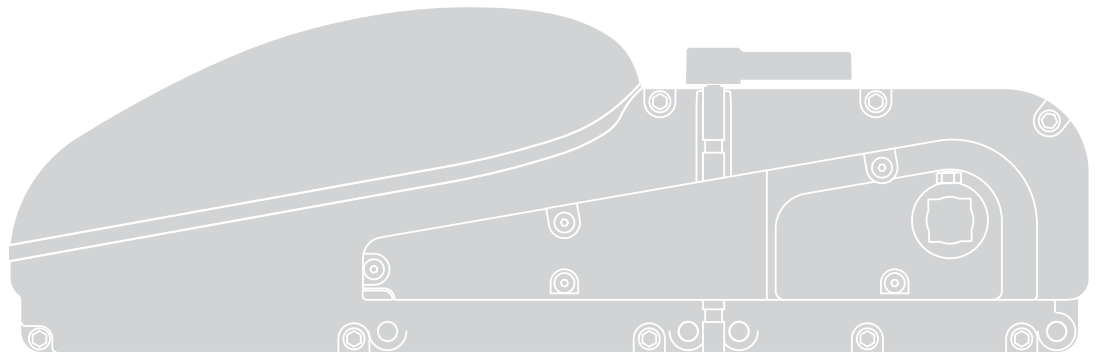


# Nice

CE  
EAC

TNLKCE  
TN2020L  
TN2030L



## Garage door opener

EN - Instructions and warnings for installation and use

Nice



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## GENERAL WARNINGS: SAFETY - INSTALLATION - USE (instructions translated from Italian)

- WARNING** Important safety instructions. Follow all instructions as improper installation may cause serious damage.
- WARNING** Important safety instructions. It is important to comply with these instructions to ensure personal safety. Keep these instructions.
- Before commencing the installation, check the “Product technical specifications”, in particular whether this product is suitable for automating your guided part. If not suitable, do NOT proceed with installation.
  - The product cannot be used before it has been commissioned as specified in the chapter on “Testing and commissioning”.
- WARNING** 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 installation of the product, check that all the materials are in good working order and suited to 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 away from children.
- WARNING** 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 power supply grid, with a contact opening distance permitting complete disconnection under the conditions dictated 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. Should this happen, stop installation immediately and contact 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 for material defects is excluded.
  - 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 carried out by unsupervised children.
  - Before working 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 packing materials of the product must be disposed of in compliance with local regulations.
  - The product must not be installed outdoors.
  - Keep an eye on moving doors and do not let anyone go near them until they have opened or closed fully.
  - Be careful when activating the manual release device (manual manoeuvre), as an open door may fall suddenly due to weak or broken springs, or if it is unbalanced.
  - Every month, check that the drive motor reverses when the door encounters a 50 mm-high object placed on the ground. If necessary, readjust the door and check it again, as incorrect adjustment is potentially dangerous (for drive motors incorporating a trapping safety system that intervenes when the door’s lower edge encounters an obstacle).
  - If the power cable is damaged, it must be replaced by the manufacturer or by an appointed servicing company or similarly qualified person in order to prevent any form of risk.

### INSTALLATION PRECAUTIONS

- Prior to installing the drive motor, check that the door is in good working order, correctly balanced and that it opens and closes properly.
  - Before installing the motor, remove all superfluous ropes and chains and deactivate any equipment not required for motorised operation, such as locking equipment.
  - Check that there are no points where people could get trapped or crushed against fixed parts when the door is fully open or closed; if there are, arrange adequate protective measures for these parts.
  - Install the manoeuvring assembly for manual release (manual manoeuvre) at a height below 1.8 m.  
NOTE: if removable, the manoeuvring assembly must be kept close to the door.
  - Make sure that the controls are kept at a safe distance from moving parts, while allowing a good view of these.  
The manoeuvring assembly of a switch kept manually closed must be located in a position that is visible from the guided part but far from moving parts. It must be installed at a minimum height of 1.5 m.
  - Permanently attach the trapping hazard warning labels in a highly visible location or near the fixed control devices (if present).
  - Permanently attach the manual release (manual manoeuvre) label close to the manoeuvring element.
  - After installation, make sure that the motor prevents or stops opening of the door when the latter is loaded with a 20-kg weight secured to the centre of its bottom edge (for drive motors that can be used with doors having opening widths exceeding 50 mm).
  - After installation, make sure that the mechanism is properly adjusted and that the motor reverses when the door collides with a 50 mm-tall object placed on the ground (for drive motors incorporating a trapping safety system that intervenes when the bottom edge of the door encounters an obstacle).
- Following installation, check and ensure that no door parts obstruct public roadways or pavements.



# 1 PRODUCT DESCRIPTION AND INTENDED USE

TEN is a range of gearmotors designed to automate articulated counterweight or spring overhead doors – both protruding and non-protruding. It constantly monitors the effort it exerts during manoeuvres, detecting any anomalies, and is able to reach the end-of-stroke (during opening and closing) through a slowdown phase. TEN operates using electric power. In the event of a power failure, the gearmotor can be released in order to move the door manually.

The TEN line includes the products listed in Table 1.

**⚠ WARNING! – Any use other than that specified herein or in environmental conditions other than those stated in this manual is to be considered improper and is strictly forbidden!**

**Table 1 - Description of the TEN components**

Model type	Description
<b>TN2020LR10*</b>	Irreversible gearmotor and Led courtesy light. To be used as a “Slave” of TN2010LR10 or TN2030LR10.
<b>TN2030LR10</b>	Irreversible gearmotor, control unit, opening and closing mechanical limit switch and LED courtesy light.
<b>TNLK CER10</b>	Irreversible gearmotor, control unit, opening and closing mechanical limit switch and LED courtesy light. Only available in kits and suitable for automation with 1 central motor only.

\* If used differently, make sure that the power supply comes from a safety extra-low voltage system that does not generate voltages exceeding the safety extra-low voltage.

# 2 APPLICATION LIMITS

The data relative to the TEN performances is indicated in Chapter 13 (“Technical specifications”) and is the only data that allows for correctly determining whether the product is suitable for its intended use. TEN is generally able to automate overhead doors in accordance with the limits specified in Table 2.

**Table 2 - Application limits relating to the door dimensions**

Type of door	Driven by 1 motor		Driven by 2 motors	
	Max height	Max length	Max height	Max length
Protruding overhead door	2.6 m	3 m	2.6 m	5.4 m
Non-protruding overhead door	2.6 m	3 m	2.6 m	5.4 m

**⚠ Warning! Any other use or use with dimensions greater than those specified is considered non-conforming. Nice declines all liability for damage and injury resulting from non-conforming use.**

The measurements shown in Table 2 are purely indicative and are only used for making rough estimates. The actual suitability of TEN for automating a specific door depends on the degree of door leaf balancing, guide friction and other aspects, including occasional events such as wind pressure or the presence of ice, which could obstruct the leaf’s movement.

To establish realistic conditions, the force required to move the leaf throughout its stroke must be measured, to ensure that this value does not exceed the “rated torque” specified in Chapter 13 (“Technical specifications”); moreover, to calculate the number of cycles/hour and the consecutive cycles, the data appearing in Tables 3 and 4 must be taken into account.

**Table 3 - Application limits relating to the force required to move the door with TNLK CER10 or TN2030LR10**

Force required to move the leaf (Nm)	Maximum no. of cycles/hour			Maximum no. of consecutive cycles		
	TNLK CER10	TN2020LR10	TN2030LR10	TNLK CER10	TN2020LR10	TN2030LR10
Up to 120	20	30	25	25	33	27
120–180	18	28	23	23	31	25
180–220	15	25	20	20	28	22

**Table 4 - Application limits relating to the force required to move the door with TN2030 +1 TN2020**

Force required to move the leaf (Nm)	Maximum no. of cycles/hour	Maximum no. of consecutive cycles
Up to 150	15	20
150–250	13	17
250–350	10	15

**⚠ To prevent overheating, the control unit has a limiter that is based on the motor effort and duration of the cycles, and trips when the maximum limit is exceeded.**

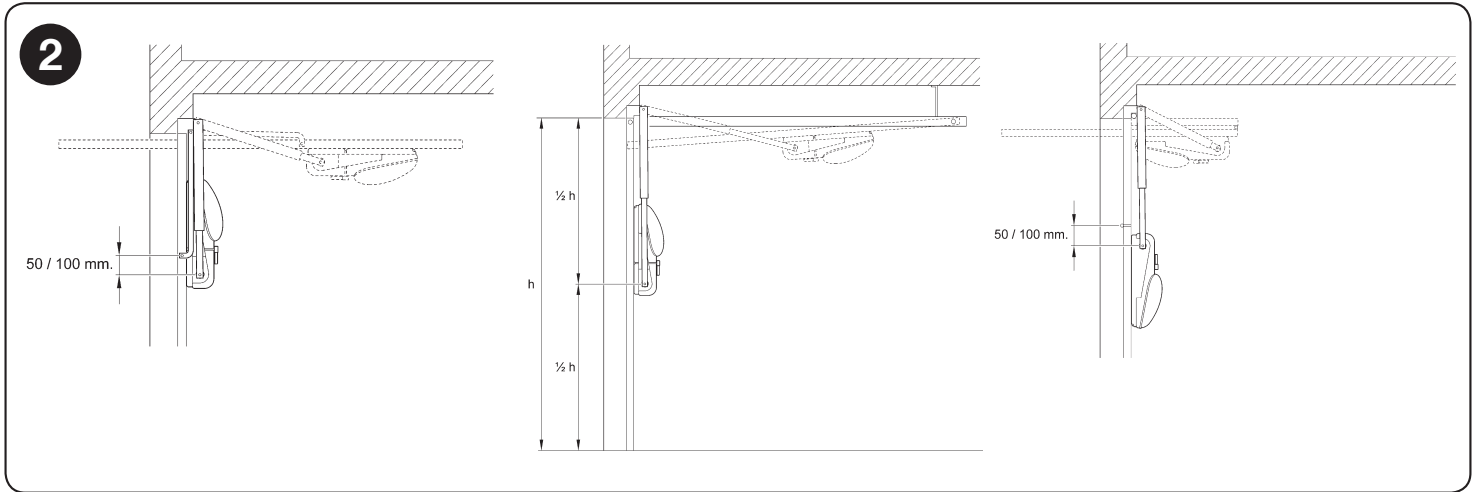
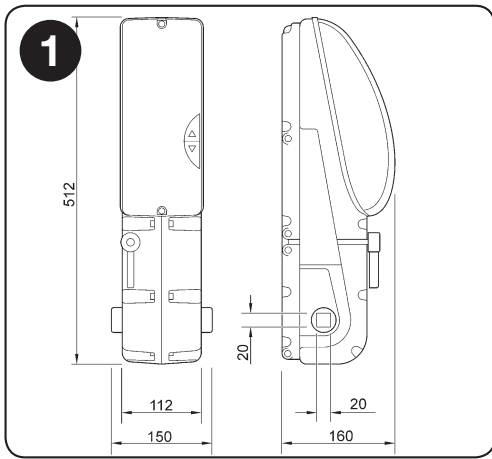
# 3 INSTALLATION

## 3.1 - Gearmotor installation

**⚠ Important! Prior to installing the gearmotor, consult Chapter 2, the contents of the package to verify the materials, and the overall dimensions of the gearmotor (Figs. 1–2).**

