

Attuatore elettrico a catena  
Electric chain actuator

CE

# SMART



 **COMUNELLO**  
**MOWIN**

Window Automation Technology

ISTRUZIONI D'USO E DI INSTALLAZIONE  
INSTALLATION AND USER'S MANUAL


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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-switch, 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.

## 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.

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 with biased-off switch mode. 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 lenght of cables
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 Smart 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 and dormer 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:

TECHNICAL FEATURES			
TECHNICAL DATA	SMART 20		
DIET	230 VAC	110 VAC	24 VDC
TRACTION FORCE	250 N	250 N	250 N
PUSH FORCE	200 N	200 N	200 N
FREQUENCY	50 HZ	60 HZ	-
TYPE OF SERVICE	S2 4min	S2 4min	S2 4min
NO LOAD SPEED	16 mm/s	16 mm/s	16 mm/s
RIDES AVAILABLE	180 - 380	180 - 380	180 - 380
OPERATING TEMPERATURE	-5°C + 50°C	-5°C + 50°C	-5°C + 50°C
IP PROTECTION DEGREE	20	20	20
SOFT START/SOFT STOP	YES	YES	YES
CURRENT ABSORPTION	0,14A	0,14A	0,9A
ABSORBED POWER	22W	22W	22W
OBSTACLE DETECTION	YES	YES	YES
PARALLEL CONNECTION	YES (MAX 30 ACTUATORS)	YES (MAX 30 ACTUATORS)	YES (MAX 30 ACTUATORS)
SYNCHRONIZATION	NO	NO	NO
DIMENSIONS	41X79X265	41X79X265	41X79X265
OPENING LIMIT SWITCH	SENSOR	SENSOR	SENSOR
CLOSING LIMIT SWITCH	AMPEROMETRIC	AMPEROMETRIC	AMPEROMETRIC
ACTUATOR WEIGHT	1.1KG	1.1KG	1.1KG
COLORS	GREY/WHITE/BLACK	GREY/WHITE/BLACK	GREY/WHITE/BLACK
CODE	MSMART20H0***	MSMART20I0***	MSMART20L0***

\*\*\*B00 black colour/W00 white colour/G00 gray colour

## 4. ACTUATOR

### 4.1 TYPES OF POWER SUPPLY

The smart series of actuators is available with electrical supply 230VAC 50 Hz (with a tolerance of  $\pm 10\%$ ), with a three-core supply cable: BLUE, neutral common; BLACK, open phase; BROWN, closed phase.

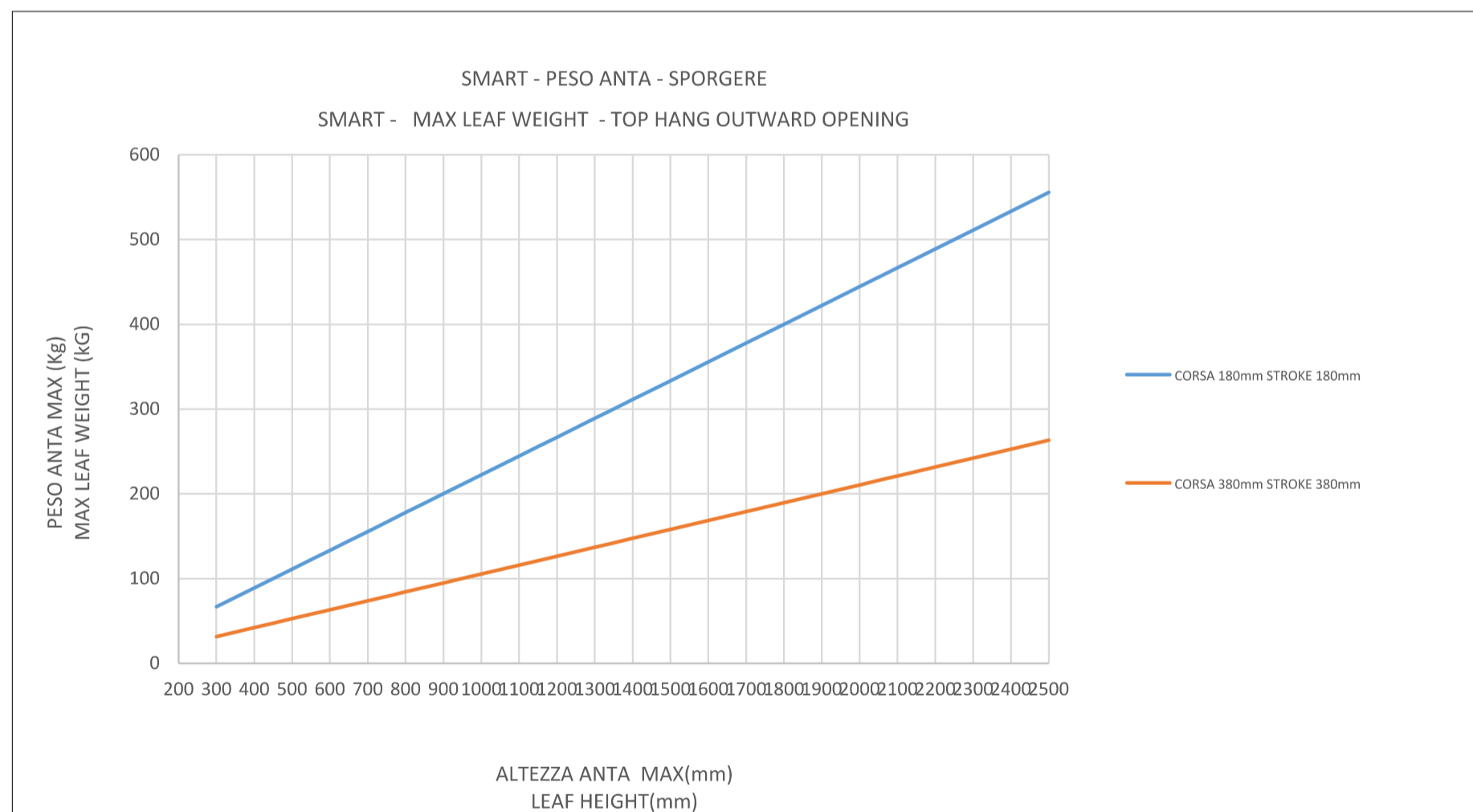
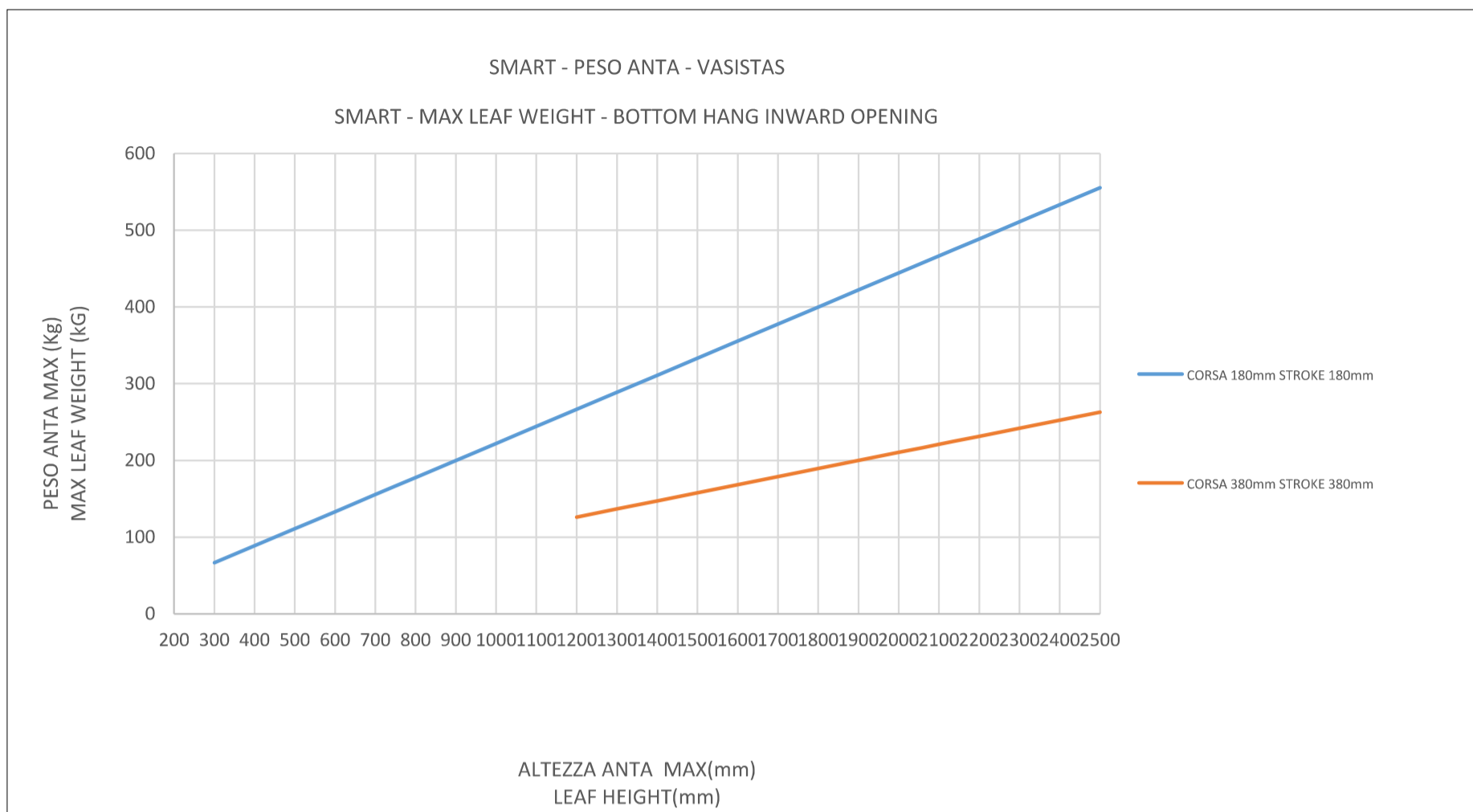
### 4.2 CALCULATION OF THE FORCE NECESSARY

