

ORO

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D811247 03-05-00 Vers. 02

HYDRAULIC AUTOMATION FOR SWING GATES



1) GENERAL SAFETY

WARNING! An incorrect installation or improper use of the product can cause damage to persons, animals or property.

The **Warnings** leaflet and the **Instruction booklet** supplied with this product should be read carefully as they provide important information about safety, installation, operation and maintenance.

Scrap packing materials (plastic, cardboard, polystyrene etc) according to the provisions set out by current standards. Keep nylon or polystyrene bags out of children's reach.

Keep the instructions with the technical brochure for future reference.

This product was exclusively designed and manufactured for the use specified in the present documentation. Uses not specified in this documentation could cause damage to the product and can be dangerous. The Company declines all responsibility for any consequences resulting from the product being used improperly or differently from whatever is specified in the present documentation.

Do not install the product in an explosive environment.

The construction components of this product must comply with the following European Directives: 89/336/CEE, 73/23/EEC (amended by RL 91/263/EEC, 92/31/EEC and 93/68/EEC). As for all non-EEC countries, the above-mentioned standards as well as the current national standards should be respected in order to have a good safety level.

The Company declines all responsibility for any consequences resulting from failure to observe **Good Technical Practice** when constructing closing structures (door, gates etc.), as well as from any deformation which might occur during use.

The installation must comply with the provisions set out by the following European Directives: 89/336/CEE, 73/23/EEC (amended by RL 91/263/EEC, 92/31/EEC and 93/68/EEC).

Disconnect the electrical power supply before carrying out any operations on the plant. Also disconnect any buffer batteries, if fitted.

Fit an omnipolar circuit breaker or thermal magnetic circuit breaker on the mains power supply, having a contact opening distance equal to or greater than 3mm.

Check that a differential switch with a 0.03A threshold is fitted just before the power supply mains.

Check that grounding is carried out correctly: connect all metal parts for closure (doors, gates etc.) and all system components provided, with an earth terminal.

Fit all the safety devices (photocells, electric edges etc.) which are needed to protect the area from any danger caused by squashing, conveying and shearing.

Position at least one light signal device (blinker) where it can be easily seen, and fix a **Warning** sign to the structure.

The Company declines all responsibility with respect to the automation safety and good operation when other manufacturers' components are used.

Only use original parts for any maintenance or repair operation.

Do not modify the automation components, unless explicitly authorized by the Company.

Instruct the product user about the control systems provided and the manual opening operation in case of emergency.

Do not allow persons or children to remain in the automation operation area.

Keep radio control or other control devices out of children's reach, in order to avoid unintentional automation activation.

The user must avoid any attempt to carry out work or repair on the automation system, but only request assistance from qualified personnel. Anything which is not expressly provided for in the present instructions, is not allowed.

2) GENERAL OUTLINE

A compact sturdy hydraulic piston, available in various versions according to the user's requirements and type of operation.

They are models available with a hydraulic lock on closing or without a hydraulic lock in which an electric lock is required.

To make the manual manoeuvre easier, the lock can be released by means of a triangular pin which can be reached using the appropriate key.

The pushing force is adjusted with extreme precision by means of two by-pass valves which provide antisquash safety.

The end-of-stroke operation is electronically set in the control panel by means of a timer.

All models are available with slow-down function during the closing phase.

3) MAIN AUTOMATION PARTS (fig.1)

- M) 2-pole single-phase motor, protected by thermal circuit-breaker.
- P) Hydraulic cam pump.
- D) Distributor with adjustment valves.

C) Cylinder with piston.

CS) Rod cover.

S) Reservoir.

SB) Release.

T) Head.

F) Base with articulated joint.

Components supplied: Attachments for pillars and gate - personalised release key - drive capacitor - instruction manual.

4) TECHNICAL SPECIFICATIONS

	Mod. ORO	Mod. ORO/E
Power supply	: 230Vac±10% - 50Hz	(special voltage on request)
Motor	: 2800min ⁻¹	
Absorbed power	: 240W	
Capacitor	: 6.3µF	
Max. pressure	: 2MPa (20bar)	
Pump capacity	: 0.9l/min	: 0.6l/min
Pushing force	: 1500N	
Towing force	: 1250N	
Opening time (working stroke)	: 20s	: 27s
Closing time (working stroke)	: 20s	: 27s
Type of lock	: Hydraulic lock	: Electric lock
	on closing	on closing/opening
Max leaf length	: 1.8m	: 2.5m
Max. leaf weight	: 1800N (~180kg)	: 2000N (~200kg)
Working stroke	: 250mm	
Manoeuvres in 24 hours	: 60	
Impact reaction	: Hydraulic clutch	
Manual manoeuvre	: Release key	
Thermal protection	: 120°C	
Environmental conditions	: -10°C to +60°C	
Degree of protection	: IP55	
Controller weight	: 53N (~5,3kg)	
Dimensions	: see fig. 2	
Oil	: Idrolux Oil if not differently indicated on the actuator	
	(0.75 litres)	
Noise	: <70dB(A)	

5) ACTUATOR INSTALLATION

5.1) Preliminary checks

Check that:

The gate structure is sufficiently sturdy.

Also make sure that the actuator pushes against the leaf reinforced section.

The leaves move manually and without effort all along their stroke.

The door stop plates are fitted at the end of both closing and opening strokes.

If the gate has not been recently installed, check the wear condition of all components.

Repair or replace faulty or worn parts.

The automation reliability and safety are directly influenced by the state of the gate structure.

5.2) Installation dimensions

The installation dimensions can be worked out from the table concerning the respective model (fig.3) and with reference to the diagram in fig.4.

The diagram in fig.4 uses the following conventional references:

P Rear bracket fixed to pillar.

F Leaf fixing front fork.

a-b Dimensions used to determine the fixing point for bracket Φ

C Value of fixing distance between centres.

D Leaf length.

x Distance from the leaf axis to the pillar edge.

Z Value always greater than 40mm (b - x).

kg Max leaf weight (see **Technical specifications**).

α° Leaf opening angle.

5.3) How to interpret the installation measurements (fig.3)

The table represents the recommended dimensions A and B based on the length of the gate and of the decided opening angle in degrees α° . The smaller are the values of A and B, the less is the opening-closing time of the gate. The larger are the A and B values, the greater is the force developed by the piston; (for small but heavy gates or others with considerable friction it is recommended that the values of A and B be increased). If the values A and B are too unlike, this can cause a speed variation during the opening and closing, with the possibility of oscillations and the possibility of gate jamming.

WARNING! All versions are provided with a ball joint which allows the rod to be lengthened or shortened by approximately 5mm, but only if it was fixed using the dimensions shown in fig.8 before installation after installation, this adjustment allows the rod stroke to be corrected.

Fig.9 illustrates the oscillation that the controllers may show with respect to their horizontal axis.

During installation, carefully follow all the phases described below, taking care to protect the actuator's chromium-plated rod at all times, in order to prevent it from being damaged by impact or any welding slag.

