



SEA[®] USA

Gate Operators & Traffic Barriers



SATURN - BOXER

OPERATORS FOR SLIDING GATES



SEA USA Inc.

10850 N.W. 21st - unit 160 - Doral - Miami
FLORIDA (FL) 33172

Phone: ++ 1 - 305.594.1151

www.sea-usa.com

UL 325 ED. 7TH FOR GATE OPERATORS

GENERAL SAFETY PRECAUTIONS

The following precautions are an integral and essential part of the product and must be supplied to the user:

Read them carefully as they contain important indications for the safe installation, use and maintenance.

1. These instructions must be kept and forwarded to all possible future users of the system.
2. This product must be used only for that which it has been expressly designed.
3. Any other use is to be considered improper and therefore dangerous.
4. The manufacturer cannot be held responsible for possible damage caused by improper or unreasonable use.
5. Avoid operating in the proximity of the hinges or moving mechanical parts.
6. Do not enter the path of the moving gate while in motion.
7. Do not obstruct the motion of the gate as this may cause a situation of danger.
8. Do not allow children to play or stay within the path of the moving gate.
9. Keep remote control or any other control devices out of the reach of children, in order to avoid possible involuntary activation of the gate operator.
10. In case of break down or malfunctioning of the product, disconnect from the main power source. Do not attempt to repair or intervene directly, contact only qualified personnel for repair.
11. Failure to comply with the above may create a situation of danger.
12. All cleaning, maintenance or repair work must be carried out by qualified personnel.
13. In order to guarantee that the system works efficiently and correctly it is important to have the manufacturer's instructions on maintenance of the gate and operator carried out by qualified personnel.
14. In particular, regular checks are recommended in order to verify that the safety devices are operating correctly.

All installation, maintenance and repair work must be documented and made available to the user.

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 manual 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. Every gate operator installation **MUST** have a minimum of two independent means of protection devices against entrapments, such as edge sensors and photo beams more in particular in places where the risk of entrapments is more likely to occur
9. **SAVE THESE INSTRUCTIONS**

GENERAL SAFETY INFORMATION

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 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:

IMPORTANT INSTALLATION INSTRUCTIONS

1. Install the gate operator only when:

- a. The operator is appropriate for the construction of the gate and the usage Class of the gate.
- b. All openings of a horizontal slide gate are 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 inches (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.
- c. All areas of the moving vertical pivot gate panel from the bottom of the gate to the top of the gate or a minimum of 72 inches (1.83 m) above grade, whichever is less, that pass by a fixed stationary object, and in the area of the adjacent fence that the gate covers during the travel of the gate, shall be designed, guarded or screened to prevent a 2-1/4 inches (57.2 mm) diameter sphere from passing through such areas.
- d. All exposed pinch points are eliminated or guarded.
- e. Guarding is supplied for exposed rollers.
- f. The operator instructions shall list the maximum number of open and close entrapment protection devices capable of being connected to the operator.

2. The operator is intended for installation only on gates used for vehicles. Pedestrians must be supplied with a separate access opening. The partial 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.

3. 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.

4. 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.

5. For a gate operator utilizing Type D entrapment protection:

- a. The gate operator controls must be placed so that the user has full view of the gate area when the gate is moving.
- b. The placard shall be placed adjacent to the controls
- c. An automatic closing device (such as a timer, loop sensor, or similar device) shall not be employed
- d. No other activation device shall be connected.

6. Permanently mounted controls intended for user activation must be located at least 6 ft (1.83 m) 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.

7. 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.

8. A minimum of two (2) WARNING SIGNS shall be installed, in the area of the gate. Each placard is to be visible by persons located on the side of the gate on which the placard is installed.

9. FOR GATE OPERATORS UTILIZING TYPE B1 NON-CONTACT ENTRAPMENT PROTECTION:

- a. See instructions on the placement of non-contact sensors for each Type of application
- b. 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
- c. 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

10. FOR A GATE OPERATOR UTILIZING TYPE B2 CONTACT ENTRAPMENT PROTECTION:

- a. 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 post-mounted both inside and outside of a vehicular horizontal slide gate.
- b. One or more contact sensors shall be located at the bottom edge of a vehicular vertical lift gate.
- c. One or more contact sensors shall be located at the pinch point of a vehicular vertical pivot gate.
- d. 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.

- e. 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 is not obstructed or impeded by building structures, natural landscaping or similar obstruction. A wireless contact sensor shall function under the intended end-use conditions.
- f. 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 4 inches (101,6 mm), but less than 16 inches (406 mm) above the ground at any point in its arc of travel, one or more contact sensors shall be located on the bottom edge.
- g. For a vertical barrier (arm) operator utilizing Type B2 contact entrapment protection, one or more contact sensors shall be located at the bottom edge of a vertical barrier (arm).
- h. One or more contact sensors shall be located where the risk of entrapment or obstruction exists on a bifold gate, such as:
 - i) At the inner and outer leading edge.
 - ii) Between the outer column panel and the inner bifold panel of an opening bifold gate.
 - iii) Between the outer/column panel and any obstruction within 16 inches (406 mm) of the gate panel when it is in the fully open position.
 - iv) At hinge points depending on the construction of the gate.
 - v) On the bottom edge(s), if the bottom edge(s) of a bifold gate is/are greater than 4 inches (152 mm) but less than 16 inches (406 mm) above the ground at any point in its arc or travel.

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

UL 325 ENTRAPMENT PROTECTION REQUIREMENTS

VEHICULAR GATE OPERATOR CLASSES

Residential Vehicular Gate Operator-Class I: A vehicular gate operator (or system) intended for use in garages or parking areas associated with a residence of one-to-four single families

Commercial/General Access Vehicular Gate Operator-Class II: A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units), hotel, garages, retail store, or other buildings accessible by or servicing the general public

Industrial/Limited Access Vehicular Gate Operator-Class III: A vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not accessible by or intended to service the general public

Restricted Access Vehicular Gate Operator-Class IV: A vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not accessible by or intended to service the general public

THIS VEHICULAR GATE OPERATOR MUST BE INSTALLED WITH AT LEAST TWO INDEPENDENT ENTRAPMENT PROTECTION MEANS AS SPECIFIED IN THE TABLE BELOW

GATE OPERATOR CATEGORY <i>(Effective January, 12 2016)</i>		
ENTRAPMENT PROTECTION TYPES	HORIZONTAL SLIDE VERTICAL LIFT - VERTICAL PIVOT	SWING VERTICAL BARRIER (ARM)
	A, B1*, B2* or D	A, B1*, B2*, C or D
TYPE A	Inherent entrapment protection system	
TYPE B1	Non-contact sensors such as photoelectric sensors or equivalents	
TYPE B2	Contact sensors such as edge sensors or equivalent devices	
TYPE C	Inherent force limiting, inherent adjustable clutch or inherent pressure relief device	
TYPE D	Actuating device requiring constant pressure to maintain opening or closing motion of the gate	

NOTES:

1. The same type of device shall not be used for both entrapment protection means. Use of a single device to cover both the opening and closing directions is in accordance with the requirement; however, a single device is not required to cover both directions. Tice installer is required to install entrapment protection devices in each entrapment zone

2. **FOR VERTICAL BARRIERS ONLY:** Barrier gate operators (arm) that is not intended to move toward a rigid object closer than 16 inches (406 mm) are not required to be provided with a means of entrapment protection

