



SILVERVISTA

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# DC Brushless Barrier Gate Instruction Manual





## **Warning:**

Please read this instruction manual carefully before installation, in which contains some important information about installation, usage, maintenance and safety.

Any undefined operation under this instruction is not allowed. Improper usage will result in damage to this product and cause serious injury or property losses.

Please keep this instruction manual properly for future reference.

The design and manufacture of the barrier gate is totally complied with the current standards and regulations.

Considering the possibility of danger, the installation must strictly comply with the following construction standards and electrical operation procedures:

- Before installation, please check if any additional equipment or materials are needed in order to meet the specific requirements.
- The handling of packing materials must comply with local regulations.
- Please do not modify any parts, except for those defined under this instruction manual.

Any undefined modification may cause troubles. Any damages to the product arising therefrom shall be beyond the liability of the company.

- Please do not leak water or liquid into the controller or any other open devices. Please disconnect the power immediately if any mentioned cases happened.
- Please keep this product away from heat and open fire. Or it may damage the components; cause the failure or other hazards.
- Nobody is allowed to stand or walk under the barrier boom, especially when it's on moving. Please do not stand or leave any objects within the boom rotation range of 90° due to the collision by cars.
- Spring adjustment, operation mode setting, induction devices installation must be operated by qualified professionals.

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## 1. Product Outline

On the basis of absorbing essence of similar products at home and abroad, the company has researched and developed this BC series DC brushless barrier gate. This product adopts international advanced technology, with mechanical and electrical integrated design, which fully realizes automation and intelligence of operating, brings convenience, safety and speed for using.

## 2. Functions and Features

- Efficient DC brushless motor and precise gear reducer drive with mechanical and electrical control integrated. More flexible and convenient operation, safe and reliable for using, completely maintenance free during its service time.
- Adopts precise four-bar linkage mechanism and spring balance device which enable the barrier boom work with soft start-slow stop function in fast and stable without any impact. Reduces the driving power in maximum, extends its service life.
- Integrated machine core, small size with large power, wall-mounted installation, easy for assembling and disassembling.
- DC 24V low voltage brushless motor, adapts to global voltage (110~220±15%). It highlights for safer use, less noise, low heat output, frequently use, energy conservation and environmental protection.
- The combination of motor hall encoder and control unit ensures the control to mechanism moving position at the utmost.
- The dedicated controller system has high integration and strong logic performance. It can be connected with any toll system of roads and bridges, parking lots and so on.
- Intelligent speed adjustment efficiently reduces the trembling of the barrier boom, suitable for different occasions.
- High-sensitivity Auto-reverse function will prevent incorrect operation and other crash or hitting accidents.

- Open first anti-smash function: barrier boom will perform opening action once received an opening signal during the closing process.
- Humanized anti-collision boom dropping-out mechanism, when the vehicle accidentally hits the barrier boom, the anti-collision mechanism will rotate the boom to avoid damage to the vehicle and the barrier gate.
- High-strength precision cast steel machine case, with outdoor metal powder electrostatic spraying surface treatment, waterproof and dustproof, protection class up to IP54.

### 3. Technical Parameter List

Barrier Model	SV4BBDF	SV6BBDF/SV46BBDT
Boom Length	Round boom $\phi 75$ , $\leq 4\text{m}$ ; Octagonal boom $80 \times 46$ , $\leq 4\text{m}$	Octagonal boom $100 \times 45$ , $\leq 6\text{m}$
Open/Close Speed	2.0 sec	5.0 sec
Transmission Ratio	1:60	1:120
Max. Power	140w	
Power Supply	AC110-240V $\pm 15\%$	
Machine Case	1.5mm Steel Plate	
Machine Case Size (W×D×H)	325 × 240 × 962mm	
Net Weight	38kg	
Operating Temperature Range	-40~+60 °C (temperature under -20°C should be equipped with electric heating plate)	
Driving Method	Brushless DC motor + Helical gear reducer	
IP Grade	54	
Insulation Class	F	
Relative Humidity	$\leq 85\%$	
Motor Unload Speed	2400r/min	
Service Life	5 million times	
Remote Control Distance	$\leq 30\text{m}$ (empty environment, sunny weather)	
Running Noise	$< 50\text{dB}$	
Surface Treatment	Outdoor metal powder electrostatic spraying	

