Installation Manual (V1.8)

PAB-B Beyond Series

Barrier Gate

ISO 9001:2015 Certified Manufacturer For Years

Vehicle Access Control System:

-Parking Management System
-Barrier Gate
-Parking Lock

Contents

1、Declaration

- The original language is English.
- Machine noise: less than 60db.
- Not more than 1000m above sea level, can not be used in explosive environment.
- EU single-phase voltage is 230V.

EC DECLARATION OF CONFORMITY CE

According to the following EC Directives

- Low Voltage Directive: 2006/95/EC
- Electromagnetic Compatibility Directive 2004/108/EC

The undersigned, Tan Qi Hua , representing Xiamen Dashou Technology Ltd./ The 4th Floor, No. 866, Yuan Shan South Road, Xiamen, China 361009. Declares that the machine described hereafter:

Product name: Barrier Gate

Model: PAB-B-NSN, PAB-B-NSL, PAB-B-HSN ,PAB-B-HSL, PAB-B-NCN, PAB-B-NFN,PAB-B-NFN2

Provided that it is used and maintained in accordance with the general accepted codes of good practice and the recommendations of the instructions manual, meet the essential safety and health requirements of Low Voltage Directive and Electromagnetic Compatibility Directive.

Person authorised to compile the technical file: Qihua Tan, The 4th Floor, No. 866, Yuan Shan South Road, Xiamen, China 361009
For the most specific risks of this machine, safety and compliance with the essential requirements of the Directive has been based on elements of:

EN 61000-6-1
EN 61000-6-3
EN 61000-3-2
EN 61000-3-3
EN 60335-2
EN60335-1

Date:____2011-06-25_____
Signature: __Tan Qi Hua____
Qualification: _General Manager

2、Safety

2.1 General safety information

This PAB-B Beyond series barrier was designed, built and tested using advanced technology and will have left our factory only after having satisfied stringent safety and reliability criteria. Nevertheless the barrier system can represent a risk to persons and property if it is not operated correctly. These operating instructions must therefore be read in their entirety and all safety information contained therein must be complied with.
The manufacturer shall refuse to accept liability and shall withdraw warranty cover if this barrier system is used incorrectly or is used for a purpose for which it was not intended.

2.2 Intended Use

The PAB-B Beyond series barriers are designed for use in controlling the entrance and exit lanes of car parks areas, multi-storey car parks and other vehicular access routes.

It is not permitted to use these barrier systems for any other purpose. Modifications or changes to the barrier or its control modules are prohibited. Only original Dashou spare parts and accessories may be used.

2.3 Operational Safety

A safe clearance distance, of at least 500 mm, must be provided between the top of the barrier boom and the closest solid obstacle (building, wall, fence etc.). The barrier activating elements must be installed at a position that provides a direct line of site to the barrier.

The motion of the barrier boom must be directly visible to the person operating the barrier.
Whilst the barrier boom is in motion, persons, and other objects, are prohibited from being in the immediate vicinity of the barrier.

Automated systems must be provided with a specially marked pedestrian walkway (actual location to be determined on-site).

If the barrier and operating elements have been installed, and connected in a fixed mains power supply, an all-pole, lockable, electrical master switch must be used.

The assembly and installation instructions must be complied with in their entirety. Permission must be sought from Dashou, prior to any alterations. The barrier boom fixture is designed to withstand wind velocities of up to a maximum of 7 on the Beaufort scale (= 500 N/m2). If higher wind velocities are anticipated, a modified barrier boom fixture must first be agreed to by Dashou.

Barrier booms longer than 3.5 m require a supporting bracket.

All electrical connections, wiring work and exchange of any components may only be performed by appropriately trained electrical technicians.

Before opening any electrical or electronic modules within the barrier, they must first be disconnected from the mains power supply.

Technical modifications or changes, to the barrier system, are prohibited.

2.4 Technical Developments

The manufacturer reserves the right to modify, without prior notice, the technical specifications in order to accommodate the latest technical developments. Dashou is willing to provide information on the status of existing operating instructions and on any alterations and extensions that may be relevant.

2.5 Warranty

Definition of warranty duration: All products for signed distributors of DASHOU have 12 months warranty from loading date of shipment. Warranty does not cover problems arising after above durations. Besides, the warranty terms agreed between the distributors and their customers are beyond the liability of DASHOU.

Maintenance of Products: If Products are originally defective, it shall be substituted or repaired as the occasion requires during the warranty period. (Note: For the substitution, repairing, they would be covered by DASHOU. For the transportation, the customer will pay the shipment charge from local to Dashou and DASHOU will pay the shipment charge from DASHOU to the customer.)