**⚠ Warning! The garage door must be able to move with ease. Limit to be complied with (according to EN12604):**

- private use = maximum 150 N
- industrial/commercial use = maximum 260 N



**Fig. 3** shows the location of the components of a typical installation and the electrical connections:

a - gearmotor with incorporated control unit

c - warning light with incorporated antenna

e - primary sensitive edge

g - 20x20 square-shaped tube

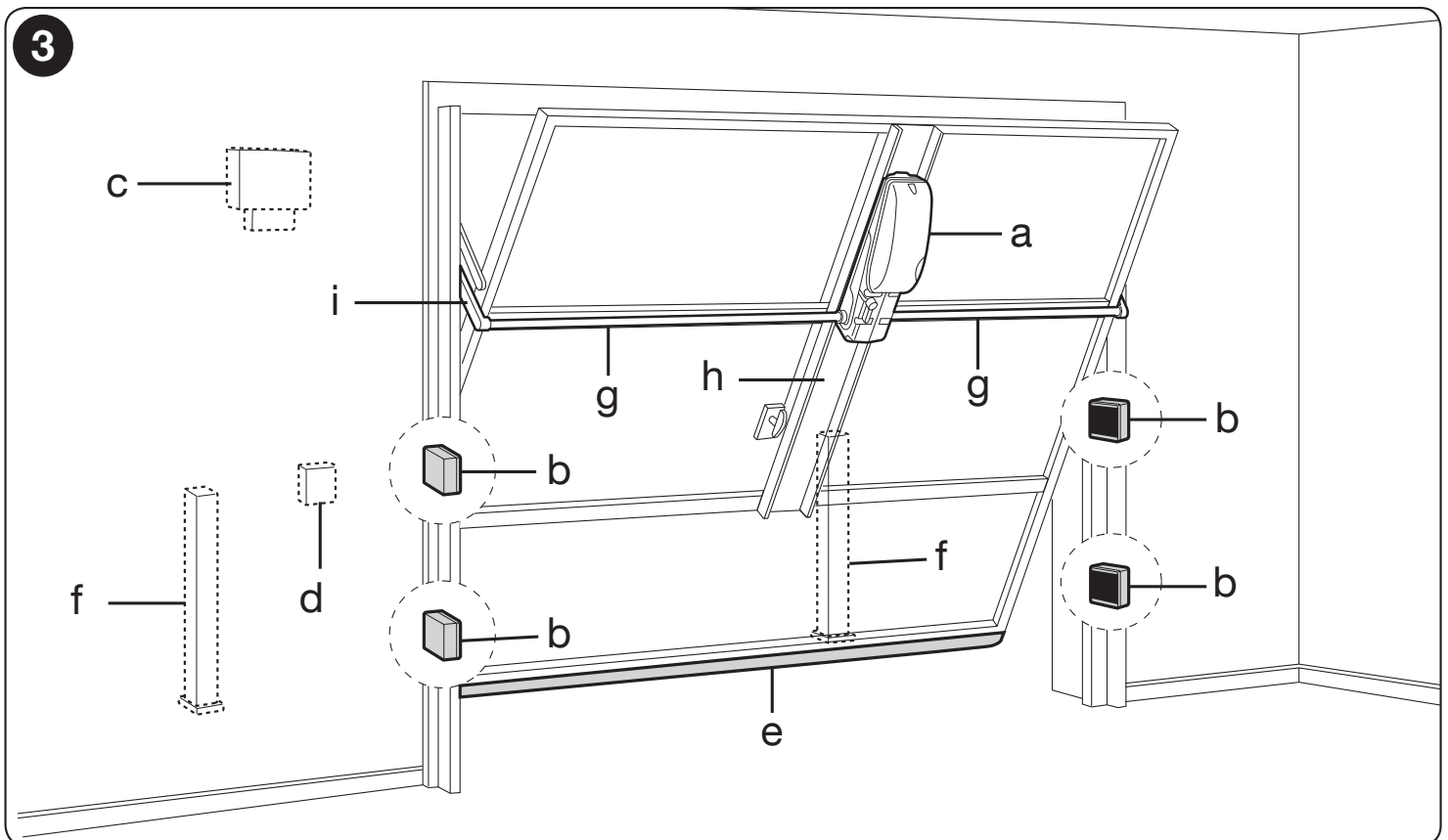
i - telescopic arm

b - photocells

d - key selector

f - photocell columns

h - support bracket

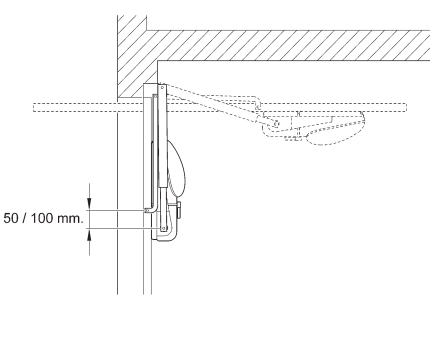
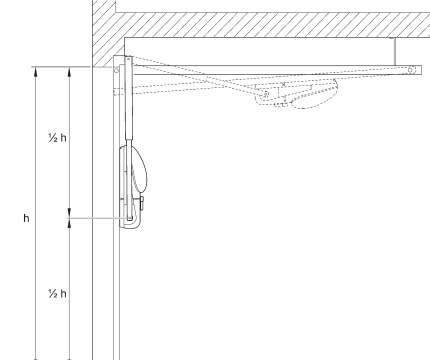
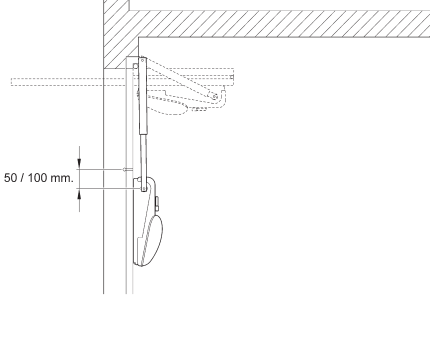
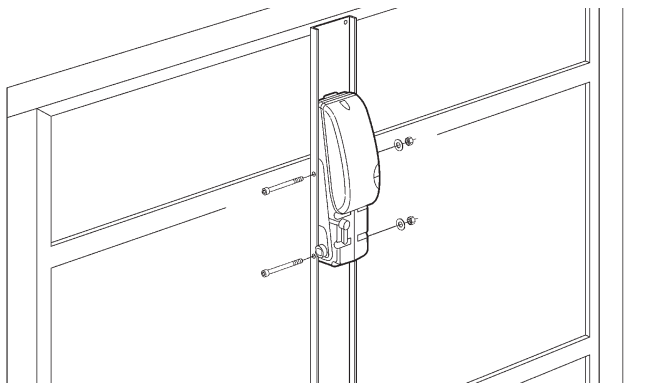
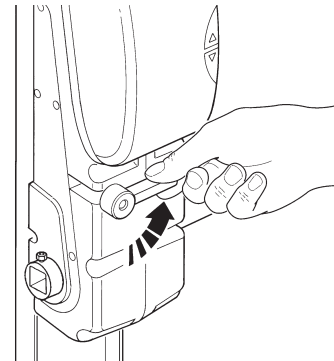
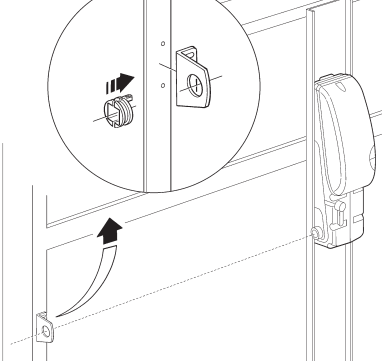




Prior to installing the equipment, verify the gear, motor's overall dimensions (**Fig. 1**). Depending on the type of door (protruding, non-protruding or articulated), verify whether it is possible to secure the gearmotor at the heights shown in **Fig. 3**.

**⚠ Should the space between the supporting arm and the fixed part of the door be insufficient, it is necessary to use the "curved arms" accessory (to prevent interferences).**

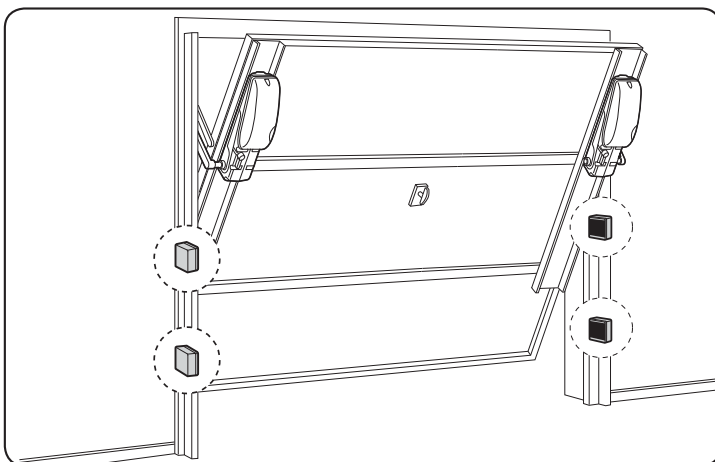
### 3.2 - Installing a gearmotor

<p><b>01.</b></p>	<p>Once the type of gearmotor has been defined, fasten the support bracket to the door in a perfectly vertical position at the indicated height</p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="135 320 603 831"> <p><b>For protruding overhead doors</b>, the arm rotation axis must be 50–100 mm below the supporting arm of the door.</p>  </div> <div data-bbox="603 320 1066 831"> <p><b>For non-protruding overhead doors</b>, the arm rotation axis must be exactly aligned with the supporting arm of the door.</p>  </div> <div data-bbox="1066 320 1536 831"> <p><b>For articulated overhead doors</b>, the arm rotation axis must be 50–100 mm below the door rotation hinge.</p>  </div> </div>
<p><b>⚠ If TEN is used upside-down, the control unit must be programmed as described in Paragraph 7.12.</b></p>	
<p><b>02.</b></p>	<p>Secure the gearmotor to the bracket using the relevant screws.</p> 
<p><b>03.</b></p>	<p>Manually release the gearmotor by turning the lever anti-clockwise.</p> 
<p><b>04.</b></p>	<p>Tightly secure the side support brackets so that they are perfectly aligned with the motor's rotation shaft, and insert the adapter bushings provided.</p> <p><b>Depending on the space between the supporting arm and the fixed frame of the door, straight or curved arms must be used.</b></p> 

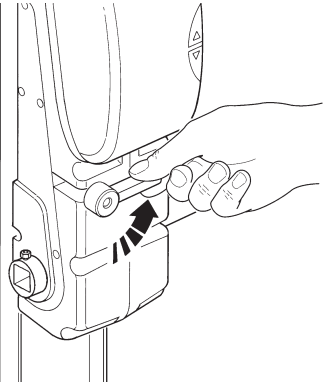
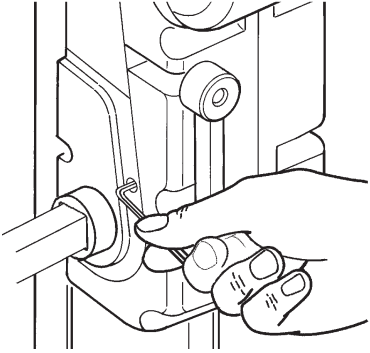
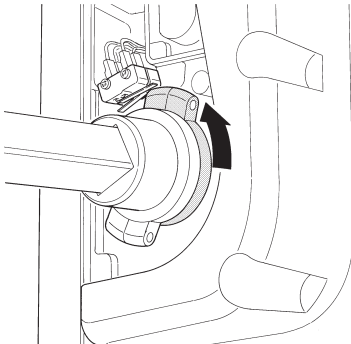
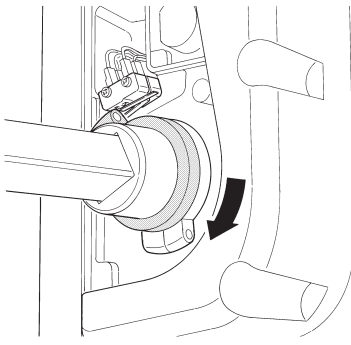
<p><b>05.</b></p>	<p>Fasten the upper support to the door frame: if it already present, verify whether it is suitable for the arms to be used. The measurements shown are purely indicative: they may vary in relation to the door's overall dimensions.</p>	
<p><b>06.</b></p>	<p>Insert the transmission tube through the arm bushing and into the motor shaft; cut the tube to size.</p>	
<p><b>07.</b></p>	<p>Open the door fully and cut the arms to size, making sure that with the door closed they are guided for at least 70 mm. Should the length not be sufficient, reposition the upper support or choose longer arms.</p>	
<p><b>08.</b></p>	<p>Insert the arms in their respective guides and verify that the door moves freely without jamming or hindrances. <b>Check the balancing again: the door is well-balanced if it does not move when stopped at any point along its path. If necessary, intervene appropriately on the balancing systems.</b></p>	

### 3.2.1 - Installing two gearmotors

**Note:** To install two gearmotors, use the same procedure for installing a single gearmotor (Paragraph 3.2); the adjacent picture shown the positioning of the gearmotors.



### 3.3 - Adjusting the limit switches

01.	Manually release the gearmotor.	
02.	Remove the side casing by loosening the screws.	
03.	<b>Opening limit switch</b> <ul style="list-style-type: none"><li>- Open the door fully.</li><li>- Turn the internal cam anti-clockwise until it clicks, signalling the micro-switch's intervention.</li><li>- Tighten the fastening screw forcefully using an Allen key.</li></ul>	
04.	<b>Closing limit switch</b> <ul style="list-style-type: none"><li>- Close the door almost fully (until it stops roughly 2 cm from the threshold).</li><li>- Turn the external cam clockwise until it clicks, signalling the micro-switch's intervention.</li><li>- Tighten the fastening screw forcefully using an Allen key.</li></ul>	
06.	Close the side casing again, making sure that the cables and seals are correctly positioned.	

