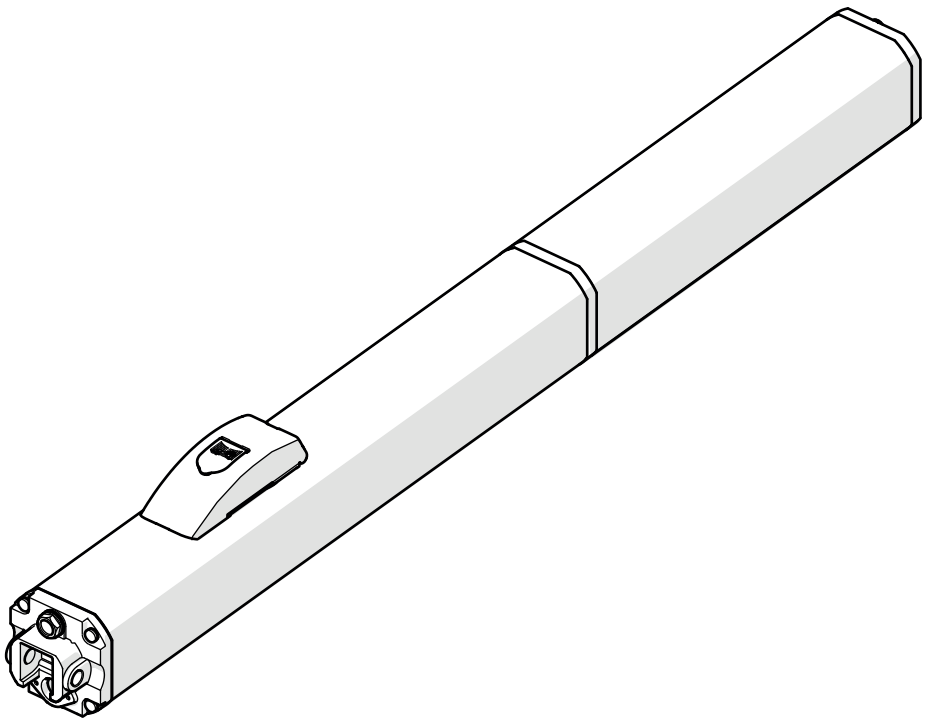
400



Translation of the original instructions

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CONTENTS

TABLES

ADDENDUM

ENGLISH

Translation of the original instructions

1. INTRODUCTION TO THE INSTRUCTION MANUAL

This manual provides the correct procedures and requirements for installing 400 and maintaining it in a safe condition.

When drafting the manual, the results of the risk assessment conducted by FAAC S.p.A. on the entire product life cycle have been taken into account in order to implement effective risk reduction measures.

The following stages of the life cycle of the product have been considered:

- Delivery/handling
- Assembly and installation
- Set-up and commissioning
- Operation
- Maintenance/troubleshooting
- Disposal at the end of the product's life cycle

Risks arising from installation and using the product have been taken into consideration; these include:

- Risks for the installation/maintenance technician (technical personnel)
- Risks for the user of the automation system
- Risks to product integrity (damage)

In Europe, the automation of a gate falls under the Machinery Directive 2006/42/EC and the corresponding harmonised standards. Anyone automating a gate (new or existing) is classified as the Manufacturer of the Machine. They are therefore required by law, among other things, to carry out a risk analysis of the machine (automatic gate in its entirety) and take protective measures to fulfil the essential safety requirements specified in Annex I of the Machinery Directive.

FAAC S.p.A. recommends that you always comply with the EN 12453 standard and in particular that you adopt the safety criteria and devices indicated, without exception, including the dead-man function.

This manual also contains general information and guidelines, which are purely illustrative and not exhaustive, in order to facilitate the activities carried out by the Manufacturer of the Machine in all respects with regard to carrying out the risk analysis and drafting the instructions for use and maintenance of the machine. It should be clearly understood that FAAC S.p.A. accepts no liability for the reliability and/or completeness of the above instructions. As such, the manufacturer of the machine must carry out all the activities required by the Machinery Directive and the corresponding harmonised standards on the basis of the actual condition of the locations and structures where the product 400 will be installed, prior to commissioning the machine. These activities include the analysis of all the risks associated with the machine and subsequent implementation of all safety measures intended to fulfil the essential safety requirements.

This manual contains references to European standards. The automation of a gate must fully comply with any laws, standards and regulations applicable in the country where installation will take place.

Unless otherwise specified, the measurements provided in the instructions are in mm.

1.1 MEANING OF THE SYMBOLS USED

NOTES AND WARNINGS IN THE INSTRUCTIONS

WARNING ELECTRIC SHOCK HAZARD - The operation or stage described must be performed following the supplied instructions and applicable safety regulations.

WARNING, PERSONAL INJURY HAZARD OR RISK OF DAMAGE TO COMPONENTS - The procedure or step described must be carried out following the instructions provided and according to the applicable safety regulations.

WARNING - Details and specifications which must be respected in order to ensure that the system operates correctly.

RECYCLING and DISPOSAL - Components and structural materials, batteries and electronic components must not be disposed of together with household waste. They must be taken to authorised disposal and recycling centres.

For manual lifting, there should be 1 person for every 20 kg to be lifted.

PAGE E.g.: **6** see Page 6.

FIGURE E.g.: **1**-3 see Figure 1 - detail 3.

TABLE E.g.: **1** see Table 1.

§ CHAPTER/SECTION E.g.: §1.1 see section 1.1.

APPENDIX E.g.: **1** see Appendix 1.

SAFETY SIGNS AND SYMBOLS (EN ISO 7010)

GENERIC HAZARD
Personal injury hazard or risk of damage to components.

ELECTROCUTION HAZARD
Risk of electric shock from live parts.

CRUSHING HAZARD
Risk of crushing to the hands/feet due to the presence of heavy parts.

RISK OF SHEARING / TRAPPING OF FINGERS / HANDS Risk of shearing or trapping of fingers and hands due to moving parts and the presence of gears.

CUTTING/AMPUTATION/PIERCING HAZARD
Cutting hazard due to the presence of sharp components or the use of pointed/sharp tools (drill).

RISK OF IMPACT/CRUSHING
Risk of impact or crushing due to moving parts.

FIRE HAZARD Risk of fire due to the use of the welder.

COLLISION WITH FORKLIFT TRUCKS HAZARD
Risk of impact with forklift trucks.

PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment must be worn to protect against hazards (e.g. crushing, cutting, shearing etc.):


Obligation to wear safety footwear.


Obligation to wear mask/goggles to protect the eyes from the risk of fragments due to the use of the drill or welder, or risk of contact with oil, battery fluids or other substances.


Obligation to wear work gloves.


Obligation to wear work clothes without parts that could become caught in moving parts.

MARKINGS ON PACKAGING


Handle with care. Presence of fragile parts.


This way up: DO NOT turn over.


Store away from water and humidity.


Read the instructions.


Obligation to wear safety footwear.

Percent storage humidity.

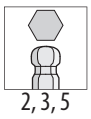
Storage temperature.


RECYCLE and DISPOSE of at authorised waste collection centres.


DO NOT stack pallets.

Maximum number of stacked packages.

TOOLS (type and size)


2, 3, 5 — Hex wrench of the size indicated in figures (6, 8...)

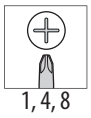

13, 14, 17 — Hex key of the size indicated in figures (6, 8...)


Level


8 — Metal drill bit of the size indicated in figures (6, 8...)


Angle grinder


Welder


1, 4, 8 — PHILLIPS SCREWDRIVERS of the size indicated in figures (6, 8...)

2. SAFETY RECOMMENDATIONS

This product is placed onto the market as "partly completed machinery", therefore it cannot be commissioned until the machine in which it has been incorporated has been identified and declared to conform to the Machinery Directive 2006/42/EC by the actual Manufacturer.

Incorrect installation and/or incorrect use of the product might cause serious harm to people. Read and comply with all the instructions before starting any activity on the product. Keep these instructions for future reference.

Perform installation and other activities adhering to the sequences provided in the instructions manual.

Always comply with all the requirements contained in the instructions and warning tables at the beginning of the paragraphs. Always comply with the safety recommendations.

Only the installer and/or maintenance technician is authorised to work on the automation components. Do not modify the original components in any way.

Close off the work site (even temporarily) and prevent access/transit. EC countries must comply with the legislation that transposes the European Construction Site Directive 92/57/EC.

The installer is responsible for the installation/testing of the automation and for completing the Register of the system.

The installer must prove or declare to possess technical and professional proficiency to perform installation, testing and maintenance activities according to the requirements in these instructions.

2.1 INSTALLER SAFETY

Installation activities require special work conditions to reduce to the minimum the risks of accidents and serious damage. Furthermore, the suitable precautions must be taken to prevent risks of injury to persons or damage.

The installer must be in good physical and mental condition, aware of and responsible for the hazards that may be generated when using the product.

The work area must be kept tidy and must not be left unattended.

Do not wear clothes or accessories (scarves, bracelets, etc.) that may get caught in moving parts.

Always wear the personal protective equipment recommended for the type of activity to be carried out.

The required level of workplace lighting must be equal to at least 200 lux.

Operate CE marked machinery and equipment in compliance with the manufacturer's instructions. Use work instruments in good conditions.

Use the transport and lifting equipment recommended in the instructions manual.

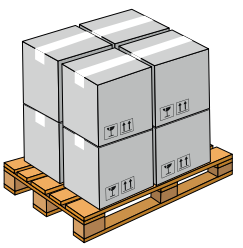
Use safety-compliant portable ladders of adequate size, fitted with anti-slip devices at the top and bottom, equipped with retainer hooks.

2.2 TRANSPORT AND STORAGE

PALLETISED SUPPLY

RISKS

PERSONAL PROTECTIVE EQUIPMENT



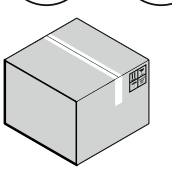
Follow the instructions on the packaging during handling.

Use a forklift truck or pallet truck, in compliance with safety regulations to avoid the risk of impact.

SINGLE PACKAGE

RISKS

PERSONAL PROTECTIVE EQUIPMENT



Follow the instructions on the packaging during handling.

Store the product in its original packaging, in closed and dry premises, protected from the sun and free from dust and aggressive substances. Protect from mechanical stress. If stored for more than 3 months, regularly check the condition of the components and the packaging.

- Storage temperature: 5°C to 30°C.
- Percentage of humidity: 30% to 70%.

2.3 UNPACKING AND HANDLING

RISKS

PERSONAL PROTECTIVE EQUIPMENT

1. Open the package and remove the contents.
2. Check that all components are present and intact.
3. Dispose of the packaging materials.

The packaging materials (plastic, polystyrene etc.) must not be left within reach of children as they are potential sources of danger.

When you have finished with them, dispose of the packaging in the appropriate containers, as per applicable waste disposal regulations.

VENT CLOSURE

The 400 is supplied with the vent hole closed with a screw and washer. When handling the actuator, the vent hole should be closed to prevent oil leaks (✎ 2).

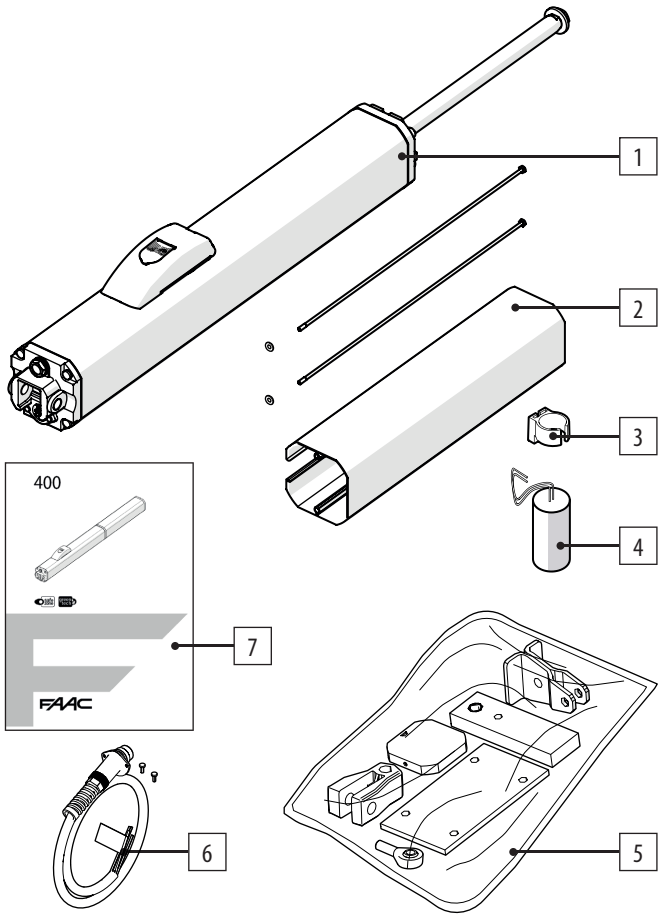
2.4 DISPOSAL OF THE PRODUCT

After having dismantled the product, dispose of it in compliance with the current waste disposal regulations.

Components and structural materials, batteries and electronic components must not be disposed of together with household waste. They must be taken to authorised disposal and recycling centres.

