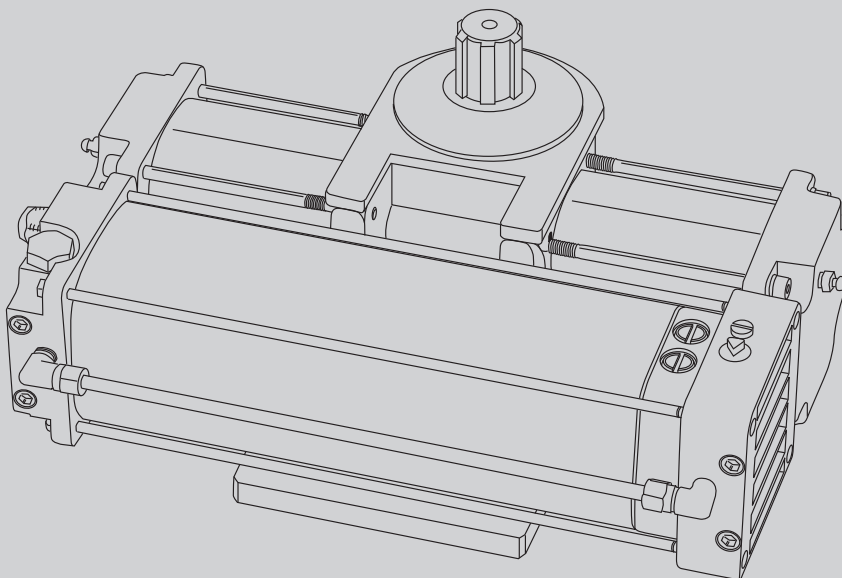




AUTOMAZIONE OLEODINAMICA INTERRATA PER CANCELLI A BATTENTE  
PISTON AUTOMATIONS FOR SWING GATES  
AUTOMATISME OLÉODYNAMIQUE ENTERRÉ POUR PORTAILS A VANTAUX  
HYDRAULISCHER UNTERFLURDREHTORANTRIEB  
AUTOMATISMO OLEODINÁMICO SOTERRADO PARA PORTONES BATIENTES  
AUTOMAÇÃO ÓLEODINÂMICA ENTERRADA PARA PORTÕES DE BATENTE



ISTRUZIONI DI INSTALLAZIONE  
INSTALLATION MANUAL  
INSTRUCTIONS D'INSTALLATION  
MONTAGEANLEITUNG  
INSTRUCCIONES DE INSTALACION  
INSTRUÇÕES DE USO E DE INSTALAÇÃO

# SUB



# BFT



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

## 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.
- Installation must be carried out by qualified personnel (professional installer, according to EN 12635), in compliance with Good Practice and current code.
- 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 general 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 provide full disconnection under overvoltage category III conditions.
- 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.
- For roller shutter automation only
  - 1) The motor's moving parts must be installed at a height greater than 2.5 m above the floor or other surface from which they may be reached.
  - 2) The gearmotor must be installed in a segregated and suitably protected space so that it cannot be reached without the aid of tools.
- 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 H05RN-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.
- For barriers only: before opening the door, the spring must be decompressed (vertical boom).
- 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 EN12453), connect in unverified mode, foresee mandatory maintenance at least every six months
- The maintenance described above must be repeated at least once yearly or at shorter intervals where site or installation conditions make this necessary.

### 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. Do not throw away your discarded equipment or used batteries with household waste. You are responsible for taking all your waste electrical and electronic equipment to a suitable recycling centre.

### DISMANTLING

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

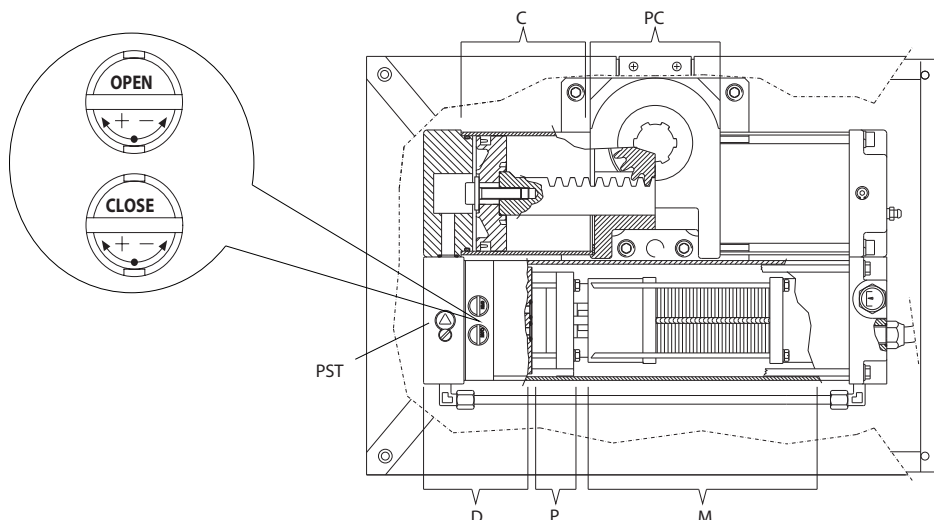
- Cut off the power and disconnect the whole electrical system.
- Remove the actuator from the base it is mounted on.
- Remove all the installation's components.
- See to the replacement of any components that cannot be removed or happen to be damaged.

**DECLARATIONS OF CONFORMITY CAN BE FOUND AT <http://www.bft-automation.com/CE>  
INSTRUCTIONS FOR USE AND ASSEMBLY CAN BE FOUND IN THE DOWN-LOAD SECTION.**

**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.**

Fig. 1



### MANUALE D'USO (I)

La chiusura del cancello è mantenuta da un'elettroserratura oppure dal blocco idraulico nelle versioni **SUB** munite di tale dispositivo. Le versioni dotate di rallentamenti permettono un accostamento in apertura e chiusura senza fastidiosi sbattimenti. La forza di spinta si regola con estrema precisione mediante due valvole by-pass che costituiscono la sicurezza antischiacciamento. Il funzionamento a fine corsa è regolato elettronicamente nel quadro di comando mediante temporizzatore. Rimuovendo un apposito tappo sulla copertura si può accedere facilmente allo sblocco d'emergenza, che si attiva con l'apposita chiave in dotazione. L'attivazione del sistema di sblocco potrebbe provocare movimenti incontrollati del cancello nel caso in cui siano presenti sbilanciamenti o guasti meccanici.

#### 1) PARTI PRINCIPALI DELL'AUTOMAZIONE

Attuatore oleodinamico monoblocco (fig.1) costituito da:

- M)** Motore monofase 2 poli protetto da disgiuntore termico.
- P)** Pompa idraulica a lobi.
- D)** Distributore con valvole di regolazione.
- PC)** Martinetto - cremagliera - pignone.

Componenti in dotazione: chiave di sblocco e regolazione by-pass - condensatore - boccola scanalata - manuale istruzione.

**ATTENZIONE:** L'attuatore può essere destro o sinistro e per convenzione si osserva il cancello dal lato interno (verso di apertura). L'attuatore destro o sinistro, è identificabile dalla posizione del perno di sblocco "PST". In fig.1 è rappresentato un attuatore sinistro.

#### 2) ACCESSORI

- Cassa di fondazione portante **CPS** (predisporre all'automazione).
- Cassa di fondazione non portante **CID**.
- Braccio a slitta **BSC** (per montaggio fuoricardine).

#### 3) MANUTENZIONE

**ATTENZIONE:** Ogni due anni sostituire completamente l'olio di ogni attuatore. L'olio deve essere assolutamente dello stesso tipo (IDROLUX)

### USER'S MANUAL (GB)

The gate is kept closed by an electric lock, or by a hydraulic lock on the **SUB** versions supplied with it. The versions with slow-down functions avoid unpleasant slamming noise when the gate is brought to the final opening and closing stages. The pushing force can be adjusted with extreme precision by means of two by-pass valves which provide anti-squash safety. The end-of-stroke operation is electronically

set by a timer on the control panel. The emergency release, activated by the proper key supplied, can be easily reached after removing the appropriate cap found on the cover. Activation of the release system could cause uncontrollable gate movements in the case where any unbalance or mechanical faults are present.

#### 1) MAIN AUTOMATION PARTS

Single-block hydraulic actuator (fig.1) consisting of:

- M)** 2-pole single-phase motor protected by thermal circuit-breaker.
- P)** Hydraulic lobe pump.
- D)** Distributor with adjustment valves.
- PC)** Rack - pinion jack.

Components supplied as standard: by-pass release and adjustment key, capacitor, grooved bush and instruction manual.

**WARNING:** An actuator can be mounted on the left or right-hand side, as identified by looking at the gate from the inside (opening direction). An actuator can be recognised as left or right-handed by observing the position of release pivot "PST". Fig.1 shows an actuator to be mounted on the left.

#### 2) ACCESSORIES

- **CPS** Bearing foundation case (provided for automation).
- **CID** Non-bearing foundation case.
- **BSC** Slide arm (for mounting to one side of the hinge-pivot).

#### 3) MAINTENANCE

**ATTENTION:** The oil of each actuator must be replaced completely every two years. Only use oil of the same type (IDROLUX)

### MANUEL D'UTILISATION (F)

La fermeture du portail est maintenue par une serrure électrique ou bien par le blocage hydraulique dans les versions **SUB** dotées de ce dispositif. Les versions dotées de ralentissements permettent une approche en ouverture et en fermeture sans claquements. La force de poussée peut être réglée avec une précision extrême au moyen de deux soupapes de dérivation qui représentent la sécurité anti-écrasement. Le fonctionnement à la fin de course est réglé électroniquement sur le tableau de commande au moyen d'un temporisateur. En enlevant un bouchon spécial sur la couverture, il est possible d'accéder facilement au déblocage d'urgence, qui est activé avec la clé spéciale fournie en dotation.