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

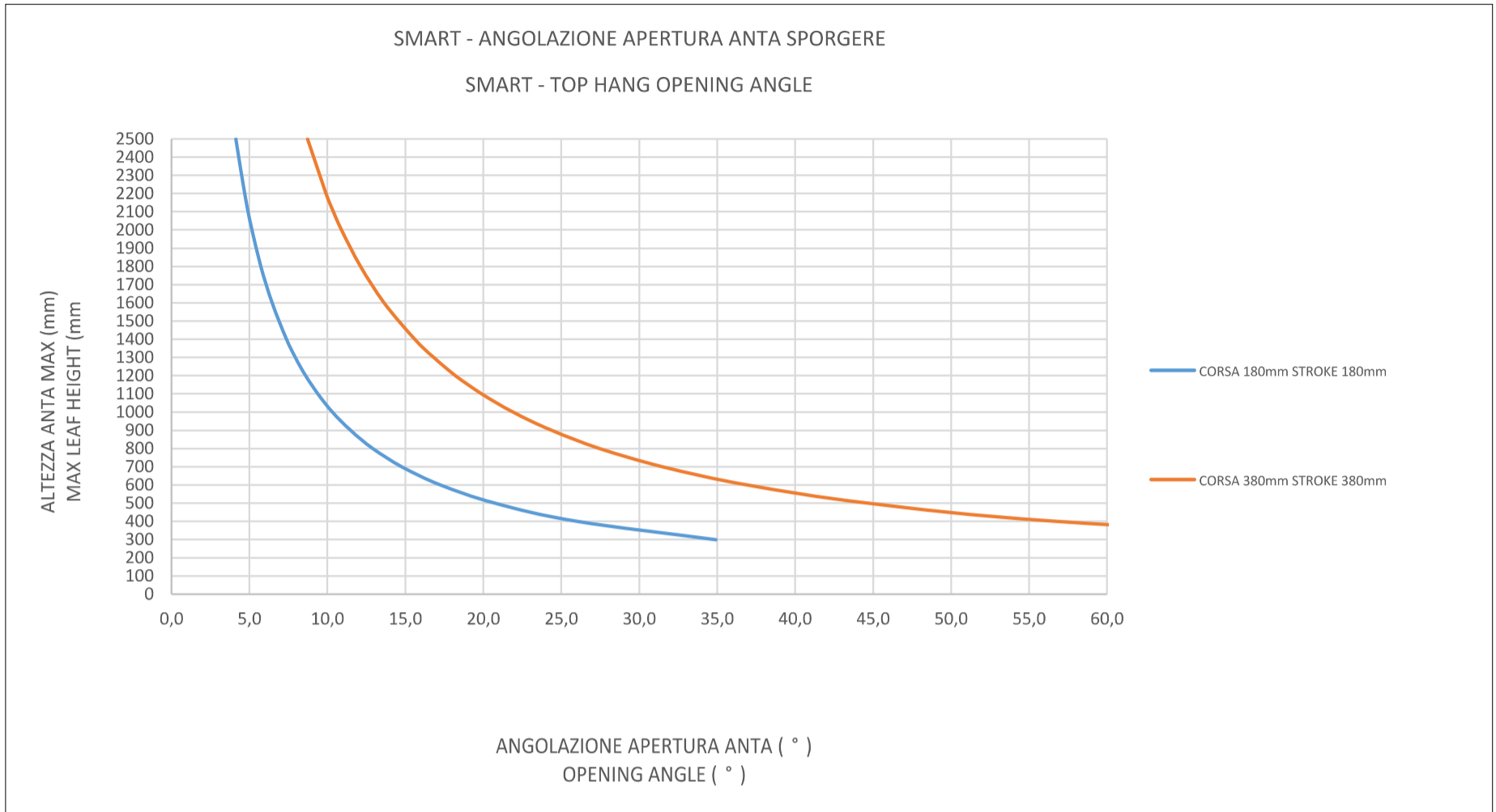
Key to symbols      F = Force required to open in N (Newton)  
                           P = Weight of the window (only moveable part) in kg (kilogrammes)  
                           C = Opening travel of actuator in cm. (Centimetres)  
                           H = Height of the openable part of the window in cm. (centimetres)