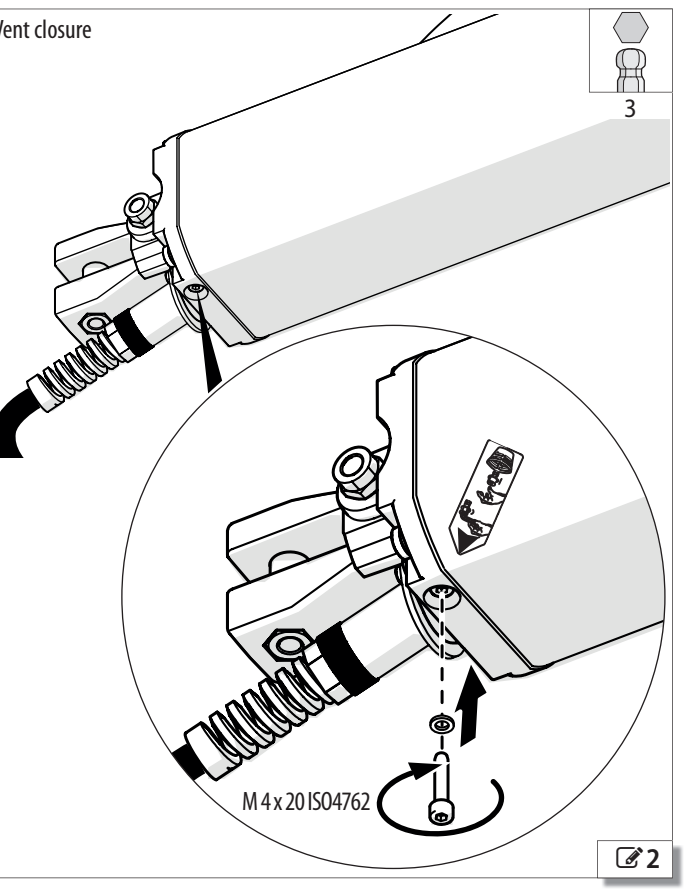
The oil must be gathered in a watertight container and given to an authorised disposal and recycling centre. Do not mix with other substances such as antifreeze or transmission fluids. Keep the used oil away from sources of heat and out of the children's reach. The fluid is not hazardous to health. In case of contact with eyes, skin or clothing, wash and rinse the affected parts.

The technical data sheets of the fluids are available in the on-line spare parts catalogue.



1	400
2	Casing
3	Capacitor support
4	Capacitor
5	Installation accessories
6	Power cable
7	Instruction manual

✎ 1



✎ 2

ENGLISH

Translation of the original instructions

3. 400

3.1 INTENDED USE

The FAAC series 400 actuators have been designed for use on horizontal movement swing gates intended for installation in areas that are accessible to people, the main purpose of which is to provide safe access for goods, vehicles and people to industrial/commercial buildings.

One actuator must be installed for each leaf. To move the gate manually, follow the manual operation instructions.

⚠ Any other use that is not expressly specified in these instructions is prohibited and could affect the integrity of the product and/or represent a source of danger.

3.2 LIMITATIONS OF USE

The leaf must fall within the dimensional and frequency of use limits indicated in the technical data.

The presence of weather conditions such as snow, ice and strong wind, even occasional, could affect the correct operation of the automation, the integrity of the components and be a potential source of danger (see § Emergency use). The limitations of use of the 400 in wind are detailed in table ⊞ Limits of use in relation to wind.

400 is not designed to be a security (break-in protection) system.

If there is a pedestrian access gate integrated in the leaf of the gate, the motorised movement must be disabled when the pedestrian gate is not in a safe position.

The installation must be visible during the day and at night. If it is not, appropriate solutions must be provided to make the fixed and moving parts visible.

The 400 must be connected to a FAAC electronic board as indicated in this manual (Technical characteristics).

Implementing the automation requires the installation of the necessary safety devices, identified by the installer through an appropriate risk assessment of the installation site.

3.3 UNAUTHORISED USE

- Uses other than the intended use are prohibited.
- It is prohibited to install the automation system outside of the limits specified in the Technical Data and Installation Requirements sections.
- It is forbidden to use 400 in a constructional configuration other than the one provided by the manufacturer.
- No component part of the product may be modified.
- It is prohibited to install the automation system on escape routes.
- It is prohibited to install the automation system to create fire doors.
- It is prohibited to install the automation system in environments in which there is a risk of explosion and/or fire: the presence of flammable gases or fumes is a serious safety hazard (the product is not ATEX certified).
- It is prohibited to power the system with energy sources other than those specified.
- It is prohibited to integrate commercial systems and/or equipment other than those specified, or use them for purposes not intended and authorised by their respective manufacturers.
- Do not allow water jets of any type or size to come into direct contact with the actuator.
- Do not expose the actuator to corrosive chemicals or atmospheric agents.
- It is prohibited to use and/or install accessories which have not been specifically approved by FAAC S.p.A.
- It is prohibited to use the automation system before performing commissioning.
- It is prohibited to use the automation system in the presence of faults which could compromise safety.
- It is prohibited to use the automation system with the fixed and/or mobile guards removed or altered.
- Do not use the automation system unless the area of operation is free of persons, animals or objects.
- Do not enter/remain in the area of operation of the automation system while it is moving.
- Do not try to prevent the movement of the automation system.
- Do not climb on, hold onto or let yourself be pulled by the leaf. Do not climb onto the actuator.
- Do not allow children to approach or play in the area of operation of the automation system.
- Do not allow the control devices to be used by anyone who is not specifically authorised and trained to do so.
- Do not allow the control devices to be used by children or persons with mental and physical deficiencies unless they are supervised by an adult who is responsible for their safety.

⚠ During manual operation, gently guide the leaf the whole way, do not push it and let it slide freely.

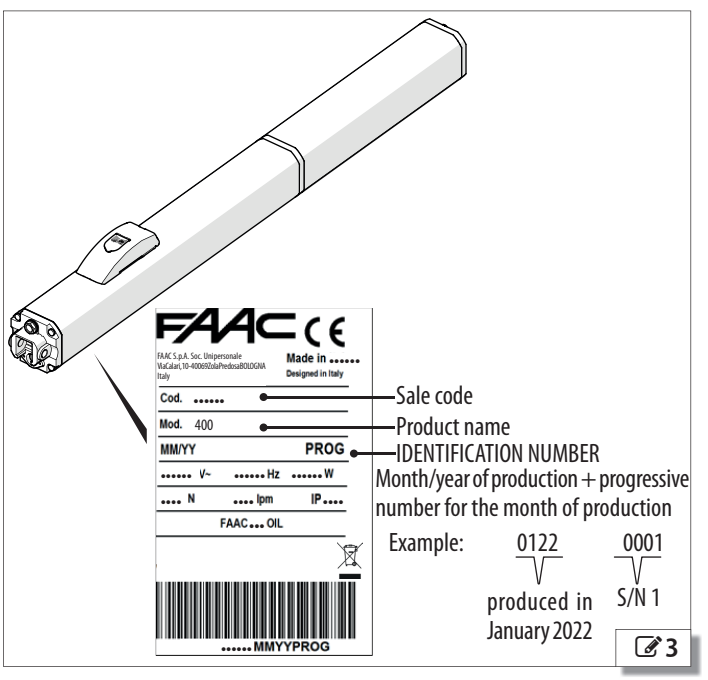
3.4 EMERGENCY USE

In emergencies or if there is a fault, turn off the power supply to the automation. If the leaf can be moved safely by hand, use the MANUAL OPERATION mode; otherwise place the automation out of service until it has been reset/repaired.

In the case of a breakdown, the automation must be reset/repaired exclusively by the installer/maintenance technician.

3.5 PRODUCT IDENTIFICATION

The product is identified by the plate (✎ **3**).



MARKINGS ON THE PRODUCT

Indicates the screw to be removed before putting into service. It is found on the actuator tank.

3.6 TECHNICAL CHARACTERISTICS

The 400 is a hydraulic actuator for swing gates. The system consists of an electric motor that displaces the oil in the hydraulic circuit by means of a pump and actuates the piston. The piston rod is fixed to the leaf in order to transmit movement.

The 400 range of actuators includes different models according to: type of hydraulic lock, stroke of the rod, pump flow rate and type of oil.

TYPE OF HYDRAULIC LOCK the hydraulic lock makes it impossible to reverse the movement when the actuator is not in operation and defines the following models:

- **400 CBAC** (with opening and closing lock) The actuator is non-reversing during both opening and closing. To allow manual operation, the release manoeuvre must be performed. Electric locks are not required to maintain the open and closed positions.
- **400 CBC** (with closing bock) The actuator is non-reversing during opening. To allow manual operation during opening, the release manoeuvre must be performed. The force required to close the leaf manually, without having released the actuator, depends on various factors (length of the leaf, by-pass screw adjustment, installation measurements). It is therefore advisable to carry out the release manoeuvre. An electric lock is required to maintain the open position.
- **400 CBA** (with opening lock) The actuator is non-reversing during closing. The release manoeuvre has to be performed in order to allow manual operation during closing. The force required to open the leaf manually, without having released the actuator, depends on various factors (length of the leaf, by-pass screw adjustment, installation measurements); it is anyway advisable to carry out the release manoeuvre. An electric lock is required to maintain the closed position.
- **400 SB** (without lock) The actuator is reversible. To allow manual operation, it is not necessary to perform the release manoeuvre. The force required to move the leaf manually, without having released the actuator, depends on various factors (length of the leaf, by-pass screw adjustment, installation measurements); it is anyway advisable to carry out the release manoeuvre. Electric locks are required to maintain the open and closed positions.

ROD STROKE Long rod actuators (**L** version) are recommended for wide pillars.

PUMP FLOW RATE the electric motor and pump assembly determines the maximum speed of movement of the leaf and the maximum thrust force. Quick acting actuators are available (version **R**). The slow actuators (version **S**), that deliver a greater force, are suitable for moving long leaves.

OIL TYPE 400 (FAAC HP OIL), 400 Winter (FAAC HP2 OIL) the Winter versions are suitable for installation in environments with temperatures as low as -40°C.

Control system

The 400 must be connected to a FAAC electronic board for controlling 230 V / 115 V motors (depending on the version) for swing gates.

Standard equipment (on all versions)

- Key-protected bypass screws: allow the maximum crushing force during opening and closing to be regulated.
- Key-protected release device: allows manual operation. When used with actuators without a lock, it reduces the force required for manual operation.

1 Technical data

Version	400 CBAC	400 CBC	400 CBA	400 CBAC R	400 CBAC L
Power supply voltage	220…240 V~	220…240 V~	220…240 V~	220…240 V~	220…240 V~
	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Electric motor	Asynchronous single phase	Asynchronous single phase	Asynchronous single phase	Asynchronous single phase	Asynchronous single phase
Thrust capacitor	8 µF	8 µF	8 µF	8 µF	8 µF
Thermal protection	120°C	120°C	120°C	120°C	120°C
Max power	220 W	220 W	220 W	220 W	220 W
Max. thrust	6200 N*	6200 N*	6200 N*	4650 N*	4650 N*
Max leaf length	2.2 m	2.2 m	2.2 m	2.2 m	2.2 m
Min leaf length	0.9 m	0.9 m	0.9 m	0.9 m	1.1 m
Rod stroke	270 mm	270 mm	270 mm	270 mm	390 mm
Max. rod speed	10 mm/s**	10 mm/s**	10 mm/s**	15 mm/s**	15 mm/s**
Motor-pump unit flow rate	1 l/min	1 l/min	1 l/min	1.5 l/min	1.5 l/min
Ambient operating temperature	-20 °C…+55 °C	-20 °C…+55 °C	-20 °C…+55 °C	-20 °C…+55 °C	-20 °C…+55 °C
[WINTER version]	[-40 °C…+40 °C]	-	-	-	[-40 °C…+40 °C]
Type of use	Industrial/Commercial	Industrial/Commercial	Industrial/Commercial	Industrial/Commercial	Industrial/Commercial
Use frequency	70 cycles/hour	70 cycles/hour	70 cycles/hour	80 cycles/hour	50 cycles/hour
Protection rating	IP55	IP55	IP55	IP55	IP55
Oil type	FAAC HP OIL	FAAC HP OIL	FAAC HP OIL	FAAC HP OIL	FAAC HP OIL
[WINTER version]	[FAAC HP2 OIL]	-	-	-	[FAAC HP2 OIL]
Weight	8.9 kg	8.9 kg	8.9 kg	8.9 kg	10.5 kg

* values refer to a 230 V power supply

** values refer to a frequency of 50 Hz

Version	400 SB	400 SB S	400 SB L	400 SB S L
Power supply voltage	220…240 V~	220…240 V~	220…240 V~	220…240 V~
	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Electric motor	Asynchronous single phase	Asynchronous single phase	Asynchronous single phase	Asynchronous single phase
Thrust capacitor	8 µF	8 µF	8 µF	8 µF
Thermal protection	120°C	120°C	120°C	120°C
Max power	220 W	220 W	220 W	220 W
Max. thrust	6200 N*	7750 N*	6200 N*	7750 N*
Max leaf length	4.0 m	7.0 m	4.0 m	7.0 m
Min leaf length	0.9 m	0.9 m	1.1 m	1.1 m
Rod stroke	270 mm	270 mm	390 mm	390 mm
Max. rod speed	10 mm/s**	7.5 mm/s**	10 mm/s**	7.5 mm/s**
Motor-pump unit flow rate	1 l/min	0.75 l/min	1 l/min	0.75 l/min
Ambient operating temperature	-20 °C…+55 °C	-20 °C…+55 °C	-20 °C…+55 °C	-20 °C…+55 °C
[WINTER version]	[-40 °C…+40 °C]	-	-	-
Type of use	Industrial/Commercial	Industrial/Commercial	Industrial/Commercial	Industrial/Commercial
Use frequency	70 cycles/hour	60 cycles/hour	50 cycles/hour	50 cycles/hour
Protection rating	IP55	IP55	IP55	IP55
Oil type	FAAC HP OIL	FAAC HP OIL	FAAC HP OIL	FAAC HP OIL
[WINTER version]	[FAAC HP2 OIL]	-	-	-
Weight	8.9 kg	8.9 kg	10.5 kg	10.5 kg