## 4. Drivemnt Components

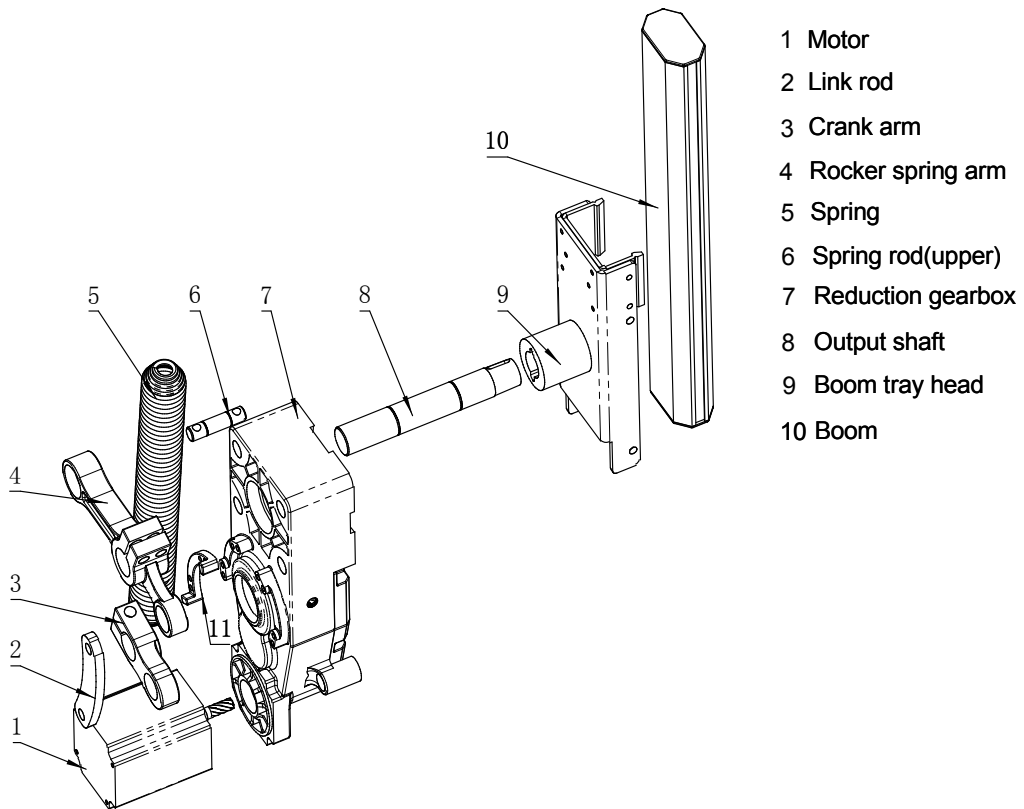
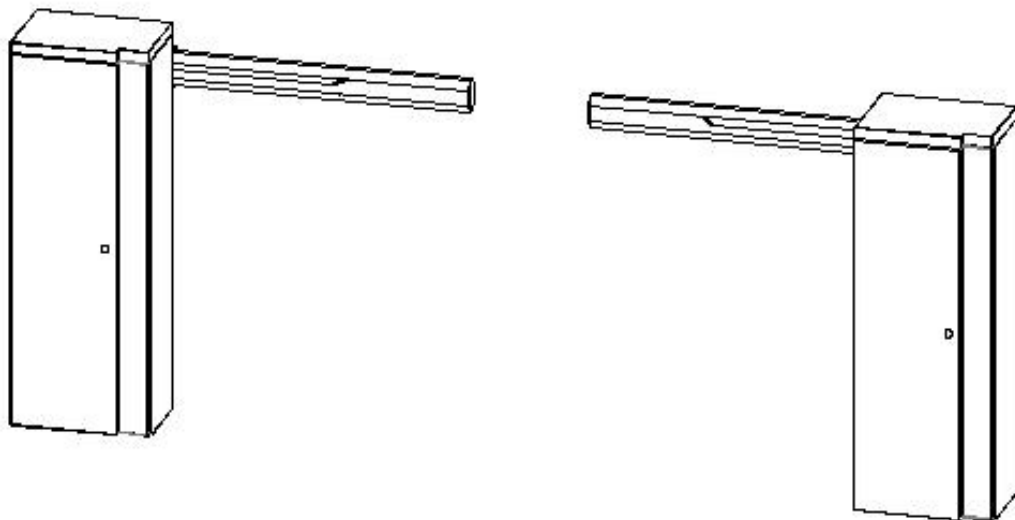


