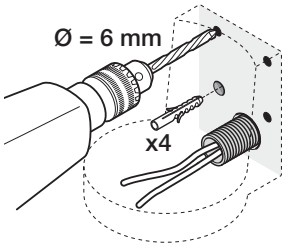
04.

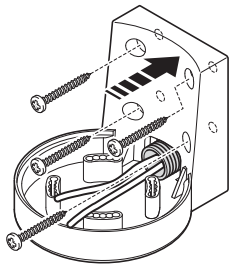


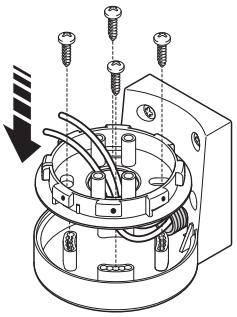
05. A











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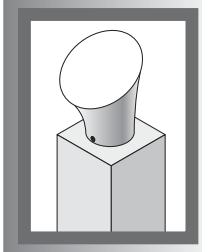

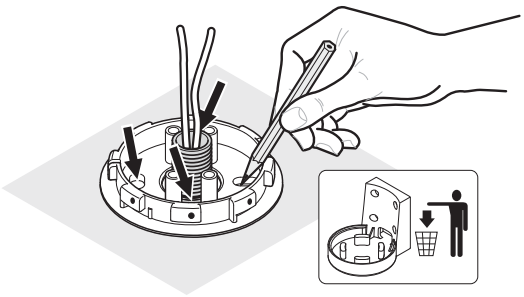

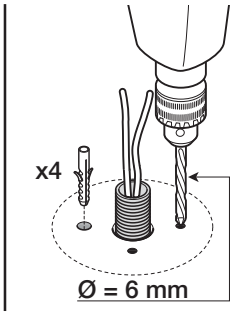

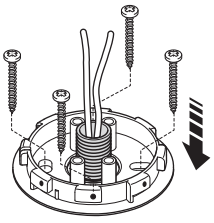

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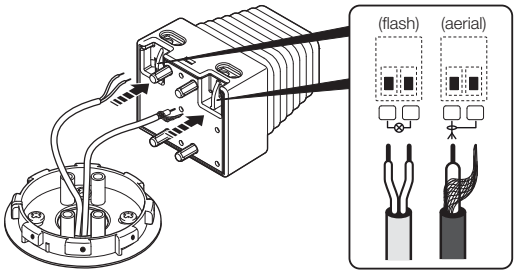

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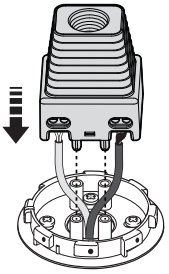

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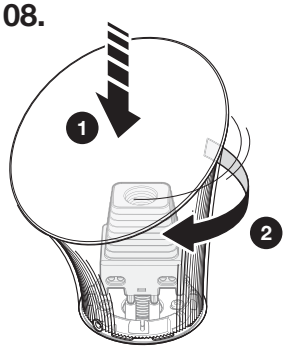

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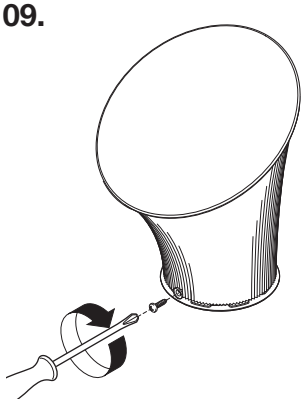

Installation and connection the pair of photocells PH200 (ref. paragraph 5.3).

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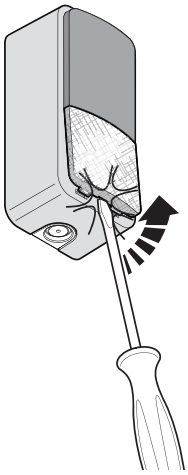

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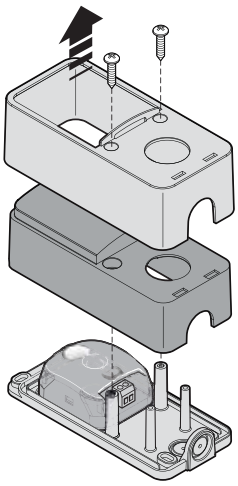

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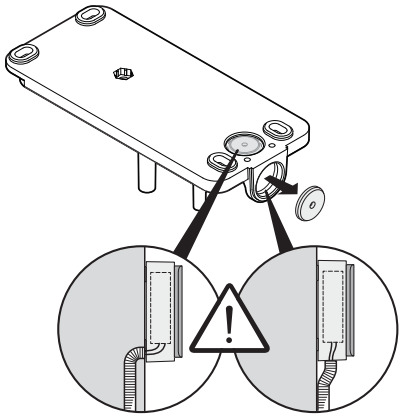

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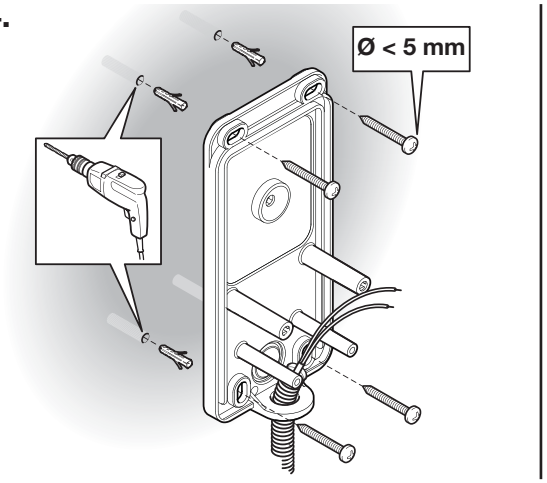

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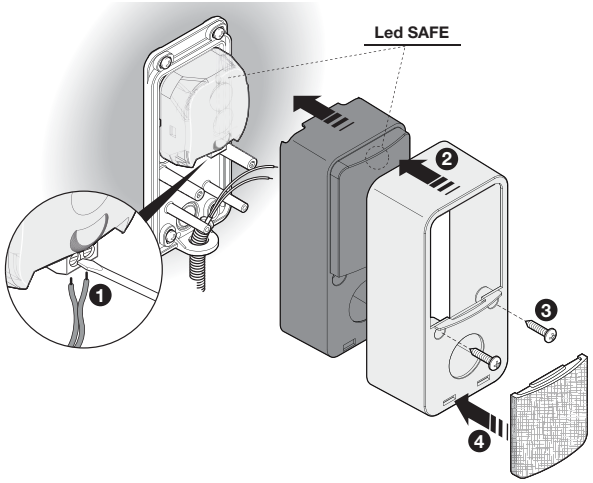

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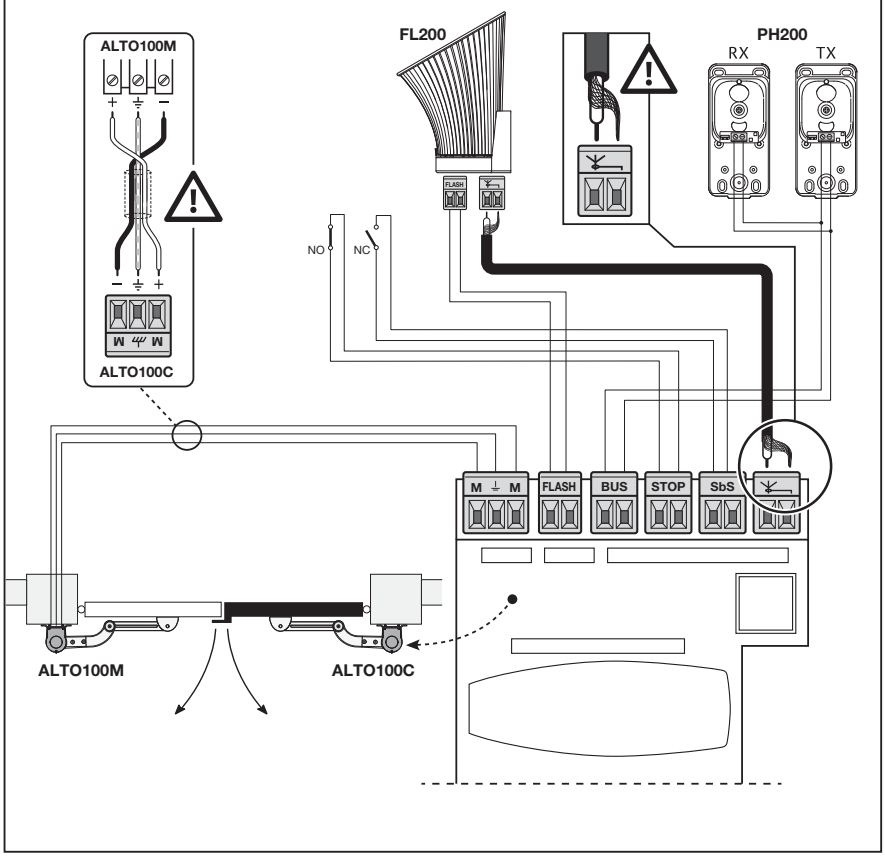

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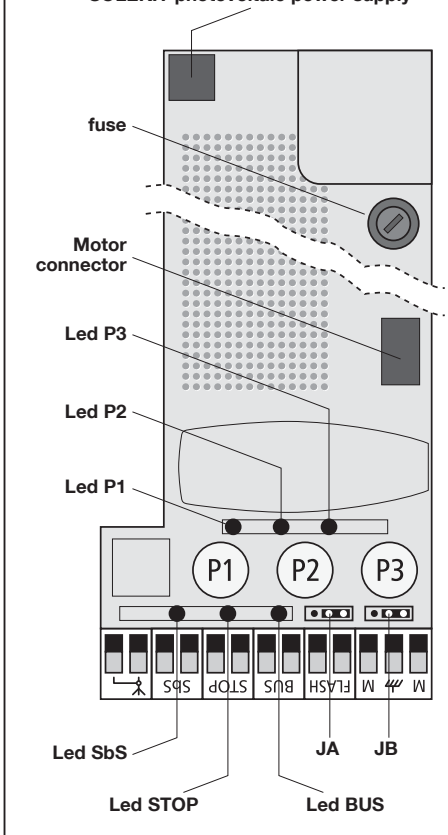

— STEP 6 —

INITIAL START-UP AND
CONNECTION CHECK

6.1 - CONNECTING THE CONTROL UNIT TO THE POWER MAINS

After installing and connecting all envisaged devices, insert the power cable plug in a socket. In this phase, if the socket is far from the automation, an extension lead may be used. **IMPORTANT** – The cable supplied is suitable for a provisional connection of the control unit to the mains, for the purposes of programming and operation tests. When testing and starting up the automation, the control unit must be connected permanently to the electrical mains, creating a specific power line which also includes a device to disconnect the automation from the power supply. For these operations, read paragraph 8.1.

