

ARM 2
ARM 2 SQ
ARM 2 SQ IP44

D811196 24-02-00 Vers. 02

**ELECTROMECHANICAL
AUTOMATION FOR
COUNTERWEIGHT
OVERHEAD DOORS**



Thank you for buying this product. Our company is sure that you will be more than satisfied with the product's performance.

Carefully read the **WARNINGS** pamphlet and the **INSTRUCTION BOOKLET** which are supplied together with this product, since they provide important information regarding the safety, installation, use and maintenance of the product. This product complies with recognised technical standards and safety regulations. We declare that this product is in conformity with the following European Directives: 89/336/EEC, 73/23/EEC and subsequent amendments.

1) GENERAL OUTLINE

This controller has been designed to motorize counter-balanced overhead doors.

The compactness and versatility of the installation allow the motor drive to be fitted to almost any model of overhead door where it can be installed both in the centre and at the side. It is particularly recommended for residential use. The irreversible gearmotor keeps the door locked in the closing position without electric lock.

Release can be easily activated by a lever on the inside during power failures. It is equipped with appropriate microswitches which stop the motor in the opening and closing position and with a timed courtesy lamp.

The following versions are available:

ARM2

Model with built-in control unit (POLLUCE 2M) controlling one or two controllers.

ARM-SQ

Model without control unit indispensable for automations with two controllers ARM2, the first of which is ARM2 and the second is ARM2-SQ. They can be also used in case of wall-mounted control unit.

ARM-SQ IP44

Version without control unit and with IP44 protection.

Indispensable when the environmental conditions require this level of protection, for example in case of antifire rain systems.

ARMKIT

Model available in kit used for overhead doors with a door panel of up to 7m².

It is equipped with a built-in control unit Mod. POLLUCE 1M.

CAUTION - The controllers without pre-assembled control unit, must be controlled by a control unit featuring electronic torque adjustment (series POLLUCE).

2) TECHNICAL SPECIFICATIONS

Power supply	: 230V±10%50Hz (*)
Motor	: Single-phase 1400 min ⁻¹
Power	: 200W
Absorption	: 1A
Capacitor	: 8µF 450V (for 230V power supply)
Insulation class	: F
Thermal protection	: 130°C
Lubrication	: Permanent grease
Reduction gear ratio	: 1/812
Output shaft rev.	: 1,8 min ⁻¹ MAX
Output shaft	: Hollow through shaft 20X20
Opening time	: 17 ± 20 s
Torque provided	: 270 Nm
Application limit	: 1 Motor x 7 m ² / 2 Motors x 10 m ²
Impact reaction	: (Sensitive edge) stop and reverse
Limiting devices	: Built-in, electrical and adjustable limit switches
Control unit	: POLLUCE 1M - POLLUCE 2M model
Manual manoeuvre	: Lever release
No. manoeuvres in 24 hours	: 40
Courtesy lamp	: Max 40W
Working temperature	: -15 +60 C°
Protection	: IP30 (IP44 for ARM-SQ IP44)
Controller weight	: 10 kg
Dimensions	: See fig. 1

(*) Special voltages on request

3) INSTALLATION OF THE AUTOMATION

Preliminary checks

Check:

- that the structure of the door is sturdy and strong enough
- that the door is properly balanced
- that the door can be slid manually and runs smoothly along the whole of its stroke

If the door being installed is not new, check whether its components are worn. Repair or replace any worn or damaged parts.

Automation reliability and safety are directly influenced by the condition of

the overhead door structure.

4) INSTALLATION

4.1) Required accessories:

Telescopic arm kit - Pair of driving pipes - Fixing base

4.2) Installation of the actuator

Secure the actuator to the fixing base using the four screws provided and positioning it in the most suitable direction for installation (see dimensions in fig. 2).

The fixing position of the actuator changes according to the type of overhead door. In the case of counter-balanced overhead doors with vertical guide (fig. 3) the axis of the actuator driving shaft, must be about 70-80 mm lower than the fulcrum of the already existing panel levers.

For overhead doors with vertical and horizontal guides, the axis of the actuator must be about 100-110 mm lower than half the total height of the door (fig. 4).

For overhead doors with articulated panel, the axis of the actuator must be about 150 mm lower than the articulated hinged joint (fig. 5).

Remove the fixing base surplus exceeding the overhead door panel (fig. 3). Make some fixing holes in the base and secure it to the panel using fasteners suited to the type of overhead door (screws, rivets etc.). The fixing points must be made in reinforced points of the panel and, if possible, under the motor.

4.3) Driving shaft assembly

Fasten the two side shaft supports to the panel (fig. 6).

These should be fastened securely to the frame of the overhead door and should be perfectly aligned with the actuator shaft hole.

Position the shaft adaptor bushes on both the supports and insert the square driving pipes until they enter the housing of the actuator shaft (fig. 7).

Cut the shaft surplus in keeping with the measurements given in fig. 8 where is the arm and is the counter-weight case.

4.4) Balancing of overhead door

Carry out the manual opening of the overhead door. If when the actuator is installed, the door is no longer balanced (fig. 9), increase the counter-weighting as follows:

Remove the guards of the counter-weight cases, release the counter-weights and add weights (iron plates) until the balancing of the door is achieved.

