

Installation Manual

# VECTOR Operator



manussa

# Installation Manual

## VECTOR



Read thoroughly all of these instructions before installing the operator.

Keep this manual in a safe place for future reference.

This manual is meant exclusively for professional installers.

### 0 CONTENTS

#### 1. PRODUCT IDENTIFICATION

- 1.1 Product Description
- 1.2 Symbol Description
- 1.3 Versions
- 1.4 Product EC Marking
- 1.5 Noise Statement
- 1.6 Radiation, Gas, Fumes and Dust Produced by the Machine
- 1.7 Use in Flammable and/or Explosive Environments
- 1.8 Accessories

#### 2. TRANSPORTATION, STORAGE AND MAINTENANCE

- 2.1 Machine Delivery Conditions
- 2.2 Transport Conditions
- 2.3 Storage Conditions

#### 3. TECHNICAL DATA

- 3.1 General Dimensions
- 3.2 Technical Specifications
- 3.3 Low Energy
- 3.4 Operation
  - 3.4.1 ON-OFF Switch
  - 3.4.2 Mode Selection Switch
- 3.5 Instructions for the technician
- 3.6 Decommissioning, Dismantling and Removal
- 3.7 Intended Use and Uses that Should be Avoided
- 3.8 Application Limitations

#### 4. PRE-INSTALLATION

- 4.1 Training Requirements for Installation Technicians
- 4.2 Physical and Environmental Requirements
- 4.3 Electrical Pre-installation Requirements

#### 5. INSTALLATION

- 5.1 Type of Arm that Can Be Installed
- 5.2 Installing the Operator
- 5.3 Positioning Levels for the Fixing Holes
- 5.4 Extendable Rigid Arm Installation
  - 5.4.1 Rigid Arm and Guide Installation
- 5.5 Installing the Pushing Articulated Arm
  - 5.5.1 Attaching the Arm to the Leaf
- 5.6 Spring Adjustment
- 5.7 Selecting Breaking Level without Power
- 5.8 Testing Operations
- 5.9 Connecting to the Power Supply
- 5.10 VECTOR Electronic Card

#### 5.11 Electronic Connections

- 5.12 Arm-Type Selection
- 5.13 Connecting the Controls/Inputs
- 5.14 Connector to Auxiliary Outputs
- 5.15 Installing and Acquiring the Sensors
- 5.16 Dip-Switch Management
- 5.17 Display Management

#### 6. COMMISSIONING

- 6.1 Start-up
- 6.2 Management and Use
  - 6.2.1 Operational Logic Settings
  - 6.2.2 Management of Electronic Locks
  - 6.2.3 Program Switch Connector
  - 6.2.4 External Peripherals Connectors (15 VDC)
  - 6.2.5 Double Vector Connection and Use
  - 6.2.6 Interlocking Connection and Use
  - 6.2.7 Normal Stop and Emergency Stop

#### 7. SAFETY

- 7.1 General Safety Instructions
- 7.2 Required Personal Protection Equipment
- 7.3 Identifying Dangerous Areas in the Machine
- 7.4 Risk Evaluation
- 7.5 Safety Regulations

#### 8. MAINTENANCE AND INSPECTION

- 8.1 General Maintenance to be Performed by the User
- 8.2 Maintenance Tasks Exclusively Reserved for the Manufacturer

#### 9. TROUBLESHOOTING

#### 10. APPENDIXES

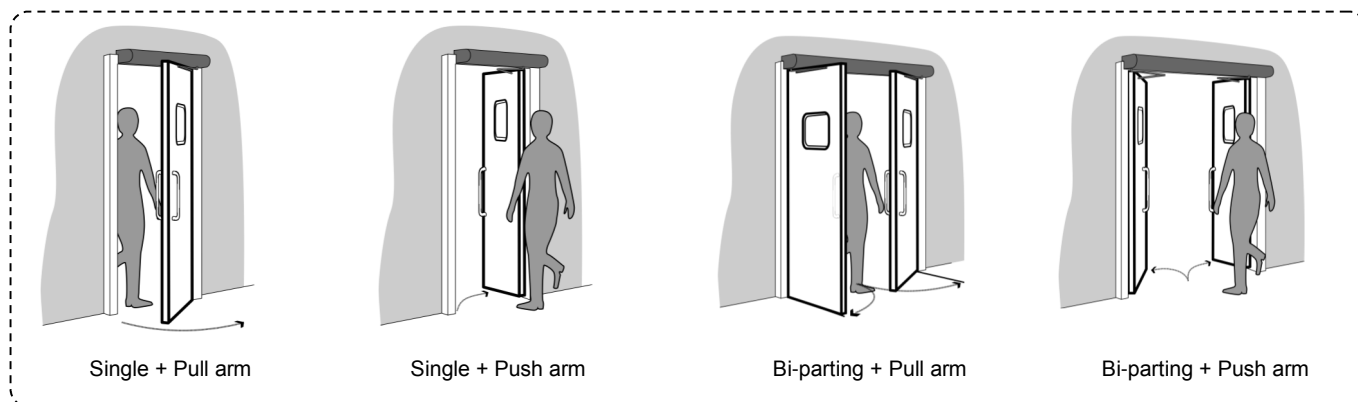
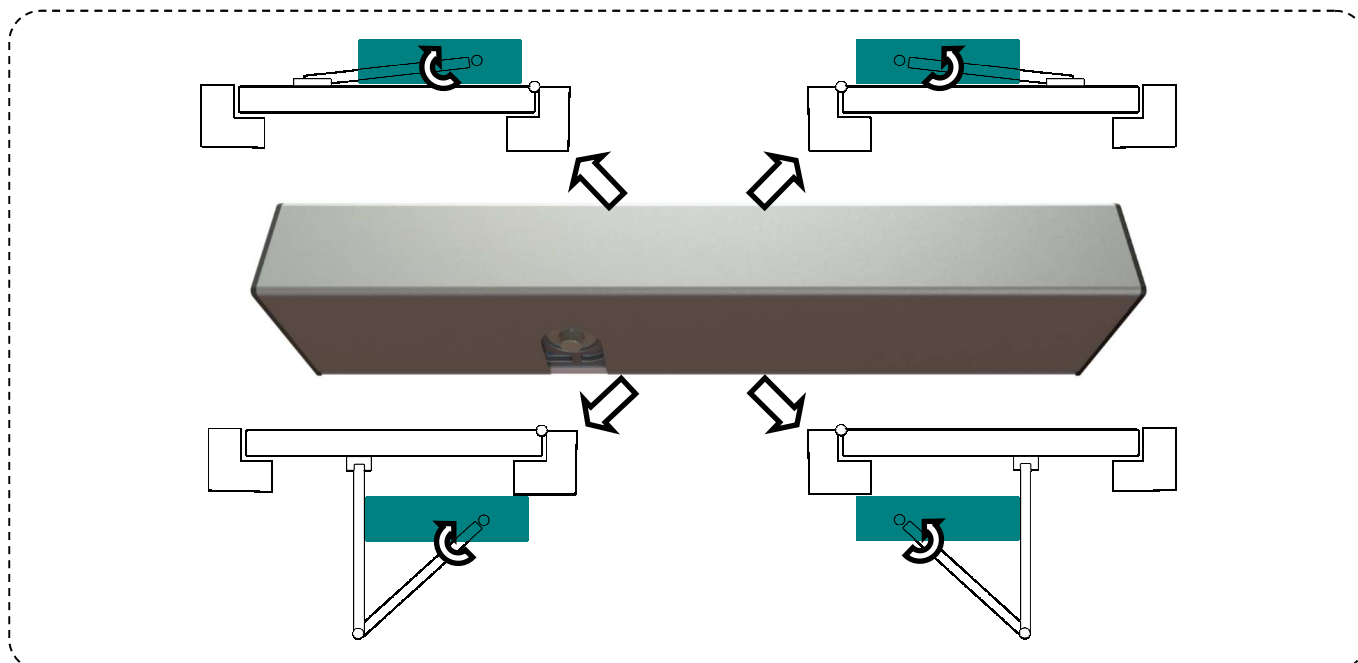
- 10.1 EC Declaration of Conformity
- 10.2 Installation Check-list
- 10.3 Maintenance Book
  - 10.3.1 Frequency of Interventions
  - 10.3.2 Actions Log
- 10.4 Notes

## 1 PRODUCT IDENTIFICATION

### 1.1 Product Description

The **manusa** VECTOR swing operator has been especially designed to make fast, safe and controlled access of persons to all types of facilities possible.

It is an operator for automatic **swing doors** with high traffic flow, available with pull or push arms for single-slide and bi-parting door versions.



VECTOR is an advanced **electromechanical operator** used for the automation of any type of new or existing swing door.

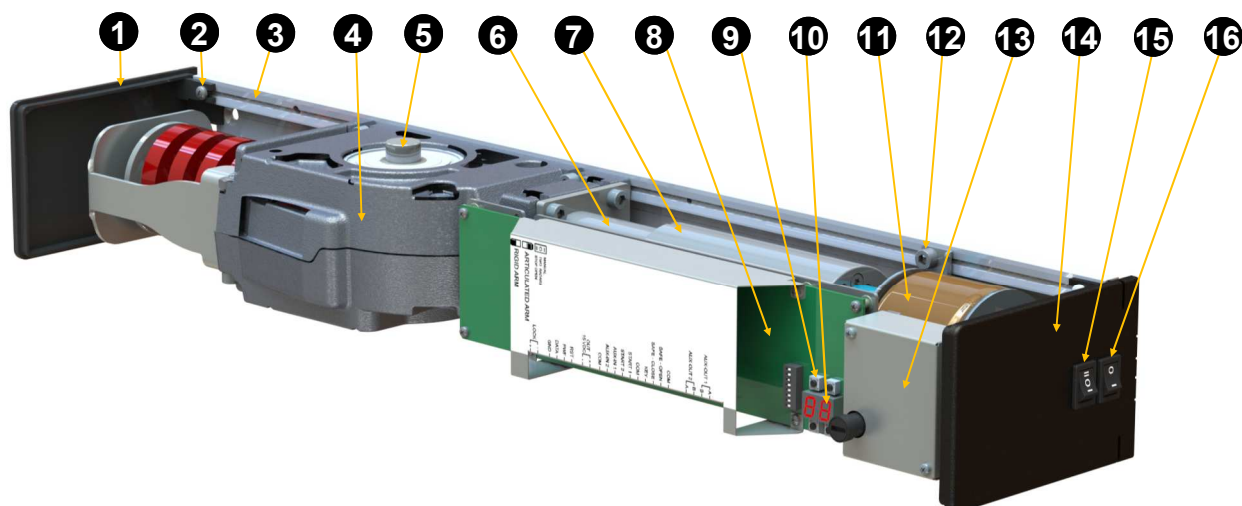
It is a **highly-efficient, high-performance** operator, especially designed for intensive use, as it can automate both light and very heavy doors.

**manusa** VECTOR is also recommended for **hermetic doors for clean rooms**, and for environments with **strong winds**, thanks to its specific operating modes.

Other main features:

- **Compact** design, with minimum aesthetic impact
- Formal and attractive design with pleasant lines
- Door closing by means of an **motor-assisted spring** in normal operation
- Door closing by means of a **spring** in case of power supply failure
- Available modes for **Low Energy** and **Push&Go** activation
- **Easy installation** and monitoring thanks to its built-in double display

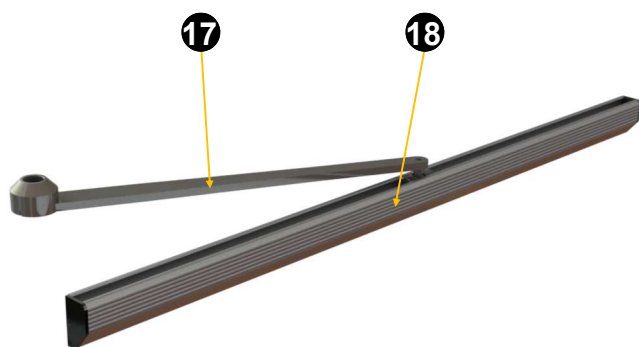
### 1.1 A VECTOR Swing Operator



1. Blind side cover
2. Cover screws
3. Main chassis profile
4. Re-send mechanism
5. Axis with upper and lower outputs
6. Gear
7. Motor
8. Electronics

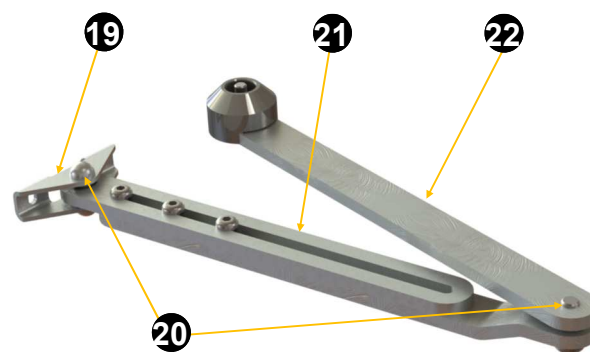
9. Navigation buttons
10. Operator control display
11. Transformer
12. Installation screws
13. Filter
14. Side cover
15. Mode selection program switch/ Mode switch
16. ON-OFF button

### 1.1 B Pull arm



17. Pull arm
18. Pull guide profile

### 1.1 C Push arm



19. Arm-to-leaf anchor
20. Joints
21. Adjustable-depth plate
22. Push arm





This manual details all the basic instructions for assembling the automatic door. Read it thoroughly and, when in doubt, contact the Technical Support Department (see back of the manual).

For your own safety, adhere at all times to all the technical instructions detailed in this manual. **manusa** accepts no responsibility for damages and faults derived from not complying with these instructions.

Finally, we would like to thank you for your trust in acquiring a product from the **manusa** range, a company with more than 50 years experience designing, manufacturing and installing automatic access systems.

## 1.2 Symbol Description

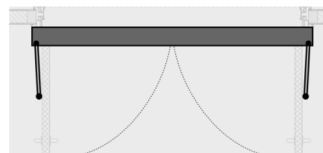
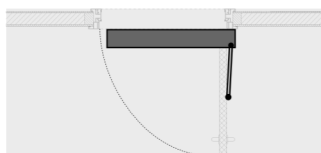
The symbols that appear in this manual and/or in the machine are listed below:

	ELECTRICAL HAZARD. The inside of the machine must not be manipulated unless it has been previously disconnected from the power supply.		IMPORTANT WARNING. Strictly adhere to the indications provided with this symbol.
	DANGER. Improper use may cause injuries to people and damage the machine.		OPTIONAL. These elements are optional; they will be included in the box depending on the order placed.

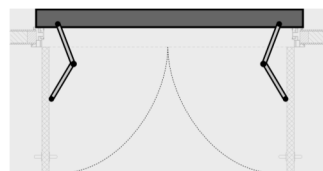
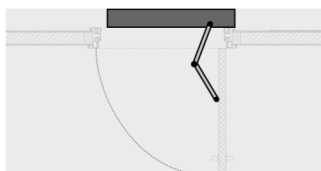
## 1.3 Versions

It is available in the following transmission arm configurations, in single or bi-parting variants:

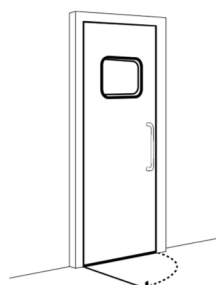
**Pull arm:** attached to the wall on the same side as the hinges (see picture).



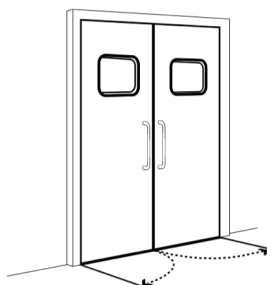
**Push arm:** attached to the wall on the opposite side as the hinges (see picture).



Both the **operator** and the **two arm versions** (pull and push) are **universal for any leaf typology: bi-parting, left and right opening.**



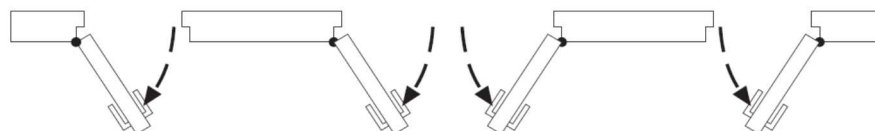
**LEFT**  
Side Opening



**BI-PARTING**




**RIGHT**  
Side Opening



## 1.4 Product EC Marking

The operator includes a marking label like shown on the image. If it is missing, please, report the incident to the Technical Assistance Service (see the back of this manual).

Fabricante: Manufacturer: Redor S.L.	Modelo: Model: Visio	Tensión: Voltage: 230V/50Hz	Potencia: Power: 285W
País / Año fabricación: Country / Manufacturing year: España / 2011	Microp. Vers.: C.C. / Q.C.: Mont.		312 15
NPS SN			
GIEL 01060913000		manusa 	
Ref: www.manusa.com			
Carga máxima: 1 hoja / leaf 2 hojas / leaf 2 hojas / leafs telesc. 4 hojas / leafs telesc. Mas. total weight: 180Kg 240Kg 180Kg 300Kg			

## 1.5 Noise Statement

The weighted acoustic pressure level of emissions A is below 70 dB.

### 1.6 Radiation, Gas, Fumes and Dust Produced by the Machine

manusa machines do not produce any type of radiation, gas, fumes or dust.

### 1.7 Use in Flammable and/or Explosive Environments

The machine described in this manual has not been designed to operate in flammable and/or explosive environments.

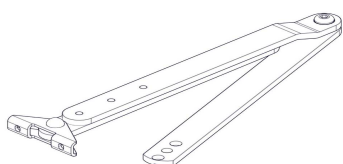
### 1.8 Accessories

manusa machines are compatible with the manusa range of accessories. manusa Technical Department shall perform an evaluation for any integration with machines from other manufacturers.

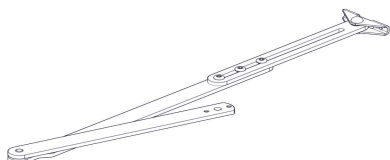
DETECTION	WIRED RANGE	WIRELESS RANGE	CONTROL / OTHER
<ul style="list-style-type: none"> <li>- Movement sensor</li> <li>- Reopening photocell</li> <li>- Standard presence sensor</li> <li>- Recessed presence sensor</li> <li>- Unsupervised movement and presence sensor</li> <li>- Supervised movement and presence sensor</li> <li>- Touchless switch</li> <li>- Safety sensor L=350</li> <li>- Safety sensor L=700</li> </ul>	<ul style="list-style-type: none"> <li>- Push button</li> <li>- Elbow push button</li> <li>- Key switch</li> <li>- Proximity reader</li> <li>- Keypad</li> <li>- Autonomous print reader</li> </ul>	<ul style="list-style-type: none"> <li>- Push button</li> <li>- Elbow push button</li> <li>- Key switch</li> <li>- Keypad</li> <li>- Remote control</li> <li>- Hands-free access identifier</li> </ul>	<ul style="list-style-type: none"> <li>- Emergency stop</li> <li>- Buzzer and/or warning light</li> <li>- VECTOR mode selector.</li> <li>- VECTOR key mode selector</li> </ul>

ARMS	AXIS EXTENSIONS
------	-----------------

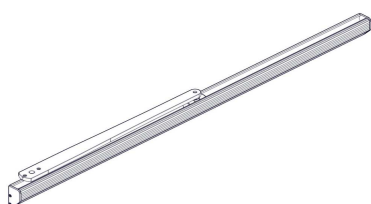
- Short push arm.



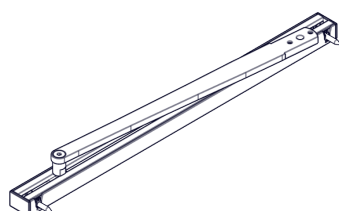
- Long push arm



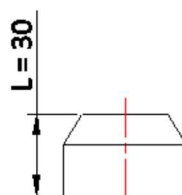
- Pull arm



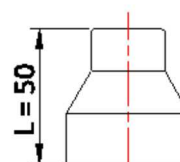
- SLIM pull arm



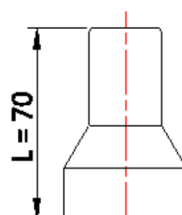
- 30mm axis extension.



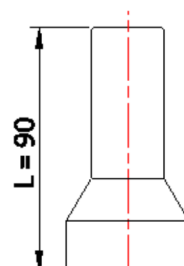
- 50mm axis extension.



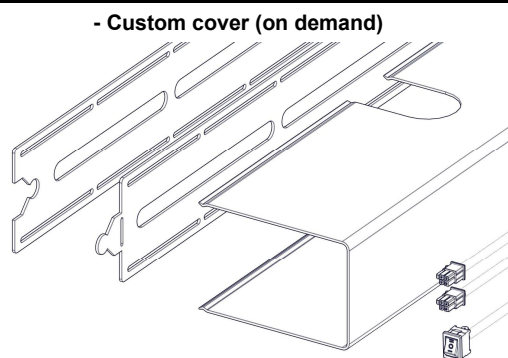
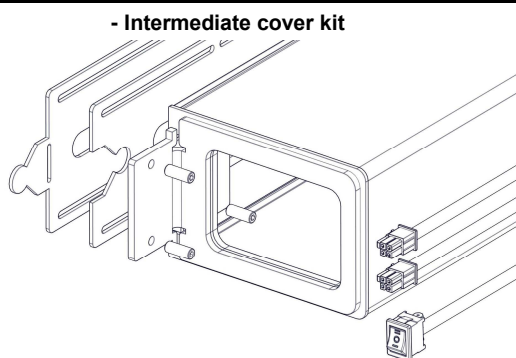
- 70mm axis extension.



- 90mm axis extension.

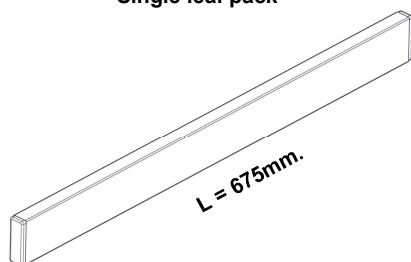


## DOUBLE VECTOR

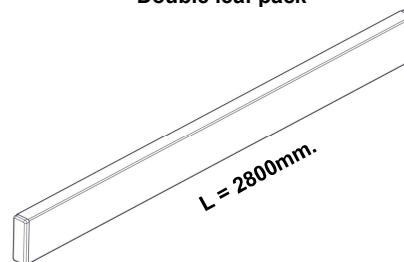


## FRAME PACKS (for P50 swing door + pull Vector operator)

- Single leaf pack



- Double leaf pack



## 2 TRANSPORT, STORAGE AND MAINTENANCE

### 2.1 Machine Delivery Conditions

**manusa** is in charge of the initial delivery of the machine. Please make sure that all the parts and components arrive in good condition: that they have not been tampered with, that there is no item missing from the list on the delivery note, that it did not get wet or suffer from damage caused by the environment. If this is not the case, please log this in writing in the appropriate delivery note and contact **manusa**.

### 2.2 Transport Conditions

For subsequent transportation, the machine must always travel conveniently packaged and protected from the elements.

### 2.3 Storage Conditions

If the machine is not going to be installed immediately, make sure it is stored in an area that meets the following criteria:

- A safe place, protected from impact and out of reach from people who are not to use the product.
- The machine needs to rest on a flat, smooth and resistant surface, maintaining the same distribution as in the transport container or vehicle.
- A location protected from corrosive environments, from the elements, damp, oils, fumes, etc.

