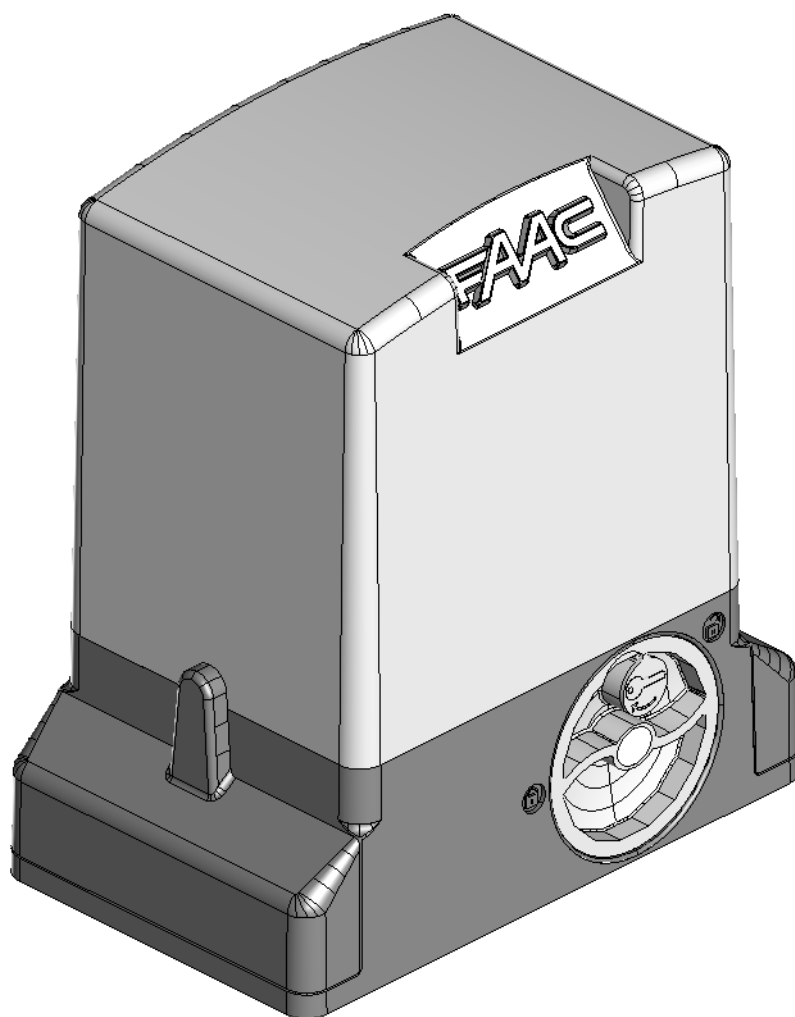


# 740-741



# FAAC

## EC DECLARATION OF CONFORMITY FOR MACHINES (DIRECTIVE 2006/42/EC)

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

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

**Declares that:** 740 / 741 mod. operator

is built to be integrated into a machine or to be assembled with other machinery to create a machine under the provisions of Directive 2006/42/EC

conforms to the essential safety requirements of the following EEC directives

2006/95/EC Low Voltage directive  
2004/108/EC Electromagnetic Compatibility directive

and also declares that it is prohibited to put into service the machinery until the machine in which it will be integrated or of which it will become a component has been identified and declared as conforming to the conditions of Directive 2006/42/EC

Bologna, 01 January 2008

The Managing Director



A. Marcellan

## WARNINGS FOR THE INSTALLER

### GENERAL SAFETY OBLIGATIONS

- 1) **ATTENTION! To ensure the safety of people, it is important that you read all the following instructions. Incorrect installation or incorrect use of the product could cause serious harm to people.**
- 2) Carefully read the instructions before beginning to install the product.
- 3) Do not leave packing materials (plastic, polystyrene, etc.) within reach of children as such materials are potential sources of danger.
- 4) Store these instructions for future reference.
- 5) This product was designed and built strictly for the use indicated in this documentation. Any other use, not expressly indicated here, could compromise the good condition/operation of the product and/or be a source of danger.
- 6) FAAC declines all liability caused by improper use or use other than that for which the automated system was intended.
- 7) Do not install the equipment in an explosive atmosphere: the presence of inflammable gas or fumes is a serious danger to safety.
- 8) The mechanical parts must conform to the provisions of Standards EN 12604 and EN 12605.  
For non-EU countries, to obtain an adequate level of safety, the Standards mentioned above must be observed, in addition to national legal regulations.
- 9) FAAC is not responsible for failure to observe Good Technique in the construction of the closing elements to be motorised, or for any deformation that may occur during use.
- 10) The installation must conform to Standards EN 12453 and EN 12445.  
For non-EU countries, to obtain an adequate level of safety, the Standards mentioned above must be observed, in addition to national legal regulations.
- 11) Before attempting any job on the system, cut out electrical power .
- 12) The mains power supply of the automated system must be fitted with an all-pole switch with contact opening distance of 3mm or greater. Use of a 6A thermal breaker with all-pole circuit break is recommended.
- 13) Make sure that a differential switch with threshold of 0.03 A is fitted upstream of the system.
- 14) Make sure that the earthing system is perfectly constructed, and connect metal parts of the means of the closure to it.
- 15) The automated system is supplied with an intrinsic anti-crushing safety device consisting of a torque control. Nevertheless, its tripping threshold must be checked as specified in the Standards indicated at point 10.
- 16) The safety devices (EN 12978 standard) protect any danger areas against **mechanical movement Risks**, such as crushing, dragging, and shearing.
- 17) Use of at least one indicator-light (e.g. FAACLIGHT ) is recommended for every system, as well as a warning sign adequately secured to the frame structure, in addition to the devices mentioned at point "16".
- 18) FAAC declines all liability as concerns safety and efficient operation of the automated system, if system components not produced by FAAC are used.
- 19) For maintenance, strictly use original parts by FAAC.
- 20) Do not in any way modify the components of the automated system.
- 21) The installer shall supply all information concerning manual operation of the system in case of an emergency, and shall hand over to the user the warnings handbook supplied with the product.
- 22) Do not allow children or adults to stay near the product while it is operating.
- 23) Keep remote controls or other pulse generators away from children, to prevent the automated system from being activated involuntarily.
- 24) Transit is permitted only when the automated system is idle.
- 25) The user must not attempt any kind of repair or direct action whatever and contact qualified personnel only.
- 26) Maintenance: check at least every 6 months the efficiency of the system, particularly the efficiency of the safety devices (including, where foreseen, the operator thrust force) and of the release devices.
- 27) **Anything not expressly specified in these instructions is not permitted.**

