(I)

Centrale elettronica di controllo per attuatori: SPIDER 6060 SPIDER 6065 SPIDER 6100

Manuale d'istruzione per installazione

(GB)

Electronic control unit for: SPIDER 6060 SPIDER 6065 SPIDER 6100 actuators

Installation instruction manual

(F)

Centrale électronique de contrôle pour pédateurs: SPIDER 6060 SPIDER 6065 SPIDER 6100

Manuel d'instructions pour l'installation

(D)

Elektronische Steuerzentrale für die Antriebe: SPIDER 6060 SPIDER 6065 SPIDER 6100

Installation-sanleitungen

(E)

Central electrónica de control para los accionadores: SPIDER 6060 SPIDER 6065 SPIDER 6100

Manual de instrucciones para la instalación

QUESTO LIBRETTO È DESTINATO SOLO ALL'INSTALLATORE.
L'installazione dovrà essere effettuata solamente da personale professionalmente qualificato in conformità a quanto previsto dalla legge n° 46 del 5 marzo 1990 e successive modifiche ed integrazioni e nel pieno rispetto delle norme UNI 8612.

 **This manual is for use only by technical personnel qualified to carry out the installation.**
No information given in this manual can be considered of any interest to the end user!

This handbook is enclosed with the **SPIDER 6060, SPIDER 6065** and **SPIDER 6100** units and must not be used for different products!

IMPORTANT NOTICE:

The unit described in this handbook is designed to control an electromechanical actuator for the automation of sectional doors, counterweight overhead doors and spring overhead doors.
Any other use is considered improper and consequently forbidden by current laws.

It is our duty to remind you that you are carrying out operations on machine systems classified in the "Automatic gates and doors" category and as such are considered particularly "hazardous".
It is your job to make them as "Safe" as is reasonably possible!

 Only qualified personnel should install and service the equipment. It is the responsibility of the installer to ensure that the equipment is correctly and professionally installed in compliance with all relevant regulations and standards applicable in the country of installation.
We draw your attention to the following most important European directives - it is the installers responsibility to check what other regulations apply in the country of installation.

- EEC 89/392 (Machine Directive)
- PrEN 12453 (Safety in using motorised doors - requirements and classifications)
- PrEN 12445 (Safety in using motorised doors - testing methods)

Nice products are designed and manufactured to meet all current European standards and it is essential that the installer also installs the equipment in accordance with all local and European requirements.

Unqualified personnel or those who do not know the standards applicable to the "Automatic gates and doors" category:
Must under no circumstances carry out installations or implement systems

Personnel who install or service the equipment without observing all the applicable standards:
Will be held responsible for any damage the system may cause!

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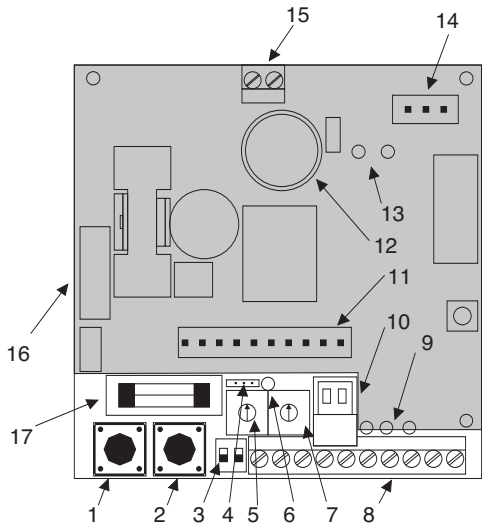
1) INTRODUCTION:

The electronic control card is suitable for the control of sectional doors, counterweight type overhead doors and spring type overhead doors, operated by the NICE SPIDER 6060 and 6080 24V electromechanical actuators with 24 Vdc motors.
The control card can provide “Hold to run control”, “semi-automatic” and “automatic” modes of operation for these units.
When the door is in operation, movement will be interrupted by activation of the safety inputs (stop and photocell).
Open and close positions are set with limit switches and braking during closing will reduce speed and noise at the end of the manoeuvre.
The 433.92 Mhz radio receiver built into the control unit is suitable for the **Flo1**, **Flo2**, **Flo4** and **Very VE** transmitters; the code is memorised with the self-learning technique.
As an alternative to the built-in radio the unit will accept any of the range of plug-in **Nice** radio receivers
The unit has been designed to guarantee maximum reliability, safety and flexibility of use

