

## EC DECLARATION OF CONFORMITY FOR MACHINES (DIRECTIVE 98/37/EC)

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

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

**Declares that:** The operator mod. **844 R 3Ph**

- is built to be integrated into a machine or to be assembled with other machinery to create a machine under the provisions of Directive 98/37/EC;
- conforms to the essential safety requirements of the following 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 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 98/37/EC.

Bologna, 01 January 2005

The Managing Director  
A. Bassi



### 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 safety devices (EN 12978 standard) protect any danger areas against **mechanical movement Risks**, such as crushing, dragging, and shearing.
- 16) 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 "15".
- 17) FAAC declines all liability as concerns safety and efficient operation of the automated system, if system components not produced by FAAC are used.
- 18) For maintenance, strictly use original parts by FAAC.
- 19) Do not in any way modify the components of the automated system.
- 20) 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.
- 21) Do not allow children or adults to stay near the product while it is operating.
- 22) Keep remote controls or other pulse generators away from children, to prevent the automated system from being activated involuntarily.
- 23) Transit through the leaves is allowed only when the gate is fully open.
- 24) The user must not attempt any kind of repair or direct action whatever and contact qualified personnel only.
- 25) 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.
- 26) **Anything not expressly specified in these instructions is not permitted.**

# 844 R 3Ph AUTOMATED SYSTEM

These instructions apply to the following model:

## 844R 3Ph

The FAAC mod. 844R 3Ph automation for sliding gates is an electromechanical operator powered by three-phase voltage, transmitting motion to the sliding leaf via a rack and pinion drive suitably coupled to the gate.

The irreversible system ensures the gate is mechanically locked when the motor is not operating and, therefore, no lock need to be installed.

The gearmotor is supplied with an adjustable mechanical clutch, providing the necessary anti-crushing protection.

A convenient manual release makes it possible to move the gate in the event of a power-cut or fault.

The 844 INTERFACE board is fitted on board the operator. This board is used for connecting the motor and the limit inductive sensor to the 844 T electronic control unit, which must be housed in a separate enclosure.

The 844R 3Ph automation is designed and manufactured to control access of vehicles. Avoid any other use whatever.

## 1. DESCRIPTION AND TECHNICAL SPECIFICATIONS

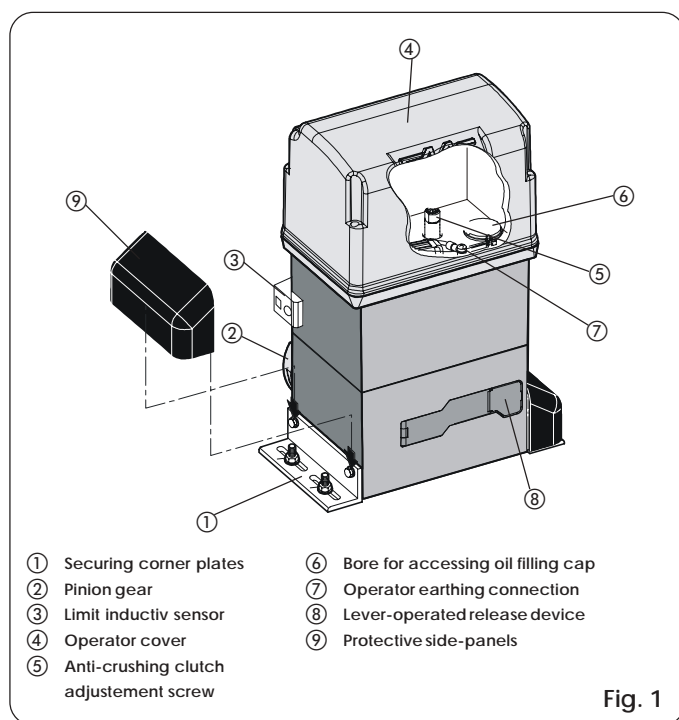


Fig. 1

### 1.1. MAXIMUM USE CURVE

The curve enables you to find maximum work time (T) according to use frequency (F).

The 844R 3Ph gearmotor can operate continuously at 60% use frequency.

To ensure efficient operation, you have to work in the work range under the curve.

**Important:** The curve is obtained at a temperature of 24°C. Exposure to the sun's rays can reduce use frequency down to 20%.

### Calculation of use frequency

This is the percentage of effective work time (opening + closing) compared to total cycle time (opening + closing + pause time).

Calculation formula:

$$\%F = \frac{Ta + Tc}{Ta + Tc + Tp + Ti} \times 100$$

where:

Ta = opening time

Tc = closing time

Tp = pause time

Ti = interval time between one complete cycle and the next

### Use frequency graph

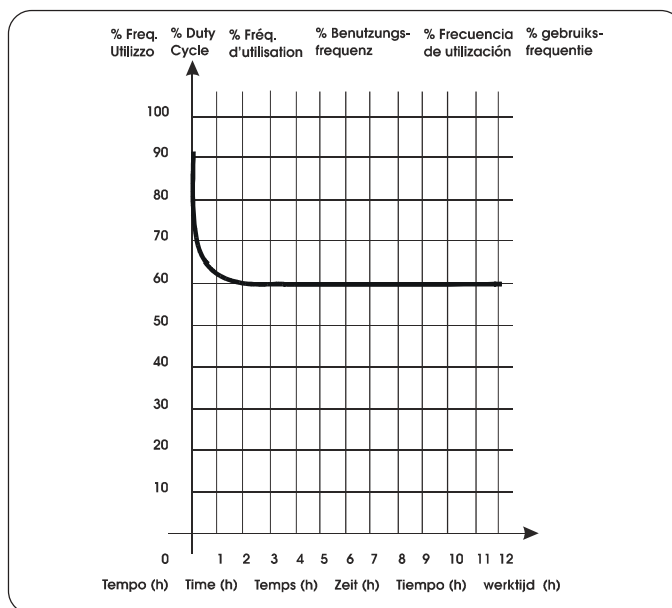


Table 1 TECHNICAL SPECIFICATIONS OF GEARMOTOR

MODEL	844R 3Ph
Power supply (Vac +6% -10% 50-60Hz)	400 (3ph + N)
Absorbed power (W)	950
Reduction ratio	1 : 30
Type of pinion	Z12/Z16/Z20
Rack	4 module pitch 12,566
Max. thrust (daN)	250(Z12)-190 (Z16)-150(Z20)
Max. torque (Nm)	62
Winding thermal protection (°C)	135 °C
Use frequency	60 % (See graph.)
Oil quantity (l)	1,8
Type of oil	FAAC XD 220
Operating ambient temperature (°C)	-20 ÷ +55
Weight of gearmotor (Kg)	15
Protection class	IP 44
Gate max. weight (Kg)	2200 (Z12) 1600 (Z16)
Gate speed (m/min)	9,5 (Z16)
Gate max. length (m) (time-out)	40 m. (Z16)
Clutch	bidisk in oil bath
Protective treatment	cataphoresis
Available ucontrol nits	844 T
Limit-switch	inductive with stop plates
Gearmotor overall dimensions LxHxD (mm)	see Fig. 2
Electric motor technical specifications	
RPM	1400
Power (W)	950
Absorbed current (A)	2,5
Power supply (Vac +6% -10%; 50-60Hz)	400 (3ph + N)

## 2. DIMENSIONS

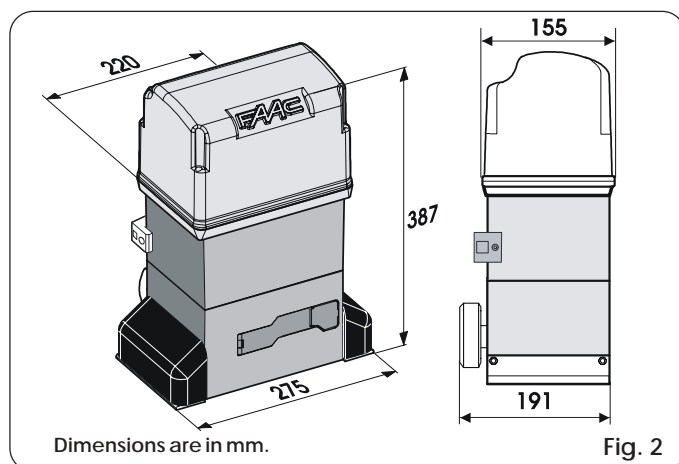


Fig. 2

## 3. ELECTRICAL EQUIPMENT

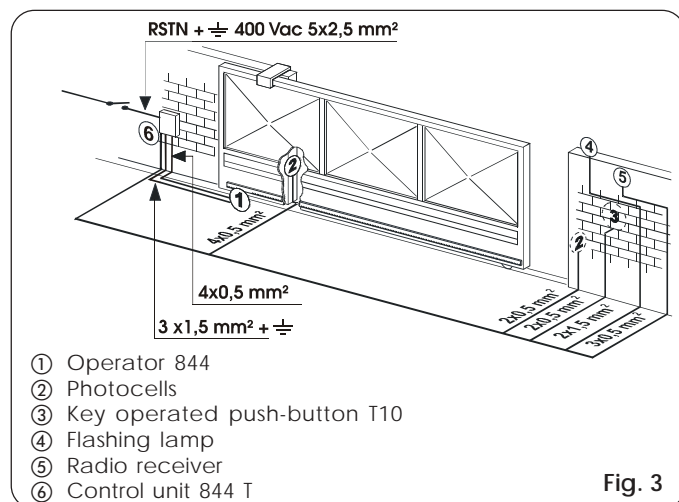


Fig. 3

## 4. INSTALLATION OF AUTOMATION

### 4.1. PRELIMINARY CHECKS

To ensure safety and an efficient automation, make sure the following requirements are met:

- The gate structure must be suitable for automation. In particular, wheel diameter must be in proportion to the weight of the gate to be automated, an upper guide must be supplied, and travel limit mechanical stops must be fitted to prevent the gate from derailing.
- The characteristics of the soil must ensure sufficient stability of the foundation plinth.
- There must be no pipes or electrical cables in the plinth excavation area.
- If the gearmotor is exposed to passing vehicles, if possible, fit adequate guards to protect against accidental impact.
- Check if an efficient earth plate is present for connection to the gearmotor.

### 4.2. FOUNDATION PLATE MASONRY

- 1) Assemble the foundation plate as shown in Fig.4.
- 2) The foundation plate must be positioned as in Fig. 5 (right-hand closure) or Fig. 6 (left-hand closure) to ensure the rack and pinion mesh correctly.

- 3) Prepare a foundation plinth as in Fig.7 and enclose the foundation plate in a wall providing one or more sheaths for routing electric cables. Using a spirit level, check if the plate is perfectly level. Allow the cement to set.