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

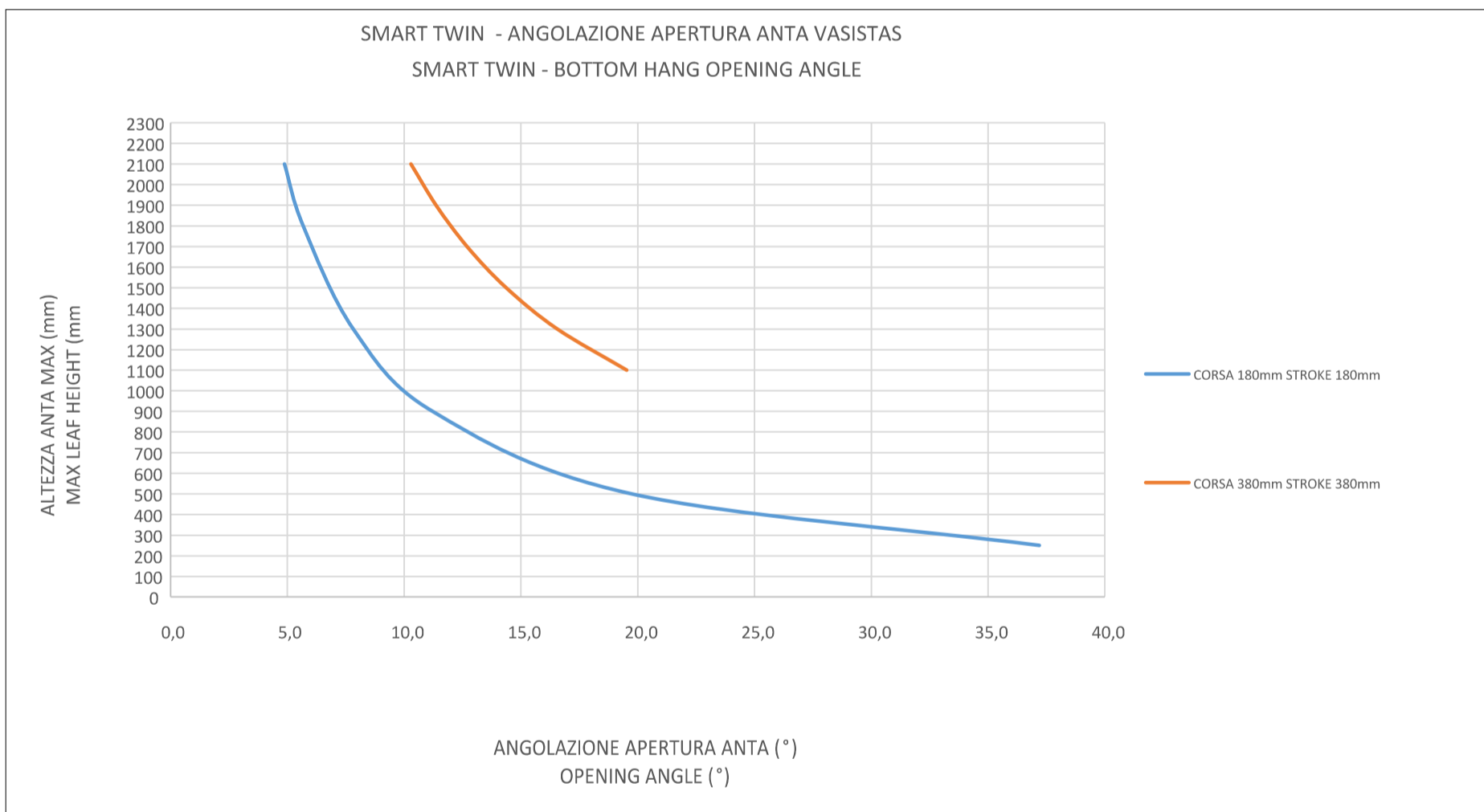
**4.3 GRAPHS TO DEFINE THE MAXIMUM WEIGHT OF THE DOOR AS A FUNCTION OF THE TRAVEL “C” OF THE ACTUATOR AND THE HEIGHT “H” OF THE WINDOW**



4.4 GRAPH FOR DETERMINING THE OPENING ANGLE.\*



ENGLISH



\*The calculation is indicative and considers an overlap equal to 0

#### 4.5 PACK AND TOOLS REQUIRED FOR ASSEMBLING THE ACTUATOR

The actuator is packed individually in a cardboard box. Each pack contains:

Electric actuator, 230VAC 50Hz with electric supply cable, support brackets, fixing bracket for top-hung window, fixing bracket for bottom-hung window and instruction manual.

