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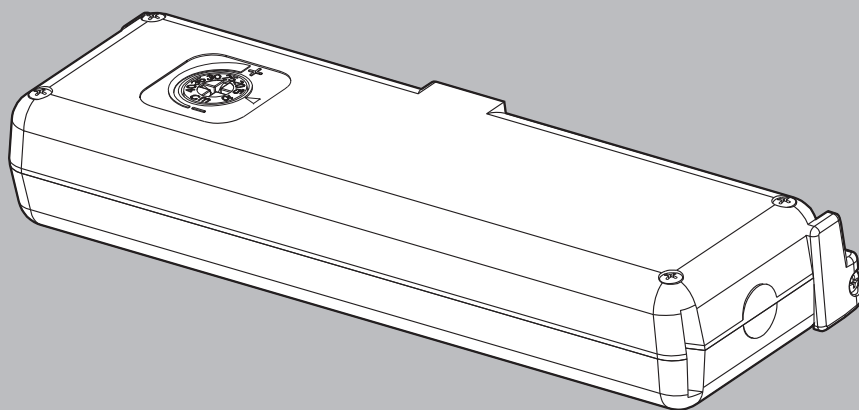
EN

INSTALLATION AND USE INSTRUCTIONS

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CHAIN ACTUATOR FOR
WINDOW AUTOMATION

ACK4



PATENTED



P/N 0P5101

VER.0.0

REV.09.13

**BEFORE INSTALLING AND USING THE ACTUATOR, IT IS
COMPULSORY FOR THE INSTALLER AND THE USER TO READ
AND UNDERSTAND THIS MANUAL IN ALL ITS PARTS.**

**THIS MANUAL IS INTEGRAL PART OF THE ACTUATOR
AND MUST BE PRESERVED FOR FUTURE REFERENCE
UNTIL DEMOLITION OF THE SAME.**

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declares that the electrical device

called: CHAINACTUATOR FOR WINDOWAUTOMATION

type: ACK4

models: ACK42 - ACK44

Serial n° and year of manufacture: see data plate and CE marking applied to the device

complies with the requirements of the following directives:

2006/95/CE

Low Voltage Directive: electrical material for use within certain voltage limits.

2004/108/CE

Electromagnetic Compatibility Directive - Concerning the approximation of the laws of Member States relating to electromagnetic compatibility.

and also declares that the following harmonised standards have been applied:

EN55014-1

EN55014-2

EN61000-6-3

EN61000-6-2

EN50366

EN60335-1

Date: Sandrigo, 10/01/2008

Matteo Cavalcante

2.1- GENERAL INSTRUCTIONS



BEFORE INSTALLING AND USING THE ACTUATOR, IT IS COMPULSORY THAT THE INSTALLER AND THE USER CAREFULLY READ AND UNDERSTAND THIS MANUAL IN ALL ITS PARTS.



THIS MANUAL IS INTEGRAL PART OF THE ACTUATOR AND MUST COMPULSORILY BE PRESERVED FOR FUTURE REFERENCE.



THE MANUFACTURER HAS NO LIABILITY FOR ANY EVENTUAL DAMAGE TO PERSONS, ANIMALS AND THINGS DUE TO THE INOBSERVANCE OF THE PRESCRIPTIONS DESCRIBED IN THIS MANUAL.

2.2- INSTALLER AND USER



THE ACTUATOR INSTALLATION CAN BE PERFORMED EXCLUSIVELY BY COMPETENT AND QUALIFIED TECHNICAL PERSONNEL SATISFYING THE PROFESSIONAL AND TECHNICAL REQUIREMENTS FORESEEN BY THE LAWS IN FORCE IN THE COUNTRY OF INSTALLATION.



THE ACTUATOR CAN BE USED EXCLUSIVELY BY A USER ACTING IN COMPLIANCE WITH THE INSTRUCTIONS CONTAINED IN THIS MANUAL AND/OR IN THE MANUAL OF THE ACTUATOR CONTROL DEVICE (e.g.: CONTROL UNIT).

2.3- WARRANTY



THE ACTUATOR WARRANTY EXPIRES, IF ITS USE DOES NOT COMPLY WITH THE INSTRUCTIONS AND PRESCRIPTIONS DESCRIBED IN THIS MANUAL, AS WELL AS IF NON-ORIGINAL COMPONENTS, ACCESSORIES, SPARE PARTS, AND CONTROL SYSTEMS ARE USED (SEE LAST PAGE).

2.4- TECHNICAL ASSISTANCE

For the technical assistance apply to your Dealer or to the Manufacturer.

2.5- RESERVED RIGHTS

The reserved rights on this manual "Installation and use instructions" remain property of the Manufacturer.

Each information herein contained (text, drawings, diagrams, etc.) is reserved.

None part of this manual can be reproduced and disclosed (totally or partially) by any reproduction means (photocopies, microfilms or other) without written authorization of the Manufacturer.

2.6- DESCRIPTION OF PERSONNEL



USERS MUST NEVER PERFORM OPERATIONS RESERVED FOR MAINTENANCE PEOPLE OR SPECIALISED TECHNICIANS. THE MANUFACTURER DECLINES ALL LIABILITY FOR DAMAGE DERIVING FROM FAILURE TO OBSERVE THE ABOVE REQUIREMENTS.

Specialised electrician:

A specialised electrician must be able to install the actuator, start it and operate it both in normal conditions and in the maintenance mode; he/she is qualified to perform all electrical and mechanical adjustment and maintenance operations. He/she is allowed to work on live electrical cabinets and junction boxes.

User:

specialised person capable of operating the actuator under normal conditions by using the relative controls. He/she must also be able to operate with the actuator under “maintenance” in order to perform simple routine maintenance operations (cleaning), and start or reset the actuator following an unscheduled stop.

3.1- RATING PLATE AND "CE" MARKING

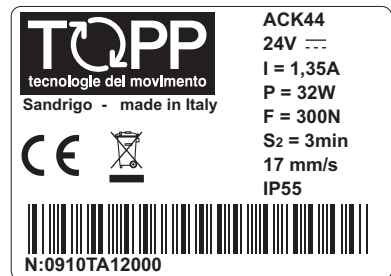
The "CE" marking certifies the compliance of the machine with the essential safety and health requirements foreseen by the product European Directives.

The rating plate is an adhesive plate in polyester, silk-screen printed in black, having the following size: L= 50 mm - H= 36 mm.

It is applied externally on the actuator. The plate (**Fig. 1**) bears in readable and indelible way the following data:

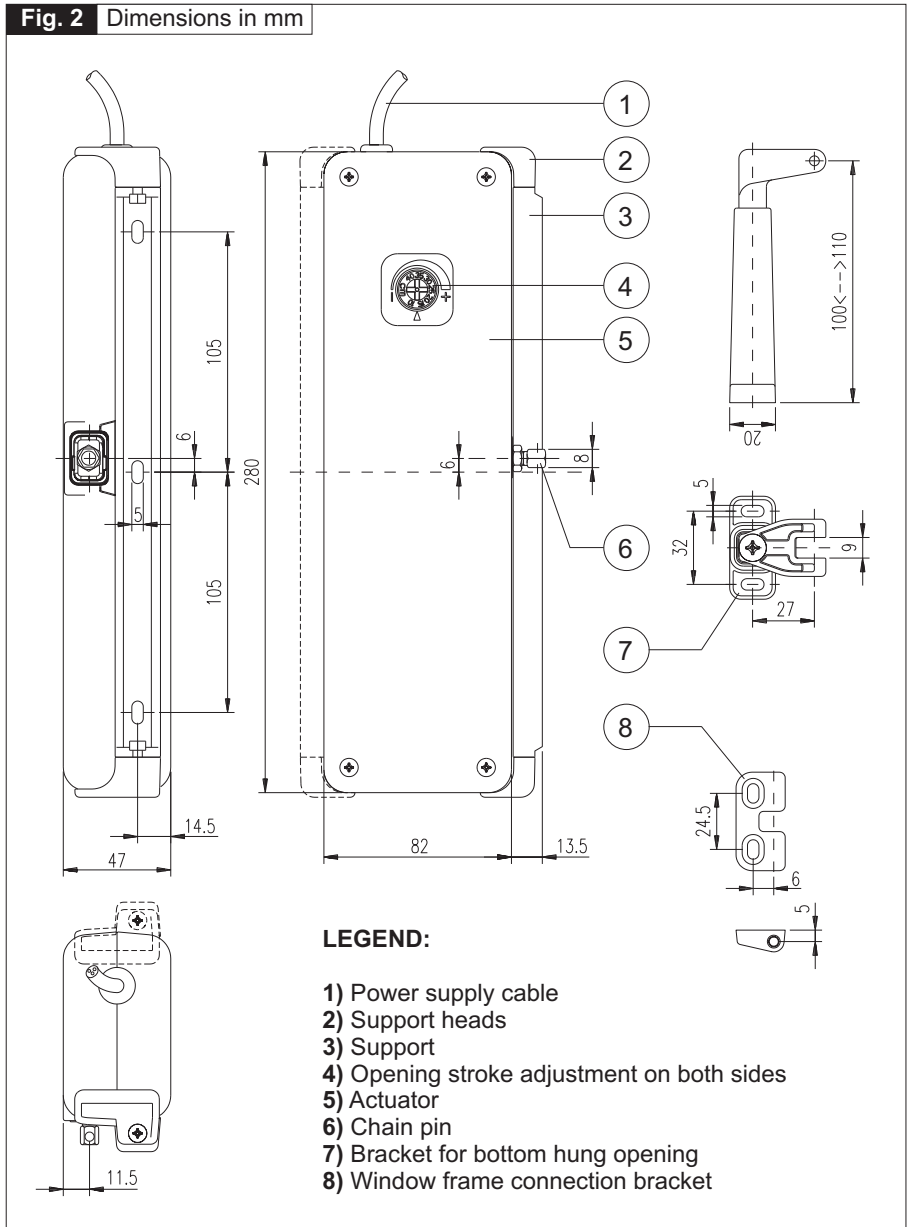
- logo and address of the manufacturer
- type and model
- voltage and intensity of power supply (V - A)
- absorbed electric power P (W)
- thrust and tractive force F (N)
- type of service S_2 (min)
- idle translation speed (mm/s)
- protection degree (IP)
- "CE" marking
- symbol of "WEEE" Directive 2002/96/CE
- symbol of double insulation (only for mod. ACK42)
- serial number

Fig. 1



3.2- DENOMINATION OF THE COMPONENTS AND DIMENSIONS

Fig. 2 Dimensions in mm



LEGEND:

- 1) Power supply cable
- 2) Support heads
- 3) Support
- 4) Opening stroke adjustment on both sides
- 5) Actuator
- 6) Chain pin
- 7) Bracket for bottom hung opening
- 8) Window frame connection bracket

3.3- TECHNICAL DATA

Tab. 1 contains the technical data characterising the actuators.

