

Automatic Barrier Gate Instructions

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Chapter 1 Overview

1.1 Appearance and Dimensions of the Chassis

PB1000 and PB2000 series barrier gates are available currently. The chassis appearance of the two series differs greatly, where PB1000 series use the gray painted housing while PB2000 series use the stainless steel housing. Figure 1-1A shows the appearance and dimensions of the PB1030 chassis and Figure 1-1B shows the appearance and dimensions of the PB2030 chassis.

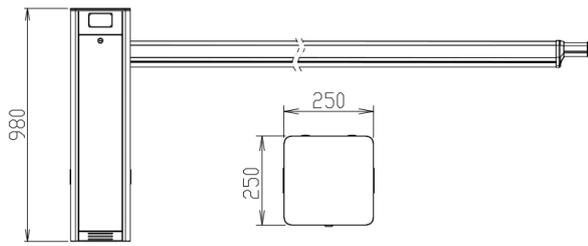


Figure 1-1A Dimensions of the PB1030 Chassis

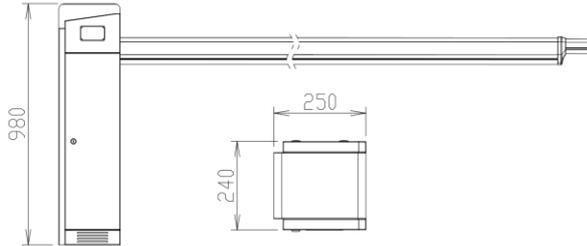


Figure 1-1B Dimensions of the PB2030 Chassis

1.2 Appearance and Dimensions of the Boom of the Barrier Gate

The PB1000 and PB2000 series chassis can be used in combination with different types of Straight booms, Figures 1-2A, 1-2B, 1-2C show the appearance and dimensions of different types of booms.

3m Straight Boom:

3 m (boom length, which can be extended to 3.8 m)

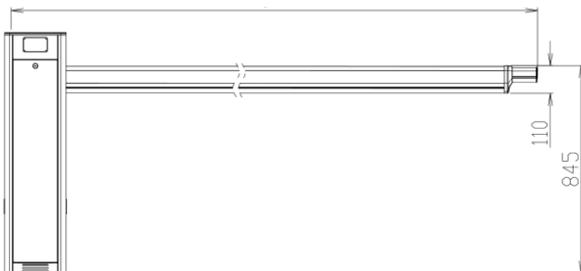


Figure 1-2A

4m Straight Boom:

4 m (boom length, which can be extended to 4.8 m)

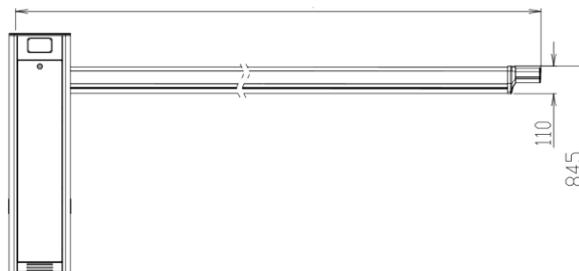


Figure 1-2B

5m Straight Boom:

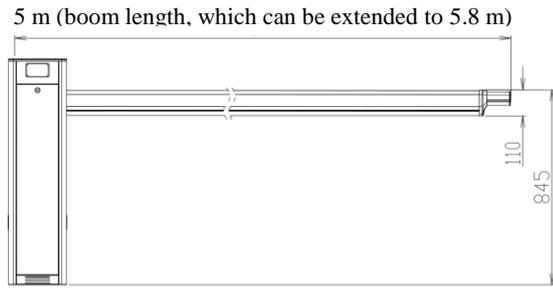


Figure 1-2C

1.3 Chassis Components

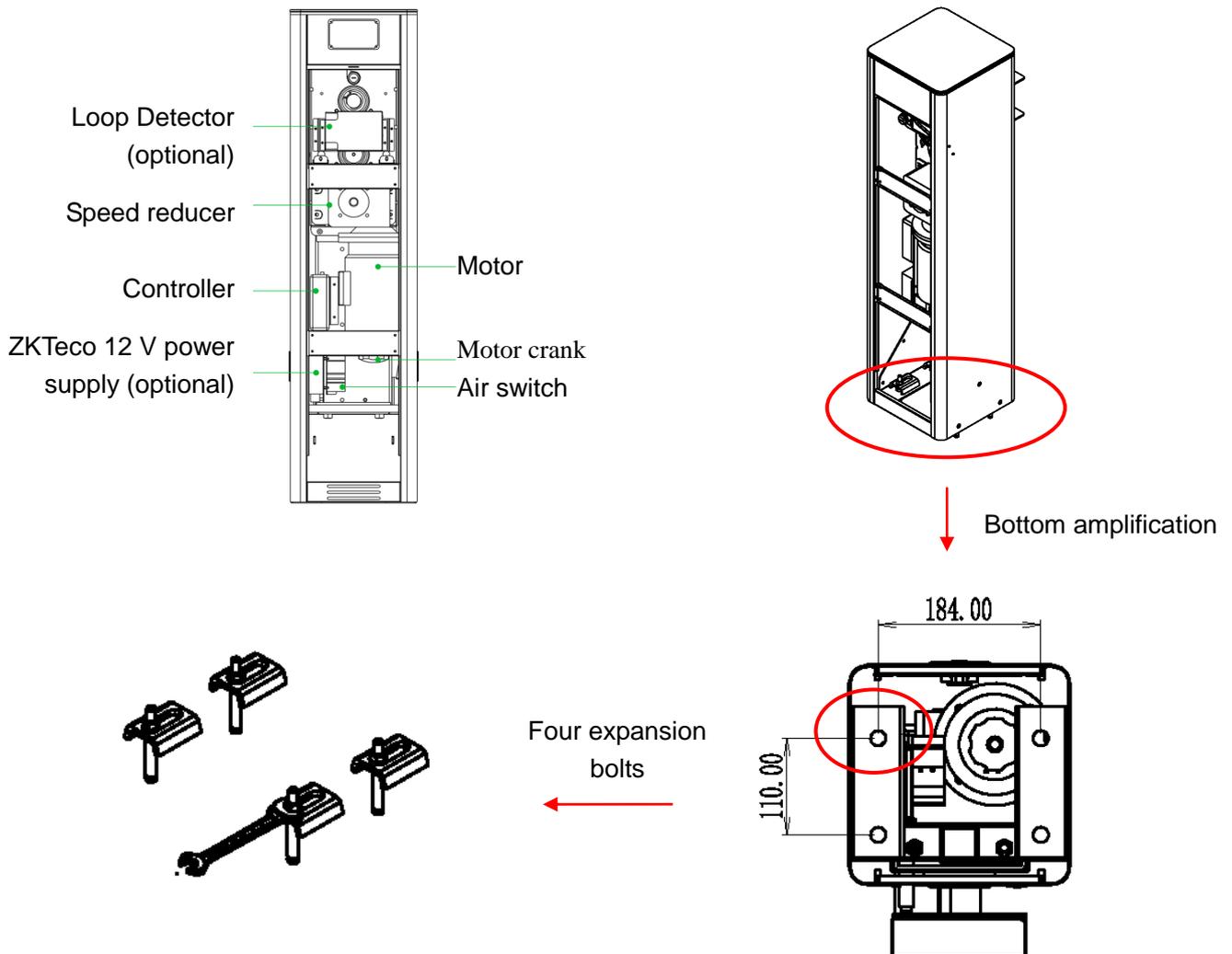


Figure 1-3 Components inside the Chassis

1.4 Working Principles

The core of the barrier gate adopts the modular design and consists of five modules: bearing and precision platform, power subsystem (motor), sine speed reduction subsystem, compression spring-type moment balance subsystem, and electric control subsystem.

- ① **Platform:** The barrier gate uses an independent bearing and precision platform, which is made of rectangular steel with dimensions of 150 mm (L) x 50 mm (W) x 4-5 mm (T). Different installation holes are precisely processed using a numerical control machine on this platform. Other subsystems are installed around this platform and their precisions are controlled by this platform. The function of this platform is equivalent to the frame of a car.
- ② **Power subsystem:** One motor and a matched speed reducer compose the power subsystem, which is installed on the bearing and precision platform. Speed reducers with different reduction ratios can be replaced to change the output moment and rotation speed of the core.

