

**DICHIARAZIONE DI CONFORMITÀ CE**

Il fabbricante Fratelli Comunello S.p.A., con sede a Rosà, Via Cassola (VI), Italia

Dichiara sotto la propria responsabilità che:

L'attuatore modello:

LIWIN L25 (230V)

LIWIN L35 - L35 2WNET - L35 3WNET - L35 4WNET (230V) LIWIN L35R - L35R 2WNET- L35R

3WNET- L35R 4WNET (230V) LIWIN L35 - L35 2WNET- L35 3WNET- L35 4WNET (24V)

Matricola e anno di costruzione: posti sulla targa dati.

Descrizione: **attuatore elettromeccanico per finestre, lucernai, e cupole**

è conforme alle disposizioni legislative che traspongono le seguenti direttive:

- 2014/30/EU (Direttiva EMC) • 2011 /65/EU (Direttiva RoHS)
- 2014/35/EU (Direttiva LVD)
- 1999/5/CE (Direttiva R& TIE)

e che sono state applicate tutte le norme e/o specifiche tecniche di seguito indicate

EN55014-1:2006 + A1:2009

ETSI EN 300 220-1 V2. 4. 1

EN61000-6-3:2007

ETSI EN 300 220-2 V2. 4. 1

EN61000-6-2:2005

ETSI EN 301 489-1 V1. 9. 2

EN60335-1:2012 + AC:2014 + A11:2014

ETSI EN 301 489-3 V1. 6. 1

ed emendamenti successivi

Luca Comunello

Rappresentante legale di Fratelli Comunello S.p.A.

Rosà, il 21/04/2016

## Notes

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# 1. GENERAL INFORMATION

## 1.1 Introduction to this manual

Please read carefully and follow the instructions detailed in this manual. Keep the manual for use and future maintenance. Pay attention to the configuration of the DIP-switches, to the data concerning the performance (see "Technical Data") and to the installation instructions. Improper use or incorrect operation, fitting or assembly can damage the system as well as cause injury to people and damage to property.

The assembling instructions are available on the official web site  
<http://www.comunello.com/mowin>

## 2. SAFETY

This installation manual is written exclusively for competent professional personnel.

The installation, electrical connections and adjustments must be carried out conforming to good practice and according to the regulations in force. Incorrect installation can cause a potential hazard. The packing materials (plastic, polystyrene, etc.) must not be allowed to pollute the environment, but must be disposed of correctly, and must not be left within the reach of children since they can cause possible hazards. Before starting installation, check the product is complete and undamaged.

If the power cable is damaged, it must be replaced by the manufacturer or his technical support or a similarly qualified person in order to avoid any risks.

Do not install the product in an explosive environment or atmosphere: the presence of flammable gas or fumes is a serious health and safety hazard.

Before installing the drive mechanism, put in place all the structural modifications relating to safety measures and to the protection or segregation of all the zones involving hazards of crushing, shearing, entrapment and of general hazard. Check that all the existing structure has the necessary requirements of strength and stability. The manufacturer of the drive mechanism is not responsible for failing to conform to good practice in the construction of the windows to be opened, as well as any distortion which could occur during use.

Put up the notices laid down by current regulations to identify hazardous areas.

Ensure that the electrical supply is not a temporary one, but has the required electrical boxes, and in case of doubt or lack of (definite) information, also install:

- suitable isolating transformers;
- thermal magnetic cut-outs suitable to voltage requirements;
- surge arrester.

Before connecting the electrical supply, ensure that the electrical rating correspond to that of electrical distribution supply. Fit onto the supply network an allpole switch with a contact gap of at least 3 mm.

Check that on the supply side of the electrical plant there is a suitable differential residual current circuit breaker and overload protection.

When required to do so, connect to an efficient earthing/ground system fitted according to the safety regulations in force in the country where the actuator is being installed. Before carrying out any operation (installation, maintenance or repair), isolate the electrical supply before working on the equipment. To ensure complete isolation from the supply current, installation is recommended of a double-pole switch of the approved type. The low-voltage 24 Vdc actuators must be supplied by suitable power supplies (NOT TRANSFORMERS) of an approved Class II type (double safety insulation) having an output voltage of 24 Vdc -15% to +20% (or from 20.4 Vdc min. to 28.8 Vdc max.) When using the 24 Vdc version, the cable must have a suitable cross-section, calculated based on the distance between the power supply and the actuator, so as not to have a voltage drop or loss.