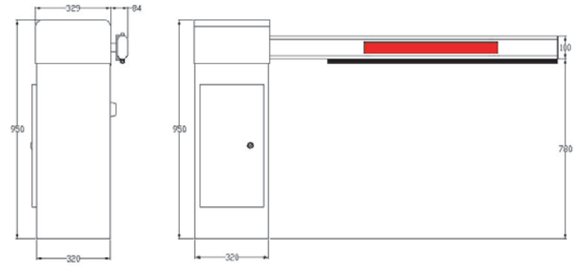
For any Products of which the warranty period has expired, it may be repaired with charge, only the electric components' fee. In any of the following events, the defective product is beyond the scope of warranty:

☆ The marker or serial number of the defective product is unclear or has been altered;
☆ Damage attributable to any personal reason other than any intrinsic defect;
☆ Damage incurred by other reasons, accidental damage, abnormal use or installation.

In case it's necessary for DASHOU to dispatch technicians to participate at the customer's side without quality problems, the expenses shall be borne by the customer.

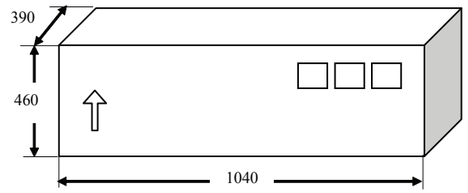
3、Packing

PAB-B Beyond barrier housing uses 2cm thick honeycomb carton for packaging, and boom arm uses bubble plastic film for packaging (poly wood package will be provided upon customer`s cost if required). Below parts are the dimensions of the packing box and barrier:



1mm thickness aluminum arm

Dimensions of barrier housing & boom arm (mm)



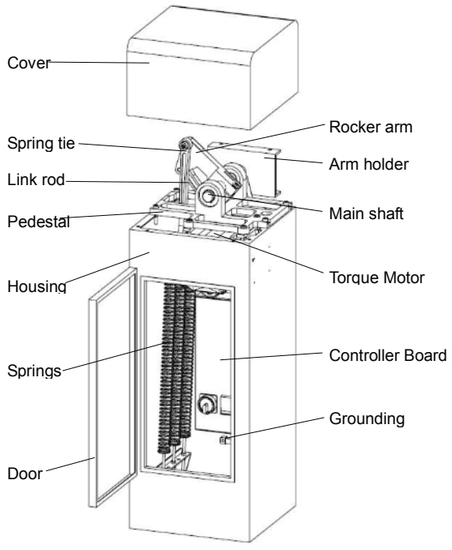
Dimensions of packing box (mm)

Following accessories should exist when open the package:

- 4PCS. M16 X 120mm expansion bolt used to fix barrier housing onto foundation
- 4 PCS. M8 X 60mm(For fence arm) or M8 X 20mm(For straight/Crank arm) hexangular lock screw used to assembly boom
- 1PCS spared balance spring
- 1PCS Boom Lining for boom fixing
- 1PCS end cap of boom
- 1PCS key to barrier housing door
- Other optional accessories if customers buy

4、Installation

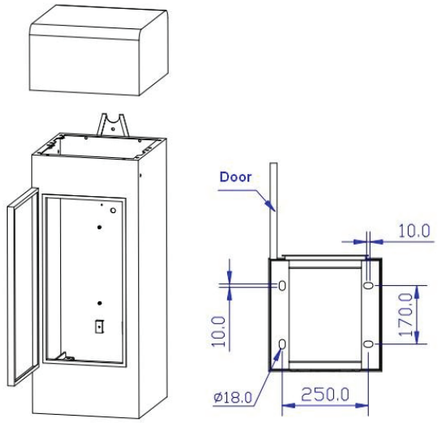
4.1 Structure Of Barrier



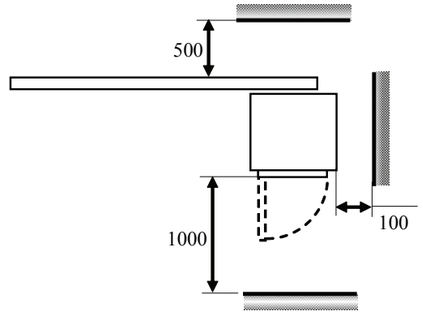
4.2 Arm Installation Direction

4.3 Foundation

To ensure that the barrier gate is working stably under all operating conditions, a concrete foundation with the following dimensions must be provided:



Foundation diagram (mm)

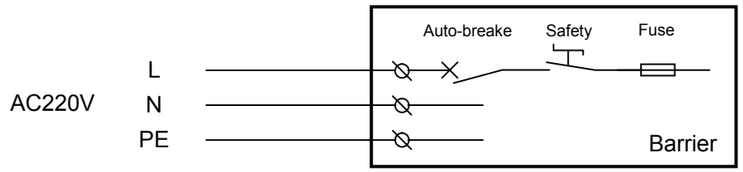


Minimum Installation Space(mm)

1. Fix those 4PCS expansion bolt (M16*120) on the concrete foundation according to above Foundation Diagram in “4.3 Foundation”;
2. Align the bottom hole of the barrier to those 4PCS expansion bolt, lock and fasten them by nuts. Please be sure that the barrier can work steady.

4.4 Power Connection

PAB-B Beyond barrier uses AC 220±10% & 50/60HZ input as its power supply. A fuse has integrated by barrier controller unit. For the safety and ease of maintenance and repair, barrier has set the auto-breaker and safety switch in power supply circuit.



5、Specification, Features & Function

5.1 Technical specification

Power	AC 220±10%, 50/60HZ, Max.0.5A
Motor (AC 220±10%)	70W concreted decelerating torque motor
Control unit	32 bit ARM MCU, 48Mhz basic frequency, variable frequency motor technology, multiplexing 0~5V switch input, multi relay output; RS485 interface, WatchDog shut down protect.
Loop detector input	Either active or passive dry contact input; 0~0.5V or short as logic 0, 3V~24V or open as logic 1. The input has RC hardware filter and 10 ms software filter, the width of pulse required to be over 100 ms, 1 fall to 0 trig to protect from crash to obstructer, and 0 to 1 trig barrier boom to move up.
Infrared Photocell input	Either active or passive dry contact input, 0~0.5V or short as logic 0, 3V~24V or open as logic 1. The input has 10 ms software filter, the width of pulse required to be over 100 ms, 1 fall to 0 trig to protect from crash to obstructer, and 0 to 1 trig barrier boom to move up.
Up & Down input	Either active or passive input, 0~0.5V or short as logic 0, 3V~24V or open as logic 1. The input has 10 ms software filter, the width of pulse required to be over 100 ms, 1 fall to 0 trig
Traffic light output Loop detector Syn. output	AC 220V power output (passive), Max. current 3A/ AC220V. Relay works if barrier boom move >2/3 and releases if boom move <2/3. Relay NO output, Max.AC 220V/0.5A, Max.DC 12V/1A
Wireless Remoter (optional)	Two button remote transmitter, distance: 20~50m
RS 485 interface	Semi-duplex RS485 interface, switch time 10 ms, 8 data bits, 1 stop bit, no checksum, 9600 bps, ASCII decimal code.
Opening/closing time	0.8 / 1.5 / 2 / 3 / 4 second optional (slightly adjustable by software)
Spring	Barrier boom will keep balance in 30~45º, >45º will move up automatically, <30º will move down automatically
Arm	45×100mm Aluminum alloy, Max. 6m
Arm direction	Leftward or rightward optional
Housing	2mm cold-roller sheet, anti-UV light and static plating, IP 54
Housing dimension	950mm×329mm×320mm
Gross Weight	Around 55 KG
Operating temperature	-25℃ -55℃
Humidity	10%-95%

5.2 Function & Features

5.2.1 Automatically check the operation status and report failure.

List of failure code as below:

E1---Pulse angle sensor or motor failure;

E3--- 'up' input failure (Input short circuit remains more than 10 sec. regarding as fail)

E4--- 'down' input failure (Input short circuit remains more than 10 sec. regarding as fail)

E5--- "1# Loop Detector" input failure (Input short circuit remain more than 10 sec. regarding as fail)

E6--- "Infrared photo cell" input failure (Input short circuit remain more than 10 sec. regarding as fail)

E7--- Always-on mode

5.2.2 Up and Down control

Three ways to control the barrier movement:

- 'Up' and 'Down' inputs by a push button
- Remote control
- RS485 serial command.

5.2.3 Anti-collision protects boom arm (optional)

Once anti-collision mechanism installed, it will protects the boom arm not to be damaged once boom arm was collided by a vehicle.

5.2.4 Alarm Against Swing Off (optional)

Boom and magnet will swing off when a vehicle hits the boom, the sensor detects the magnet and boom was gone and then sends an alarm signal to your devices like PC or alarm system.