1.1) DESCRIPTION:

IMPORTANT - Before starting to install the unit read all of the instructions carefully!
Quick Reference Chart

Fig. 1



1: Programming button
2: STEP-BY-STEP BUTTON (PP)
3: Dip Switch to select functioning modes
4: Selection of slowing down speeds
5: Trimmer to adjust maximum opening force
6: OK LED
7: Trimmer to adjust maximum closing force
8: Terminal board for connection of device inputs and outputs
9: LED signalling input state
10: Terminal for the aerial if the alternative radio is used on plug 11
11: Plug for alternative radio receiver
12: Courtesy light
13: LED signalling limit switch state
14: Coupling for the limit switches
15: Terminal board for connecting the motor
16: Coupling for the power transformer
17: Rapid low voltage fuse (6060=5A) (6065=1A) (6100=1A)

: Invisible part, covered by the case

2) INSTALLATION INSTRUCTIONS:

Remember there are specific standards that have to be strictly followed regarding the safety of electrical installations and automatic gates and doors!

As well as the legal requirements and standards that must be adhered to, please take note of the following points to ensure maximum safety and reliability in your installation.

- Prior to installing check the surrounding environment. Carefully evaluate any hazards there could be from physical damage (transiting vehicles, parts of trees falling etc.,), possible contact with foreign bodies (insects, leaves ...), flooding hazards or any other exceptional events.

- Make sure that the mains voltage is the same as that given on the rating plate and in this manual.

- Check there are suitable electrical protections against short circuits and proper earthing on the mains supply.

- Remember that SPIDER has mains voltage running through it (electrocution hazard, fire hazard ...).

- Take care with the control unit, parts may be subject to damage if subjected to careless handling or high humidity etc.

- Make sure you have all the necessary materials and that they are suitable for this kind of use.

2.1) INSTALLATION:

Read all the instructions through at least once!

Before starting installation, carefully analyse all the risks relating to the automation you are about to install. Verify that the door to be automated is in a sound condition and that the mechanics are in good working order, observe the safety margins and minimum distances. Evaluate with particular care the safety devices to be installed and where to install them; always install an **emergency stop** device which should be a category 0 stop device (compulsory interruption of power to the SPIDER gearmotor) if required in the country of installation.