L'activation du système de déblocage pourrait provoquer des mouvements incontrôlés du portail au cas où des déséquilibres ou des pannes mécaniques seraient présents.





## 1) PARTIES PRINCIPALES DE L'AUTOMATISME

Actionneur hydraulique monobloc (fig.1) constitué par:

- M)** Moteur monophasé 2 pôles protégé par un disjoncteur thermique.
- P)** Pompe hydraulique lobée.
- D)** Distributeur avec soupapes de réglage.
- PC)** Vérin crémaillère - pignon.

Composants fournis en dotation: clé de déblocage et de réglage by-pass - bague cannelée - manuel d'instructions.

**ATTENTION:** L'actionneur peut être droit ou gauche et par convention on regarde le portail du côté interne (direction d'ouverture). L'actionneur droit ou gauche peut être identifié par la position du pivot de déblocage «PST». La fig.1 illustre un actionneur gauche.

## 2) ACCESSOIRES

- Caisse de fondation portante **CPS** (prédispose à la motorisation).
- Caisse de fondation non portante **CID**.
- Bras à coulisse **BSC** (pour le montage hors des gonds).

## 3) ENTRETIEN

**ATTENTION:** Tous les deux ans, remplacer complètement l'huile de chaque actionneur. N'utiliser que de l'huile du même type (IDROLUX).

### BEDIENUNGSANLEITUNG (D)

Das Tor wird von einem Elektroschloß oder - bei den entsprechend ausgerüsteten **SUB** Versionen - von einer Hydrauliksperr verschlossen gehalten. Die Versionen mit Endlagendämpfung Öffnen und Schließen das Tor ohne störende Anschlaggeräusche. Die Schubkraft wird äußerst präzise mit zwei By-Pass-Ventilen geregelt, über welche auch die Quetschsicherung gesteuert wird. Der Endanschlagsbetrieb wird über die Steuerung der Anlage zeitgesteuert. Bei der Betätigung des Entsperrungssystems könnte das Tor unkontrollierte Bewegungen ausführen, sollten Ungleichgewichte oder mechanische Schäden bestehen.

## 1) HAUPTBESTANDTEILE DER AUTOMATISCHEN ANLAGE

Hydraulischer Antrieb im Monoblock (Abb.1) bestehend aus:

- M)** Einphasenmotor mit Thermoschutz
- P)** Hydraulikpumpe
- D)** Verteiler mit Krafteinstellventilen und Notentriegelung
- PC)** Antriebswelle mit Ritzel und Zahnstange

Lieferumfang: Schlüssel zum Entsperren und Regeln des By-Pass-Ventils - Kondensator 6,3 µF - Bedienungsanleitung.

**ACHTUNG:** Bei Bestellung angegeben, ob der Antrieb für einen links oder rechts angeschlagenen Torflügel bestimmt ist (von innen gesehen) und ob die Notentriegelung innen (Hofseitig) oder außerhalb des Tores liegen soll. (Standard: innen auf der Hofseite).

## 2) ZUBEHÖR

- Massiver Fundamentkasten **CPS** (Verwendung empfohlen).
- oder: Gehäusebausatz **CID**.
- Schlittenarm **BSC** (für die Montage außerhalb der Torangel).

## 3) WARTUNG

**ACHTUNG:** Alle zwei Jahre muß bei jedem Antrieb ein kompletter Ölwechsel vorgenommen werden. Es darf ausschließlich Öl desselben Typs verwendet werden (IDROLUX). Überprüfen ob der Wasserabfluß der Drainage frei von Schmutz und Unrat ist. Somit wird sichergestellt, daß der Simmerring nicht beschädigt wird.

### MANUAL DE USO (E)

El cierre de la cancela está garantizado por una electroceradura, o bien por el dispositivo de bloqueo hidráulico en las versiones **SUB** provistas de tal dispositivo. Las versiones dotadas de deceleración permiten, en fase de apertura y de cierre, un acercamiento de la hoja al final de la carrera sin molestas sacudidas. La fuerza de empuje se regula con extrema precisión mediante dos válvulas by-pass, que constituyen la seguridad antiplastamiento. El funcionamiento de fin de carrera se regula electrónicamente desde el cuadro de mandos mediante temporizador. Quitando un tapón expresamente previsto en la tapa, se puede acceder fácilmente

al dispositivo de desbloqueo de emergencia, que se activa con la llave específica, asignada en el equipamiento base. La activación del sistema de desbloqueo podría provocar movimientos incontrolados de la cancela en caso de que haya desequilibrios o averías mecánicas.

## 1) PARTES PRINCIPALES DEL AUTOMATISMO

Servomotor oleodinámico monobloque (fig.1) constituido por:

- M)** Motor monofásico de 2 polos protegido mediante disyuntor térmico.
- P)** Bomba hidráulica de lóbulos.
- D)** Distribuidor con válvulas de regulación.
- PC)** Gato - cremallera - piñón.

Componentes asignados en el equipamiento base: llave de desbloqueo y regulación by-pass - condensador - casquillo acanalado - manual de instrucciones.

**ATENCIÓN:** El servomotor puede ser derecho o izquierdo, observando la cancela desde el lado interior (sentido de apertura). El servomotor derecho o izquierdo se puede identificar a través de la posición del perno de desbloqueo "PST". En la fig.1, está representado un servomotor izquierdo.

## 2) ACCESORIOS

- Caja de cimentación portante **CPS** (predispone al automatismo).
- Caja de cimentación no portante **CID**.
- Brazo de corredera **BSC** (para montaje fuera del quicio).

## 3) MANTENIMIENTO

**ATENCIÓN:** Cada dos años, hay que sustituir completamente el aceite de cada servomotor. El aceite debe ser absolutamente del mismo tipo (IDROLUX).

### MANUAL PARA DE USO (P)

O fecho do portão é mantido por uma fechadura eléctrica ou por um bloqueio hidráulico nas versões do **SUB** providas de tal dispositivo. As versões equipadas de afrouxamentos consentem uma aproximação na abertura e no fecho sem fastidiosos batimentos. A força de impulso regula-se com extrema precisão por meio de duas válvulas by-pass que constituem a segurança antiesmagamento. O funcionamento no final de curso é regulado electronicamente por meio de temporizador. Removendo uma específica tampa da cobertura, pode-se aceder facilmente ao desbloqueio de emergência que activa-se com a respectiva chave fornecida com o equipamento de série.

A activação do sistema de desbloqueio poderia provocar movimentos incontrolados do portão, caso sejam presentes desequilíbrios ou avarias mecánicas.

## 1) PARTES PRINCIPAIS DA AUTOMATIZAÇÃO

Accionador hidráulico monobloco (fig.1) constituído por:

- M)** Motor monofásico de 2 pólos protegido por disjuntor térmico.
- P)** Bomba hidráulica de lobos.
- D)** Distribuidor com válvulas de regulação.
- PC)** Macaco cremalheira - pinhão.

Componentes fornecidos com equipamento base: Chave de desbloqueio e regulação by-pass - condensador - casquillo estriado - manual de instruções.

**ATENÇÃO:** O accionador pode ser direito ou esquerdo e por convenção observa-se o portão do lado de dentro (sentido de abertura). O accionador direito ou esquerdo, é identificável pela posição do pivô de desbloqueio "PST". Na fig.1 está representado um accionador esquerdo.

## 2) ACESSÓRIOS

- Caixa de fundação portante **CPS** (predispõe para a automatização).
- Caixa de fundação não portante **CID**.
- Braço de correr **BSC** (para a montagem fora do gonzo).

## 3) MANUTENÇÃO

**ATENÇÃO:** A cada dois anos substitua completamente o óleo de cada accionador. O óleo deve ser rigorosamente do mesmo tipo (IDROLUX).

## 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.
- L'apparecchio può essere utilizzato da bambini di età non inferiore a 8 anni e da persone con ridotte capacità fisiche, sensoriali o mentali, o prive di esperienza o della necessaria conoscenza, purché sotto sorveglianza oppure dopo che le stesse abbiano ricevuto istruzioni relative all'uso sicuro dell'apparecchio e alla comprensione dei pericoli ad esso inerenti. I bambini non devono giocare con l'apparecchio. La pulizia e la manutenzione destinata ad essere effettuata dall'utilizzatore non deve essere effettuata da bambini senza sorveglianza.
- 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.



### DEMOLIZIONE

L'eliminazione dei materiali va fatta rispettando le norme vigenti. Non gettate il vostro apparecchio scartato, le pile o le batterie usate nei rifiuti domestici. Avete la responsabilità di restituire tutti i vostri rifiuti da apparecchiature elettriche o elettroniche lasciandoli in un punto di raccolta dedicato al loro riciclo.

**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.
- The unit can be used by children over 8 years old and by people with reduced physical, sensory or mental capabilities or with no experience or necessary knowledge on condition they are supervised or trained about the safe use of the equipment and understand the risks involved. Children must not play with the unit. Cleaning and maintenance must not be performed by unsupervised children.
- 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.



### SCRAPPING

Materials must be disposed of in accordance with the regulations in force. Do not throw away your discarded equipment or used batteries with household waste. You are responsible for taking all your waste electrical and electronic equipment to a suitable recycling centre.

**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.**

### AVERTISSEMENTS POUR L'UTILISATEUR (F)

**ATTENTION ! Instructions de sécurité importantes. Veuillez lire et suivre attentivement tous les avertissements et toutes les instructions fournis avec le produit sachant qu'un usage incorrect peut provoquer des préjudices aux personnes, aux animaux ou aux biens. Veuillez conserver les instructions pour d'ultérieures consultations et pour les transmettre aux propriétaires futurs éventuels.**

**Cet appareil ne peut être destiné qu'à l'usage pour lequel il a été expressément installé. Tout autre usage sera considéré comme impropre et donc dangereux. Le fabricant ne sera en aucun cas considéré comme responsable des préjudices dus à un usage impropre, erroné ou déraisonné.**

### SECURITE GENERALE

Nous vous remercions d'avoir choisi ce produit qui, nous n'en doutons pas, saura vous garantir les performances attendues.

