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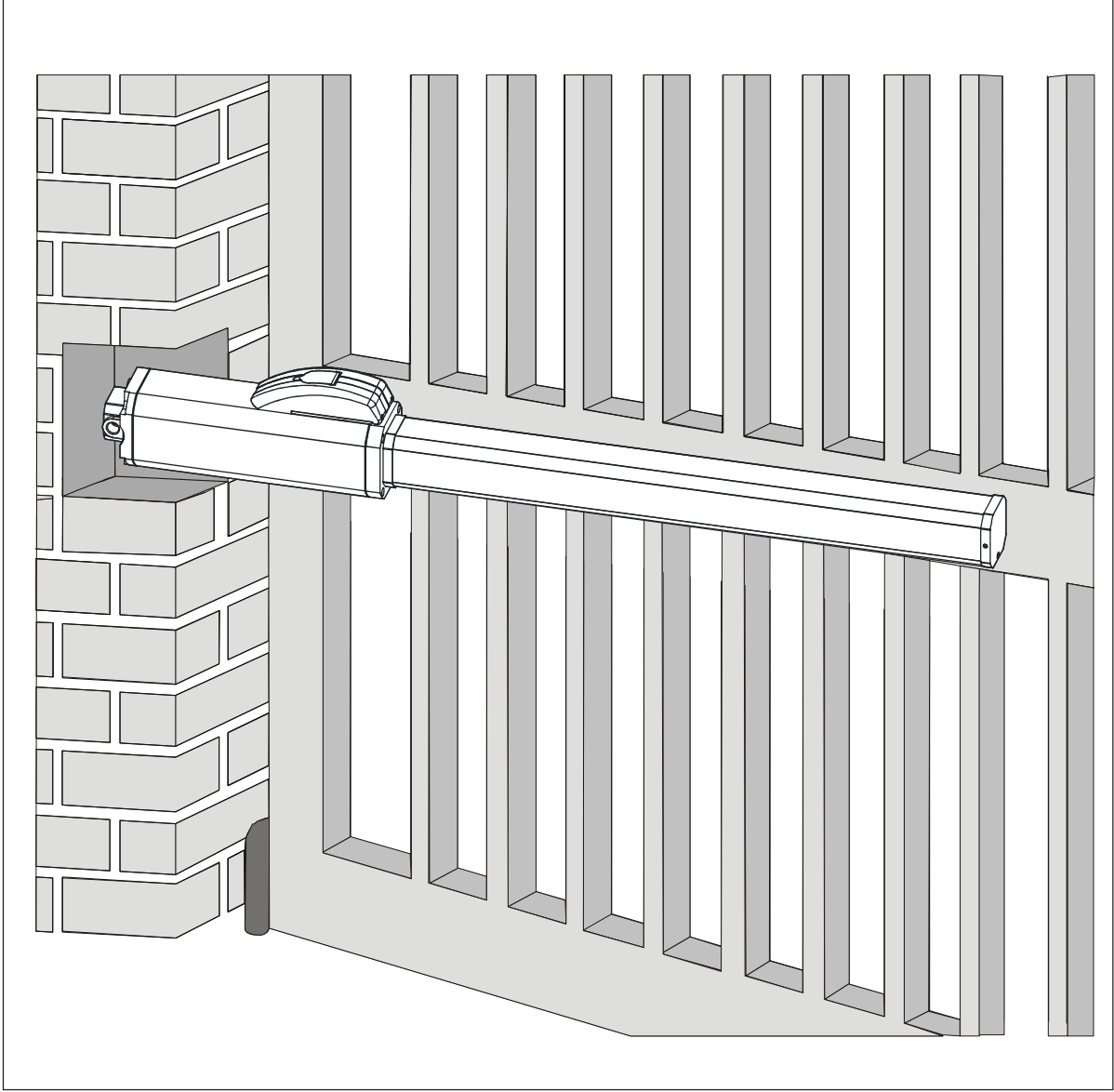
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422




FAAC

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Read this instruction manual to the letter before you begin to install the product.

Symbol  highlights notes that are important for people's safety and for the good condition of the automated system.

Symbol  draws your attention to the notes about the product's characteristics or operation.



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732870 Rev. A

422 AUTOMATION SYSTEM

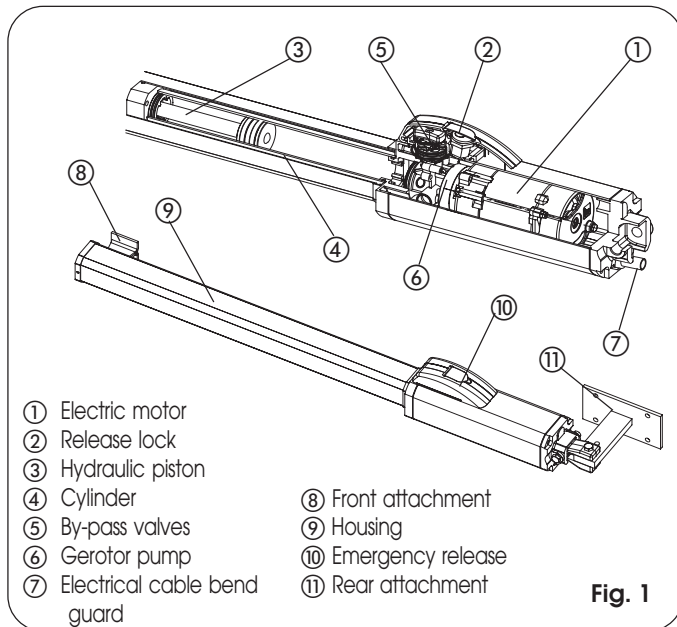
These instructions apply to the following models:

422 CBCS - 422 CBACS - 422 SBS - 422 CBC - 422 CBAC - 422 SB - 422 CBC PED. - 422 SB PED.

The FAAC 422 automated system for swing leaf gates consists of an enbloc composed of an electric pump and a hydraulic piston which transmits drive to the leaf.
The models with a hydraulic locking do not require installation of electric locks, as they guarantee mechanical locking of the leaf when the motor is not operating.
The models without a hydraulic locking, require the installation of electric locks to ensure the leaf is mechanically locked.

