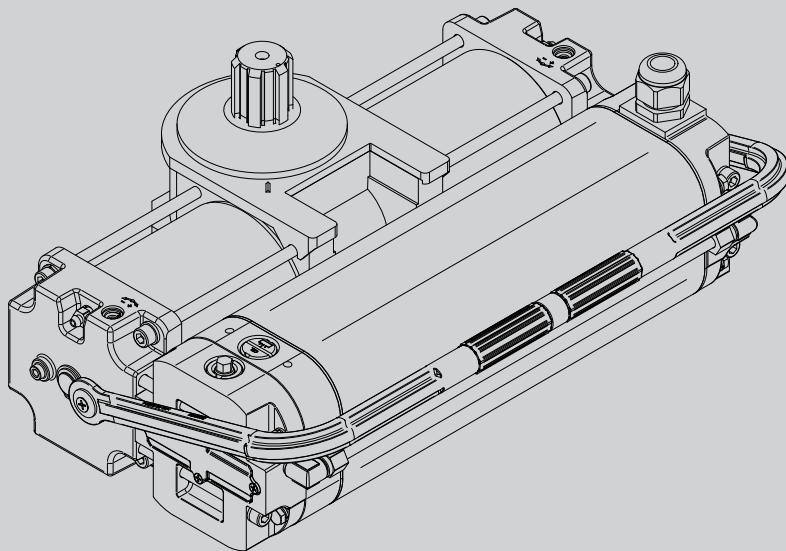




AUTOMAZIONI A PISTONE PER CANCELLI A BATTENTE  
 PISTON AUTOMATIONS FOR SWING GATES  
 AUTOMATIONS A PISTON POUR PORTAILS BATTANTS  
 HYDRAULISCHER DREHTORANTRIEB  
 AUTOMATIZACIONES A PISTON PARA PORTONES CON BATIENTE  
 AUTOMATISERINGSSYSTEMEN MET ZUIGER VOOR VLEUGELPOORTEN



# SUB BT

ISTRUZIONI DI INSTALLAZIONE  
 INSTALLATION MANUAL  
 INSTRUCTIONS D'INSTALLATION  
 MONTAGEANLEITUNG  
 INSTRUCCIONES DE INSTALACION  
 INSTALLATIEVOORSCHRIFTEN