- ③ **Sine speed reduction subsystem:** The sine speed reduction subsystem is composed of constant-speed wheels and variable-speed wheels. It controls the falling speed of the boom. The speed is the lowest at the lifting start point and falling start point, and highest at the angle of 45 degrees.
- ④ **Compression spring-type moment balance subsystem:** One cam, one compression spring, and one guide groove compose the compression spring-type moment balance subsystem. It can greatly relieve the pressure of motor output and prolong the service life of the motor.
- ⑤ **Electric control subsystem:** The electric control subsystem consists of two position detection elements. The bearing and precision platform is processed using a numerical control machine, and therefore, the locations of the two position detection elements can be highly associated with the height of the sine speed reduction subsystem.

1.5 Specification Parameters of Product Series

Appearance	Model	Boom Type	Standard Boom Length	Lifting/ Falling Speed	Fastening Mode	Note
Gray appearance series	PB1012L	Straight boom	3 m (the expansion boom can be extended to 3.8 m)	1s	Chassis on the left	The 3M standard configuration is not installed the expansion boom. The standard configuration in China uses 220 V power input and national standard-complia nt plug. For orders placed outside China, specify whether the voltage is 110 V or 220 V as well as the plug specifications.
	PB1012R	Straight boom	3 m (the expansion boom can be extended to 3.8 m)	1s	Chassis on the right	
	PB1030L	Straight boom	4 m (the expansion boom can be extended to 4.8 m)	3s	Chassis on the left	
	PB1030R	Straight boom	4 m (the expansion boom can be extended to 4.8 m)	3s	Chassis on the right	
	PB1060L	Straight boom	5 m (the expansion boom can be extended to 5.8 m)	6s	Chassis on the left	
	PB1060R	Straight boom	5 m (the expansion boom can be extended to 5.8 m)	6s	Chassis on the right	
Stainless steel silvery appearance series	PB2012L	Straight boom	3 m (the expansion boom can be extended to 3.8 m)	1s	Chassis on the left	The following functions are optional for the 12 models above: 1.Cooling system 2.Heater system 3.Boom illuminator system 4.Bumping bounce back system
	PB2012R	Straight boom	3 m (the expansion boom can be extended to 3.8 m)	1s	Chassis on the right	
	PB2030L	Straight boom	4 m (the expansion boom can be extended to 4.8 m)	3s	Chassis on the left	
	PB2030R	Straight boom	4 m (the expansion boom can be extended to 4.8 m)	3s	Chassis on the right	
	PB2060L	Straight boom	5 m (the expansion boom can be extended to 5.8 m)	6s	Chassis on the left	
	PB2060R	Straight boom	5 m (the expansion boom can be extended to 5.8 m)	6s	Chassis on the right	

Chapter 2 Product Installation

2.1 Installation Precautions

- 1) Install the parking lot barrier gate on a level road. If the road level is a slope, a horizontal base should be built. In addition, the parking lot barrier gate system needs to be correctly wired and operated in accordance with the wiring diagram.
- 2) Adjust the spring based on the boom length to achieve moment balance for Automatic Barrier Gate prior to delivery. If the boom needs to be extended or cut due to on-site conditions, the spring strength needs to be re-adjusted to achieve balance. Otherwise, the motor will become very hot and the reduction gearbox will wear out excessively.
- 3) Do not remove and insert the wiring terminal when the device is not powered OFF. Otherwise, the barrier gate or system will be damaged easily.
- 4) Pay attention to wiring specifications of relevant terminals. Do not expose excess length of the metal part. Otherwise, short circuits or other faults may easily occur on the barrier gate during operation.

2.2 Cable Embedding

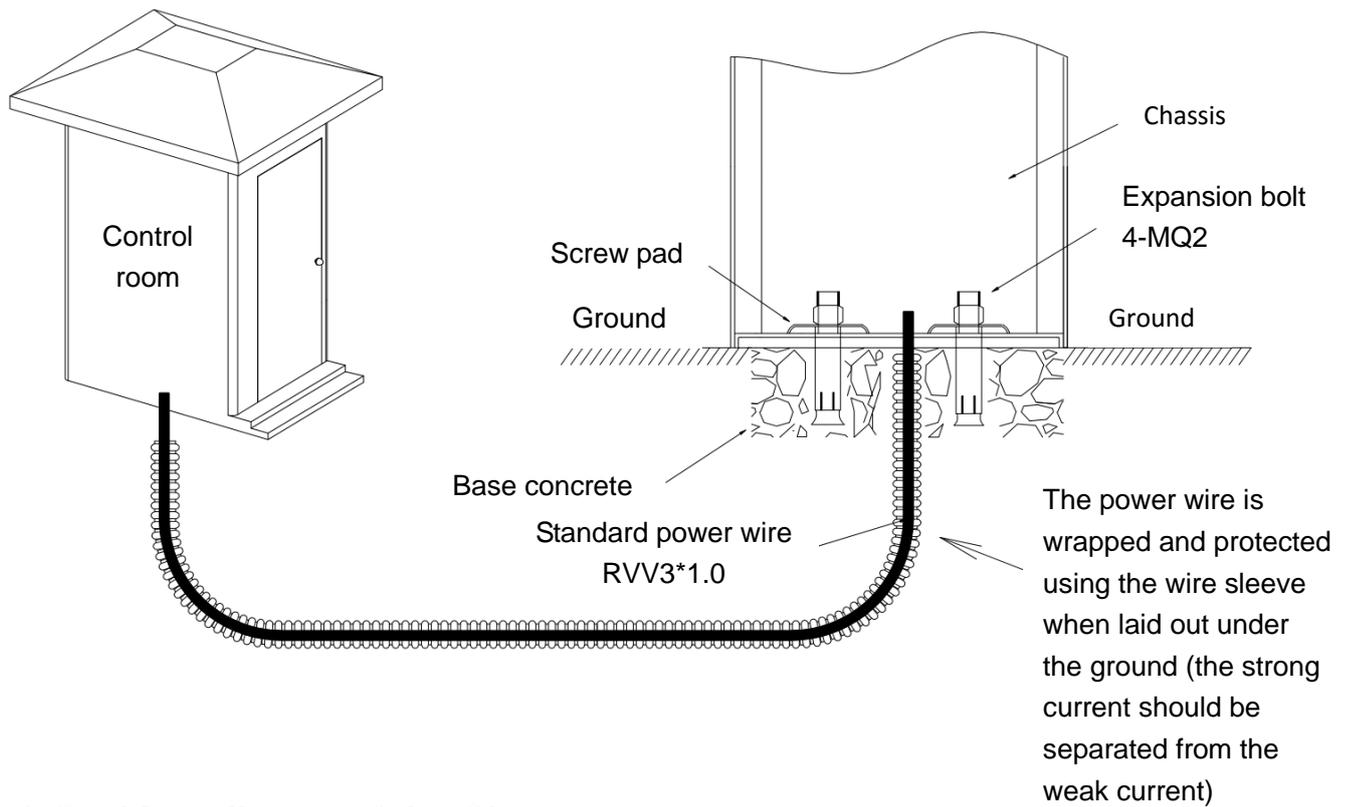
2.2.1 Cable Embedding Procedure

1. Route cables to be connected through protective sleeves in advance.
2. Use a tool to open a cable tray on the ground.

2.2.2 Cable Specifications

Protective sleeve: $\phi 25$, black

Cable: Standard power wire, RVV3*1.0



2.3 Civil Installation of the Chassis

Chassis Installation Procedure

- 1) Use positioning soft tapes to mark the installation position of the chassis, as shown in Figure 2-3A.
- 2) Drive four expansion bolts into the positioning soft tapes, as shown in Figure 2-3B.
- 3) Remove the access door and install the barrier gate, as shown in Figure 2-3C.
- 4) Install pads and use a wrench to tighten nuts, as shown in Figure 2-3D.
- 5) Install the access door, as shown in Figure 2-3E.