Note: Anti-collision (swing off) should be equipped; The sensor should be connected to your devices like PC or alarm system.

5.2.5 Safety--- Anti-hit by pressure resistance bounce

While moving down, boom arm will immediately go back to vertical position once it is obstructed by an imposed force, which protects the vehicle or person not to be hit by boom arm. The sensitivity is adjustable.

Note: This function does not work when the angle is <9° both in vertical and horizontal position.

5.2.6 Safety--- Anti-hit by Loop Detector (Optional)

Suppose1# loop detector is connected to the barrier gate. While barrier boom moving down, If a coming vehicle was detected to be existing on the ground induction coil (to be connected to1# loop detector), the barrier boom will go back to vertical position immediately until loop input was dismissed and then the barrier boom will go down immediately.

Note: This function does not work when barrier boom horizontal angle is <9º.

5.2.7 Safety--- Anti-hit by IR photocell (Optional)

Suppose a Photo Cell is connected to the barrier gate. While barrier boom moving down, If infrared transportation between transmitter and receiver is blocked by human or vehicle, the barrier arm will go back to vertical position immediately. The arm will automatically close once the infrared transportation recovers.

Note: This function doses not work when barrier boom horizontal angle is <9º.

5.2.8 Double safety--- Anti-hit by Loop Detector & IR photocell (Optional)

To double protect a vehicle by connecting a loop detector and an IR photocell to barrier gate. While barrier boom moving down, if the infrared transportation between transmitter and receiver was blocked by a coming vehicle, or the coming vehicle was detected to be existing on the ground induction coil, or both happened, the barrier arm will go back to vertical position immediately. The arm will automatically & immediately close once the infrared transportation recovers and at the same time the vehicle has already passed through the ground induction coil.

5.2.9 Safety--- Anti-hit by "Opening Priority"

If a vehicle is coming while boom arm moving down, the boom arm will immediately go back to vertical position once a manual open command is given by guard by the push button or remoter transmitter, which protect the vehicle not to be hit by boom arm.

5.2.10 Automatically close after the given time

Once this function is set "ON", the barrier will automatically close after given time (1-90 seconds adjustable) if there is no any up or down input after barrier open fully.

This function is OFF as a default.

5.2.11 Automatically Close by 1# loop detector (Optional)

If 1# loop detector is connected to barrier gate (connect 1# loop detector to "Loop 1" terminal of controller board. Refer to 6.4 for details), if no any up or down input after the boom opened fully, the barrier will automatically close after vehicle passed.

5.2.12 Automatically open by 2# loop detector (Optional)

If 2# loop detector is connected to barrier gate (connect 2# loop detector to "Loop 2" terminal of controller board. Refer to 6.4 for details), once 2# loop input was triggered when barrier boom is in horizontal position, the barrier boom will open automatically and immediately.

5.2.13 Always-open mode (Optional)

Keep continuously pressing "Stop" button of remote transmitter for 3 seconds, boom arm will go up to vertical position and stay there until again keep pressing "Close" button of remoter transmitter for 3 sec. to finish always-open mode.

5.2.14 Traffic light control (Optional)

When barrier boom go up more than 2/3, the relay shorted, the port connected to the green light output will be AC 220V, the port connected to the red light will no output; When barrier boom go down more than 1/3, the green light will no output, and the red light output will be AC 220V.

5.2.15 Manually control in case of no power

Once power is off, just open the cabinet and manually control the barrier by a gear mechanism. Also barrier boom can be manually locked in any position between horizontal and vertical by pulling out the black plastic "lock/unlock rod" which is located at the back of motor, the lock status will remain until unlock manually.

Push down the black plastic "lock/unlock rod" to unlock the barrier.

Warning: Not allowed to use the function when power on, may hurt your hand and damage the motor.

5.2.16 Boom to open up fully or close down in case of power failure (Optional)

If power is suddenly off while boom closing, boom will automatically close down fully if the angle between boom and vertical plane beyond 45 degree. If power failure occurs during boom opening, boom will automatically continue to open up fully if the angle between boom and level surface beyond 45 degrees.

5.2.17 Anti-condensation in cold climate

The barrier remains low power consumption even without closing and opening input, which will keep the motor in normal temperature. The lubricant will not be frozen so that the barrier will keep working in frozen environment

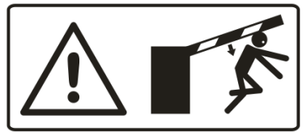
5.2.18 Transparent plastic covers on Control Board

A transparent plastic covers on the Control Board to makes Control Board water proof and dust proof, also protects operator.