6.2 - IDENTIFYING KEYS AND LEDS ON THE CONTROL UNIT

From the next paragraph onwards, the manual will deal with the keys, leds and connectors present on the control unit. To identify them, refer to **fig. 27**, on the previous page.

6.3 - CHECKING ELECTRICAL CONNECTIONS AFTER INITIAL POWER-UP

CAUTION! – All the subsequent operations described in this manual will be made on live electric circuits, and therefore manoeuvres may constitute a hazard! Therefore take great care during these operations.

After powering up the control unit, the following checks should be performed.

01. On the control unit: check that the Led "BUS" flashes regularly (1 flash per second).

02. On the two photocells (TX and RX): ensure that the Led "SAFE" (**fig. 28**) flashes (the type of flash is not important; it is simply important whether the led is permanently lit or off.

If these checks do not obtain positive results, disconnect the control unit from the power supply and check the cable connections. In these cases refer also to paragraphs D and E ("Troubleshooting" and "Diagnostics and Signals") in the chapter "Further Details".

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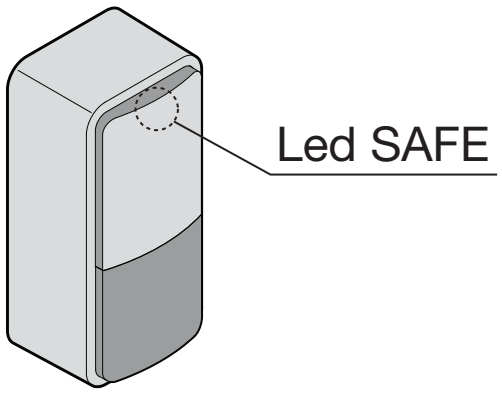


— STEP 7 —

STANDARD CONTROL UNIT PROGRAMMING

7.1 - LEARNING THE IDENTITY OF CONNECTED DEVICES

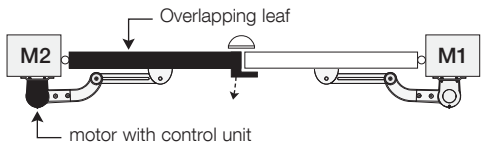
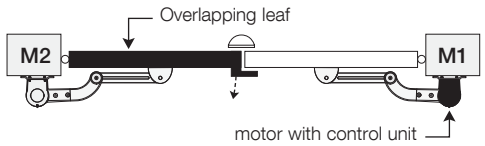
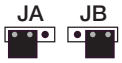
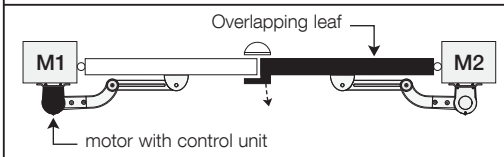
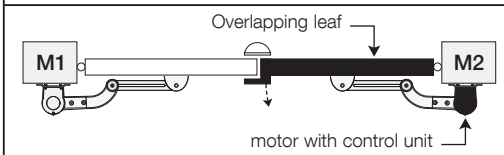
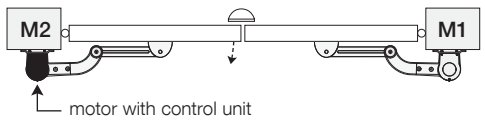
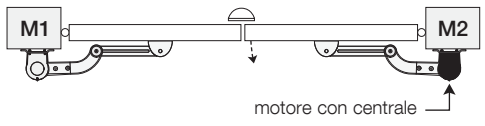
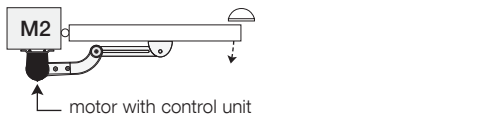
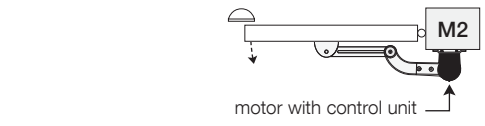
After the initial checks described in Step 6 the control unit must learn the identity of the devices connected to its terminals "BUS" and "STOP". The following procedure enables the control unit to recognise connected devices one at a time, and to assign them with a specific unique address.

01. On the control unit, press and hold P2 until Led P2 starts flashing quickly; then release the key.

02. Wait a few seconds for the control unit to learn all connected devices. Learning is complete when the STOP Led remains lit and Led P2 turns off. **Caution!** – If Led P2 continues to flash this means that there is an error; in this case read paragraph D - "Troubleshooting".

Caution! – In the future, if a new device is connected to the control unit (for example, a new pair of photocells), or if a device is removed, this learning procedure must be repeated.

Table 3

7.2 - LEARNING THE MAXIMUM LEAF OPENING ANGLE

After learning the devices, the control unit must learn the maximum leaf opening angle, starting from the closing travel stop. Therefore proceed as follows.

01. In **Table 3** identify the diagram that represents the position of the overlapping leaf and the gearmotor with control unit, present on your system (these two details are in black on the diagram).

02. On the control unit, wire in jumpers **JA** and **JB**, in the same position indicated alongside the diagram shown in **Table 3**.

03. Release the gearmotors by means of the special keys (read paragraph "Manually locking and releasing the gearmotor") and move the leafs to mid-travel; then lock the gearmotors again.

04. On the control unit, press and hold P3 until Led P3 starts flashing quickly; then release the key.

05. Wait the control unit to independently activate a pre-set sequence of manoeuvres and only intervene in the event of a fault.

Manoeuvre sequence:
1) closure of motor M1 through to mechanical stop; **2**)closure of motor M2 through to mechanical stop; **3**) opening of motor M2 and motor M1 through to the mechanical opening stop; **4**) complete closure of M1 and M2. Caution!

Cases of faults:
A) If the first manoeuvre of one or both the leafs is not closure, press P3 to stop the learning phase and control the position of the electric jumpers **JA** and **JB** (see **Table 3)**.
B) If the first motor to move towards the closing point is not M1, press P3 to stop the learning phase and check the positions of the electrical jumpers **JA** and **JB**, with reference to Table **3**.
C) During the learning phase, if any device trips (photocells, P3 pressed etc.), the learning phase is stopped immediately, and so must be repeated from phase 04.

06. At the end of the manoeuvre, Led P3 turns off, confirming memorisation of the maximum leaf opening angle. **Caution!** – If the Led continues to flash this means that there is an error; in this case read paragraph D - "Troubleshooting".

Warning – In the future, if one or both opening travel stops are moved, the entire learning procedure must be repeated.

7.3 - OPERATION PARAMETER SETTINGS

7.3.1 - Programming the leaf movement speed

The speed of the leaf during opening or closing may be set by selecting one of two options: "low speed" or "high speed".
To program the required option, briefly press P2 and check the status of Led P2: if this turns off, it means that the "low speed" option is set; otherwise if it turns on it means that the "high speed" option has been selected. To switch between one option and the other, press P2 again.

WARNING – If the leaf is longer than 1.20 m, heavier than 100 kg and the gearmotor is installed with the arm shortened the "low speed" option is recommended. The" high speed" option should only be set for leafs with shorter lengths and lighter weights.

7.3.2 - Programming the "work cycle", i.e. the behaviour of the automation after an opening manoeuvre

After an opening manoeuvre is activated by the user, the automation sets up for a closing manoeuvre according to the option programmed for this parameter. Two options are available: "half cycle" or "complete cycle".

- **Half cycle**: (factory setting) after an opening manoeuvre is activated by the user, the leafs remain open until the user activates a closing manoeuvre (semi-automatic mode).
- **Complete cycle**: after an opening manoeuvre is activated by the user, the leafs remain open for a set time interval, after which they are closed automatically by the control unit (automatic mode). To modify the pause time, read paragraph B and relative sub-paragraphs.

To program a work cycle, briefly press P3 and check the status of Led P3: if it is off, this means that the "half cycle" is set; if lit, the "complete cycle" is set. To switch between one option and the other, press P3 again.

7.4 - CHECKING OPERATION OF THE RADIO TRANSMITTERS

The control unit incorporates a radio receiver for ECCO5 transmitters (various models). The transmitters supplied are not memorised; therefore, at the beginning, it is necessary to memorise the FIRST transmitter (Mode 1), with the procedure C.2.

In this manual the transmitter keys are identified with the symbols T1, T2, T3, T4, T5 (see **fig. 29**). **Warning!** - The T5 key is not used in this application.

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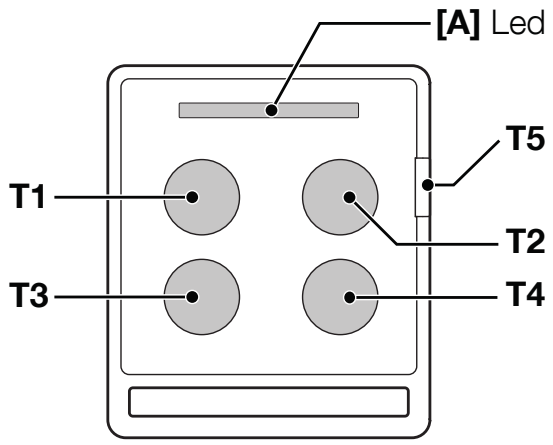

To check operation of the transmitter press a key and at the same time ensure that the transmitter led **[A]** flashes and that the automation executes the command envisaged for that key.

English

CAUTION! – All operations described in chapters 8, 9, 10 may constitute a hazard. Therefore they must be performed exclusively by skilled and qualified personnel, in observance of these instructions and current safety standards applicable in the place of use.

— STEP 8 —

SETTING THE ELECTRICAL LINE
FOR PERMANENT POWER SUPPLY

After programming, before testing and commissioning the automation, it must be permanently connected to the mains by means of a special power line equipped with a disconnect device.

8.1 - CONNECTING THE AUTOMATION PERMANENTLY TO THE POWER MAINS

CAUTION! – **Incorrect connections can cause faults or hazardous situations; therefore strictly observe all connections specified in this paragraph.**

8.1.1 - Replacement of the power cable

01. **Remove the power supply unit**
To perform this operation, read the instructions in paragraph A.2 (chapter "Further details"), but only disconnecting the wires phase and neutral (there is no need to disconnect the earth wire or connector with the 5-cable plate).
02. In the area housing the power supply unit, remove the screw securing the eyelet of the earth wire (**fig. 30**).
03. Remove the control unit
To perform this operation, read the instructions in paragraph A.1 (chapter "Further details").
04. **Replace the cable**
Loosen the cable clamp screws; withdraw the power cable (supplied as standard) and insert the new cable (for cable specifications, refer to paragraph 3.3.4).
05. Strip the cable to approx. 80 mm, and the phase and neutral wires, after which insert the sheath taken from the previous power cable.
06. Connect the phase and neutral wires to the power supply unit terminal board, observing the specifications on the label.
07. On the earth wire, insert a crimp terminal without insulation, using a 6 mm eyelet.
08. In the area housing the power supply unit, use a screw to secure the two eyelets for the earth wires (fig. 30 – Caution! - Direct the crimp terminal towards the outlet of the power cable).
09. Slowly pull the power cable downwards until a sufficient cable length is left to rotate and close the power supply unit.
10. Then, firmly position the seal in its seat and close the power supply unit cover with all screws (caution! - A missing seal or screw may cause problems with internal electronics).
11. Insert the protective cover on top of the motor.

