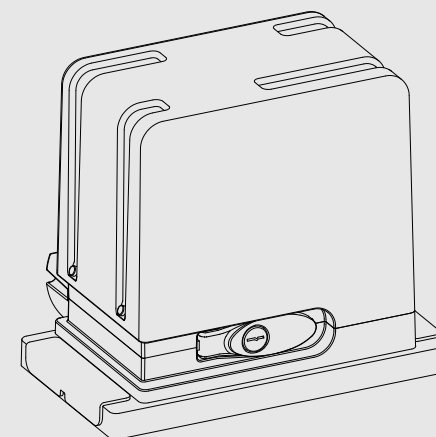




Technical Manual
DZ CUBE



Made by: **Motoppar Indústria e Comércio de Automatizadores Ltda**
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⚠ WARNING:
Do not use the device
without referring to this
manual first.

CONTENTS

IMPORTANT SAFETY INSTRUCTIONS.....	3
TECHNICAL FEATURES	4
BASIC TOOLS NEEDED FOR INSTALLATION	6
ELECTRICAL CONNECTIONS	6
WIRING PRECAUTIONS	7
PRECAUTIONS WITH THE GATE BEFORE THE INSTALLATION.....	8
INSTALLING AND MOUNTING THE OPERATOR.....	9
INSTALLING THE ANALOG LIMIT SWITCH.....	14
TROUBLESHOOTING.....	16

IMPORTANT SAFETY INSTRUCTIONS

**Recommendation:**

When installing the operator, the PPA's specialist installer must comply with all the instructions present on both this TECHNICAL MANUAL and the USER MANUAL.

By using the USER MANUAL, the installer must present all information, uses and security items of the device to the end-user.



Prior to installing the operator, carefully read and observe the instructions contained herein.



- Prior to installing the operator, ensure that the local grid power complies with the technical data appearing on the gate's label

- Do not connect the operator to the source of power until the installation / maintenance (or servicing) is over. Proceed the wiring of the control unit with the control box power switched OFF

- After installing the operator, make sure the gate system is placed far enough from the sidewalk

- The system's power supply network MUST include a disconnection device (not supplied).

TECHNICAL FEATURES

DZ CUBE 550 / DZ CUBE 400 24V

TYPE OF GATE OPERATOR	Sliding	Sliding
MOTOR	Single-phase	24V Brushless
POWER SUPPLY	127 V / 220 V	127 – 220 V
RATED FREQUENCY	60 Hz	60 Hz
RATED POWER	300 W / 290 W	30 W
MOTOR RPM	1740	2200
RATED CURRENT	2.6 A / 1.4 A	0.350 A
REDUCTION RATIO	1:23	1:23
LINEAR SPEED (LS)	13.3 m/min (Z14) 17.1 m/min (Z18)	16.8 m/min (Z14) 21.6 m/min (Z18)
CYCLES/HOUR*	40	50
PROTECTION RATING	IPX4	IPX4
OPERATING TEMPERATURE	-5° C / +50° C (23° F / 122° F)	-5° C / +50° C (23° F / 122° F)
INSULATION SYSTEM	Class B, 130° C	Class B, 130° C
LIMIT SWITCH SYSTEM	Analog / Digital	Hybrid
MAX LEAF WEIGHT	550 Kg (~1213lb)	400kg (~882lb)
MAX LEAF LENGTH	LENGHT = 0,5 X LS	LENGHT = 0,5 X LS

DZ CUBE 650 JETFLEX

TYPE OF GATE OPERATOR	Sliding
MOTOR	JetFlex
POWER SUPPLY	127 V / 220 V
RATED FREQUENCY	60 Hz
RATED POWER	380 W / 390 W
MOTOR RPM	5800
RATED CURRENT	3.8 A / 2.8 A
REDUCTION RATIO	1:23
LINEAR SPEED (LS)	44.4 m/min (Z14) 57 m/min (Z18)
CYCLES/HOUR*	50
PROTECTION RATING	IPX4
OPERATING TEMPERATURE	-5° C / +50° C (23° F / 122° F)
INSULATION SYSTEM	Class B, 130° C
LIMIT SWITCH SYSTEM	Hybrid
MAX LEAF WEIGHT	650 Kg (1433lb)
MAX LEAF LENGTH	LENGHT = 0,25 X LS