## 3. TECHNICAL DATA

### 3.1 General Dimensions

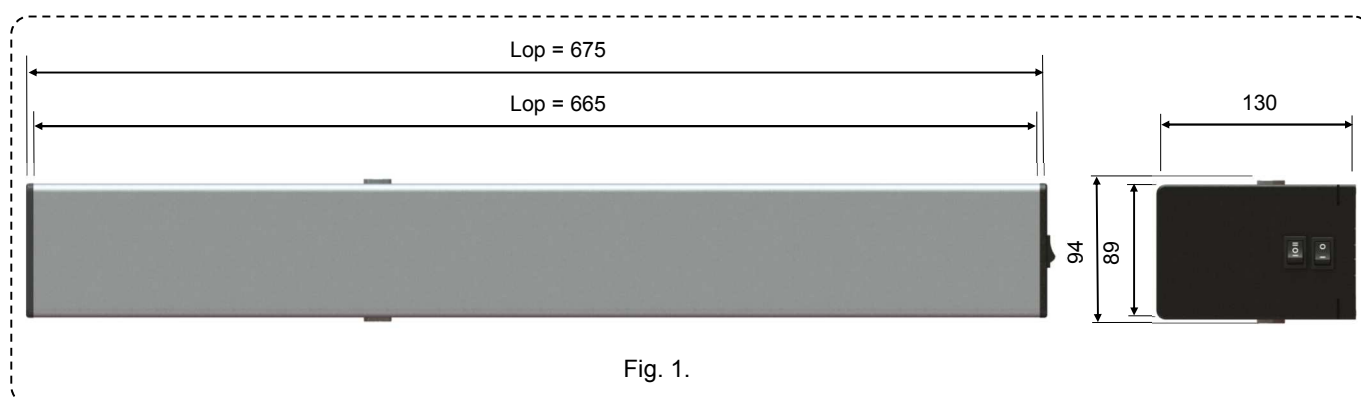


Fig. 1.

### 3.2 Technical Specifications

The **manusa** VECTOR swing operator offers high-end kinematic performance in the industry:

#### MECHANICAL FEATURES

Dimensions (Height x Width x Length) (Fig.1)	89x130x675mm (1 leaf)	89x130x2800mm (max. 2 leaves)
Maximum leaf weight	250 Kg (See fig.2)	
Opening time	3s (70°/s) ÷ 6s (20°/s)	
Closing time	4s (40°/s) ÷ 15s (10°/s)	
Closing force (second in 1154)	EN4 ÷ EN6 (See fig.18)	
Maximum opening angle	110°	
Width of the door leaf	700 ÷ 1400mm	
Anti-crushing protection	Automatically limits force when obstacles are present	
Weight	Approx. 11kg.	
Degree of protection	IP40	

#### ELECTRICAL SPECIFICATIONS

Power supply	230V ±10% CA 50/60 Hz	
Power supply on demand	115V ±10% CA 50/60 Hz	
Nominal power	85W	
Shaft output max. torque	45Nm	
External devices power supply	15 VDC - 12W Máx.	
Operating temperature	De -10°C a 50°C	
Service	Continual	

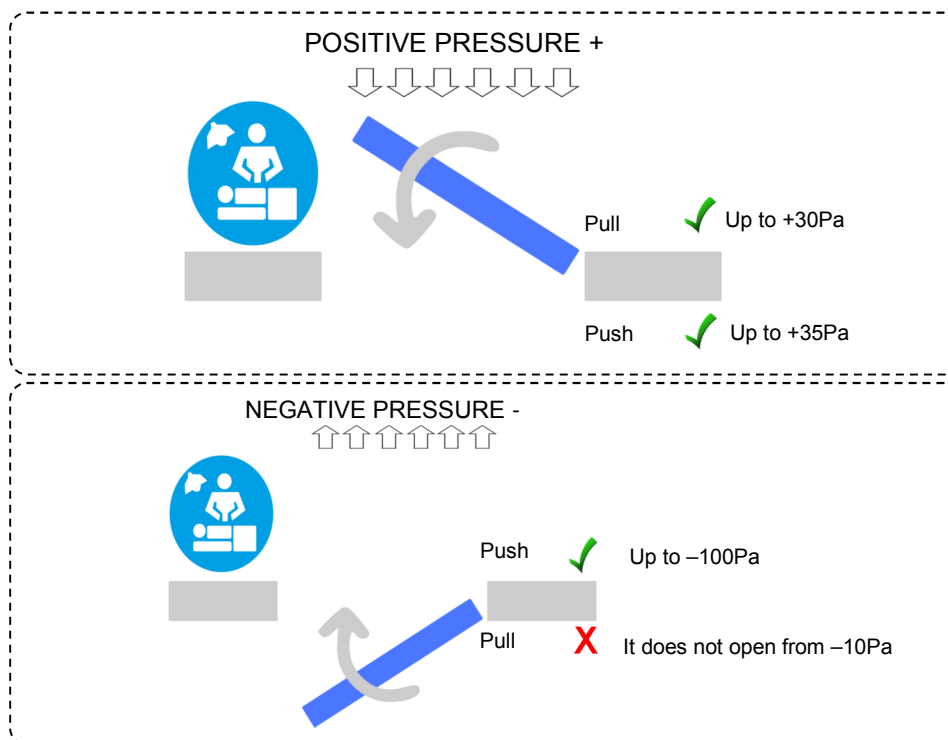
#### APPLICABLE STANDARDS

Low Voltage	2014/35/CE
Electromagnetic Compatibility	2014/30/CE
Construction Products	2011/305/CE
Machine Safety	2006/42/CE
Automatic Door Use Safety:	EN 16005

#### OPERATING LIMITS

Useful life	10 years
-------------	----------

#### WORKING PRESSURES



#### FIRE RESISTANCE TEST EN-1634-1

The use of Vector Operator is positively appraised for use on timber/mineral-based door assemblies. Of up to 120 minutes integrity and insulation with respect to **EN 1634-1**.

Should the recommendations given in this report be followed it can be concluded that single-acting timber/mineral-based door assemblies, which have previously been successfully fire tested by UKAS accredited laboratory (or assessed by *Exova Warringtonfire*, *BM TRADA* or *Chiltern International Fire*), to have achieved up to 120 minutes integrity and insulation performance in accordance with BS **EN 1634-1**, as discussed in this report, may be fitted with Vector Operator, without detracting from the overall achieved performance of the doorset.



### 3.3 Low Energy

The operator can be regulated in Low-Energy mode in accordance with standard EN16005, thanks to the following features:

- Reduced dynamic force on the door threshold
- Restricted operator force and limited speed

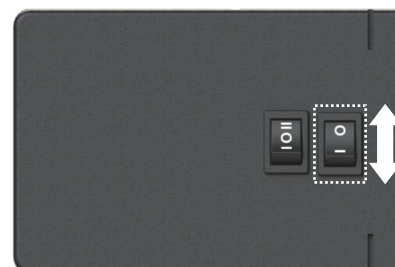
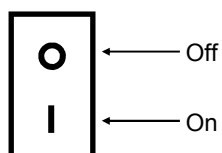
The installer should check the Low-Energy installation conformity with applicable standards. Protection of the closing edge should be evaluated individually.

### 3.4 Operation

**manusa** doors are designed to operate automatically. Manual operation is only intended in the case of an emergency and to carry out cleaning, maintenance and adjustment tasks.

#### 3.4.1 ON-OFF Switch

A switch that turns the operator on and off.



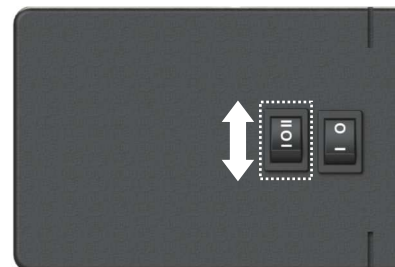
See section **6 Commissioning** in this manual

#### 3.4.2 Mode Selection Switch

This switch is located on the head of the operator, next to the ON-OFF switch. It enables mode selections:

- I Manual
- 0 Automatic (two radars)
- II Stop open

The installation of external switches voids the operation of this mode selection switch.



### 3.5 Instructions for the technician

- Follow the instructions carefully when installing the operator.
- This product has been designed and manufactured to be used exclusively for the purposes indicated in this manual. Any other use not expressly indicated may damage the product and/or be hazardous. **manusa** accepts no responsibility for improper use of the operator.
- **manusa** will not be held liable for non-compliance with good installation practices when installing locks, nor for any warping that may be caused by their use.
- Disconnect the electrical power supply before performing any type of intervention.
- Check that the electrical installation has an upstream circuit breaker and proper earthing.
- Safety devices should comply with standard EN 12978, and be installed in accordance with EN 16005.

### 3.6 DECOMMISSIONING, DISMANTLING AND REMOVAL

This machine can be easily dismantled, and decommissioning does not have any special complications. Proceed to dismantle the unit removing the different elements, and discard and recycle waste accordingly.

### 3.7 Intended Use and Uses that Should be Avoided

The intended use for the VECTOR operator is to automate swing doors designed for pedestrian access. Prohibited uses that should be avoided are listed below:

- Do not modify the machine or any of its components.
- Do not disconnect, manipulate or decommission any of the machine's safety components.
- Do not allow technicians not authorised by **manusa** to perform work on the machine.
- Do not use spare parts other than original ones supplied by **manusa**.
- Do not use any part of the machine as support for objects and people.
- Do not allow children to play with the machine.

This list includes inappropriate uses of the door that are reasonably foreseeable. Despite this, **manusa** shall not be held responsible for possible accidents or damage caused by inappropriate uses not included in the list above.

### 3.8 Application Limits

**!** IMPORTANT: For the correct operation of the operator, the door must not exceed the weight or width indicated in diagram Fig. 2.

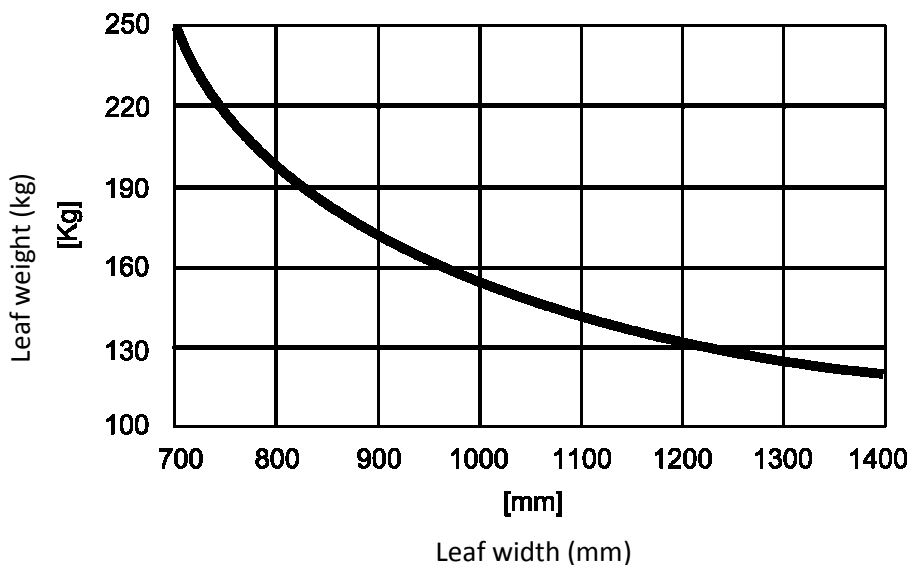
Closing the door is performed by:

- Motor assisted spring (normal operation)
- Only the spring (operating without power)

In addition, each transmission is assigned a different maximum depth value of the frame, above which a correct installation cannot be carried out. The operator is designed to function exclusively on swing doors in dry environments, and should be installed inside buildings.

**manusa** is not responsible for damages arising from any use or placement different from that for which it was designed, not for unauthorised modifications.

Fig. 2.



## 4 PRE-INSTALLATION

### 4.1 Training Requirements for Installation Technicians

Installing **manusa** machines as well as any other intervention for maintenance, regulation adjustment, etc should be carried out by qualified technical staff that meet the following requirements:

- Know how to use the maintenance and/or lifting equipment.
- Are able to correctly handle the loads.
- Know how to use the personal protective equipment.
- Know how to apply the Low Voltage Regulations instructions.
- Have technical knowledge of **manusa** products.
- Know the reference and application standards for **manusa** products and services.

### 4.2 Physical and Environmental Requirements

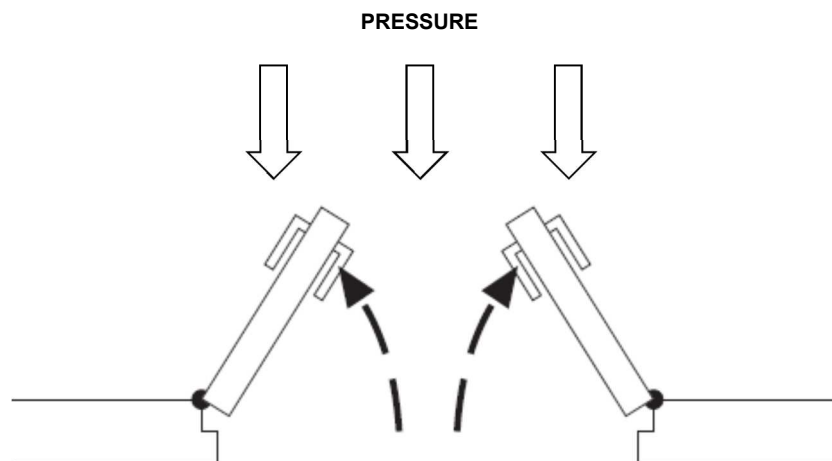
The VECTOR swing operator should be installed in places that meet the following requirements:

- Smooth, flat, level floor.
- Smooth, flat, level wall with sufficient load capacity. Capable of anchoring a suitable frame.
- An area free from shocks and vibrations.
- Ambient temperature: -15 a +50°C.
- Relative air humidity: The operators' electric and electronic components that are destined for tropical climates receive a surface treatment to protect them from environmental humidity.
- Do not expose to direct sunlight.
- Do not expose to rain or excessive humidity.

Consideration of the location for the equipment should be carried out by technical personnel authorised by **manusa**. During this process, the cable inlet location for the for the different units should be identified.



In installations where the swing door is to be installed between two rooms with different pressure, it is recommended that the door is planned for and installed such that **the positive pressure always acts in the direction that the leaf closes**, thus helping to maintain the closed position.

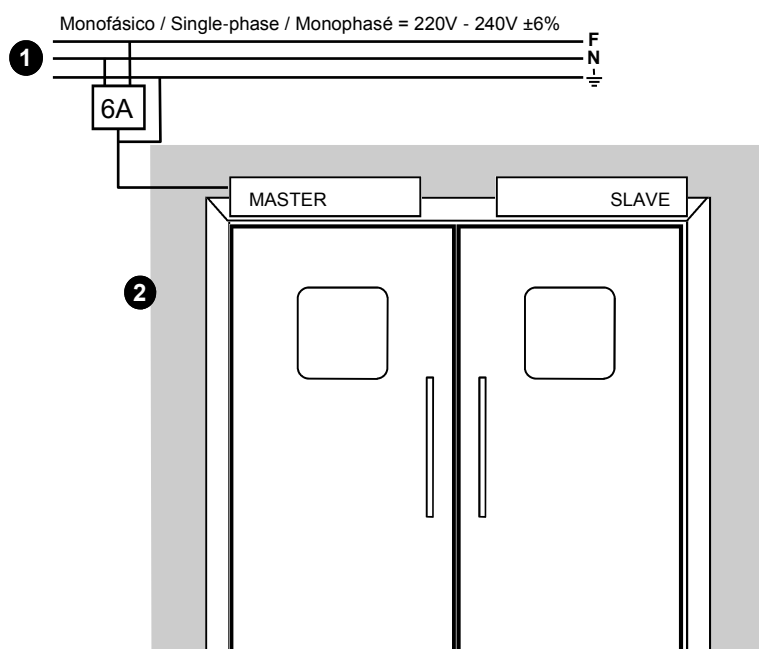
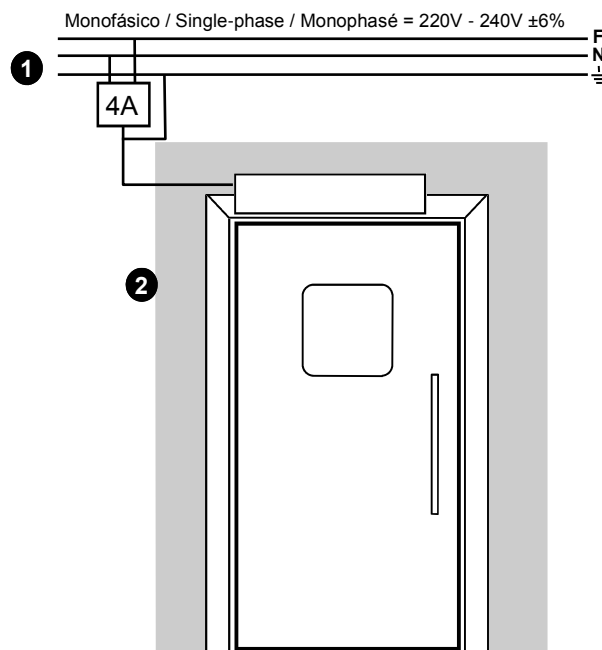


### 4.3 Electrical Pre-Installation Requirements

Assembling a **manusa** automatic door requires an electrical pre-installation with a 6A double-pole magneto-thermal switch, and it must comply with the cable sections specified below:

**!** The diagram shows the standard wiring for the elements that the operator includes as standard.

- 1** Current Input:
  - 16mm corrugated tube.
  - 3 cables 1.5mm<sup>2</sup> section: phase + neutral + earth.
- 2** Radars:
  - Cables supplied with the accessory.



## 5 INSTALLATION

### 5.1 Type of Arm that Can Be Installed

- RIGID ARM: (Used when the operator is installed on the same side that the door opens).
- STANDARD ARTICULATED ARM: The standard articulated arm can be mounted to PUSH. (It is used when the operator is installed on the opposite side from where the door opens).
- LONG ARTICULATED ARM: The long articulated arm can be mounted to PUSH. (It is used when the operator is installed on the opposite side from where the door opens, where the door jamb is particularly deep).



WARNING: For a correct installation, consult the corresponding sections for 'Installing the Arms'.

### 5.2 Installing the Operator

To attach the operator, follow the steps below (Fig. 3):

- Remove the main cover (B)
- Disconnect all connections (key-pad, switch, transformer, motor) on the electronic card ©, unscrew the 2 screws and remove the card ©. The two screws remain in place between the circuit board and the lower base
- Unscrew and remove the 2 transformer fixing screws (G)
- Unscrew and remove the 4 gear motor group fixing screws (D)
- Remove the two end covers (E) and (F)
- Attach the main extruded profile (A) to the wall following the instructions in the following sections, depending on the type of arm used
- Assemble all the components, with the exception of the end covers and the main cover, following the steps above in reverse order.

When reassembling, to aid installation, tighten first the two lower gear motor group fixing screws, then support it on them, tighten the other two, such that the gear motor shaft end is perpendicular to the upper profile of the leaf

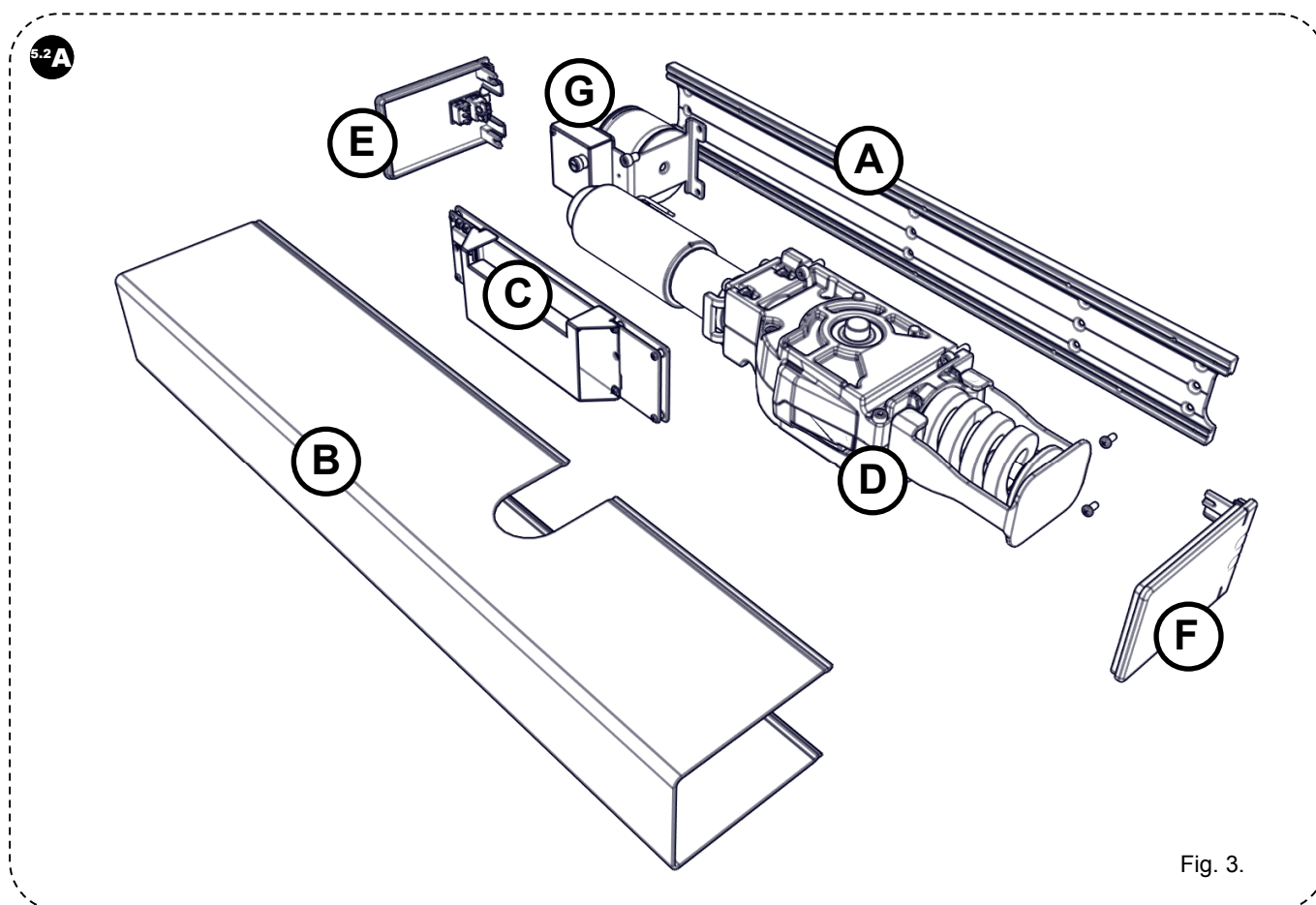


Fig. 3.

### 5.3 Positioning Levels for the Fixing Holes



Make suitable holes for the type of fixing screw to be used, only after checking the 'Positioning Levels' indicated in the sections corresponding to the type of arm used. In the case of a double operator, prepare the connections (cable routes) between the two individual operators.

### 5.4 Extendable Rigid Arm Installation

The rigid arm is used when the operator is installed on the same side as the door opens.