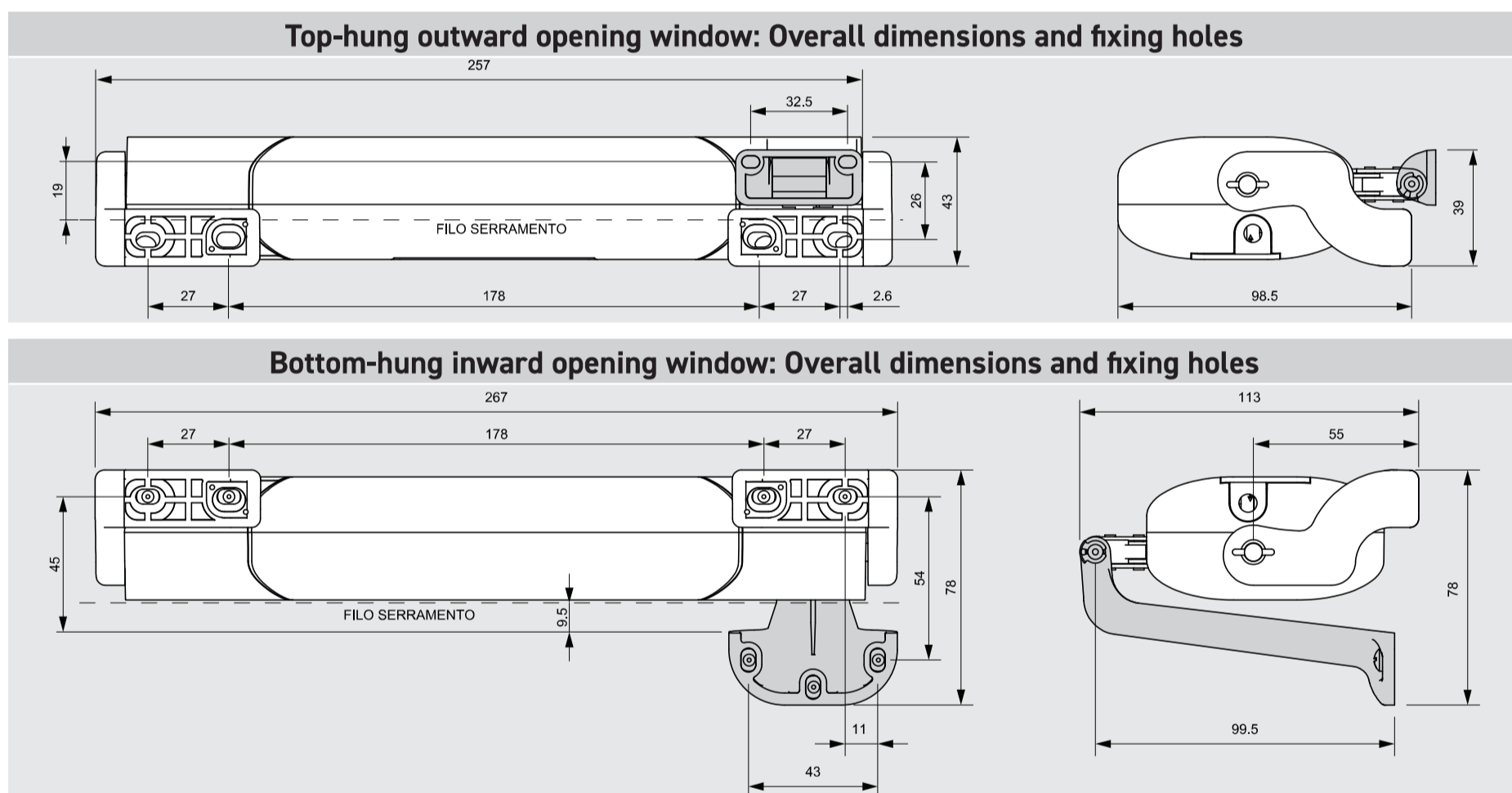
Before starting to fit the actuator, we recommend preparing the following fitting materials, tools and equipment: Metre rule or tape measure, pencil, drill/screwdriver, set of drill bits for metal or wood, set of screw bits, electrical pliers, screwdrivers, screws and/or threaded inserts suitable for the type of window material. **AVOID** using self-tapping screws and/or three-lobed screws on any metal windows.

## 5. 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. In case of testing before installation, please move the chain only when opening.

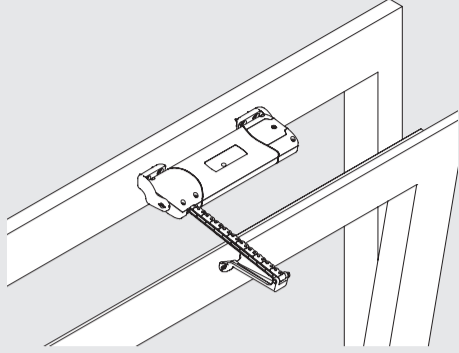


### 5.1 INSTALLATION SEQUENCE

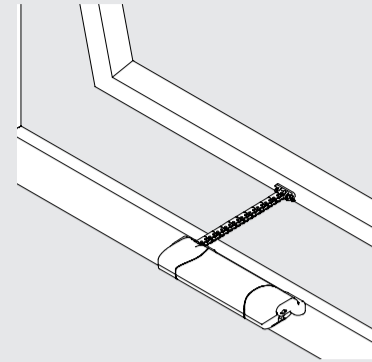
- Check that the width of the window, where the actuator is due to be fitted, is more than 320 mm. Otherwise, it is **NOT POSSIBLE** to fit the actuator.
- Check that the force required to open/close it (calculated according to the table under Point 4.2) is less than or equal to that shown in the **TECHNICAL 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.



**Bottom-hung inward opening window:**

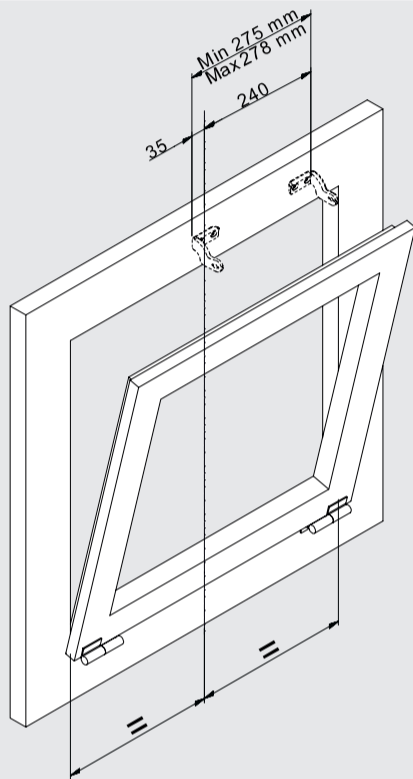


**Top-hung outward opening window:**

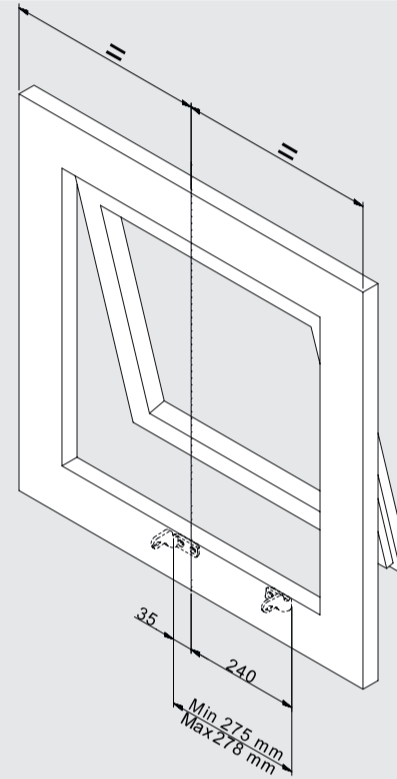


**CAUTION** If the window is of the bottom-hung type, check that the limiting arms have been fitted to prevent the window from accidentally falling down.

