

# **AUTOMATIC BOOM GATE**

## **USER'S MANUAL**

**MODEL: DC315Y/DC315UY  
DC420Y/DC420UY**

### **WARNING!**

**ONLY QUALIFIED AND EXPERIENCED TECHNICIANS  
SHOULD ATTEMPT INSTALLATION OR SERVICE TO THIS  
UNIT, OTHERWISE, SERIOUS PERSONAL INJURY,  
DEATH, OR PROPERTY DAMAGE MAY OCCUR.  
PLEASE KEEP THESE INSTRUCTIONS FOR FURTHER  
REFERENCE.**

## OUTLINE

1. Important safety information.....	3
2. Introduction .....	3
3. Main technical specifications.....	4
4. Packing list .....	5
5. Installation .....	5
6. Adjustment .....	7
7. Electrical .....	9
8. Maintenance .....	13

## 1. Important safety information

Carefully read and follow all safety precaution and warnings before attempting to install and use DC315Y/DC315UY, DC420Y/DC420UY. Incorrect installation can lead to severe injury.

- The automatic barrier should be installed by a qualified technician; otherwise, serious personal injury or property damage may occur.
- Children should not be allowed to play near or operate automatic barrier.
- Before any job on the barrier, cut out electrical power.
- Do not in any way modify the components of the automatic barrier, otherwise serious personal injury or property damage may occur. We do not accept responsibility for damage or injury resulting from installing this barrier.
- Notify the users that the barrier is never to be operated unless it is in full view.
- Always keep people and objects away from the barrier when it is operated.
- Keep remote controls away from children, to prevent the barrier from being activated involuntarily.
- The distance between the end of the bar and the nearest objects should exceed 0.5m.
- Any changing of the bar by customer is not allowed. If you have any special requirements about the bar, please kindly contact a dealer.
- Under no condition should barrier be used with bar or spring not attached.
- The barrier should be switched off before fitting the crank handle in.
- For your safety, withdraw the crank before switching the power back on.
- For service, call an experienced technician.
- Our company reserves the right to change the design and specification without prior notification.
- We do not accept responsibility for damage or injury resulting from installing this barrier incorrectly.

## 2. Introduction

The automatic barrier intended for use in parking area, tollgates, ports or docks etc.. The product has the advantages of good appearance, excellent function, convenient to operate, safe and reliable performance. The dimensions see Fig.1.

