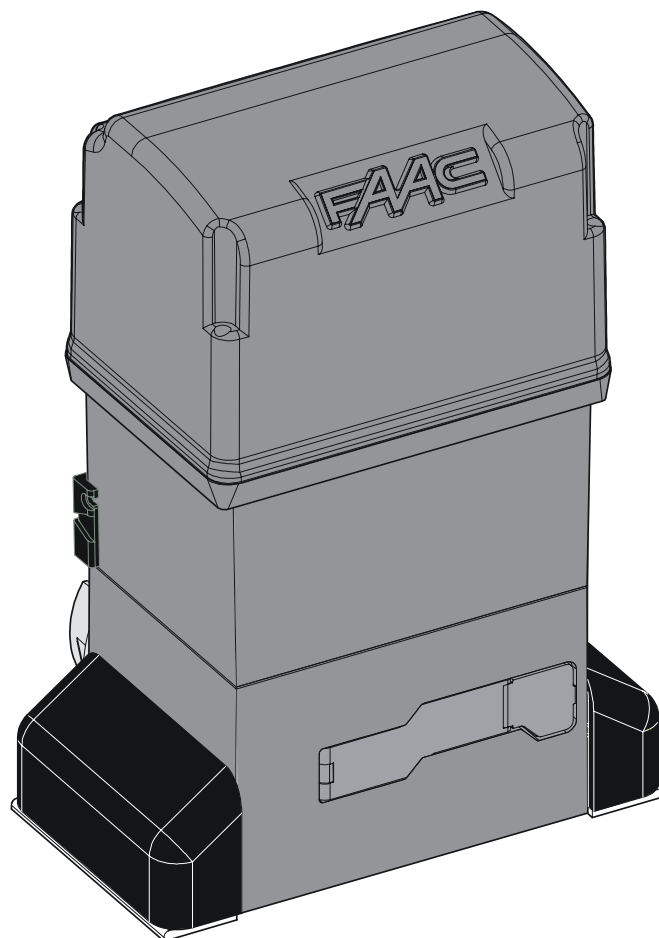


844

Slide Gate Operator



Intertek

UL325 - UL991

FAAC International Inc.
Headquarter & East Coast Operations
3160 Murrell Rd
Rockledge, FL 32955
Tel. 800 221 8278
www.faacusa.com

FAAC International Inc.
West Coast Operations
357 South Acacia Avenue
Fullerton, CA 92831

FAAC

TABLE OF CONTENTS

IMPORTANT SAFETY INFORMATION	3
Important Safety Instructions	3
Important Installation Instructions	3
General Safety Precautions	4
UL325 Gate Operator Classifications	5
Installing the Warning Signs	5
1. DESCRIPTION & SPECIFICATIONS	6
1.1. Maximum Use Curve	6
1.2. Technical Specifications	6
2. DIMENSIONS	7
3. ELECTRIC LAYOUT	7
4. INSTALLATION	7
4.1. Preliminary Checks	7
4.2. Foundation Plate Installation	7
4.3. Mechanical Installation	8
4.4. Installing The Rack	8
4.5. Installation Of Chain Pinions	9
5. CONTROL BOARD 780D	10
5.1. Warnings	10
5.2. 780D Technical Specifications	10
5.3. Layout And Components	10
5.4. Electric Connections	11
5.5. Programming	13
6. START-UP	16
6.1. Electric Connections	16
6.2. Opening - Closing Directions	16
6.3. Determining Stop Points At Travel Limit	16
6.4. Inputs Check	17
6.5. Mechanical Clutch Adjustment	17
6.6. Travel Limits Check	17
6.7. Safety Devices Check	17
7. FINAL OPERATIONS	18
8. MANUAL OPERATION	18
9. RESTORING NORMAL OPERATION	18
10. FORCE ADJUSTMENT	
11. MAINTENANCE	19
11.1. Removing Board And Transformer	19
11.2. Repairs	19
12. LOGICS TABLES	20
13. SPARES PARTS DIAGRAM	22
14. TROUBLESHOOTING	24

IMPORTANT SAFETY INFORMATION

Important Safety Instructions



WARNING: TO REDUCE THE RISK OF SEVERE INJURY OR DEATH:

- READ AND FOLLOW ALL INSTRUCTIONS.
- Never let children operate or play with the gate controls. Keep remote controls away from children.
- Always keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF A MOVING GATE.
- Test the gate operator monthly. The gate MUST reverse on contact with a rigid object or when an object activates a non-contact sensor. If necessary, adjust the force or the limit of travel and then retest the gate operator. Failure to properly adjust and retest the gate operator can increase the risk of injury or death.
- Use the manual release mechanism only when the gate is not moving.
- KEEP GATE PROPERLY MAINTAINED. Have a qualified service person make repairs to gate hardware.
- The entrance is for vehicles only. Pedestrians must use a separate entrance.
- SAVE THESE INSTRUCTIONS.

Important Installation Instructions

1. Install the gate operator only when the following conditions have been met:
 - The operator is appropriate for the type and usage class of the gate.
 - All openings of a horizontal slide gate have been guarded or screened from the bottom of the gate to a minimum of 6 feet (1.83 m) above the ground to prevent a 2-1/4 inch (57.2 mm) diameter sphere from passing through openings anywhere in the gate or through that portion of the adjacent fence that the gate covers when in the open position.
 - All exposed pinch points are eliminated or guarded.
 - Guarding is supplied for exposed rollers.
2. The operator is intended for installation on gates used by vehicles only. Pedestrians must be provided with a separate access opening.
3. To reduce the risk of entrapment when opening and closing, the gate must be installed in a location that allows adequate clearance between the gate and adjacent structures. Swinging gates shall not open outward into public access areas.
4. Before installing the gate operator, ensure that the gate has been properly installed and that it swings freely in both directions. Do not over-tighten the operator clutch or pressure relief valve to compensate for a damaged gate.
5. Controls intended for user activation must be located at least six feet (6') away from any moving part of the gate and where the user is prevented from reaching over, under, around or through the gate to operate the controls. Exception: Emergency access controls only accessible by authorized personnel (e.g. fire, police, EMS) may be placed at any location in the line-of-sight of the gate.
6. The Stop and/or Reset buttons must be located within line-of-sight of the gate. Activation of the reset control shall not cause the operator to start.
7. All warning signs and placards must be installed and easily seen within visible proximity of the gate. A minimum of one warning sign shall be installed on each side of the gate.
8. For gate operators that utilize a non-contact sensor (photo beam or the like):
 - See instructions on the placement of non-contact sensors for each type of application.
 - Exercise care to reduce the risk of nuisance tripping, such as when a vehicle trips the sensor while the gate is still moving.
 - Locate one or more non-contact sensors where the risk of entrapment or obstruction exists, such as at the reachable perimeter of a moving gate or barrier.

9. For gate operators that utilize a contact sensor (edge sensor or similar):
- One or more contact sensors shall be located where the risk of entrapment or obstruction exists, such as at the leading edge, trailing edge, and postmounted both inside and outside of a vehicular horizontal slide gate.
 - One or more contact sensors shall be located at the bottom edge of a vehicular vertical lift gate.
 - One or more contact sensors shall be located at the pinch point of a vehicular vertical pivot gate.
 - A hardwired contact sensor shall be located and its wiring arranged so that the communication between the sensor and the gate operator is not subjected to mechanical damage.
 - A wireless device such as one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions shall be located where the transmission of the signals are not obstructed or impeded by building structures, natural landscaping or similar obstruction. A wireless device shall function under the intended end-use conditions.
 - One or more contact sensors shall be located on the inside and outside leading edge of a swing gate. Additionally, if the bottom edge of a swing gate is greater than 152 mm (6 in) but less than 406 mm (16 in) above the ground at any point in its arc of travel, one or more contact sensors shall be located on the bottom edge.
 - One or more contact sensors shall be located at the bottom edge of a vertical barrier (arm).



General Safety Precautions

Gate Construction

Vehicular gates should be constructed and installed in accordance with ASTM F2200: Standard Specification for Automated Vehicular Gate Construction.

For more information, contact ASTM at: www.astm.org

Installation

- If you have any questions or concerns regarding the safety of the gate operating system, do not install the operator and consult the manufacturer.
- The condition of the gate structure itself directly affects the reliability and safety of the gate operator.
- Only qualified personnel should install this equipment. Failure to meet this requirement could cause severe injury and/or death, for which the manufacturer cannot be held responsible.
- The installer must provide a main power switch that meets all applicable safety regulations.
- It is extremely unsafe to compensate for a damaged gate by increasing hydraulic pressure.
- Install devices such as reversing edges and photo beams to provide better protection for personal property and pedestrians. Install reversing devices that are appropriate to the gate design and application.
- Before applying electrical power, ensure that voltage requirements of the equipment correspond to the supply voltage. Refer to the label on your gate operator system.

Usage

- Use this equipment only in the capacity for which it was designed. Any use other than that stated should be considered improper and therefore dangerous.
- The manufacturer cannot be held responsible for damage caused by improper, erroneous or unreasonable use.
- If a gate system component malfunctions, disconnect the main power before attempting to repair it.
- Do not impede the movement of the gate, you may injure yourself or damage the gate system as a result.
- This equipment may reach high thermal temperatures during normal operation, therefore use caution when touching the external housing of the gate operator.
- Use the manual release mechanism according to the procedures presented in this manual.
- Before performing any cleaning or maintenance operations, disconnect power to the equipment.
- All cleaning, maintenance or repair work must be performed by qualified personnel.

UL325 Gate Operator Classifications

RESIDENTIAL VEHICULAR GATE OPERATOR CLASS I

A vehicular gate operator system intended for use in a single family dwelling, garage or associated parking area.

COMMERCIAL / GENERAL ACCESS VEHICULAR GATE OPERATOR CLASS II

A vehicular gate operator system intended for use in commercial locations or buildings such as multi-family housing units (five or more single family units), hotels, parking garages, retail stores or other buildings that service the general public.

INDUSTRIAL / LIMITED ACCESS VEHICULAR GATE OPERATOR CLASS III

A vehicular gate operator system intended for use in industrial locations or buildings such as factories, loading docks or other locations not intended to service the general public.

RESTRICTED ACCESS VEHICULAR GATE OPERATOR CLASS IV

A vehicular gate operator system intended for use in guarded industrial locations or buildings such as airport security areas or other restricted access locations that do not service the general public, and in which unauthorized access is prevented via supervision by security personnel.

Installing the Warning Signs

This FAAC slide gate operator is supplied with two warning signs to alert people that a possible hazard exists and that appropriate actions should be taken to avoid the hazard or to reduce exposure to it.

Permanently install one warning sign on each side of the gate so they are fully visible to traffic and pedestrians.

Use appropriate hardware such as metal screws (not supplied) to permanently install each warning sign.



844 OPERATOR

1. DESCRIPTION AND SPECIFICATION

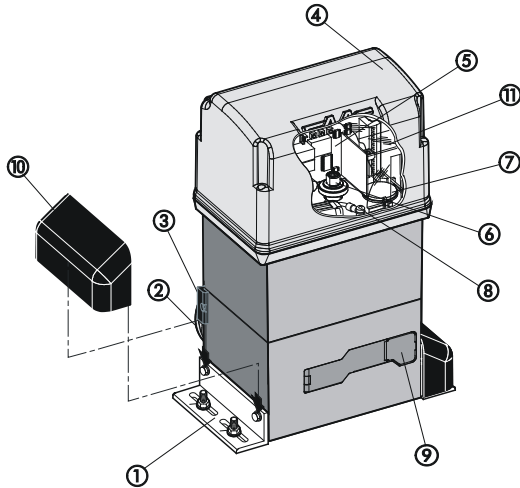
The FAAC Model 844 is an electro-mechanical operator for sliding gates transmitting motion to the sliding leaf via a rack or chain pinion appropriately coupled to the gate.

The non-reversing system ensures the gate is mechanically locked when the motor is not operating and, therefore, no lock needs to be installed.

The gearmotor is equipped with a mechanical clutch which, combined with an electronic device, offers the necessary adjustable anti-crushing safety and guarantees stopping or reversing the gate movement. A handy manual release makes it possible to move the gate in the event of a power cut or malfunction. The control board, if supplied with the gearmotor, it is placed inside the operator.

The 844 automated system is designed and manufactured to control access of vehicles. Do not use for any other purpose.

Fig. 1



- | | |
|--|----------------------------------|
| 1. Mounting Brackets | 7. Oil Filling Plug |
| 2. Pinion | 8. Operator Grounding |
| 3. Limit Sensor Switch | 9. Lever Operated Release System |
| 4. Operator Cover | 10. Protective Side Panels |
| 5. 780 D Control Board | 11. Cover for 780D Control Board |
| 6. Adjustment Screw for Anti-crushing Clutch | |

1.1. Maximum Use Curve

The curve makes it possible to establish maximum work time (T) according to use frequency (F). The 844 gearmotor can operate non-stop at 70% use frequency.

To ensure efficient operation, operate in the work range below the curve.

Important: The curve is obtained at a temperature of 75°F. Exposure to direct sunlight can reduce use frequency down to 20%.