Figure 1

## 5. Installation Direction



Lefthand Fixed

Righthand Fixed

Figure 2


## 6. Assembly and Installation

### 6.1 Pre-Installation Check

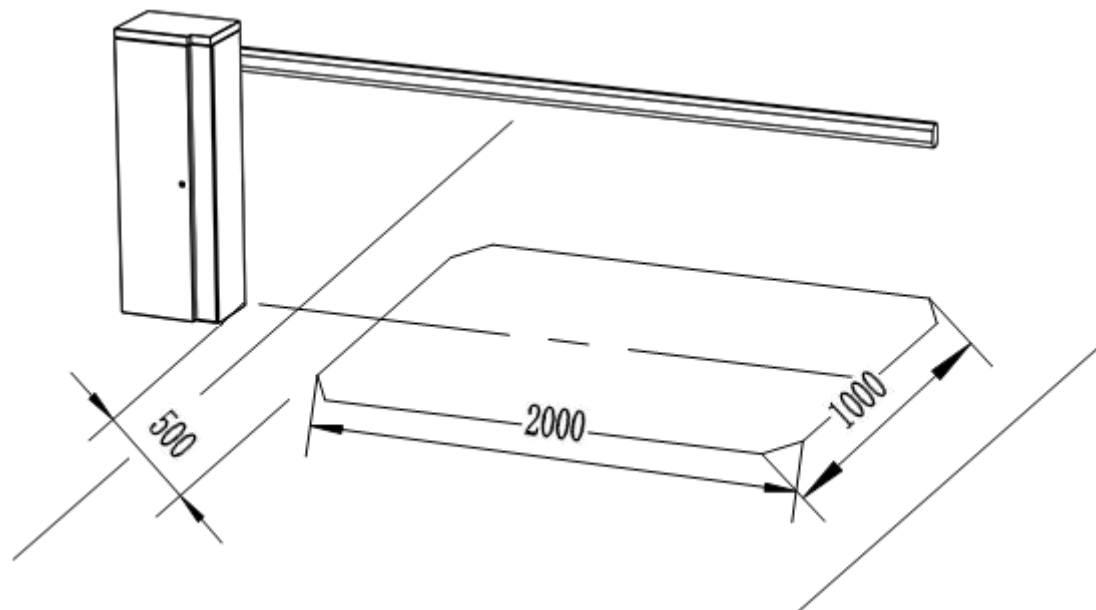
**⚠️ Note:**

- Barrier gate installation must be carried out by qualified technician; Installation must comply with relevant regulations. Before installation, please read this instruction manual carefully.
- Please definite the installation direction of the barrier gate to be lefthand or righthand fixed.
- Please make sure that the boom will operate freely without any impediment.
- Please make sure the mounting base is strong enough and the size is suitable.
- Please make sure the installation spots for all the relative equipment are suitable to avoid any collision.
- Please check the accessories according to the packing list (page 16)

### 6.2 Basic Structure Installation

- Coil Installation Instruction  :

Position of the induction coil: The general size of induction coil size is 2m(L) x 1m(W), its central axis should be right under the barrier boom, please refer to the figure 3.



**Figure 3**

- Fastening Screws Installation Instruction  :

If the installation site didn't set with a foundation, then please make sure that the installation ground is strong enough to be fix with the barrier gate. Drill holes for fastening screws with diameter of 16mm, depth of 80mm, drive the M12 x 150mm fastening screw into the hole, then tighten the nut before withdrawing it.

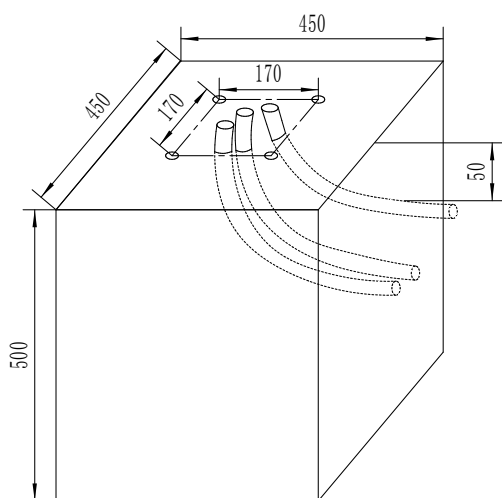
If the installation site is concreted with foundation, please make sure the foundation depth is over 500mm, and the foundation area is over 450 x 450mm. Please pre-bury 3pcs PVC wiring tubes with diameter of 25mm: 1 for induction coil wiring, which should be led towards roadside and should be 50mm underneath the ground. The other 2 tubes are for power supply and control unit wiring. Meanwhile, users can embed 4pcs M12 foundation screws and leave 70mm of the screw thread over the ground, keep a distance of 170 x 170mm; Or users can drill the hole after the foundation hardening, and use the equipped expansion bolts to finalize the installation, please refer to Figure 4.

- Barrier Gate Installation Instruction  :

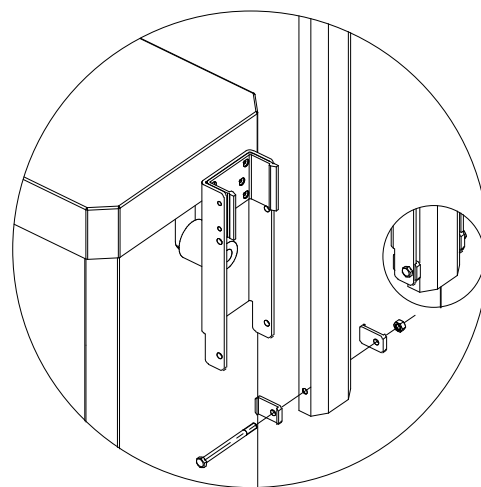
Put the barrier gate in the right place (Keep the boom dropping-out and vehicle passing on the same direction), make sure the barrier gate is vertical to the ground, align the press board to the anchor bolts, lock and fasten them.