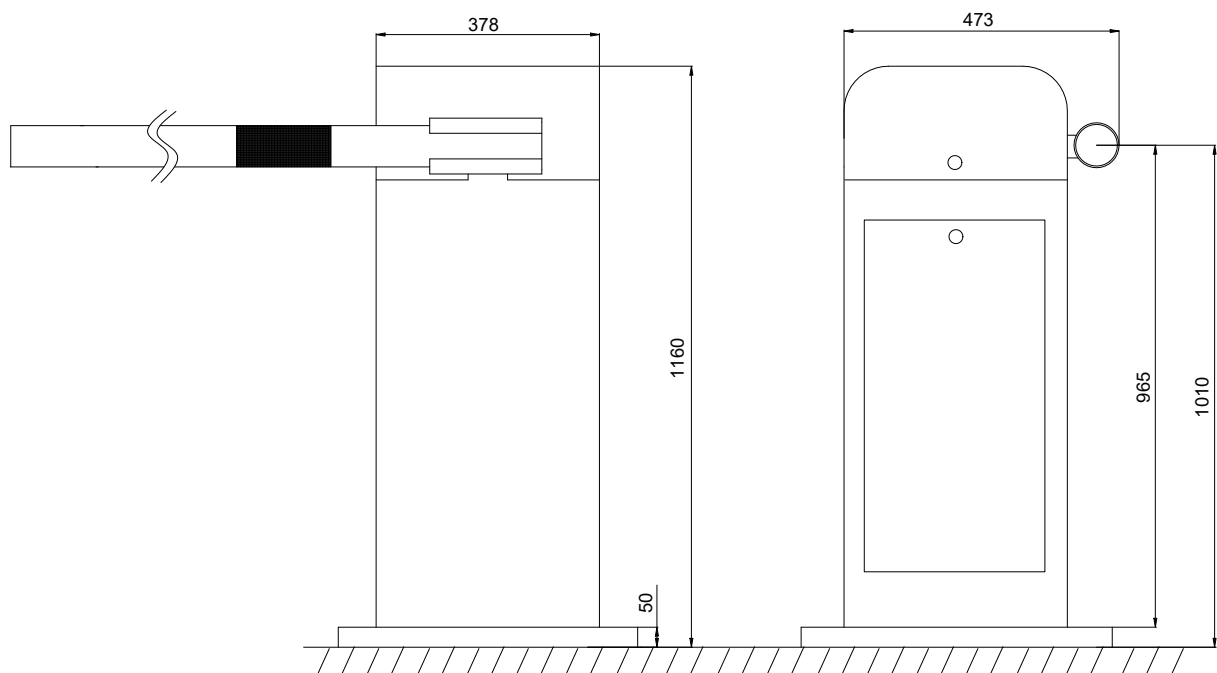


Fig.1

### 3.Main technical specifications

Table 1

Type	DC315Y	DC315UY	DC420Y	DC420UY
Power supply	Single-phase $AC220 \times (1 \pm 10\%)V$ 50Hz	Single-phase $AC110 \times (1 \pm 10\%)V$ 60Hz	Single-phase $AC220 \times (1 \pm 10\%)V$ 50Hz ;	Single-phase $AC110 \times (1 \pm 10\%)V$ 60Hz
Motor speed	960r/min	1080r/min	960r/min	1080r/min
Opening time	1.5s	1.3s	2.2 s	1.9 s
Motor output	150W	150W	150W	150W
Bar length	3.4m ( $\Phi 75 \times 1.2$ shaped aluminum alloy)	3.4m ( $\Phi 75 \times 1.2$ shaped aluminum alloy)	4.4m ( $\Phi 75 \times 1.2$ shaped aluminum alloy)	4m ( $\Phi 75 \times 1.2$ shaped aluminum alloy)
Measurement	$370 \times 370 \times 1100$ mm	$370 \times 370 \times 1100$ mm	$370 \times 370 \times 1100$ mm	$370 \times 370 \times 1100$ mm
Environmental temperature	-10℃~+45℃	-10℃~+45℃	-10℃~+45℃	-10℃~+45℃

#### 4. Packing list

Make sure that all parts are included before using. Refer to packing list. If any parts appear to be missing, contact a dealer.

Table 2

No.	Item	Quantity	Remark
1	Assembled cubicle	1	
2	Steel expansion bolt (M12×200)	4	For install the barrier (see Fig.4)
3	Nut	4	
4	Bigger washer (12)	4	
5	Plate	2	
6	Pin spindle	1	For install the bar (see Fig.5)
7	Bushing	1	
8	Plane washer and spring washer	2	
9	Nut	1	
10	Button switch	1	
11	Key	2	
12	Crank handle	1	
13	Hexagonal wrench key	2	3mm / 5mm
14	User's manual	1	

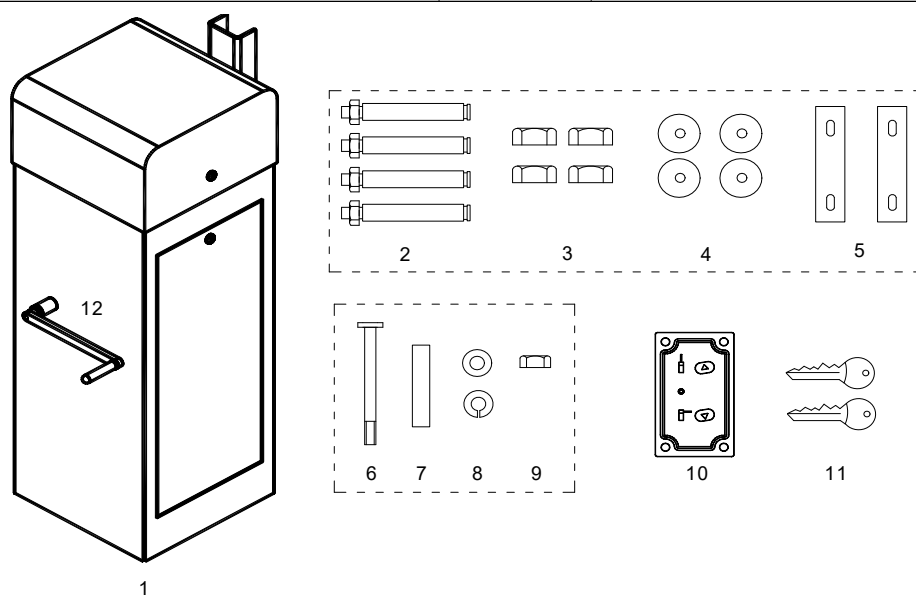


Fig.2

#### 5. Installation

Wiring and cabling (See Fig. 3)