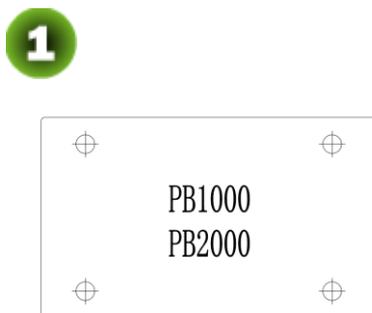


Figure 2-3A

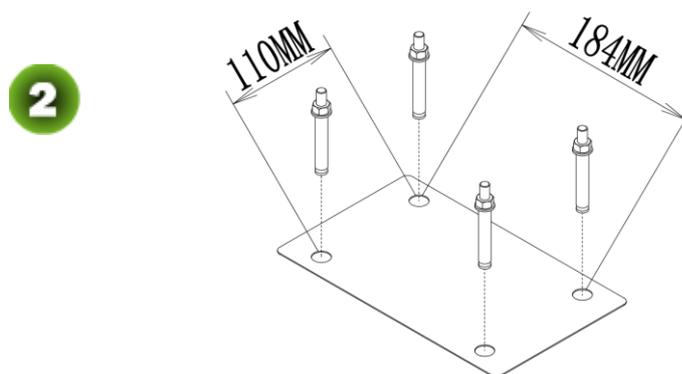


Figure 2-3B

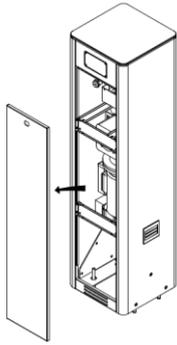
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Figure 2-3C

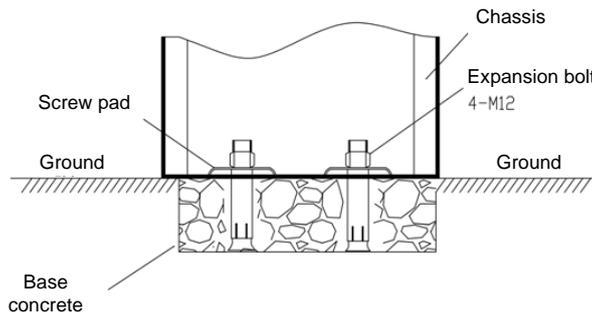
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Figure 2-3D

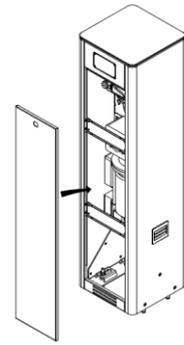
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Figure 2-3E

2.4 Boom Installation

Boom Installation Procedure

- 1) Take out booms.
- 2) Apply glue to the protrusion side of the convex boom and insert the protrusion side into the concave boom to bond the two booms to become one boom, as shown in Figure 2-4A.
- 3) Wipe off spilled glue with cloth, as shown in Figure 2-4B.
- 4) Put the expansion boom into the main boom, adjust the length of the expansion boom, and fasten the expansion boom with screws, as shown in Figure 2-4C.
- 5) Install decorative cap A on the expansion boom, fasten the decorative cap to the fixed plate of the expansion boom, and then install decorative cap B to the end of the expansion boom, as shown in Figure 2-4D.
- 6) Install the complete boom to the chassis, as shown in Figure 2-4F

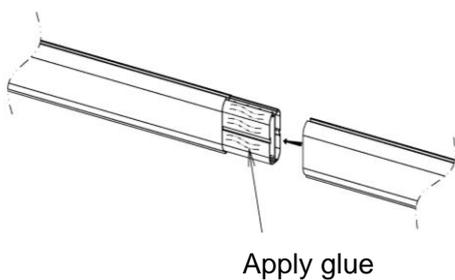
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Figure 2-4A Applying Glue

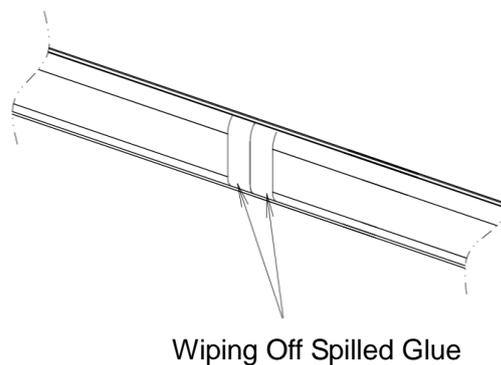
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Figure 2-4B Wiping Off Spilled Glue

3

Adjust the distance

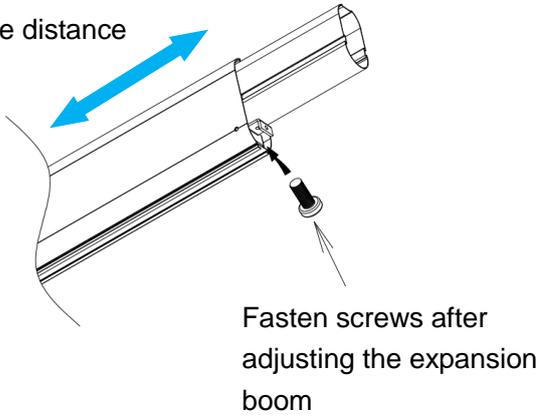


Figure 2-4C

4

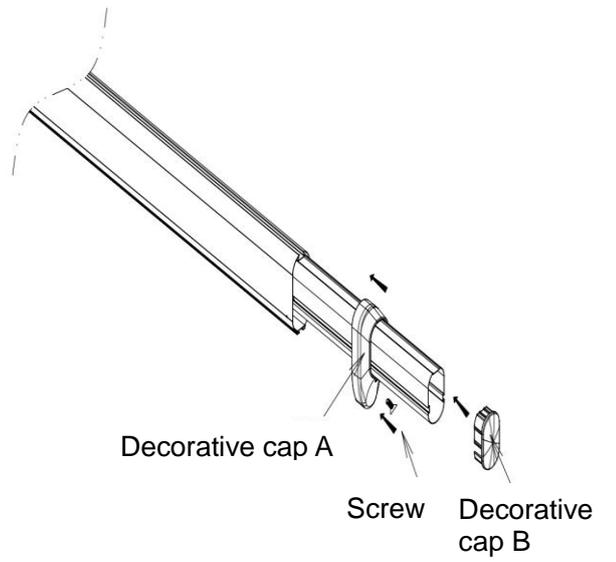


Figure 2-4D

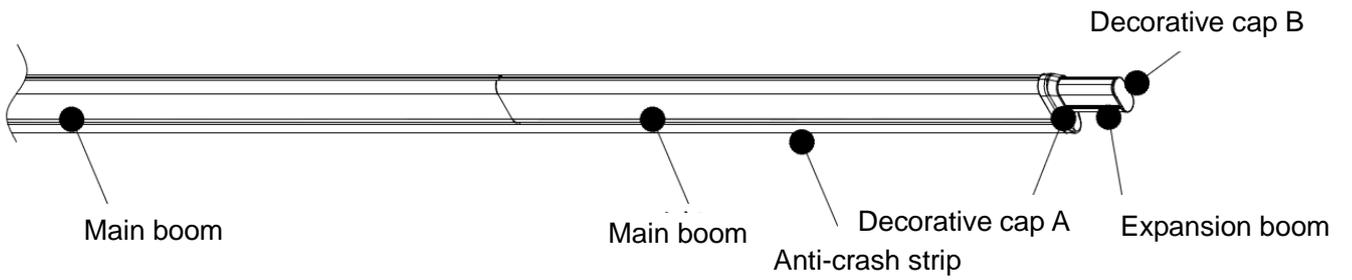
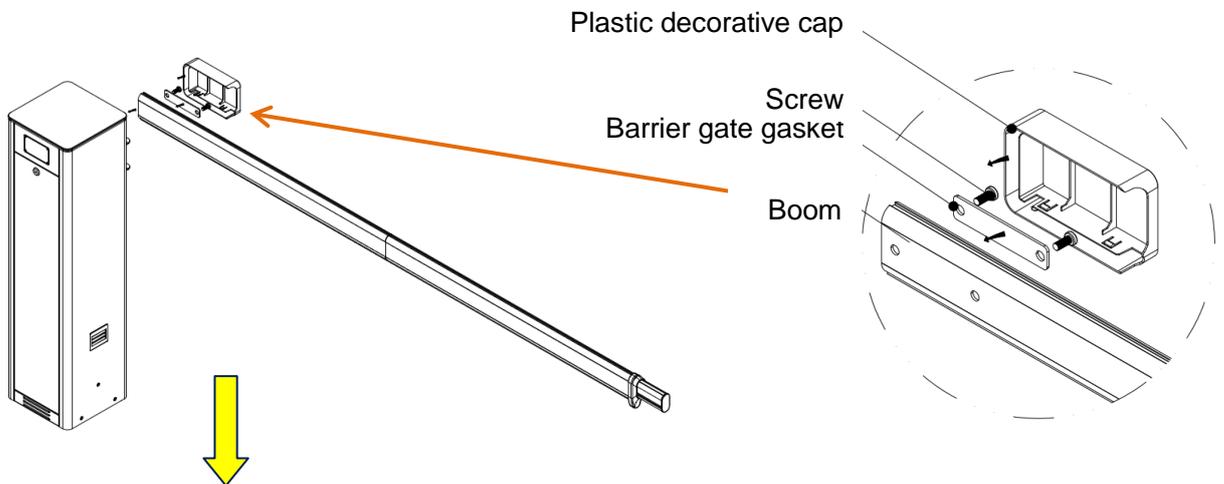