The 422 automated systems were designed and built to automate swing leaf gates. Do not use for any other purpose.

1. DESCRIPTION AND TECHNICAL SPECIFICATIONS



- ① Electric motor
- ② Release lock
- ③ Hydraulic piston
- ④ Cylinder
- ⑤ By-pass valves
- ⑥ Gerotor pump
- ⑦ Electrical cable bend
- ⑧ Front attachment
- ⑨ Housing
- ⑩ Emergency release
- ⑪ Rear attachment

Fig. 1

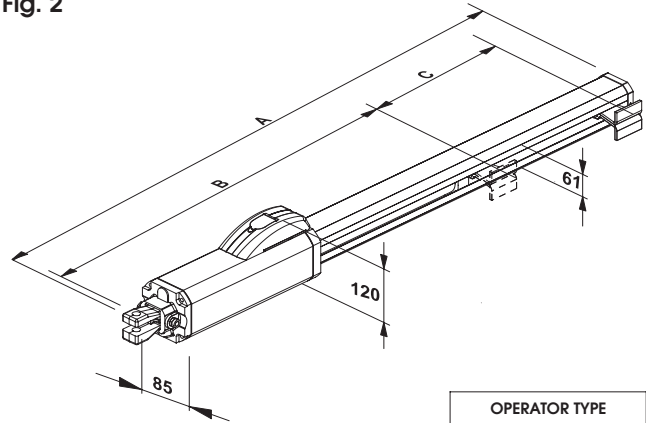
Tab. 1: Technical specifications of "422 Operator"

| MODEL | CBCS | CBACS | SBS | CBC | CBAC | SB | PED. CBC | PED. SB |
|---------------------------------|-----------------------------|-------|------|------|------|-----|----------|---------|
| Traction/thrust force max (daN) | 690 | 690 | 690 | 500 | 500 | 500 | 380 | 380 |
| Rod effective stroke (mm) | 240 | 240 | 240 | 240 | 240 | 240 | 160 | 160 |
| Rod linear speed (cm/s) | 1 | 1 | 1 | 1,3 | 1,3 | 1,3 | 2 | 2 |
| Use frequency (cycles/hour) | 55 | 55 | 55 | 55 | 55 | 55 | 70 | 70 |
| Pump flow-rate (l/min) | 0,75 | 0,75 | 0,75 | 1 | 1 | 1 | 1,5 | 1,5 |
| Hydraulic locking | (1) | (2) | / | (1) | (2) | / | (1) | / |
| Leaf maximum length (m) | 1,80 | 1,80 | 3 | 1,80 | 1,80 | 3 | (3) | (3) |
| Operator weight (Kg) | 7 | | | | | | | |
| Power supply | 230 Vac (+6% -10%) / 50 Hz. | | | | | | | |
| Absorbed power (W) | 220 | | | | | | | |
| Absorbed current (A) | 1 | | | | | | | |
| Electric motor (rpm) | 1400 - 4 poles | | | | | | | |
| Thermal protection on winding | 120 °C | | | | | | | |
| Thrust capacitor | 8uF / 400 V. | | | | | | | |
| Operating ambient temperature | - 40°C + 55 °C | | | | | | | |
| Protection class | IP55 | | | | | | | |

- (1) Closing - (2) Opening and closing
- (3) Max. 1,20 m. - Min. 0,80 m.

1.1. DIMENSIONS

Fig. 2



| | | OPERATOR TYPE | |
|---|------------------------------|---------------|------------|
| | | STANDARD | PEDESTRIAN |
| A | OVERALL DIMENSIONS | 987 mm. | 827 mm. |
| B | DISTANCE BETWEEN ATTACHMENTS | 693 mm. | 613 mm. |
| C | EFFECTIVE STROKE | 240 mm. | 160 mm. |

2. ELECTRIC DEVICES (standard system)

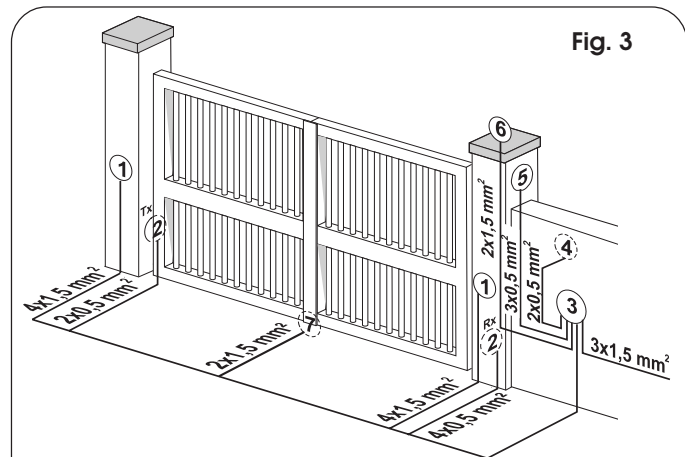


Fig. 3

- ① Operators mod. 400 (provide a connector block for each operator)
- ② Photocells
- ③ Electronic control unit
- ④ Key operated push-button T 10
- ⑤ Radio receiver
- ⑥ Flashing light
- ⑦ Electric lock (if necessary)

- 1) To lay the electrical cables, use adequate rigid and/or flexible pipes.
- 2) Always separate the connection cables of the low voltage accessories from the 230 V power cables. Use separate sheaths to avoid any type of interference.

3. INSTALLING THE AUTOMATED SYSTEM

3.1. PRELIMINARY CHECKS

To ensure a correctly operating automated system, the structure of the existing gate or gate to be built must satisfy the following requirements:

- Max length of leaves according to the dimensions of Table 1.
- A strong and rigid leaf structure.
- Smooth, uniform leaves movement, without any irregular friction during the entire travel;
- Existing hinges in good condition.
- Travel limit mechanical stops must be provided.

We advise you to carry out the metalwork jobs before installing the automated system.

The condition of the structure directly influences the reliability and safety of the automated system.