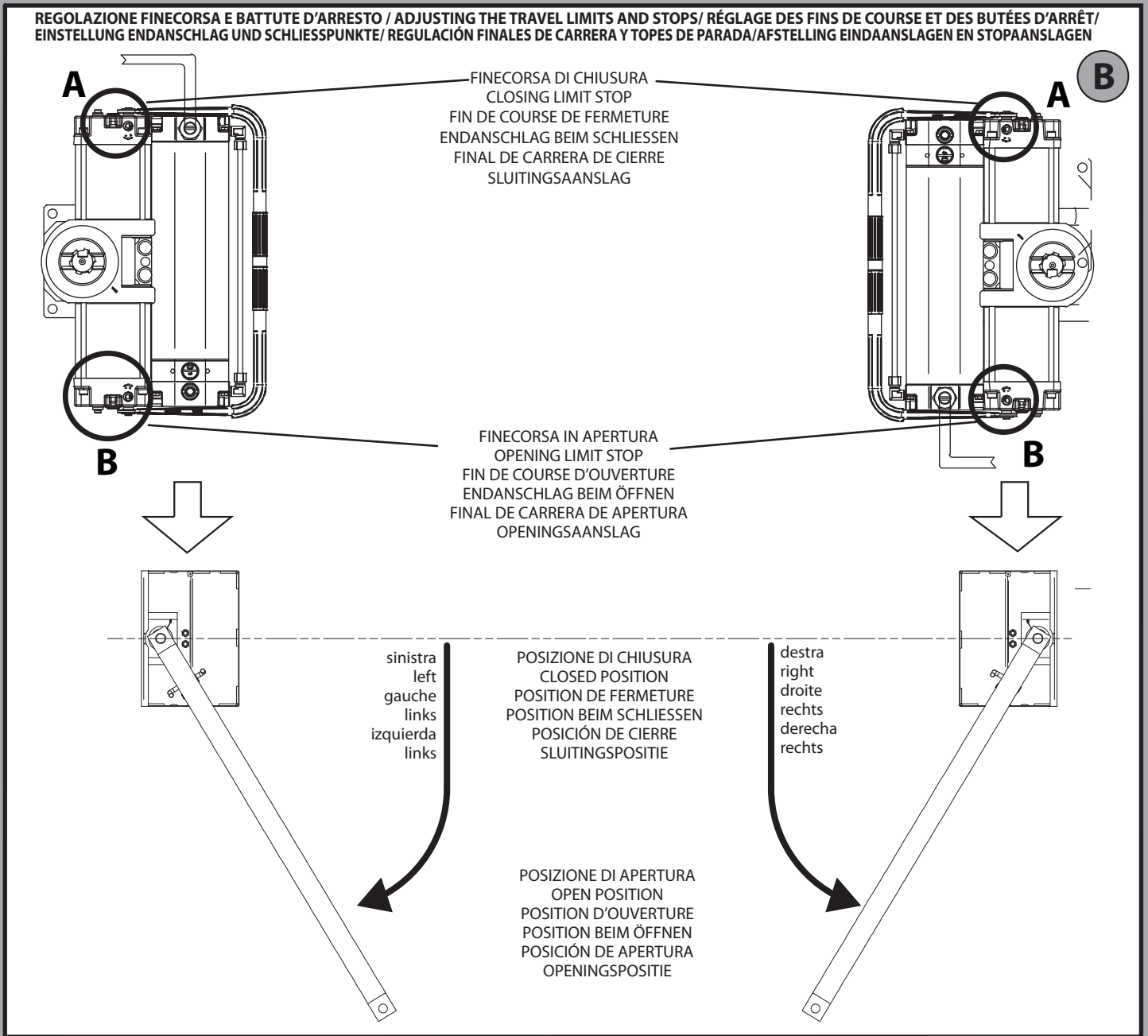
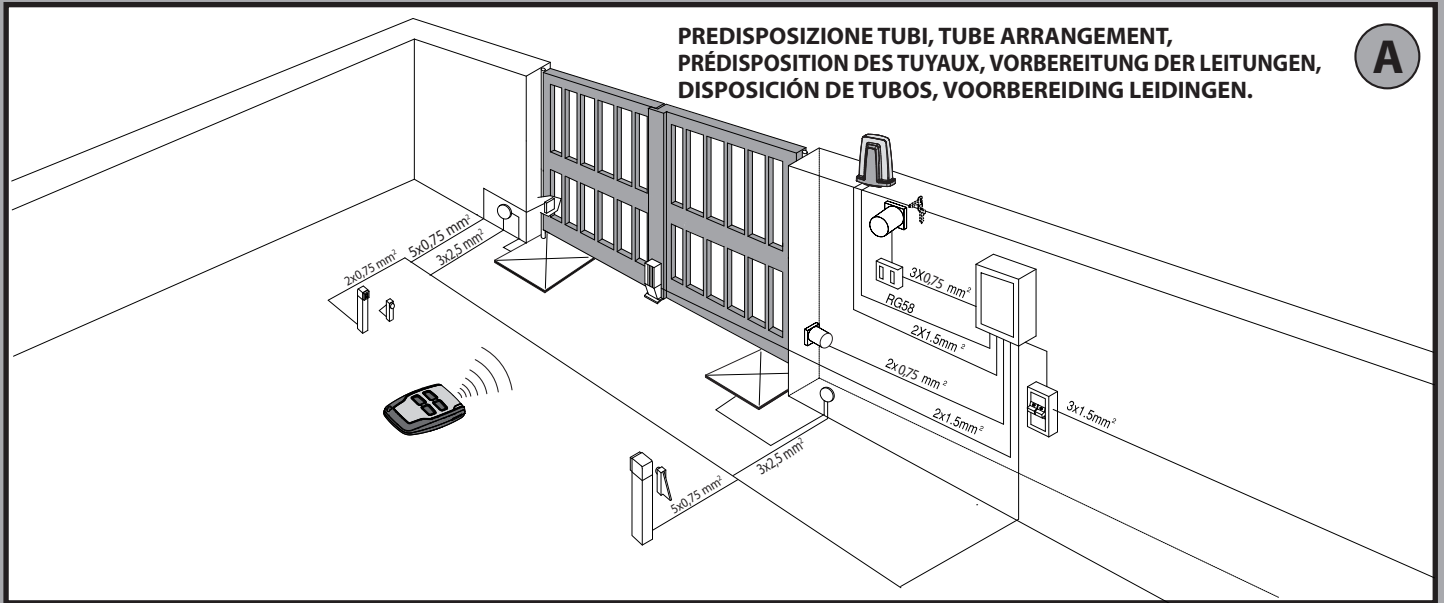
AZIENDA CON SISTEMA DI GESTIONE  
 INTEGRATO CERTIFICATO DA DNV  
 = UNI EN ISO 9001:2008 =  
 UNI EN ISO 14001:2004

# INSTALLAZIONE VELOCE-QUICK INSTALLATION-INSTALLATION RAPIDE SCHNELLINSTALLATION-INSTALACIÓN RÁPIDA - SNELLE INSTALLATIE



- a) Prima di iniziare con l'installazione bisogna leggere le avvertenze.  
 a) Before commencing installation, make sure you read the warnings.  
 a) Avant de commencer l'installation lisez les avertissements.  
 a) Vor der Installation müssen die Hinweise gelesen werden.  
 a) Antes de comenzar con la instalación es necesario leer las advertencias.  
 a) Voor met de installatie te beginnen moet u de waarschuwingen lezen.
- b) Oltre alle figure, bisogna seguire le indicazioni date nel paragrafo corrispondente a pag.10  
 b) In addition to the figures, you must follow the instructions given in the relevant section on page 12  
 b) Suivez non seulement les figures mais aussi les indications données dans le paragraphe correspondant à la page 14  
 b) Außer den Abbildungen müssen die Angaben im entsprechenden Abschnitt auf Seite 16 befolgt werden  
 b) Además de las figuras, es necesario seguir las indicaciones dadas en el apartado correspondiente en pág. 18  
 b) Volg niet alleen de figuren, maar ook de aanwijzingen die in de paragraaf op pag. 20 staan