Figure 2-4E Appearance of the Straight Boom

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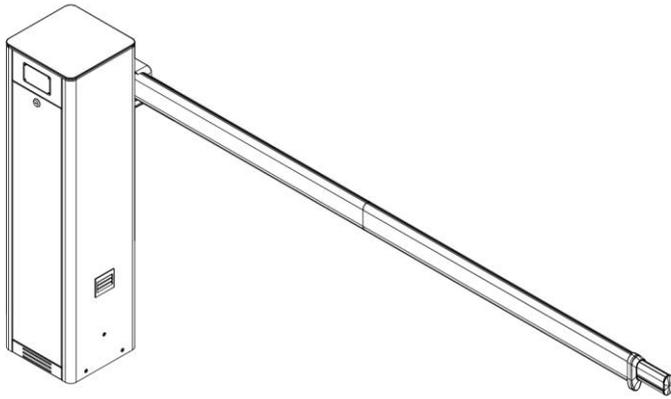


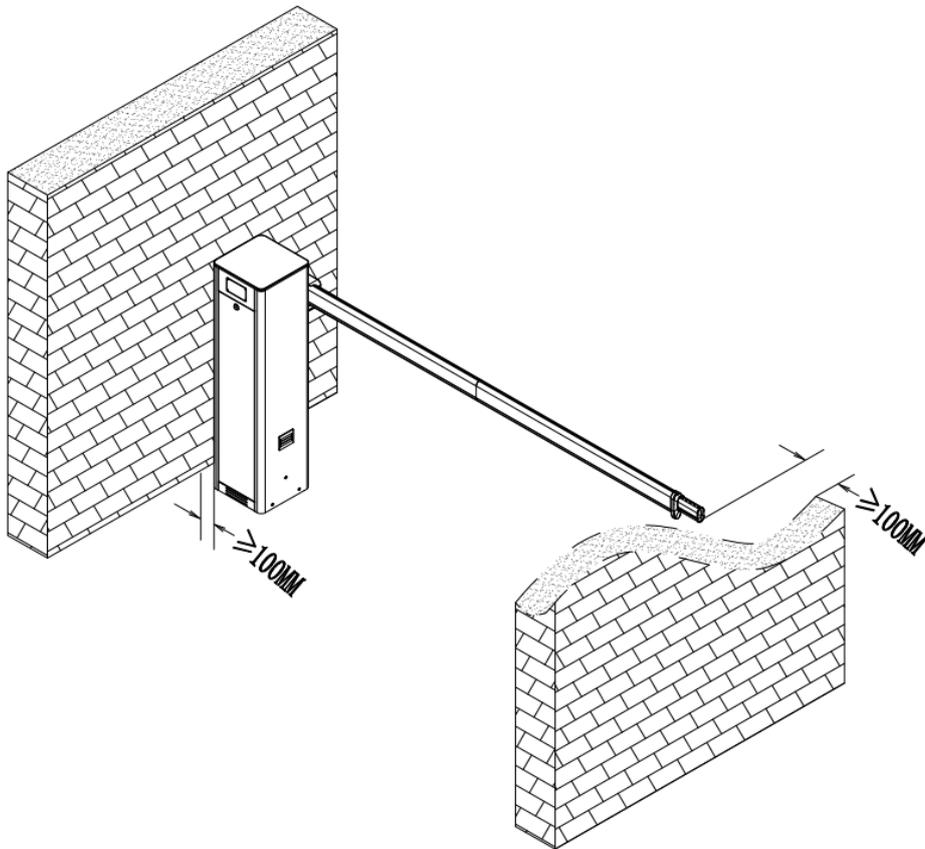
Figure 2-4F Installing the Boom to the Chassis

2.5 System Diagram

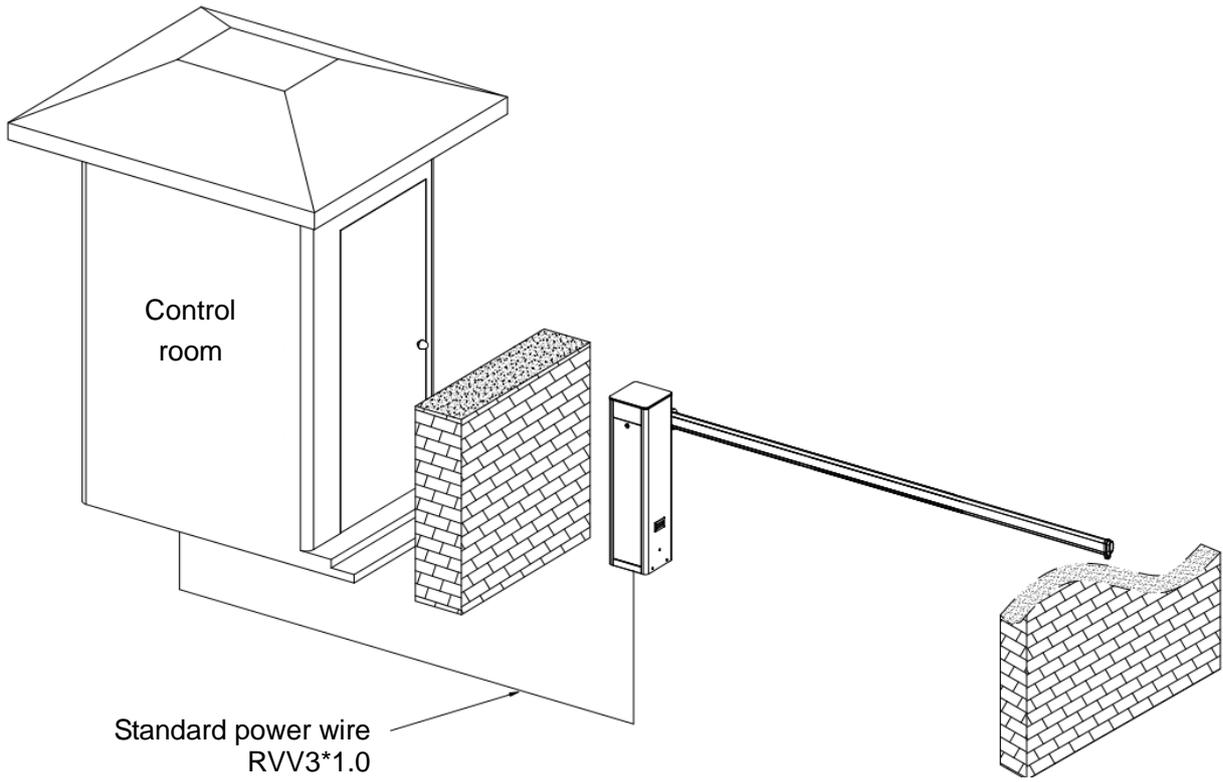
Installation Diagram for the Barrier Gate and Wall:

The distance between the chassis and the wall should be greater than or equal to 100 mm.

The distance between the boom and the wall should be greater than or equal to 100 mm.