* values refer to a 230 V power supply

** values refer to a frequency of 50 Hz

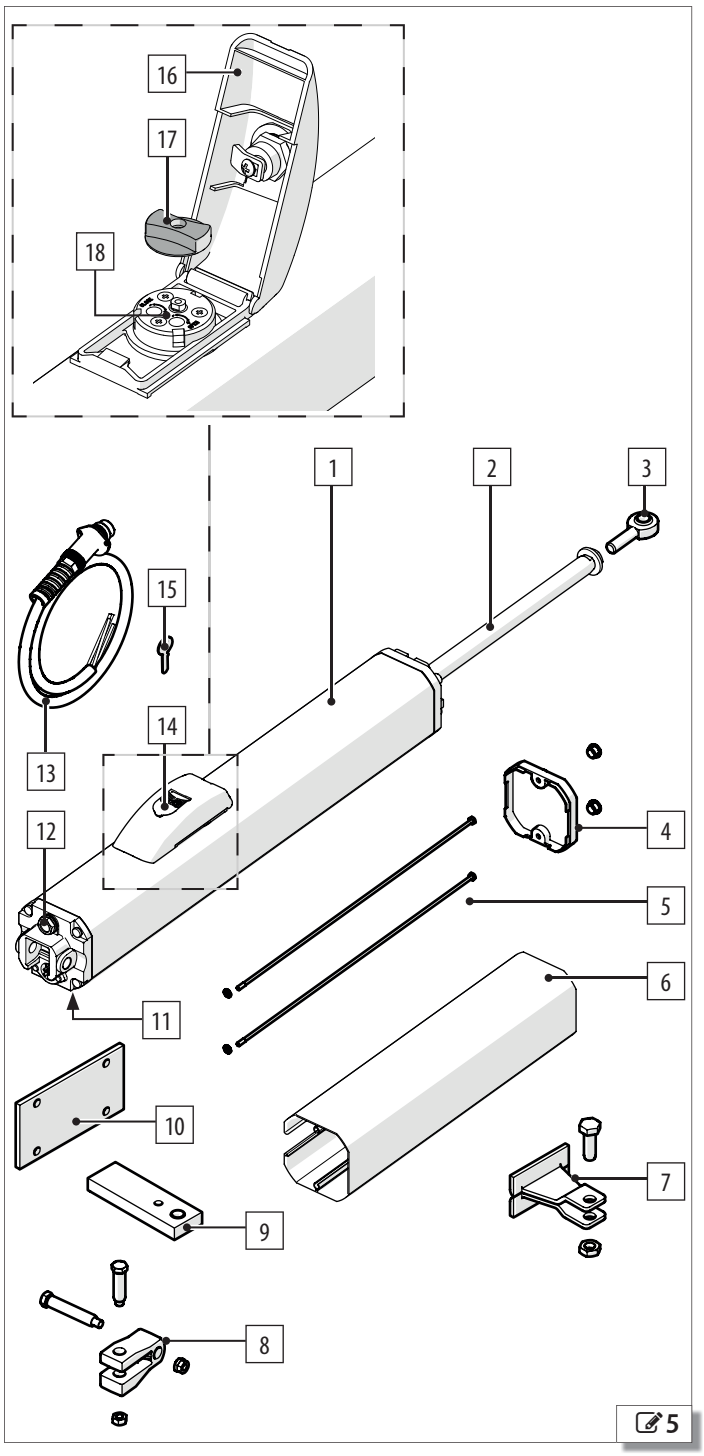
Version	400 CBAC 115V	400 CBAC R 115V	400 CBAC L 115V	400 SB 115V	400 SB S 115V
Power supply voltage	110…120 V~	110…120 V~	110…120 V~	110…120 V~	110…120 V~
	60 Hz	60 Hz	60 Hz	60 Hz	60 Hz
Electric motor	Asynchronous single phase	Asynchronous single phase	Asynchronous single phase	Asynchronous single phase	Asynchronous single phase
Thrust capacitor	25 µF	25 µF	25 µF	25 µF	25 µF
Thermal protection	120°C	120°C	120°C	120°C	120°C
Max power	220 W	220 W	220 W	220 W	220 W
Max. thrust	6200 N*	4650 N*	4650 N*	6200 N*	7750 N*
Max leaf length	2.2 m	2.2 m	2.2 m	4.0 m	7.0 m
Min leaf length	0.9 m	0.9 m	1.1 m	0.9 m	0.9 m
Rod stroke	270 mm	270 mm	390 mm	270 mm	270 mm
Max. rod speed	10 mm/s	15 mm/s	15 mm/s	10 mm/s	7.5 mm/s
Motor-pump unit flow rate	1 l/min	1.5 l/min	1.5 l/min	1 l/min	0.75 l/min
Ambient operating temperature	-20 °C…+55 °C	-20 °C…+55 °C	-20 °C…+55 °C	-20 °C…+55 °C	-20 °C…+55 °C
[WINTER version]	[-40 °C…+40 °C]	[-40 °C…+40 °C]	[-40 °C…+40 °C]	-	[-40 °C…+40 °C]
Type of use	Industrial/Commercial	Industrial/Commercial	Industrial/Commercial	Industrial/Commercial	Industrial/Commercial
Use frequency	70 cycles/hour	80 cycles/hour	50 cycles/hour	70 cycles/hour	60 cycles/hour
Protection rating	IP55	IP55	IP55	IP55	IP55
Oil type	FAAC HP OIL	FAAC HP OIL	FAAC HP OIL	FAAC HP OIL	FAAC HP OIL
[WINTER version]	[FAAC HP2 OIL]	[FAAC HP2 OIL]	[FAAC HP2 OIL]	-	[FAAC HP2 OIL]
Weight	8.9 kg	8.9 kg	10.5 kg	8.9 kg	8.9 kg

* values refer to a 110 V power supply

3.7 COMPONENT IDENTIFICATION

COMPONENTS SUPPLIED

1	Actuator body
2	Rod
3	Joint
4	Casing cover with plugs
5	Casing fastening tie-rods with washers
6	Casing
7	Front bracket with fixing pin and nut
8	Rear fork with fixing pins and nuts
9	Rear bracket arm
10	Rear bracket plate
11	Breather screw
12	Oil filler plug
13	Power cable
14	Lock cover
15	Release key
16	Release device cover
17	Release knob
18	By-pass screws (force adjustment)



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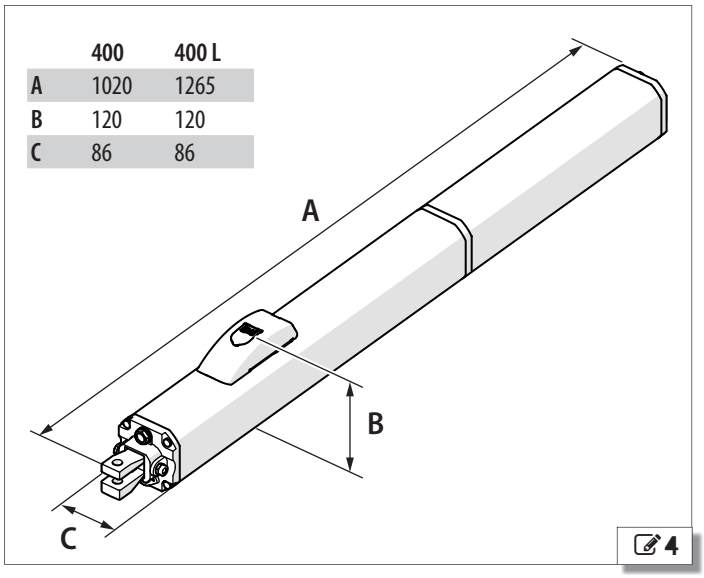
3.8 DIMENSIONS

The dimensions are indicated in figure (4).

	400	400 L
A	1020	1265
B	120	120
C	86	86



4

3.9 MANUAL OPERATION

The actuator has to be released in order to operate the leaf manually.

Disconnect the power supply from the automation before releasing the actuator.

During manual operation, gently guide the leaf the whole way. Do not push it and let it slide freely.

Do not leave the actuator in the released mode: restore automatic operation after moving it manually.

RELEASING THE ACTUATOR

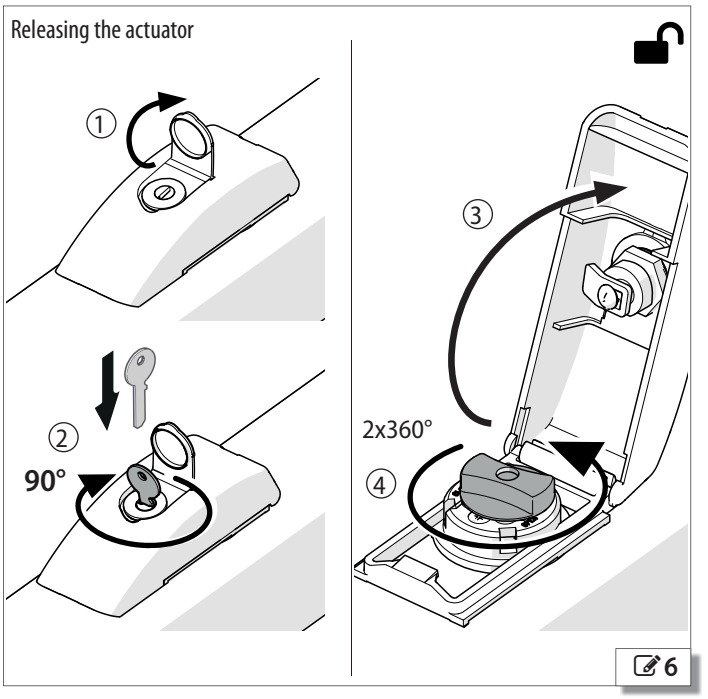
With reference to (✎6) :

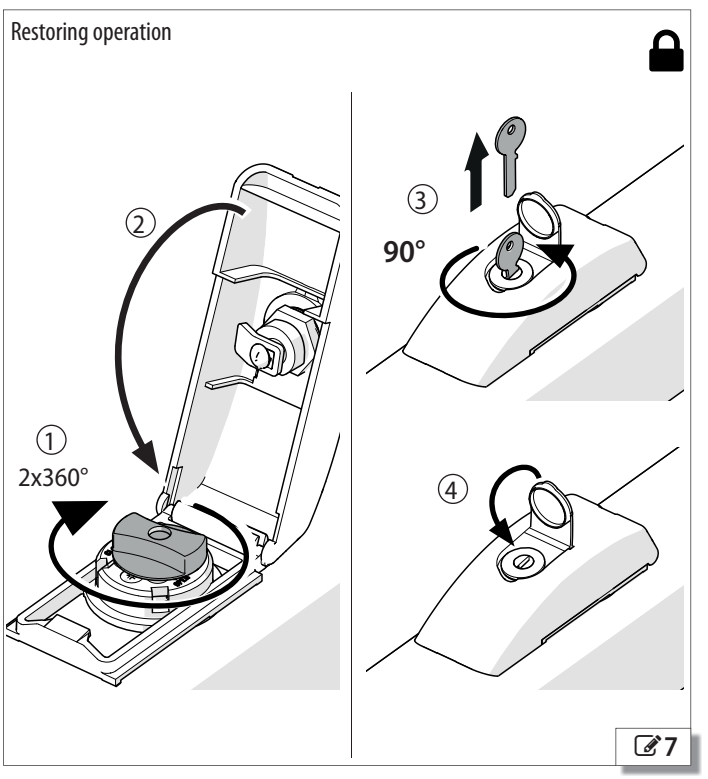
1. Open the lock cover.
2. Insert the key and turn it clockwise by 90°.
3. Open the release device cover.
4. Turn the knob fully anticlockwise without forcing it (about two complete turns). Move the barrier manually.

REINSTATING OPERATION

With reference to (✎7) :

1. Turn the knob fully clockwise.
2. Close the release device cover.
3. Turn the key anticlockwise by 90°, then remove it.
4. Close the lock cover.





4. INSTALLATION REQUIREMENTS

4.1 MECHANICAL REQUIREMENTS

The mechanical structural components must comply with the requirements of EN 12604. Before installing the automation, the suitability of the mechanical requirements must be established and any work that is necessary in order to meet them carried out.

The essential mechanical requirements are as follows:

Flat, horizontal paving in the area of movement of the leaf.

The structure (columns, hinges and leaves) must be solid and there must be no risk of detachment or collapse, (considering the weight of the leaf and the forces applied by the door actuator and wind action). Perform structural calculations where necessary.

The structure must show no signs of corrosion or cracking.

The hinges must be in good condition, lubricated and with no play or friction.

The leaf must remain vertical throughout the entire length of travel, with a regular, smooth and uniform movement.

Appropriate devices must be installed to prevent the leaf from falling.

Presence of external mechanical limit stops to limit the travel of the leaf when opening and closing. The stops must be suitably sized and solidly fastened so that they resist any impact of the leaf in the event of improper use (leaf pushed and left to slide freely). The thresholds and protrusions of the paving must be appropriately shaped in order to prevent the risk of sliding or slipping.

Presence of a safety area between the wall (or other fixed element) and the furthest protruding part of the open leaf, to protect against the risk of persons becoming trapped/crushed. Alternatively, check that the opening force required falls within the maximum permissible limits according to applicable standards and legislation.

Presence of safety areas between the fixed and moving parts, to protect against the risk of hands being trapped. Alternatively, apply protective elements that prevent fingers from being introduced.

Presence of a safety area between the floor and lower edge of the leaf, along its entire stroke, to protect feet from becoming caught and crushed. Alternatively, apply protective elements preventing the introduction of feet.

No sharp edges or protruding parts should be present to ensure there are no cutting, hooking or perforation hazards. Alternatively, eliminate or protect any sharp edges and protruding parts.

For the minimum dimensions to prevent crushing/shearing of body parts, refer to EN 349. For the safety distances required to prevent danger zones being reached, refer to ISO 13857.

4.2 ELECTRICAL SYSTEM

Always shut off the power supply before performing any work. If the disconnect switch is not in view, apply a warning sign stating "WARNING - Maintenance in Progress".

The electrical system must comply with applicable legislation in the country of installation.

Use components and materials with CE marking which are compliant with the Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU.

The power supply line for the automation must be fitted with a multi-pole circuit breaker, with a suitable tripping threshold, a contact opening distance of at least 3 mm and a breaking capacity that complies with current regulations.

The power supply for the automation must be fitted with a 30 mA differential switch.

The metal parts of the structure must be earthed.

Check that the protective earthing system complies with applicable regulations in the country of installation.

The electrical cables of the automation system must be of a size and insulation class that is compliant with current legislation and laid in appropriate rigid or flexible conduits, either above or below ground.

Use separate conduits for the power supply and the 12-24 V control devices / accessories cables.

Check buried cable plans to ensure that there are no other electrical cables in proximity to the planned digging/drilling locations to prevent the risk of electrocution.

Check that there are no pipes in the vicinity as well.

The external electronic board must be housed in an enclosure that has a minimum IP 44 protection rating and fitted with a lock or another type of device to prevent access by unauthorised persons. The enclosure must be located in an accessible and non-hazardous area and at least 30 cm from the ground. The cable outlets must face downwards.

The conduit fittings and the cable glands must prevent the entry of moisture, insects and small animals.

Protect extension connections using junction boxes with an IP 67 protection rating or higher.