*** B1 and B2 means of entrapment protection MUST be MONITORED**

PERIODIC MAINTENANCE

TURNING OFF THE POWER

Clean and grease parts in movement (wheels, counter-connecting rod, release, etc.)	YEARLY
Check for corroded parts and replace if necessary	YEARLY
Check if the screws and all mounting hardware are properly tighten	YEARLY
Check the conditions of wear and tear of the devices in movement	YEARLY
Check the correct drain of the rainwater	YEARLY
Check the integrity of the connection cables	YEARLY
Inspect the track for any signs of cracking or separation	YEARLY
Ensure that the gate moves freely	YEARLY

BY MAIN SOURCE TURNED-OFF

Check the battery conditions and be sure that connections are free of corrosion	YEARLY
Verify the functionality of the battery backup, or power failure option	YEARLY

TURNING ON THE POWER

Check and confirm the proper operation of all safety devices (photocells, edge sensors etc)	YEARLY
Check and confirm the operation of all installed accessories	YEARLY
Check and confirm the operation of the manual release	YEARLY

ALL THE ABOVE DESCRIBED OPERATIONS MUST BE MADE EXCLUSIVELY BY AN AUTHORIZED INSTALLER

NOTICE

As for misunderstandings that may arise refer to your area distributor or call our help desk. These instructions are part of the device and must be kept in a well-known place. The installer shall follow the provided instructions thoroughly. SEA products must only be used to automate doors, gates and wings. Any initiative taken without SEA USA Inc. explicit authorization will preserve the manufacturer from whatsoever responsibility. The installer shall provide warning notices on not assessable further risks. SEA USA Inc. in its relentless aim to improve the products, is allowed to make whatsoever adjustment without giving notice. This doesn't oblige SEA to up-grade the past production. SEA USA Inc. cannot 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.

TO RESPECT THE LAWS IN FORCE IT IS RECOMMENDED TO USE THE ENCODER WITH THE ELECTRONIC CONTROL UNIT

CHANGES TO UL 325 ED. 7TH FOR GATE OPERATORS

Changes were made to the 7th edition to clarify the minimum number of entrapment protection sensors that are required to meet the standard. Since year 2000, UL 325 has required that gate operators be installed with two independent means of entrapment protection and that each means must protect both directions of gate travel.

For 2016, a monitoring requirement for external sensors was added to block fully automatic operation until the minimum number of entrapment protection sensors have been installed.

The wording of the 7th Edition of UL 325 has been clarified to resolve the differing interpretations regarding the minimum number of sensors required for each type of gate: the minimum number of external entrapment protection sensors (combination of photo eyes and edge sensors) required in a typical automated gate installation depends on the type of operator, the type of gate and the number of entrapment zones that must be protected. See the table below (added to the 7th Edition of UL 325).

Note: For most gate operators, the first means of entrapment protection is the inherent sensor and the second means of entrapment protection is the external entrapment protection sensors the installer must add

MINIMUM QUANTITY OF ENTRAPMENT PROTECTION MEANS

GATE TYPE	OPENING	CLOSING
HORIZONTAL SLIDE GATE	2	2
HORIZONTAL SWING GATE	2*	2*
VERTICAL PIVOT GATE	2	2
VERTICAL LIFT GATE	1	2

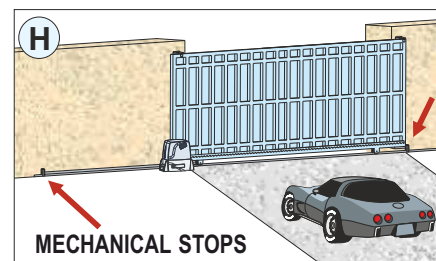
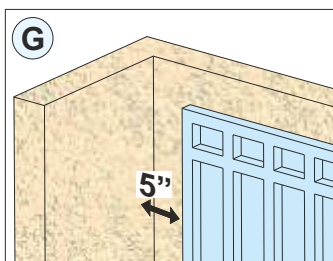
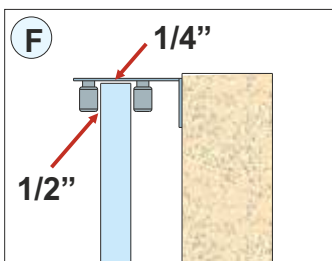
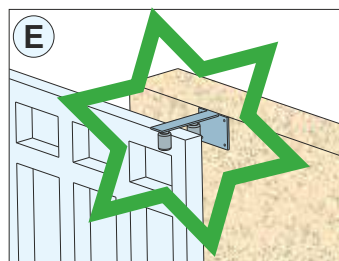
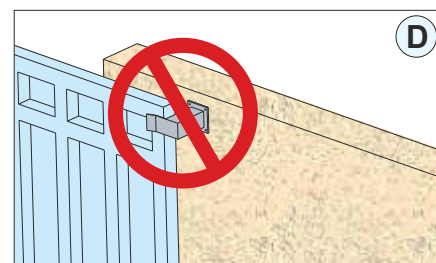
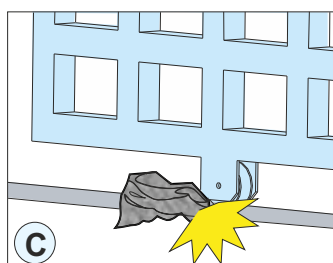
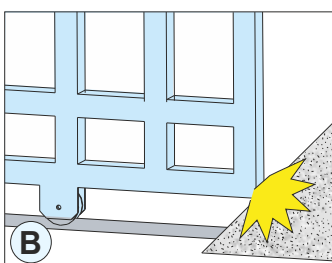
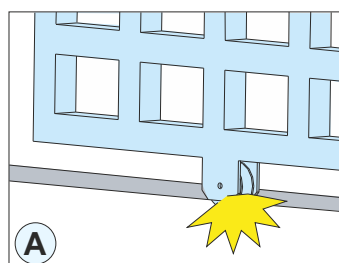
** For a horizontal swing gate operator, at least two independent entrapment protection means are required in each direction of travel. Except, if there is no entrapment zone in one direction of travel, only one means of entrapment protection is required in that direction of travel; however, the other direction must have two independent entrapment protection means.*

Exception: A Barrier Arm is not required to be provided with means to protect against entrapment, unless the arm moves toward a rigid object closer than 16 inches.

GATE WARNINGS AND PRECAUTIONS

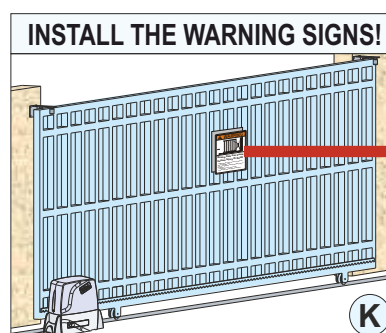
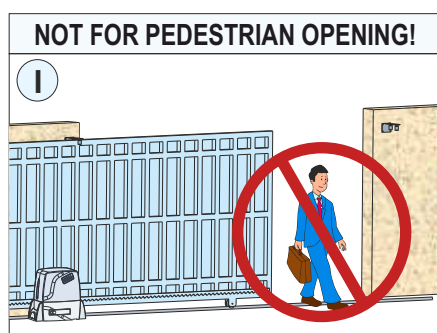
Check that the gate is in good running order before the installation:

- the gate must be rigid and straight and must run smoothly throughout its travel
- the length of the gate must comply with the max. length recommended for each operator model
- the weight of the gate must comply with max. weight recommended for each operator model
- the lower gate slideway must be perfectly straight, horizontal and without any obstacles which could obstruct the gate sliding (see images A - B - C)
- the lower sliding wheels must be equipped with greasable or watertightened bearings
- the upper gate slideway must be perfectly straight and placed so that the gate is in vertical position
- the upper gate slideway must be provided with rollers (see images D - E)
- respect the distances in the image F; the distance between the end of the gate (in full opening position) and the eventual wall must be of **5 inches** at least, to allow the complete sliding without impact (G)
- the mechanical stops must always be installed in order to avoid any possible derailment of the gate



WARNINGS

- SEA operators have been designed for the automation of gates for vehicle use only**
Be aware to avoid the crossing of the gate path because it is very dangerous for pedestrians
- Make sure that no person could activate the automation or act on it from the outside**
- Install the warning signs on each side of the gate and in avisible zone** to inform the pedestrians about the danger they run when passing or resting in the environment of the gate
- For more safety SEA advises to install mechanical stops and infrared photocells**

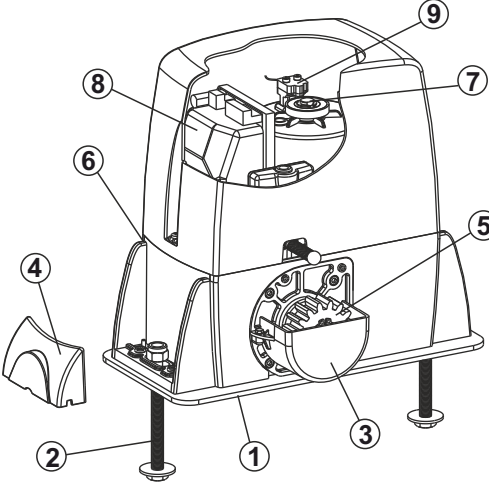
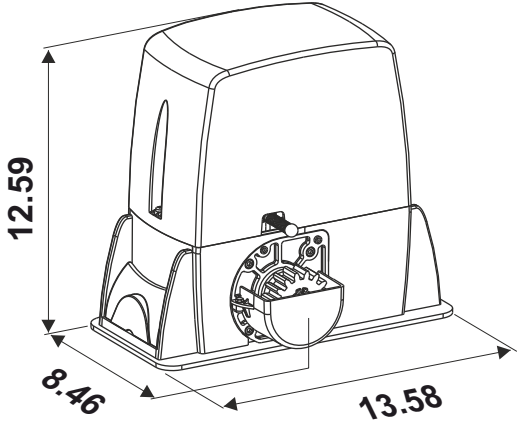


GENERAL FEATURES

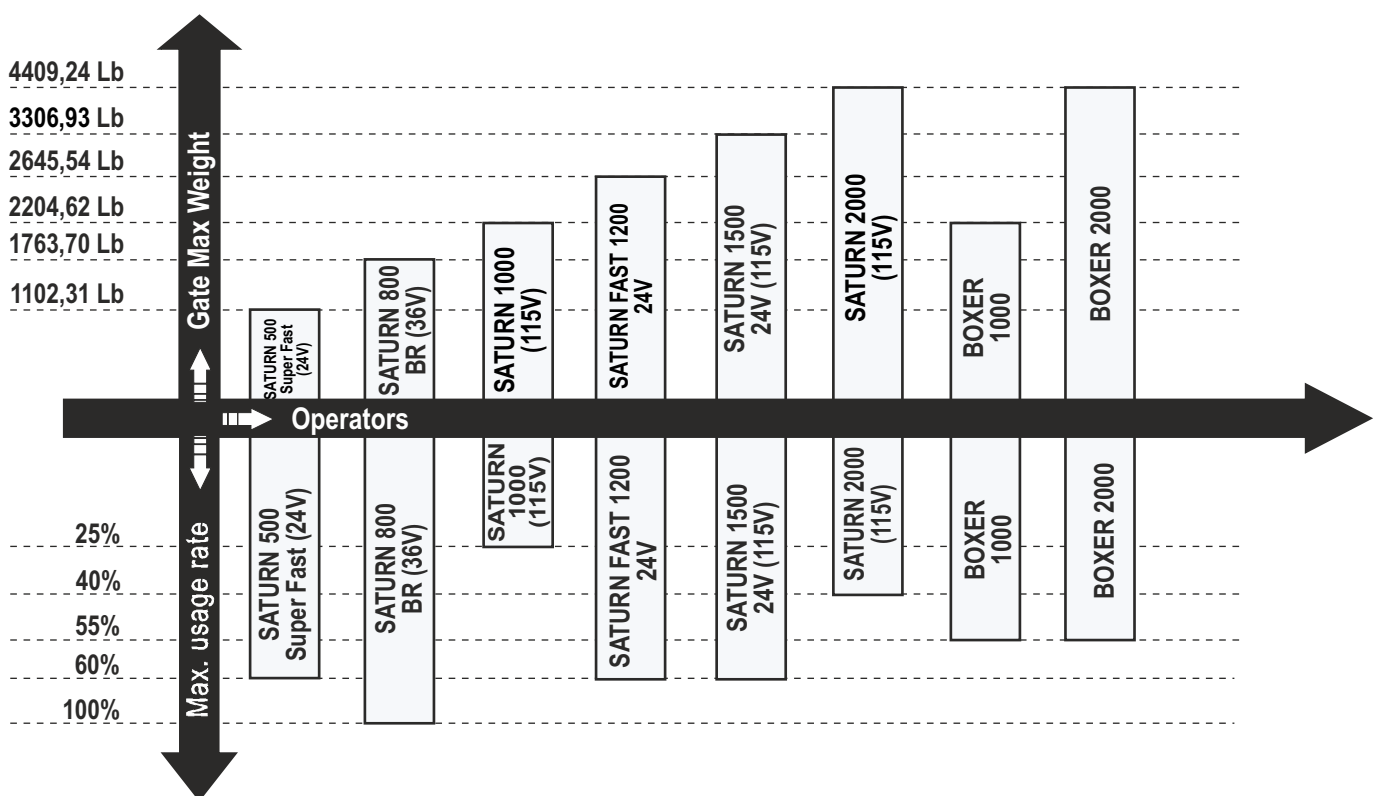
SATURN and the **BOXER** are gearmotors designed for the automation of sliding gates.






The operators are available in **version with grease** lubrication or in **oil bath version**.






