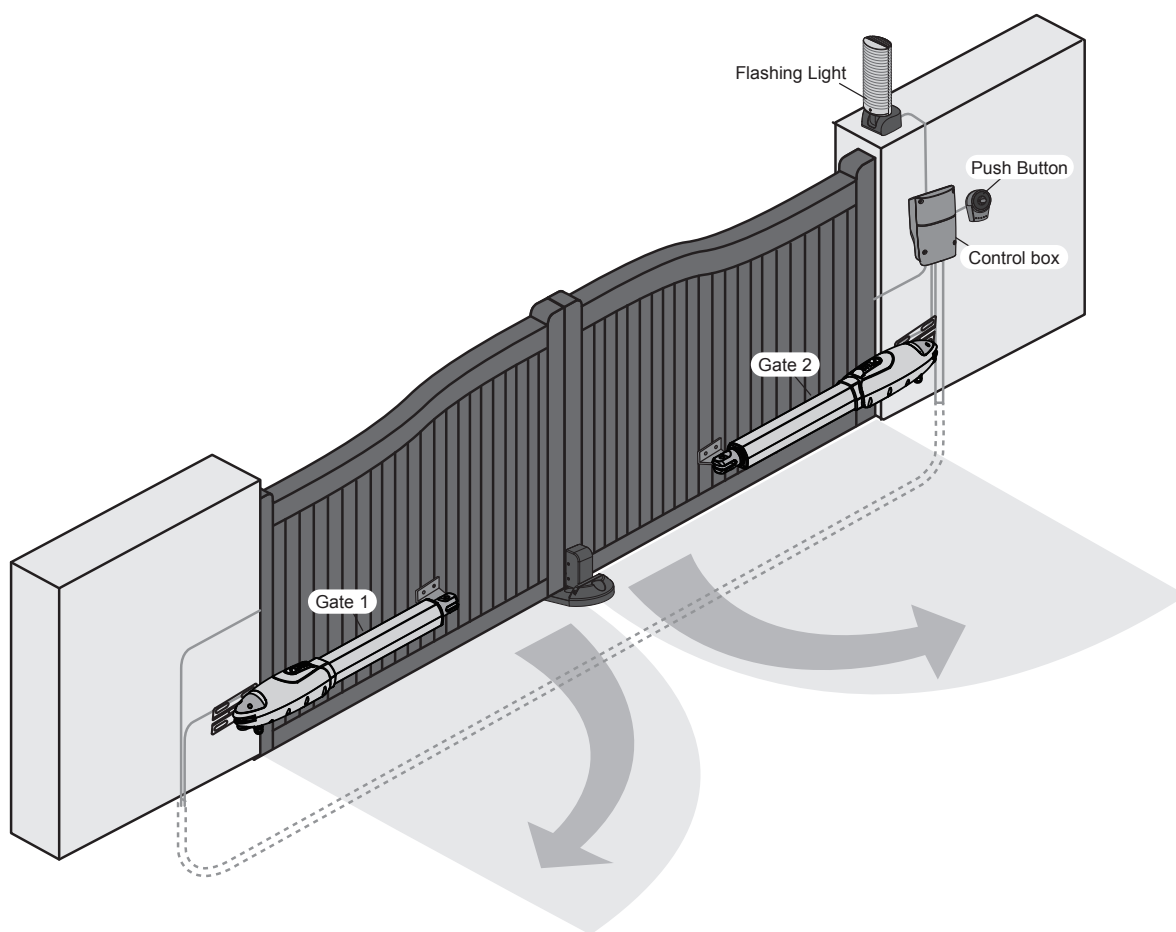


PW320/PW330 USER MANUAL

SWING GATE OPENERS

24V DC GEAR MOTOR

FOR RESIDENTIAL





Declaration of Conformity

Applicant: Powertech Electronics Inc.

Manufacturer: Timotion Technology Co., Ltd.