- Barrier Boom Installation Instruction  :

Place the barrier boom into boom tray, add plastic gasket on both sides, use the spanner to clamp the boom by screws nuts. Please refer to Figure 5.



**Figure 4**



**Figure 5**



### 6.3 Boom Balance Adjustment

The tension of the spring is related to the boom length, the spring has been assembled in the factory according to the different boom length, also the relative adjustments on operating speed, operating balance during opening/closing process has been set up before delivery. Spring tense must be re-adjusted by professionals if there were any changes on the boom length or weight. Please check and adjust according to the following steps.

1. Open the barrier gate side door and remove the upper cover.
2. Unplug the power cord.
3. Toggle the crank from the side door to unlock it(refer to column 6.7), manually adjust the boom to the place of 45 degrees then release the hand. If the boom keeps stable on the place of 45 degrees' angle, indicating that it is with the best spring force.
4. If the spring force is too large or too small, then should be adjusted. First, loosen the nut on the top of the spring, clockwise rotating the screw to increase the tension of the spring, counter-clockwise to decrease, then adjust the barrier boom again to its 45 degrees' angle position to check the spring tension.
5. Through repeating the above forth step to adjust the boom to its best balance, then fasten the double nuts, adjustment is complete.

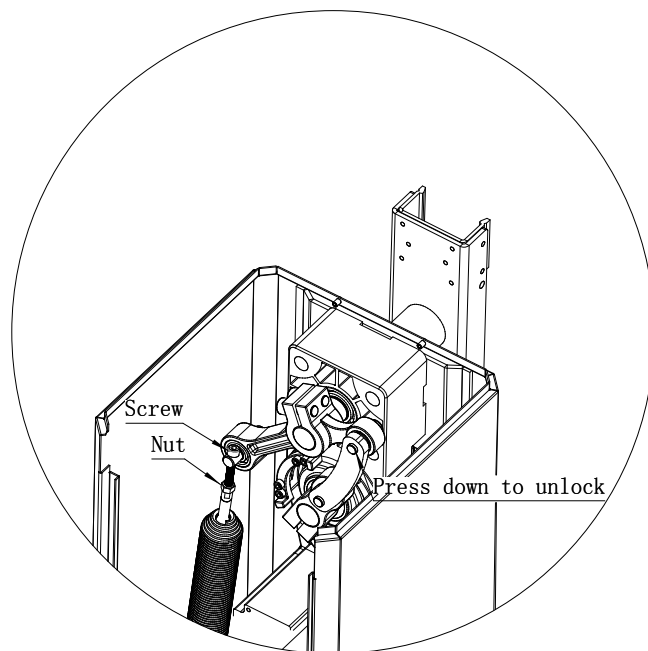


Figure 6

## 6.4 Mains Wiring

The power module of the barrier gate has been connected to the control board before delivery. To ensure operational safety and avoid damage to the components, please disconnect the circuit breaker first, and then connect the L and N of AC power into the input port of circuit breaker.

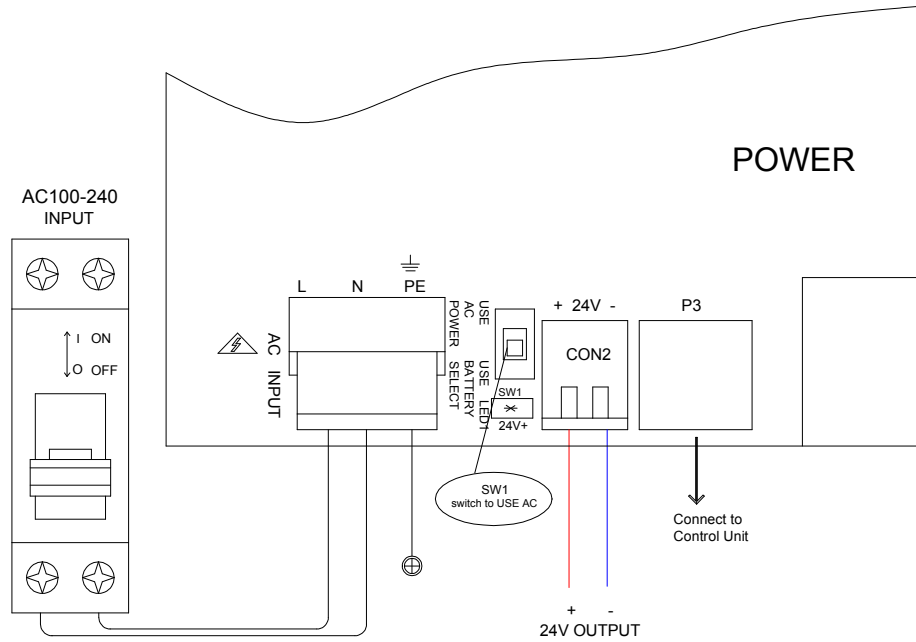


Figure 7

**Note: Only professional technicians can engage in the installation and after sales maintenance for this product and are responsible for any damage caused by improper operation.**

## 6.5 Electrify Check

Please close the circuit breaker to connect the power after correctly wired. The indicator light on the control board will be on once the power is connected; After powering on, please press the open/+ and close/- buttons on the remote control, barrier gate will automatically detect the opening/closing limit switch (both limit switches are required to be detected). After detecting the opening/closing limit switch, the auto-detecting data will be saved automatically, after which, the barrier gate will work properly.