N.B. If the actuator is installed in a central position, increase the counter-weights in an equal amount.

If the (single) actuator is installed at the side, add more weight to the actuator side.

The lateral installation is possible provided that the structure of the overhead door panel is strong enough to transmit the movement from one side only.

If the counter-weights are made of iron, fasten the weights by welding (fig. 9).

If the counter-weights are made of other materials, fasten the weights in the most appropriate way.

4.5) Telescopic arm assembly

WARNING: Before rotating the actuator shaft, check that the cams controlling the microswitches - limit switches rotate freely (loose).

If the overhead door measurement shown in fig. 10, is 15 mm or more, fit the straight telescopic arms (fig. 11).

If the overhead door measurement (fig. 10) is less than 15 mm, fit the curved telescopic arms (fig. 12).

Position the upper fastener of each arm on both sides of the overhead door.

The dimensions given in fig. 13 are merely indicative. They may vary according to the overall dimensions of the door.

Weld the arm fasteners. Some overhead door models may already have the fasteners attached. In this case, check if they can be used for the type of telescopic arms selected.

Open the overhead door completely and measure the distance D (fig. 14) between the fastener hole and the centre of the driving shaft.

Cut the arm guide and the driving arm in keeping with the measurements indicated in fig. 15 (value is the distance previously obtained).

If the values given in fig. 15 cannot be observed because the telescopic arm length is insufficient, check when the door is closed whether the telescopic arm stays inserted for at least 70-80 mm (fig. 16). If this is not the case, find a position more suitable for the fastener or use longer arms.

Secure the telescopic arm onto the fastener (fig. 17) using the pin and split pin supplied.

Insert the driving shafts (fig. 18) in the corresponding square housings of the driving arms, make through holes in the shafts and bushes and fasten using through screws and nuts.

5) ELECTRICAL PLANT SET-UP

5.1) Main components for one automation (fig. 19):

I Type approved omnipolar switch with 3 mm min. contact opening provided with overload and short-circuit protection, used to break the automation connection from the mains. If not present, provide the automation with a type approved differential switch with adequate capacity and a 0.03 A threshold.

M-Q-R) Actuator with control unit with built-in receiver

CTBA) Telescopic arms and transmission pipes

Fr) Photocell (receiver)

Ft) Photocell (transmitter)

T) 1-2-4 channel transmitter

CC) Sensitive edge check

CS) Sensitive edge

D) Connector block

P) Internal control push button strip

Set the electrical plant (fig. 19) according to the current standards for electrical plants CEI 64-8, IEC364, Harmonization HD384 and other national regulations. Keep the power supply connections definitely separated from the auxiliary connections (photocells, sensitive edges, control devices, etc.).

WARNING: For the power supply connection, use a multipolar cable with a 3x1mm² minimum section as prescribed by the above mentioned standards (for example, a H07RN-F cable with 3x1mm² section).

5.2) Connection arrangement

Fig. 20a-20b-20c-20d show some examples of connections for the different arrangements.

Fig. 20a One ARM2 or ARMKIT with pre-assembled control unit

Fig. 20b One ARM2-SQ with wall-mounted control unit

Fig. 20c Two ARM2-SQ with wall-mounted control unit mod. POLLUCE 2M

Fig. 20d One ARM2 with pre-assembled control unit mod. POLLUCE 2M and one ARM2-SQ without control unit.

5.3) Cable passage

Fig. 21 shows the passage of the actuator cables. The casing features thin walls to be cut using a pair of scissors.

If the overhead door is not provided with a central element where to pass the connection cables (fig. 21), apply appropriate raceways.

The part of the cables between the wall and mobile door should form a loop (fig. 22) long enough to allow the movement of the door without tensioning.

6) LIMIT SWITCH ADJUSTMENT

Remove the upper casing of the gearmotor, the limiting microswitches with the corresponding cams are located on the left of the controller.

The upper microswitch controls stopping in the closing position "1".

The lower microswitch controls stopping in the opening position "2".

The two cams which control the microswitches are fitted to the output shaft. The cam should detect the microswitch command always on the side opposite to the fixing screw head of the cam.

The cams should be adjusted as follows:

Operate the manual release using the appropriate lever (fig. 26).

Close the door completely (fig. 23).

Turn the closing cam until the triggering of the upper microswitch "1" can be heard and lock the cam in position by tightening the cam screw.

Open the door completely (fig. 24).

Turn the opening cam until the triggering of the lower microswitch "2" can be heard and lock the cam in position by tightening the cam screw.

CAUTION: If the cams at the end of the manoeuvre do not intercept the limiting microswitch, the motor will continue to run until the time set on the control unit (TW) has elapsed.

Supply the system with power and check that the closing and opening positions are correct. If necessary adjust the cam position as required.

Make sure the cams are properly fastened and re-fit the upper casing of the actuator.

7) CONTROL UNIT

For the connections and adjustment of the control unit, see the specific instruction manual.

Fig. 25a shows the connection terminal board for the version ARM2-SQ (version without control unit).

Fig. 25b shows the connection terminal board for the versions ARM2-SQ IP44 (version without control unit and with IP44 protection). Keep the low voltage connections definitely separated from the power supply connections.

8) MOTOR TORQUE ADJUSTMENT

See the relevant instruction manual for the control unit.