Cross section of cables	Max length of the cable
1,50 mm <sup>2</sup>	~ 100 m
0,75 mm <sup>2</sup>	~ 50 m

The device is not intended to be used by people (including children) whose physical, sensory or mental capabilities are reduced or by people who lack in experience or knowledge, unless a person responsible for their safety can control them or give them instructions concerning the use of the device. Children must be supervised to ensure that they do not play with the device.

The **Liwin** chain actuator is intended only and exclusively for use for which it was designed, and the manufacturer cannot be held responsible for damage due to its improper use. The actuator is intended exclusively for internal installation to open top-hung and bottom-hung windows, skylights, dormer windows and roof windows. Any other use is not recommended unless with the prior approval of the manufacturer. Install the actuator according to the instructions shown in this manual.

Any apparatus serving and controlling the actuator must be produced according to the regulations in force and respect the relevant standards issued by the European Community.

If the actuator is installed on a window at a height of less than 2.5 m from the floor and in buildings (public and otherwise) in which the use of destination is not clear, it must be operated exclusively by a command which is not accessible by public (key button).

The command button has to:

- 1) be placed at a height of 1500 mm from the floor
- 2) be positioned so that, at its activation, a person who carries the opening and closing has within its field of view all the moving parts.

Do not wash the apparatus with solvents or jets of water. Do not immerse the apparatus in water.

Any repair must be carried out by qualified personnel (the manufacturer or an authorised service centre).

Always insist that only original spare parts are used.

Failure to use the original spare parts could compromise the correct operation of the product and the safety of people or property, also annulling the effects of the guarantee enclosed with the apparatus.

In case of any problems or doubt, contact the point of sale where the product was purchased or the manufacturer directly.

### 3. TECHNICAL DATA

#### 3.1 Table of technical data and mark

The CE mark certifies that the actuator conforms to the essential health and safety requirements laid down by European product directives. The CE mark can be identified by the relevant adhesive label applied to the outside of the product, on which are shown some of the data shown in the following table:

	Liwin	Liwin 2W-Net Liwin 3W-Net Liwin 4W-Net	Liwin R	Liwin 2W-Net R Liwin 3W-Net R Liwin 4W-Net R
Model L35 230Vac	ML35S140Hy00*	ML35Sx40Hy00**	ML35R140Hy00*	ML35Rx40Hy00**
Model L35 24Vdc	ML35S140Ly00*	ML35Sx40Ly00**	-	-
Model L25 230Vac	ML25S138Hy00*	-	-	-
Power supply ac voltage	230 Vac	230 Vac	230 Vac	230 Vac
Power supply dc voltage	24 Vdc	24 Vdc	-	-
Frequency of ac voltage	50 Hz	50 Hz	50 Hz	50 Hz
Operation	S2 4 min			
Push/Pull strength L35	350 N	F total X 0,7	350 N	F total X 0,7
Push/Pull strength L25	250 N	-	-	-
Stroke speed unloaded	18 mm/s			
Protection class	IP44			
Double insulation ac	yes			
Double insulation dc	low voltage			
Motor voltage V ac L35	0,19 A	0,19 A	0,19 A	0,19 A
Motor voltage V ac L25	0,14 A	-	-	-
Motor voltage V dc	1 A	1 A	-	-
Power L35	28 W	28 W	28 W	28 W
Power L25	22 W	-	-	-
Operating temperature	-5 / +50 °C			
Strokes L35	50 - 100 - 150 - 200 - 250 - 300 - 350 - 400 - 420 mm			
Strokes L25	200 - 250 - 380 mm			
Closed limit switch	on impact			
Soft Start/Soft Stop	yes / yes	yes / yes	yes / yes	yes / yes
Obstacle detection	yes	yes	yes	yes
Connection in parallel	yes ( max 30 actuators )			
Synchronisation	no	yes	no	yes
Dimensions	390x38x73 mm			

\* Replace "y" with the colour code: 0B black, 0W white, 0G grey.

\*\* Replace "x" with synchronisation value: 2 = two actuators, 3 = three actuators, 4 = four actuators.

