SEA USA
ELECTRONIC OPENING SYSTEMS
International registered trademark n. 2.777.971

SATURN-BOXER

1000 - 2000

MOTOR REDUCER 120V~ FOR SLIDING GATES



C US
LISTED TO
CSA Std C22.2 no. 247-92(R2004)
UL Std no. 325 – 5th Edition

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Details

General

An appliance shall be provided with an instruction manual. The instruction manual shall give instructions for the installation, operation, and user maintenance of the appliance.

The installation instructions shall specify the need for a grounding-type receptacle for connection to the supply and shall stress the importance of proper grounding.

The installation instructions shall inform the installer that permanent wiring is to be employed as required by local codes, and instructions for conversion to permanent wiring shall be supplied.

Information shall be supplied with a gate operator for:

a) The required installation and adjustment of all devices and systems to effect the primary and secondary protection against entrapment (where included with the operator).
b) The intended connections for all devices and systems to effect the primary and secondary protection against entrapment. The information shall be supplied in the instruction manual, wiring diagrams, separate instructions, or the equivalent.

Vehicular gate operators (or systems)
A vehicular gate operator shall be provided with the information in the instruction manual that defines the different vehicular gate operator Class categories and give examples of each usage. The manual shall also indicate the use for which the particular unit is intended as defined in Glossary, Section 3. The installation instructions for vehicular gate operators shall include information on the Types of gate for which the gate operator is intended.

A gate operator shall be provided with the specific instructions describing all user adjustments required for proper operation of the gate. Detailed instructions shall be provided regarding user adjustment of any clutch or pressure relief adjustments provided. The instructions shall also indicate the need for periodic checking and adjustment by a qualified technician of the control mechanism for force, speed, and sensitivity.

Instructions for the installation, adjustment, and wiring of external controls and devices serving as required protection against entrapment shall be provided with the operator when such controls are shipped with the operator.

Instructions regarding intended installation of the gate operator shall be supplied as part of the installation instructions or as a separate document. The following instructions or the equivalent shall be supplied where applicable:

a) Install the gate operator only when:
   1) The operator is appropriate for the construction of the gate and the usage Class of the gate,
   2) All openings of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 4 feet (1.22 m) above the ground to prevent a 2-1/4 inch (57.2 mm) diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that the gate covers in the open position,
   3) All exposed pinch points are eliminated or guarded, and
   4) Guarding is supplied for exposed rollers.

b) The operator is intended for installation only on gates used for vehicles. Pedestrians must be supplied with a separate access opening. The pedestrian access opening shall be designed to promote pedestrian usage. Locate the gate such that persons will not come in contact with the vehicular gate during the entire path of travel of the vehicular gate.

c) The gate must be installed in a location so that enough clearance is supplied between the gate and adjacent structures when opening and closing to reduce the risk of entrapment. Swinging gates shall not open into public access areas.

d) The gate must be properly installed and work freely in both directions prior to the installation of the gate operator. Do not over-tighten the operator clutch or pressure relief valve to compensate for a damaged gate.

e) (not applicable)

f) 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. Outdoor or easily accessible controls shall have a security feature to prevent unauthorized use.

g) The Stop and/or Reset button must be located in the line-of-sight of the gate. Activation of the reset control shall not cause the operator to start.

h) A minimum of two (2) WARNING SIGNS shall be installed, one on each side of the gate where easily visible.

i) For gate operators utilizing a non-contact sensor:

1) See instructions on the placement of non-contact sensors for each Type of application,
2) Care shall be exercised to reduce the risk of nuisance tripping, such as when a vehicle, trips the sensor while the gate is still moving, and
3) One or more non-contact sensors shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate or barrier.

j) For a gate operator utilizing a contact sensor:

1) 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.
2) One or more contact sensors shall be located at the bottom edge of a vehicular vertical lift gate.
3) One or more contact sensors shall be located at the pinch point of a vehicular vertical pivot gate.
4) 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.
5) A wireless contact sensor 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 contact sensor shall function under the intended end-use conditions.
6) 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 6 inches (152 mm) above the ground at any point in its arc of travel, one or more contact sensors shall be located on the bottom edge.
7) One or more contact sensors shall be located at the bottom edge of a vertical barrier (arm).

Revised 56.8.4 effective February 21, 2008

Instruction regarding intended operation of the gate operator shall be provided as part of the user instructions or as a separate document. The following instructions or the equivalent shall be provided:
IMPORTANT SAFETY INSTRUCTIONS
WARNING – To reduce the risk of injury or death:

1. READ AND FOLLOW ALL INSTRUCTIONS.

2. Never let children operate or play with gate controls. Keep the remote control away from children.

3. Always keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.

4. Test the gate operator monthly. The gate MUST reverse on contact with a rigid object or stop when an object activates the non-contact sensors. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate operator properly can increase the risk of injury or death.

5. Use the emergency release only when the gate is not moving.

6. KEEP GATES PROPERLY MAINTAINED. Read the owner's manual. Have a qualified service person make repairs to gate hardware.

7. The entrance is for vehicles only. Pedestrians must use separate entrance.

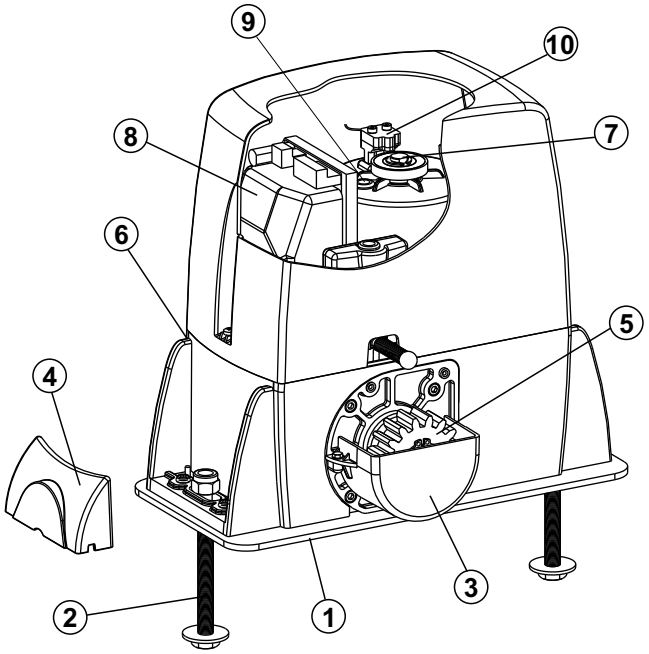
8. SAVE THESE INSTRUCTIONS.

MECHANICAL INSTALLATION

The **SATURN** and the **BOXER** are motor reducers designed for the automation of sliding gates with **grease** lubrication or in **oil bath**, depending on the versions.
The irreversibility of the motor reducers allows a perfect and safe gate closing, and makes the installation of an elecric lock unneccessary. In case of electric power cut, the lock device placed on the front part of the motor reducer allows the manual opening and closing. The operators are equipped with an electronic clutch device and **adjustable mechanical clutch (if present)**, which provides an adjustment of the thrust on the gate, furthermore the **electronic inversion system** (optional) through **encoder** makes out of the Saturn and Boxer motor reducers a safe and reliable operators allowing in a simple way to respect the laws in force in the country where the product will be installed.