- 1) Identify $\alpha - b - \alpha^\circ$ on the table in fig. 3.
- 2) Fix bracket ΦQ (fig.10) to the pillar.
- 3) Fit the piston in bracket ΦO
- 4) Make sure that the rod eye is adjusted see fig 8.
- 5) Pull the rod out completely after activating the emergency release (fig.18)
- 6) Push the rod back in manually until you position the eye hole with the hole of the template (fig.22).
- 7) Fit fork ΦQ (fig.8) to the rod.
- 8) Fully close the gate leaf against the centre stop plate.
- 9) Keeping the piston level, mark the position for attaching fork (fig. 10 ref. ΦQ) to the leaf.
- 10) Remove fork ΦO from the rod and move the piston sideways.
- 11) Fix fork (fig.10 ref. ΦQ) to the leaf by means of screws or welding.
- 12) Reconnect the rod to fork ΦO remove bleed screw ΦS (Fig.17) and supply the actuator with power.
- 13) Make some full cycles.
- 14) In the case when you have to adjust the opening angle, do so by adjusting the ball joint see fig.8.
- 15) After adjustment proceed as follows in order to secure piston into mounting bracket: clean piston cover and secure with fastener, insert mounting pin and tighten lock nut with open end wrench as shown in Fig.8A.

5.4) Suggestions for particular installations

Fig.5 A recess must be made to house the controller when the leaf is completely open; the recess measurements are shown in fig.5.

Fig.7 When the ΦO dimension is greater than the values shown in the installation tables, it is necessary to move the leaf hinge-pivot or make a recess in the pillar, as in fig.6.

5.5) Anchoring of attachments to the pillar

Weld or fix the bracket base supplied to the pillar, check the α and ΦO measurements and then weld plate ΦQ to the said base. (fig. 10).

If the pillar is made of masonry, plate ΦQ must be welded to the metal base ΦF and deeply anchored by means of suitable hooks ΦZ which are to be welded on the back of the said base (fig. 11a).

If the pillar is made of stone, plate ΦQ is welded to the metal base ΦF and can be fixed by means of four metal screw anchors ΦT (fig. 11b); if the gate is large, it is advisable to weld plate ΦQ to an angle-shaped base (fig. 11c).

5.6) Anchoring of attachments to the leaf

Weld or fix fork ΦQ to the leaf at distance between centres ΦC shown in fig.4, making sure that the actuator is perfectly level (level ΦL fig. 10) with respect to the gate movement plane.

If the gate is made of metal, the fork can be welded (fig. 12a) or fixed using appropriate screws (fig. 12c).

If the gate is made of wood, the fork can be fixed using appropriate screws (fig. 12b).

6) GROUND LEAF STOP PLATES

For the actuator to operate correctly, stop plates ΦA must be used during both opening and closing manoeuvres, as shown in fig. 13.

The leaf stop plates must prevent the actuator rod from going to the end-of-stroke position. Fig.14 specifies the dimensions needed to check the correct actuator installation both for pushing and towing. The plates must be positioned in such a way as to maintain a rod stroke margin of approximately 5mm; this is to avoid possible operation anomalies (such as a lock-up).

7) ELECTRIC LOCK FITTING

This is needed on mod. ORO/E only since these are not supplied with a hydraulic lock on closing.

The **EBP** model electric lock (fig.15) consists of a continuous service electromagnet being anchored to the ground.

This device remains energized throughout the actuator operation time, and allows the catch to stay lifted when it reaches the closing position, without opposing any resistance; the catch will drop into position when the gate has

completed the closing cycle.

The electric lock can also be used to keep the block of the gate in case of actuator malfunction or current failure.

8) ELECTRICAL INSTALLATION SET-UP

Lay out the electrical installation (fig. 16) with reference to the CEI 64-8 and IEC 364 provisions, complying with the HD 384 and other national standards in force for electrical installation. The mains power supply connections must be kept totally separate from the service connections (photocells, electric edges, control devices etc.).

WARNING! For connection to the mains, use a multipolar cable with a minimum of 3x1.5mm² cross section and complying with the previously mentioned regulations. For example, if the cable is outside (in the open), it has to be at least equal to H07RN-F, but if it is on the inside (or outside but placed in a plastic cable channel) it has to be or at least equal to H05VV-F with section 3x1.5mm².

Connect the control and safety devices in compliance with the previously mentioned electrical installation standards.

Fig.16 shows the number of connections and the cross section for power supply cables having a length of approximately 100 metres; in case of longer cables, calculate the cross section for the true automation load.

When the auxiliary connections exceed 50-metre lengths or go through critical disturbance areas, it is recommended to decouple the control and safety devices by means of suitable relays.

8.1) The main automation components are (fig.16):

I Type-approved omnipolar circuit breaker with at least 3mm 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 differential switch with a 0.03A threshold in the circuit 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 and RG58 cable.

M Actuator.

E Electric lock.

Fte Pair of external photocells (transmitter).

Fre Pair of external photocells (receiver).

Fti Pair of internal photocells with CF posts.

Fri Pair of internal photocells with CF posts (receiver).

T 1-2-4 channel transmitter.

IMPORTANT: Before electrically activating the actuator, remove bleed screw ΦS (fig. 17) which is positioned under the base with articulated joint and keep it for any later reuse. Only remove bleed screw ΦS when the actuator is installed.

9) MANUAL OPENING

In emergency case, such as in the case of power cut-out, to release the gate, insert the same key C used for the adjustment of the by-pass valve inside the triangular pin (Fig.18) and rotate it counterclockwise.

The gate can now be opened manually.

WARNING! make sure that you manually push the gate open at the same speed as the motor would have.

To reset the electric operation of the actuator, turn the key in clockwise direction until pin is blocked.

9.1) Mod. ORO

In case of emergency, for example when the electrical power is disconnected, to release the gate, insert the same key C used for the adjustment of the by-pass valve inside the triangular pin (Fig.18) and rotate it counterclockwise. The gate can now be opened manually. To reset the electric operation of the actuator, turn the key in clockwise direction until pin is blocked.

9.2) Mod. ORO/E

Since these models are reversible, for the manual operation of the gate it is sufficient that the electric lock be opened with the appropriate key. To make the manual manoeuvre easier, the lock can be released by means of a triangular pin which can be reached using the appropriate key.

10) PUSHING FORCE ADJUSTMENT

The pushing force is adjusted by two valves marked with the writing **Close** and **Open** respectively, which are used to adjust the closing and opening pushing force (fig.19).

Lift open the lid indicated in (Fig.19) there you will find the two valves.

Turn the valves towards the **Q** sign to increase the force transmitted; turn the valves towards the **O** sign to reduce the force.

To achieve proper antisquash safety, the pushing force must be slightly higher than that needed to move the leaf during both closing and opening manoeuvres; the strength, which is measured on the leaf edge, must never exceed the limits set out by the current national standards.

Under no circumstances whatsoever must the by-pass valves be fully closed.

Complete the adjustments and restore the release system.