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**B1**

ITALIANO

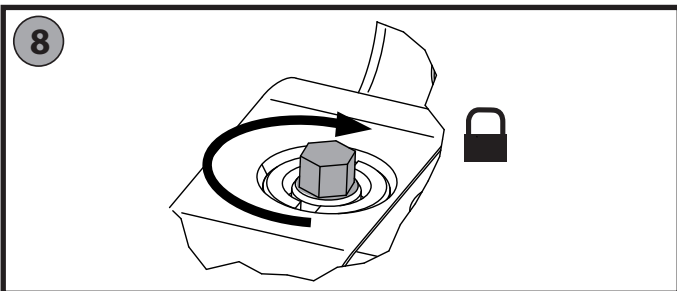
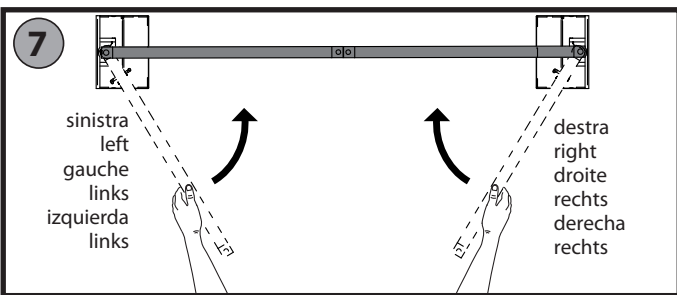
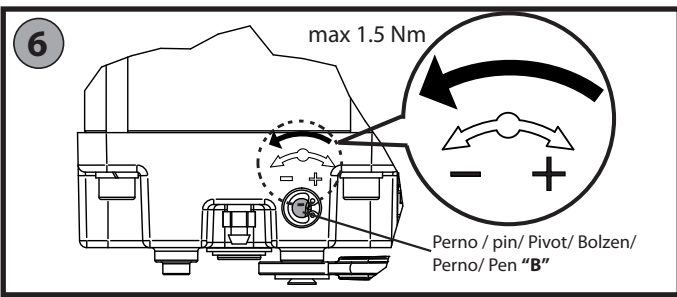
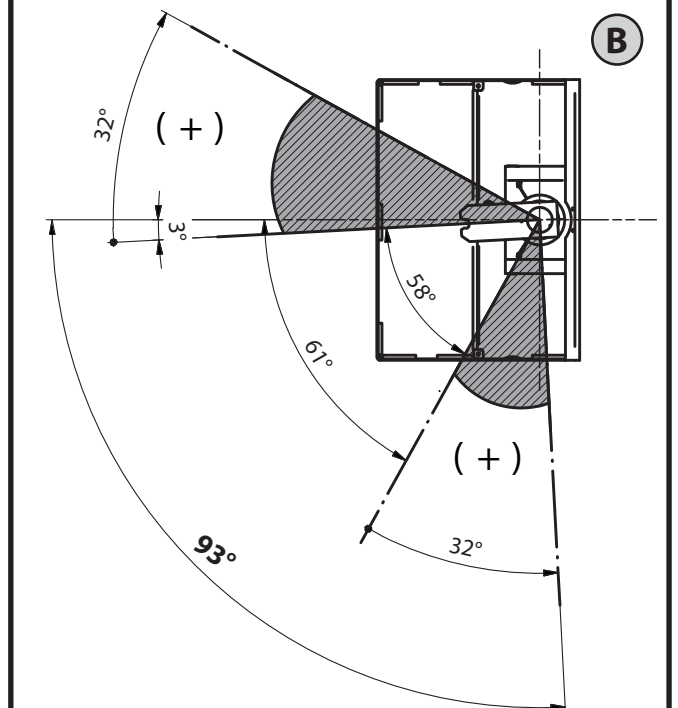
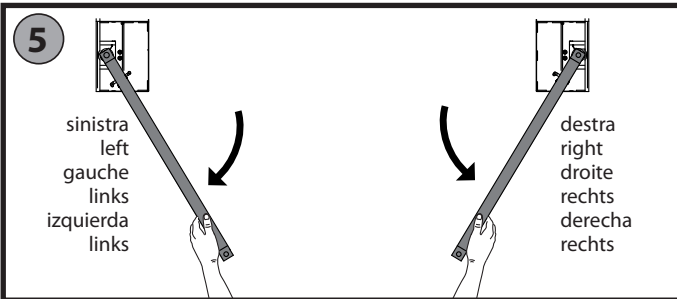
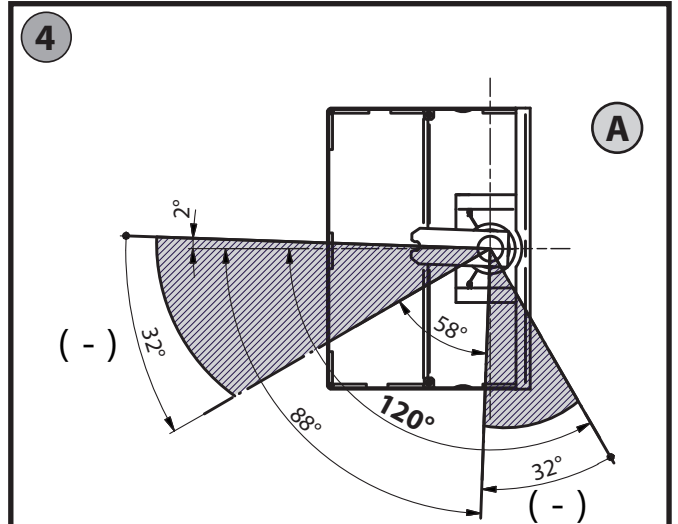
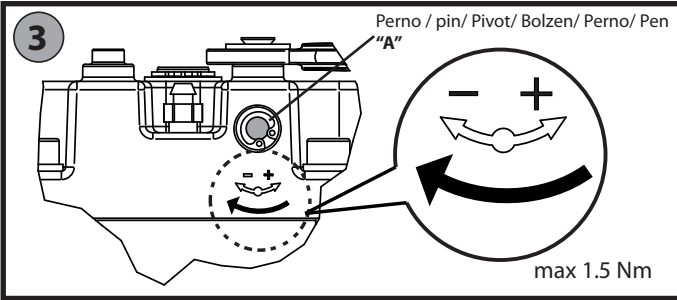
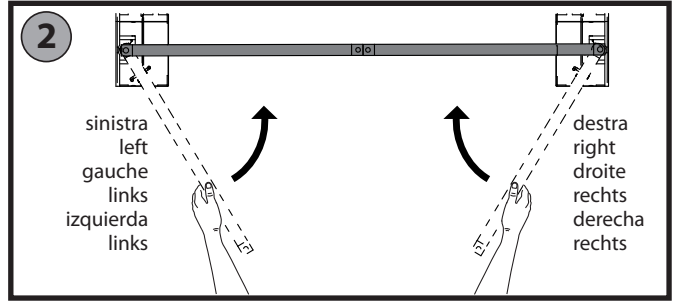
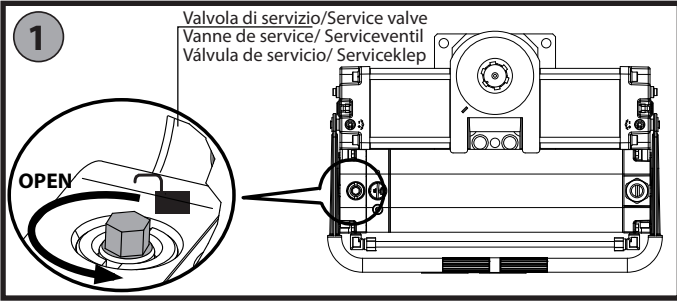
ENGLISH