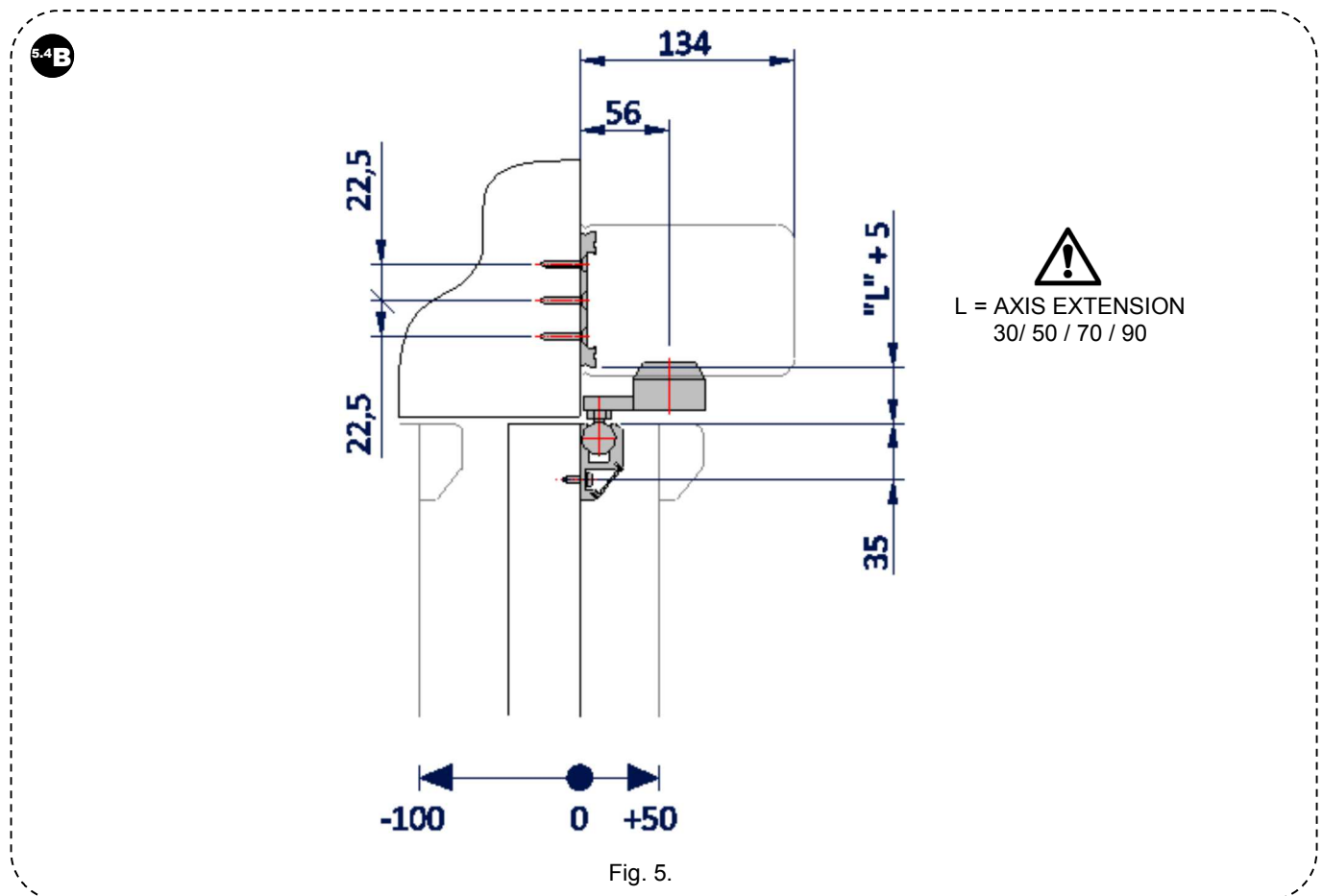
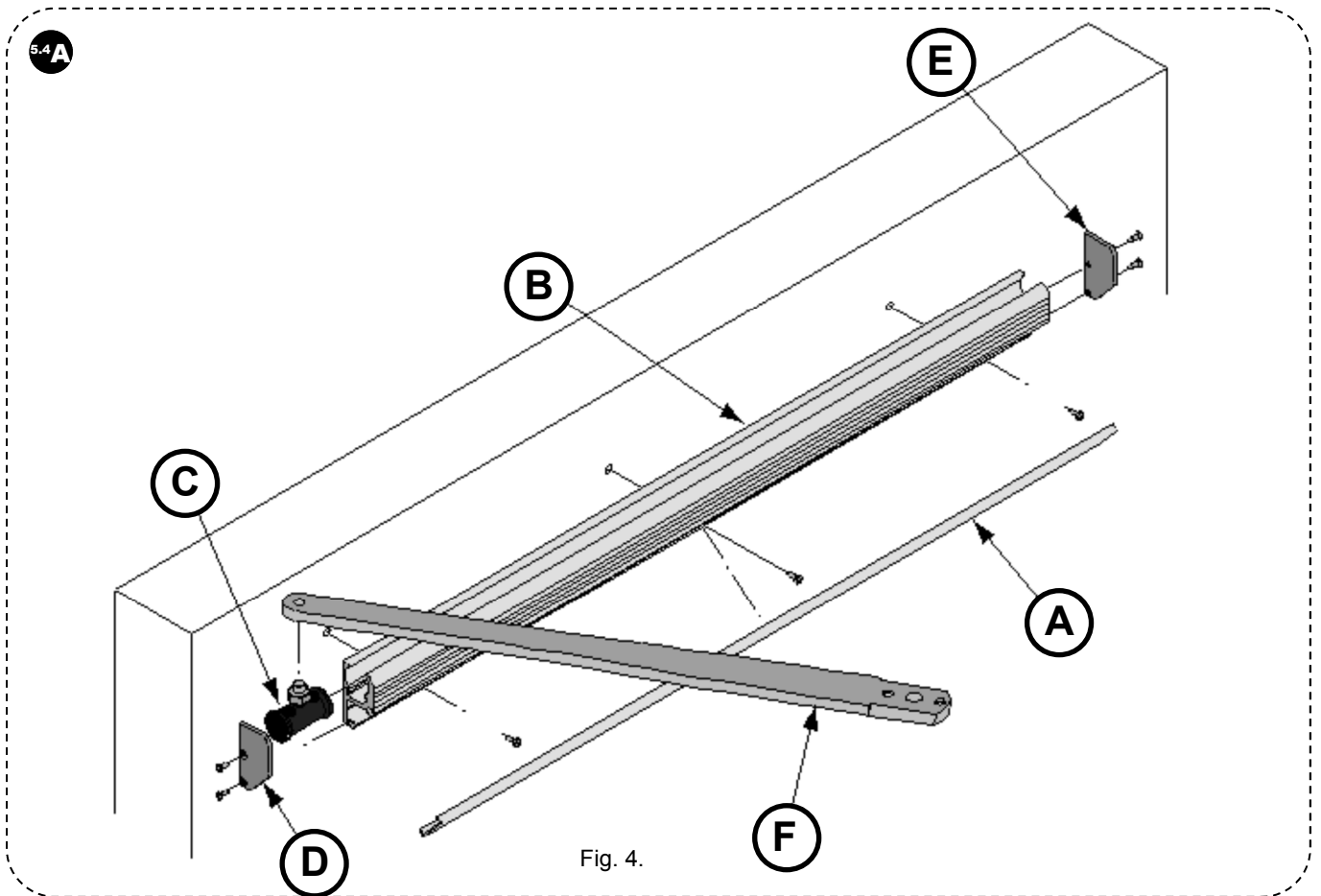
**WARNING:** To place the operator correctly, always use as the main reference the axis of the leaf hinges and the drive shaft of the gear motor, as shown in Fig. 6 (LEFT-opening leaf) and Fig. 7 (RIGHT-opening leaf).



**WARNING:** The final tightening of the screws should be performed only after ensuring that the operator has been placed vertically, guaranteeing that the hinges and the gear motor drive shaft are perfectly parallel. For this to happen, after installing the rigid arm and the corresponding guide, ensure that the arm pin is not applying any force to the cylindrical runner during the manoeuvre phase. An error in the positioning of the operator will cause the rigid arm pin to oscillate with respect to the cylindrical runner, increasing the admissible tolerance and consequently causing a part of the operator to deteriorate.

#### 5.4.1 Rigid Arm, SLIM Arm Guide Installation

- Remove the cover (Fig. 4 Part A) from the main guide profile (Fig. 4 part B) to access the mounting compartment.
- Place the main guide profile (Fig. 4 part B) horizontally, following the fixing positioning levels indicated in figures 5, 6 and 7.
- Make at least 4 holes coinciding with the 'V' mark on the guide profile, and attach it (Fig. 4 part B) to the frame using the corresponding screws.
- Place the runner (Fig. 4 part C) in the guide (Fig. 4 part B).
- Tighten the nut (Fig. 8 part A) so that the spring is previously loaded until the plate ends (Fig. 8 part B) coincide with the line that indicates the EN4 range start point (level L=0).
- With the door closed, find the position to introduce the arm (Fig. 9 part A) so that the ends of the arm (Fig. 4 part F) coincide with the axis of the runner pin (Fig. 4 part C).
- Remove the arm, take out the arm connection and turn it (Fig. 9 part A) 1 or 2 teeth towards the closing part of the leaf (Fig.10). Then re-insert the output axis.
- Insert the washer (Fig. 9 part B) and tighten the screw (Fig. 9 part C).
- Unscrew the spring tension screw slightly (Fig. 8 part A).
- Insert the arm (Fig. 9 part D) into the arm connection groove, and tighten the two screws (Fig. 9 part E).
- Open the door slightly and turn the rigid arm until the runner axis (Fig. 4 part. C) coincides with the end of the rigid arm where the arm pin is attached.
- Screw the threaded end of the pin (Fig. 4 part C) to the rigid arm (Fig. 4 part F).
- Close the guide cover (Fig. 4 Part A) .
- Close the guide right (Fig. 4 part E) and left (Fig. 4 part D) end covers with the corresponding screws.
- Adjust the spring [see section 'Spring Adjustment'].



## SLIM Arm guide installation

- Take out the cover (Fig. 38 part A) from the main guide profile (Fig. 38 part B) so that it can be secured.
- Place the main guide profile (Fig. 38 part B) horizontally, following the fastening dimensions indicated in figures 5, 6 and 7
- Attach the guide profile, using the holes at the ends (Fig. 38 part B), to the frame, using the appropriate screws
- Place the skid (Fig. 38 part C) on the guide (Fig. 38 part B)
- Screw the nut (Fig. 8 part A) so that the spring loads previously up to both ends of the plate (Fig. 8 part B) coincide with the line indicating the beginning of the EN4 field (dimension L=0)
- With the door closed, search for the position to introduce the arm (Fig. 9 part A), so that the arm ends (Fig. 38 part F) coincide with the skid's shaft bolt (Fig. 38 part C)
- Remove the arm, take out the arm connection and turn it (Fig. 9 part A with 1 or 2 teeth towards the leaf's closing part (Fig.10). Then, reinsert the output axis
- Introduce the washer (Fig. 9 part B) and tighten the screw (Fig. 9 part C)
- Loosen the screw slightly, removing tension from the spring (Fig. 8 part A)
- Insert the arm (Fig. 9 part D) into the slot of the arm's connection, and tighten both screws (Fig. 9 part E)
- Open the leaf slightly and turn the rigid arm until the skid's shaft (Fig. 38 part C) coincides with the end of the rigid arm, where the bolt is attached
- Screw the threaded end of the bolt (Fig. 38 part C) to the rigid arm (Fig. 38 part F)
- Insert the arm's adjustable stop and adjust (Fig.38 part G) before pushing the end covers in (Fig.38 part D and Fig.38 part E).
- Push the cover in.
- Adjust the spring [see section 'Adjusting the spring']

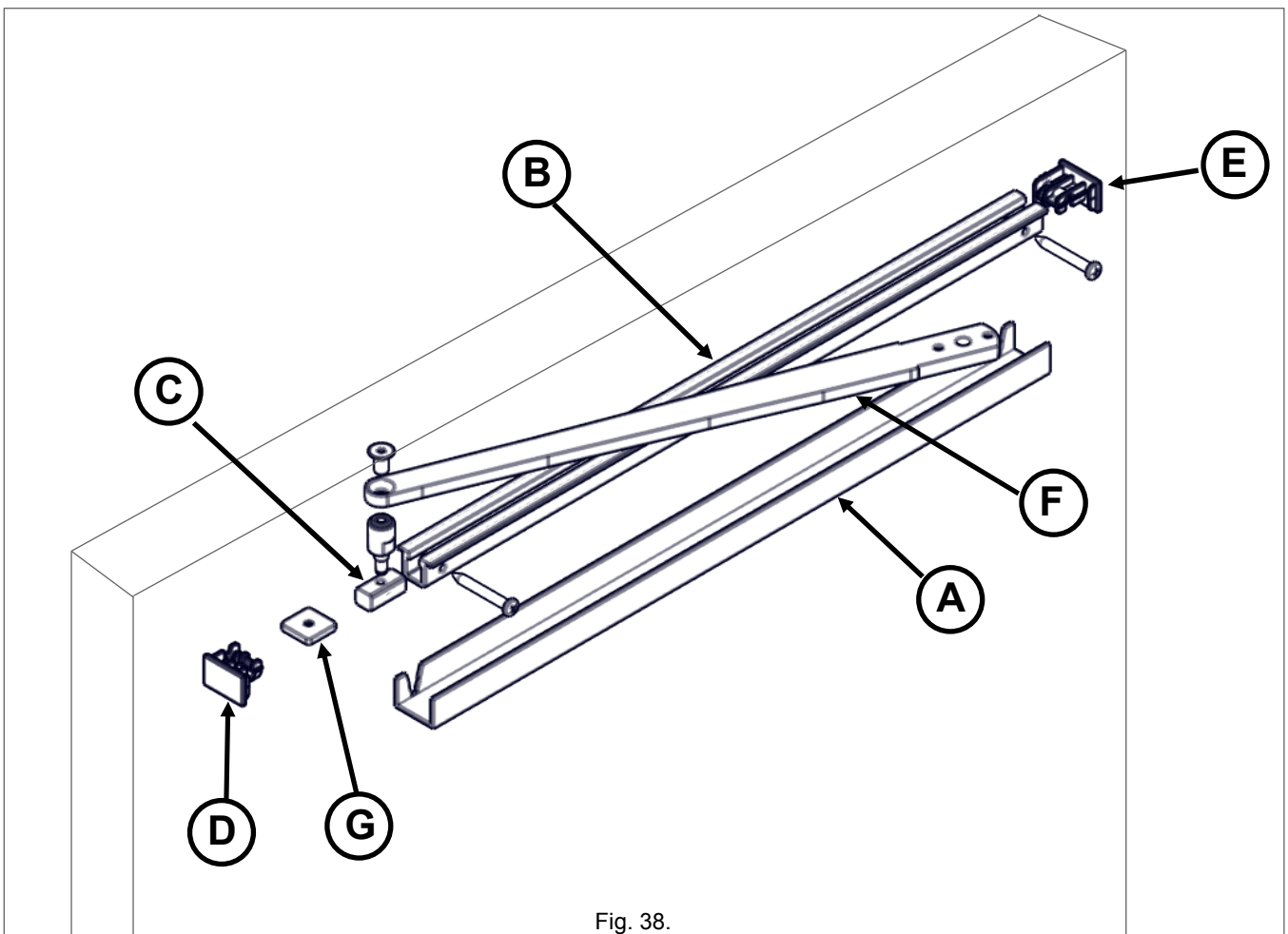
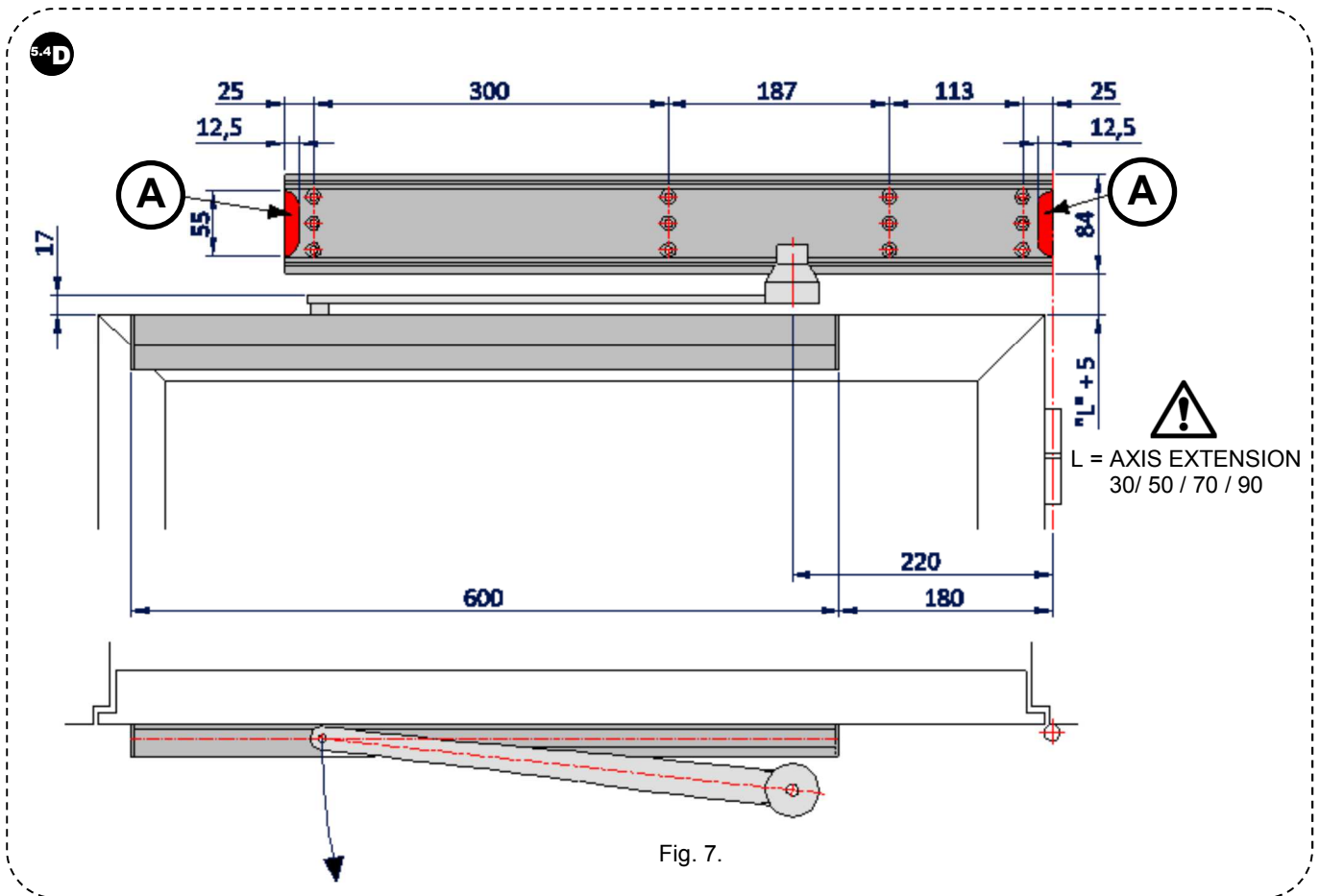
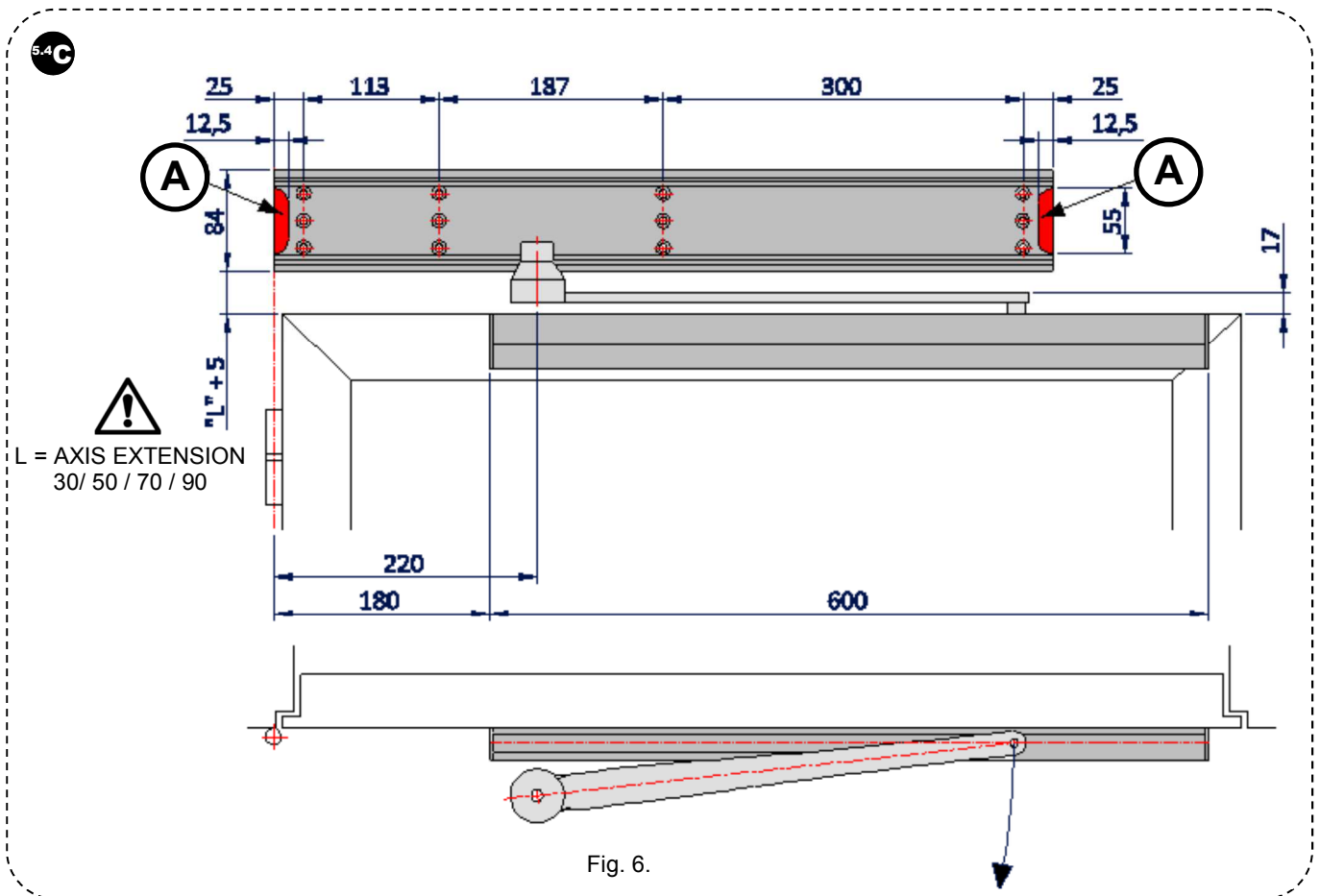


Fig. 38.





5.4 E

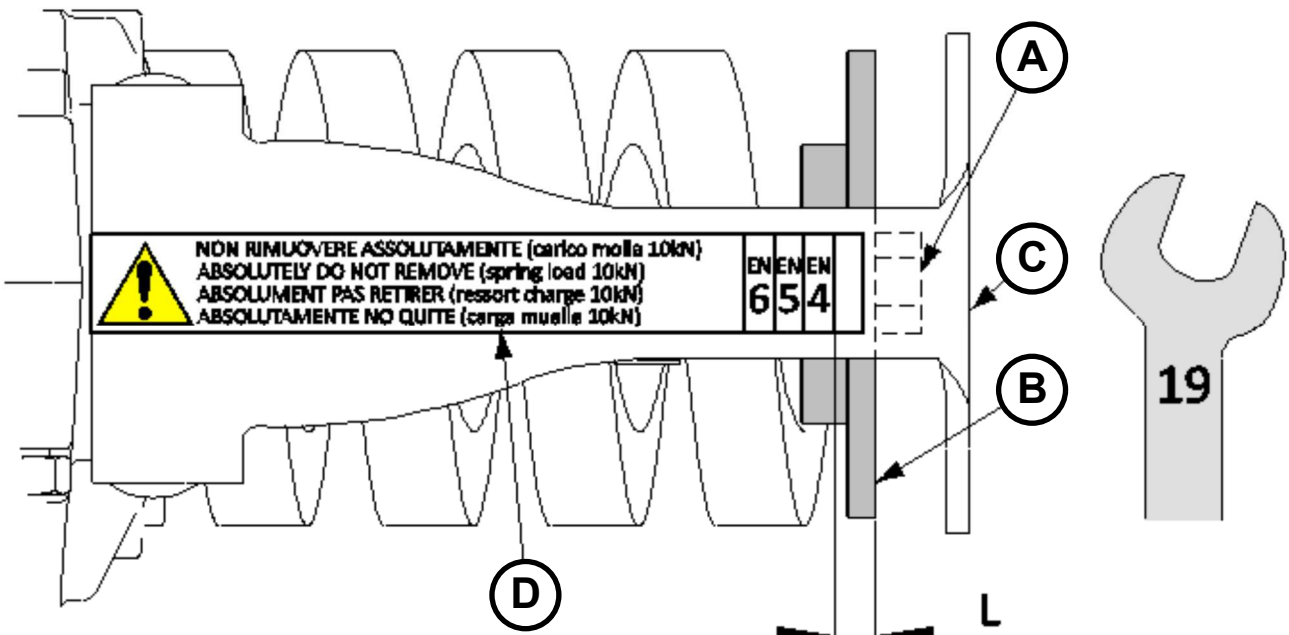


Fig. 8.