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## 4. ACTUATOR

### 4.1 Types of power supply

The **Liwin** series of actuators is available in various models and colours in two electrical supply versions:

- 230 Vac - can be supplied with mains power 230 Vac (50 Hz) (with a tolerance of  $\pm 10\%$ ), with a three-core supply cable: BLUE, neutral common; BLACK, open phase; BROWN, closed phase.
- 24 Vdc - can be supplied with a voltage of 24 Vdc with a two-core supply cable: BLUE, connected to the + (positive) closed; BROWN, connected to the + (positive) open.

### 4.2 Calculation of the force necessary

The calculation is made without considering the loads due to atmospheric agents.

**Key to symbols** F = Force required to open in N (Newton)

P = Weight of the window (only moveable part) in kg (kilogrammes)

C = Opening travel of actuator in cm (centimetres)

H = Height of the openable part of the window in cm (centimetres)

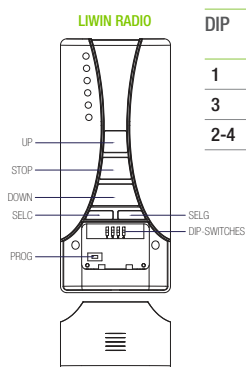
Bottom-hung inward opening	Top-hung outward opening	Horizontal skylight
$F = [(P / 2) \times (C/H)] \times 9.8$	$F = [(P / 2) \times (C/H)] \times 9.8$	$F = (P / 2) \times 9.8$

For all the W-net systems the total push force of the synchronized actuator can be calculated by creating a sum of the force of every single actuator and the subtracting 30% of the force remaining.

### 4.3 Pack and tools required for assembling the actuator

The actuator is packed individually in a cardboard box. Each pack contains: electric actuator, 230 Vac 50 Hz or 24 Vdc, with electric supply cable, support brackets, fixing bracket for top-hung window, fixing bracket for bottom-hung window, drilling template and instruction manual. Before starting to fit the actuator, we recommend preparing the following fitting materials, tools and equipment: Metre rule or tape measure, pencil, drill/screwdriver, set of drill bits for metal or wood, set of screw bits, electrical pliers, screwdrivers, screws and/or threaded inserts suitable for the type of window material. AVOID using self-tapping screws and/or three-lobed screws on any metal windows.

## 5. PROGRAMMING FUNCTION WITH R- CONTROL



DIP	Function
1	Storage of the transmitters
3	Deletion of all the stored transmitters
2-4	Not used

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### 5.1. DIP-SWITCH 1: STORAGE OF THE TRANSMITTERS

To store a transmitter TX1 on a blank actuator proceed as follows:

To store a transmitter on a blank actuator proceed as follows:

- A Prepare the electrical connection to the main voltage 230 VAC, but do not connect the actuator
- B Set the transmitter dip-switch no.1 into ON position (all the other dip-switches must be in OFF position)
- C R6 control only: press the key SELC of the transmitter repeatedly, until displayed by the leds the selected channel
- D Connect the actuator to the 230 VAC voltage
- E Within 5 sec press and hold (for about 3/4 sec) the key PROG of the transmitter TX1
- F Release the key PROG
- G Set the transmitter dip-switch no.1 into OFF position
- H Wait 10 sec
- I Pressing the keys UP or DOWN, the actuator moves in opening/closing direction

To add another transmitter to the actuator it is necessary to use a remote control previously programmed transmitter and proceed as follows:

- A R6 control only: press the key SELC of the already programmed transmitter repeatedly, until displayed by the led the selected channel
- B Set the dip-switches no.1 into ON position of both transmitters
- C Press and hold for 15 seconds the key PROG of the transmitter 1 already programmed
- D Release the key PROG of transmitter 1
- E Within 5 seconds press and hold for 5 seconds the key PROG of the transmitter 2 to be programmed
- F Set the transmitter dip-switch no. 1 of transmitters 1 and 2 into OFF position
- G Wait 10 seconds
- H Pressing the keys UP or DOWN the actuator moves in opening/closing direction

#### **5.2.DIP-SWITCH 3: DELETION OF ALL THE STORED TRANSMITTERS**

**To delete all the transmitters stored on the actuator it is necessary using a remote control previously stored and proceed as follows:**