The irreversibility of the gearmotor allows a perfect and safe closing of the gate avoiding the installation of the electric lock. Furthermore, the **release system** - placed on the front part of the external box - allows the manual opening and closing in the event of a power failure. The operators are also equipped with an **electronic clutch device** (some versions with **adjustable mechanical clutch**) which guarantees the control of the gate thrust. Moreover, the **electronic inversion system** through **ENCODER (optional)**, makes **SATURN** and **BOXER** safe and reliable operators and allows to comply with the regulations in force in those Countries where the products are installed

COMPONENTS		DIMENSIONS (inches)
<p><i>E.g. Saturn</i></p>  <p>Fig. 1</p>	<ol style="list-style-type: none"> Adjustable foundation plate Anchor bolts Pinion protection Adjusting screws cover Pinion Release lever Adjusting screw for mechanical clutch (Optional) Electronic control unit Magnetic encoder (Optional) 	 <p>Fig. 2</p>

APPLICATION CHART



TECHNICAL DATA	SATURN 1000	SATURN 2000	BOXER 1000	BOXER 2000
Power Supply	115V~ ± 5% - 50/60 Hz		230V~ ± 5% - 50/60 Hz	
Motor power	400W	700W	350W	700W
Absorbed current	3,2 A	5,0 A	1,7 A	1,8 A
Starting capacitor	50 μF	70 μF	20 μF	25μF
Usage rate	25%	40%	70%	
Operating temperature	-4°F  +131°F 		-4°F  +131°F 	
Thermal protection	302°F		302°F	
Operator weight	28,66 Lb	31,96 Lb	30,86 Lb	33,06 Lb
Anti-crushing clutch	ELECTRONIC	ELECT./MECH.	ELECTRONIC/MECHANICAL	
Protection class	IP55		IP55	
Z16 (Z20) pinion speed	31,16 (36,08) ft/min		0,15 (0,18) m/s	
Maximum torque	40,5 lbft	51,6 lbft	40,5 lbft	51,6 lbft
Gate max. weight	2204,62 Lb	4409,24 Lb	2204,62 Lb	4409,24 Lb
Gate max. length	32,80 feet		32,80 feet	
Mechanical clutch	No	YES	OPTIONAL	
Limit switch	INDUCTIVE OR MECHANICAL		INDUCTIVE OR MECHANICAL	
 THE USAGE RATE IS VALID ONLY FOR THE FIRST OPERATING HOUR AND 20°C ROOM TEMPERATURE				

TECHNICAL DATA	SATURN 800 BR 36V BRUSHLESS	SATURN 500 SUPER FAST 24V	SATURN 1200 FAST 24V	SATURN 1500 24V
Power Supply	115V~ ± 5% - 50/60 Hz			
Motor power	36V 	24V 		
Absorbed power	330 W	100W		
Usage rate	100%	60%		
Operating temperature	-4°F  +131°F 			
Operator weight	30,86 Lb	31,52 Lb		
Anti-crushing clutch	ELECTRONIC			
Protection class	Ip55			
Pinion speed	(Z16) 55,12 ft/min	(Z20) 78,6 ft/min	(Z16) 62,94 ft/min	(Z13) 49,2 ft/min
Maximum torque	33,2 lbft	33,2 lbft	44,3 lbft	48 lbft
Gate max. weight	1763,70 Lb	1102,31 Lb	2645,54 Lb	3306,93 Lb
Gate max. length	32,80 feet			
Limit switch	INDUCTIVE OR MECHANICAL			
 THE USAGE RATE IS VALID ONLY FOR THE FIRST OPERATING HOUR AND 20°C ROOM TEMPERATURE				

NOTE FOR INVERTER VERSIONS	SATURN 1000/2000 INVERTER		BOXER 1000/2000 INVERTER	
THE INVERTER VERSIONS OF SATURN AND BOXER HAVE DIFFERENT MAX. SPEED VALUES ACCORDING TO THE PINION IN USE	PINION Z13	Max. 0,21 m/s	PINION Z13	Max. 0,21 m/s
	PINION Z16	Max. 0,266 m/s	PINION Z16	Max. 0,266 m/s
	PINION Z20	Max. 0,33 m/s	PINION Z20	Max. 0,33 m/s

1 - GATE ARRANGEMENTS

Before the installation, check that all gate parts (fixed and mobile) have a resistant and non-deformable structure; also make the following checks:

- The gate must be rigid and compact;
- The lower gate slideway must be perfectly straight, horizontal and without any obstacles which could obstruct the gate sliding;
- The lower sliding wheels must be equipped with greasable or watertightened bearings;
- The upper slideway must be perfectly straight and placed so that the gate could be in vertical position;
- The mechanical stops of the gate must always be installed in order to avoid any possible derailment*

2 - INSTALLATION OF THE FOUNDATION PLATE

To install the foundation plate it is necessary to:

2.1. Prepare a concrete basement according to the dimensions shown in Fig. 3; The foundation plate and the anchor bolts must be concreted inside the basement

NOTE: *IF ALLOWED BY THE GATE STRUCTURE, IT IS RECOMMENDED TO LIFT THE FOUNDATION PLATE OF ABOUT 1,96 inches FROM THE GROUND, IN ORDER TO AVOID EVENTUAL WATER STAGNATION.*

2.2. Before cementing the plate insert a flexible plastic pipe of at least **1,18 inches** in diameter into the special hole of the plate

2.3. Before concreting the plate, make sure that it is perfectly levelled and that the distance of **2.28 - 2.63 inches** as shown in Fig. 4 is respected

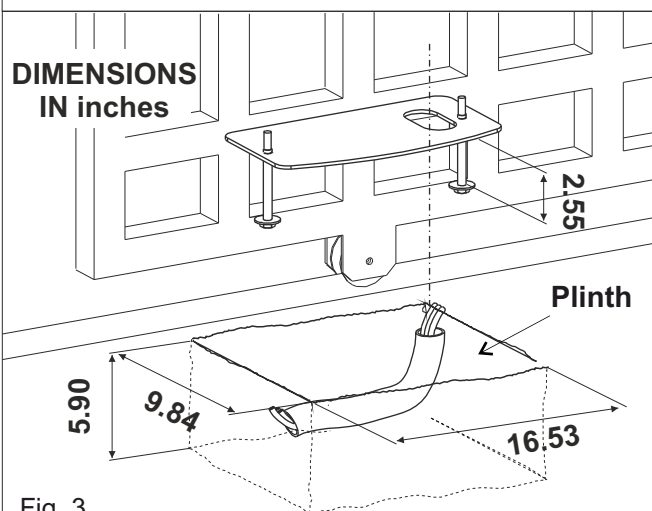


Fig. 3

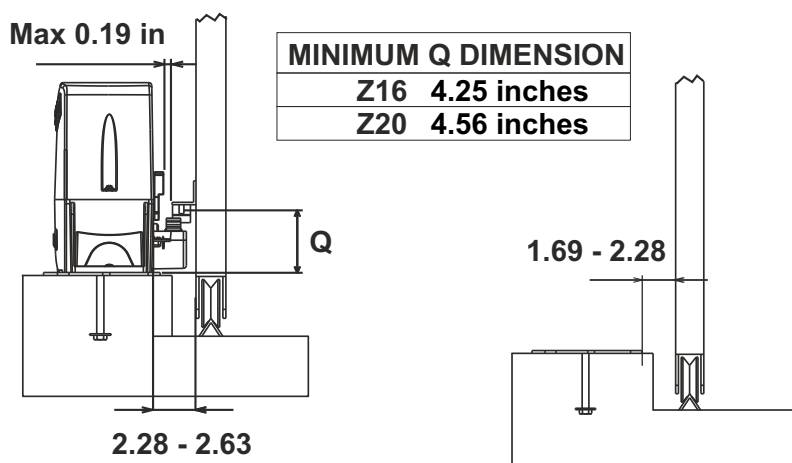


Fig. 4

3 - CABLES PASSAGE ARRANGEMENT

Saturn and Boxer are provided with two different holes for electric cables passage.

