

EC MACHINE DIRECTIVE COMPLIANCE DECLARATION

(DIRECTIVE 89/392 EEC, APPENDIX II, PART B)

Manufacturer: FAAC S.p.A.

Address: Via Benini, 1
40069 - Zola Predosa
BOLOGNA - ITALY

Hereby declares that: the model 400 automation system

- is intended to be incorporated into machinery, or to be assembled with other machinery to constitute machinery in compliance with the requirements of Directive 89/392 EEC, and subsequent amendments 91/368 EEC, 93/44 EEC and 93/68 EEC;
- complies with the essential safety requirements in the following EEC Directives:

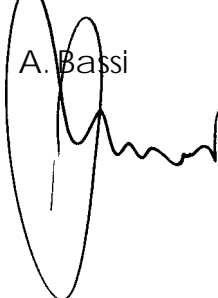
73/23 EEC and subsequent amendment 93/68 EEC.
89/336 EEC and subsequent amendments 92/31 EEC and 93/68 EEC.

and furthermore declares that unit must not be put into service until the machinery into which it is incorporated or of which it is a component has been identified and declared to be in conformity with the provisions of Directive 89/392 EEC and subsequent amendments enacted by the national implementing legislation.

Bologna, 1 January 1997

Managing
Director

A. Bassi

A handwritten signature in black ink, appearing to be 'A. Bassi', written over a large, faint oval stamp.

IMPORTANT NOTICE FOR THE INSTALLER

GENERAL SAFETY INSTRUCTIONS

- 1) **WARNING! For reasons of safety, all the instructions in this manual must be followed scrupulously. Improper installation or misuse of the product may result in serious injury.**
- 2) Packaging material (plastic, polystyrene etc.) is a potential hazard and must be kept out of reach of children.
- 3) Read the instructions carefully before installing the product.
- 4) Keep these instructions for future reference.
- 5) This product has been designed and manufactured only for the use stated in this manual. Any other use not expressly indicated may result in damage to the product and/or risk of injury.
- 6) FAAC S.p.A. shall not be liable for any damage caused by improper use of the automation or by any use other than that for which it is intended.
- 7) Do not install this device in explosive atmospheres: the presence of flammable gas or fumes constitutes a serious hazard.
- 8) Mechanical structural elements must comply with UNI8612, CEN pr EN 12604 and CEN pr EN 12605 standards. For countries outside the EU, mechanical structural elements must comply with the above standards in addition to any national safety standards in order to obtain a reasonable degree of safety.
- 9) FAAC cannot be held responsible for failure to observe technical standards in the construction of gates on which the automation is installed, or for any deformation of the gates which may occur during use.
- 10) Installation must comply with UNI8612, CEN pr EN 12453 and CEN pr EN 12635. The degree of safety of the automation must be C+D.
- 11) Before carrying out any operations on the automation, disconnect the electrical power supply to the system.
- 12) Install a multi-pole switch on the supply line to the automation with a contact opening distance of 3 mm or more. We recommend the use of a 6A thermal magnetic circuit breaker with multi-pole switching.
- 13) Ensure that a residual current device with a trip threshold of 0.03A is installed upstream of the automation system,
- 14) Check that the earthing system is installed correctly and is efficient. Connect the metal parts of the gate and the yellow/green wire of the operator to the earthing system.
- 15) The automation is fitted with an anti-crushing safety system consisting of a torque control device which, in all cases, must be used in conjunction with other safety devices.
- 16) The safety devices (e.g. photocells, safety edges, etc.) protect areas where there is a mechanical movement hazard, e.g. crushing, entrapment and cutting.
- 17) Each installation must be fitted with at least one flashing light (e.g. FAAC LAMP, MINILAMP etc.) and a warning sign suitably fixed to the gate, in addition to the safety devices as per point 16. above.
- 18) FAAC cannot be held responsible for the safe and correct operation of the automation in the event that parts other than FAAC original parts are used.
- 19) Use only FAAC original spare parts for maintenance operations.
- 20) Do not carry out any modifications to automation components.
- 21) The installer must supply all information regarding manual operation of the system in the event of an emergency and provide the end-user with the "End-user Guide" attached to the product.
- 22) Do not allow any persons, especially children, to stand in the vicinity of the automation when in operation.
- 23) Keep remote radio controls and any other control devices out of the reach of children to prevent accidental operation of the automation.
- 24) The end-user must not attempt to repair or adjust the automation. These operations must be carried out exclusively by qualified personnel.
- 25) **Any operations not explicitly indicated in these instructions are not permitted.**

400 AUTOMATION SYSTEM

These instructions apply to the following models:

400 CBC - 400 SB - 400 SBS - 400 CBAC - 400 CBACR - 400 CBAC lungo - 400 SB lungo.

The FAAC 400 automation system for swing gates is a hydraulic unit comprising an electric pump and a hydraulic piston which moves the gate leaf.