*REFERENCE = 3.0 METTERS GATE LENGTH

DZ CUBE 800

TYPE OF GATE OPERATOR	Sliding
MOTOR	Single-phase
POWER SUPPLY	127 V / 220 V
RATED FREQUENCY	60 Hz
RATED POWER	340 W / 230 W
MOTOR RPM	1740
RATED CURRENT	1.9 A / 1.3 A
REDUCTION RATIO	1:23
LINEAR SPEED (LS)	13.3 m/min (Z14) 17.1 m/min (Z18)
CYCLES/HOUR*	40 (Z14) 50 (Z18)
PROTECTION RATING	IPX4
OPERATING TEMPERATURE	-5° C / +50° C (23° F / 122° F)
INSULATION SYSTEM	Class B, 130° C
LIMIT SWITCH SYSTEM	Analog / Digital
MAX LEAF WEIGHT	800 Kg (~1764lb.)
MAX LEAF LENGTH	LENGHT = 0,5 X LS

DZ CUBE 850 JETFLEX / DZ CUBE 850 JETFLEX BRUSHLESS

TYPE OF GATE OPERATOR	Sliding	Sliding
MOTOR	JetFlex	24V JetFlex
POWER SUPPLY	127 V / 220 V	127 – 220 V
RATED FREQUENCY	60 Hz	60 Hz
RATED POWER	380 W / 390 W	140 W / 115 W
MOTOR RPM	5800	4500
RATED CURRENT	3.8 A / 2.8 A	2.0 A / 1.3 A
REDUCTION RATIO	1:30	1:23
LINEAR SPEED (LS)	34 m/min (Z14) 43.7 m/min (Z18)	34.4 m/min (Z14) 44.3 m/min (Z18)
CYCLES/HOUR*	50	60
PROTECTION RATING	IPX4	IPX4
OPERATING TEMPERATURE	-5° C / +50° C (23° F / 122° F)	-5° C / +50° C (23° F / 122° F)
INSULATION SYSTEM	Class B, 130° C	Class B, 130° C
LIMIT SWITCH SYSTEM	Hybrid	Hybrid
MAX LEAF WEIGHT	850 Kg (~1874lb.)	850 Kg (~1874lb.)
MAX LEAF LENGTH	LENGHT = 0,25 X LS	LENGHT = 0,25 X LS

*REFERENCE = 3.0 METTERS GATE LENGTH

DZ CUBE 1000 JETFLEX

TYPE OF GATE OPERATOR	Sliding
MOTOR	JetFlex
POWER SUPPLY	127 V / 220 V
RATED FREQUENCY	60 Hz
RATED POWER	170 W / 140 W
MOTOR RPM	5800
RATED CURRENT	2.2 A / 1 A
REDUCTION RATIO	1:30
LINEAR SPEED (LS)	34 m/min (Z14) 43.7 m/min (Z18)
CYCLES/HOUR*	60
PROTECTION RATING	IPX4
OPERATING TEMPERATURE	-5° C / +50° C (23° F / 122° F)
INSULATION SYSTEM	Class B, 130° C
LIMIT SWITCH SYSTEM	Hybrid
MAX LEAF WEIGHT	1000 Kg (~2205lb.)
MAX LEAF LENGTH	LENGHT = 0,25 X LS

BASIC TOOLS NEEDED FOR INSTALLATION

Tools needed:



ELECTRICAL CONNECTIONS

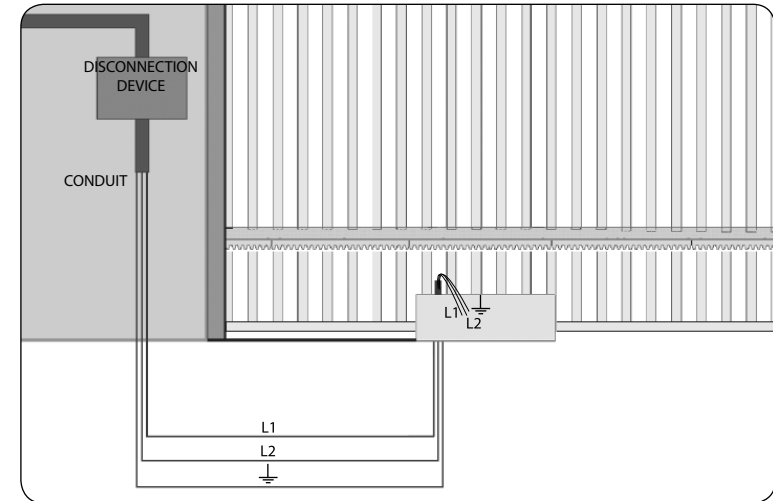
For the electrical set-up, the power grid must have the following features:

- 127V/220V Power Supply
- 5A Circuit Breakers in the Electrical Panel
- 3/4" diameter conduits between the electrical panel and the disconnection device
- 3/4" diameter conduits between the disconnection device and the outlet
- 1/2" diameter conduits for (optional) external pushbuttons
- 1/2" diameter conduits for (optional) photocells.

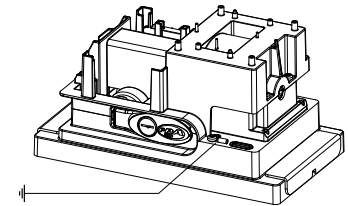
- ⚠ - The cable used for the wiring must comply with the NBR NM 247-3 standards (Brazil)
- The mains cable (of an internal use product) must be a 3 x (Tri-rated) 0.75 mm² / 500 V flexible cable, according to the NBR NM 247-5 standards (Brazil)
- The mains cable (of an internal use product) must be a 3 x (Tri-rated) 0.75 mm² / 500 V flexible cable; according to the IEC 60245-57 standards (Brazil).

WIRING PRECAUTIONS

To avoid damage to the wiring, it is important that all electrical conductors are properly connected to the operator. The passing of the cables must be carried out through conduits, inside the foundation, ensuring that none of the electrical conductors are stuck and damaged.



- ⚠ The ground terminal must be connected to the ground wire.

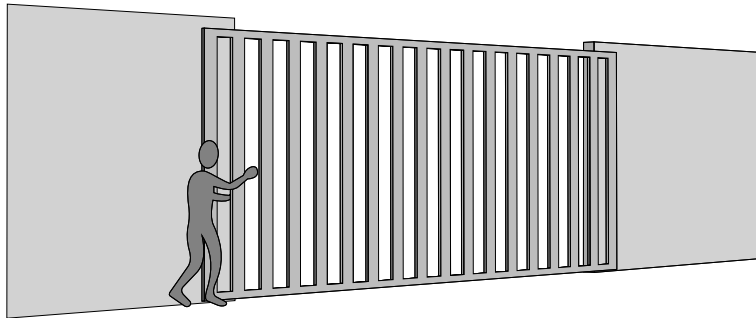


- ⚠ **IMPORTANT**
The operator must be powered through a Differential Residual (DR) Current device with a Nominal residual operating current exceeding 30 mA.

PRECAUTIONS WITH THE GATE BEFORE THE INSTALLATION

Before installing the operator, check the movement (opening / closing) of the gate, according to the instructions below:

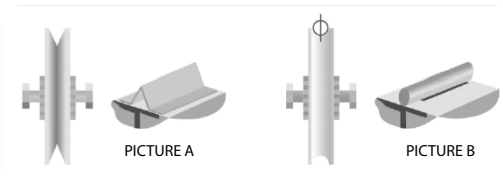
Step 1: Before proceeding with the product's installation, check if the mechanical structure of the gate is suitable for automation, i.e., properly opening and closing. Manually move the gate leaf in both directions (open/closed) and verify the required effort. Such effort must be minimal along its course (there should be no points requiring more or less effort).



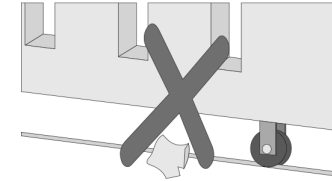
Step 2: Manually close the gate and check if the required effort was the same from the previous procedure.

The gate must have a resistant structure and, as far as possible, non-deformable. The wheels diameter must be suitable to the gate size, must be in good working order, and mounted in such a way that the gate has stability on its complete course. We strongly recommend using 120-mm-diameter wheels.

The pictures below show the two most used track systems. On the system that uses a V-track (Picture A - Corner bead), there are many points of friction and, therefore, increased wear and tear, whereas the system that uses a round bar gate track (Picture B) allows the gate to move smoothly and causes less point of friction to the operator.



