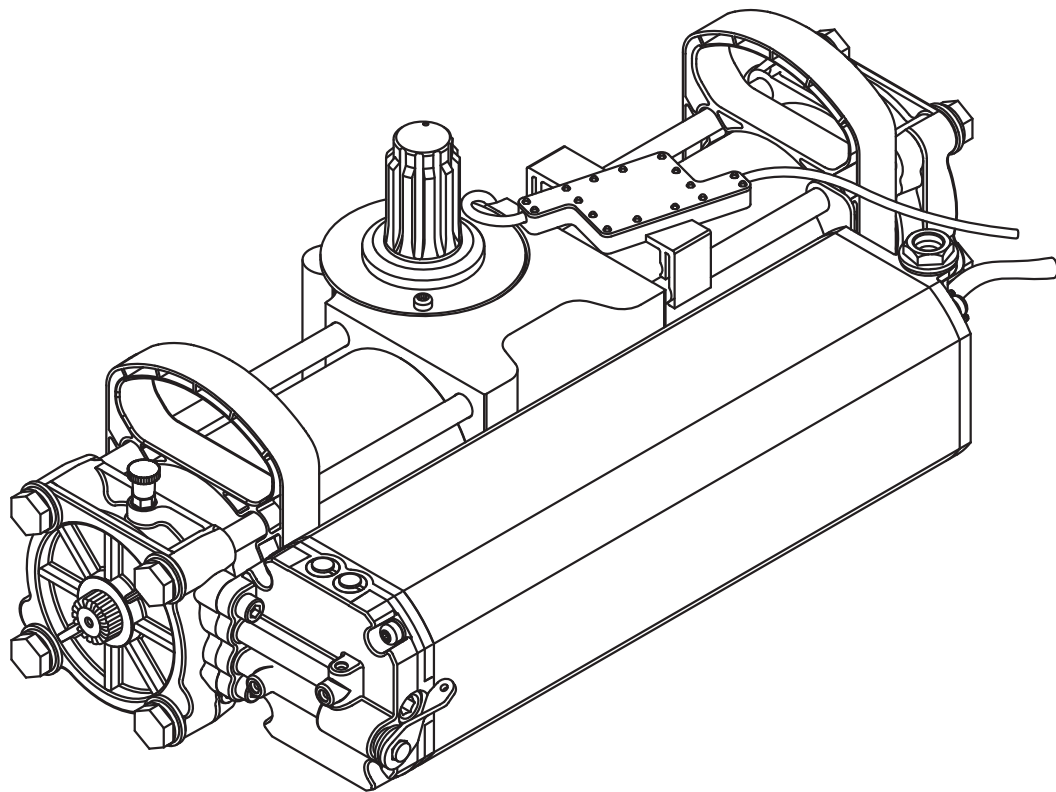


S800 ENC



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EC DECLARATION OF CONFORMITY

The Manufacturer

Company name: FAAC S.p.A. Soc. Unipersonale

Address: Via Calari, 10 - 40069 Zola Predosa BOLOGNA

hereby declares that the following products:

Description: Underground actuator for swing gates

Model: S800 ENC 100° CBAC 230V; S800 ENC 180° CBAC 230V;
S800 ENC 100° SBW 230V; S800 ENC 180° SBW 230V

comply with the following applicable EU legislations:

Directive EMC 2004/108/EC

Directive ROHS 2 2011/65/EU

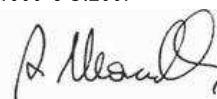
Furthermore, the following harmonised standards have been applied:

EN 61000-6-2:2005

EN 61000-6-3:2007

Bologna, 01-01-2016

CEO



DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

(2006/42/EC ANN.II P.1, LETT. B)

Manufacturer and person authorised to prepare the relevant technical documentation

Company name: FAAC S.p.A. Soc. Unipersonale

Address: Via Calari, 10 - 40069 Zola Predosa BOLOGNA

hereby declares that for the partly completed machinery:

Description: Underground actuator for swing gates

Model: S800 ENC 100° CBAC 230V; S800 ENC 180° CBAC 230V;
S800 ENC 100° SBW 230V; S800 ENC 180° SBW 230V

the following essential requirements of the Machinery Directive 2006/42/EC (including all applicable amendments) have been applied and met:

EHSR 1.1.2, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.2.3,

1.3.2, 1.3.3, 1.3.7, 1.3.8.1, 1.3.8.2, 1.3.10,

1.3.11.2, 1.4.1, 1.4.5, 1.4.6, 1.4.8, 1.4.9, 1.4.11,

1.5.4, 1.5.15, 1.6.1, 1.6.1.1

and that the relevant technical documentation has been compiled in accordance with part B of Annex VII.

Furthermore, the following harmonised standards have been applied:

EN 12453:2000

EN 12100:2010

EN 13849-1:2008

EN 13849-2:2008

It is also declared that the partly completed machinery identified above may

1. INTRODUCTION TO THE INSTRUCTION MANUAL

This manual provides the correct procedures and requirements for installation and keeping of S800 ENC in safe conditions.

The results of the risk assessment conducted by FAAC S.p.A. on the entire life cycle of the product has been considered when drafting the manual in order to implement effective risk reduction.

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

- delivery/handling of the supply
- assembly and installation
- setting up and commissioning
- operation
- maintenance/resolving any faults
- disposal at the end of the product's life

Risks arising from installation and using the product have been considered:

- risks for the installer/maintenance technician (technical personnel)
- risks for the automation user
- risks for product integrity (damage)

In Europe, the automation of a door/gate falls under the Machinery Directive 2006/42/EC and the relevant harmonised standards. Whoever automates a door/gate (new or existing) is referred to as the Manufacturer of the Machine. By law, it is therefore required, among other things, to carry out a risk analysis of the machine (automatic door/gate, as a whole) and take protective measures to fulfil the essential safety requirements specified in Attachment I of the Machinery Directive.

This manual also contains general information and guidelines in a purely illustrative and not exhaustive manner, so as to facilitate the activities carried out by the Manufacturer of the Machine, in all respects, in relation to the risk analysis and drafting instructions for use and maintenance of the machine. It is specifically understood that FAAC S.p.A. does not accept any liability with regard to the reliability and/or completeness of the above instructions. Therefore, the manufacturer of the machine must carry out all the activities required by the Machinery Directive and the relevant harmonised standards, according to the actual condition of the locations and structures where the product S800 ENC 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 door/gate must fully comply with 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



1 Symbols: notes and warnings on the instructions



ATTENTION ELECTROCUTION HAZARD - The operation or step described must be performed in compliance with the provided instructions and safety regulations.



WARNING: RISK OF PERSONAL INJURY OR DAMAGE TO THE PARTS - The operation or step described must be performed in compliance with the provided instructions and safety regulations.



For manual lifting, arrange for 1 person every 20 kg being 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/PARAGRAPH E.g.: §1.1 see Paragraph 1.1.



ANNEX E.g.: 1 refer to Annex 1.



2 Symbols: safety recommendations (EN ISO 7010)



GENERIC HAZARD

Risk of personal injury or damage to parts.



ELECTROCUTION HAZARD

Risk of electrocution due to the presence of live parts.



RISK OF CRUSHING, MUSCOLO-SKELETAL DISORDERS

Risk of musculoskeletal crushing - Risk of personal injury in carrying heavy loads manually.



CRUSHING HAZARD

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



CUTTING/AMPUTATION/PIERCING HAZARD

Risk of cutting due to the presence of sharp parts or the use of tools (drill).



SHEARING HAZARD

Risk of shearing due to moving parts.



RISK OF IMPACT/CRUSHING

Risk of impact or crushing due to moving parts.



FALLING OBJECTS HAZARD

Risk of impact due to falling objects.



TRIPPING HAZARD

Risk of tripping due to the presence of thresholds higher than 20 mm.



SPENT BATTERIES HAZARD

3 Symbols: Personal Protective Equipment

Personal protective equipment must be worn for protection from any risks (e.g. crushing, cutting, shearing...):



Obligation to wear head protection helmet.



Obligation to wear safety footwear.



Obligation to wear mask/goggles to protect the eyes from the risk of fragments due to the use of drill or welder.



Obligation to wear work gloves.



Obligation to wear ear protectors.



Obligation to wear work clothes without any parts that may get caught in moving parts..

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 will be 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 a 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, competent and responsible for the hazards that may be generated with 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 or greater than 200 lux.

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

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

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

2.2 TRANSPORT AND STORAGE

 4 Symbols: signs on the packaging.



Read the instructions.



Handle with care. Presence of fragile parts.



Upward direction. Do NOT turn over.



Store away from water and humidity.



PROHIBITION to stack the pallets.



Maximum number of stackable packages.



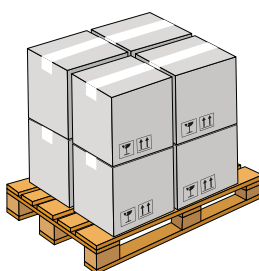
CE marking.

PALLETISED SUPPLY

RISKS



PERSONAL PROTECTIVE EQUIPMENT



Follow the instructions on the package while handling it.

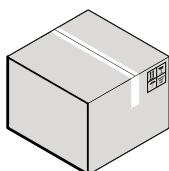
Use the forklift truck or pallet truck in observance of the safety rules to avoid risks of collision/impact.

SINGLE PACKAGE

RISKS



PERSONAL PROTECTIVE EQUIPMENT



Follow the instructions on the package while handling it.

STORAGE

Store the product in its original packaging, in closed and dry premises,

2.3 UNPACKING AND HANDLING

RISKS



PERSONAL PROTECTIVE EQUIPMENT



1. Open the package.
2. Remove all the components.



Lift the actuator by the handles.



Make sure all of the components in the supply are present and correct.
 1.