# AUTOMATED SYSTEM 740-741

These instructions apply to the following models:

**FAAC 740 - 741**

The 740-741 gearmotor is an electro-mechanical operator designed for moving sliding gates.

The non-reversing reduction system ensures the gate is mechanically locked when the gearmotor is not operating, therefore it is not necessary to install any electric lock

A convenient manual release with customised key makes it possible to move the gate in the event of a power failure or malfunction of the operator.

**The 740-741 gearmotor was designed and built for controlling vehicle access. AVOID ANY OTHER USE WHATEVER.**

## 1. DESCRIPTION AND TECHNICAL SPECIFICATIONS

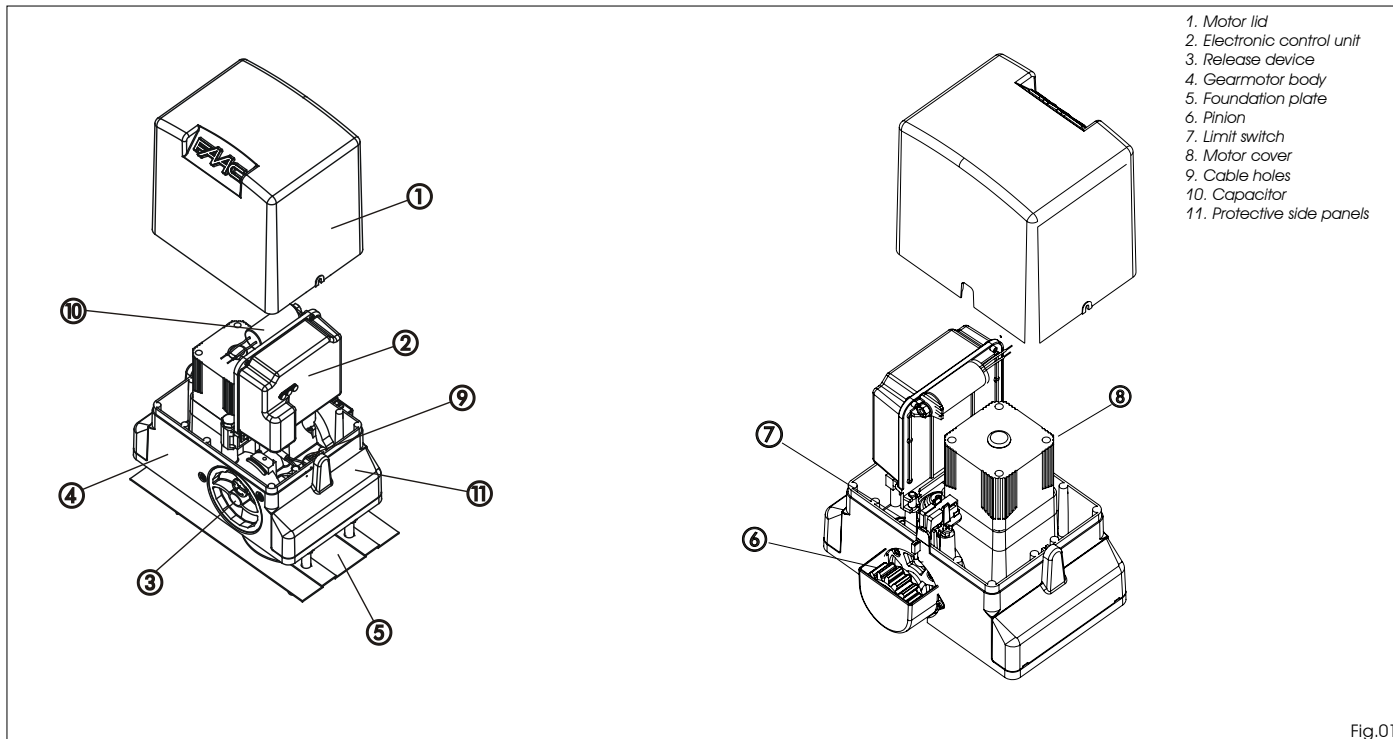


Fig.01

MODEL	740	741	740 115V	741 115V
Power supply (+6% -10%)	230 V ~ 50Hz	230 V ~ 50Hz	115 V ~ 60Hz	115 V ~ 60Hz
Absorbed power (W)	350	500	350	600
Absorbed current (A)	1,5	2,2	3	5,2
Capacitor (µF)	10	12,5	30	50
Thrust on pinion (daN)	45	65	45	65
Torque (Nm)	18	24	18	24
Winding thermal protection (°C)	140	140	140	140
Leaf max weight (Kg)	500	900	500	900
Type of pinion	Z16	Z16	Z16	Z16
Gate speed (m/min)	12	12	14	14
Gate max length (m)	15	15	15	15
Type of limit switch	Magnetic	Magnetic	Magnetic	Magnetic
Clutch	Electronic	Electronic	Electronic	Electronic
Use frequency	S3 - 30%	S3 - 40%	S3 - 30%	S3 - 40%
Operating temperature (°C)	-20 +55	-20 +55	-20 +55	-20 +55
Gearmotor weight (Kg)	10	11	10	11
Protection class	IP44	IP44	IP44	IP44
Gearmotor overall dimensions	See Fig.02	See Fig.02	See Fig.02	See Fig.02

## 2. DIMENSIONS

Values are expressed in mm

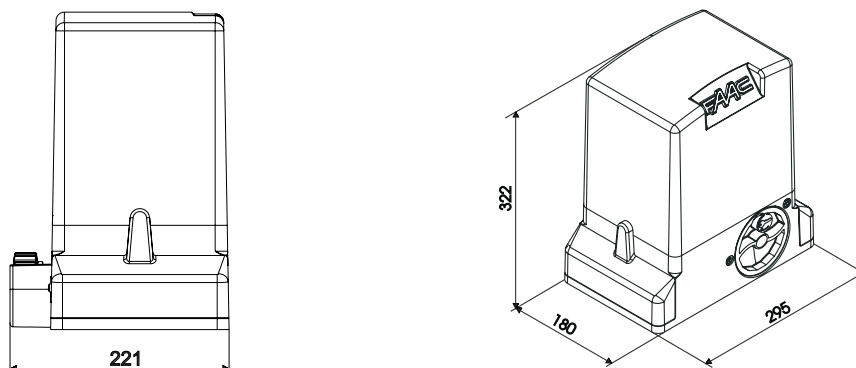


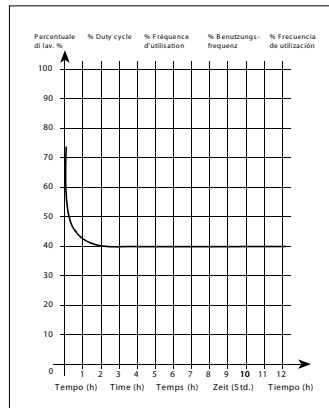
Fig.02