3.2. INSTALLATION DIMENSIONS

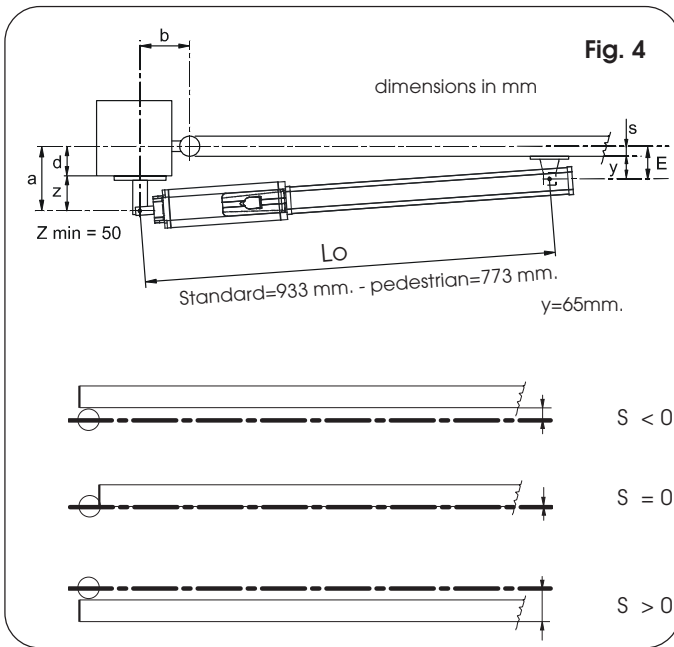


Table A: Recommended dimensions for standard operators

| Opening angle | a (mm) | b (mm) | c(*) (mm) | d(**) (mm) |
|---------------|--------|--------|-----------|------------|
| 90° | 120 | 120 | 240 | 70 |
| 110° | 100 | 100 | 240 | 50 |

(*) Rod effective stroke (**) maximum dimension

Table B: Recommended dimensions for long operators

| Opening angle | a (mm) | b (mm) | c(*) (mm) | d(**) (mm) |
|---------------|--------|--------|-----------|------------|
| 90° | 80 | 80 | 160 | 30 |

(*) Rod effective stroke (**) maximum dimension

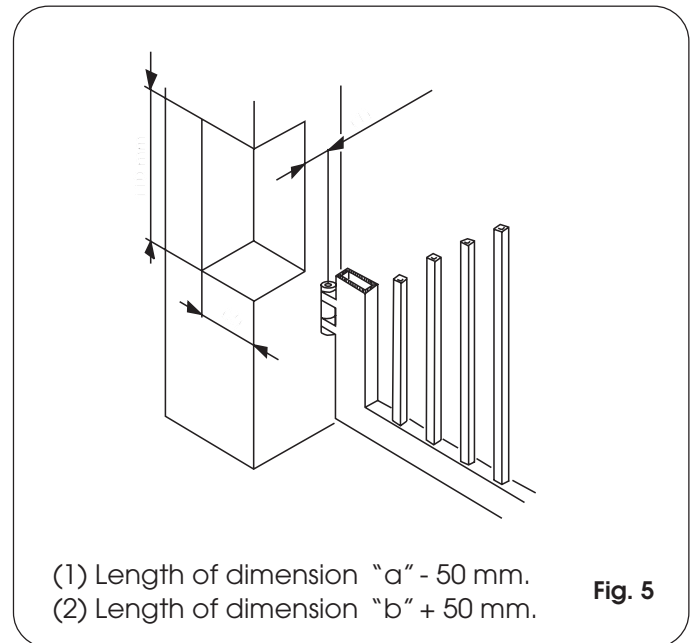
c = The effective rod stroke is shorter than the maximum stroke, in order to prevent the rod from reaching its stop point internally, during the opening and closing stages.

3.2.1. GENERAL RULES FOR DETERMINING THE INSTALLATION DIMENSIONS

If the dimensions indicated in table A or B cannot be executed, the following must be considered in order to determine different measurements:

- to obtain **90° opening of the leaf: a + b = c.**
- to obtain **over 90° opening of the leaf: a + b < c.**
- **lower a and b dimensions will result in higher speeds.** We advise you to observe the current legal regulations;
- **limit the difference of the a and b dimensions to within 40 mm:** higher differences will considerably vary speed during the opening and closing motion;
- for reasons of operator dimensions, the **minimum Z dimension is 50 mm** (Fig. 4);
- if the pilaster dimensions or the position of the hinge (dimension **d**) do not make it possible to contain dimension **a** to the required size, a niche must be made in the pilaster as shown in Fig. 5;
- dimension **a** must always be larger than dimension **E**.

For installations opening toward the outside, refer to paragraph 9.1.



- (1) Length of dimension "a" - 50 mm.
- (2) Length of dimension "b" + 50 mm.

Fig. 5

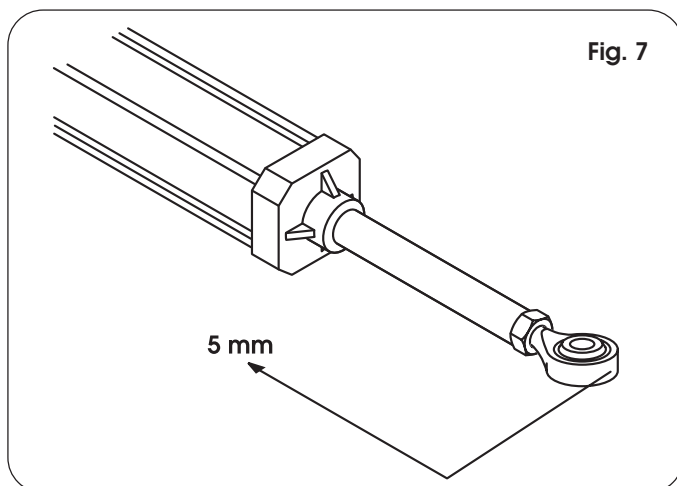
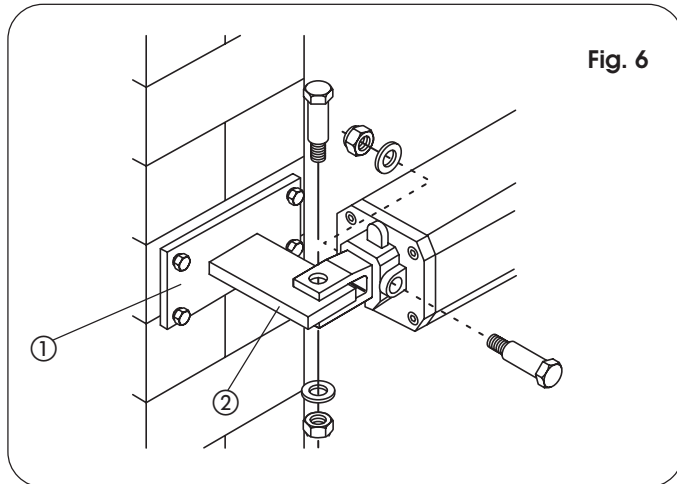
3.3. INSTALLATION OF THE OPERATORS