System Diagram



Chapter 3 Device Wiring and Commissioning

3.1 Commissioning Preparations

- 1) Internal cables have been laid out completely prior to device delivery. Users are not allowed to change the cable layout but connect the device to a 220V/110 power supply.
- 2) The chassis housing must be grounded and a leakage circuit breaker must be installed on the power side.
- 3) Confirm that there is no object or person in the position into which the boom will fall.
- 4) The boom length and balance spring are adjusted to the balance state prior to product delivery. Do not increase or decrease the length and weight of the boom, to prevent imbalance. If the length and weight of the boom need to be changed, only professional personnel are allowed to perform the operation.

3.2 Commissioning Procedure

- 1) If the boom fails to fall into a level position, adjust position A; if the boom fails to be lifted upright, adjust position B. Properly adjust the levelness of the falling boom and the verticality of the lifted boom. See Figure 3-2A.
- 2) If the boom shakes during falling or lifting, adjust position C. The shaking that occurs during lifting is caused by the overlarge spring force. In this case, loosen the screws for several coils. If the boom shakes during falling, tighten the screws for several coils to reach the optimal state. See Figure 3-2B.

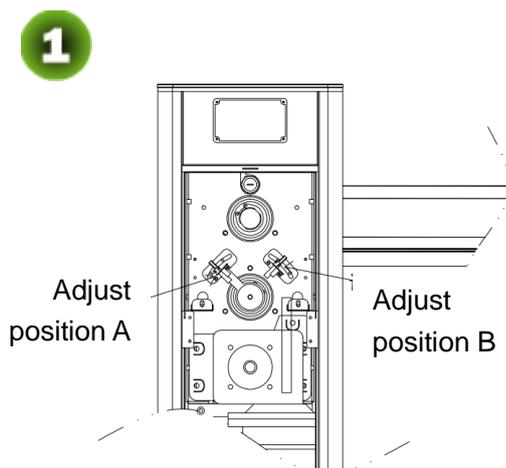


Figure 3-2A Adjusting Levelness Verticality of the Boom

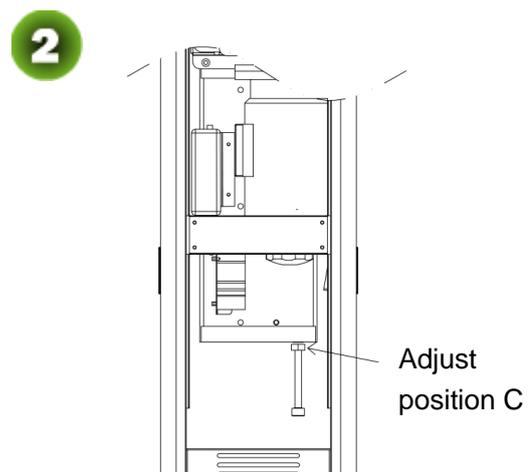
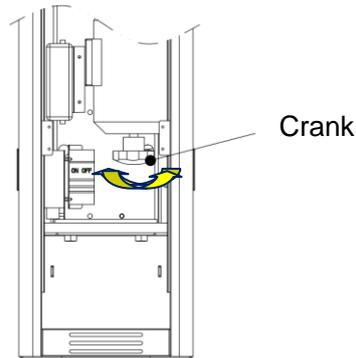


Figure 3-2B Adjusting the Boom in the Case of Shaking

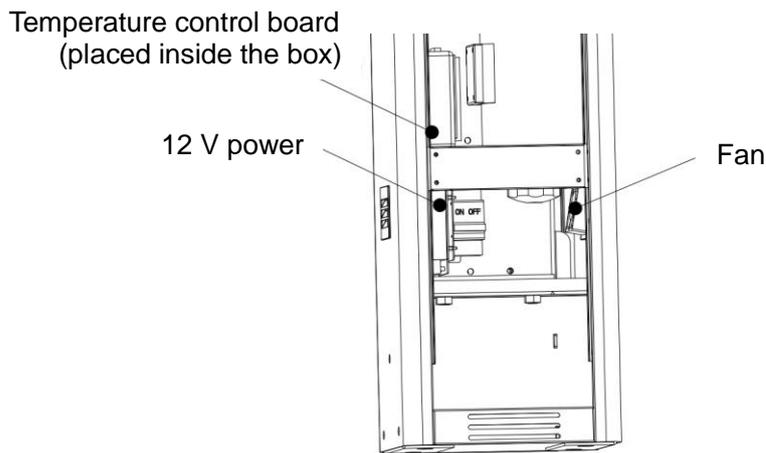
- 3) The barrier gate provides multiple interfaces, which can be connected to the vehicle detector (Loop Detector) and boom light bar. The barrier gate not only meets security requirements but also supports automatic management after it is connected to a charging system (optional).

4) Use the motor crank to lift the boom in the case of a power failure.



3.3 Additional Functions (Optional)

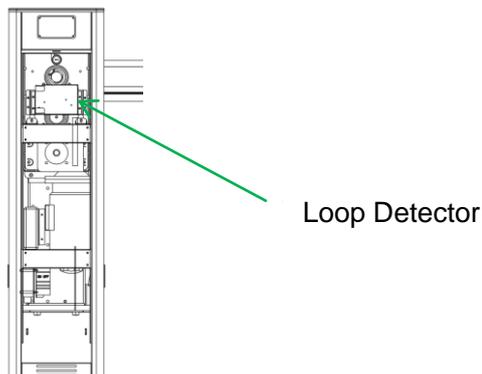
1) Cooling system: Add the following accessories: fan, temperature control board, power module



2) Heater system, Add the following accessories: Heating device, Temperature control board, Power module

3) Anti-crash function, Add the following accessories: Bumping bounce back system

4) Vehicle detector, Add the following accessories: Loop Detector



5) Lamp control, Add the following accessories: Boom illuminator system; Power module

Chapter 4 Common FAQs

Q: After the boom is installed, the boom does not give any response when a remote controller or external controller is used to control the boom lifting and falling.

A: The signal problem occurring on the grating makes the mechanism get jammed. Check whether the grating plug malfunctions, use a controller to control the lifting and falling of the boom. If the boom can be lifted and fall normally, the grating functions properly.

If the grating plug functions properly but the problem recurs after the motor crank is rotated, the grating is faulty. Replace the grating.

Q: The chassis vibrates or shakes.

A: Open the chassis door, and use a wrench to tighten expansion bolts.

Q: The boom does not give a response. What are the possible causes?

A: 1) Check whether power is supplied and whether the power voltage is within the range of rated voltage +5%.

2) Check whether the fuse of the control box is burnt.

3) Check the line and check whether cable joints on the binding post of the control box are in good contact.

4) Check whether the silicon controlled thyristor of the control box is damaged. If yes, replace the control box.

Note: If the barrier gate does not operate, power off the barrier gate immediately. Otherwise, the control box will be burnt.

Chapter 5 Device Maintenance

5.1 Maintenance Items

- 1) Maintain the boom. Fix the degumming or falling part of the reflection film.
- 2) Tighten the cable joints and fix the contact points of the device.
- 3) Clear away dust from components inside the chassis.