The actuator is not provided with electrical limit switches. Therefore the motors switch off at the end of the operation time set by the control unit. The said operation time must last approximately 2-3 seconds after the moment when the leaves meet the ground stop plates.

11) COVERING ELEMENT POSITIONING

Covering element **Q** for all models can become left or right-handed by reversing the position of cap **O** (fig. 21), taking care to keep the water drainage channel always at the bottom, remember to screw back the Q screw.

12) AUTOMATION CHECK

Before the automation device finally becomes operational, scrupulously check the following conditions:

- Check that all components are tightly fixed.
- Check that all control devices (photocells, pneumatic edge etc) operate correctly.
- Check the emergency manoeuvre command.
- Check the opening and closing operations using the control devices provided.
- Check the normal (or personalised) function control logic in the control unit.

13) AUTOMATION OPERATION

Since the automation system can be remotely controlled by means of a radio control device or a Start button, all safety devices must be frequently checked in order to ensure their perfect efficiency.

In the event of any irregular operation, request immediate assistance from qualified personnel.

Children must be kept at a safe distance from the automation operation area.

14) CONTROL

Various types of controls are provided (manual, radio control, magnetic card access control etc.) depending on the installation requirements and characteristics.

(See the specific instructions for the various control systems).

The installer undertakes to instruct the user about the correct automation operation, and also point out the operations required in case of emergency.

15) MAINTENANCE

Before carrying out any maintenance to the controller, disconnect the system power supply.

Periodically check the system for oil leaks.

To recap the oil, please use the same oil as described in the **TECHNICAL SPECIFICATIONS** paragraph and proceed with the following instruction:

- a) With the piston all the way out take of the screw (P) situated on the base see (Fig.20).
- b) Top up using the prescribed oil until its level reaches the level of the oil lid see (Fig.20).
- c) Refit all the components paying attention to the seals.

ATTENTION - Replace the actuator oil every 2 years with the same oil as described in the **TECHNICAL SPECIFICATIONS** paragraph.

Check all automation safety devices.

When any operational malfunction is found, and not resolved, disconnect the systems power supply and request the assistance of a qualified technician (installer).

When the automation is out of order, activate the manual release knob to allow the manual opening and closing operations to be carried out by means of the electric lock.

16) MALFUNCTIONS AND REMEDIES

16.1) Faulty operation of the actuator

Using an appropriate instrument, check that the ends of the actuator are supplied with voltage after the opening or closing command is given.

If the motor vibrates but does not turn, the causes could be as follows:

- Wrong connection of common wire C (always light blue).
- No connection between the drive capacitor and the two drive terminals.
- If the leaf movement is opposite to what it should be, reverse the motor drive connections in the control unit.

Leaf stops: when the operation time is insufficient, the leaves may not complete their strokes. In that case, slightly increase the operation time setting in the control unit.

16.2) Faulty operation of the electrical accessories

All faulty control and safety devices can cause abnormal operation or automation block.

If the control unit is provided with a self-diagnosing system, identify the fault.

In case of malfunction, it is advisable to disconnect and bridge all the automation devices one by one, if necessary, until the faulty device is identified. After replacing or repairing it, restore all the devices which were previously disconnected or bridged. For all devices installed, refer to their respective instruction manual.

WARNING! the above operation must be carried out by qualified personnel. During maintenance, the gate operational area must be appropriately indicated and closed off, in order to avoid any danger to persons, animals and property.

WARNINGS! Correct controller operation is only guaranteed when the data specified in this manual are respected. The company cannot be held responsible for any damage caused by failure to observe the standards on safety, installation and good technical practice, as well as the directives specified in the present manual.

17) SCRAPPING

WARNING: This operation should only be carried out by qualified personnel. Materials must be disposed of in conformity with the current regulations. In case of scrapping, the automation devices 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.).

18) DISMANTLING

WARNING! This operation should only be carried out by qualified personnel. When the automation system is disassembled to be reassembled on another site, proceed as follows:

- Disconnect the power supply and the entire external electrical installation.
- Replace the bleed screw (fig. 17) under the articulated joint block.
- In the case where some of the components cannot be removed or are damaged, they must be replaced.

The descriptions and illustrations contained in the present manual are not binding. The Company reserves the right to make any alterations deemed appropriate for the technical, manufacturing and commercial improvement of the product, while leaving the essential product features.

Fig. 1

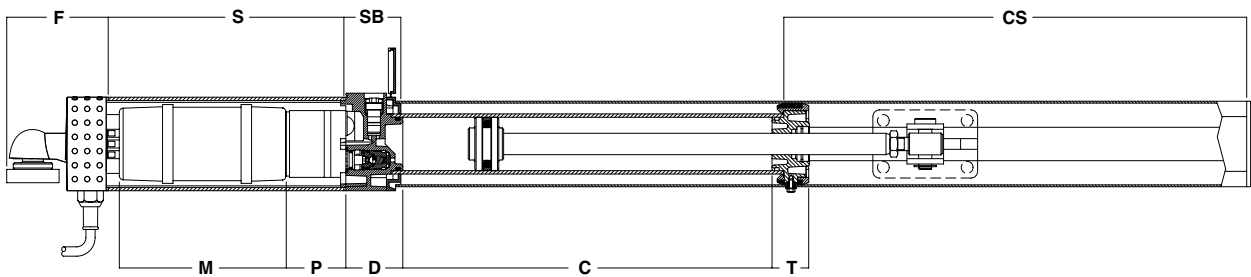
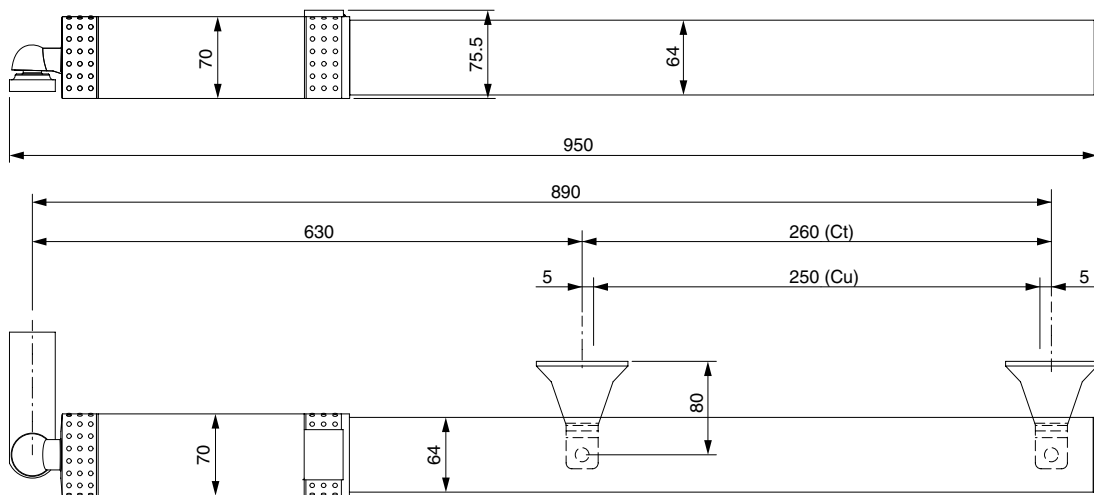