MAIN PARTS DENOMINATION

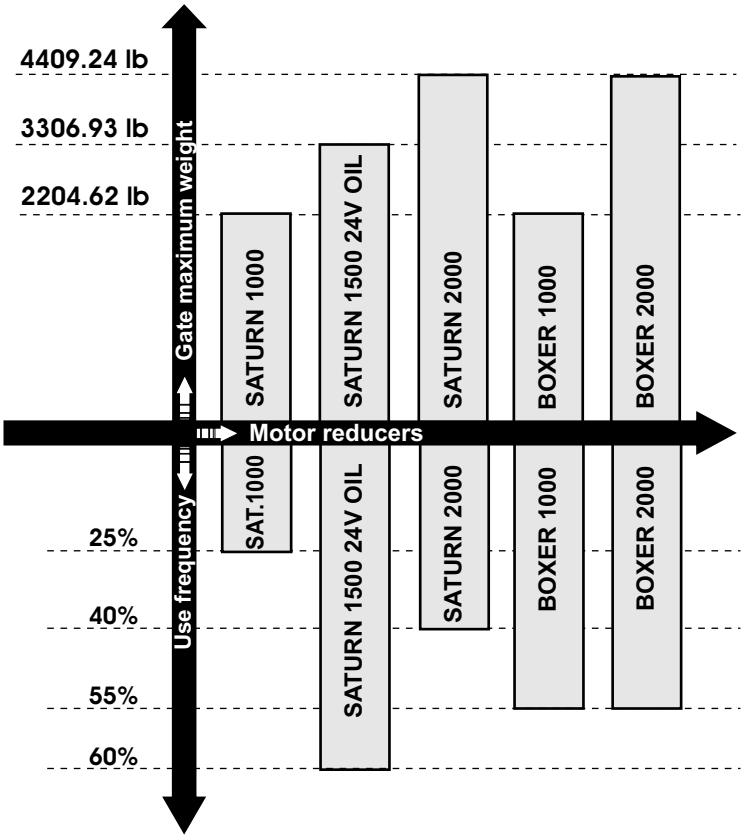
1 Adjustable foundation plate
2 Anchor bolts
3 Pinion protection
4 Adjusting screws cover
5 Pinion
6 Reducer release lever
7 Screw for mechanical clutch adjustment (where present)
8 Electronic unit
9 Oil filling up cap
10 Magnetic encoder



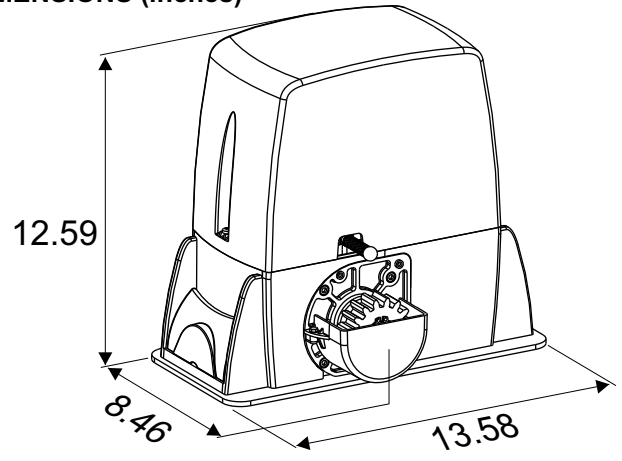
TECHNICAL DATA	*Saturn 1000*	*Saturn 2000*	*Saturn 1400 24V OIL*
Power supply	120V (±5%) 50/60 Hz		
Motor	120V		24V⎓
Power	400W	500W	100W
Absorbed current	3,2 A	5,0 A	
Motor capacitor	50 uf	70 uf	-
Working frequency	25%	40%	60%
Working Temperature	-4°F +131°F		
Thermoprotection	302°F		-
Weight	28.66 lb	31.96 lb	31.52 lb
Anticrushing clutch	Electronic	Electr./Mech.	Electronic
Protection degree	IP55		
Pinion Z16 (Z20) speed	31.16 (36.08) feet/min		Adjustable
Maximum torque	55 Nm	70 Nm	60 Nm
Gate maximum weight	2204.62 lb	4409.24 lb	3086.47 lb
Mechanical clutch	no	yes	-
Limit switch	Inductive or mechanical		

TECHNICAL DATA	*Boxer 1000*	*Boxer 2000*
Power supply	120 V (±5%) 50/60 Hz	
Power	400W	500W
Absorbed current	3,2 A	5,0 A
Motor capacitor	50 uf	70 uf
Working frequency	55%	
Working Temperature	-4°F +131°F	
Thermoprotection	302°F	
Weight	30.86 lb	33.06 lb
Anticrushing clutch	Electronic	Electronic/Mechanical
Protection degree	IP55	
Pinion Z16 (Z20) speed	31.16 (36.08) feet/min	
Maximum torque	55 Nm	70 Nm
Gate maximum weight	2204.62 lb	4409.24 lb
Mechanical clutch	no	yes
Limit switch	Inductive or mechanical	

SATURN - BOXER MOTOR REDUCERS USING GRAPHIC



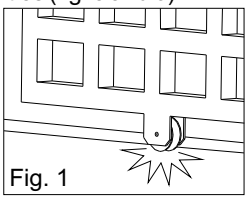
DIMENSIONS (inches)

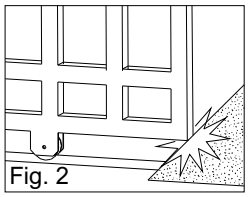


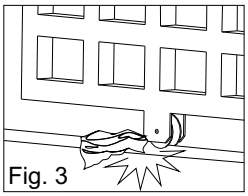
GATE WARNINGS AND PRECAUTIONS

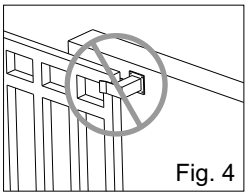
1. GATE ARRANGEMENT

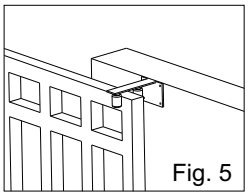
The first thing to check is that the gate is in good running order as follows:
a) The gate is rigid and straight and runs smoothly throughout its travel.
b) that the inferior sliding guide-rail is perfectly straight and horizontal to avoid a derailment of the gate (fig. 1); furthermore it must be free of irregularities and foreign bodies which could obstruct the normal run of the gate (fig. 2 and 3).
c) that the upper guides are not fixed (fig. 4) but furnished with rollers
d) that the distance between the end of the gate (in maximum opening position) and the eventual wall must be at least of 5 inches (fig. 7) which allow the sliding of the gate without difficulties (fig. 5 and 6).
e) The lower support wheels have sealed bearings or grease points.
f) The top guide must be manufactured and installed so that the gate is perfectly upright.
g) Physical gate stops must be fitted to prevent the gate coming out of its guides and track.