To install the specified accessories, refer to the respective instruction manuals.

## 4 ELECTRICAL CONNECTIONS

**⚠ WARNING! – All electrical connections must be made with the system disconnected from the power supply. Incorrect connections can cause damage to the equipment and injury to people.**

**⚠ WARNING! – The cables used must be suited to the type of installation; for example, a type-H03VV-F cable is recommended for indoor environments, and a type-H07RN-F cable for outdoor environments.**

Fig. 4 shows the electrical connections in a typical installation; the figure referring to step 02 of the installation shows the electrical connections to be made on the control unit.

### 4.1 - Types of electrical cables


**Table 5 - Types of electrical cables (see Fig. 4)**

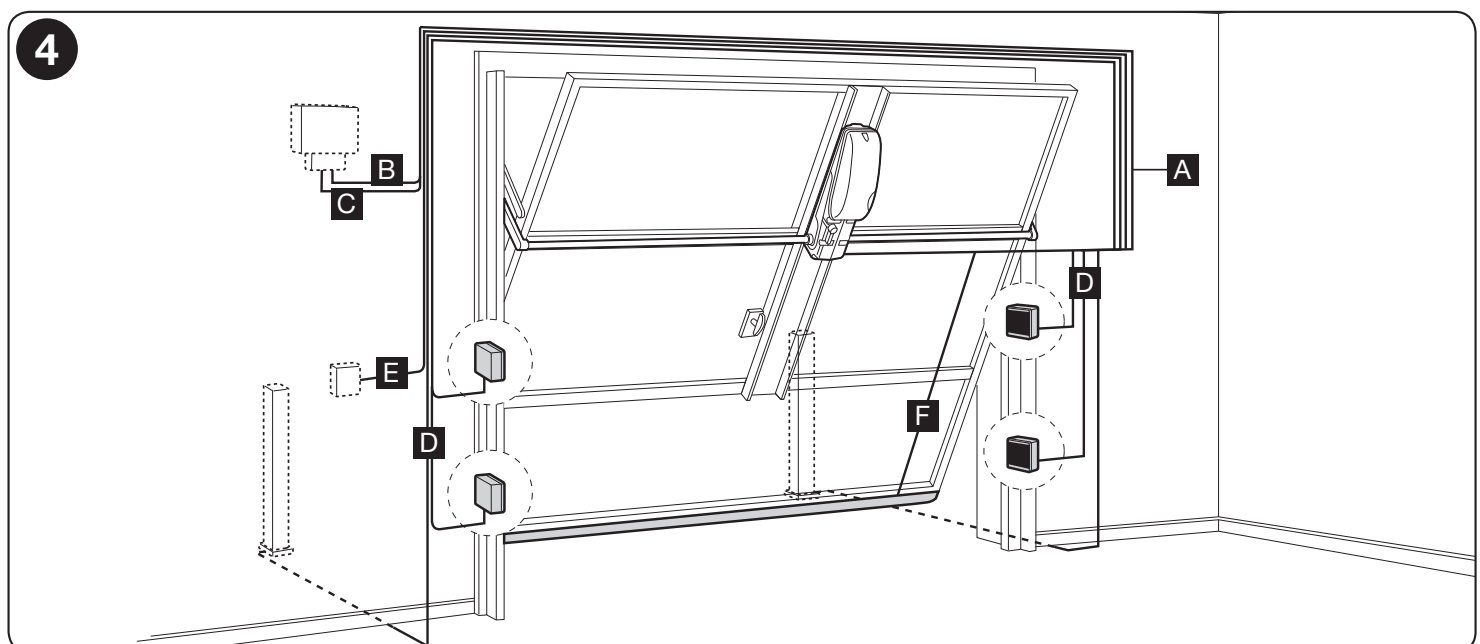
Connection	Type of cable	Maximum admissible length
A: Power line	1 cable (3x1.5 mm <sup>2</sup> )	30 m (*)
B: 12 V ELDC warning light	1 cable (2x1 mm <sup>2</sup> )	20 m
C: Antenna	1 shielded cable (type RG58)	20 m (recommended length: below 5 m)
D: Transmitter photocell	1 cable (2x0.25 mm <sup>2</sup> )	20 m
D: Receiver photocell	1 cable (3x0.25 mm <sup>2</sup> )	20 m
E: Key selector	2 cables (2x0.25 mm <sup>2</sup> )	20 m
F: Sensitive edge	1 cable (2x0.25 mm <sup>2</sup> )	20 m

**Note:** (\*) If the power cable is longer than 30 m, use a cable with larger cross-section (e.g.: 3x2.5 mm<sup>2</sup>) and arrange a safety earthing system near the automation.

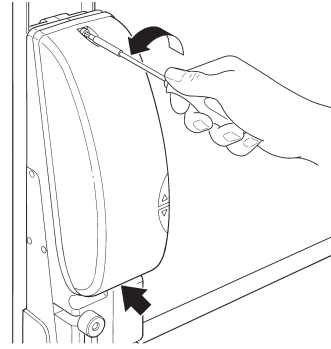
### 4.2 - Electrical cable connections

**Table 6 - Description of the electrical connections (see wiring diagram at step 02)**

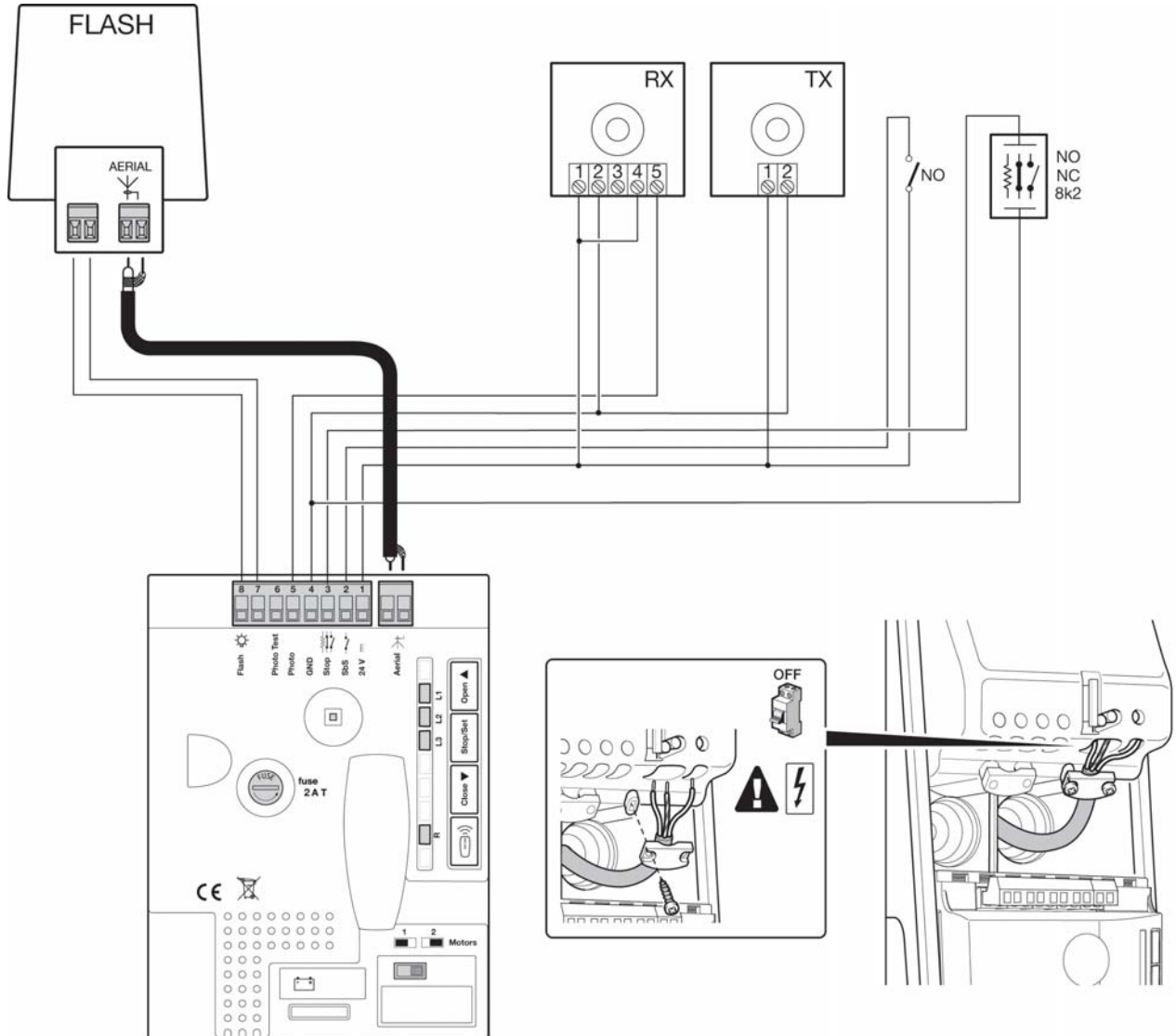
Terminals	Function	Description
	ANTENNA	- Connection input for the radio receiver antenna. The antenna is incorporated in the warning light; alternatively an external antenna can be used, or a section of wire already present on the terminal, which functions as an antenna, can be left
1-2	SbS	- Input for devices that control the movement; it is possible to connect Normally Open (NO) devices to this input
3-4	STOP	- Input for the devices that block or even stop the current manoeuvre; Normally Closed (NC) contacts, Normally Open (NO) contacts or fixed-resistance devices can be connected using special arrangements on the input. For further information on the STOP function, see Paragraph 8.1 - STOP input
1-5	PHOTO	- Input for safety devices such as photocells. They intervene during the closing phase, by reversing the manoeuvre. Normally Closed (NC) contacts can be connected. For further information on the PHOTO function, see Paragraph 8.1 - Photocells
4-6	PHOTOTEST	- Whenever a manoeuvre is begun, the relative safety devices are checked and the manoeuvre will start only if the test outcome is positive. This can only be accomplished using a special type of connections: the "TX" photocells are powered separately with respect to the "RX" receivers. For further information on the connection, see Paragraph 8.1 - Photocells
7-8	FLASH	- On this output it is possible to connect a Nice warning light (for the relevant models see Chapter 13 - Technical specifications). During the manoeuvre the light flashes at intervals of 0.5 s



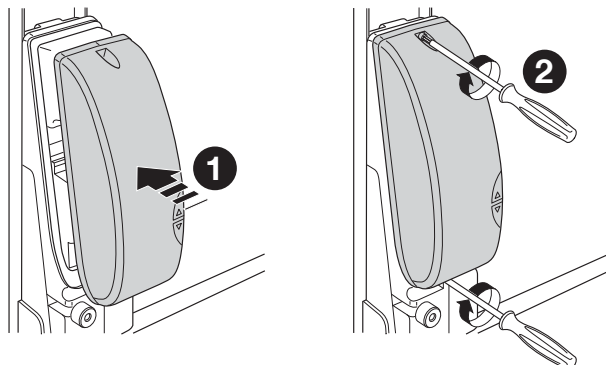
01. Open the cover



02. 1 - connect the power cables of the motor and accessories (depending on the control unit model)  
2 - connect the power cable



03. After programming the device, close the cover.



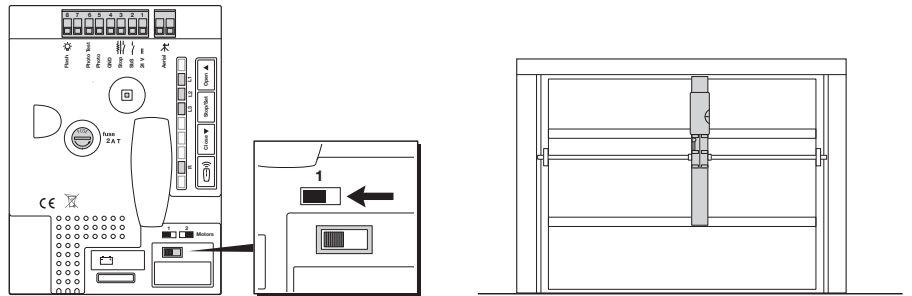
## 5 STARTING THE AUTOMATION AND CHECKING THE CONNECTIONS

Before starting the automation inspection and start-up phases, the door should be positioned roughly midway along its path so that it can be free to move both during opening and closing.