Ce produit, correctement installé par du personnel qualifié et expérimenté (monteur professionnel) est conforme aux normes reconnues de la technique et des prescriptions de sécurité.

Si l'automatisation est montée et utilisée correctement, elle garantit la sécurité d'utilisation prescrite. Il est cependant nécessaire de respecter certaines règles de comportement pour éviter tout inconvénient accidentel.

- Tenir les enfants, les personnes et les objets à l'écart du rayon d'action de l'automatisation, en particulier pendant son fonctionnement.

Fig. 1

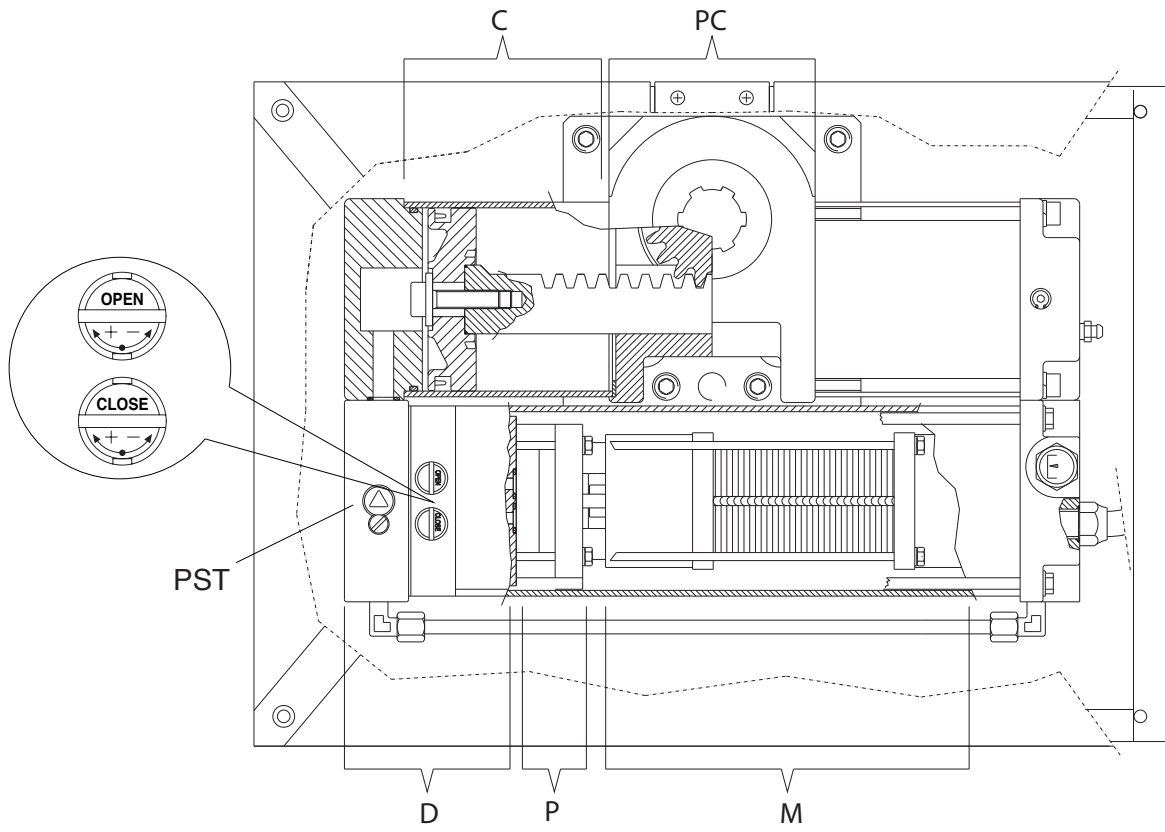


Fig. 2

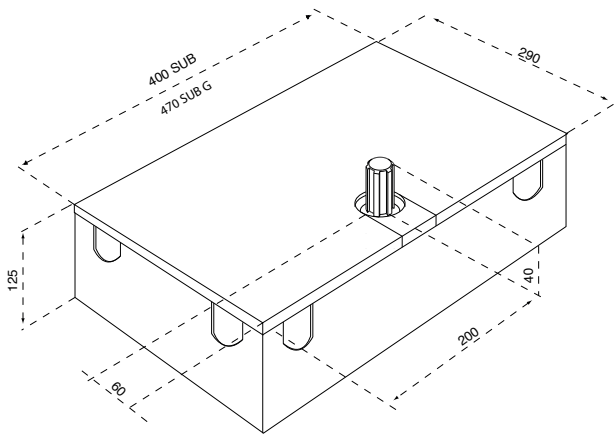


Fig. 3

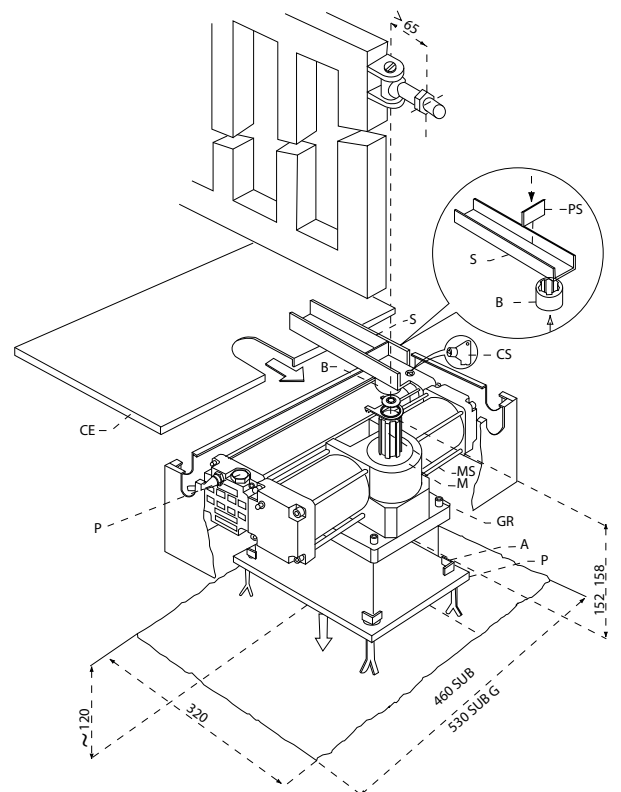


Fig. 4

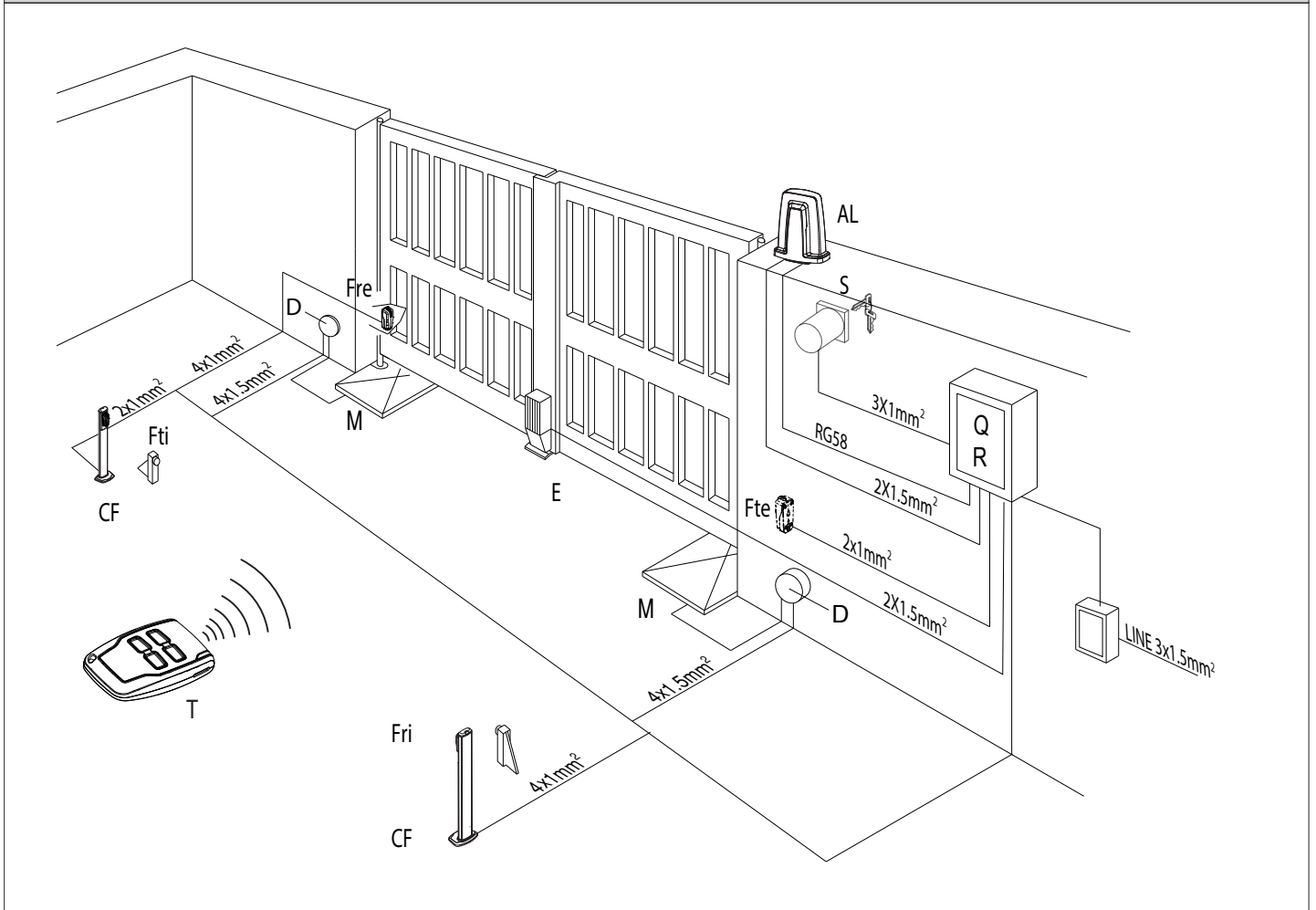


Fig. 5

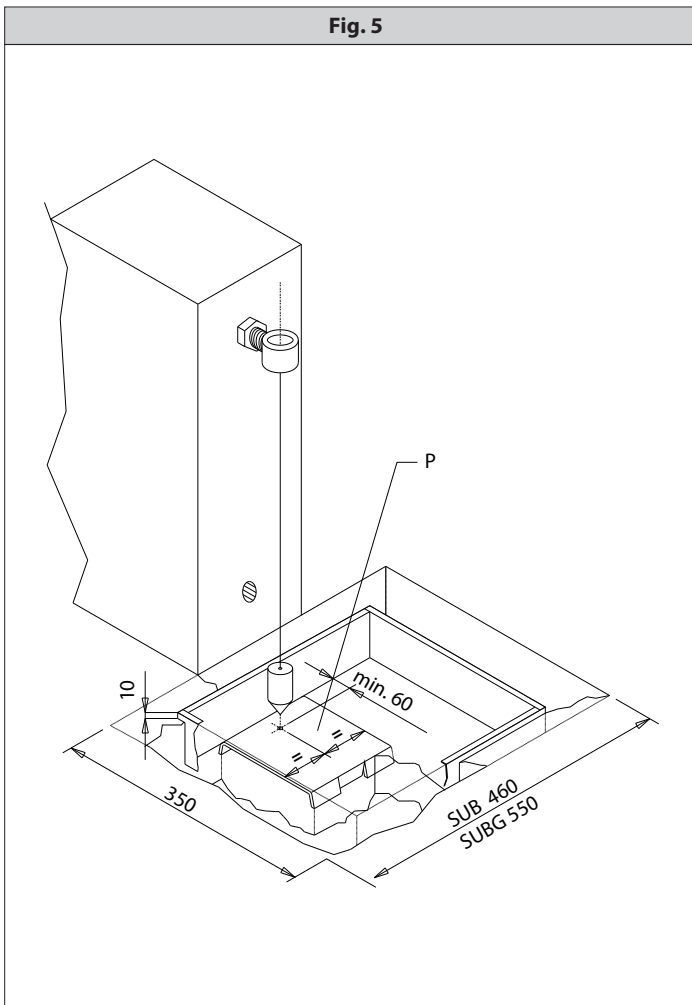


Fig. 6

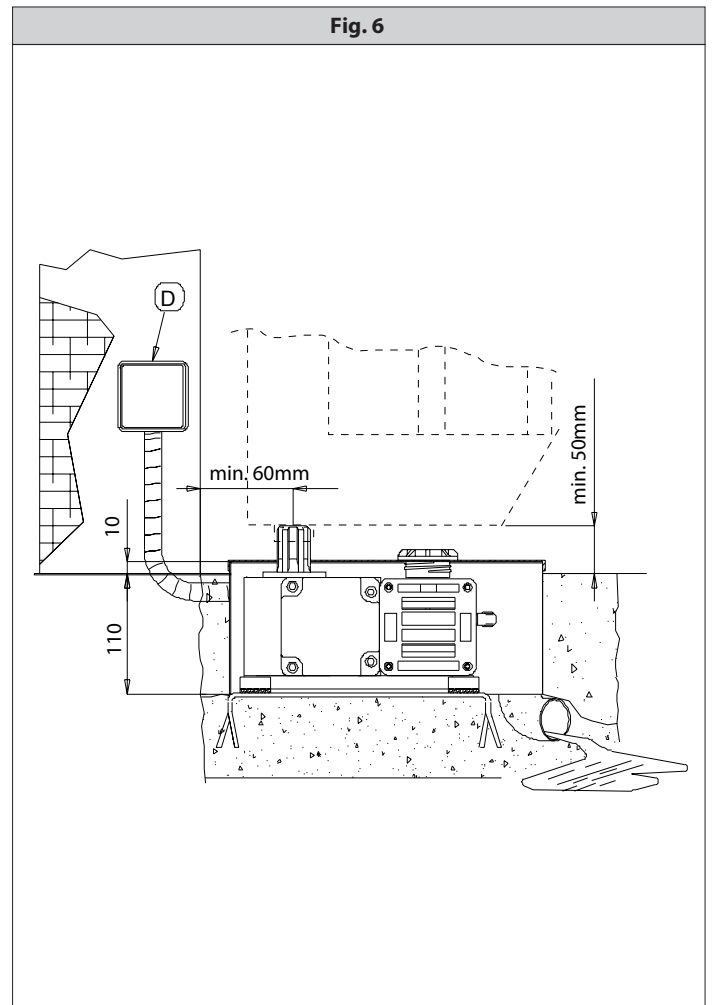




Fig. 7

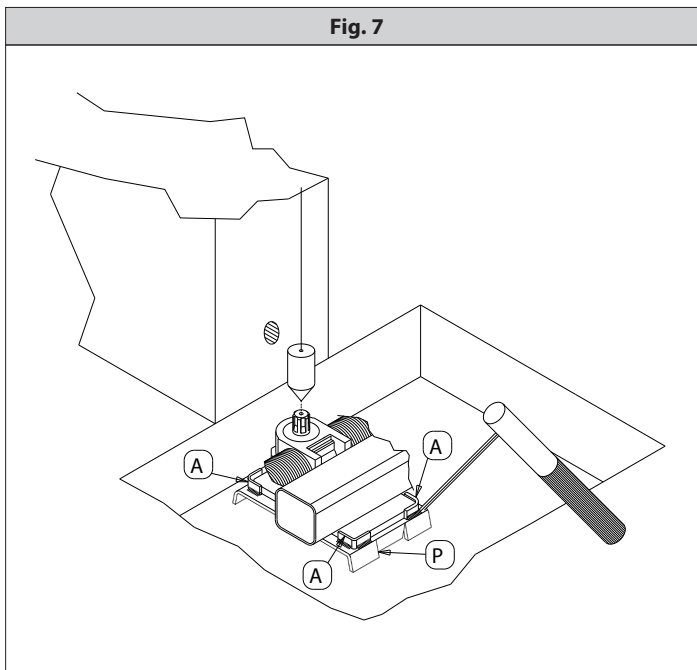


Fig. 8

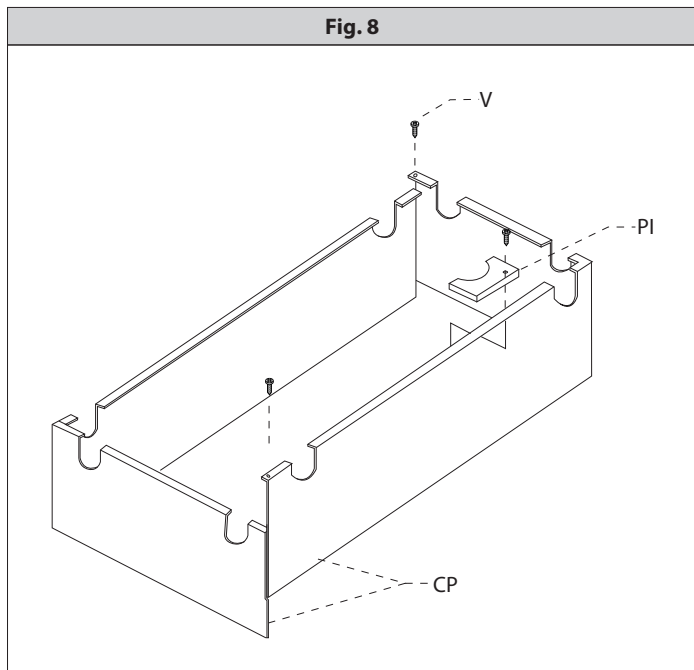


Fig. 9