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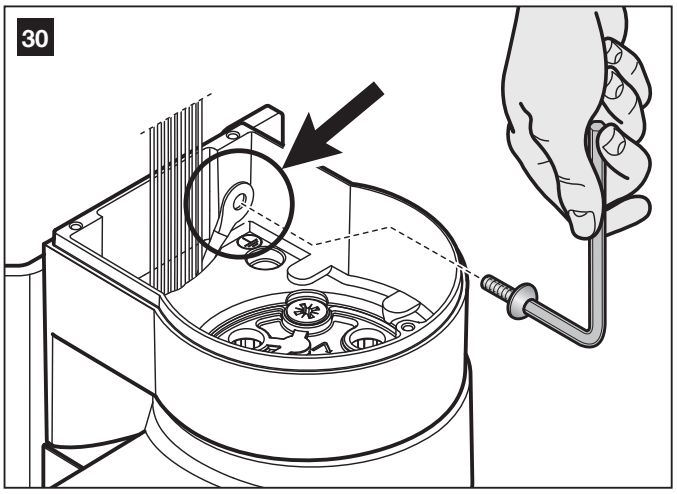

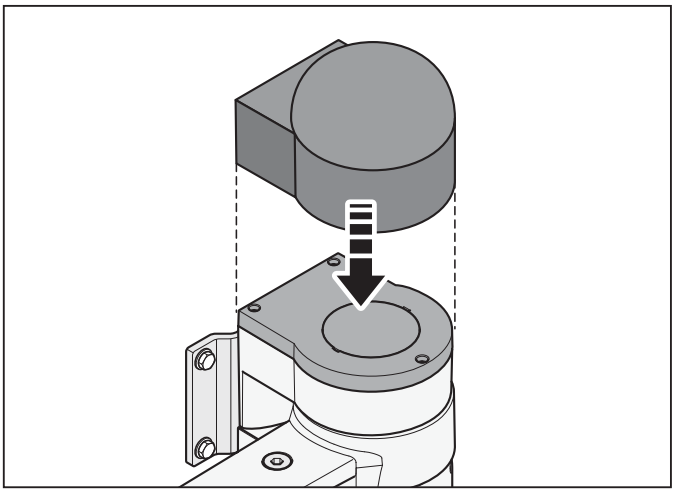

12. Lastly, tighten down the screws of the cable clamp, insert the control unit in its seat, refit the cable ducting support and refit the lower cover of the gearmotor.

8.1.2 - Installing the safety devices on the electrical line

The automation power line must be equipped with a device for protection against short circuits and a device for disconnection of the automation from the power mains (neither devices are supplied with the kit).
The disconnect device must have contacts with a sufficient gap to ensure complete disconnection, in compliance with the overvoltage category III, according to the installation instructions.
If necessary, this device guarantees quick and safe disconnection from the mains power and therefore must be positioned in sight of the automation. If located in a concealed position, it must be equipped with a system that prevents inadvertent or unauthorised reconnection of power, to avoid potential hazards.

— STEP 9 —

AUTOMATION TESTING
AND COMMISSIONING

Testing and commissioning of the system are the most important phases in automation set-up, as they will guarantee maximum system safety. The testing procedure described below may also be used to periodically check the devices making up the automation.
Testing and commissioning of the entire system must be performed by skilled and qualified personnel, who are responsible for the tests required to verify the solutions adopted according to the risks present, and for ensuring observance of all legal provisions, standards and regulations and in particular all requirements of the standard EN 12445, which establishes the test methods for checking automations for gates.

9.1 - TESTING

01. Ensure that all instructions and warnings in STEP 1 have been strictly observed.
02. Using the radio transmitter, test a gate closing and opening cycle and ensure that the leaf movement corresponds to specifications. A number of tests should be performed to ensure that the gate moves smoothly and that there are no assembly defects, incorrect settings, or any points of friction.
03. Ensure correct operation of all safety devices in the system (photocells, sensitive edges, etc.), by activating them one at a time during an opening and/or closing manoeuvre. In particular, each time a device is activated, check on the control unit that the Led "BUS" emits a longer flash; this confirms that the control unit has recognised the event.
04. To test photocells and in particular that there is no interference with other devices, pass a cylinder (diameter 5 cm, length 30 cm) through the optic axis (**fig. 31**). Pass the cylinder first close to the TX photocell, then close to the RX and lastly at the centre between the two. Ensure that in all cases the device engages, changing from the active status to alarm status and vice versa, and that the envisaged action is

generated in the control unit (for example movement inversion in 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.

9.2 - COMMISSIONING

Commissioning can only be performed after positive results of all test phases. Partial or "makeshift" commissioning is strictly prohibited.

01. Produce the technical documentation of the automation, which must include at least the following documents: the overall layout drawing of the system (see example in **fig. 4**), the electrical wiring diagram (see example in **fig. 26**), the analysis of risks present and relative solutions adopted, and the manufacturer's declaration of conformity of all devices installed (use appendix 1).

02. Affix a dataplate on the gate, specifying at least the following data: type of automation, name and address of manufacturer (responsible for commissioning), serial number, year of construction and CE mark.

03. Permanently attach to the gate the label supplied in the pack, regarding the procedure for manual locking/release of the gearmotor.

04. Compile and provide the automation owner with the declaration of conformity (use appendix 2).

05. Prepare and provide the automation owner with the User's guide; for this purpose appendix 3 "User's guide" may be used as an example".

06. Prepare and provide the owner with the form "Maintenance schedule", containing all maintenance instructions for all devices in the automation.

07. Before commissioning the automation, ensure that the owner is adequately informed of all associated risks and hazards.

— STEP 10 —

MAINTENANCE AND DISPOSAL

10.1 - PERIODIC MAINTENANCE

Maintenance must be performed in strict observance of the safety provisions in this manual and according to current legislation and standards.

In general, the devices in the "ALTO" system do not require special maintenance; however, periodic inspections will enable the user to maintain system efficiency and ensure correct operation of the safety systems installed. Therefore we recommend checks every six months, to ensure perfect efficiency of all devices, performing all tests and checks described in paragraph 10.1 and paragraph "Maintenance operations admitted for the user" (appendix 3 - Operation guide).
If other devices are present, follow the instructions in the relative maintenance schedule.

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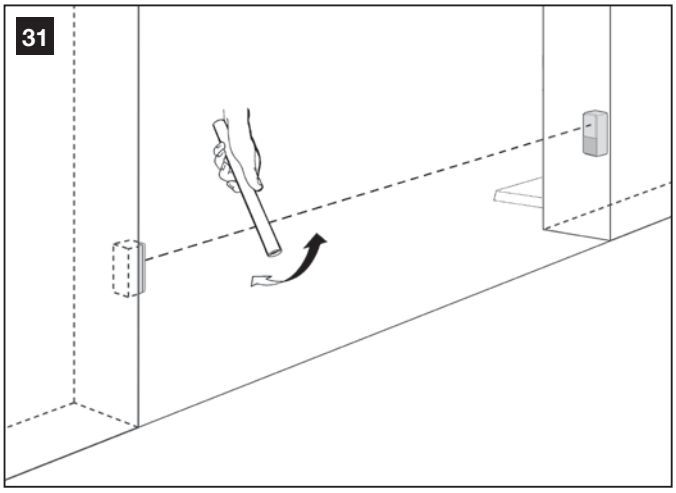


10.2 - DEVICE DISPOSAL

This product is an integral part of the automation and therefore must be disposed together with the latter.

As in installation, also at the end of product lifetime, the disassembly and scrapping operations must be performed by qualified personnel.
This product is made of various types of material, some of which can be recycled while others must be scrapped. Seek information on the recycling and disposal systems envisaged by the local regulations in your area for this product category.

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

As indicated by the symbol alongside, disposal of this product in domestic waste is strictly prohibited. Separate the waste into categories for disposal, according to the methods envisaged by current legislation in your area, 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.

A - OTHER TASKS REGARDING INSTALLATION AND CONNECTIONS

Some installation and/or connection tasks require removal of the control unit and/or power supply unit.

The control unit needs to be removed when the following is required;
- control unit replacement (paragraph A.1);
- power cable replacement (paragraph 8.1.1);
- connection of SOLEKIT photovoltaic power supply (paragraph A.5);
- adjustment of gearmotor feet (paragraph 5.4);
- insertion and connection of PR200 battery (paragraph A.4).

The power supply unit needs to be removed when the following is required;
- power supply unit replacement (paragraph A.2);
- power cable replacement (paragraph 8.1.1);
- rotation of fixing bracket behind gearmotor (**fig. 21**);
- power supply unit fuse replacement (paragraph A.3).

A.1 - Removing the control unit

01. Remove the lower cover of the gearmotor as shown in **fig. 22**;
02. Then, with reference to **fig. 32**, use a Phillips screwdriver to loosen the 4 cable ducting support scres, and remove;
03. Pull the control unit in the direction of the arrow, by approx. 4 centimetres, and detach the motor connector;
04. Then remove the control unit completely.

Caution! - When the control unit is refitted, insert the motor connector again on the control unit, taking care to observe polarity (the connector can only be fitted in one direction).

A.2 - Removing the power supply unit

The power supply unit is located on the upper section of the gearmotor. To remove, proceed as follows.

01. With reference to **fig. 33**, loosen the 3 screws of the upper cover of the gearmotor and slowly turn the cover in the direction of the arrow (take care to avoid the wires below!);
02. Remove the connector with 5-wire plate (C), pulling it in the direction of the arrow;
03. Lastly, loosen the screws of the power terminal (D) and withdraw the 3 wires.

Caution! - When the connector with 5-wire plate is refitted, take care to observe polarity (the connector can only be fitted in one direction).

A.3 - Replacing the power supply unit fuse

01. Access the power supply unit as described in paragraph A.2, but leaving all cables connected.
02. Turn the protection cap of the fuse in the direction of the arrow (**fig. 3**4) and remove the fuse.
03. Insert the new fuse, refit the fuse protection cap and close the power supply unit cover with all the screws, ensuring that the seal is correctly positioned in its seat (**caution**! - A missing seal or screw may cause problems with internal electronics).