- 1) Fasten the rear attachment on the pilaster, following the indications in **Tables A/B**. Modify, if necessary, the length of the supplied attachment.

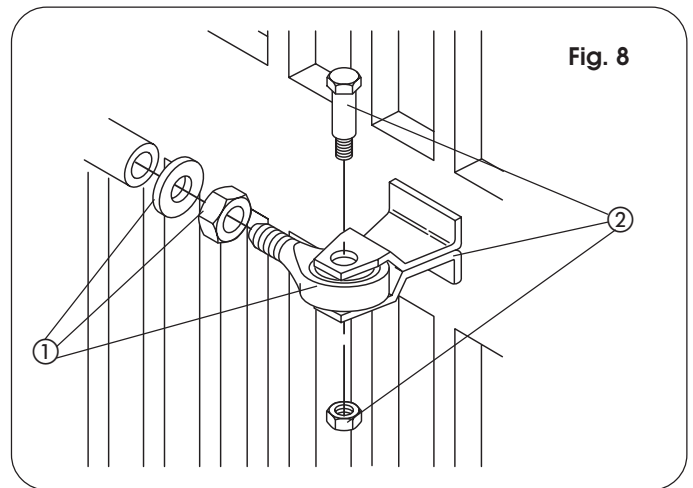
Attention: To avoid compromising good operator functionality, we recommend you to respect the indicated dimensions.

- For iron pilasters, accurately weld the rear attachment (ref. 2, Fig. 6) directly on the pilaster.
- For masonry pilasters, select one of the following solutions:
 - A) appropriately lay a walling-in plate and then accurately weld the rear attachment.
 - B) secure, with screws and expansion plugs, the rear attachment plate (ref. a, Fig.6) to the pilaster and then accurately weld the rear attachment to the plate as shown in Fig. 6.

- 2) Secure the operator to the rear attachment with the supplied screws (Fig. 6).
- 3) Screw, halfway down, the front attachment onto the rod (ref. ① Fig.8) and tighten with the supplied nut.
- 4) Release the operator (see chapter 7).
- 5) Fully remove the rod to its stop point and make it recede by about 5 mm (Fig.7).



- 6) Relock the operator (see chapter 8).
 - 7) Fit the front attachment onto the rod (ref. ② Fig. 8)
 - 8) Close the gate leaf and, keeping the operator perfectly horizontal, find the position of the front attachment (Fig. 9) on the leaf.
 - 9) Provisionally fix the front attachment on the leaf with two weld spots, protecting the rod against any welding waste.
- NB.:** If the gate structure does not permit the attachment to be firmly fastened, take action on the structure, creating a solid support base.
- 10) Release the operator and manually check if the gate is free to open completely stopping on the travel limit mechanical stops and if leaf movement is good and friction-free.
 - 11) Definitively weld the front attachment on the leaf. To do this, temporarily release the operator from the



attachment to prevent welding waste from damaging it (Fig.10).

Notes:

- A) We advise you to grease all the securing pins of the attachments.
- B) If welding is impossible, the plates of the front and rear attachments are designed to be secured with screws if necessary.