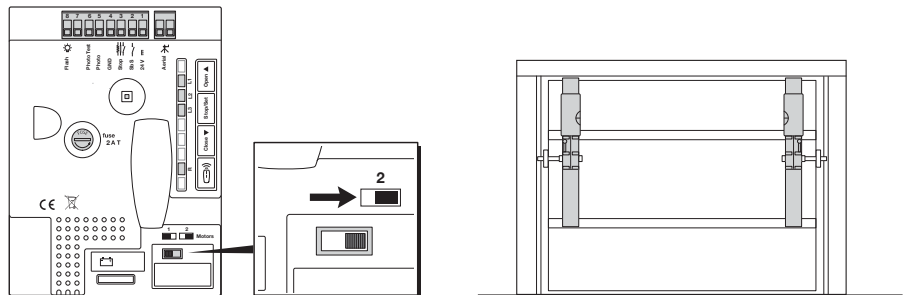
### 5.1 - Selecting the type of installation

Depending on the type of installation, with either one or two gearmotors, the selector on the control unit must be set.

**Installation with one gearmotor:** shift the selector to the left



**Installation with two gearmotors:** shift the selector to the right



**⚠ Do not adjust the selector for two motors when only a single motor is installed; it would not work properly and the gearmotor could get damaged.**

### 5.2 - Connecting the automation to the mains electricity

To connect TEN to the mains electricity, simply insert its plug into a power outlet; if necessary, use an adapter if the plug version does not match the available power socket.

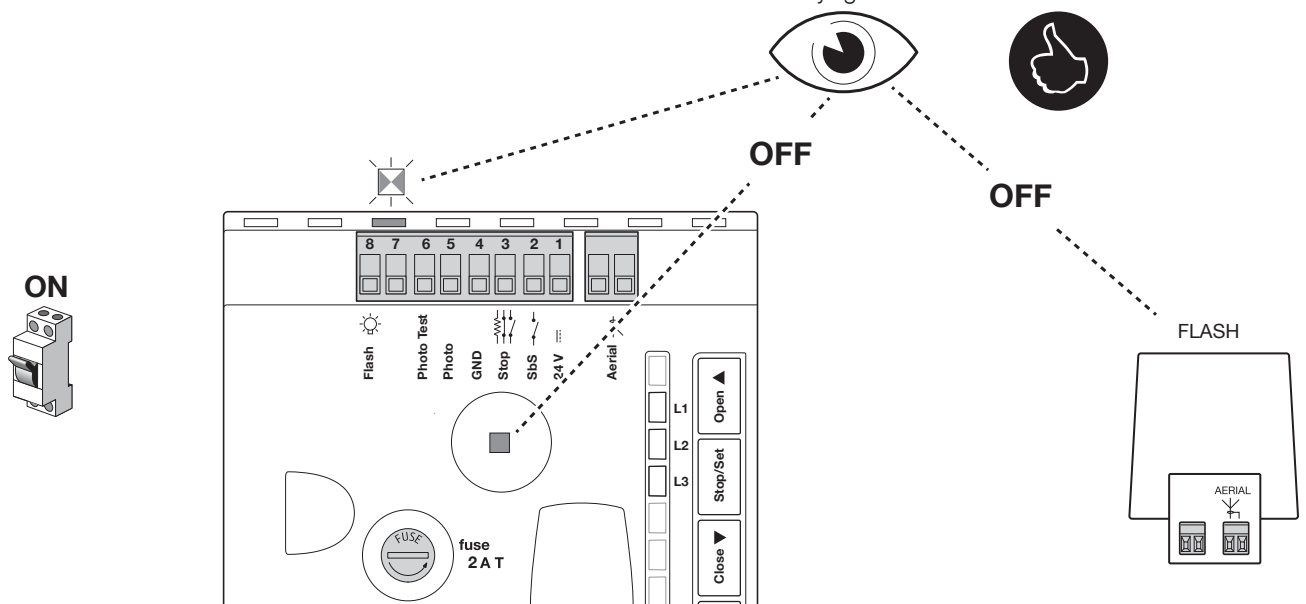
**⚠ Never cut or remove the cable supplied with TEN. - If not already available, a power socket for connecting TEN to the mains must be made by qualified and experienced personnel in strict observance of current legislation, standards and regulations. The power supply line must be protected from short-circuits and ground leakage; a device must be installed to allow for disconnecting the power supply during the installation and maintenance of TEN (the same plug and outlet are suitable for this purpose).**

**01.** Manually disengage the gearmotor and move the door in the opening/closing direction.

**02.** Manually lock the gearmotor.

**03.** Proceed as described below:

- Make sure that the green "OK" LED flashes regularly, at a rate of one flash per second.
- Check that the motor does not command the door to move and that the courtesy light is off.



**⚠** If the above conditions are not satisfied, immediately switch off the power supply to the control unit and carefully check the electrical connections. For additional information on the search for and diagnosis of faults, refer to Chapters 9 and 10.

## 6 TESTING AND COMMISSIONING

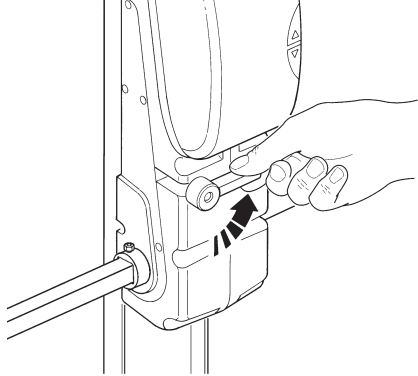
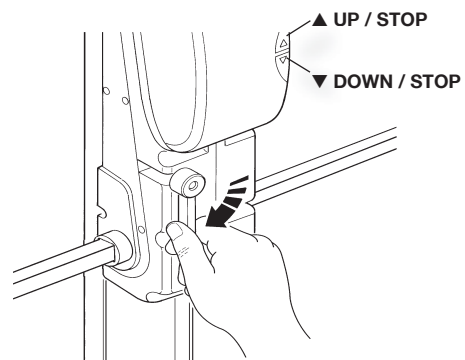
These are the most important phases in the automation's arrangement to ensure maximum system safety.

They must be carried out by a qualified and expert technician who must define the necessary tests to verify the solutions adopted to counter any risks present, and check compliance with the laws, regulations and standards: in particular, with all the requirements of the EN 13241-1, EN 12445 and EN 12453 standards.

### 6.1 Testing

The procedure must only be carried out after acquiring the positions (see Paragraph 7.3).

The testing procedure can also be performed as a periodic check of the automation devices. Each component of the system (sensitive edges, photocells, emergency stop, etc.) requires a specific testing phase; for these devices, observe the procedures outlined in the respective instruction manuals. Conduct testing of TEN as follows:


01.	Ensure that all instructions stated under the "General warnings" chapter have been strictly observed.
02.	<p>Release the door by turning the release lever of each motor anti-clockwise; verify whether it is possible to manually open and close the door using a force not exceeding 225 N, by intervening on the point specified for the manual manoeuvre.</p> 
03.	<p>Lock the gearmotor to the door by turning the release lever clockwise.</p> 
04.	Using the key selector or the transmitter or the control unit buttons, test the opening and closing of the door and make sure that it moves in the intended direction.
05.	Perform the test several times to verify that the door moves smoothly, that there are no points of excessive friction and that there are no defects in the assembly or adjustment.
06.	Check the proper operation of all the safety devices, one by one (photocells, safety edges, etc.). In particular, each time a device is activated, the "OK" LED on the control unit quickly flashes twice, confirming that the control unit has recognised the event.
07.	<p>Check the operation of the photocells and any interference with other devices:</p> <ol style="list-style-type: none"> <li>1 - insert a cylinder with 5 cm diameter and 30 cm length across the line of sight, first near the TX then near the RX;</li> <li>2 - check that the photocells intervene in any case, switching from the active status to alarm status and vice-versa;</li> <li>3 - check that the photocell's intervention determines the intended response of the control unit: for example, causing the movement to reverse during the closing manoeuvre.</li> </ol>
08.	<p>If dangerous situations caused by the movement of the door have been safeguarded by limiting the impact force, the user must measure the impact force in accordance with the EN 12453 and EN 12445 standards.</p> <p>If the adjustment of the "Speed" and control of the "Motor Force" are used to assist the system for the reduction of the impact force, try to find the adjustment that gives the best results.</p>

### 6.2 - Commissioning

Commissioning can only take place once all the testing phases have terminated successfully in accordance with the EN 12453 and EN 12445 standards.

Partial or "makeshift" commissioning is forbidden.

01.	Draw up and store (for at least 10 years) the automation's technical file, which must include at least the following: the assembly drawing of the automation, a wiring diagram, risk analysis and relative solutions adopted, the manufacturer's declaration of conformity for all the devices used (for TEN use the enclosed EC Declaration of Conformity), and a copy of the automation's instructions for use and maintenance schedule.
02.	Permanently attach the manual release (manual manoeuvre) label close to the manoeuvring element.

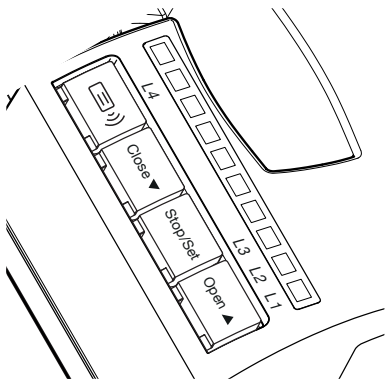

03.	Permanently attach a label or sign on the door containing the adjacent picture (min. height 60 mm):	
04.	Using the key selector or the transmitter or the control unit buttons, test the opening and closing of the door and make sure that it moves in the intended direction.	
05.	Affix a label to the door containing at least the following data: type of automation, name and address of manufacturer (person responsible for commissioning), serial number, year of manufacture and CE mark.	
06.	Fill in the declaration of conformity of the automation and hand it to the owner of the automation.	
07.	Give the owner the user manual (tear-out insert).	
08.	Draw up the maintenance schedule and hand it to the owner of the automation.	
09.	The force adjustment is an important safety factor and must be done with the utmost care by qualified technicians. <b>Important!</b> - Adjustments set to force loads higher than those allowed may cause injury to persons and animals or damage to things. Adjust the force to the minimum available value to allow rapid and reliable detection of any obstacles.	
10.	Before commissioning the door, inform the owner properly and in writing about the attendant residual risks.	

## 7 PROGRAMMING

### 7.1 - Programming keys

A number of programmable functions are available on the TEN control unit; they can be adjusted using 4 keys on the control unit and are displayed through 4 LEDs: L1, L2, L3, L4(R).

The default functions should satisfy most requirements, but can be modified at any time using the appropriate programming procedure; see Paragraph 7.6.


Keys	Function	
<b>Open ▲</b>	The “ <b>OPEN</b> ” key enables the user to open the door or scroll up through the programming steps.	
<b>Stop / Set</b>	The “ <b>STOP</b> ” key can be used to stop the manoeuvre; if pressed for more than 3 seconds, it allows for entering the programming mode, as described below.	
<b>Close ▼</b>	The “ <b>CLOSE</b> ” key enables the user to close the door or scroll down through the programming steps.	
<b>Radio</b> 	The “ <b>RADIO</b> ” key, within the first 10 seconds from the start, allows for memorising and deleting the transmitters to be used with TEN.	

### 7.2 - Quick set-up

The “Quick set-up” function allows for speeding up the motor’s commissioning. It only works with an empty memory.

This procedure allows for detecting and memorising the STOP input configuration, the presence or absence of the connection in “Phototest” mode of the PHOTO input, the opening and closing positions and the transmitter (if present) memorised in Mode 2 with the Step-by-Step control.

**Table 7 - Quick set-up procedure**

01.	Bring the door to its midway position.
02.	Lock the motor.
03.	Power the control unit through the mains and wait 10 seconds.
04.	Press and release the ▲ key.
05.	Device recognition phase: LEDs L2 and L3 flash rapidly for the entire duration of the recognition phase and the door performs the closing, opening and closing manoeuvres.
06.	LED L4(R) flashes once every second: press and release after 5 seconds the key of the transmitter to be memorised.
	<b>If the memorisation procedure was successful, LED L4(R) on the control unit will flash 3 times. Repeat the procedure for each transmitter to be memorised. The memorisation phase terminates if no further transmitters are memorised for 10 seconds.</b>



### 7.3 - Acquisition of the door opening and closing positions

The control unit must recognise the door leaf opening and closing positions; during this phase, the door path is measured between the closing stop and the opening limit switch, as this is necessary to calculate the slowdown and partial opening points. Besides the positions, the STOP input configuration is detected and memorised in this phase in addition to the presence or absence of the connection in "Phototest" mode of the PHOTO input (see Paragraph 8.1). Moreover, during this phase the control unit memorises the force required for the opening and closing manoeuvres.

