

## CE DECLARATION OF MACHINE CONFORMITY

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

**Manufacturer :** FAAC S.p.A.

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

**Declares that:** Operator mod. 412,

- is manufactured to be incorporated in a machine or for assembly with other machines to constitute a machine under the provisions of Directive 89/392/EEC, and subsequent amendments 91/368/EEC, 93/44/EEC, 93/68/EEC;
- conforms to the essential safety requirements of the following further EEC Directives:

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

and, furthermore, declares that putting the machine into service is forbidden until the machine in which it will be incorporated or of which it will become a part has been identified and it has been declared as conforming to the conditions of Directive 89/392/EEC and subsequent amendments enacted by the national implementing legislation.

Bologna, 01 January 1999

The Managing Director  
A. Bassi



## WARNING FOR THE INSTALLER

### GENERAL SAFETY OBLIGATIONS

- CAUTION! It is important for personal safety to follow all the instructions carefully. Incorrect installation or misuse of the product may cause people serious harm.**
- Read the instructions carefully before starting to install the product.
- Packaging material (plastic, polystyrene, etc.) must not be left within reach of children as it is a potential source of danger.
- Keep the instructions in a safe place for future reference.
- This product was designed and manufactured strictly for the use indicated in this documentation. Any other not expressly indicated use may damage the product and/or be a source of danger.
- FAAC accepts no responsibility due to improper use of the automation or use other than that intended.
- Do not install the appliance in an area subject to explosion hazard: inflammable gasses or fumes are a serious safety hazard.
- Mechanical construction elements must meet the provisions of UNI8612, CEN pr EN 12604 and CEN pr EN 12605 standards.  
To obtain an adequate level of safety in non EU countries, the above mentioned standards must be observed in addition to national standards.
- FAAC will not accept responsibility if the principles of good workmanship are disregarded in constructing the closing elements to be motorised, and if any deformation occurs during use of the said elements.
- Installation must meet the following standards: UNI8612, CEN pr EN 12453 and CEN pr EN 12635.  
The safety class for the automation must be C+D.
- Before carrying out any work on the system, switch off the electricity supply.
- The mains electricity supply of the automation must be fitted with a single-pole switch with contact opening distance of 3mm or greater. Use of a 6A thermal breaker with single-pole circuit break is recommended.
- Make sure there is a differential switch with 0.03A threshold upstream of the system.
- Check that the earthing system is correctly made and connect the closure metal parts to it. Also connect the Yellow/Green wire of the automation to the earthing system.
- The automation includes an intrinsic anti-crushing device consisting of a torque control which, however, must be installed together with other safety devices.
- The safety devices (e.g.: photocells, sensitive edges, etc...) protect any dangerous areas against **Movement mechanical risks**, such as, crushing, dragging, or shearing.
- Use of at least one indicator-light is essential for each system (e.g.: FAAC LAMP MINILAMP, etc.) as well as a sign adequately fixed to the frame structure, in addition to the devices mentioned at point "16".
- FAAC accepts no responsibility regarding safety and correct operation of the automation, should components made by manufacturers other than FAAC be used in the system.
- Use only FAAC original spare parts for maintenance.
- Do not make any alterations to the components of the automation.
- The installer must supply full information regarding manual operation of the system in the event of an emergency and provide the user of the system with the "User's Guide" included with the product.
- Do not allow children or other persons to stand near the product while in operation.
- Keep remote controls or any other pulse generator well away from children, to prevent the automation from being activated accidentally.
- The user must refrain from attempting to repair or adjust the system personally and should contact qualified personnel only.
- Anything not expressly provided for in these instructions is not permitted.**

# 412 AUTOMATION SYSTEM

These instructions apply to the following models:

## Operators 412 and 412-24V

The FAAC 412 AUTOMATION SYSTEM for swing gates comprises two electromechanical operators which drive the gate leaves by means of a worm screw.

The system locks mechanically; therefore no electric lock is required.