**3. MAXIMUM USE CURVE**

The curve makes it possible to establish maximum work time (T) according to use frequency (F). With reference to IEC 34-1 Standard, the 740-741 gearmotor with an S3 duty, can operate at a use frequency of 30-40%.

To ensure efficient operation, it is necessary to operate in the work range below the curve.

**Important:** The curve is obtained at a temperature of 20°C. Exposure to the direct sun rays can reduce use frequency down to 20%.



**Calculation of use frequency**

Use frequency is the percentage of effective work time (opening + closing) compared to total time of cycle (opening + closing + pause times). Calculation formula:

$$\% F = \frac{T_a + T_c}{T_a + T_c + T_p + T_i} \times 100$$

where:

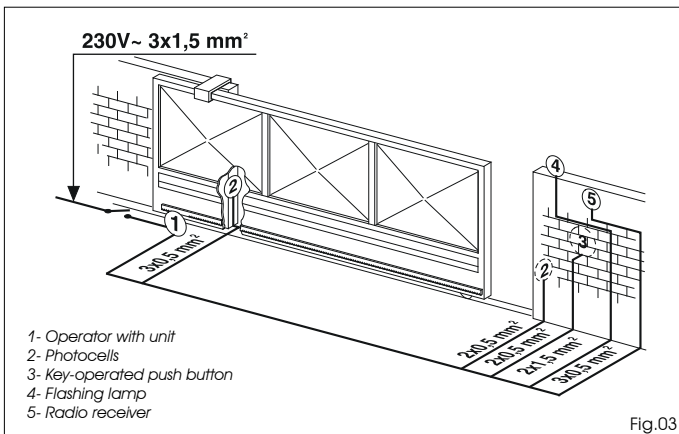
T<sub>a</sub> = opening time

T<sub>c</sub> = closing time

T<sub>p</sub> = pause time

T<sub>i</sub> = time of interval between two complete cycles

**4. ELECTRICAL SET-UP (standard system)**



**5. INSTALLING THE AUTOMATED SYSTEM**

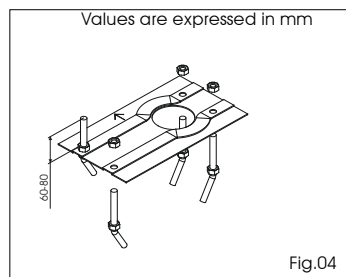
**5.1. Preliminary checks**

To ensure safety and efficiency of the automated system, make sure the following requirements are observed before installing the system:

- The gate structure must be suitable for automation. The following are necessary in particular: wheel diameter must be in proportion to the weight of the gate, an upper track must be provided, plus mechanical travel stops to prevent the gate derailing.
- The soil must guarantee a perfect stability of the foundation plinth.
- There must be no pipes or electric cables in the plinth excavation area.
- If the gearmotor is located in the vehicle transit or manoeuvre area, adequate means of protection should be provided against accidental impact.
- Check if an efficient earthing is available for connection to the gearmotor.