It's very important to make the low - tension 230V~ cables pass through one hole and the very low safety tension 24V cables through the other one (Fig. 5)

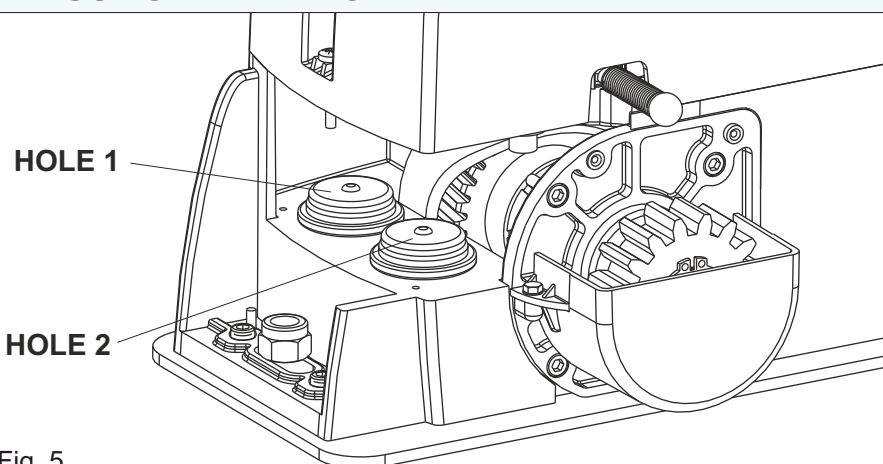


Fig. 5

4 - INSTALLATION OF THE OPERATOR

4.1. Insert the 4 grub screws into the special holes, in order to adjust the gearmotor height on the plate (Fig. 6)
At the end of installation check if the 4 grub screws are well gripped on the foundation plate

4.2. Fix the gear motor to the foundation plate using the 2 included nuts, adjusting the side position (Fig. 7) so to respect the shown quota in Fig. 4



ATTENTION! REMOVE THE RED TRANSPORT OIL CAP AND REPLACE IT WITH THE BLACK ONE SUPPLIED, PROVIDED WITH AIRHOLE

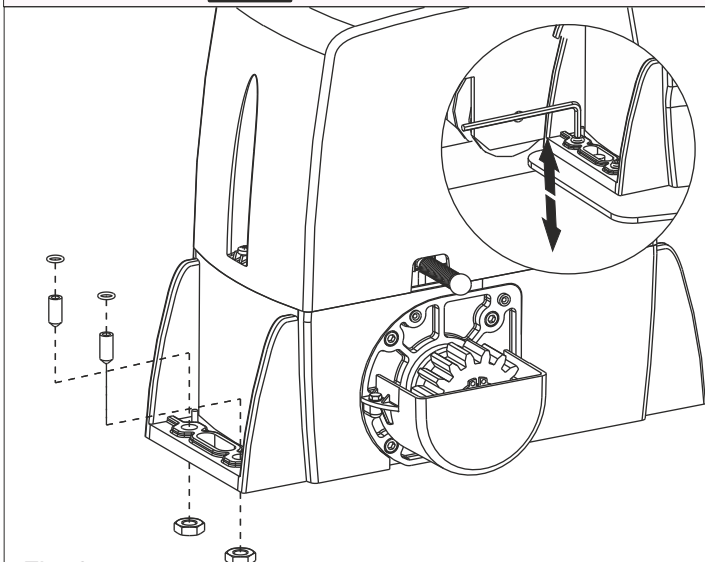


Fig. 6

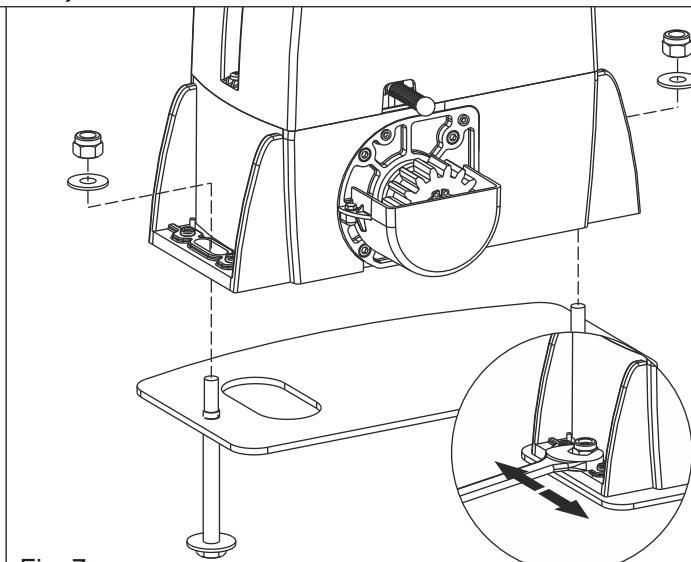


Fig. 7

5 - GEAR RACK MOUNTING

5.1. Release the operator and open the leaf completely;

5.2. Fix on each gear rack element the support pawls with the appropriate lock screws, making sure to put them in the upper part of the hole (Fig. 8);

5.3. Lean the gear rack element on the toothed pinion of the operator in parallel to the ground slideway of the gate, as shown in Fig. 9 and electrically weld the central pawl **B** to the gate structure (Fig. 10). Manually move the gate until pawl **C** is placed in front of the pinion and fix it through electric welding. Repeat the same procedure for pawl **A** after having placed it in front of the pinion;

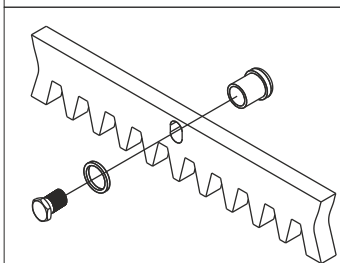


Fig. 8

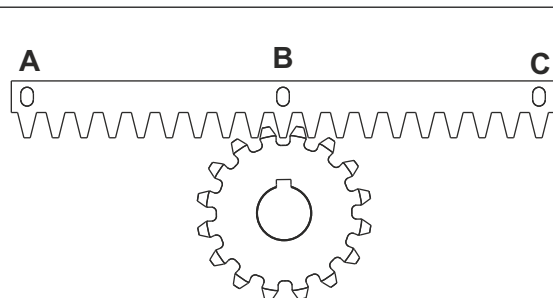


Fig. 9

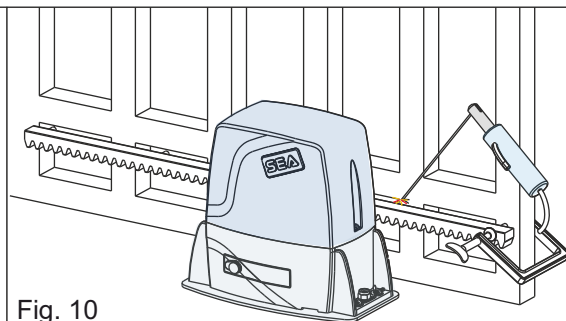


Fig. 10

5.4. Make sure that all the gear rack elements are perfectly aligned and correctly placed (the teeth must be in phase). It is suggested to oppose an element to two aligned elements as shown in Fig. 11;

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

5.6. To avoid that the gate weights down the pinion (Fig. 12) lift up the whole rack about **0.059 inches**
Caution!: Keep a gap of about **0.019** between pinion tooth and gear rack tooth;

5.7. Make sure that the gear rack works at the midpoint of the pinion along all the rack elements, if necessary, adjust the length of the spacers