6、Operation

6.1 Safety tips

Prevent smashing by boom arm: don't stand under the boom arm while it is moving down.



Prevent electric shock: barrier using non-secure AC220V as power supply, the wiring terminals and control board will be electrified with non-secure voltage after power, don't touch these parts after power.

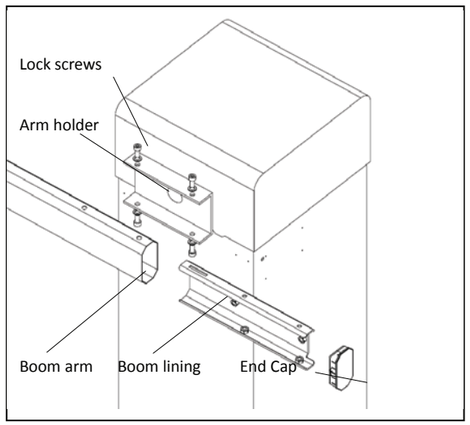
Prevent mechanical injury: there are many exposed mechanical parts will have dislocation movement while barrier is at work. don't touch these parts while at work.

6.2 Boom arm assembly

1、Insert the boom lining into the boom arm and align the four mounting holes at the upper and lower.

2、Put the boom arm into the boom holder and re-align the four mounting holes at the upper and lower. Lock and fasten the boom arm using 4pcs boom locking screws.

3、Push the boom cover into the boom arm.



6.3 Adjust boom length

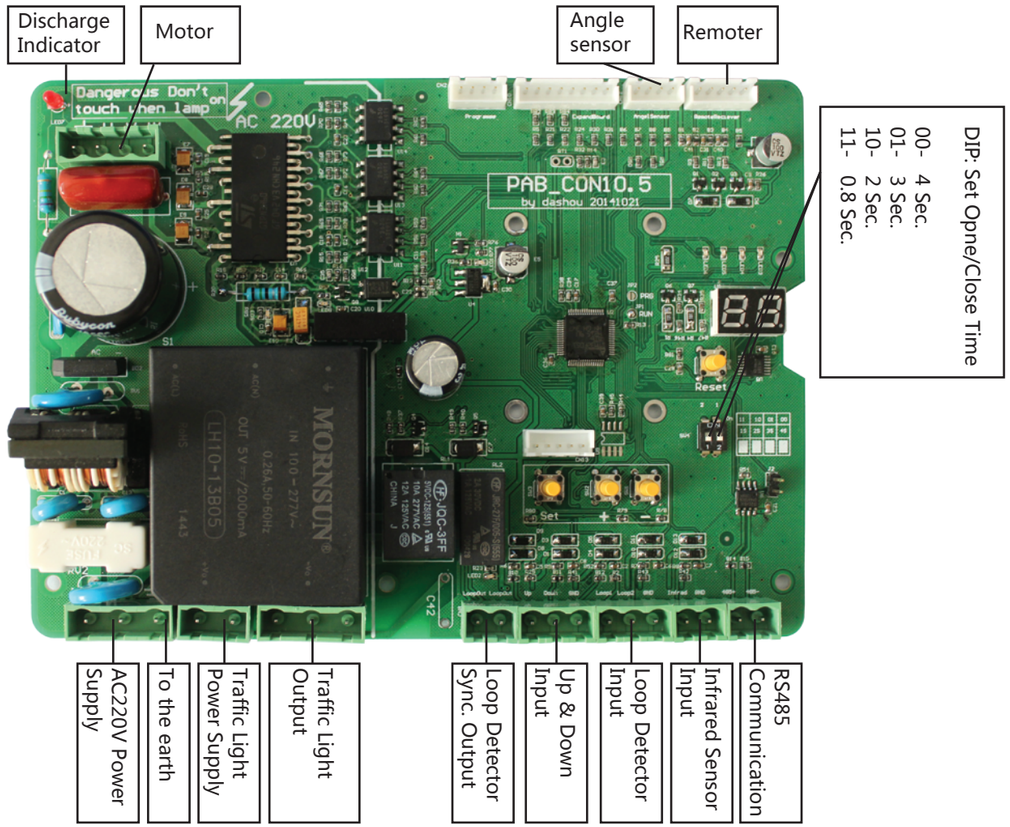
Before delivery, parameters have been programmed well according to the boom length required by customers. If you need re-adjust the boom length, you must firstly adjust the spring balance and then program the parameters according to the following steps:

1) Under status of Power-off, remove the boom from the barrier gate and cut boom to desired length and then assembled to barrier gate.**(Refer to 6.2 Boom arm assembly)**

2) Power-off the barrier gate, select the appropriate quantity of balance spring according to boom length and adjust the spring tightness so that the boom can maintain static balance at 45 degrees.