It is recommended to install a flashing light in a visible position to indicate when it is moving.

The control accessories must be positioned in areas that are always accessible and not dangerous for the user. It is recommended to position the control accessories within the field of view of the automation.

If an emergency stop button has been installed, it must be EN13850 compliant.

Comply with the following heights from the ground:

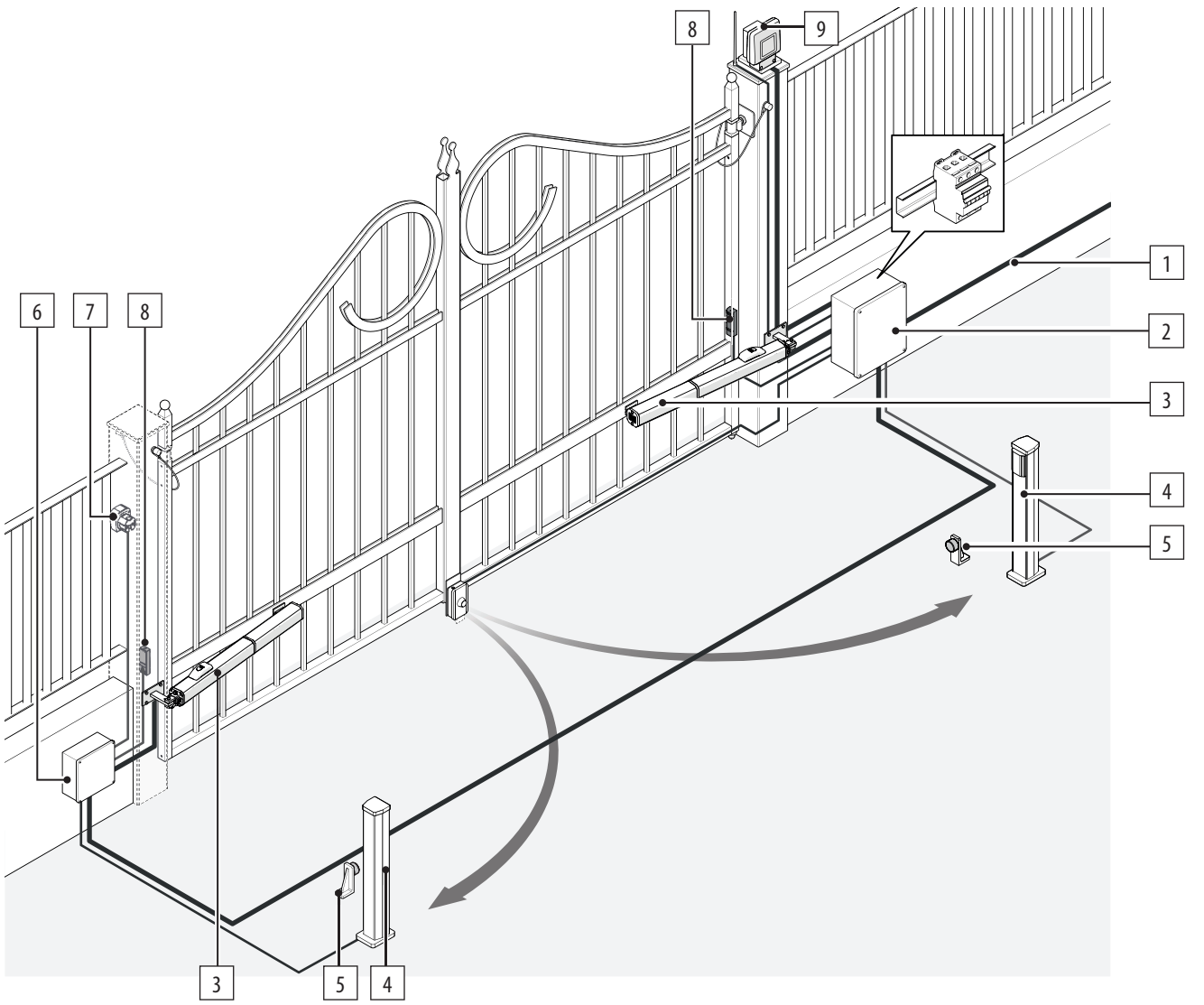
- control accessories = minimum 150 cm

- emergency buttons = maximum 120 cm

If the manual controls are intended to be used by disabled or infirm persons, highlight them with suitable pictograms and make sure that these users are able to access them.

4.3 EXAMPLE SYSTEM

The example is purely an illustration and is only one of the possible applications of the 400.



1	Mains power supply	3G 1.5 sq. mm	6	Junction box
2	Board enclosure and circuit breakers and differential switch		7	Key button
3	400 actuators	4G 1.5 sq. mm	8	Pair of external photocells
4	Pair of internal photocells		9	Flashing light
5	Mechanical stops			

8

5. INSTALLATION

RISKS

PERSONAL PROTECTIVE EQUIPMENT

The installation must comply with standard EN 12453. Mark off the work site and prohibit access/transit.

Installation must be carried out when it is not raining. If it is raining, adequate shelter for the actuator and the automation components must be provided until installation is complete.

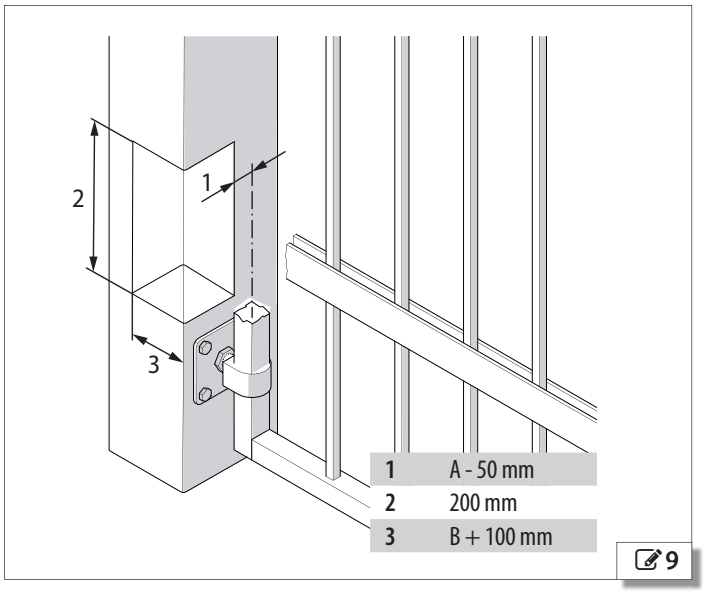
5.1 DETERMINING THE POSITION OF THE REAR BRACKET

The actuator must be installed inside the property, with the gate opening inwards.
For applications in which the gate opens outwards, see appendix.

Refer to the following tables to establish the correct position for the rear bracket and then install it:

- **A** and **B** rear bracket installation measurements
- **D** distance between the edge of the pillar and the axis of the hinge of the leaf. If the distance **D** does not allow the correct distance **A** to be obtained, make a recess on the pillar (dimensions indicated in the figure).
- **Z** distance between the fulcrum and the rear bracket (minimum = 50 mm to prevent the actuator touching the pillar). If necessary, modify the length of the rear bracket arm.
- **S** the distance between the axis of the hinge of the leaf and the mounting surface of the front bracket.
- **Y** distance between the fulcrum of the front bracket and the surface of the leaf. According to the model:
  400 **Y = 75 mm**
  400L **Y = 100 mm**

The maximum opening angle of the leaf is indicated in the tables.



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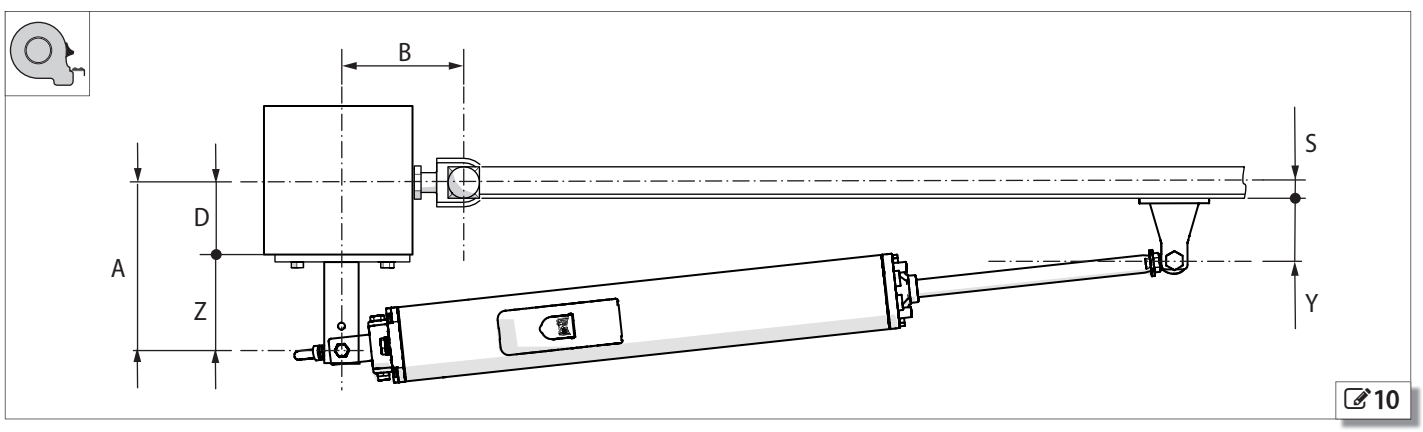


10

2 Measurements 400

(1) a closing electric lock has to be installed

(2) the speed of the leaf could be uneven during the final stage of movement

S=0

A \ B	80	90	100	110	120	130	140	150
80	110° (1-2)	115° (1-2)	120° (1-2)	120° (1-2)	125° (1-2)	115° (1)	105° (1)	100° (1)
90	105° (1-2)	110° (1-2)	115° (1-2)	120° (1-2)	120° (1-2)	110° (1)	100° (1)	95° (1)
100	105° (2)	110° (2)	115° (2)	120° (2)	110°	105°	95°	
110	105° (2)	110° (2)	115° (2)	115° (2)	105°	100°	95°	
120	105° (2)	105° (2)	110° (2)	105°	100°	95°		
130	100° (2)	105° (2)	110° (2)	100°	95°	90°		
140	100° (2)	105° (2)	100°	95°	90°			
150	100° (2)	100°	90°	85°	85°			
160	100° (2)	90°	85°					

S=20

A \ B	80	90	100	110	120	130	140	150
100	95° (1)	100° (1)	105° (1)	110° (1)	110° (1)	105° (1)	95° (1)	95° (1)
110	95° (1)	100° (1)	105° (1)	110° (1)	105° (1)	100° (1)	95° (1)	95° (1)
120	95°	100°	100°	105°	100°	95°	90°	
130	95°	95°	100°	100°	95°	90°	85°	
140	95°	100°	100°	95°	90°	86°		
150	95°	95°	95°	85°	85°			
160	95°	95°	85°					

S=40

A \ B	100	110	120	130	140	150
120			100° (1)	95° (1)	90° (1)	85° (1)
130			95° (1)	90° (1)	85° (1)	
140		95°	90°	85°		
150		90°	85°			
160	85°	85°				

3 Measurements 400 L

(1) a closing electric lock has to be installed

(2) the speed of the leaf could be uneven during the final stage of movement

S=0

A \ B	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220
100	105° (1-2)	110° (1-2)	115° (1-2)	115° (1-2)	120° (1-2)	125° (1-2)	125° (1-2)	130° (1-2)	135° (1-2)	135° (1-2)	135° (1-2)	120° (1)	115° (1)	110° (1)	105° (1)
110	105° (1-2)	110° (1-2)	115° (1-2)	115° (1-2)	120° (1-2)	120° (1-2)	125° (1-2)	130° (1-2)	130° (1-2)	135° (1-2)	130° (1)	120° (1)	110° (1)	105° (1)	100° (1)
120	100° (1-2)	110° (1-2)	110° (1-2)	115° (1-2)	120° (1-2)	120° (1-2)	125° (1-2)	125° (1-2)	130° (1-2)	130° (1-2)	120° (1)	115° (1)	110° (1)	105° (1)	100° (1)
130	100° (2)	105° (2)	110° (2)	115° (2)	115° (2)	120° (2)	120° (2)	125° (2)	125° (2)	130° (2)	115°	110°	105°	100°	
140	100° (2)	105° (2)	110° (2)	110° (2)	115° (2)	120° (2)	120° (2)	125° (2)	125° (2)	120°	110°	105°	100°	100°	
150	100° (2)	105° (2)	105° (2)	110° (2)	115° (2)	115° (2)	120° (2)	120° (2)	125° (2)	115°	105°	100°	100°	95°	
160	100° (2)	105° (2)	105° (2)	110° (2)	115° (2)	115° (2)	120° (2)	120° (2)	120° (2)	110°	100°	100°	95°		
170	100° (2)	100° (2)	105° (2)	110° (2)	110° (2)	115° (2)	115° (2)	120° (2)	110° (2)	100°	100°	95°	90°		
180	100° (2)	100° (2)	105° (2)	105° (2)	110° (2)	110° (2)	115° (2)	115° (2)	105°	100°	95°	90°			
190	100° (2)	100° (2)	105° (2)	105° (2)	110° (2)	110° (2)	115° (2)	105°	100°	95°	90°	90°			
200	100° (2)	100° (2)	100° (2)	105° (2)	110° (2)	110° (2)	110° (2)	100°	95°	90°	90°				
210	100° (2)	100° (2)	100° (2)	105° (2)	105° (2)	110° (2)	100°	95°	90°	85°	85°				
220	95° (2)	100° (2)	100° (2)	105° (2)	105° (2)	100°	95°	90°	85°	85°					
230	100° (2)	100° (2)	100° (2)	100° (2)	105° (2)	95°	90°	85°	85°						
240	95° (2)	100° (2)	100° (2)	105° (2)	95°	90°	85°	85°							
250	100° (2)	100° (2)	100° (2)	95°	90°	85°									
260	95° (2)	100° (2)	95°	90°	85°										
270	95° (2)	95° (2)	85°	85°											