3. Dispose of the packaging material.



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



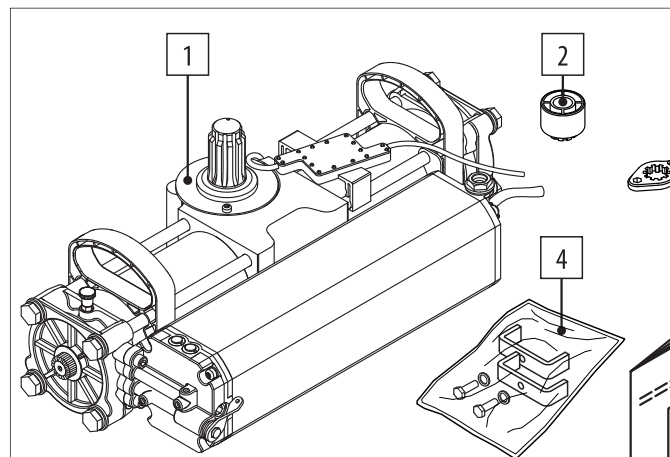
Discard the packaging after use in the appropriate containers in accordance with waste disposal regulations.

2.4 PRODUCT WASTE DISPOSAL

After dismantling the product, dispose of it in compliance with the Standards in force.



The constructive components and materials, batteries and electronic components must not be disposed of with household waste. They must be delivered to authorised disposal and recycling facilities. They must be collected in a sealed container and handed over to an authorised disposal and recycling facility. Do not mix with other substances such as anti-freeze or transmission fluids. Keep the used components away from heat sources and out of reach of children.



3. S800 ENC

3.1 INTENDED USE

Underground actuators of the FAAC S800 ENC series are designed to activate horizontally moving swing gates for residential/condominium use.

One underground actuator must be installed for each leaf.

The systems set up with S800 ENC must only be intended for vehicle transit.

See the instructions in § 8.3 to move the gate by hand.



Any other use, not specifically described, is prohibited and might affect the integrity of the product and/or be a source of danger.

3.2 LIMITS OF USE

The leaf must comply with the dimensional and weight limits specified in the technical data.

Comply with the frequency of use limits indicated in the technical data.

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 (see § Use in an emergency).

The limits of use in relation to the wind are described in detail in Limits of use of S800 ENC in relation to the wind.

In the presence of a pedestrian door integrated in the leaf of the gate, motorised movement must be prevented when the pedestrian door is not closed.

S800 ENC is not designed as a protective system against intrusion.

S800 ENC must be connected to an electronic board FAAC for 230 V motor control of swing gates, fitted with a BUS connection and slow-down control at the limit switch.

The automation set-up requires necessary safety devices to be installed, which are identified by the installer after having carried out a proper risk assessment of the installation site.

3.3 UNAUTHORISED USE

- Any use other than the intended use is prohibited.
- It is prohibited to install the automation outside of the limits set forth in the Technical data and the Installation requirements.
- It is prohibited to install the automation along escape routes.
- It is prohibited to install the automation to implement smoke and/or fire protection doors (fire doors).
- It is prohibited to install the automation in areas that are at risk of explosion and/or fire: the presence of flammable gases or fumes poses a severe danger for safety (the product is not certified pursuant to directive 94/9/EC ATEX).
- It is prohibited to power the system with energy sources other than those set forth.
- It is prohibited to integrate unrelated commercial systems and/or equipment, or employ them for uses that are not allowed by the respective manufacturers.
- It is prohibited to use and/or install accessories that are not specifically approved by FAAC S.p.A..
- It is prohibited to use the automation before having commissioned the system.
- It is prohibited to use the automation with faults/tampering which could jeopardise safety.
- It is prohibited to use the automation with movable and/or fixed

- Do not use the automation when its range of action is of people, animals or objects.
- Do not pass and/or stop within the automation's range while it is moving.
- Do not obstruct the movement of the automation.
- Do not climb onto, hold onto or be pulled by the leaf.
- Do not allow children to come close or play near the automation's range of action.
- Do not allow the control devices to be used by persons not specifically authorised and trained.
- Do not allow the control devices to be used by children or persons with reduced mental-physical abilities, unless under the supervision of an adult responsible for their safety.



When moving it manually, slowly guide the leaf for its entire travel; do not push the leaf so it moves freely.

3.4 USE IN AN EMERGENCY

In any malfunction, emergency or fault, disconnect the power supply of the automation. If the conditions allow the leaf to be moved manually, use the MANUAL OPERATION; otherwise, disconnect the automation out of service until it is restored/repaired.

In case of a fault, the automation must be restored/repaired; this can only be carried out by the INSTALLER/MAINTENANCE TECHNICIAN.

3.5 PRODUCT IDENTIFICATION

The product is identified by the plate (see § 2).

FAAC S.p.A. Soc. Unipersonale
Via Calati, 10 - 40069 Zola Predosa BOLOGNA
Italy

Made in
Designed in Italy

Cod.

Mod. S800 ENC

MM/YY PROG

..... V~ Hz W

.... Nm lpm IP....

FAAC... OIL

..... MMYPROG

Sales code

Product name

IDENTIFICATION NUMBER

Month/Year of manufacture + Production number in production month.

Example: 0115 000
made in January 2015 S/N 1

3.6 TECHNICAL SPECIFICATIONS

The hydraulic actuator S800 ENC is available in different versions for 100° or 180° leaf opening options and for the CBAC or SBW type of motor block.

- **CBAC** (With Opening and Closing Block): when the motor is not running, resistance to movement is high. The hydraulic RELEASE device is required for manual operation. Electric locks are not required to hold the opening/closing positions.
- **SBW** (Without Windy Block) suitable for windy areas: when the motor is not running, resistance to movement is low (the limits of use in relation to the wind are described in detail in  1). The Hydraulic Release device is recommended for manual operation. Electric locks are required to hold the opening/closing positions.

Control system

- S800 ENC must be connected to a FAAC electronic board for the control of 230 V for swing gates, fitted with a BUS connection and slowdown control at the limit switch.

Standard equipment (on all versions)

- BUS magnetic absolute encoder to detect slowdown and stroke end positions and to recognise obstacles to movement (anti-crushing electronic function).
- By-pass screws to adjust the maximum crushing force during opening and closing.
- Service release lever: for manual operation during installation/maintenance.
- Integrated mechanical opening and closing stops (positive stop): used to define the leaf stop points. No external mechanical stops are required when using the positive stops. Using positive stops will also reduce the maximum stroke (maximum reduction: 30° for opening and 30° for closing). The limits of use of the positive stops in relation to the length and weight of the leaf are described in detail in  2.

FAAC Components required for installation:

- foundation box
- grooved joint kit

Optional FAAC accessories:

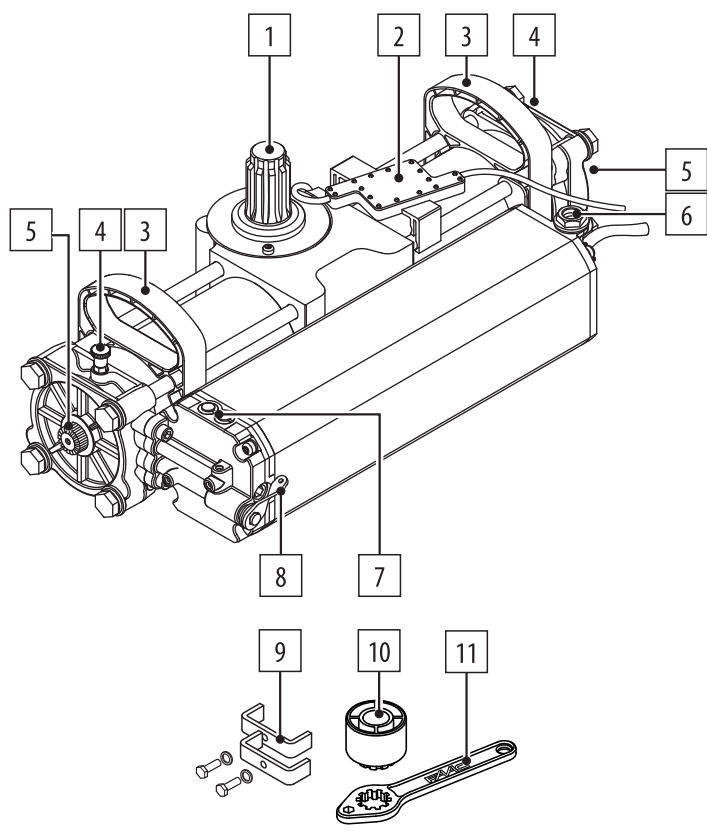
- hydraulic release device with coded key accessible from well as outside the gate (required on CBAC versions)
- lock with customised key for hydraulic release

 5 Technical data

Model Version	S800 ENC 100° CBAC 230V	S800 ENC 180° CBAC 230V	S800 ENC 100° SBW 230V	S800 ENC 180° SBW 230V
Mains power supply voltage	230 V~ 50 Hz	230 V~ 50 Hz	230 V~ 50 Hz	230 V~ 50 Hz
Electrical 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	280 W	280 W	280 W	280 W
Max torque	550 Nm	550 Nm	550 Nm	550 Nm
Max. leaf width	2 m	2 m	4 m	4 m
Max. leaf weight	800 kg	800 kg	800 kg	800 kg
Max angular speed	7.8 °/s	7.8 °/s	7.8 °/s	7.8 °/s
Max leaf opening angle	113 °	187 °	113 °	187 °
Operating ambient temperature	-20 °C +55 °C	-20 °C +55 °C	-20 °C +55 °C	-20 °C +55 °C
Type of use	Residential-Condominium	Residential-Condominium	Residential-Condominium	Residential-Condominium
Continuous operating time (ROT)	133' at 23 °C	133' at 23 °C	133' at 23 °C	133' at 23 °C
Protection rating	IP67	IP67	IP67	IP67
Type of oil	FAAC HP OIL	FAAC HP OIL	FAAC HP OIL	FAAC HP OIL
Dimensions (W x D x H)	380 x 220 x 160 mm	450 x 220 x 160 mm	380 x 220 x 160 mm	450 x 220 x 160 mm
(Foundation box)	(507 x 283 x 200 mm)	(507 x 283 x 200 mm)	(507 x 283 x 200 mm)	(507 x 283 x 200 mm)