<b>01.</b>	Release the motor and bring the door to its midway point, then lock the motor again.
<b>02.</b>	Simultaneously press and hold the ▼ and <b>Set</b> keys.
<b>03.</b>	Release the keys when the manoeuvre starts (after roughly 3 seconds).
<b>04.</b>	Press the ▲ key to perform a complete opening manoeuvre.
<b>05.</b>	Press the ▼ key to perform the closing manoeuvre.
<ul style="list-style-type: none"> <li>• If the above conditions are not satisfied, immediately switch off the power supply to the control unit and carefully check the electrical connections.</li> <li>• If at the end of the recognition process, LEDs <b>L2</b> and <b>L3</b> flash, it means that there is an error: see Chapter 10 - "Troubleshooting".</li> <li>• During these manoeuvres, the control unit memorises the force required for opening and closing.</li> <li>• The recognition phase of the door opening and closing positions, and of the STOP and PHOTO input configuration, can be repeated again at any time, even after the installation (for example, if one of the limit switch cams is shifted); simply repeat the procedure starting from step 01.</li> </ul>	

**With Memory Empty, in case of an error during the recognition phase, LEDs L1, L2 and L3 will flash simultaneously.**

### 7.4 - Checking the movement of the door

Once the opening and closing positions have been acquired, several manoeuvres should be carried out in order to check that the door moves correctly.

<b>01.</b>	Press and release the ▲ key to command an opening manoeuvre: check that this occurs smoothly and without any changes in speed. Important - The door must slow down when it is between 15 cm and 5 cm from the mechanical opening stop, and must stop at 2–3 cm from the stop.
<b>02.</b>	Press and release the ▼ key to command a closing manoeuvre: check that this occurs smoothly and without any changes in speed. Important - The door must slow down when it between 70 cm and 50 cm from the mechanical closing stop, and must stop against the mechanical closing stop.
<b>03.</b>	During the manoeuvre, check that the flashing light (if any) flashes at a speed of 0.5 seconds on and 0.5 seconds off.
<b>04.</b>	Open and close the door several times to make sure that there are no assembly and adjustment defects or other anomalies (for example, points of greater friction).
<b>05.</b>	Check that the motor, arms and brackets are secured in a solid, stable and suitably resistant manner even during sudden door acceleration or slowdown movements.

### 7.5 - Integrated radio receiver

The control unit has an incorporated radio receiver for remote control, which operates at a frequency of 433.92 MHz and is compatible with the following types of transmitters (due to the fact that the type of coding differs, the first transmitter inserted also determines the type of those memorised subsequently – up to 100 transmitters can be memorised):

FLOR, O-CODE, SMILO

### 7.6 - Programming the functions











#### 7.6.1 - Level 1 functions (ON-OFF)

**Table 8 - Level 1 programmable functions**

LED	Function	Description
<b>L1</b>	Closing speed	This function allows for choosing between 2 motor speed levels during the closing manoeuvre: "high" and "low". If the function has not been activated, the "slow" mode applies.
<b>L2</b>	Opening speed	This function allows for choosing between 2 motor speed levels during the opening manoeuvre: "high" and "low". If the function has not been activated, the "slow" mode applies.
<b>L3</b>	Automatic closing	This function allows for closing the door automatically after a programmed pause time; the default Pause Time is 30 seconds but can be modified to 15 or 60 seconds (see Table 10). If the function has not been activated, the "semi-automatic" mode applies.
<p>- During normal operation, LEDs <b>L1</b>, <b>L2</b> and <b>L3</b> are on or off depending on the status of the function they represent.</p> <p>- By default, Level 1 functions are all set to "OFF" but can be modified at any time (see Table 9).</p>		

## 7.6.2 - Programming the Level 1 functions (ON-OFF)

Caution - To complete the procedure, maximum 10 seconds are allowed between pressing one key and another, after which the system exits the procedure automatically and memorises the changes made up to that time.











Table 9 - Procedure for changing the Level 1 functions (ON-OFF)	
01. Press and hold the <b>Set</b> key for roughly 3 seconds.	 3 s
02. Release the <b>Set</b> key when LED L1 starts flashing.	 L1 
03. Press the ▲ / ▼ key to shift the flashing LED to the LED representing the function to be modified.	 or  
04. Press and release the Set key to change the status of the function (short flashing = OFF; long flashing = ON).	  
05. Wait 10 seconds to exit the programming mode after the maximum time elapses.	 10 s
⚠ Steps 03 and 04 can be repeated during the programming phase to set other functions to ON or OFF.	



## 7.6.3 - Level 2 functions (adjustable parameters)

Table 10 - Level 2 programmable functions				
LED	Function	Level	Value	Description
L1	Motor force	L1	Low	Adjusts the sensibility of the motor force to suit the type of door. The “High” setting is more suitable for heavier and larger doors.
		L2	Medium	
		L3	High	
L2	Step-by-Step function	L1	Open - Stop - Close - Open	Adjusts the sequence of commands associated with the Step-by-Step input or the 1st radio command (see Table 12).
		L2	Open - Stop - Close - Stop	
		L3	Condominium	
L3	Pause Time	L1	15 seconds	Adjusts the pause time, that is, the time that elapses before automatic re-closing. Is effective only if automatic closing is enabled.
		L2	30 seconds	
		L3	60 seconds	
<p><b>Note:</b> “■” default function</p> <p>All the parameters can be adjusted as required without any contraindications; only the adjustment of “motor force” could require special attention:</p> <ul style="list-style-type: none"> <li>Do not use high force values to compensate for points of abnormal friction on the leaf. Excessive force can jeopardise the operation of the safety system or damage the door.</li> <li>If the “motor force” control is used to assist the impact force reduction system, measure the force again after each adjustment in compliance with the EN 12453 and EN 12445 standards.</li> <li>Wear and atmospheric conditions influence the door’s movement, thus the force settings should be checked periodically.</li> </ul>				

## 7.6.4 - Level 2 programming (adjustable parameters)

Caution - To complete the procedure, maximum 10 seconds are allowed between pressing one key and another, after which the system exits the procedure automatically and memorises the changes made up to that time.

Table 11 - Procedure for changing the Level 2 functions	
01. Press and hold the <b>Set</b> key for roughly 3 seconds.	 3 s
02. When LED L1 starts flashing, release the <b>Set</b> key.	 L1 
03. Press and release the ▲ or ▼ key to shift the flashing LED to the LED of the parameter to be modified.	 or 
04. Keep the <b>Set</b> key pressed down until Step 06.	
05. Wait roughly 3 seconds for the LED associated with the current level of the parameter to be modified to light up.	
06. Press the ▲ / ▼ key to shift the lit LED representing the value of the parameter.	 or  

07. Release the <b>Set</b> key.	
08. Wait 10 seconds to exit the programming mode after the maximum time elapses.	 10 s
⚠ Steps 03 and 07 can be repeated during the same programming phase to modify multiple parameters.	

## 7.7 - Transmitter memorisation

Each transmitter to be used in the system must be memorised in the control unit's radio receiver; the transmitters can be memorised in two modes: Mode 1 and Mode 2 (Paragraphs 7.7.1 and 7.7.3).






### 7.7.1 - Mode 1 transmitter memorisation

In this mode the function of the transmitter keys is fixed and each key corresponds to the command in the control unit shown in Table 12; a single memorisation phase is carried out for each transmitter, during which all the transmitter keys are memorised. During this phase it is irrelevant which key is pressed.

Note - The single-channel transmitters only have key 1, while dual-channel transmitters only have keys 1 and 2.

Key	Command
1	Step-by-Step
2	Partial open
3	Open
4	Close

### 7.7.2 - Mode 1 memorisation procedure

01. Press and hold, for at least 3 seconds, the radio button  on the control unit.	
02. Release the button when the LED lights up.	
03. Within 10 seconds press the 1st key on the transmitter to be memorised and hold it for at least 2 seconds.	
⚠ If the memorisation procedure was successful, LED L4(R) on the control unit will flash 3 times. Repeat the procedure for each transmitter to be memorised. The memorisation phase terminates if no further transmitters are memorised for 10 seconds.	




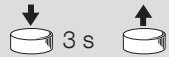

### 7.7.3 - Mode 2 transmitter memorisation

In this mode, each transmitter key can be associated with one of the 4 possible control unit commands shown in Table 14; only one key is memorised for each phase, namely the one that was pressed during the memorisation phase.

Note - Single-channel transmitters only have key T1, while dual-channel transmitters only have keys T1 and T2.

Key	Command
1	Step-by-Step
2	Partial open
3	Open
4	Close

### 7.7.4 - Mode 2 memorisation procedure

01. Press and release the radio key  on the control unit for a number of times corresponding to the desired command (1...4 - Table 14).	
02. Make sure that LED L4(R) on the control unit emits a number of flashes equal to the number of the desired command (1...4).	
03. Within 10 seconds press the desired key on the transmitter to be memorised, holding it down for at least 3 seconds before releasing it.	
⚠ If the memorisation procedure was successful, LED L4(R) on the control unit will flash 3 times. Repeat the procedure for each transmitter to be memorised. The memorisation phase terminates if no further transmitters are memorised for 10 seconds.	

## 7.8 - Transmitter memorisation near the control unit (with two transmitters)

This procedure can be used to memorise a NEW transmitter by using a second (OLD) transmitter, which has already been memorised and works properly, without using the keys on the control unit, by merely standing near the control unit.

During the procedure the NEW transmitter is memorised in the same way as the OLD transmitter was memorised (Mode 1 or Mode 2).

⚠ This procedure can be performed on all the receivers lying within the transmitter's range; therefore, only the device involved in the operation should be powered.

**Table 16 - Procedure for memorising the transmitter near the control unit**

01.	Stand near the control unit with the two transmitters: <b>⚠ wait 1 second between one step and the next.</b>	
02.	On the NEW transmitter, hold down any key for at least 8 seconds then release it.	
03.	On the OLD transmitter press and release the key slowly for 3 times.	
04.	On the NEW transmitter press and release the key slowly once.	
<b>⚠</b>	Repeat the procedure for each transmitter to be memorised.	

**7.9 - Deleting all memorised transmitters from the memory**

**Table 17 - Transmitter deletion procedure**

01.	Press and hold the radio button  on the control unit.	
02.	Wait for LED L4(R) to light up then wait for it to switch off and wait for it to flash 3 times.	
03.	Release the key exactly during the 3rd flash.	
<b>⚠</b>	If the memorisation procedure was successful, LED L4(R) on the control unit will flash 5 times.	

**7.10 - Locking / unlocking of the radio memory**

**⚠** This procedure locks the memory, thus preventing the recognition and deletion of radio transmitters.

**Table 18 - Procedure for locking/unlocking the radio memory**

01.	Disconnect the control unit from the power supply	
02.	Press and hold the radio button  on the control unit up to Step 03	
03.	Power the control unit again (continue holding the button down)	
04.	After 5 seconds LED L4(R) will emit 2 slow flashes: at this point release the button	
05.	(Within 5 seconds) repeatedly press and release the button  on the control unit to select one of the following options: - LED off = Deactivation of the memory lock. - LED on = Activation of the memory lock.	
<b>⚠</b>	Five seconds after last pressing the button, LED L4(R) will emit 2 slow flashes to signal the end of the procedure.	

**7.11 - Programming the Phototest / Electric lock function**

By default, the output of terminal 6 is set to the “Phototest” function but can be modified to electric lock, and vice-versa, at any time (Table 19). For this programming mode the warning light must be connected (or a 12 V lamp with max 21 W).

**Table 19 - Procedure for modifying the Phototest / Electric lock function**













01.	Shut off the mains power to the gearmotor.	
02.	Press and hold the <b>Set</b> key up to step 05.	
03.	Restore power to the gearmotor.	
04.	With the <b>Set</b> key still pressed, wait for the courtesy light to emit the initial flash, then: - if the warning light stays off, the phototest function has been programmed; - if the warning light stays on, the electric lock function has been programmed.	
05.	With the <b>Set</b> key still pressed, press and release (even several times) the <b>▼</b> key. The warning light will switch on or off with the following meaning: on = electric lock off = phototest	
06.	Release the <b>Set</b> key.	
<b>⚠</b>	After activating the “Phototest” function and connecting the photocells, it is necessary to perform the position recognition procedure described in Paragraph 7.3 “Acquisition of the door opening and closing positions”.	