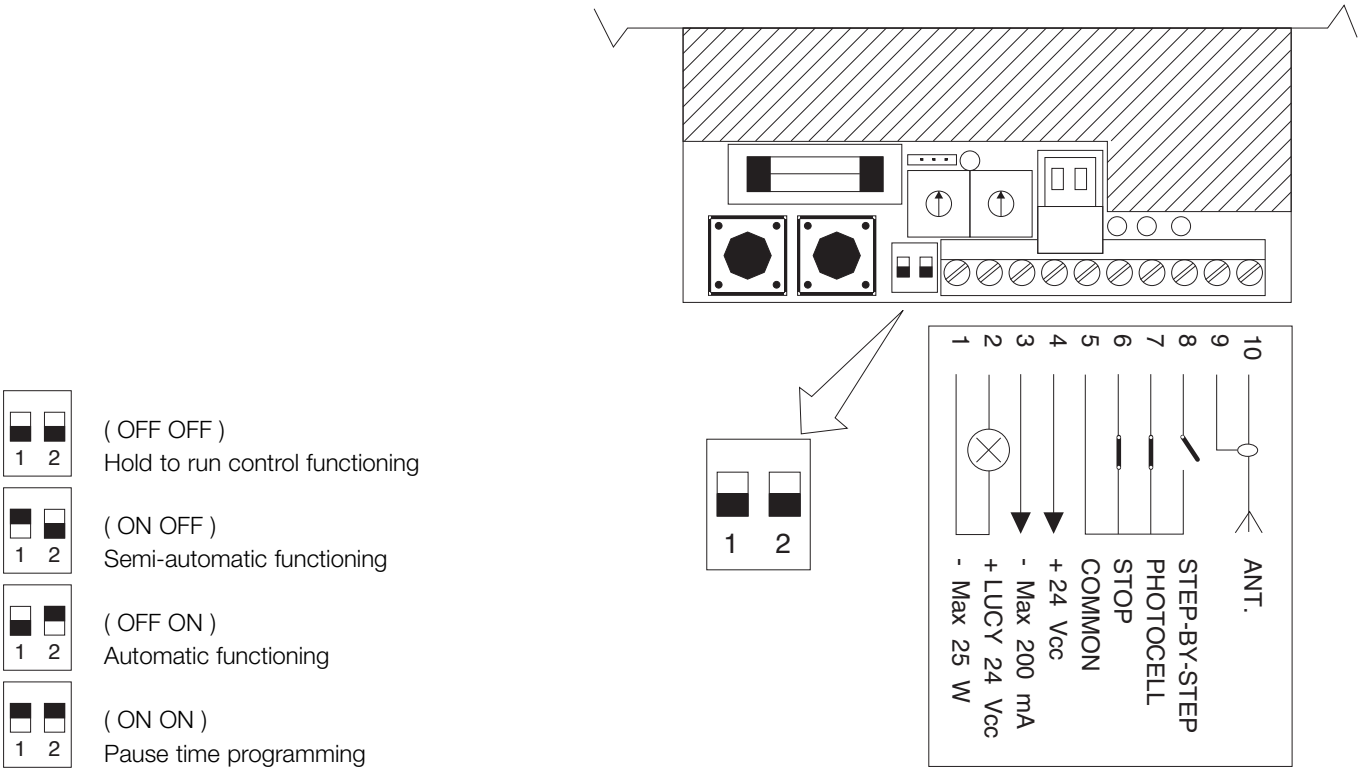
Once the risks have been analysed, install the SPIDER actuator and relative control (key selector or push button panel) and safety devices (emergency stop, photoelectric cells, sensitive edges and flashing light).

When installing SPIDER, scrupulously follow all the instructions given in the instruction manual enclosed with the gearmotor. If some points are not very clear do not install the unit until all doubts have been cleared up with our TECHNICAL OFFICE.

2.2) WIRING DIAGRAM:

Once the gearmotor, control and safety devices have been installed connect the unit as follows:-

Fig. 2



To safeguard the operator and avoid damaging components while wiring:
disconnect the unit from all power when working on it.

If the inputs of the NC (Normally Closed) contacts are not used they should be linked out; if there is more than one then they should be placed in SERIES with one another; if the inputs of the NO (Normally Open) contacts are not used they should be left free. The inputs must be of the voltage free mechanical type; DO NOT USE Open Collector type inputs (“PNP”, “NPN” etc.).

Remember that there are specific, strict standards that must be complied with both as regards the safety of the electrical systems and as regards automatic gates and machines.

2.3) DESCRIPTION OF THE CONNECTIONS:

1-2 : Flashing light = Output for LUCY 24C (24 Vdc) flashing light, maximum lamp power: 25 W

3-4 : 24 Vdc = 24 Vdc output [direct current] for powering accessories (Photocells, Radio etc) max. 200 mA

5-6 : Stop = Input with STOP function (Emergency, shutdown or extreme safety)

5-7 : Photocell = Input for safety devices (Photocells, pneumatic edges)

5-8: Step-by-Step = Cyclic functioning command input (OPEN- STOP- CLOSE- STOP), same as the STEP-BY-STEP key

9-10 : Aerial = Input for the built-in receiver radio aerial

Only qualified, expert personnel may carry out installation and subsequent maintenance, in compliance with European standards and directives and following the best indications dictated by “expert workmanship”. Whoever carries out these jobs will be held responsible for any damage caused

2.4) NOTES on CONNECTIONS:

For the most part, connections are easy: a lot of them are direct connections to a single user point or contact.

- The output for connecting the flashing light **LUCY** on terminals **1** and **2**, negative and positive pole respectively, has a fixed voltage so it is necessary to use a flashing light with an electric card that generates flashing.

- The output for powering accessories on terminals **3** and **4** has a direct current (3 = negative - , 4 = positive +); pay attention to polarity when connecting the accessories.