	ACK42	ACK44
Power supply voltage	230 V - 50 Hz	24 V=
Absorbed current	0,32 A	1,35 A
Absorbed power with load	75 W	32 W
Thrust force	300 N	
Tractive force	300 N	
Idle translation speed	27 mm/s	17 mm/s
Duration of idle stroke	15 s	23 s
Minimum window frame height ⁽¹⁾	H = 800 mm	
Adjustable stroke end ⁽²⁾	10 - 15 - 20 - 25 - 30 - 35 - 40 cm	
Electronics with warning horn to signal to the user the wrong assembling ⁽³⁾		
Protection against electric shocks	Class II	Class III
Type of service S ₂ ⁽⁴⁾	2 min	3 min
Operating temperature	- 5 °C + 50 °C	
Protection degree of electric devices	IP 55	
Adjustment of the window frame connection	10 mm	
Parallel electric connection of more actuators on the same window	Only with proper electronic device	
Parallel electric connection of more actuators on different windows	Yes (see wiring diagram)	
Actuator weight with brackets	1,7 kg	
Gross weight	1,9 kg	
⁽¹⁾ Actuator distance from the window frame opening hinge ⁽²⁾ Tolerance on the precision of the output limit switch tripping: +/- 1 cm ⁽³⁾ The "buzzer" device is enabled automatically and emits a continuous "beep" as long as the actuator is fed. For further details on its operation see par. 5.6 ⁽⁴⁾ Service of limited duration according to EN 60034		

Compatibility of actuators connected in parallel

	ACK4	T50	C20	C25	C30	C40	SL60	T80	C240	C20T
ACK4	Y	Y	Y	Y	Y	Y	Y			

3.4- FORMULAS FOR THE CALCULATION OF THRUST AND TRACTIVE FORCE

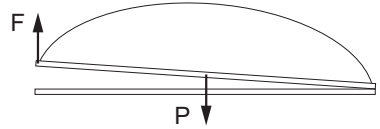
Fig. 3

Horizontal domes or skylights

$F_{(N)}$ = Force necessary for opening or closing

$P_{(N)}$ = Weight of the skylight or dome
(Only movable part)

$$F = 0,54 \times P$$


Fig. 4

Top hung windows (A) or bottom hung windows (B)

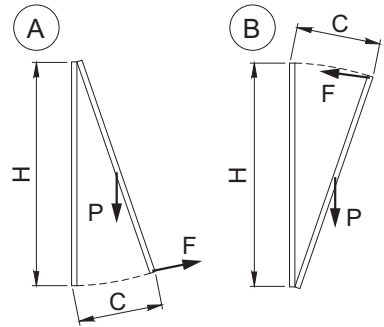
$F_{(N)}$ = Force necessary for opening or closing

$P_{(N)}$ = Weight of the window
(only movable part)

$C_{(mm)}$ = Window opening stroke

$H_{(mm)}$ = Window height

$$F = (0,54 \times P) \times \left(\frac{C}{H} \right)$$



3.5- DESTINATION OF USE



THE ACTUATOR HAS BEEN DESIGNED AND MANUFACTURED TO PERFORM AUTOMATICALLY, BY MEANS OF A CONTROL DEVICE, THE OPENING AND CLOSING OF TOP HUNG WINDOWS, BOTTOM HUNG WINDOWS, PIVOT WINDOWS, AND SKYLIGHTS.

3.6- USE LIMITS

The actuator has been designed and manufactured exclusively for the destination of use given in **par .3.5**, therefore, any other type of use is strictly forbidden in order to assure in any moment the safety of the installer and of the user, as well as the efficiency of the actuator itself.



IT IS STRICTLY FORBIDDEN TO USE THE ACTUATOR FOR IMPROPER USES OTHER THAN THE ONE FORESEEN BY THE MANUFACTURER (SEE PAR. 3.5).



IT IS STRICTLY FORBIDDEN TO INSTALL THE ACTUATOR ON THE EXTERNAL SIDE OF THE WINDOW FRAME SUBJECT TO ATMOSPHERIC AGENTS (RAIN, SNOW, ETC.).



THE USE OF THE ACTUATOR IN ENVIRONMENTS WITH POTENTIALLY EXPLOSIVE ATMOSPHERE IS STRICTLY FORBIDDEN.



IT IS COMPULSORY TO KEEP THE PACKAGE AND THE ACTUATOR OUT OF REACH OF CHILDREN.

3.7- PACKAGE

Each standard package of the product (cardboard box) contains (**Fig. 5**):

- No. 1 Actuator equipped with power supply cable;
- No. 1 Support (**Ref. A**);
- No. 1 Bracket for hopper opening (**Ref. B**);
- No. 1 Small parts package (window connection bracket, nuts, pin and fastening screws for aluminium window frames) (**Ref. C**);
- No. 1 Adhesive drilling template (**Ref. D**);
- No. 1 Installation and use instructions (**Ref. E**);
- No.1 Safety Plate (**Fig. 6**).



MAKE SURE THAT THE ABOVE DESCRIBED COMPONENTS ARE CONTAINED IN THE PACKAGE, AS WELL AS THAT THE ACTUATOR HAS NOT BEEN DAMAGED DURING TRANSPORT.

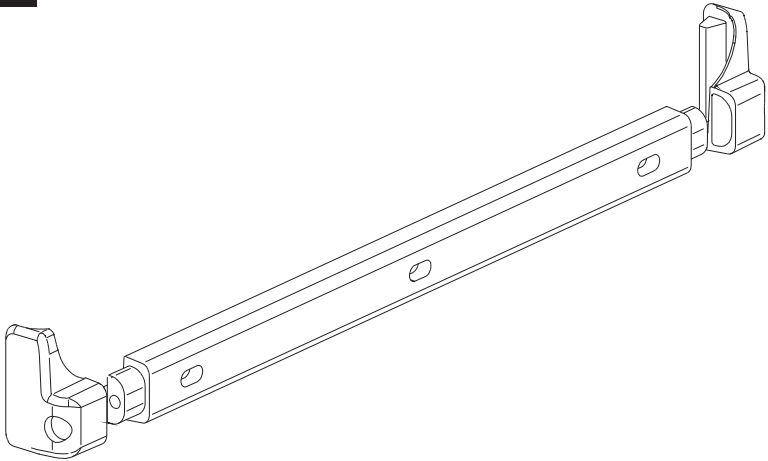


SHOULD ANY ANOMALY BE DETECTED, IT IS FORBIDDEN TO INSTALL THE ACTUATOR, AND IT IS COMPULSORY TO REQUIRE TECHNICAL ASSISTANCE FROM YOUR DEALER OR THE MANUFACTURER.

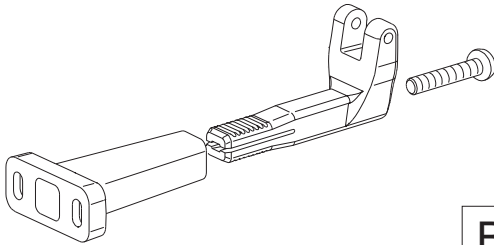


THE PACKAGING (PAPER, PLASTIC, ETC.) HAS TO BE DISPOSED ACCORDING TO THE LAWS IN FORCE.

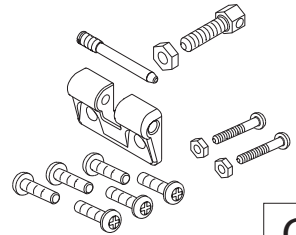
Fig.5



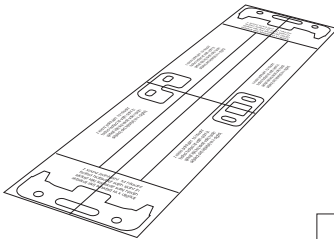
A



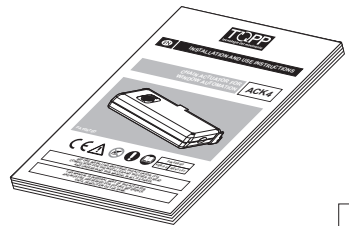
B



C



D



E

4.1- GENERAL INSTRUCTIONS



OPERATORS MUST BE INFORMED OF ACCIDENT RISKS, SAFETY DEVICES AND THE GENERAL ACCIDENT PREVENTION REGULATIONS ESTABLISHED BY INTERNATIONAL DIRECTIVES AND BY THE LAW IN FORCE IN THE COUNTRY OF USE. ALL OPERATORS MUST STRICTLY COMPLY WITH THE ACCIDENT PREVENTION REGULATIONS IN FORCE IN THE COUNTRY OF USE.



DO NOT REMOVE OR ALTER THE PLATES PLACED ON THE ACTUATOR BY THE MANUFACTURER.



IF THE WINDOW FRAME IS ACCESSIBLE FROM OR INSTALLED AT A HEIGHT OF LESS THAN 2.5 m FROM THE GROUND, AND IF IT CAN BE COMMANDED BY AN UNTRAINED USER OR WITH A REMOTE CONTROL DEVICE, FIT AN EMERGENCY STOP SYSTEM WHICH AUTOMATICALLY CUTS IN TO PREVENT THE RISK OF CRUSHING OR DRAGGING PARTS OF THE BODY INSERTED BETWEEN THE MOVING AND FIXED PARTS OF THE WINDOW FRAME.