Calculating Use Frequency

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

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

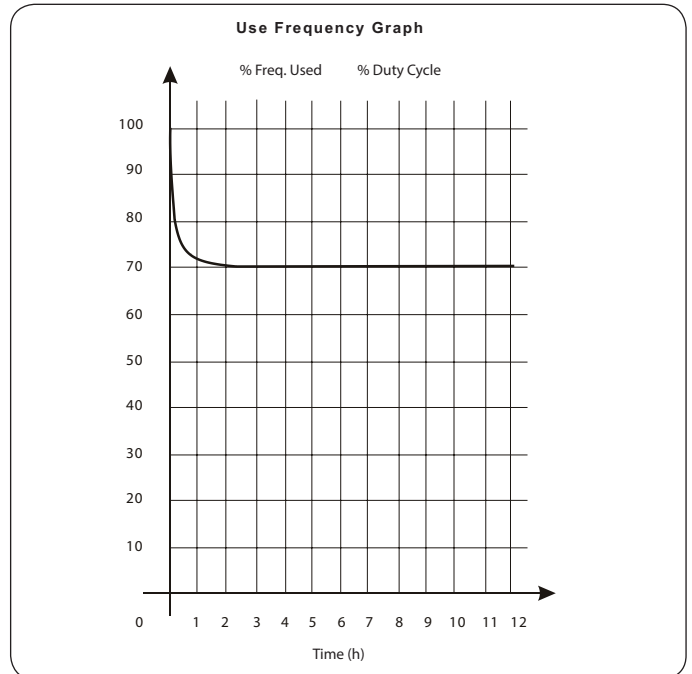
where:

T_a = opening time

T_c = closing time

T_p = pause time

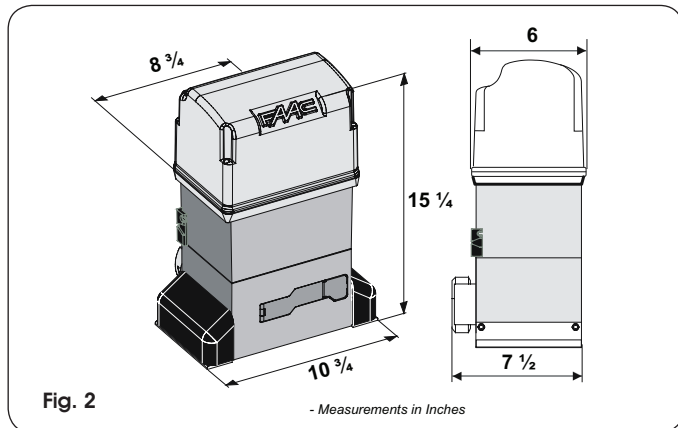
T_i = time of interval between two complete cycles



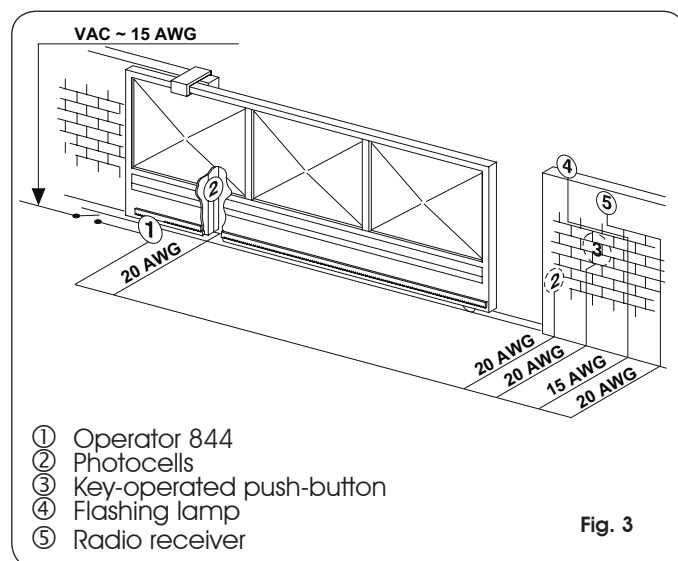
1.2 Technical Specifications

Type of Pinion	Z16	Z20
Power Supply	115 Vac (+10% -6%)	
Absorbed Power	650 W	
Reduction Ratio	1 : 30	
Max. Thrust	247 lbf	198 lbf
Max. Torque	26 lbf.ft	
Winding Thermal Protection	248 °F	
Use Frequency	70% (see graph)	
Oil Quantity	1.9 qt	
Type of Oil	FAAC HP	
Ambient Operating Temperature	-4 to +131 °F	
Weight	32 lb	
Protection Class	IP 44	
Gate Max. Weight	3950 lb	2200 lb
Gate Speed	38 ft/min	47 ft/min
Gate Max. Length	131 ft	164 ft
Clutch	twin-disk in oil bath	
Protective Treatment	cataphoresis	
Control Board	780D	
Limit-Switch	magnetic or inductive	
Overall Dimensions L x H x D	See Fig. 2	
Electric Motor Technical Specifications		
Rotation Speed	1700 r.p.m	
Power	650 W	
Current	7 A	
Starting Capacitor	70 μF	
Power Supply	115 Vac (+10% -6%)	

2. DIMENSIONS



3. ELECTRICAL LAYOUT



4. INSTALLATION

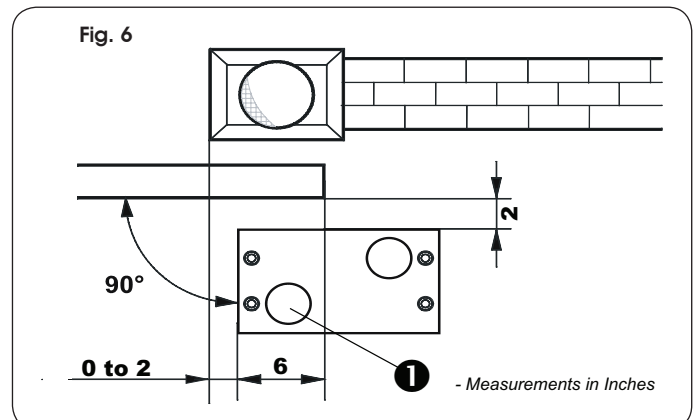
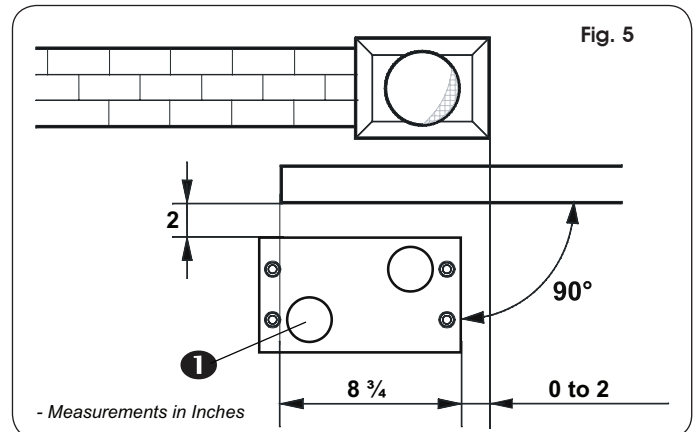
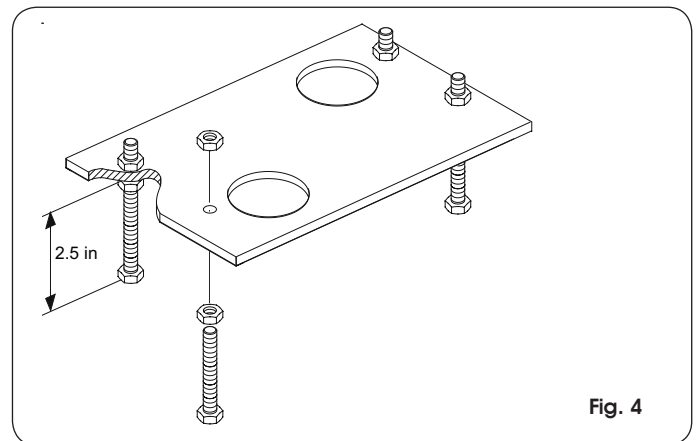
4.1. Preliminary Checks

To ensure safety and an efficiently operating automated system, make sure the following conditions are observed:

- The gate structure must be suitable for automation. For example, wheel diameter must be in proportion to the weight of the gate to be automated, an upper guide must be provided, mechanical stop limits to prevent the gate derailing must be installed.
- The soil must permit sufficient stability for the concrete pad.
- There must be no pipes or electric cables in the pad excavation area.
- If the operator is exposed to passing vehicles, install, if possible, adequate means of protection against accidental impact.
- Check if an efficient grounding is available for connection to the gearmotor.

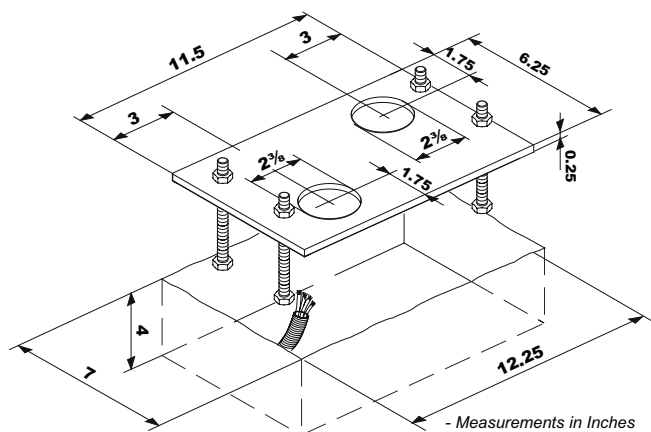
4.2. Foundation Plate Installation

- Assemble the foundation plate as shown in Fig. 4. The foundation plate must be located as shown in Fig. 5 (right closing) or Fig. 6 (left closing) to ensure that the rack and pinion mesh correctly.



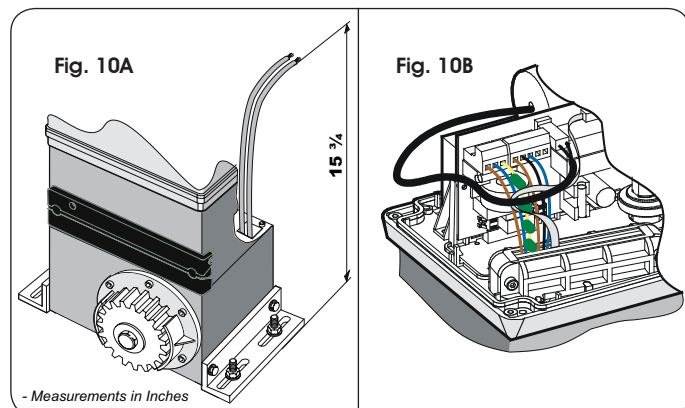
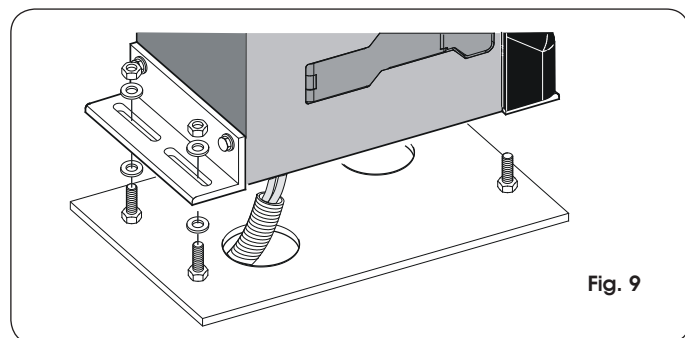
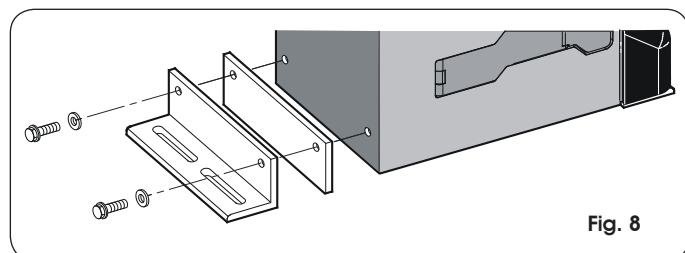
- Prepare a concrete pad as shown in Fig. 7, following the suggested dimensions. It's recommended to have the pad a minimum of 4" above level grade to avoid any flooding of the operator. The underground depth of the concrete pad is determined by the soil condition and the local building codes. Make sure the concrete pad is leveled.
- Provide one or more conduit pathways for all power and accessory connections. Extend the conduit about of 1/2" above the level of the concrete pad.
- After the concrete is poured in the forms and before it has a chance to set, insert the foundation plate into the cement and position it flush with the top of the concrete and aligned with the top of the lower gate frame. Use the dimensions shown in Figs 5 or 6 to align your foundation plate. Allow the concrete to set for a minimum of two days before installing the operator.
- Route the wires in the conduits. To facilitate the connections allow for about 15" of extra length of cables out of the conduit. Separate the high and low voltage wires in different conduits.