3.7 IDENTIFICATION OF COMPONENTS

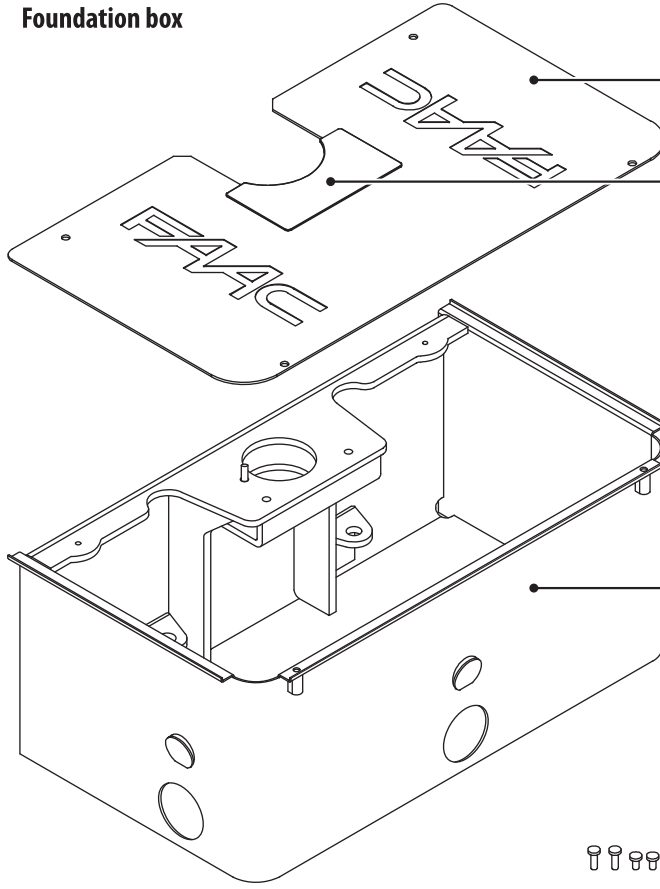
Hydraulic actuator S800 ENC



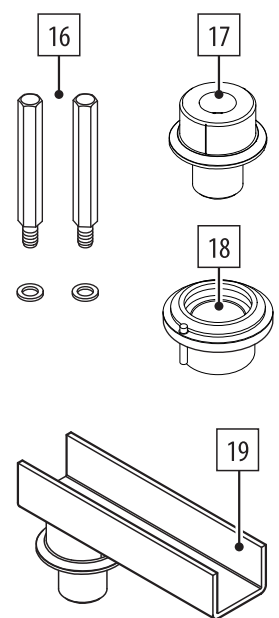
- 1 Pinion
- 2 Absolute encoder
- 3 Lifting handles
- 4 Bleed screws
- 5 Stroke end mechanical stop adjustment screws (positive stop)
- 6 Oil filler cap
- 7 By-pass screws (force adjustment)
- 8 Service release lever
- 9 Positive stop fastenings
- 10 Installation support
- 11 Key

INSTALLATION ACCESSORIES (SUPPLIED SEPARATELY)

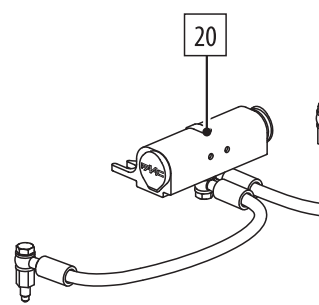
Foundation box



Grooved joint kit



Hydraulic release (optional)



Foundation box

- 12 Cover
- 13 Removable plate (not used when the hydraulic release is installed)
- 14 Foundation box
- 15 Cover fastening screws

Grooved joint kit

- 16 Screws with grower to fasten the actuator
- 17 Grooved joint
- 18 Bush
- 19 Guide bracket with groove

Grooved joint kit with guide

- 16 Screws with grower to fasten the actuator
- 18 Bush
- 19 Guide bracket with groove

4. INSTALLATION REQUIREMENTS

4.1 MECHANICAL REQUIREMENTS

The mechanical construction elements must comply with the provisions of Standards EN 12604 and EN 12605.

Before installing the automation, suitability of the mechanical requirements must be verified and any required procedures must be implemented for this purpose.

The necessary mechanical requirements are:



Solid ground to support the weight of the actuator and the leaf.

Flat and horizontal flooring in the leaf movement area.

Set-up of an adequate rainwater draining system from the foundation box.

Perfectly vertical leaf in all positions along the stroke with smooth and even movement, without friction.

A solid, stable structure (columns, hinges, leaves) and without the risk of detachment or sagging considering the weight of the leaf, the forces developed by the actuator and the action of the wind. Perform the structural calculation if necessary.

Adequate fall protection devices for the leaf.

No signs of corrosion or cracks in the structure.

Hinges in good condition, lubricated, with no play or friction.

External mechanical opening and closing stops to limit the leaf stroke. The stops must be adequately sized and firmly secured to withstand the impact of the leaf. The external mechanical stops are not required when using positive stops. The limits of use of the positive stops in relation to the length and weight of the leaf are described in detail in **Limits of use of the positive stops**.

The thresholds and elements extending out from the floor must be adequately shaped or marked to eliminate the risk of tripping or slipping.

Safety clearance between the wall (or other fixed element) and the most prominent part of the open leaf, adequate to protect against the risk of crushing/trapping people. Alternatively, check that the opening force is within the limits allowed by the current regulation.

Safety clearances between the fixed and mobile parts, adequate to protect against the risk of crushing hands. Alternatively, apply protections that prevent inserting one's fingers.

Safety clearance between the floor and the bottom edge of the leaf along its entire stroke, suitable to protect against the risk of dragging a person's feet. Alternatively, apply protections that prevent inserting one's foot.

No sharp edges and protruding parts, to avoid the risk of cutting and hooking. Alternatively, eliminate or adequately protect the sharp edges and protruding parts.

Installing S800 ENC only requires the presence of the upper hinge of the leaf since the lower rotation fulcrum is provided by the foundation box. If an existing gate is automated, it must be dismantled and the lower hinge removed before installing the actuator.

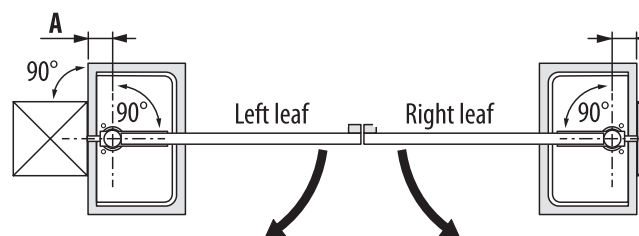
Refer to the EN 349 standard for the definition of the minimum spaces, to prevent crushing body parts.

Refer to standard EN ISO 13857 for the definition of the safety distances to prevent the danger zones from being reached.

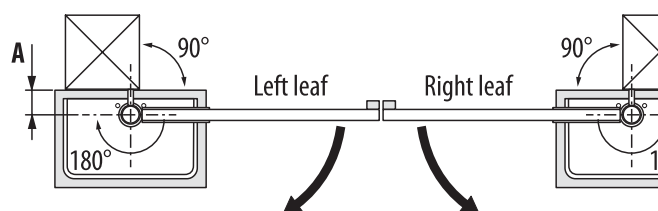
The dimensions and positioning of the foundation box are indicated in **5**.

POSITIONING THE ACTUATOR

Actuator installed perpendicular to the closed leaf

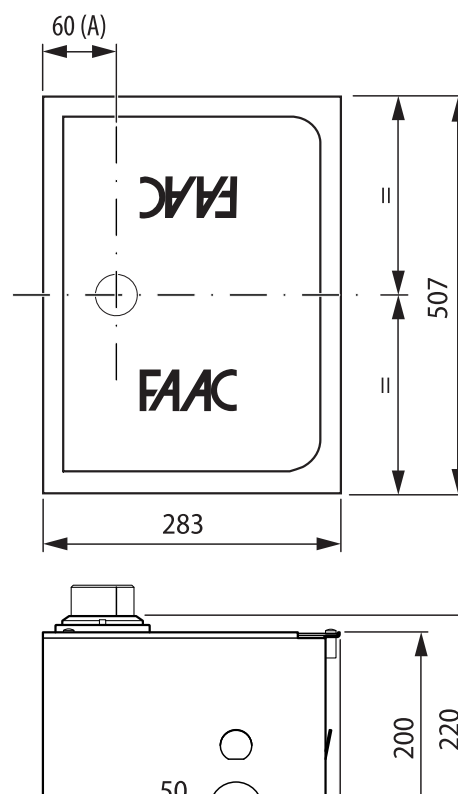


Actuator installed parallel to the closed leaf



A distance **A** equal to or greater than 60 mm is required between the vertical axis of the upper hinge and the pillar.

OVERALL DIMENSIONS



4.2 ELECTRIC SYSTEM



Before performing any operation, disconnect the mains power supply. If the disconnecting switch is not visible, put up a "ATTENTION - Maintenance in progress" sign.



The electrical system must comply with the regulations in force in the country of installation.

Use CE-marked components and materials that comply with the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108.

The mains power supply of the automation must be fitted with a 6 A omnipolar circuit breaker with a contact opening distance equal to or greater than 3 mm, for disconnection purposes in accordance with current regulations.

The mains power supply of the automation must be equipped with a differential switch with a threshold of 0.03 A.

The metal masses of the structure must be earthed.

Check that the earthing system is set up in compliance with the regulations in force in the country of installation.

The electrical cables of the automation system must be sized and have an insulation rating in accordance with regulations in force, placed in adequate rigid or flexible pipes that are exposed or concealed.

Use separate pipes for power cables and for connection cables of 12-24 V control devices/accessories.

Consult the concealed cable plan to ensure there are no electrical cables near excavations and drilling areas so as to avoid the risk of electrocution.

Ensure there are no pipes near the excavations and drilling areas.

The electronic board must be housed in an enclosure which guarantees minimum IP 44 protection.

The board enclosure must be placed in a non-hazardous area, which is

accessible even with open leaf, at least 30 cm from the ground.

The board enclosure must be fitted with a lock or other device that prevents access to unauthorised persons. The cable output must be directed downwards. The pipe fittings to the enclosure must protect against humidity, insects and small animals from entering.