- A Power only the actuator to be reset
- B R6-CONTROL only: press the key SELC on the transmitter repeatedly until displayed the channel stored (by the leds)
- C Set the transmitter dip-switch no.3 into ON position
- D Press and hold for at least 10 seconds the key PROG of the transmitter
- E Leave the key PROG and set the remote dip-switch no.3 into OFF position

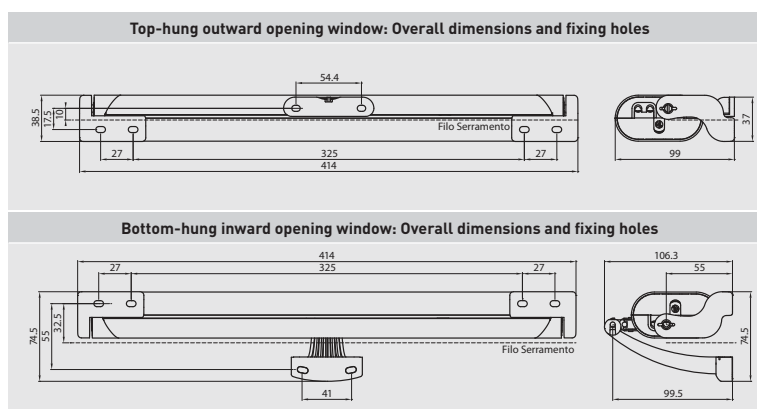


## 6. INSTALLATION



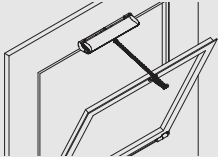
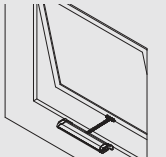
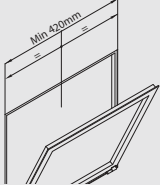
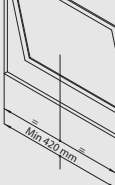
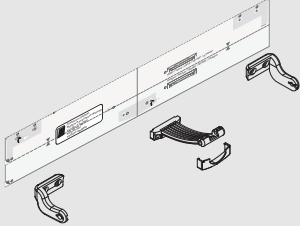
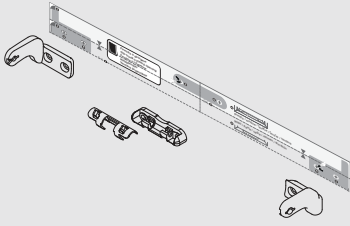
With bottom-hung windows, there is a danger of potential injury resulting from the window accidentally falling.

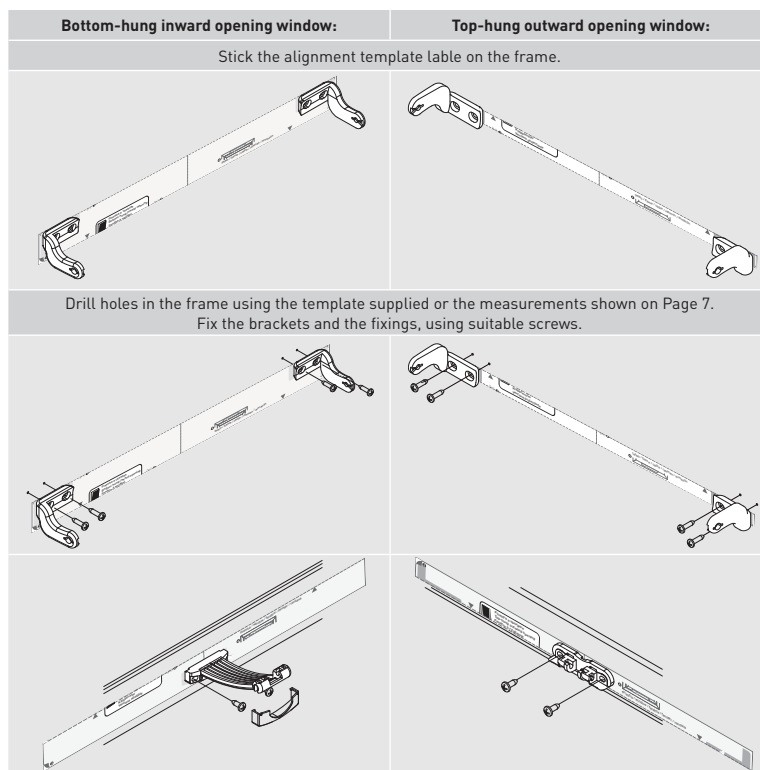
It is **OBLIGATORY** to fit limiting arms (of the Series 1276 type), or an alternative safety system, of a suitable size to prevent the window from accidentally falling down.