Address: Shiyong Minying Industrial Zone, Hengli Town, DongGuan City, GuangDong, China

Model: PW320; PW330; PR-1

1. Certificate of conformity of a product with the essential requirements art. 3.2 of the R&TTE Directive 1999/5/EC.
2. The above product has been tested with the listed standards and in compliance with the European Directive LVD 2006/95/EC.
3. The submitted sample of the above product has been tested for CE marking according to the following European Directives: 2006/42/EC Machinery Directive.

Comply with the following Standards:

EN 301489-1 V1.8.1: 2008

EN 301489-3 V1.4.1: 2002

EN 300220-1 V2.1.1: 2006

EN 300220-2 V2.1.2: 2007

EN 60335-1: 2002+A11:2004+A1:2004+A12:2006+A2:2006+A13:2008

EN 60335-2-103: 2003

EN 62233: 2008

EN 12445: 2001

EN 12453: 2001

And also declare that the machinery may not be put into service until the machine, which will be integrated or become one of the components, and announced to comply with the provisions as the required.

Taiwan, October 31, 2013

David Lan



(Deputy Managing Director)

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Warnings

Please read this instruction manual carefully before the installation of gate-automated system.

This manual is exclusively for qualified installation personnel. Powertech Electronics Inc. is not responsible for improper installation and failure to comply with local electrical and building regulations.

Keep all the components of PW320/230 system and this manual for further consultation.

- In this manual, please pay extra attention to the contents marked by the symbol:



- Be aware of the hazards that may exist in the procedures of installation and operation of the gate-automated system. Besides, the installation must be carried out in conformity with local standards and regulations.
- If the system is correctly installed and used following all the standards and regulations, it will ensure a high degree of safety.
- Make sure that the gates works properly before installing the gate-automated system and confirm the gates are appropriate for the application.
- Do not let children operate or play with the gate-automated system.
- Do not cross the path of the gate-automated system when operating.
- Please keep all the control devices and any other pulse generator away from children to avoid the gate-automated system being activated accidentally.

- Do not make any modifications to any components except that it is mentioned in this manual.

- Do not try to manually open or close the gates before you release the gear motor.

- If there is a failure that cannot be solved and is not mentioned in this manual, please contact qualified installation personnel.

- Do not use the gate-automated system before all the procedures and instructions have been carried out and thoroughly read.

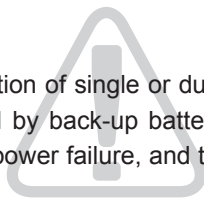
- Test the gate-automated system weekly and have qualified installation personnel to check and maintain the system at least every 6-month.

- Install warning signs (if necessary) on the both sides of the gate to warn the people in the area of potential hazards.

1) Product Description and Applications

1.1 Applications

PW320/PW330 is applied for residential automation of single or dual leaf gate. PW320/PW330 has to be operated with electricity and it's forbidden to be operated by back-up batteries for normal use. Back-up batteries are only allowed for emergent operation when there is a power failure, and the gear motors can be released by special keys to move the gate manually.



1.2 Description of the Automation

The following diagram of PW320/PW330 typical installation describes some terms and accessories of a gate automation system:

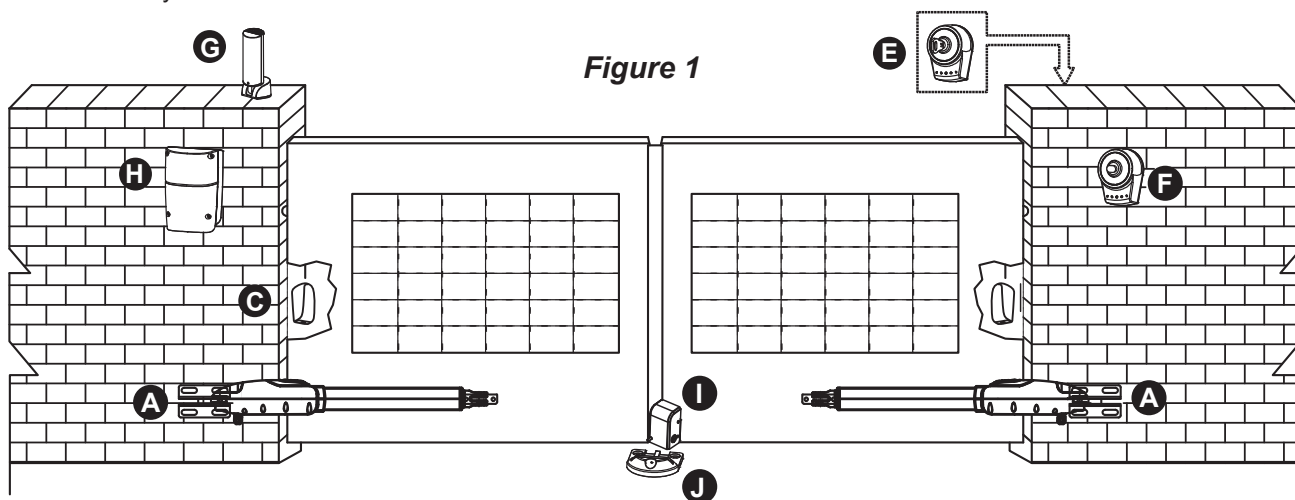


Figure 1

1.3 Description of Devices

PW320/PW330 includes the accessories shown in **Figure 2**.

Please check the accessories the same as the package provided.

Attention: Some accessories of PW320/PW330 are not included due to local regulations or customized order.

A) 2 PW320/PW330 electromechanical gear motors with mounting brackets.

B) 2 release keys.

C) 1 pair of PH-2 photocells. (one TX and one RX)

D) 2 PR-1 radio transmitters.

E) 1 PKS-1 key selector with two keys.

F) 1 PPB-1 push button switch.

G) 1 PF-1 flashing light.

H) 1 Control box

I) 1 PEL-1 electric latch.

J) 1 PS-1 stopper.

K) Various small parts: bolts, nuts, etc.

See Tables 1, 2, 3, 4, 5, 6.

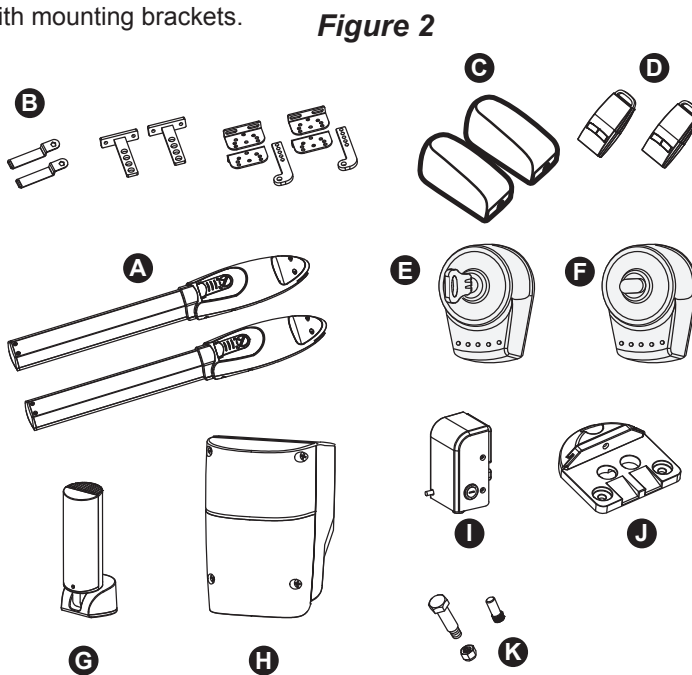


Figure 2

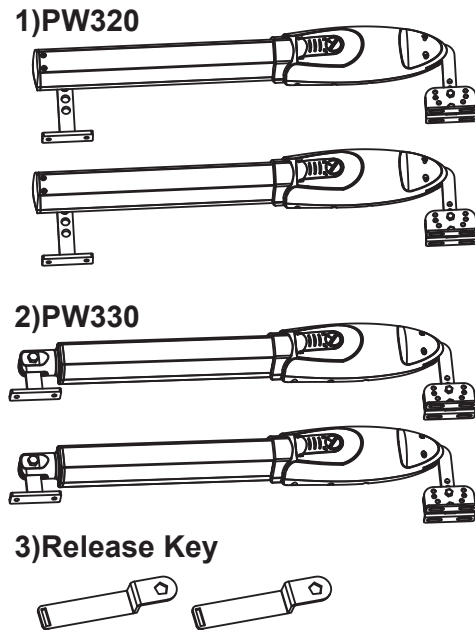
1.3.1 PW320/PW330 Electromechanical Gear Motors

PW320/PW330 consists of a worm screw reduction gear and a 24V direct current motor. The gear motor could be released manually by special release keys when there is a power failure.