5.4 F

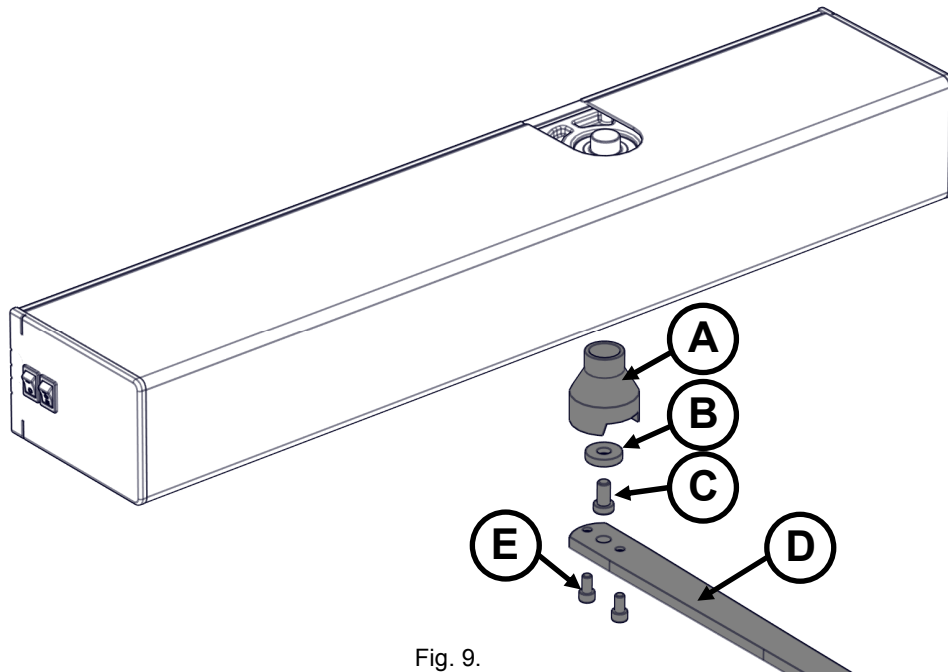


Fig. 9.

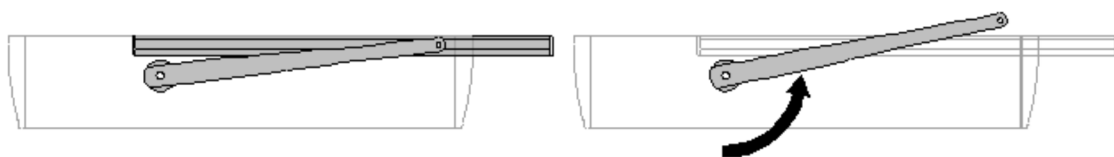


Fig. 10.

**5.4 G** Before tightening the arm connection to the operator axis, check that the distance between the guide and the upper side of the arm is about 17mm.



**WARNING:** After installing the rigid arm and the guide, ALWAYS check that the Switch position is to the right, as shown in Fig. 11.

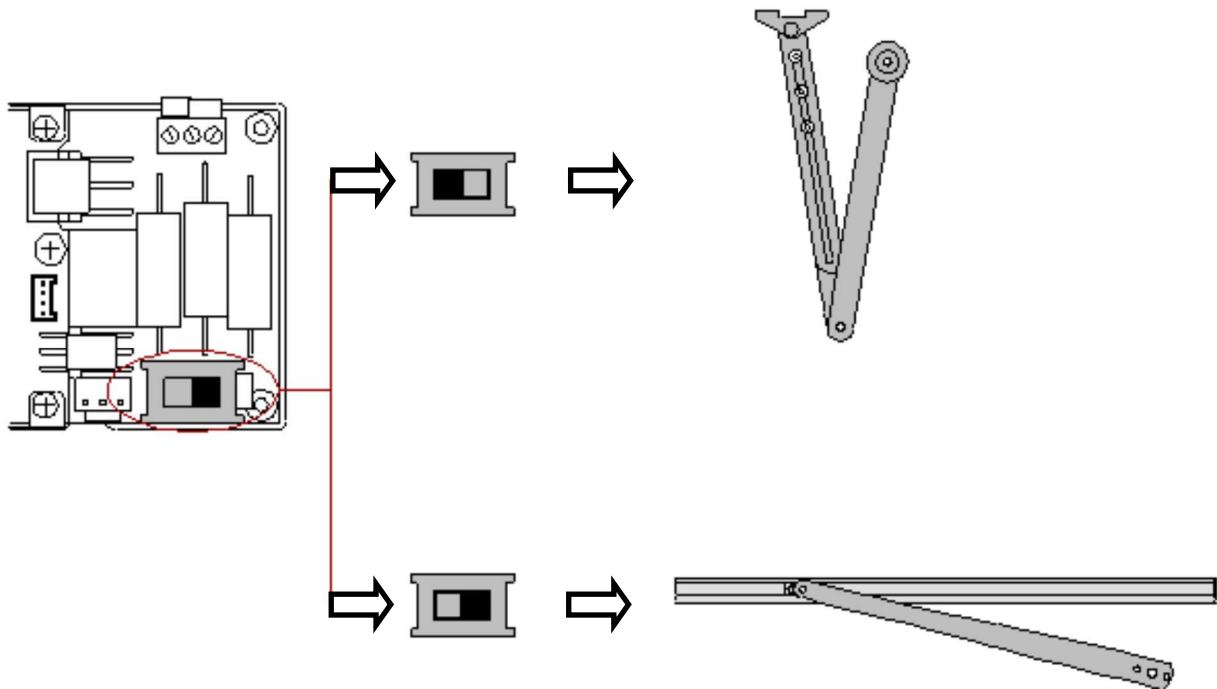


Fig. 11.

## 5.5 Installing the Pushing Articulated Arm

The pushing articulated arm is used when the operator is installed on the opposite side from where the door opens.



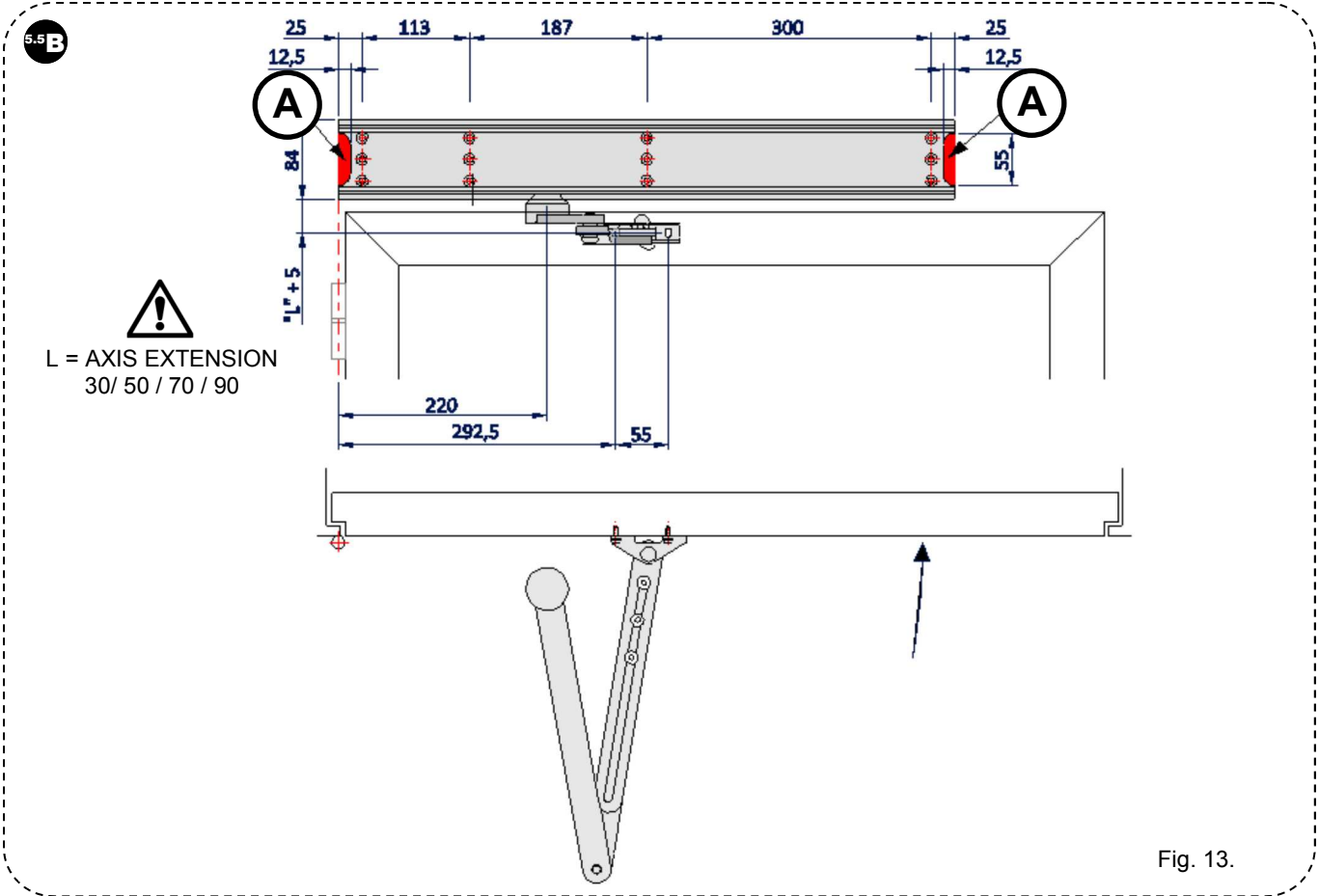
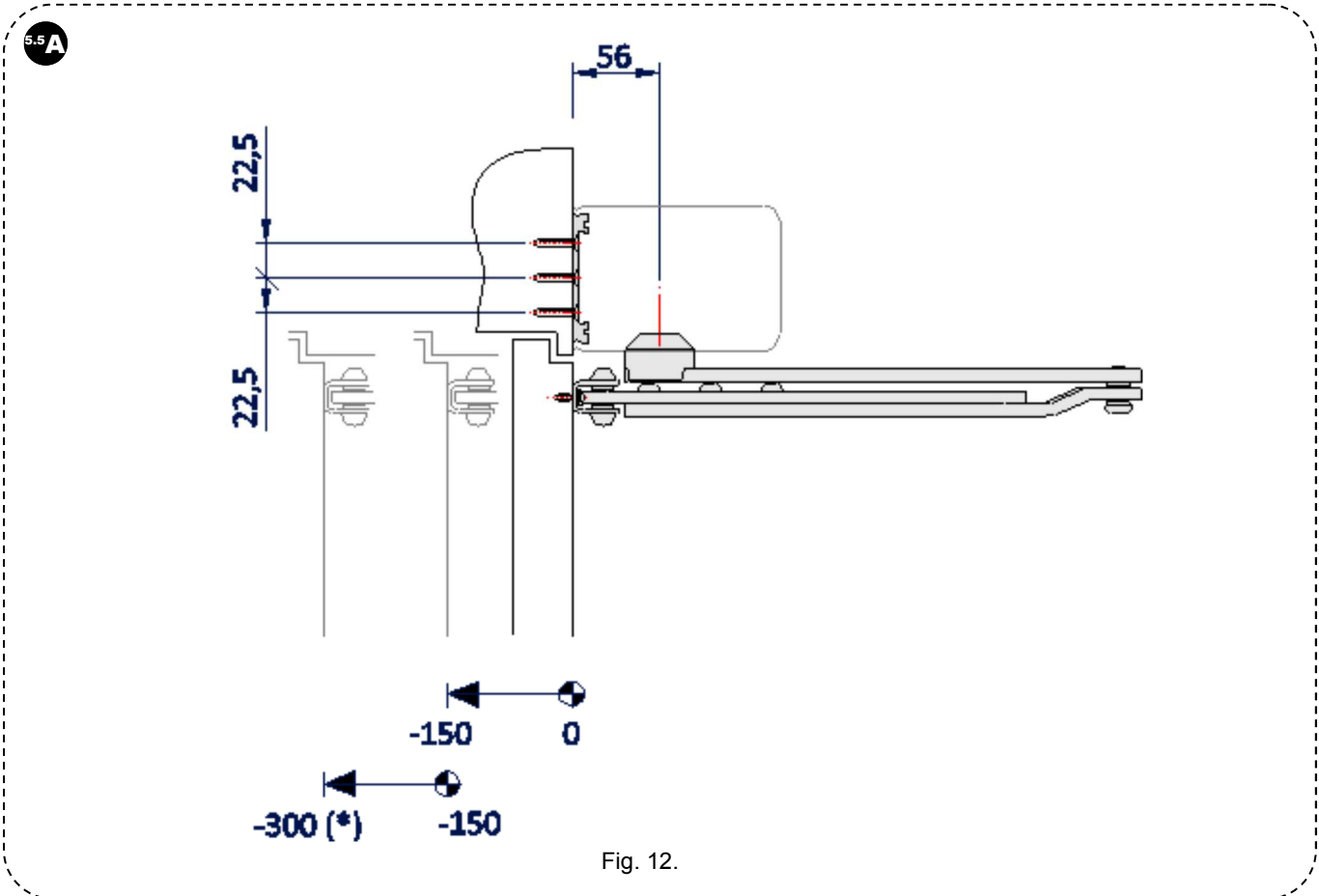
**WARNING:** To correctly place it, always use as main reference the axis of the leaf hinges and the motor drive shaft, as shown in Fig. 12, Fig. 13 (LEFT-opening leaf) and Fig. 14 (RIGHT-opening leaf).



**WARNING:** The final tightening of the screws should be performed only after ensuring that the position of the operator and the articulated arm guarantee that it can easily rotate within the door frame.

### 5.5.1 Attaching the Arm to the Leaf

- Place the washer (Fig. 9 part B) and the screw (Fig. 9 part C) on the connection point with the arm (Fig. 9 part A).
- Place the first part of the articulated arm (Fig. 15 part D) in the arm joining cavity as shown in Fig. 9, and tighten the screws (Fig. 9 part E).
- Unscrew the three M8 x 16 screws (Fig. 16 part B) so that the part of the arm that fixes to the leaf is separated.
- Make holes in the door as indicated in figures 12 and 13.
- Affix the leaf-joining part of the articulated arm (Fig. 16 part A) to the door leaf using the appropriate screws.



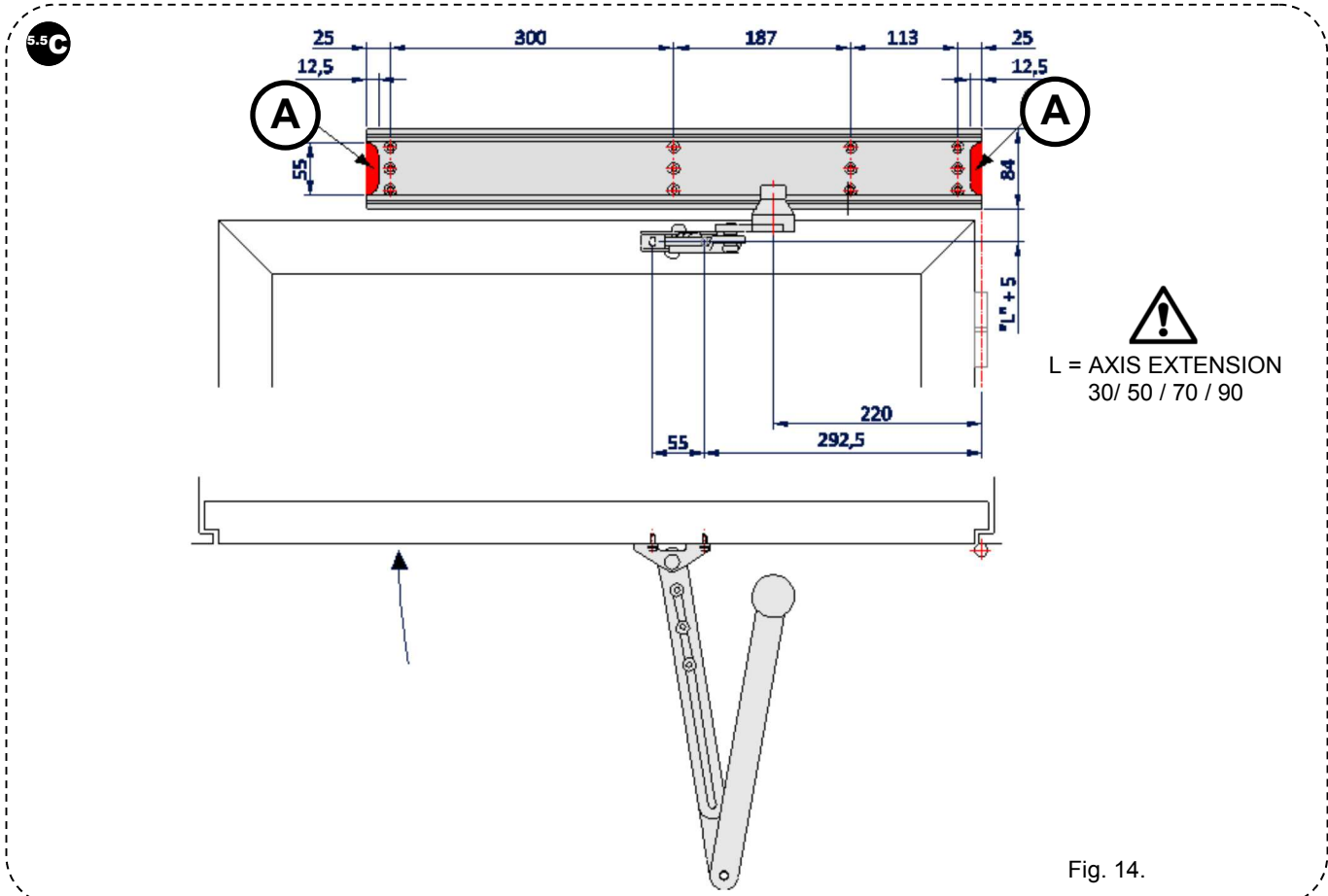


Fig. 14.

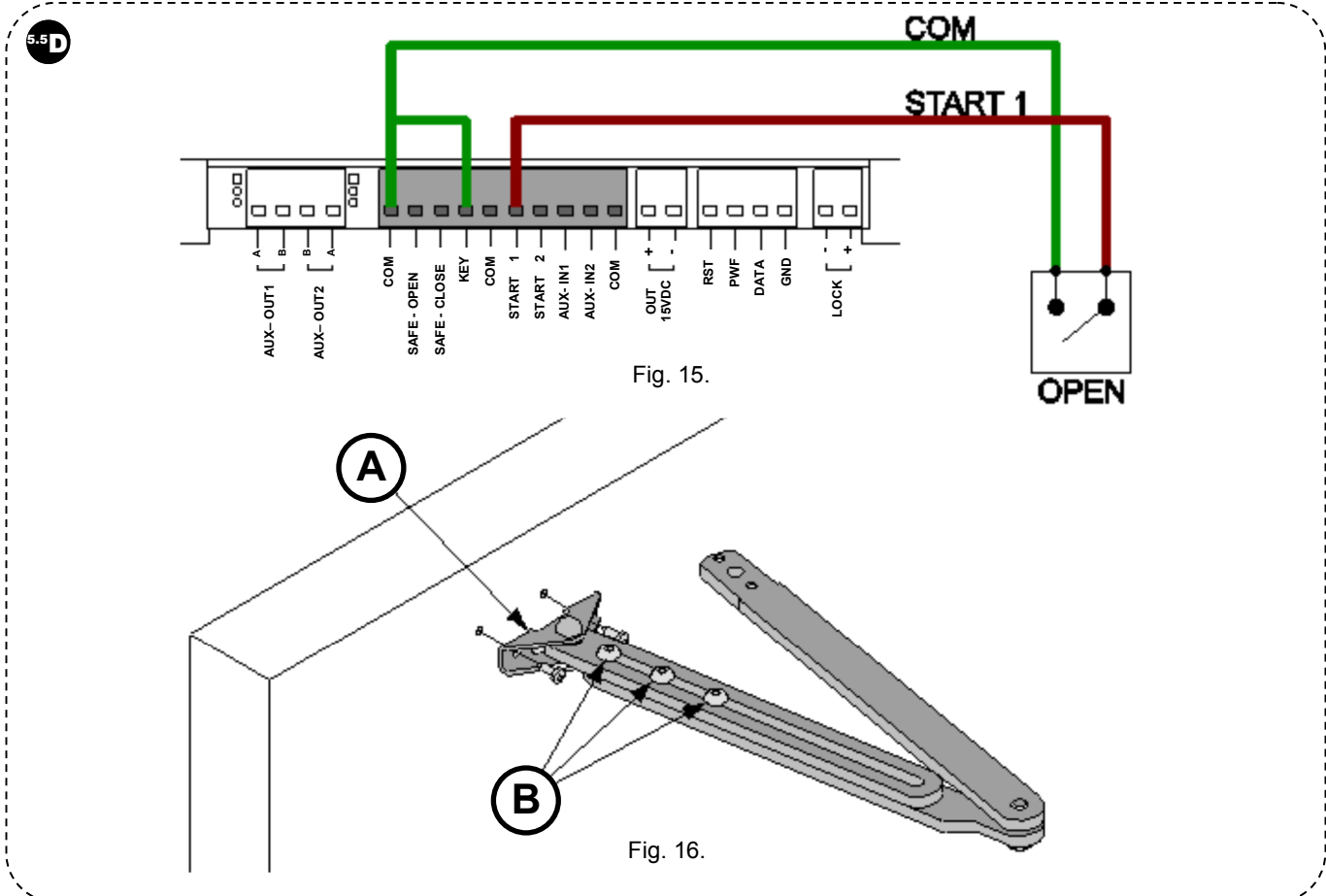


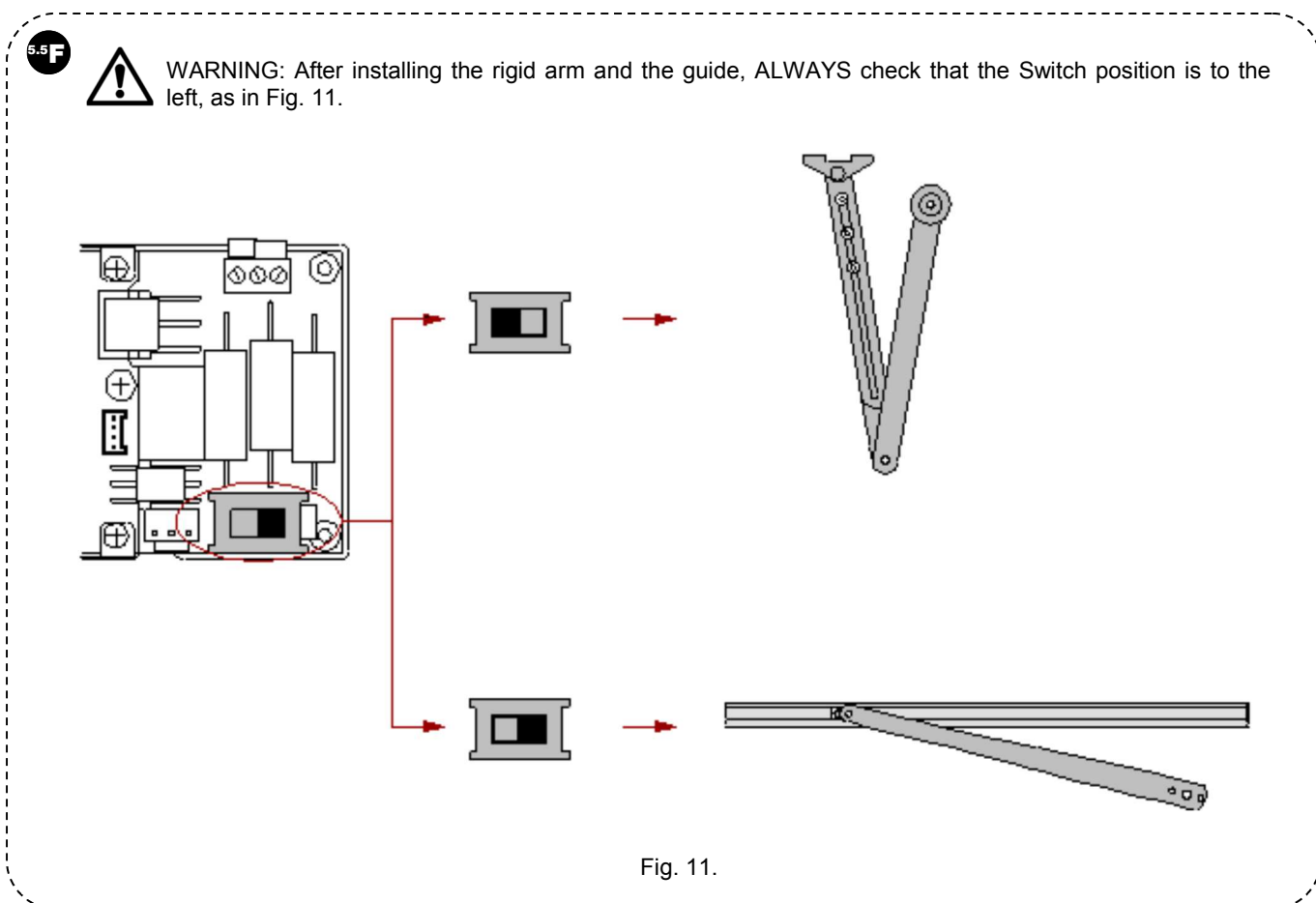
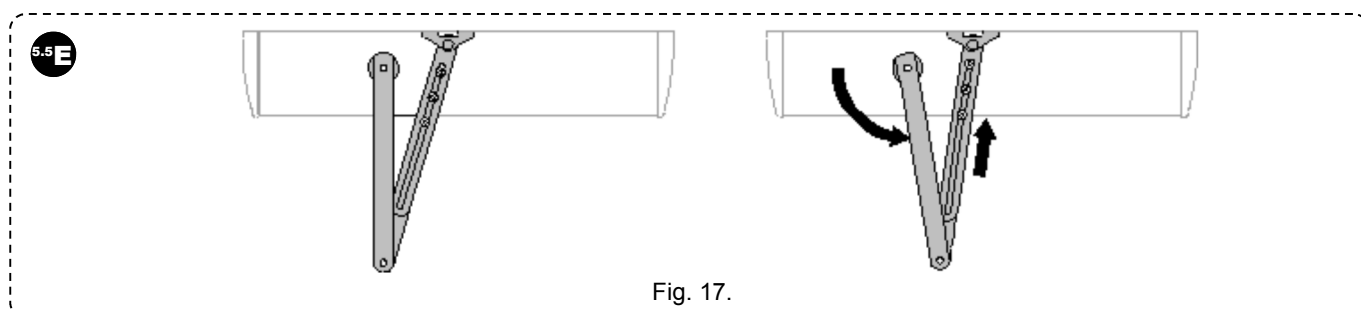
Fig. 15.