## 6.6 Vertical Adjustment of Barrier Boom

If the barrier gate boom cannot open to its vertical position or close to its horizontal position. Please take the following steps to adjust it:

1. Open the barrier gate door, unplug the power cord.
2. Open and remove the upper cover.
3. Loosen the two fasten screws on rocker spring arm when the barrier boom is in erect. Adjust the boom to its horizontal position by hand. Use the torque wrench to tighten the two fastening screws (locking force is 72 N·m)
4. Connect the power to work, check whether the boom opens/closes in place. If not, please re-adjust it after power off until the performance achieving the ideal state.

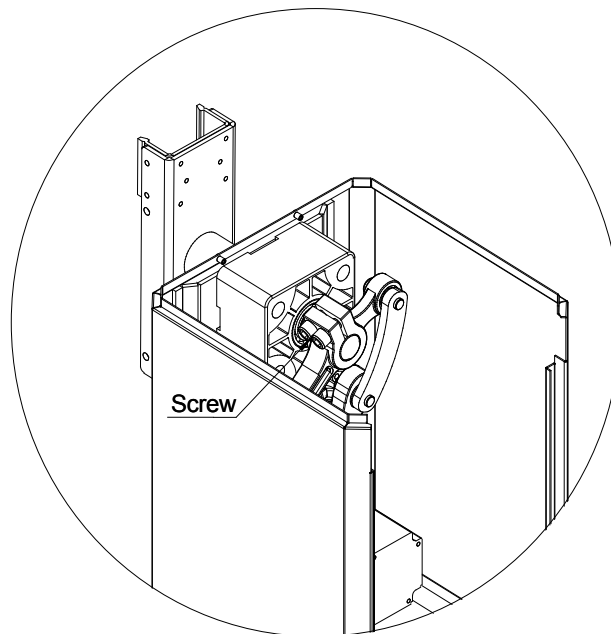


Figure 8

## 6.7 Manually Open/Close

The barrier boom may stay in the vertical or horizontal position when power is off, by this time the barrier gate mechanism is on its self-locking position. If you need to open/close the barrier by hand at this time, please follow the steps as below:

1. Open the barrier gate door.
2. Unplug the power cord.
3. For lefthand fixed type:

To close when boom in opened position, please counter-clockwise rotate the motor shaft

with a specific tool to enable the barrier boom to move, after which barrier boom can be manually pressed down for closing.

To open when boom in closed position, please clockwise rotate the motor shaft with a specific tool to enable the barrier boom to move, after which barrier boom can be manually lifted up for opening. Please refer to Figure 9.

4. For righthand fixed type:

To close when boom in opened position, please counter-clockwise rotate the motor shaft with a specific tool to enable the barrier boom to move, after which barrier boom can be manually pressed down for closing.

To open when boom in closed position, please clockwise rotate the motor shaft with a specific tool to enable the barrier boom to move, after which barrier boom can be manually lifted up for opening. Please refer to Figure 10.

**Note: Please stabilize the boom when manually open it, in order to avoid any unnecessary damage caused by the spring tension.**