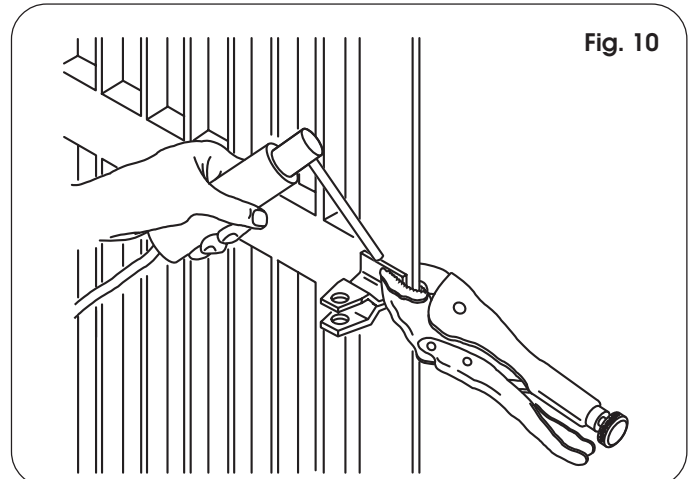
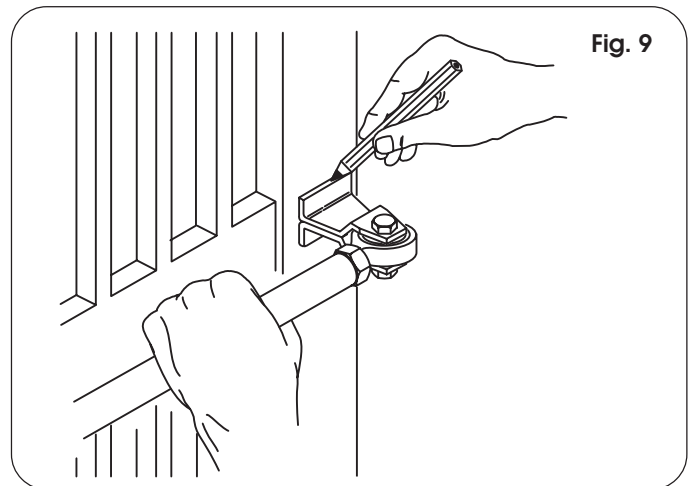
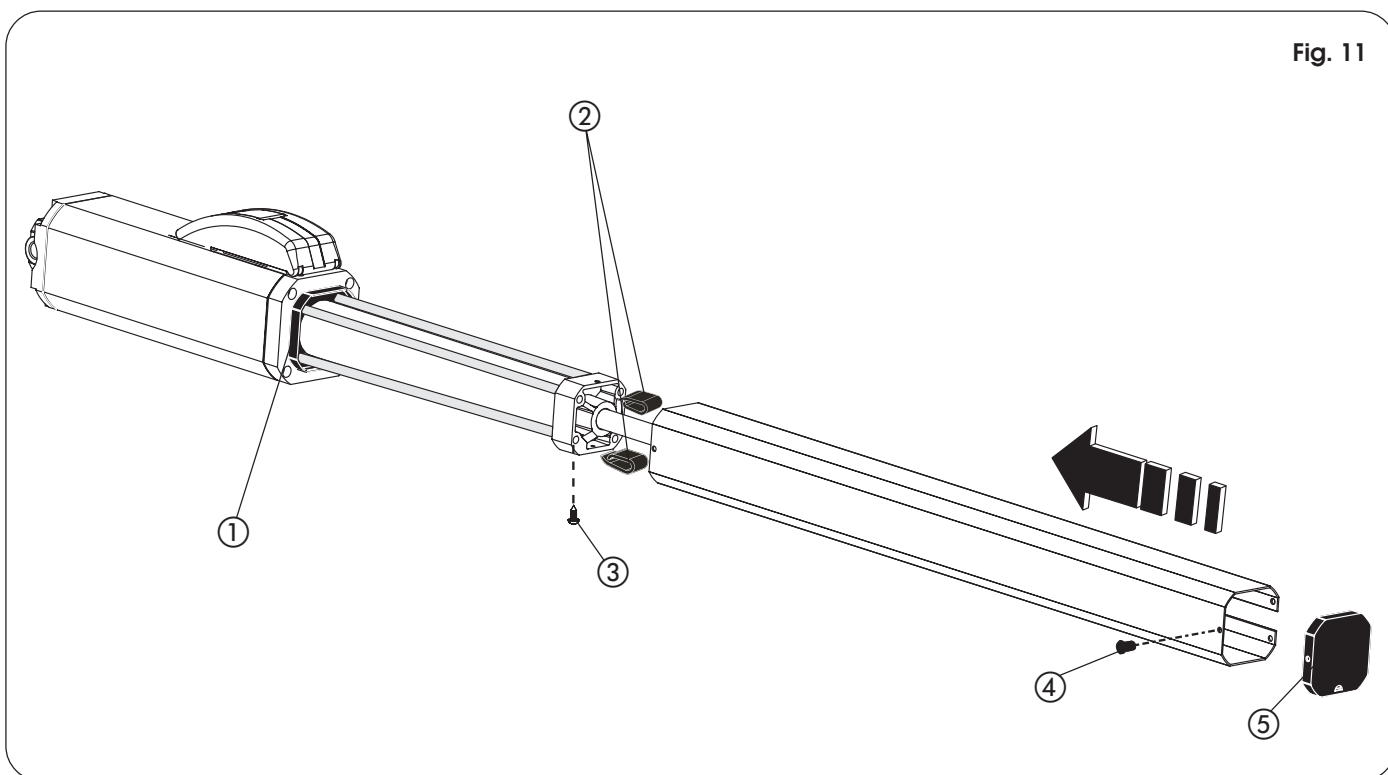


Fig. 11



12) Prepare the protective housing and fit it on the operator as shown in Fig. 11.

- A) Insert the two anti-vibration spacers ② onto the front flange.
- B) Introduce the housing, pressing it firmly on the rear cover ①.
- C) Secure the housing with the self-tapping screw ③.
- D) Fit the front cover ⑤ on the housing and fasten it with FIX plug ④.

13) Fit the electric cable bend guard (ref.③, Fig. 14).

14) Re-lock the operator and make the electrical connections of the selected electronic control unit following the relevant instructions.

4. START-UP

4.1. ADJUSTING THE ANTI-CRUSHING SYSTEM

The 422 automated system has an anti-crushing safety device which limits the operator's force if an obstacle is encountered while the gate is moving. To adjust the intervention threshold of the anti-crushing system, temporarily open the release unit.

-Lift the protective plug (Fig. 12, ref. ①) and fit the supplied key (Fig. 12, ref. ②).

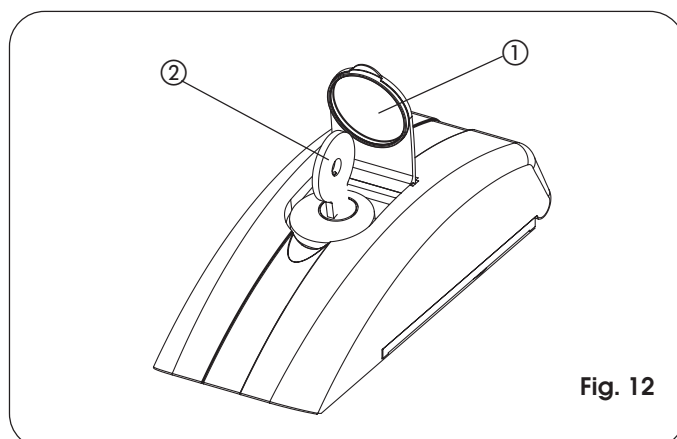


Fig. 12

- Turn the key 90° clockwise to open the cover.
- Lift up the cover (Fig. 13).
- Back off the screw (Fig. 13, ref. ③) which secures the knob, and withdraw the knob (Fig. 13, ref. ④).
- Turn the force adjustment screws (By-Pass) (Fig. 13, ref. ⑤ and ⑥) on the operator.
- OPEN screw (green wording) : gate opening direction.
- CLOSE screw (red wording) : gate closing direction.
- To reduce torque, turn the screws anti-clockwise.
- To increase torque, turn the screws clockwise.
- When you have finished adjusting, re-position the knob (Fig. 13, ref. ④) and fasten the screw (Fig. 13, ref. ③).
- Close the cover and lock it by turning the key anti-clockwise.