Protect the extension joints of the motor cable and encoder cable using junction boxes with a protection rating of IP 67 or higher.

The total length of the BUS cables must not exceed 100 m.

It is recommended to install a flashing light in a visible position to indicate gate movement.

The control accessories must be positioned in areas that are not hazardous to the user and are also accessible with open leaf. It is recommended to place the control accessories within the operator's visual range. This is mandatory with "dead man" control.

If an emergency stop button is installed, it must comply with the relevant regulations.

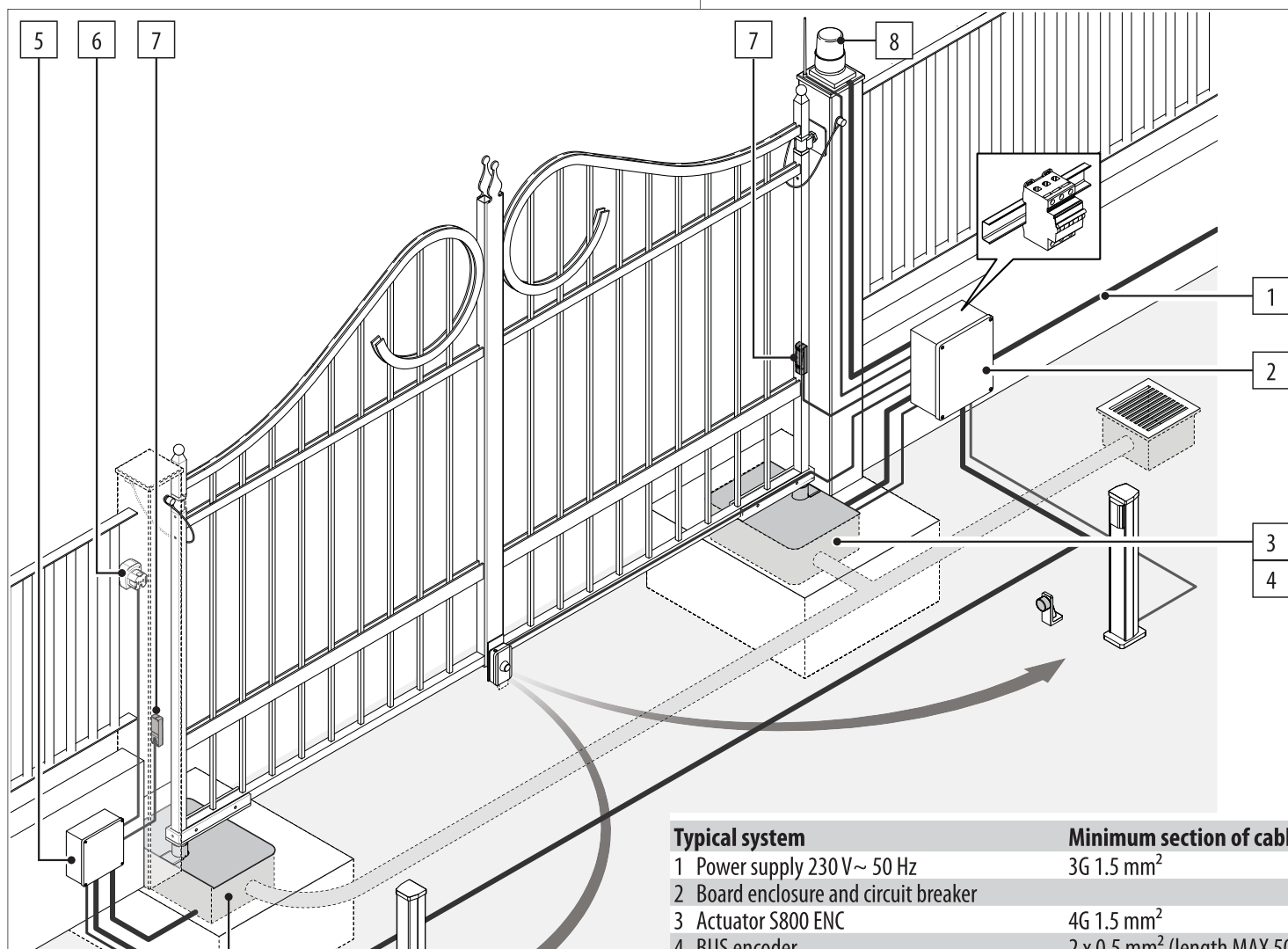
Comply with the following heights from the ground:

- control accessories = minimum 150 cm

- emergency buttons = maximum 120 cm

4.3 TYPICAL SYSTEM

6 indicates the installation layout of a typical system.



Typical system

- 1 Power supply 230 V~ 50 Hz
- 2 Board enclosure and circuit breaker
- 3 Actuator S800 ENC
- 4 BUS encoder

Minimum section of cable

- 3G 1.5 mm²
- 4G 1.5 mm²
- 2 x 0.5 mm² (length MAX 50 m)

5. INSTALLATION



Installation must be carried out in compliance with Standards EN 12453 and EN 12445.

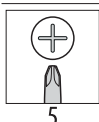
Close off the work site and prevent access/transit.

5.1 REQUIRED TOOLS

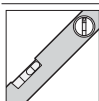
6 Symbols: work equipment (type and size)



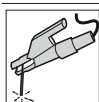
HEX WRENCH of the specified size (7, 8, 12)



CROSS-HEAD SCREWDRIVER of the specified size (6, 8...)



LEVEL

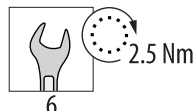


WELDER

INSTRUMENT with TORQUE ADJUSTMENT - if required for safety, a tool is indicated with torque adjustment and the TIGHTENING TORQUE value. E.g.:



x.x Nm



2.5 Nm

6

5.2 REMOVE THE LEAF AND LOWER HINGE

If you automate an existing gate, the leaf must be dismantled and the lower hinge removed before installing the actuator.

RISKS



PERSONAL PROTECTIVE EQUIPMENT



Anchor the leaf to the lifting device with a rope or a suitable chain. After removing the leaf, place it on the ground or anchor it with a rope or chain to prevent it from tipping over.

5.3 PUT IN THE FOUNDATION BOX

RISKS

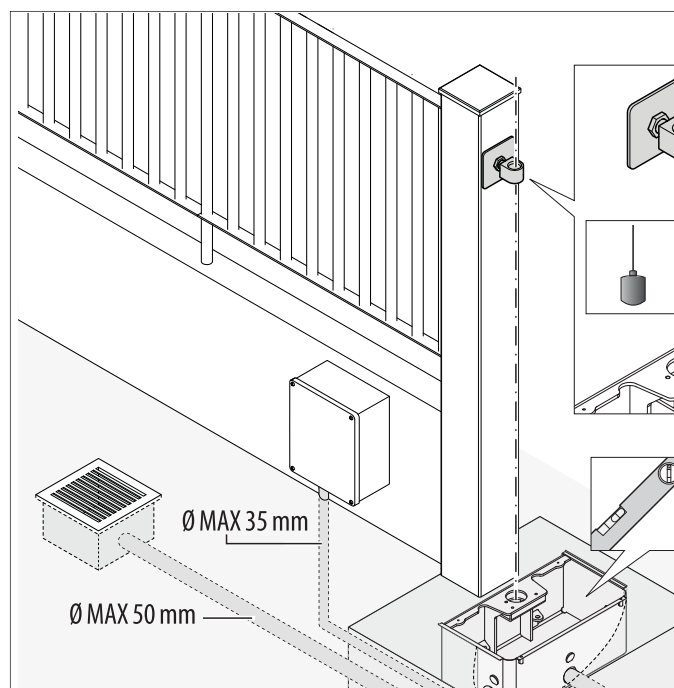


PERSONAL PROTECTIVE EQUIPMENT



The layout 21 of 3 provides approximate features of the foundation for the leaf having maximum weight and length specified in the Technical data. It is the responsibility of the installer to adapt the dimensions and materials of the foundation according to the characteristics of the ground, the gate and the installation environment. Consult the structural calculation if necessary.

1. Perform excavations and set up separate pipes for the electrical cables and drains (7).
2. Place the box with the hole aligned with the vertical axis of the hinge (7).
3. Connect the pipes for the electrical cables and the drain.
4. Use a spirit level to ensure the box is horizontal.
5. Cement the box and wait for it to harden.



5.4 SET UP THE GUIDE BRACKET

RISKS



PERSONAL PROTECTIVE EQUIPMENT



The guide bracket is an important component for installation safety, to guarantee the stability and control of the leaf during movement.

The guide bracket in the FAAC catalogue is designed for applications with leaves up to the maximum weight and length indicated in the Technical data.

When FAAC guide brackets are not used, the installer is responsible for designing the brackets suitable for the applied loads, defining the construction materials, thicknesses, sizes and surface anti-corrosion treatments. Play between the leaf and bracket must be MAX 2 mm.

The welds made must be certified.

1. Set up the guide bracket (🔧 8-1).
2. Position the grooved joint (🔧 8-2).



The notch on the joint must be centred with the centreline of the bracket and directed as shown in the figure.

When the bracket is placed on the box the joint must be centred on the vertical rotation axis of the leaf (🔧 8-3).

3. Weld the entire circumference of the joint on the guide bracket (🔧 8-4).

5.5 INSTALLING THE LEAF

RISKS



PERSONAL PROTECTIVE EQUIPMENT



1. Assemble the bush (🔧 9-1) in the foundation box, inserted in the reference pin (🔧 9-2).
2. Assemble the guide bracket (🔧 9-3).
3. Assemble the leaf on the guide bracket (🔧 10) and anchor the leaf to the upper hinge.