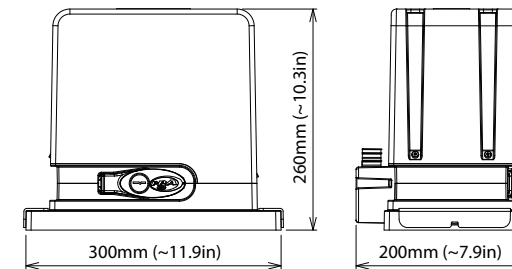
Step 3: Check if the gate leaf does not jam when opening or closing. The gate track must be perfectly straight, level and periodically free of any obstruction or debris which could impair the movement of the gate on its complete course, as shown on the picture below.



INSTALLING AND MOUNTING THE OPERATOR

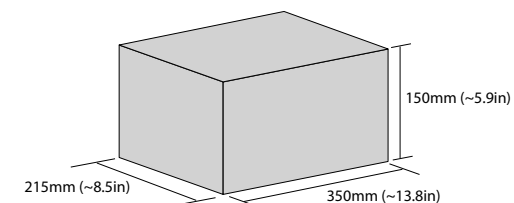
Before proceeding with the product's installation, disconnect any unnecessary cables as well as any devices or systems from the mains power supply.

GATE OPERATOR SIZE

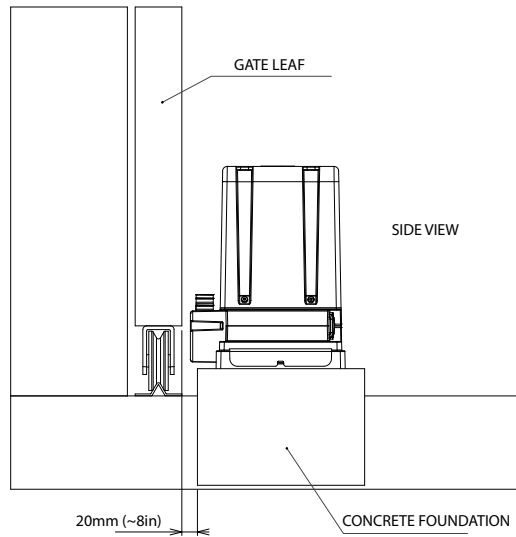


It is important to comply with these instructions to ensure a proper operation. To mount the operator, do as follows:

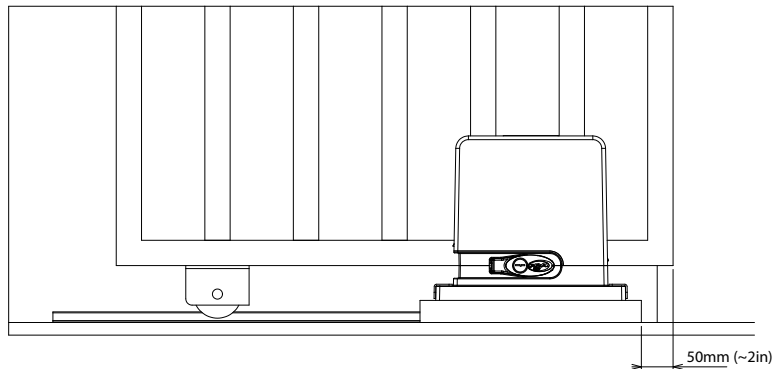
Step 1: Check if the ground is stable enough so that the operator can be screwed so that it remains level. If the ground does not comply to this requirement, a concrete foundation must be provided, according to the instructions below:



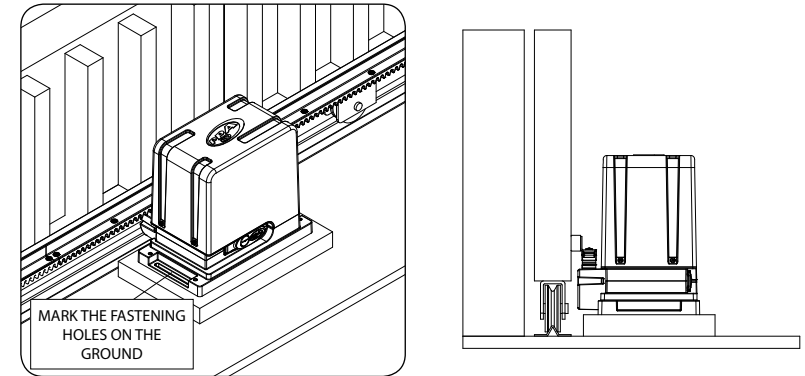
Step 2: The dimensions of the concrete foundation must be suitable to the operator size. The concrete foundation must be approximately 20mm (\cong 0.8in) away from the gate-leaf face.