Fig. 1


Fig. 2


Fig. 3


Fig. 4


Fig. 5

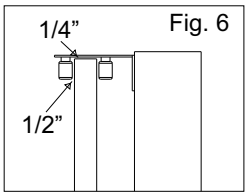


Fig. 6

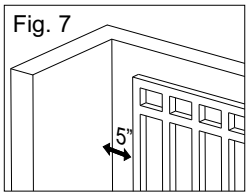
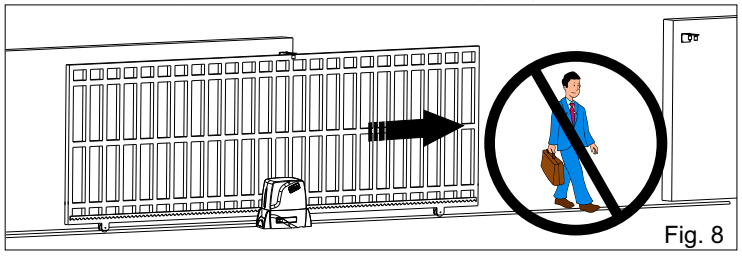


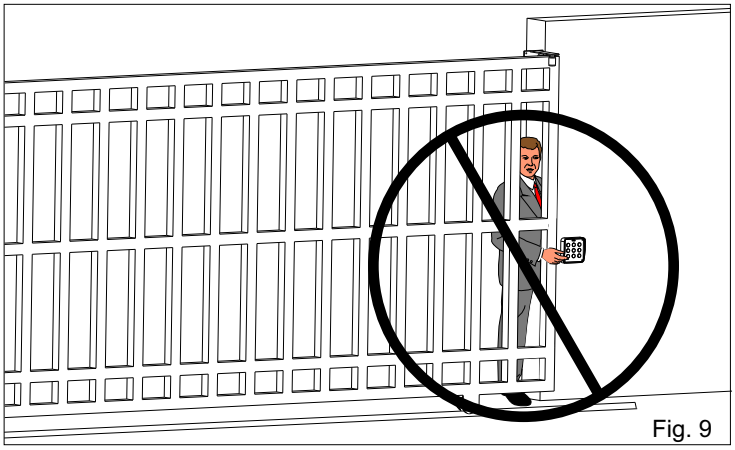
Fig. 7

2. PRECAUTIONS

Saturn and Boxer have been created for the automation of gates used by vehicles only. Pay very much attention to avoid the crossing of the gate path it is very dangerous for pedestrians (fig. 8).


Fig. 8

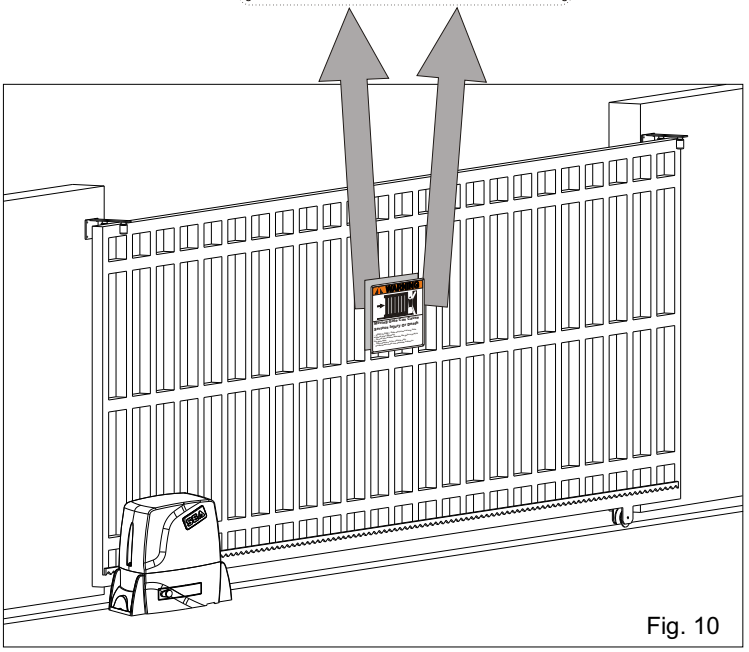
Make sure that no person not belonging to the company somehow activates the automation or acts on it from the outside (fig. 9).


Fig. 9

Install the warning signs, on both sides of the gate which informs the pedestrians about the danger they run when passing or resting in the environment of the gate (fig. 10).

Important:
For a higher security, SEA advices to install infrared photocells.




Fig. 10

3. TYPE OF INSTALLATION

A front installation is the right and only possible installation, it is highly recommended to install two security gate stops on the two extremities of the rail to prevent the gate from derailment (fig. 11).

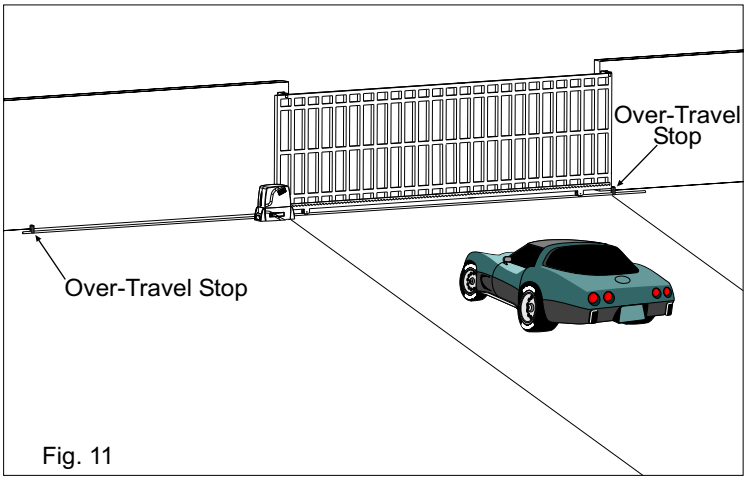


Fig. 11

MECHANICAL INSTALLATION

4. FOUNDATION PLATE ANCHORAGE

To install the foundation plate it is necessary to:

4.1. Prepare a concret basement with the dimensions shown in Fig. 12 where the foundation plate and the anchor bolts will be concreted.

NOTE: It is recommended, gate structure permitting, to lift the foundation plate about 1.96 in. from the ground, in order to avoid eventual water stagnation.

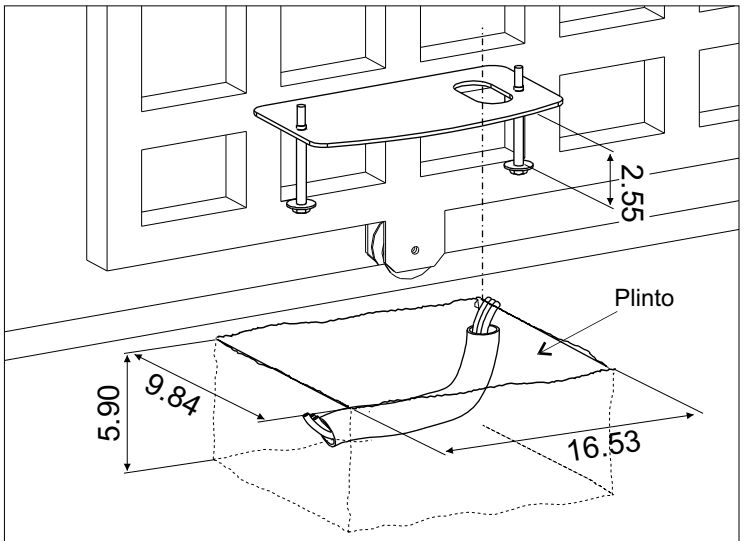


Fig. 12

4.2. Before concreting in the plate insert a flexible plastic duct Ø 1.18 in. Minimum into the special hole of the plate.