To adjust the torque limiters, consult Standards EN 12453 and EN 12445 for EU member countries and current legal regulations in the other countries.

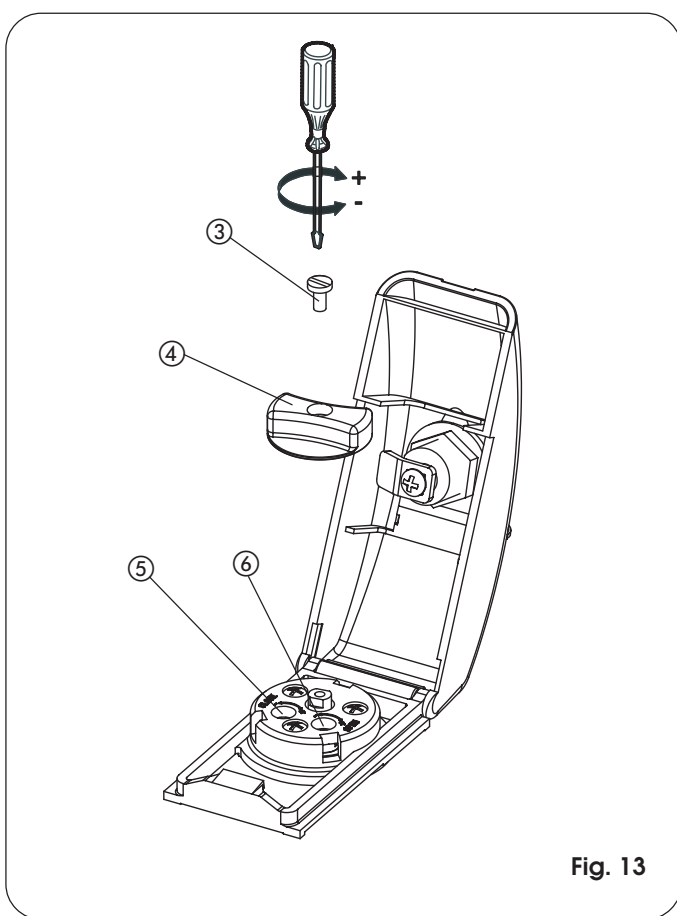


Fig. 13

5. FINAL OPERATIONS

Finish the installation operations as follows:

- Close the cover of the release device with the key.
- Remove the breather screw (Fig. 14, ref. ②)

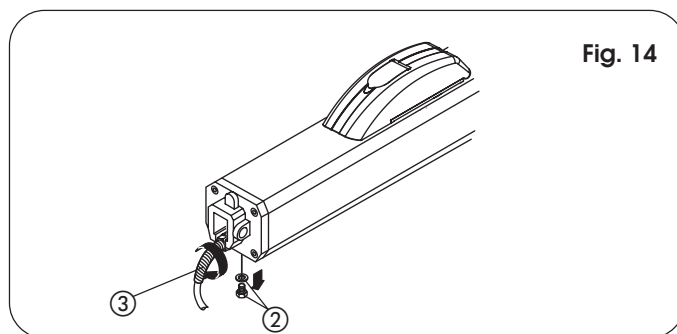


Fig. 14

6. AUTOMATED SYSTEM TEST

When you have finished installing, apply the danger signal sticker on the side of the operator so that it is clearly visible (Fig. 15). Run an accurate functional check of the automated system and of all the accessories connected to it, especially the safety devices. Hand the "User's Guide" to the Client, explain correct operation and use of the operator, and indicate the potentially dangerous areas of the automated system.

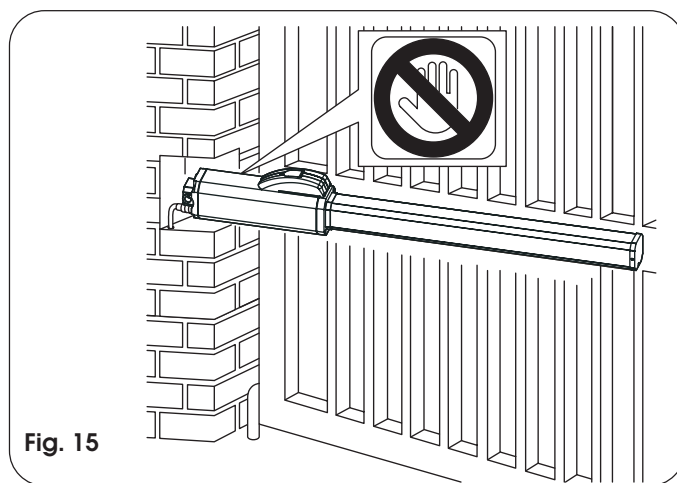


Fig. 15

7. MANUAL OPERATION

If the gate has to be moved manually due to a power cut or fault of the automated system, use the release device as follows:

- Lift the protective plug (Fig. 16, ref. ①) and fit the supplied key (Fig. 16, ref. ②).
- Turn the key 90° clockwise to open the cover.
- Lift up the cover (Fig. 16 ref. ③).
- Turn the release knob anti-clockwise for about two turns (Fig. 16, ref. ④).
- Open or close the leaf manually.

8. RESTORING NORMAL OPERATION MODE

To prevent an involuntary pulse from activating the operator during the manoeuvre, cut power to the system before re-locking the operator.

- To re-lock the operator, turn the release knob clockwise until it stops (Fig. 16, ref. ④).
- Close the cover and turn the key 90° anti-clockwise (Fig. 16, ref. ②).
- Finally, remove the key and close the protective plug (Fig. 16, ref. ①).