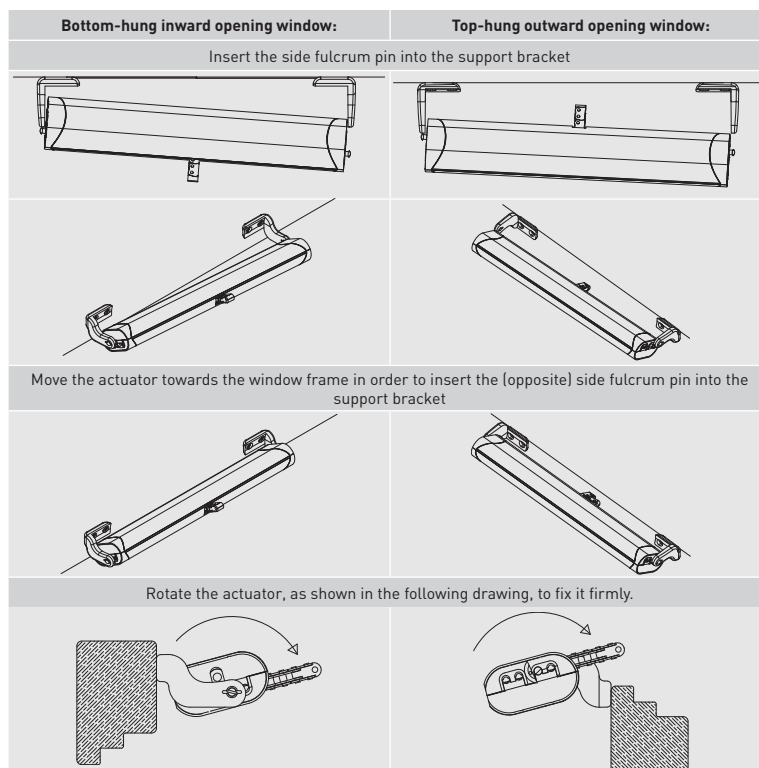


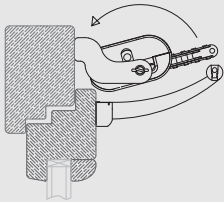
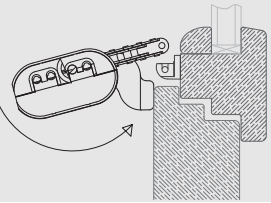
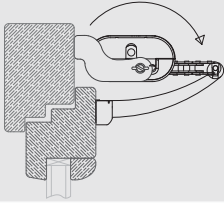
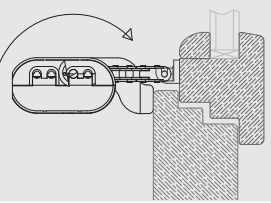
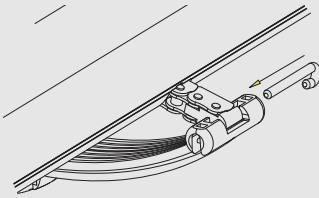
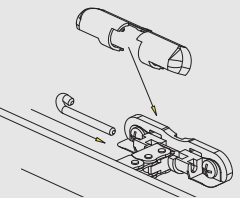
### 6.1 Installation sequence