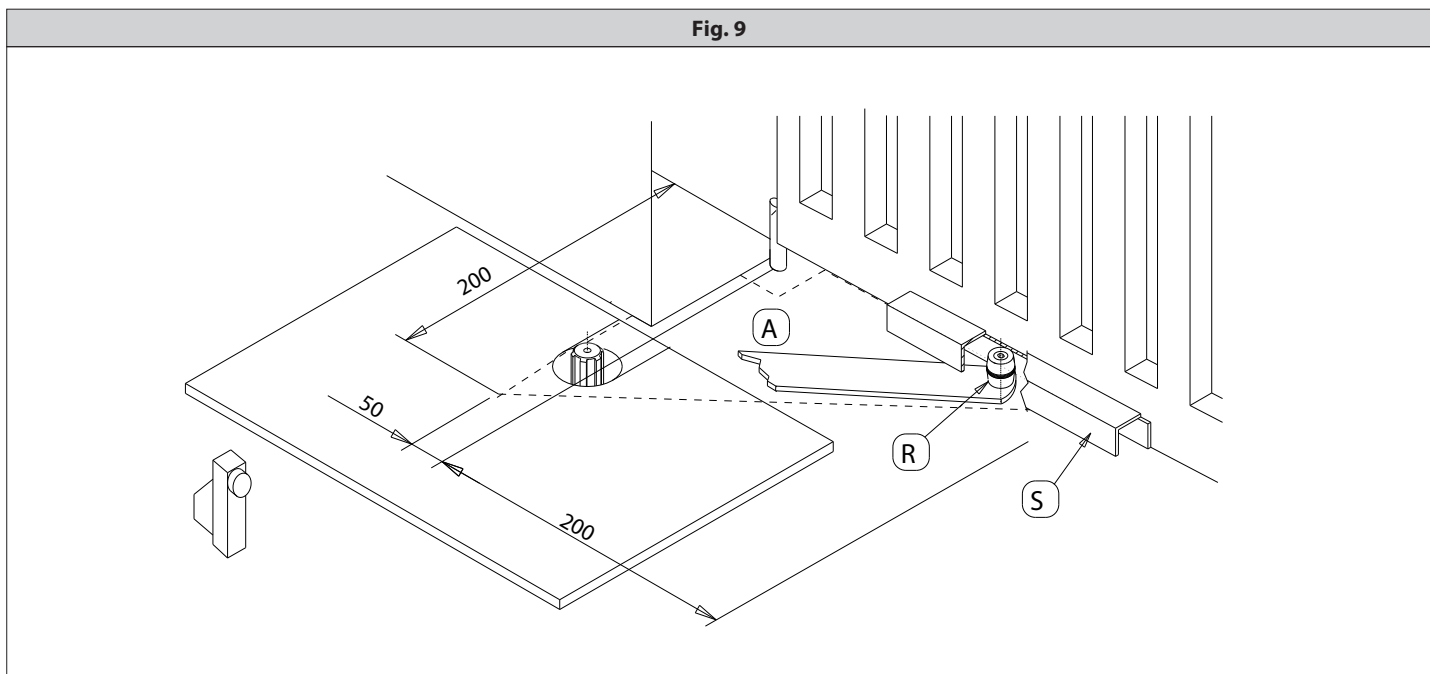


Fig. 10

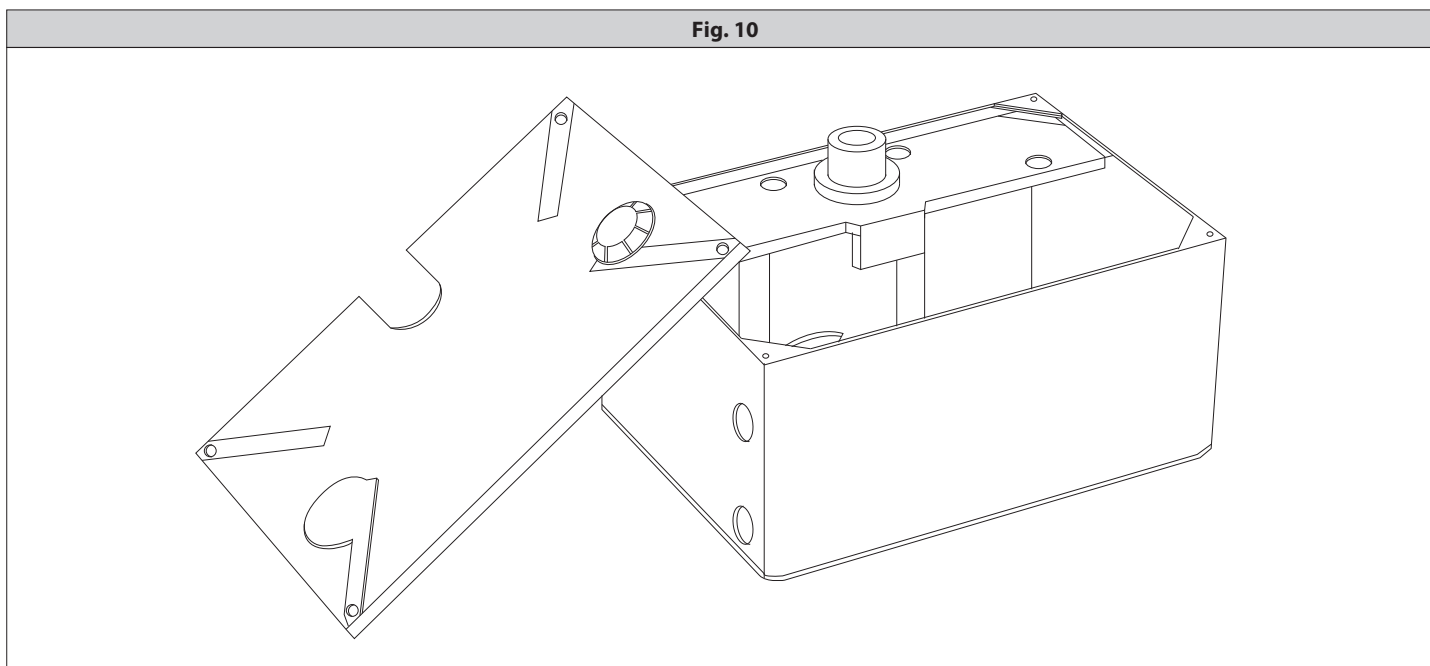


Fig. 11

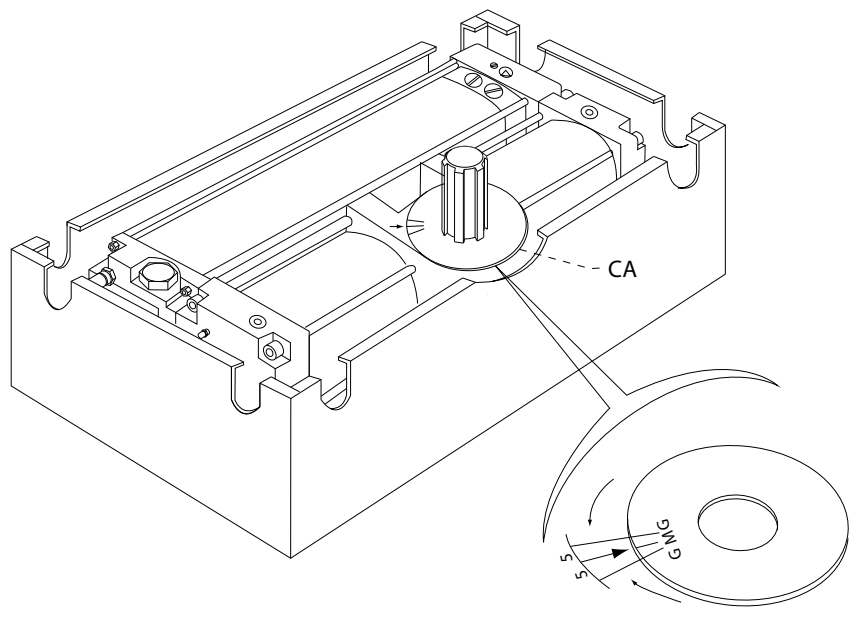
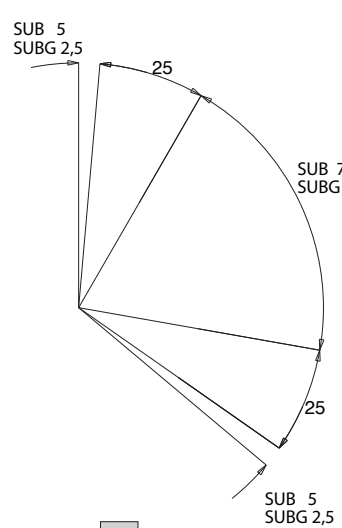
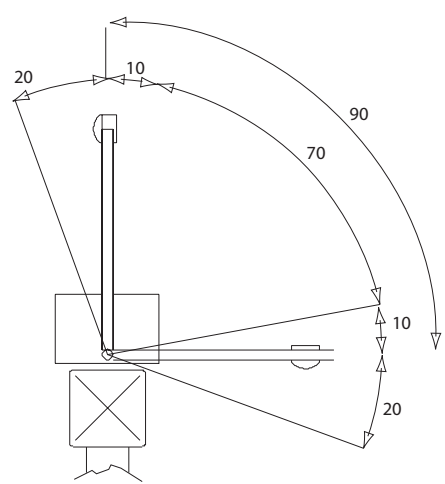


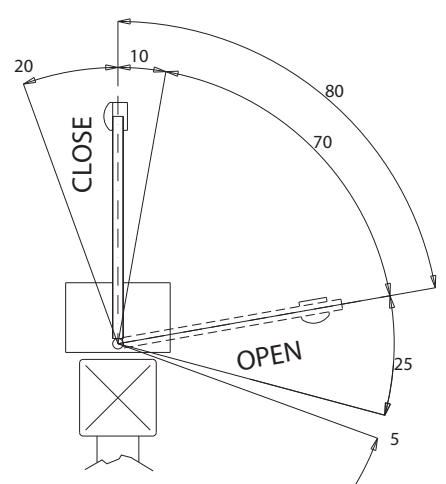
Fig. 12 - 13 - 14



12

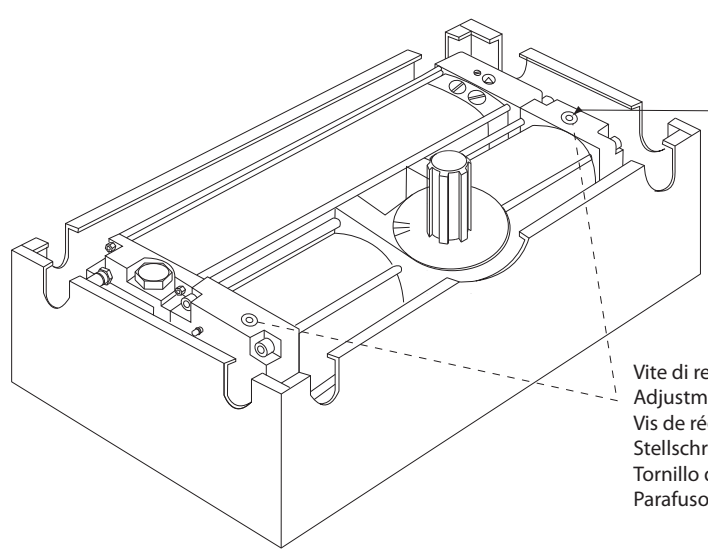


13



14

Fig. 15



Vite di regolazione  
 Adjustment screw  
 Vis de réglage  
 Stellschraube  
 Tornillo de regulación  
 Parafuso de regulação