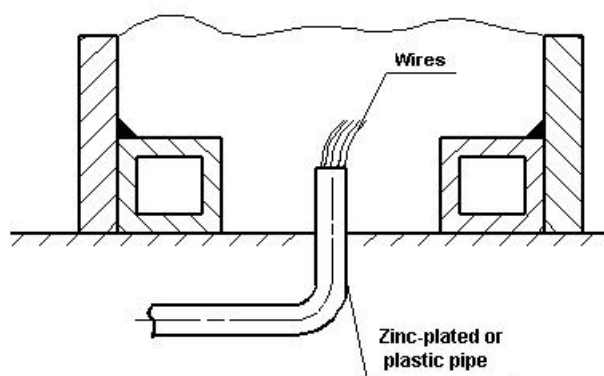


Fig.3

Installation of expansion bolts. (See Fig. 4)

The barrier requires a concrete pad in order to maintain proper stability. The foundation bolts must be set into the concrete when it is poured, or you can drill four holes on the concrete pad, fix the four expansion bolts that are provided with the barrier first. Mount the barrier to the concrete pad, place two pieces of plates on the square frame of the barrier, tighten the washers and nuts.

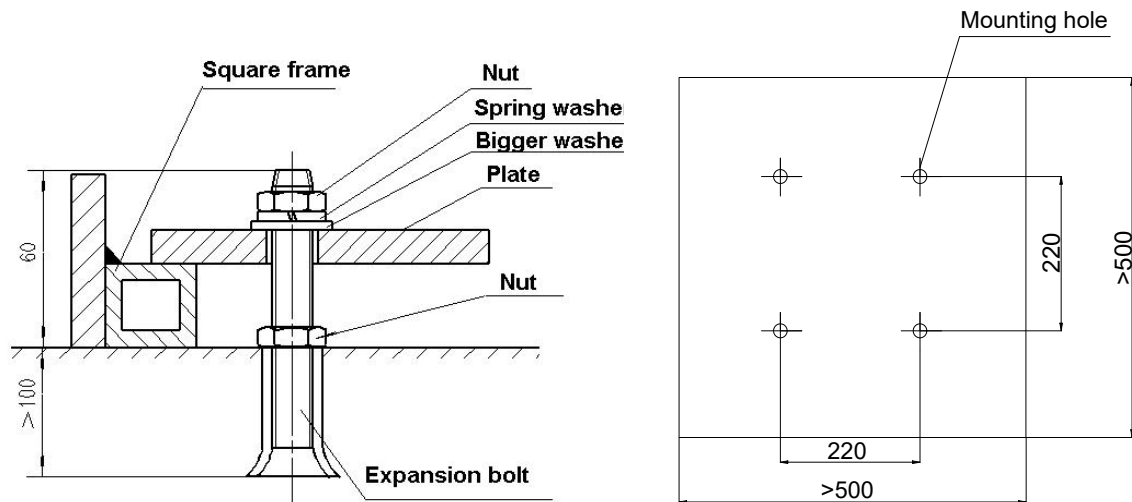


Fig.4

Installation of the bar (See Fig.5)

Fit the hole in the bar with the hole in the support bracket, insert the bushing into the bar, then push the pin spindle into the hole as shown in Fig.5, fit the washers and nut. Finally push the bar and make it is clamped in the support bracket.