For models equipped with a hydraulic lock, it is not necessary to install an electric lock, as the gate leaf is locked mechanically when the motor is not in operation. Models not equipped with a hydraulic lock require one or more electric locks to ensure mechanical locking of the gate.

The 400 automation systems have been designed for the automation of swing gates. Do not use for any other purpose.

1. DESCRIPTION AND TECHNICAL SPECIFICATIONS

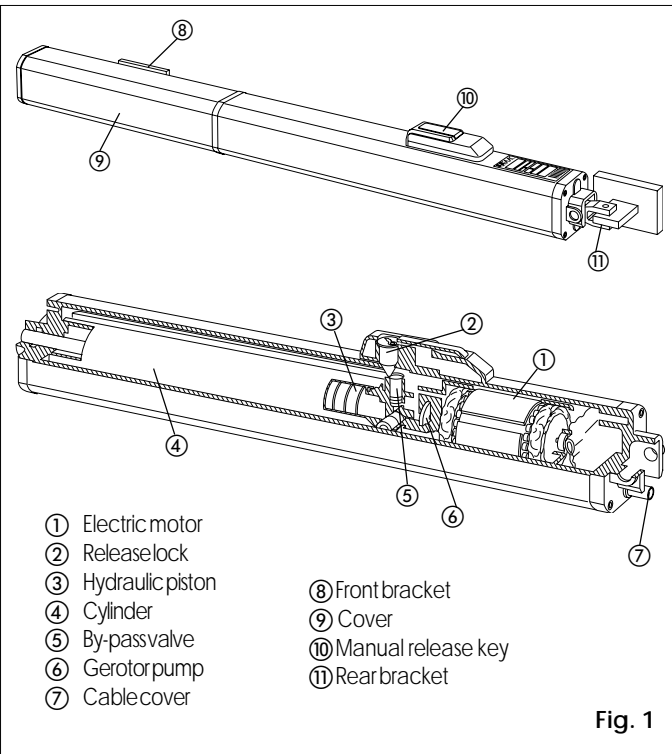


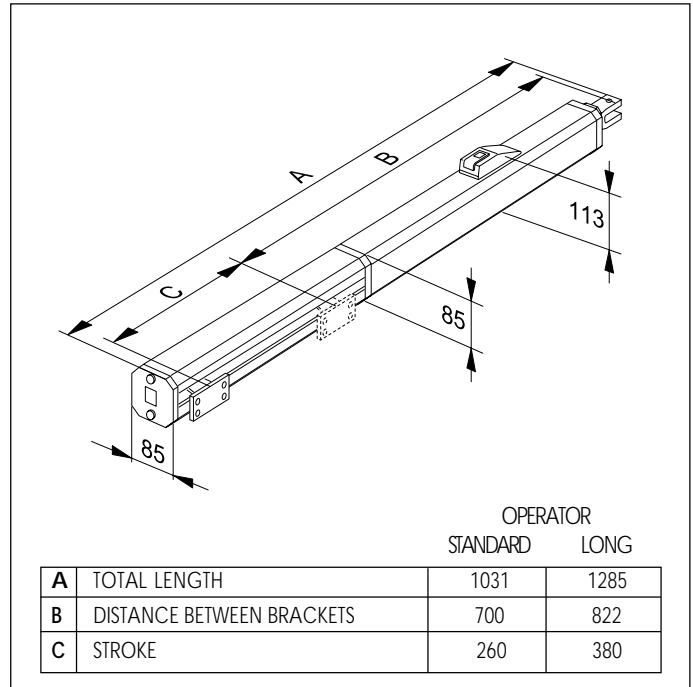
Fig. 1

Tab. 1 400 operator technical specifications

MODELS AVAILABLE	CBC	CBAC	SB	SBS	CBACR	CBAC LIN	SB LIN
Power supply	230 V~ (+6% -10%) - 50 Hz						
Absorbed power	220 W						
Current drawn	1 A						
Electric motor (rpm)	4 poles - 1400						
Motor winding thermal cutout	120 °C						
Capacitor	8 µF / 400V						
Temperature range	-20 °C +55 °C						
Housing protection	IP 55						
Max. thrust/traction force (daN)	620	620	620	775	465	465	465
Rod stroke (mm)	260	260	260	260	260	380	380
Rod speed (cm/s)	1	1	1	0.75	1.5	1.5	1.5
Operator weight (Kg)	8.6	8.6	8.6	8.6	8.6	10	10
Duty cycle (cycles/hour)	70	70	70	60	80	50	50
Pump delivery (l/min)	1	1	1	0.75	1.5	1.5	1.5
Operating pressure (bar)	40	40	40	50	30	30	30
Hydraulic locking	(1)	(2)	/	/	(2)	(2)	/
Maximum leaf length (m)	2.20	2.20	4	7	2.20	2.20	2.50