- 4) Lay the electrical cables for connection to the accessories and power supply as in Fig.3.  
To facilitate making connections, allow the cables to protrude by about 40 cm from the hole (Fig.5-6 ref. ①) of the foundation plate.

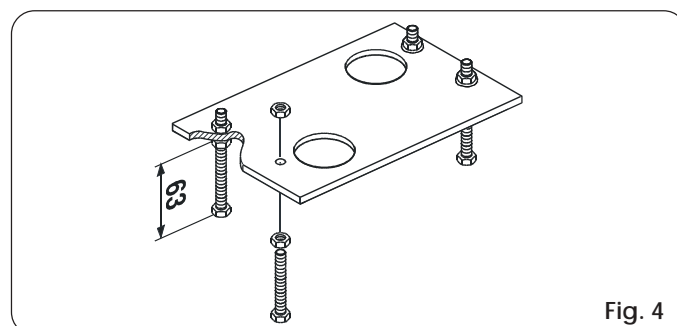


Fig. 4

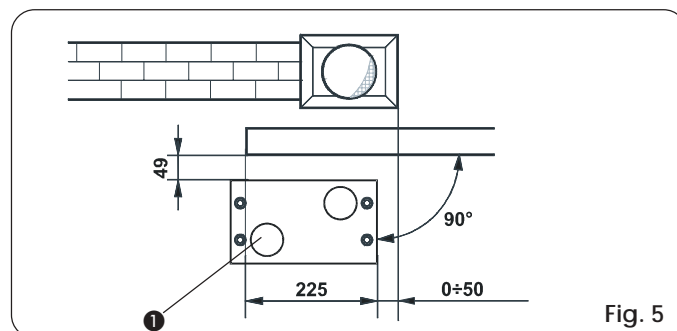


Fig. 5

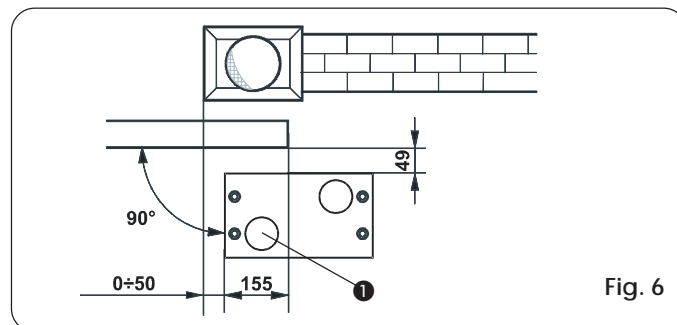


Fig. 6

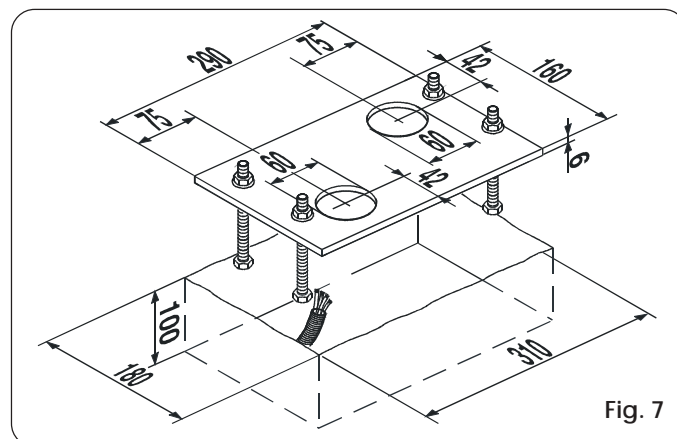


Fig. 7

#### 4.3. MECHANICAL INSTALLATION

- 1) Assemble, on the operator, the securing corners and the anti-vibration spacers as shown in Fig. 8.
- 2) Open the cover, unscrewing the securing screws.
- 3) Fit the operator on the plate, using the supplied washers and nuts as shown in Fig. 9.  
During this operation, route the cables through the raceway on the operator's lower half-body (Fig. 10 ref. A).  
Take great care in unsheathing all the cables so that the cable gland grips only the individual wires (Fig.10 ref. B).  
To access the unit, refer to chapter 5.
- 4) Adjust the height of the feet and the distance from the gate - refer to Fig. 11.
- 5) Secure the gearmotor on the foundation plate, tightening the nuts as shown in Fig.12.