S=20

A \ B	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230
120	95° (1)	100° (1)	105° (1)	105° (1)	110° (1)	115° (1)	115° (1)	120° (1-2)	120° (1-2)	127° (1-2)	125° (1)	115° (1)	110° (1)	105° (1)	100° (1)	95° (1)
130	95° (1)	100° (1)	100° (1)	105° (1)	110° (1)	110° (1-2)	115° (1-2)	120° (1-2)	120° (1-2)	125° (1-2)	115° (1-2)	110° (1)	105° (1)	100° (1)	95° (1)	95° (1)
140	95° (1)	100° (1)	100° (1)	105° (1)	110° (1)	110° (1)	115° (1-2)	115° (1-2)	120° (1-2)	120° (1-2)	110° (1)	105°	100° (1)	95° (1)	95° (1)	
150	95°	95°	100° (2)	105°	105°	110° (2)	110° (2)	115° (2)	120° (2)	115°	105°	100°	100°	95°	90°	
160	95°	95° (2)	100° (2)	100°	105° (2)	110° (2)	110°	115° (2)	115° (2)	110°	100°	100°	95°	90°		
170	95° (2)	95°	100°	105° (2)	105° (2)	110° (2)	110° (2)	110° (2)	110°	105°	100°	95°	90°	90°		
180	95° (2)	95°	100° (2)	100° (2)	105°	105° (2)	110° (2)	110° (2)	105°	100°	95°	90°	90°			
190	95° (2)	95° (2)	100° (2)	100° (2)	105° (2)	105° (2)	110° (2)	105°	100°	95°	90°	90°	85°			
200	90° (2)	95° (2)	100° (2)	100° (2)	100° (2)	105° (2)	110° (2)	100°	95°	90°	90°	85°				
210	90° (2)	95° (2)	100° (2)	100° (2)	100° (2)	105° (2)	100°	95°	90°	85°	85°	85°				
220	90° (2)	95° (2)	95° (2)	100° (2)	100° (2)	105° (2)	95°	90°	85°	85°						
230	90° (2)	95° (2)	95° (2)	100° (2)	100° (2)	95°	90°	85°	85°							
240	90° (2)	95° (2)	95° (2)	100° (2)	95°	90°	85°	85°								
250	90° (2)	95° (2)	95° (2)	95° (2)	90°	85°										
260	90° (2)	95° (2)	95° (2)	90°	85°											
270	90° (2)	95° (2)	90°	85°												

S=40

A \ B	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230
140	90° (1)	95° (1)	100° (1)	100° (1)	105° (1)	105° (1)	110° (1)	115° (1)	115° (1)	110° (1)	105° (1)	100° (1)	95° (1)	95° (1)	90° (1)
150	90° (1)	95° (1)	95° (1)	100° (1)	105° (1)	105° (1)	110° (1)	110° (1)	115° (1)	105° (1)	100° (1)	95° (1)	95° (1)	90° (1)	90° (1)
160	90° (1)	90° (1)	95° (1)	100° (1)	100° (1)	105° (1)	110° (1)	110° (1)	110° (1)	100° (1)	100° (1)	95° (1)	90° (1)	90° (1)	85° (1)
170	90°	90°	95°	100°	100°	105°	105°	110°	105°	100°	95°	90°	90°	85°	
180	90°	90°	95°	100°	100°	105°	105°	105°	100°	95°	90°	90°	85°	85°	
190	90°	90°	95°	100°	100°	105°	105°	100°	95°	90°	90°	85°	85°		
200	90°	90°	95°	100°	100°	105°	100°	95°	90°	90°	85°	85°			
210	90°	90°	95°	95°	100°	100°	95°	90°	90°	85°	85°				
220	90°	90°	95°	95°	100°	95°	90°	85°	85°						
230	90°	90°	95°	95°	95°	90°	89	85°							
240	90°	90°	95°	95°	90°	85°	85°								
250	90°	90°	95°	90°	85°										
260	90°	90°	90°	85°											
270	90°	90°	85°												

5.2 INSTALLING THE REAR BRACKET

The structure of the pillar must be suitable for fixing the actuator. If necessary, create a solid support base to attach it to. It is the responsibility of the installer to provide suitable fastenings for the applied loads. Welding must be carried out in a workmanlike manner. Safety may be affected if it is carried out badly.

Apply the measurements indicated (see tables ▦ Measurements 400/400 L).

STEEL PILLAR

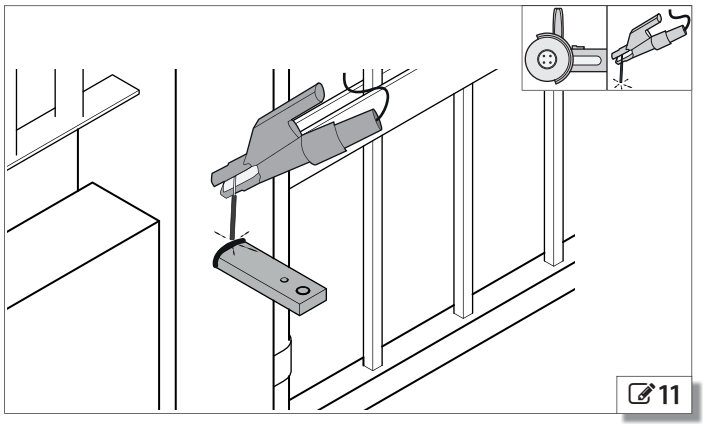
Weld the rear bracket arm horizontally to the pillar (✎**11**).

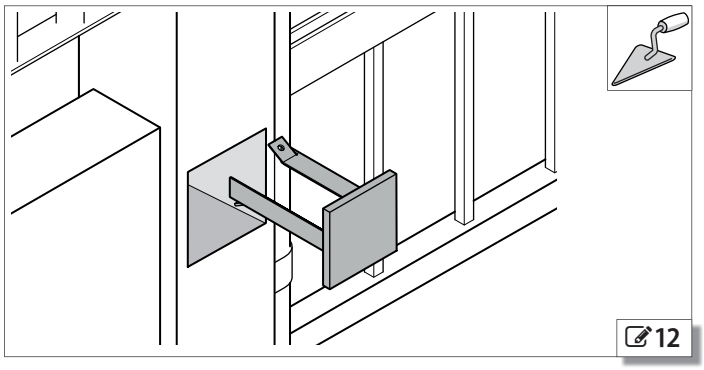
MASONRY PILLAR WITH PLATE TO EMBED

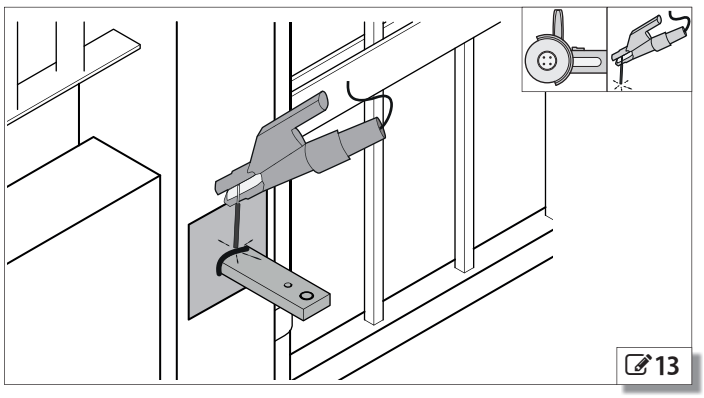
1. Embed the plate within the pillar (✎**12**).
2. Weld the rear bracket arm horizontally (✎**13**).

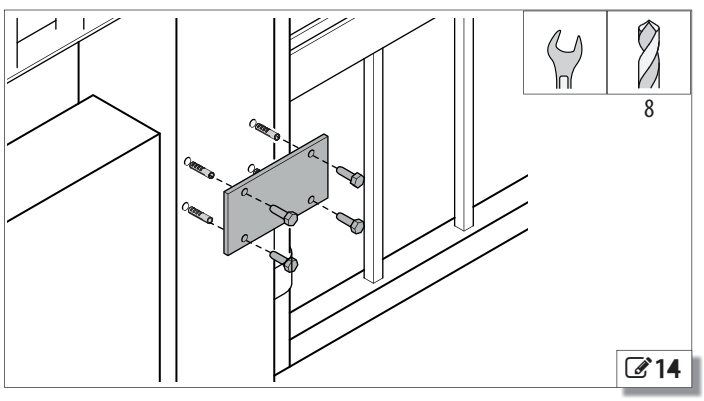
MASONRY PILLAR WITH SCREW-ON PLATE

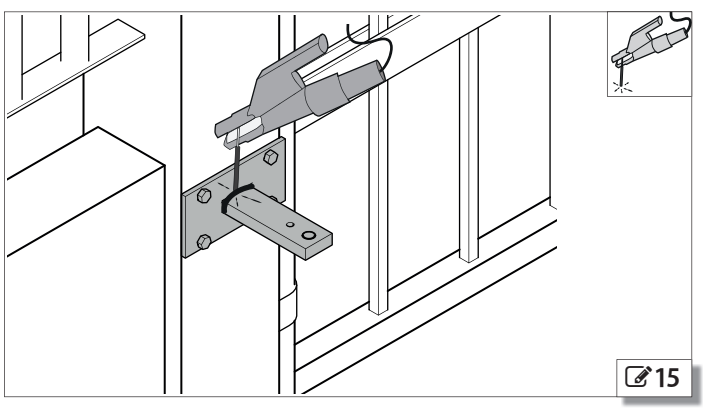
1. Drill holes in the pillar and install the rear bracket plate (✎**14**). Use dowels with suitable screws and fastening torque.
2. Weld the rear bracket arm horizontally onto the plate (✎**15**).











5.3 INSTALLING THE FORK AND JOINT

INSTALLING THE REAR FORK

If you use the SAFEcoder accessory, install the rear fork following the instructions provided in the specific manual.

1. Grease the long pin.
2. Fasten the rear fork to the actuator using the long pin (✎**16**).
3. Tighten the self-locking nut using two hex spanners.

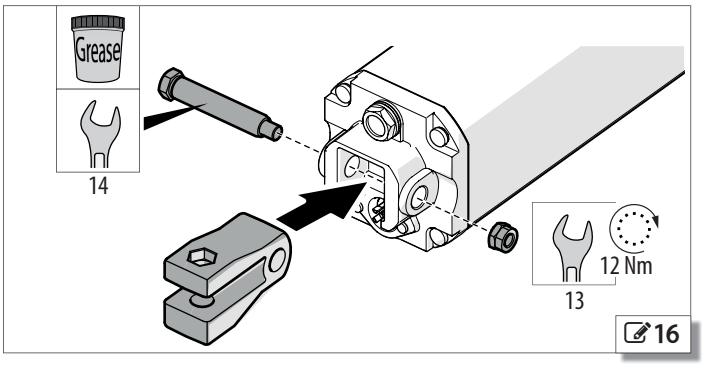
CONNECT THE JOINT TO THE ROD

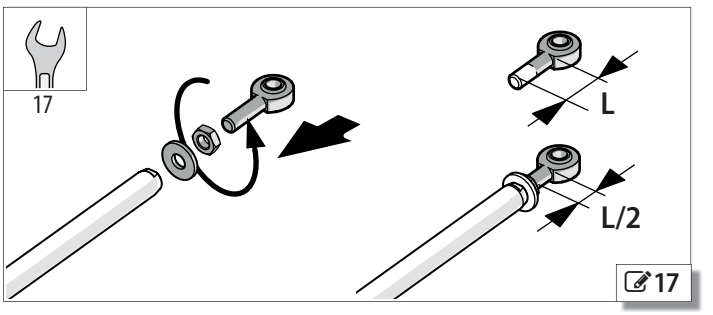
1. Screw the joint onto the rod, interposing the nut and washer (✎**17**).
2. Adjust the joint to half of its stroke and then tighten the lock nut (allows for subsequent adjustments).

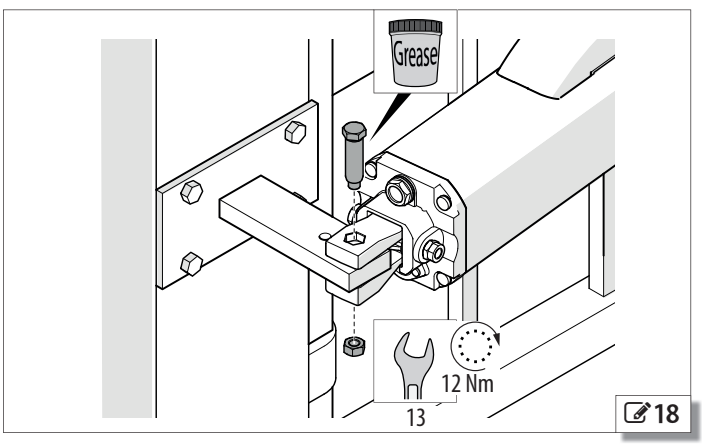
5.4 INSTALLING THE ACTUATOR

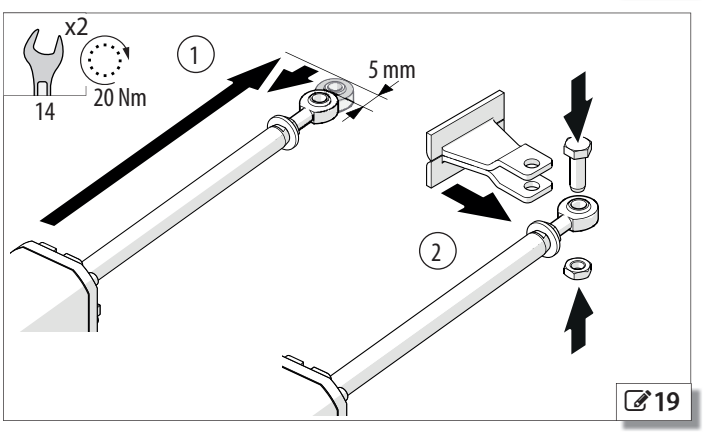
The structure of the gate must be suitable for fixing the actuator. If necessary, create a solid support to which to attach it. It is the responsibility of the installer to provide suitable fastenings for the applied loads. Welding must be carried out in a workmanlike manner. Safety may be affected if it is carried out badly.