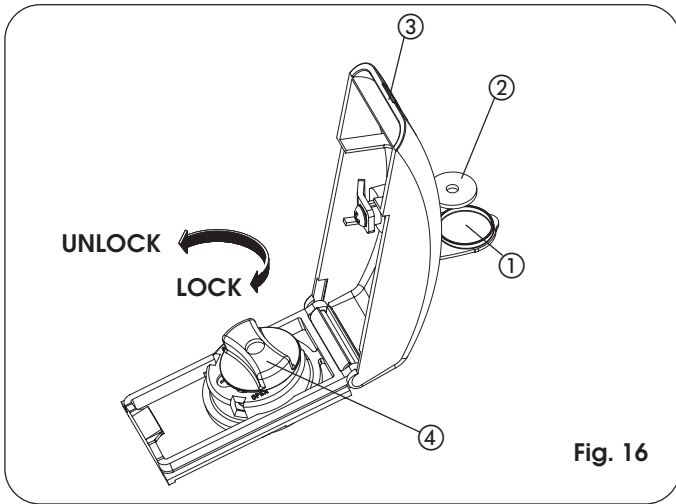


Fig. 16

9. SPECIAL APPLICATIONS FOR SWING LEAF GATES

9.1. OPENING TOWARD THE OUTSIDE, WITH OPERATOR INSTALLED INSIDE (Fig. 17)

For this special application, refer to Table 1, and select the STANDARD operator according to leaf length.

For leaves with a length of up to 1,8 m, we advise you to use the CBAC STANDARD operators.

For leaves longer than 1,8 m, we advise you to use only operators without the hydraulic locking, externally installing the ground level electric lock too. The installation dimensions are shown in table C. Instructions to adjust the anti-crushing system for outward opening gates only, contrary to what we indicated in paragraph 4.1:

- OPEN screw (green wording) : gate closing direction.
- CLOSE screw (red wording) : gate opening direction.
- To reduce torque, turn the screws anti-clockwise.
- To increase torque, turn the screws clockwise.

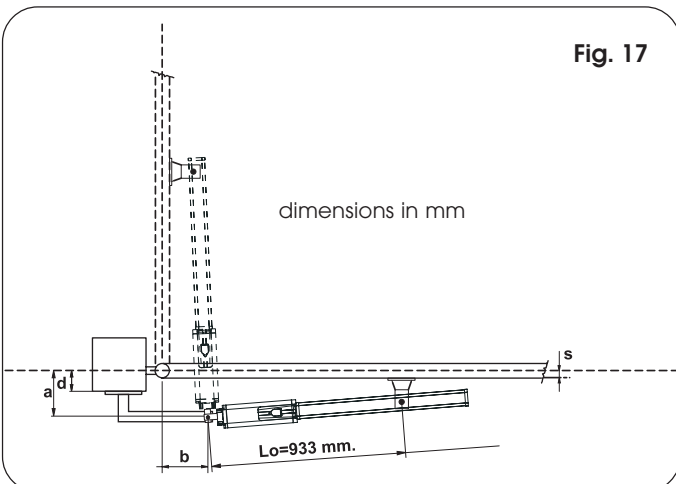


Fig. 17

Table C: Recommended dimensions for standard operators

| Opening angle | a (mm) | b (mm) | s (mm) | d(**) (mm) | c(*) (mm) |
|---------------|--------|--------|--------|------------|-----------|
| 90° | 100 | 90 | 0 | 50 | 240 |
| 90° | 110 | 100 | 0 | 60 | 240 |
| 90° | 120 | 110 | 0 | 70 | 240 |

(*) Rod effective stroke (**) maximum dimension

10. MAINTENANCE

Run a functional check of the system at least every 6 months, with special attention to the efficiency of the safety and release devices (including the thrust force of the operator), and to perfect operation of the gate hinges.

Also, periodically check quantity of oil inside the tank.

Oil level check instructions:

- Cut power to the system.
- Position the operator vertically, with the rear flange high up.
- Remove the oil filling plug.
- Insert a screwdriver until it comes into contact with the electric motor as shown in Fig. 18.
- Remove the screwdriver and check oil level as shown in Fig. 18.

⚠ USE ONLY FAAC HP FLUID OIL

Periodically check correct adjustment of the anti-crushing safety device (BY-PASS) and the efficiency of the release system to allow manual operation (see relevant paragraph).

The safety devices installed on the system must be checked every 6 months.

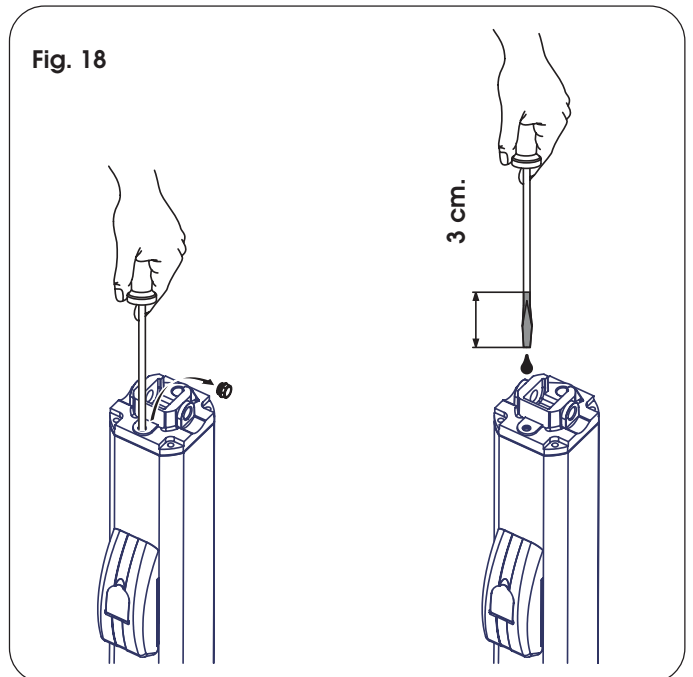


Fig. 18

11. REPAIRS

For any repairs, contact FAAC's authorised Repair Centres.