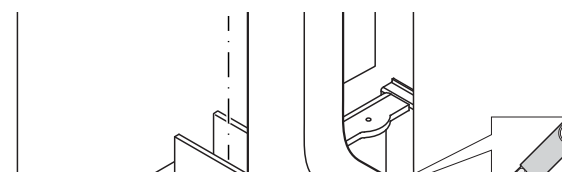
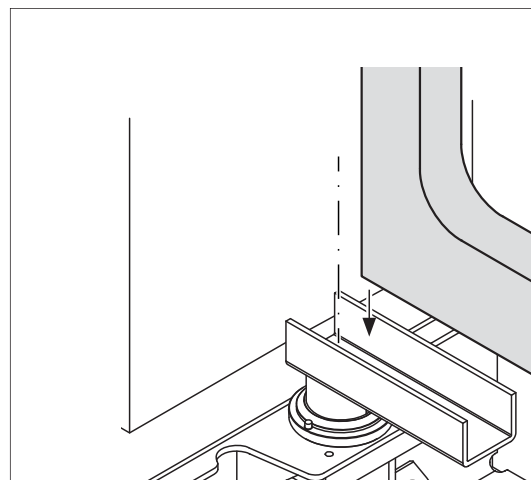
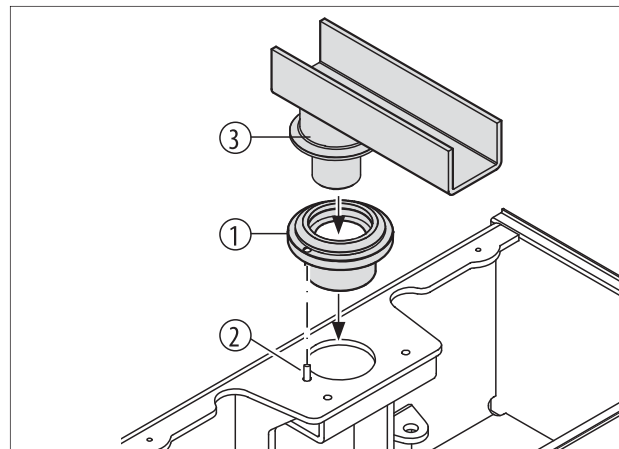
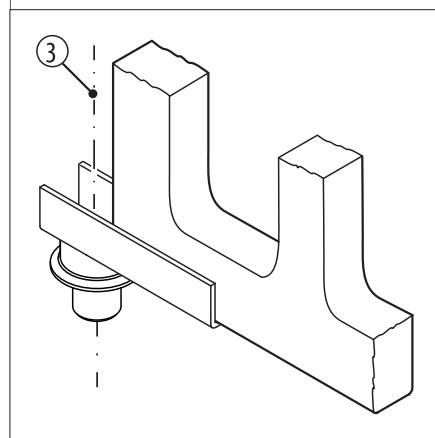
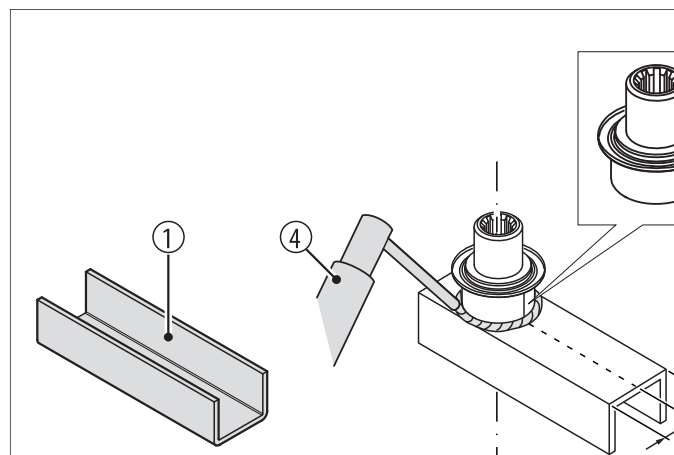
Play between the leaf and bracket must be MAX 2 mm.

DO NOT weld the guide bracket to the leaf.

4. Check that:
 - the leaf resting on the bracket is perfectly horizontal (use the spirit level)
 - movement is smooth and with no friction along the entire stroke, all the way to the external opening/closing stops (if present)



When moving it manually, slowly guide the leaf for its entire stroke, do not push the leaf so it moves freely.

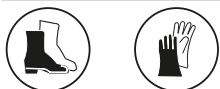


5.6 INSTALLING THE ACTUATOR

RISKS



PERSONAL PROTECTIVE EQUIPMENT



Lift the actuator by the handles.

1. Unscrew and remove both caps of the positive stops (🔧 11-1).
 - The actuator is provided with positive stops set for maximum leaf stroke (tightened screws). Ensure both screws are fully tightened (🔧 11-2).



Do not force tightening of the positive stop screws.

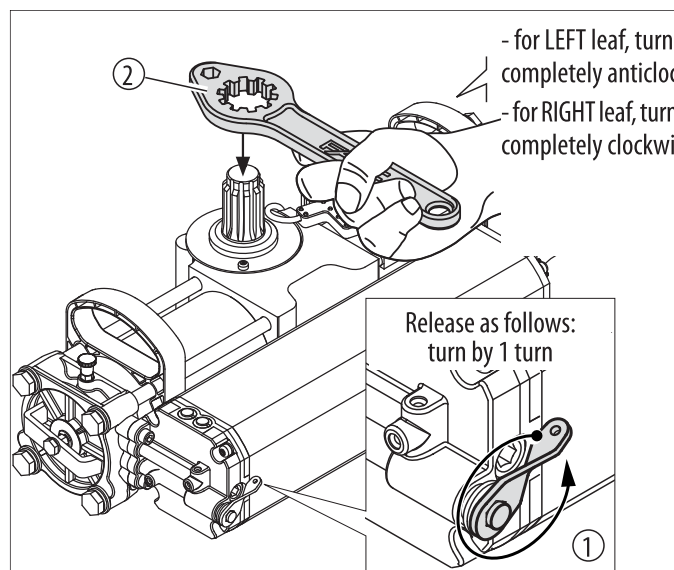
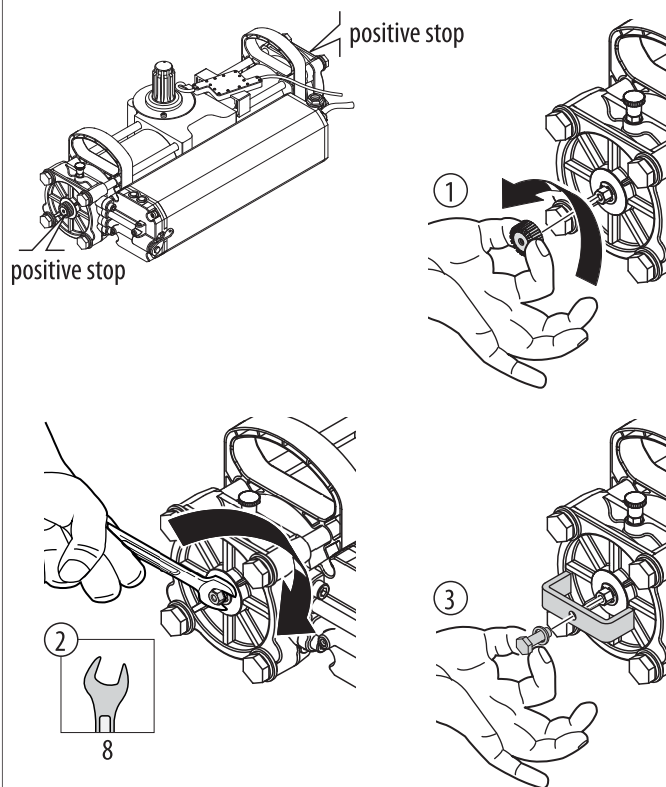
2. Assemble a fastening on each positive stop (🔧 11-3).
 - For this stage, insert the fastening screw without tightening it. The fastening screw must be tightened after adjusting the positive stops (§ relative paragraph).
 - Only if positive stops are NOT being used, tighten the fastening screw in this step.
3. Release the actuator by turning the service lever one full turn anti-clockwise (🔧 12-1).



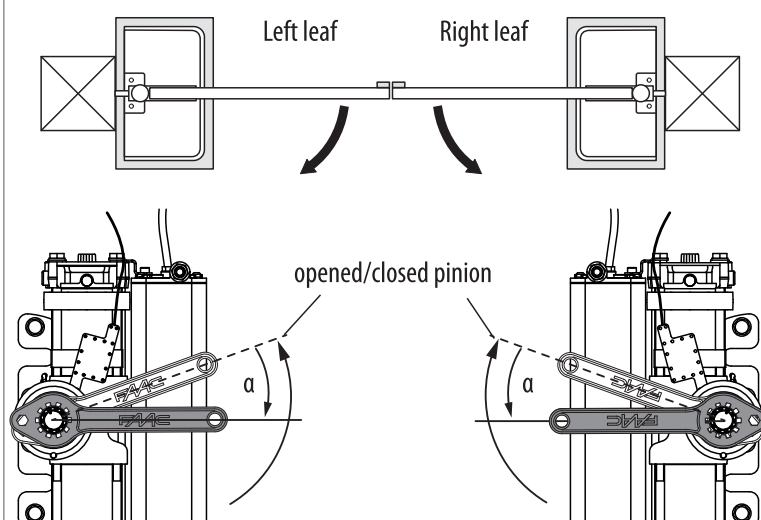
Do not unscrew the service lever by more than one turn so as to prevent oil from leaking.

4. Insert the spanner in the pinion (🔧 12-2) and rotate the pinion until it stops, in the closing direction of the leaf. Then move it back, approximately to angle "α" indicated based on the type of installation or actuator version (🔧 13 or 🔧 14).
 - If the pinion is already turned completely, only move it back.
5. It must now be possible to insert the spanner into the pinion in a parallel position to the closed leaf. Perform a further minimum adjustment if necessary.