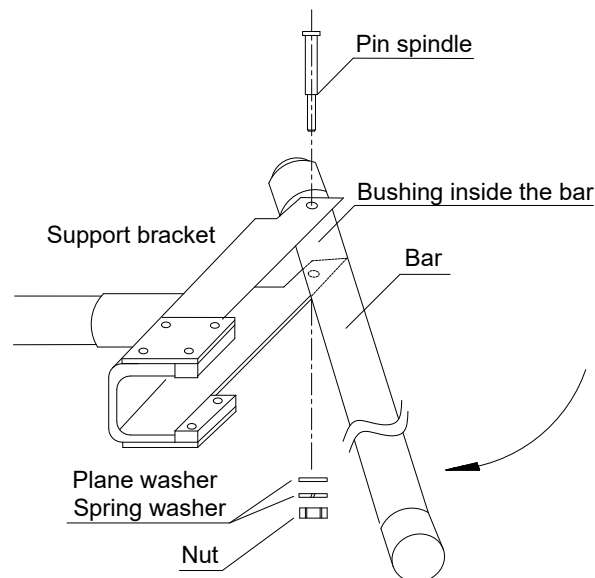


Fig.5

## 6. Adjustment

### Adjust the balance spring (See Fig.6)

When the barrier is delivered, the balance springs have been adjusted. It is not necessary to adjust them any more. When the barrier has been in use for some time, adjusting the springs could become necessary. Adjust the spring can be done by turning the nut.

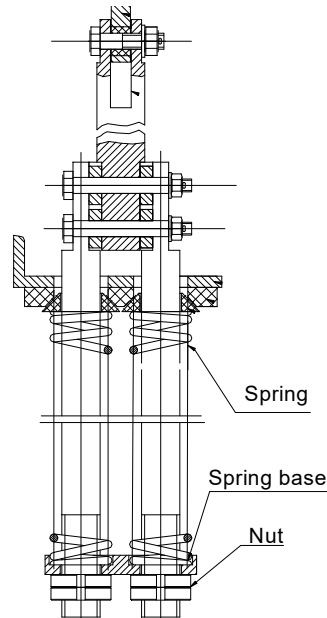


Fig.6

### Adjust the limit position (see Fig.7)

Normally the limit position has been adjusted prior to delivery. It is not necessary to adjust it except for service and maintenance.

Rough adjusting: With power on, open and then close the bar by button switch, if the bar can not reach the horizontal position, move the bar to its horizontal position by crank handle, loosen the screw of No.1 limit cam, then turn the limit cam until the proximity switch is active (red indicator light illuminates), then tighten the screw.

If the bar cannot reach the vertical position, move the bar to its vertical position by crank handle, loosen the screw of No.2 limit cam and then turn the limit cam until the proximity switch is active, finally tighten the screw.

Micro adjusting: switch on the power supply, operate the bar stop at horizontal or vertical position by pressing the button. Check the position of the bar and micro adjust the limit cam properly until the horizontal and vertical positions are suitable.

If the limit direction is wrong, you should exchange the wires 'CL' and 'OP' (See Fig.10 and wiring notes of control board).

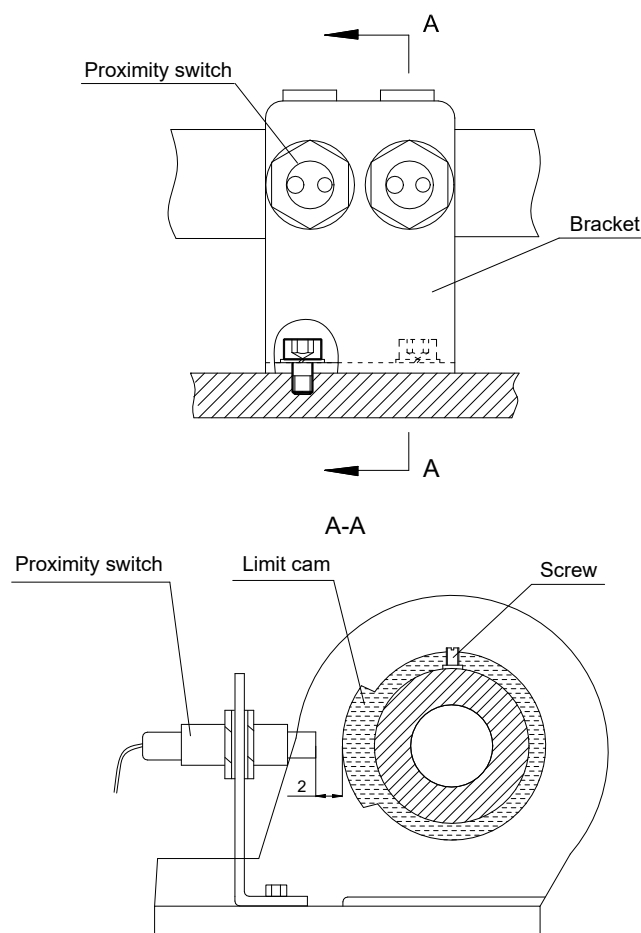


Fig.7

#### Release in case of power failure

In case of power failure, you can push the bar manually when it is at horizontal position see Fig.8 (A).