ANY TAMPERING WITH OR UNAUTHORISED REPLACEMENT OF ONE OR MORE PARTS OR COMPONENTS OF THE ACTUATOR, OR THE USE OF UNORIGINAL ACCESSORIES AND CONSUMABLES, MAY INCREASE THE RISK OF ACCIDENT AND THUS RELIEVES THE MANUFACTURER OF ALL CIVIL AND PENAL LIABILITY



EXTRAORDINARY AND ROUTINE MAINTENANCE OPERATIONS INVOLVING THE TOTAL OR PARTIAL DISMOUNTING OF THE ACTUATOR MAY ONLY BE PERFORMED AFTER DISCONNECTING IT FROM THE POWER SUPPLY.



THIS APPLIANCE MAY NOT BE USED BY PERSONS (CHILDREN INCLUDED) WITH REDUCED PHYSICAL, SENSORIAL OR MENTAL CAPACITIES, OR INEXPERT PEOPLE, UNLESS THEY ARE SUPERVISED AND TAUGHT HOW TO USE IT BY A PERSON RESPONSIBLE FOR THEIR SAFETY. CHILDREN MUST BE CONTROLLED TO MAKE SURE THEY DO NOT PLAY WITH THE APPLIANCE.

4.2- SAFETY DEVICES

4.2.1- PROTECTION AGAINST ELECTRIC HAZARD

The actuator is protected against electric hazard due to direct and indirect contacts.

The protection measures against direct contacts aim at protecting people against hazards due to contact with active parts, usually live parts; while the protection measures against indirect contacts aim at protecting people against hazards due to conducting part, which are usually insulated, but could become live in case of failure (insulation failure).

The adopted protection measures are the following:

- 1) Insulation of live parts by means of a plastic material body;
- 2) Enclosure with suitable protection degree;

3) Only for the mod. ACK4/230V provided with protection against electric shocks:

Protection of passive type given by the use of components with double insulation, also called components of class II or with equivalent insulation.

4.3- SAFETY PLATES



IT IS FORBIDDEN TO REMOVE, MOVE, SPOIL OR IN ANYWAY REDUCE THE VISIBILITY OF THE SAFETY PLATES. FAILURE TO OBSERVE THE ABOVE MAY CAUSE SERIOUS HARM TO PEOPLE AND DAMAGE TO PROPERTY. THE MANUFACTURER DECLINES ALL LIABILITY FOR ANY DAMAGE CAUSED BY THE FAILURE TO OBSERVE THE ABOVE REQUIREMENT.

Fig. 6 illustrates the safety plate: this must be applied directly to the outside of the actuator or near it and always in a position where it can be seen by the installer and/or operator.

4.4- RESIDUAL RISKS

The installer and the user are herewith informed that after the actuator has been installed on the window, the actuator drive can accidentally generate the following residual risk:

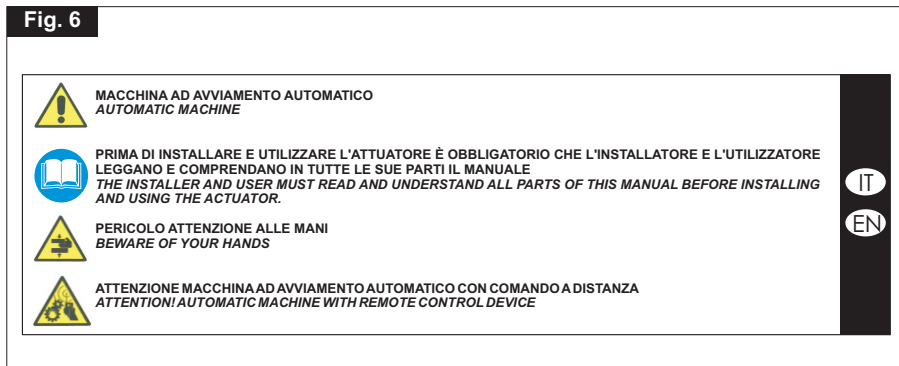
Residual risk: Hazard of squashing or dragging of body parts inserted between the movable and the fix part of the window frame.

Exposure frequency: Accidental and when the installer or the user decides to perform a wrong voluntary action.

Severity of the damage: Light lesions (usually reversible).

Adopted measures: Before enabling the device, it is compulsory to verify that near the window there are not persons, animals or things whose safety may be accidentally jeopardized. During actuator operation, it is compulsory to be in a safe control position assuring visual control on the window movement (**see par. 6.1**).

Fig. 6



5.1- GENERAL INSTRUCTIONS



THE ACTUATOR INSTALLATION CAN BE PERFORMED EXCLUSIVELY BY COMPETENT AND QUALIFIED TECHNICAL PERSONNEL SATISFYING THE PROFESSIONAL AND TECHNICAL REQUIREMENTS FORESEEN BY THE LAWS IN FORCE IN THE COUNTRY OF INSTALLATION.



THE ACTUATOR PERFORMANCE MUST BE SUFFICIENT TO ASSURE THE CORRECT MOVEMENT OF THE WINDOW. IT IS COMPULSORY TO VERIFY THE THRUST OR TRACTIVE FORCE ACCORDING TO THE TYPE AND WEIGHT OF THE WINDOW (PAR. 3.4). IT IS FORBIDDEN TO EXCEED THE LIMITS GIVEN IN TAB. 1 CONCERNING THE TECHNICAL DATA (PAR. 3.3).



THE ACTUATOR INSTALLATION MUST BE PERFORMED EXCLUSIVELY WITH CLOSED WINDOW OR SKYLIGHT.



BEFORE PERFORMING THE INSTALLATION OF THE ACTUATOR ON HOPPER WINDOWS, VERIFY THAT ON BOTH SIDES OF THE WINDOW TWO COMPASS STROKE LIMIT DEVICES ARE INSTALLED IN ORDER TO AVOID THE ACCIDENTAL FALL OF THE WINDOW.

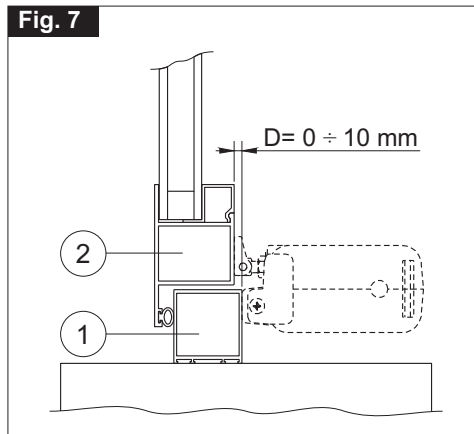


FOR CORRECT OPERATION OF THE ACTUATOR, THE WINDOW MUST HAVE A MINIMUM HEIGHT OF 800 mm (DISTANCE OF THE ACTUATOR FROM THE WINDOW OPENING HINGE). OTHERWISE, ASK YOUR DEALER OR THE MANUFACTURER FOR THE NECESSARY ACCESSORIES FOR A CORRECT INSTALLATION.



VERIFY THAT THE DISTANCE "D" BETWEEN THE FIXED PART OF THE WINDOW (ON WHICH THE FIXING OF THE ACTUATOR IS FORESEEN - FIG. 7 - REF. 1) AND THE MOVABLE PART OF THE WINDOW (ON WHICH THE BRACKET FIXING IS FORESEEN - FIG. 7 - REF. 2) IS INCLUDED WITHIN 0 AND 10 mm. OTHERWISE, ASK YOUR DEALER OR THE MANUFACTURER FOR THE NECESSARY ACCESSORIES FOR A CORRECT INSTALLATION (SEE CHAP. 9)

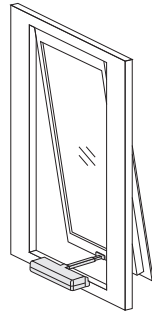
Fig. 7



5.2- TOP HUNG WINDOWS (Fig. 8 and 16÷26)

- 1) Open the package (par. 3.7) and extract the various components;
- 2) **Fig. 17-** With a pencil draw the centre line "X" of the window frame;
- 3) **Fig. 18-** Select the following components: bracket "S1", support "SA", two nuts "D1", two screws "V1", heads "T1" and "T2";
- 4) **Fig. 19-** Insert the two nuts "D1" on the support "SA" and mount the head "T1" by fixing it using screw "V1";
- 5) **Fig. 20-** Cut out the adhesive template "DS" and apply it on the window frame centring it on the previously drawn centre line "X";

Fig. 8



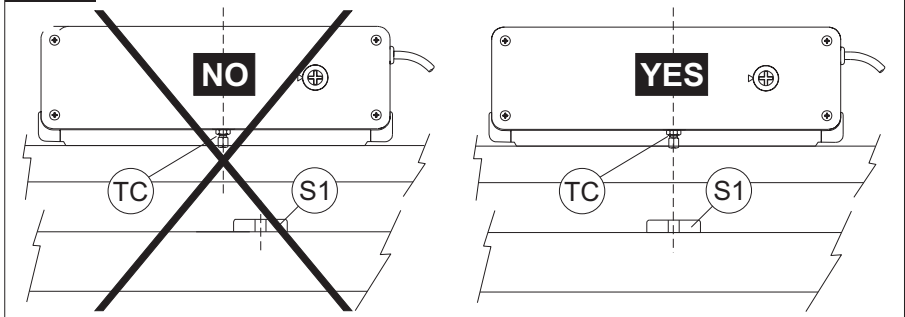
CAUTION: FOR NON-COPLANAR WINDOW FRAMES, IT IS NECESSARY TO CUT THE TEMPLATE CONCERNED PART AND TO APPLY IT ON THE WINDOW FRAME PAYING ATTENTION TO KEEP IT IN THE SAME REFERENCE POSITION.

- 6) With a suitable drill, create on the window frame holes having the related diameter, given on the adhesive template "DS";
- 7) **Fig. 21-** Mount the support "SA" on the fix window frame with the screws "V2"; Check the perfect horizontal and vertical alignment with the window frame;
- 8) **Fig. 22-** Mount the bracket "S1" on the movable window frame with the screws "V2";
- 9) Mount the actuator on the support "SA", place the head "T2" and tighten the screw "V1";



VERIFY THAT THE CHAIN END "TC" IS ON THE SAME AXIS OF THE BRACKET "S1". OTHERWISE, LOOSEN THE FIXING SCREWS AND POSITION IT CORRECTLY. WHEN THE DEVICES ARE NOT COAXIAL, THIS MAY DAMAGE THE ACTUATOR AND THE WINDOW FRAME (FIG. 9).