5.2 Maintenance Period

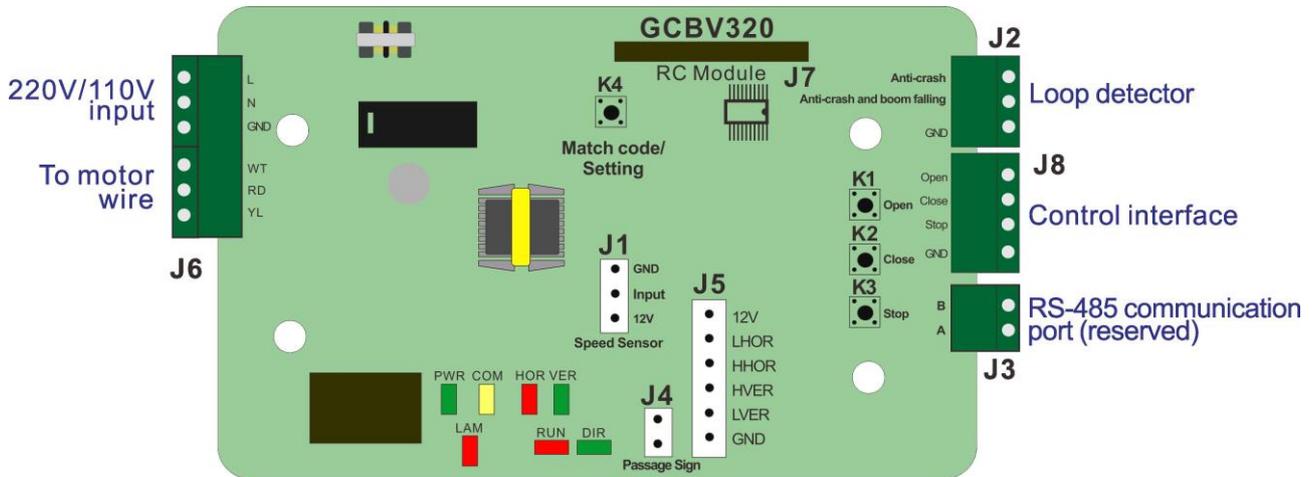
Maintenance technicians need to maintain the barrier gate system at the following frequency:

- 1) Maintain the boom once every month.
- 2) Tighten cable joints and maintain contact points of the device once every month.
- 3) Clear away dust from components inside the chassis once every month.
- 4) Common faults occurring on the barrier gate system should be rectified by system technicians. For faults that cannot be rectified, contact the maintenance company in a timely manner and make the *Device Maintenance Records*.

Appendix 1 Packaging List

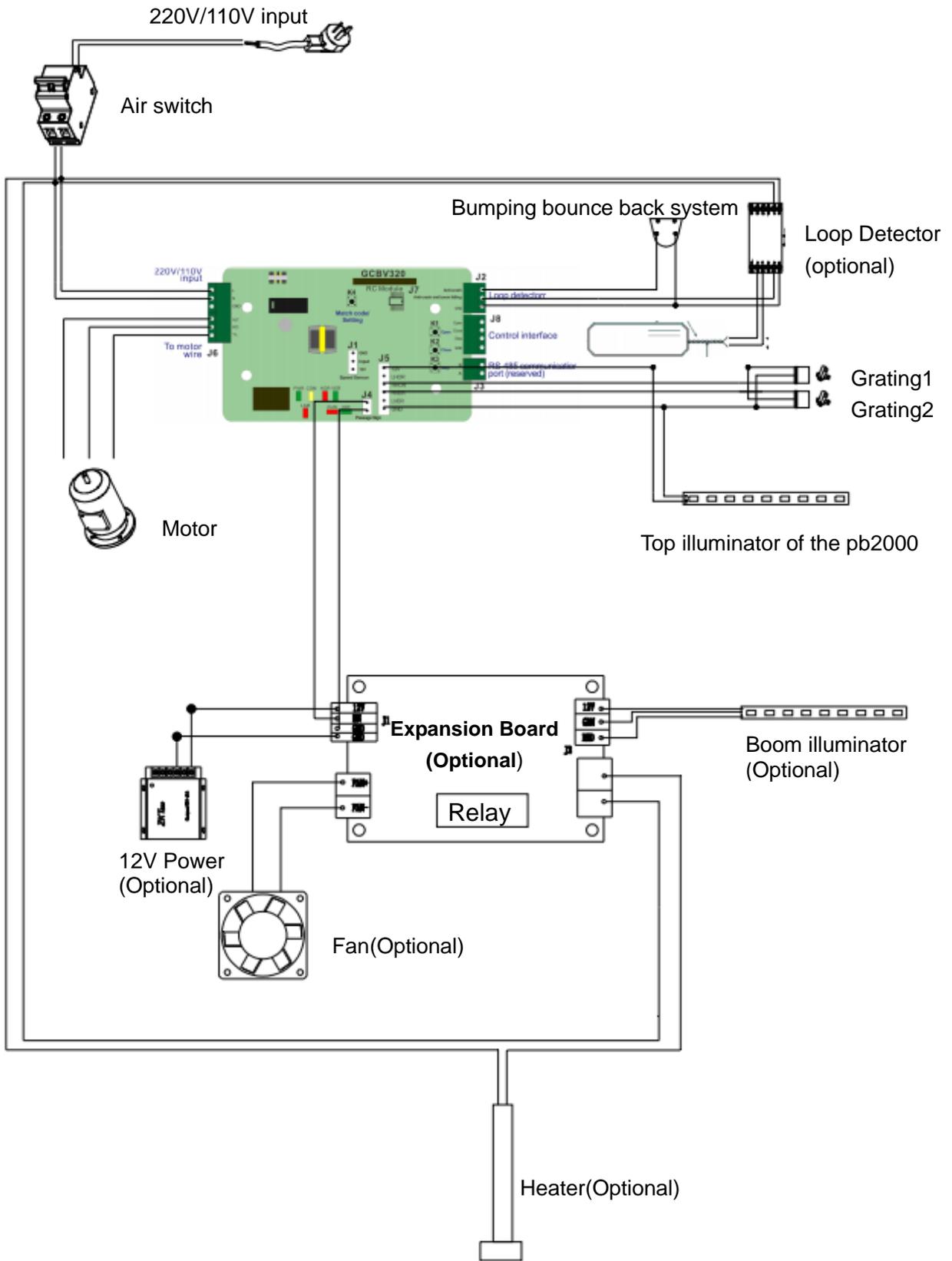
1	Barrier gate	1 pc
2	Boom	1 set
3	Transmittor	2 pc
4	Key	2 pcs
5	Instruction book	1 pc
6	White stick band for installation positioning	1 pc
7	Decorative cap for the boom	1 set
8	Hardware pack	1 set
9	M12 expansion bolt	4 pcs
10	Screw pad	4 pcs
11	M10*45 mm screw	2 pcs
12	Boom gasket	1 pc
13	M10 L-shaped wrench	1 pc
14	Glue	1 set