#### Crank handle

Switch the power off. Insert the crank handle in the hole of the housing.

Turn the crank handle clockwise or anticlockwise to move the bar manually. See Fig.8 (B)

Withdraw the handle before switch the power back on.

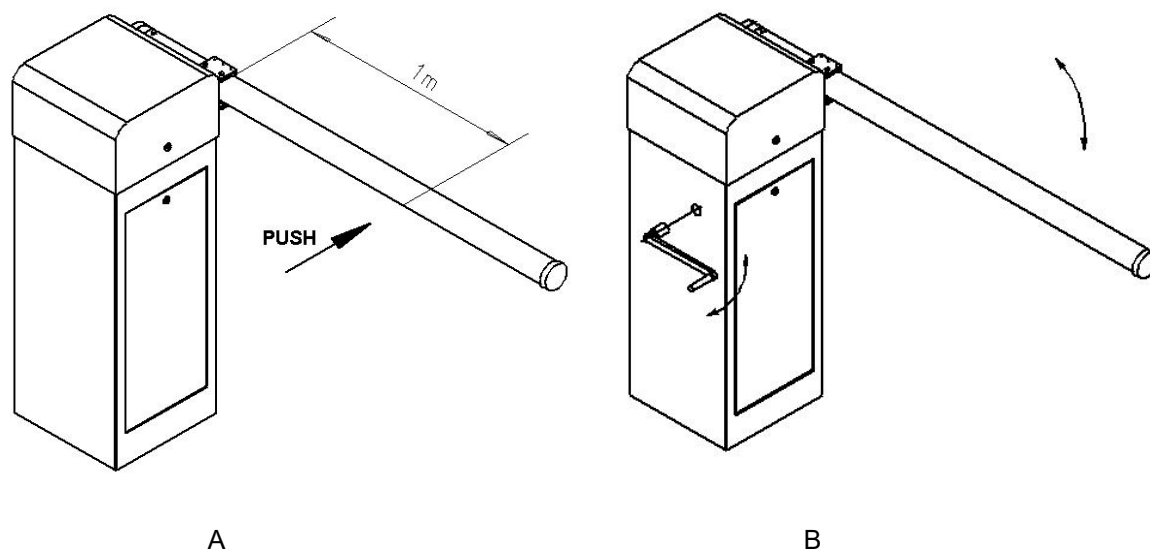


Fig.8



## 7.Electrical

- With each press of the remote control button the bar will open, stop, close or stop cycle.
- You can program/learn button 1, button 2, button 3, button4 individually, each button can be used to open, stop or close the barrier.

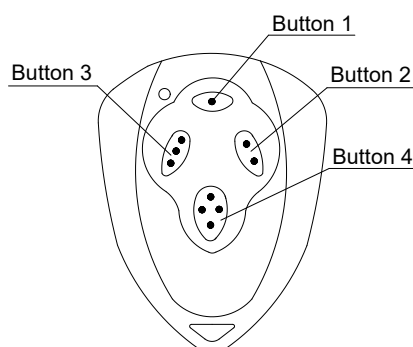


Fig.9

- Adding extra remote controls (learn): Press the button 'AN' (See Fig.10 terminal 13) on the control board, the beeper will ring, then press the remote control button which you want to use and release, the beeper will ring again, press the same remote control button again, the beeper will ring at 1/2Hz frequency and then stop, Then the learning process is finished.

Up to 25 remote controls may be used.

- Erase all existing remote controls: Press and hold "AN" button, the beeper will ring, do not release the button until the beeper stops ringing. This indicates that all the remote controls have been erased completely, please reset before using.

Table 3 DIP-switch  
(See Fig.9 terminal 5)

Position	DIP-switch	Function
1	ON	Limit switch (proximity switch) mode is N.C..
	OFF	Limit switch (proximity switch) mode is N.O..
2	ON	Auto-close function is available.
	OFF	Auto-close function is shut off.
3	ON	Programming / In this position the control board is in programming condition, NOT USE condition.
	OFF	Normal / In this position the control board can be normally used.
Note: The limit switch mode of DC315Y/DC315UY, DC420Y/DC420UY is N.C., make sure that the first DIP-switch is turned to ON position.		