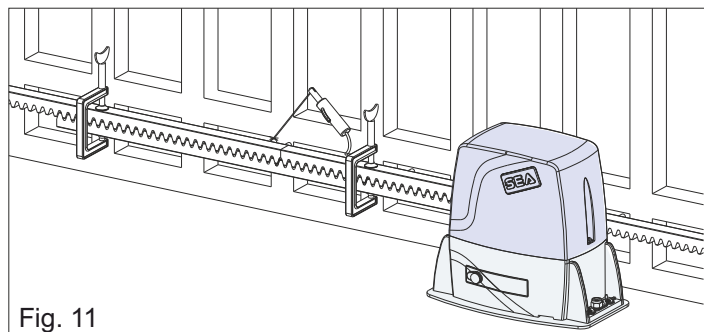


Fig. 11

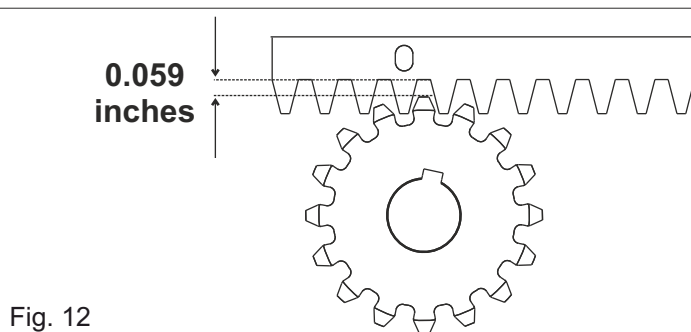


Fig. 12

6 - LIMIT SWITCH ADJUSTMENT

6.1. IN OPENING

- Fully open the gate
- **MECHANICAL STOP:** place the plate (Fig. 13) on the rack according to the desired gate stop position; fix the plate on the rack using the screws.
- **INDUCTIVE LIMIT SWITCH:** place the plate (Fig. 14) on the rack according to the desired gate stop position; fix the plate on the rack using the screws. Bring the inductive limit switch opening plate (indicated by an arrow on the limit switch) in correspondence with point «X» of the plate on the rack (1,96 inches from the folded side of the plate - Fig. 15).

6.2. IN CLOSING

- Fully close the gate
- **MECHANICAL STOP:** place the plate (Fig. 13) on the rack according to the desired gate stop position; fix the plate on the rack using the screws.
- **INDUCTIVE LIMIT SWITCH:** place the plate (Fig. 14) on the rack according to the desired gate stop position; fix the plate on the rack using the screws. Bring the inductive limit switch closing plate (indicated by an arrow on the limit switch) in correspondence with point «X» of the plate on the rack (1,96 inches from the folded side of the plate - Fig. 15).

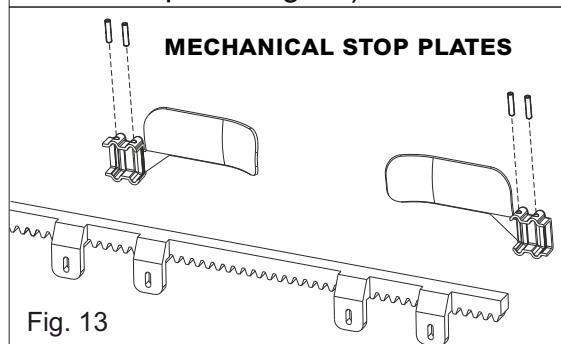


Fig. 13

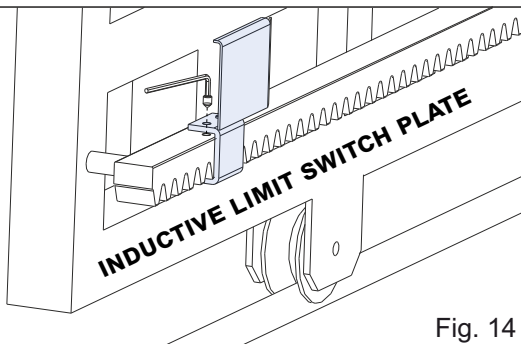


Fig. 14

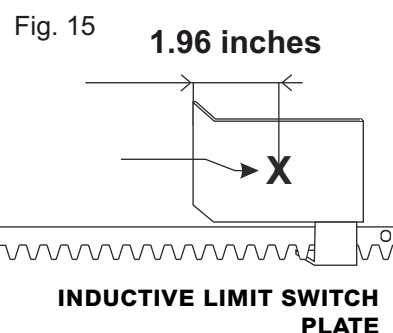


Fig. 15

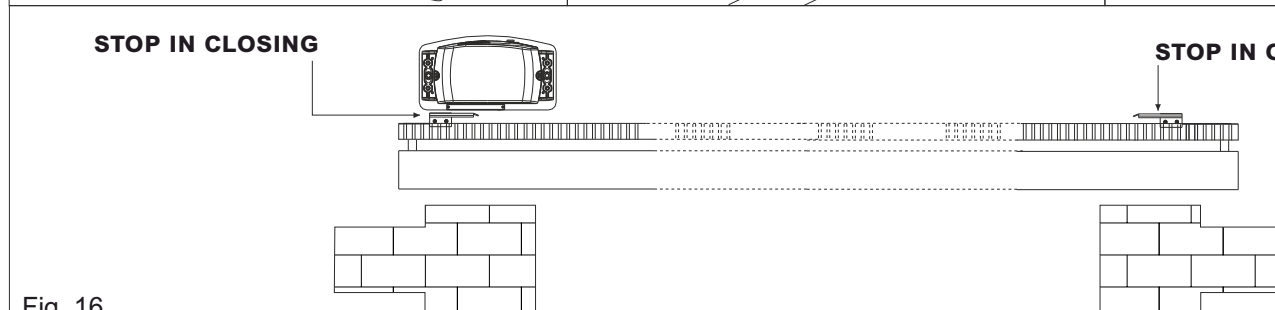


Fig. 16

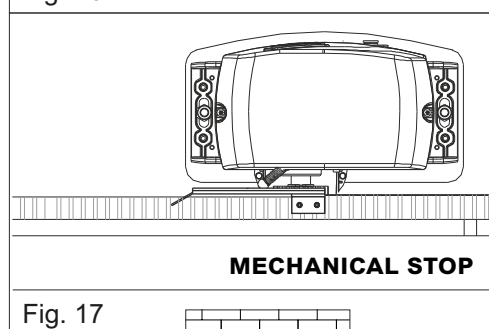


Fig. 17

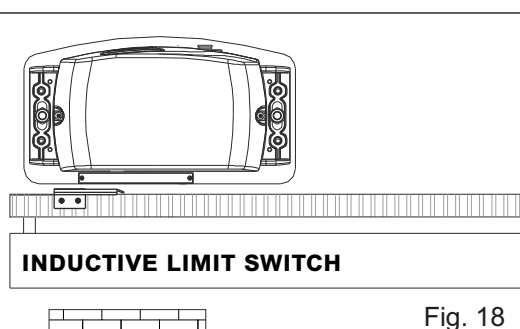


Fig. 18

NOTE

FOR FURTHER DETAILS ON THE ADJUSTMENT OF THE INDUCTIVE LIMIT SWITCH, REFER TO THE PROGRAMMING MANUAL OF THE ELECTRONIC CONTROL BOARD