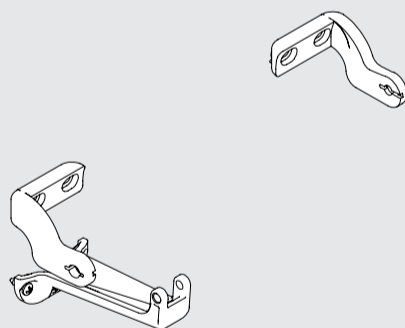
**Bottom-hung inward opening window: With a pencil, mark the mid-point "X" of the window frame.**



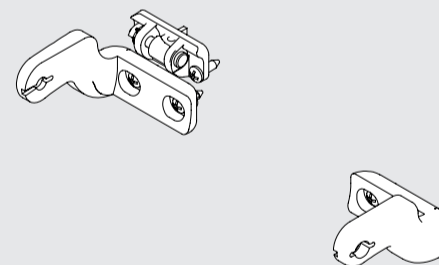
**Top-hung outward opening window: With a pencil, mark the mid-point "X" of the window frame.**



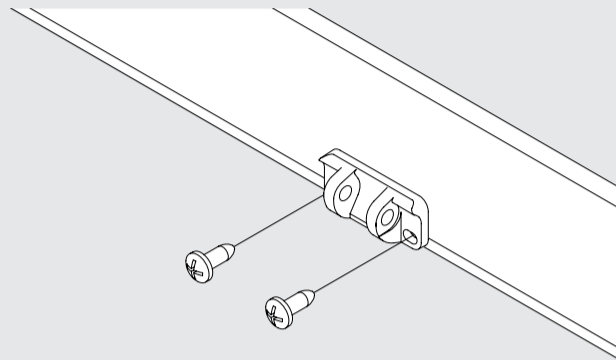
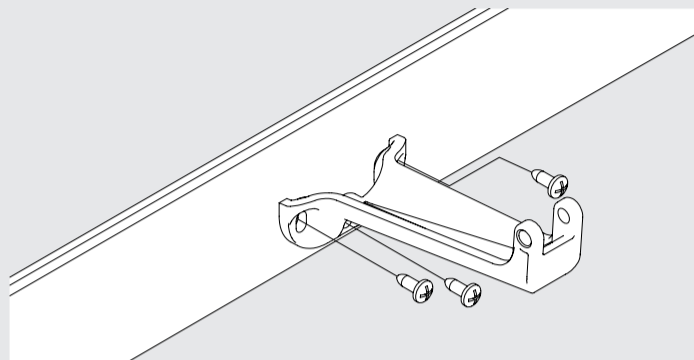
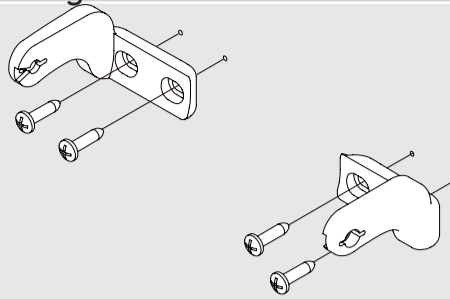
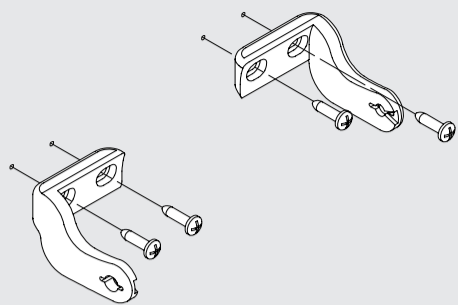
**Bottom-hung inward opening window:**



**Top-hung outward opening window:**



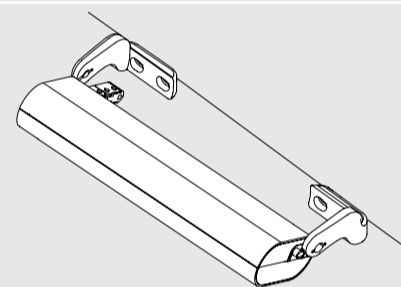
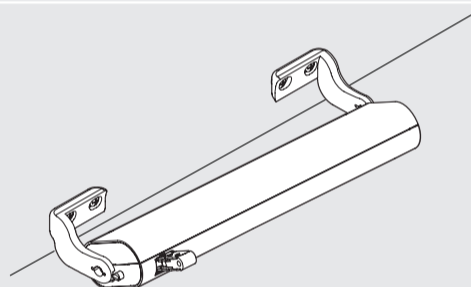
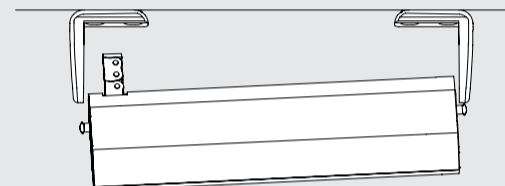
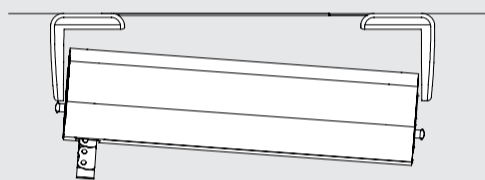
Drill holes in the frame using the template supplied or the measurements shown on Page 7.  
Fix the brackets and the fixings, using suitable screws.



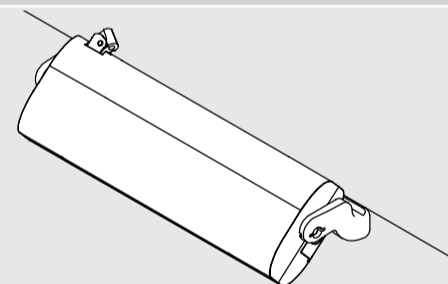
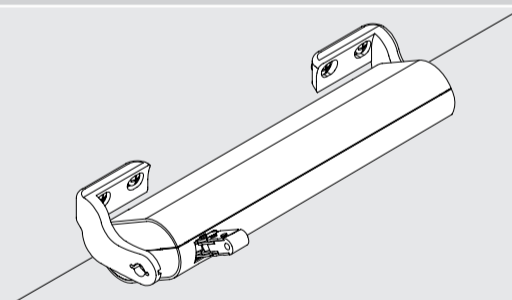
**Bottom-hung inward opening window:**

**Top-hung outward opening window:**

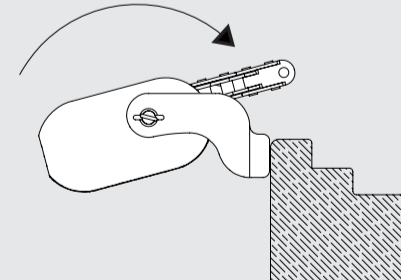
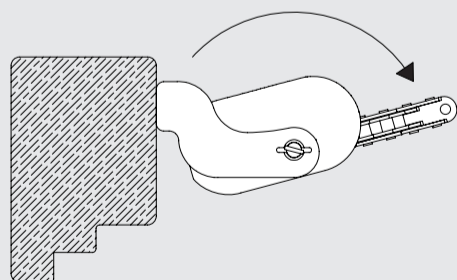
Insert the side fulcrum pin into the support bracket