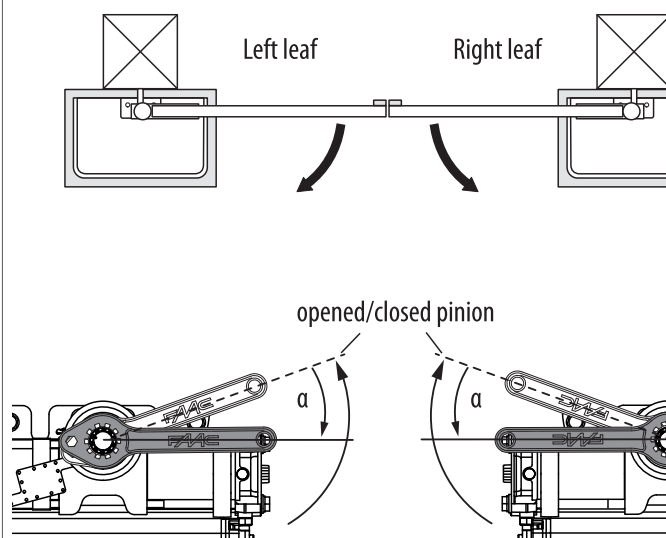
Perform steps ① ② ③ for both the positive stops



Actuator installed perpendicular to the closed leaf



Actuator installed parallel to the closed leaf



6. Lubricate the pinion (🔧 15-1).
7. Insert the actuator in the box.
 - The actuator with the pinion must be tilted downwards (🔧 15-2), then place it back in a vertical position and aligned with the grooved joint (🔧 15-3). If necessary, temporarily open the leaf to aid the operation.
 - Be careful not to damage the electrical cables.
8. Lift the actuator and insert the pinion into the joint.



The leaf must be closed during this step.

9. Place the support inserted into the key at the bottom of the box and rest the actuator on it (🔧 15-4).
10. Tighten the tie-rods with the grover in the 2 holes of the box and hooked into the holes of the actuator plate to lift the actuator (🔧 15-5).



Proceed with partial tightening movements, first one tie-rod and then the other, until they stop. A torque wrench must be used to achieve the required tightening torque (🔧 15-6).

11. Open and close the leaf manually to ensure it can be fully opened and closed manually. If not, ensure that all of the installation steps have been carried out correctly. Lastly, remove the key with the support.



When moving it manually, slowly guide the leaf for its entire stroke, do not push the leaf so it moves freely.

5.7 ADJUSTING THE POSITIVE STOPS

On closing

1. With the actuator released and the leaf closed, loosen the screw of the closing positive stop (🔧 16-1 A or B).
2. Stop unscrewing as soon as you feel resistance.

On opening

1. With the actuator released and the leaf open, loosen the screw of the opening positive stop (🔧 16-1 A or B).
2. Stop unscrewing as soon as you feel resistance.

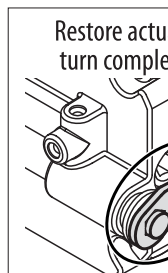
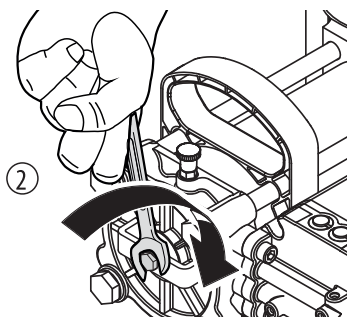
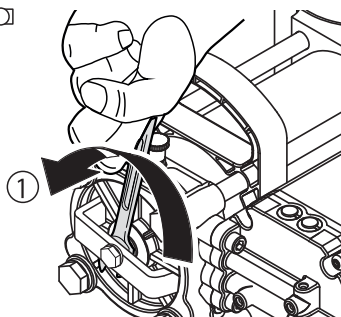
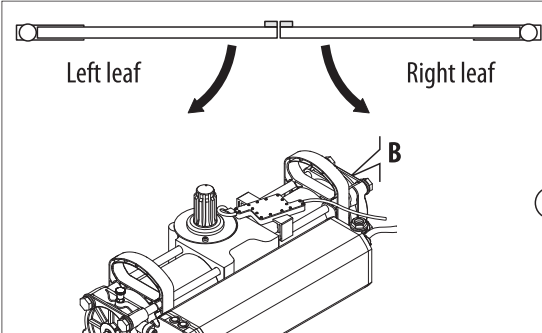
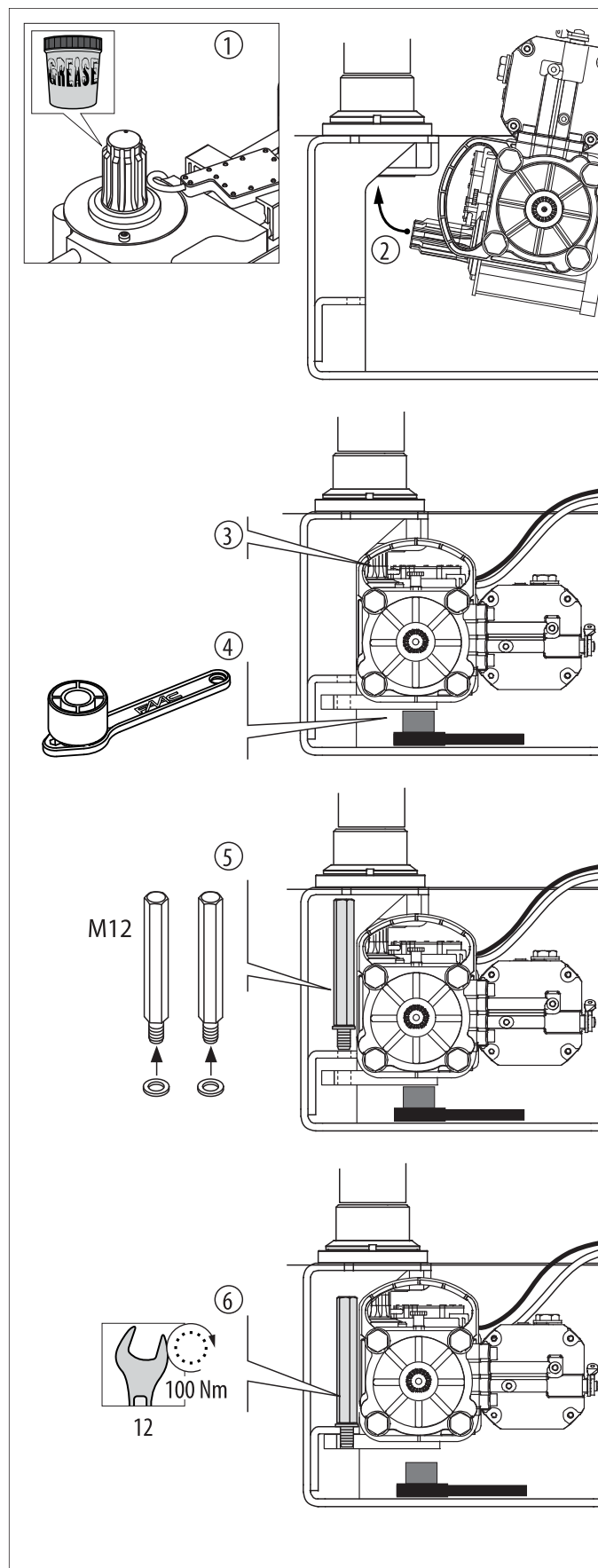
Check

1. Manually move the leaf to check the stop positions. If necessary, correct the adjustments.



Slowly guide the leaf as it moves so as to avoid impact on the positive stops.

2. Block the positive stops by tightening the fastening screws (🔧 16-2).
3. Restore the actuator by turning the service lever clockwise until it stops (🔧 16-3).



6. START-UP

RISKS



PERSONAL PROTECTIVE EQUIPMENT



Before setting up electrical connections, disconnect the power supply of the automation. If the disconnecting switch is not visible, put up a "ATTENTION - Maintenance in progress" sign.

1. Set up the electrical connections according to the instructions of the electronic control board and the installed accessories.

Electric motor cable

yellow-green	earth
blue	neutral
brown	phase 1
black	phase 2

2. Turn the mains power supply back on.
3. Switch the electronic board on according to the specific instructions. If the motor rotates the wrong way, disconnect the power and swap the wires of phases 1 and 2.

6.1 FORCE ADJUSTMENT (BY-PASS)

RISKS



PERSONAL PROTECTIVE EQUIPMENT



Adjust the by-passes in accordance with the applicable standards (EN 12445).

1. Remove the protective caps (🔧 17-1).
2. Adjust the opening and closing force by actuating the automation electrically and using the by-pass screw corresponding to the manoeuvre in progress (🔧 17 A or B):



screw A = adjusts the force of clockwise leaf movement
screw B = adjusts the force of anticlockwise leaf movement
tighten to increase the force 
loosen to decrease the force 

3. Set the protective caps back in place (🔧 17-1).

CLOSURE OF THE BOX

Close the cover of the box with the supplied screws (🔧 18).

6.2 FINAL OPERATIONS

1. Ensure that the forces generated by the leaf are within the limits allowed by the standard. Use an impact curve gauge in accordance with standards EN 12453 and EN 12445. For countries outside the EU, when there is no specific local standard, the force must be less than 150 N static.

in a visible position.

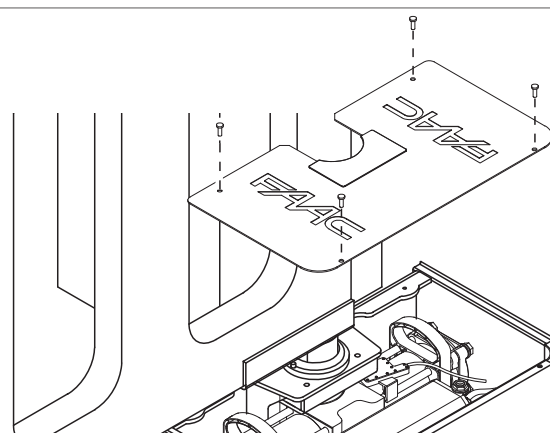
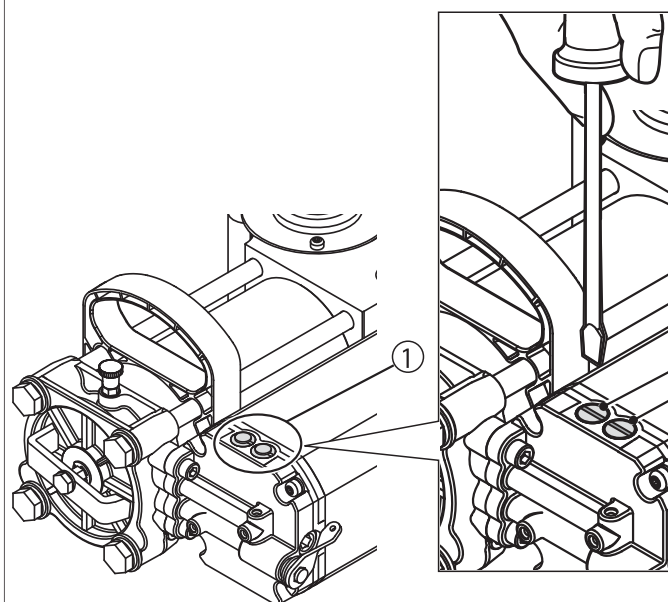
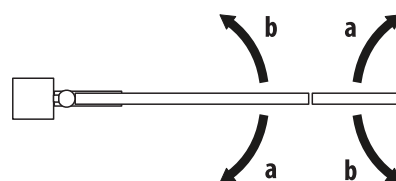
5. Put up the CE marking on the gate.
6. Complete the EC Declaration of Conformity of the manufacturer and attach it to the system Logbook.
7. Provide the owner/operator of the automation with the system Logbook, the system Logbook with the maintenance schedule, and the user instructions of the automation.