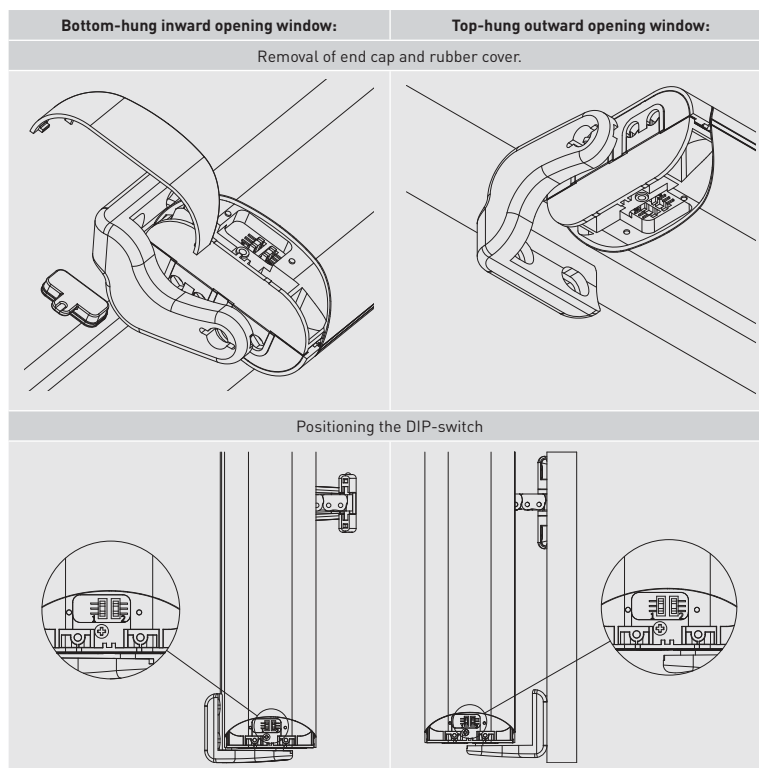
- Check that the width of the window, where the actuator is due to be fitted, is more than 420 mm. Otherwise, it is **NOT POSSIBLE** to fit the actuator.
- Check that the force required to open/close it (calculated according to the table under Point 4.2) is less than or equal to that shown in the **TECHNICAL DATA** table.
- Try manually the window opening, checking for and if necessary eliminating any sticking points that could cause a malfunction.
- Manually test the maximum opening of the window, checking that it is greater than the travel set by the actuator.

<b>Bottom-hung inward opening window:</b>	<b>Top-hung outward opening window:</b>
	
<b>CAUTION</b> If the window is of the bottom-hung type, check that the limiting arms have been fitted to prevent the window from accidentally falling down.	
<b>Bottom-hung inward opening window:</b> With a pencil, mark the mid-point "X" of the window frame.	<b>Top-hung outward opening window:</b> With a pencil, mark the mid-point "X" of the window frame.
	
<b>Bottom-hung inward opening window:</b>	<b>Top-hung outward opening window:</b>
	





Bottom-hung inward opening window:	Top-hung outward opening window:
Rotate the actuator so as to allow the window to shut.	
	
<p>Rotate the actuator in the opposite direction so that the end of the chain can be inserted correctly inside the bottom-hung window fixing.</p>	<p>Rotate the actuator in the opposite direction so that the end of the chain can be inserted correctly inside the top-hung window fixing.</p>
	
<p>Join the chain to the fixing by inserting the relevant locking pin.</p>	<p>Join the chain to the fixing by inserting the relevant locking pin. Clip the cover in place.</p>
	



Select the stroke distance required by following the setting of the DIP-switches according to the scheme below. Note: each DIP-switch has three possible positions.

Liwin 350N				
Stroke	Dip-switch 1	Dip-switch 2		
420	Top			Top
	Middle			Middle
	Bottom			Bottom
400	Top			Top
	Middle			Middle
	Bottom			Bottom
350	Top			Top
	Middle			Middle
	Bottom			Bottom
300	Top			Top
	Middle			Middle
	Bottom			Bottom
250	Top			Top
	Middle			Middle
	Bottom			Bottom
200	Top			Top
	Middle			Middle
	Bottom			Bottom
150	Top			Top
	Middle			Middle
	Bottom			Bottom

Stroke	Dip-switch 1	Dip-switch 2		
100	Top			Top
	Middle			Middle
	Bottom			Bottom
50	Top			Top
	Middle			Middle
	Bottom			Bottom

Liwin 250N				
Stroke	Dip-switch 1	Dip-switch 2		
200	Top			Unavailable
	Middle			
	Bottom			
250	Top			Unavailable
	Middle			
	Bottom			
380	Top			Unavailable
	Middle			
	Bottom			

ENGLISH

## 6.2 Electrical connection

Wire in the apparatus according to the electrical supply required by the actuator (see label on product), following the table below.