FRANÇAIS

DEUTSCH

ESPAÑOL

NEDERLANDS



**C**

\*Bianco (SW)  
 \*\*Rosso (MOT +)  
 \*\*\*Nero (MOT -)

*Bianco	**Rosso	***Nero
White	Red	Black
Blanc	Rouge	Noir
Weiß	Rot	Nero
Blanco	Rojo	Negro
Wit	Rood	Zwart

**D**

151  
 353  
 260

**E**

FCM MCP  
 V1  
 D P M

**F**

710

**G**

1  
 2  
 3  
 4  
 5

OIL

livello olio \*

\*oil level / niveau d'huile/ Ölstand/ nivel aceite/ oliepeil

G 5 5

## INSTALLER WARNINGS

**WARNING! Important safety instructions. Carefully read and comply with all the warnings and instructions that come with the product as incorrect installation can cause injury to people and animals and damage to property. The warnings and instructions give important information regarding safety, installation, use and maintenance. Keep hold of instructions so that you can attach them to the technical file and keep them handy for future reference.**

### GENERAL SAFETY

This product has been designed and built solely for the purpose indicated herein. Uses other than those indicated herein might cause damage to the product and create a hazard.

- The units making up the machine and its installation must meet the requirements of the following European Directives, where applicable: 2004/108/EC, 2006/95/EC, 2006/42/EC, 89/106/EC, 99/05/EC and later amendments. For all countries outside the EEC, it is advisable to comply with the standards mentioned, in addition to any national standards in force, to achieve a good level of safety.
- The Manufacturer of this product (hereinafter referred to as the "Firm") disclaims all responsibility resulting from improper use or any use other than that for which the product has been designed, as indicated herein, as well as for failure to apply Good Practice in the construction of entry systems (doors, gates, etc.) and for deformation that could occur during use.
- Before installing the product, make all structural changes required to produce safety gaps and to provide protection from or isolate all crushing, shearing and dragging hazard areas and danger zones in accordance with the provisions of standards EN 12604 and 12453 or any local installation standards. Check that the existing structure meets the necessary strength and stability requirements.
- Before commencing installation, check the product for damage.
- The Firm is not responsible for failure to apply Good Practice in the construction and maintenance of the doors, gates, etc. to be motorized, or for deformation that might occur during use.
- Make sure the stated temperature range is compatible with the site in which the automated system is due to be installed.
- Do not install this product in an explosive atmosphere: the presence of flammable fumes or gas constitutes a serious safety hazard.
- Disconnect the electricity supply before performing any work on the system. Also disconnect buffer batteries, if any are connected.
- Before connecting the power supply, make sure the product's ratings match the mains ratings and that a suitable residual current circuit breaker and overcurrent protection device have been installed upline from the electrical system. Have the automated system's mains power supply fitted with a switch or omnipolar thermal-magnetic circuit breaker with a contact separation that meets code requirements.
- Make sure that upline from the mains power supply there is a residual current circuit breaker that trips at no more than 0.03A as well as any other equipment required by code.
- Make sure the earth system has been installed correctly: earth all the metal parts belonging to the entry system (doors, gates, etc.) and all parts of the system featuring an earth terminal.
- Installation must be carried out using safety devices and controls that meet standards EN 12978 and EN 12453.
- Impact forces can be reduced by using deformable edges.
- In the event impact forces exceed the values laid down by the relevant standards, apply electro-sensitive or pressure-sensitive devices.
- Apply all safety devices (photocells, safety edges, etc.) required to keep the area free of impact, crushing, dragging and shearing hazards. Bear in mind the standards and directives in force, Good Practice criteria, intended use, the installation environment, the operating logic of the system and forces generated by the automated system.
- Apply all signs required by current code to identify hazardous areas (residual risks). All installations must be visibly identified in compliance with the provisions of standard EN 13241-1.
- Once installation is complete, apply a nameplate featuring the door/gate's data.
- This product cannot be installed on leaves incorporating doors (unless the motor can be activated only when the door is closed).
- If the automated system is installed at a height of less than 2.5 m or is accessible, the electrical and mechanical parts must be suitably protected.
- Install any fixed controls in a position where they will not cause a hazard, away from moving parts. More specifically, hold-to-run controls must be positioned within direct sight of the part being controlled and, unless they are key operated, must be installed at a height of at least 1.5 m and in a place where they cannot be reached by the public.
- Apply at least one warning light (flashing light) in a visible position, and also attach a Warning sign to the structure.
- Attach a label near the operating device, in a permanent fashion, with information on how to operate the automated system's manual release.
- Make sure that, during operation, mechanical risks are avoided or relevant protective measures taken and, more specifically, that nothing can be banged, crushed, caught or cut between the part being operated and surrounding parts.
- Once installation is complete, make sure the motor automation settings are correct and that the safety and release systems are working properly.
- Only use original spare parts for any maintenance or repair work. The Firm disclaims all responsibility for the correct operation and safety of the automated system if parts from other manufacturers are used.
- Do not make any modifications to the automated system's components unless explicitly authorized by the Firm.
- Instruct the system's user on what residual risks may be encountered, on the control systems that have been applied and on how to open the system manually in an emergency. Give the user guide to the end user.
- Dispose of packaging materials (plastic, cardboard, polystyrene, etc.) in accordance with the provisions of the laws in force. Keep nylon bags and polystyrene out of reach of children.