## 7.12 - Deactivating the “Variable sensitivity to obstacle detection”

TEN is equipped with an obstacle detection system based on control of the motor’s effort.
















By default, this function is variable: the sensitivity increases where the motor has less effort and decreases where the motor has greater effort; this helps to detect obstacles with the utmost precision.

In some situations, for example in case of strong gusts of wind or an incorrectly balanced structure, this system may detect a false obstacle. To avoid this problem in such situations, the variable sensitivity can be disabled – see Table 20. There are 3 “fixed” motor force levels (see Table 10).

Table 20 - Procedure for disabling the “variable sensitivity to obstacle detection”	
01. Shut off the mains power to the gearmotor.	
02. Press and hold the <b>Set</b> key up to step 05.	
03. Restore power to the gearmotor.	 
04. With the <b>Set</b> key still pressed, wait for the courtesy light to emit the initial flash, then: - if the courtesy light stays off, the obstacle detection is programmed to “variable sensitivity”; - if the courtesy light stays on, the obstacle detection is programmed to “fixed sensitivity”.	   4 s
05. With the [Set] key still pressed, press and release (even several times) the ▲ key. The courtesy light will switch on or off with the following meaning: on = fixed sensitivity (motor force only) off = variable sensitivity	   
06. Release the <b>Set</b> key.	
<b>⚠ Warning: If the variable sensitivity is reactivated after being disabled, it is advisable to perform the position acquisition procedure described in Paragraph 7.3.</b>	

## 7.13 - Programming the gearmotor’s installation direction

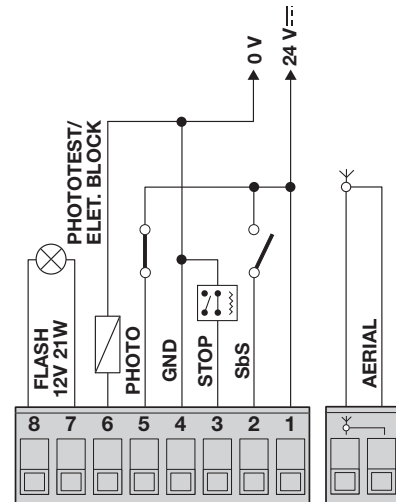
By default, TEN is programmed for being installed straight, as shown in **Fig. 3** of the typical system. If the installation requires an upside-down assembly, the control unit must be programmed as described in Table 21.

Table 21 - Procedure for programming the installation direction	
01. Shut off the mains power to the gearmotor.	
02. Simultaneously press and hold the <b>Stop</b> and ▼ keys up to step 05.	 
03. Restore power to the gearmotor.	  
04. (With the <b>Stop</b> and ▼ keys still pressed), wait for the control unit to start (roughly 4 seconds): - if LEDs L1, L2 and L3 are off, TEN is programmed for being installed straight; - if the LEDs are on, TEN is programmed for being installed upside-down.	   4 s 
05. (With the <b>Stop</b> and ▼ keys still pressed) press and release the ▲ key several times. LEDs L1, L2 and L3 will switch on or off with the following meaning: on = upside-down installation off = straight installation	   ...
06. Release the <b>Stop</b> and ▼ keys.	 
<b>⚠ Warning: if the upside-down installation is programmed, during normal operation the Open and Close keys are modified with respect to that indicated on the control unit label.</b>	

## 8.1 - Adding or removing devices

It is possible to add or remove devices at any time; in particular, various types of devices can be connected to the STOP and PHOTO inputs, as described in the following paragraphs.

The adjacent figure shows the wiring diagram for connecting the various devices.



### STOP input

This input causes the immediate stoppage of the manoeuvre, followed by a brief reversion. Devices with normally open (NO) or normally closed (NC) contact output, as well as devices with 8.2 kΩ fixed resistor output (sensitive edges), can be connected to this input. The control unit recognises the type of device connected to the input during the acquisition phase of the opening and closing positions (Paragraph 7.3); subsequently, a STOP command is triggered whenever the device detects any difference from the recognised setting. Multiple devices, even of different types, can be connected to the input:

- Any number of NO devices can be connected "in parallel".
- Any number of NC devices can be connected "in series".
- Multiple NC devices can be "cascade" connected with a single 8.2 kΩ terminating resistor.
- The NO and NC combination can be created by connecting two NO contacts "in parallel", but the NC contact must be connected "in series" to an 8.2 kΩ resistor.

**⚠** If the STOP input is used to connect devices with safety functions, only the devices with 8.2 kΩ fixed resistor guarantee Category 3 safety against faults, in accordance with the EN 13849-1 standard.

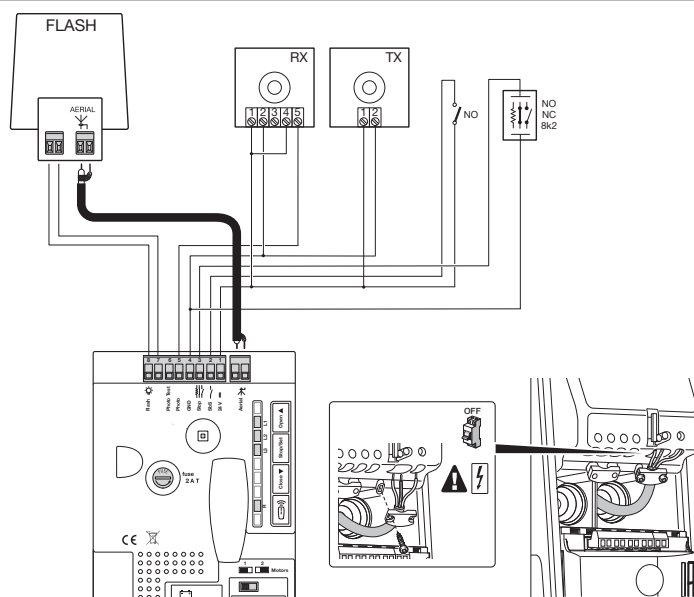
### Photocells

The control unit features a "Phototest" function which increases the reliability of the safety devices, enabling it to be classified under Category 2 in accordance with the EN 13849-1 standard regarding the combination of the control unit and safety photocells.

Each time a manoeuvre is started, all safety devices involved are checked and the manoeuvre will only start if everything is in order. Should the test fail (photocell blinded by the sun, cables short-circuited, etc.), the fault is identified and the manoeuvre is disabled. To add a pair of photocells, connect them as described below.

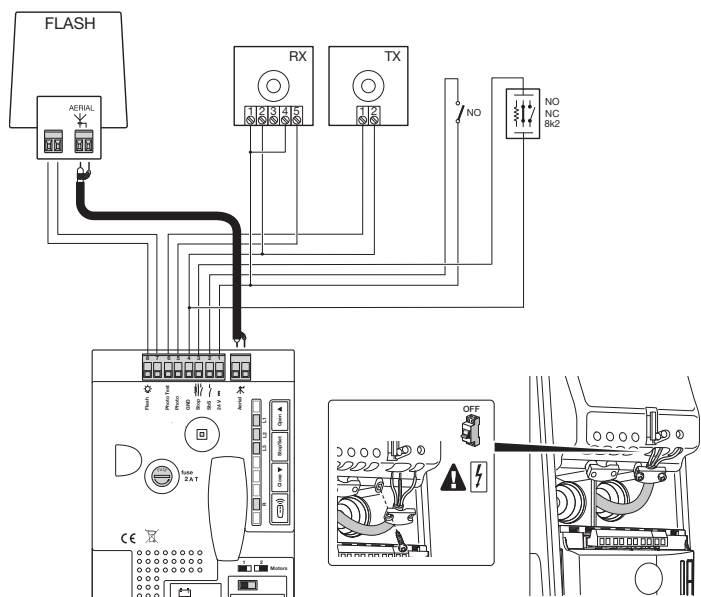
#### • Connection without "Phototest" function:

Power the receivers directly from the control unit's device output (terminals 1 - 4).



• **Connection with “Phototest” function:**

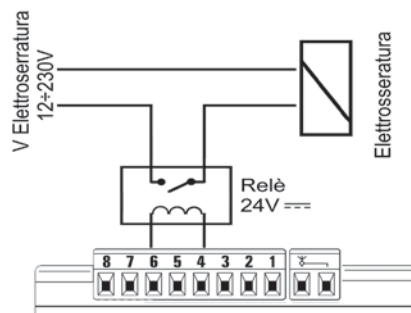
The receiver power comes directly from the services output (terminals 1 - 4), while that of the transmitters is from the “Phototest” output (terminals 4 - 6). The maximum admissible current on the “Phototest” output is 100 mA.



⚠ If 2 pairs of photocells are used that interfere with one another, it is necessary to activate the “synchronisation” as described in the photocell instruction manual.

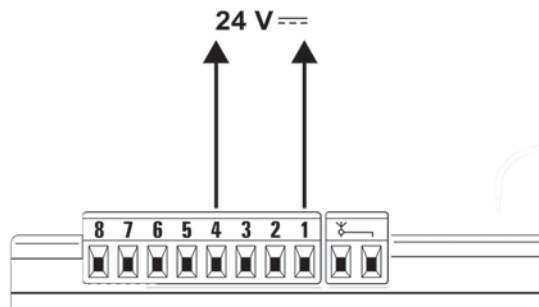
**8.2 - Electric lock**

The “phototest” output is set by default to the “Phototest” function. The output can be programmed to control an electric lock. As the opening manoeuvre starts, the output is activated for 2 seconds; in this way an electric lock device can be connected. The output is not activated during the closing manoeuvre, therefore the electric lock must reset manually. The output cannot control the electric lock directly, but only loads of 24 V  $\text{---}$  - 2 W. The output must be interfaced with a relay, as shown in the adjacent figure.



**8.3 - Connecting other devices**

If the user needs to power external devices, such as a proximity reader for transponder cards or the light for illuminating the key-operated selector switch, it is possible to tap power as shown in the adjacent figure. The power supply voltage is 24 V  $\text{---}$  -30% to +50% with a maximum available current of 100 mA.



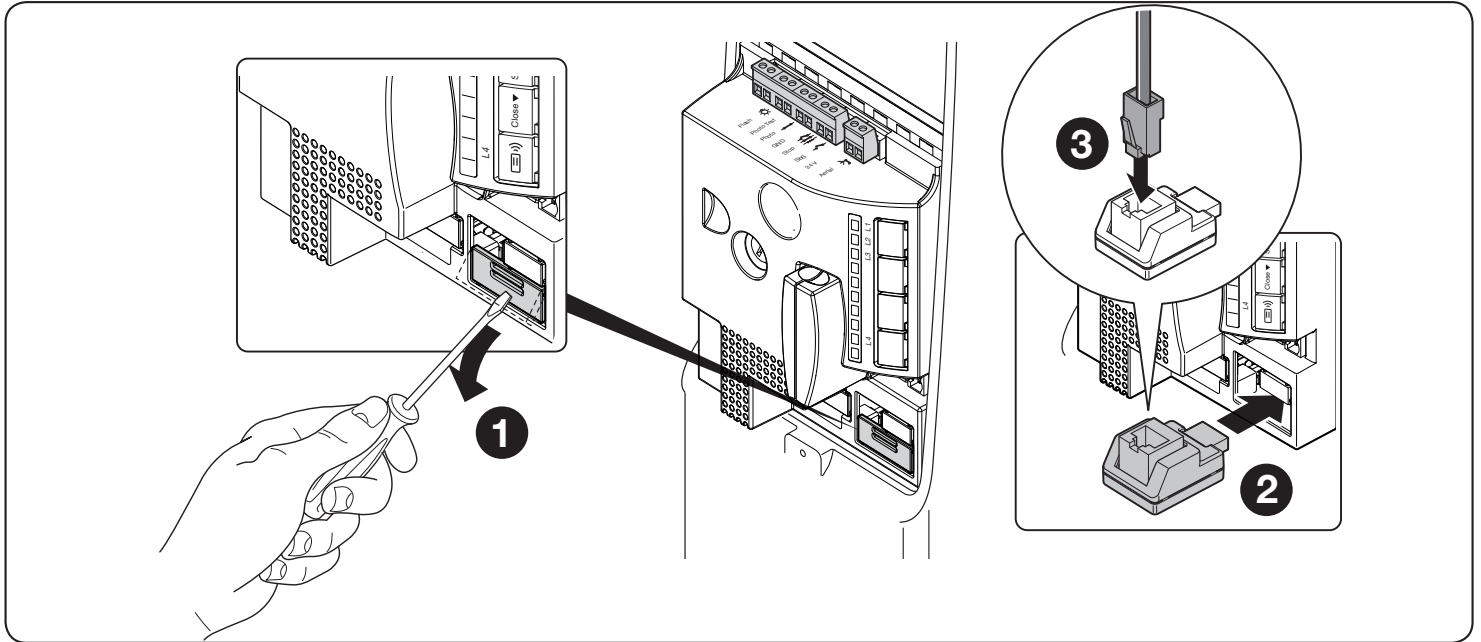
## 8.4 - Connecting the Oview programmer

It is possible to connect the Oview programming unit to the control unit, via the IBT4N interface through a bus cable with 4 electrical wires inside. This unit enables quick and full programming of the functions, parameter adjustment, updating of the control unit firmware, diagnostics to detect any malfunctions and periodic maintenance.