➔ **To obtain anti-crushing protection, you have to use electronic control units with a torque control electronic device. The 412 automation was designed and manufactured to control access of vehicles. Avoid any other use whatever.**

### 1. DESCRIPTION AND TECHNICAL SPECIFICATIONS

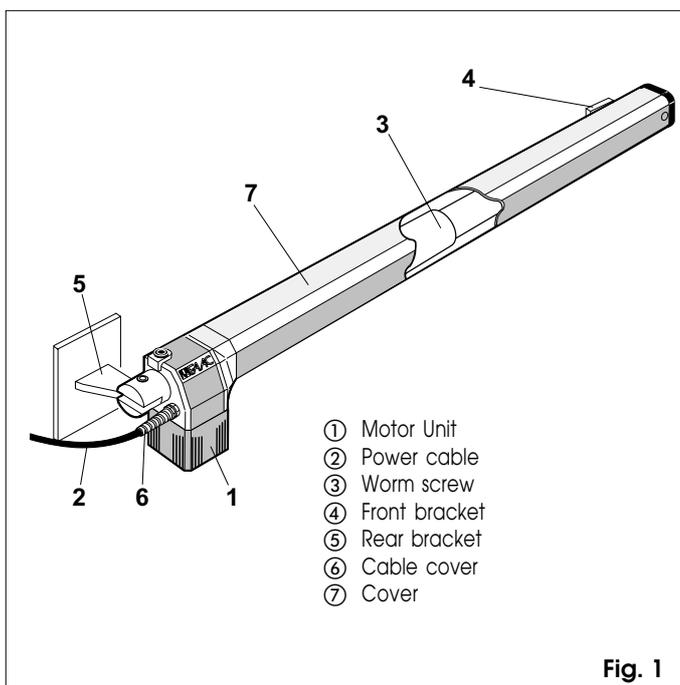


Fig. 1

Table 1: 412 operator technical specifications

	412	412-24V
Power supply	230 V~ 50 Hz	24Vdc
Absorbed power (W)	280	70
Current drawn (A)	1,5	3
Electric motor	1400 rpm	
Motor winding thermal cutout	140 °C	/
Capacitor	8 µF/400V	/
Max. thrust/traction force (daN)	350	250
Rod stroke (mm)	290	
Rod speed (cm/s)	1,6	
Temperature range (°C)	-20 ÷ +55 °C	
Operator weight (Kg)	6,5	
Housing protection	IP 44	
Duty cycle (cycles/hour)	18	50
Maximum leaf length (m)	1,80	

### Drawing A INSTALLATION DIMENSIONS

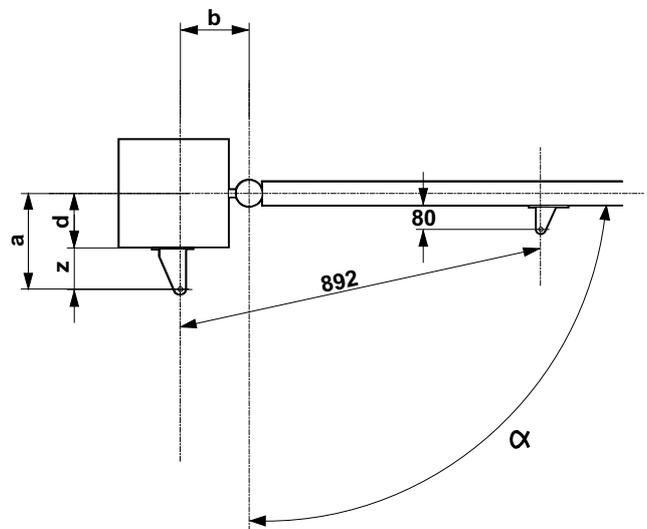


Fig. A

Table A: Recommended dimensions

Opening angle "α"	a (mm)	b (mm)	c (*) (mm)	d (**) (mm)
90°	145	145	290	100
110°	125	125	290	80

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

### CALCULATING INSTALLATION DIMENSIONS: GENERAL RULES

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

- For 90° leaf opening:  $a + b = c$
- For leaf opening over 90°:  $a + b < c$
- **The lower the dimensions of a and b the higher the gate speed.** Always respect current standards.
- **Limit the difference between a and b to within 4 cm:** larger differences alter speed considerably during opening and closing.
- For reasons of operator clearance, **the minimum value for Z is 45 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.