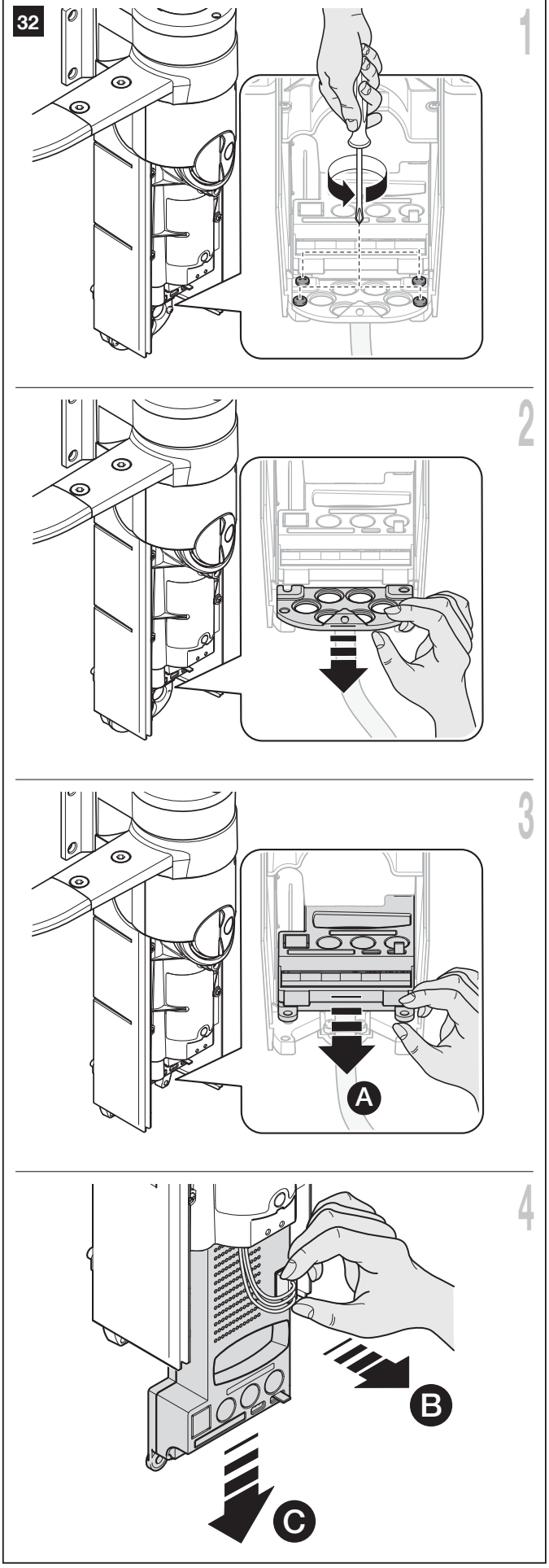
*A.4 - **Installing and connecting the PR200 backup battery** (optional device)*

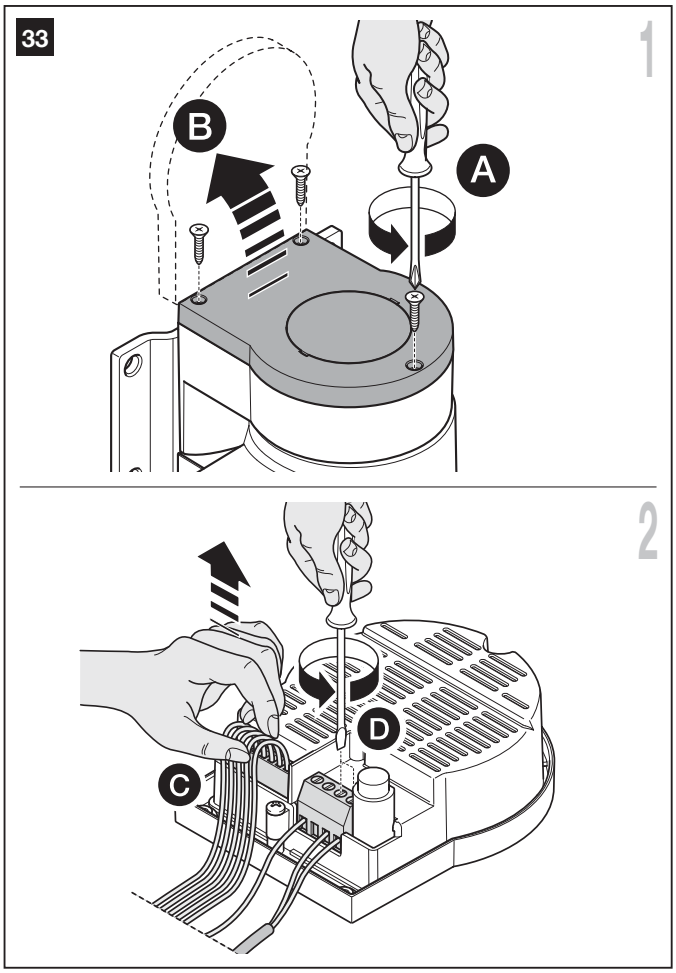
CAUTION! - The PR200 battery is an optional device that enables power supply to the automation in the event of an emergency (mains power failure). If this is envisaged in the automation, the device must be connected to the control unit only after completing all the other tasks described in this manual.

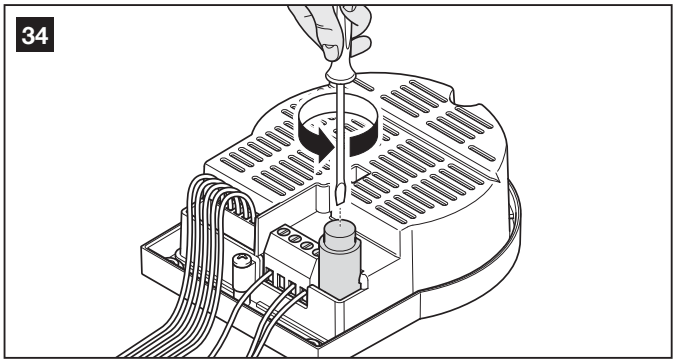
In the event of a power failure, this battery guarantees at least 10 manoeuvre cycles (1 cycle = opening and closing). To install it and connect it to the control unit, proceed as follows.

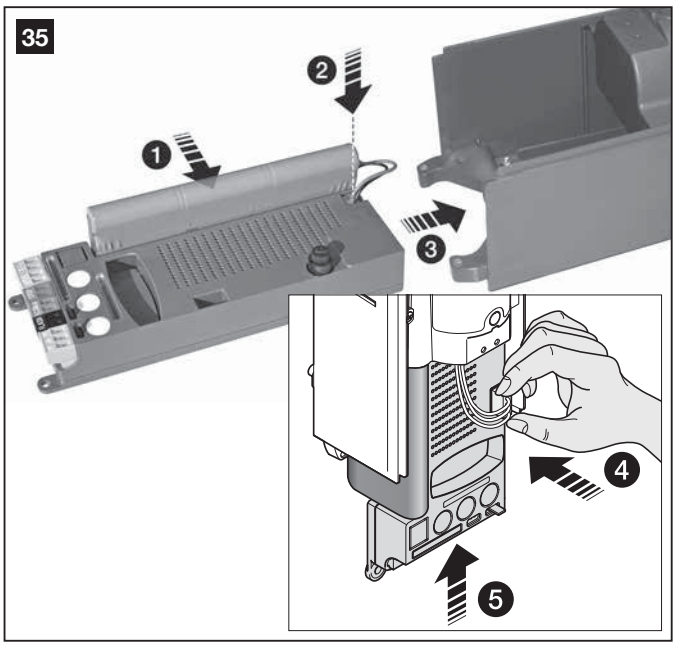
01. Remove the control unit from its seat as described in paragraph A.1.
02. With reference to **fig. 35**, move the battery up to the left side of the control unit and connect the battery to the socket on the control unit, taking care to observe polarity (the connector can only be fitted in one direction).
03. Keeping the battery alongside the control unit, insert the two ele-

32









ments simultaneously in their seats, but only half way.

04. Attach the motor connector again (phase 4) and complete insertion of the battery and control unit.

05. Lastly, refit the cable ducting support and the lower cover of the gearmotor.

For further information on the battery, refer to its specific instruction manual.

A.5 - Connecting the solar power supply system (SOLEKIT)

CAUTION! - The PR200 battery is an optional device that enables the automation to run exclusively on solar power. If this is envisaged in the automation, the device must be connected to the control unit only after completing all the other tasks described in this manual.

The "ALTO"system can operate also with the SOLEKIT solar power supply system. Special technical provisions have been envisaged to minimise energy consumption when the automation is stationary, by turning off all devices not essential to operation (for example, the photocells). In this way all energy available and stored in the battery is used to move the gate.

To connect the SOLEKIT to the "ALTO" control unit, refer to **fig. 36** and the following procedure.

01. Remove the control unit from its seat as described in paragraph A.1.

02. Disconnect the automation from the power mains and remove the PR200 backup battery (if fitted). **CAUTION! - When the automation is powered by "SOLEKIT", it cannot and MUST NEVER BE POWERED at the same time by the mains or the PR200 backup battery (if fitted).**

03. Connect the adaptor cable (supplied with the kit SOLEKIT) to the socket on the control unit, taking care to observe polarity (refer to the cable instruction leaflet. **Caution**! – the cable connector can only be inserted in one direction).

04. Lastly, insert the control unit in its seat, refit the cable ducting support and refit the lower cover of the gearmotor.

For further information on the SOLEKIT device, refer to its specific instruction manual.

A.5.1 - SOLEKIT application limits: maximum possible number of cycles per day within a set period of the year

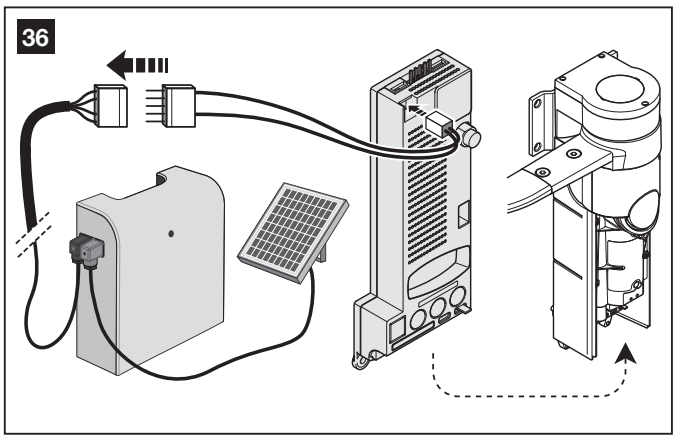
The SOLEKIT photovoltaic power supply enables the automation to operate completely autonomously for a limited number of manoeuvres per day, i.e. for as long as the energy generated by the photovoltaic panel and stored in the battery remains above the level of consumption with gate manoeuvres. A simple calculation enables an estimate of the maximum number of cycles per day (1 cycle = opening + closing) performed by the automation in a certain period of the year, provided that a positive energy balance is maintained.