Fig. 2



Ct = Corsa totale
Total stroke
Course totale
Totalhub
Carrera total

Cu = Corsa utile
Working stroke
Course utile
Nutzhub
Carrera til

Fig. 3

a (mm) \ b (mm)	80	90	100	110	120	130	140	150	160
80					112	104	99	94	91
90					105	99	94	91	88
100					100	94	91		
110					95	89	87		
120			103	95	90				
130		106	95	90	86				
140		96	89						
150	97	89	84						
160	88	83	80						α°

Fig. 4

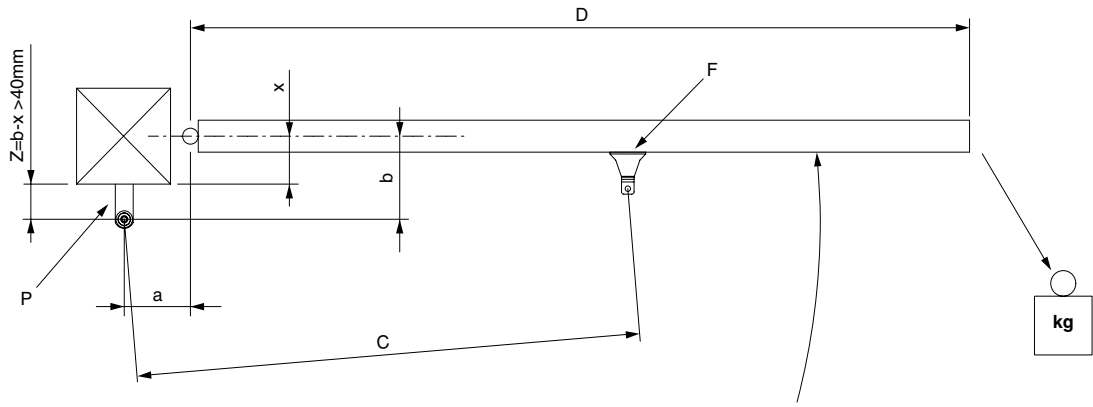


Fig. 5

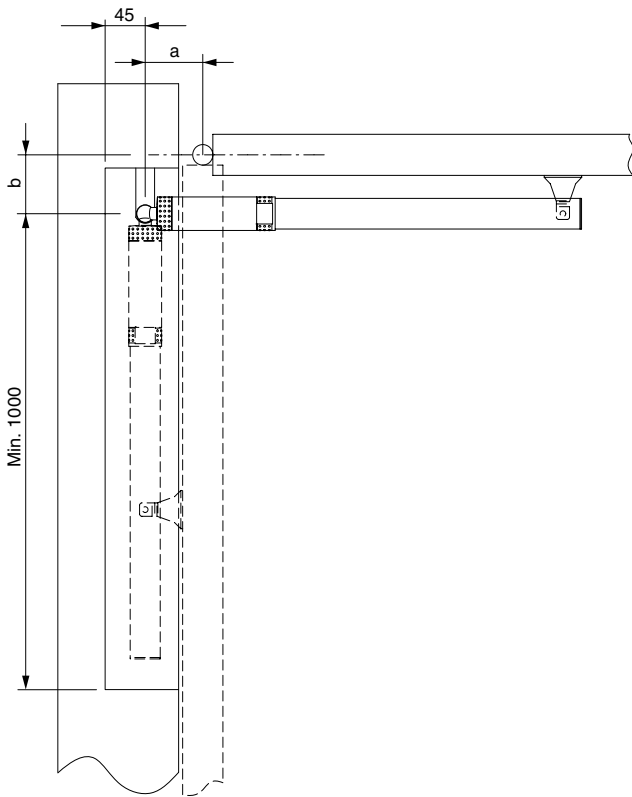


Fig. 6

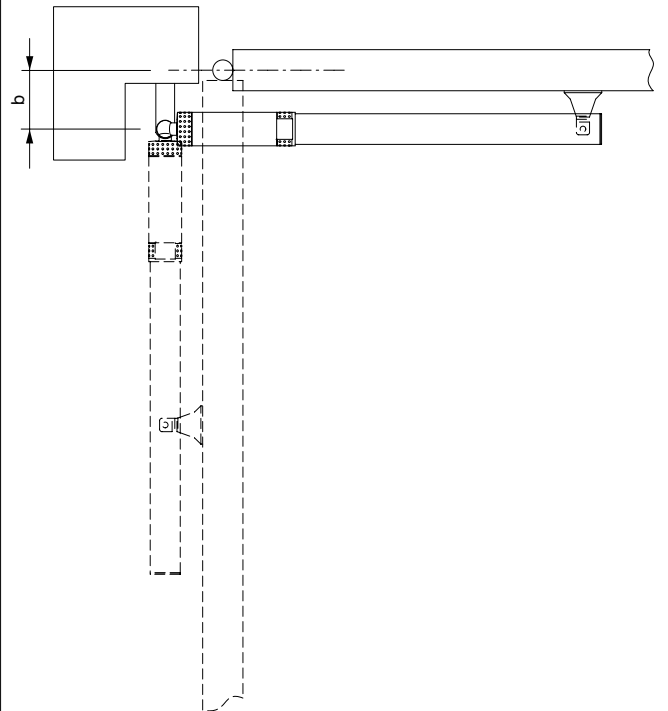


Fig. 7

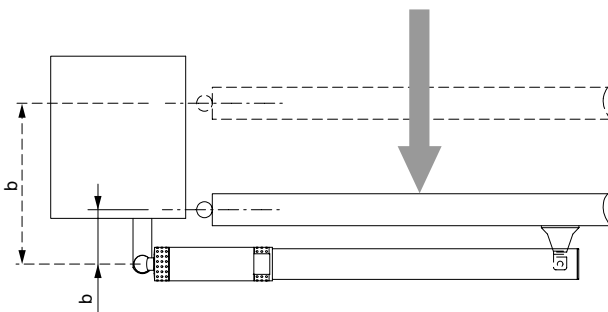
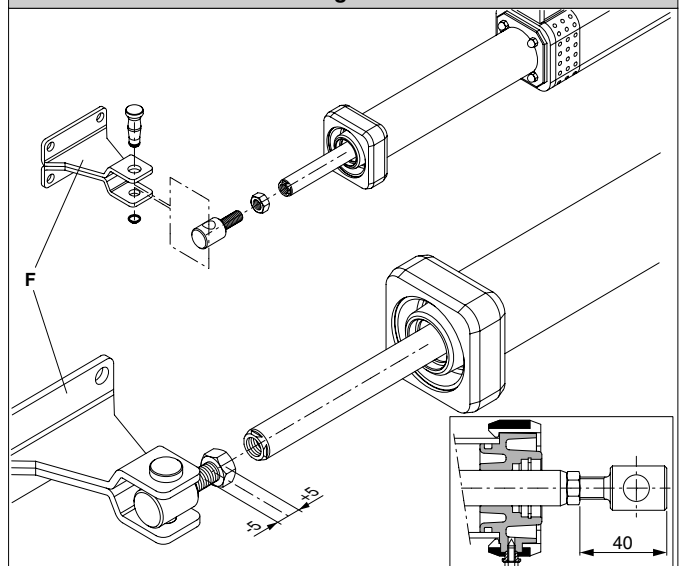