Move the actuator towards the window frame in order to insert the (opposite) side fulcrum pin into the support bracket



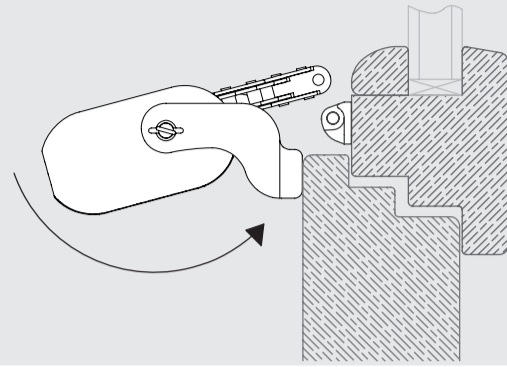
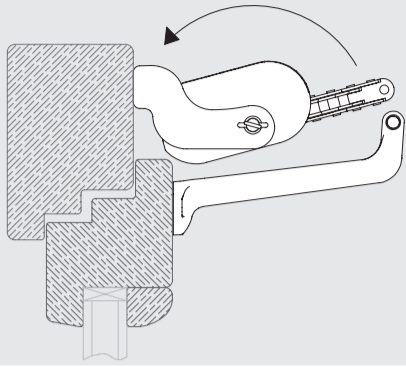
Rotate the actuator, as shown in the following drawing, to fix it firmly



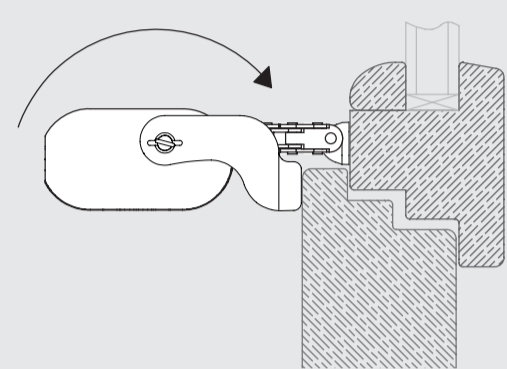
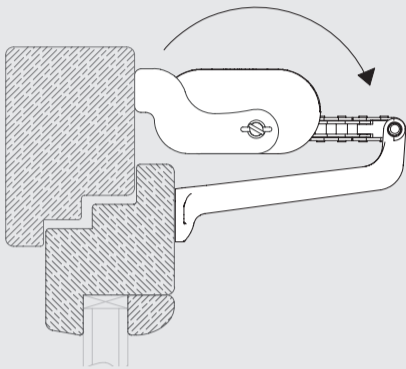
**Bottom-hung inward opening window:**

**Top-hung outward opening window:**

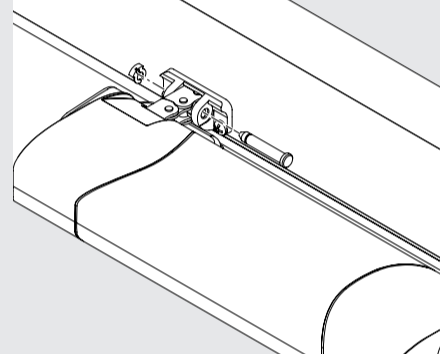
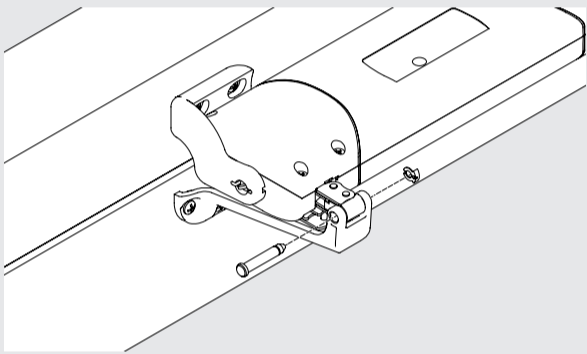
Rotate the actuator so as to allow the window to shut.



Rotate the actuator in the opposite direction so that the end of the chain can be inserted correctly inside the bottom-hung window fixing.



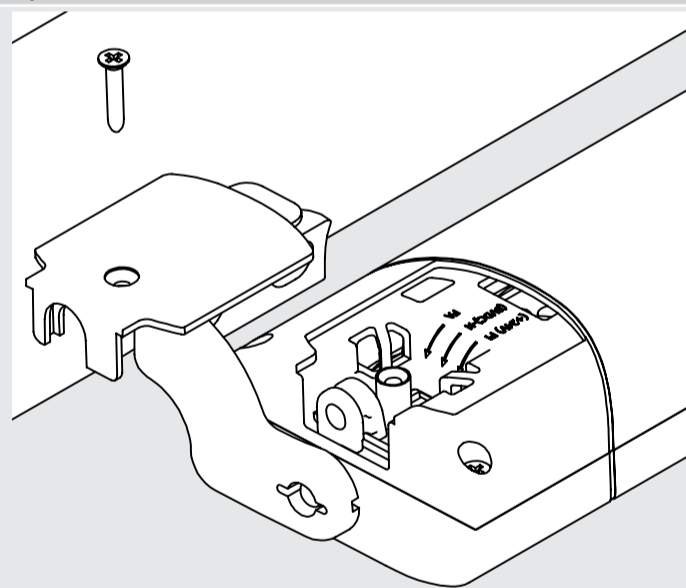
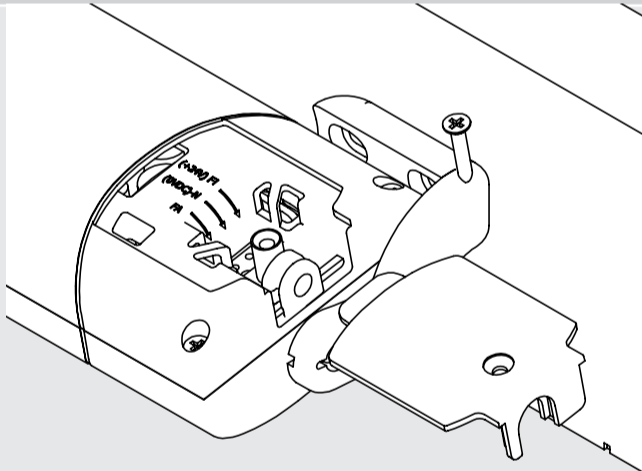
Join the chain to the fixing by inserting the relevant locking pin. Clip the cover in place.