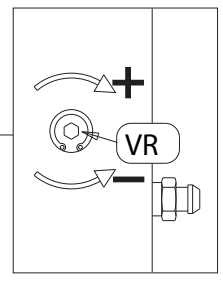


Fig. 16

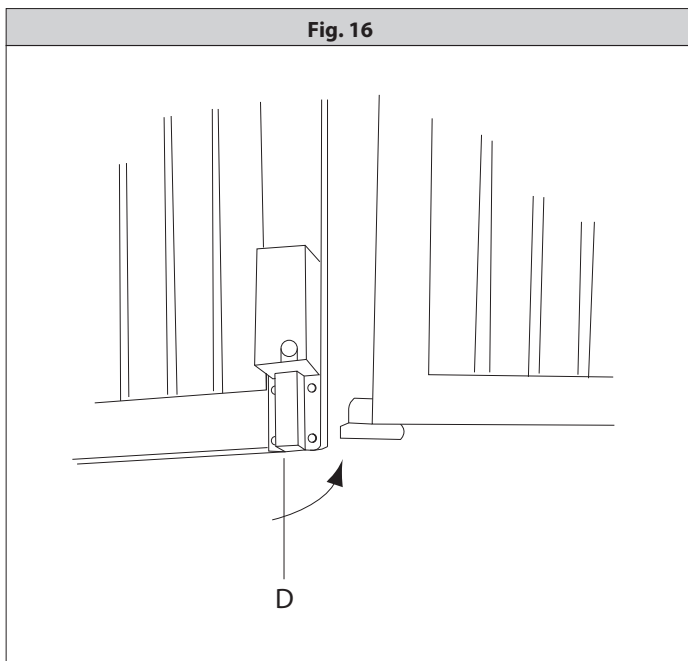


Fig. 17

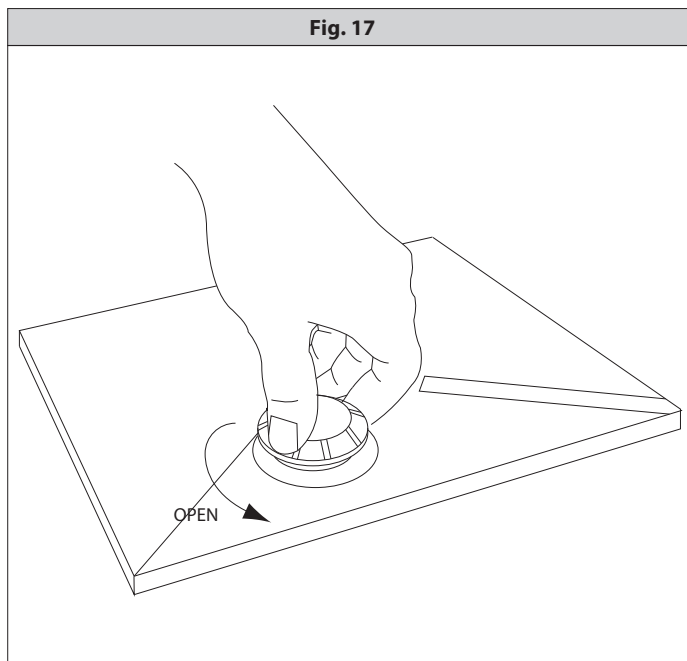


Fig. 18

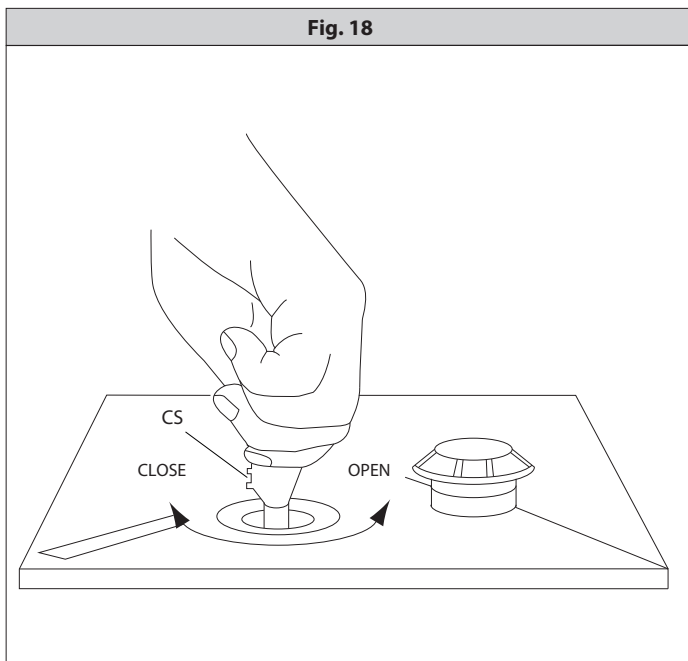


Fig. 19

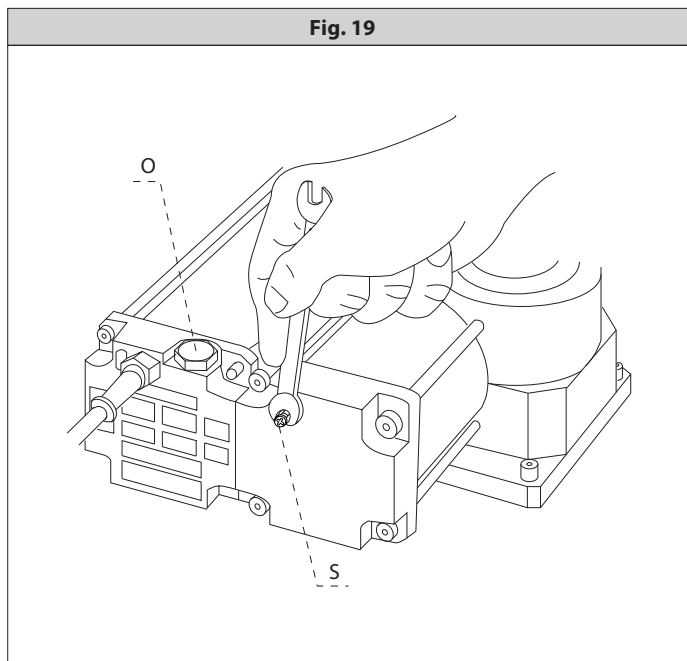
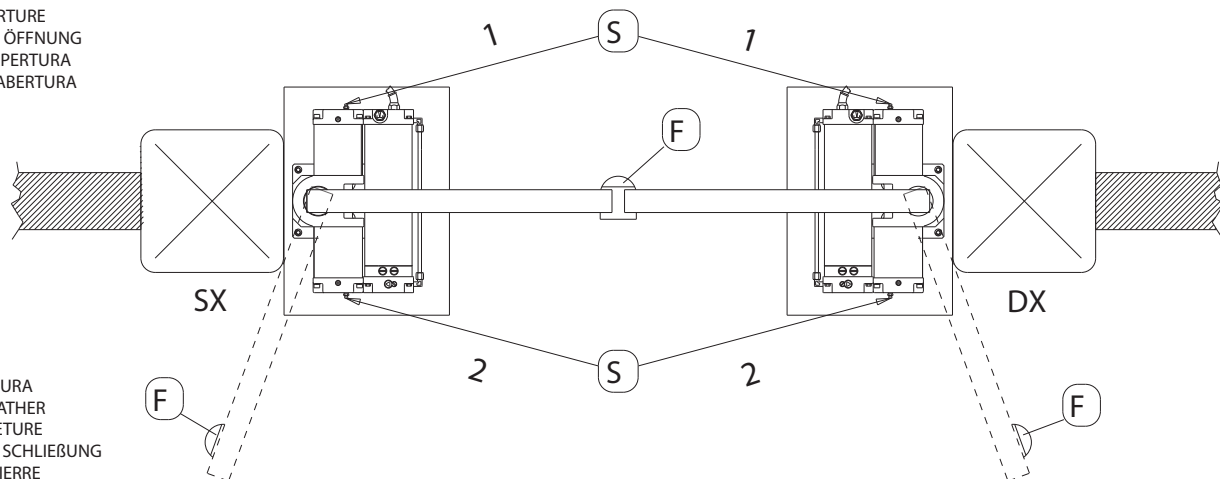


Fig. 20

- 1 • SFIATO APERTURA
- 1 • OPENING BREATHER
- 1 • PURGE OUVERTURE
- 1 • ENTLÜFTUNG ÖFFNUNG
- 1 • PURGADOR APERTURA
- 1 • SANGRIA DE ABERTURA



- 2 • SFIATO CHIUSURA
- 2 • CLOSING BREATHER
- 2 • PURGE FERMETURE
- 2 • ENTLÜFTUNG SCHLIEßUNG
- 2 • PURGADOR CIERRE
- 2 • SANGRIA DE FECHO

## 1) GENERAL OUTLINE

The **SUB** hydraulic controller provides the ideal solution for underground hinge-pivot installations, as it brilliantly solves aesthetic automation problems. The **SUB** actuator consists of a perfectly sealed single block, containing a hydraulic control unit and a jack, which provides a hidden underground installation without any hydraulic connections. The gate is kept closed by an electric lock, or by a hydraulic lock on the **SUB** versions supplied with it. The versions with slow-down functions avoid unpleasant slamming noise when the gate is brought to the final opening and closing stages. The pushing force can be adjusted with extreme precision by means of two by-pass valves which provide antisquash safety. The end-of-stroke operation is electronically set by a timer on the control panel. The emergency release, activated by the proper key supplied, can be easily reached after removing the appropriate cap found on the cover.