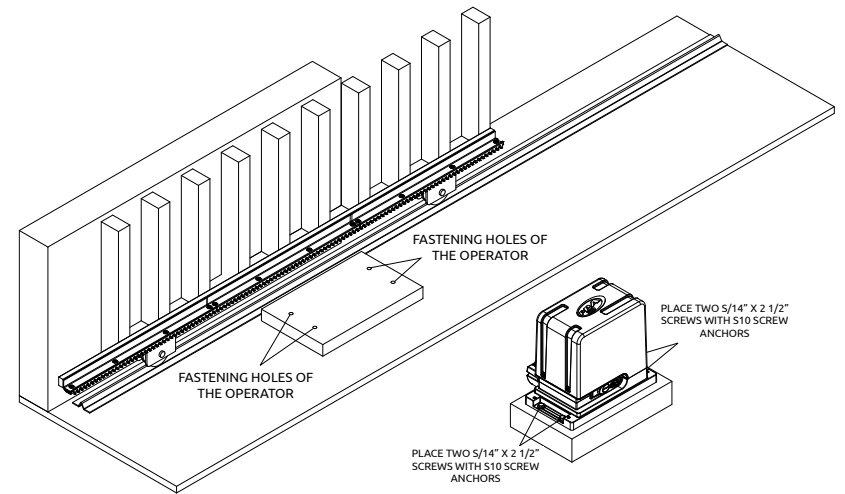
Step 3: Once the requirements are complied with, totally open the gate, and place the operator near the gate-leaf face, respecting the 50-mm (\cong 2in) gap between the extremity of the leaf and the concrete foundation.



Step 4: Perform the pre-alignment of the operator with the gate, by placing the toothed rack on the pinion and leaning this set to the gate. Then, mark the position of the fastening holes on the ground or concrete foundation.

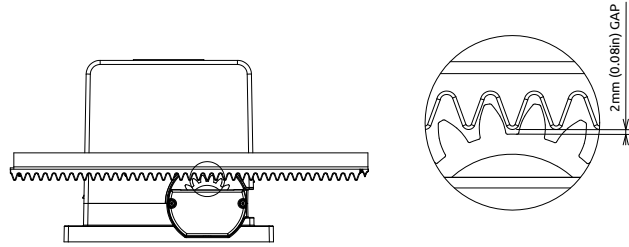


Step 5: Drill the fastening holes, by placing the operator level with the gate. Before tightening the $5\frac{1}{4}'' \times 2\frac{1}{2}''$ screws, move the gate, checking if it does not lean on the operator along its course. If so, move the operator back.

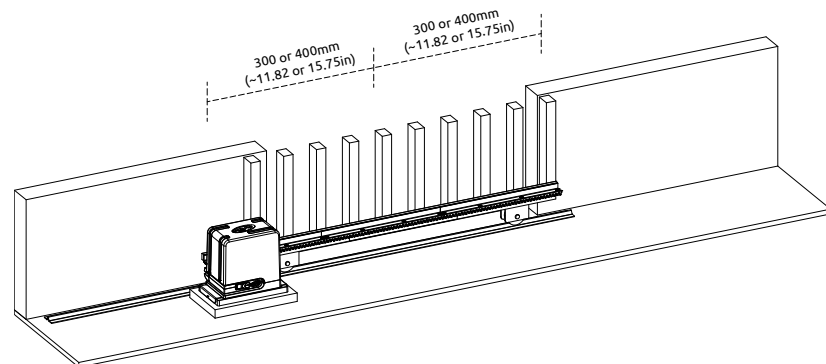


Step 6: With the operator manually released, place the rack bar on the pinion, aligned to the gate.