(1) : CLOSED (2) : OPENED & CLOSED

1.1. DIMENSIONS



2. STANDARD INSTALLATION LAYOUT

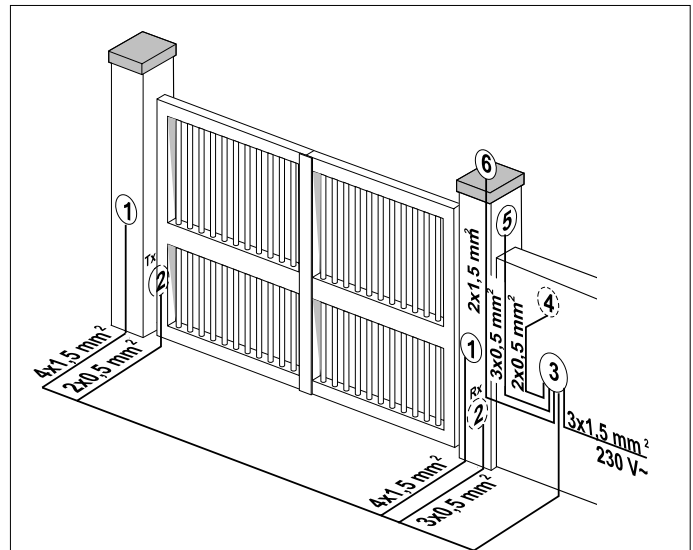


Fig. 3

- ① Operators (require 2 junction boxes)
- ② Photocells
- ③ Electronic control unit
- ④ Keyswitch
- ⑤ Radio receiver
- ⑥ Flashing light

Notes: 1) Use suitable rigid/flexible conduit for laying power cables.
 2) Always keep low voltage accessory cables separate from 230V - power cables. To avoid interference, use separate sheaths.

Table 2

INSTALLATION DIMENSIONS

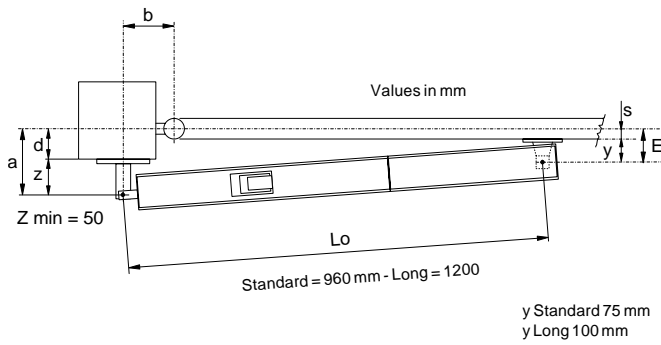


Fig. A

TableA: Recommended dimensions for standard operator

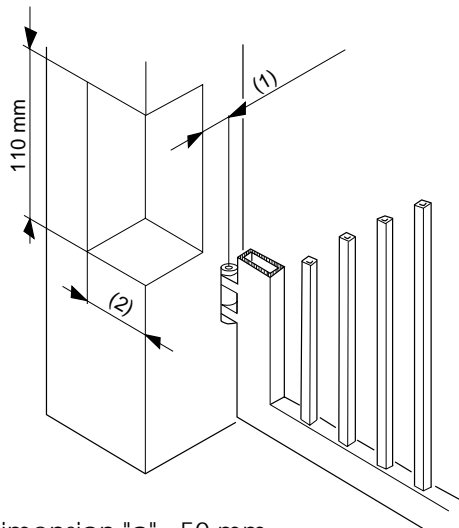
Opening angle "α"	a (mm)	b (mm)	c (*) (mm)	d (**) (mm)	s (mm)
90°	130	130	260	80	2
110°	100	90	260	50	2

(*) working excursion of piston rod (**) maximum dimensions

TableB: Recommended dimensions for long operator

Opening angle "α"	a (mm)	b (mm)	c (*) (mm)	d (**) (mm)	s (mm)
90°	200	180	380	150	2
125°	130	170	380	80	2

(*) working excursion of piston rod (**) maximum dimensions



(1) Dimension "a" - 50 mm.
(2) Dimension "b" + 50 mm.

Fig. B

CALCULATING INSTALLATION DIMENSIONS: GENERAL RULES

If modifications to the dimensions specified in Table A or B are necessary, proceed as follows:

- For 90° leaf opening: $a + b = c$
- For leaf opening over 90°: $a + b < c$
- The smaller the dimensions of a and b the higher the gate speed. Always respect current standards.
- Limit the difference between a and b to within 40 mm: larger differences alter speed considerably during opening and closing.

- For reasons of operator clearance, the minimum value for Z is 50 mm (Fig. A)
- If the dimensions of the gate post or position of the hinge do not allow for the specified distance of "a", make a recess in the gate post as shown in Fig. B.
- Dimension a must always be greater than dimension E.