The control units of the POLLUCE series feature the electric torque adjustment option which should be set for the minimum force required to carry out the opening and closing strokes completely.

Adjustment is carried out by moving the appropriate connection to the

terminals of the transformer.

CAUTION: Excessive torque adjustment may jeopardise the anti-squash safety function.

On the other hand insufficient torque adjustment may not guarantee correct opening and closing strokes.

9) EMERGENCY MANOEUVRE

The emergency manoeuvre can be carried out from the inside by operating the appropriate lever shown in fig. 26. To re-activate the door locking function, bring the lever back to its initial position.

If the garage does not have a secondary access door, an external release mechanism is provided (Mod. SM1-2) which can be fitted to the door cremone bolt (fig. 27). Such a mechanism can activate the release of one or two gearmotors.

If the release is fitted on the outside, then the return spring of the release lever shown in fig. 27 must be loaded.

10) CHECKING THE AUTOMATION

Before considering the automation completely operational, the following checks must be made with great care:

Check that all components are properly fastened.

Check that all the safety means work properly (i.e. photocells, pneumatic rubber skirt, etc.).

Check the emergency manoeuvre function.

Check the opening and closing manoeuvres using the controls.

Check the control unit's electronic logic in normal or customised operation in the control unit.

11) USE OF THE AUTOMATION

Since the automation may be remote controlled either by radio or a start button, it is essential that all safety means are checked frequently.

Any malfunction should be corrected immediately by qualified personnel. Keep children at a safe distance from the field of action of the automation.

12) THE CONTROLS

With the automation the door has a power driven opening and closing. The controls can come in various forms (i.e. manual, remote controlled, limited access by magnetic badge, etc.) depending on needs and installation characteristics. For details on the various command systems, consult the specific instruction booklets.

Anyone using the automation must be instructed on its operation and controls.

13) MAINTENANCE

All maintenance operations must be performed with the system power supply shut off.

The actuator does not require periodical maintenance operations. If necessary, check that the screws are properly tightened and that the telescopic arms are adequately greased.

Check the safety devices of the door and motor drive.

Check the pushing force periodically. If necessary, adjust the position of the electric torque in the control unit.

For any malfunction that remains unsolved, shut off the power to the system and call a qualified specialist (installer). When the automation is out of order, activate the manual release to allow manual opening and closing.

14) TROUBLESHOOTING

14.1) Faulty operation of the gearmotor

Use a suitable instrument to check if there is a voltage across the gearmotor terminals when an open or close command has been given.

If the motor vibrates but does not turn, this may be due to:

the common wire C is wrongly connected (it is always light blue)

the drive capacitor is not connected to the terminals in the control unit

if the leaf moves in the wrong direction, invert the drive connections of the motor in the control unit

LEAF STOP: the door may not complete its stroke or the motor may continue to run after the door has reached the stop position. Check the position of the cams controlling the limit switches.

14.2) Faulty operation of the electrical accessories

If any of the control and safety components are faulty, this can cause malfunctions or a breakdown of the whole automation.

In case of a fault, it is wise to disconnect each of the components in the automation one at a time, until the one that is causing the fault is found. After having repaired or replaced it, restore all the components that were disconnected. For details on each component, refer to its specific instruction manual.

15) NOISE

The aerial noise produced by the gearmotor under normal operating

conditions is constant and does not exceed 70dB(A).

16) SCRAPPING

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.).

17) 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 installation components.
- In the case where some of the components cannot be removed or are damaged, they must be replaced.

WARNINGS:

Trouble-free operation of the controller can only be guaranteed if the data given in this manual is respected.

The manufacturer is not liable for damages caused by the failure to respect safety rules, installation recommendations and instructions given in this manual.

WARNINGS

Correct operation of the actuator 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 installation standards and directives specified in the present manual.

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 unchanged, at any time and without undertaking to update the present publication.