- Set the bar auto-close function: (This feature can be selected to make the bar stay open for some seconds before it automatically closes. The auto-close time can be adjusted to between 0 and 44 seconds.) Turn on the second and the third DIP-switch (see Fig.10 terminal 5) to ON position. Press '▲' (UP) button of button switch or remote control to open the bar, after the bar stops at vertical position, wait some seconds according to

your requirement (the range is 0~44 sec.), this period of time is regarded as 'auto-close time'. Press the '▼' (DOWN) button or remote control to close the bar, after the bar stops at the horizontal position, return DIP-switch 3 to OFF position immediately. Thus the auto-close function has been set.

- **Cancel the auto-close function:** Turn on the second and the third DIP-switch (see Fig.10 terminal 5) to ON position. Press the '▲' (UP) button of button switch or remote control to open the bar. When the bar stops at the vertical position, wait until the bar close automatically (45 sec.). After the bar stops at the horizontal position, return DIP-switch 3 to OFF position immediately. Thus the auto-close function has been canceled.
- **Note:**
  - (1) If any button 1, 2 or 3 has been set with auto-close function, then the other two buttons are also have this function. Button 4 needs to be set independently.
  - (2) There are two different methods to cancel the auto-close function:(a) see **Cancel the auto-close function** section. (b) You can turn off the second and the third DIP-switch to OFF position, the auto-close function will be shut off. The auto-close feature will not function (See table 3).
  - (3) The second and the third DIP-switch normal factory setting is OFF, i.e. the auto-close function was shut off.

### Activities Covered in this section

#### Auto-reverse function

Adjust the VR1 (see Fig.10 terminal 14) to proper position to make the auto-reverse function available. (Clockwise to increase force, anticlockwise to decrease force) The bar will auto-reverse when it contacts an obstruction during the bar down, it will auto-stop when it contacts an obstruction during the bar up.

The factory setting is set at **MAXIMUM** force.

#### Loop detector (N.O.)

If loop detector detects vehicle during the bar closing, the bar will reverse immediately. After vehicle leaves the loop, the bar will continue to close.

If loop detector detects vehicle when the bar stops at vertical or middle position, the bar will remain stop until vehicle passes through the loop. After vehicle passes through the loop, the bar will close. If loop detector detects vehicle when the bar stops at horizontal position, the bar will not move.

The bar will keep opening if loop detector detects vehicle during opening. After vehicle passes through the loop, the bar will close.

#### Infrared photocell (N.C.)

If infrared beam is broken during closing, the bar will reopen immediately.

#### Limit switch (Proximity switch)

The switch is used to accurately stop the bar in the vertical and horizontal positions.

If the bar stops at opened position (vertical) when the proximity switch is reached, the bar will not move if you press '▲' (UP) button of button switch.

If the bar stops at closed position (horizontal) when the proximity switch is reached, the bar will not move if you press '▼' (DOWN) button of button switch.

#### Open priority

The bar will return to open if press '▲' (UP) button of external button switch during closing.

Control board as shown in Fig.10.