3. INSTALLATION OF THE AUTOMATION SYSTEM

3.1. PRELIMINARY CHECKS

To ensure trouble-free operation, make sure that the gate (whether existing or yet to be installed) has the following specifications:

- max. length of each gate leaf: 7 metres
- strong and rigid leaf frame
- smooth gate movement, with no stiff points
- hinges in good condition
- physical travel limit stops

If any welding or brazing has to be done on the gate, do this before installing the automation system. The good order of the structure directly influences the reliability and safety of the automation system.

3.2. INSTALLATION OF THE OPERATORS

- 1) Fix the rear bracket to the gate post according to the instructions in Table 2. Adjust the length of the bracket if necessary.

Warning: Observe the specified dimensions to ensure correct operator functioning.

In the case of iron gate posts, weld the bracket directly onto the gate post.

In the case of brick/concrete gate posts, flush-mount a wall plate (2, Fig. 4), and weld the bracket to the plate (Fig. 4).

- 2) Fix the operator to the rear bracket by means of the screws supplied (Fig. 4).
- 3) Screw the front bracket half-way onto the rod (1, Fig. 6) and secure with the nut provided.
- 4) Release the operator (see paragraph 5).
- 5) Extend the rod to the end of its stroke and then retract it by

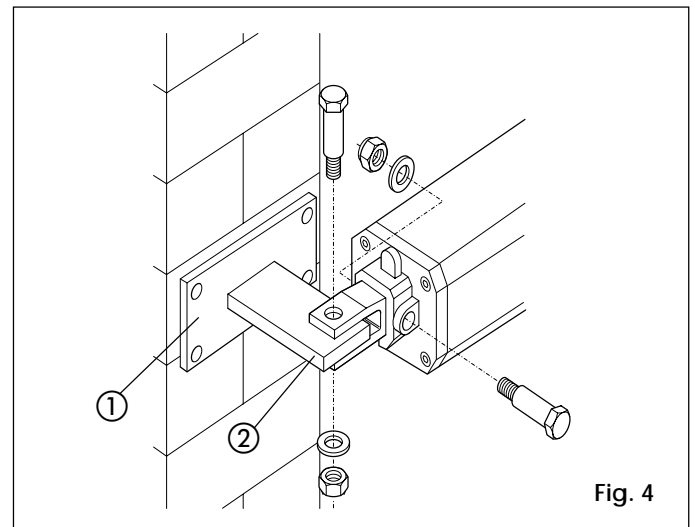


Fig. 4

about 5 mm (Fig. 5).

- 6) Lock the operator (see paragraph 6)
- 7) Fit the front bracket onto the rod as shown in Fig. 6, ref. 2.
- 8) Close the gate leaf and, keeping the operator perfectly horizontal, locate the leaf attachment position of the front bracket (Fig. 7).
- 9) Fix the front bracket temporarily to the leaf by two welds. **N.B.:** If the gate frame does not allow for secure fixing of the bracket, add a support plate.
- 10) Release the operator and ensure that the gate opens smoothly