Appendix 2 Wiring Diagram of the Control Board

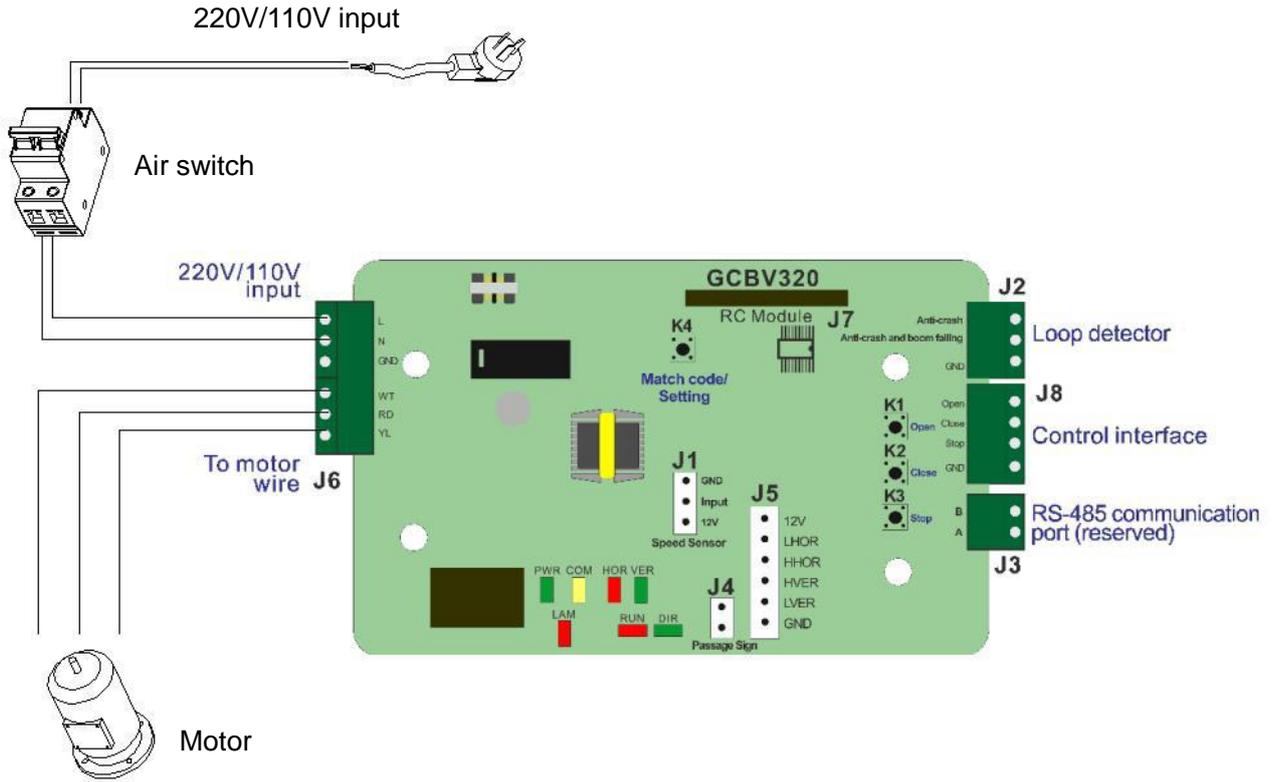


Attached Figure – A Control Board Diagram

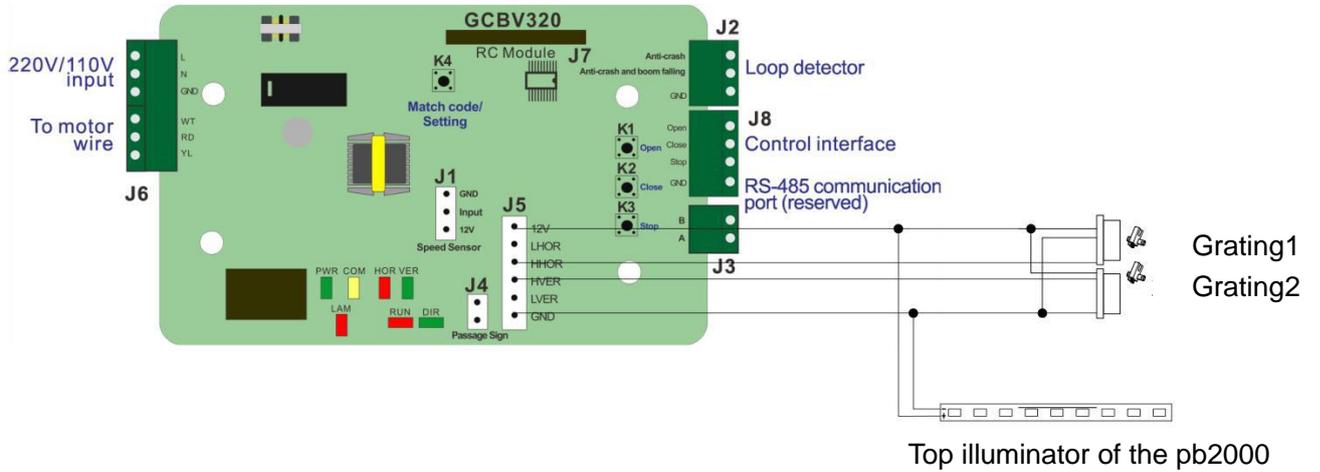
The controller Match code Description: Press the **K4** button on the controller, motherboard flashing yellow light, mean in the matching state, then press and hold the remote **K1/K2** switch button pairing, when the flash a red light on the motherboard, the pairing is successful. Completing pairing can be according to the remote control **K1/K2** button, check the barrier gate operation state to detect whether the pairing is successful.