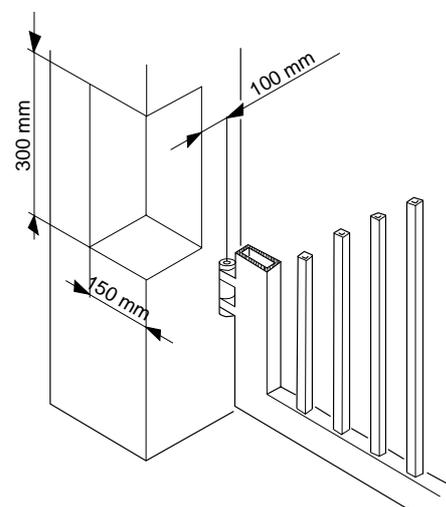


Fig. B

**2. STANDARD INSTALLATION LAYOUT**

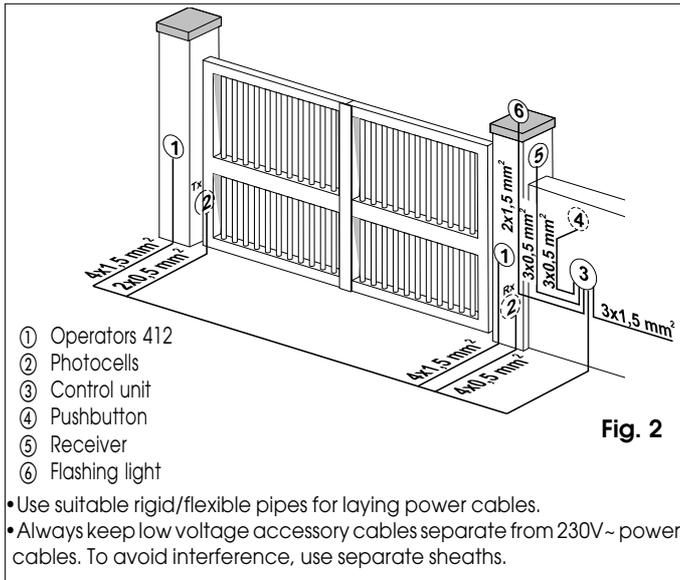


Fig. 2

**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: 1.8 metres
- strong and rigid leaf frame
- smooth gate movement, with no stiff points
- hinges in good condition
- mechanical 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 A. 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 (fig. 3), and weld the bracket to the plate.

- 2) Fix the operator to the rear bracket by means of the screws supplied (fig. 3).

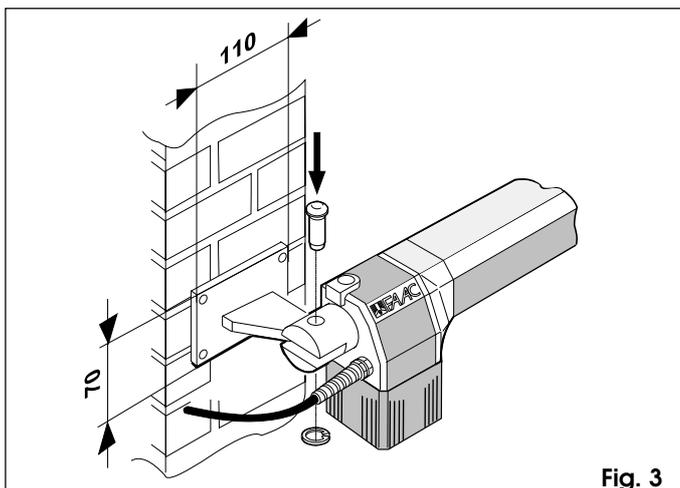


Fig. 3

**Caution:** the operators supplied in the kit are left and right hand versions.

For correct installation the operator must be positioned as shown in fig. 3.

- 3) Release the operator (see paragraph 5).
- 4) Extend the rod to the end of its stroke (fig. 4).
- 5) Lock the operator (see paragraph 6).
- 6) Rotate the operator rod two full turns clockwise (fig. 4).
- 7) Fit the front bracket onto the rod as shown in fig. 5.
- 8) Close the gate leaf and, keeping the operator perfectly horizontal, locate the leaf attachment position of the front bracket (fig. 6).
- 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.