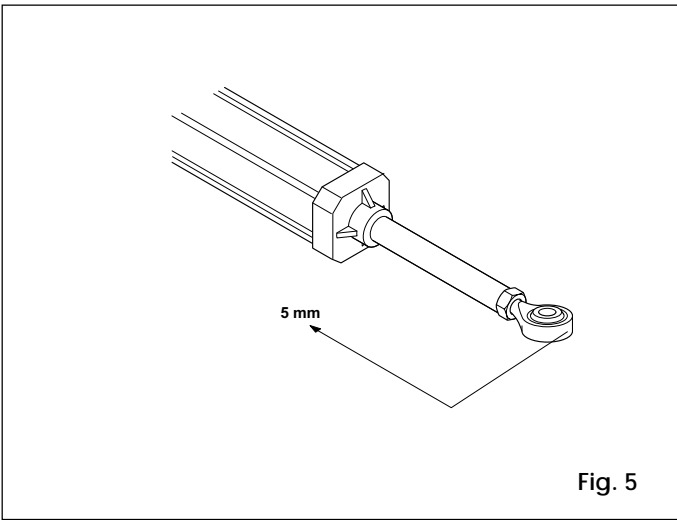


Fig. 5

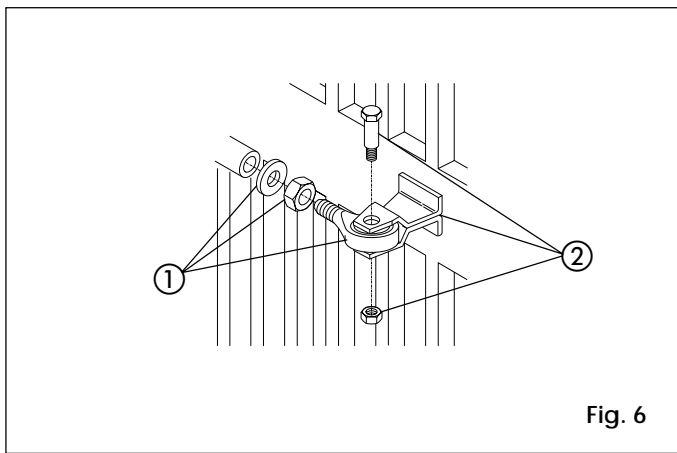


Fig. 6

with no stiff points and that it stops on the physical travel stops.
 11) Completely weld the front bracket to the leaf. To weld, detach the operator temporarily from the bracket to prevent any waste material from damaging it (Fig. 8).

- N.B.:**
- 1) Grease all pivots on brackets
 - 2) If welding is not possible, the front and rear bracket plates are also designed for fixing by screws and screw anchors.

- 12) Fit the cover on the operator as shown in Fig. 9. Fit the cable sheath (3, Fig. 11).
- 13) Repeat the above operations to install the second operator.

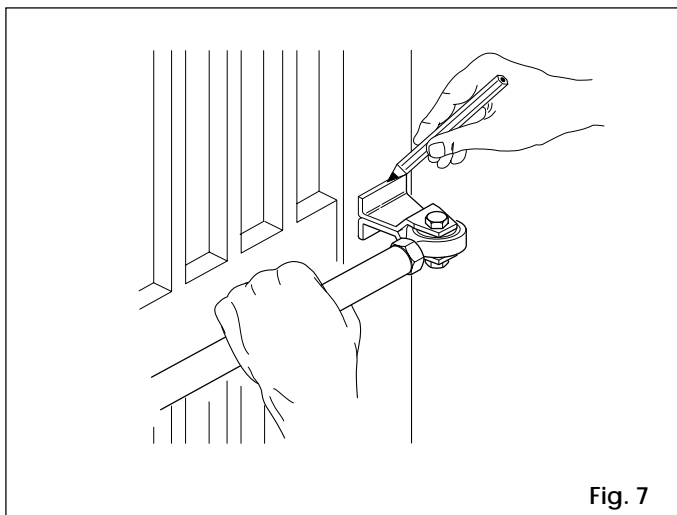


Fig. 7

14) Make the electrical connections of the electronic control unit following the instructions provided.

4. START-UP

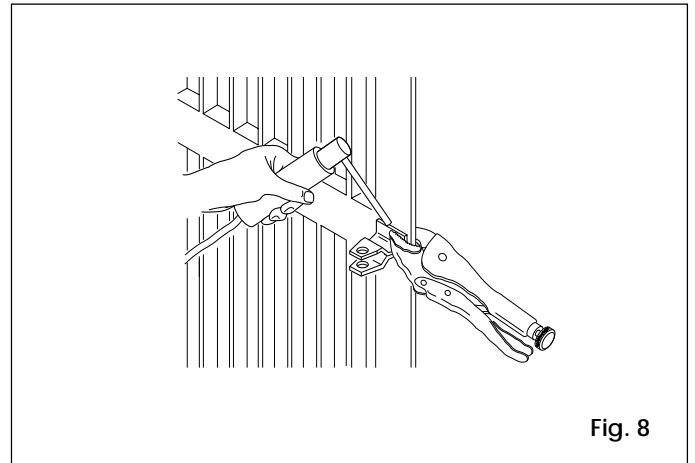


Fig. 8

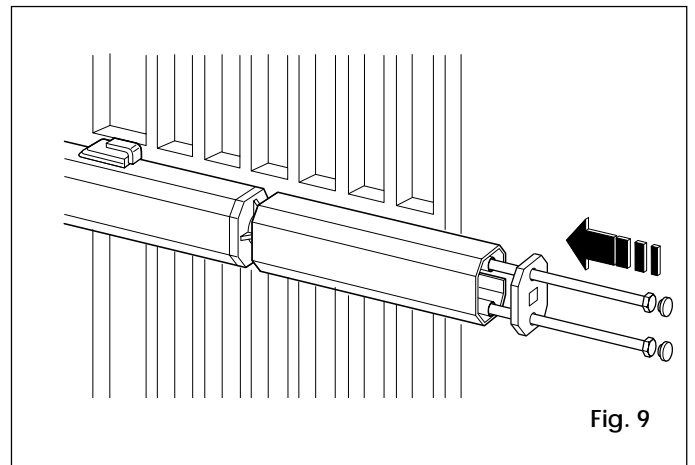


Fig. 9

4.1. ANTI-CRUSHING SYSTEM ADJUSTMENT

The 400 automation is equipped with an anti-crushing system which limits the torque applied by the operator when the gate leaf encounters an obstacle during its movement. When the obstacle is removed, the gate proceeds until the set operation time is complete.