ATTENTION: the direct current supply on the photocells made by **Nice** does not allow synchronised functioning (an alternate current supply is needed) .

- Current standards specify that very low voltage electric circuits must always refer to earth potential. Terminal **3** (0 volt) on the unit is already earthed via the gearmotor’s metal structure

2.5) INSTALLING THE AERIAL (Built-in radio):

An ABF or ABFKIT type aerial must be used if the receiver is going to work well: range is limited to a few metres without an aerial. Install the aerial as high as possible; if there are metal or reinforced concrete structures, install the aerial above them. Connect the central core of the coax to terminal 10 and the earth shield to terminal 9. If the aerial is installed in a place that is not connected to earth (masonry structures) the shield’s terminal can be earthed to provide a greater range. The earth point must, of course, be in the immediate vicinity and be of a good quality. If an ABF or ABFKIT aerial cannot be installed, you can get quite good results using the length of wire supplied with the receiver as the aerial, laying it flat and connecting it to terminal 10.

3) TESTING:

The system must be checked and tested when connections are completed.

We recommend working, initially, with all the functions disabled (dip-switches OFF). Check that the two trimmers that adjust maximum force (5 - 7 in Fig.1) are set halfway.

A) Check that the chain support is halfway so that movement is problem free both in opening and closing.

Make sure that all the standards relative to the automatic gates and doors category have been observed!

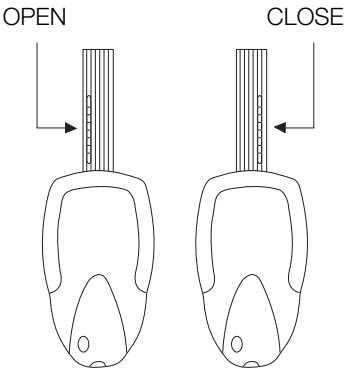
B) Power the unit and check that voltage between terminals 3-4 is 24 Vdc.
As soon as the unit is powered the indicator lights (9 see Fig.1), on the active inputs, should turn on and the OK LED should flash. As a rule the LEDs on the STOP and PHOTOCELL safety devices’ inputs are always on while the LED on the STEP-BY-STEP command input is off. If this is not the case, switch power off immediately and check connections carefully.

C) Check that all the safety devices on the unit are working properly (emergency stop, photoelectric cells, pneumatic edges, etc.); each time they trigger the corresponding STOP and PHOTOCELL LEDs should turn off.

- This is one of the most important checks and must be done with great care. In fact, the “active” safety of the automatic door depends on the correct functioning of the safety devices. The flashing light is an excellent instrument for signalling the state of danger and the torque limiting devices are a great help in minimising damage but only the correct installation of the safety devices will make it possible to stop the automatism before it can cause any damage.

D) Now carry out a test with the door disconnected from the motor, making it open and close, and press the STEP-BY-STEP button to verify that the mechanical parts are all in good working order. (Door OPEN is the first manoeuvre after power is turned back on.) When the cycle has finished hook the door back on the chain.

Fig.3



E) It is now time to position the elements sliding to the limit switch.
Press and hold down the STEP-BY-STEP button and verify that the door moves in the opening direction. If the door is stuck, turn the "OPENING FORCE" trimmer clockwise with a screwdriver (see Fig. 4) to increase maximum opening force. Keep the button pressed until the door is 1 cm from the opening point; now fit the sliding element next to the casing's edge. Now press and hold down the STEP-BY-STEP button once again and verify that the door moves in the closing direction. If the door is stuck, turn the "CLOSING FORCE" trimmer clockwise with a screwdriver (see Fig. 4), to increase maximum closing force. Keep the button pressed until the door is 1 cm from the closing point and then fit the sliding element next to the casing's edge.

F) It is now possible to try a complete movement of the actuator. Press and hold down the STEP-BY-STEP button until the door stops automatically at the end of its travel. Press the STEP-BY-STEP button once more until the door stops automatically at the end of its travel in the other direction. We suggest making the door open and close several times to see if there are any assembly or adjustment defects of the gearmotor's limit switches or if there are any points of friction.