Fig. 16.



**WARNING:** Attach the door's leaf-joining point to the arm correctly, using reinforcements where necessary.

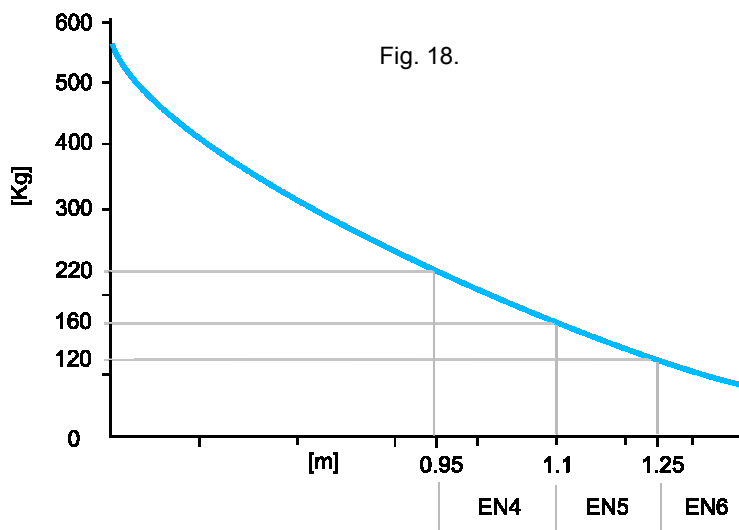
- Turn the nut (Fig. 8 part A) to preload the spring, until the plate ends (Fig. 8 part. B) coincide with the line indicating the start point of the EN4 range (level L=0).
- Place the arm connection (Fig. 9 part A) on the operator output axis, so that the first part of the arm is perpendicular to the operator mounting surface (Fig. 17).
- Tighten the screw (Fig. 9 part C) so that the arm connection remains anchored to the operator output axis.
- Screw in the three M8 x 16 hexagon button-head screws (Fig. 16 part B) without tightening so that the parts that make up the articulated arm are joined together.
- With the leaf close, turn the part of the arm where the connection is to slightly compress the spring (see fig. 17).
- Fix the adjustment by firmly tightening the three M8 x 16 fixing screws (Fig. 16 part. B).
- Adjust the spring [see section 'Spring Adjustment'].



## 5.6 Spring Adjustment

The strength of the spring should be adjusted according to the leaf width, and taking into account standard EN 1154 within the range EN 4 to EN 6.

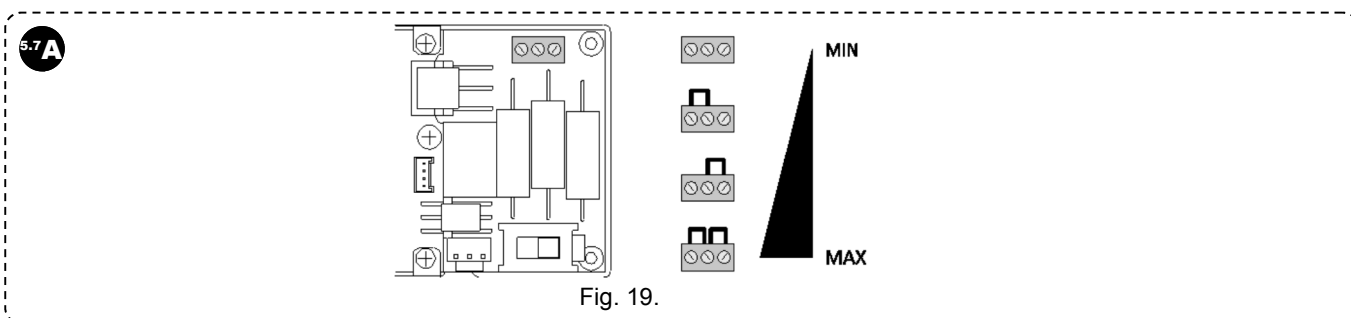
The adjustment range can be seen in the graph curve in Fig. 18, depending on the weight and width of the swing leaf, and regardless of the type of arm installed. When adjusting the spring, take into account loads due to wind, excessive pressure and other environmental conditions that tend to open a door on their own. Adjust the strength of the spring tightening the screw (Fig. 8, Part A) such that it tenses the spring until the plate ends (Fig. 8 part B) are in the category corresponding to the installation type (identified EN class).



**WARNING:** Taking into account that the spring is a component that accumulates a great deal of energy when fully compressed, it is imperative to replace the spring and all components that operate with it exclusively with ORIGINAL spare parts. It is convenient that a qualified technician performs scheduled maintenance tasks. For maintenance information, refer to chapter 8 of this manual.

## 5.7 Selecting Breaking Level without Power

Adjust the breaking level such that it suits the closing speed and dimensions/weight of the leaf (Fig. 16). Check operation by opening the door manually and closing it with the spring when there is no power.



## 5.8 Testing Operations

Before making the electrical connection, clean any traces of dust or debris and test the following items:

- The operator is correctly mounted on the wall.
- All the screws are tight.
- Check the wiring and ensure there are no wires near moving parts.
- The arm is correctly attached to the leaf.
- The heads are correctly placed and fixed at the base.



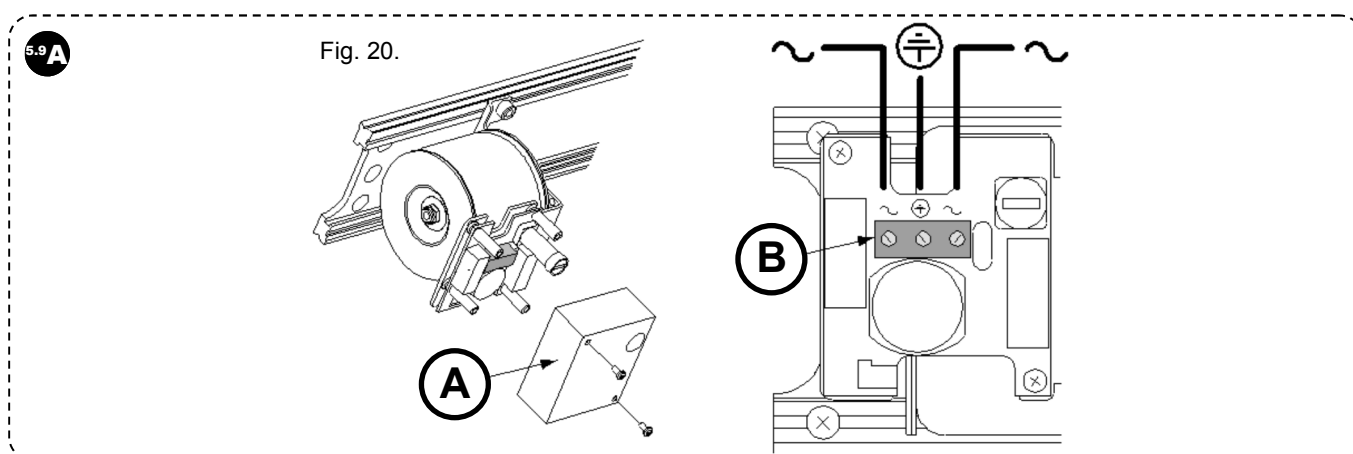
**WARNING:** Check the spring protection bracket (Fig. 8, part C) and ensure that the anti-tampering seal sticker has not been removed (Fig. 8, part D).

## 5.9 Connecting to the Power Supply

**!** WARNING: All the connection operations on the card terminal plates or the peripheral devices should be made with the power disconnected to avoid irreversible electrical damage.

**!** WARNING: Before continuing further operations, ensure that it is disconnected from the mains. Before connecting the unit to the power supply, carry out the controls detailed the section 'Commissioning'.

- Route the power cable to the interior of the operator without damaging it on any metallic edges.
- Open the cover (Fig.20 Part A).
- Connect the mains power supply and earth outlet cable on the terminal plates as shown in (Fig. 20 Part B).
- Replace the cover (Fig. 20 Part A).



5.9 B **!** WARNING: Do not invert the power supply and earth cables. It has to be possible to section the power from the mains junction box using a two-pole switch (see Fig. 21 E) with a 3mm minimum contact opening (not supplied).

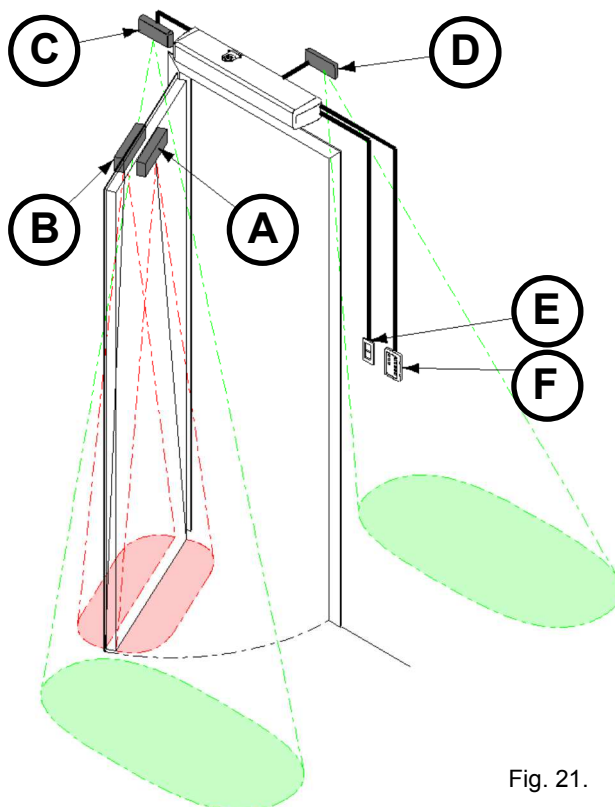


Fig. 21.



## 5.10 VECTOR Electronic Card

Fig. 22 shows the main components of the electronic card:

- |   |   |
|---|---|
| <b>A</b> - Jumper to display viewing                | <b>I</b> - Controls/inputs connectors               |
| <b>B</b> - Display and buttons                      | <b>J</b> - Power supply for the sensors/accessories |
| <b>C</b> - Dip switches                             | <b>K</b> - Multi-logical program switch connector   |
| <b>D</b> - PC connector                             | <b>L</b> - Electronic lock connector                |
| <b>E</b> - Transformer connector                    | <b>M</b> - Key-pad connector                        |
| <b>F</b> - ON-OFF switch connector                  | <b>N</b> - Motor connector                          |
| <b>G</b> - Logic setting selection switch connector | <b>O</b> - Braking level selector connector         |
| <b>H</b> - Auxiliary output connections             | <b>P</b> - Arm type program switch                  |

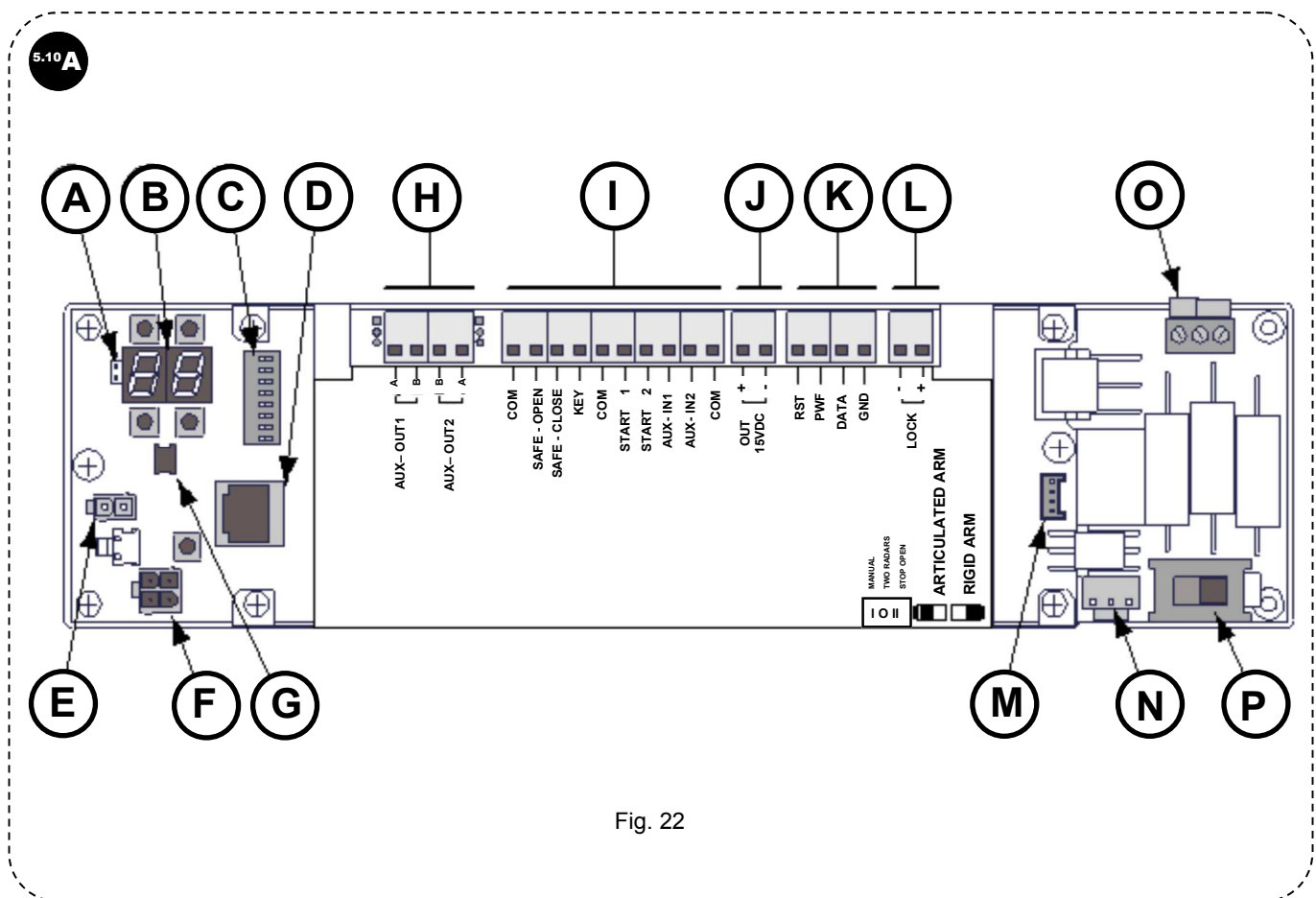


Fig. 22

## 5.11 Electronic Connections

Connect to the electronic card (Fig. 22):

- Logic settings switch connector [H]
- ON-OFF switch connector [G]
- Transformer connector [E]
- Motor connector [O]
- Key-pad connector [N]

## 5.12 Arm-Type Selection

Rigid arm (Left or right-opening leaf)

→ Configure the right program switch as shown in Fig. 11.

Articulated arm (Left and right-opening leaf)

→ Configure the left program switch as shown in Fig. 11.

## 5.13 Connecting the Controls/Inputs

SIGNAL	DEFAULT*	DESCRIPTION	FUNCTION
KEY	NC	Lock signal. Closing devices, such as the electronic key, the key program switch, the transponder, etc., may be connected.	If the signal starts, the central unit controls the full leaf closing (from any position). Until this signal is no longer received, the door will remain closed and will not detect any external peripheral devices (including the multi-logic program switches). The signal should be shorted with COM if there are no devices connected.
START 1	NO	Opening signal. Devices can be connected for leaf opening control.	The end of this signal causes the leaves to open. This signal is controlled only with 2 radars logic setting.
START 2	NO	Opening signal. Devices can be connected for leaf opening control.	The end of this signal causes the leaves to open. This signal is controlled both with 2 radars logic setting and 1 radar logic setting.
SAFE OPEN	NC	Opening safety signal: other protective sensors can be connected for additional safety during the opening phases of the leaves.	If the door is in the opening phase and the contact is open, the central unit will order the manoeuvre to immediately stop. Opening will continue only after this signal has been deactivated. The signal should be shorted with COM if there are no devices connected.
SAFE CLOSE	NC	Closing safety signal: other protective sensors can be connected for additional safety during the closing phases of the leaf.	If the door is in the closing phase and the contact is open, the central unit will immediately order the reverse movement. Closing will start again only once the contact is closed again. The signal should be shorted with COM if there are no devices (internal or external) connected.
COM		Common in electrical signals.	
AUX IN 1 AUX IN 2	NO	Signal that, depending on the settings, may have the following configurations:	
		0 - Disabled persons opening	Opening control for disabled persons. LOW ENERGY open and close with a minimum 5 second pause.
		1 - Emergency opening	It controls door opening regardless of the existing logic settings, overriding as priority even the KEY input.
		2 - Door interlocking with priority	It identifies the device used in the interlocking logic setting, with the door's as priority.
		3 - Door interlocking without priority	It identifies the device used in the interlocking logic setting, with the door's without priority
		4 - Lock release feedback	Control used to indicate that the lock is released. Connect the micro-switch or the contact to detect the state of the released lock.
		5 - Lock release control	Control allowing the lock to be released manually, without controlling the opening of the leaf.
6 - Individual control with Double operation mode	Signal that allows the device to be controlled as if it were individual when it operates with a double leaf.		

AUX IN 1 AUX IN 2	NO	7 - Stand-by state	When the contact is closed, the door enters stand-by mode (unlocked and deactivated). This logic setting only operates with the door in the closed position.
		8 - Activate again from Stand-by	When the contact is closed, the door activates again after being in stand-by.
		9 - Step by Step function	For each impulse, the door, if closed, performs an opening manoeuvre, or if open, performs a closing manoeuvre.
		10 - Fire alarm	When the contact is closed, all commands are deactivated and the door is closed by the spring.
		11 - Manual operation	When the contact is closed, the door enters manual operation and the logic settings switch (Fig.1B) is excluded.

NO = Normally Open    NC = Normally Closed

All inputs must refer to the common (COM); those indicated are preset configurations (default). These can be modified (see section 5.17 *Display Management*)

### 5.14 Connector to Auxiliary Outputs

SIGNAL	DEFAULT <sup>†</sup>	DESCRIPTION	FUNCTION
AUX OUT 1 AUX OUT 2	NA	A signal that, depending on its setting, can have the following configurations:	
		0 - Sensors supervision	Signal to manage the supervised sensors.
		1 - Interlocking	Allows the configuration of the device output, to enable interlocking between the two operators.
		2 - Open-door state	Output that signals the open-door state.
		3 - Closed-door state	Output that signals the closed-door state.
		4 - Malfunction	Output that signals the operator malfunction state.
		5 - Lock control repetition	This is a repetition of the signal that arrives from the lock control.

NO =Normally Open    NC =Normally Closed

All inputs must refer to the common (COM); those indicated are preset configurations (default). These can be modified (see section 5.17 *Display Management*)



WARNING: To connect the auxiliary output signals, see the electrical connections shown in Fig. 23. Maximum contact load: 24V - 100mA



WARNING: Overloading the card capacity may damage it.

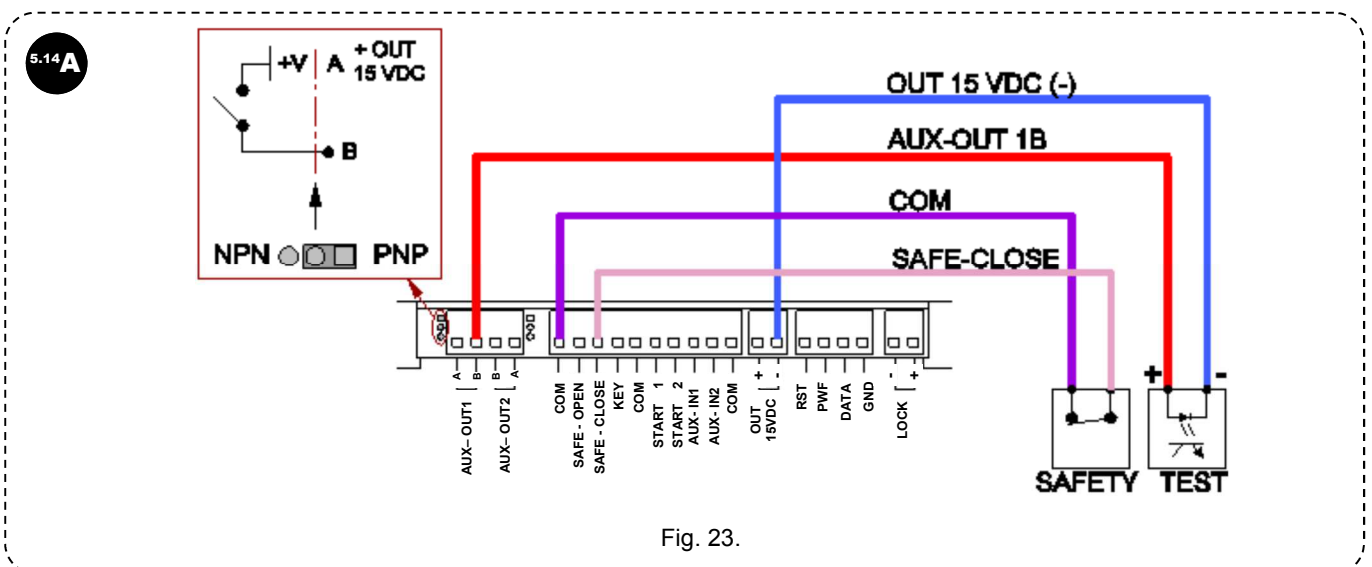


Fig. 23.

### 5.15 Installing and Acquiring the Sensors

The operator is prepared to manage:

- Safety sensors (see Fig. 21 A and B): they are mounted on the leaf and control the nearby area to detect possible obstacles, and stop movement or invert it to prevent blows, crushing or other sources of danger;
- Detection sensors (see Fig. 21 C and D): normally mounted on the wall, to detect when persons approach the door and control the opening.