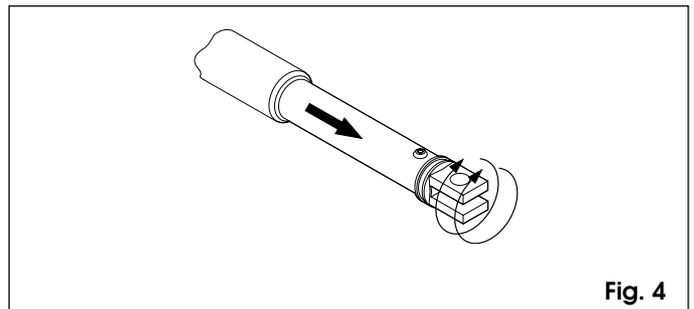


Fig. 4

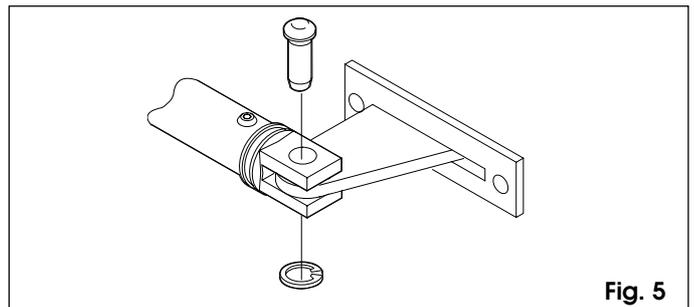


Fig. 5

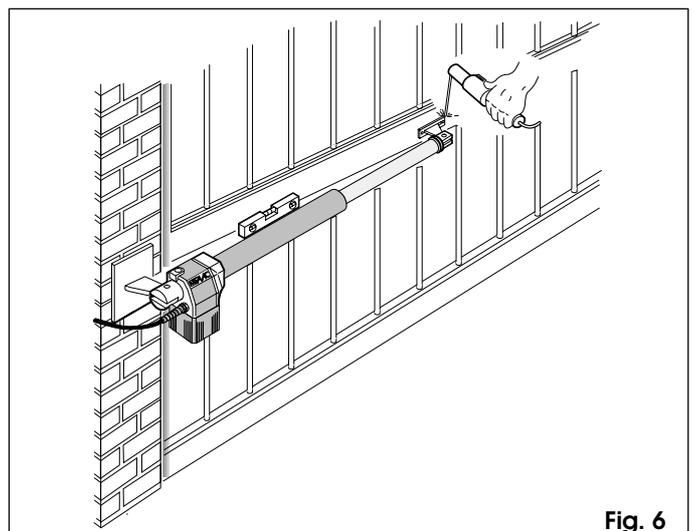


Fig. 6

- 10) Release the operator and ensure that the gate opens smoothly with no stiff points and that it stops on the mechanical 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.

- 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 (fig. 7) on the operator as shown in fig. 8.

**N.B.:** Fix the guide support of the cover on the hole furthest from the cap (fig.7).

- 13) Repeat the above operations to install the second operator.  
 14) Make the control unit connections.  
 15) Programme the control unit to set the specific installation requirements.