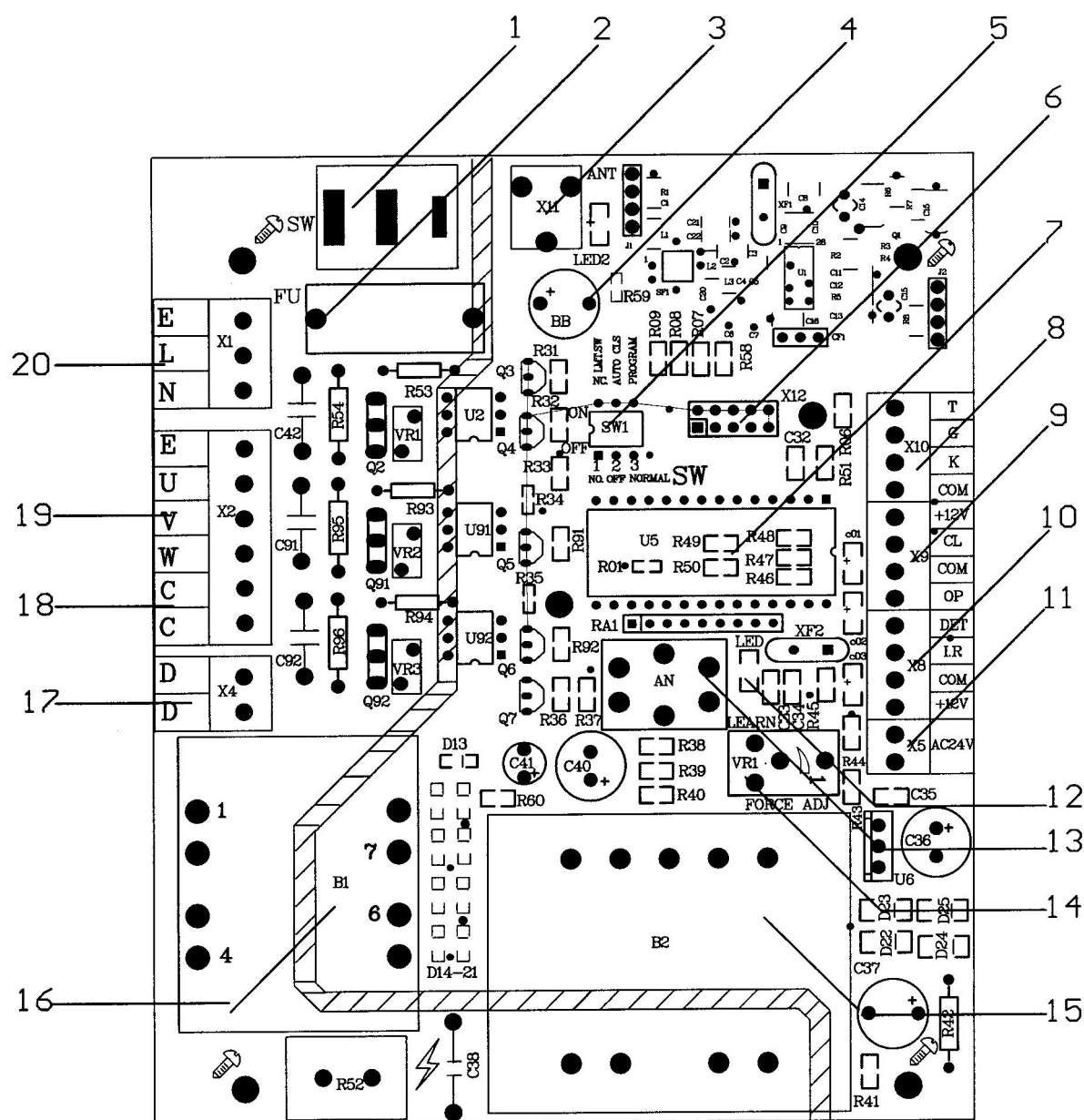
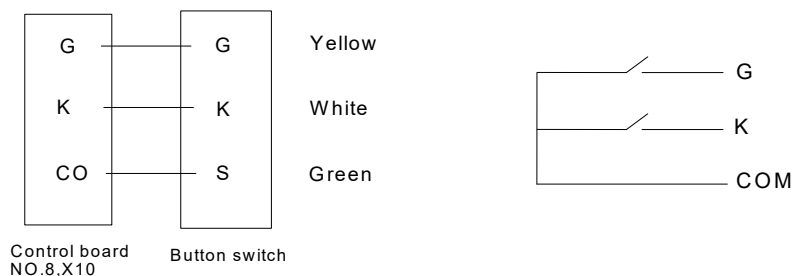


Fig.10 Control board scheme

**Wiring Notes of Control Board (See Fig.10)**

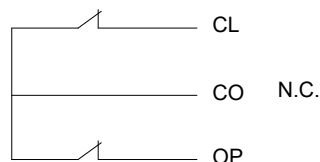
1. Power Switch: ON/OFF
2. Fuse: DC315Y/DC420Y: 5A, Ø5x20; DC315UY/DC420UY: 10A Ø5x20
3. Antenna: ANT
4. Beeper: DC12V
5. DIP-switch
6. Memory Card: AT93C66
7. MCU: PIC16C57C
8. External button Switch: K (UP), G (DOWN), COM (Common)