Fig. 9



- 10) **Fig. 23-** Mount the nut "D2" on the screw "V3" and then it on the chain ending "TC";
Fig. 24- Connect the bracket "S1" to the screw "V3" by means of the pin "P";
- 11) Perform the electric connections according to the prescriptions of **par. 5.4**, as well as with reference to the wiring diagram;
- 12) **Fig. 25-** Act with a screwdriver or with a coin on the adjustment screw "VR", setting the wished opening stroke (cm);



CAUTION: VERIFY THAT THE SELECTED STROKE IS SOME CENTIMETRES LOWER THAN THE STROKE EFFECTIVELY ALLOWED BY MECHANICAL LOCKS, COMPASS STROKE LIMIT DEVICES, OR WING OPENING HINDRANCES.

- 13) **Fig. 26-** Perform a test of complete window frame opening and closing. After the closing phase, verify that the chain end "TC" is completely returned in its seat (**Ref. A**);
- 14) If the closing is right (**Ref. A**), fix the screw "V3" with the nut "D2" and the pin "P".
 If the closing is not precise (**Ref. B**), perform the necessary adjustment of the screw "V3" and of the nut "D2".

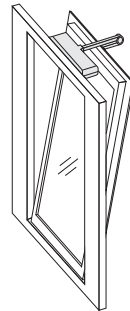


FOR A CORRECT ADJUSTMENT OF THE WINDOW FRAME CLOSING SEE THE INDICATIONS GIVEN IN PAR. 5.6.

5.3- BOTTOM HUNG WINDOWS (Fig. 10 and 27÷37)

- 1) Open the package (**par. 3.7**) and extract the various components;
- 2) **Fig. 28-** With a pencil draw the centre line "Y" of the window frame;
- 3) **Fig. 29-** Select the following components: bracket "S2" and "S3", support "SA", two nuts "D1", two screws "V1", screw "V4", heads "T1" and "T2";
- 4) **Fig. 30-** Insert the two nuts "D1" on the support "SA" and mount the head "T2" by fixing it using screw "V1";
- 5) **Fig. 31-** Cut out the adhesive template "DV" and apply it on the window frame centring it on the previously drawn centre line "Y";

Fig. 10



CAUTION: FOR NON-COPLANAR WINDOW FRAMES, IT IS NECESSARY TO CUT THE TEMPLATE CONCERNED PART AND TO APPLY IT ON THE WINDOW FRAME PAYING ATTENTION TO KEEP IT IN THE SAME REFERENCE POSITION.

- 6) With a suitable drill, create on the window frame holes having the related diameter, given on the adhesive template "DV";
- 7) **Fig. 32-** Mount the support "SA" on the fix window frame with the screws "V2"; check the perfect horizontal and vertical alignment with the window frame;
- 8) **Fig. 33-** Mount the bracket "S2" on the movable window frame with the screws "V2";
- 9) Mount the actuator on the support "SA", place the head "T1" and tighten the screw "V1";



VERIFY THAT THE CHAIN END "TC" IS ON THE SAME AXIS OF THE BRACKET "S1". OTHERWISE, LOOSEN THE FIXING SCREWS AND POSITION IT CORRECTLY. WHEN THE DEVICES ARE NOT COAXIAL, THIS MAY DAMAGE THE ACTUATOR AND THE WINDOW FRAME (SEE FIG. 9).

- 10) **Fig.34-** Mount the nut "D2" on the screw "V3" and then it on the chain end "TC";
Fig.35- Connect the bracket "S3" to bracket "S2" and fix it with the screw "V4". Connect the bracket "S3" with the screw "V3" by means of the pin "P";
- 11) Perform the electric connections according to the prescriptions of **par. 5.4**, as well as with reference to the wiring diagram;
- 12) **Fig. 36-** Act with a screwdriver or with a coin on the adjustment screw "VR", setting the wished opening stroke (cm);



CAUTION: VERIFY THAT THE SELECTED STROKE IS SOME CENTIMETRES LOWER THAN THE STROKE EFFECTIVELY ALLOWED BY MECHANICAL LOCKS, COMPASS STROKE LIMIT DEVICES, OR WING OPENING HINDRANCES.

- 13) **Fig. 37-** Perform a test of complete window frame opening and closing. After the closing phase, verify that the chain end "TC" is completely returned in its seat (**Ref. A**);
- 14) If the closing is right (**Ref. A**), fix the screw "V3" with the nut "D2" and the pin "P". If the closing is not precise (**Ref. B**), perform the necessary adjustment of the screw "V3" and of the nut "D2". If necessary, act also on the bracket "S3", unscrewing the screw "V4" it is possible to unhook the two brackets modifying their coupling position.



FOR A CORRECT ADJUSTMENT OF THE WINDOW FRAME CLOSING SEE THE INDICATIONS GIVEN IN PAR. 5.6.

5.4- ELECTRIC CONNECTIONS (Wiring diagram)



THE ELECTRIC CONNECTION OF THE ACTUATOR CAN BE PERFORMED ONLY BY COMPETENT AND QUALIFIED TECHNICAL PERSONNEL SATISFYING THE TECHNICAL AND PROFESSIONAL REQUIREMENTS FORESEEN BY THE LAW IN FORCE IN THE COUNTRY OF INSTALLATION ISSUING TO THE CUSTOMER A DECLARATION OF CONFORMITY FOR THE CONNECTION AND/OR THE PLANT PERFORMED.



THE ELECTRIC CONNECTION OF THE VERSION ACK44 HAS TO BE CARRIED OUT WITH A VERY LOW SAFETY VOLTAGE FEEDER PROTECTED AGAINST SHORT CIRCUITS.



BEFORE PERFORMING THE ELECTRIC CONNECTION OF THE ACTUATOR, VERIFY THE CORRECT INSTALLATION ON THE WINDOW.



THE MAINS TO WHICH THE ACTUATOR IS CONNECTED MUST COMPLY WITH THE REQUIREMENTS OF THE LAWS IN FORCE IN THE COUNTRY OF INSTALLATION, AS WELL AS SATISFY THE TECHNICAL FEATURES GIVEN IN TAB. 1 AND ON THE RATING PLATE AND THE "CE" MARKING (PAR. 3.1).



THE SECTION OF THE MAINS CABLES MUST BE PROPERLY SIZED ACCORDING TO THE ABSORBED ELECTRIC POWER (SEE RATING PLATE AND "CE" MARKING).



ANY TYPE OF ELECTRIC MATERIAL (PLUG, CABLE, TERMINALS, ETC.) USED FOR THE CONNECTION MUST BE SUITABLE FOR THE USE, WITH "CE" MARKING AND COMPLYING WITH THE REQUIREMENTS FORESEEN BY THE LAWS IN FORCE IN THE COUNTRY OF INSTALLATION.



TO ASSURE EFFICIENT SEPARATION FROM THE MAINS, INSTALL AN APPROVED TEMPORARY BIPOLAR SWITCH (PUSH-BUTTON) UPLINE OF THE DEVICE. FIT A BIPOLAR MAIN SWITCH WITH CONTACT APERTURE OF AT LEAST 3 mm UP LONE OF THE CONTROL LINE.



BEFORE PERFORMING THE ELECTRIC CONNECTION OF THE ACTUATOR, VERIFY THAT THE POWER SUPPLY CABLE IS NOT DAMAGED. SHOULD IT BE DAMAGED, IT MUST BE REPLACED BY THE MANUFACTURER OR BY THE TECHNICAL ASSISTANCE SERVICE OR IN ANY CASE BY AUTHORIZED OPERATORS.

5.5- CONTROL DEVICES



THE CONTROL DEVICES USED TO DRIVE THE ACTUATOR MUST ASSURE THE SAFETY CONDITIONS FORESEEN BY THE LAWS IN FORCE IN THE COUNTRY OF USE.

According to the different type of installations, the actuators can be driven by the following control devices:

1) MANUAL PUSH-BUTTON:

Bipolar switch button with central OFF position, with biased-off switch;

2) CONTROL AND FEEDING UNIT:

Microprocessor control units (e.g.: Mod. TF, etc.) controlling the single actuator or more than one actuator simultaneously by means of one or more manual push-buttons, an infrared remote control or a 433 Mhz radio control.

To these control units, it is possible to connect the rain sensors (**RD - 12V**), the wind sensor (**RW**) and the brightness sensor;



THE EVENTUALLY USED UNITS MUST SUPPLY A VOLTAGE TO ACK4 FOR MAX. 120 s.

3) SYNCHRONIZATION UNIT:

Microprocessor control unit (USA2) controlling by means of a manual push-button the simultaneous operation of 2 actuators installed on a single window assuring the regular opening and closing movement.

5.6- ADJUSTMENT OF THE WINDOW FRAME CLOSING (Fig. 25-35)

THE CORRECT ADJUSTMENT OF THE WINDOW FRAME CLOSING ASSURES THE LIFE AND THE TIGHTNESS OF THE SEALS, AS WELL AS THE GOOD OPERATION OF THE ACTUATOR.

A good method to perform the adjustment is to let the chain go back without load into the actuator and, then, to measure the position of the chain ending with reference to the external casings.

Then, tighten the window frame fixing screw and let the chain go back.

The adjustment is right, when with closed window the chain ending has the same position detected during the test without load.

As given in **Fig. 26 - Ref. B** (top hung windows) and in **Fig. 37 - Ref. B** (bottom hung windows), although the window is closed, part of the chain ending or of the chain itself has not come back completely into the actuator casings causing the failed tripping of the related limit switch related to the chain re-entering. In this case, the actuator motor remains under conditions of maximum stress, until the electronic protection trips and the **"BUZZER" is enabled.**

This warning horn emits a continuous "beep" as long as the actuator is connected to the power supply.



CONSIDERING THAT THIS ADDITIONAL SAFETY DEVICE HAS BEEN DEVELOPED IN ORDER TO OFFER A RAPID SYSTEM TO DETECT ANY EVENTUAL ANOMALY IN THE ASSEMBLY OF THE DEVICE, FOR A CORRECT INSTALLATION OF THE PRODUCT IT IS COMPULSORY TO FOLLOW ALL THE ASSEMBLING PROCEDURES DESCRIBED IN THIS MANUAL.