G) It is now time to test triggering of the safety devices connected to the PHOTOCELL input: they have no effect in the opening manoeuvres while they cause the door to stop when it is closing and they also cause reversal of movement when in the semi-automatic and automatic functioning modes. The devices connected to the STOP input work in both the opening and closing manoeuvres, stopping movement.

H) Now select the functioning mode (see Fig. 2) with the dip switches, going from hold to run control to semi-automatic or automatic as required by the customer.

3.1) ADJUSTMENTS:

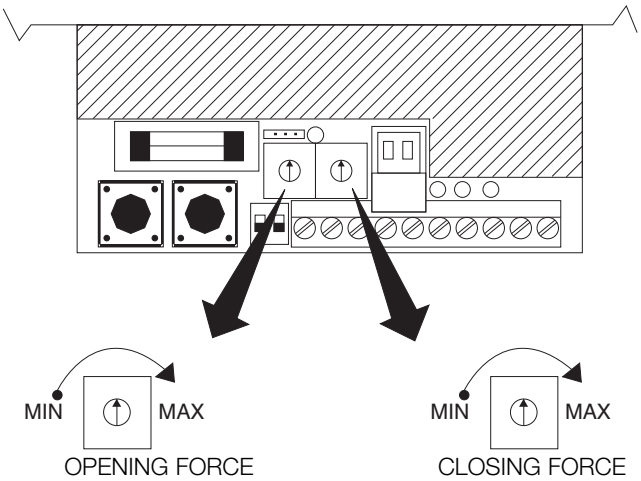
After the system has been checked it should be adjusted to guarantee the proper working order of the automation and to ensure a correct and safe operation.

The recent European standards, prEN 12453: safety in the use of motorised doors - requirements and classifications; and prEN 12445: safety in the use of motorised doors - testing methods; (not completely approved), require the use of measures to limit the forces in the movement of automatic doors equal to a maximum of 1400N as the impact force; a maximum static residual force of 150N that must cancel itself out within 5 seconds from impact.

☑ There is a system on the unit that constantly controls the force developed by the motor. If it exceeds a certain level, adjustable with the trimmers, a safety device stops and reverses movement immediately. There are two different adjustments to be made as the force needed for opening may be different to that needed for closing, especially if the door is not well balanced.

Now adjust with the trimmers (Fig. 4) to reach the values specified by the above mentioned standards.
Broadly speaking, the adjustment has to ensure a manoeuvre without the safety devices triggering due to normal mechanical friction but, at the same time, the manoeuvre should stop at the slightest pressure exerted in the opposite direction.

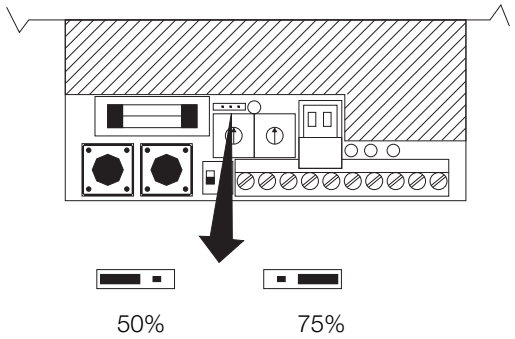
Fig. 4



☑ The unit carries out a braking procedure during the closing manoeuvre that slows speed and reduces noise in the final movement phase.

The point at which slowing down starts is calculated automatically according to the length of the previous manoeuvre; four seconds before the manoeuvre is expected to finish the unit reduces the voltage supplied to the motor and, consequently, speed.
Two different slowing down levels can be selected by means of the jumper in Fig. 5 (50% or 75% of speed). The slowing down level you have just selected is effective immediately but as it is calculated on the previous manoeuvre, several complete manoeuvres are necessary to establish the actual slowing down point.

Fig.5



3.2) FUNCTIONING MODES:

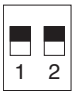
The unit has two dip switches that are used to activate the various functioning modes and to render the system suitable to the user's requirements and safer to use.
The unit has three distinct functioning modes, hold to run control, semi-automatic and automatic plus pause time programming.

ATTENTION: some of the functioning modes are linked to safety aspects: carefully evaluate the effects of a function and see which function gives the greatest possible level of safety.
When servicing a system, before you modify a programmable function, evaluate why certain choices were made when it was installed and then verify if safety will be influenced with the new programming.