Fig. 7



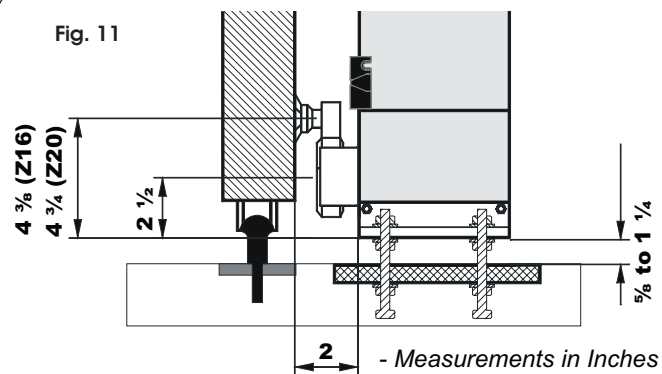
4.3. MECHANICAL INSTALLATION

1. Assemble the mounting brackets and anti-vibration spacers on the operator as shown in Fig. 8.
2. Open the cover, remove the securing screws.
3. Attach the operator to the plate, using the supplied washers and nuts as shown in Fig. 9. During this operation, route cables through the opening inside the lower half-casing of the operator (Fig.10 - Ref. A).

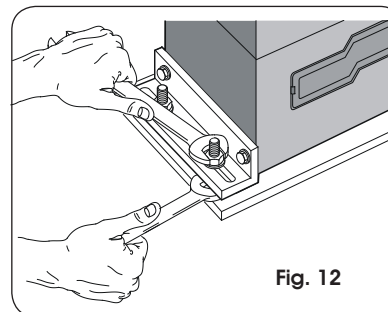


To access the electronic board, route the cables through the appropriate hole, using the supplied rubber cable-clamp. Make sure to strip the jacket on all cables so that the clamp holds single cables only (Fig.10 - Ref. B).

Fig. 11



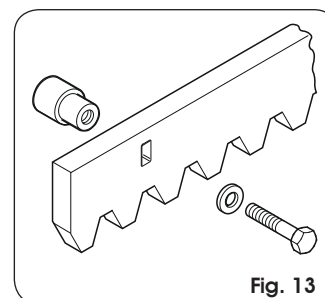
4. Adjust the height and distance from the gate as shown in Fig 11.
5. Secure the operator to the foundation plate, tighten nuts as shown in Fig. 12.



4.4. INSTALLING THE RACK

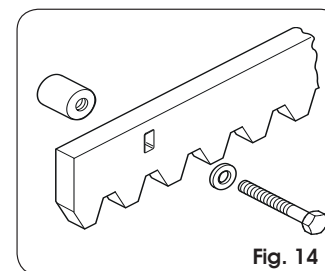
4.4.1. STEEL RACK TO WELD (Fig. 13)

1. Place the three threaded dowel nuts on the rack element, positioning them at the top of the slot. In this way, the slot play will allow any adjustments to be made.
2. Manually move the leaf to its closed position.
3. Lay the first piece of rack level on the pinion and weld the threaded dowel nut to the gate as shown in Fig. 15.
4. Move the gate manually, checking that the rack is resting on the pinion, then weld the second and third dowel nut.
5. Place another rack element next to the previous one, use a third piece of rack (as shown in Fig. 16) to synchronize the teeth of the first two elements.
6. Move the gate manually and weld the three threaded dowel nuts. Proceed as described until the gate is fully covered.

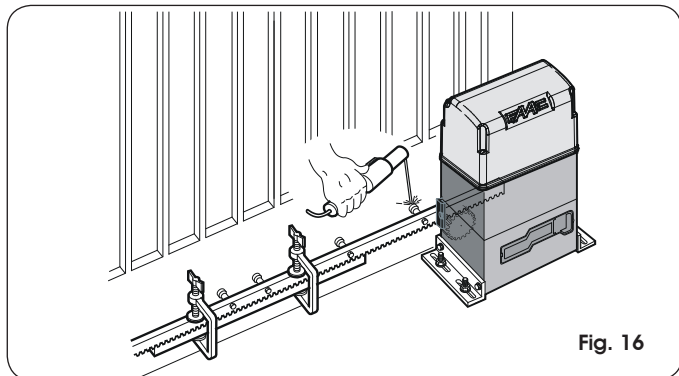
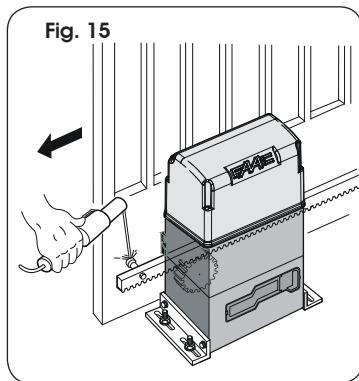


4.4.2. STEEL RACK TO SCREW (Fig. 14)

1. Manually move the leaf to its closing position.
2. Lay the first piece of rack level on the pinion and place the spacer between the rack and the gate, positioning it at the top of the slot.
3. Mark the drilling point on the gate. Drill a $\varnothing 1/4$ inch hole and apply thread with a $\varnothing 5/16$ inch male tap. Screw in the bolt.
4. Move the gate manually, checking that the rack is resting on the pinion. Repeat step 3.

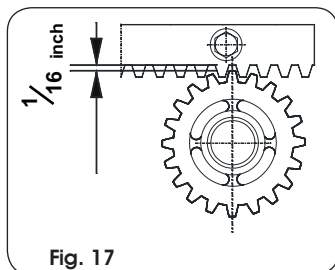


6. Place another rack element next to the previous one, use a third piece of rack (as shown in Fig. 16) to synchronize the teeth of the first two elements.
7. Move the gate manually and secure the first element. Proceed as previously described until the gate is fully covered.



Notes on Rack Installation

- Make sure that, during gate travel, no rack elements derail from the pinion.
- Do not, for any reason, weld the rack elements either to the spacers or to each other.
- When the rack has been installed, to ensure that it meshes correctly with the pinion, lower the gearmotor position by about 1/16 inch (Fig. 17).
- Manually check that the gate regularly reaches the mechanical stop limits and make sure there is no friction during gate travel.
- Do not use grease or other lubricants between rack and pinion.

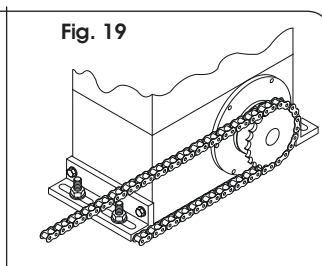
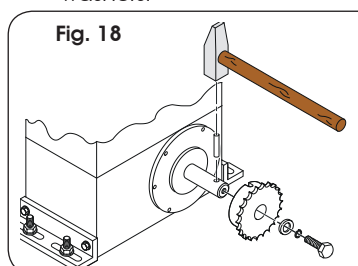


4.5. INSTALLATION OF CHAIN PINIONS

The operators for chain and idle transmissions require the installation of a Z16 or Z20 chain pinion.

4.5.1. MODEL 844 ER CAT (Figs. 18 & 19)

1. Insert the pin on the shaft, using a hammer.
2. Fit the chain pinion on the shaft, making the channel coincide with the pin. Tighten the screw and the appropriate washers.



4.5.2. MODEL 844 ER RF (Figs. 20 & 21)

3. Insert the pin **g** on the shaft, using a hammer.
4. Fit the idle transmissions bracket on the operator flange, using the four screws **a** (M5 x 12) and the appropriate washers **b**, in the kit as shown in Fig. 20.
5. Fit the chain pinion on the shaft, making the channel coincide with the pin and tighten the screw **d** and the appropriate washers **e** and **f**.
6. Pass the chain as shown in Fig. 21A and install the cover with screw **a** and washer **c** as in Fig. 20.

Fig. 20

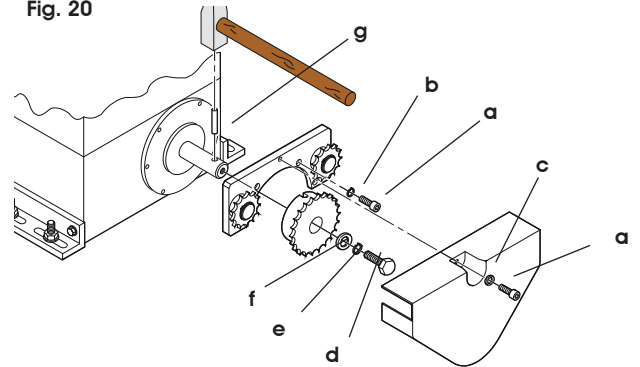
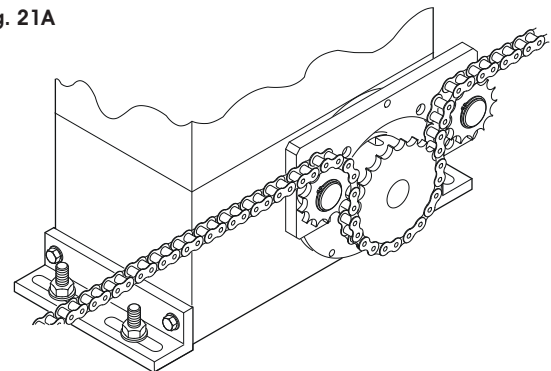


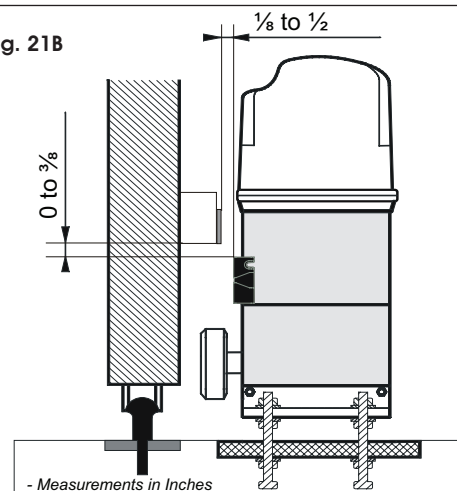
Fig. 21A



4.5.3. LIMIT SWITCHES

In case of operators with magnetic limit switches, you have to provide a bracket to mount them on the gate, following the proper distances shown in Fig. 21B.

Fig. 21B



5. CONTROL BOARD 780D

5.1. WARNINGS

Important: Before attempting any work on the control board (connections, maintenance), always turn off power.

- Check local wiring codes in all cases and follow all local building codes. Wiring and hookup should be performed by qualified electricians/installers only.
- AC power should be supplied from a circuit breaker panel and must have its own dedicated circuit breaker. This supply must include a green ground conductor.
- Properly ground the gate operator to minimize or prevent damage from power surges and/or lightning. Use a grounding rod if necessary. Connect the ground cable to the PE terminal on J7 (Fig. 22), and to the ground lug on the operator (Fig. 40). A surge suppressor is recommended for additional protection.
- Always separate power cables from control and safety cables (push-button, receiver, photocells, etc.).

5.2. 780D TECHNICAL SPECIFICATIONS

Power Supply	115 Vac (+10% -6%)
Input Power	10 W
Motor Max. Load	1000 W
Accessories Max. Load (A)	0.5 A
Operating Ambient Temperature	-4°F to +131°F
Protection Fuses	2 (see Fig. 22 and Section 5.3)
Function Logics	Automatic / "Stepped" automatic / Semi-automatic / Safety devices / Semi-automatic B / Dead-man C / "Stepped" semi-automatic / Mixed B/C logic
Work Time	Programmable (from 0 to 4.1 min.)
Pause Time	Programmable (from 0 to 4.1 min.)
Thrust Force	Adjustable over 50 levels
Terminal Board Inputs	Open - Partial Open - Opening safety devices - Closing safety devices - Stop - Edge - Power supply+ground
On-Connector Inputs	Opening and closing limit-switch - Motor capacitor

780D Technical Specifications (continued)

Terminal Board Outputs	Flashing lamp - Motor - 24 VDC accessories power supply- 24 VDC indicator-light / Timed output / Electric lock command - 'traffic lights' - Failsafe
Rapid Connector	5-pin card connection for RP receivers
Programming	3 keys (+, -, F) and display, "basic" or "advanced" mode

5.3. LAYOUT AND COMPONENTS

DL	SIGNALLING AND PROGRAMMING DISPLAY
Led	INPUTS STATUS CONTROL LED
J1	LOW VOLTAGE TERMINAL BLOCK
J2	CONNECTOR FOR RP RECEIVER
J5	CONNECTOR FOR MOTOR STARTING CAPACITOR
J6	MOTOR AND FLASHING LAMP CONNECTION TERMINAL BLOCK
J7	VAC POWER SUPPLY TERMINAL BLOCK
J8	DOUBLE CONNECTOR - RAPID CONNECTION TO LIMIT-SWITCH
F1	MOTOR AND TRANSFORMER PRIMARY WINDING FUSE (F 5A - 230V; F 10A - 115V)
F2	LOW VOLTAGE AND ACCESSORIES FUSE (T 800mA)
F	"F" PROGRAMMING PUSH-BUTTON
-	"-" PROGRAMMING PUSH-BUTTON
+	"+" PROGRAMMING PUSH-BUTTON