Schematic diagram

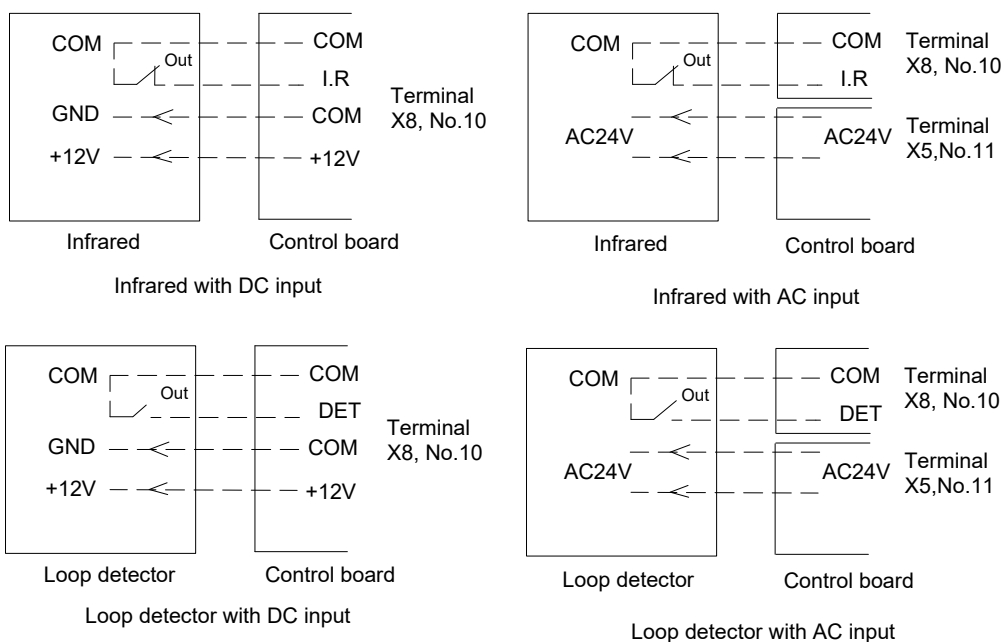
Wiring diagram

9. Limit switch (proximity Switch): CL (DOWN), CO (Com), OP (UP), +12V(DC +12V)



Wiring diagram

10. Output power supply: +12V (DC +12V), COM (GND,CO), DET (Loop detector), I.R. (Infrared)



Schematic diagram

11. Output Power Supply: AC24V
12. Power Indicator: LED
13. Learn Button (AN): LEARN
14. Force Adjustor: Clockwise +, Anticlockwise –
15. Transformer: DC315Y/DC420Y: 220V/12Vx2; DC315UY/DC420UY: 110V/12V x2
16. Sampling Transformer: 110V/ 8.8V 4W
17. Alarm Lamp: DC315Y/DC420Y: AC220V; DC315UY/DC420UY: AC110V
18. Motor Capacitor: DC315Y/DC420Y: 14  $\mu$  F 450V AC; DC315UY/DC420UY: 55  $\mu$  F 450VAC
19. Motor: U (Com), V (Positive direction), W (Opposite Direction), E (Earth)
20. Power Input: E (Earth), L (Live), N (Neutral)  
DC315Y/DC420Y: AC220V; DC315UY/DC420UY: AC110V

## 8. Maintenance

- Any changing of the materials, standards or length in this product by customer is not allowed. If you have any special requirements about the bar, please kindly contact our sales division.
- Under no condition should barrier be used with bar or spring not attached.
- If the bar has become very slow when opening or closing, and even can not stop at its fully opened or closed position, tighten the screw by 5mm hexagonal wrench key. See Fig.11
- Please check and add transformer oil (DB25-GB2536) regularly, please change the oil according to the weather. See Fig.11 and Table 4
- Every 3 months check and add grease (2#) to active components. See Table 5

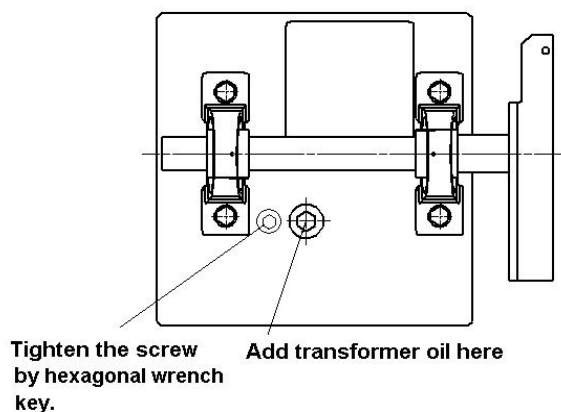


Fig.11

Table 4 Parameters of DB25 transformer oil

Kinematic viscosity (20℃)	Break down voltage	Solidification point
≤30 Centistoke	≥35 kV	≤-25℃

Table 5 Parameters of grease (# 2)

Penetration (25℃, 150g, 1/10mm, 60 times)	Drop point
265~295	≥180℃