5.7- EMERGENCY PROCEDURES

Should it be necessary to open the window manually due to power supply failure or mechanism block, follow these instructions:



BEFORE PERFORMING ANY TYPE OF INTERVENTION ON THE ACTUATOR AND ON THE WINDOW, IT IS COMPULSORY TO DISCONNECT THE POWER SUPPLY OF THE ACTUATOR AND TO PUT ON "0" THE EVENTUAL SWITCHES OF THE CONTROL DEVICES.



IT IS COMPULSORY TO PADLOCK THE MAIN SWITCH OF THE DISCONNECTION DEVICE INSTALLED ON THE MAINS IN ORDER TO AVOID ANY UNEXPECTED START. IF THE MAIN SWITCH CANNOT BE PADLOCKED, IT IS COMPULSORY TO PLACE A SIGN FORBIDDING THE ENABLING.



IN SOME CASES, THE EVENT OF POSSIBLE ANOMALIES MIGHT STALL ALSO OTHER ACTUATORS CONNECTED IN PARALLEL. TO FIND THE SUPPOSED MALFUNCTIONING ACTUATOR, RUN SOME CLOSING OPERATIONS IN SUCCESSION (ABOUT 10 OPERATIONS EVERY 2 SECONDS), TILL THE WORKING ACTUATORS START RUNNING AGAIN.

- 1) Act on the pin "P" until it is completely extracted from the bracket "S1" (top hung windows - **Fig. 11**). Act on the pin "P" until it is completely extracted from the bracket "S3" (bottom hung windows - **Fig. 12**);
- 2) Open the window manually.

Fig. 11

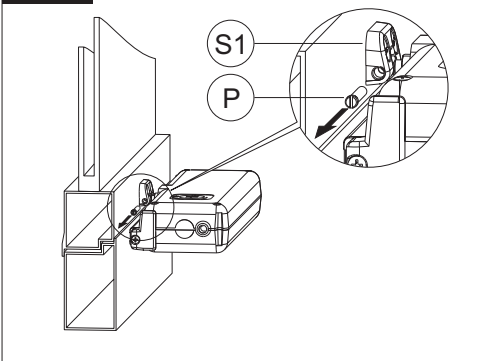
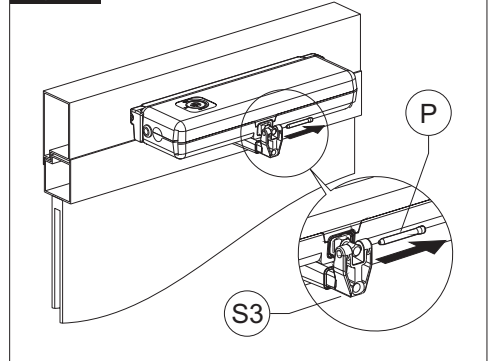


Fig. 12



6.1- USE OF THE ACTUATOR



THE ACTUATOR CAN BE USED ONLY BY A USER ACTING IN COMPLIANCE WITH THE INSTRUCTIONS GIVEN IN THIS MANUAL AND/OR IN THE MANUAL OF THE ACTUATOR COMMAND DEVICE (e.g.: WIND AND RAIN CONTROL UNIT).



BEFORE USING THE ACTUATOR, IT IS COMPULSORY FOR THE USER TO READ AND UNDERSTAND IN ALL ITS PARTS THIS MANUAL, AS WELL AS THE EVENTUAL MANUAL OF THE INSTALLED CONTROL DEVICE TYPE.



BEFORE OPERATING THE ACTUATOR, THE USER MUST COMPULSORILY VERIFY THAT NEAR AND/OR UNDER THE WINDOW THERE ARE NOT ANY PERSON, ANIMAL AND THING WHOSE SAFETY MAY BE ACCIDENTALLY JEOPARDISED (SEE PAR. 4.4).



DURING THE OPERATION OF THE ACTUATOR CONTROL DEVICE, THE USER HAS TO COMPULSORILY OCCUPY A CONTROL POSITION ASSURING VISUAL CONTROL ON THE WINDOW MOVEMENT.



THE FUNCTION EFFICIENCY AND THE RATED PERFORMANCE OF THE ACTUATOR, OF THE WINDOW FRAME ON WHICH IT IS INSTALLED AND OF THE ELECTRIC EQUIPMENT MUST BE VERIFIED STEADILY IN TIME BY PERFORMING, WHEN NECESSARY, INTERVENTIONS OF ROUTINE AND SUPPLEMENTARY MAINTENANCE ASSURING THE OPERATION CONDITIONS IN COMPLIANCE WITH THE SAFETY REGULATIONS.



ALL ABOVE MENTIONED MAINTENANCE INTERVENTIONS MAY BE PERFORMED EXCLUSIVELY BY TECHNICAL COMPETENT AND QUALIFIED TECHNICAL PERSONNEL SATISFYING THE TECHNICAL AND PROFESSIONAL REQUIREMENTS FORESEEN BY THE LAW IN FORCE IN THE COUNTRY OF INSTALLATION.

The use of the actuator allows to control automatically the opening and closing of the window according to the type of control device installed (see par. 5.5).

7.1- GENERAL INSTRUCTIONS



IF THE ACTUATOR WORKS INCORRECTLY, CONTACT THE MANUFACTURER.



ANY WORK ON THE ACTUATOR (E.G.: POWER CABLE, ETC.) OR ITS COMPONENTS MAY ONLY BE CARRIED OUT BY PERSONNEL QUALIFIED BY THE MANUFACTURER. TOPP DECLINES ALL LIABILITY FOR WORK PERFORMED BY UNAUTHORISED PEOPLE.

The actuator incorporates components that do not require significant routine or extraordinary maintenance operations.

In heavy-duty conditions (e.g.: very dirty work areas, frequent use, elevated temperature changes, load variations caused by wind or snow, etc.) make sure, at least once every 6 months, that the actuator assembly components are clean, the fixing systems (brackets and screws) are tight, the window frame is not deformed and the seals are tight, and check the cables and connectors.

If any malfunctions arise after cleaning or inspection, contact the TOPP technical assistance service.

8.1- GENERAL INSTRUCTIONS

THE DEMOLITION OF THE ACTUATOR MUST OCCUR IN COMPLIANCE WITH THE LAWS IN FORCE ON ENVIRONMENT PROTECTION.



DIFFERENTIATE THE PARTS MAKING UP THE ACTUATOR ACCORDING TO THEIR DIFFERENT MATERIAL TYPE (PLASTIC, ALUMINIUM, ETC.).

9- SPARE PARTS AND ACCESSORIES UPON REQUEST**9.1- GENERAL INSTRUCTIONS**

THE USE OF "NON-ORIGINAL" SPARE PARTS AND ACCESSORIES WHICH MAY ENDANGER THE SAFETY AND THE EFFICIENCY OF THE ACTUATOR IS FORBIDDEN. THIS ACTION SHALL INVOLVE THE WARRANTY EXPIRATION.



ORIGINAL SPARE PARTS AND ACCESSORIES HAVE TO BE REQUESTED EXCLUSIVELY TO YOUR DEALER OR TO THE MANUFACTURER STATING TYPE, MODEL, SERIAL NUMBER, AND YEAR OF CONSTRUCTION OF THE ACTUATOR.

Fig. 13

FRAME ADJUSTMENT PINS

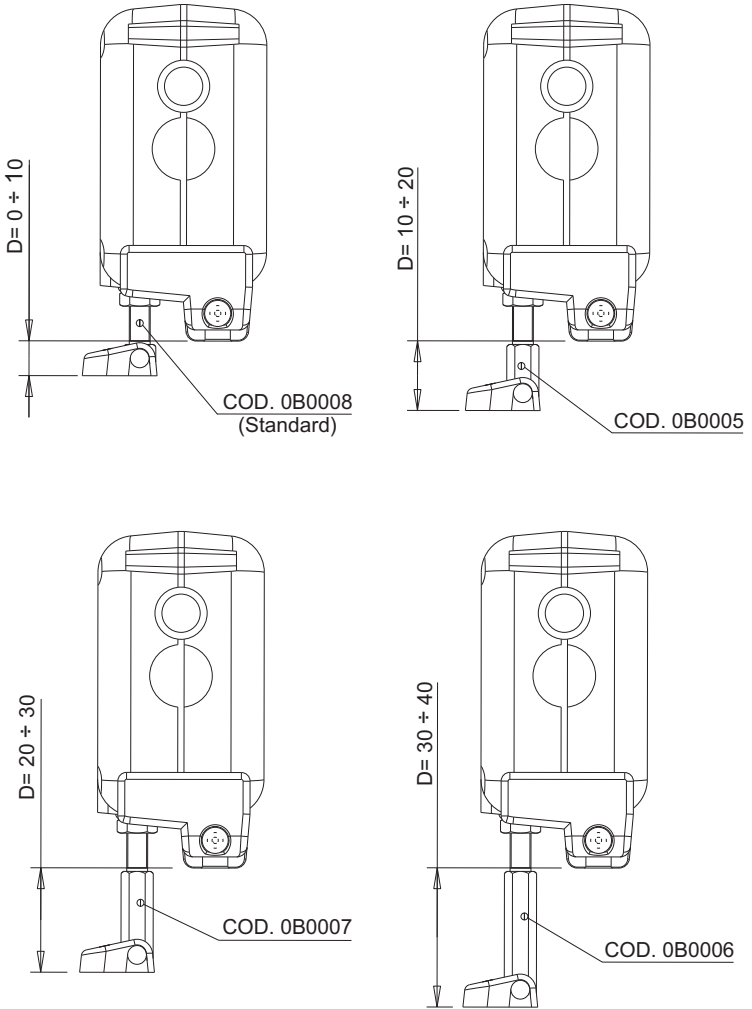
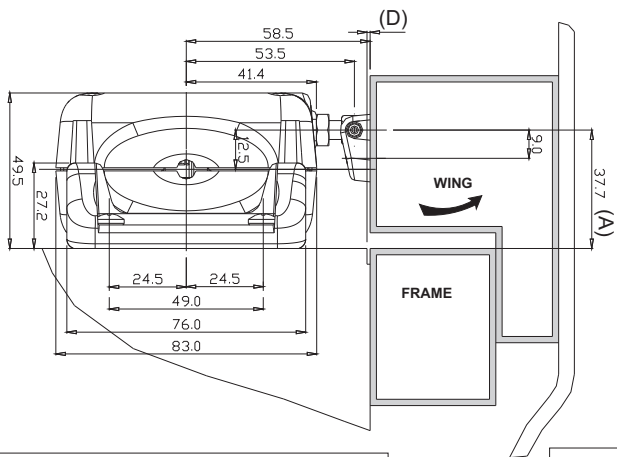