4.3. Before concreting in the plate, make sure that it is perfectly leveled and that the distance of 2,28-2,63 in. as shown in Fig. 13 is respected.

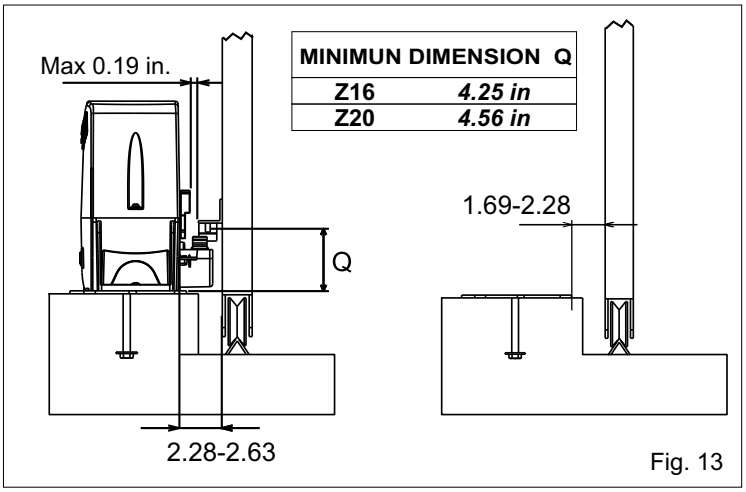


Fig. 13

5. CABLES PASSAGE ARRANGEMENT

Saturn and Boxer are provided with two different holes for electric cables passage.
It's very important to make the high - tension (120V~) cables pass through one hole and the low - tension cables (24V⎓) through the other one (Fig. 14)

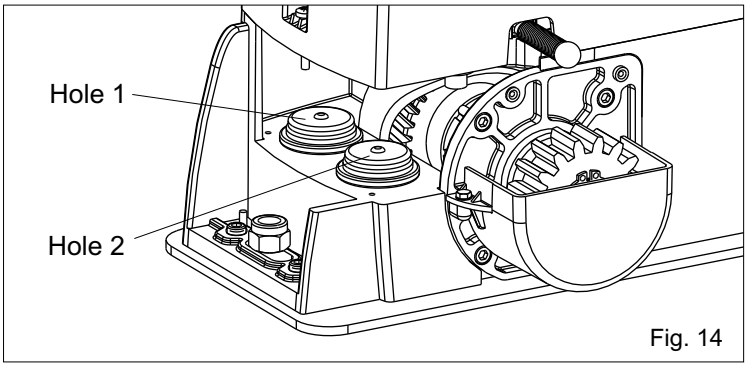


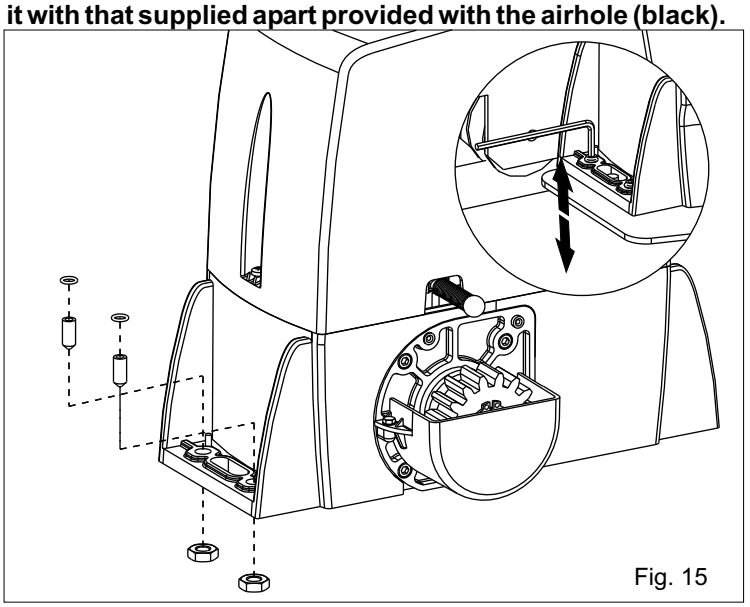
Fig. 14

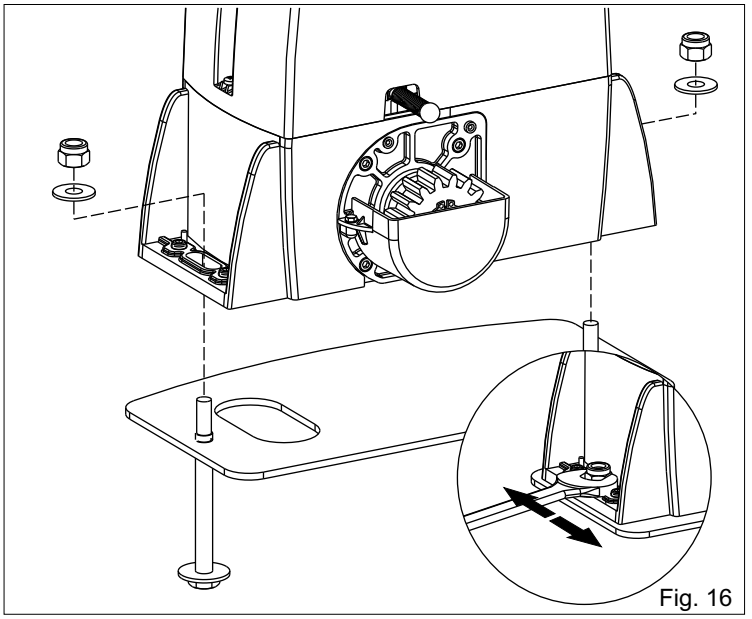
6. FITTING OF THE MOTOR REDUCER

6.1. Insert the 4 grains into the special holes, so that it is possible to adjust the motor reducer height on the plate (Fig. 15). **At the end of installation check if the 4 crub screws are well gripped on the foundation plate.**

6.2. Fix the motor reducer to the foundation plate with the 2 included nuts, adjusting the side position (Fig. 16) so to respect the shown quota in (Fig. 13).

6.3. Remove the closing loading oil cap (red) and substitute it with that supplied apart provided with the airhole (black).