230 Vac supply			24 Vdc supply		
1	Blue	Neutral / Common	1	Blue	Positivo
2	Black	Phase / Open	2	Brown	Negativo
3	Brown	Phase / Closed	4	White	Data [2/3/4 W-Net actuators]
4	White	Data [2/3/4 W-Net actuators]	5	Yellow	Data [2/3/4 W-Net actuators]
5	Yellow	Data [2/3/4 W-Net actuators]	6	Green	Data [2/3/4 W-Net actuators]
6	Green	Data [2/3/4 W-Net actuators]			

Electric 230 Vac wiring	Radio version wiring	Electric 24 Vdc wiring
Electric 230 Vac wiring (2/3/4 W-Net actuators)	Radio version wiring (versioni 2/3/4 W-Net)	Electric 24 Vdc wiring (2/3/4 W-Net actuators)



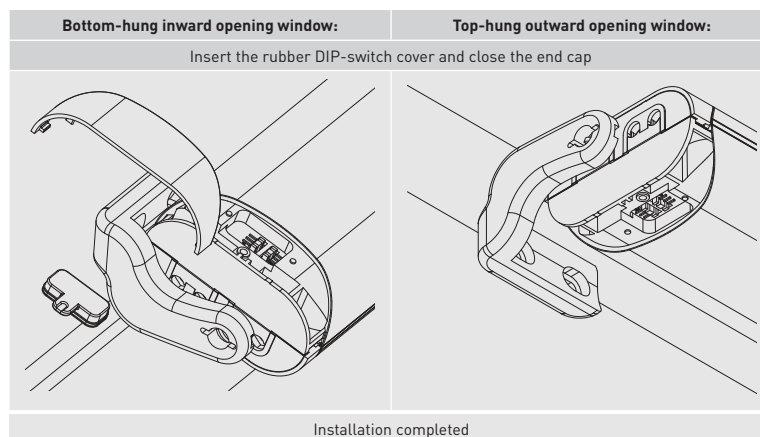
### 6.3 Operating test

Press the control button and close the window, checking that:

- A. The window is completely closed. If it is not, check that the gap between the window and the frame is bigger than or equal to 0 mm. If necessary, insert spacers so as to obtain the correct gap.
- B. The chain is perfectly vertical to the window frame. If necessary adjust the fixing bracket by using the screws and slots.

Having reached the correct closing position, press the control button and open the window in order to check that the actuator runs freely over the full travel set up.

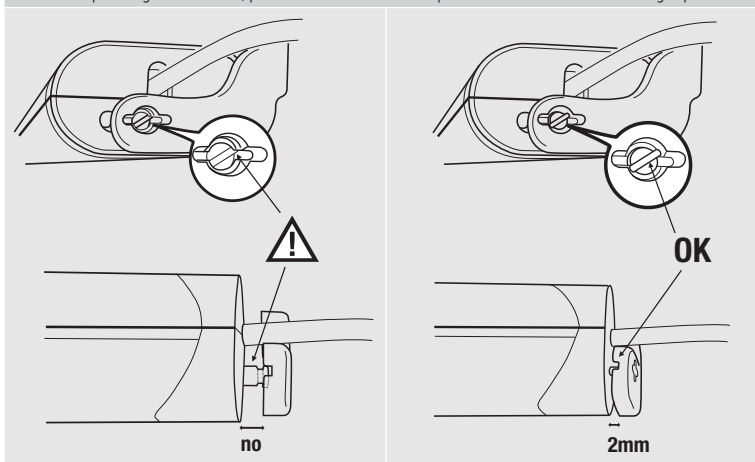
Having achieved the required opening run, press the control button again to close the window. Once the window has completely closed, check that the screws, supports and fixings are tightened correctly, and that the seals are sufficiently compressed.



**CAREFUL!! - after installation the 4 covers must be perfectly closed.**

### ATTENTION!

Before operating the actuator, please make sure that the product has been fixed at the right position



## 7. MAINTENANCE, EMERGENCY ACTION & CLEANING

If it becomes necessary to manually disconnect the window from the actuator due to: a power failure, mechanical breakdown, maintenance, or cleaning the exterior of the window, follow the step sequence described on Page 11 in reverse order.

BEWARE OF THE DANGER of the window falling; as the window is free to fall, as it is no longer held up by the chain. Once the maintenance or cleaning operations have been completed, repeat the sequence described on Page 11.