3) Program parameters: power-on the barrier gate, repeatedly control the barrier up and down till the barrier gate work steadily. The controller board will automatically adjust the parameter values till it reaches its optimal level. At first, the boom movement may not be stable because of inappropriate parameter values, with the up and down times increasing, the boom movement will be gradually smooth. It means that parameters have been automatically programmed well when both Up-adjust and Down-adjust LED indicator goes out.

6.4 Controller Board and Wiring Diagram



Caution 1: While Discharge Indicator working, Don`t touch the left side part of the board. The board is divided into left side part and right side part by a middle white line The process of Discharge last about 5 minutes.

Caution 2: Prohibited to connect any capacitor to the motor.

6.5 Parameter Programming

There are three button saying "SET", "+", "-" on the control unit.
In normal condition '+' is used for manually 'up' control, '-' is used for manually 'down' control, numeric LED shows the barrier arm movement status ('0' for vertical, around '96' for horizontal) or the failure code.

- **Enter Programming mode**
  Press "SET" button first and then '+' to start the Programming, the first default display will be function '1' (F1);
- **Select function**
  At the status of function '1', every time you press "SET" button ,the function code will add 1, from 1 to 9 and cycling. See below function code.
- **Set Parameter**
  Under the selected function, press '+' or '-' to display value ,within 10 sec. press '+' to increase parameter value, or press '-' to decrease value. Press 'SET' to save and return to "select function" status.
- **Exit Programming mode**
  Firstly press 'SET' and then '-' to exit programming mode, or it will exit automatically if no input for more than 30s during programming.

Function code:

- F1--- 'UP' optimize (Default: 32)
  Users no need to set, inappropriate value may result in arm strong shaking
- F2--- 'Down' optimize (Default: 78)
  Users no need to set, wrong or inappropriate value may result in arm strong shaking
- F3---Threshold value of pressure resistance bounce (Default: 50)
  Value 12~99, the sensitivity decreases with the value increasing.
- F4---Address: 1~99. (Default: 99)
- F5---Automatic close in given time (Default 99)
  Value 1-99 sec., this function shut down at 91-99 sec.

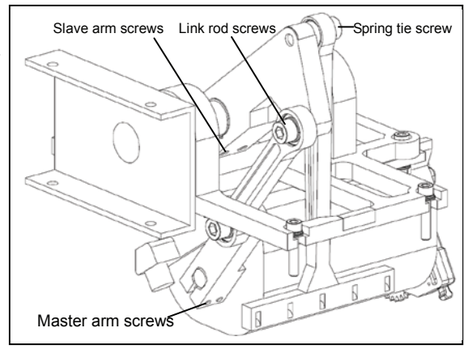
7、Maintenance and Repair

7.1 Maintenance

Check the following items on a regular basis every three months:

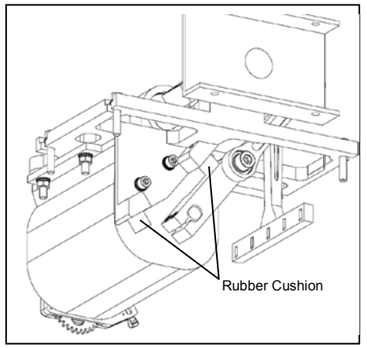
1) Screws loosing

Open the barrier' s top cover and control the barrier up and down. Visually check if the active arm screws, the slave arm screws, the link rod screws and the spring tie screw loose, especially the loosing of link rod screws will lead to serious boom arm shock. If loose, firstly turn the power off, then manually lock the boom arm at the vertical position, and remove the springs, the pedestal and the drive mechanism from the barrier housing. Finally fasten the loosed screws, put it back to situ, load springs, and fasten the cover.



2) Rubber Cushion damaging

Open the barrier' s top cover, control the barrier up and down. Visually check whether the Rubber Cushion is damaged while active arm hit it. If damaged, should spin out the old damaged Rubber Cushion and replace it with a new one.