### WIRING

- WARNING!** For connection to the mains power supply, use: a multicore cable with a cross-sectional area of at least 5x1.5mm<sup>2</sup> or 4x1.5mm<sup>2</sup> when dealing with three-phase power supplies or 3x1.5mm<sup>2</sup> for single-phase supplies (by way of example, type H05 VV-F cable can be used with a cross-sectional area of 4x1.5mm<sup>2</sup>). To connect auxiliary equipment, use wires with a cross-sectional area of at least 0.5 mm<sup>2</sup>.
- Only use pushbuttons with a capacity of 10A-250V or more.
  - Wires must be secured with additional fastening near the terminals (for example, using cable clamps) in order to keep live parts well separated from safety extra low voltage parts.
  - During installation, the power cable must be stripped to allow the earth wire to be connected to the relevant terminal, while leaving the live wires as short as possible. The earth wire must be the last to be pulled taut in the event the cable's fastening device comes loose.

**WARNING!** safety extra low voltage wires must be kept physically separate from low voltage wires. Only qualified personnel (professional installer) should be allowed to access live parts.

### CHECKING THE AUTOMATED SYSTEM AND MAINTENANCE

Before the automated system is finally put into operation, and during maintenance work, perform the following checks meticulously:

- Make sure all components are fastened securely.
- Check starting and stopping operations in the case of manual control.
- Check the logic for normal or personalized operation.
- For sliding gates only: check that the rack and pinion mesh correctly with 2 mm of play along the full length of the rack; keep the track the gate slides on clean and free of debris at all times.
- For sliding gates and doors only: make sure the gate's running track is straight and horizontal and that the wheels are strong enough to take the weight of the gate.
- For cantilever sliding gates only: make sure there is no dipping or swinging during operation.
- For swing gates only: make sure the leaves' axis of rotation is perfectly vertical.
- Check that all safety devices (photocells, safety edges, etc.) are working properly and that the anti-crush safety device is set correctly, making sure that the force of impact measured at the points provided for by standard EN 12445 is lower than the value laid down by standard EN 12453.
- Impact forces can be reduced by using deformable edges.
- Make sure that the emergency operation works, where this feature is provided.
- Check opening and closing operations with the control devices applied.
- Check that electrical connections and cabling are intact, making extra sure that insulating sheaths and cable glands are undamaged.
- While performing maintenance, clean the photocells' optics.
- When the automated system is out of service for any length of time, activate the emergency release (see "EMERGENCY OPERATION" section) so that the operated part is made idle, thus allowing the gate to be opened and closed manually.
- If the power cord is damaged, it must be replaced by the manufacturer or their technical assistance department or other such qualified person to avoid any risk.
- If "D" type devices are installed (as defined by EN 12453), connect in unverified mode, foresee mandatory maintenance at least every six months

### WARNING!

Remember that the drive is designed to make the gate/door easier to use and will not solve problems as a result of defective or poorly performed installation or lack of maintenance

### SCRAPPING

Materials must be disposed of in accordance with the regulations in force. There are no particular hazards or risks involved in scrapping the automated system. For the purpose of recycling, it is best to separate dismantled parts into like materials (electrical parts - copper - aluminium - plastic - etc.).

### DISMANTLING

If the automated system is being dismantled in order to be reassembled at another site, you are required to:

- Cut off the power and disconnect the whole electrical system.
- Remove the actuator from the base it is mounted on.
- Remove all the installation's components.
- See to the replacement of any components that cannot be removed or happen to be damaged.

**Anything that is not explicitly provided for in the installation manual is not allowed. The operator's proper operation can only be guaranteed if the information given is complied with. The Firm shall not be answerable for damage caused by failure to comply with the instructions featured herein.**

**While we will not alter the product's essential features, the Firm reserves the right, at any time, to make those changes deemed opportune to improve the product from a technical, design or commercial point of view, and will not be required to update this publication accordingly.**

## 1) GENERAL INFORMATION

The SUB BT hydraulic actuator is ideal for in-ground under-hinge applications. It is a brilliant solution to the problem of making the automated system aesthetically unobtrusive. The SUB BT actuator comes as a waterproof self-contained unit incorporating the hydraulic power pack-jack, which means it can be installed fully under ground without the need for any hydraulic connections.