## 3) MAIN AUTOMATION PARTS

Single-block hydraulic actuator (fig.1) consisting of:

- M)** 2-pole single-phase motor protected by thermal circuit-breaker.
- P)** Hydraulic lobe pump.
- D)** Distributor with adjustment valves.
- PC)** Rack - pinion jack.

Components supplied as standard: by-pass release and adjustment key, capacitor, grooved bush and instruction manual.

**WARNING:** An actuator can be mounted on the left or right-hand side, as identified by looking at the gate from the inside (opening direction). An actuator can be recognised as left or right-handed by observing the position of release pivot "PST". Fig.1 shows an actuator to be mounted on the left.

## 4) ACCESSORIES

- **CPS** Bearing foundation case (provided for automation).
- **CID** Non-bearing foundation case.
- **BSC** Slide arm (for mounting to one side of the hinge-pivot).

## 5) TECHNICAL SPECIFICATIONS

Single-phase power supply .....	220-230V 50/60Hz(*)
Motor revolutions .....	2800 min <sup>-1</sup>
Output shaft revolutions .....	See Table 1
Absorbed power .....	250 W
Capacitor .....	6.3 µF
Absorbed current .....	1.4 A
Max torque .....	400 Nm
Pressure .....	3MPa (30 bar) max
Pump capacity .....	See Table 1
Impact reaction .....	Hydraulic clutch
Manual manoeuvre .....	Release key
Max no. manoeuvres .....	500 / 24hours
Thermal protection .....	160 °C
Environmental conditions .....	-10 °C to +60 °C
Degree of protection .....	IP 67
Controller weight .....	SUB 220N (~22 kg) - SUB G 240N (~24 kg)
Oil .....	IDROLUX
Dimensions .....	See fig.2
Sound pressure .....	LpA<70dba

(\*) Special voltages available on request.

## 6) ACTUATOR INSTALLATION

### 6.1) Preliminary checks

Check that:

- The leaf structure is sturdy and rigid.
- The upper hinge is in working order and possibly adjustable.
- A hole can be dug to lay the case under the hinge-pivot, or to one side of the hinge-pivot for slide arm installation.
- The leaf ground stop plates are fitted.
- Repair or replace all faulty or worn components.

Fig.3 illustrates an exploded view of the installation. Automation reliability and safety are directly affected by the condition of the gate structure.

### 6.2) Electrical installation setup

Set up the electrical installation as shown in fig.4, making reference to the current standards for electrical installations. Keep the mains supply connections definitely separate from the service connections (photocells, electric edges, control devices, etc.).

**WARNING! For connection to the mains power supply, use a multicore cable with a cross-sectional area of at least 3x1.5mm<sup>2</sup> of the kind provided for by the regulations in force.**


**To connect the motors, use a cable with a cross-sectional area of at least 1.5mm<sup>2</sup> of the kind provided for by the regulations in force. The cable must be type H05RN-F at least.**

Connect the control and safety devices in compliance with the previously men-

tioned installation standards. Fig.4 shows the number of connections and the cross section for power supply cables about 100-m long; for greater lengths, calculate the cross section needed for the true automation load.

### 6.3) Main automation parts (Fig.4):

- I)** Type-approved adequately rated omnipolar circuit-breaker with at least 3,5 mm contact opening, provided with protection against overloads and short circuits, suitable for cutting out automation from the mains. If not already installed, place a type-approved omnipolar circuit-breaker with a 0.03A threshold just before the automation system.
- Qr)** Control panel and incorporated receiver.
- SPL)** Preheating board for operation with temperature lower than 5°C (optional).
- S)** Key selector.
- AL)** Blinker with tuned antenna.
- M)** Controller.
- E)** Electric lock.
- Fte)** External photocells (emitting section).
- Fre)** External photocells (receiving section).
- Fti)** Internal photocells with CF posts (emitting section).
- Fri)** Internal photocells with CF posts (receiving section).
- T)** 1-2-4 channel transmitter.
- RG58)** Cable for antenna.
- D)** Connector block.

 **The connector block (fig. 6) must always be positioned higher than the motor. In fact, as the controller is perfectly sealed, the tank is made to breathe through the actuator supply cable.**

### 6.4) Cementation of the foundation case (under the hinge-pivot)

The case must be cemented under the hinge-pivot, keeping in mind that the actuator bearing shaft must be perfectly aligned to the leaf rotation axis. If the gate is provided with fixed hinges, disassemble it and remove the lower hinge. If the leaf is high enough from the ground and cannot be removed, proceed to supporting it by means of a shim placed between the ground and the leaf during installation. If the gate is provided with adjustable hinges, remove the lower hinge, loosen the upper one and move the leaf to the side. If the gate has been newly manufactured, fit an upper hinge which can be adjusted.

- Dig a foundation hole having the dimensions shown in fig.5.
- Provide a drainage pipe (fig.6) for rainwater in order to prevent stagnation inside the foundation case. Lay a raceway for the power supply cable as far as connector block "D"
- Lay a strong foundation on the bottom (fig.5) where to bury the hooks of foundation case "P". The dimensions for positioning plate "P" are defined in fig.5. Let the cement harden for the time needed.
- Rest the actuator on base "P", with its shaft perfectly aligned to the leaf axis (fig.7), and weld four angle bars "A" in correspondence with the four corners of the actuator centring base. The minimum dimension between the pillar and rotation shaft axis is shown in fig.6.
- Assemble the foundation case by fixing its two half sections together by means of the screws supplied (fig.8), and fixing small plate "PI" to the back. Position the box around the actuator, so that small plate "PI" (fig. 8) fits around the shaft, and the edge of the box protrudes above the ground by about 10mm (fig.6). Position cover "CE" (fig.3) on the box and fix its corners with 2 screws.
- Fill the rest of the hole with concrete.

### 6.5) Cementation of the foundation case (to one side of the hinge-pivot)

Installation with slide arm (to one side of the hinge pivot). This is advisable when you want to avoid disassembling the existing gate leaf. Area "A" highlighted in fig.9 corresponds to a right-angled triangle having a side of approximately 200mm, where the actuator axis can be laid in order to allow the leaf to open by at least 90°.

- The drive arm provides a distance between centres between grooved bush "B" and sliding roller "R" of up to 380mm.
- Bush "B" must be welded to the drive arm with the leaf completely closed, the roller must be inserted into slide "S" taking into account the safety degrees shown on small card "CA" (fig.11). For slow-down versions, also take into account the slow-down degrees (fig.13).
- Slide "S" (fig.9) can be welded or fixed with screws both underneath and to the side of the leaf. The position of the slide is to be identified by marking on the leaf the spots reached by sliding roller "R" both during closing and opening. Having identified the mid-point between the two markings made previously, align the mid-point of slide "S" and fix it tightly. If slide "S" is shorter than the distance between the two markings on the leaf, this type of installation is not possible. Keep in mind that, the nearer slide "S" is to the leaf rotation pivot, the greater will the leaf speed be. Having identified the actuator position, proceed to cementing the foundation case as described in paragraph 6.4.

## 7) BEARING FOUNDATION CASE

Two bearing foundation case models - **CPS** for **SUB** and **CPS G** for **SUB G** (fig.10) - are available. Having installed the bearing case, the gate becomes operational



even without mounting the actuator, which can be inserted later. In case of any maintenance needed, this type of case allows the actuator to be removed without disassembling the gate leaf. Should the **CPS** mod. bearing foundation case be used, refer to the respective manual for the positioning procedure.

## 8) LEAF MOUNTING

With the actuator in its final position, proceed as follows.

- Prepare a U-shaped shoe (fig.3) where the leaf is to be inserted and then fastened in its correct position by welding small plate "PS" to it.
- Position grooved bush "B" in the actuator shaft.
- Temporarily fasten the shoe to the leaf: mount the leaf in its completely closed position, placed over the actuator shaft and perfectly aligned to the rotation axis.
- Before welding bush "B" to the U-shaped shoe, the right fixing point must be found. To determine the correct point, proceed as described below.

**WARNING:** Do not weld bush "B" directly to the leaf. Do not weld the grooved bush to the actuator output shaft.

### 8.1) Version without slow-down function

- Release the jack with key "CS" supplied, in the way shown in fig.18.
- With the help of pliers, completely rotate the output shaft in the direction of gate closing along its entire stroke.
- Arrange small card "CA" (fig. 11) by positioning point "M" in correspondence with the arrow in the casting.
- Rotate the shaft and bring point "G" (right-r.h. or left-l.h.) in correspondence with the arrow.
- Protect the actuator from any metal spots during the subsequent welding phase.
- The bush can now be welded to the shoe with the leaf mounted in the gate closed and stopped position. Disassemble the shoe to weld bush "B" all the way around its circumference.
- Any small defects in levelling foundation plate "P" can be corrected by means of adjustment dowels "GR" (fig.3).
- Place the gate stop on opening in the required position; however, the gate stop must maintain an extra rotation of at least 5° for safety, in order to prevent the rack from reaching its end of travel.

**NOTE:** The rotation degrees of the SUB R versions are highlighted in fig. 12; in the case of versions without slow-down function, consider the slow-down angles (25°+25°) as normal speed. For the SUB G versions, take into account a total rotation of 185°. For effective 180° openings, the safety margin is 2.5° both on closing and on opening.

### 8.2) Version with slow-down function

The versions provided with slow-down function need particular attention in identifying the fixing point of grooved bush "B" (fig.3). It is advisable to use the actuator in a symmetrical way; fig.12 shows the 130 degrees of total rotation of an ordinary actuator, divided into the various phases. By way of example, fig.13 shows the correct operation method for an actuator carrying out a leaf opening manoeuvre of 90°, that is 20°+ 20° for safety, 70° for normal stroke and 10°+ 10° for slow-down. In order to obtain the angles described, use small card "CA" on the "SUB R mod." side (fig.11).