3) Springs balancing

Turn the power off temporarily, put the boom arm at the position between 30 and 40 degrees angle to the vertical and check whether the boom arm can keep static hanging balance. If can not keep balance, need to adjust the springs balance (Refer to 6.3 Adjust boom length)

4) Controller Board displaying

While barrier is working, visually check whether the controller Board' s numeral LED normally displays angle value barrier boom arm moving. If there is fault code displaying, find the reason and deal it. (Refer to 6.6 Circuit Self-test)

7.2 FAQs and Troubleshooting

FAQ 1: Turn back halfway while the boom arm is moving down.

Possibility: (1) If F3 value is less than 25, maybe the pressure resistance rebound threshold is too sensitive, so triggered it by boom inertia or wind blowing.

(2) Springs tension is too tight

Solution: (1) Increases the threshold value of pressure resistance rebound to 50.

(2) Reduce the spring tension according to balance adjusting instructions.

FAQ 2: Boom arm move down very slowly and pressure resistance rebound function does not work.

Possibility: If F2 value is less than 60, maybe springs tension is too loose, lead to slow-down come too early.

Solution: Increase the spring tension according to balance adjusting instructions.

FAQ 3: Boom arm shock hardly while it reaches the vertical position and horizon position.

Possibility: (1) The link-rod screw is loose

(2) F1 and F2 value changed

Solution: (1) Fasten the loosed screws

(2) Increase F1 value if boom shock hardly at vertical position

Decrease F2 value if boom shock hardly at horizon position.

FAQ 4: Boom arm cannot open and close, also controller board LED display E1 fault code.

Possibility: 1. If boom arm can’ t move up after power on and manual moving it can make The controller display the moving angle value, indicates that the motor is damaged.

2. If boom arm moves slowly, but controller board LED does not display the moving angle value, indicates that the pulse angle sensor is damaged.

Solution: 1. Replace motor.

2. Replace pulse angle sensor.

FAQ 5: Boom arm shock hardly when it starts to open or close

Possibility: (1) Boom arm was not tightly fixed onto the barrier housing

(2) Transmission devices inside the barrier was loosen

(3) Balance spring was broken.

Solution: (1) Check and re-fixed the boom arm onto the barrier housing tightly

(2) Adjust the Limit Screw of Transmission device and Rubber Cushion

(3) Replace the same balance spring

FAQ 6: Boom cannot move, cannot be controlled by remoter, but can be controlled by Entry Station

Possibility: (1) The battery of remoter (transmitter) has run down

(2) The remoter (transmitter) got damaged

(3) The remoter (receiver) got damaged

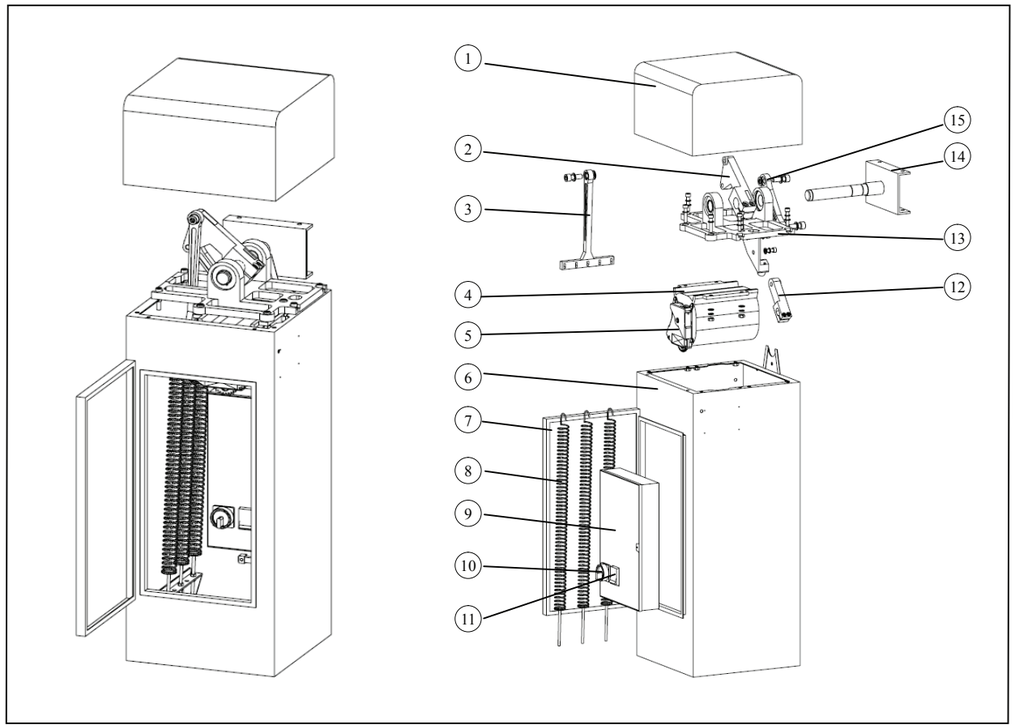
(4) The controller board got damaged

Solution: (1) Observe whether the indicator of remoter (transmitter) is on or off when press its button. If indicator is off, check whether the battery has run down.