HOLD TO RUN CONTROL FUNCTIONING
When in the manual functioning mode (dip switch 1=OFF 2=OFF) you can have opening and closing by pressing the STEP-BY-STEP button.
This movement will continue only while the button is pressed and will stop as soon as it is released.
If STOP triggers, movement will stop immediately whether the door is opening or closing. Once a movement has been stopped the step-by-step button has to be pressed again to start another movement.
If the PHOTOCELL triggers it has no effect on an opening manoeuvre while in closing it causes movement to stop. In the functioning of the gearmotor, in the opening and closing manoeuvres the motor will run for a maximum of 60 seconds for safety reasons. If movement is prevented for any reason the gearmotor will switch itself off when the preset working time has elapsed.

SEMI-AUTOMATIC FUNCTIONING MODE
When operating in the semi-automatic mode (dip switch 1=ON 2=OFF) a command pulse on the STEP-BY-STEP input enables the alternative opening and closing movement according to the OPEN-STOP-CLOSE-STOP sequence. A STOP command will always stop movement immediately, whether the door is opening or closing. Once movement has stopped a new command pulse must be given to start another movement. A PHOTOCELL command has no effect in opening while in closing it causes movement to stop and reverses movement.
In the semi-automatic function the opening and closing manoeuvres also take a maximum of 60 seconds.

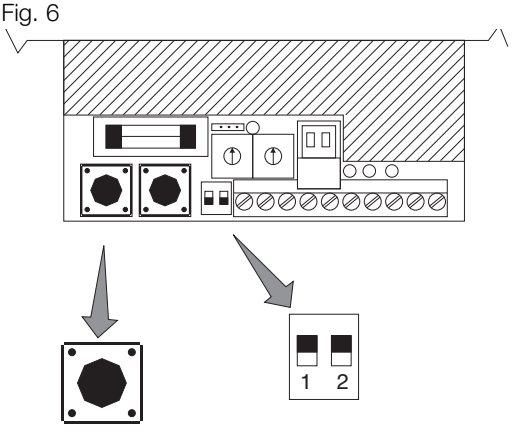
AUTOMATIC FUNCTION
If the automatic functioning mode has been chosen (dip switch 1=OFF 2=ON), an opening manoeuvre is followed by a pause (the length of time is programmable) and then by a closing manoeuvre.
If, during the pause time, the PHOTOCELL triggers, the timer will be reset with a new pause time; operation of the STOP during pause time will cancel the closing function and leave the unit in a STOP state. In the automatic function the opening and closing manoeuvres will also take a maximum of 60 seconds.



PROGRAMMING PAUSE TIME
If the automatic functioning mode is selected, an opening manoeuvre is followed by a "pause" followed automatically by a closing manoeuvre. If pause time is not programmed it will last 30 seconds.
To programme pause time, during which the door stays open, proceed as follows:

1) Turn both dip switches ON
2) Press the programming button and hold it down.
3) Count the number of flashes of the courtesy light (1 second intervals).
4) Release the button when it reaches the time you want.
5) Put the dip switches back in the position for automatic functioning.

Fig. 6

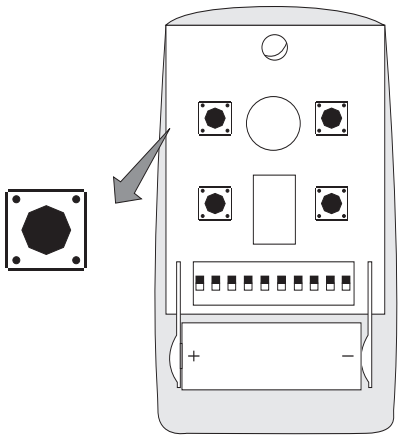


PROGRAMMING BUTTON

4) SELF-LEARNING RADIO:

The unit includes a 433.92 Mhz radio receiver suitable for **Flo1, Flo2, Flo4** and **Very VE** transmitters
Since the radio has a built-in self-learning system it is very simple to memorise the transmitter code.