Connect the following sensors if they are present:

ID	SENSOR	DIAGRAM
17 = 0 30 = 1	Safety sensor supervised during closing (See Fig. 21 A)	See Fig. 23
17 = 0 30 = 1	Safety sensor supervised during opening (See Fig. 21 B)	See Fig. 24
	Detection sensor (radar) on entry (See Fig. 21 D)	See Fig. 25
	Detection sensor (radar) on exit (See Fig. 21 C)	See Fig. 26

If, when the device is put into operation, the configuration of the supervised safety sensors has not yet been memorised, the display will show error E6. Exit this state by activating the automatic supervised sensor acquisition procedure (parameter LS, see section 'Managing Operating Parameters of the Display'). During this procedure, the card waits until the sensors are deactivated and checks the their supervision has been activated.

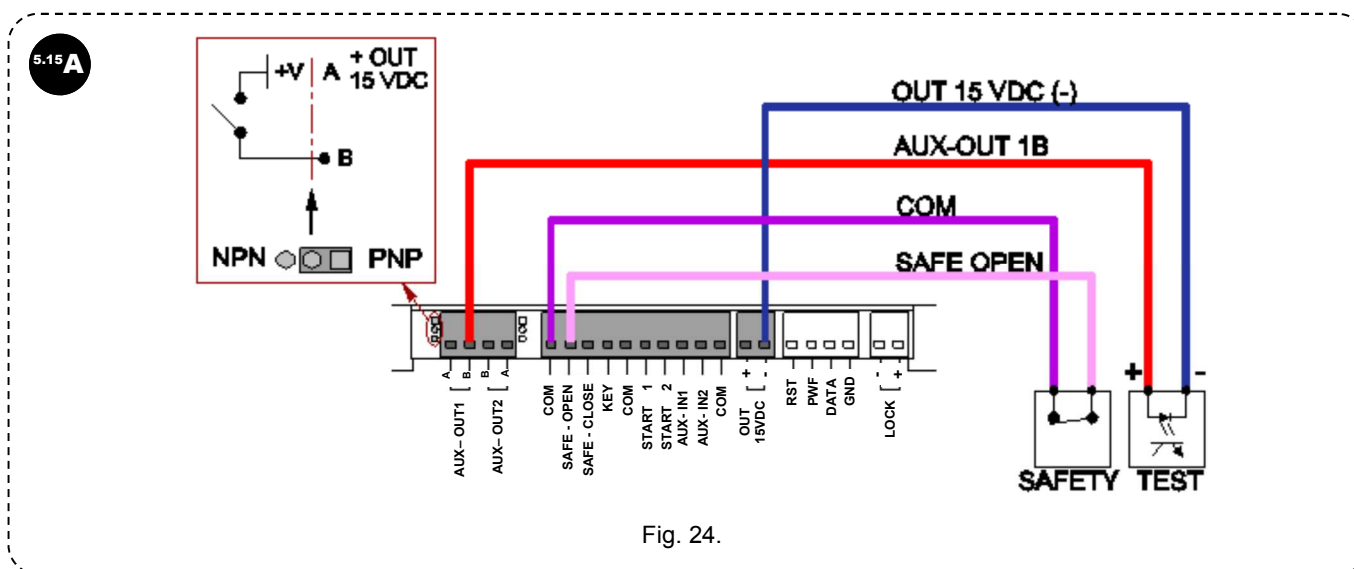


Fig. 24.

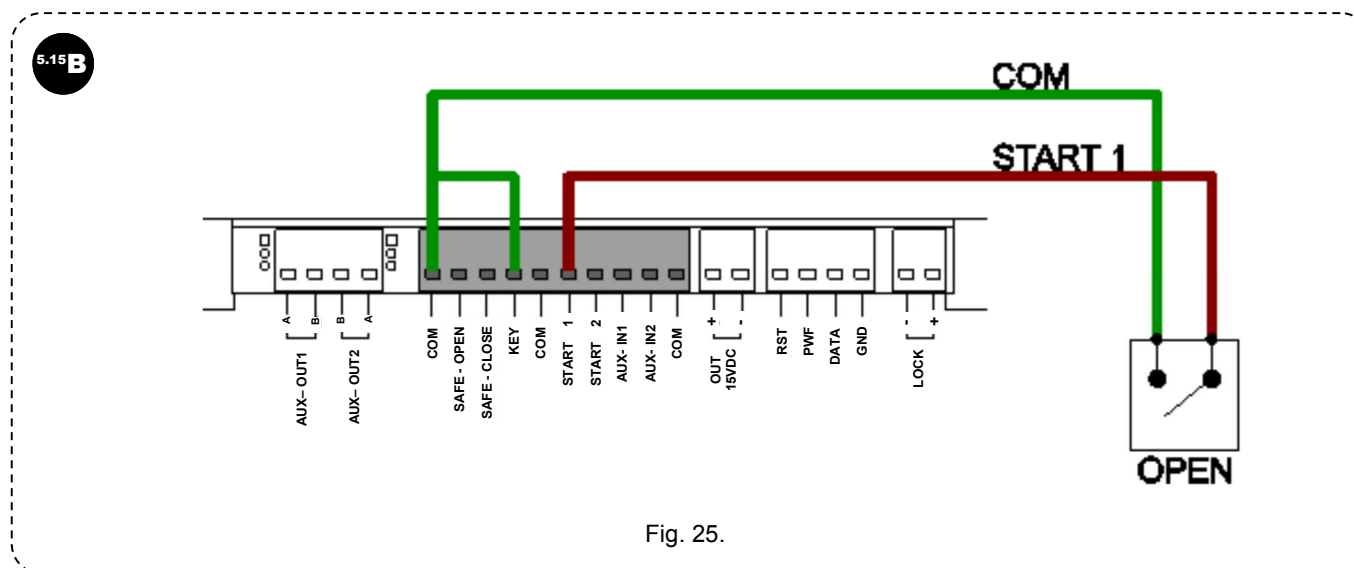
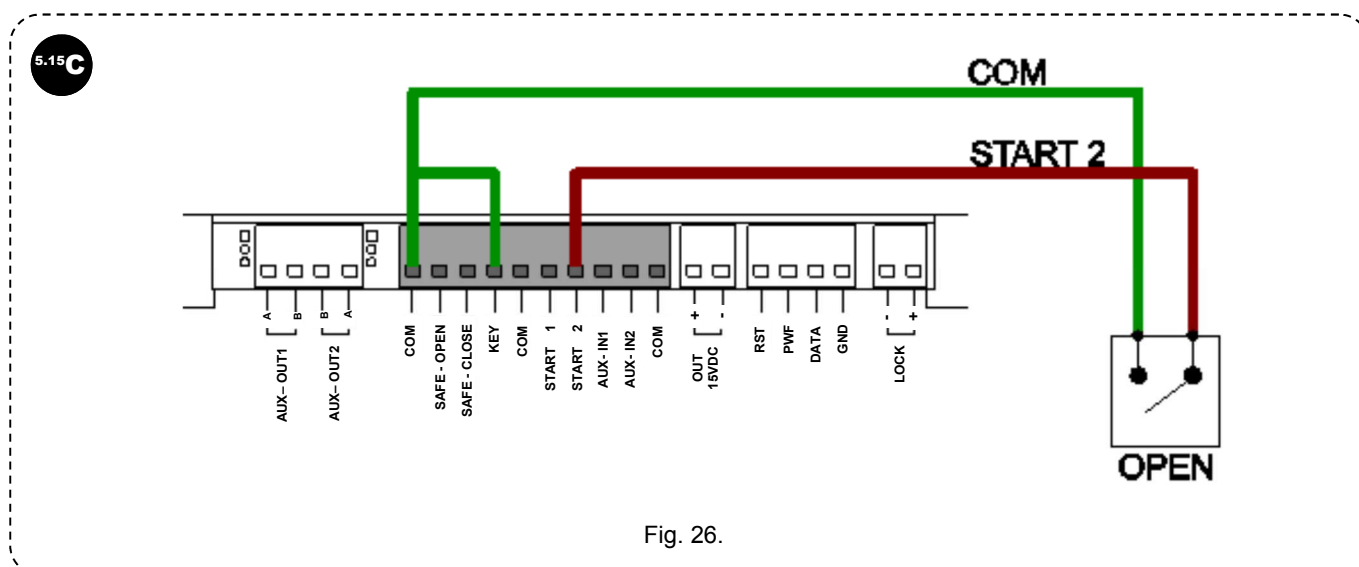


Fig. 25.



**WARNING:** move away from the sensors so that they do not detect any obstacle and so that, when they deactivate, they allow the acquisition process to finish. If they do not deactivate, the procedure will remain blocked and it can be aborted by pressing the ESC key.

When the procedure is finished, the display will show one of four values depending on the configuration detected:

ID	CONFIGURATION	DESCRIPTION
S0	No supervised sensor detected	No sensors detected, or the sensors that may be connected are managed as normal sensors, not as supervised sensors.
S1	Supervised sensor only during opening	The supervised sensor is managed only during opening. During the closing phase there is no sensor, or the sensor is managed as a normal sensor.
S2	Supervised sensor only during closing	The supervised sensor is managed only during closing. During the opening phase there is no sensor, or the sensor is managed as a normal sensor.
S3	Supervised sensor both during opening and closing	The supervised sensor is managed both during opening and closing.

The value will remain on the display until one of the following keys is pressed:

- ENT: To accept the detected configuration, ensuring that it corresponds effectively with the actual configuration of the sensors connected to the operator.
- ESC: To reject the detected configuration and return to the E6 error state.



**WARNING:** Never accept the detected configuration if it does not coincide with the actual configuration of the sensors connected to the operator. This may trigger highly hazardous situations or cause the operator to malfunction.

The acquisition procedure can be repeated at any time using the LS parameter (refer to section 'Display Management').



**WARNING:** The automatic acquisition procedure of supervised sensors should be repeated every time the configuration of the sensors connected to the operator is changed.



**WARNING:** In the case of the Double Vector (2 leaves) operator, THE AUTOMATIC ACQUISITION PROCEDURE OF SUPERVISED SENSORS SHOULD BE CARRIED OUT ON BOTH ELECTRONIC CARDS (MASTER AND SLAVE).

At start-up, the display shows the firmware version of the card, and then the configuration of the sensors in memory (S0; S1; S2; S3), for 2 seconds.

If the supervision of a sensor malfunctions, the display will show the flashing value of this sensor (S1: opening safety device; S2: closing safety device; S3: both). This signal will end once normal supervision has been re-established.

## 5.16 Dip-Switch Management

There is a dip-switch on the electronic card with 8 positions for configuring the functionality and ON-OFF type basic operations. These settings are detected and memorised after a reset, and the possible dip-switch variations during operation are not taken into account:

DIP	PARAMETER	VALUE		DEFAULT
1	Arm type	OFF	Articulated	OFF
		ON	Rigid	
2	Mode LOW ENERGY (LOW ENERGY LEVEL)	OFF	Normal	OFF
		ON	Low Energy	
3	Mode PUSH&GO	OFF	De-activated	OFF
		ON	Activated (to switch ON, put parameter 14 in value '0' -See 5.17)	
4	Mode KEY entry	OFF	Bistable	OFF
		ON	Monostable	
5	Actuator type	OFF	De-activated	ON
		ON	Activated	
6	Return close in non-manual mode	OFF	Motorised return close	OFF
		ON	Return close by spring	
7	Action after collision during closing by spring	OFF	Another motorised opening is not performed	OFF
		ON	Another motorised opening is performed	
8	Unused	OFF		OFF
		ON		

## 5.17 Display Management

The two seven-segment displays shown in Fig. 27 and located on the electronic card with 4 buttons, control the main parameters and the advanced options for managing the operator in various types of installation.

To correctly view the display, configure the jumper according to the side which the door will open, indicated in Fig. 27.

It can be programmed as follows:

1. Select the parameter which is to be modified with the [+] and [-] keys; during this phase the display shows the indicated parameter. Pressing the [ESC] key exits the parameter selection phase, pressing [ENT] enters the parameters view/edit phase.
2. The display flashes with the actual parameter value. The value can be changed using the [+] and [-] keys; pressing the [ESC] key returns to the parameter selection phase without modifying the value, and pressing the [ENT] key changes the value and returns to the parameter selection phase.
3. During the parameters selection/edit phase there is an active timeout; if no keys are pressed for a period of 10 seconds, it exits the programming phase.
4. In order to confirm the operational commands, it is necessary to press and hold the [ENT] key for 5 seconds, after which the display returns to the parameter selection phase automatically.

ID	DESCRIPTION	SETTING	DEFAULT
01	Opening speed	RANGE: 20°/s ÷ 70°/s (Adjustable by amounts of 5°/s)	60
02	Closing speed	RANGE: 20°/s ÷ 40°/s (Adjustable by amounts of 5°/s)	20
03	Normal stopping time	RANGE: 0 ÷ 60 seconds (Adjustable by amounts of 1s); 62: 2 min 63: 3 min 64: 4 min	0
04	Disabled persons/Low Energy stopping time	RANGE: 5 ÷ 60 seconds (Adjustable by amounts of 1 second)  (Only active when <i>aux is</i> set to 0)	5

ID	DESCRIPTION	SETTINGS	DEFAULT
05	Return closing speed with spring	RANGE: 1 ÷ 9 (1 = minimum speed, 9 = maximum speed)	5
06	Crushing protection	RANGE: 1 ÷ 9 both opening and closing (1 = most sensitive ; 9 = least sensitive)	5
07	Accelerations	RANGE: 5 ÷ 30 (Regulating steps of 1) Modifies both accelerations and decelerations	30
08	Approach angle	RANGE: 10 ÷ 40 [modifies both values (close equal to half (1/2) of the opening)]	20
09	Electronic lock control voltage	0 = 12 VDC 1 = 24 VDC	0
10	Electronic lock types	0 = Not used For electronic lock types that may be used, see section 'Management of Electronic Locks'	0
11	Electronic lock impulse duration or opening delay	RANGE: 0 ÷ 9 The time depends on the type of electronic lock: see section 'Management of Electronic Locks'	2
12	Electronic lock closing force	RANGE: 0 (min.) ÷ 9 (max.)	5
13	Individual/double mode	0 = Individual 1 = Double Master 2 = Double Slave	0
14	Activation of the electronic lock according to the selected logic settings	0 = Deactivated 1 = One Radar 2 = Two Radars 3 = One Radar and Two Radars	3
15	Configuration of the auxiliary input AUX-IN 1	0 = Disabled persons opening 1 = Emergency opening 2 = Door interlocking with priority 3 = Door interlocking without priority 4 = Lock release feedback 5 = Lock release control 6 = Individual control with operational mode with Double 7 = Puts the door in stand-by (if it is active) 8 = Resets door stand-by 9 = Step-step (1 impulse opens, 1 impulse closes) 10 = Fire alarm 11 = Manual operation 12 = Door closed	0
16	Configuration of the auxiliary Input AUX-IN 2	0 = Disabled persons opening 1 = Emergency opening 2 = Door interlocking with priority 3 = Door interlocking without priority 4 = Lock release feedback 5 = Lock release control 6 = Individual control with operational mode with Double 7 = Puts the door in stand-by (if it is active) 8 = Resets door stand-by 9 = Step-step (1 impulse opens, 1 impulse closes) 10 = Fire alarm 11 = Manual operation 12 = Door closed	1
17	Configuration of the auxiliary output AUX-OUT 1	0 = Monitoring the sensors 1 = Interlocking 2 = Open-door state 3 = Closed-door state 4 = Malfunction 5 = Lock control repetition	0
18	Configuration of the auxiliary output AUX-OUT 2	0 = Monitoring the sensors 1 = Interlocking 2 = Open-door state 3 = Closed-door state 4 = Malfunction 5 = Lock control repetition	1

ID	DESCRIPTION	SETTING	DEFAULT
19	MultiMaster address	0 = Multimaster not managed 1 ÷ 15 = Unique address for MultiMaster connections	0
20	Exclusion of opening safety	Angle of safety sensor exclusion during opening RANGE: 0 ÷ 40% of the entire course	0
21	Double opening delay	RANGE: 0 ÷ 100 Opening delay in 100ms units (if 0 they are synchronised)	0
22	Double closing delay	RANGE: 0 ÷ 100 Closing delay in 100ms units (if 0 they are synchronised)	0
23	Input polarity SAFE OPEN	0 = NA (Normally Open) 1 = NC (Normally Closed)	1
24	Input polarity SAFE CLOSE	0 = NA (Normally Open) 1 = NC (Normally Closed)	1
25	Input polarity KEY	0 = NA (Normally Open) 1 = NC (Normally Closed)	1
26	Input polarity START 1	0 = NA (Normally Open) 1 = NC (Normally Closed)	0
27	Input polarity START 2	0 = NA (Normally Open) 1 = NC (Normally Closed)	0
28	Input polarity AUX IN1	0 = NA (Normally Open) 1 = NC (Normally Closed)	0
29	Input polarity AUX IN2	0 = NA (Normally Open) 1 = NC (Normally Closed)	0
30	Output polarity AUX OUT 1	0 = NA (Normally Open) 1 = NC (Normally Closed)	0
31	Output polarity AUX OUT 2	0 = NA (Normally Open) 1 = NC (Normally Closed)	0
32	Level of force during LP procedure	RANGE: 5 ÷ 60 (0 = minimum force ÷ 9 = maximum force)	5
33	Percentage level of opening angle reduction	RANGE: 0÷50%	0
34	Leaf installation	0 = mounted on lintel 1 = mounted on the leaf (reverse)	0
35	Opening speed for disabled persons	0 = Low Energy 1 = Speed as indicated in parameters 1 and 2	0
37	Configuration of the START 2 input	0 = Operates as indicated on page 13 1 = Disabled persons opening: activate with switch B-fig.1- given in logic settings 1 2 = Disabled persons opening: activate in all logic settings	0
ST	Stop movement		
LS	Learning sensor (Procedure for automatically acquiring the supervised sensors).	1 - Select LS using keys [+] and [-] 2 - Press [ENT] to begin the procedure 3 - The display shows a value (SO; S1; S2; S3) that corresponds to the detected configuration ( <b>see section 'INSTALLING AND ACQUIRING THE SENSORS'</b> ) 4 - press ENT to accept the detected configuration; ensure that it effectively corresponds to the actual configuration of the sensors connected to the operator, or ESC to reject the detected configuration.	
Sd	Default configuration of all the parameters and points reset	1 - Select Sd using keys [+] and [-]. 2 - Press [ENT]. 3 - When the display shows [--], press [ENT] again for 5 seconds to confirm. 4 - When the display stops showing [--], release the [ENT] key.	
Lp	Acquiring the leaf parameters	1 - Select Lp using keys [+] and [-]. 2 - Press [ENT]. 3 - When the display shows [--], press [ENT] again for 5 seconds to confirm. 4 - When the display stops showing [--], release the [ENT] key.	





**WARNING:** During the parameters modification phase, all motor movements will be disabled.

When not using programming, the [ENT] key is an opening control (only for logic settings *One Radar* or two *Radars*).

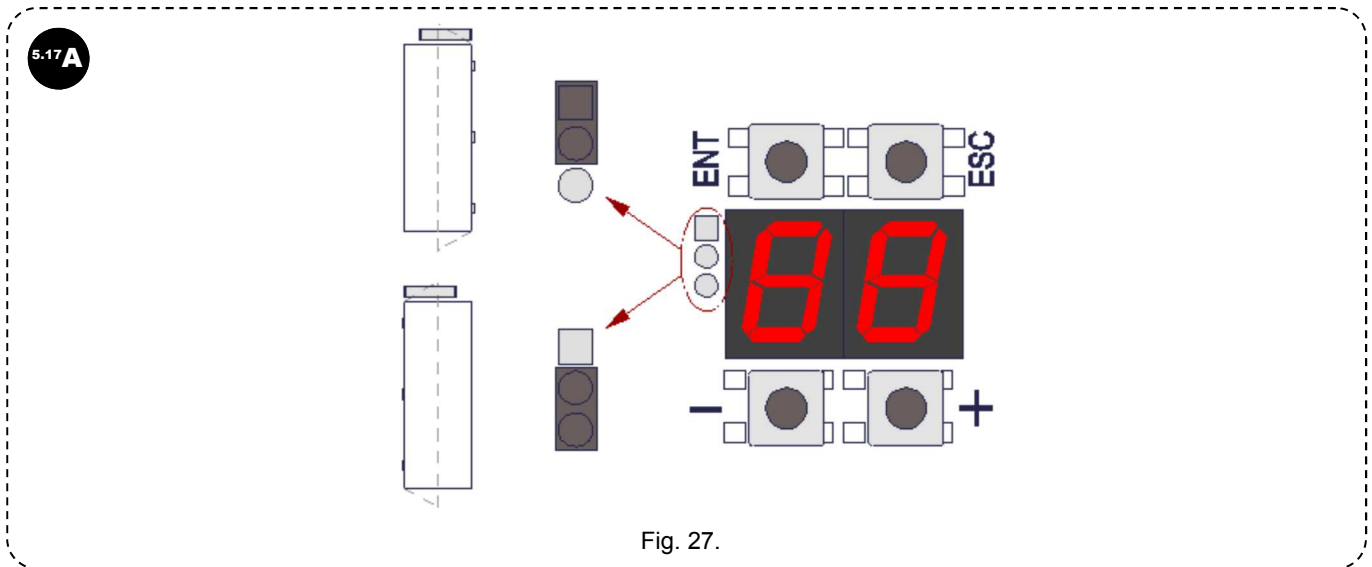


Fig. 27.

## 6. COMMISSIONING

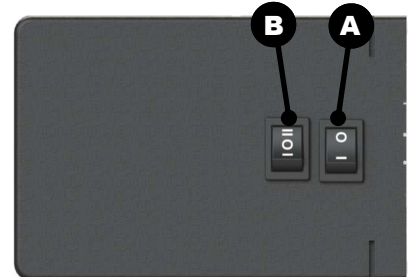
### 6.1 Start-Up

- Turn switch (A) OFF.



**WARNING:** Check again whether DipSwitch has been configured correctly, especially No. 1 and No. 5. Check again whether the contacts and KEY, SAFE CLOSE and SAFE OPEN are correctly connected or, if not to be used, they are connected to COM.

- Connect the operator power supply to the 230v mains supply.
- Turn switch (A) to ON.
- Check that the display comes on and that E6 is shown: if necessary, configure the jumper to see the display correctly (See Fig. 27);
- 5. Select LS with the [+] and [-] keys and press [ENT]; when [--] is shown, press [ENT] again for 5 seconds to confirm; when [--] is no longer displayed, release the [ENT] key: the process for acquiring the supervised sensors will begin (see section section 5.15 on page 28).
- 6. If an electronic lock is installed, configure the parameters 10/11/12/14 (see sections 'Display Management' and/or 'Electronic Lock Management')
- 7. Using the [+] or [-] key, select LP and press [ENT]; when [--] is shown, press [ENT] again for 5 seconds to confirm the command; when [--] is no longer displayed, release the [ENT] key. The door will open and the parameters acquisition cycle will begin.



**WARNING:** During the door opening process, block the leaf's opening degree to the desired position to set the end of its run. Immediately after, the door will close completely and the display will flash CL. Once the door reaches the completely closed position and CL is no longer flashing, you may check that the operation is working by pressing the [ENT] key: the door will open and close normally. The opening angle during normal operation is reduced with respect to that detected during the acquisition of the targets, allowing it to operate without completing its mechanical run. The percentage reduction is defined by parameter No. 33 each time that it is switched on again (or the RESET manoeuvre is executed); the device will go to the completely closed position. Following that, the first manoeuvre will be carried out at a reduced speed.