The first step in **calculating the energy available,** is dealt with in the SOLEKIT instruction manual; the second step in **calculating the energy consumed** and therefore the maximum number of cycles per day, is dealt with in this paragraph.

• Calculating the energy available

To calculate the energy available, proceed as follows (refer also to the SOLEKIT instruction manual):

01. On the terrestrial map supplied in the SOLEKIT instruction manual, locate the point of system installation; then read the value **Ea** and the



degrees of **latitude** of this location *(E.g. Ea = 14; degree = 45°N)*.

02. On the graphs (North or South) supplied in the SOLEKIT instruction manual, locate the curve for the location's **latitude** (e.g: 45°N).

03. Choose the **period of the year** on which to base the calculation, or select the lowest point of the curve to calculate **the worst period of the year;** then read the corresponding value **Am** (e.g. December, January: Am= 200).

04. Calculate the value of energy available **Ed** (produced by the panel) multiplying **Ea** x **Am** = **Ed** *(example: Ea = 14; Am = 200, i.e. Ed = 2800)*.

• Calculating the energy consumed

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

05. On the table below, select the box corresponding to the intersection between the line with the **weight** and the column with the **opening angle** of the leaf. The box contains the value of the **severity index** (K) for each manoeuvre *(e.g. gearmotor with standard arm on leaf of 130 kg and 95° opening; K = 84).*

motor	Opening angle					
	with standard arm			with short arm		
Leaf weight	≤90°	90÷100°	100÷110°	≤90°	90÷100°	100÷110°
< 80 kg	30	44	60	60	84	112
80-120 kg	42	58	90	90	128	200
120-150 kg	55	84	144	144	220	288
150-180 kg	86	126			220	

06. On the **table 4,** select the box corresponding to the intersection between the line with the **Ed** value and the column with the **K** value. The box contains the maximum possible number of cycles per day *(e.g. Ed= 2800; K= 84; cycles per day = 30)*.

If the number obtained is too low for the envisaged use or is located in the "area not recommended for use", the use of 2 or more photovoltaic panels may be considered, or the use of a photovoltaic panel with a higher power. Contact the Nice technical assistance service for further information.

The method described enables the calculation of the maximum possible number of cycles **per day** that can be completed by the automation while running on solar power. The calculated value is considered an average value and the same for all days of the week. Considering the presence of the battery, which acts as an energy "storage depot", and the fact that the battery enables automation autonomy also for long periods of bad weather (when the photovoltaic panel produces very little energy) it may be possible to exceed the calculated maximum possible number of cycles per day, provided that the average of 10-15 days remains within the envisaged limits.

Table 5 specifies the maximum possible number of cycles, according to the manoeuvre's **severity index** (K), using **exclusively the energy stored** by the battery. It is considered that initially the battery is completely charged (e.g. after a prolonged period of good weather or recharging via the optional PCB power supply unit) and that the manoeuvres are performed within a period of 30 days.

When the battery runs out of the stored energy, the led starts to indicate the battery low signal by flashing briefly every 5 seconds, accompanied by a "beep".

If the "ALTO" is used on a single leaf gate (with only one gearmotor), the maximum possible number of cycles corresponds to the value in the tables, multiplied by **1.5.** For example, if the calculated number of cycles is 30 and the gate has one leaf only, the number of cycles will be: 30 x **1,5** = 45.

A.6 - "Stand-by" function when the device PR200 and/or SOLEKIT is installed (optional devices)

When the automation is powered by the backup battery PR200 or the photovoltaic system SOLEKIT, the "standby" function is activated automatically 60 seconds after completion of an automatic manoeuvre cycle. This turns off the "BUS" output and all connected devices, the outputs "Flash", "Els" and all leds, with the exception of the BUS led which flashes more slowly (1 flash every 5 seconds). After this, as soon as the user sends a command, the control unit restores power and starts the manoeuvre *(this may start with a short delay)*.

A.7 - Using the "BUS" input/output

Only devices compatible with ECSBus technology must be connected to the terminal "BUS" (this is explained in detail in paragraph 3.3.3). **Important – Following testing of the automation, each time new devices are connected to (or removed from) the "BUS" terminal, the learning procedure must be performed as described in paragraph A.10.**

A.8 - Using the "STOP" input

STOP is the input that causes immediate shutdown of the manoeuvre (with brief inversion). This input can be connected to devices with contact types Normally Open, Normally Closed (NC) or devices with a constant resistance of 8,2KΩ, such as sensitive edges.
When set accordingly, more than one device can be connected to the STOP input, also different from one another. For this function, refer to **Table 6** and the following notes to the table.

Note 1. *The combination NO and NC is possible by connecting the 2 contacts in parallel, taking care to connect a 8,2kΩ resistance to the NC contact (this enabling the combination of 3 devices: NO, NC and 8,2KΩ).*

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. *Two devices with a 8,2kΩ constant resistance can be connected in parallel. However if there are more than two of these devices, they must be connected "in cascade" placing only one terminating resistance of 8,2kΩ.*

Warning! – If devices with safety functions are connected to the "STOP" input, only devices with a constant 8,2kΩ resistance output can guarantee fault safety category 3.

TABLE 4 - Maximum number of cycles per day *(see paragraph A.5.1)*

Ed	K≤50	K≤75	K=100	K=125	K=150	K=175	K=200	K=225	K=250	K=275	K=300
9500	183	122	92	73	61	52	46	41	37	33	31
9000	173	115	87	69	58	49	43	38	35	31	29
8500	163	109	82	65	54	47	41	36	33	30	27
8000	153	102	77	61	51	44	38	34	31	28	2
7500	143	95	72	57	48	41	36	32	29	26	24
7000	133	89	67	53	44	38	33	30	27	24	22
6500	123	82	62	49	41	35	31	27	25	22	21
6000	113	75	57	45	38	32	28	25	23	21	19
5500	103	69	52	41	34	29	26	23	21	19	17
5000	93	62	47	37	31	27	23	21	19	17	16
4500	83	55	42	33	28	24	21	18	17	15	14
4000	73	49	37	29	24	21	18	16	15	13	12
3500	63	42	32	25	21	18	16	14	13	11	11
3000	53	35	27	21	18	15	13	12	11	10	9
2500	43	29	22	17	14	12	11	10	9	8	7
2000	33	22	17	13	11	9	8	7	7	6	6
1500	23	15	12	9	8	7	6	**Area of use not recommended**			
1000	13	9	7								

TABLE 5 - Maximum number of cycles using exclusively battery power *(see paragraph A.5.1)*

K≤50	K≤75	K=100	K=125	K=150	K=175	K=200	K=225	K=250	K=275	K=300
1082	721	541	433	361	309	271	240	216	197	180

Important – Following testing of the automation, each time new devices are connected to (or removed from) the "STOP" terminal, the learning procedure must be performed as described in paragraph A.10.
During use of the automation, the control unit generates a stop command during the current manoeuvre if there is any variation to the status of the learnt device.

A.9 - Installing and connecting additional pairs of photocells

As well as the first pair of photocells installed as described in paragraph 5.3, additional pairs can be installed at any time, proceeding as described below.

01. Install photocells TX and RX using one of the layouts shown in **fig. 37**; then connect the photocells to the control unit.
02. In **Table 7** identify the position of the electric jumpers corresponding to the layout used to install the photocells; then wire in the jumpers in photocells TX and RX, with the same position as specified **(note** – position jumpers not used in the relative compartment (fig. 38), for future use when necessary). **Warning** – As this configuration is used by the control unit to recognise the specific pair of photocells and to assign these with a specific function, take care to ensure that there are no other pairs of photocells with jumpers wired in the same position.
03. Perform the procedure described in paragraph A.10 for the control unit to learn the identity of these new photocells.

A.10 - Learning the identity of new devices connected or removed

Each time new devices are connected to (or removed from) the terminals "BUS" and "STOP" directly or indirectly, the control unit must learn the identity of these devices. The following procedure enables the control unit to recognise connected devices one at a time, and to assign them with a specific unique address.

01. On the control unit, press and hold P2 until Led P2 starts flashing quickly; then release the key.
02. Wait a few seconds for the control unit to learn all connected devices. Learning is complete when the STOP Led remains lit and Led P2 turns off. **Caution**! – If Led P2 continues to flash this means that there is an error; in this case read paragraph D - "Troubleshooting".
03. Repeat the automation testing procedure as described in the paragraph 9.1 "Testing".

Caution! – In the future, if a new device is connected to the control unit (for example, a new pair of photocells), or if a device is removed, this learning procedure must be repeated.

Table 6

		1st device		
		NA	**NC**	**8,2kΩ**
2nd device	**NA**	In parallel *(note 2)*	*(note 1)*	in parallel
	NC	*(note 1)*	In series *(note 3)*	In series
	8,2kΩ	in parallel	In series	in parallel *(note 4)*

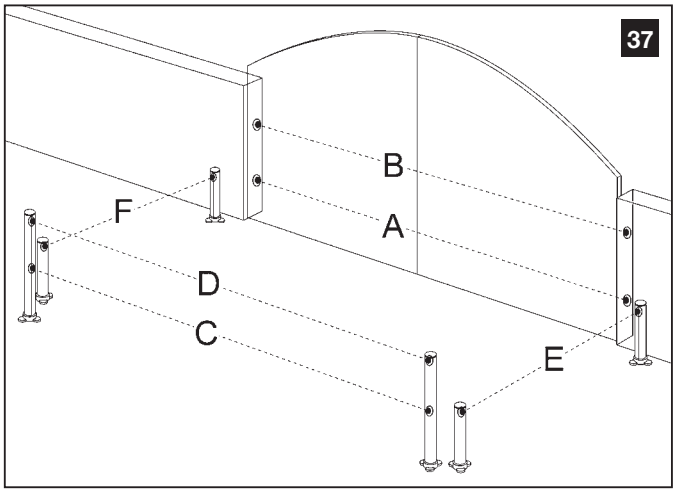
B - ADVANCED SETTINGS

The control unit of the "ALTO" system has a series of modifiable parameters to enable adaptation of the product to specific needs of the automation and relative users.
To modify a value or check a setting, use a transmitter memorised in "Mode I" (if necessary, memorise on as described in paragraph C.2).