J1 CONNECTOR

- 1 OPEN A (total opening)
- 2 OPEN B (partial opening)
- 3 FSW-OP (opening safety devices)
- 4 FSW-CL (closing safety devices)
- 5 STOP
- 6 SAFE ("edge" safety devices)
- 7 - (negative for power supply to accessories)
- 8 - (negative for power supply to accessories)
- 9 +24V (supply to accessories)
- 10 +24V (supply to accessories)
- 11 FSW-TX (negative for emitting photocells - FAILSAFE)
- 12 AA (negative for Audio Alarm)

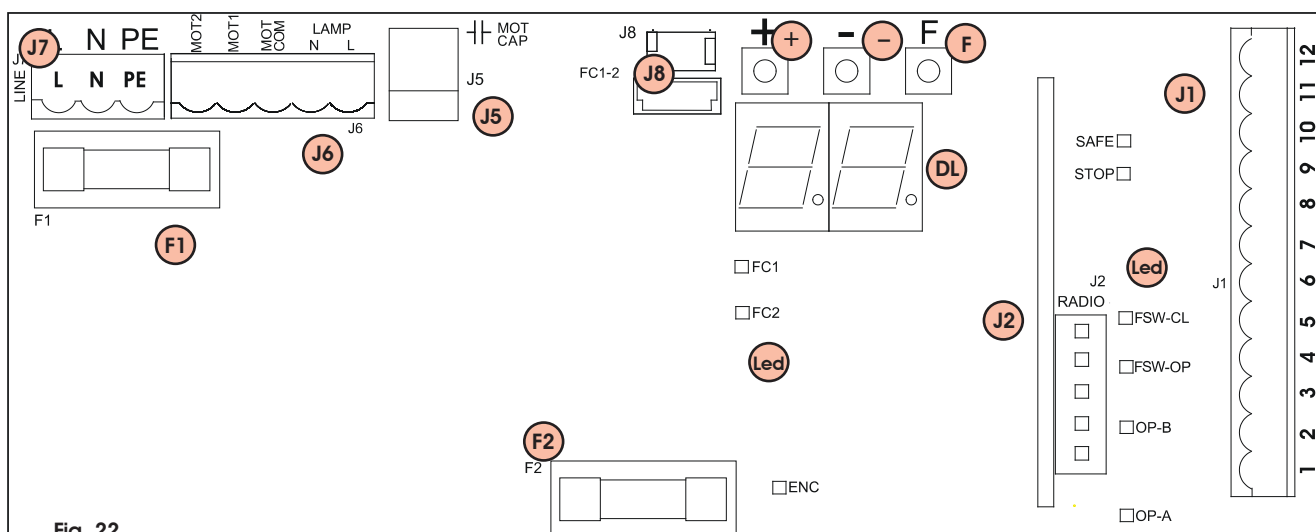
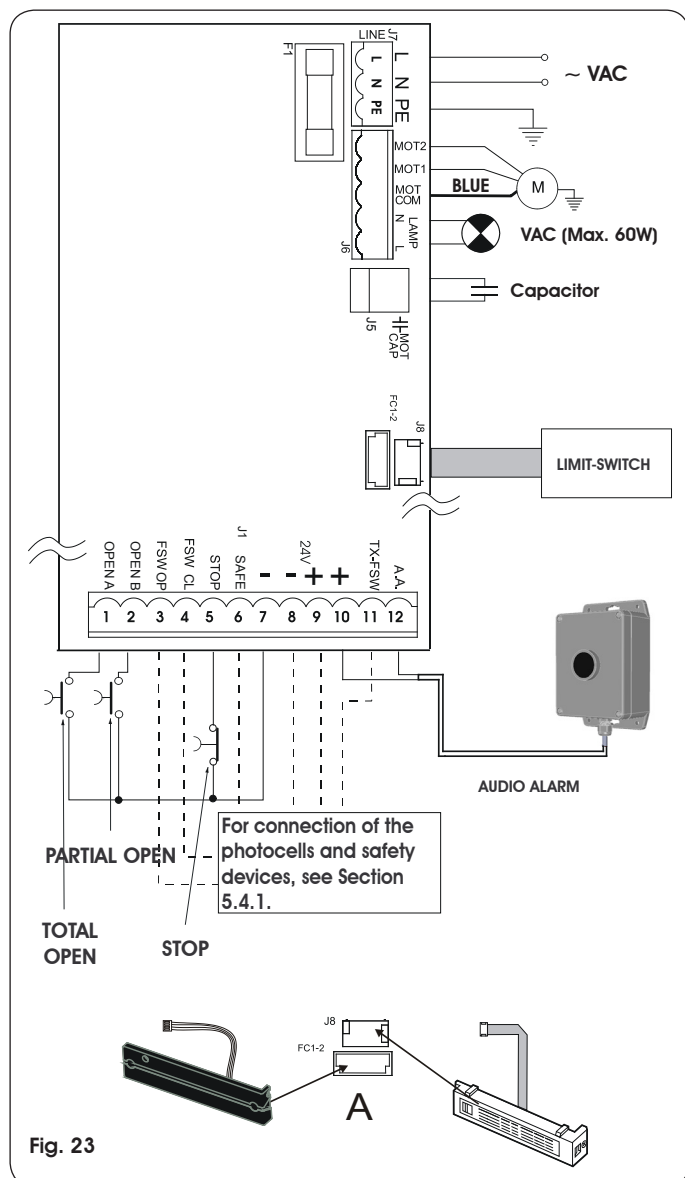


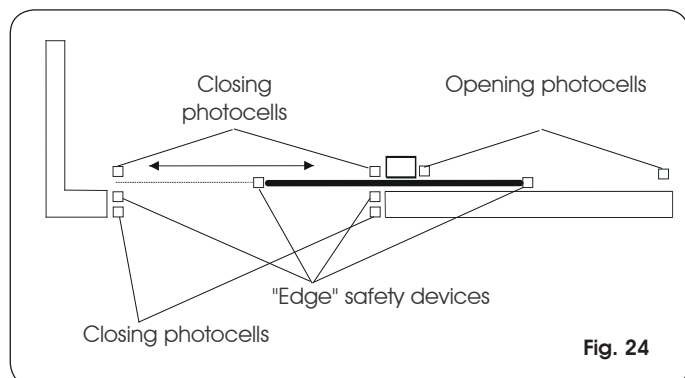
Fig. 22

5.4. ELECTRIC CONNECTIONS



5.4.1. Connection of Photocells and Safety Devices

For compliance with UL325 all the entrapment zones generated by the moving gate must be protected by safety devices. See Fig. 24 for a typicale example of how safety devices can be installed to protect entrapment zones.



Opening Safety Devices:

Active only during gate opening movement. When an obstacle is detected they cause immediate reversing and resumption of the opening motion on release (see advanced programming in Section 5.5.2.)

Closing Safety Devices:

Active only during gate closing movement. When an obstacle is detected they cause reversing, either immediate or on release (see advanced programming in Section 5.5.2.)

Edge Safety Devices:

Active during the gate opening and closing movements. They cause immediate reversal of motion and stopping after two seconds.

Encoder:

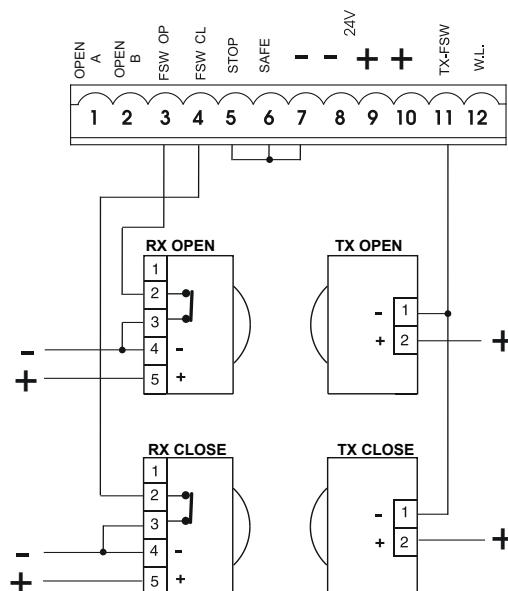
Monitors for an obstacle during gate opening and closing movements. It causes immediate reversal of motion and stopping after two seconds.

Note: For compliance with the UL325 all safety devices that protect entrapment zones must be monitored. The 844 operator monitors the safety devices with the FAIL SAFE function.

See advance programming in Section 5.5.2 for details on the different options for Fail Safe.

A minimum of one external device for each direction of travel must be connected and monitored. See the following figures for various examples of connections.

Connection of a pair of monitored opening photocells and pair of monitored closing photocells.



Connection of a pair of monitored opening photocells and a monitored closing edge

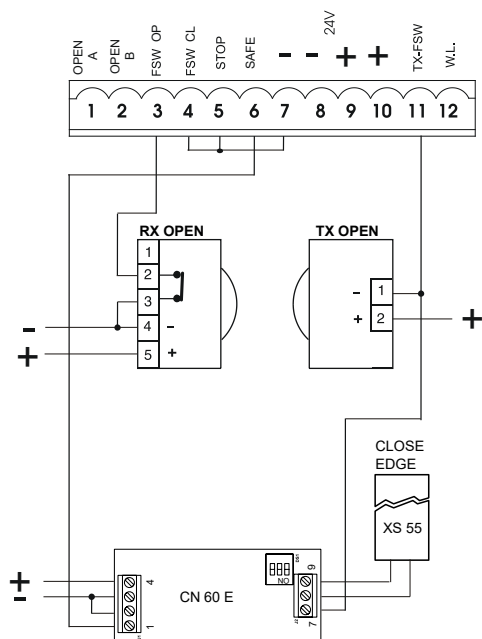


Fig. 26

Connection of a pair of monitored closing photocells and a monitored opening edge

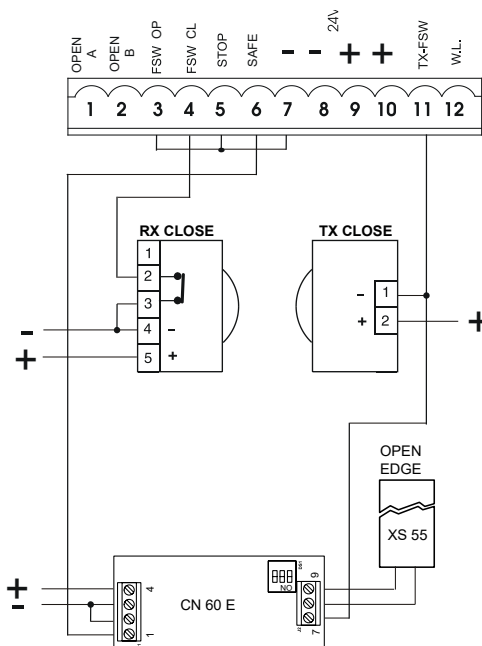


Fig. 27

Connection of a monitored sensing edge in closing and opening

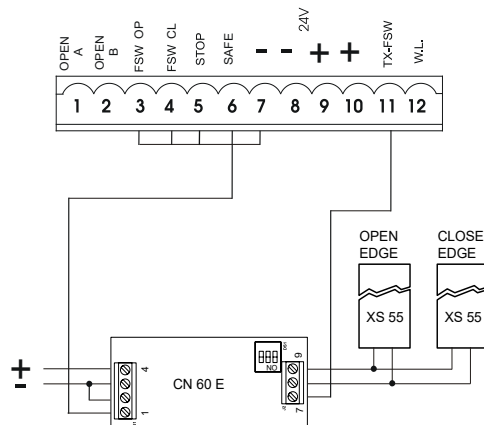


Fig. 28

Connection of a pair of monitored opening photocells, monitored closing photocells and a monitored opening and closing edge

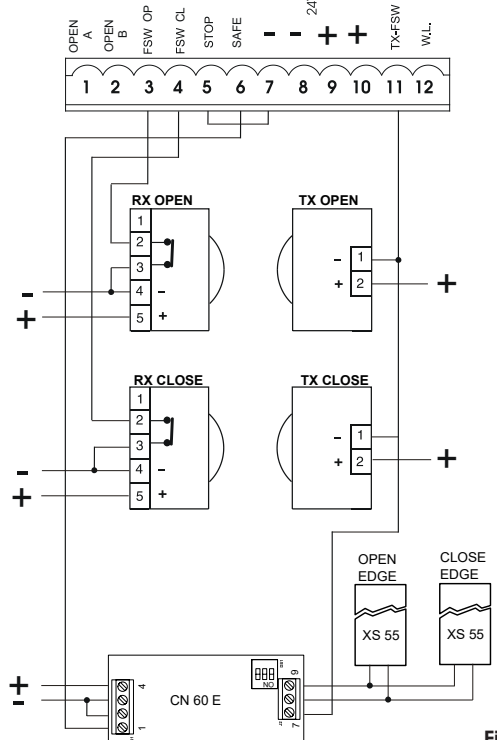


Fig. 29

5.4.2. J7 Terminal Block - Power Supply (Fig. 23)

POWER SUPPLY (Terminals PE-N-L):

- PE: Ground connection
- N : AC Power (Neutral)
- L : AC Power (Line)

5.4.3. J6 Terminal Block - Motors / Flashing Lamp (Fig. 23)

MOTOR - (Terminals MOT-C, MOT-1, MOT-2): Motor connection (see Section 6.5).