fig.1

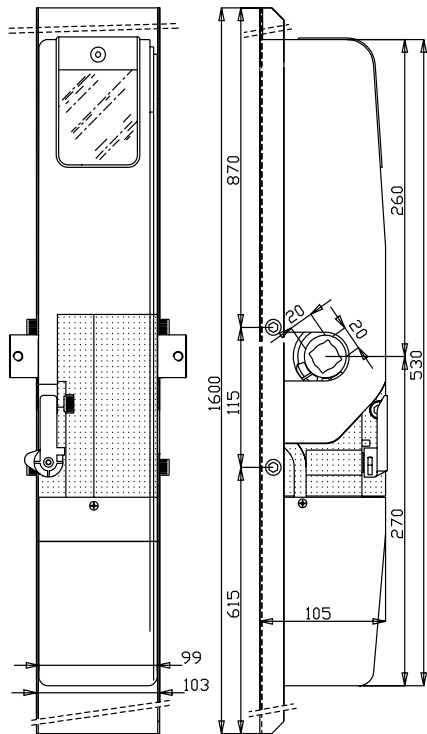


fig.2

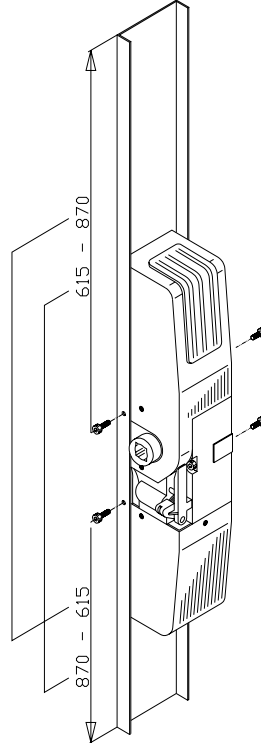


fig.3

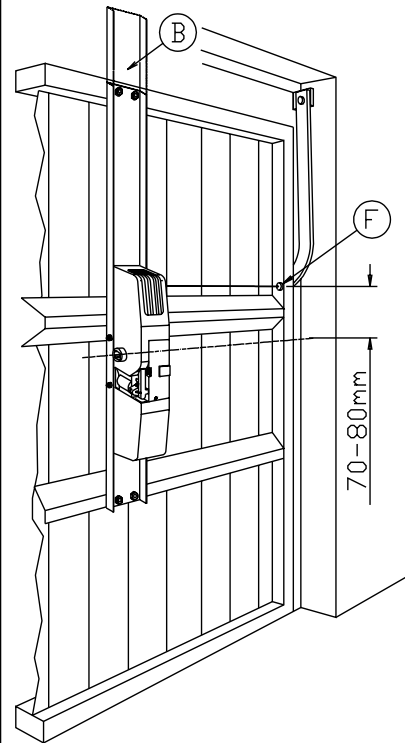


fig.4

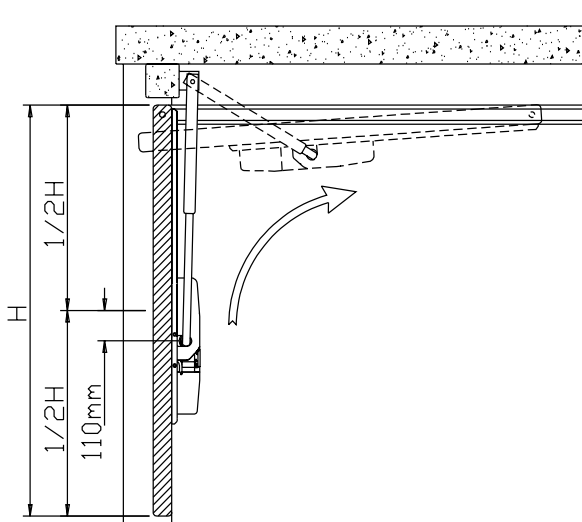


fig.5

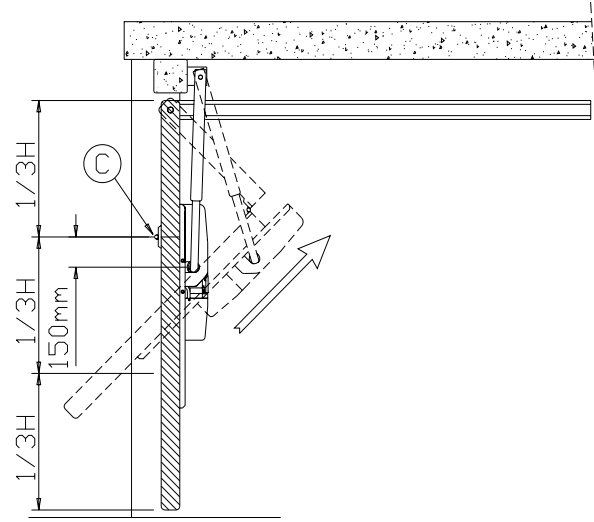


fig.6