7 - MAGNETIC LIMIT SWITCH ADJUSTMENT

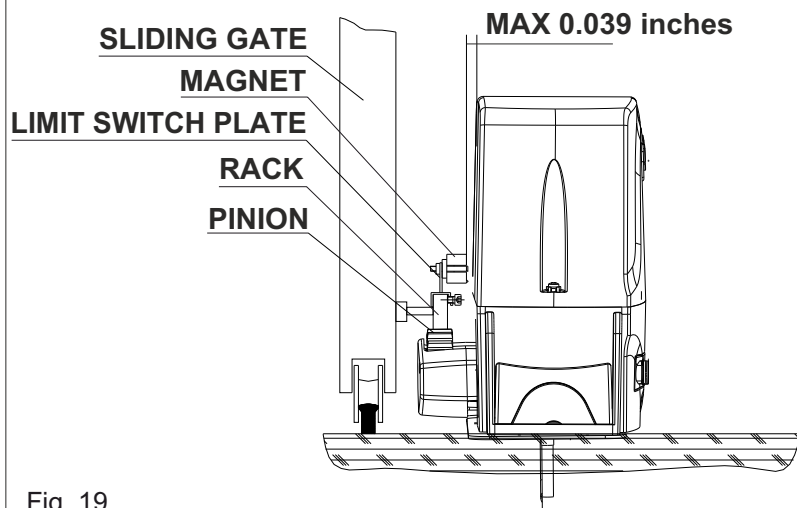


Fig. 19

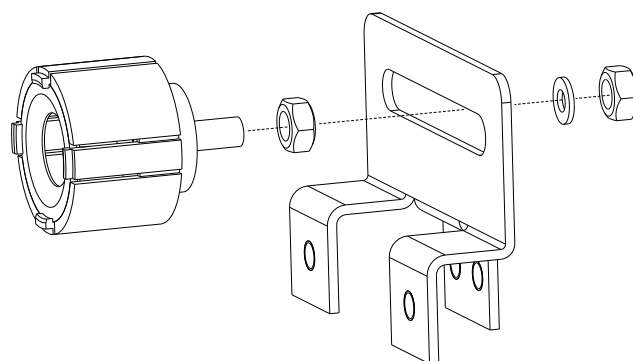


Fig. 20

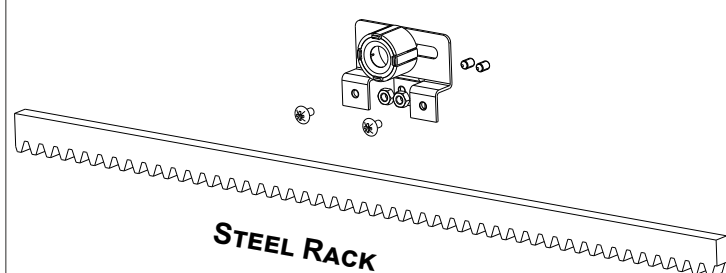


Fig. 21

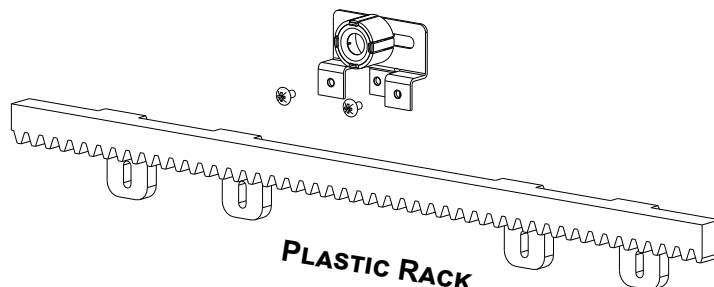


Fig. 22

8 - GROUNDING

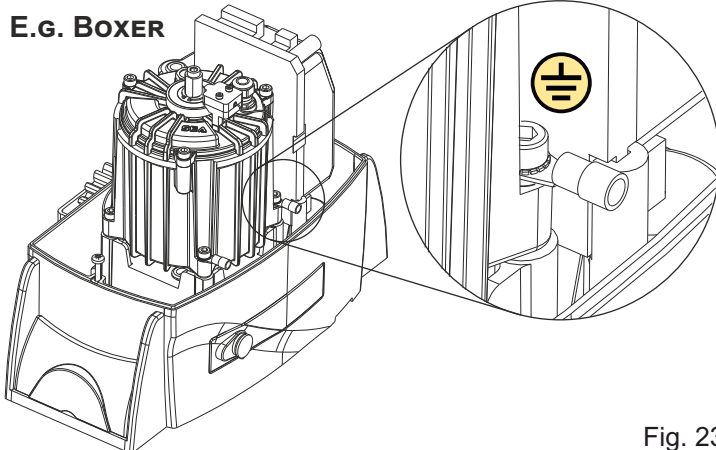


Fig. 23

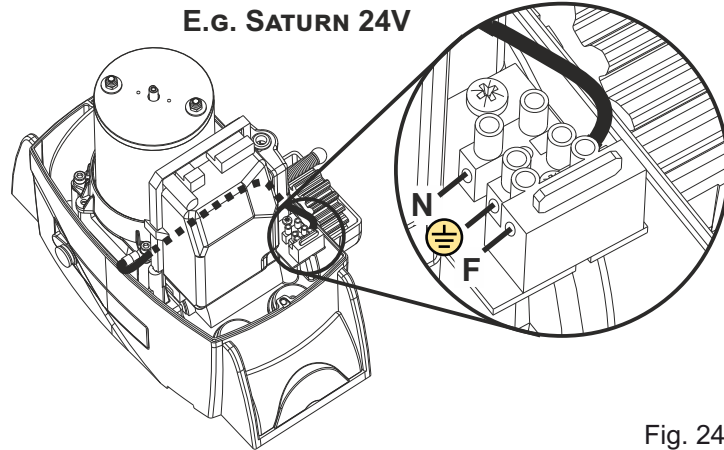


Fig. 24

9 - CLUTCH ADJUSTMENT (OPTIONAL)

9.1. Switch off the electric power supply

9.2. To adjust the clutch, act on the grub screw «A» (Fig. 25) as follows:

- **CLOCKWISE DIRECTION** = less clutch sensitivity - more thrust force
- **COUNTER-CLOCKWISE DIRECTION** = more clutch sensitivity - less thrust force

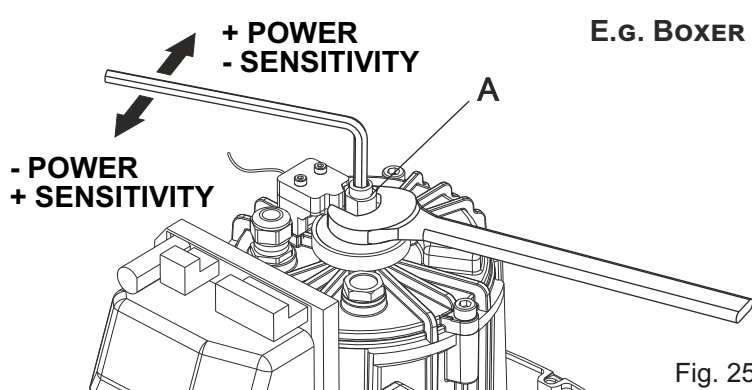


Fig. 25

10 - SCREW-COVER MOUNTING

At the end of the mechanical installation and after carrying on all the required adjustments, mount the two screw covers on the operator, as shown in Fig. 26