LAMP - (Terminals LAMP L, LAMP N): Flashing lamp output same VAC as input; max 60W.

5.4.4. J1 Terminal Block - Accessories (Fig. 23)

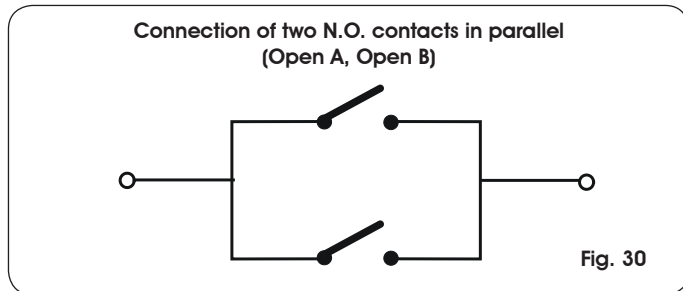
Consult the relevant tables for a detailed description of operation in the different logics

OPEN A - "Total Opening" Command (Terminal 1): any pulse generator (push-button, detector, etc.) which, by closing a contact, commands total opening and/or closing of the gate leaf.

To install several total opening pulse generators, connect the N.O. contacts in parallel (Fig. 30).

OPEN B - "Partial Opening" or "Closing" Command (Terminal 2): any pulse generator (push-button, detector, etc.) which, by closing a contact, commands partial opening and/or closing of the gate leaf. In the B, C and B/C logics, it always commands gate closure.

To install several partial opening pulse generators, connect the N.O. contacts in parallel (Fig. 30).



FSW OP - Opening Safety Devices Contact (Terminal 3):

The purpose of the opening safety devices is to protect the leaf movement area during opening. During opening, in the **A-AP-S-E-EP** logics the safety devices reverse the movement of the gate, or stop and restart the movement when it is released (see advanced programming in Section 5.5.2). During the opening cycle in logics **B, C** and **B/C**, they interrupt movement. They never operate during the closing cycle.

If the Opening Safety Devices are engaged when the gate is closed, they prevent the opening movement.

Note: If no opening safety devices are needed, jumper terminals FSW OP and -.

FSW CL - Closing Safety Devices Contact (Terminal 4):

The purpose of the closing safety devices is to protect the gate movement area during closing. During closing, in the **A-AP-S-E-EP** logics, the safety devices reverse the movement of the gate, or stop and reverse the movement when it is released (see advanced programming in Section 5.5.2). During the closing cycle in logics **B, C** and **B/C**, they interrupt movement. They never operate during the opening cycle.

If the Closing Safety Devices are engaged when the gate is open, they prevent the closing movement.

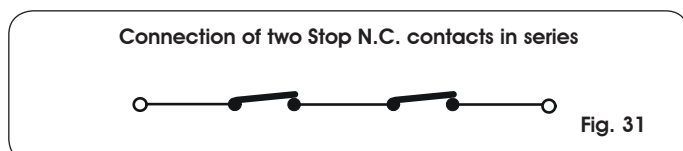
Note: If no closing safety devices are needed, jumper terminals FSW CL and -.

STOP - STOP Contact (Terminal 5):

Any device (e.g. a push-button) which, by opening a contact, stops gate movement.

To install several STOP devices, connect the N.C. contacts in series (Fig. 31).

Note: If STOP devices are not connected, jumper the STOP and - terminals.



SAFE - EDGE Safety Device Contact (Terminal 6):

The purpose of the edge safety device is to protect the leaf movement area during opening/closing. In all logics, during opening and closing, the safety device reverses gate movement for 2 seconds. If the safety devices operate again during the 2-seconds reversing time, it stops movement (STOP) without any reversing.

If the Edge Safety Device is engaged while the gate is closed or open, it prevents movement.

Note: If edge safety devices are not needed, jumper terminals SAFE and -.

- **Negative for power supply to accessories (Terminals 7 and 8)**
- + **24 VDC - Positive for power supply to accessories (Terminals 9 and 10)**

Important: Accessories max. load is 500 mA. To calculate the load, refer to the instructions for the individual accessories.

TX -FSW - Negative for Power Supply to Photocell Transmitters or edge controller (Terminal 11)

Use this terminal to connect the negative transmitters of the photocell power and enable the FAIL SAFE function (see advanced programming in Section 5.5.2) for compliance with UL325 Ed. 6

With this function is enabled, the equipment checks for proper operation of the photocells or edge controller before every opening or closing cycle.

A.A. - Power Supply to Audio Alarm (Terminal 12)

Connect the supplied Audio Alarm as shown in fig. 23. The alarm will sound upon two consecutive obstacle detections by the operator. It will sound continuously until the activation of the STOP input or a power cycle.

5.4.5. J2 Connector - Rapid Connection to Receiver

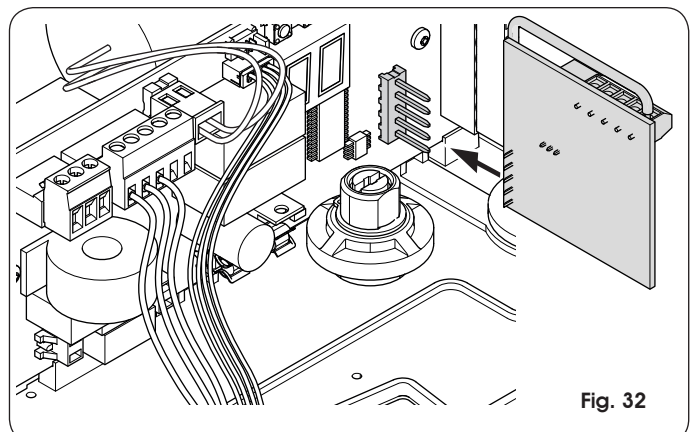
This is used for rapid connection of RP receivers (see Fig. 32). Insert the board with the components side toward connector J1. Insert and remove only with power off.

5.4.6. J5 Connector - Rapid Connection to Capacitor

Quick-fit connector for connecting the motor starting capacitor.

5.4.7. Double Connector J8 - Limit-Switch Quick Fit

Quick-fit connector for connecting the limit-switch. For connecting both the MLS magnetic limit-switch and the inductive limit-switch (Fig. 23 Ref. ①) to the operator.



5.5. PROGRAMMING

To program operation of the automated system, access the "PROGRAMMING" mode with keys **F**, **+** and **-** on the cover.

Attention: before attempting to power up the system, re-position the board's cover to avoid contact with high voltage parts and to access the push-button keys on the cover (Fig. 33).

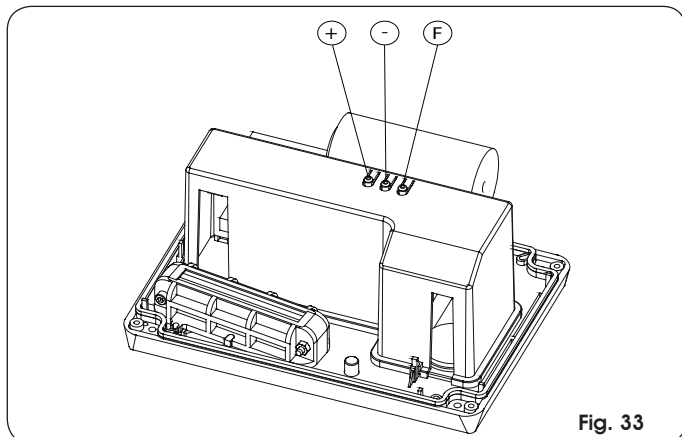


Fig. 33

Programming is divided in two parts: **BASIC** and **ADVANCED**.

5.5.1. BASIC PROGRAMMING

To access BASIC PROGRAMMING, press key **F**:

- If you press it (and hold it down), the display shows the name of the first function.
- If you release the key, the display shows the value of the function that can be modified with keys **+** and **-**.
- If you press **F** again (and hold it down), the display shows the name of the next function, etc.
- When you reach the last function, press **F** to exit the program, and the display resumes showing the gate status.

The following table shows the sequence of functions accessible in BASIC PROGRAMMING:

BASIC PROGRAMMING (F)		
Display	Function	Default
LO	FUNCTION LOGICS (see table of logics):	EP
	A = Automatic	
	AP = "Stepped" automatic	
	S = "Safety" Automatic	
	E = Semi-automatic	
	EP = "Stepped" Semi-automatic	
	C = Dead-man	
	b = "B" Semi-automatic	
	bC = Mixed Log.(B opening / C closing)	
PA	PAUSE TIME:	2.0
	This has effect only if automatic logic was selected.	
	Adjustable from 0 to 59 sec. in one-second steps.	
	Subsequently, display changes to minutes and tens of seconds (separated by a point) and time is adjusted in 10-second steps, up to the maximum value of 4.1 minutes.	
	E.g. if the display shows 2.5, pause time is 2 min. and 50 sec.	

Display	Function	Default
FO	FORCE:	50
	Adjusts Motor thrust.	
	01 = minimum force 50 = maximum force	
d1	OPENING DIRECTION:	-3
	Indicates the gate opening movement and makes it possible not to change the motor connections on the terminal board.	
	-3 = Rightward opening movement E- = Leftward opening movement	
St	STATUS OF AUTOMATED SYSTEM:	
	Exit from programming, save data, and return to gate status viewing.	
	00 = Closed	
	01 = Now opening	
	02 = At "STOP"	
	03 = Open	
	04 = Pause	
	05 = "FAIL SAFE" error	
	06 = Now closing	
	07 = Now reversing	
	08 = Photocells tripped	
	09 = Sequential obstacle detection	

NOTE: Status 09 will be displayed after two consecutive triggers of the safe input or two consecutive obstacle detections from the inherent entrapment protection device (encoder). In this status the operator will also set off the audio alarm. Normal operation can only be resumed by breaking the stop circuit or resetting power.

5.5.2. ADVANCED PROGRAMMING

To access ADVANCED PROGRAMMING, press key **F** and, as you hold it down, press key **+**:

- If you release key **+**, the display indicates the name of the first function.
- If you release key **F** too, the display shows the value of the function that can be modified with keys **+** and **-**.
- If you press key **F** (and hold it down), the display shows the name of the next function, and if you release it, the value that can be modified with keys **+** and **-** is shown.
- When you reach the last function, press **F** to exit the program, and the display resumes showing the gate status.

The following table shows the sequence of functions accessible in ADVANCED PROGRAMMING:

ADVANCED PROGRAMMING (F) + (+)		
Display	Function	Default
bo	MAXIMUM TORQUE AT INITIAL THRUST:	4
	The motor operate at maximum torque (ignoring the torque setting) at start of movement. Useful for heavy leaves.	
	4 = Active no = Disabled	

Display	Function	Default
br	FINAL BRAKING: When the gate reaches the opening or closing limit-switch, a braking stroke can be selected to ensure the leaf is stopped immediately. If decelerations are selected, braking starts when they finish. At 00 value, braking is disabled. Time can be adjusted from 01 to 20 in 0.01-second steps. 00 = Braking disabled from 01 to 20 = Timed braking	05
FS	FAIL SAFE: This function allows to select wich safety inputs will be monitored by the controller. It enables a functional test of the photocells or safety edges before any gate movement. If the test fails (device not present or not working are indicated by the value 05 on the display), the gate does not start moving. 00 FSW-OP, FSW-CL monitored SAFE not monitored 01 FSW-OP, FSW-CL not monitored SAFE monitored 02 FSW-OP, SAFE monitored FSW-CL not monitored 03 FSW-CL, SAFE monitored FSW-OP not monitored 04 FSW-OP, FSW-CL, SAFE monitored	00
PF	PRE-FLASHING (5 s): Activates the flashing lamp for 5 seconds before start of movement. no = Disabled oP = Only before opening CL = Only before closing 0C = Before every movement	no
PH	CLOSING PHOTOCELLS LOGIC: Select the tripping mode of the closing photocells. They operate for the closing movement only: they stop movement and reverse it when they are released, or they reverse it immediately. y = Reverse on release no = Reverse immediately to opening	no

Display	Function	Default
oP	OPENING PHOTOCELLS LOGIC: Select the tripping mode of the opening photocells. They operate for the opening movement only: they stop the movement and restart it when they are released, or they reverse it immediately. y = Reverse immediately to closing no = Restart movement on release	no
EC	ENCODER: The encoder operates as an anti-crushing device. If the gate hits an obstacle during opening or closing, the encoder immediately reverses the gate leaf movement for 2 seconds. If the encoder operates again during the 2-seconds reversing time, the movement stops (STOP) without commanding any reversing. Adjust the sensitivity of the anti-crushing system, by varying the parameter between 01 (maximum sensitivity) and 99 (minimum sensitivity). From 01 to 99 = Encoder active and sensitivity adjustment	99
rp	Pre-limit switch DECELERATION: You can select gate deceleration before the opening and closing limit-switches have been tripped. 00 = Deceleration disabled From 01 to 99 = Deceleration enabled	00
ra	Post-limit switch DECELERATION: You can select gate deceleration after the opening and closing limit-switches have been tripped. 00 = Deceleration disabled from 01 to 20 = Deceleration enabled Note: Not active on first cycle after power loss	00

Display	Function	Default
P0	PARTIAL OPENING: You can adjust the width of partial leaf opening, from 0 to 20 . For example, with pinion Z20, partial opening can vary from 2' to 13'.	05
E	WORK TIME (time-out): It is advisable to set a value of 5 to 10 seconds over the time taken by the gate to travel from the closing limit-switch to the opening limit-switch and vice versa. Adjustable from 0 to 59 sec. in one-second steps. Subsequently, display changes to minutes and tens of seconds (separated by a point) and time is adjusted in 10 second steps, up to a maximum value of 4.1 minutes. Attention: the set value will not exactly match the motor's maximum operating time if decelerations are used.	4.1
AS	ASSISTANCE REQUEST (combined with next function): If activated, at the end of countdown (see the next function: "Cycle Programming") it effects 2 sec. (in addition to the value already set with the PF function) of pre-flashing at every Open pulse (job request). It can be useful to set scheduled maintenance jobs. Y = Active no = Disabled	no
nc	CYCLE PROGRAMMING: To set countdown of system operation cycles. Settable (in thousands) from 00 to 99 thousand cycles. The displayed value is updated as cycles proceed.	00
St	GATE STATUS: Exit from programming, save data and return to viewing gate status (see Section 5.5.1.).	