SCREW

- A** adjusts the force of clockwise leaf movement (a)
B adjusts the force of anticlockwise leaf movement (b)

ADJUSTMENT

-  + tighten to increase the force
 - loosen to decrease the force



7. MAINTENANCE

RISKS



PERSONAL PROTECTIVE EQUIPMENT



REQUIRED TOOLS



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.

7.1 ROUTINE MAINTENANCE

The table Routine maintenance (16) lists a rough guide of routine operations, which are guidelines and are in no way exhaustive, to maintain the automation efficient and safe. It is the responsibility of the machine installer/manufacturer to define the maintenance schedule of the automation, integrating the list or changing the service intervals based on the features of the machine.

7.2 OPERATING PROBLEMS

7 Guide to solving malfunctions

CONDITION	SOLUTION
The gate does not perform the SETUP	ensure the actuator is not blocked check the presence of the power supply
The gate does NOT OPEN	check motor and encoder connection check for faults/errors in the actuator
The gate CLOSSES instead of OPENING and vice versa	invert the motor connection phases at a SETUP
The gate performs movements at very low speed	check the set force check the set slowdown spaces
The gate only moves for short stretches	check the encoder connection check for errors in the encoder
Irregular movement (jerks)	check for air in the hydraulic circuit. Bleed
Excessively noisy automation	there is air in the hydraulic circuit. Bleed check the verticality of the leaves

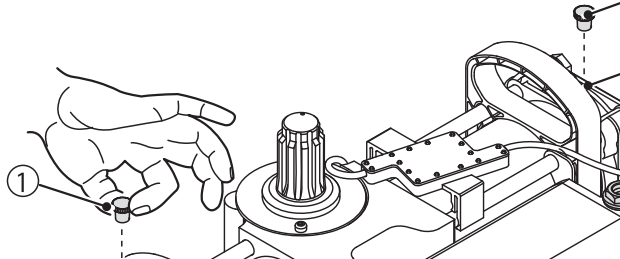
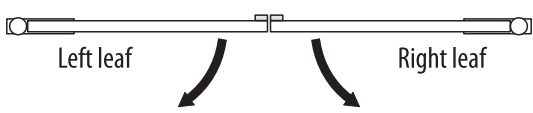
BLEEDING

1. Remove the protective caps (19-1).
 2. Command the gate to open. During the stroke of the leaf, the screw (19-2A or B): oil emulsified with air leaks out.
 3. Tighten the screw before the leaf completes the stroke.
 4. Command the gate to close. During the stroke of the leaf, the screw (19-2A or B): oil emulsified with air leaks out.
 5. Tighten the screw before the leaf completes the stroke.
- Repeat the procedure until non-emulsified oil comes out.
6. Set the protective caps back in place (19-1).

TOPPING-UP THE OIL LEVEL

1. Remove the cap (19-3). Check the oil level: it should be below the cap.
2. Top-up, if necessary. Set the cap in place again.

Only use FAAC oil.
Perform bleeding after topping up the oil level.



8 Routine maintenance

If the checks listed below reveal conditions other than those foreseen, they must be restored.

Operations	Frequency
Structures	
Check the structure that the gate, plinth and building/fencing parts adjacent to the automation are fastened to: absence of damage, cracks, fractures, failures.	12
Check the movement area of the gate: absence of obstacles, absence of objects/deposits which reduce safety clearances.	12
Check the absence of hooking points or dangerous prongs.	12
Gate	
Check the gate and its fastenings: integrity, no deformations or rust, etc.	12
Check the correct tightening of screws and bolts.	
Check the concentricity between the upper hinge of the leaf and the lower rotation fulcrum provided by the foundation box.	12
Check hinges and bearings: integrity, perfectly positioned and fastened in place, no deformation, rust, etc.	12
Lubricate hinges and/or bearings if necessary.	12
Check the mechanical stops: fastening and solidity. Both sides must be checked, simulating the impact that they could undergo during use.	12
Check the guide bracket of the leaf: integrity, absence of deformation and rust, proper fastening, etc.	12
Check the absence of wear/collapsing which could jeopardise the condition that all the weight of the leaf bears on the lower rotation fulcrum.	
Check the anti-falling device: fastening and integrity.	12
General cleaning of the gate operating area.	12
Actuator	
Check the integrity and correct fastening.	12
Check the sturdiness of the connections of the actuator to the leaf to avoid uncontrolled movements of the leaf should it break.	12
Check the welding of the joint on the guide bracket.	
Check reversibility and irreversibility.	12
Check that there is no oil leakage.	12
Top up the oil level, if necessary. Only use FAAC oil.	12
Bleed the oil, if necessary.	12
Clean the actuator and the foundation box	12
Check drainage efficiency.	
Check the integrity of the actuator cables, of the cable glands and of the junction boxes.	12
Electronic equipment	
Check the integrity of the electronic board enclosure.	12
Check the integrity of the power and connection cables and of the cable glands.	12
Check the integrity of the connectors and of the wiring.	
Check that there are no signs of overheating, burns, etc. on electronic components.	12
Check the integrity and proper operation of the limit switches, if used.	12
Check the integrity of the earthing connections.	12
Check proper operation of the circuit breaker and residual current device.	12
Control devices	
Check the integrity and proper operation of the installed devices and of the remote controls.	12
Sensitive edges	
Check: integrity, fastening and proper operation.	6
Deformable edges	
Check: integrity and fastening.	12
Photocells	
Check: integrity, fastening and proper operation.	6
Check the columns: integrity, fastening, no deformation, etc.	6
Flashing light	

Access control

Check that the gate opens correctly only with authorised user recognition.

Complete automation

Check that the automation works properly, according to the programmed using the various control devices.

Check that the gate moves correctly, smoothly and regularly without any stalling or noise.

Check its correct opening and closing speed and that it follows the intended slowdowns.

Check proper operation of the manual release: when the release is activated, the gate should only be able to be moved manually.

Check the presence of lock caps.

Ensure that the maximum manual moving force of the leaf is less than 220 N.

Check the proper operation of the safety edges for obstacle detection.

Check the proper operation of the encoder for obstacle detection.

Check the proper operation of each pair of photocells.

Check that there is no optical/luminous interference between the pairs of photocells.

Check the limitation curve of the forces (standards EN 12453 and EN 12445) in countries outside the EU, when there is no specific local standard, the force must be less than 150 N static.

Check the presence, integrity and legibility of all the necessary signs: risks, exclusive use, etc.

Check the presence, integrity and legibility of the CE marking of the gate and the DANGER AUTOMATIC MOVEMENT warning sign.

8. 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

8.1 SAFETY RECOMMENDATIONS

Systems set up with FAAC S800 ENC series underground actuators are intended for vehicle transit.

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



- Do not pass and/or stop within the automation's range of action while it is moving.
- Do not use the automation when its range of action is not clear of people, animals or objects.
- Do not allow children to come close or play near the automation's range of action.
- Do not obstruct the movement of the automation.
- Do not climb onto, hold onto or be pulled by the leaf.
- Do not allow the control devices to be used by persons who are not specifically authorised and trained.
- Do not allow the control devices to be used by children or persons with reduced mental-physical abilities, unless under the supervision of an adult responsible for their safety.
- Do not use the automation with movable and/or fixed guards that have been tampered with or removed.
- Do not use the automation with faults/tampering which could jeopardise safety.
- Do not expose the automation to aggressive chemical or environmental agents; do not expose the actuator to direct water jets of any type or amount.
- Do not expose the automation to flammable gases or fumes.
- Do not perform any operation on the automation components.

8.2 USE IN AN EMERGENCY

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

In any malfunction, emergency or fault, disconnect the power supply of the automation. If the conditions allow the leaf to be moved manually, use the MANUAL OPERATION; otherwise, remove the automation out of service until it is restored/repared.

In case of a fault, the automation must be restored/repared. This may only be carried out by the INSTALLER/MAINTENANCE TECHNICIAN.

8.3 MANUAL OPERATION



Before performing the Release manoeuvre, disconnect the power supply of the automation.

With manual movement, slowly guide the leaf along its entire path. Do not push the leaf so it runs freely.

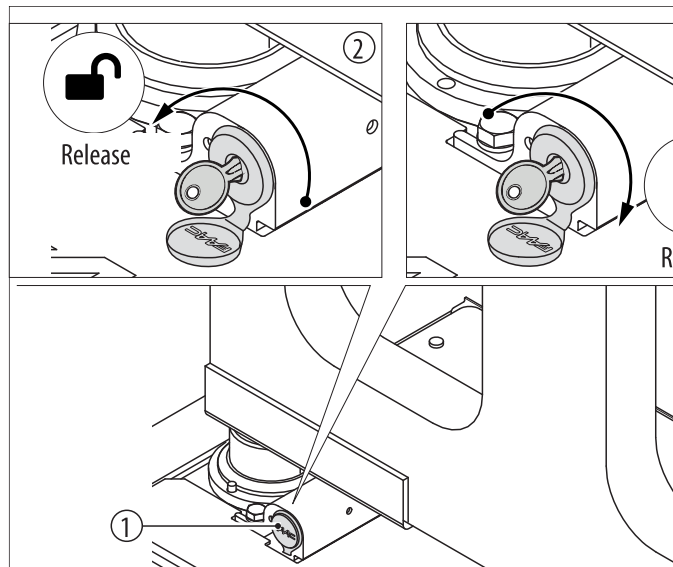
Do not leave the gate unlocked: after performing manual movement, restore automatic operation.