**5.2. Masonry for foundation plate**

- 1- Assemble the foundation plate as shown in figure 04.
- 2- In order to ensure that the pinion and rack engage

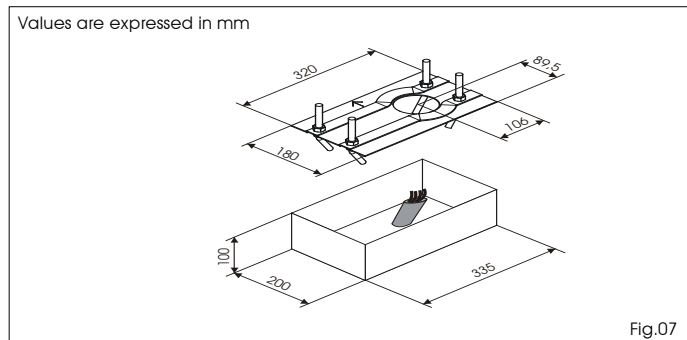
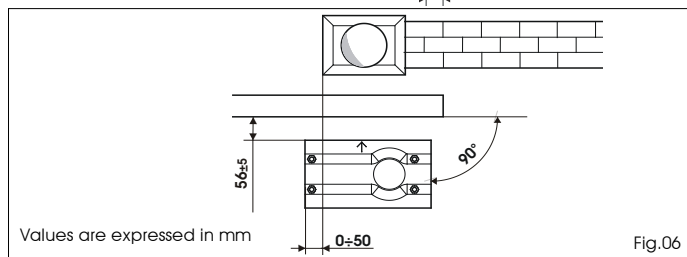
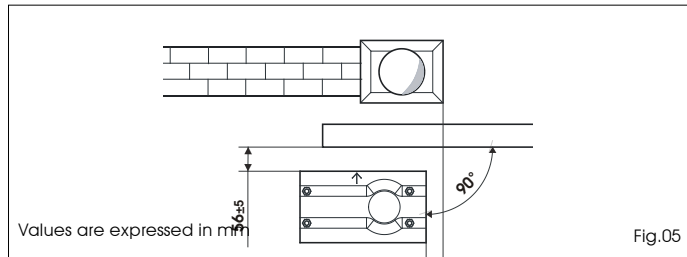


correctly, the foundation plate must be positioned as shown in Fig. 05 (right closing) or Fig. 06 (left closing).

**Warning: The arrow on the foundation plate must always point to the gate, see Figs. 05-06.**

3- After determining the position of the foundation plate, make a plinth as shown in Fig. 07 and wall the plate, providing several sheaths for routing the cables. Using a spirit level, check if the plate is perfectly level. Wait for the cement to set.

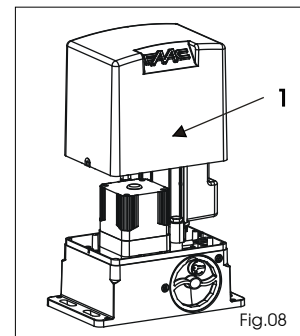
4- Lay the electric cables for connection to the accessories and power supply as shown in diagram of Fig. 03. To facilitate con-



nections to the control unit, allow the cables to protrude by at least 50 cm from the hole on the foundation plate.

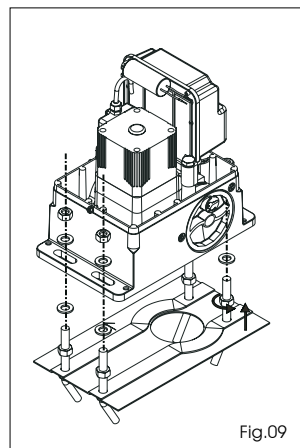
**5.3. Mechanical installation**

- 1- Remove the cover, Fig. 08 ref. 1.
- 2- Position the operator on the foundation plate, using the supplied washers and nuts as shown in Fig. 09. During this operation, route the cables through the appropriate openings in the motor body (See Fig.01 ref.9). If necessary, the two holes can be joined using a hammer to obtain a wider space.
- 3- Adjust the height of the gearmotor and the distance from the gate, referring to dimensions in Fig. 10.



**Attention: This operation is necessary to ensure the rack is correctly secured and to enable any new adjustments.**

- 4- Secure the gearmotor to the plate, tightening the nuts.
- 5- Prepare the operator for manual operation as described in paragraph 8.