The gear motor is installed with two post brackets, one rear plate and one front plate for the installation.

Table 1: List of small parts	PW320	PW330
Front plate	2pcs	2pcs
Rear plate	4pcs	2pcs
Post bracket	4pcs	4pcs
M8*25L hex bolt	4pcs	4pcs
M8 self-locking nut	2pcs	4pcs
M12 *25L hex bolt	0	2pcs
M12 self-locking nut	2pcs	2pcs
Release key	2pcs	2pcs

Figure 3



1.3.2 Control Box

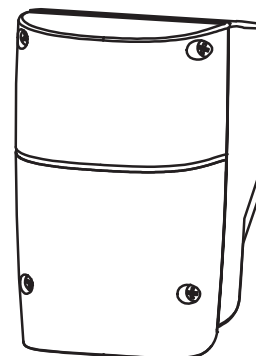
Control box consists of one control panel with incorporated receiver, one transformer and two back-up batteries.

Provides the complete automation of the gear motors and other accessories of PW320/PW330 kit.

To connect separate terminals on the control panel and activate the gear motors and other accessories, the installation manual has to be carefully read beforehand.

Table 2: List of small parts for Control Box	Quantity
5*30 Screw	4 pcs
Nylon screw anchor	4 pcs

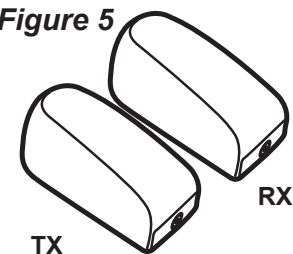
Figure 4



1.3.3 PH-2 Photocells

The pair of PH-2 photocells has to be installed on the wall and connected to the control panel. The function of the photocells is to detect the obstacles found on the optical axis between the transmitter (TX) and the receiver (RX).

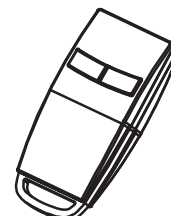
Figure 5



1.3.4 PR-1 Radio Transmitter

PR-1 radio transmitter is used for the remote control of the gate movement. To use the transmitter, press and hold the button for 1 second. There are two buttons on the transmitter and (A) button is “open-stop-close mode” and (B) button is “pedestrian mode”.

Figure 6

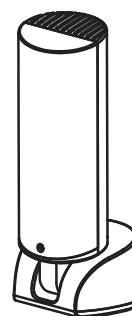


1.3.5 PF-1 Flashing Light

PF-1 flashing light is controlled by control box and blinks when the gate is moving. The flashing light stops blinking when the gates finish opening or closing.

Table 2: List of small parts for PF-1	Quantity
3*20 Screw	3 pcs
Nylon screw anchor	3 pcs

Figure 7

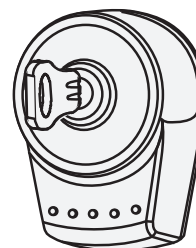


1.3.6 PKS-1 Key selector

The PKS-1 key selector is used for opening the gate outdoors without the radio transmitter. PKS-1 key selector is supplied with two keys

Table 3: List of small parts for PKS-1	Quantity
3*20 Screw	3 pcs
Nylon screw anchor	3 pcs
Keys	2 pcs

Figure 8

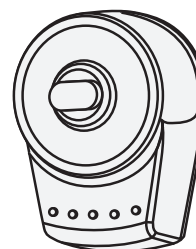


1.3.7 PPB-1 Push Button

The PPB-1 push button is used for opening the gate indoors without the radio transmitter.