Fig. 8



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Fig. 8A

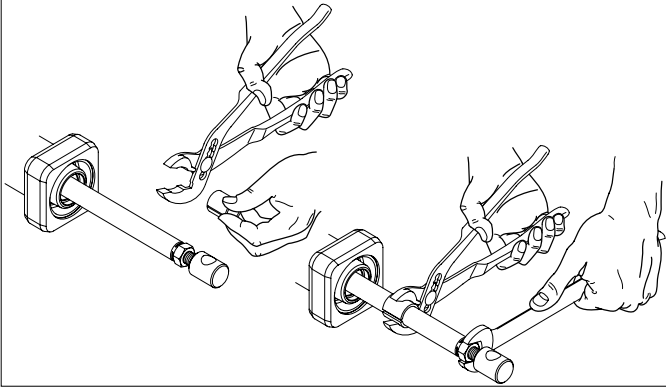


Fig. 10

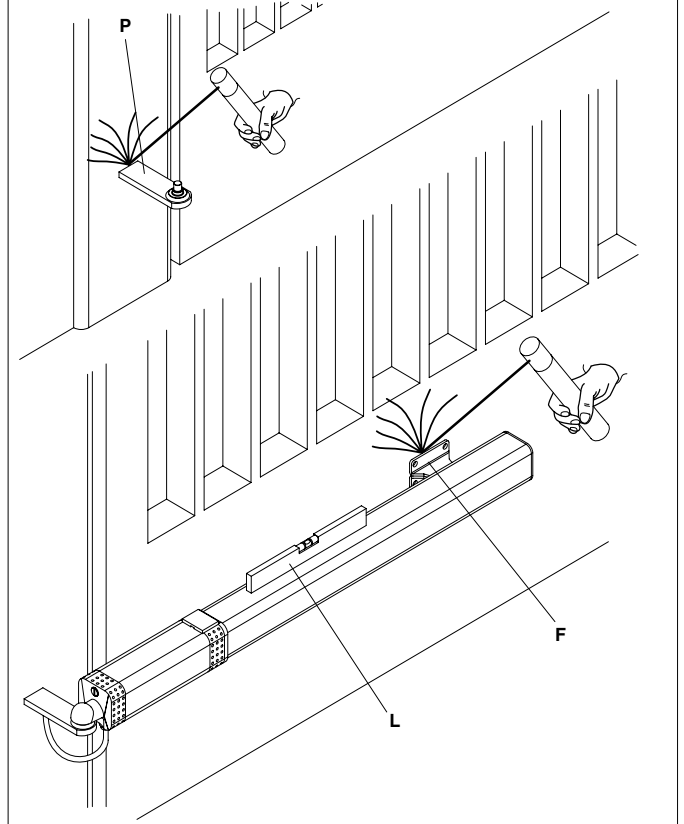


Fig. 9

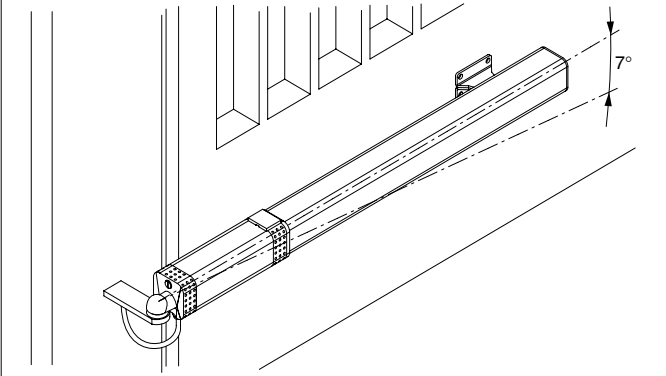