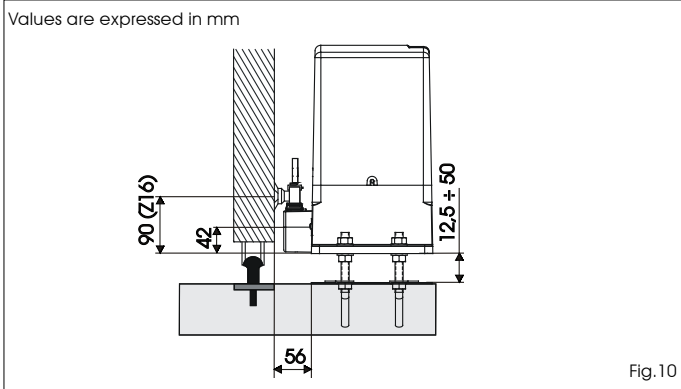


Fig.10

## 5.4. Assembling the rack

### 5.4.1. Steel rack to weld (Fig. 11)

- 1) Fit the three threaded pawls on the rack element, positioning them at the bottom of the slot. In this way, the slot play will enable any future adjustments to be made.
- 2) Manually take the leaf into its closing position.
- 3) Lay the first section of rack level on the pinion and weld the threaded pawl on the gate as shown in Fig. 13.
- 4) Move the gate manually, checking if the rack is resting on the pinion, and weld the second and third pawl.
- 5) Position another rack element end to end with the previous one, using a section of rack (as shown in Fig. 14) to synchronise the teeth of the two elements.
- 6) Move the gate manually and weld the three threaded pawls, thus proceeding until the gate is fully covered.

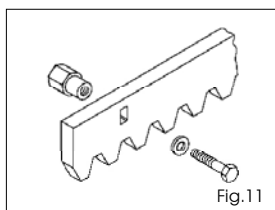


Fig.11

### 5.4.2. Steel rack to screw (Fig. 12)

- 1) Manually take the leaf into its closing position.
- 2) Lay the first section of rack level on the pinion and place the spacer between the rack and the gate, positioning it at the bottom of the slot.
- 3) Mark the drilling point on the gate. Drill a  $\varnothing$  6,5 mm hole and thread with an M8 male tap. Screw the bolt.
- 4) Move the gate manually, checking if the rack is resting on the pinion, and repeat the operations at point 3.
- 5) Position another rack element end to end with the previous one, using a section of rack (as shown in figure 14) to synchronise the teeth of the two elements.
- 6) Move the gate manually and carry out the securing operations as for the first element, thus proceeding until the gate is fully covered.

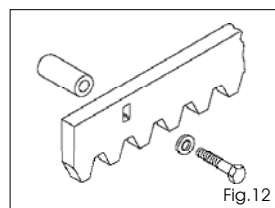


Fig.12

### Notes on rack installation

- Make sure that, during the gate travel, all the rack elements do not exit the pinion.
- **Do not, on any account, weld the rack elements either to the spacers or to each other.**
- When the rack has been installed, to ensure it meshes correctly with the pinion, it is advisable to lower the gearmotor position by about 1.5 mm (Fig.15).

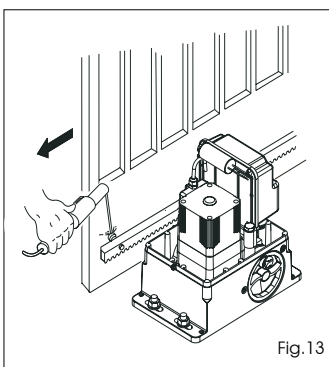


Fig.13

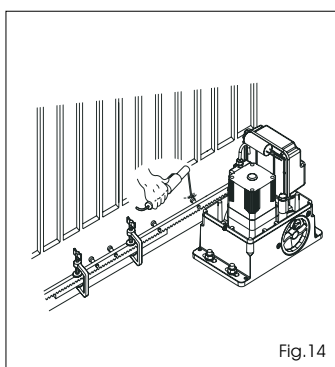


Fig.14

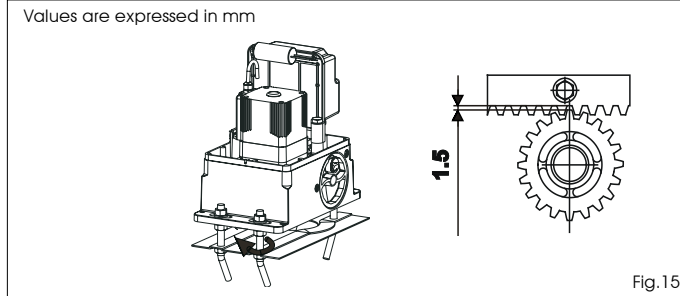


Fig.15

- Manually check if the gate correctly reaches the mechanical limit stops maintaining the pinion and rack coupled and make sure there is no friction during gate travel.
- Do not use grease or other lubricants between rack and pinion.

## 6. START-UP

### 6.1. Control board connection

**Before attempting any work on the board (connections, programming, maintenance), always turn off power.**

Follow points 10, 11, 12, 13 and 14 of the GENERAL SAFETY OBLIGATIONS.

Following the instructions in Fig. 3, route the cables through the raceways and make the necessary electric connections to the selected accessories.

Always separate power cables from control and safety cables

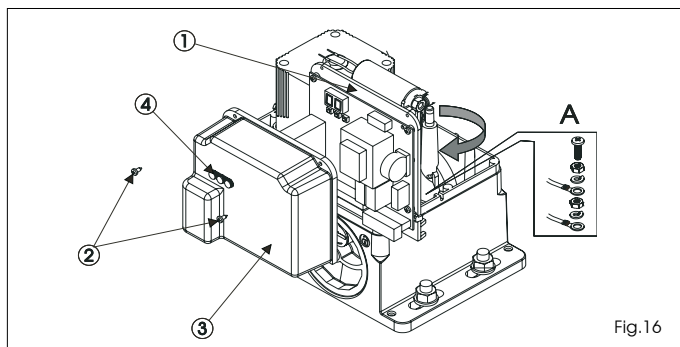


Fig.16

(push-button, receiver, photocells, etc.). To avoid any electric noise whatever, use separate sheaths.