B.1 - Modifying the value of a parameter

***Warning** - During the procedure, the specified key must be pressed for approx. 1 second, with a pause of approx. 1 second before pressing again. This will give the control unit the time to recognise the command sent via radio.*

01. In **Table 8** select the parameter to be modified (the meaning of the parameters is provided in paragraph B.2) and note down the value to be set, the transmitter key used to set this value and the number of times the key is pressed to set the required value.
02. On the transmitter, press and hold keys T1 and T2 or T1 and T3 simultaneously (see **Table 8**) for at least 5 seconds; then release the keys.
03. (within 3 seconds) Modify the selected parameter value by pressing a transmitter key for a specific number of times; the relative key and number of times to press are specified in **Table 8**. ***Example**: to set the "Pause time" at 40 seconds, press T1 three times.*



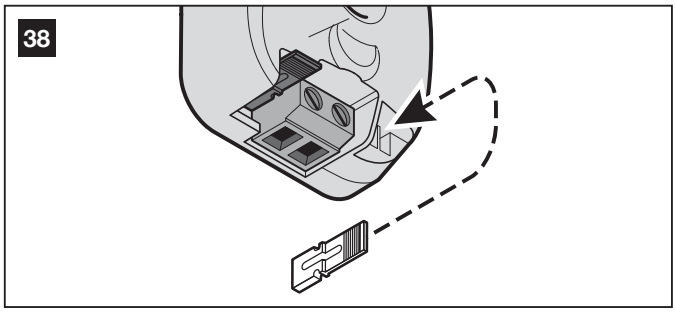
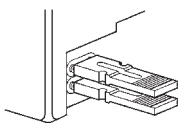
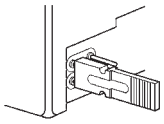
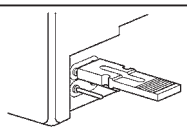
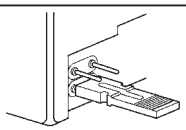
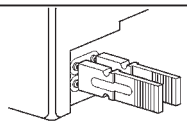
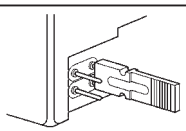


Table 7

Photocell	Jumpers	Photocell	Jumpers
A Photocell h=50 cm; with activation on closurea		**D** Photocell h=100 cm; with activation on opening and closure	
B Photocell h=100 cm; with activation on closure		**E** Photocell on right with activation on opening	
C Photocell h=50 cm; with activation on opening and closure		**F** Photocell on left with activation on opening	

English

B.2 - List of modifiable parameters (Table 8)

- **Pause time**: this is the time implemented by the control unit after an opening manoeuvre before automatically closing the leafs. **Warning** – the pause will only be enabled if the "complete cycle" option is programmed (i.e. automatic re-closing of the gate) during programming as described in paragraph 7.3.2.
- **"Pedestrian" command**: comprises 4 types of command related to the leaf "partial open". During use of the automation the set command is activated when the key T2 is pressed on the transmitter.
- **Motor force**: normally, during a manoeuvre the motor implements a specific force to move the leaf, to compensate for its weight, friction on the hinge pins and any presence of wind etc.
  During a manoeuvre, if an inadvertent obstacle brakes the leaf further, the motor increases the force applied in the attempt to overcome the obstacle. At this point, if the force generated by the obstacle causes the motor to exceed the set level, the control unit immediately activates a safety manoeuvre, inverting movement of the leaf. Therefore, if the parameter is suitably set, this guarantees increased safety.
- **"Step-by-Step" command**: comprises 4 types of "step-step" command, i.e. a command in which each press of the key activates the subsequent manoeuvre after the one completed or in progress, according to the pre-set order in the set sequence. During use of the automation, the set command is activated when the transmitter key T1 is pressed and on the devices connected to the control unit by means of the terminal "SbS".
- **Pressure discharge**: this parameter, when suitably set, enables discharge of the pressure applied on the structure when the leafs are stationary and positioned against the opening or closing travel limit stops.

All parameters can be set as required, with the exception of the parameters "Motor force" and "Pressure discharge" which must comply with the following requirements:

Motor force:

- Never use excessively high force values to compensate for any abnormal gate movements caused, for example, by points of increased friction. In fact, excessive force may impair correct operation of the safety system or damage the leaf.
- If the "Motor force control" is used in support of the system for impact force reduction, after each adjustment the force measurement procedure must be performed, as envisaged by standard EN 12445.
- The local weather conditions (for example, strong gusts of wind) can influence leaf movement, causing an increase in the load applied on the motor. Therefore the "Motor force" parameter may require periodic adjustments".

Pressure discharge:

- Never use excessively low pressure discharge values as these would have no effect; they may also cause damage to the leaf and the travel limit stop.
- Never use excessively high pressure discharge values as these would keep the leaf separate from the travel limit stop.
- Use a pressure discharge value that enables the leaf to remain in contact with the travel limit stop, without this applying excessive pressure on the motor.

B.3 - Checking parameter settings

The settings of a required parameter can be checked at any time according to the procedure below.

01. In **Table 9** select the parameter to be checked (the meanings of the parameters are explained in paragraph B.2).
02. On the transmitter, press and hold keys T1 and T2 or T1 and T3 simultaneously (see **Table 9**) for at least 5 seconds; then release the keys.
03. (within 3 seconds) On the transmitter, press and hold the key of the parameter to be checked and release when the flashing light starts to flash.
04. Count the number of flashes and consult **Table 10** (column "N.") to locate the same number; read the currently set value of the parameter being checked alongside. ***Example****: if the flashing light emits 3 flashes, this means that the "pause time" is programmed at 40 seconds.*

C - MEMORISING OR DELETING RADIO TRANSMITTERS

C.1 - Memorising the FIRST transmitter

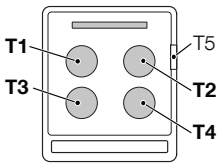
The transmitters supplied are not memorised; therefore, at the beginning, it is necessary to memorise the FIRST transmitter (Mode 1), with the procedure C.2.

C.2 - "Mode I" memorisation procedure

When this procedure is used, the system automatically associates each transmitter key with the following commands:

key **T1** = **"Step-by-Step"** command (> Open > Stop > Close > ...)
key **T2** = **"Pedestrian"** command (> Total opening of 1 leaf > ...)
key **T3** = command **> Open > Stop > ...**
key **T4** = command **> Close > Stop > ...**

Notes: *• The T5 key is not used in this application. • The commands of the T1 and T2 keys can be modified by the user (see paragraph B.1 and Table 8). • The symbol ">" means: "press the key once".*



Therefore to memorise these commands simultaneously on the 4 keys of a transmitter, proceed as follows.

01. On the control unit, press and hold P1 on the receiver until the green Led P1 illuminates, and then release.
02. (within 10 s) press any key on the transmitter for at least 2 s to memorise it.
If the memorisation procedure is successful, the LED P1 will emit 3 flashes.
03. If there are other transmitters to be memorised, repeat phase 02 within the next 10 seconds; otherwise the memorisation procedure terminates automatically.

A transmitter memorised in Mode I can control 1 automation only, using the 4 commands.

C.3 - "Mode II" memorisation procedure

When this procedure is used, it is the installer's task to associate the transmitter key with the required command, from those available. Therefore, to memorise a command on a key, proceed as follows. Therefore, to memorise a command on a key, proceed as follows.

01. Refer to the table below; choose the command to be memorised and note the number of times the transmitter needs to be pressed (in phase 03) to memorise it.

• "Step-by-Step" command (**> Open > Stop > Close > ...**) **press once**
• "Pedestrian" command (**> Total opening of 1 leaf > ...**) **press twice**
• command **> Open > Stop > ...** **press three times**
• command **> Close > Stop > ...** **press four times**

Notes: *• The commands "Step-by-Step" and "Pedestrian" can be modified by the user (see paragraph B.1). • The symbol ">" means: "press the key once".*

02. On the control unit, press P1 for the same number of times as the command to be memorised and ensure that Led P1 emits a number of quick flashes corresponding to the number of the selected command.
03. (within 10 seconds) press the required key of the transmitter to be memorised for at least 3 seconds. If memorisation is successful, Led P1 on the control unit will emit 3 slow flashes.
04. If there are other transmitters to be memorised for the same type of command, repeat step 03 within the next 10 s otherwise the memorisation phase will end automatically.

To memorise another key, repeat the procedure from the beginning.

C.4 - Duplicating an existing and previously memorised transmitter

This procedure enables memorisation on the control unit of a new transmitter, by duplicating the characteristics of another existing and previously memorised transmitter. During this procedure, take care to observe the following warnings:
– if the transmitter to be duplicated is memorised in Mode I, when the request to press a button is made, any key on the two transmitters can be pressed;
– otherwise, if the transmitter to be duplicated in memorised in Mode II, when the request to press a button is made, the key with the command to be duplicated must be pressed on the "old" transmitter, followed by the key to be associated with this command on the "new" transmitter.

01. Ensure that the two transmitters are located within the reception range of the automation and press the key on the "new" radio transmitter for at least 5 seconds, then release.
02. Press the key on the OLD radio transmitter slowly 3 times.
03. Press the key on the NEW radio transmitter slowly once.

Table 8 - Factory settings and other available options

Parameter	Access keys	Value range available	Key	No. times pressed
Pause Time	T1 + T2	10 seconds	T1	Once
		20 seconds (*)	T1	Twice
		40 seconds	T1	Three times
		80 seconds	T1	Four times
"Pedestrian" command activated with transmitter key T2)	T1 + T2	Opening of 1 leaf to mid-travel	T2	Once
		Total opening of 1 leaf (*)	T2	Twice
		Partial opening of 2 leafs to 1/4 of travel	T2	Three times
		Partial opening of 2 leafs to mid-travel	T2	Four times
Motor force	T1 + T2	Minimum	T3	Once
		Medium low (*)	T3	Twice
		Medium high	T3	Three times
		Maximum	T3	Four times
"Step-by-Step" command (activated with transmitter key T1 and "SbS" terminal of control unit)	T1 + T2	> Open > Stop > Close > Stop > ...	T4	Once
		> Open > Stop > Close > ... (*)	T4	Twice
		> Open > Close > ...	T4	Three times
		> Open > ...	T4	Four times
Pressure discharge				
• on Closure (motor 1)	T1 + T3	No discharge (*)	T1	Once
		0.1 s (Minimum)	T1	Twice
		••	T1	Three times
		•••	T1	Four times
		0.4 s (Medium)	T1	Five times
		•••••	T1	Six times
		••••••	T1	Seven times
		0.7 s (Maximum)	T1	Eight times
• on Opening (motor 1)	T1 + T3	No discharge (*)	T2	Once
		0.1 s (Minimum)	T2	Twice
		••	T2	Three times
		•••	T2	Four times
		0,4s (medio)	T2	Five times
		•••••	T2	Six times
		••••••	T2	Seven times
		0.7 s (Maximum)	T2	Eight times
• on Closure (motor 2)	T1 + T3	No discharge (*)	T3	Once
		0.1 s (Minimum)	T3	Twice
		••	T3	Three times
		•••	T3	Four times
		0.4 s (Medium)	T3	Five times
		•••••	T3	Six times
		••••••	T3	Seven times
		0.7 s (Maximum)	T3	Eight times
• on Opening (motor 2)	T1 + T3	No discharge (*)	T4	Once
		0.1 s (Minimum)	T4	Twice
		••	T4	Three times
		•••	T4	Four times
		0.4 s (Medium)	T4	Five times
		•••••	T4	Six times
		••••••	T4	Seven times
		0.7 s (Maximum)	T4	Eight times