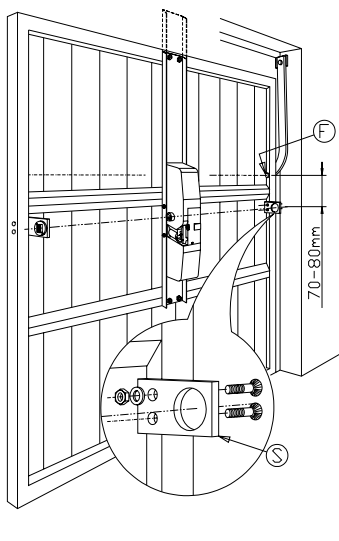


fig.7

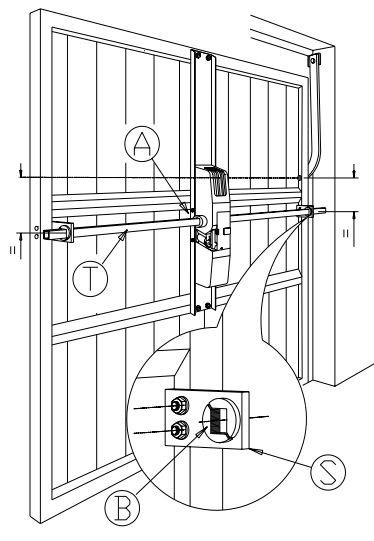


fig.8

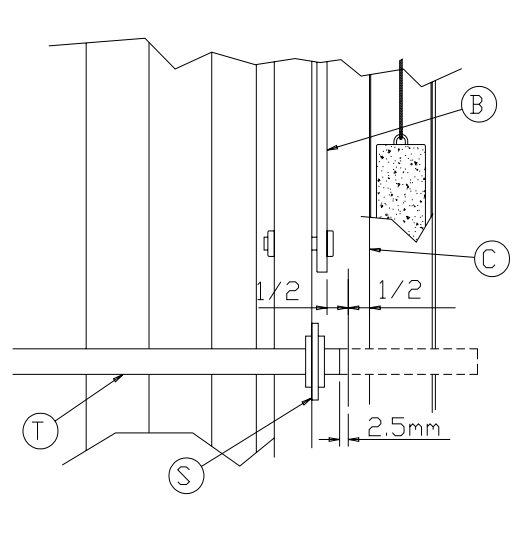


fig.9

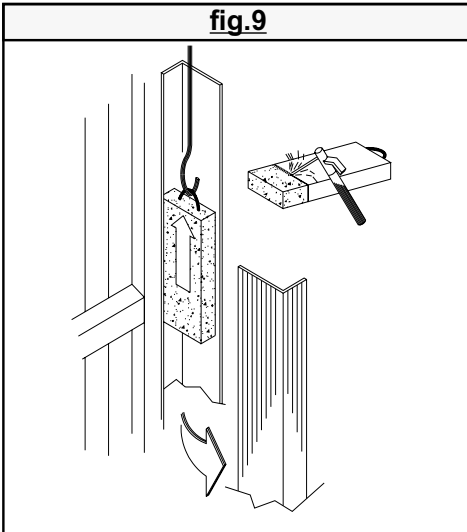


fig.10

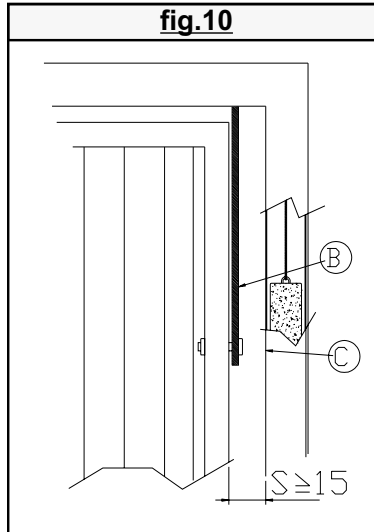


fig.11

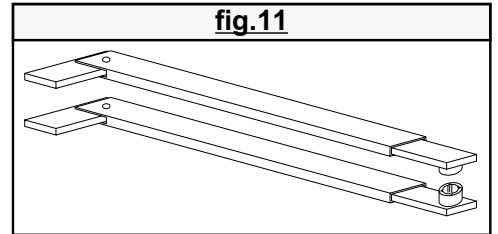