## 6.2 Management and Use

### 6.2.1 Operational Logic Settings

LOGIC SETTING		DESCRIPTION
LOW-ENERGY		In all operating modes (excluding Stop Closed) a motorised reduced-speed opening (velocity Low Energy) and an augmented stop period (disabled persons stop time) can be achieved using the disabled persons opening controls (in the configuration input [AUX IN 1 configuring the parameter 15=0, section 'Management of the Operational Parameters-display']). Closing will be carried out by the spring with obstacle control.
PUSH & GO:		Manually moving the stationary leaf when in the closed position will automatically create an opening and closing manoeuvre. To configure this logic setting it is necessary to set DIP 3 = ON.
SAFE CLOSE		If the safety sensor mounted on the closing leaf and which is connected to the electronic card (in Safe Close mode) detects an obstacle during the closing phase, it interrupts and quickly reverses the direction of movement of the leaf, opening it completely at the standard speed and closing it again normally. If the detection takes place during the opening phase, the system does not react and the door continues along its course.
SAFE OPEN		If the safety sensor mounted on the closing leaf and which is connected to the electronic card (in Safe Open mode) detects an obstacle during the opening phase, it interrupts the movement of the leaf; if later it detects nothing, the leaf returns to its opening movement and then closes at normal speed. If the detection takes place during the closing phase. the system does not react and the door continues along its course.
Operational Logic Settings	Manual	With this logic setting the controls connected to START1 and START2 are disabled, allowing manual opening and closing. The opening and closing safety sensors are active only in the case when motorised opening is required for disabled persons.
	1 radar	EXIT RADAR ONLY: Only controls the START2 input on the electronic control card. A signal sent from the sensor connected to this input causes the opening and subsequent closing of the leaf. Locking the door with a lock or motor (in cases where a lock has not been chosen) in the closed position, depends on the type of lock used and the configuration of parameter 14.
	2 radars	ENTRY AND EXIT RADAR: Both inputs START1 and START2 on the electronic control card are enabled. A signal sent from a connected sensor to one of the inputs causes the opening and subsequent closing of the leaf. Locking the door with a lock or motor (in cases where a lock has not been chosen) in the closed position, depends on the type of lock used and the configuration of parameter 14.
	Stop closed	The door is locked in the closed position. The device controls the complete closing of the leaf. In this logic setting the inputs START1 and START2 on the electronic control card cannot be controlled and, where present, the electronic lock locks the leaf. If there is no electronic lock, the leaf is locked by the motor.
	Stop open	The door is locked in the open position. The device controls the complete opening of the leaf. In this logic setting the inputs START1 and START2 on the electronic control card cannot be controlled.
Anti-crushing during opening		During the opening phase, the leaf encounters an obstacle preventing movement. The operator interrupts the movement of the leaf for a few seconds and slowly closes it completely. The sensitivity value can be regulated using parameter 06 (see section 'Management of the Operational Parameters-display').
Anti-crushing during closing		During the closing phase, the leaf encounters an obstacle preventing movement. The operator immediately inverts the leaf movement and opens it completely. The subsequent closing is performed slowly. The sensitivity value can be regulated using parameter 06 (see section 'Management of the Operational Parameters-display').

## 6.2.2 Management of Electronic Locks

ID	DESCRIPTION	SETTING	DEFAULT
09	Electronic lock control voltage <sup>(1)</sup>	0 = 12 VDC 1 = 24 VDC	0
10	Types of electronic lock <sup>(2)</sup>	0 = Not used 1 = Electronic lock with mechanical reset when closed again 2 = Electromagnetic (maglock) (24VDC only) 3 = Electronic lock 4 = Motorised locked 5 = Electronic lock with automatic reset 6 = Magnetic (maglock) with delay (24VDC only)	0
11	Impulse duration or opening delay <sup>(3)</sup>	RANGE: 0 ÷ 9 The time depends on the type of electronic lock	2
12	Closing force of the electronic lock <sup>(4)</sup>	RANGE: 0 (min.) ÷ 9 (max.)	5
14	Electronic lock activation according to the selected logic <sup>(5)</sup>	0 = Deactivated 1 = One Radar 2 = Two Radars 3 = One Radar and two Radars	3
15	Configuration of auxiliary input 1	4 = Lock Release Feedback <sup>(6)</sup> 5 = Lock Release Control <sup>(7)</sup>	0
16	Configuration of auxiliary input 2	4 = Lock Release Feedback <sup>(6)</sup> 5 = Lock Release Control <sup>(7)</sup>	1
17	Configuration of auxiliary output 1	5 = Lock control repetition	0
18	Configuration of auxiliary output 2	5 = Lock control repetition	1

<sup>(1)</sup> The lock can be operated with 12 and 24 VDC (Parameter 09) with a maximum power of 15 W. Maglocks only operate with 24 VDC.

<sup>(2)</sup> The following types of locks are expected to be compatible:

TYPE	PAR.	VALUE	OPERATION
1 - ELECTRONIC LOCK WITH MECHANICAL RESET WHEN CLOSED AGAIN	10	1	See Fig. 28 - Electronic lock that when powered in impulsive mode, the leaf is unlocked and the lock is automatically reset when it closes. It requires a door jolt freeing device in order to make it easier to unlock the leaf.
	11	RANGE: 0÷9 [t=50÷500 ms]	
2 - ELECTRO-MAGNET (MAGLOCK)	10	2	See Fig. 29 - If the magnet is powered, it keeps the door locked; when disconnected, the door may move freely. It does not require a door jolt freeing device. The magnet is powered again before the door is fully closed to enable it to close completely.
	11	RANGE: 0÷9 [t=200÷2000 ms]	
3 - ELECTRONIC LOCK	10	3	See Fig. 30 - Electronic lock that when powered, moves a bolt which keeps the door locked. When disconnected, the bolt goes up and the leaf can move freely. It requires a door jolt freeing device in order to make it easier to unlock the leaf. The magnet is powered again when the door is closed.
	11	RANGE: 0÷9 [t=200÷2000 ms]	
4 - MOTORISED LOCK	10	4	See Fig. 31 - Electronic lock with electronic starter motor; when powered, it retracts the locking arm allowing the leaf to move freely. It requires a door jolt freeing device in order to make it easier to unlock the leaf. The electronic lock disconnects when the door is closed.
	11	RANGE: 0÷9 [t=500÷5000 ms]	

TYPE	PAR.	VALUE	OPERATION
5 - ELECTRONIC LOCK WITH AUTOMATIC RESET	10	5	See Fig. 32 - Electronic lock which, when powered, frees the leaf to move. It resets by cutting power to the lock when the leaf opens more than 10°. It requires a door jolt freeing device in order to make it easier to unlock the leaf.
	11	RANGE: 0÷9 [t=100÷1000 ms]	
6 - ELECTRO-MAGNETIC (MAGLOCK) WITH DELAY	10	6	See Fig. 33 - A magnet that, when powered, keeps the door locked closed and, when disconnected, frees it to move. It does not require a door jolt freeing device. The magnet is powered again after the leaf is completely closed.
	11	RANGE: 0÷9 [t=200÷2000 ms]	

6.2 A

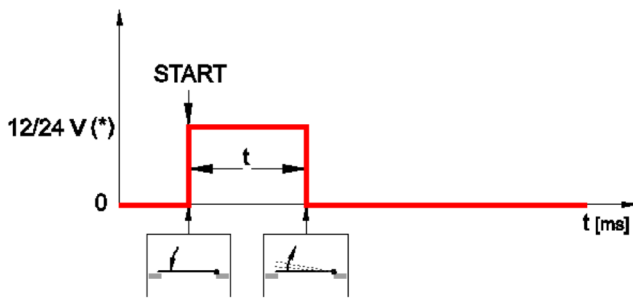


Fig. 28.

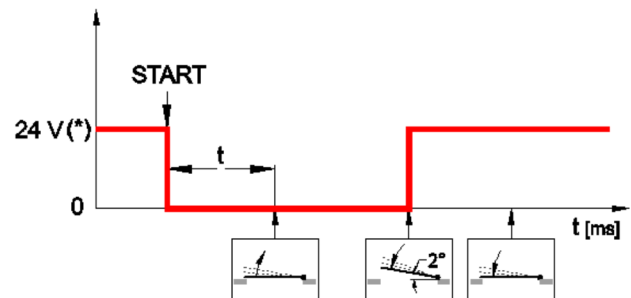


Fig. 29.

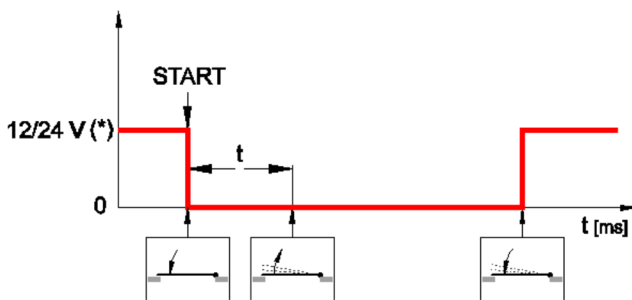


Fig. 30.

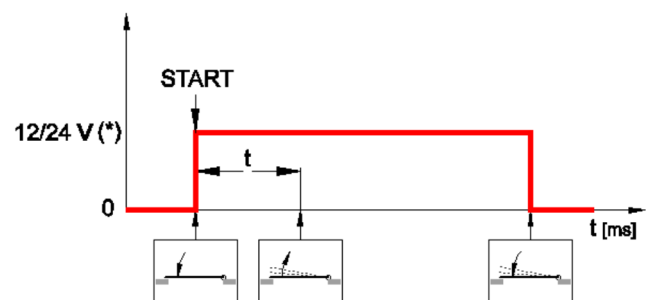


Fig. 31.

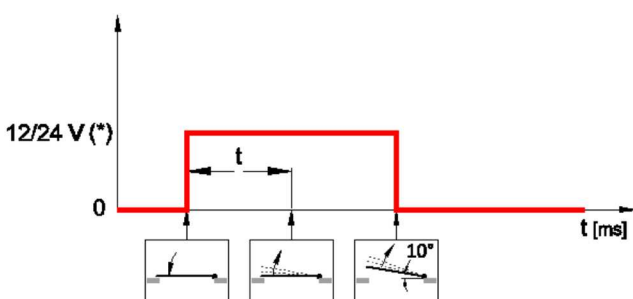


Fig. 32.

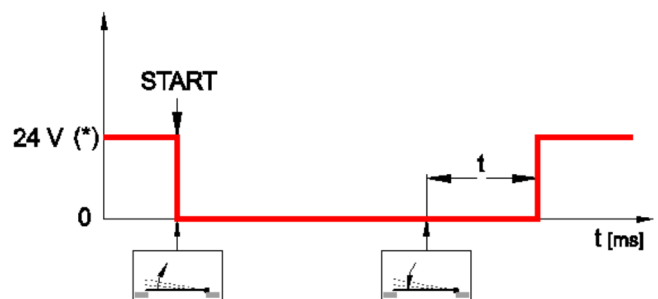


Fig. 33.

<sup>(3)</sup> For some types of electronic locks, the duration of the impulse can be modified to activate or delay the opening of the leaf with the release control. The parameter has a different significance and level of adjustment according to the type of electronic lock configured using parameter 10.

<sup>(4)</sup> To guarantee the electronic lock closes again, the closing force can be adjusted.

<sup>(5)</sup> The use of the lock (for lock types 2-3-4-6) can be limited only if certain types of operational logic settings have been selected.

<sup>(6)</sup> A lock feedback control can be used that indicates the lock release state: after the unlock order is given, the central electronics wait for permission from the lock before starting to open. If this does not arrive within a maximum set time, the operator opens the door anyway.

<sup>(7)</sup> One of the auxiliary inputs may be used as a control to manually release the lock working in parallel with the automatic release, which can be used to open the door manually.

### 6.2.3 Program Switch Connector

To connect the program switch (Fig. 21 F), use a shielded cable with 4 0.22 mm wires, not connected to the shield. For connections, refer to Fig. 30.

For more information on the use of multi-logical program switches, refer to the operating instructions.

### 6.2.4 External Peripherals Connector (15 VDC)

The real power supply value may vary from 15 VDC  $\pm$  5% depending on the resistive load connected to these terminals.

OUT Terminal / 15 VDC : POSITIVE ( + ) COM Terminal: NEGATIVE ( - )



**WARNING:** Do not invert the power supply polarity. The LED lit up indicates normal power of 15 V. If it is off, check that there is mains and/or power.

### 6.2.5 Double Vector Connection and Use

The Double VECTOR is a connection between two operators for a double swing leaf.

It can be connected in two ways:

1. With two individual VECTORS, each installed in one leaf, but making the connection between the two;
2. With two individual VECTORS joined together with a prolongation kit, as shown in Fig. 34 (OPTIONAL).

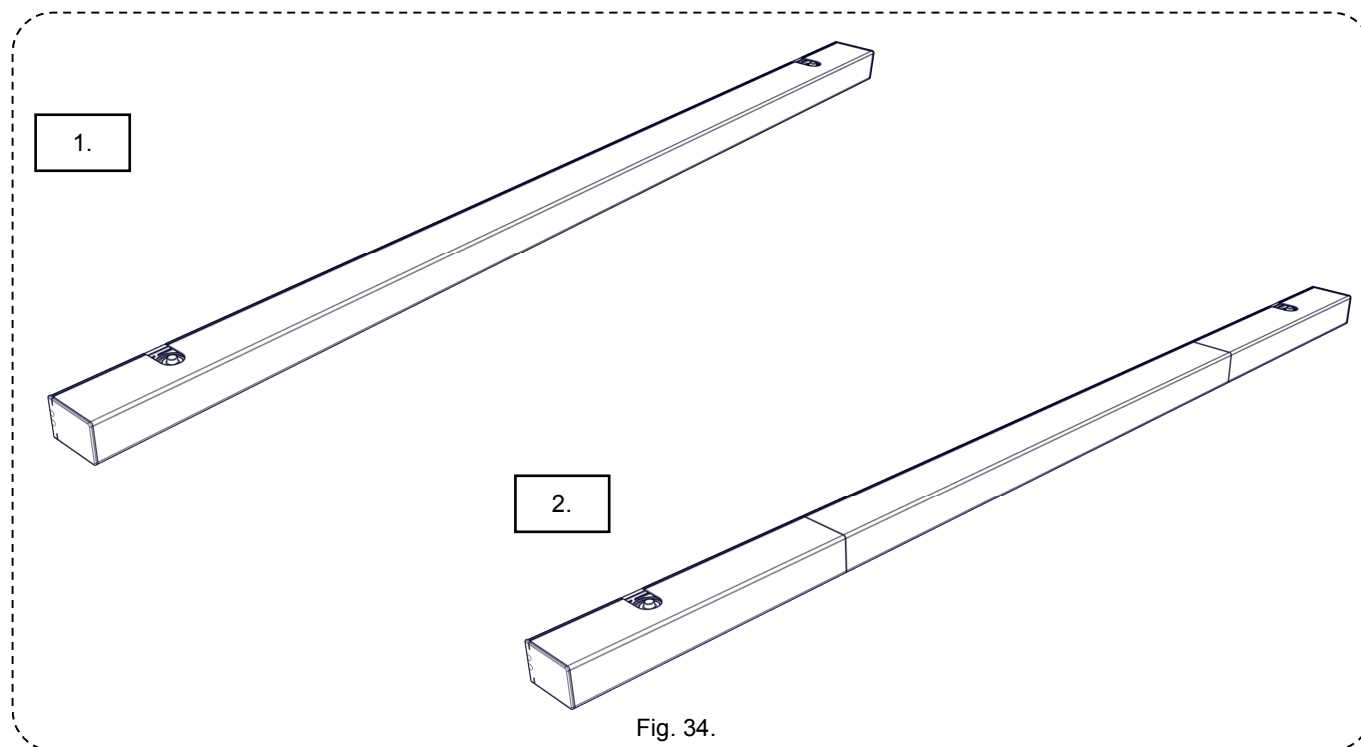
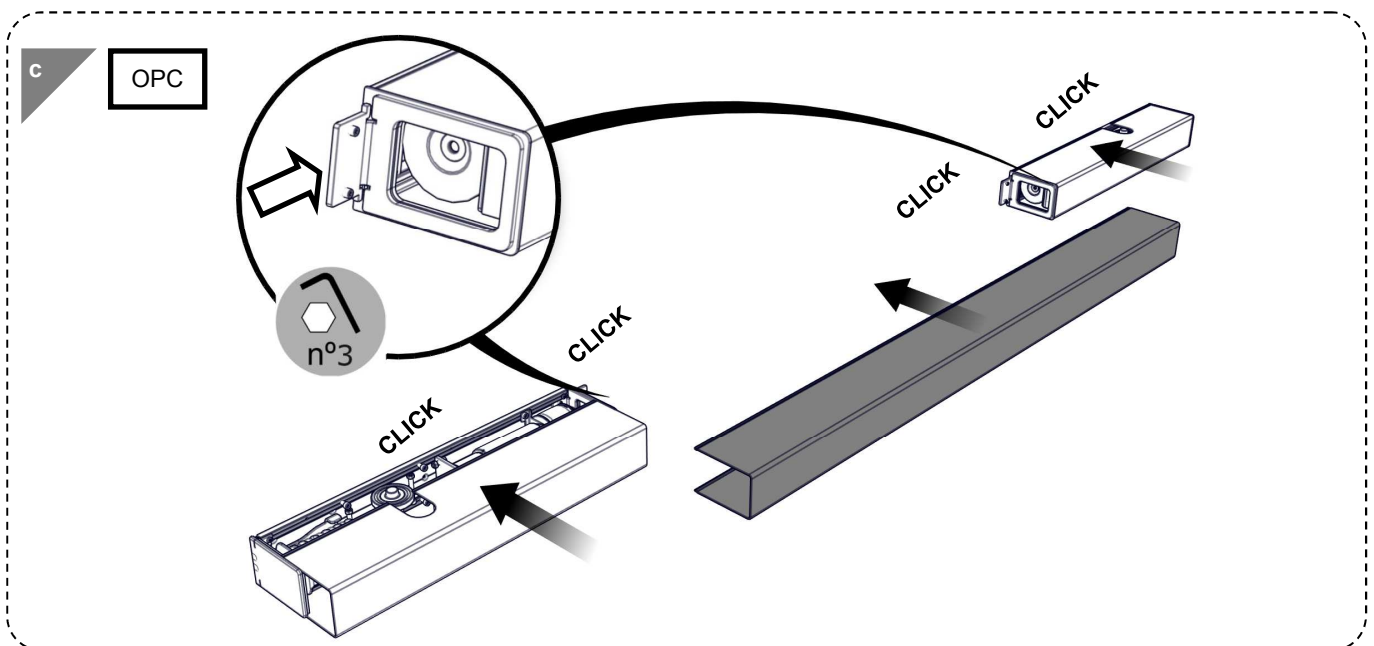
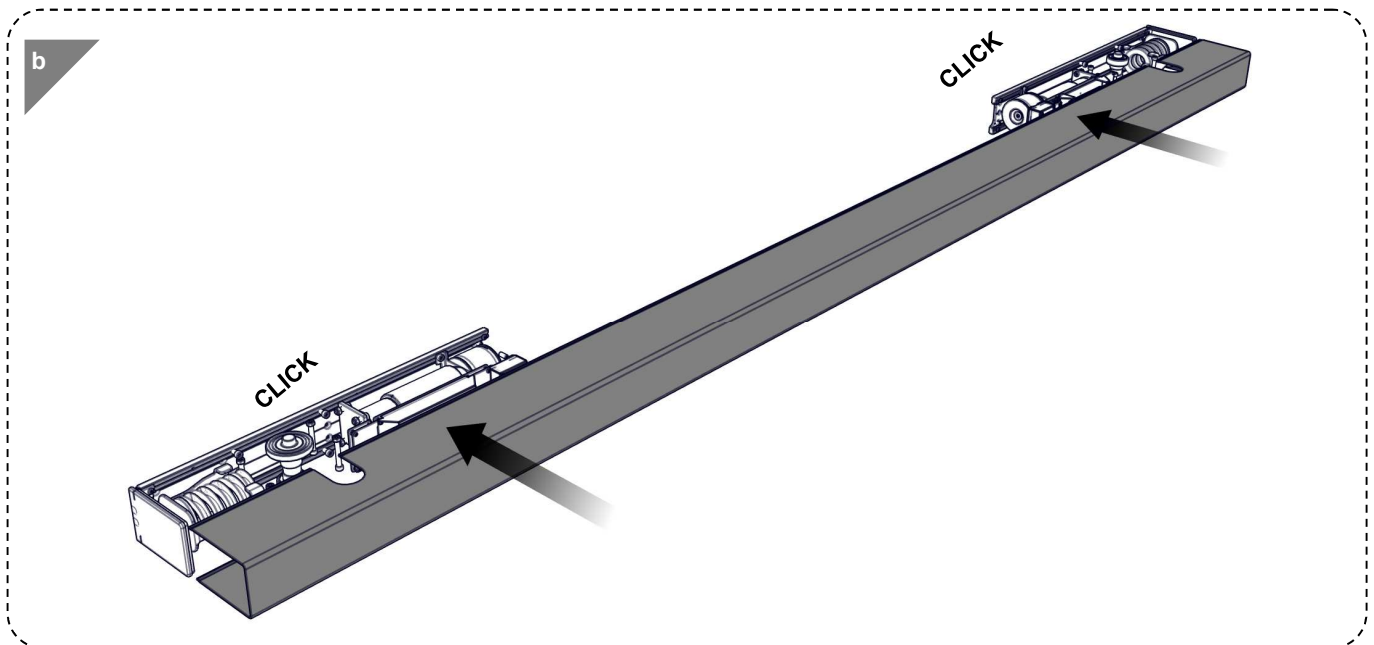
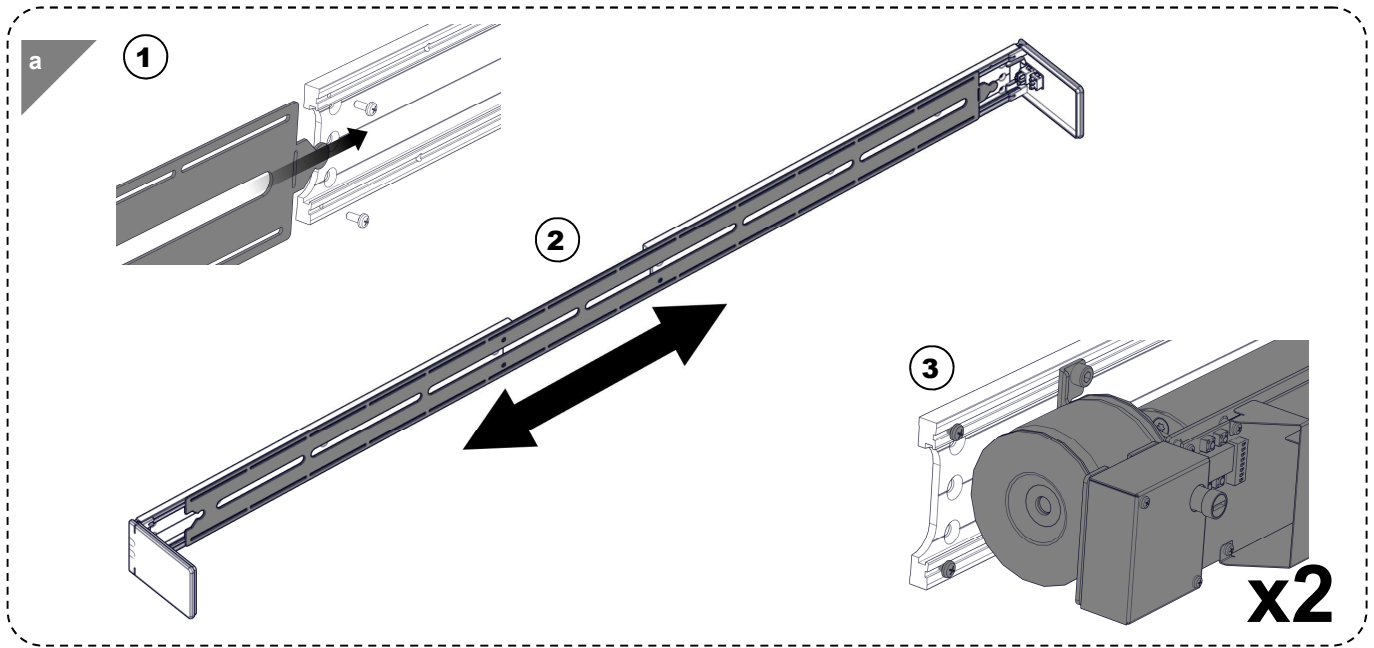


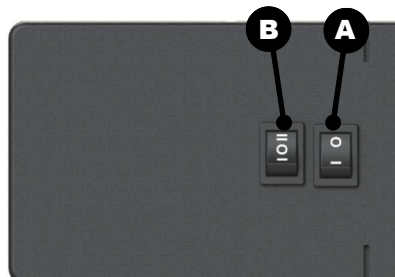
Fig. 34.