Attached Figure – B1 Mains Supply and Motor Wiring Diagram

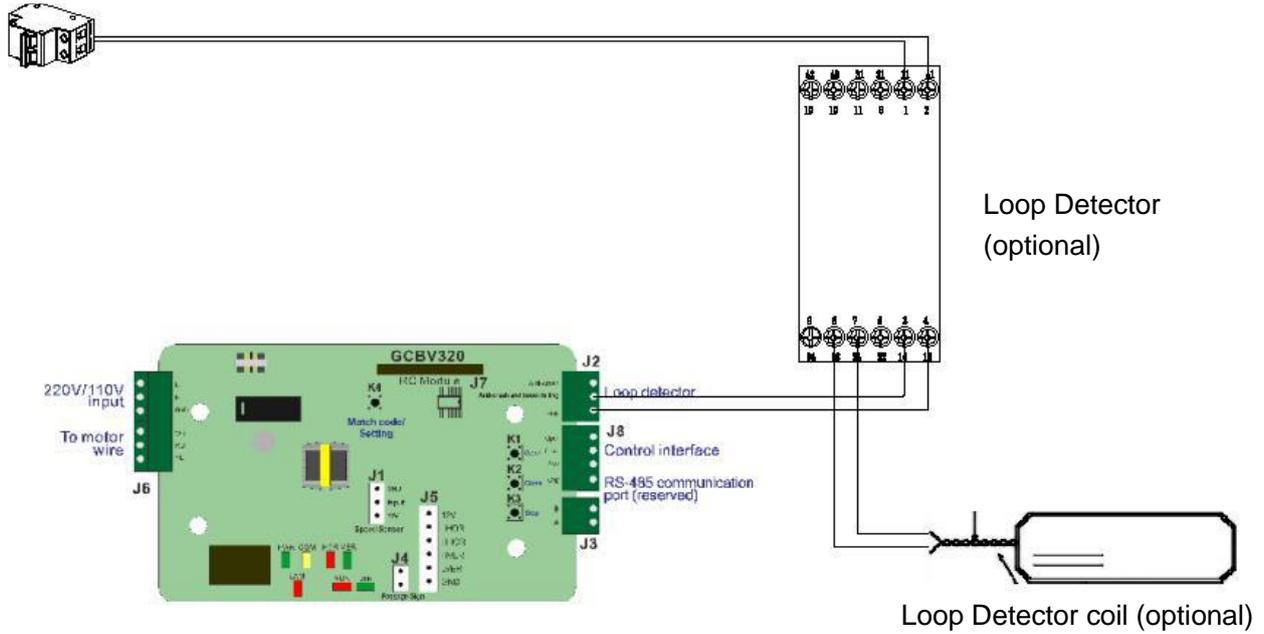


Attached Figure – B2 Mains Supply and Motor Wiring Diagram

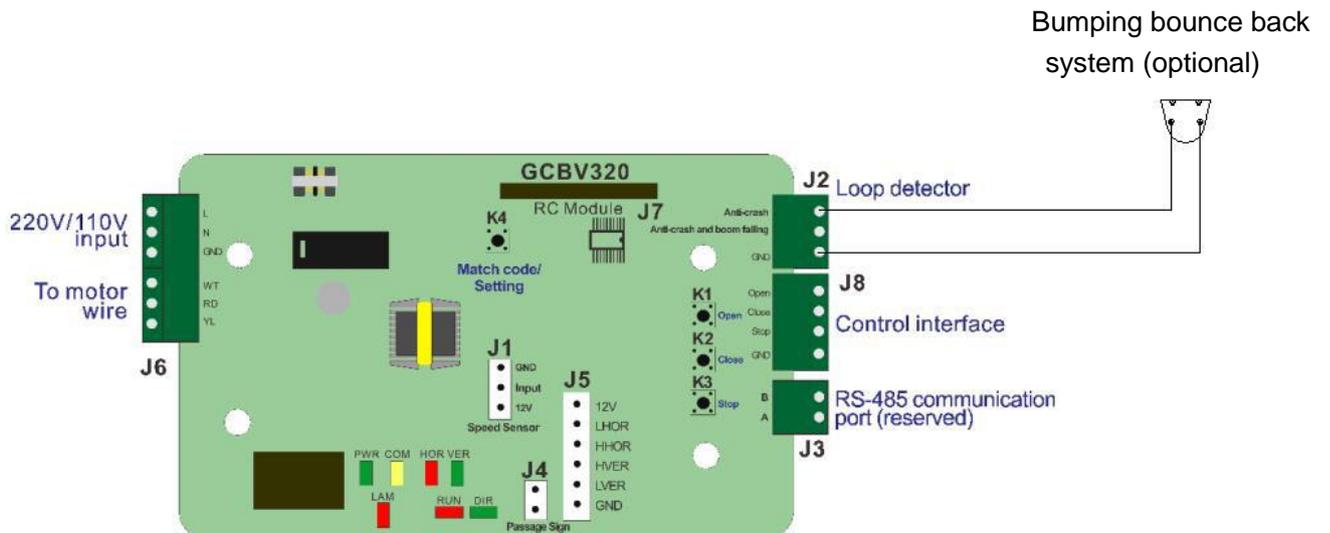


Attached Figure – C Grating and PB2000 illuminator Wiring Diagram

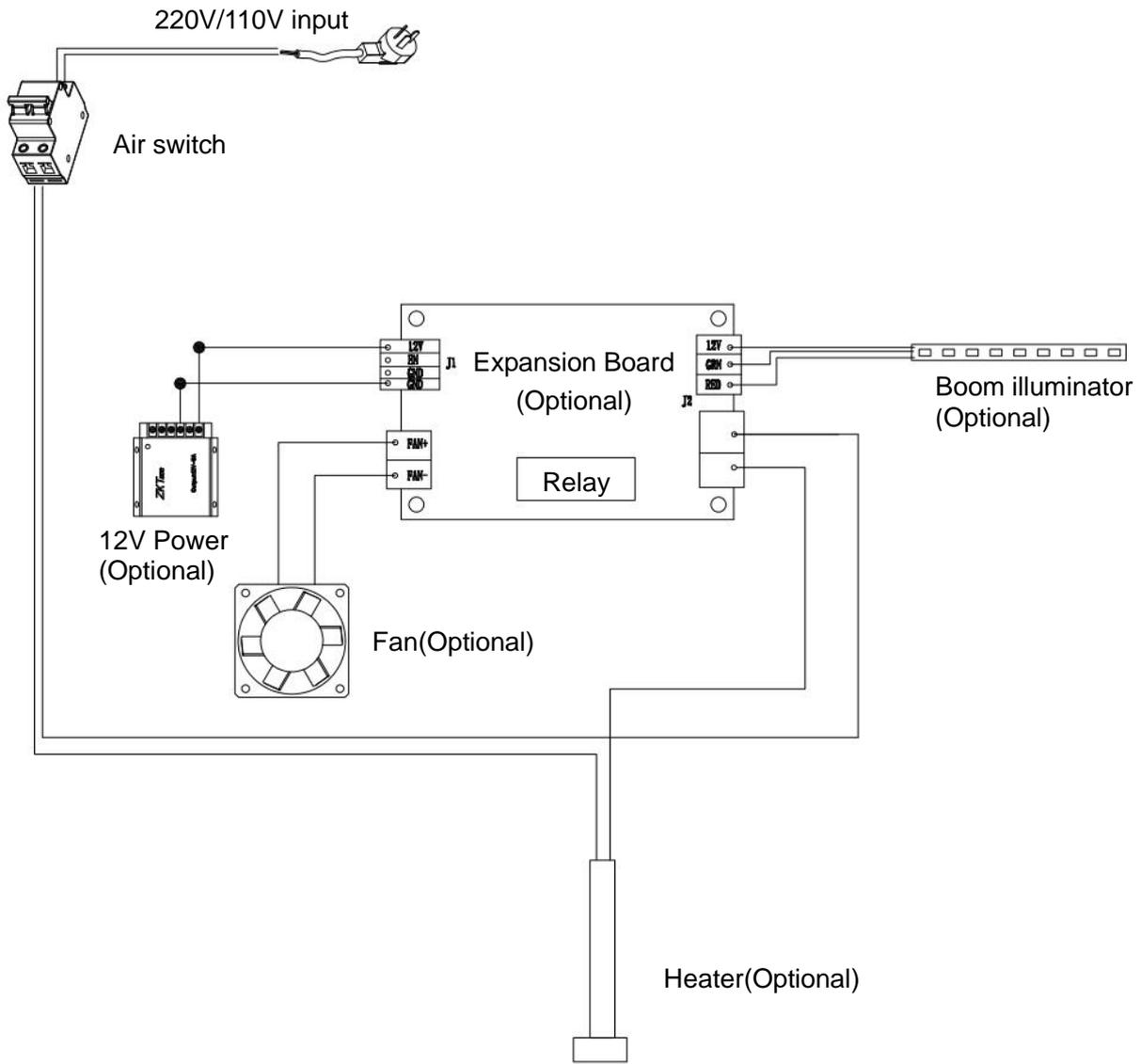
Air switch



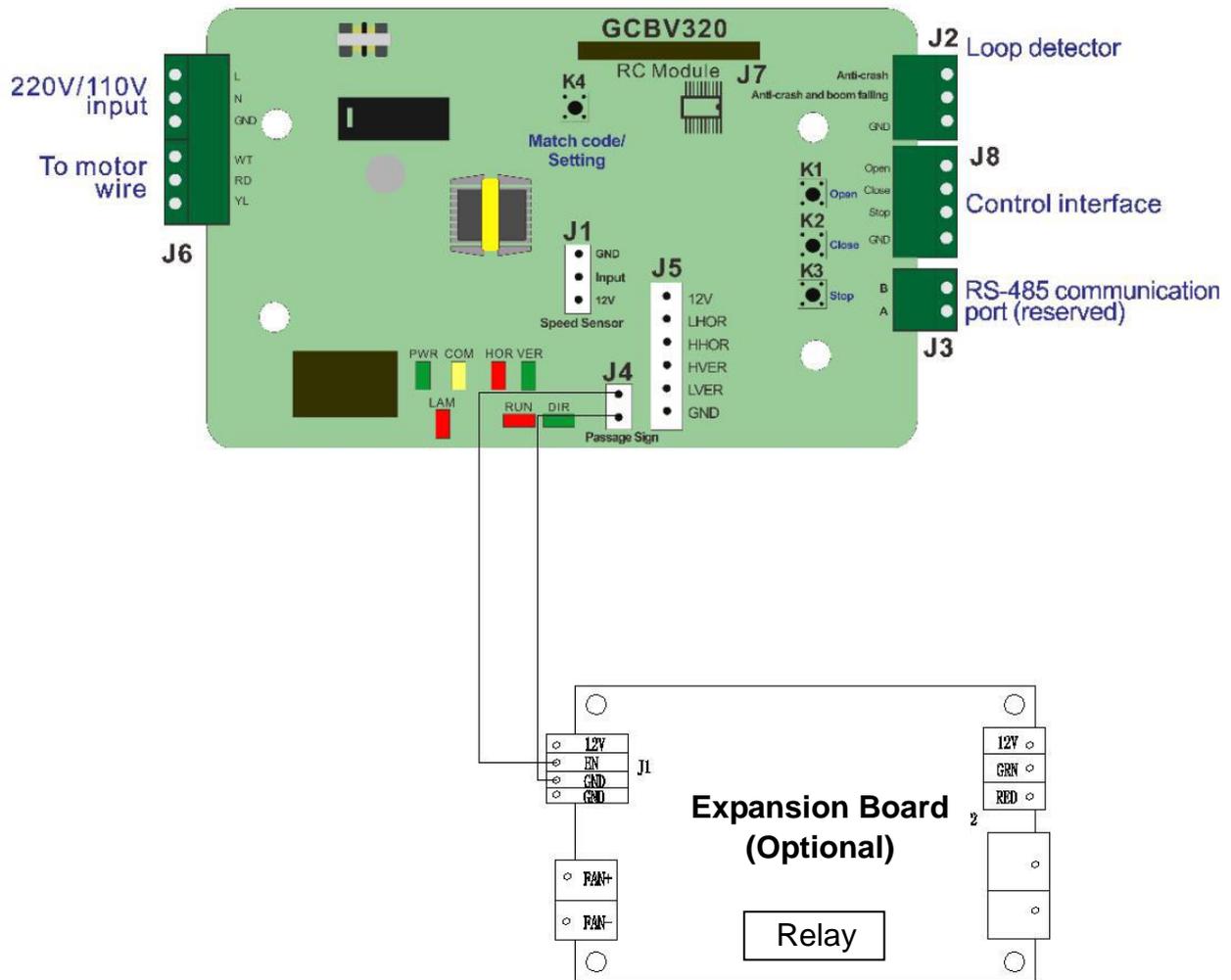
Attached Figure – D Loop Detector Wiring Diagram



Attached Figure – E Bumping bounce back system Wiring Diagram



Attached Figure – F Expansion Board Wiring Diagram



Attached Figure – G Wiring Diagram of the Combined Expansion Board and Controller