The Oview allows for operating on the control unit at a maximum distance of roughly 100 m. If several control units are networked with each other in a BusT4 network, by connecting the Oview to one of them, it is possible to view on the display all the networked control units (up to a maximum of 16 units).

The Oview unit can also be left connected to the control unit during normal operation of the automation, so that the user can send commands using a specific menu.

**⚠ Warning! - Before connecting the IBT4N interface, it is necessary to disconnect the control unit from the power supply.**



## 8.5 - Special functions

### “Always open” function

This function is a control unit feature that enables the user to command an opening manoeuvre when the “Step-by-Step” command lasts longer than 3 seconds. This can be used, for example, to connect a timer contact to the “Step-by-Step” input in order to keep the door open during a specific time bracket.

This feature is valid regardless of the “Step-by-Step” input programming (see the “Step-by-Step function” parameter – Table 10).

### “Move anyway” function

In the event that one of the safety devices is not functioning properly or is out of order, it is still possible to command and move the door in “Man present” mode. For further details, refer to the “USER GUIDE” pull-out insert (final part of the manual)

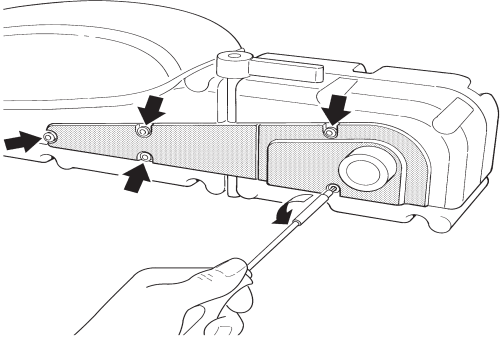
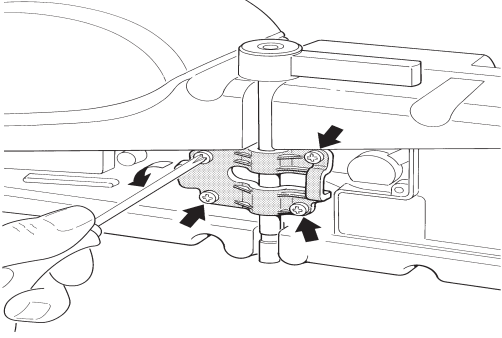
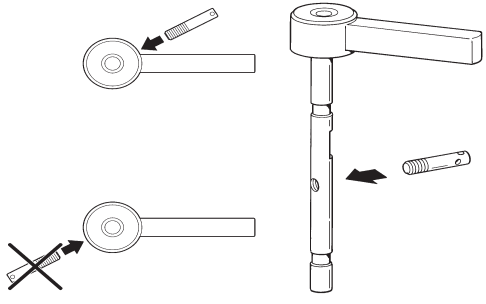
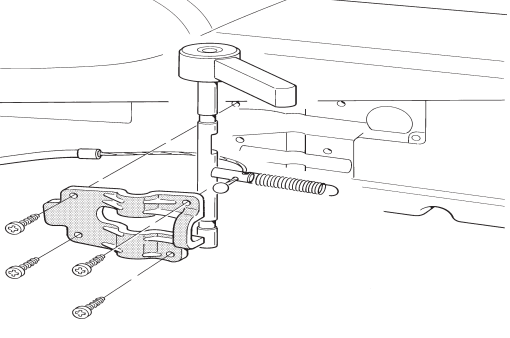
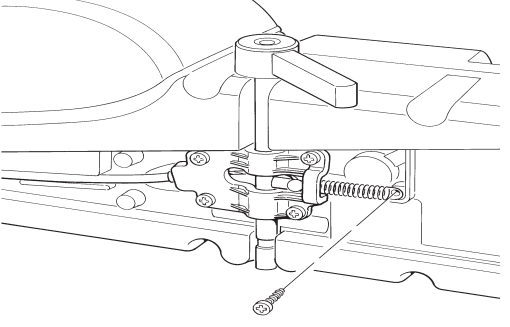
## 8.6 - Accessories

The following optional accessories are available:

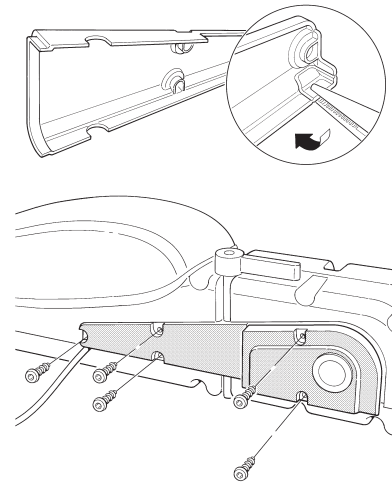
- TNA1** Spare control unit for TN2030 and TNKCE
- OTA2** Motor support bracket length 1,250 mm
- OTA3** Motor support bracket length 2,000 mm
- TNA4** Pair of transmission shafts length 1,500 mm
- TNA5** Pair of standard straight telescopic arms
- TNA6** Pair of standard curved telescopic arms
- TNA8** Pair of transmission shafts length 200 mm
- OTA11** Kit for releasing the door from the outside with metal cable
- OTA12** Kit for releasing the door from the outside with key-operated latch
- TNA38** Return device for 1 pair of transmission shafts
- TS** Sign plate



## 8.6.1 - OTA11 pre-assembly

<b>01.</b>	Loosen the screws and remove the side covers.	
<b>02.</b>	Loosen the screws and remove the collar.	
<b>03.</b>	Screw on the pin provided, making sure that it is properly positioned with respect to the lever.	
<b>04.</b>	Insert the cord and spring, as shown.	
<b>05.</b>	Fasten the spring with the 4.2x13 screw provided, screw the collar back on and, lastly, insert the sheath.	

**06.** Cut the tab fitted on the cover and close the entire assembly, being careful not to crush the sheath.



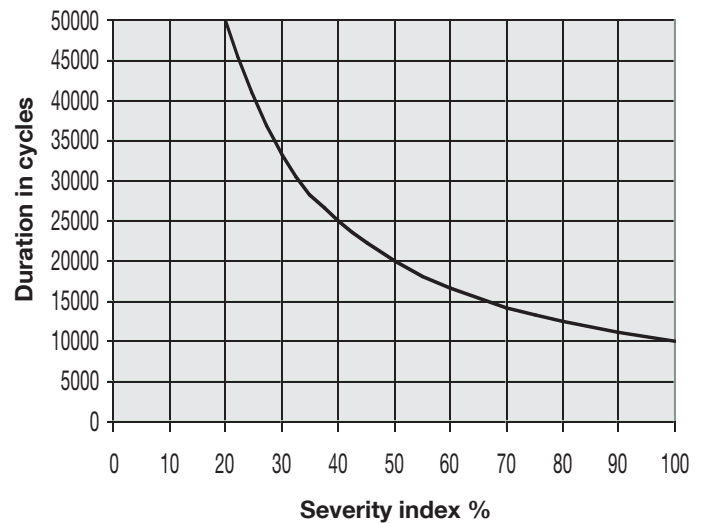
### 8.6.2 - Product durability

Chapter 13, "Technical specifications", contains the estimate of the product's "durability", that is, its average useful life. The value is strongly influenced by the degree of severity of the manoeuvres, in other words, the sum of all the factors that cause wear. The estimate of all the indices must be made by summing up all the severity indices specified in Table 5; the total result can then be compared with the estimated durability figures in the chart. For example, TNKGE mounted on a 130 kg door, requiring a 150 Nm force to move it, equipped with photocells and without other burdensome elements, obtains a severity index equal to 60% (30+20+10). An estimated durability of 18,000 cycles can be inferred from the chart.

The durability is estimated on the basis of design calculations and the results of tests performed on prototypes; being an estimate, it does not constitute any guarantee regarding the product's actual lifetime.

**Table 22 - Estimated durability in relation to the manoeuvre severity index**

Severity index %	TNLKGER10	TN2030LR10
	TN2030LR10	TN2030LR10 + TN2030LR10
<b>Weight of the door (kg)</b>		
Up to 70	20	10
70-150	30	20
150-200	40	30
Over 200	60	50
<b>Force N required to move door</b>		
Up to 100	10	5
100 - 180	20	15
180 - 220	40	30
220 - 280	-	50
<b>Other factors contributing to fatigue</b> (to be considered if their probability exceeds 10%)		
Ambient temperature greater than 40°C or lower than 0°C, or humidity greater than 80%	10	10
Presence of dust and sand	15	15
Presence of salinity	20	20
Manoeuvre interrupted by photocell	10	10
Manoeuvre interrupted by Stop	20	20
High speed	15	15
<b>Total severity index % (see adjacent chart):</b>		





**Table 25 - Key LEDs (Fig. 6)**

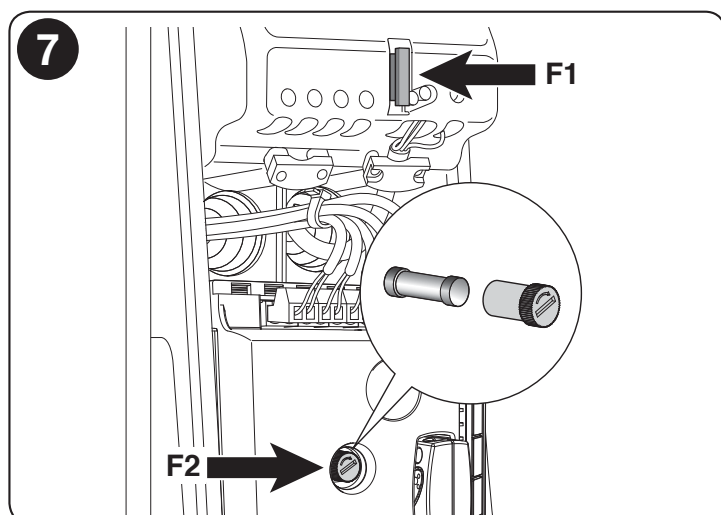
L1	Description
Off	Indicates the slow "Motor closing speed" during normal operation.
On	Indicates the fast "Motor closing speed" during normal operation.
Flashes	Function programming in progress
L2	Description
Off	Indicates the slow "Motor opening speed" during normal operation.
On	Indicates the fast "Motor opening speed" during normal operation.
Flashes	- Function programming in progress - If it flashes together with LED L3, the user must run the recognition phase of the door opening and closing positions (Paragraph 7.3).
L3	Description
OFF	During normal operation the device indicates "Automatic closing" is inactive.
On	During normal operation the device indicates "Automatic closing" is active.
Flashes	- Function programming in progress - If it flashes together with LED L2, the user must run the recognition phase of the door opening and closing positions (Paragraph 7.3).
L4(R) (radio)	Description
On	During normal operation it indicates that a radio code not present in the memory has been received.
Flashes	Transmitter programming or deletion under way

## 10 TROUBLESHOOTING

Table 26 contains useful instructions to help you solve malfunctions or errors that may occur during the installation stage or in case of fault.