Fig. 11

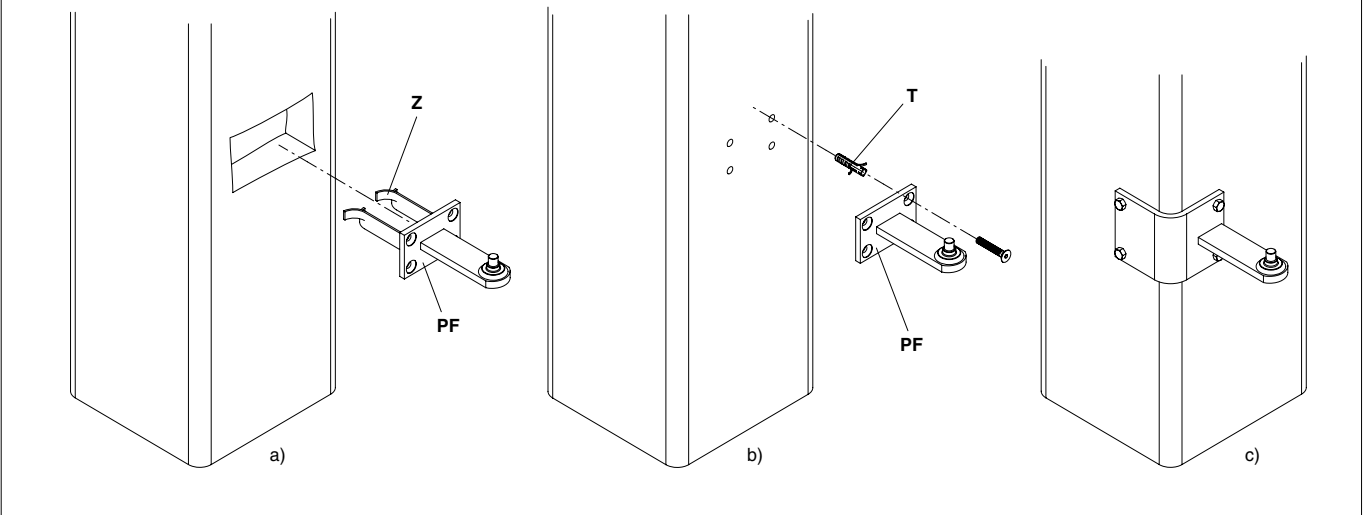


Fig. 12

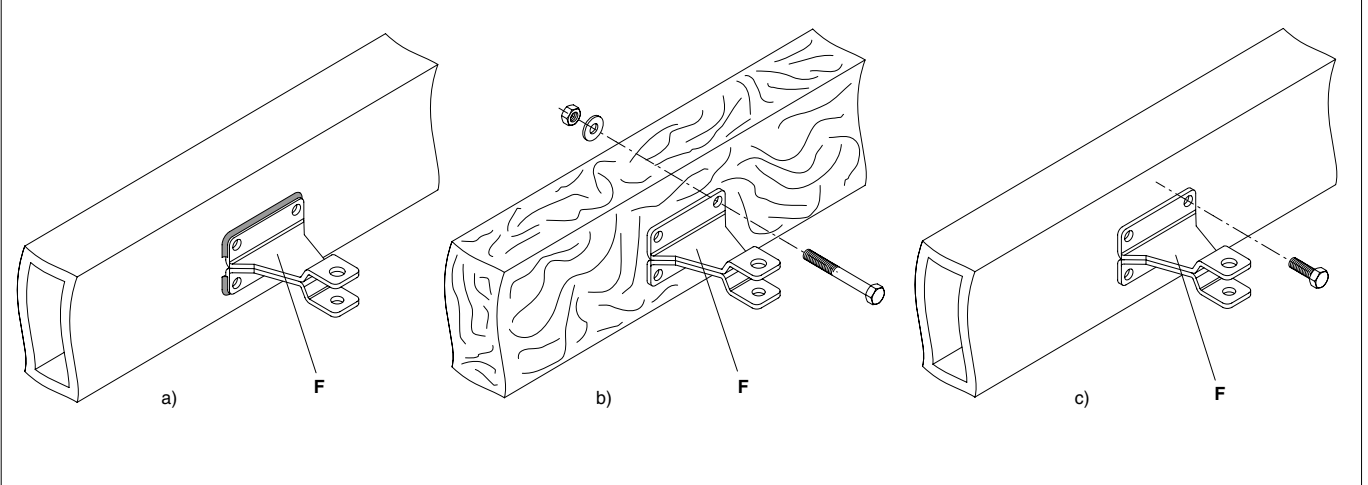


Fig. 13

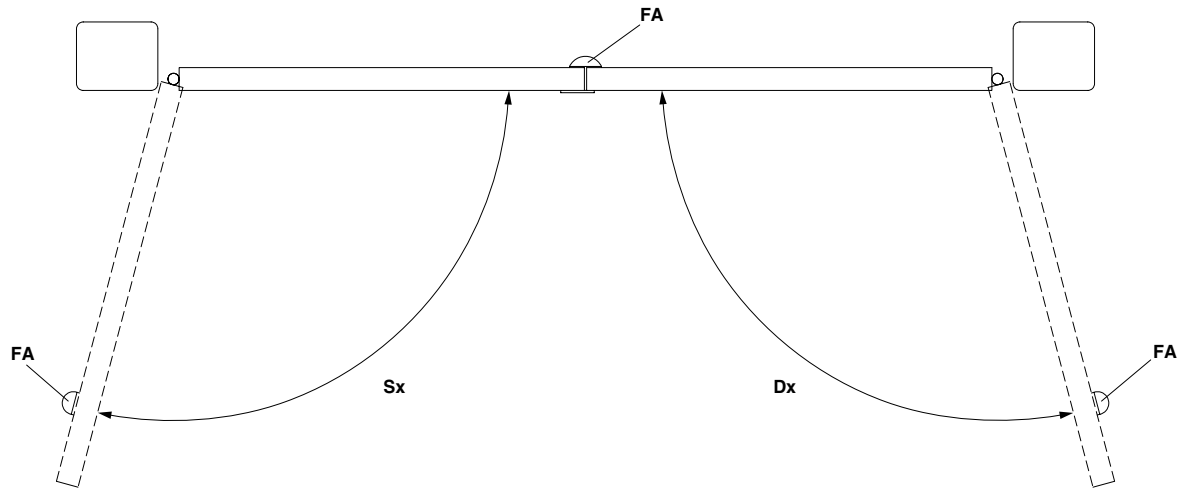


Fig. 14