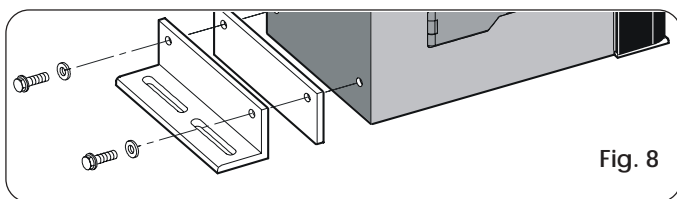


Fig. 8

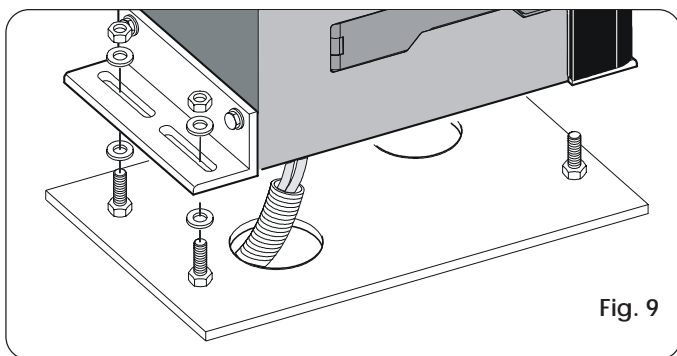


Fig. 9

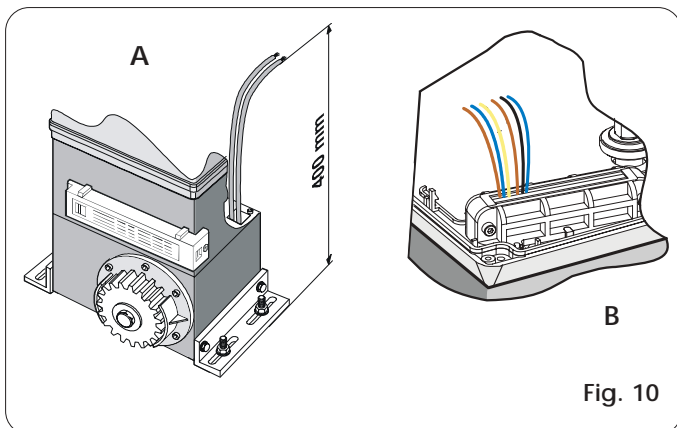


Fig. 10

- 6) Set the operator for manual operation as described in chapter 8.

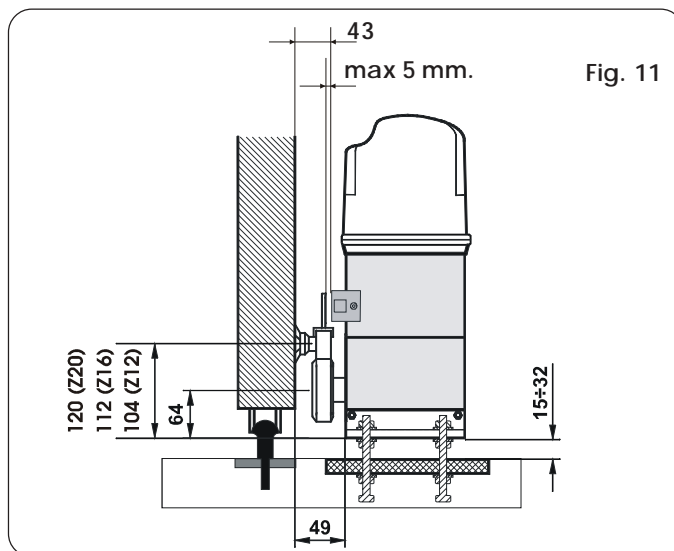


Fig. 11

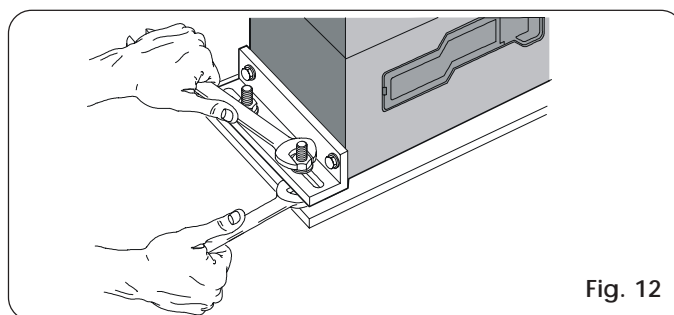


Fig. 12

#### 4.4. INSTALLING THE RACK

##### 4.4.1. STEEL RACK TO BE WELDED (Fig.13)

- 1) Fit the three threaded pawls on the rack element, locating them in the upper part of the slot. In this way, play on the slot will accommodate any adjustments that may be necessary later on.
- 2) Manually place the leaf in closed position.
- 3) Rest the first section of the rack level on the pinion gear, and weld the threaded pawl on the gate as shown in Fig.14.
- 4) Move the gate by hand, checking whether the rack rests on the pinion gear, and weld the second and third pawl.
- 5) Position another rack element next to the previous one, using a section of rack as in Fig.15, to synchronize the teeth of the two elements.
- 6) Move the gate by hand and weld the three threaded pawls, carrying on until you have covered the entire gate.