**WARNING:** For effective opening manoeuvres of less than 90°, slow-down cannot be obtained in both directions. You need to decide beforehand whether to have slow-down on closing or opening, taking into account that slow-down begins to happen in the last 25°- 30° of shaft rotation, both on opening and closing (fig.14). Having determined the correct angle for fixing the grooved bush, fix it in the way described in paragraphs 8 - 8.1.

**NOTE:** For the SUB GR versions, take into account a total rotation of 185°, out of which: 2.5°+ 2.5° for safety, 25°+ 25° for slow-down and 125° for stroke at normal speed. This provides a maximum rotation of 180°.

### 8.3) Slow-down adjustment (R versions only)

Slow-down adjustment screws "VR" are highlighted in fig.15, and can be adjusted by means of a 3-mm Allen wrench. This must be turned clockwise to make the movement slower and anticlockwise to make it less slow. Adjust the slow-down speed so as to prevent the leaf from slamming when it stops.

### 8.4) Installation with slide arm (to one side of the hinge-pivot)

This type of installation is illustrated in fig.9. The installation method is described in paragraph 6.5. Furthermore, the actuator support base must be tightly secured to the foundation base by means of screws, and not just fastened by the four angle bars as in the case of installation under the hinge-pivot.

## 9) STOP PLATES

The use of ground stop plates "F" (fig.20) is compulsory both on opening and closing. The stop plates must lock the leaf while maintaining a safety extra-stroke of 5° at least (fig.12).

## 10) LEAF PHASE DIFFERENCE

In the case where the leaves overlap during the closing manoeuvre, the phase

difference on closing is set by means of the appropriate trimmer included in the electronic control unit. The motor of the delayed leaf must be connected to the terminals of the control unit, which are identified by the "Mr" symbol as illustrated in the control unit wiring diagram.

## 11) ELECTRIC LOCK FITTING

This is only needed for models without hydraulic lock on closing (Table 1). The EBP mod. electric lock (fig.16) consists of a continuous- service electromagnet hooked to the ground. This device remains energised during the whole gearmotor operation time, allowing catch "D" to reach the closing stop point without opposing any resistance; this factor allows the pushing load to be reduced on closing, thus improving antisquash safety.

## 12) PUSHING FORCE ADJUSTMENT (Fig.1)

This is obtained by means of two valves, marked by the writing "close" and "open" respectively, used to adjust the pushing force on closing and opening. If the valves are turned towards the "+" sign the force is increased, if they are turned towards the "-" sign it is decreased. To obtain good antisquash safety, the pushing force must be slightly greater than that needed to move the leaf, both on closing and opening; however, the force, measured at the leaf edge, must not exceed the limits set out by the current national standards. The actuator is not provided with electrical limit switches. Therefore the motors are switched off at the end of the operation time set in the control unit. Such operation time must exceed by about 2-3 seconds the moment where the leaves meet the ground stop plates. For this reason as well as for safety reasons, under no circumstances must the by-pass valves be completely closed.

## 13) MANUAL OPENING

In case of emergency, for instance when there is no power available, the gate must be opened by hand.

### 13.1) Versions without hydraulic locks (electric lock)

As these models are irreversible, in order to move the gate by hand you only need to open the electric lock by means of the appropriate key, and push the leaves with a force strong enough to win that adjusted with the by-pass valves (approximately 15 kg/150N). In order to make the manoeuvre easier, it may also be helpful to activate the hydraulic lock in the way described below.

### 13.2) Versions with hydraulic locks (Fig.17)

- Unscrew cap "T" which is found on the cover of each actuator (usually on the inside).
- Insert the release key supplied in triangular release pivot PST and rotate it anticlockwise by a few turns (CS in fig.18).
- Push the leaf by hand at a speed similar to that of motorised operation.
- To restore motorised operation, turn the key clockwise until it is completely tightened, screw the release cap onto the cover and put the key in a place which is known to all users.

**NOTE:** In order to avoid oxidation of the release device, it is helpful to fill its triangular seat with grease.

## 14) AUTOMATION CHECK

Before finally making the automation fully operative, carefully carry out the following procedure:

- Check that all components are tightly secured.
- Check the correct functioning of all safety devices (photocells, pneumatic edge etc.).
- Check the emergency manoeuvre command.
- Check the opening and closing operations with the control devices in use.
- Check the standard (or customised) electronic function logic in the control unit.

## 15) AUTOMATION OPERATION

As automation can be remotely controlled by means of a radio control or start button, it is essential to frequently check that all safety devices are perfectly efficient. In case of any operational malfunction, take immediate action and request the assistance of qualified personnel. It is recommended to keep children at a safe distance from the automation field of action.

## 16) CONTROL

The automation system is used to obtain motorised gate opening and closing. There are different types of control (manual, radio, magnetic badge access control, etc.) depending on the installation requirements and characteristics. For the various control systems, see the relevant instructions. All automation users must be instructed on proper control and use.

## 17) MAINTENANCE

All maintenance on the controller must be performed with the systems power supply shut off. Check periodically for oil leaks. When topping-up the oil, always use oil of the same type (see data table) and proceed as follows:

- a) Remove the cap "P" (fig.3).
- b) Top-up with oil until it reaches 1.5 mm on the oil cap hole.
- c) Reassemble all of the unit.

**ATTENTION:** The oil of each actuator must be replaced completely every two years. Only use oil of the same type (see data table).

- Check the safety devices of the automation.
- When any operational malfunction is not resolved, disconnect the power supply from the system and request the assistance of qualified personnel.
- If the leaves move jerkily, or if excessive noise is noticed during manoeuvring, this could be due to air being trapped in the hydraulic circuit, and therefore a bleed operation may be required.

## 17.1) Oil bleed

**NOTE:** The actuator is supplied without air in the hydraulic circuit. If a bleed operation is required, proceed as described below.

- a) Remove the cover from the actuator.
- b) Activate the opening command and loosen the bleed screw (S) for opening (fig.19-20) during leaf movement.
- c) Let the air out until non-emulsified oil appears (if possible, try to prevent the oil leaking out of the bleed screw from falling into the foundation case).
- d) Tighten the bleed screw before the actuator runs out of operation time.
- e) Activate the closing command and loosen the bleed screw for closing (which can be seen in fig.20) during leaf movement.
- f) Let the air out until non-emulsified oil appears.
- g) Tighten the bleed screw before the actuator operation time runs out.
- h) Repeat this operation several times for both bleed screws.
- i) Restore the oil level, checking that it just reaches below cap "O" (fig.19). Top up with IDROLUX oil of the same type.

## 18) NOISE LEVEL

The aerial noise level produced by the gearmotor under normal operating conditions is constant and does not exceed 70 dB (A).

## 19) SCRAPPING

Materials must be disposed of in conformity with the current regulations. In case of scrapping, the automation components do not entail any particular risks or danger. In case of recovered materials, these should be sorted out by type

(electrical components, copper, aluminium, plastic etc.).

## 20) DISMANTLING

When the automation system is disassembled to be reassembled on another site, proceed as follows:

- Disconnect the power supply and the entire electrical installation.
- Remove the gearmotor from its fixing base.
- Disassemble the control panel, if separate, and all the installation components.
- In the case where some of the components cannot be removed or are damaged, they must be replaced.

## 21) MALFUNCTION: CAUSES and REMEDIES

When any operational malfunction is found, and not resolved, disconnect the power supply from the system and request the assistance of qualified personnel (installer). When automation is out of order, activate the manual release to allow opening and closing manoeuvres to be carried out by hand.

### 21.1) The gate does not open. The motor does not turn.

- 1) Check that the photocells or electric edges are not dirty, or engaged, or not aligned. Proceed accordingly.
- 2) Check that the electronic equipment is correctly supplied with power. Check the integrity of the fuses.
- 3) Check that the functions are correct by means of the control unit diagnosing leds (see relevant instructions). Identify any causes for faults. If the leds show a persistent start command, check that no radio controls, start buttons or other control devices keep the start contact activated (closed).
- 4) If the control unit does not work, it must be replaced. Should the checks listed above be satisfactory, replace the actuator.

### 21.2) The gate does not open. The actuator vibrates but there is no movement.

- 1) The manual release was left engaged. Reset motorised operation. Should an electric lock be fitted, check that it opens correctly after the start command.
- 2) Check that the capacitor is connected to the motor drive terminals.
- 3) Check that the motor common (light blue wire) is properly connected.
- 4) Disconnect and reconnect the power supply to the system. The first start command must open. Should the actuator close, reverse the respective drive connections to the actuator.
- 5) Help the leaf to open by hand. If the leaf opens, check if there are any mechanical problems with the leaf or, if necessary, adjust the by-pass valves as described in the relevant item 12. Should the checks listed above be satisfactory, replace the actuator.

**TABLE 1**

Mod.	Block type	Pump flow rate l/min	Opening angle (degrees)	Max. leaf length (mt)	Max. leaf weight (kg)	Speed (degrees/sec.)
SUB EL	electric lock	0.4 (V0)	130	3,5	8000N (~800 Kg)	3,9
SUB	hydraulic blocks	0.6 (V1)	130	1,8	8000N (~800 Kg)	5,4
SUB R	hydraulic blocks	0.9 (V2)	130	1,8	8000N (~800 Kg)	9
SUB E	electric lock	0.6 (V1)	130	2,5	8000N (~800 Kg)	5,4
SUB ER	electric lock	0.9 (V2)	130	2,5	8000N (~800 Kg)	9
SUB G	hydraulic blocks	0.6 (V1)	180	1,8	8000N (~800 Kg)	5,4
SUB GR	hydraulic blocks	0.9 (V2)	180	1,8	8000N (~800 Kg)	9
SUB GE	electric lock	0.6 (V1)	180	2,5	8000N (~800 Kg)	5,4
SUB GER	electric lock	0.9 (V2)	180	2,5	8000N (~800 Kg)	9

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