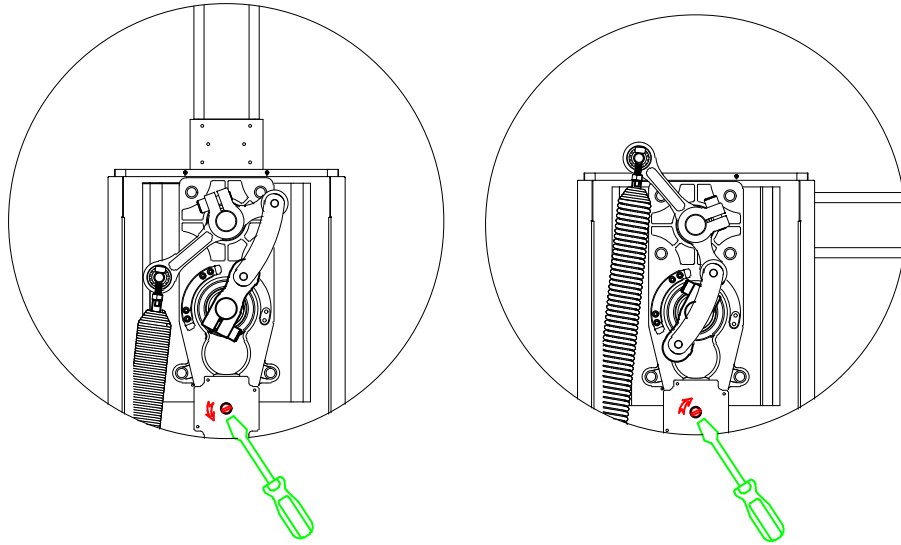


Figure 9

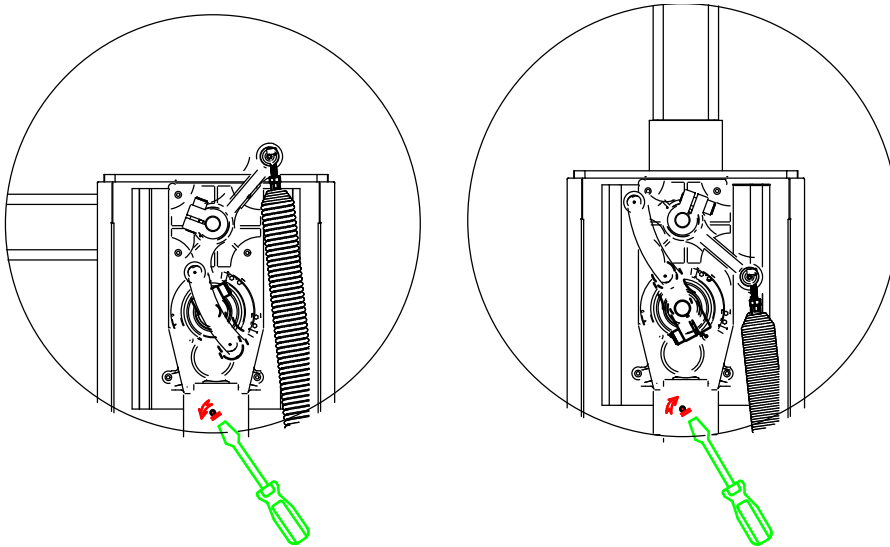


Figure 10

### 6.8 Spring Configuration

Boom Length	Spring
3M Octagonal Boom 80x46 mm	Φ4.5x1pc
4M Octagonal Boom 80x46 mm	Φ5.5x1pc
5M Octagonal Boom 100x45 mm	φ4.5 x1pc; φ5.5 x1pc
6M Octagonal Boom 100x45 mm	φ5.5x2pcs

**Note:** If the boom length is shorter than 4m, it's recommended to use 80x46mm octagonal boom, if length is longer than 4m, to use 100x45mm octagonal boom.