To adjust the intervention threshold of the anti-crushing system, it is first necessary to remove the release unit (Fig. 10).

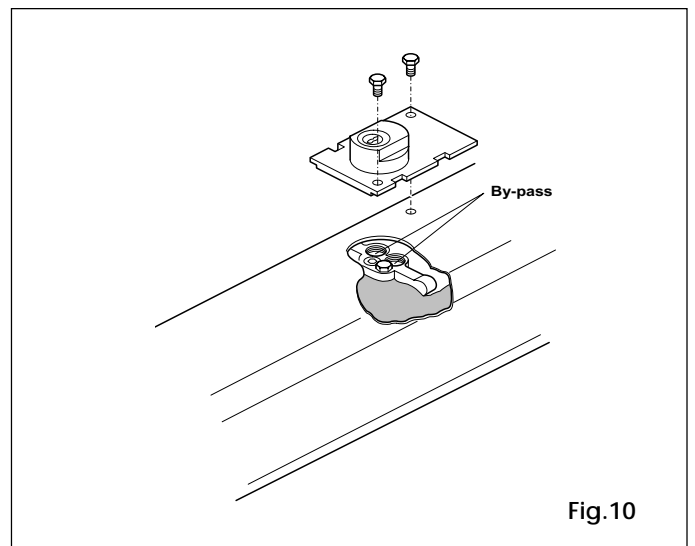


Fig. 10

Adjust the torque adjuster screws (By-pass valves, Fig. 10) on the operator.

- Green screw: to adjust torque applied during gate opening
- Red screw: to adjust torque applied during gate closing.

To reduce torque, turn the screw anticlockwise.

To increase torque, turn the screw clockwise.

This torque limiter must be set so as never to exceed 15 kg measured on the outer edge of the leaf.

To ensure precise torque adjustment use a linear dynamometer.

Complete the installation operations as follows:

- Fit the release unit cover (1 Fig. 11).
- Remove the breather screw (2, Fig. 11).

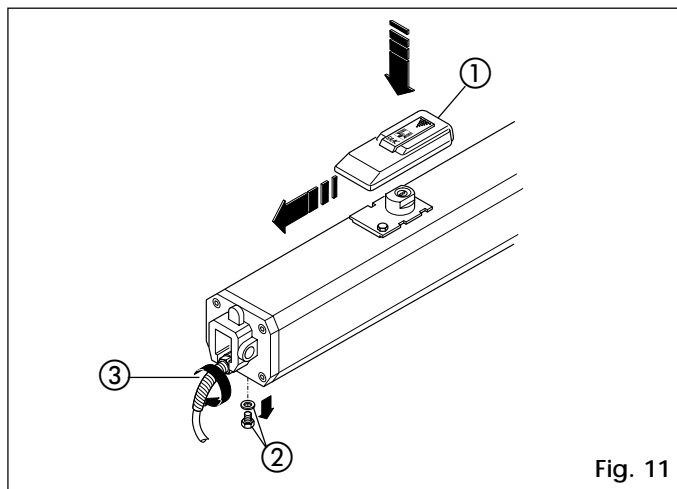


Fig. 11

4.2. TESTING THE AUTOMATED UNIT

On completion of the installation, affix a danger warning adhesive label in a clearly visible position on the side of the operator (Fig. 12).

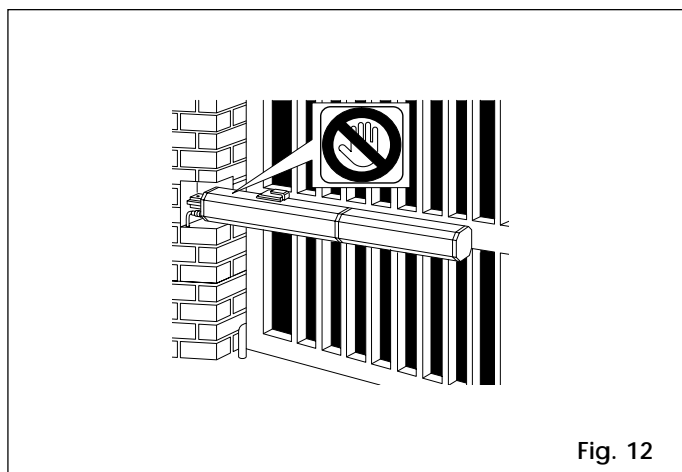


Fig. 12

Carefully check operation of the operator and all the connected accessories, especially the safety devices.

Give the customer the "User guide" and demonstrate how to use the operator correctly. Point out the potential danger zones of the automated unit.

5. MANUAL OPERATION

In the event of a power failure or malfunction, the gate can be operated manually by opening the sliding cover and inserting the special release key as shown in Fig. 13.