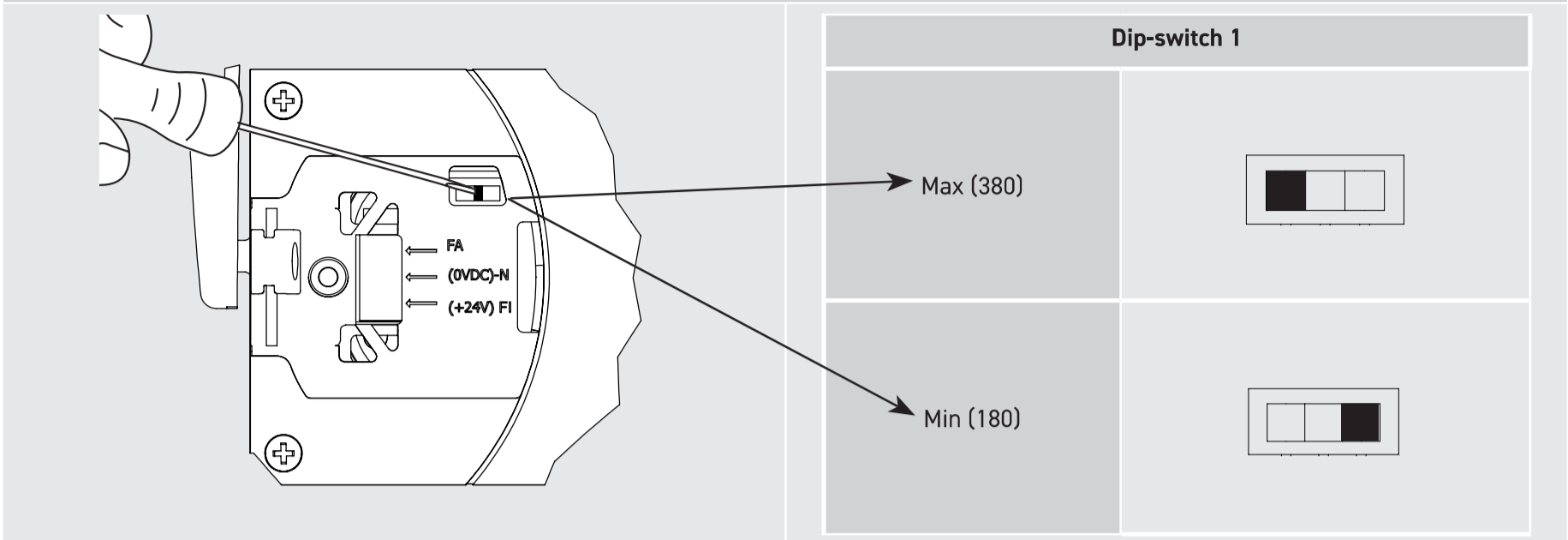
**Bottom-hung inward opening window:**

**Top-hung outward opening window:**

Removal of end cap.



With the use of a screwdriver, to move the dip-switch with caution, to select the desired stroke in the opening movement.



## 5.2 ELECTRICAL CONNECTION

Wire in the apparatus according to the electrical supply required by the actuator (see label on product), following the table below. The Smart actuator can only be connected in parallel with other motors of the Smart series, not with different motors.

⚠ The maximum limit of motors that can be connected in parallel is 30 actuators.

230Vac Supply			24Vdc supply		
1	Blue	Neutral / Common	1	Blue	Positive
2	Black	Phase / Open	2	Brown	Negative
3	Brown	Phase / Closed			

Electric 230Vac wiring		Electric 24Vdc wiring	
<p>110/230V~ 50/60Hz N F</p>		<p>24 Vdc + -</p>	

## 5.3 OPERATING TEST

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

- 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.
- 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.

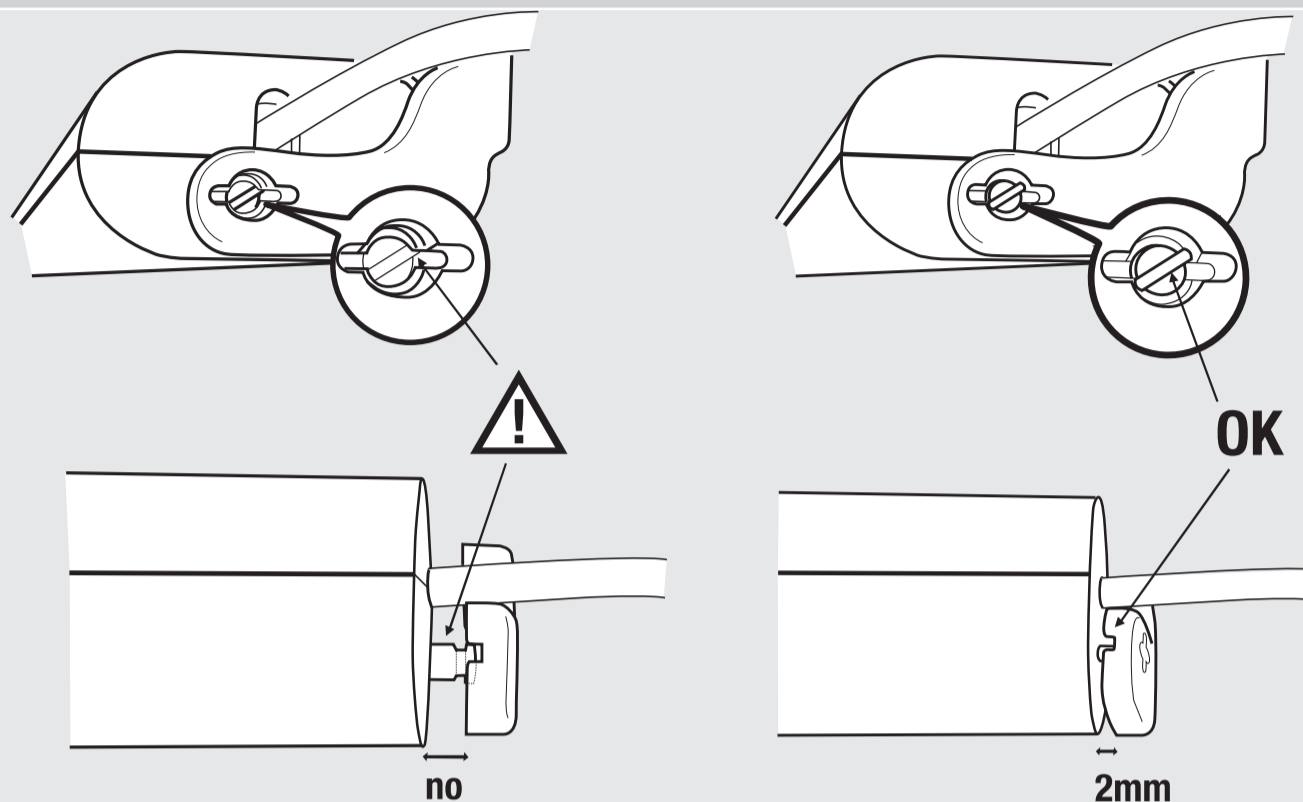
Having achieved the required opening run, press the control button again to close the window. Once the window has completely closed, check that the screws, supports and fixings are tightened correctly, and that the seals are sufficiently compressed.