#### 6.1.1. Earthing

Connect the earth cables as shown in Fig.16 ref.A.

#### 6.1.2. Electronic control unit

In the gearmotors, the electronic control unit is fitted to an adjustable support (Fig. 16 ref. 1) with transparent lid (Fig. 16 ref. 3).

The board programming push buttons (Fig. 16 ref. 4) have been located on the lid. This allow the board to be programmed without removing the lid.

For correct connection of the control unit, follow indications the specific instructions:

### 6.2. Positioning the limit switches

**Important :** For correct positioning of the limit switch magnets, the control unit must be installed and correctly connected to all control and safety accessories.

The operator is fitted with a magnetic limit switch which commands the gate to stop at the moment when the magnet, fixed in the upper part of the rack, activates the sensor. The magnets supplied with the operator are suitably polarised and activate only one sensor contact, the closure contact or the opening contact.

**Important: For correct functioning of the operator, the magnet with the circle must be positioned to the left of the motor and, vice versa, the magnet with the square must be positioned to the right of the motor (SEE FIGURE 18)**

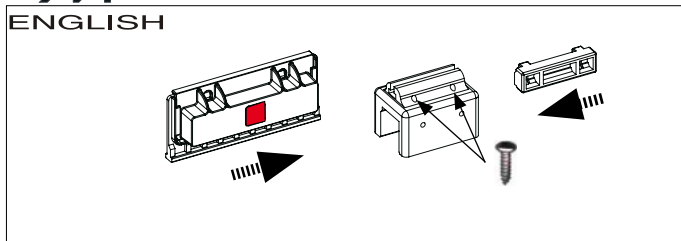


Fig.17

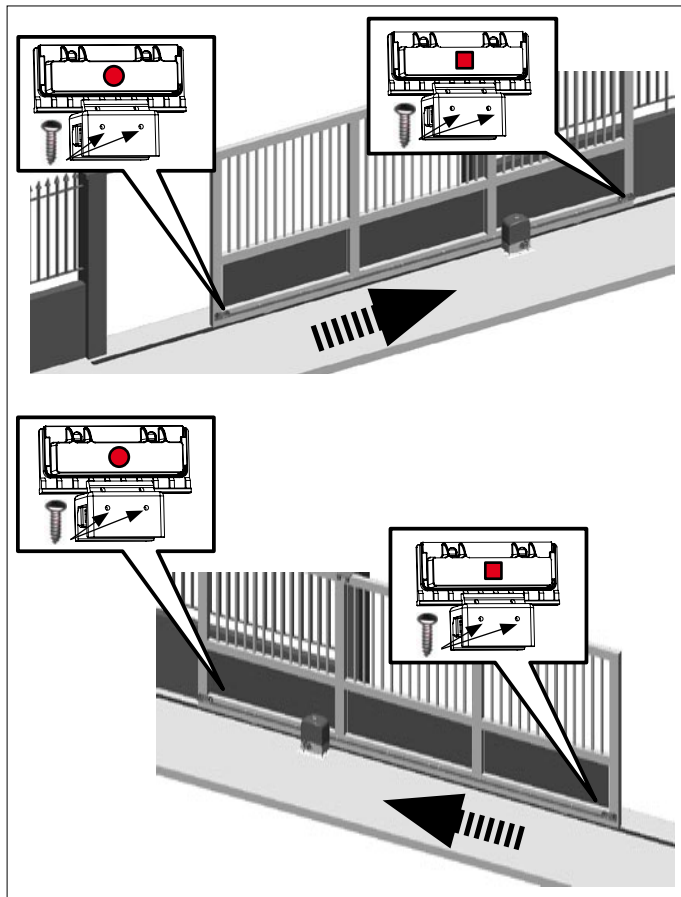


Fig.18

- 1) Assemble the two magnets as indicated in figure 18.
- 2) Prepare the operator for manual operation, as indicated in paragraph 8, then power up the system.
- 3) Manually move the gate into the open position, leaving 40 mm from the travel limit mechanical stop
- 4) Slide the magnet closest to the operator along the rack, in the direction of the motor. As soon as the LED for the limit switch on the board switches off, move the magnet forward by another 10 mm and fix it with the appropriate screws.
- 5) Proceed in a similar way for the other magnet.
- 6) Move the gate approximately half way through its run and re-lock the system (see paragraph 9).

**Important :** Before sending an impulse, ensure that the gate cannot move manually.

- 7) Perform a complete gate cycle to check correct operation of the limit switches.

**Important :** To avoid damage to the operator and/or interruptions in the operation of the automated system, approximately 40 mm must remain from the travel limit mechanical stops. Check that at the end of the operation, both at opening and closure, the LED of the respective limit switch remains activated (LED off)

- 8) Make the appropriate changes to the position of the limit switch magnets.