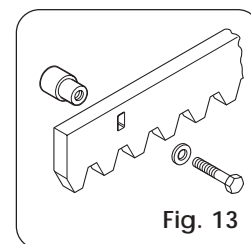


Fig. 13

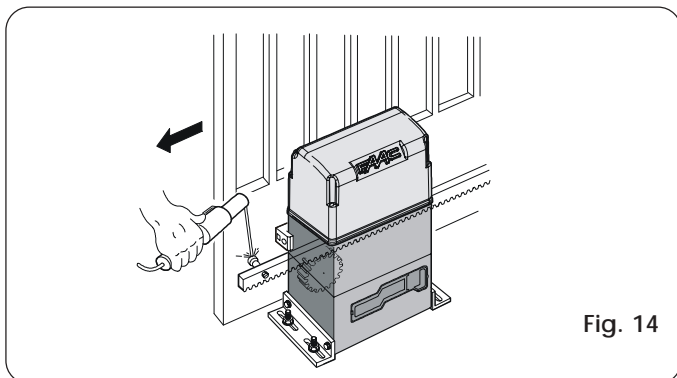


Fig. 14

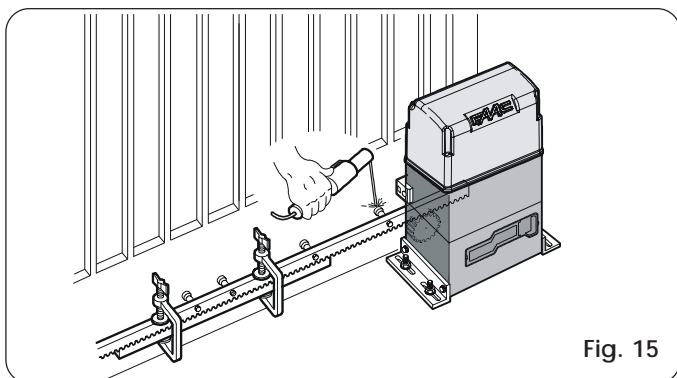


Fig. 15

#### 4.4.2. STEEL RACK TO BE BOLTED (Fig. 16)

- 1) Manually place the leaf in closed position.
- 2) Rest the first section of the rack level on the pinion gear and insert the spacer between the rack and the gate, locating it in the upper part of the slot.
- 3) Mark the drilling point on the gate. Drill  $\varnothing 6.5$  mm. and tap with a  $\varnothing 8$  mm. taps. Tighten the bolt.
- 4) Move the gate by hand, checking whether the rack rests on the pinion and repeat operations at point 3.
- 5) Position another rack element next to the previous one, using a section of rack as in Fig. 15.
- 6) Move the gate by hand and execute the securing operations as done for the first element, carrying on until you have covered the entire gate.

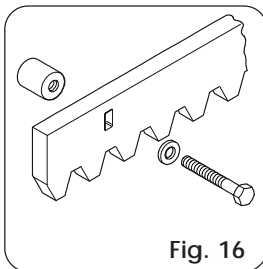


Fig. 16

#### Notes on the rack

- As the gate moves, make sure that no rack elements lose contact with the pinion.
- Do not, repeat do not, weld the rack elements either to the spacer or to each other.
- After installing the rack, to ensure correct meshing with the pinion gear, we advise you to lower the position of the gearmotor by approximately 1.5 mm (Fig.17).
- Manually check that the gate reaches the mechanical limit stops correctly, and that there is no friction during travel.
- Do not apply grease or other lubricants between rack and pinion.

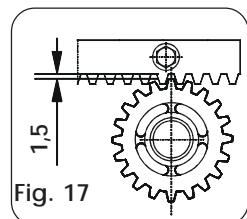


Fig. 17

#### 4.5. INSTALLING THE CHAIN PINIONS

In the chain application versions, a Z16 or Z20 chain pinion has to be assembled.

Proceed as follows:

- Fit the elastic pin on the shaft, using a hammer (Fig. 18)
- Install the chain pinion on the shaft, making the pinion seats coincide with the elastic pin, and tighten the screws with the washers (Fig. 18).
- Assemble the chain as shown in Fig. 19.

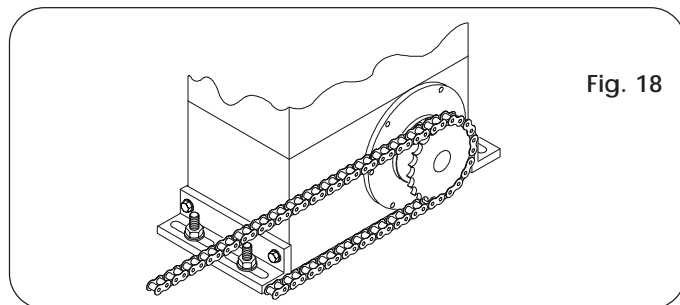
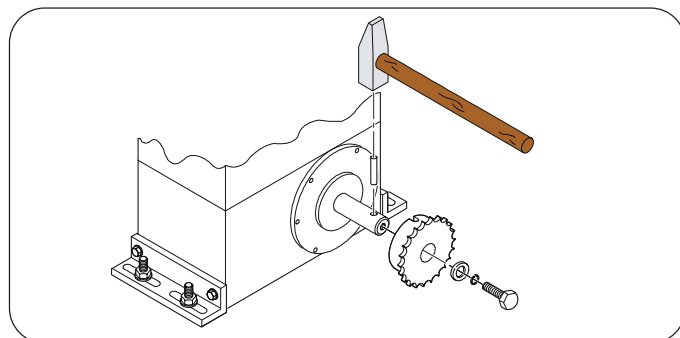


Fig. 18

#### 5. CONNECTIONS FOR THE CONTROL UNIT

The 844R 3Ph operator can be installed using an 844 T remote control unit. The 844 INTERFACE board is installed on board the operator (fig. 20).

Make the connections, following the lay-outs in the instructions for the 844 T electronic control unit.