Table 4: List of small parts for PPB-1	Quantity
3*20 Screw	3 pcs
Nylon screw anchor	3 pcs

Figure 9

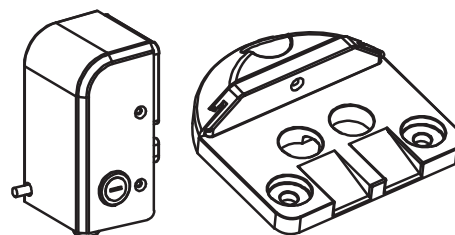


1.3.8 PEL-1 Electric Latch and PS-1 Stopper

PEL-1 electric latch is used to lock the gate and it has to be used with PS-1 stopper and installed on the master gate.

Table 6: List of small parts for PEL-1 and PS-1	Quantity
M8*25L hex bolt	3 pcs
M8 self-locking nut	3 pcs
Key	2 pcs

Figure 10



2) Installation:

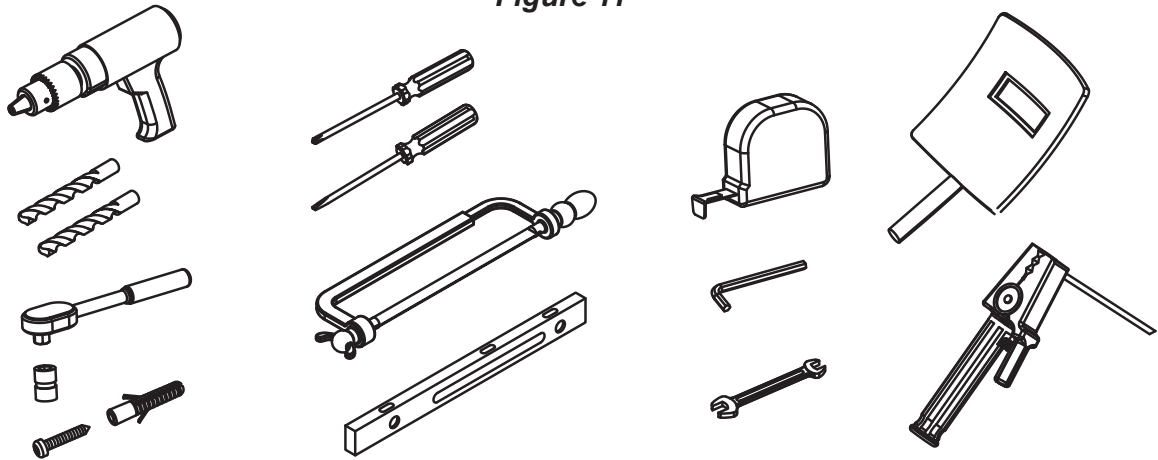
2.1 Notes of Motors in Operation

The PW320/PW330 gate openers are applicable to per leaf of 3.0/4.0 meters in width and 250/350 kg in weight which can be opened up to 120 degrees primarily for residential use; where the performance shall be influenced by the factors such as gate dimension, weight and climate that the driven torque is necessarily to be adjusted properly.

2.1.1 Tools in Installing

Please make sure all tools and cables are ready and conform to the industrial safety standard before installation. Please refer to **Figure 11**.