## 7. AUTOMATED SYSTEM TEST

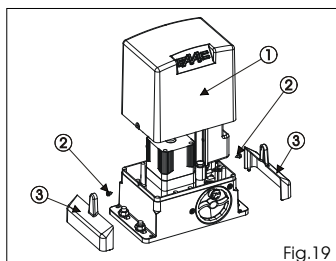


Fig.19

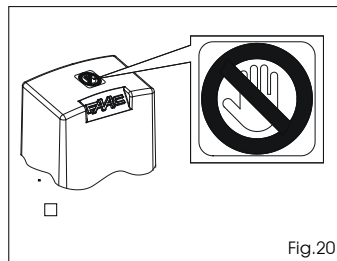


Fig.20

Once installation of the operator has been completed, make a careful functional check of all accessories and safety devices connected. Move the board support back to its original position. Position the protective casings (Fig.19 ref.1), tighten the two side screws supplied (Fig.19 ref.2) and insert, under pressure, the supporting side pieces (Fig.19 ref. 3).

Apply the adhesive, warning of danger, to the upper part of the casing (Fig.20).

Give the Client the "User Guide" and demonstrate the correct operation and use of the gearmotor, highlighting the potentially dangerous zones of the automated system.

## 8. MANUAL OPERATION

**Attention:** Switch off the power supply to the system, to avoid any possibility of an accidental impulse activating the gate during the release procedure.

To release the gearmotor, proceed as follows:

- 1) Insert the appropriate key supplied and turn it clockwise as indicated in Fig.21 refs.1 and 2.
- 2) Turn the release system clockwise until the mechanical stop is reached Fig.21 ref.3.
- 3) Open or close the gate manually.

## 9. RESTORING NORMAL OPERATION

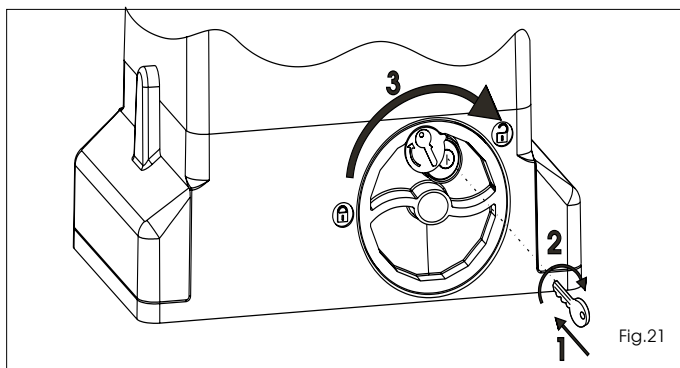


Fig.21

**Attention:** Switch off the power supply to the system, to avoid any possibility of an accidental impulse activating the gate whilst restoring normal operation mode

To restore normal operation mode, proceed as follows:

- 1) Turn the release system anticlockwise until it reaches its stop position, Fig.22 ref.1.
- 2) Turn the key anticlockwise and remove it from the lock, Fig. 2 refs. 2 and 3.

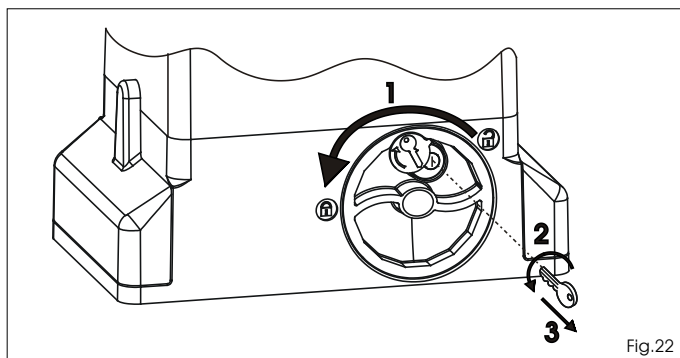


Fig.22

- 3) Move the gate until the release system meshes (corresponding to locking of the gate).

- 4) Restore the power supply to the system.

## 10. SPECIAL APPLICATIONS

Special applications are not contemplated

## 11. MAINTENANCE

Check the functional operation of the system at least every six months, especially the efficiency of the safety devices (including the operator thrust force) and the release devices.

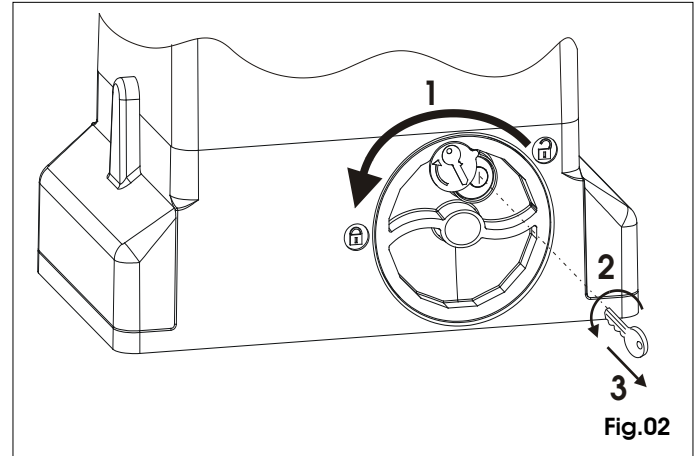
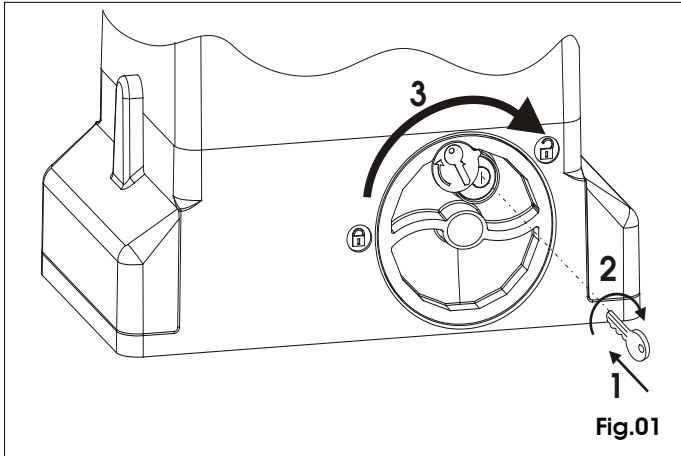
## 12. REPAIRS

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

## 13. AVAILABLE ACCESSORIES

For the available accessories, refer to the catalogue.