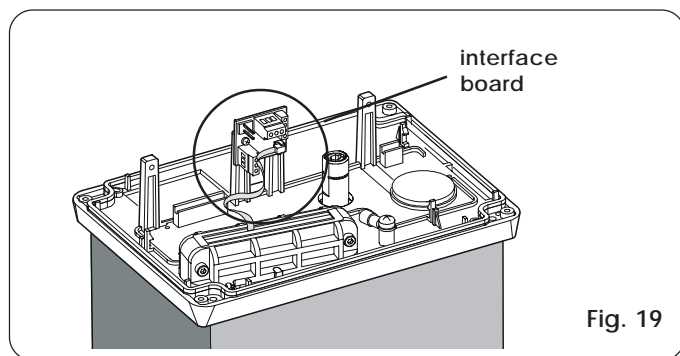


Fig. 19

## 6. START-UP

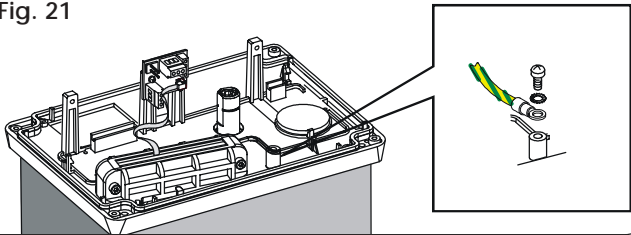
### 6.1. ELECTRIC CONNECTIONS

➔ Before attempting any work on the control unit (connections, programming, maintenance), always turn off power supply.

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

Make all the electric connections on the board as shown in chapter 5, including earthing the operator (Fig. 21).

Fig. 21



### 6.2. ADJUSTMENT OF INDUCTIVE LIMIT SENSOR

The 844R 3Ph operator has an inductive limit sensor (fig. 1 ref. ③), with a quick-fit connector already connected to the 844 INTERFACE board. When the sensor detects a transiting plate fitted on the top of the rack, it commands gate motion to stop. Procedure for correct positioning of the two supplied plates:

- 1) Assemble the limit sensor centring the plate with respect to the threaded pins of the support (fig.22).
- 2) Check if the operator is in manual mode (see chapter 8).
- 3) Manually take the gate to opening position, leaving 2 - 5 cm from the mechanical travel stop.
- 4) Allow the plate to slide on the rack in opening direction until the relevant LED goes OFF.
- 5) Take the plate about a further 45 mm and secure it to the rack, fastening the screws.
- 6) Manually take the gate to closing position, leaving 2 - 5 cm from the mechanical travel stop.
- 7) Allow the plate to slide on the rack in closing direction until the relevant LED goes OFF.
- 8) Take the plate about a further 45 mm and secure it to the rack, fastening the screws.
- 9) Take the gate to its halfway travel point and relock the system (see chapter 9).
- 10) Run the automated system for at least one complete cycle.
- 11) Check if the gate stops at about 2-5 cm from its mechanical contact point. If necessary, correct the position of the plates and check if the stop point is correct.
- 12) The distance between the inductive limit sensor and the plates must be 5 mm at the most.

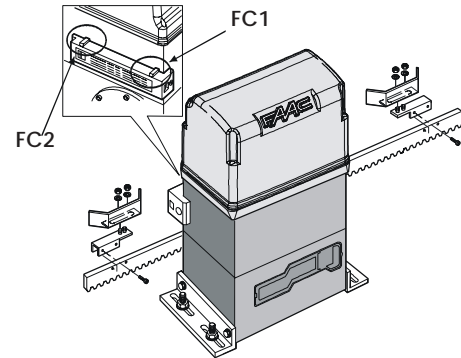


Fig. 22

### 6.3. ADJUSTING THE MECHANICAL CLUTCH

The 844R 3Ph operator is equipped with a mechanical clutch. Procedure for adjusting the action threshold of the mechanical clutch (we advise you to set it in compliance with current standards):

- 1) Cut power to the automated system.
- 2) Keep the motor shaft locked with a wrench, and turn the clutch adjustment screw with an Allen wrench or screwdriver Fig. 23.  
To increase torque, turn the screw clockwise.
- ➔ The operator is supplied with clutch set to maximum value. Therefore, you should initially turn the screw counter-clockwise to reach optimum setting.  
To reduce torque, turn the screw counter-clockwise.
- 3) Power up the automated system and check if the torque you have just carried out is correctly set.

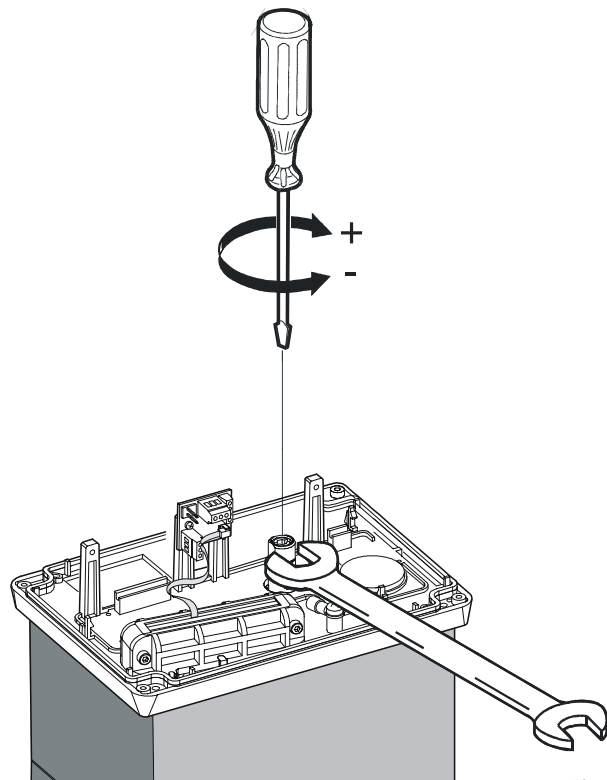


Fig. 23

### 6.4. CHECK OF SAFETY DEVICES AND ACCESSORIES

Check correct operation of the following: all safety and anti-crushing devices and the accessories used in the system.