fig.12

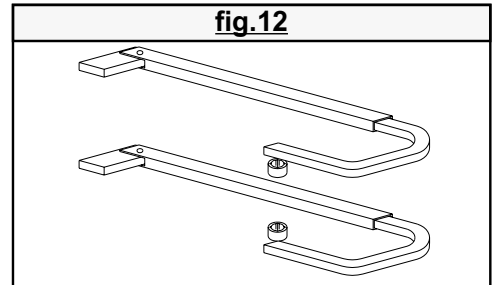


fig.13

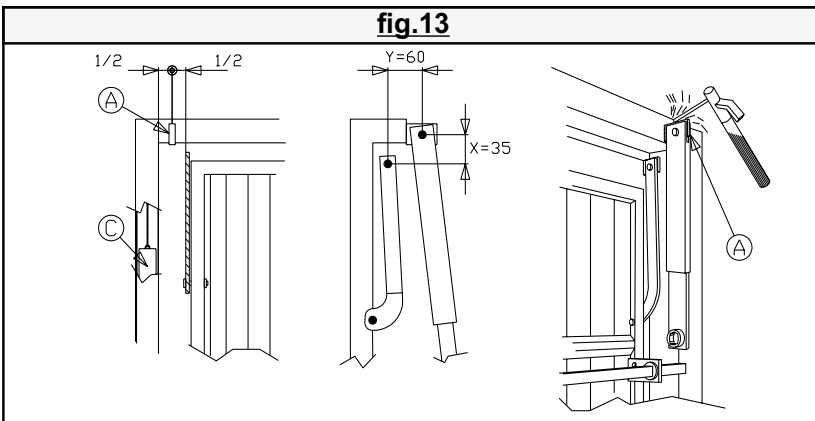


fig.14

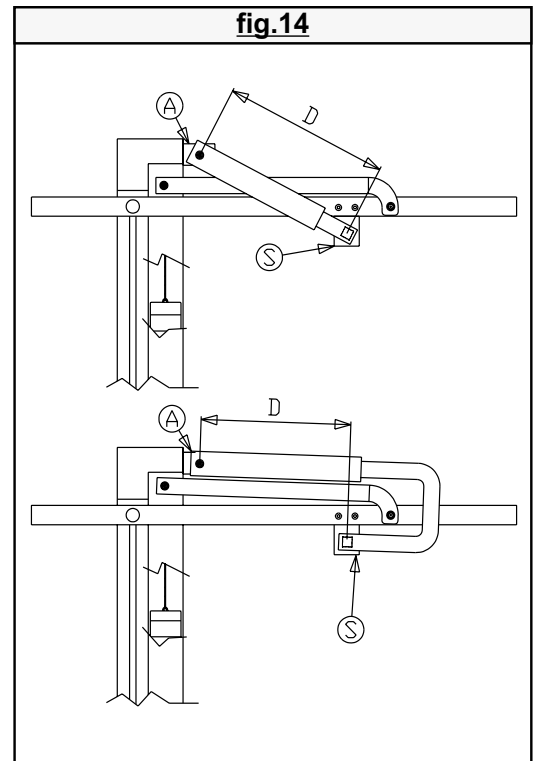


fig.15

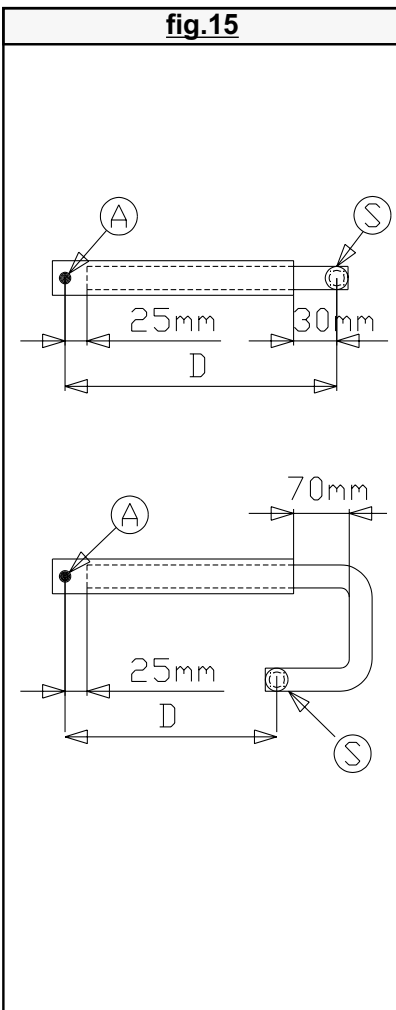


fig.16

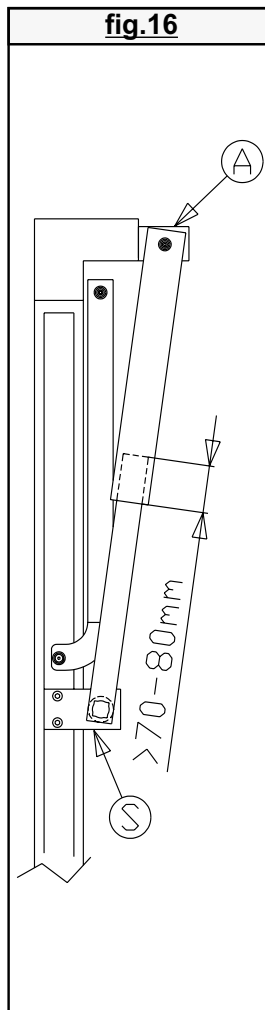