(*) Factory setting

Table 9

Parameter	Access keys	Key for display
Pause Time	T1 + T2	T1
Pass door	T1 + T2	T2
Motor force	T1 + T2	T3
“Step-by-Step” function	T1 + T2	T4
Discharge on Closure (motor 1)	T1 + T3	T1
Discharge on Opening (motor 1)	T1 + T3	T2
Discharge on Closure (motor 2)	T1 + T3	T3
Discharge on Opening (motor 2)	T1 + T3	T4

Table 10

Parameter	N.	Set value
Pause Time	**1**	10 seconds
	2	20 seconds (*)
	3	40 seconds
	4	80 seconds
“Pedestrian” command	**1**	Opening of 1 leaf to mid-travel
	2	Total opening of 1 leaf (*)
	3	Partial opening of 2 leafs to 1/4 of travel
	4	Partial opening of 2 leafs to mid-travel
Motor force	**1**	Minimum
	2	Medium low (*)
	3	Medium high
	4	Maximum
“Step-by-Step” command	**1**	Open > Stop > Close > Stop > ...
	2	> Open > Stop > Close > ... (*)
	3	> Open > Close > ...
	4	> Open > ...
Pressure discharge		
• on Closure (motor 1)	**1**	No discharge (*)
	2	0,1s (Minimum)
	3	••
	4	•••
	5	0,4s (Medium)
	6	•••••
	7	••••••
	8	0,7s (Maximum)
• on Opening (motor 1)	**1**	No discharge (*)
	2	0,1s (Minimum)
	3	••
	4	•••
	5	0,4s (Medium)
	6	•••••
	7	••••••
	8	0,7s (Maximum)
• on Closure (motor 2)	**1**	No discharge (*)
	2	0,1s (Minimum)
	3	••
	4	•••
	5	0,4s (Medium)
	6	•••••
	7	••••••
	8	0,7s (Maximum)
• on Opening (motore 2)	**1**	No discharge (*)
	2	0,1s (Minimum)
	3	••
	4	•••
	5	0,4s (Medium)
	6	•••••
	7	••••••
	8	0,7s (Maximum)

(*) Factory setting

At this point the “new” transmitter is memorised on the control unit with the same characteristics as the “old” transmitter.

To memorise other transmitters, repeat the same procedure.

C.5 - Deleting ALL radio transmitters memorised on the control unit

Caution! – This procedure deletes all memorised transmitters.

01. On the control unit, press and hold P1 and wait for Led P1 to illuminate, turn off and then emit 3 flashes – release the key on precisely the third flash.

02. Wait approx. 4 seconds. during which Led P1 flashes very quickly (= deletion in progress).

03. If the procedure is successful after a few moments the LED P1 will emit 5 slow flashes (= deletion procedure ok).

C.6 - Using transmitters memorised in “Modo II”

In the same control unit there can be some transmitters memorised in mode I and others in mode II. The control unit has 256 memory slots and each can store either all keys of the transmitter, if the latter is memorised in Mode I, or 1 key of the transmitter, if the latter is memorised in Mode II.

If this mode is used appropriately 2 or more different automations can be controlled for example,

• with key T1 memorised with “**> Open > Stop > ...**” 1 automation can be controlled;

• with key T2 memorised with “**> Close > Stop > ...**” 1 automation can be controlled;

• with key T3 memorised with “**> Open > Stop > Close > ...**” 2 automations can be controlled;

• with key T4 memorised with “**> Open > Stop > Close > ...**” 3 automations can be controlled.

Caution! - If a transmitter is already memorised in Mode I none of its keys can be memorised in Mode II.

D - TROUBLESHOOTING

Table 12 gives possible indications on how to deal with malfunctions that may be met during installation or due to a fault.

E - DIAGNOSTICS AND SIGNALS

Some devices directly provide particular signals to describe the state of operation or eventually a malfunction.

E.1 - Led signals on photocells

The photocells contain a LED “SAFE” (**fig. 28**) that provides information at any moment on the state of operation. For the meaning of led flashes, refer to **Table 13**.

E.2 - Led signals on control unit

The LEDs on the control unit provide particular signals to report on the normal operation and on possible faults. For the meaning of led flashes, refer to **Table 11**.

E.3 - Flashing light signals

During a manoeuvre the flashing light flashes every second; in case of anomalies the light flashes at more frequent intervals (half a second); the flashes are repeated twice with an interval of one second. For the meaning of led flashes, refer to **Table 14**.

Table 11 - Led signals on control unit

LED BUS	**Status**	**Action**
Off	Fault	Check that the unit is powered; check that the fuses have not been activated; if this is the case check the cause of the fault and replace them with other fuses with the same characteristics.
On	Serious fault	There is a serious fault; switch off the control unit for a few seconds; if the status persists there is a fault and the electronic board must be replaced.
One flash per second	Everything OK	Control unit works correctly.
2 long flashes	Input status variation	A variation to the status of the inputs: SbS, STOP, activation of the photocells, or when the radio transmitter is used, is normal.
Series of flashes separated by a pause	È la stessa segnalazione che c'è sul lampeggiante. Leggere la Tabella 14.	
Quick flash	BUS short circuit	An overload has been detected therefore the power to the BUS switched off. Check by disconnecting the devices one at a time. To restore power to the BUS simply send a command, for example with a radio transmitter.
LED STOP	**Status**	**Action**
Off	STOP input activated	Check the devices connected to the STOP input.
On	Everything OK	STOP input active.
LED SbS	**Status**	**Action**
Off	Everything OK	SbS input not active.
On	SbS input activated	This is normal only if the device connected to the SbS input is active.
LED P1	**Status**	**Action**
Off	Everything OK	No memorisation underway.
On	Memorisation in "Mode I"	This is normal during memorisation mode 1 which lasts maximum 10 s.
Series of quick flashes, from 1 to 4	Memorisation in "Mode II"	This is normal during memorisation mode 2 which lasts maximum 10 s.
1 slow flash	Wrong command	Command received from a transmitter which is not memorised.
3 slow flashes	Memorisation OK	All devices successfully memorised.
5 slow flashes	Deletion OK	All radio transmitters successfully deleted.
LED P2	**Status**	**Action**
Off	Everything OK	"Slow" speed selected.
On	Everything OK	"Fast" speed selected.
1 flash per second	No devices have been learnt or an error has occurred in learnt devices	Some faulty devices may be present; check and if necessary repeat the device learning phase (see paragraph A.10).
2 flashes per second	Device learning procedure underway	It shows that the search for connected devices is underway (it lasts maximum a few seconds).
LED P3	**Status**	**Action**
Off	Everything OK	Operation with "half cycle" (semi-automatic).
On	Everything OK	Operation with "complete cycle" (automatic).
1 flash per second	There is no memorised opening angle	Perform the leaf opening and closing learning phase (read paragraph 7.2).
2 flashes per second	Indicates that the opening angle learning phase is in progress	Indicates that the opening angle learning phase is in progress.

Table 12 - Signals of operating problems

Symptoms	Probable cause and possible solution
The radio transmitter does not emit any signal (the LED does not light up)	• Check whether the batteries are discharged; replace if necessary.
The manoeuvre does not start and the BUS LED does not flash	• Check that the power supply cable is correctly inserted in the mains socket. • Check that the fuses and have not been activated (paragraph A.3); if this is the case check the cause of the fault and replace them with other fuses with the same characteristics.
The manoeuvre does not start and the flashing light is off	• Check that the command is actually received. If the command reaches the SbS input the relevant LED “SbS” should light up; if a radio transmitter is used the LED “BUS” should emit two long flashes.
The manoeuvre does not start and the flashing light flashes	• See Table 14.
The manoeuvre starts but is immediately followed by an inversion	• The force selected is too low to move the leafs. Check for obstructions and if necessary select a higher force as described in paragraph B.1
The manoeuvre is carried out but the flashing light is not working	• During the manoeuvre, ensure that there is voltage on the FLASH terminal of the flashing light (as this is intermittent, the voltage value is not significant: approx. 10-30 V~); if voltage is present, the problem is due to the lamp, which should be replaced with an identical version.

Table 13 - Led signals on photocells

LED “SAFE”	Status	Action
Off	The photocell is not powered or it is faulty	Check that the voltage on the photocell terminals is of about 8 ÷ 12 V ⎓; if the voltage is correct then the photocell is probably faulty.
3 quick flashes and 1 second pause	Device not recognised by the control unit	Repeat the learning procedure on the control unit (paragraph A.10). Check that all the photocell pairs on BUS have different addresses (see Paragraph A.9)
1 very slow flash	The RX receives an excellent signal	Normal operation
1 slow flash	The RX receives a good signal	Normal operation
1 quick flash	The RX receives a poor signal	Normal operation but check TX-RX alignment and correct cleaning of photocell lenses
1 very quick flash	The RX receives a bad signal	At the limit of normal operation; check TX-RX alignment and correct cleaning of photocell lenses
Always lit	The RX does not receive any signal	Check for any obstruction between TX and RX. Check that the LED on the TX flashes slowly. Check alignment between TX and RX

Table 14 - Flashing light signals

Quick flashes	Status	Action
1 flash 1 second pause 1 flash	BUS error	At the beginning of the manoeuvre the devices present do not correspond with those recognised; check and eventually carry out the learning procedure (paragraph A.10). One or more devices may be faulty; check and, if necessary, replace them
2 flashes 1 second pause 2 flashes	Photocell activated	At the start of the manoeuvre, one or more photocells do not enable movement; check to see if there are any obstructions. During the movement if there is an obstruction no action is required
3 flashes 1 second pause 3 flashes	“Gearmotor force” limiting device activated	During the movement, the leaf experienced excessive friction; identify the cause
4 flashes 1 second pause 4 flashes	STOP input activated	At the start of the manoeuvre or during the movement, the STOP input was activated; identify the cause