Fig. 14

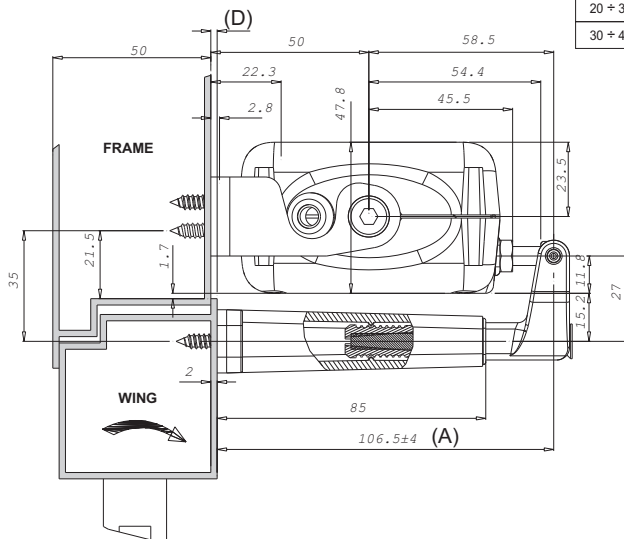
VERTICAL MOUNTING BRACKET (COD. 3A1380-81-82)



FOR A CORRECT OPERATION, THE WINDOW MUST HAVE A MIN. HEIGHT OF 800 mm (ACTUATOR DISTANCE FROM THE WINDOW FRAME OPENING HINGE).

Overlapped part (D)	Window frame adjustment pin code
0 ± 10 mm	0B0008 (Standard)
10 ± 20 mm	0B0005
20 ± 30 mm	0B0007
30 ± 40 mm	0B0006

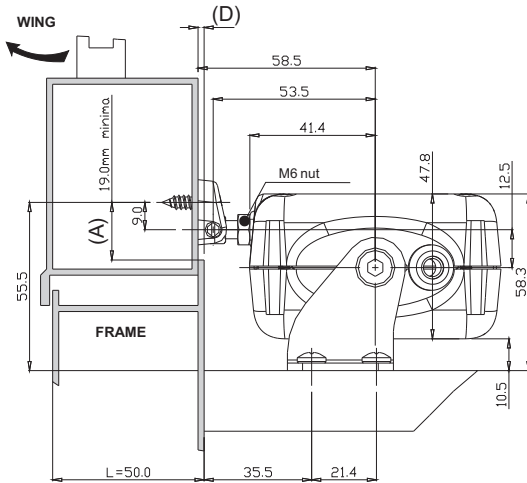
SINGLE SWIVEL BRACKET (COD. 1A1665-66-67)



THE FIXING POSITION (A) HAS TO BE VERIFIED AND EVALUATED ACCORDING TO THE PROFILE/WIDTH OF THE WING/FRAME AND OF THE WINDOW LIGHT. THE ACTUATOR WITH SWIVEL BRACKET CAN BE SUBJECT TO A MAX. THRUST FORCE NOT EXCEEDING 250 N FOR A CORRECT OPERATION, THE WINDOW MUST HAVE A MIN. HEIGHT OF 400 mm (ACTUATOR DISTANCE FROM THE WINDOW FRAME OPENING HINGE).

Fig. 15

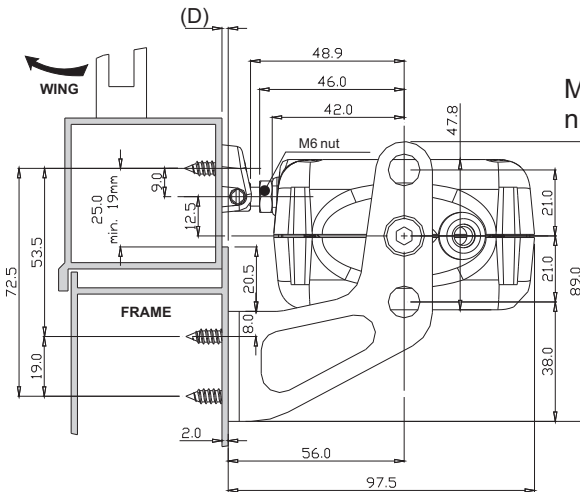
SMALL SWIVEL BRACKET (COD. 3A1396-97-98-99)



Make sure that the M6 nut is tightly fastened

Overlapped part (D)	Window frame adjustment pin code
0 + 10 mm	0B0008 (Standard)
10 + 20 mm	0B0005
20 + 30 mm	0B0007
30 + 40 mm	0B0006

BIG SWIVEL BRACKET (COD.3A1391-92-93-94)



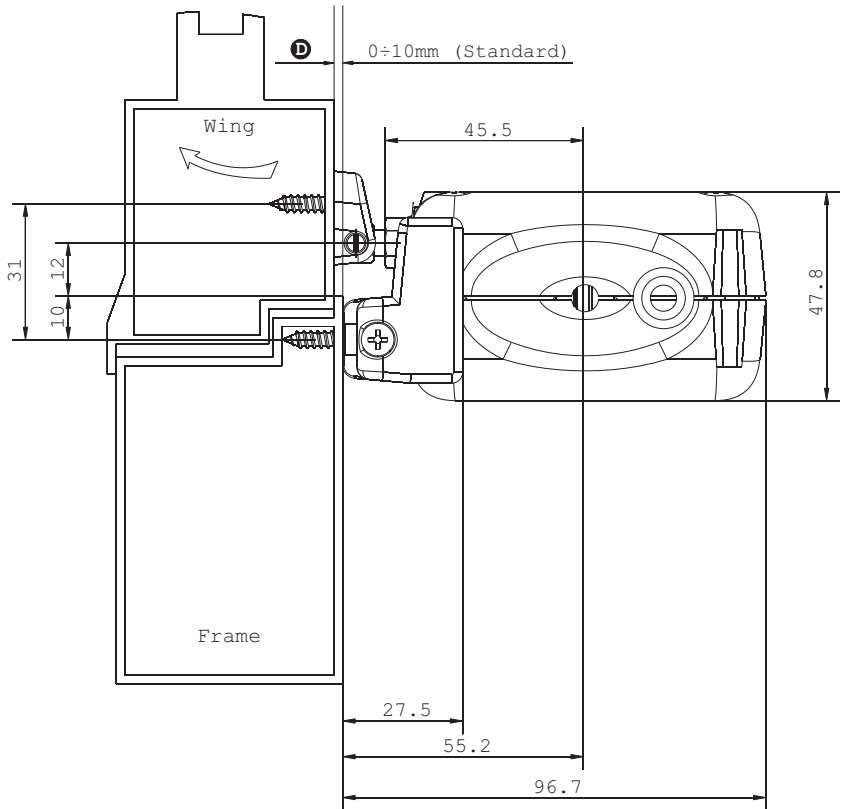
Make sure that the M6 nut is tightly fastened



THE FIXING POSITION (A) HAS TO BE VERIFIED AND EVALUATED ACCORDING TO THE PROFILE/WIDTH OF THE WING/FRAME AND OF THE WINDOW LIGHT. THE ACTUATOR WITH SWIVEL BRACKET CAN BE SUBJECT TO A MAX. THRUST FORCE NOT EXCEEDING 250 N FOR A CORRECT OPERATION, THE WINDOW MUST HAVE A MIN. HEIGHT OF 400 mm (ACTUATOR DISTANCE FROM THE WINDOW FRAME OPENING HINGE).

THE CHAIN CAN CURVE BOTH UPWARDS AND DOWNWARDS DEPENDING ON THE WINDOW'S WEIGHT, ON THE DISTANCE BETWEEN THE PUSH POINT AND THE HINGES, ON THE WIND. THIS DOES NOT AFFECT THE GOOD PERFORMANCES OF THE ACTUATOR.

Fig. 16



Overlapped part D	Window frame adjustment pin code
0 ± 10 mm	0B0008 (Standard)
10 ± 20 mm	0B0005
20 ± 30 mm	0B0007
30 ± 40 mm	0B0006