The gate is kept closed by a hydraulic locking feature or by a solenoid lock. The actuator features soft-closing so that the gate opens and closes without clanging; operating force is adjusted automatically and extremely accurately by means of the control unit's electronic control. The actuator features built-in mechanical limit stops that can be adjusted over the last 32 degrees of the gate's opening and closing travel to make the installer's job easier and also avoid having to install external mechanical stops.

## 2) TECHNICAL SPECIFICATIONS

Power supply (*)	24V ---
Max. power input	300W
Max. pressure	30 bar
Pump delivery rate	0,9 l/min.
Max. torque	400 Nm
Type of use	very intensive
Type of locking	Hydraulic
Ambient temperature range	-20°C to 60°C
Impact reaction	electronic clutch (with control panel)
Manual operation	release key
Protection rating	IP 67
Actuator weight	16 kg
Max. leaf weight	800 kg.
Max. leaf length	2.5m (when dealing with leaves over 2 m long, use the solenoid lock)(*1)
Max. opening angle	120°
Angular velocity	9°/s
Overall dimensions	Fig. D
Oil	Idrolux Winter


(\*) Special supply voltages to order.


(\*1) **CAUTION!!! for correct operation, use the floor-mounted stops.**

**CAUTION!!! If you are using two solenoid locks in the installation, you will need to run the second lock off a separate power supply.**

## 3) TUBE ARRANGEMENT FIG. A

### 4) ADJUSTING THE TRAVEL LIMITS AND STOPS FIG. B:

 **Warning!** Do not attempt to move the leaf using the limit stop adjustment screw.

 **WARNING!** Make sure that the leaf approaches the opening and closing travel limits at slowed speed.

Turning pin "A" (- direction) --> leaf angle decreases.

Turning pin "B" (+ direction) --> leaf angle increases.

The pin can be turned manually or with a battery-powered screwdriver set to 1.5 Nm.

13 turns of pin "A" = limit stop moved by 1.5 mm ≈ 3° Leaf (opening-closing). Total FCM1 movement: 15 mm ≈ 32°.

#### FIG. B1:

- Release the operator by opening the service valve (Ref. 1).
- Close the leaf (manually) (Ref. 2).
- Turn the closing limit stop pin "A" as far as it will go in the (-) direction (Ref. 3).
- Sample adjustments (Ref. 4):
  - up to 120° (Ref. A)
  - up to 93° (Ref. B).
- Open the leaf manually (to the desired position) (Ref. 5).
- Turn the opening limit stop pin "B" as far as it will go in the (-) direction (Ref. 6).

- Open and close both gate leaves to check that the limit stops are adjusted correctly.
- Close the leaf (manually) (Ref. 7).
- Lock the operator again by closing the service valve (Ref. 8)

## 5) POWER CABLE FIG. C

## 6) MAIN PARTS OF AUTOMATED SYSTEM FIG. E

**FCM:** motor limit stop

**MCP:** jack, rack, pinion

**M:** motor

**P:** hydraulically driven lobe pump

**D:** control valve assembly

**V1:** service valve

## MAINTENANCE:

### 7) LUBRICATING THE SERVICE VALVE Fig. F

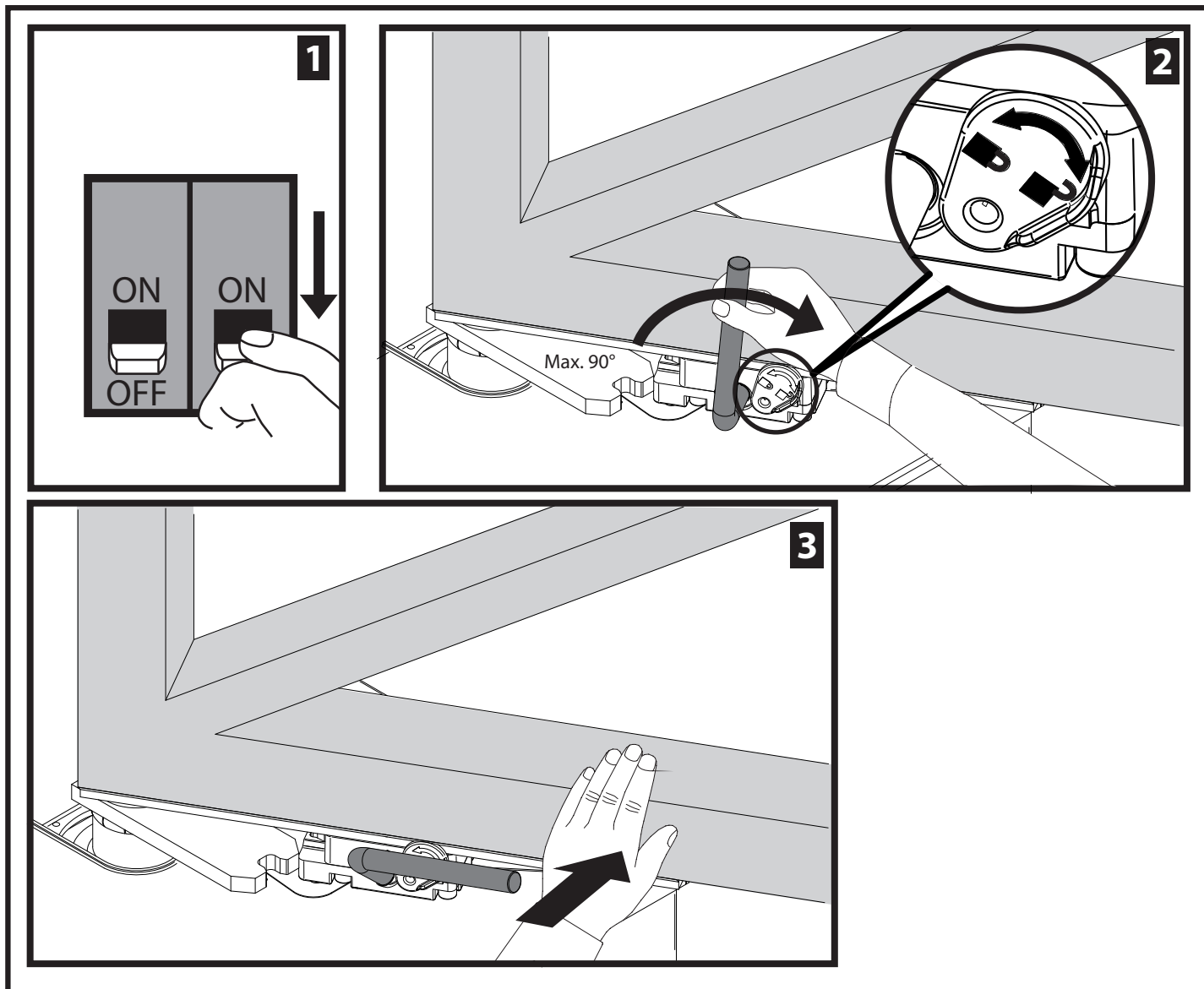
Caution: this operation needs to be performed every 12 months.