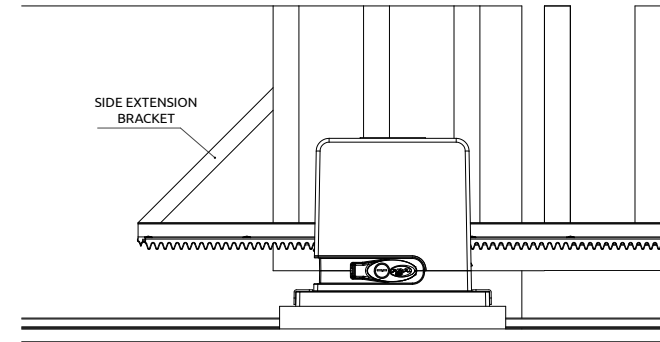
It is necessary to leave an approximate 2-mm (0.08 in) gap between the top of the rack cog and the bottom of the pinion cog.



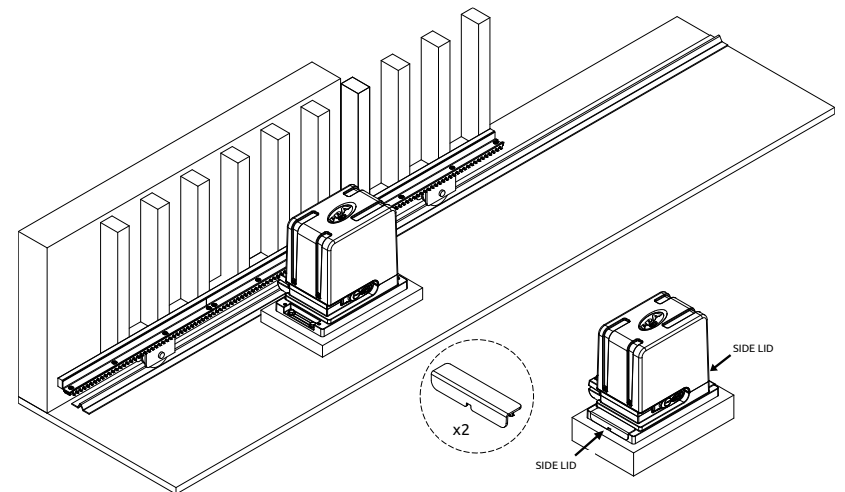
Step 7: Fasten the rack bar all along the gate leaf by welding it or by tightening screws every 300 or 400 mm (\cong 11.82 or 15.75in).



Step 8: If the gate leaf is warped, provide holders to ensure the rack bar is aligned. In cases where the rack bar is longer than the length of the gate, provide a Side Extension Bracket, so that the pinion does not slip when the operator starts.

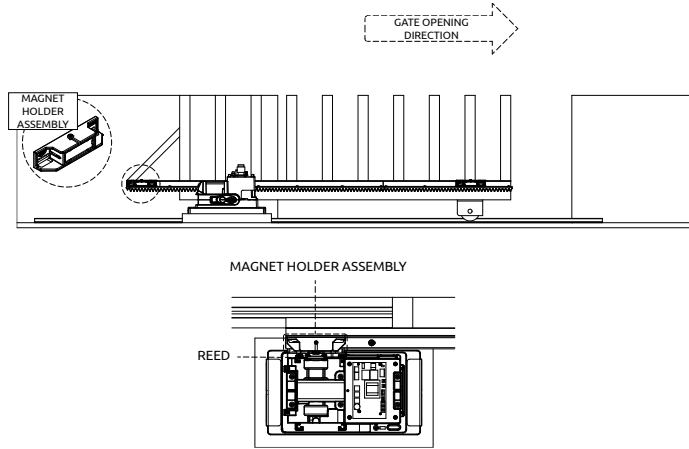


Step 9: After fastening the rack bar, fasten the operator permanently to the ground or concrete foundation, by strongly tightening the screws. Fit the two (Provided) side lids.