Fig. 17

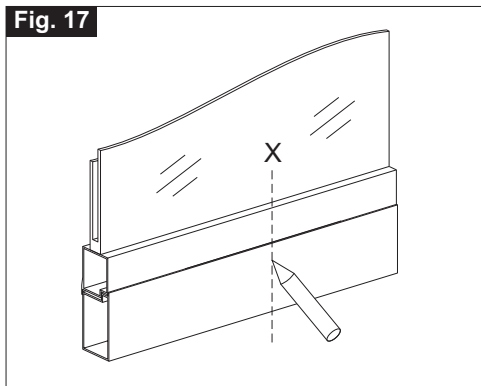


Fig. 18

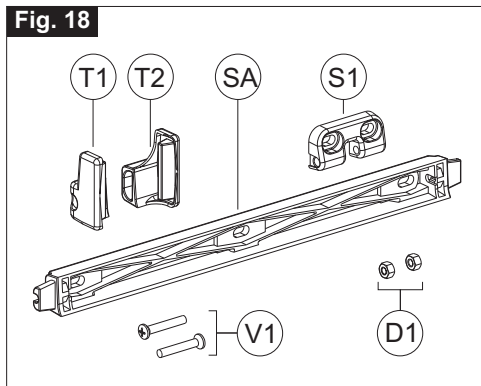


Fig. 19

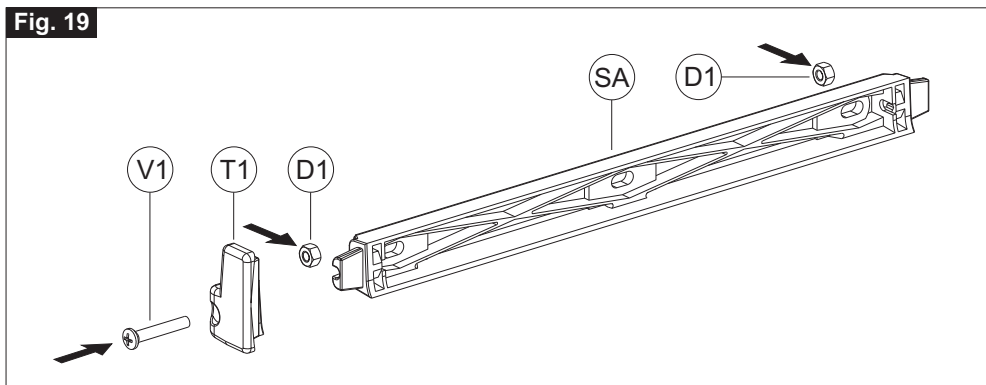


Fig. 20

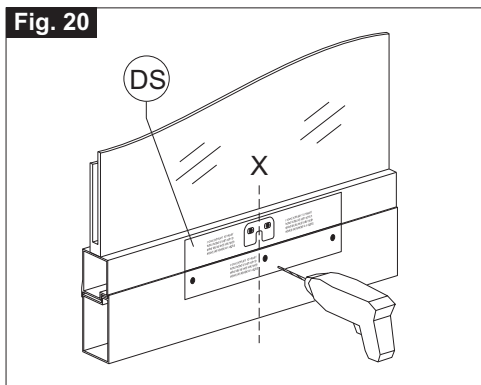


Fig. 21

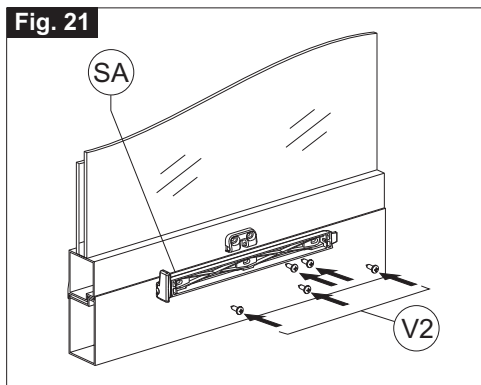


Fig. 22

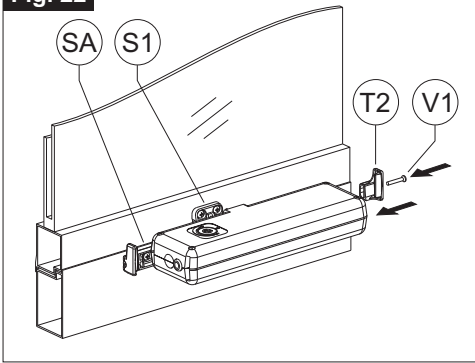


Fig. 23

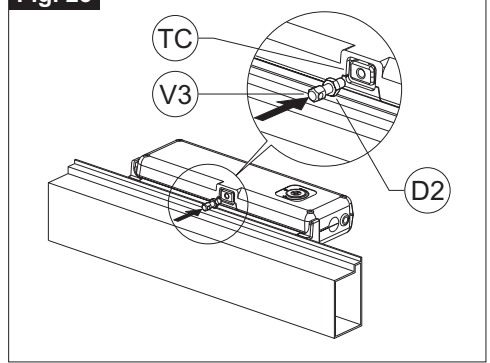


Fig. 24

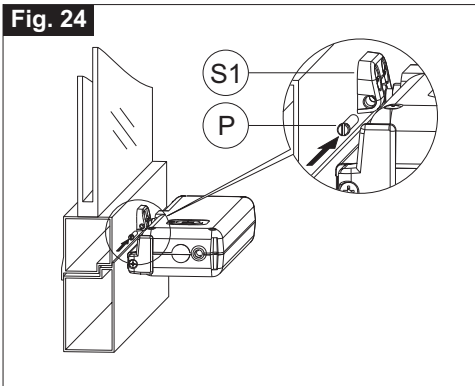


Fig. 25

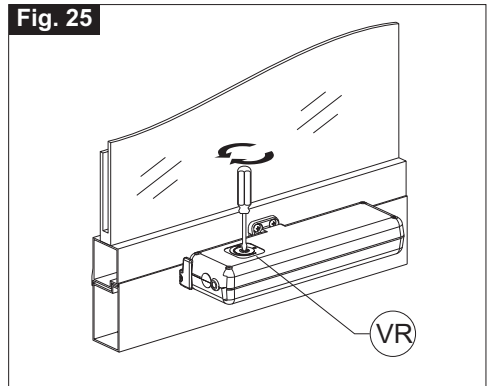


Fig. 26

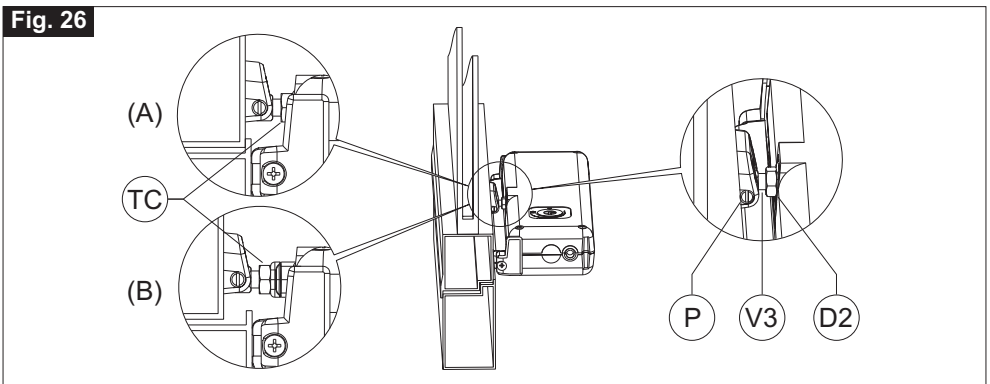
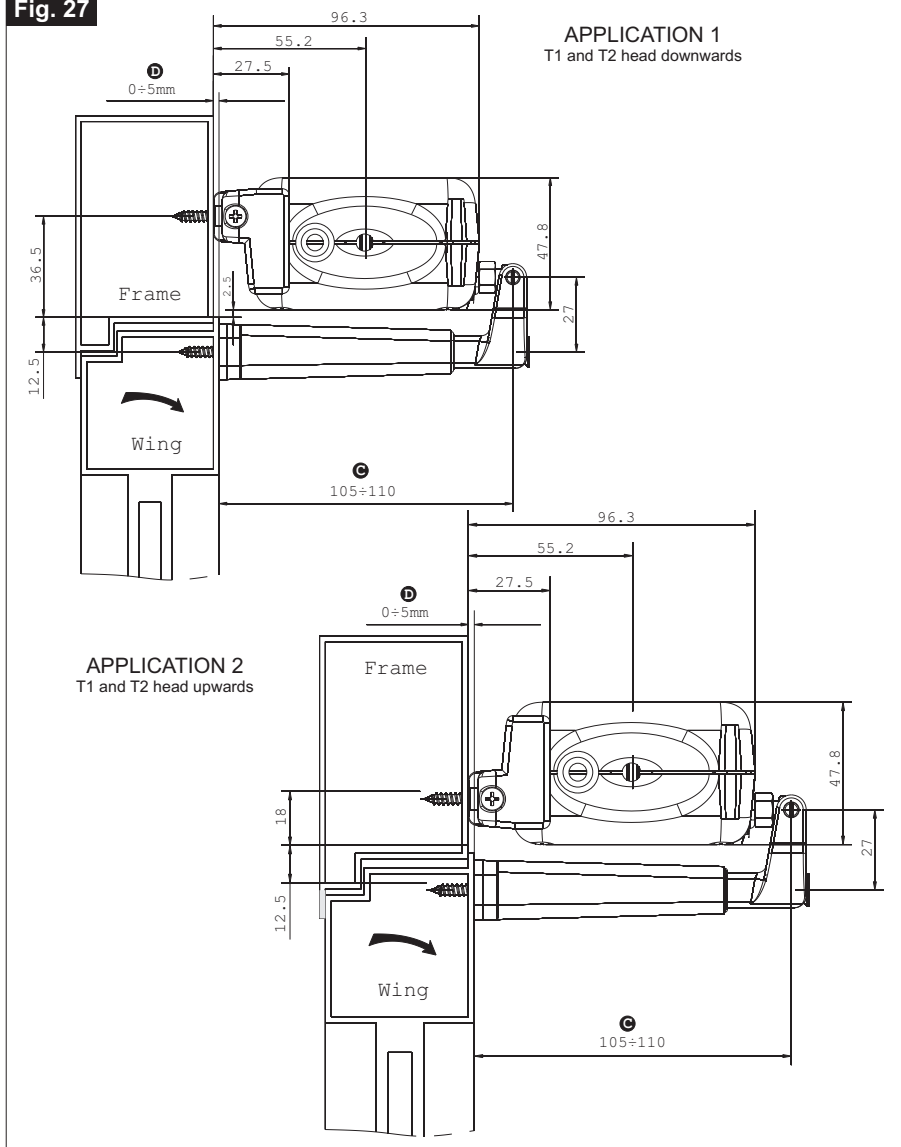


Fig. 27



**VERIFY THAT THE DISTANCE "D" BETWEEN THE FIXED PART AND THE MOVABLE PART OF THE WINDOW IS INCLUDED WITHIN 0 AND 5 mm.
THE DISTANCE "C" IS ADJUSTABLE FROM 105 TO 110 MM DEPENDING ON THE OVERLAP "D".**