### 7.1) TOPPING UP OIL FIG. G

Caution: an oil change is recommended every 5 years.

## 8) MANUAL OPENING (See USER GUIDE -FIG. 1-).

**FIG.1** ATTIVAZIONE SBLOCCO DI EMERGENZA / ACTIVATING EMERGENCY RELEASE.  
 ACTIVATION DU DÉVERROUILLAGE D'URGENCE / AKTIVIERUNG NOTFALLENTSPERRUNG.  
 ACTIVACIÓN DEL DESBLOQUEO DE EMERGENCIA / ACTIVERING NOOD-DEBLOKKERING.



#### AVVERTENZE PER L'UTILIZZATORE ( I )

**ATTENZIONE!** Importanti istruzioni di sicurezza. Leggere e seguire attentamente le Avvertenze e le Istruzioni che accompagnano il prodotto poiché un uso improprio può causare danni a persone, animali o cose. Conservare le istruzioni per consultazioni future e trasmetterle ad eventuali subentranti nell'uso dell'impianto.

Questo prodotto dovrà essere destinato solo all'uso per il quale è stato espressamente installato. Ogni altro uso è da considerarsi improprio e quindi pericoloso. Il costruttore non può essere considerato responsabile per eventuali danni causati da usi impropri, erronei e irragionevoli.

#### SICUREZZA GENERALE

Nel ringraziarVi per la preferenza accordata a questo prodotto, la Ditta è certa che da esso otterrete le prestazioni necessarie al Vostro uso.

Questo prodotto risponde alle norme riconosciute della tecnica e della disposizioni relative alla sicurezza se correttamente installato da personale qualificato ed esperto (installatore professionale).

L'automazione, se installata ed utilizzata correttamente, soddisfa gli standard di sicurezza nell'uso. Tuttavia è opportuno osservare alcune regole di comportamento per evitare inconvenienti accidentali:

- Tenere bambini, persone e cose fuori dal raggio d'azione dell'automazione, in particolare durante il movimento.
- Non permettere a bambini di giocare o sostare nel raggio di azione dell'automazione.
- Questa automazione non è destinata all'uso da parte di bambini o da parte di persone con ridotte capacità mentali, fisiche e sensoriali, o persone che manca-

no di conoscenze adeguate a meno che esse non abbiano potuto beneficiare, attraverso l'intermediazione di una persona responsabile della loro sicurezza, di una sorveglianza o di istruzioni riguardanti l'uso dell'apparecchio.

- I bambini devono essere sorvegliati per sincerarsi che non giochino con l'apparecchio. Non permettere ai bambini di giocare con i controlli fissi. Tenere i telecomandi lontani dai bambini.
- Evitare di operare in prossimità delle cerniere o organi meccanici in movimento.
- Non contrastare il movimento dell'anta e non tentare di aprire manualmente la porta se non è stato sbloccato l'attuatore con l'apposita manopola di sblocco.
- Non entrare nel raggio di azione della porta o cancello motorizzati durante il loro movimento.
- Non lasciare radiocomandi o altri dispositivi di comando alla portata dei bambini onde evitare azionamenti involontari.
- L'attivazione dello sblocco manuale potrebbe causare movimenti incontrollati della porta se in presenza di guasti meccanici o di condizioni di squilibrio.
- In caso di apritapparelle: sorvegliare la tapparella in movimento e tenere lontano le persone finché non è completamente chiusa. Porre cura quando si aziona lo sblocco se presente, poiché una tapparella aperta potrebbe cadere rapidamente in presenza di usura o rotture.
- La rottura o l'usura di organi meccanici della porta (parte guidata), quali ad esempio cavi, molle, supporti, cardini, guide... potrebbe generare pericoli. Far controllare periodicamente l'impianto da personale qualificato ed esperto (installatore professionale) secondo quanto indicato dall'installatore o dal costruttore della porta.
- Per ogni operazione di pulizia esterna, togliere l'alimentazione di rete.
- Tenere pulite le ottiche delle fotocellule ed i dispositivi di segnalazione luminosa. Controllare che rami ed arbusti non disturbino i dispositivi di sicurezza.