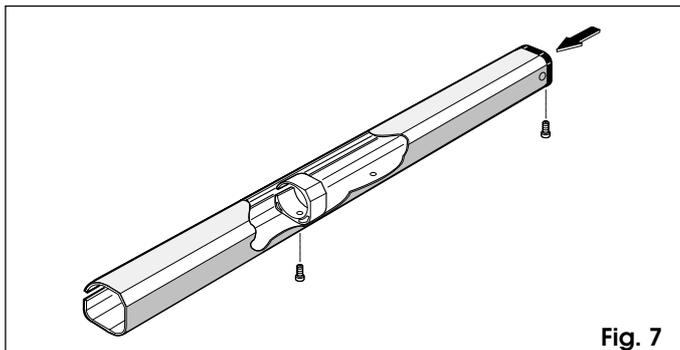


Fig. 7

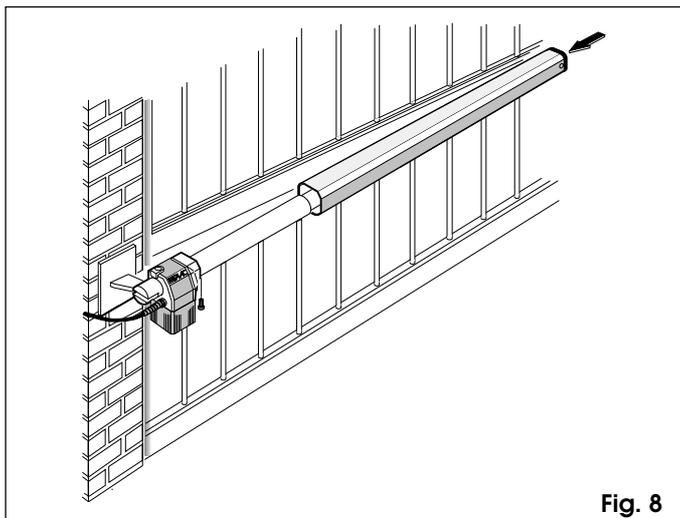


Fig. 8

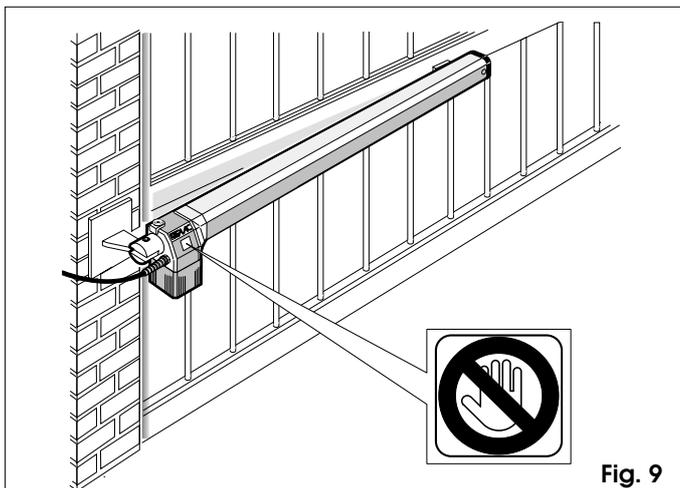


Fig. 9

**4. TESTING THE AUTOMATED UNIT**

On completing installation, affix a danger warning adhesive label in a clearly visible position on the side of the operator (fig. 9).

Careful check operation of the operator and all accessories connected to it.

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 removing the plug and inserting the special release key as shown in fig. 10.

To release the operator, turn the key in the direction of leaf closing (fig. 10).

Open or close the leaves manually.

**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 key in the leaf opening direction (fig. 10).

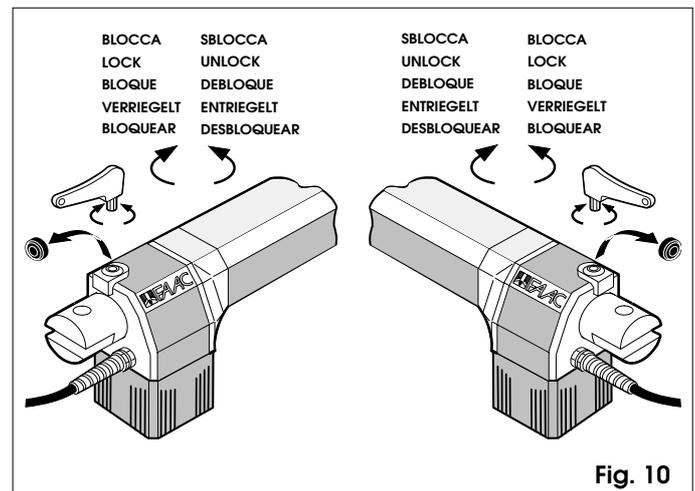


Fig. 10

**7. 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.

Check periodically that the electronic anti-crushing system is adjusted correctly and that the release mechanism for manual movement is fully operative (see relative paragraph).

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

**9. REPAIRS**

For repairs, refer to authorised FAAC service centres.

## END-USER GUIDE

### 412 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 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 leaves.
- Do not allow branches or bushes to interfere with the movement of the leaves.
- Ensure that the warning lamps are always in working order and visible.
- Do not attempt to actuate 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 qualified technicians only.
- At least once every 6 months, have qualified personnel check that the automation system, safety devices and earth connection are in working order.

#### DESCRIPTION

The FAAC 412 automation system consists of two electromechanical operators which are ideal for controlling swinging gates with each leaf up to 1.80 m long.

The two electromechanical operators transmit movement to the leaves by a worm screw system.

The operators are controlled by an electronic control unit, mounted 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, contact the installation technician.

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

The 412 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 by operating the unlocking 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 safety cap and insert the key provided into the release system as shown in fig. 1. To release the operator, turn the key in the leaf closure direction (fig. 1).

Open or close the leaf manually.

#### RETURNING TO NORMAL OPERATION

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

To re-lock the operator, turn the key in the leaf opening direction (fig. 1).