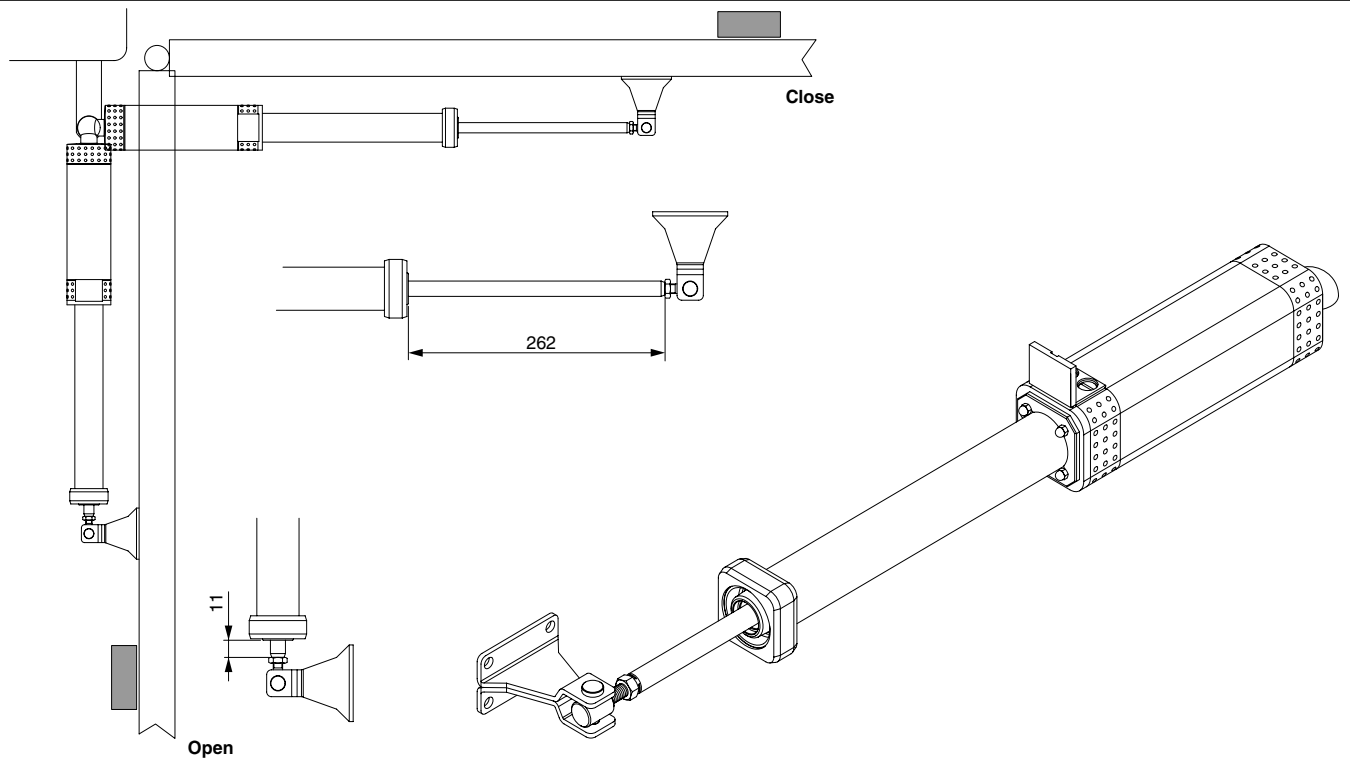


Fig. 15

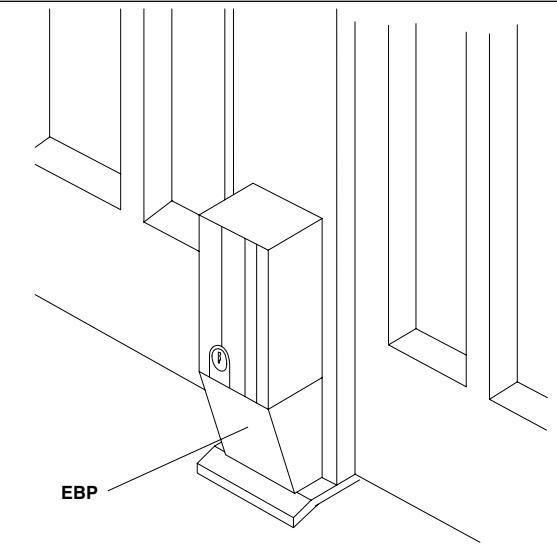


Fig. 16

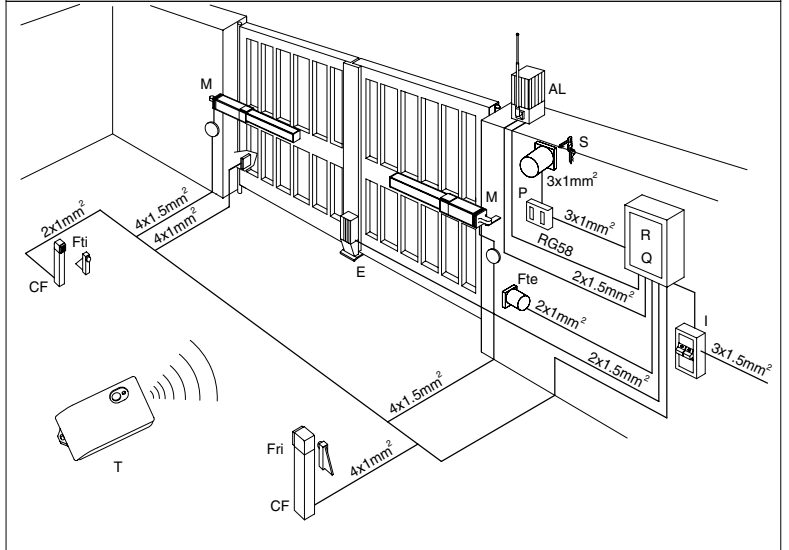


Fig. 17

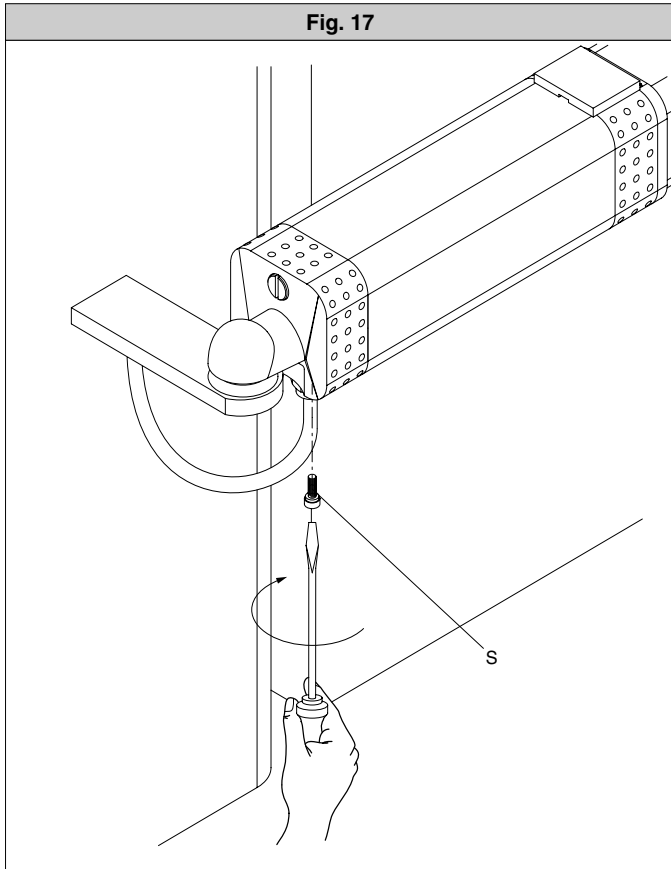


Fig. 18