Fig. 15


Fig. 16

MECHANICAL INSTALLATION

7. GEAR RACK MOUNTING

7.1. Release the motor and open the leaf completely;

7.2. Fix on each gear rack element the support pawls with the appropriate lock screws, make sure to put them in the upper part of the hole (Fig. 17) ;

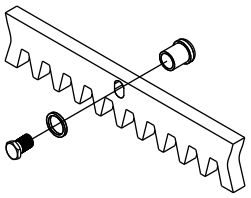


Fig. 17

7.3. Lean the gear rack element on the toothed pinion of the motor in parallel to the ground slideway of the gate, as shown in Fig. 18 and electrically weld the central pawl B to the gate structure (Fig. 19).
Manually move the gate until pawl C is placed corresponding to the pinion and fix it through electric welding. Repeat the same procedure for pawl A after having placed it corresponding to the pinion;

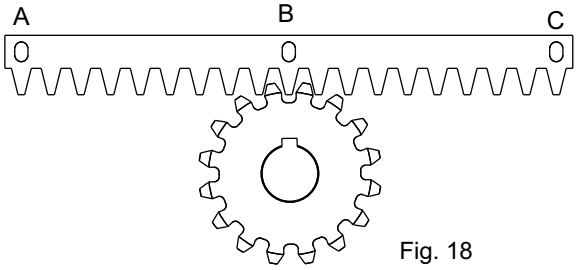


Fig. 18

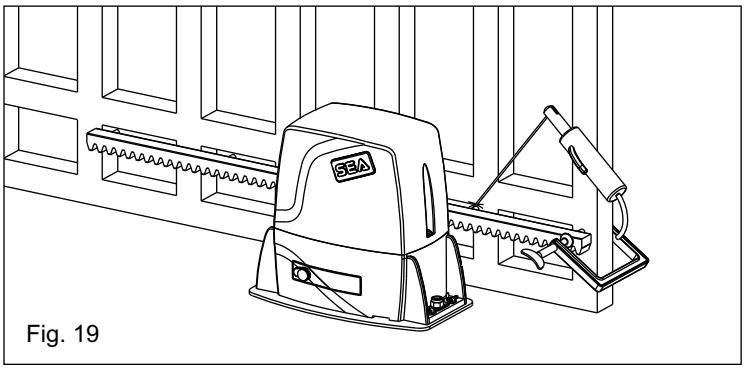


Fig. 19

7.4. Make sure that all the gear rack elements are perfectly aligned and placed correctly (teeth in phase). It's suggested to place two aligned elements infront of a third one as shown in Fig.20;

7.5. Repeat the above described operation for all the remaining gear rack elements which have to be installed;

7.6. To avoid that the door weights down on the pinion (Fig.21) lift up the whole rack about 0.059 in.
Warning: Keep a gap of about 0,019 in. between pinion tooth and gear rack tooth;

7.7. Make sure that the gear rack works at the center of the pinion along all rack elements, if necessary, adjust the distance pieces length.

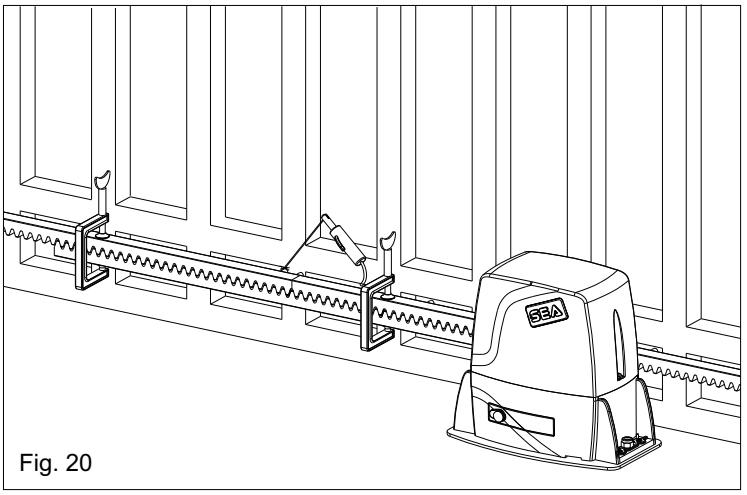


Fig. 20

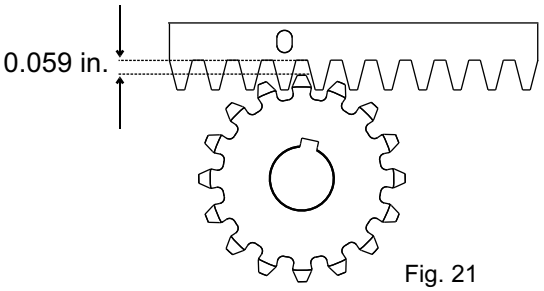


Fig. 21

8. LIMIT SWITCH ADJUSTMENT

8.1. In order to install and adjust the limit switch in opening, follow the below mentioned instructions (Fig. 22):
- Take the gate to complete opening,
- Place the small plate on the gear rack so that the limit switch is (small lever in case of mechanical limit switch (Fig. 23); small pointers placed on the upper part in case of inductive limit switch (Fig. 24)) in corrispondence of pointX which is placed 1.96 in. from the folded side of the small plate (fig. 25) and fix it with the delivered screws (Fig. 26 - Fig.27).

8.2. In order to install and adjust the limit switch in closing, follow the below mentioned instructions (Fig. 22):
- Take the gate to complete closing
- Place the small plate on the gear rack so that the limit switch is in corrispondence of pointX which is placed 1.96 in. from the folded side of the small plate (fig. 25) and fix it with the delivered screws (Fig. 26 - Fig.27).

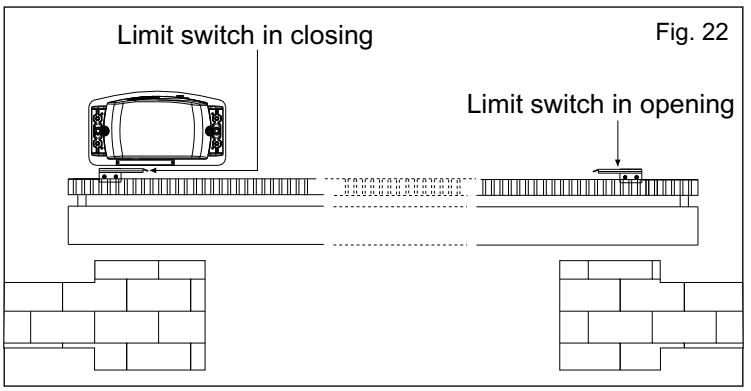


Fig. 22

MECHANICAL INSTALLATION

Mechanical limit switch

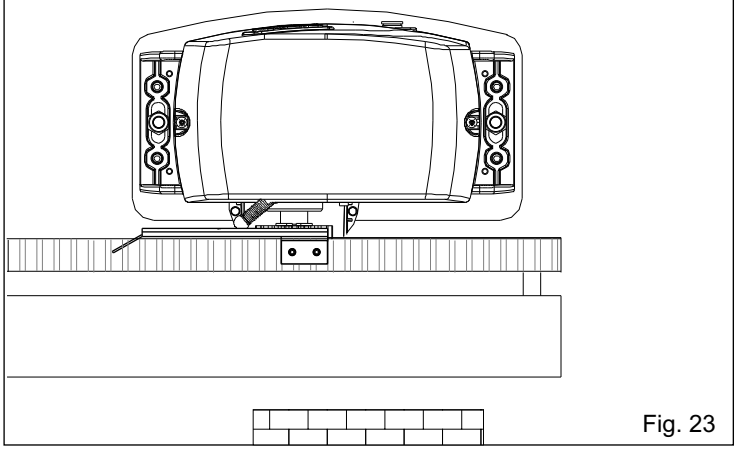


Fig. 23

Inductive limit switch

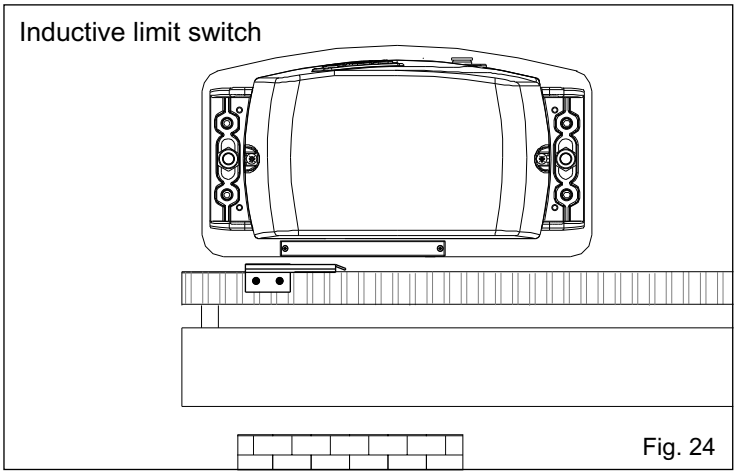


Fig. 24

Position in which must be the spring (mechanical limit switch) or the pointer (inductive limit switch)