Note 1: To reset the programming default settings, check that the edge input is closed (SAFE LED ON), and simultaneously press keys +, - and F, holding them down for 5 seconds.

Note 2: Modifications of programming parameters take effect immediately, whereas changes are saved to memory only after you exit programming and return to normal gate status viewing. If the equipment is powered down before returning to status viewing, any modifications will be lost.

6. START-UP

6.1. ELECTRIC CONNECTIONS

Make all electrical connections to the board as described in Section 5, including grounding the operator (Fig. 34).

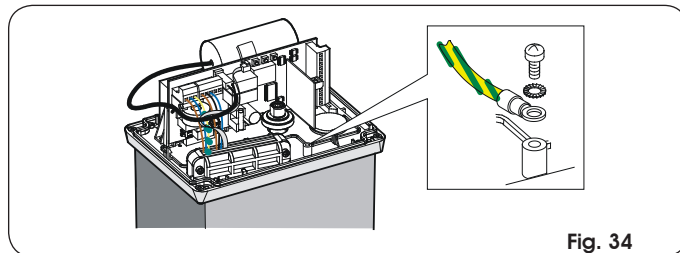


Fig. 34

6.2. OPENING - CLOSING DIRECTIONS

Power up the system and set the opening direction on the board (see Section 5.5.1).

If opening direction is to the RIGHT (**-3**):

OPENING limit-switch LED = **FC1**

CLOSING limit-switch LED = **FC2**

If opening direction is to the LEFT (**E-**):

OPENING limit-switch LED = **FC2**

CLOSING limit-switch LED = **FC1**

Note: for RF chain applications the wires on Mot1 and Mot2 (See Fig. 23) need to be reversed.

6.3. DETERMINING STOP POINTS AT TRAVEL LIMIT

The 844 operator has a limit sensor switch which, by detecting the transit of a reference applied to the rack, commands the motor to stop. The device can be magnetic (Fig. 41) or inductive (Fig. 42).

6.3.1. Magnetic Limit-Switch (MLS)

The MLS limit-switch detects the transit of two magnets fitted on the side of the rack facing the operator.

Procedure for correct positioning of the two supplied magnets:

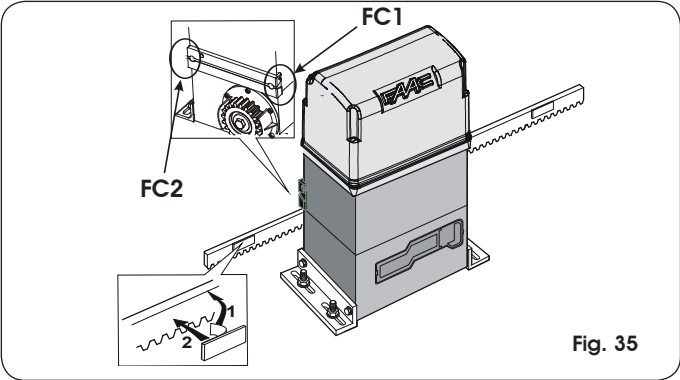
1. Check that the operator is in manual mode (see Sec.8).
2. Manually open the gate to within 3/4 to 2 inches of the travel limit mechanical stop.
3. Fit the magnet on the rack as shown in the instruction sheet that comes with the magnets. Slide the magnet on the rack in opening direction until the relevant LED turns off (Fig. 22 and 41), then move the magnet forward an additional 1 3/4 inches.
4. Manually close the gate to within 3/4 to 2 inches of the travel limit mechanical stop.
5. Fit the magnet on the rack as shown in the instruction sheet that comes with the magnets. Slide the magnet on the rack in closing direction until the relevant LED turns off (Fig. 22 and 41), then move the magnet forward an additional 1 3/4 inches.
6. Move the gate to its halfway travel point and relock the system (see Sec. 9).
7. Find out the desired pre- and post-limit-switch deceleration values (see Section 5.5.2) and run the automated system for at least one complete cycle.

- 8. Check that the gate stops approximately 3/4 to 2 inches from its mechanical stop point. If necessary, correct the position of the magnets and check that the stop point is correct.
- 9. Tighten the magnets in holders at desired stop points.

⚠ Attention: Due to the powerful magnetic fields produced by the supplied magnets, do not place magnetic storage devices (credit cards, magnetic tapes, floppy disks, etc) or sensitive electronic equipment (watches, CRT monitors, LCD screens, etc.) near the magnets.

Notes on Magnet Positioning

- To ensure correct operation, allow at least 3/4 inch from the mechanical stop limit in the gate stop position. Carry out this check after determining the values of the pre- and post-limit switch decelerations (see Section 5.5.2.) and after running at least one complete cycle of the automated system.
- The distance between the limit-switch and magnets must be from 1/4 to 1/2 inch.

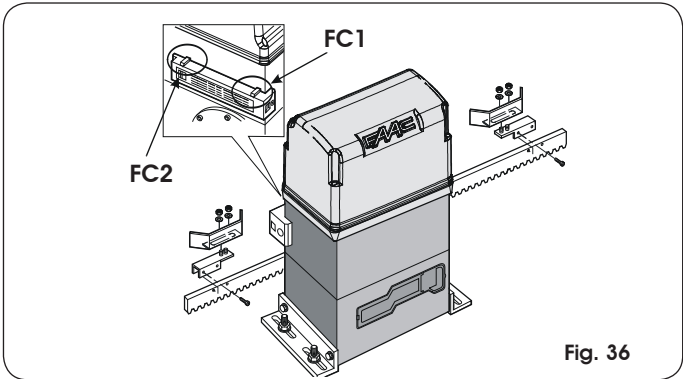


6.3.2. Inductive Limit-Switch

The inductive limit-switch detects the travel of the two steel plates fitted on the top of the rack or the chain. Procedure for correct positioning of the two supplied steel plates:

1. Assemble the limit-switch by centering the plate with respect to the threaded pins of the support (Fig. 36).
2. Check that the operator is in manual operating mode (see Section 8).
3. Manually open the gate to within 3/4 to 2 inches of the mechanical stop limit.
4. Allow the plate to move on the rack in opening direction until the relevant LED goes off (Figs. 22 and 36); next, move the plate forward an additional 1 3/4 inches and secure it to the rack by tightening the screws.
5. Manually close the gate to within 3/4 to 2 inches of the mechanical stop limit.

6. Allow the plate to move on the rack in closing direction until the relevant LED goes off (Figs. 22 and 36); next, move the plate forward by an additional 1 3/4 inches and secure it to the rack by tightening the screws.



Notes on Plate Positioning

- To ensure correct operation, allow at least 3/4 inch from the mechanical stop limit in the gate stop position. Carry out this check after determining the values of the pre- and post-limit switch decelerations (see Section 5.5.2.) and after running at least one complete cycle of the automated system.
- The distance between the limit-switch and the plates must be $\leq 3/16$ inch.

6.4. INPUTS CHECK

The table below shows the status of the LEDs in relation to the status of the inputs.

Note the following: **LED ON** = closed contact
LED OFF = open contact

Check the status of the LEDs as per the following table.

Note: The status of the LEDs while the gate is closed are shown in bold. If opening direction is to the left, the status of LEDS FC1 and FC2 is reversed.

Table 2: Operation of the Signalling Status LEDs

LEDS	ON	OFF
OP-A	Command activated	Command inactive
OP-B	Command activated	Command inactive
FC1	Limit-switch free	Limit-switch engaged
FC2	Limit-switch free	Limit-switch engaged
FSW OP	Safety devices disengaged	Safety devices engaged
FSW CL	Safety devices disengaged	Safety devices engaged
STOP	Command inactive	Command activated
SAFE	Safety devices disengaged	Safety devices engaged
ENC	Flashes while the motor rotates	

6.5. MECHANICAL CLUTCH ADJUSTMENT

In addition to its electronic safety devices (encoder and force adjustment), the 844 operator is also equipped with a mechanical clutch. **The clutch doesn't need to be adjusted in a typical application.** To adjust the operator's thrust and reversing behavior use the force and encoder settings, as detailed in Sections 5.5.1 and 5.5.2.

1. Adjust the F0 setting in Basic Programming so the gate pushes hard enough but not too hard
2. Adjust the EC setting in Advanced Programming so the gate reverses when it hits a rigid object/obstruction

For more information on how to adjust the combination of clutch, force and encoder see section 10.

In case the clutch needs to be adjusted:

1. Cut electrical power to the operator.
 2. Keep the motor shaft locked with a wrench and turn the clutch adjustment screw with an Allen wrench or screwdriver as shown in Fig. 37 Ref. A.
 - To increase torque, turn the screw clockwise.
 - To reduce torque, turn the screw counter-clockwise.
 3. Power up the operator and check that the torque you have just set is correct.
- ➔ **The operator is supplied as standard with a clutch adjustment spring for gates up to 2200 lbs. For heavier gates, use the supplied alternative spring. For spring replacement instructions, see Fig. 37 Ref. B.**

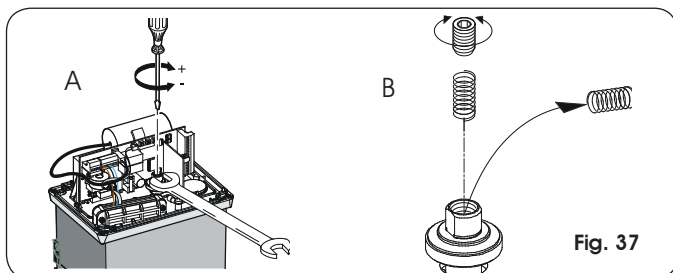


Fig. 37

6.6. TRAVEL LIMITS CHECK

Be careful when setting the post-limit-switch deceleration and braking. If the deceleration is too long and braking is insufficient, the magnet or steel plate fitted on the gate's rack can overshoot the sensor until it is disengaged.

When the gate stops, check that the correct limit-switch light is engaged. The relevant LED must be OFF. If it went OFF and then ON again, or if both limit-switch LEDs are OFF, you must reduce the post-limit-switch deceleration value and/or increase the braking value (see Section 5.5.2).

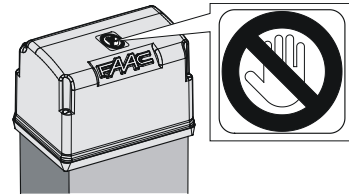
6.7. SAFETY DEVICES CHECK

Check for the correct operation of all safety equipment, anti-crushing devices (ENCODER sensor), and accessories used in the system.

7. FINAL OPERATIONS

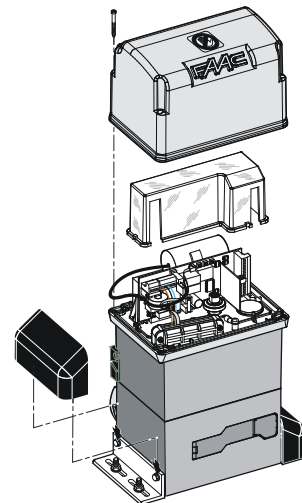
- After installation, apply the danger sticker to the top of the cover (Fig. 38).

Fig. 38



- Snap-fit the side panels, put the equipment's cover on and secure it with the supplied screws (Fig. 39).

Fig. 39



- Remove the vent screw (Fig. 40).

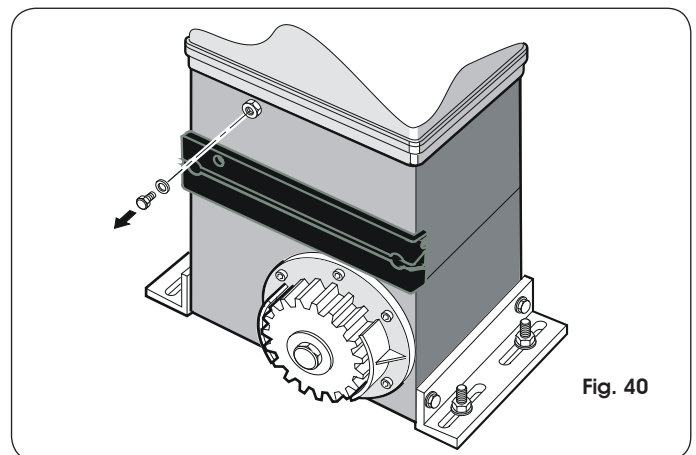


Fig. 40

8. MANUAL OPERATION

1. If the gate has to be operated manually due to a power outage or malfunction of the automated system, use the release device as follows:
2. Open the protection door and insert the supplied key in the lock (Fig. 41).