fig.17

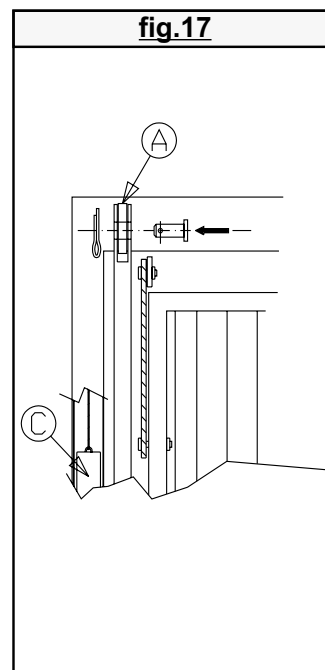


fig.18

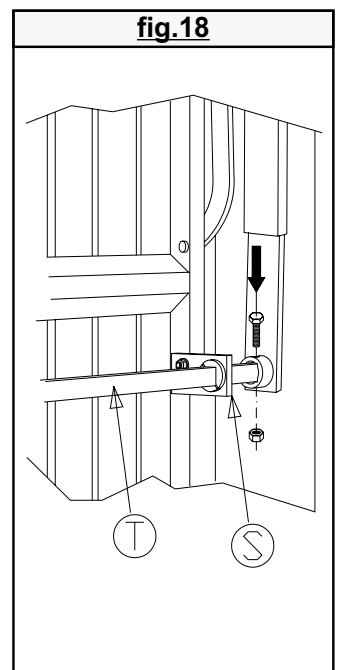


fig.19

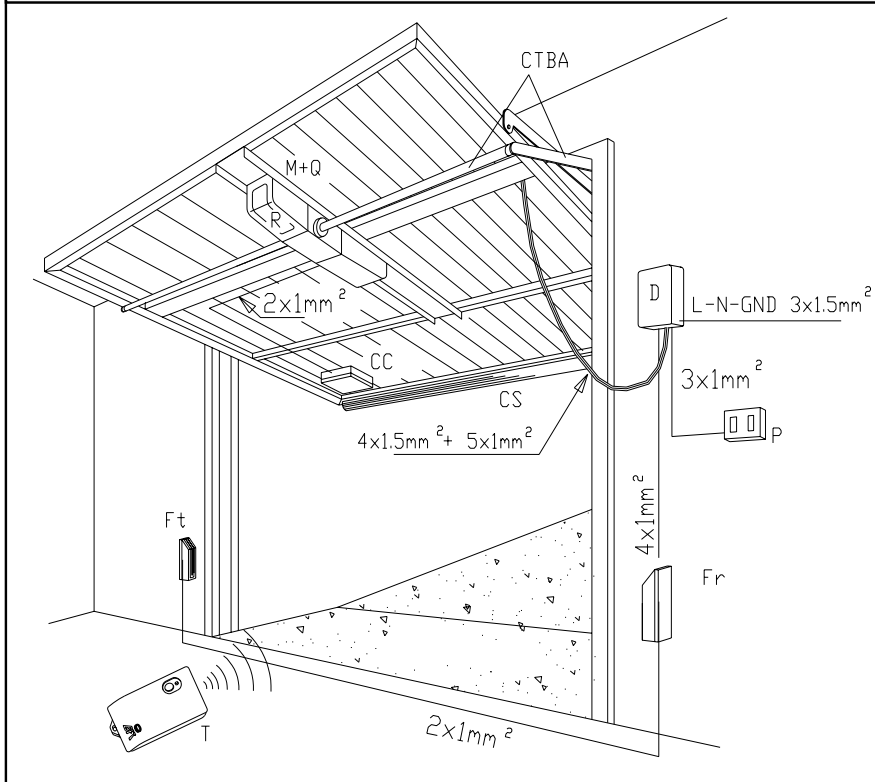


fig.20

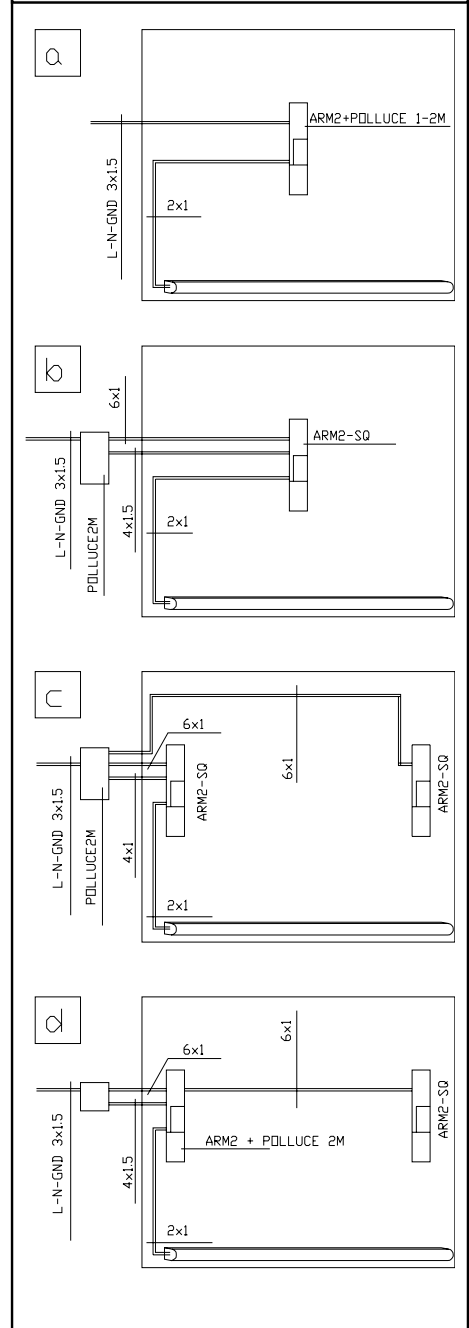


fig.21

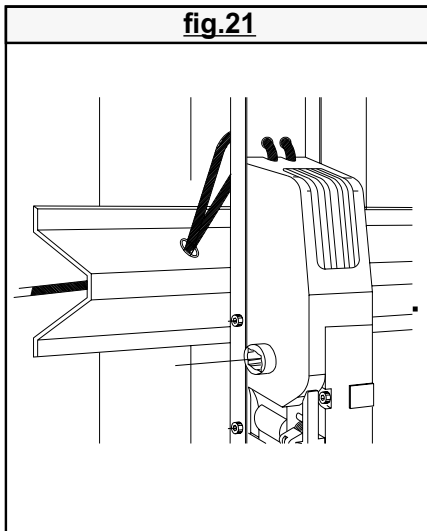


fig.22