12. TROUBLESHOOTING

The following table will help you identify and solve some particular conditions.

| | CONDITION | SUGGESTION |
|----------|---|---|
| A | Gate not moving. | <ul style="list-style-type: none"> - Check if mains power is supplied. - Make sure that the operator is not unlocked. (chapter 8.). - Check the adjustment of the anti-crushing system (paragraph 4.1). - Check oil level inside the tank. (chapter 10 - Fig. 18). - Check the connection and operation of the thrust capacitor. - Check the efficiency of the electronic control unit. |
| B | Gate moving slowly. | <ul style="list-style-type: none"> - Check the adjustment of the anti-crushing system (paragraph 4.1). |
| C | Gate moving jogwise. | <ul style="list-style-type: none"> - Make sure that you have removed the breather screw (chapter 5). - Run some complete gate opening and closing cycles, in order to release any air inside the piston. |
| D | The operator is losing oil from the breather screw. | <ul style="list-style-type: none"> - An initial, minimum oil leak is normal. A larger leak may occur if the operator is not fitted in a perfectly horizontal plane. If the oil leak does not stop soon, we advise you to visit an authorised repair centre. |
| E | The leaves stop at slow-down. | <ul style="list-style-type: none"> - Check the adjustment of the anti-crushing system (paragraph 4.1). |
| F | Gate speed not constant. | <ul style="list-style-type: none"> - Incorrect installation dimensions (paragraph 3.2). |

| Notes |
|--------------|
| |
| |
| |
| |
| |

MAINTENANCE REGISTER

Installation technician _____
 Customer _____
 Type of system _____
 Serial number _____
 Installation date _____ Activation _____

System configuration

| PART | MODEL | SERIAL NUMBER |
|----------------------|----------|---------------|
| Aktuatore | FAAC-550 | |
| Safety device 1 | | |
| Safety device 2 | | |
| Pair of photocells 1 | | |
| Pair of photocells 2 | | |
| Control device 1 | | |
| Control device 2 | | |
| Radio control | | |
| Flashing lamp | | |
| Other device | | |
| Other device | | |

Indication of residual risks and of foreseeable improper use

| No. | Date | Description of job | Signatures |
|-----|------|--------------------|------------|
| 1 | | | Technician |
| | | | Customer |
| 2 | | | Technician |
| | | | Customer |
| 3 | | | Technician |
| | | | Customer |
| 4 | | | Technician |
| | | | Customer |
| 5 | | | Technician |
| | | | Customer |
| 6 | | | Technician |
| | | | Customer |
| 7 | | | Technician |
| | | | Customer |
| 8 | | | Technician |
| | | | Customer |
| 9 | | | Technician |
| | | | Customer |
| 10 | | | Technician |
| | | | Customer |

USER'S GUIDE

AUTOMATED SYSTEM 422

Read the instructions carefully before using the product and store them for future use

GENERAL SAFETY REGULATIONS

If correctly installed and used, the 422 automated system ensures a high degree of safety.

Some simple rules on behaviour can prevent accidental trouble:

- Do not pass between the leaves when they are moving. Wait for the leaves to open fully before passing through them.
- Do not, on any account stay in between the leaves.
- Do not stand near the automated system, and do not allow children, persons or things to do so, especially when it is operating.
- Keep remote controls or other pulse generators away from children, to prevent the automated system from being activated involuntarily.
- Do not allow children to play with the automated system.
- Do not willingly obstruct leaves movement.
- Prevent any branches or shrubs from interfering with leaves movement.
- Keep indicator-lights efficient and easy to see.
- Do not attempt to activate the leaves by hand unless you have released them.
- In the event of malfunctions, release the leaves to allow access and wait for qualified technical personnel to do the necessary work.
- When you have set manual operation mode, cut power to the system before restoring normal operation.
- Do not in any way modify the components of the automated system.
- Do not attempt any kind of repair of direct action whatever and contact qualified personnel only.
- At least every six months: arrange a check by qualified personnel of the automated system, safety devices and earth connection.

DESCRIPTION

These instructions apply to the following models:
422 CBCS - 422 CBACS - 422 SBS - 422 CBC - 422 CBAC - 422 SB - 422 CBC PED. - 422 SB PED.

The FAAC 422 automated system for swing leaf gates consists of a hydraulic enbloc composed of an electric pump and a hydraulic piston which transmits drive to the leaf.

The models with a hydraulic locking do not require installation of an electric lock, as they guarantee mechanical locking of the leaf when the motor is not operating.

The other models, without a hydraulic locking always require one or more electric locks to ensure the leaf is mechanically locked. Leaves of up to 3 mt can be automated depending on the selected model.

The functioning of the operators is controlled by an electronic control unit, housed in an enclosure with adequate degree of protection against atmosphere agents.

The leaves are normally closed.

When the electronic control unit receives an opening command from the radio control or any other pulse generator, it activates the hydraulic appliance which rotates the leaves until they reach the opening position to allow access.

If automatic mode was set, the leaves close automatically after selected pause time has elapsed.

If the semi-automatic mode was set, a second pulse must be sent to close the leaf again.

A stop pulse (if supplied) always stops movement.

For details on the behaviour of the automated system in different function logics, consult the installer.

Automated systems include safety devices (photocells) that prevent the leaves from moving when there is an obstacle in the area they protect.

The 422 automated system is supplied standard with a hydraulic anti-crush protection safety device (BY-PASS) which limits the torque transmitted to the leaves.

The warning-light indicates the current leaf movement.

MANUAL OPERATION

If the gate has to be moved manually due to a power cut or fault of the automated system, the release unit must be temporarily opened (fig.1).

- Remove the protective plug and insert the supplied key.
- Turn the key 90° clockwise to open the cover.
- Lift up the cover.
- Turn the release knob anti-clockwise for about two turns. Open or close the leaf manually.

N.B.: IN MODELS WITHOUT THE LOCKS, ALL YOU HAVE TO DO IS TO MANUALLY RELEASE THE ELECTRIC LOCK.

RESTORING NORMAL OPERATION MODE

Before re-locking the operator, cut power to the system. Turn the release knob clockwise until it stops.

Close the cover and turn the key 90° anti-clockwise. Finally, remove the key and close the protective plug.