RELEASE MANOEUVRE

1. Open the cap of the lock (🔧 20-1).
2. Insert the key and turn it one anti-clockwise turn until it stops (🔧 20 -2), then move the gate manually.

RESTORING AUTOMATIC OPERATION

1. Turn the key by one clockwise turn until it stops (🔧 20-3).
2. Ensure manual movement is prevented, then remove the key and close the cap (🔧 20-1).



1 The limits of use of S800 ENC in relation to the wind

The table shows the maximum wind allowed for S800 ENC based on the leaf surface exposed to the wind.

Winds that exceed those allowed may affect the integrity of the mechanical transmission components of S800 ENC.

It is the responsibility of the installer to assess the impact of the wind on all the elements of the structure (columns, hinges, leaves) to define the maximum wind allowed for the automation.

Exposed area (m ²)	Leaf length (m)											
	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3	3.25	3.5	3.75
1	12								11			
2			11			10			9			
3	10											
4												
5												
6	9											
7												
8												
9	8											
10												
11												
12												
13	7											
14		6										
15					5							
16							4					

Strength and name of the wind (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	Near gale	> 50...62
8	Gale	> 62...75
9	Severe gale	> 75...87
10	Storm	> 87...102
11	Violent storm	> 102...117
12	Hurricane	> 117

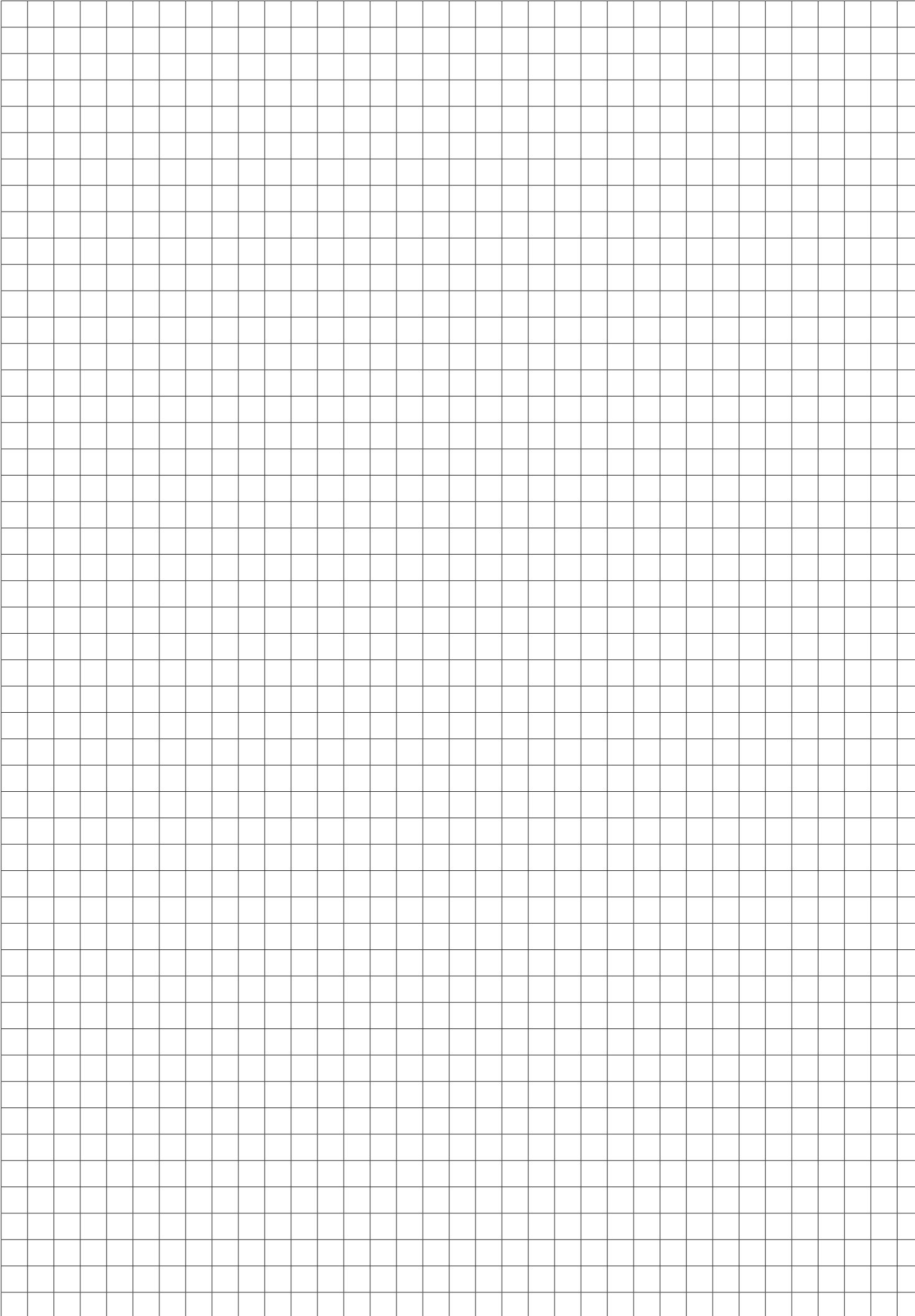
2 Limits of use of the positive stops

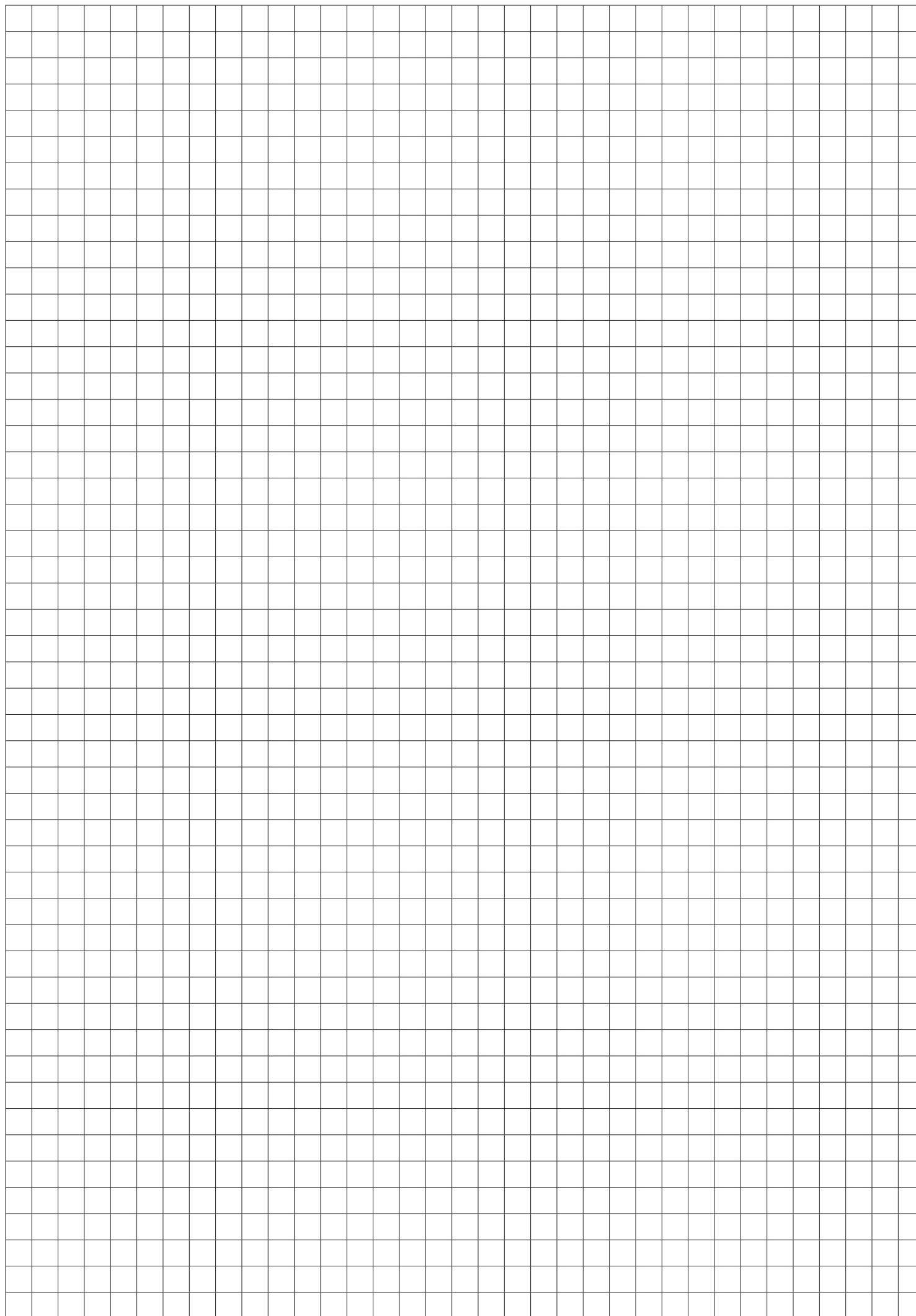
The limits of use of the positive stops in relation to the length and weight of the leaf are indicated in the table below.

Using positive stops beyond the allowed limits is not advisable.

If using the integrated mechanical stops beyond the admissible limits is unavoidable, the minimum positive stop speed must be by setting at least 30° at slowdown speed.

Leaf weight (kg)	Leaf length (m)											
	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3	3.25	3.5	3.75
50												
100												
150												
200												
250												
300												
350												
400												
450												
500												
550												
600												
650												





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