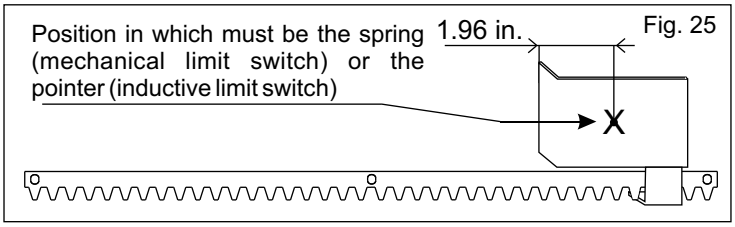


Fig. 25

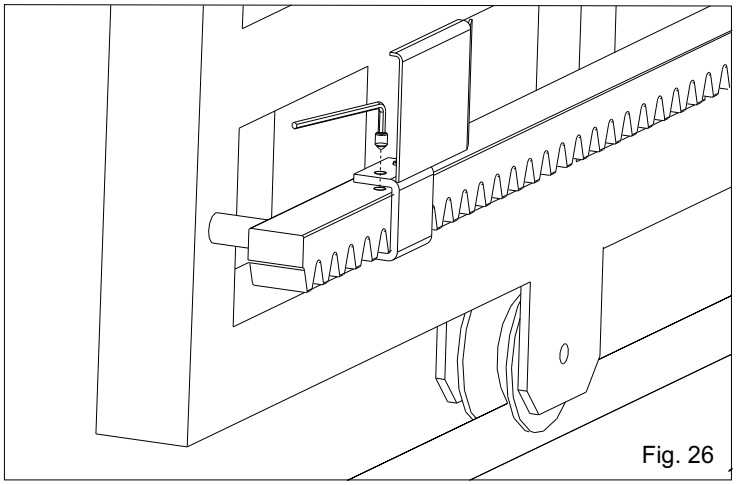


Fig. 26

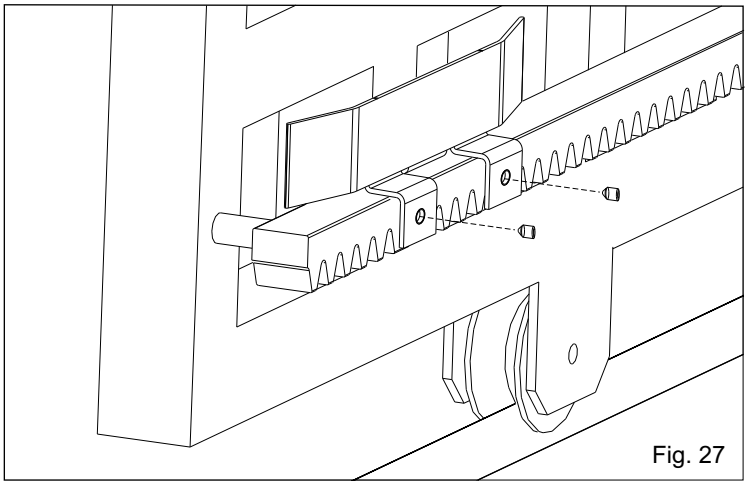


Fig. 27

Adjusting the trimmer for braking, placed on the electronic control unit, it is possible to make the gate stop on the desired position.

9. GROUNDING (Fig. 28 - Fig.29)

Example: Boxer

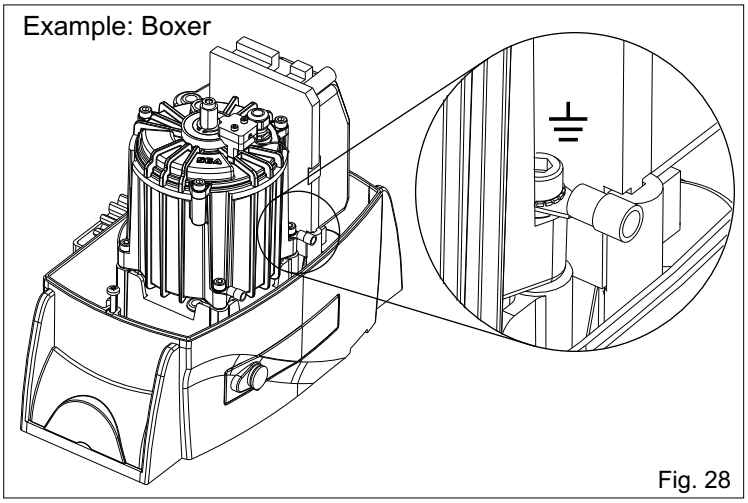


Fig. 28

Example: Saturn 24V

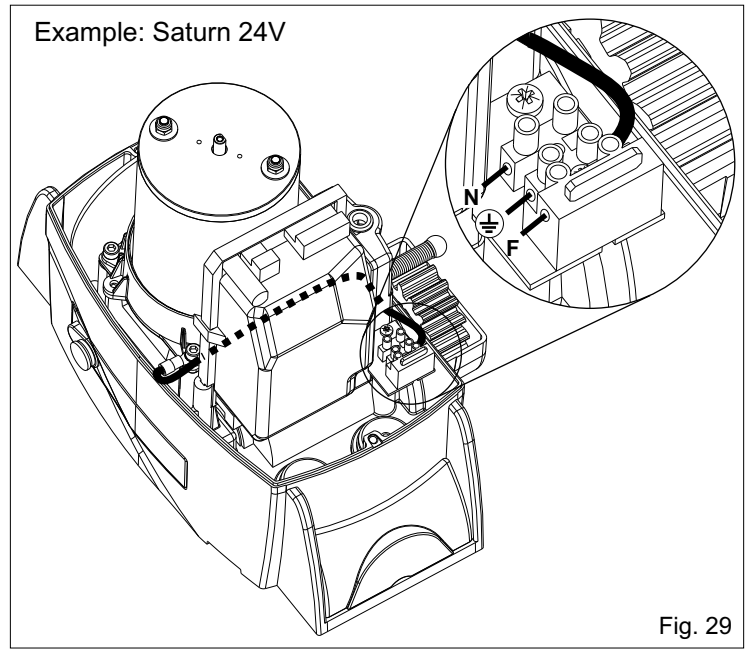


Fig. 29

MECHANICAL INSTALLATION

10. CLUTCH ADJUSTMENT *(Where present)*

10.1. Switch off electric power.

10.2. In order to adjust the clutch it is necessary to:

- Act on the scrub screw "A" (Fig. 30) as follows:
- Turning clockwise = less clutch sensibility / more thrust force
-Counter clockwise = more clutch sensibility / less thrust force