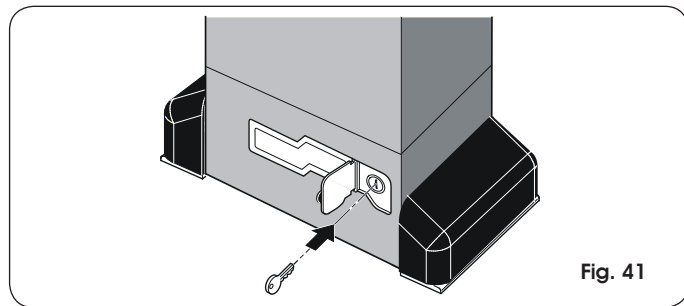


Fig. 41

3. Turn the key clockwise and pull the release lever as shown in Fig. 42.
4. Open and close the gate manually.

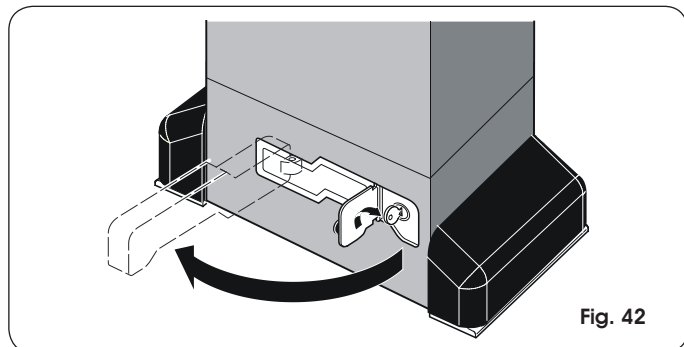


Fig. 42

9. RESTORING NORMAL OPERATION

To prevent an involuntary pulse from activating the gate, 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 engages.

10. FORCE ADJUSTMENT

Make sure the gate travels smoothly in both directions before starting the adjustment. Obstruct the gate then adjust the F0 setting appropriately so the gate does not slip the clutch during normal operation but does upon hitting an object. If the clutch keeps slipping tighten it as described in Section 6.5

By lowering the F0 setting from 50 (maximum) the operator limits how hard the gate is pushed, which in turn will allow the clutch to slip. Once the force is set appropriately move on to the encoder adjustment.

The Encoder has multiple purposes but the adjustment here is just for obstacle detection. 01 is the most sensitive (reverses more easily) and 99 is the least sensitive. The machine comes set at 99 so in most instances after, and sometimes during the Force adjustment you will bring the setting down from 99 to a lower number so the machine will reverse on obstructions.

If it is too sensitive the gate will reverse during normal travel with no obstructions. If this happens twice the display will show **09** which requires a reset to continue operation.

The goal is to have a combination of Force and Encoder settings so that the gate travels fine during normal operation but the clutch slips and then the Encoder senses the obstruction when the gate contacts a rigid obstacle.

11. MAINTENANCE

Check the operational efficiency of the system at least once every 12 months, especially the efficiency of the safety and release devices (including operator thrust force).

- Check that the operator is intact and securely fastened
- Check that the pinion doesn't have any flat on the shaft
- Check that the hand guard around the pinion is present and intact
- Check that the operator can't be pushed in reverse
- Check that there are no oil leaks
- Check the condition of the cables, cable glands and junction boxes
- Check that the connectors and wiring are solid
- Check that there are no signs of overheating, burning etc. of electronic components
- Check that the ground connection is intact
- Check that the limit switches are in place and operating correctly

11.1. REMOVING BOARD AND TRANSFORMER

If you have to disassemble the transformer-board unit, proceed as follows:

Remove all terminal boards and connectors from the board. Unscrew the 3 screws from the board and the 2 from the transformer. Lift the unit up and gently remove the transformer from the couplings on the board as shown in Fig. 43.

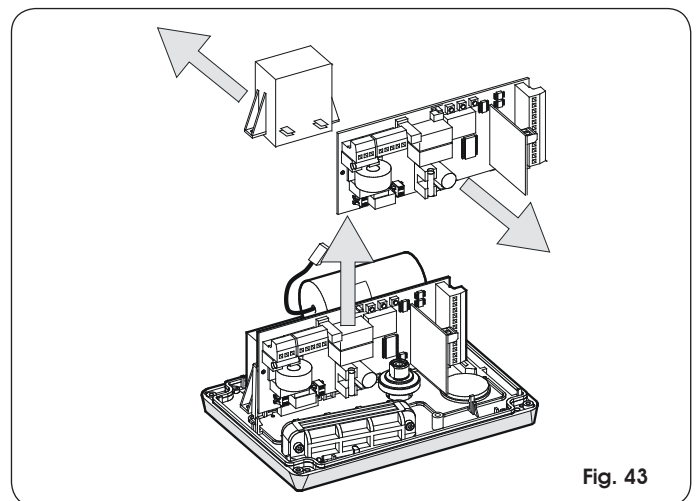


Fig. 43

11.2. REPAIRS

For any repairs, contact an FAAC authorized repair center.

12. LOGICS TABLES

Tab. 3/a

PULSES						
Logic "A"	OPEN - A	OPEN - B	STOP	OPENING SAFETY DEVICES	CLOSING SAFETY DEVICES	EDGE SAFETY DEVICE
GATE STATUS	Opens the leaf and closes it after pause time (1)	Opens leaf for the partial opening time and closes after pause time (1)		No effect (OPEN disabled)	No effect	No effect (OPEN disabled)
CLOSED						
OPEN on PAUSE	Reloads pause time (1)(3)			No effect (if on part.opng. OPEN A disabled)	Reloads pause time (1) (3)	Reloads pause time (1) (OPEN disabled)
CLOSING	Re-opens the leaf immediately (1)		Stops operation	No effect (saves OPEN)	see paragraph 5.5.2.	Reverses to open for 2" (2)
OPENING	No effect (1) (3)			see paragraph 5.5.2.	No effect	Reverses to close for 2" (2)
LOCKED	Closes the leaf (3)		No effect (OPEN disabled)			No effect (OPEN disabled)

Tab. 3/b

PULSES						
Logic "A.p"	OPEN - A	OPEN - B	STOP	OPENING SAFETY DEVICES	CLOSING SAFETY DEVICES	EDGE SAFETY DEVICE
GATE STATUS	Opens the leaf and closes it after pause time	Opens leaf for the partial opening time and closes after pause time		No effect (OPEN disabled)	No effect	No effect (OPEN disabled)
CLOSED						
OPEN on PAUSE	Stops operation (3)			No effect (if on part.opng. OPEN A disabled)	Reloads pause time (3) (OPEN disabled)	Reloads pause time (OPEN disabled)
CLOSING	Re-opens the leaf immediately		Stops operation	No effect (saves OPEN)	see paragraph 5.5.2.	Reverses to open for 2" (2)
OPENING	Stops operation (3)			see paragraph 5.5.2.	No effect	Reverses to close for 2" (2)
LOCKED	Closes the leaf (with Closing Safety devices engaged, opens at the 2nd pulse) (3)		No effect (OPEN disabled)			No effect (OPEN disabled)

Tab. 3/c

PULSES						
Logic "S"	OPEN - A	OPEN - B	STOP	OPENING SAFETY DEVICES	CLOSING SAFETY DEVICES	EDGE SAFETY DEVICE
GATE STATUS	Opens the leaf and closes it after pause time	Opens leaf for the partial opening time and closes after pause time		No effect (OPEN disabled)	No effect	No effect (OPEN disabled)
CLOSED						
OPEN on PAUSE	Re-closes the leaf immediately (3)			No effect (if on part.opng. OPEN A disabled)	On release, closes after 5" (OPEN disabled) (3)	Reloads pause time (1) (OPEN disabled)
CLOSING	Re-opens the leaf immediately		Stops operation	No effect (saves OPEN)	see paragraph 5.5.2.	Reverses to open for 2" (2)
OPENING	Re-closes the leaf immediately (3)			see paragraph 5.5.2.	No effect (saves OPEN)	Reverses to close for 2" (2)
LOCKED	Closes the leaf (3)		No effect (OPEN disabled)			No effect (OPEN disabled)

Tab. 3/d

PULSES						
Logic "E"	OPEN - A	OPEN - B	STOP	OPENING SAFETY DEVICES	CLOSING SAFETY DEVICES	EDGE SAFETY DEVICE
GATE STATUS	Opens the leaf	Opens leaf for the partial opening time		No effect (OPEN disabled)	No effect	No effect (OPEN disabled)
CLOSED						
OPEN	Re-closes the leaf immediately (3)			No effect (if on part.opng. OPEN A disabled)	No effect (3) (OPEN disabled)	No effect (OPEN disabled)
CLOSING	Re-opens the leaf immediately		Stops operation	No effect (saves OPEN)	see paragraph 5.5.2.	Reverses to open for 2" (2)
OPENING	Stops operation (3)			see paragraph 5.5.2.	No effect	Reverses to close for 2" (2)
LOCKED	Closes the leaf (with Closing Safety devices engaged, opens at the 2nd pulse) (3)		No effect (OPEN disabled)			No effect (OPEN disabled)

Tab. 3/e

Logic "Ep"	PULSES				
	OPEN - A	OPEN - B	STOP	OPENING SAFETY DEVICES	CLOSING SAFETY DEVICES
GATE STATUS					
CLOSED	Opens the leaf	Opens leaf for the partial opening time		No effect (OPEN disabled)	No effect
OPEN	Re-closes the leaf immediately (3)			No effect (if on part opening, OPEN A disabled)	No effect (OPEN disabled) (3)
CLOSING	Stops operation		Stops operation	No effect (saves OPEN)	see paragraph 5.5.2.
OPENING	Stops operation (3)			see paragraph 5.5.2.	No effect
LOCKED	Restarts movement in reverse direction (3) (always closes after a Stop)		No effect (OPEN disabled)	No effect (if it must open, it disables OPEN)	No effect (OPEN disabled) (if it must close, it disables OPEN)

Tab. 3/f

Logic "C"	PULSES				
	CONTROLS ALWAYS HELD DOWN			PULSES	
GATE STATUS	OPEN-A (opening)	OPEN-B (closing)	STOP	OPENING SAFETY DEVICES	CLOSING SAFETY DEVICES
	Opens the leaf	No effect (OPEN-A disabled)		No effect (OPEN A disabled)	No effect (OPEN A disabled)
OPEN	No effect (OPEN-B disabled)	Closes the leaf	No effect (OPEN-A/B disabled)	No effect (OPEN A disabled)	No effect (OPEN B disabled)
CLOSING	Stops operation	/	Stops operation	No effect	Stops operation (OPEN-B disabled)
OPENING	/	Stops operation		Stops operation (OPEN-A disabled)	No effect

Tab. 3/g

Logic "B"	PULSES				
	OPEN-A (opening)	OPEN-B (closing)	STOP	OPENING SAFETY DEVICES	CLOSING SAFETY DEVICES
GATE STATUS					
CLOSED	Opens the leaf	No effect	No effect (OPEN B disabled)	No effect (OPEN A disabled)	No effect (OPEN A disabled)
OPEN	No effect	Closes the leaf		No effect	No effect (OPEN B disabled)
CLOSING	Reverses to open	No effect	Stops operation	No effect (saves OPEN A)	Stops operation (OPEN-B disabled)
OPENING	No effect	No effect		Stops operation (OPEN-A disabled)	No effect
LOCKED	Opens the leaf	Closes the leaf	No effect (OPEN A/B disabled)	No effect (OPEN-A disabled)	No effect (OPEN B disabled)

Tab. 3/h

Logic "B/C"	PULSES				
	CONTROLS ALWAYS HELD DOWN			PULSES	
GATE STATUS	OPEN-A (opening)	OPEN-B (closing)	STOP	OPENING SAFETY DEVICES	CLOSING SAFETY DEVICES
	Opens the leaf	No effect	No effect (OPEN B disabled)	No effect (OPEN A disabled)	No effect (OPEN A disabled)
OPEN	No effect	Closes the leaf		No effect	No effect (OPEN B disabled)
CLOSING	Reverses to open	No effect	Stops operation	No effect (saves OPEN A)	Stops operation (OPEN-B disabled)
OPENING	No effect	No effect		Stops operation (OPEN-A disabled)	No effect
LOCKED	Opens the leaf	Closes the leaf	No effect (OPEN A/B disabled)	No effect (OPEN-A disabled)	No effect (OPEN B disabled)