Fig. 28

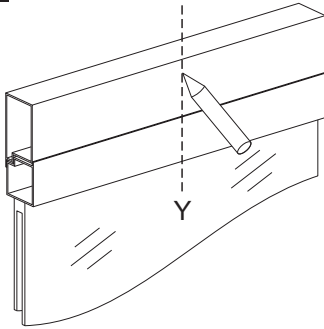


Fig. 29

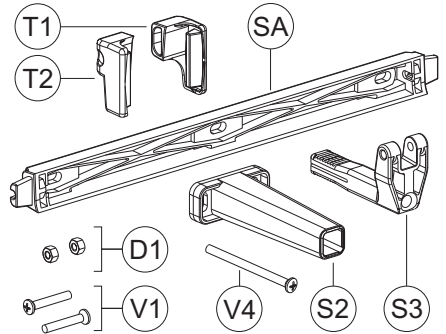


Fig. 30

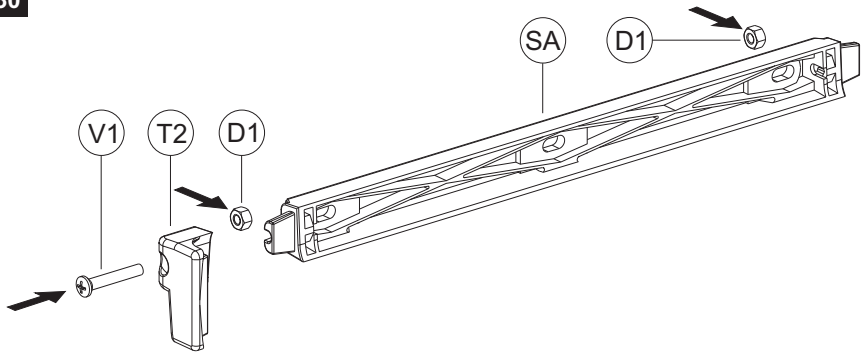


Fig. 31

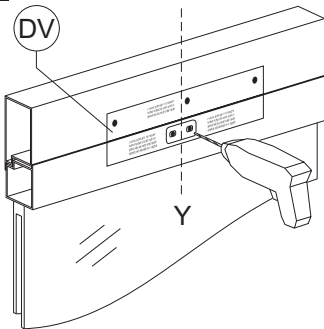


Fig. 32

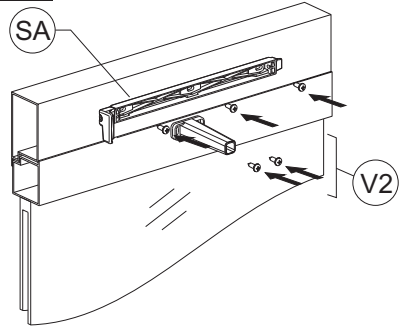


Fig. 33

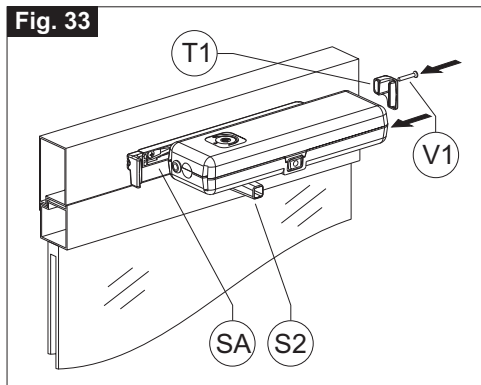


Fig. 34

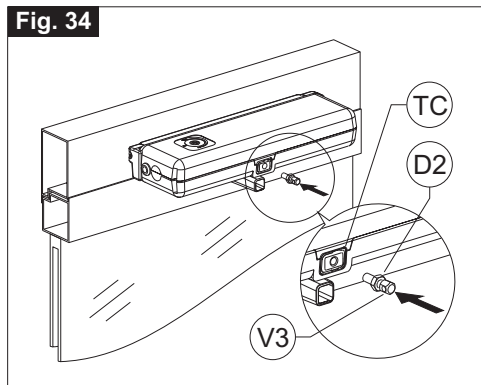


Fig. 35

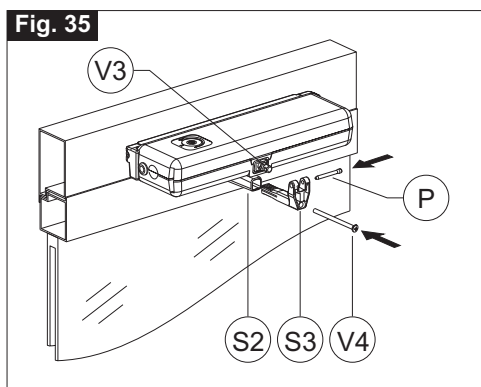


Fig. 36

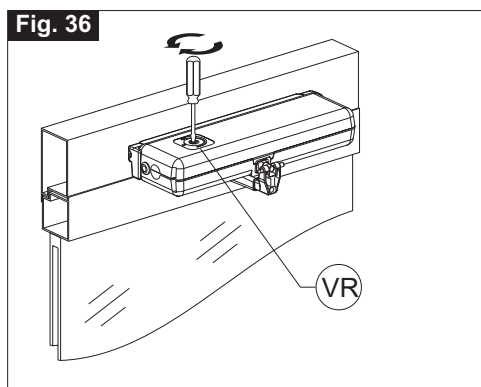
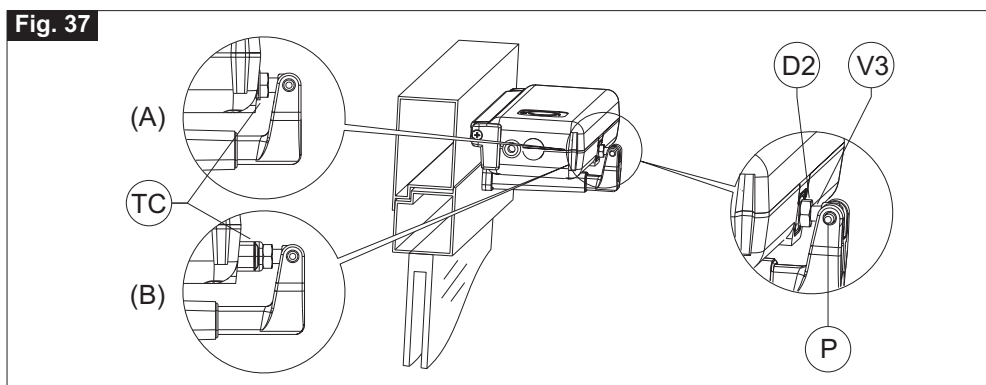
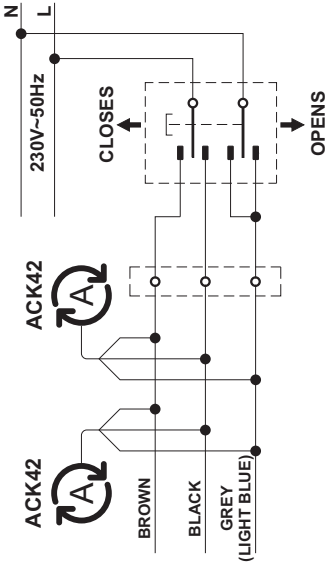


Fig. 37

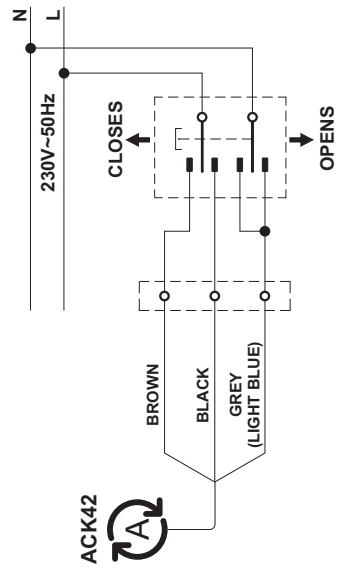


230 V

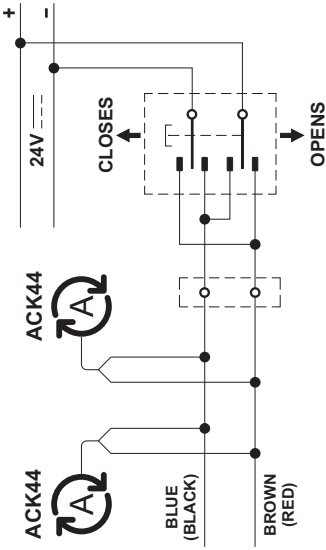
Wiring diagram



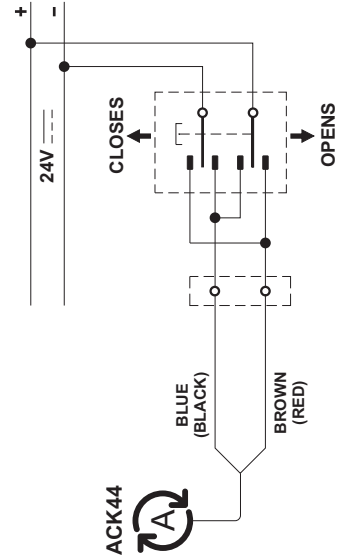
 THIS SYMBOL IDENTIFIES THE TOPPELECTRICAL ACTUATOR IN WIRING DIAGRAM.



24 V



 THIS SYMBOL IDENTIFIES THE TOPPELECTRICAL ACTUATOR IN WIRING DIAGRAM.




Warranty for faults or defects according to art. 1490 of the Civil Code covers products and single parts of products for 24 months after the shipment from the factory.

Warranty for the good operative performance of devices agreed by the manufacturer means that the manufacturer will commit itself to repair and replace, free of charge and as soon as possible, the parts that may be fail due to a material manufacturing defect during the warranty period. The buyer cannot be entitled to any compensation right for any damages or other expenses. Fragile parts or parts that are exposed to normal wear and tear or that are exposed to corrosive agents or treatments or to overloads, even if just temporary, etc, are not included in the warranty. The manufacturer will not be liable for any damages caused by incorrect assembling, handling, fitting, excessive stress or damages due to incompetence.

Furthermore, the manufacturer will not be liable for tampering with the product, if the product is disassembled or lacks a label or if it has obvious indications of collision or other. Repairs under warranty should always be delivered under "ex-works" terms.

The warranty is valid only if the form herein (which is part of the usage and installation instructions) is filled out completely and specified with the reason of the reported fault.

The products must be installed and used in accordance with the technical characteristics and instructions provided by TOPP and also according to the compliance of safety norms and dispositions that regulate the installation and the use of the electric appliances, effective in the country in which the products are installed and used. To that end, the buyer explicitly exempts TOPP from any liability with regard to improper usage, the non-compliance of safety norms, technical specifications and use and installation instructions.

MODEL	<hr/>	TECHNICAL REPORT										
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