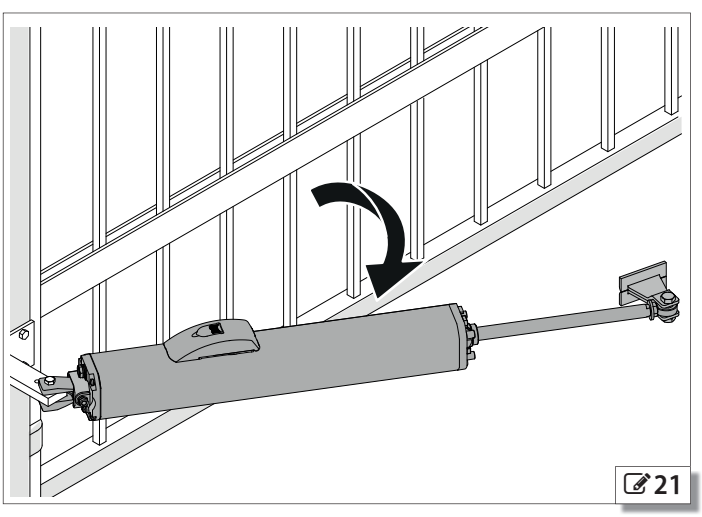
1. Grease the short pin and use it to connect the rear fork to the rear bracket (✎**18**).
2. Make sure that the actuator has been released. Pull the rod out completely, as far as it will go, and then push it back in by 5 mm (✎**19**-**1**).
3. Connect the front bracket to the joint (✎**19**-**2**).
4. With the leaf closed, locate the mounting position for the front bracket and mark it, making sure that you keep the actuator horizontal (use a spirit level). Mark the fixing position (✎**20**).
5. Rotate the actuator so that it does not obstruct the work area (✎**21**). Then remove the front bracket from the joint.
6. Secure the front bracket to the leaf by welding or using screws.

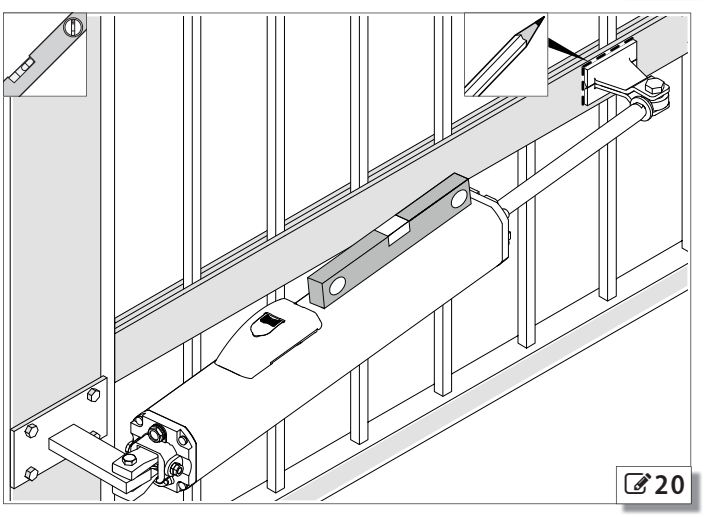












■ **FASTENING BY WELDING (22-A)**

Welding must be carried out in a workmanlike manner. Safety may be affected if it is carried out badly. Connect the earth (-) of the welder to the leaf, NOT to the actuator. Protect the rod from weld spatter.

■ **FASTENING WITH SCREWS (22-B)**

Drill holes in the front bracket at the points provided on the side in contact with the leaf. Use the bracket as a template for marking the fixing points on the leaf, then drill the holes and fasten to the structure using suitable screws and fastening torque.

7. Reconnect the joint to the front bracket and insert the screw to fix it temporarily. To obtain the correct closed position, small adjustments can be made by turning the joint by a few turns. When finished, secure it in place using the nut (**23**).
8. Open and close the leaf manually to make sure that it can be completely opened and closed. If it is not possible to do so, make sure that all the installation procedure has been carried out correctly.

During manual operation, gently guide the leaf the whole way.

5.5 INSTALLING THE CASING

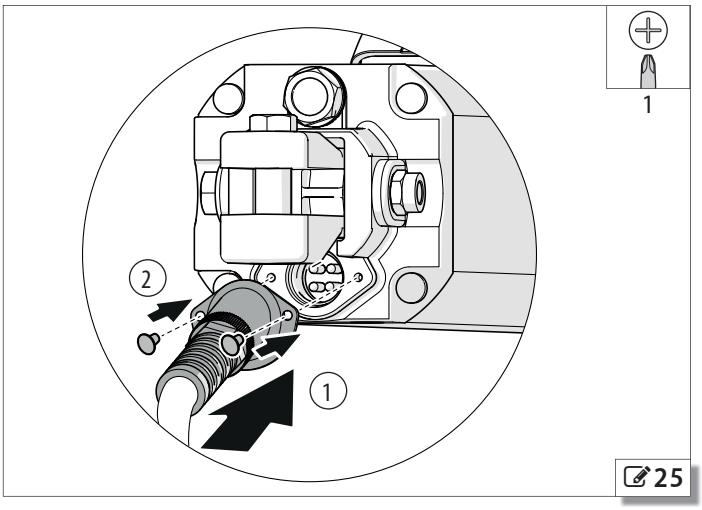
1. Install the cover onto the casing and fully insert the tie rods with washers so that they slide into the guides **A** (**24-1**).
2. Install the casing and screw the tie rods into the holes **B** on the actuator (**24**).
3. Press the 2 caps on (**24-3**).

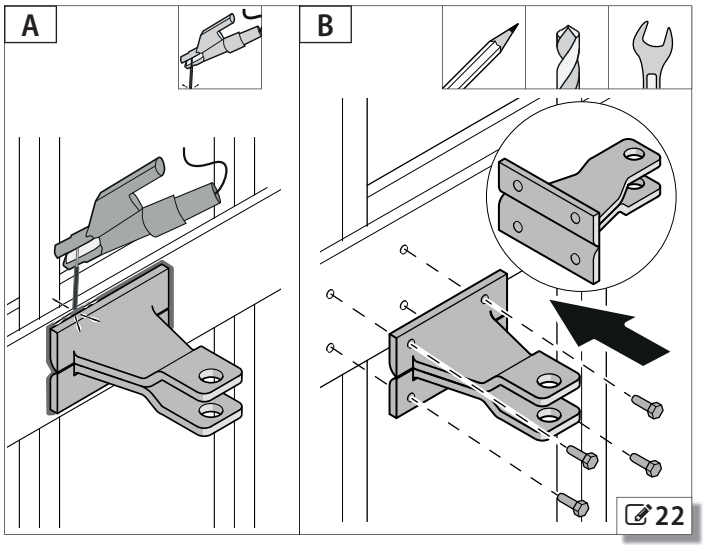
5.6 INSTALLING THE POWER CABLE

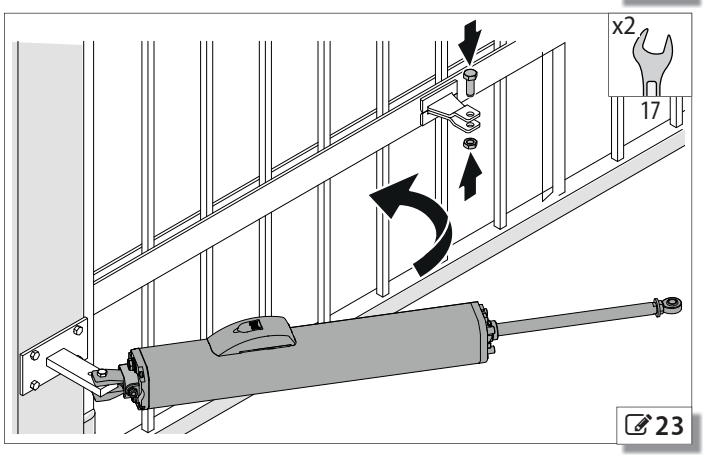
Make sure that the minimum bending radius of the cable is 60 mm.

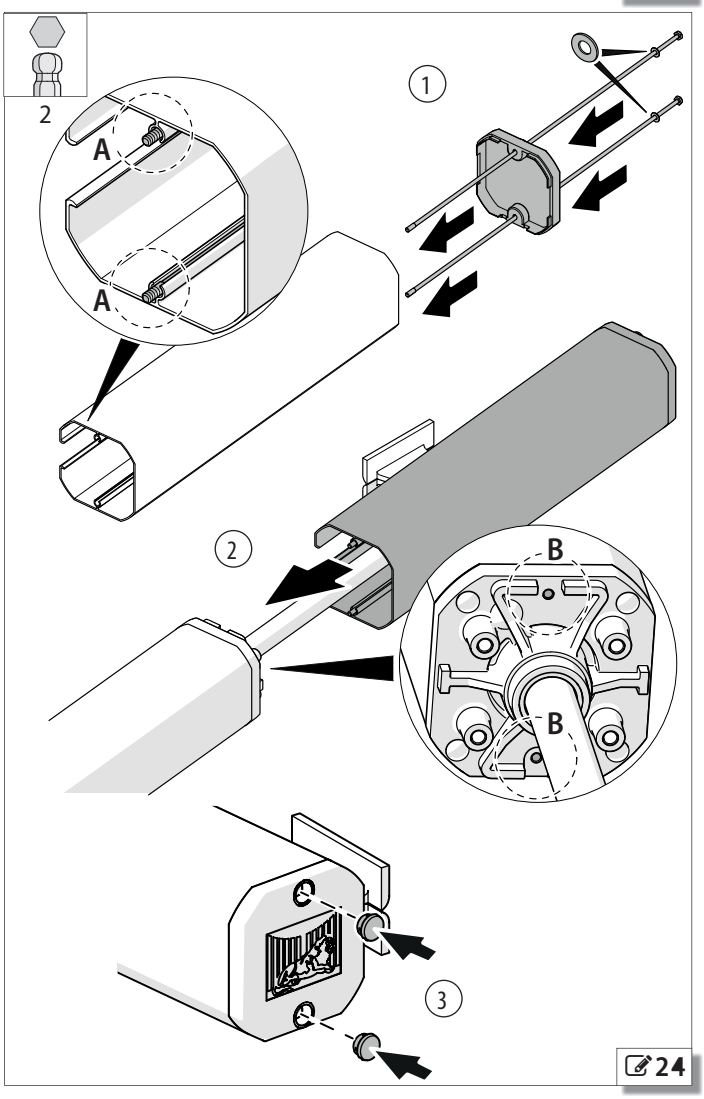
Move the leaf to make sure that the position of the cable does not interfere with other parts.

1. Press the power supply cable connector on (**25-1**).
2. Fasten in place using the two screws (**25-2**).









6. START-UP

RISKS

PERSONAL PROTECTIVE EQUIPMENT

Before making electrical connections, cut off the automation power supply. If the disconnect switch is not in view, apply a warning sign stating "WARNING - Maintenance in Progress".

1. Remove the breather screw (✎ **26**).
2. Connect the actuator to the electronic board:

Electric motor cable			
yellow-green	earth	brown	Opening
blue or grey	neutral	black	Closing

3. Connect the thrust capacitor supplied between the two phases of the electric motor.
4. Turn the power back on.
5. Start the electronic board following the specific instructions and then adjust the by-pass screws.

6.1 REMOVE THE BREATHER SCREW

Remove the screw and washer in order to open the vent hole.

A few drops of oil may leak out after the breather screw has been removed, even after the initial movements in case of manual movements. Keep the screw as it will have to be reinstalled if the actuator has to be removed and subsequently transported.

6.2 ADJUSTING THE FORCE (BY-PASS)

Be careful when working in the area of movement of the leaf because of the risk of impact and crushing.

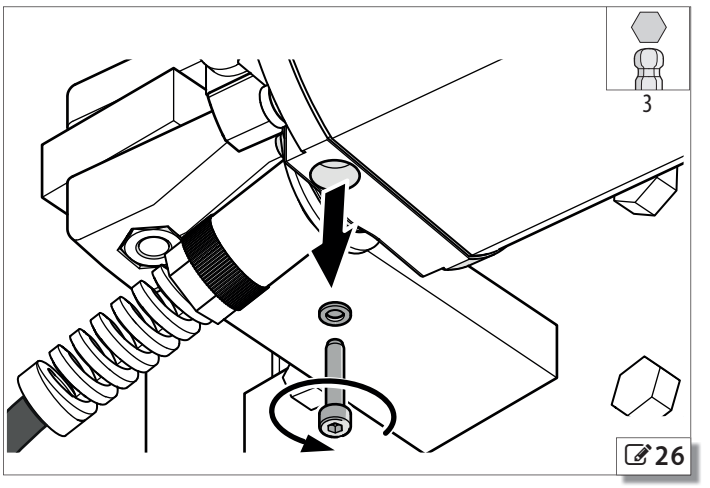
1. Open the lock cover (✎ **27**-**1**).
2. Insert the key and turn it clockwise by 90° (✎ **27**-**2**).
3. Lift the cover and remove the screw and then the knob (✎ **27**-**3**).
4. To regulate the force, adjust the by-pass screw corresponding to the opening/closing movement (✎ **27**-**4**):