## 7. FINAL OPERATIONS

After completing installation, remove the breather screw (see fig. 24) and apply the danger signal tape on the top of the cover (Fig. 25).

Fit the side panels by pressure, and secure the cover with the supplied screws.

Hand the "User's Guide" to the Client, explain correct operation and use of the gearmotor, and indicate the potentially dangerous areas of the automated system.

## 8. MANUAL OPERATION

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

- 1) Open the protective door and fit the supplied key in the lock (Fig. 26).
- 2) Turn the key clockwise and pull the release lever as shown in Fig. 27.
- 3) Open and close the gate manually.

## 9. RESTORING NORMAL OPERATION MODE

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

- 1) Re-close the release lever.
- 2) Turn the key counter-clockwise.
- 3) Remove the key and close the lock protection door.
- 4) Move the gate until the release device meshes.

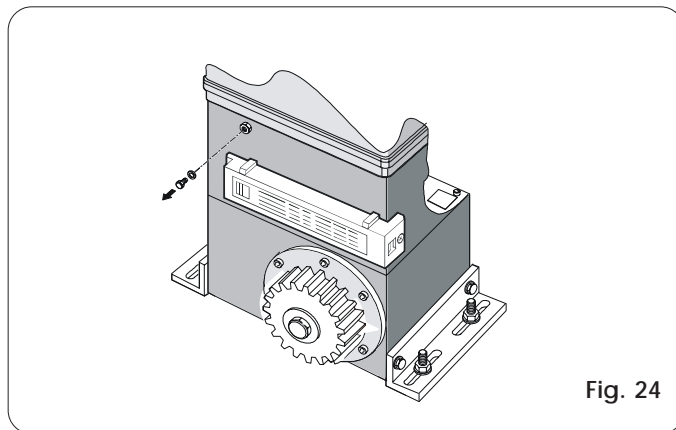


Fig. 24

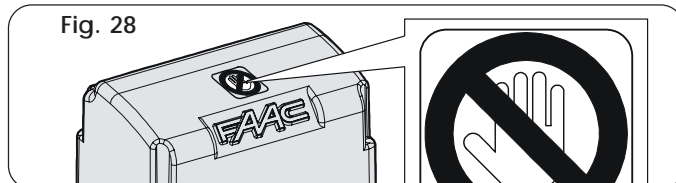


Fig. 28

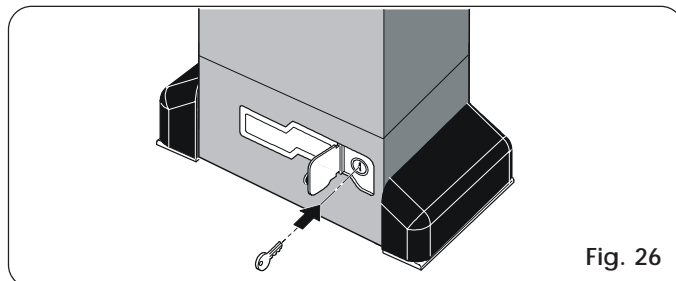


Fig. 26

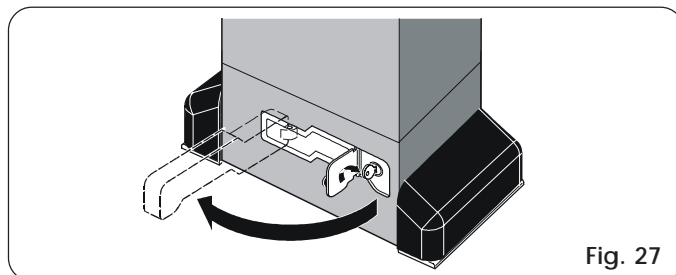


Fig. 27

## 10. ASSEMBLY OF THE CN 60E CONTROL UNIT (OPTIONAL)

The operator is designed to house - with the aid of a DIN bar - the control unit of the CN 60E conductive safety edge. Cut the DIN bar to measure and secure it to the operator with two screws in the two appropriate holes, and hook on the CN 60E control unit (Fig. 28).

For connection and operation, consult the specific instructions.

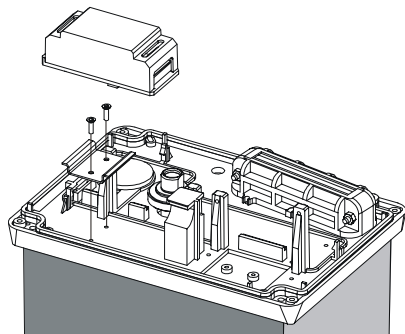


Fig. 28

## 11. SPECIAL APPLICATIONS

There are no special applications.

## 12. MAINTENANCE

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

### 12.1. TOPPING UP OIL

Periodically check quantity of oil inside the operator.

An annual check is sufficient for low to medium use frequency; for heavier duty, check every 6 months.

To access the tank, temporarily remove the oil filling plug (Fig.29). Oil visual check: oil must touch the copper windings of the electric motor.

To top up, pour in oil up to the level.

Use only FAAC XD 220 oil.