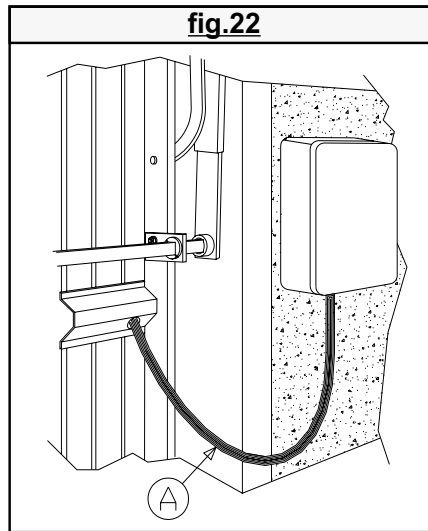


fig. 23

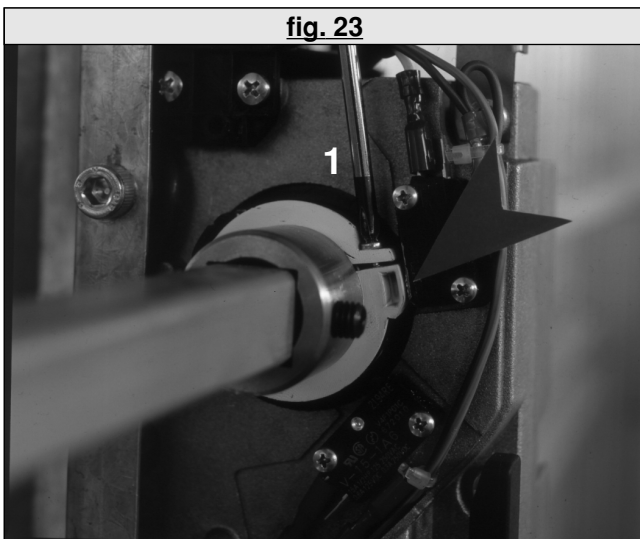


fig. 24

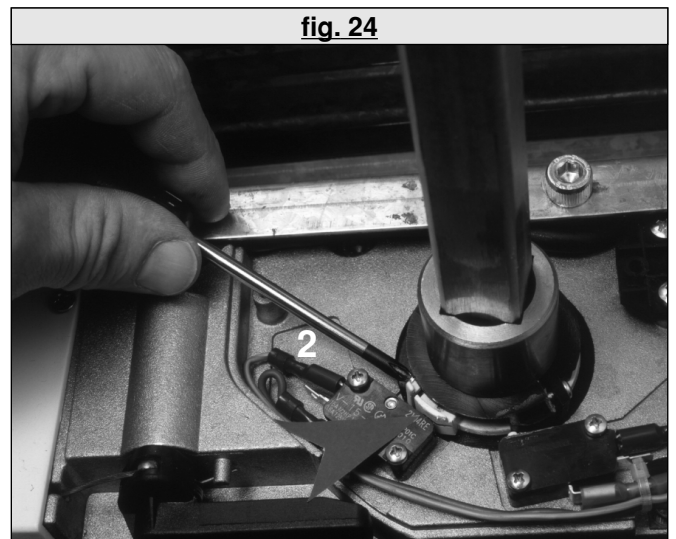


Fig.25a

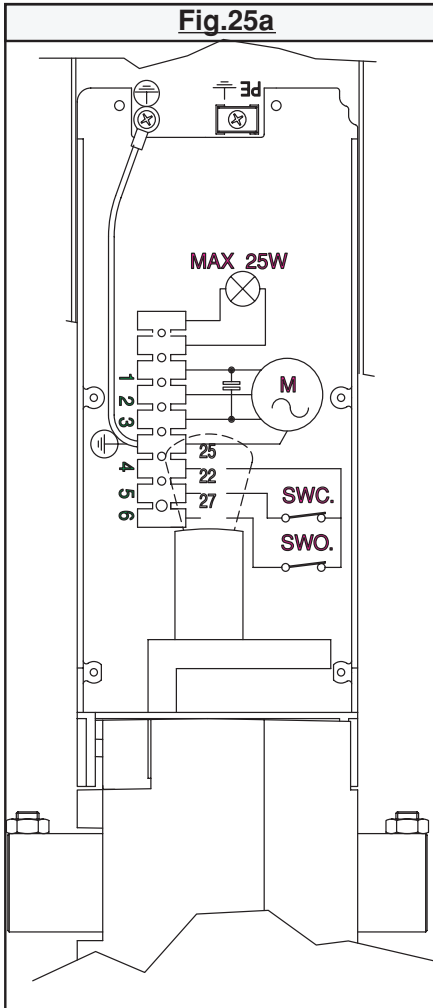


Fig.25b

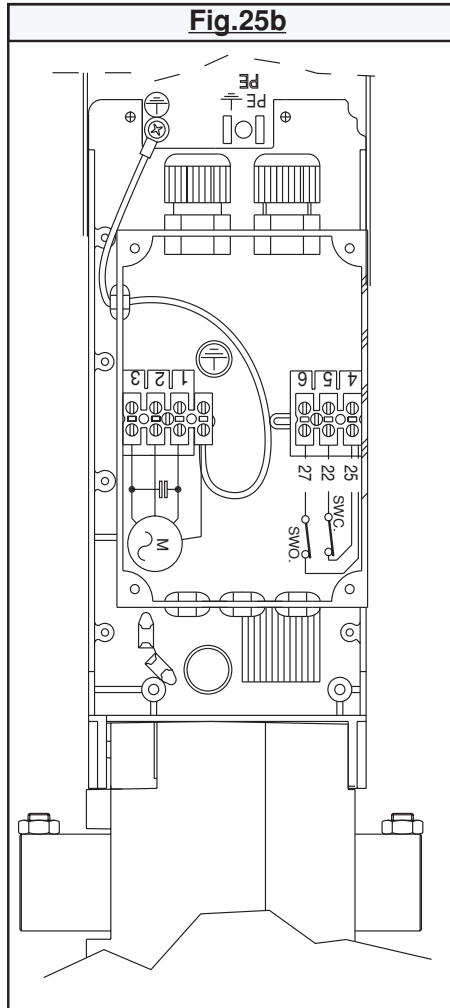


Fig. 26



Fig.27