To release the operator, turn the key one full turn in an anti-clockwise direction as shown in Fig. 13.

Open or close the leaves manually.

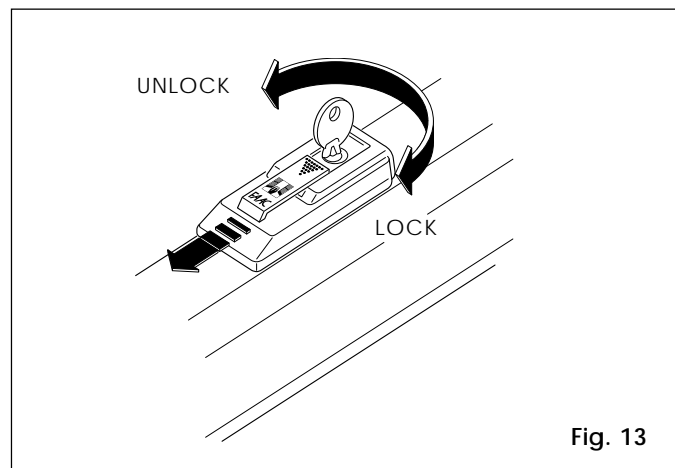


Fig. 13

6. RETURNING TO NORMAL OPERATION

Turn off the electricity supply to the system before re-locking the operators to avoid all risk of starting them accidentally.

To re-lock the operator, turn the release key clockwise as shown in Fig. 13.

7. SWING GATE SPECIAL APPLICATIONS

There are no special applications.

8. MAINTENANCE

Carry out periodic checks of the gate structure and ensure in particular that the hinges are in perfect working condition.

Periodically check the level of oil in the reservoir.

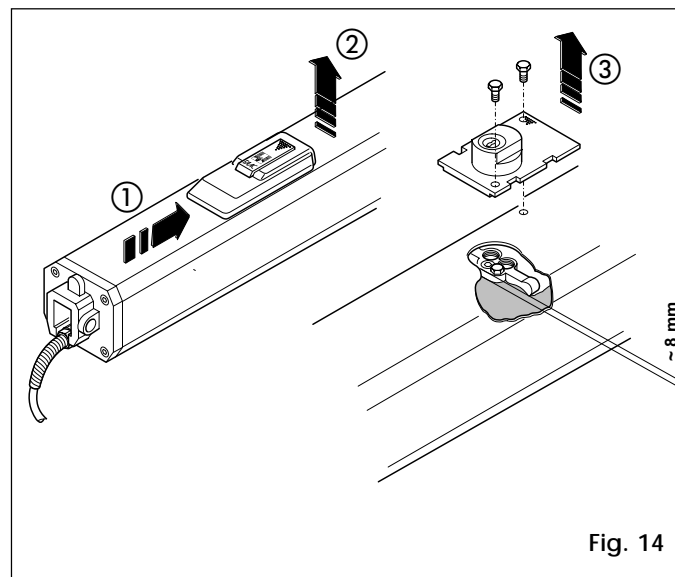


Fig. 14

For low-medium duty installations an annual check is sufficient; for more frequently used installations, oil checks should be carried out every six months.

The oil level should be approximately 8 mm from the top edge of the distribution flange (Fig. 14).

To top up the oil, first remove the cover and the release unit, and then pour in oil following the indications in Fig. 14.

N.B. : ONLY USE FAAC XD 220 OIL.

Periodically check that the anti-crushing system is correctly adjusted (BY-PASS valves) and the efficiency of the release system which allows the gates to be moved manually (see relative paragraph).

Safety devices installed on the system must be checked every six months.

9. REPAIRS

For repairs, contact an authorised FAAC service centre.

End-User Guide

400 Automation Systems

Read the end user guide carefully before using the product and keep it in a safe place for future reference.

GENERAL SAFETY REGULATIONS

When correctly installed and used, the 412 Compact automation system ensures a high degree of safety. A few simple rules should be followed to prevent accidental problems.

- Do not pass between the leaves when they are still moving: always wait until they have opened completely.
- Do not linger between the leaves.
- Do not linger near the automation system; do not allow children or adults to linger near it; and do not leave objects near it.
- Keep wireless control devices, or other devices that might accidentally activate the automation system, out of the reach of children.
- Do not allow children to play with the automation system.
- Do not impede the movement of the gate leaves.
- Do not allow branches or bushes to interfere with the movement of the gate leaves.
- Ensure that the warning lamps are in always in working order and visible.
- Do not attempt to move the leaves manually unless you have first unlocked them.
- In case of a malfunction, unlock the leaves to allow vehicles to pass, and call a qualified technician.
- If you have set the manual mode, before restoring normal operation, disconnect the power supply.
- Do not modify the components of the automation system.
- Do not attempt to repair the automation system or to perform any operation on it. Call a qualified technician.
- At least once every 6 months, have qualified personnel check that the automation system, safety devices and earth connection are in working order.