- Non utilizzare l'automatismo se necessita di interventi di riparazione. In caso di guasto o di malfunzionamento dell'automazione, togliere l'alimentazione di rete sull'automazione, astenersi da qualsiasi tentativo di riparazione o intervento diretto e rivolgersi solo a personale qualificato ed esperto (installatore professionale) per la necessaria riparazione o manutenzione. Per consentire l'accesso, attivare lo sblocco di emergenza (se presente).
- Per qualsiasi intervento diretto sull'automazione o sull'impianto non previsto dal presente manuale, avvalersi di personale qualificato ed esperto (installatore professionale).
- Con frequenza almeno annuale far verificare l'integrità e il corretto funzionamento dell'automazione da personale qualificato ed esperto (installatore professionale), in particolare di tutti i dispositivi di sicurezza.
- Gli interventi d'installazione, manutenzione e riparazione devono essere documentati e la relativa documentazione tenuta a disposizione dell'utilizzatore.
- Il mancato rispetto di quanto sopra può creare situazioni di pericolo.

**Tutto quello che non è espressamente previsto nel manuale d'uso, non è permesso. Il buon funzionamento dell'operatore è garantito solo se vengono rispettate le prescrizioni riportate in questo manuale. La Ditta non risponde dei danni causati dall'inosservanza delle indicazioni riportate in questo manuale.**

**Lasciando inalterate le caratteristiche essenziali del prodotto, la Ditta si riserva di apportare in qualunque momento le modifiche che essa ritiene convenienti per migliorare tecnicamente, costruttivamente e commercialmente il prodotto, senza impegnarsi ad aggiornare la presente pubblicazione.**

## USER WARNINGS (GB)

**WARNING! Important safety instructions. Carefully read and comply with the Warnings and Instructions that come with the product as improper use can cause injury to people and animals and damage to property. Keep the instructions for future reference and hand them on to any new users.**

**This product is meant to be used only for the purpose for which it was explicitly installed. Any other use constitutes improper use and, consequently, is hazardous. The manufacturer cannot be held liable for any damage as a result of improper, incorrect or unreasonable use.**

### GENERAL SAFETY

Thank you for choosing this product. The Firm is confident that its performance will meet your operating needs.

This product meets recognized technical standards and complies with safety provisions when installed correctly by qualified, expert personnel (professional installer).

If installed and used correctly, the automated system will meet operating safety standards. Nonetheless, it is advisable to observe certain rules of behaviour so that accidental problems can be avoided:

- Keep adults, children and property out of range of the automated system, especially while it is moving.
- Do not allow children to play or stand within range of the automated system.
- This automated system is not meant for use by children or by people with impaired mental, physical or sensory capacities, or people who do not have suitable knowledge, unless a person who is responsible for their safety provides them with necessary supervision or instructions on how to use the device.
- Children must be supervised to ensure they do not play with the device. Do not allow children to play with the fixed controls. Keep remote controls out of reach of children.
- Do not work near hinges or moving mechanical parts.
- Do not hinder the leaf's movement and do not attempt to open the door manually unless the actuator has been released with the relevant release knob.
- Keep out of range of the motorized door or gate while they are moving.
- Keep remote controls or other control devices out of reach of children in order to avoid the automated system being operated inadvertently.
- The manual release's activation could result in uncontrolled door movements if there are mechanical faults or loss of balance.
- When using roller shutter openers: keep an eye on the roller shutter while it is moving and keep people away until it has closed completely. Exercise care when activating the release, if such a device is fitted, as an open shutter could drop quickly in the event of wear or breakage.
- The breakage or wear of any mechanical parts of the door (operated part), such as cables, springs, supports, hinges, guides. . . , may generate a hazard. Have the system checked by qualified, expert personnel (professional installer) at regular intervals according to the instructions issued by the installer or manufacturer of the door.
- When cleaning the outside, always cut off mains power.
- Keep the photocells' optics and illuminating indicator devices clean. Check that no branches or shrubs interfere with the safety devices.
- Do not use the automated system if it is in need of repair. In the event the automated system breaks down or malfunctions, cut off mains power to the system; do not attempt to repair or perform any other work to rectify the fault yourself and instead call in qualified, expert personnel (professional installer) to perform the necessary repairs or maintenance. To allow access, activate the emergency release (where fitted).
- If any part of the automated system requires direct work of any kind that is not contemplated herein, employ the services of qualified, expert personnel (professional installer).
- At least once a year, have the automated system, and especially all safety devices, checked by qualified, expert personnel (professional installer) to make sure that it is undamaged and working properly.

- A record must be made of any installation, maintenance and repair work and the relevant documentation kept and made available to the user on request.
- Failure to comply with the above may result in hazardous situations.

**Anything that is not explicitly provided for in the user guide is not allowed. The operator's proper operation can only be guaranteed if the instructions given herein are complied with. The Firm shall not be answerable for damage caused by failure to comply with the instructions featured herein. While we will not alter the product's essential features, the Firm reserves the right, at any time, to make those changes deemed opportune to improve the product from a technical, design or commercial point of view, and will not be required to update this publication accordingly.**





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