**Table 26 - Troubleshooting**

Problem	Solution
The radio transmitter does not control the door and the LED on the transmitter does not light up	Check whether the transmitter batteries are exhausted and replace them if necessary.
The radio transmitter does not control the door and the LED on the transmitter lights up	- Check whether the transmitter has been memorised correctly in the radio receiver. - Check that the transmitter emits the radio signal correctly by means of the following empirical test: press a key and place the LED against the antenna of a common radio (ideally a low-cost product) that is switched on and tuned to 108.5 Mhz FM, or as close as possible to this frequency; a slight crackling sound should be heard.
No manoeuvre starts and the OK LED fails to flash	Check whether the gearmotor is powered at 230 V mains voltage. Check that fuses F1 and F2 have not blown; if they have, identify the cause of the fault then replace them with ones having the same current rating and characteristics ( <b>Fig. 7</b> ).
No manoeuvre starts and the warning light is off	Check that the command is actually received. If the command reaches the Step-by-Step input, the OK LED flashes twice indicating that the command has been received.
The manoeuvre does not start and the courtesy light flashes a few times	Count the number of flashes and check them against the data shown in Table 23.
The manoeuvre starts but is immediately followed by a brief reverse run	The selected force value may be too low to move the door: check whether there are any obstacles and, if necessary, select a higher force value.
The position search function cannot be started	Check that no limit switch has been pressed. Release the motor and bring the door to its midway point, then lock the motor again.



## 11 PRODUCT DISPOSAL

**This product constitutes an integral part of the automation and, therefore, must be disposed of together with it.**

Similarly to the installation phase, once the product reaches the end of its useful life, the disassembly and scrapping operations must be performed by qualified personnel.

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

**⚠ WARNING! - Some parts of the product may contain polluting or hazardous substances which, if released into the environment, constitute serious environmental and health risks.**



As indicated by the adjacent symbol, the product may not be disposed of together with domestic waste. Sort the materials for disposal, according to the methods envisaged by current legislation in your area, or return the product to the retailer when purchasing an equivalent product.

**⚠ WARNING! - Local regulations may envisage the application of heavy fines in the event of improper disposal of this product.**

## 12 MAINTENANCE

To ensure constant safety levels a long service life, the system must be serviced regularly: at least every 6 months or after maximum 4,000 movements since the last service.

**⚠ Maintenance operations must be performed in strict compliance with the safety precautions provided in this manual and according to the applicable laws and regulations.**

For the other devices besides TEN, observe the procedures set forth in the respective maintenance schedules.

01.	Disconnect the power supply.
02.	Check for any deterioration in automation system components, paying special attention to erosion or oxidation of the structural parts. Replace any parts that are below the required standard.
03.	Check the state of wear of moving parts: telescopic arms, counterweight cables and all door components; if necessary replace them.
04.	Connect the electric power sources again and run all the tests and checks described in Paragraph "6.1 Testing".

# 13 TECHNICAL SPECIFICATIONS

All technical specifications stated herein refer to an ambient temperature of 20°C (± 5°C). • Nice S.p.A. reserves the right to modify its products at any time when deemed necessary, while nonetheless maintaining their intended use and functionality.

Technical specifications:	TEN			
	TN2020L	TN2030L	TNLKCE	TN2030L+TN2020L
Model type	/	Electromechanical gearmotor for the automatic movement of protruding and non-protruding overhead doors for residential use, inclusive of electronic control unit		
Product type	/	Electromechanical gearmotor for the automatic movement of protruding and non-protruding overhead doors for residential use, inclusive of electronic control unit		
Maximum inrush torque	320 Nm	320 Nm	280 Nm	420 Nm
Nominal torque	220 Nm	220 Nm	200 Nm	280 Nm
Speed (no load)	1.4 rpm (24 V $\text{---}$ )	1.7 rpm; the control unit allows for programming 2 speeds, equal to: 1 rpm or 1.7 rpm		
Nominal torque speed	0.9 rpm (24 V $\text{---}$ )	1.2 rpm		
Maximum frequency of operating cycles (the control unit limits the cycles to the maximum shown in Table 20, Paragraph 8.5.2) *	25 cycles/hour	20 cycles/hour	15 cycles/hour	10 cycles/hour
Maximum continuous operating time (the control unit limits continuous operation to the maximum shown in Table 20, Paragraph 8.5.2) **	14 minutes	11 minutes	10 minutes	8 minutes
Application limits	TEN can generally automate balanced doors with a surface area of up to 8 m <sup>2</sup> with 1 motor and up to 14 m <sup>2</sup> with 2 motors, according to the limits shown in Table 2.			
Durability	Estimated between 10,000 and 50,000 cycles, depending on the conditions shown in Table 22 (Paragraph 8.6.2)			
TEN power supply	24 V $\text{---}$ (-30% +50%)	230 V $\sim$ (-10% +15%) 50/60 Hz		
TEN/V1 power supply		120 V $\sim$ (-10% +15%) 50/60 Hz		
Maximum power draw with 1 motor Maximum power draw with 2 motors	130 W (5.5 A)	220 W (1 A)	200 W (0.9 A)	330 W (1.4 A)
Electrical isolation class	III	I	I	I
Power supply with back-up batteries	No			
Courtesy light	LED internal light			
Warning light output	/	For 1 ELDC warning light (12 V, 21 W lamp)		
Phototest/electric lock output	/	24 V $\text{---}$ /2 W		
STOP input	/	For normally closed, normally open or 8.2 k $\Omega$ fixed resistance contacts; with self-recognition (any variation from the memorised status triggers the "STOP" command)		
SbS input	/	For normally open contacts (closing of the contact triggers the Step-by-Step command)		
Radio ANTENNA input	/	52 $\Omega$ for RG58 or similar type cable		
Radio receiver	/	Incorporated		
Programmable functions	/	3 ON-OFF and 3 adjustable functions (see Tables 8 and 10).		
Auto-recognition functions	/	Auto-recognition of the "STOP" type of device (NO, NC contact or 8.2 k $\Omega$ resistor). Auto-recognition of the door opening and closing positions and calculation of the slowdown and partial opening points		
Operating temperature	-20°C ... +55°C			
Protection rating	IP 44			
Dimensions	512 x 150 x h 158 mm			
Weight	7.2 kg	9.5 kg	15.5 kg	
<b>Notes:</b>				
* At 50°C the maximum operating frequency is (cycles/hour):	6	4	4	3
** At 50°C the maximum continuous operation time is (minutes):	6	5	5	4

<b>Incorporated radio receiver</b>	
Product type	4-channel receiver for radio remote control
Frequency	433.92 MHz
Coding	52-bit FLOR-type digital rolling code 64-bit SMILO-type digital rolling code
Transmitter compatibility (1)	Supported protocols: FLOR, O-CODE, SMILO
Memorisable transmitters	Up to 100 if memorised in Mode 1
Input impedance	52 $\Omega$
Sensitivity	better than 0.5 $\mu$ V
Transmitter range	Up to 150 m in open range; up to 35 m inside buildings. This range can vary considerably if there are obstacles and electromagnetic disturbances, and depends on the position of the receiving antenna
Outputs	For commands as per Tables 12 and 14
Operating temperature	-20°C ... +55°C
Note (1): the first transmitter inserted also determines the type of those introduced subsequently	

## **EU Declaration of Conformity (No. 251/TN) and declaration of incorporation of “partly completed machinery”**

Note - The contents of this declaration correspond to that stated in the official document filed in the offices of Nice S.p.A. and, in particular, the latest version thereof available prior to the printing of this manual. The text herein has been re-edited for editorial purposes. A copy of the original declaration can be requested from Nice S.p.A. (TV) Italy.

Revision: **7**

Language: **EN**

**Manufacturer's name:**

NICE S.p.A.

**Address:**

Via Pezza Alta 13, 31046 Rustignè di Oderzo (TV), Italy

**Subject authorised to draw up the technical documentation:**

NICE S.p.A.

**Product type:**

“TEN” electromechanical gearmotor with incorporated control unit

**Model / Type:**

TNLKCE, TN2030L, TN2020L

**Accessories:**

ELDC, EPMA

The undersigned, Roberto Griffa, as Chief Executive Officer, hereby declares under his own responsibility that the above-mentioned product complies with the provisions of the following directives:

- Directive 2014/53/EU (RED)
  - Health and safety (Art. 3(1)(a)): EN 62479:2010
  - Electrical safety (Art. 3(1)(a)): EN 60950-1:2006+A11:2009+A12:2011+A1:2010+A2:2013
  - Electromagnetic compatibility (Art. 3(1)(b)): EN 301 489-1 V2.2.0:2017, EN 301 489-3 V2.1.1:2017
  - Radio spectrum (Art. 3(2)): EN 300 220-2 V3.1.1:2017

In addition, the product conforms to the following directive in accordance with the provisions applicable to “partly-completed machinery” (Annex II, Part 1, Section B):

Directive 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 regarding machinery and amending Directive 95/16/EC (recast).

- It is hereby declared that the relevant technical documentation has been compiled in accordance with Annex VII, Part B, of Directive 2006/42/EC and that the following essential requirements have been applied and fulfilled: 1.1.1- 1.1.2- 1.1.3- 1.2.1-1.2.6- 1.5.1-1.5.2- 1.5.5- 1.5.6- 1.5.7- 1.5.8- 1.5.10- 1.5.11

- The manufacturer undertakes to transmit, in response to a reasoned request by the national authorities, relevant information on the “partly-completed machinery”, without prejudice to the intellectual property rights of the manufacturer of the “partly-completed machinery”.

- If the “partly-completed machinery” is commissioned in a European country with an official language other than the language used in this declaration, the importer must include a translation to accompany this declaration.

- The “partly-completed machinery” must not be commissioned until the final machine in which it is to be incorporated is declared to conform to the provisions of Directive 2006/42/EC, if applicable.

The product also complies with the following standards:

EN 60335-1:2012+A11:2014

EN 62233:2008

EN 60335-2-103:2015

EN 61000-6-2:2005, EN 61000-6-3:2007+A1:2011

Place and Date: Oderzo, 12 July 2017

Mr **Roberto Griffa** (Chief Executive Officer)







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

**WARNINGS**

- Keep at a safe distance from the moving door until it is completely open or closed; do not transit through the passage until the door is completely open and has come to a standstill.
- Do not allow children to play near the door or with its controls.
- Keep the transmitters away from children.
- Suspend the use of the automation immediately as soon as you notice any abnormal operation (noises or jolting movements); failure to follow this warning may cause serious danger and accidents.
- Do not touch moving parts.
- Regular checks must be carried out by qualified personnel according to the maintenance schedule.
- Maintenance or repairs must only be carried out by qualified technical personnel.
- Send a command with the safety devices disabled:

If the safety devices malfunction or are out of order, the door may still be moved.

01. Command the door with the transmitter. The door will open normally if the safety devices give the enable signal, otherwise the control must be activated and held within 3 seconds.
02. After roughly 2 seconds the door will start moving in the "man present" mode, i.e. so long as the control is held 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.

**Unlocking  and locking  the gearmotor (manual operation)**

**Before carrying out this operation, bear in mind that the gearmotor can only be released once the door has come to a standstill.**

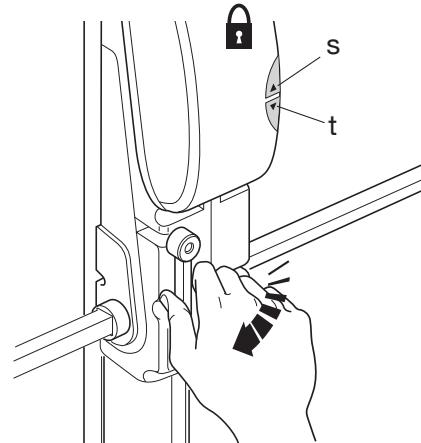
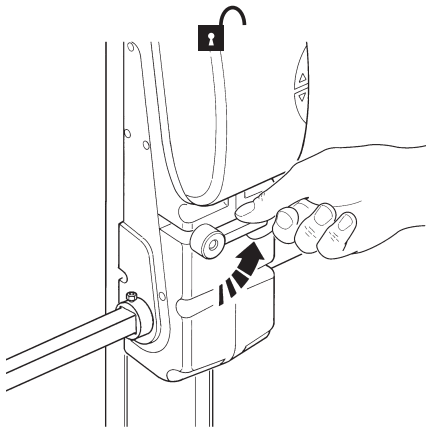
The gearmotor is equipped with a mechanical system that allows for manually opening and closing the door.

Manual operation must be performed in the case of a power outage or in the event of anomalies affecting the system.

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.

**To release the gearmotor: turn the lever anti-clockwise and move the door manually.**

**To lock the gearmotor: turn the lever clockwise until it reaches the vertical position again then manually move the door until it clicks into place.**



**• Maintenance operations permitted to the user**

- 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. If a back-up battery is fitted, disconnect it.



**Nice S.p.A.**  
Via Pezza Alta, 13  
31046 Oderzo TV Italy  
info@niceforyou.com

[www.niceforyou.com](http://www.niceforyou.com)