DESCRIPTION

These instructions apply to the following models:

400 CBC - 400 SB - 400 SBS - 400 CBAC - 400 CBACR - 400 CBAC long - 400 SB long.

The FAAC 400 automation for swing gates is a hydraulic unit comprising an electric pump and a hydraulic piston which transmits motion to the gate leaf.

Models fitted with hydraulic locks do not require the installation of an electric lock, as the hydraulic system ensures that the gate leaf is mechanically locked when the motor is not in operation. Models without hydraulic locks must be fitted with one or more electric locks to ensure mechanical locking of the gate leaves.

The FAAC 400 can automate gate leaves up to 7 m in length, depending on the model.

The operators are controlled by an electronic control unit, housed in an enclosure which assures adequate protection against atmospheric agents.

The leaves are normally closed. When the electronic control unit receives an open command from the remote radio control or any other control device, it activates the electromechanical system and causes the leaves to rotate by an angle of up to 110° to their open position, so as to allow access.

If automatic operation has been selected, the leaves close automatically after the selected pause time.

If semiautomatic operation has been selected, a second impulse must be sent to close the leaves.

An open command given while the leaves are closing causes the leaves to reverse direction of movement.

A stop command (if available) stops movement at any time.

For detailed information on the operation of the automation system in the various operating modes, consult the installation technician.

The automation system is equipped with a photocell safety device which prevents the leaves from closing when the photocells are obscured by an obstacle.

The 400 automation system is also equipped with an anti-crushing safety device (fitted as standard) that limits the torque transmitted to the leaves.

The operators ensure that the system is mechanically locked when the motor is not running, so there is no need to install a lock. The leaves can be opened manually only after operating the release device.

The lamp flashes while the leaves are moving.

MANUAL OPERATION

If the gate has to be operated manually due to a malfunction or power supply failure, remove the sliding cover and insert the key provided into the release system as shown in Fig. 1.

To release the operator, turn the key a full turn anticlockwise, as indicated in Fig. 1.

Open or close the leaf manually.

N.B. : ON MODELS WITHOUT HYDRUALIC LOCKS IT WILL ALSO BE NECESSARY TO MANUALLY RELEASE THE ELECTRIC LOCK.

RETURNING TO NORMAL OPERATION

To prevent accidental operation during this procedure, disconnect the system from the power supply before re-locking the operators.

To re-lock the operator, turn the key clockwise (Fig. 1).

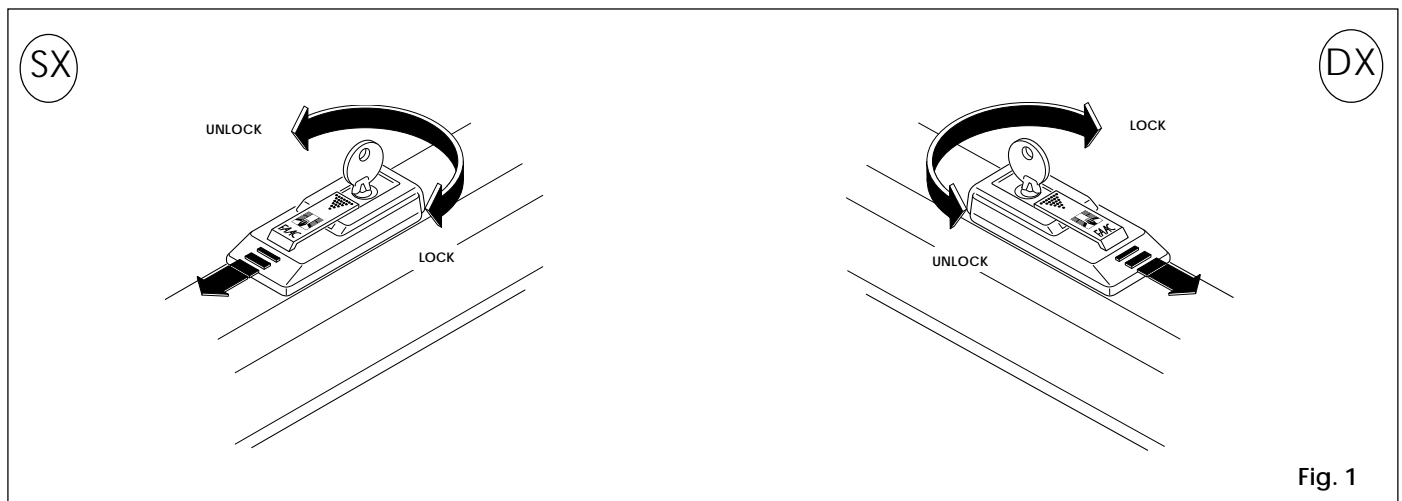


Fig. 1