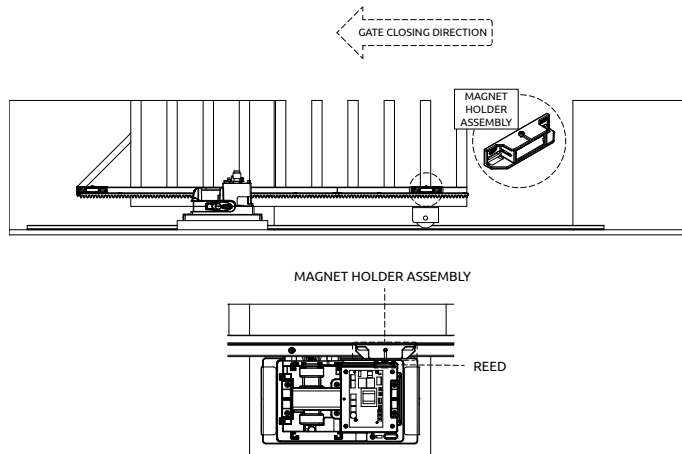


INSTALLING THE ANALOG LIMIT SWITCH

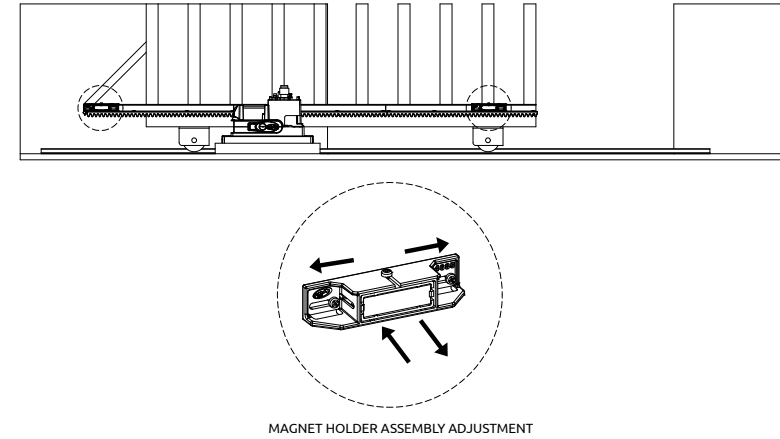
Step 1: With the gate closed, place the magnet holder assembly, placed facing the operator reed. This magnet is the 'Closed' Limit Switch.



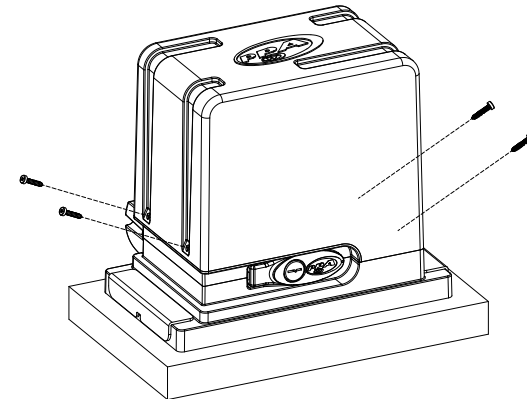
Step 2: Totally open the gate and place the other magnet holder assembly on the rack bar, facing the operator reed. This magnet is the 'Open' Limit Switch.



Step 3: Run the motor and check if the reeds are correctly turning off. If necessary, reverse the connector of the control board. After mounting the magnet holder assemblies, perform the final adjustments, moving them left / right or up / down, according to the desired adjustment.



Step 4: To finish the installation procedure, one must screw the operator housing by using the 4 provided 4.2 x 19 mm screws.



**CONTROL UNIT:**

Check on the product's label (as seen on the picture to the right) which is the proper control board for this operator. That done, refer to the control board manual available to download on **www.ppa.com.br** and perform all connections and settings accordingly.



TROUBLESHOOTING

The table below contains useful information on some PROBLEMS — SYMPTOMS, PROBABLE CAUSES AND POSSIBLE SOLUTIONS which might affect your operator. Before intervening on the system (maintenance, cleaning), always disconnect the product from the mains power supply.

SYMPTOMS	PROBABLE CAUSE(S)	ACTION(S)
Manouver fails to start	A) No power supply B) Open / Blown fuse C) Gate jammed D) Defective limit switch	A) Ensure that the power cable is correctly inserted in the power outlet B) Substitute the fuse for another one with the same specifications C) Ensure there are no obstruction on the gate travel D) Substitute the (analog and/or digital) limit switch system
Motor won't run	A) Reversed wiring B) Gate or operator jammed	A) Check the wiring B) Change to manual mode and check it separately
Control board does not accept a command	A) Blown fuse B) No power supply C) Defective remote control / Low battery D) Remote control range	A) Substitute the fuse for another B) Ensure that the power cable is correctly inserted in the power outlet C) Check and substitute the battery D) Check the position of the receiver's antenna and, if necessary, try adjusting it, if you think the signals to be weak
Motor only runs in one direction	A) Reversed wiring B) Reversed limit switch system C) Defective control board	A) Check the motor wiring B) Reverse the limit switch connector (analog and/or digital) C) Substitute the control board