## 7. Control Board Wiring

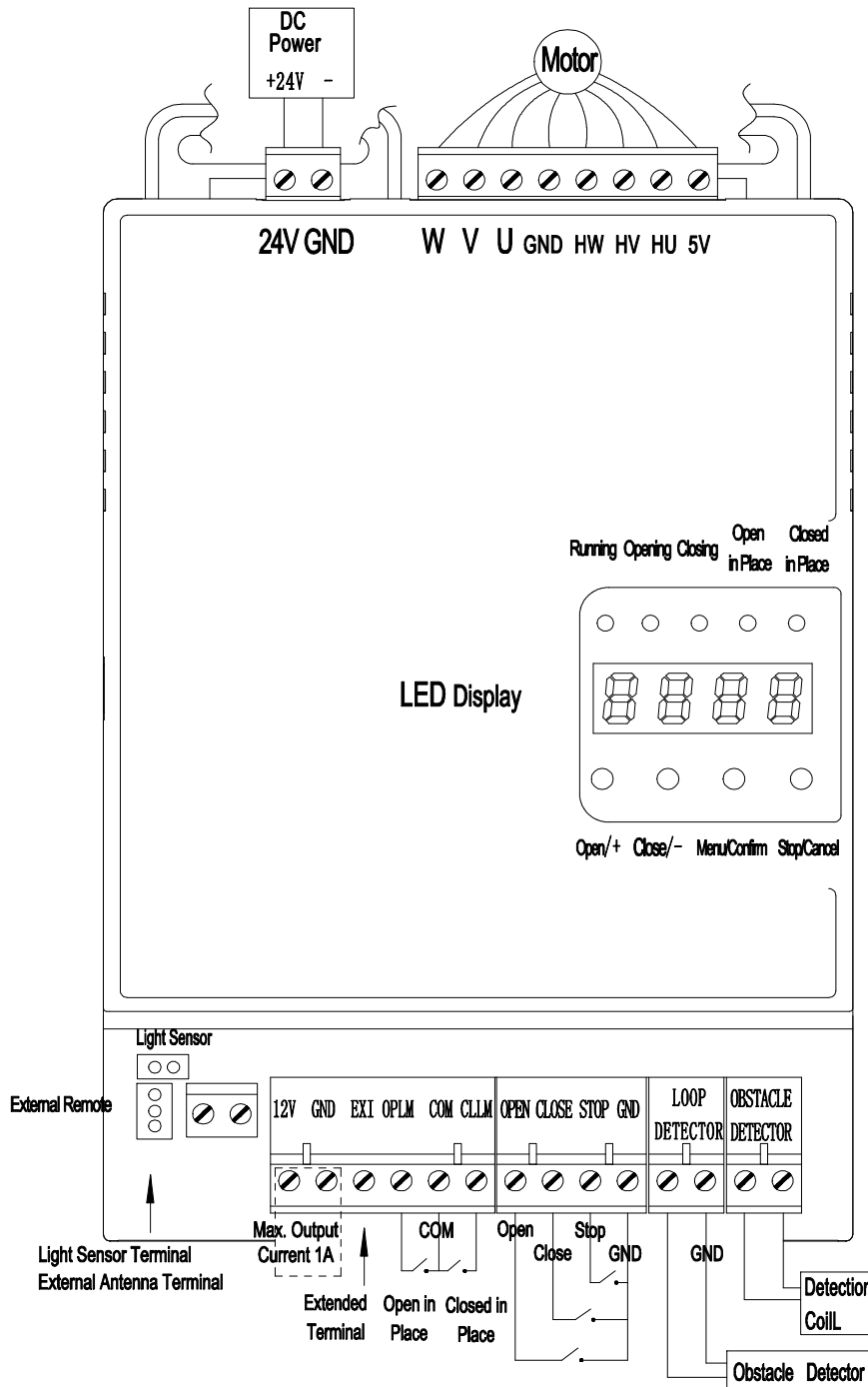


Figure 11



### Warning!

The controller of this product is specially designed for the use of low speed and medium speed barrier gates. The position of the barrier boom will be continuously detected by the motor hall during running, which replaces the limit switches used in conventional barrier control systems.

The combination of the hall encoder and the controller unit ensures the maximum control to the boom optimum running position.



**Note!**

For other special functions, please note that the controller's wiring may differ from which shown in this wiring illustration.



**Important Note:**

All input signals (like push buttons, limit switches, etc.) must be connected in the volt-free contact way.

## 7.1 Terminal Instruction

- Motor Terminal: Insert an 8 ends motor cable terminal;
- Power Terminal: Insert a 2 ends power cable terminal;
- Light Sensor Terminal: Insert a 2 ends light sensor terminal;
- External Remote Terminal: Insert a 3 ends external antenna terminal;
- 12V+/GND Terminal: Output +12V, maximum output current is 1A;
- NA Terminal: Extended terminal;
- Open in Place: When the barrier boom is open in place, the 2 terminals will be NC;
- Closed in Place: When the barrier boom is closed in place, the 2 terminals will be NC;
- OPEN: OPEN signal input terminal (another end connects with +12V terminal);
- CLOSE: CLOSE signal input terminal (another end connects to +12V terminal);
- STOP: Halfway stop during opening or closing signal input terminal (another end connects to +12V terminal);
- Radar/Loop Detector: Connect with radar or vehicle detector;
- Obstacle Detector: Connect with vehicle detection coil only.

### LED Display Instruction

Display	Instruction
IDLE	Not connect to the machine, or hall sensor failure. Possible reason: wiring loose.
STOP	Closed in place
CLOS	Barrier gate in closing

OPEN	Barrier gate in opening
HOLD	Open in place
LOCK	Barrier gate locked

## 7.2 Setting Button Instruction

There are 4 buttons on the control board for setting all the parameters: open/+, close/-, menu/confirm, stop/cancel.

Open/+: Under normal working mode, press this button, barrier will open. While control board in setting mode, pressing this this button will increase the value, press and hold this button, the value will be increased to the max. then start over again from the bottom value.

Close/-: Under normal working mode, press this button, barrier will close. While control board in setting mode, pressing this this button will decrease the value, press and hold this button, the value will be decreased to the minimum. then start over again from the top value.

☰/OK: There are 3 functions on this button:

1. Under normal working mode, press and hold this button for 3 sec. to enter into menu selection, LED will display "F-XX", press "+" or "-" to select the menu you are going to set.
2. Under menu selection status, short press this button will enter into parameter setting.
3. Save the setting after parameter confirmed.

☐/CL: Under normal working mode, press this button, barrier will stop; Under parameter setting status, pressing this button will return to previous menu.

## 7.3 Parameter Setting

Press and hold "menu" button on the control board for 3 sec. to enter into parameter setting mode, the LED will display "F-XX". Short press "+" or "-" button to select the corresponding menu, press "menu" to enter into the setting, press "stop/cancel" button to return to previous menu or exit the setting. After finished the setting, press "menu" to complete. The system will exit the setting mode after 60 sec. without setting action.