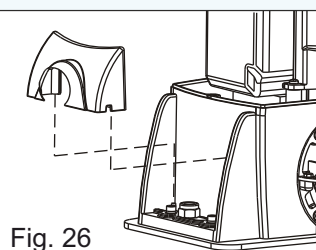


Fig. 26

11 - ELECTRIC WIRINGS

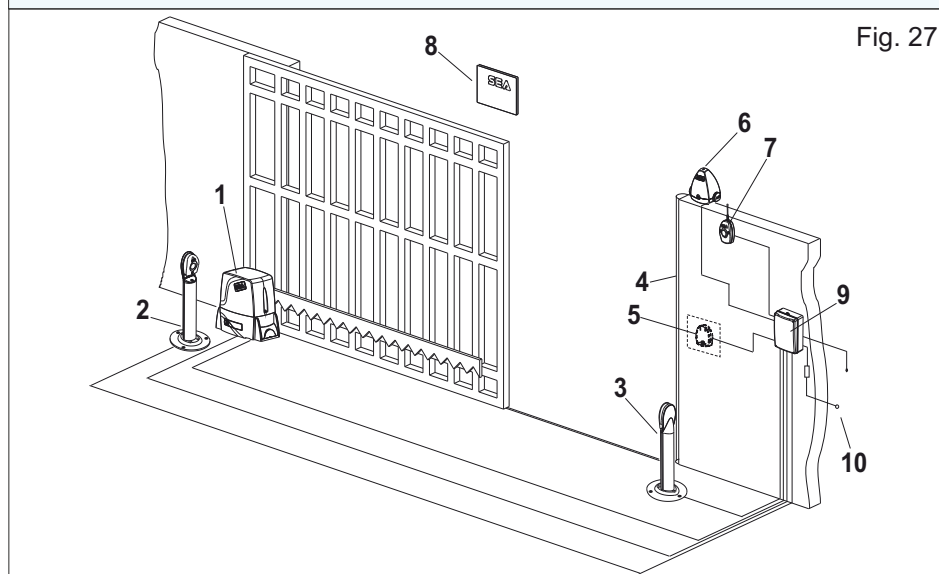


Fig. 27

- 1) Saturn - Boxer
- 2) Left photocell
- 3) Right photocell
- 4) Mechanical safety edge
- 5) Key button
- 6) Flashing lamp
- 7) Receiver
- 8) Warning notice
- 9) Junction box
- 10) Differential switch 16A - 30mA

PART FOR BOTH INSTALLER AND END-USER



CAUTION! SWITCH-OFF THE POWER SUPPLY BEFORE TO LOCK OR UNLOCK THE OPERATOR!
IN CASE OF MALFUNCTION, ALWAYS CONTACT AN AUTHORIZED INSTALLER!

12 - RELEASE SYSTEM FOR SATURN AND BOXER

12.1. To release the operator:

- Open the lock cover, insert the key and rotate 90° clockwise (Fig. 28)
- Pull the release lever until it stops, 90° approximately (Fig. 29)

Note: when pull the release lever, the control unit receives a safety stop impulse thanks to a micro-switch inside the operator (anyway it is highly recommended to switch OFF the power supply before)

12.2. To lock the operator:

- 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 if the power supply was ON

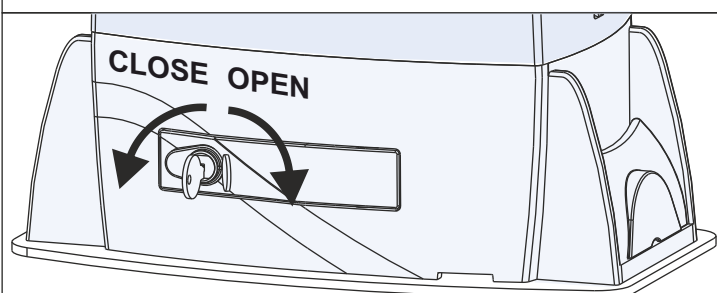


Fig. 28

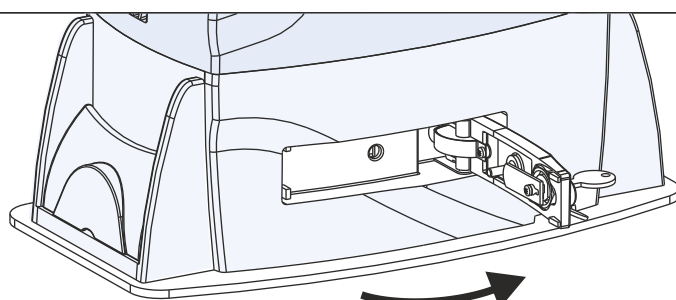


Fig. 29

PART FOR BOTH INSTALLER AND END-USER

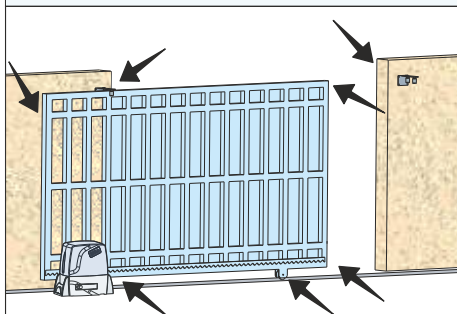
PERIODIC MAINTENANCE

Check the oil level (for operators in oil-bath) by the use of the oil level rod	Annual
Change oil (for operators in oil-bath)	4 years
Check the correct operation of the release system	Annual
Check the correct operation of the clutch (for operators with clutch)	Annual
Check the distance between pinion and gear rack (0,059 inches)	Annual
Check the condition of the pinion and the gear rack (if overused or damaged)	Annual
Check the fixing screws	Annual
Check the connection cables integrity	Annual
Check the correct operation of the limit switches in opening and closing; also check the condition of the stop plates	Annual



ALL OPERATIONS MUST BE CARRIED OUT EXCLUSIVELY BY AN AUTHORIZED INSTALLER

GATE WARNINGS AND PRECAUTIONS



RISK EXAMINATION: The points pointed by the arrows 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.*

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 avoid 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

WARNINGS: All electrical installation should comply the current regulations. A **16A - 0,030A** differential switch must be used. The entire system must be properly earth bonded. Separate the main supply cables (operators, power supply) from 24V command cables (photocells, push-buttons, etc) through pipes or sheats to prevent interferences and noise.

Always use cable-glands or pipes close to the control unit box to protect the interconnection cables against pulling efforts

INTENDED USE: The operator has been designed to be used for the automation of sliding gates only

SPARE PARTS: Send request for spare parts to: **SEA USA Inc. - Doral - MIAMI - (FL) 33172 - www.sea-usa.com**

SAFETY AND ENVIRONMENTAL COMPATIBILITY: Don't waste product packing materials and/or circuits

STORAGE: T = -4°F/+149°F ; Humidity = min. 5% / max. 90% (without condensation); Materials must be properly packaged, handled with care and with appropriate vehicles

MAINTENANCE AND DECOMMISSION: The decommission and maintenance of products must be carried out by specialised and authorised personnel only

WARRANTY LIMITS: For the guarantee see the sales conditions

THE MANUFACTURER CAN NOT BE DEEMED RESPONSIBLE FOR ANY DAMAGE OR INJURY CAUSED BY IMPROPER USE OF THIS PRODUCT

SEA reserves the right to make all the necessary changes and modifications of the products or manuals without giving prior notice

SALE CONDITIONS and WARRANTY

GENERAL WARNINGS: 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 Dept. 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.

COMPLAINTS: Complaints and/or claims must be notified to SEA within 7 business days after receiving the products. Claims and complaints 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. 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 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.

SEA USA Inc. is not responsible for errors in technical information printed in catalogs and installation manuals.



SEA USA Inc.

10850 N.W. 21st - unit 160 - Doral - Miami

FLORIDA (FL) 33172

Phone: ++ 1 - 305.594.1151

www.sea-usa.com