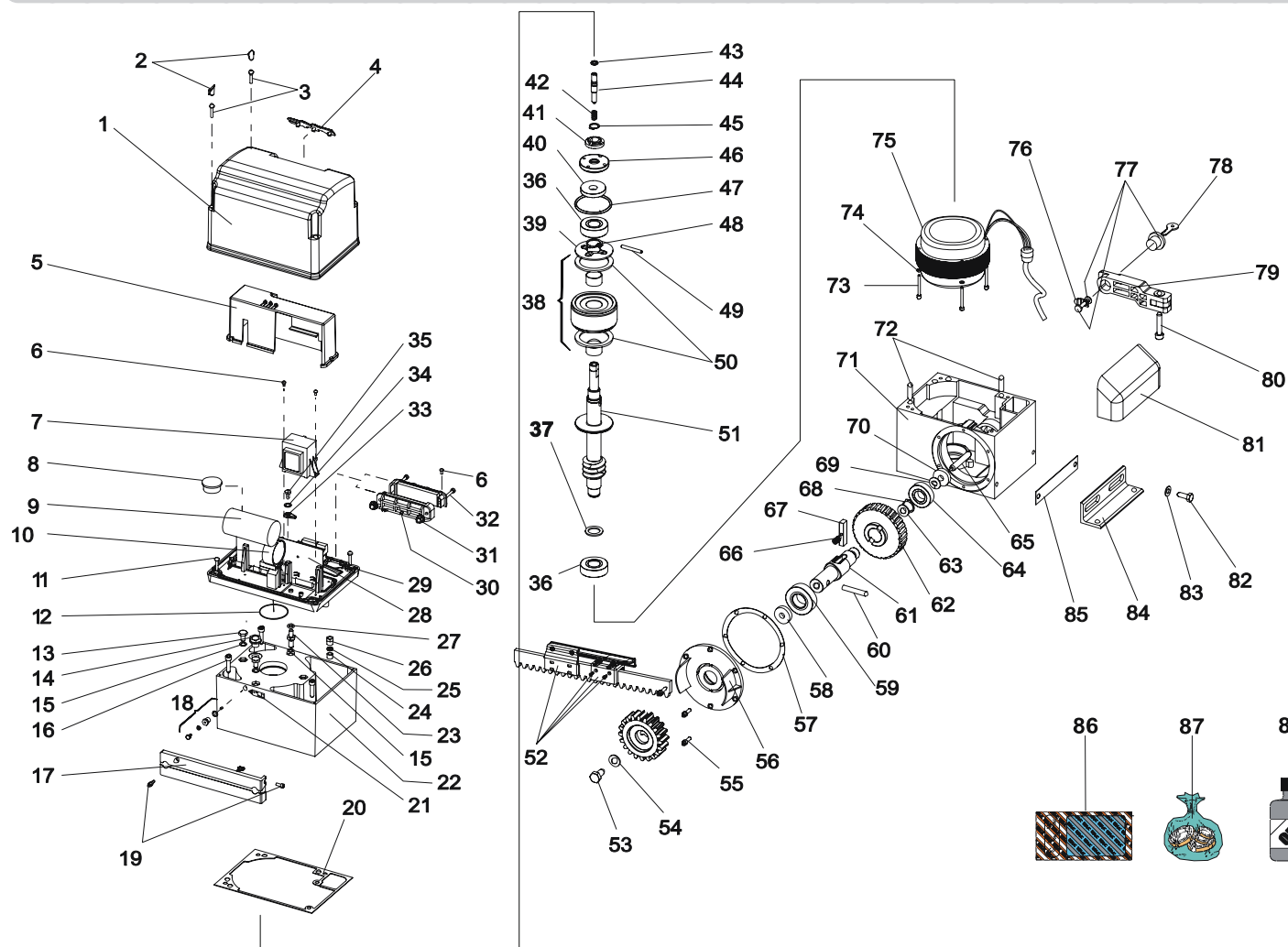
(1) If maintained, it prolongs the pause until disabled by the command (timer function)

(2) If a new pulse occurs within 2 seconds after reversing, it immediately stops operation.

(3) During the partial opening cycle, an OPEN A pulse causes total opening.

NB.: Effects on other active pulse inputs in brackets.

13. SPARE PARTS DIAGRAM



POS.	P/N	DESCRIPTION
01	63000399	Operator Plastic Cover
02	7111245	Cover Holes Caps (Nr 4)
03	701520	Thread Forming Screw
04	7324745	Faac Logo
05	7273435	Cover For Control Board
06	701422	Screw
07	63000333	Transformer 115Vac
08	711969	Kapsto Plug
09	7601092	Capacitor 70Uf 280Vac
10	722084	Capacitor Support
11	701814	Bolt M4x20
12	709062002	O Ring Gasket 6,75X1,78
13	7029055	Stator Fixing Nut
14	7110015	Cap
15	7099145	Gear Motor Stator Nut Gasket
16	7580375	Cap Screw Socket Head

POS.	P/N	DESCRIPTION
17	40985115	Limit Switch Chain Version
	7580375	Limit Switch Rack And Pinion Version
18	390516	Breather Plug Assembly
19	701002	Cap Scr.sock.head.4X10 5931 8Gz
20	7099645	Gasket
21	7320065	Breather Screw Label
22	7160605	Upper Half Body
23	7029175	Stator Nut / Earth Ground
24	7099245	Strain Relief Gasket
25	7043355	Strain Relief Ring
26	7109095	Cable Damp
27	709000002	O Ring Gasket 7,59X2,62
28	79092113	780 D Control Unit With Terminals 115V
29	63000348	Base Plate For Cover
30	7109255	Strain Relief
31	702705	Nut With Locking Washer M4
32	701000	Screw 4X 25 5931 12 K
33	752207	Lug Cembre Bf-M5
34	703007	Washer 5 6592 R40 Z

POS.	P/N	DESCRIPTION
35	701367	Screw 5 X 10 7687/Din7985 4,8 Z
36	707010	Bearing 6204-Z 20-47-14
37	7269185	Bearing Spacer
38	445842	Rotor With Clutch
39	7310275	Friction Disk
40	7093105	Smim 10X30x4.5 Gasket
41	7226605	Magnetic Disk 746/844
42	7210125	Clutch Adjustm. Spring
43	7090030015	Gasket Or 6.75X1.78 (106)
44	7181935	Pin For Clutch Adjust. 746/844 R
45	704008	Cir Clip E15 7435
46	7049125	Gasket Adjustment Ring Nut
47	7090410025	Gasket Or 42.52X2.62 (3168)
48	704005	Cir Clip E24 7435
49	7061185	Pin 5 X 40 M6 Uni 100 C6
50	7310125	Friction Disk
51	7181995	Motor Shaft
52	63000355	Magnetic Limit Switches
	2529	Limit Switch Plates For Chain
53	701119	Screw 10X16 Uni 5739 10.9 Z
54	7030185	Washer 10,5X35x4 Cat.a Z
55	701007	Cap Scr.sock.head 5X16 8G Z
56	71707615	Side Flange
57	7094085	Gasket Lateral Flange
58	7093005	Gasket For Motor Shaft A 25407
59	7070111	Bearing 6205 25-52-15 Econ.
60	7061115	Pin 8X45 Ric.uni En22338
61	7180785	Slow Shaft 746-844
62	7192075	Gear
63	704339	Ring

POS.	P/N	DESCRIPTION
64	7070121	Ball Bearing 6004
65	7182765	Unlock Pin
66	7211015	Release Spring
67	7051085	Tab
68	704009	C Clip E20 7435
69	704200	Ring Lmkas 42 D
70	7093055	Gasket Rp 10X30x7
71	7160615	Lower Semi-Body
72	7061035	Pin
73	7230145	Stator Mounting Rod
74	703205	Lock Washer 8842 Z
75	63000543	Stator 844 UL 115V
76	7291115	Lever For Lock
77	7120885	Lock
78	7131005	Key
79	409867	Release Lever Unit
80	7019415	Release Lever Screw
81	727197	Protective Side Cover
82	701107002	Hex.head 5739 8G Z 8X20
83	703002	Washer 8 6592 R40 Z
84	722351	Mounting Bracket
85	7269525	Spacer
86	3905745	Skin Pack
87	390829	Skinpack Motor
88	714019	Hydraulic Oil Faac Hp Oil Lt. 1

14. TROUBLESHOOTING

If you have a problem installing the operator, check the problems and solutions listed below for suggestions.

PROBLEM	SOLUTIONS
The operator does not respond to the activating signal.	<ul style="list-style-type: none"> • Make sure the main power switch is on. • Check the control panel terminal strip for possible broken or disconnected wires. • If a radio signal is being used to activate the operator, be sure the code sets on both the transmitter and receiver are the same. • Momentarily short across terminals 1 and 7 on the control panel. If this activates the operator, a problem probably exists in the activating device itself.
The gate is closed and does not open.	<ul style="list-style-type: none"> • Make sure the clutch adjustment is not too weak. • Increase the torque if the motor is running and the gate is not moving. This may be necessary for especially heavy gates. • Check that the closed limit switch is working. The FC status light should be off. Make sure that the limit switch plate is not too far away from the limit switch. The distance between a plate and the switch should be 3/16 in. • Check fuse F1 and replace it if necessary.
The gate opens, but will not close.	<ul style="list-style-type: none"> • Make sure the closing safety devices are working properly and that they are not activated (an activated reversing device will prevent the gate from closing) • Check that the FSW-CL light is on indicating that the closing safety is not active. Make sure that the display doesn't show 05, indicating that the Fails Safe Check didn't pass.
On initial operation the operator moves a few inches and stops.	<ul style="list-style-type: none"> • Check the encoder setting • Make sure the gate rolls freely - check wheels and rollers
The gate opens, but the operator continues to run.	<ul style="list-style-type: none"> • Check the FC light on the control panel. It should be OFF. If it is ON, check the alignment of the limit switch plate. • If the FCC light is ON and the limit switch plate is correctly adjusted, replace the limit switch. <p>Note: If the limit switch plates are not detected by the limit switch on the operator, the motor will run for 120 seconds and then the control panel will be in alarm status.</p>

NOTES:

[illegible]

NOTES:

[illegible]

LIMITED WARRANTY

To the original purchaser only:

FAAC International, Inc., warrants, for twenty-four (24) months from the date of invoice, the gate operator systems and other related systems and equipment manufactured by FAAC S.p.A. and distributed by FAAC International, Inc., to be free from defects in material and workmanship under normal use and service for which it was intended provided it has been properly installed and operated.

FAAC International, Inc.'s obligations under this warranty shall be limited to the repair or exchange of any part of parts manufactured by FAAC S.p.A. and distributed by FAAC International, Inc. Defective products must be returned to FAAC International, Inc., freight prepaid by purchaser, within the warranty period. Items returned will be repaired or replaced, at FAAC International, Inc.'s option, upon an examination of the product by FAAC International, Inc., which discloses, to the satisfaction of FAAC International, Inc., that the item is defective. FAAC International, Inc. will return the warranted item freight prepaid. The products manufactured by FAAC S.p.A. and distributed by FAAC International, Inc., are not warranted to meet the specific requirements, if any, of safety codes of any particular state, municipality, or other jurisdiction, and neither FAAC S.p.A. or FAAC International, Inc., assume any risk or liability whatsoever resulting from the use thereof, whether used singly or in combination with other machines or apparatus.

Any products and parts not manufactured by FAAC S.p.A. and distributed by FAAC International, Inc., will carry only the warranty, if any, of the manufacturer. This warranty shall not apply to any products or parts thereof which have been repaired or altered, without FAAC International, Inc.'s written consent, outside of FAAC International, Inc.'s workshop, or altered in any way so as, in the judgment of FAAC International, Inc., to affect adversely the stability or reliability of the product(s) or has been subject to misuse, negligence, or accident, or has not been operated in accordance with FAAC International, Inc.'s or FAAC S.p.A.'s instructions or has been operated under conditions more severe than, or otherwise exceeding, those set forth in the specifications for such product(s). Neither FAAC S.p.A. nor FAAC International, Inc., shall be liable for any loss or damage whatsoever resulting, directly or indirectly, from the use or loss of use of the product(s). Without limiting the foregoing, this exclusion from

liability embraces a purchaser's expenses for downtime or for making up downtime, damages for which the purchaser may be liable to other persons, damages to property, and injury to or death of any persons.

FAAC S.p.A. or FAAC International, Inc., neither assumes nor authorizes any person to assume for them any other liability in connection with the sale or use of the products of FAAC S.p.A. or FAAC International, Inc. The warranty herein above set forth shall not be deemed to cover maintenance parts, including, but not limited to, hydraulic oil, filters, or the like. No agreement to replace or repair shall constitute an admission by FAAC S.p.A. or FAAC International, Inc., of any legal responsibility to effect such replacement, to make such repair, or otherwise. This limited warranty extends only to wholesale customers who buy directly through FAAC International, Inc.'s normal distribution channels. FAAC International, Inc., does not warrant its products to end consumers.

Consumers must inquire from their selling dealer as to the nature and extent of that dealer's warranty, if any. This warranty is expressly in lieu of all other warranties expressed or implied including the warranties of merchantability and fitness for use. This warranty shall not apply to products or any part thereof which have been subject to accident, negligence, alteration, abuse, or misuse or if damage was due to improper installation or use of improper power source, or if damage was caused by fire, flood, lightning, electrical power surge, explosion, wind storm, hail, aircraft or vehicles, vandalism, riot or civil commotion, or acts of God.