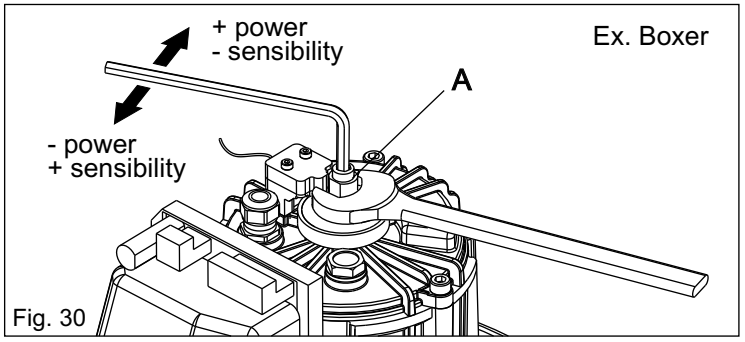
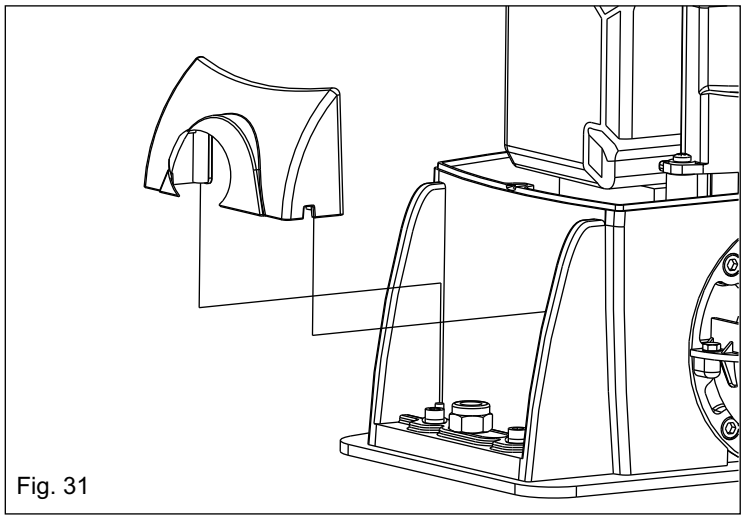


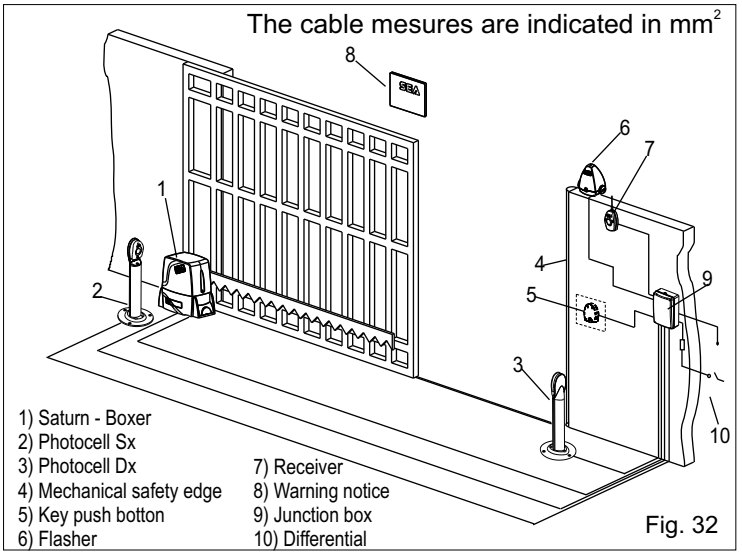
Fig. 30

11. SCREW COVER MOUNTING

At the end of the mechanical installation and after having executed all the required adjustments, mount the two screw covers on the operator as shown in Fig. 31.


Fig. 31

12. ELECTRIC CONNECTIONS OF THE INSTALLATION (Fig. 32)



1) Saturn - Boxer
2) Photocell Sx
3) Photocell Dx
4) Mechanical safety edge
5) Key push botton
6) Flasher
7) Receiver
8) Warning notice
9) Junction box
10) Differential

Fig. 32

13. RISK EXAMINATION

The points pointed by arrows in Fig. 33 are potentially dangerous. The installer must take a thorough risk examination to prevent crushing, conveying, cutting, grappling, trapping so as to guarantee a safe installation for people, things and animals (Re. Laws in force in the country where the installation has been made.)

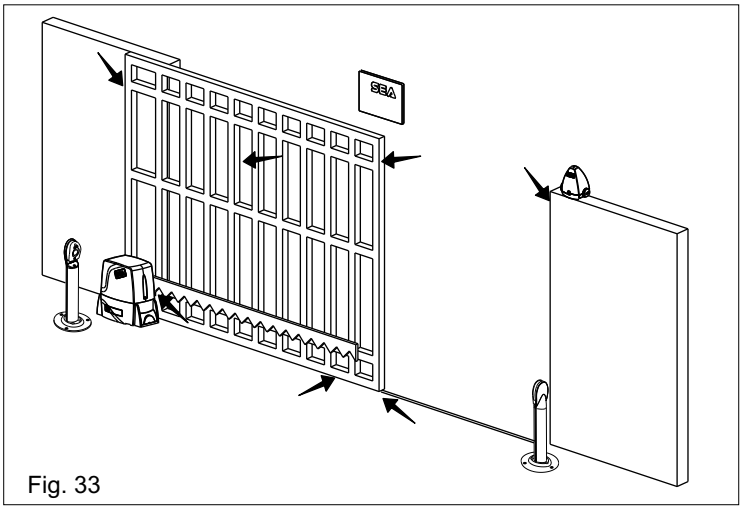


Fig. 33

14. NOTICE

SEA USA Inc. can not be deemed responsible for any damage or accident caused by product breaking, being damages or accidents due to a failure to comply with the instructions herein. The guarantee will be void and the manufacturer responsibility will be nullified if SEA USA Inc. original spare parts are not being used. The electrical installation shall be carried out by a professional technician who will release documentation as requested by the laws in force. Packaging materials such as plastic bags, foam polystyrene, nails etc must be kept out of children's reach as dangers may arise.

15. PERIODIC MAINTENANCE

Check the oil level (where present) (Use the oil level rod)	Annual
Change oil	4 years
Check the release functionality	Annual
Check the clutch functionality (where present)	Annual
Check the distance between pinion and gear rack (0,059 in.)	Annual
Check the usury status of pinion and gear rack	Annual
Check the fixing screws	Annual
Check the connection cables integrity	Annual
Check limit switch functionality and status in opening and closing and the related small plates	Annual

All the above described operations must be done exclusively by an authorized installer.

MECHANICAL INSTALLATION

Page for both instaler and user

16. RELEASE SYSTEM FOR SATURN

16.1. To release procede as follows:
- Insert the key, **push** and turn about 90° clockwise (Fig. 34).
- Pull the release lever until it stops, about 90° (Fig. 35).

Note: when pulling the release lever the electronic control unit receives a stop impulse through the micro-switch placed on the inside (if present).