The two operators, if not connected together, are independent and can function as individual operators. Using the connection between the program switch terminal plates, they communicate with each other and interchange the information necessary for the correct operation of double leaves. The base concept consists of determining a 'Master' card that compiles the operational logic by following precise rules, and a 'Slave' card that carries out the orders of the Master.



To install the Double VECTOR with two individual Vectors, follow the steps below:

1. Disassemble all of the components attached to the bases of each operator.
2. Attach the bases of each operator to the wall making the necessary holes for each type of screw used in mounting the operator; follow the instructions and the 'Positioning Levels' indicated in the previous chapters, depending on the type of arm to be used.
3. Connect the two program switch terminals so the two cards can communicate and the operator functions correctly. (Fig. 33)
4. Re-assemble all the components for each one of the Vectors disconnecting the logic settings program switch from the slave operator (B).



To install the Double VECTOR with the prolongation kit, follow the steps below:

1. Disassemble all of the components attached to the main profiles of each operator.
2. Support against a flat surface the two operator profiles by the ends and against the joining profile, centring them.
3. Insert into the main profile of each operator the lower tab of the joining heads, located at the ends of the central profile, such that the three profiles are aligned (See Fig. 34)



**WARNING:** Keep the profiles oriented as indicated in Fig. 34, so that the black heads are placed at the ends.

4. Press the pins (Fig. 34) so that the profiles are joined together.
5. Place the profiles on the wall and make holes suitable for the fixing screws used, following the instructions and the 'Positioning Levels' set forth in the previous chapters according to the type of arm to be used.
6. Connect the two program switch terminal plates so the two cards can communicate and so that the operator operates correctly. (Fig. 33)
7. Re-assemble all the components for each one of the Vectors; to do so, insert into the hinge ends of the Master operator the head located on the prolongation kit with the on switch and logic settings program switch, while on the opposite part only the head with the on switch.



**WARNING:** In both cases, select the Master leaf and the Slave leaf before making the connections.

By convention:

MASTER LEAF: First to open, last to close (in the case of a delay) SLAVE LEAF: Last to open, First to close (in the case of a delay)  
In both cases, to configure the electronic cards, it is necessary to follow the steps below:

1. It is necessary to configure the corresponding electronic cards using display settings (see section 'Managing Operating Parameters of the Display'):
  - Configure parameter 13 =1 on the MASTER card.
  - Configure parameter 13 =2 on the SLAVE card.

Even for synchronised movement (the leaves open and close at the same time without any delay), it is always necessary to configure one Master operator and another one as Slave.



**WARNING:** The two operators must be connected on the same power line and there should be no switches or fuses between the two operators. The existing peripherals should be connected (KEY, START 1 y START 2) only to the MASTER. The safety sensors (SAFE OPEN and SAFE CLOSE), in contrast, should be connected and controlled separately by both cards.

2. For double leaf with a central stop, it is necessary to configure a delay in the movement of the leaves.  
During opening, normally a lesser delay is sufficient, mainly for 'aesthetic' reasons (as a maximum, one leaf 'pushes' the other a little during the first seconds of opening). When closing, where it is fundamental that one leaf closes before the other to prevent rubbing, the delay is longer.

If the two leaves are SYNCHRONISED:

- configure only parameter 21 = 0 and parameter 22 = 0 on the MASTER card;

If the two leaves are NOT SYNCHRONISED:

- configure parameter 21 and parameter 22 only on the MASTER card to a value greater than 0.

3. To activate the operators, repeat the steps indicated in the section 'Commissioning', ensuring that the acquisition of the parameters (points 6 and 7) is performed only from the card configured as MASTER.



**WARNING:** When starting the parameter acquisition task, the Master door begins first. Therefore, it is necessary to stop the leaf during the next opening it performs. Immediately, the Slave door will start to move; for this, it is also necessary to stop the leaf at the maximum opening required. Immediately afterwards, both doors will close completely and the display will flash CL. When both leaves are closed, CL will remain on and the door will be ready for operation.

The program switch (optional) is connected solely and exclusively to the Master card using the same terminal plate used to connect the two operators together. If the parameters are modified using the program switch, these are identical for both cards. (Fig. 35) The closing operation begins from the output of both leaves completely open. Each time that a leaf reaches the completely open position before the other, it will wait until the second one has also reached the completely-open position. The inverse (START 1 or 2, SAFE CLOSE, anti-crushing) occurs at the same time for both leaves.

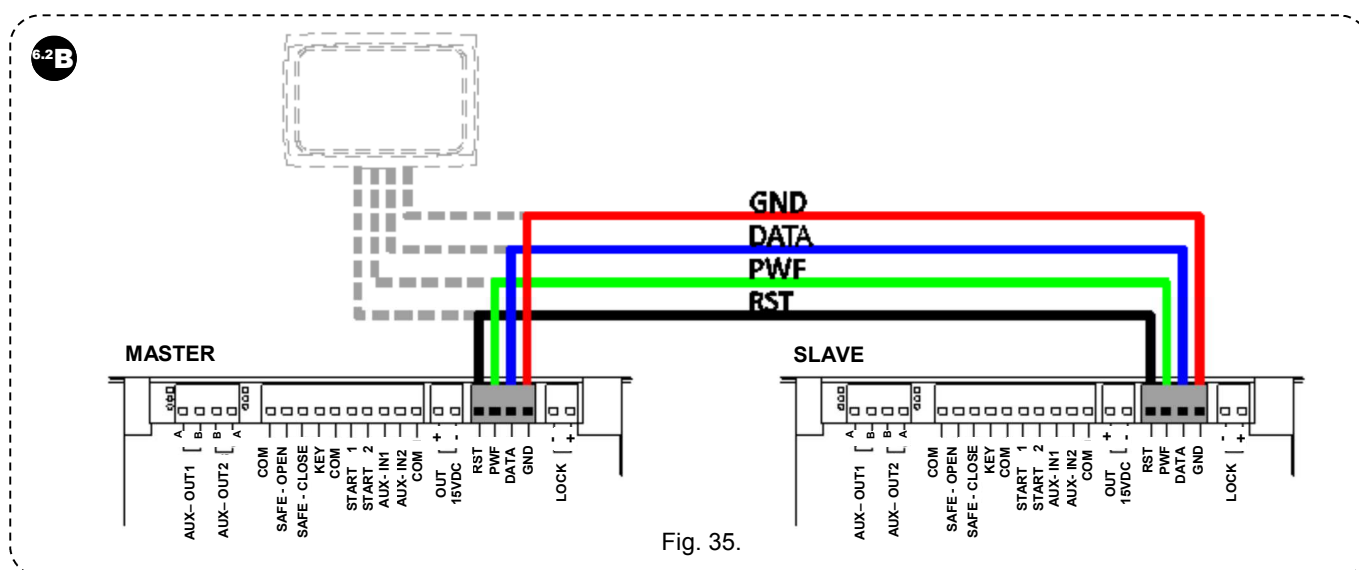
Control of the electronic lock with its corresponding operational logic settings is allowed on both cards, exactly as for individual operators.

The Push&Go function can be activated in both operators, in exactly the same way as for individual operators. When any attempt to open a leaf is detected by either operator, it will cause both leaves to open.

The anti-crushing and obstacle detection is controlled by both cards, separately and independently.

If anti crushing protection is activated on one card during the closing phase, it will interrupt the movement of both leaves and they will slowly open completely.

If anti-crushing protection is activated on one card during opening, it will interrupt the movement of the leaf in question and will slowly close it completely. The other leaf meanwhile, having reached the completely open position, will wait for the leaf in question before closing.





## 6.2.6 Interlocking Connection and Use

The VECTOR operator central control is set to be able to operate in interlocking mode through a connection to an electronic central control of the same class. With the interlocking function, the opening of a door can be done independently, if the other is not moving, that is, if it is not in a movement phase. To interlock two operators follow these steps (Fig. 33):

- Connect the terminal AUX IN 1 on the card WITH PRIORITY to the terminal AUX OUT 1 - A on the card WITHOUT PRIORITY
- Connect the terminal COM on the card WITH PRIORITY to the terminal AUX OUT 1 -B on the card WITHOUT PRIORITY
- Connect the terminal AUX OUT 1- A on the card WITH PRIORITY to the terminal AUX IN 1 on the card WITHOUT PRIORITY
- Connect the terminal AUX OUT 1- B on the card WITH PRIORITY to the terminal COM on the card WITHOUT PRIORITY

Use a 4x0.22 shielded wire for the connections, and do not connect the screen.

When an opening request is simultaneously received from the sensors on both doors, it is necessary to set an opening priority; to do so, set a door in WITH PRIORITY mode and the other in WITHOUT PRIORITY mode, using the configuration in each display (see section 'Managing Operating Parameters of the Display'):

- On the card WITH PRIORITY, configure parameter 15 =2
- On the card WITH PRIORITY, configure the parameter 17 =1
- On the card WITHOUT PRIORITY, configure parameter 15 =3
- On the card WITHOUT PRIORITY, configure parameter 17 =1

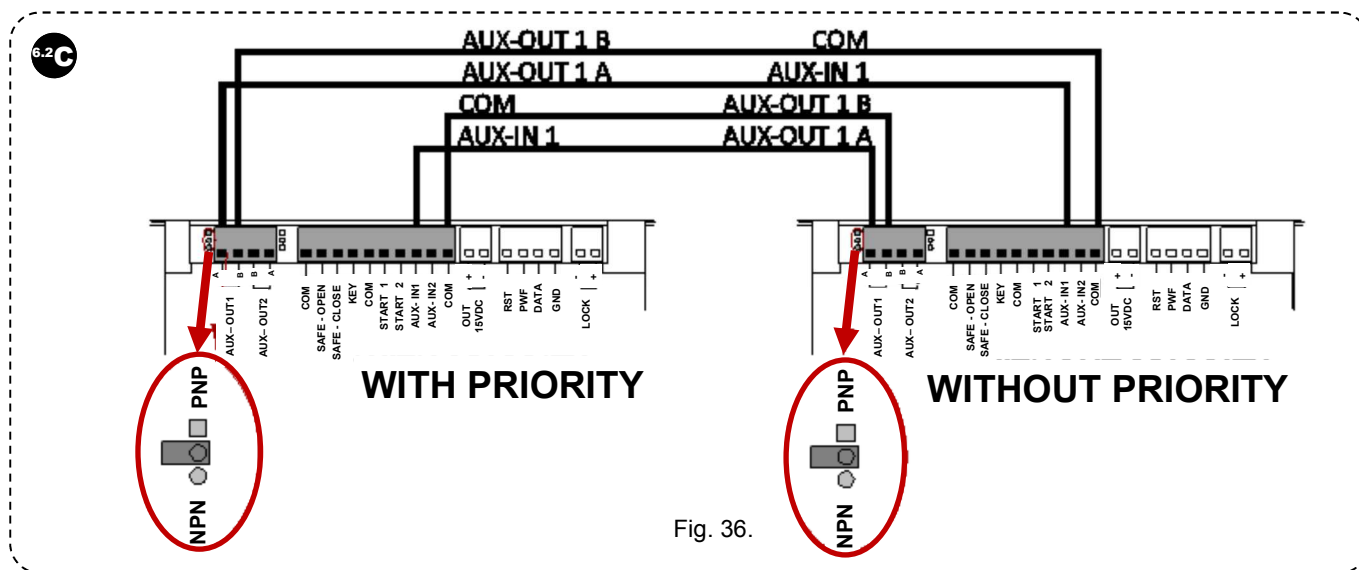
If there are simultaneous opening signals, the door WITH PRIORITY mode set will open.



**WARNING:** For interlocking between two Double VECTORS, the connection will be made between the two MASTER cards, such that one of the two is considered to be WITH PRIORITY and the other WITHOUT PRIORITY for the interlocking to function.



**WARNING:** Remove the jumper located close to the terminal plate on the side of the AUX OUT-1 connector, either the card with priority or the card without priority (Fig. 36). Installation:



## 6.2.7 Normal Stop and Emergency Stop

The normal stop for **manusa** automatic doors and the starting-up process are carried out automatically. Nevertheless, an optional emergency stop can be installed.

## 7 SAFETY

### 7.1 General Safety Instructions

- Before performing any type of task on the machine, the work area must be checked :
  - Keep the area clean and tidy.
  - Ensure there is sufficient light.
  - Ensure the absence of flammable liquids and gases in and around the work area.
  - Clearly signpost the work area to keep away all the people not involved in the work.
- Driving and the use of lifting equipment and accessories:
  - Do not drive lifting equipment over people and/or work areas.
  - Use lifting and maintenance equipment correctly, with gentle movements and never overload.
  - Transport suspended loads through areas of total visibility.
- Wear suitable clothing:
  - Do not wear baggy clothes, jewellery, ties or other items that may get caught in moving parts.
  - Long hair must be tied back.
  - Make use of the necessary PPE (Personal Protection Equipment).
- Avoid stretching:
  - Avoid postures that cause fatigue.
  - Stand firmly on the ground.
  - Never use any part of the machine as a support for people or objects.
- Always be alert:
  - Be vigilant.
  - Use common sense.

### 7.2 Required Personal Protection Equipment

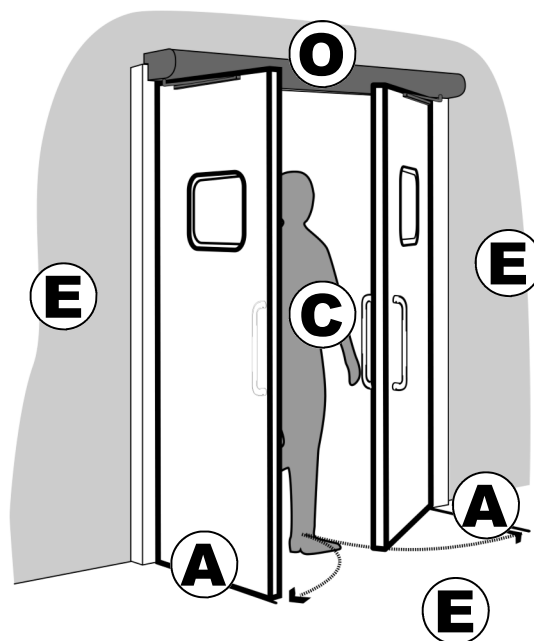
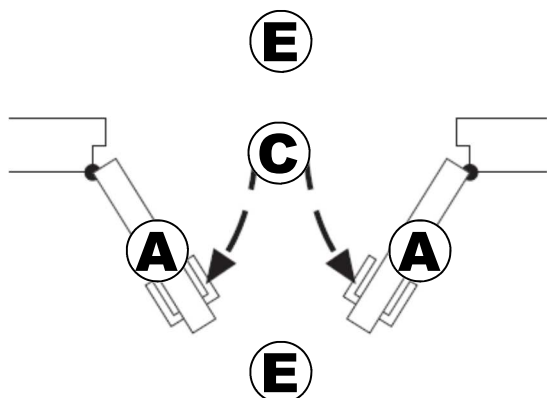
The PPE necessary to safely perform installation and maintenance tasks is:

- Protective gloves.
- Protective shoes against mechanical hazards.

### 7.3 Identifying Dangerous Areas in the Machine

The opening and closing areas and the operator area have moving parts; they are considered dangerous areas and it is important to know them:

- A** OPENING AREA
- C** CLOSING AREA
- O** OPERATOR AREA
- E** DOOR AREA



## 7.4 Risk Assessment

Below, there is an outline of the different hazardous situations that may arise with our machines after leaving the factory, either during the installation process, commissioning, maintenance, adjustment or disassembly. There is also reference to the risk minimisation measures that must be taken during the aforementioned phases of the machine's life:

MECHANICAL HAZARDS		
Risk	Dangerous Area	Risk Prevention Measures
<b>Structural</b>	Machine area	Assess the suitability of the structure where the machine is going to be installed: a levelled floor with sufficient load capacity, no obstacles in the transit area, firm ground free of irregularities, etc.
<b>Stability</b>	Machine area	Attach the different machine parts in a stable way, using appropriate materials and strictly adhering to the indications in this manual
<b>Shearing, Cut or Severing</b>	Closing area	<ul style="list-style-type: none"> <li>Do not use float glass to manufacture/repair the leaves of the machine.</li> <li>Check that there are no burred or sharp edges on any of the different door parts.</li> </ul>
<b>Dragging and entrapment</b>	Inside the operator	Do not manipulate the interior of the operator while it is in operation.
<b>Impact and crushing</b>	Closing area	<ul style="list-style-type: none"> <li>Adjust the closing force of the machine to a value appropriate for its operation.</li> <li>Verify the correct operation of the safety photocell barriers.</li> </ul>
<b>Crushing</b>	Machine area	Exercise great caution when placing the leaf in its final location.
ELECTRICAL HAZARDS		
Hazard	Dangerous Area	Risk Prevention Measures
<b>Direct or indirect contact</b>	Inside the operator	<ul style="list-style-type: none"> <li>Use components and electrical materials with CE marking.</li> <li>Connect the electrical connections, the mains connection, the earth connection and verify all connections following the indications in the wiring and connections manual.</li> <li>Ensure the continuity of the conductors by using cables with sharp edges.</li> <li>Perform all maintenance and adjustment tasks by strictly adhering to the specifications in this manual.</li> </ul>
<b>Electrical energy dispersal</b>	Operator	<ul style="list-style-type: none"> <li>Follow the technical instructions applicable under the low-voltage electrotechnical regulations.</li> <li>Connect the electrical connections, the mains connection, the earth connection and verify all connections following the indications in the wiring and connections manual.</li> </ul>
<b>Electromagnetic compatibility hazards</b>	Operator	<ul style="list-style-type: none"> <li>Use components and electrical materials with CE marking.</li> <li>Connect the electrical connections, the mains connection, the earth connection and verify all connections following the indications in the assembly manual.</li> </ul>
HAZARDS RELATED TO CONTROL AND SAFETY DEVICES		
Hazard	Dangerous Area	Risk Prevention Measures
<b>Opening controls</b>	Door area	<ul style="list-style-type: none"> <li>If manual controls are installed, place them correctly, protected from possible unauthorised or malicious use.</li> <li>Check and install the photocells following the instructions in the assembly, connection and wiring manuals.</li> </ul>
<b>Lack of power</b>	Door area	<ul style="list-style-type: none"> <li>Check that the door operates safely again after the power supply has been interrupted.</li> </ul>
<b>Confinement</b>	Door area	<ul style="list-style-type: none"> <li>Check that the panic break-out system works properly and ensure that the door opens after power supply failure.</li> </ul>

## 7.5 Safety Regulations

The safety-improvement measures implemented during the design of the **manusa** unit are:

- Easy operation.
- Limited number of tools and equipment.
- Easy monitoring.
- Accessibility to internal parts.
- The operators are protected by a metal chassis avoiding unauthorised unauthorised or malicious manipulation
- There are no loose pieces or fastenings coming from the chassis opening.
- Once the chassis is open, the cable to connect to the power supply is easily accessible.

## 8 MAINTENANCE AND INSPECTION

### 8.1 General Maintenance to Be Performed by the User

The user's maintenance duties are limited, exclusively, to keeping the door area clean and tidy.

### 8.2 Maintenance Tasks Exclusively Reserved for the Manufacturer

Installation, maintenance, adjustment and repair tasks should only be carried out by technical staff authorised by **manusa**.



All maintenance operations, apart from functional tests, must be carried out after disconnecting the power from the mains.

If the mains cable is damaged, it needs to be replaced by a special set or cable, supplied by the manufacturer or by your after-sales services.

Only original **manusa** spare parts must be used.

## 9 TROUBLESHOOTING

If the program manager detects anomalies in the door operation, the operator includes various protective measures to prevent major system damage.

The different system errors are shown in 7 segment displays to signal operating conditions:

SIGNAL	DESCRIPTION
OP on	Door open
OP Flashing	Door opening
CL on	Door closed
CL Flashing	Door closing
E1	Error derived from not initiating the system parameters (self-learning)
E2	Device type (Dip 5), or arm type (Dip 1 or configuration of the arm in the passive brake card) selection error
E3/E4	Maximum current threshold exceeded error (OVER CURRENT)
E6	Supervised sensors error
E8	Coder connection error

In the majority of cases, **to resume door operation it will be enough to select the door open mode and then the automatic door mode**. If after this operation the anomaly persists, it will be necessary to resort to a **manusa** authorised service technician.

## 10 APPENDIXES

## 10.1 CE Declaration of Conformity

# manusa

## DECLARATION OF CONFORMITY

Automatic doors

**Manufacturer:** MANUSA DOOR SYSTEMS

**Address:** Av. Vía Augusta, 85-87, 6ª planta  
08174 – Sant Cugat del Vallès  
Barcelona, Spain  
Tel 902 321 400  
Fax 902 321 450  
www.manusa.com

**Product:** Operator for pedestrian automatic swing doors

**Model:** VECTOR  
Ref: A06473

We herein declare, under our sole responsibility, that the products listed and referenced comply with the following European Directives:

**2006/42/CE** Machinery Directive  
**305/2011/CE** Construction Products Regulation  
**2004/108/CE** Electromagnetic Compatibility Directive  
**2006/95/CE** Low Voltage Directive

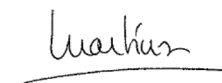
It has also implemented the following harmonised standards and technical specifications:

**Technical Building Code.** Basic Document SUA. Operation Safety and Accessibility  
**Technical Building Code.** Basic Document SI. Fire Safety  
**UNE 85121 EX**  
**UNE-EN 61000, 6-2, 6-3**  
**UNE-EN 60335-2-103**  
**UNE EN 16005**

The CE marking is included in the product to indicate conformity with the essential requirements of the applicable directives. This declaration of conformity means that the machine installation and start-up has been made in accordance with the assembly, operation and maintenance instructions from the manufacturer.



Josep Mª Guilera  
CEO



Francesca Martínez  
Product Standardization

Sant Cugat del Vallès, June 2017

## 10.2 Installation Checklist

Compliance with safety requirements is a primary objective for **manusa**, given that hundreds of thousands of people in more than 70 countries pass through our doors daily.

Risk assessment for **manusa** doors is not limited to the design and industrialisation activities carried out at our factory, but encompasses the entire useful life of our products, guaranteeing the health and safety of the users at each stage of the lifecycle of the door.

Please place here the identifying sticker for the installation

Mechanical/Electrical Elements	Compliance	Non-compliance	Not applicable	Observations
Fixing the operator on-site				
Position of the Dragging / Pushing operator				
Cover and external caps				
Axis and arm				
Fasteners and suspension of leaves				
Spring load level (EN4-EN5-EN6)				
Condition of the leaves				
Wiring				
Low Energy parameter				
Push & Go parameter				
Dragging / Pushing parameter				
Actuator S (spring) / M (motor) parameter				
Acceleration parameter				
Waiting times parameter				
Lock parameter				
Auxiliary I/O configuration				
Peripheral controls (selector/outside key switch...)				

Safety and Control Elements:	Compliance	Non-compliance	Not applicable	Observations
Sistemas de accionamiento (radar...)				
Sensores de seguridad				

Documentation:	Compliance	Non-compliance	Not applicable	Observations
Instructions manual submitted				
Works delivery certificate submitted				
Maintenance contract submitted				

## 10.3 Maintenance Book

### 10.3.1 Action Frequency

Frequency for swing doors: 12 months

<b>Without power (neither electric nor batteries, if present)</b>
Clean and grease turning pieces, hinges, etc.
Check the strength of support points
Adjust screws
<b>With power</b>
Check the correct operation of the safety elements

**NOTA:** Table complies with UNE 85121EX

10.3.2 Actions Log

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer

Date ..... / ..... / ..... PSV No.....

Signed Manusa                      Signed Customer



**10.4 Notes**

The characteristics detailed in this document are for information only and do not represent any contractual obligation. The manufacturer reserves the right to make modifications without prior warning.

**manusa** 

---

**HEAD OFFICE**

Av. Vía Augusta, 85-87, 6<sup>a</sup>  
08174 Sant Cugat del Vallés  
Barcelona - Spain  
Tel. +34 902 321 400  
Fax +34 902 321 450