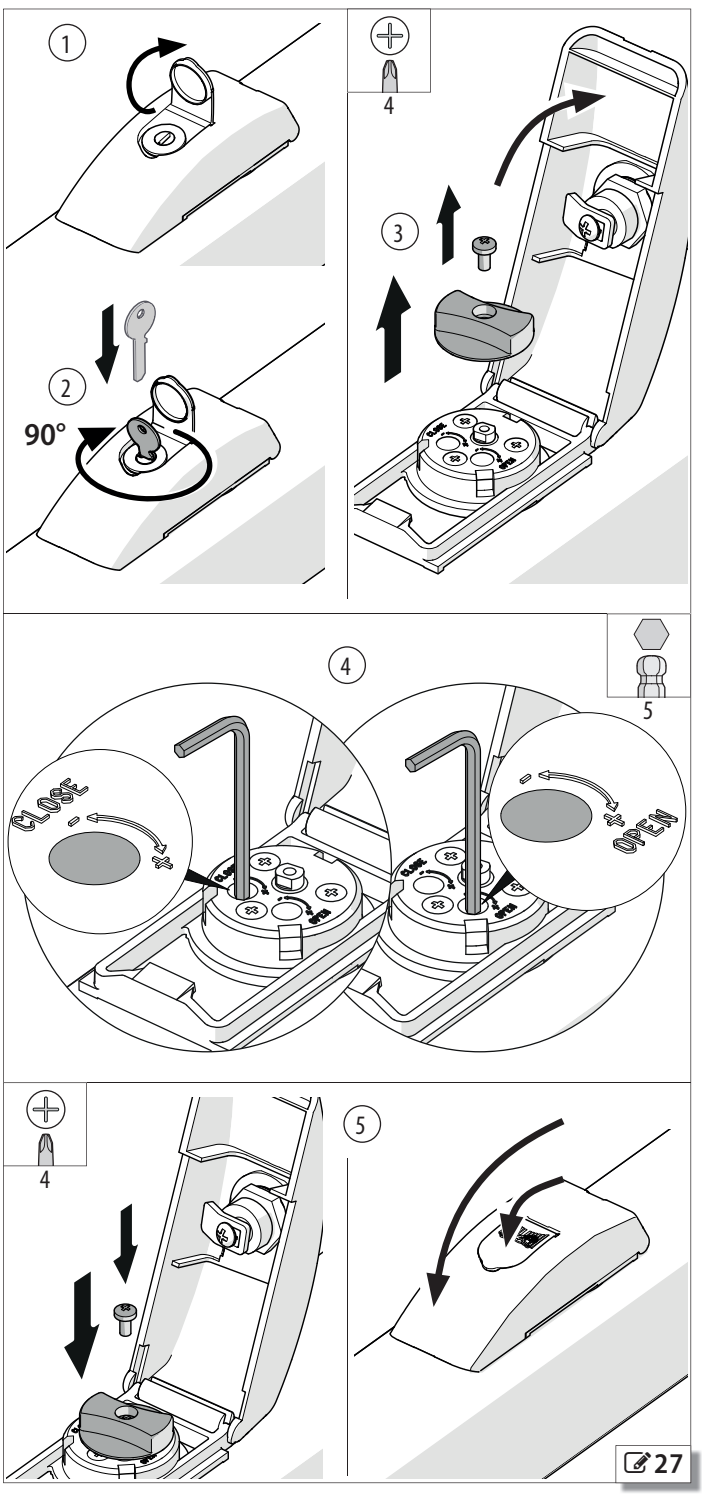
OPEN screw = regulates the force of the leaf during opening
CLOSE screw = regulates the force of the leaf during closing
tighten to increase the force ↻ +
loosen to decrease the force ↺ –

We suggest that for each by-pass you:
- loosen the screw completely
- carry out the corresponding movement
- tighten gradually until movement starts to become smooth

Make sure it has been adjusted correctly by using an impact force tester in accordance with standard EN 12453. For non-EU countries, of there are no specific local regulations, the force must be less than 150 N.

5. Reinstall the knob and close again (✎ **27**-**5**).





7. PUTTING INTO SERVICE

7.1 FINAL CHECKS

1. Make sure that the forces generated by the leaf are within the limits permitted by the current regulations. Use an impact force tester in accordance with standard EN 12453 . For non-EU countries, of there are no specific local regulations, the force must be less than 150 N.
2. Check that the maximum force required to move the leaf manually is less than 225 N in residential areas and 260 N in industrial or commercial areas.
3. Make sure that the automation is working properly with all the devices installed.

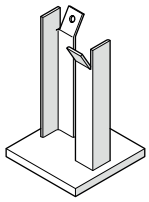
7.2 FINAL OPERATIONS

4. Highlight all areas with adequate warning signs in which there are still residual risks, even if all possible safety measures having been adopted.
5. Place a "DANGER, AUTOMATICALLY CONTROLLED" sign in a prominent position on the door.
6. Attach the CE marking to the gate.
7. Fill out the EC declaration of conformity and the system register.
8. Give the EC Declaration, the system register with the maintenance plan and the instructions for use of the automation to the system owner/operator.

8. ACCESSORIES

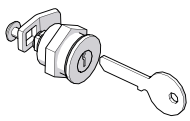
Refer to the specific instructions provided.

Plate to embed in masonry



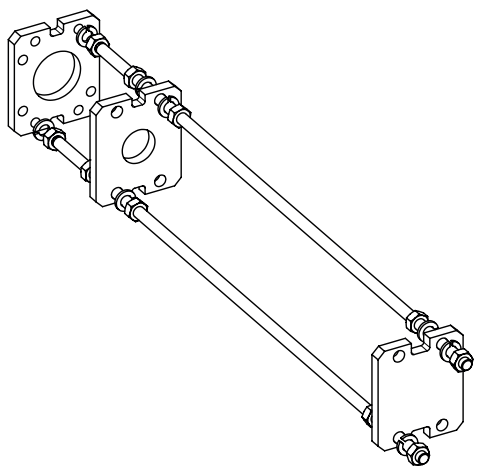
Fitting for RTA sheath

Release lock with personalised key



SAFEcoder absolute magnetic BUS encoder

Positive Stop



9. MAINTENANCE

RISKS

PERSONAL PROTECTIVE EQUIPMENT

Before performing any maintenance, disconnect the mains power supply. If the disconnecting switch is not visible, apply a "ATTENTION - Maintenance in progress" sign. Restore the power supply once maintenance is complete and after tidying up the area.

Maintenance must be performed by the installer/maintenance technician.

Comply with all the safety instructions and recommendations provided in this manual.

Close off the work site and prevent access/transit. Do not leave the work site unattended.

The work area must be kept tidy and clear upon completing maintenance.

Before starting activities, wait for the components subject to heating to cool down.

Do not modify the original components in any way.

FAAC S.p.A. disclaims any liability for damage caused by components that are modified or tampered with.

The warranty shall be forfeited in the event of tampering with components.

For replacements, use only original spare parts FAAC.

9.1 SCHEDULED MAINTENANCE

It is mandatory to carry out the operations indicated in ▦ **4** in order to keep the actuator working reliably and safely.

The installer/machine manufacturer is responsible for drawing up the maintenance plan for the machine, supplementing this list or shortening maintenance intervals according to the machine characteristics and current local regulations.

▦ **4** Scheduled maintenance of the actuator

To check the fastening torque, tighten (i.e. turn clockwise) using a torque wrench until you reach the torque value indicated in the instructions manual during installation.

Operations	Frequency in months
Check that the cover/casing and all the movable guards are integral and that they are fastened correctly. Tighten screws and bolts where necessary.	12
Check the fastening torque of the screws that secure the operator to the front fork and to the front and rear brackets.	12
Check the tightening of the joint on the rod.	12
Check that the brackets are firmly secured to their supports.	12
Check that the SAFEcoder is properly secured, if present.	12
Check the tightening and adjustment of the positive stop, if present.	12
Check that the motor power cable is intact.	12
Clean the rod using a clean damp cloth.	12
Make sure that there is no oil leaking from the seals.	12
Generally clean the operator with a clean cloth, moistened with a neutral detergent.	12
Grease all the rotation points with a brush.	12
Make sure that the manual release is working correctly.	12

▦ **5** Maintenance of other components

Operations	Frequency in months
STRUCTURES	
Check the structures and the parts of the building to which the gate and the automation is fixed: make sure there is no damage, cracking, breaks or subsidence.	Follow the manufacturer's instructions

Operations	Frequency in months
GATE	
Check the frame: make sure that it is fixed correctly, that it is intact and that there is no deformation or damage. Tighten screws and bolts where necessary.	Follow the manufacturer's instructions
Check the leaf: make sure that it is intact and that there is no deformation or damage.	Follow the manufacturer's instructions
Check the hinges: make sure that they are fixed correctly; that they are intact, correctly positioned in their seats and that there is no deformation or damage.	Follow the manufacturer's instructions
Lubricate hinges and locks/electric locks, if necessary.	Follow the manufacturer's instructions
Perform a general clean of the area of movement of the gate.	12
Make sure that the pictograms are present and intact. If they are missing or damaged, replace them.	12

Operations	Frequency in months
PROTECTIVE DEVICES AND CONTROL DEVICES	
Check that the protective devices are intact and that they operate correctly.	Follow the manufacturer's instructions
Check that the control devices are intact and that they operate correctly.	Follow the manufacturer's instructions

Operations	Frequency in months
GATE COMPLETE WITH OPERATOR	
Check that the gate operates properly in both directions with all the devices installed.	6
Check that the gate moves correctly - smooth, regular and without making abnormal l noises.	6
Check that the opening and closing speed is correct.	6
Check that the gate operates properly in the selected operating mode.	12
Check that the electric lock is working properly, if present.	Follow the manufacturer's instructions
Check that the safety devices (SAFEcoder, XS) are working correctly, if present.	6
Repeat the operations in the "Final checks" section.	6
Check that the gate's CE marking and the DANGER, AUTOMATIC MOVEMENT warning sign is present, intact and legible.	12

9.2 OPERATIONAL PROBLEMS

6 Troubleshooting

CONDITION	FINDING SOLUTIONS
No movement	Check that the actuator is not released.
	Check that there is power.
	Check the motor connection.
	Check the adjustment of the by-pass screws.
	Check the connection and operation of the thrust capacitor.
	Check that the electronic equipment is working properly.
The gate closes rather than opening and vice versa	Invert the motor connection phases.
Slow movement	Check the adjustment of the by-pass screws.
Irregular movement	Make sure that the breather screw has been removed.
	Move the gate several times to purge any air that may be present in the piston.
	Check the installation measurements.

10. INSTRUCTIONS FOR USE

It is the responsibility of the machine installer/manufacturer to draft the user instructions of the automation in accordance with the Machinery Directive, including all the required information and instructions based on the characteristics of the automation.

The guidelines below, which are purely indicative and in no way exhaustive, help the installer draft the user instructions.

The installer must provide the owner/operator of the automation with the EC Declaration, the system Logbook with the maintenance schedule and the user instructions of the automation.

The installer must inform the owner/operator of any residual risks and the intended use and ways in which the machine should not be used.

The owner is responsible for operating the automation and must:

- comply with all User instructions provided by the installer/maintenance technician and the Safety recommendations
- keep the user instructions
- have the maintenance schedule implemented
- keep the system Logbook, which must be completed by the maintenance technician at the end of all servicing

10.1 SAFETY RECOMMENDATIONS

The 400 is intended for installation on gates in areas that are accessible by people, the main purpose of which is to provide access for goods, vehicles and people.

The user must be in good physical and mental health and be aware of and responsible for the dangers which use of the product can lead to.

- Do not remain in or walk/drive through the area of operation of the automation while it is moving.
- Do not use the automation when the area of operation is not free of persons, animals or objects.
- Do not allow children to approach or play in the area of operation of the automation.
- Do not try to prevent the movement of the automation.
- Do not climb on, hold onto or let yourself be pulled by the leaf.
- Do not allow the devices to be used by anyone who is not specifically authorised and trained to do so.
- Do not allow the devices to be controlled by children or persons with mental and physical deficiencies unless they are supervised by an adult who is responsible for their safety.
- Do not use the automation with the fixed and/or mobile guards removed or altered.
- Do not use the automation in the presence of faults which could compromise safety.
- Do not expose the automation system to corrosive chemical or atmospheric agents; do not expose the actuator to corrosive chemical or atmospheric agents.
- Do not expose the automation to flammable gases or fumes.
- Do not perform any work on the components of the automation.

10.2 EMERGENCY USE

Environmental phenomena, even occasional, such as ice, snow and strong wind may hinder correct operation of the automation and affect component integrity and may become a potential source of danger.

In emergencies or if there is a fault, turn off the power supply to the automation. If the leaf can be moved safely by hand, use the MANUAL OPERATION mode; otherwise place the automation out of service until it has been reset/repaired.

In the case of a breakdown, the automation must be reset/repaired exclusively by the installer/maintenance technician.

10.3 MANUAL OPERATION

The actuator has to be released in order to operate the leaf manually.

⚠ Disconnect the power supply from the automation before releasing the actuator.

During manual operation, gently guide the leaf the whole way. Do not push it and let it slide freely.

Do not leave the actuator in the released mode: restore automatic operation after moving it manually.

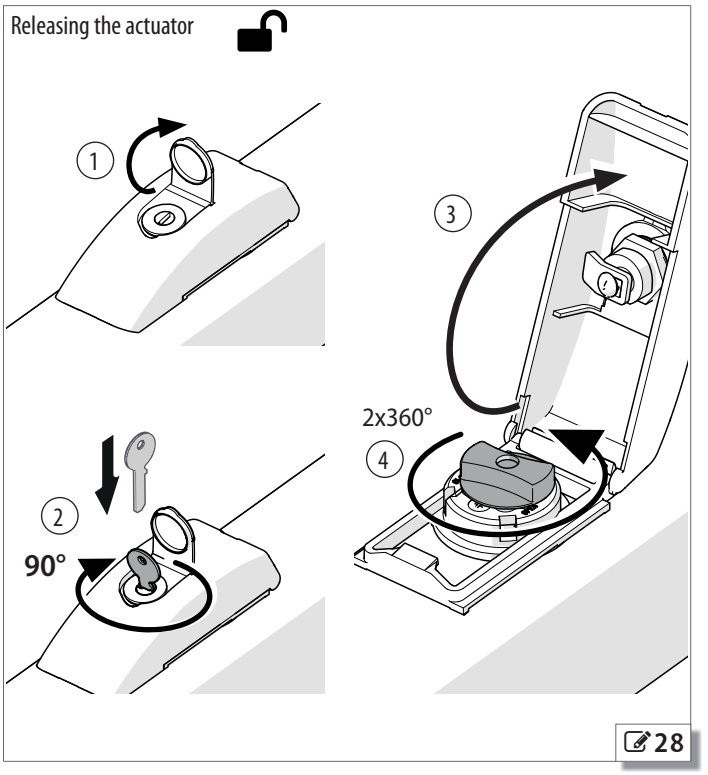
RELEASING THE ACTUATOR

1. Open the lock cover (✎ **28**-**1**).
2. Insert the key and turn it clockwise by 90° (✎ **28**-**2**).
3. Open the release device cover (✎ **28**-**3**).
4. Turn the knob fully anticlockwise without forcing it (about two complete turns) (✎ **28**-**4**).