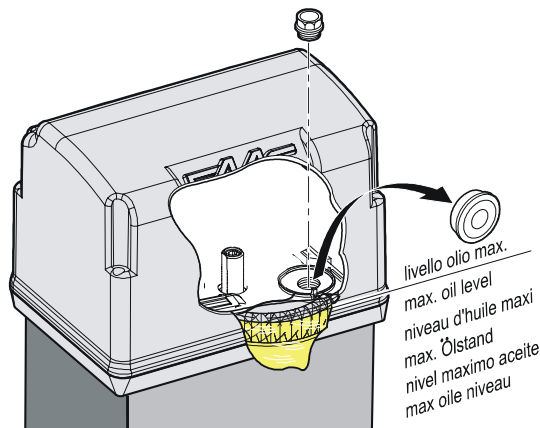


Fig. 29

## 13. REPAIRS

For repairs, contact FAAC authorised Repair Centres.



## USER'S GUIDE

### 844R 3Ph AUTOMATED SYSTEM

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

#### GENERAL SAFETY REGULATIONS

If installed and used correctly, the 844R 3Ph automation will ensure a high degree of safety. Some simple rules regarding behaviour will avoid any accidental trouble:

- Do not stand near the automation and do not allow children and other people to stand there, especially while it is operating.
- Keep remote controls or any other pulse generator well away from children to prevent the automation from being activated involuntarily.
- Do not allow children to play with the automation.
- Do not willingly obstruct gate movement.
- Prevent any branches or shrubs from interfering with gate movement.
- Keep illuminated 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 operating mode, switch off the power supply to the system before restoring normal operating mode.
- Do not make any alterations to the components of the automation.
- Do not attempt any kind of repair or direct action whatever and contact qualified FAAC personnel only.
- Call in qualified personnel at least every 6 months to check the efficiency of the automation, safety devices and earth connection.

#### DESCRIPTION

The 844R 3Ph automation is ideal for controlling industrial vehicle access areas.

The 844R 3Ph automation for sliding gates is an electromechanical operator which transmits movement to the sliding leaf via a pinion with rack or chain appropriately coupled to the gate.

Operation of the sliding gate is controlled by electronic control equipment housed in a container separated from the operator (844 T).

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

If automatic operating mode was set, the gate closes automatically after the selected pause time has elapsed.

If semiautomatic operating mode was set, a second pulse must be sent to allow the leaves to close again.

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

A stop pulse (if supplied) always stops movement.

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

Automations include safety devices (photocells, sensitive 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, installing any lock is unnecessary. Manual opening is, therefore, only possible by using the release device.

The gearmotor has an adjustable mechanical clutch providing the necessary anti-crushing protection.

An inductive sensor detects transit of metal plates secured on the rack, which correspond to the travel limit positions. The

electronic control equipment is housed in a container which is separate from the gearmotor.

A handy manual release facility makes it possible to move the gate in the event of a power cut or fault.

The warning-light indicates that the gate is currently moving.

#### MANUAL OPERATION

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

- 1) Open the protective door and fit the supplied key in the lock (Fig. 1).
- 2) Turn the key clockwise and pull the release lever as shown in Fig. 2.
- 3) Open and close the gate manually.

#### RESTORING NORMAL OPERATION MODE

To avoid an involuntary pulse from activating the gate during the manoeuvre, before re-locking the operator, switch off power to the system.

- 1) Re-close the release lever.
- 2) Turn the key anticlockwise.
- 3) Remove the key and close the lock protection door.
- 4) Move the gate until the release mechanism meshes.

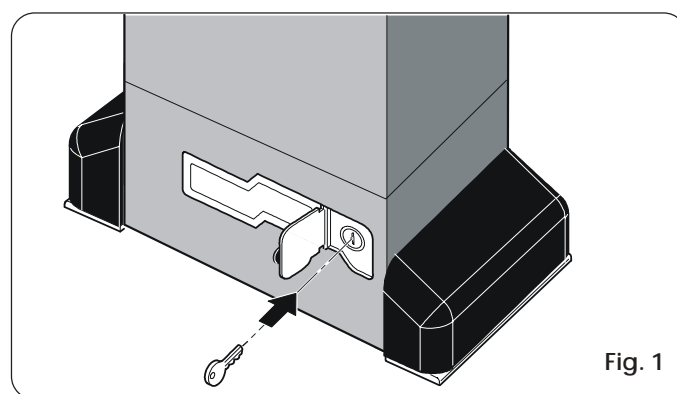


Fig. 1

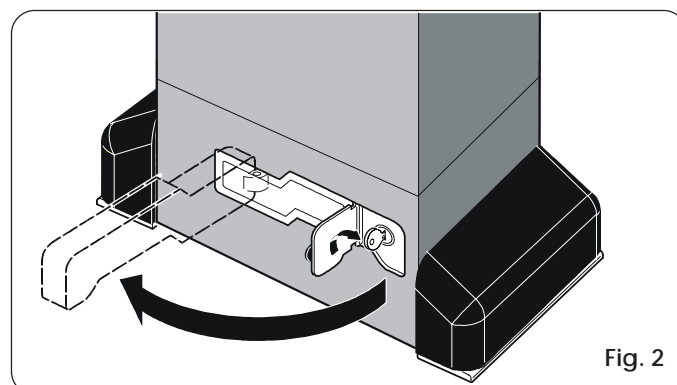


Fig. 2