Fig.7



To memorise the code proceed as follows:

1) If you are using a **Flo** transmitter select the code by means of the 10 microswitches.
   For other types of remote controls you will have to select the code according to the specific instructions.
2) Press and hold down the programming button on the unit (Fig. 6).
3) Press the button wanted on the transmitter (Fig. 7).
4) Wait until the courtesy light on the gearmotor turns on (about 2 seconds).
5) Let go of both buttons.

The code is now stored and you can verify it straight away.
The unit recognises only one code. If you memorise another code the first one will be cancelled. Hence, if several transmitters are used select the same code via the microswitches.

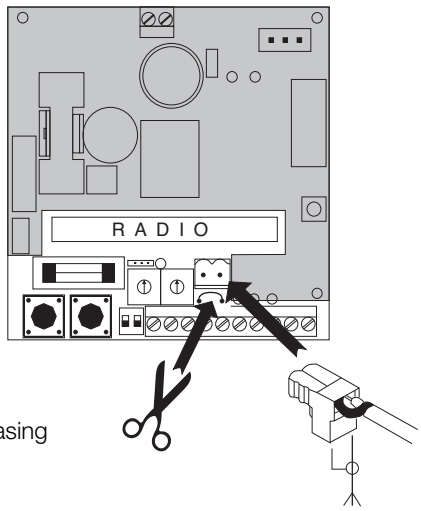
4.1 ADDING AN ALTERNATIVE RADIO:

There is a supplementary connector on the card for plugging in Nice RADIO receivers as an alternative to the radio already included on the card. We recommend waiting until installation is complete before plugging in any alternative RADIO card and only after having verified that the system works.

Fig.8

To plug in the alternative radio follow these instructions carefully:

1) Cut power off to the gearmotor by pulling the plug out.
2) Unhook the transparent cover on the external casing.
3) Remove the plastic guard on top of the adjustment trimmers.
4) Pull the external aerial's connection terminal out (Fig. 8) and connect the aerial cable to it, paying attention to polarity.
5) Use a pair of cutters to cut the jumper underneath the aerial's connector as shown in (Fig.8).
6) Plug the alternative radio in the connector.
7) Put the aerial terminal back in its connector as shown in Fig. 8.
8) Programme the radio as described in the alternative radio receiver instructions.



: Invisible part, covered by the casing

5) MAINTENANCE:

No particular maintenance is required for the electronic card. However, check at least twice a year the proper working order and adjustment of the device that controls maximum motor thrust and, if necessary, adjust with the trimmers (see chap.3.1).
Check that the safety devices are working effectively (photoelectric cells, pneumatic edges, etc.) and check operation of the flashing light.

6) INFORMATION ON MEASURES TO PROTECT THE ENVIRONMENT:

This product is made with different types of recyclable materials.
Inquire about recycling or dispoasl methods of the product,complying with the current local laws.

TECHNICAL DATA:

Power	: 230 Vac ±20% , 50 Hz
Max. flashing light power	: 25 W a 24 Vdc (the output has a fixed voltage)
Max accessories current, 24 V	: 200 mA
Max work time	: 60 Seconds.
Pause time	: Programmable from 1 to 120 Seconds.
Courtesy light time	: 60 Seconds.
Working temperature	: -20 °C ÷ 70 °C

TECHNICAL DATA OF THE BUILT-IN RECEIVER:

Reception frequency	: 433.92 Mhz
Sensitivity	: greater than 1 µV for a correctly received signal (average range 100-150 m. with an ABF - ABFKIT aerial)
Decoding	: digital (4096 combinations) suitable for FLO1, FLO2. FLO4 trasmitter.

Nice SPA reserves the right to modify its products at any time without prior notice.

FINAL NOTES:

This manual is only for use by technical personnel qualified to carry out the installation.

- No information given in this manual can be considered of any interest to the end user!
- No settings or adjustments contained in this manual can be carried out by the end user!

☑ Once the system is finished inform the end user, in detail also in writing, how to use the automatism, about residual hazards and about how to use the manual unlock device in the event of a power cut.

☑ Inform the owner of the system about the need for a regular and accurate maintenance, especially regarding a regular check of the safety and torque limiting devices.

☑ The person who installs the automation must always issue a test report and attach it to the technical documentation.

☑ The installer must write the declaration of conformity in accordance with the European 93/68 EEC (and subsequent amendments) and give a copy to the owner of the system.