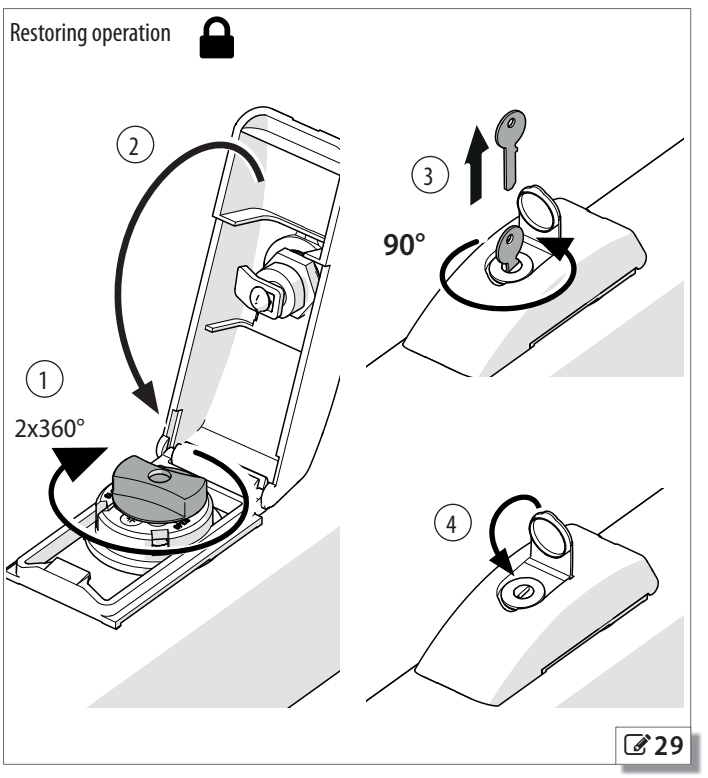
Move the barrier manually.

REINSTATING OPERATION

1. Turn the knob clockwise until it stops (✎ **29**-**1**).
2. Close the release device cover (✎ **29**-**2**).
3. Turn the key counter-clockwise by 90°and then remove it (✎ **29**-**3**).
4. Close the lock cover (✎ **29**-**4**).



✎ **28**



✎ **29**

1 Limitations of use in relation to wind

The tables indicate the maximum permitted wind force (Beaufort scale) for the 400 with maximum force regulation (by-pass) in relation to the:
- surface of the leaf exposed to the wind
- length of the leaf
- actuator model

Winds stronger than those permitted could affect the operation of the 400.

It is the responsibility of the installer to assess the impact of the wind on all components of the structure (columns, hinges, leaves) in order to calculate the maximum permitted wind force for the automation.

Beaufort number and description (Beaufort scale)		Wind speed (km/h)
0	Calm	≤ 1
1	Light air	> 1…6
2	Light breeze	> 6…11
3	Gentle breeze	> 11…19
4	Moderate breeze	> 19…29
5	Fresh breeze	> 29…39
6	Strong breeze	> 39…50
7	High wind	> 50…62
8	Gale	> 62…75
9	Severe gale	> 75…87
10	Storm	> 87…102
11	Violent storm	> 102…117
12	Hurricane force	> 117

7 Limitations of use 400 CBC, 400 CBAC, 400 SB

Exposed surface (m²)	Leaf length (m)											
	0.9	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0
1	**12**				**11**						**10**	
2	**11**			**10**		**9**			**8**			
3	**10**		**9**									
4	**9**											
5												
6	**8**											
7												
8	**7**											
9												
10												
11												
12	**6**		**5**				**4**					

8 Limitations of use 400 CBAC L

Exposed surface (m²)	Leaf length (m)										
	1.1	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0
1	**12**				**11**						**10**
2	**11**			**10**		**9**				**8**	
3	**10**	**10**	**9**								**7**
4	**9**										**6**
5	**8**										
6											
7											
8	**7**										
9											
10											
11	**6**		**5**								
12								**4**			

9 Limitations of use 400 SBS

Exposed surface (m^2)	Leaf length (m) 0.9	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0
1	**12**						**11**					
2						**10**		**9**				**8**
3	**11**		**10**		**9**		**8**					
4	**10**		**9**									
5	**9**											
6												
7	**8**											
8												
9												
10	**7**											
11			**6**									
12				**5**						**4**		

10 Limitations of use 400 SBS L

Exposed surface (m^2)	Leaf length (m) 1.1	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0
1	**12**					**11**					
2	**11**				**10**		**9**				**8**
3		**10**		**9**		**8**					
4	**9**										
5											
6	**8**										
7											
8	**7**										
9											
10											
11											
12	**6**		**5**						**4**		

2 Outward opening applications

Refer to the following tables to establish the correct rear bracket position. The maximum opening angle of the leaf is indicated in the tables.

If necessary, modify the length and shape of the rear bracket arm and then install it:

- **A** and **B** rear bracket installation measurements
- **D** distance between the edge of the pillar and the axis of the leaf hinge
- **Z** distance between the fulcrum of the rear bracket and the pillar
- **S** distance between the axis of the leaf hinge and the mounting surface of the front bracket
- **Y** distance between the fulcrum of the front bracket and the surface of the leaf. According to the model:

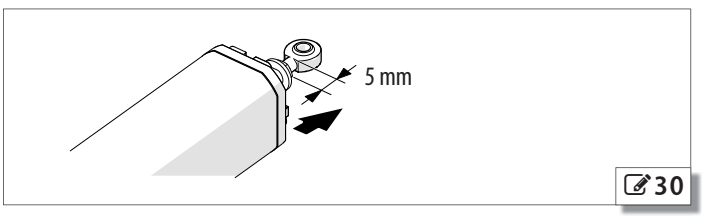
400 **Y = 75 mm**

400L **Y = 100 mm**

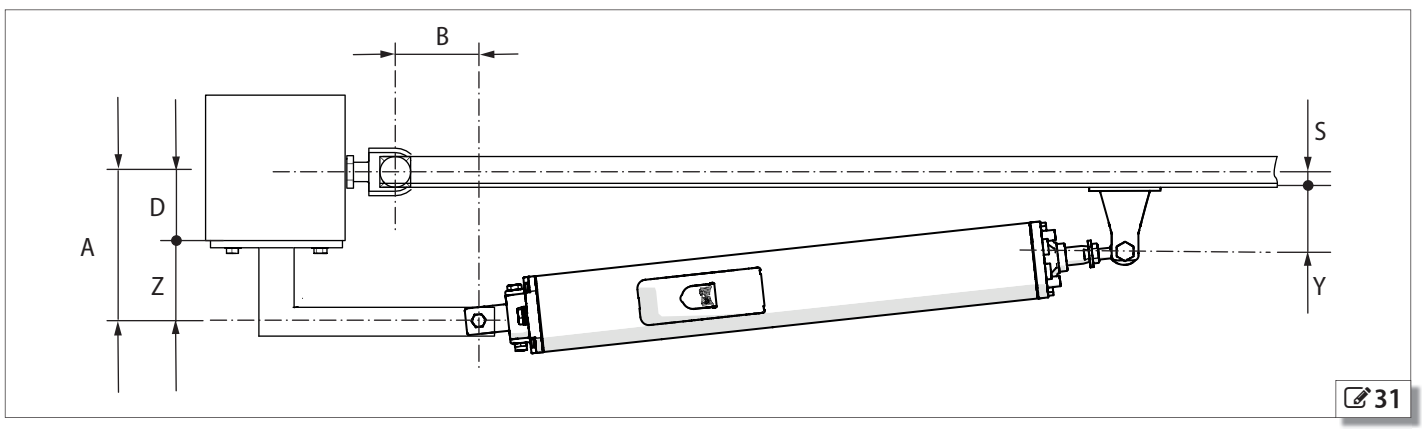
Install the actuator following the instructions in the specific sections with the following differences:

- when fixing the front bracket, the rod should be fully retracted and then pushed out by 5 mm (✎ **30**).
- during start-up and when not powered, invert the phase wires of the motor to change the direction of travel.
- when adjusting the force (§ Adjusting the force - By-Pass), the function of the by-pass screws is reversed: **OPEN** = regulates the force during closing, **CLOSE** = regulates the force during opening.

For applications in which the gate opens outwards, a **CBA** has to be installed to obtain the closing lock and a **CBC** to obtain an opening lock.



✎ **30**



✎ **31**

▦ **11** Outward opening - Measurements 400

(1) a closing electric lock has to be installed

(2) the speed of the leaf could be uneven during the final stage of movement

S=0		B									
		70	**80**	**90**	**100**	**110**	**120**	**130**	140	150	160
A	**80**	105° (1-2)	110° (1-2)	115° (1-2)	120° (1-2)	125° (1-2)	125° (1-2)	115° (1)	105° (1)	100° (1)	95° (1)
	90	105° (2)	110° (2)	115° (2)	115° (2)	120° (2)	120°	110°	100°	95°	
	100	105° (2)	105° (2)	110° (2)	115° (2)	120° (2)	110°	105°	95°		
	110	100° (2)	105° (2)	110° (2)	115° (2)	120° (2)	105°				
	120	100° (2)	105° (2)	110° (2)	110° (2)						
	130	100° (2)									

S=20		B								
		70	**80**	**90**	**100**	**110**	**120**	**130**	140	150
A	**100**	90° (1)	95° (1)	100° (1)	105° (1)	110° (1)	110° (1)	105° (1)	95° (1)	90° (1)
	110	90°	95°	100°	105°	110°	105°	100°	90°	
	120	90°	95°	100°	105°	110°	100°	95°		
	130	90°	95°	100°	105°	100°	95°	90°		
	140	90°	95°	100°	105°	95°	90°			
	150	90°	95°							

S=40		B				
		90	**100**	**110**	**120**	**130**
A	**120**	90°	95°	100°	100°	95°
	130	90°	95°	100°	95°	90°
	140	90°	95°	95°	90°	
	150	90°	95°	90°		
	160	90°	90°			

12 Outward opening - Measurements 400 L

(1) a closing electric lock has to be installed

(2) the speed of the leaf could be uneven during the final stage of movement

S=0

A \ B	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240
100	110° (1-2)	115° (1-2)	120° (1-2)	120° (1-2)	125° (1-2)	125° (1-2)	130° (1-2)	130° (1-2)	135° (1-2)	140° (1-2)	135° (1)	125° (1)	115° (1)	110° (1)	105° (1)	100° (1)	95° (1)
110	110° (1-2)	110° (1-2)	115° (1-2)	120° (1-2)	120° (1-2)	125° (1-2)	130° (1-2)	130° (1-2)	135° (1-2)	135° (1-2)	130° (1)	120° (1)	110° (1)	105° (1)	100° (1)	95° (1)	95° (1)
120	105° (2)	110° (2)	115° (2)	115° (2)	120° (2)	125° (2)	125° (2)	130° (2)	130° (2)	135° (2)	120°	115°	105°	100°	100°	95°	90° (1)
130	105° (2)	110° (2)	110° (2)	115° (2)	120° (2)	120° (2)	125° (2)	125° (2)	130° (2)	130° (2)	115°	110°	105°	100°	95°	90°	90° (1)
140	105° (2)	110° (2)	110° (2)	115° (2)	115° (2)	120° (2)	125° (2)	125° (2)	130° (2)	120°	110°	105°	100°	95°	90°	90°	
150	105° (2)	110° (2)	110° (2)	115° (2)	115° (2)	120° (2)	120° (2)	125° (2)	125° (2)	115°	105°	100°	95°	95°	90°		
160	105° (2)	105° (2)	110° (2)	115° (2)	115° (2)	120° (2)	120° (2)	120° (2)	120°	110°	105°	100°	95°				
170	100° (2)	105° (2)	110° (2)	110° (2)	115° (2)	115° (2)	120° (2)	120° (2)	115°	105°							
180	100° (2)	105° (2)	110° (2)	110° (2)	115° (2)	115° (2)	115° (2)	120° (2)									
190	100° (2)	105° (2)	105° (2)														

S=20

A \ B	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240
120	100° (1)	100° (1)	105° (1)	100° (1)	115° (1)	115° (1)	120° (1)	125° (1)	125° (1)	125° (1)	120° (1)	115° (1)	105° (1)	105° (1)	100° (1)	95° (1)	90° (1)
130	95° (1)	100° (1)	105° (1)	110° (1)	110° (1)	115° (1)	120° (1)	120° (1)	125° (1)	125° (1)	115° (1)	110° (1)	105° (1)	100° (1)	95° (1)	90° (1)	90° (1)
140	95°	100°	105°	105°	110°	115°	115°	120°	120°	120°	110°	105°	100°	95°	95°	90°	
150	95°	100°	105°	105°	110°	115°	115°	120°	120°	115°	105°	100°	95°	95°	90°		
160	95°	100°	105°	105°	110°	110°	115°	115°	120°	110°	105°	100°	95°	90°			
170	95°	100°	105°	105°	110°	110°	115°	115°	110°	105°	100°	95°	90°				
180	95°	100°	100°	105°	105°	110°	110°	115°	105°	100°	95°	90°					
190	95°	100°	100°	105°	105°	110°	110°	110°	100°	95°	90°	90°					
200	95°	100°	100°	105°	105°	110°	110°	105°	95°	90°	90°						
210	95°	100°	100°	105°													

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A \ B	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230
140	90° (1)	95° (1)	95° (1)	100° (1)	105° (1)	105° (1)	110° (1)	115° (1)	115° (1)	120° (1)	110° (1)	105° (1)	100° (1)	95° (1)	95° (1)	90° (1)
150	90° (1)	90° (1)	90° (1)	100° (1)	105° (1)	105° (1)	110° (1)	110° (1)	115° (1)	115° (1)	105° (1)	100° (1)	95° (1)	95° (1)	90° (1)	
160	90°	95°	95°	100°	105°	105°	110°	110°	115°	110°	105°	100°	95°	90°		
170	90°	95°	95°	100°	100°	105°	110°	110°	110°	105°	100°	95°	90°			
180	90°	90°	95°	100°	100°	105°	105°	110°	105°	100°	95°	90°				
190	90°	90°	95°	100°	100°	105°	105°	110°	100°	95°	90°	90°				
200	90°	95°	95°	100°	100°	105°	105°	105°	95°	90°	90°					
210	90°	90°	95°	100°	100°	105°	105°	100°	95°	90°						
220	90°	90°	95°	100°	100°	105°	100°	95°	90°							
230	90°	90°	95°	100°	100°	100°										

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