Figure 11

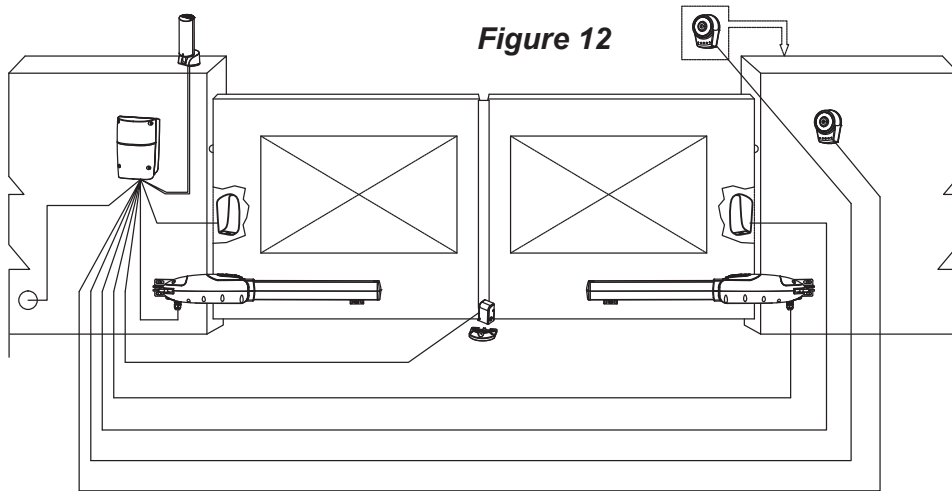


2.1.2 Motors, Components and Its Installation in Illustration

The installation procedure of PW320/PW330 may be changed due to various accessories and quantities installed. The basic wiring diagram is shown in **Figure 12**.

No wiring cables for accessories are supplied with KIT PW320/PW330.

Figure 12



2.2 Power Connection

PW320/PW330 is required to connect two cores wires, which requires very low voltage that no professionally trained personnel is required in installation; however, the users are advised to read the installation manual carefully before going for it. After getting to know all accessories and their positions, suggest starting from cable conduit arrangement to prevent the cables from being broken or damaged

2.2.1 Notes for Power Connection

1. The installation of power supply cable to the motor should be carried out by a qualified professional electrician.
2. The power supply cable of the motor should be equipped with short circuit protection and leakage protection. Please make sure to shut off the power before going installation or maintenance.