16.2. To relock procede as follows:
- Push the release lever to complete closing.
- Rotate the key counter-clockwise and extract it.

Once the lock has been restored the electronic control unit is reactivated (only if a micro-switch is mounted) .

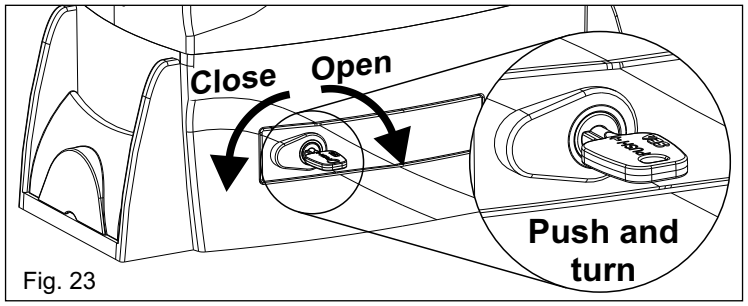
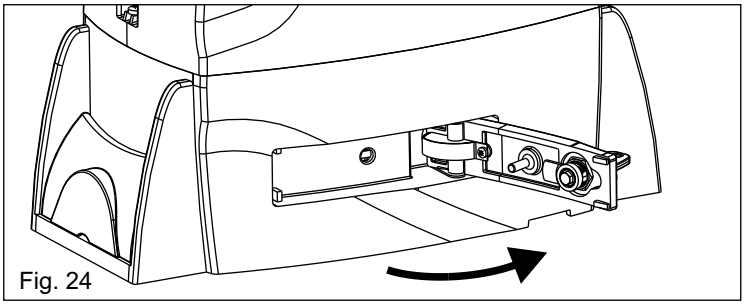


Fig. 23


Fig. 24

17. RELEASE SYSTEM FOR BOXER

17.1. In order to release do as follows:
-Open the lock cover, insert the key and rotate it 90° clockwise (Fig. 36).
- Pull the release lever until it stops, about 90° approximately (Fig. 37).

Note: when you pull the release lever, the electronic control unit receives a stop impulse thanks to a micro-switch placed inside.

17.2. In order to relock do as follows:
- Push the release lever to complete closing.
- Rotate the key counter-clockwise and extract it.
- Close the protective lock cover.

Once the lock has been restored the electronic control unit reactivates

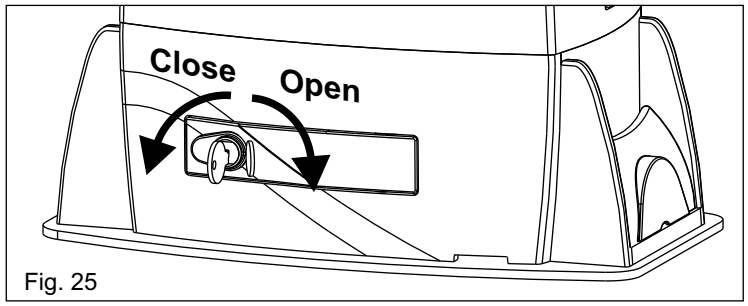
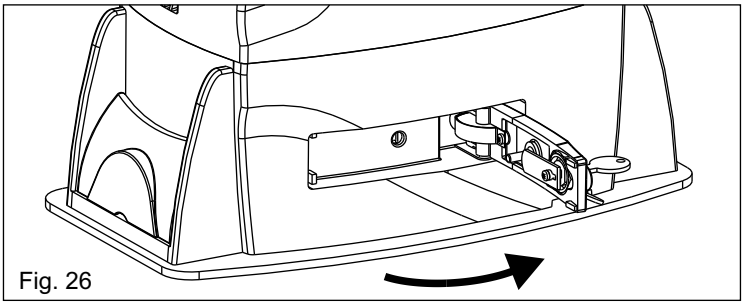


Fig. 25


Fig. 26

SALES CONDITIONS

GENERAL WARNING: Installation must be realized using parts and accessories approved by SEA. SEA is not responsible for incorrect installations and/or non-compliance with safety standards according to the law in-force. SEA is in no way liable for any damages and/or malfunctioning due to using parts and accessories non-compliant with the UL325 safety standards.
ORDERS: Orders are processed upon approval by SEA. Buyers must confirm orders by sending a written Purchase Orders to SEA. Purchase Orders are intended as confirmation of orders and binding for the buyer, which accepts SEA sales condition.

QUOTATION: Quotation and special offers with a non-specified duration expires automatically after 30 days.

PRICES: Prices are based on the Price List in force. Discounts and quotation from Sales Rep. and other selling branches must be approved by SEA. Prices are F.O.B SEA Warehouse in Miami and do not include shipments costs. SEA reserves the right to modify the price list at any time and provide notice to its sales network.

PAYMENT: Method of payments and terms are notified by SEA and displayed on the commercial invoice.

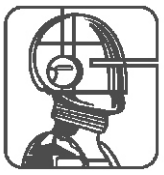
DELIVERY: The delivery time on the invoice is not binding and represents an estimated delivery. Shipments costs will be charged to the buyer and SEA is not responsible for delays and/or damages occurred to the products during shipment.

COMPLAINS: Complains and/or claims must be notified to SEA within 7 business days after receiving the products. Claims and complains must be supported by original documents. Customer must contact the factory for instructions and authorization. Merchandise returned for credit must be current, uninstalled and unused and returned in its original packaging. Freight must be pre-paid on all authorized returns.

REPAIRS: Repairs and parts are subject to the availability in stock. Shipment of products for repairs must be pre-paid by the customer. Products shipped without authorization, sender's details and description of the problems will be refused. Customers must contact SEA for instructions.

WARRANTY: for the original buyer only:
Hydraulic and oil-bath motors: 36 months warranty from the date of invoice on manufacturing, assembling and workmanship defects.
Electro-mechanic motors and electronic control systems: 24 months warranty from the date of invoice on manufacturing, assembling and workmanship defects.
Lepus and Full Tank Standard model: 60 months warranty from the date of invoice on manufacturing, assembling and workmanship defects.
No warranty will be recognized for damages due to incorrect installation and/or improper use for which the product was intended. SEA warranty obligations shall be limited to repair or replace the defective product/parts at SEA option, upon examination of the products by SEA technical Staff. All replaced parts must remain property of SEA. The warranty status of the product remains an unquestionable assessment of SEA. Buyer must ship pre-paid defective products. Products under warranty will be returned pre-paid by SEA. Recognized defects, whatever their nature, will not produce any responsibility and/or damage claims to SEA USA Inc and SEA s.r.l. Warranty shall not cover any required labor activities. Warranty will in no case be recognized if alterations and any other changes will be found on products. Warranty will not cover damages caused by carriers, expendable materials and faults due to improper use with the products specifications. No indemnities are recognized during repairing and/or replacing of the products under warranty. SEA USA Inc. and SEA s.r.l. decline any responsibility for damages to person and objects deriving from non-compliance with safety standards, installation instructions or use of the products sold. It is intended that warranty will be recognized only on products bought through the SEA authorized network. Products must be installed by professionals. No warranty will be recognized if products are installed directly by the final user. Warranty does not apply in case of unexpected events such as fire, flood, electrical power surge, lightning, vandalism and others.

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