ALTO100C gearmotor, for swing gates

- **Product type**: electromechanical gearmotor for the automation of automatic gates and doors with built-in control unit complete with radio receiver for “ECCO5...” transmitters
- **Adopted technology**: DC motor; epicyclical gear reducer; manual motor release. An internal power supply unit housed inside the motor but separated from the control unit, reduces the mains voltage to the nominal 24V⎓ voltage used in the whole automation system
- **Maximum torque**: 100 Nm
- **Nominal torque**: 50 Nm
- **No-load speed**: 0,20 rad/s ÷ 0,30 rad/s
- **Speed at nominal torque**: 0,16 rad/s ÷ 0,24 rad/s
- **Maximum frequency of operating cycles**: 50 cycles per hour (maximum 100 cycles per day)
- **Maximum time for continuous operating**: about 10 minutes
- **Application limits**: the product can be used with gates with weights up to 180 kg (leaf of 0.8 m) or with leaf lengths of up to 1.6 m and opening angle up to 110°
- **Mains power-supply**: 230 V~ (+10% -15%) 50/60 Hz
- **Absorbed power**: 120 W
- **Backup power supply**: for “PR200” buffer batteries
- **Flashing light output**: for flashing Led lights (mod. FL200)
- **“BUS” output**: 1 output with maximum load of 7 ECSBus units
- **“SbS” input**: For normally open contacts (closure of the contact prompts the “Step-by-Step” command)
- **“STOP” input**: for normally open and/or 8.2kohm constant resistance type contacts, or normally closed contacts with self-learning of the “normal” status (a variation with respect to the memorised status generates a “STOP” command
- **Radio Aerial input**: 50 ohm for RG58 or similar type cable
- **Max. cable length**: mains power-supply: 30 m; motor outputs: 10 m; other inputs/outputs: 20 m with aerial cable preferably less than 5 m (observe warnings regarding the minimum section and type of cables)
- **Ambient operating temperature**: -20°C...+50°C (gearmotor efficiency is reduced at lower temperatures)
- **Assembly**: vertical, with dedicated fixing plate
- **Protection rating**: IP 44
- **Dimension / weight**: 385 x 90 x 123 mm / 4,8 kg
- **Possibility of radio control**: with “ECCO5...” transmitters, the control unit is set to receive one or more of the following commands: “Step-by-Step”, “Partial Open”, “Only Open” and “Only Close”
- **Compatible ECCO5... transmitters**: up to 256 if memorised in “Mode I”
- **ECCO5... transmitter range**: from 50 to 100 m. This distance may vary in the presence of obstacles and/or electromagnetic disturbance present, and is influenced by the position of the receiving antenna built into the FL200 flashing light
- **Programmable functions**: “semi-automatic” function (after opening the control unit does not re-close the gate automatically) or “automatic” function (after opening the control unit re-closes the gate automatically); motor speed “low” or “high”; in the case of “automatic” mode the pause time can be selected from 10, 20, 40, and 80 seconds; “pedestrian” opening can be selected in 4 different modes; system obstacle detection sensitivity can be selected from 4 levels; “Step-by-Step” command operation can be selected from 4 modes
- **Self-programmed functions**: self-detection of devices connected to output “BUS”; self-detection of type of “STOP” device (contact type NO, NC or 8.2 kohm constant resistance); self-detection of the opening angle for each motor; self-detection of number of gearmotors present in automation (1 or 2)

ALTO100M gearmotor, for swing gates

- **Tipologia**: electromechanical gearmotor for automations of automatic gates and doors
- **Product type**: DC motor; epicyclical gear reducer; manual motor release
- **Maximum torque**: 100 Nm
- **Nominal torque**: 50 Nm
- **No-load speed**: 0,20 rad/s ÷ 0,30 rad/s
- **Speed at nominal torque**: 0,16 rad/s ÷ 0,24 rad/s
- **Maximum frequency of operating cycles**: 50 cycles per hour (maximum 100 cycles per day)
- **Maximum time for continuous operating**: about 10 minutes
- **Application limits**: the product can be used with gates with weights up to 180 kg (leaf of 0.8 m) or with leaf lengths of up to 1.6 m and opening angle up to 110°
- **Power supply**: 24 V⎓ (50%)
- **Rated current absorption**: 2A; on start-up the maximum absorbed current is 3A for a maximum time interval of 2 s
- **Ambient operating temperature**: -20°C...+50°C (gearmotor efficiency is reduced at lower temperatures)
- **Assembly**: vertical, with dedicated fixing plate
- **Protection rating**: IP 44
- **Dimensions / weight**: 385 x 90 x 123 mm / 4,3 kg

NOTES: • The kit ALTO101START and ALTO100 is produced by Nice S.p.a. (TV) I • In order to improve its products, Nice S.p.a. reserves the right to modify the technical characteristics at any time without prior notice. In any case, the manufacturer guarantees their functionality and fitness for the intended purposes. • All technical specifications refer to a temperature of 20°C.

— STEP 11 —

⚠ This user guide should be stored and handed to all users of the automation.

11.1 – WARNINGS

● Keep at a safe distance from the moving door until it is completely open or closed; do not transit through the door until it is completely open and has come to a standstill. ● Do not let children play near the door or with its commands. ● Keep the transmitters away from children. ● Suspend the use of the automation immediately as soon as you notice something abnormal in the operation (noises or jolting movements); failure to follow this warning may cause serious danger and accidents. ● Do not touch moving parts. ● Regular maintenance checks must be carried out by qualified personnel according to the maintenance plan. ● Maintenance or repairs must only be carried out by qualified technical personnel. ● Send a command with the safety devices disabled:
If the safety devices do not work properly or are out of order, the door can still be operated.

01. Command the door with the transmitter. If the safety devices give the enable signal, the door opens normally; otherwise, reattempt within 3 seconds and keep the control activated. **02.** After approximately 2 seconds the door will start moving in the "man present" mode, that is, so long as the control is kept activated the door will keep moving; as soon as the control is released the door will stop.

If the safety devices are out of order, arrange to repair the automation as soon as possible.

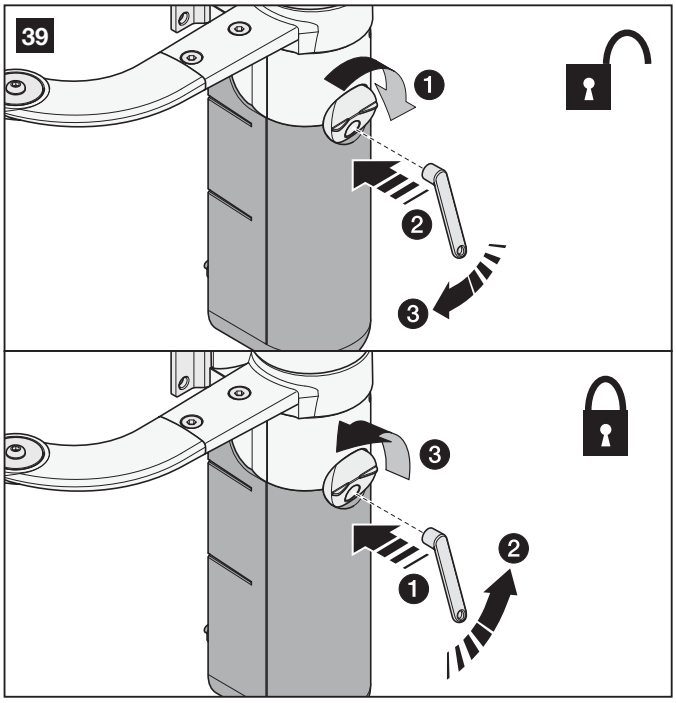
11.2 – Manually releasing and locking the gearmotor

The gearmotor is equipped with a mechanical system that enables manual opening and closing of the gate. These manual operations must be performed in the event of a power failure, malfunctions or during the installation phases.

Note - In the event of a power failure, the gate may be powered by the backup battery PR200, if present on the system.

To release the gearmotor manually, refer to **fig. 39** and proceed as follows.

01. Rotate the release disk clockwise through 90°, to expose the release pin.
02. Insert the key supplied in the release pin.
03. Turn the release key clockwise through nearly one complete turn.
04. The gate leaf can now be moved manually to the required position.
05. To restore automatic operation, turn the key anticlockwise in the release pin and manually move the gate until you can hear the leaf mechanically engage with the drive mechanism.
06. Then remove the key from the release pine and turn the release disk anti-clockwise through 90° to cover the hole.



In the event of a gearmotor fault, it is still possible to try release the motor to check whether the fault lies in the release mechanism.

11.3 – Door Control

• With radio transmitter
The command associated to each button depends on how it has been memorised.

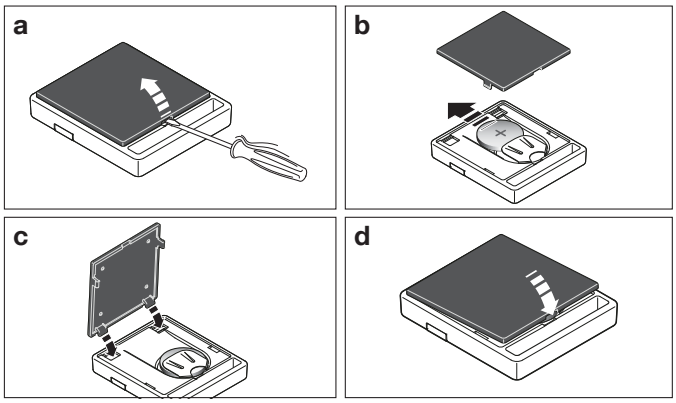
11.4 – User-admissible maintenance operations

The operations that the user must carry out periodically are listed below:

- **Cleaning of the surfaces of the devices: use a slightly damp (not wet) cloth. Do not use substances containing alcohol, benzene, thinners or other flammable substances; the use of these substances may damage the devices and cause fires or electric shocks.**
- **Removal of leaves and stones: disconnect the power supply before proceeding, so as to prevent anyone from moving the door.**

11.5 – Replacing the transmitter battery

When the battery is flat, the transmitter capacity is significantly reduced. If, when a button is pressed, the relevant Led turns on then immediately fades and turns off, it means that the battery is completely flat and should be immediately replaced.
If instead the Led turns on only for a moment, it means that the battery is partially flat; the button must be kept pressed for at least half a second for the transmitter to attempt to send the command.
However, if the battery level is too low to complete the command (and possibly wait for the response), the transmitter will turn off and the relevant Led will fade. In these cases, normal transmitter operation can be restored by replacing the battery with another of the same type, while observing the relevant polarity. To replace the battery, proceed as shown below.



⚠ Batteries contain polluting substances: do not dispose of them together with common waste but use the methods set forth in the local regulations.

Your Smart Nice Home

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IS0488A00MM_12-01-2017