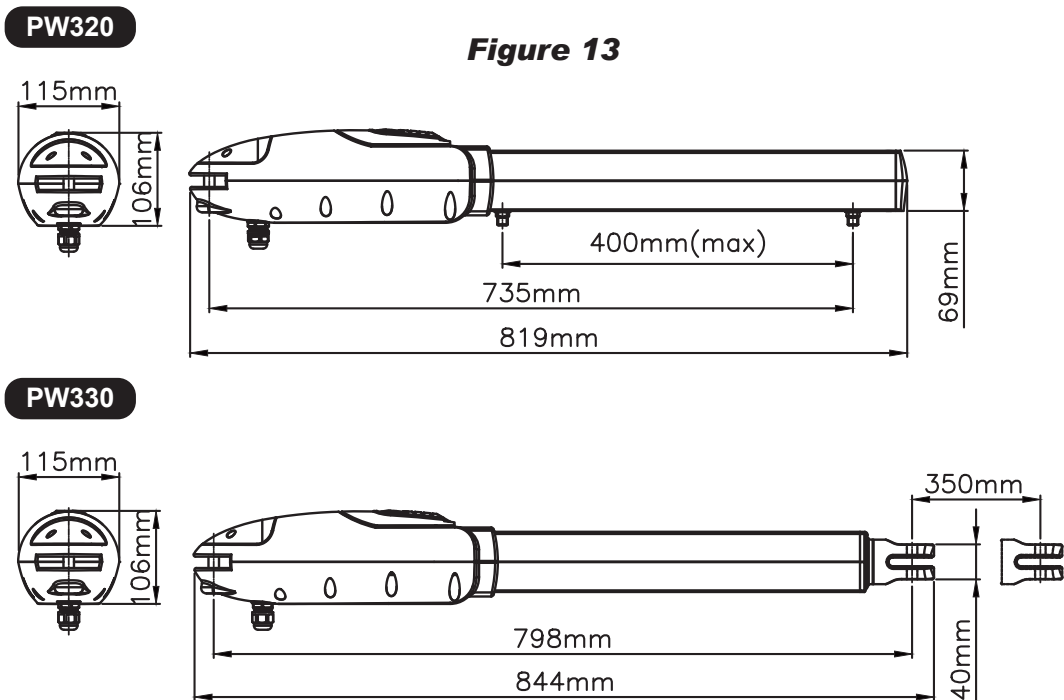
2.3 Installation

2.3.1 Preparation for Motor Installation

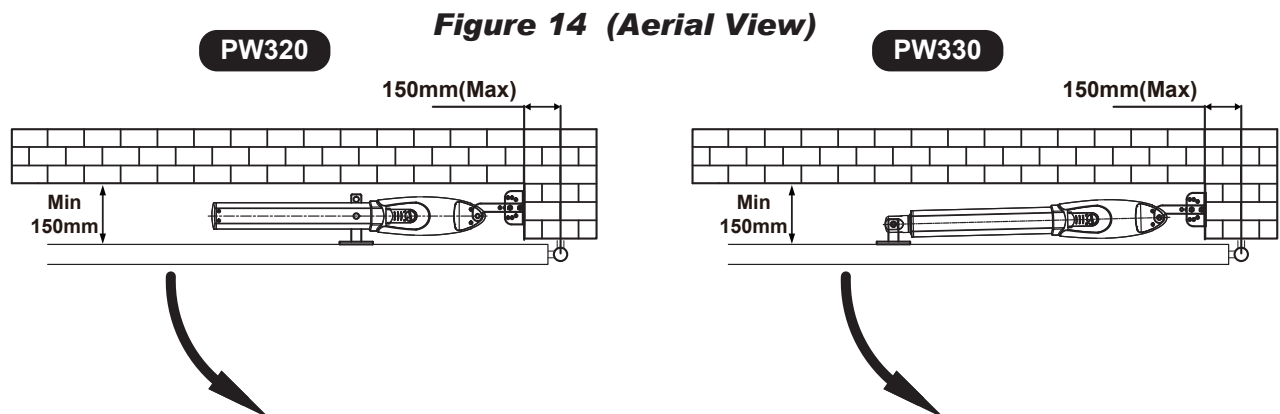
PW320/PW330 is not applicable to a gate which is inefficient or unsafe, neither to solve the defects due to incorrect installation nor poor maintenance.

Check the following items before going for installation:

- 1). Make sure the weight and dimensions of the gate conform to the operation range of PW320/PW330. Don't use PW320/PW330 if the gate specifications do not meet the requirements.
- 2). Make sure the gate structure conform to the criteria of automatic operation and force regulations.
- 3). Make sure there is no serious friction existing in the opening or closing travel of the gate leaves.
- 4). Make sure the gate is at horizontal level that the gate will not move aside at any position.
- 5). Make sure the gate can bear the impact of the motor torque when it is installed on any hole of the bracket which the surface is sufficiently sturdy.
- 6). Make sure the photo sensors are installed on flat surfaces to ensure the two ends of receiving and transmitting corresponded to each other.
- 7). Check the dimensions of the motors as below.