Installation completed

**CAREFUL!! - after installation the cover must be closed.**

**ATTENTION!**

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



ENGLISH

## 6. 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.

## 7. PROTECTION OF THE ENVIRONMENT

Some parts inside the actuator are not recyclable (plastic materials and electronic parts) and cannot be considered normal refuse. They must be disposed of correctly. In case of doubt, consult the relevant refuse disposal body.

## 8. FAQ (FREQUENTLY ASKED QUESTIONS)

Question	Cause	Remedy
The actuator is not operating	No voltage supply	Check the electrical cut-out or safety switch is "On". A cable may not be connected. With voltage supplied   Check the actuator voltage corresponds to voltage supply detected.
	With voltage supplied	Check the actuator voltage corresponds to voltage supply detected
The actuator is not travelling the distance required	The window opening is not as required	Check that according to the table on Page 13 the DIP-switch is set for the correct travel.
	The chain is bent and not perfectly linear	Detach the chain from the fixing and check that the limiting arm allows the actuator to travel the complete run. If this does not happen, adjust the limiting arm so that the actuator travels the whole distance..
The actuator pulls out the screws	Fixings (bottom-hung window and/or top-hung window) are no longer fastened to the frame	Check that suitable fixings have been used.
		Check that, on closing, the chain is perfectly perpendicular to the frame. If not, check that the fitting was carried out according to the Installation Sequence, 5.1.

## 9. GUARANTEE

a) In business relationships or in case of products sold for professional use, this warranty is limited to the repair or replacement of product parts that FRATELLI COMUNELLO SPA acknowledges as defective, through equivalent re-manufactured Products (the "Conventional Warranty"); the warranty does not include the costs necessary for repairing or replacing the material (e.g. labour costs, rental of equipment etc).

b) The provisions contained in articles 1490 to 1495 of the Italian Civil Code shall not apply.

c) FRATELLI COMUNELLO SPA warrants the proper operation of the products within the limits indicated in a) above. Unless otherwise agreed, the validity of the Conventional Warranty is 36 (thirty-six) months from the production date, which can be found on the products. The Warranty shall be effective and binding on COMUNELLO only if the product has been correctly installed and maintained in accordance with the installation and safety rules set out in the documentation provided by COMUNELLO or otherwise available on the website [http://www.comunello.com/corporate/general\\_conditions\\_sales/](http://www.comunello.com/corporate/general_conditions_sales/)

d) The warranty does not cover: failures or damage caused by transport; failures or damage caused by defects in the electrical system of the buyer and/or by carelessness, negligence, inadequate or abnormal use of such system; failure or damage due to tampering carried out by unauthorized personnel or due to incorrect use / installation (in this regard, system maintenance at least every six months is recommended) or the use of non-original spare parts; defects caused by chemical agents and/or atmospheric phenomena. The warranty does not cover the cost of consumables; in any event, COMUNELLO shall be entitled to a consideration for the work performed at the Customer, where such work proves useless as the warranty did not apply or because the customer had used the Comunello product in a negligent, reckless or incompetent manner, such that the proper use of the product could have avoided the work.

e) Implementation terms: unless otherwise agreed, the right to the Conventional Warranty is exercised by showing a copy of the purchase document (invoice) to COMUNELLO. Any defect must be notified to COMUNELLO within the time limit of thirty (30) days from detection of the defect.

The action must be exercised within the limitation period of 6 (six) months from detection of the defect. The Product parts for which the Customer requests application of the Conventional Warranty must be returned by the Customer to FRATELLI COMUNELLO SPA, Via Cassola 64, 36027 Rosà (VI) Italy.

f) The Customer cannot claim compensation for indirect damage, loss of profits, loss of production and in any case it cannot claim compensation for an amount that exceeds the value of the supplied components or products. All transport costs for Products that have been repaired or to be repaired, although covered by the Conventional Warranty, shall be charged to the Customer.

g) No external work carried out by Comunello technical staff is covered by the Conventional Warranty.

h) Specific amendments to the Conventional Warranty conditions described herein can be defined by the parties in their commercial contracts.

i) The Court of Vicenza (Italy) shall be the place of jurisdiction for any dispute which will be settled according to the Italian laws.

## 10. DECLARATION OF INCORPORATION (FOR A PARTLY COMPLETED MACHINE) AND CE DECLARATION OF CONFORMITY

The Manufacturer Fratelli Comunello S.p.A. hereby with headquarters in Via Cassola 64, 36027 Rosà (VI), Italy, declares under its own responsibility that the following products:

SMART 20 (230V) - SMART 20 (24V)

Product description: Chain actuator for windows

Model: SMART 20 (230V) - SMART 20 (24V)

Year of construction from 2024

They satisfy the applicable essential requirements of the Machinery Directive 2006/42/EC, Annex I, Art. 1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.3, 1.2.6, 1.3.9, 1.5.1, 1.5.2, 1.5.6, 1.5.8, 1.5.9, 1.5.10, 1.5.11, 1.7.1, 1.7.1.1, 1.7.3, 1.7.4.2, 1.7.4.3

The relevant technical documentation is compiled according to Annex VII, section B

The person authorized to compile the relevant technical documentation is Fratelli Comunello SPA

Upon adequately motivated request from the national authorities, the technical documentation of the aforementioned products will be made available, via e-mail, within a time compatible with its importance. Furthermore, the aforementioned products comply with the relevant provisions of the following Directives:

- 2014/30/EU Electromagnetic Compatibility Directive
- 2014/35/EU Low Voltage Directive
- 2011/65/EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive)

and the following harmonized standards and/or technical specifications:

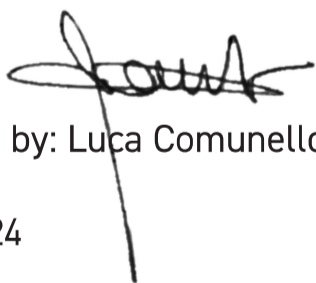
IEC 60335-2-103:2006, IEC 60335-2-103:2006/AMD1:2010 together with IEC 60335-1:2010, IEC 60335-1:2010/AMD1:2013, IEC 60335-1:2010/AM2: 2016

EN 61000-6-2 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments

EN 61000-6-3 Generic standards - Emissions standard for equipment in residential environments

The commissioning of a complete machine which includes the above-mentioned partly completed machine, supplied by us, is not permitted until it is ascertained that the installation has been carried out according to the specifications and installation instructions contained in the "Instruction Manual" supplied with the partly completed machinery and that an acceptance procedure has been completed and documented, in a specific protocol, by a qualified technician.

This declaration is made by the manufacturer: Fratelli Comunello SPA, via Cassola 64, 36027 Rosà (VI), - ITALY



Represented by: Luca Comunello

Rosà, 02/20/24