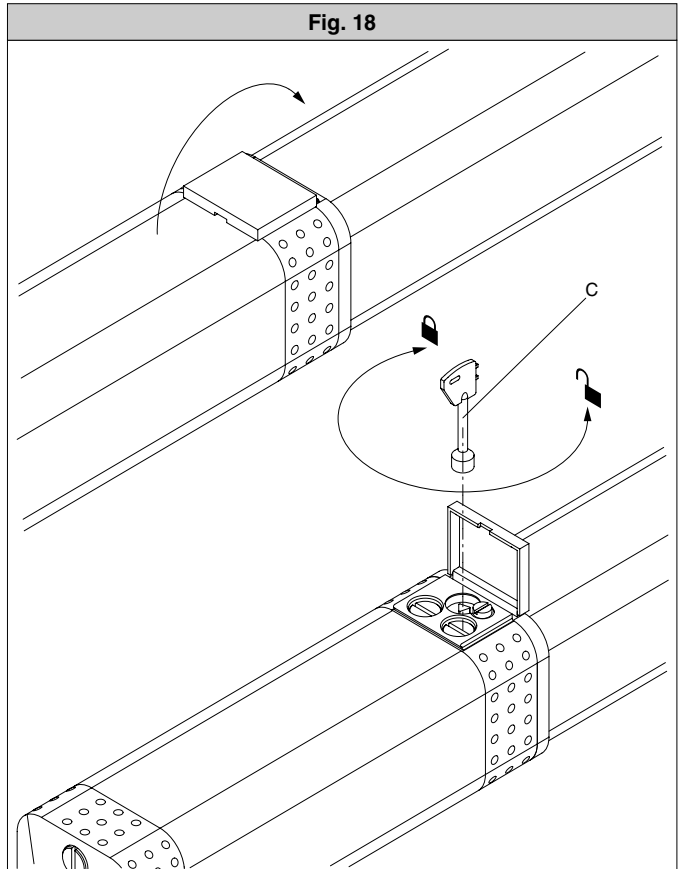


Fig. 19

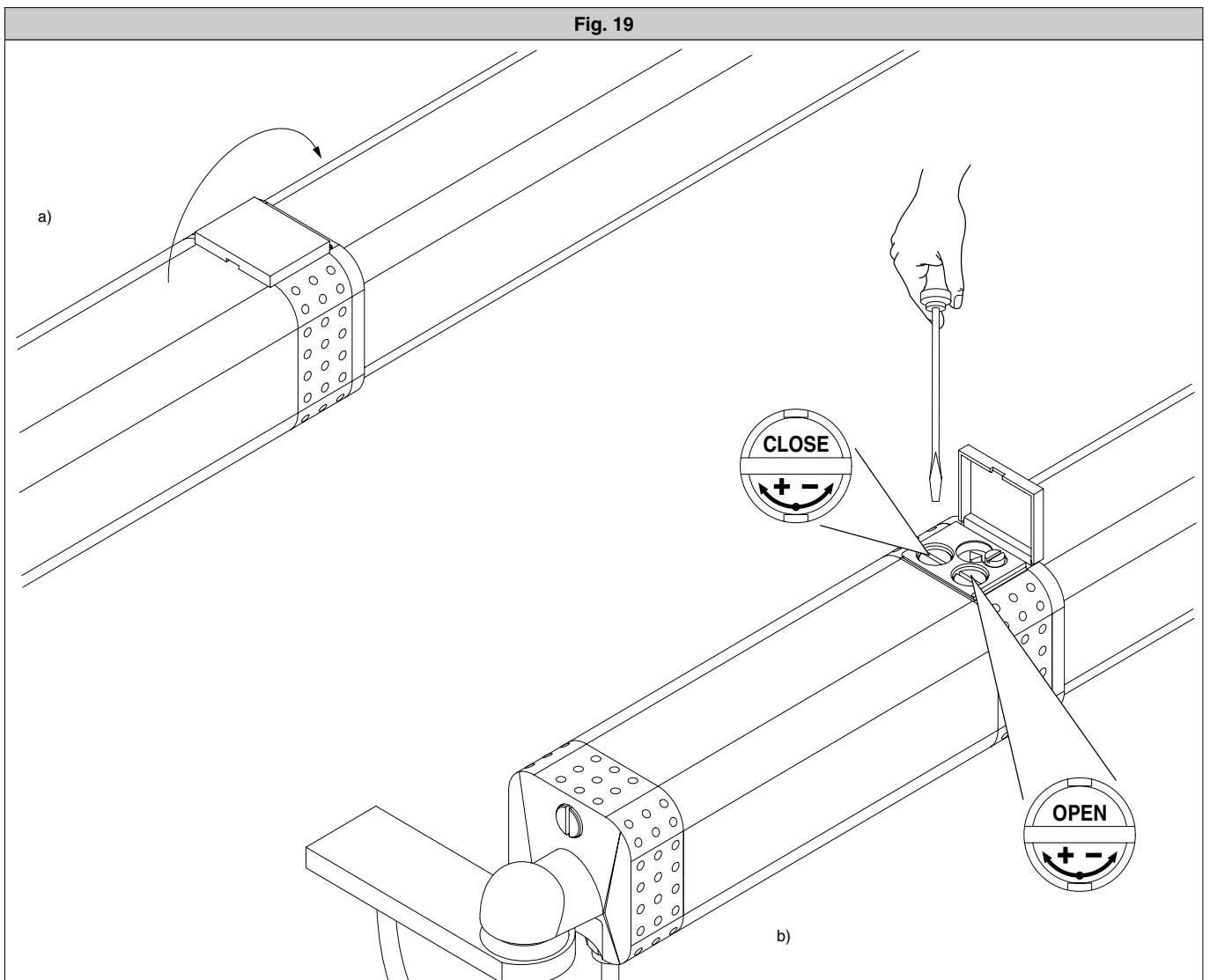


Fig. 20

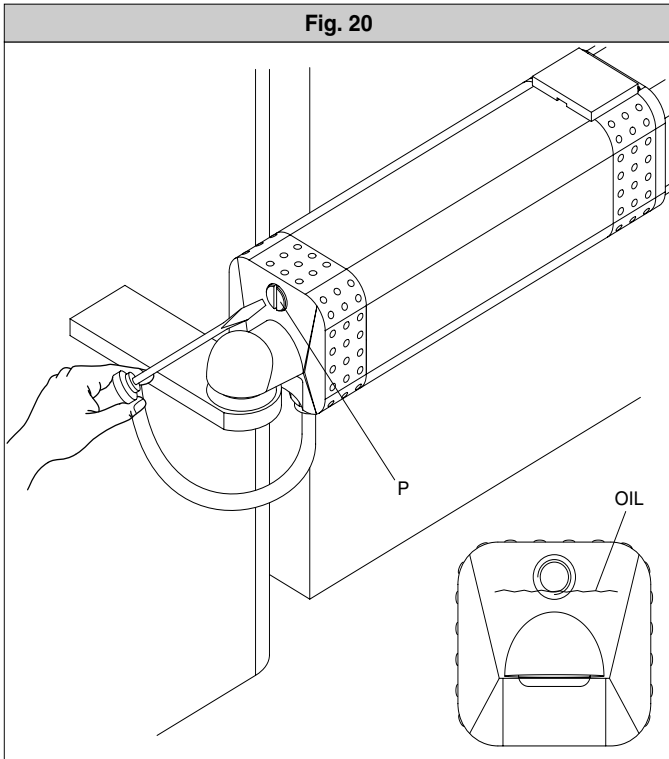


Fig. 22

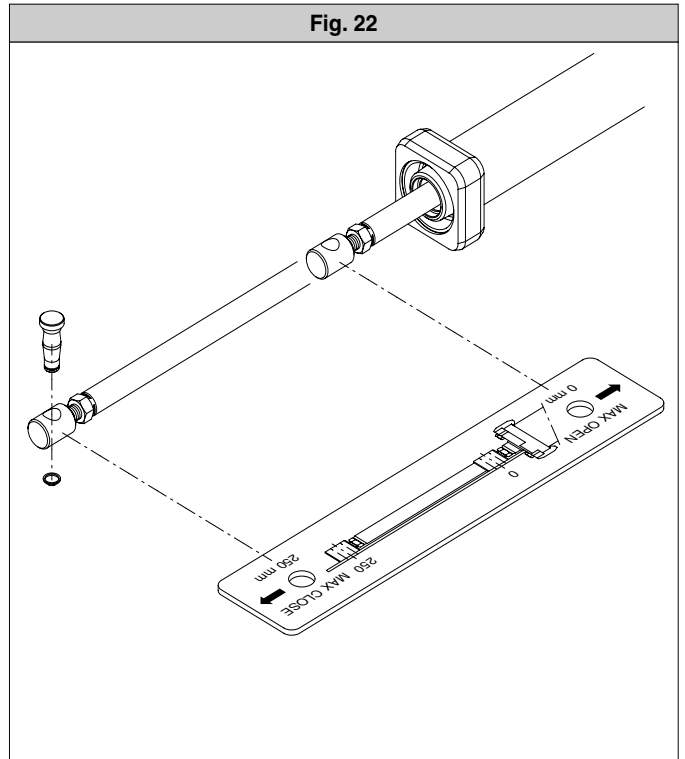


Fig. 21