## User's guide



### AUTOMATED SYSTEM 740-741

Read the instructions carefully before using the product and keep them for future consultation.

#### GENERAL SAFETY RULES

If installed and used correctly, the 740-741 automated system will ensure a high degree of safety.

Some simple rules regarding behaviour will avoid any accidental trouble:

- Do not stand near the automated system and do not allow children and other people or things to stand there, especially while it is operating.
- Keep radiocontrols or any other pulse generator well 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 gate movement.
- Prevent any branches or shrubs from interfering with gate movement.
- Keep light signalling systems efficient and clearly visible.
- Do not attempt to activate the gate by hand unless you have released it.
- In the event of malfunctions, release the gate to allow access and wait for qualified technical personnel to do the necessary work.
- After enabling manual operation, switch off the power supply to the system before restoring normal operation.
- Do not make any alterations to the components of the automated system.
- Do not attempt any kind of repair of direct action whatsoever and contact qualified personnel only.
- Call in qualified personnel at least every 6 months to check the efficiency of the automated system, safety devices and earth connection.

#### DESCRIPTION

The 740-741 automated system is ideal for controlling vehicle access areas of medium transit frequency.

The 740-741 automated system for sliding gates is an electro-mechanical operator transmitting motion to the sliding gate via a rack pinion or chain appropriately coupled to the gate.

Operation of the sliding gate is controlled by an electronic control unit housed inside the operator or in a hermetically sealed outdoor enclosure.

When, with the gate closed, the unit receives an opening command by radiocontrol or from another suitable device, it activates the motor until the opening position is reached.

If automatic operation was set, the gate re-closes automatically after the selected pause time has elapsed.

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

An opening pulse during re-closing, always causes movement to be reversed.

A stop pulse (if provided) always stops movement.

The light signalling indicates that the gate is currently moving.

For details on sliding gate behaviour in different function logics, consult the installation technician.

The automated systems include obstacle-detection and/or safety devices (photocells, edges) that prevent the gate from closing when there is an obstacle in the area they protect.

The system ensures mechanical locking when the motor is not operating and, therefore, it is not necessary to install any lock.

Manual opening is, therefore, only possible by using the release system.

The gearmotor does not have a mechanical clutch and, therefore, it is coupled to a unit with an electronic clutch offering the necessary anti-crushing safety if the system is completed with the necessary safety devices.

A convenient manual release with customised key makes it possible to move the gate in the event of a power failure or malfunction.

#### MANUAL OPERATION

**Warning:** Cut power to the system to prevent an involuntary pulse from activating the gate during the release manoeuvre

To release the operator proceed as follows:

- 1) Insert the key provided and turn it clockwise as shown in Fig. 01 ref. 1 and 2.
- 2) Turn the release system clockwise, until the mechanical stop is reached, Fig. 01 ref. 3.
- 3) Open and close the gate manually.

#### RESTORING NORMAL OPERATION

**Warning:** Cut power to the system to prevent an involuntary pulse from activating the gate during the manoeuvre for restoring normal operation.

To restore normal operation proceed as follows:

- 1) Turn the release system anti-clockwise, until its stop is reached, Fig. 02 ref. 1.
- 2) Turn the key anti-clockwise and remove it from the lock, Fig. 02 ref. 2 and 3.
- 3) Move the gate until the release system meshes (corresponds to gate locking).
- 4) Power up the system.

#### MAINTENANCE

To ensure trouble-free operation and a constant safety level, an overall check of the system should be carried out every 6 months. A form for recording routine maintenance operations is enclosed.

#### REPAIRS

For any repairs, contact the authorised Repair Centres.

#### AVAILABLE ACCESSORIES

Refer to catalogue for available accessories.

# MAINTENANCE REGISTER

## System data

<i>Installer</i>	
<i>Customer</i>	
<i>Type of system</i>	
<i>Serial No.</i>	
<i>Installation date</i>	
<i>Start-up</i>	

## System configuration

PART	MODEL	SERIAL NUMBER
Operator		
Safety device 1		
Safety device 2		
Pair of photocells 1		
Pair of photocells 2		
Control device 1		
Control device 2		
Radio control		
Flashing lamp		

## Indication of residual risks and of foreseeable improper use


No.	Date	Job description	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





Le descrizioni e le illustrazioni del presente manuale non sono impegnative. La FAAC si riserva il diritto, lasciando inalterate le caratteristiche essenziali dell'apparecchiatura, di apportare in qualunque momento e senza impegnarsi ad aggiornare la presente pubblicazione, le modifiche che essa ritiene convenienti per miglioramenti tecnici o per qualsiasi altra esigenza di carattere costruttivo o commerciale.

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