(2) Each barrier will be equipped with two remoter (transmitter) If the customer bought. If both two transmitters do not work, it means receiver may got damaged.

(3) If the receiver on the controller board ticks when press remoter (transmitter), it means the receiver is working, and controller board may got damaged.

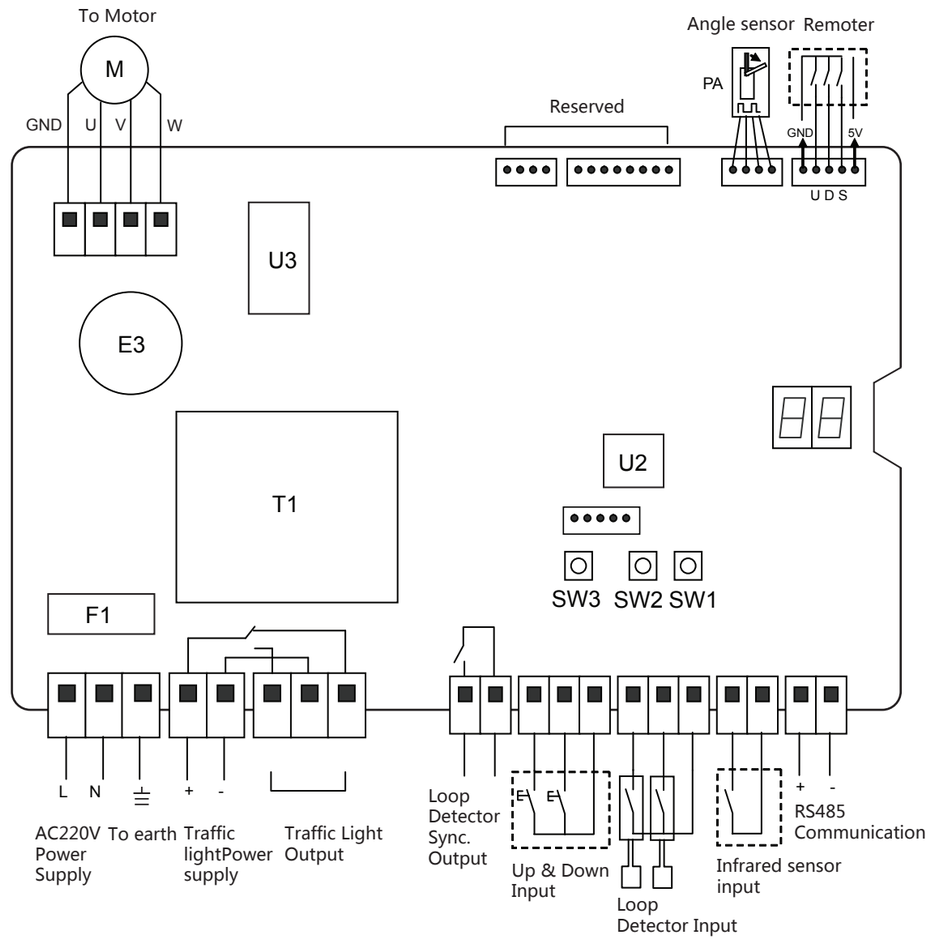
8、Mechanical Explosion Drawings and Parts List



Mechanical parts list

Serial	Part name	Serial	Part name
1	Top cover	14	Arm holder（include main shaft）
2	Slave rocker arm	15	Link rod
3	Springs tie		
4	Integrated gear torque motor		
5	Pulse angle sensor		
6	Housing		
7	Door		
8	Springs		
9	Controller Board		
10	Safety switch		
11	Auto-breaker		
12	Master Rocker arm		
13	Pedestal		

9、Electrical Diagram and Parts List



Circuit parts list

Code	Name	Code	Name
SW1	Up Button	U3	Motor Up & Down Contorl
SW2	Down Button		
SW3	Set ButtonE3		
E3	Start Capacitor		
U2	Control Chip		
T1	Transformer		
F1	Fuse		
M	Motor		
PA	Angle Sensor		