Menu	Function	Default Value	Range	Mark
F-00	Open speed	60	10-100	The larger the number is, the



				faster the speed will be.
F-01	Close speed	60	10-100	The larger the number is, the faster the speed will be.
F-02	Slow open position	70	45-80	The position that barrier starts to run at a slower speed during opening. Unit: degrees
F-03	Slow close position	45	10-60	The position that barrier starts to run at a slower speed during closing. Unit: degrees
F-04	Open acceleration time	30	0-255	Acceleration time from 0 to F-00 during opening. Unit: 0.01 sec.
F-05	Close acceleration time	30	0-255	Acceleration time from 0 to F-00 during closing. Unit: 0.01 sec.
F-06	Open in place speed	10	1-100	
F-07	Close in place speed	20	1-100	
F-08	Horizontal position adjustment	6	1-255	Slightly adjustment on barrier boom horizontal position.
F-09	Vertical position adjustment	6	1-255	Slightly adjustment on barrier boom vertical position.
F-10	Automatic close time without loop detector	0	0-255	Automatic closing time for no car passes. Unit: sec.
F-11	Obstacle Detection	0	0-1	1: Enable 0: Disable
F-12	Delay time of closing after vehicle passed	2	0-255	Unit: 0.1 sec.
F-13	Travel auto-learn speed	40	0-80	Barrier will run at this speed to set the open and closed limit switch.
F-14	Remote control pairing	0	0-60	
F-15	Auto-reverse response time after meeting obstacle	10	1-40	Response time when meeting obstacles. Unit: 0.05 sec.
F-16	Obstacle detection sensitivity	10	1-40	The larger the number is, the less the sensitivity will be.
F-17	Motor direction	0	0-3	Motor polarity and drivement rotating direction.
F-18	Locked current	6	0-15	Danger, set it with caution! The larger the number is, the larger the

				locked current will be.
F-19	Loop detector count	0	0-10	No counting for loop detector by default.
F-20	Auto-testing	0	0-255	Automatic testing interval, this can be used for burn-in test. 0 means the normal working mode.
F-21	Restore factory setting	0	0-255	5: Delete all remote controls 10: Restore factory setting
F-28	Slow close angle	30	0-45	The angle that barrier starts to run at a slower speed during closing. Unit: degrees
F-29	Relay output mode	0	0-5	For different relay type
F-38	Slow open angle	90	45-100	The angle that barrier starts to run at a slower speed during opening. Unit: degrees

## 8. Technical Support




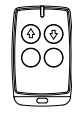



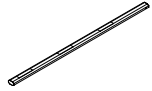
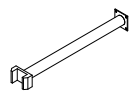
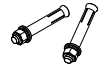

The control unit comes with an error code display feature that allows the user to determine the errors. For details, please refer to the following instruction of each error code.

Error Code	Cause
E-00	While operating the remotes deletion or restore factory setting, should set the correct value. Incorrect value will feedback this error.
E-03	Opening blocked. Possible reason: the balance spring is broken or opening speed is too slow or open in place speed is too slow. Solution: increase the opening speed or open in place speed.
E-04	Closing blocked. Possible reason: spring tension is too tight, boom not fixed, closing speed or closed in place speed is too slow. Solution: to check the spring tension, confirm boom is fixed, increase the closing speed and closed in place speed.
E-05	Opening overtime, opening time should be in 15 sec. solution: to increase the opening speed or open in place speed.
E-06	Closing overtime, closing time should be in 15 sec. solution: to increase the closing speed or closed in place speed.
E-07	Motor type wrongly selected. Solution: set under menu F-17 to modify to correct type.
E-08	During opening, the spring is broken and caused the motor reverse.
E-09	The remote control has been paired before, no need to pair again.
E-10	Pairing of remote control exceeds the maximum quantity.

If there is any operation failure that can't be handled by your technical staff, please contact our authorized service representative or professional assistance.

Please provide the barrier gate model, product serial number, controller version and other information when contact us for technical support services, which you can find in the barrier gate machine case model plate.

## 9. Packing List

Number	Title	Qty	Picture	Note
1	Barrier gate machine	1		Included in machine package
2	Machine case press board	2		
3	Expansion bolt M12	4		
4	Remote control	2		
5	Case Key	2		
6	Instruction	1		
7	Unlock tool	1		
8	Barrier gate boom	1		Optional, separate package
9	Boom holder	1		Optional
10	Expansion bolt M8	4		Optional, for fixing boom holder
11	Plug-in Machine control	1		Optional

## 10. Terms of Service

- One-year free maintenance for the system(barrier gate boom, remote control is not covered by this warranty)
- Lifetime repair guarantee.
- Technical support.

\* The following situations are not covered by free maintenance (or replacement):

- Damages to this product caused by installation which is not complied with the instructions under this manual.
- Unstable power supply, the using power supply exceeds the system specified voltage range, and doesn't meet the national safety power standard, therefore causing the damages to the product.
- Damage to the system appearance due to improper installation or usage.
- Damage to the product due to force majeure such as natural disasters.
- Beyond the warranty period.
- Service items not promised by manufacturer.

**The manufacturer reserves the right to modify the technical specifications of the product to meet the latest technological developments with prior notice.**

**This instruction and service terms involved are to the final interpretation of the product manufacturer.**