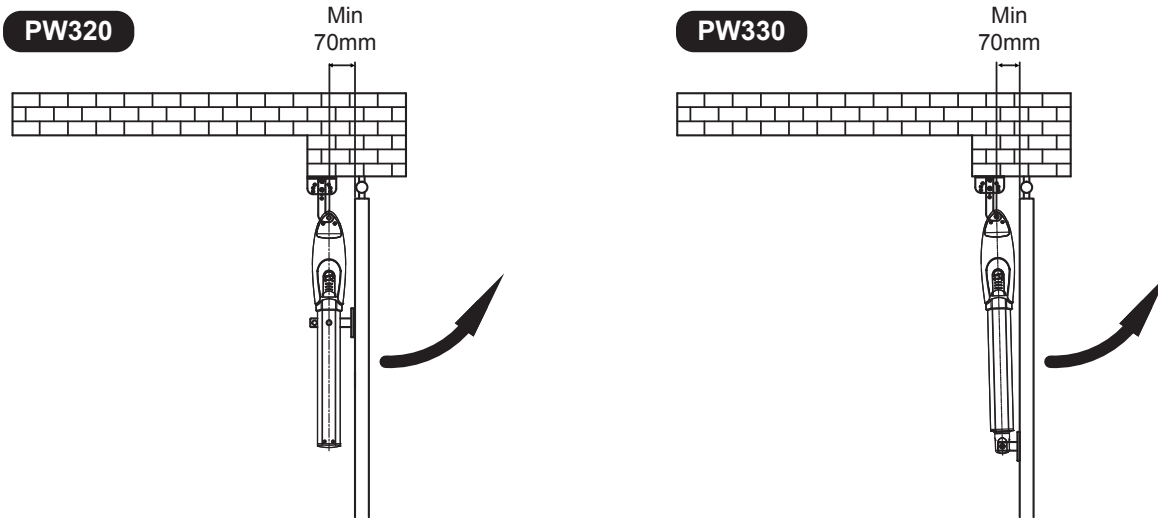


- 8). Make sure to leave enough space when the gate is opening.



9). If the gate is OPENED OUTWARD, please leave at least 70mm between the post brackets and the gate.

Figure 15 (Aerial View)



10). Using the leaf-opening angle as criteria to make sure all criteria in **Figure 17** can be met.

Figure 16 (Aerial View)

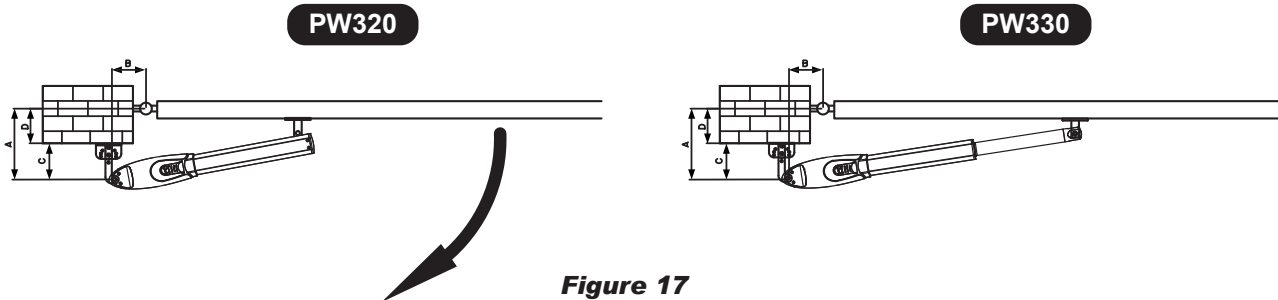


Figure 17

B(mm)	120	130	140	150	160	170	180	190
A(mm)								
120								100~110°
130								
140								
150								
160								
170								
180								
190								

B(mm)	120	130	140	150	160	170	180	190
A(mm)								
120								
130								
140								
150								
160								
170								
180								
190								

11). "C" value is 139mm.

12). "D" can be measured from the gate easily.

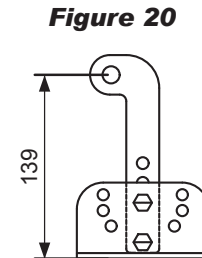
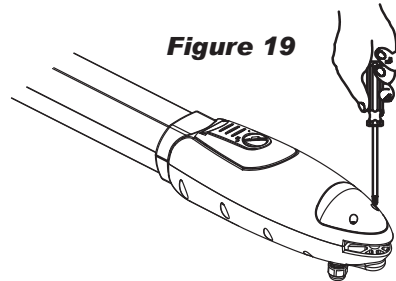
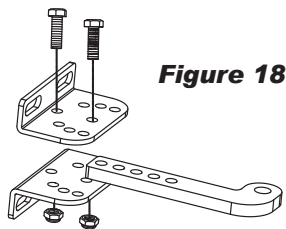
13). "A" = "C" + "D"

14). The value of "B" can be calculated from the value of "A" and the leaves opening angle. Ex. If "A"=160mm with the leaves opening angle of 100 degrees, then the value of "B" is approximate 190mm.

****Please make sure "B" and "A" are similar or the same in value that the leaves can be operated smoothly, also to reduce the burden of the motor.**

2.3.2 Installation of The Gear Motors

1. Choose the correct dimensions of the motors and position to be installed.
2. Check if the mounting surface the brackets to be installed is smooth, vertical and rigid.
3. Arrange the cable conduit for power supply cable of the motors.
4. In order to obtain the optimal supporting from the rear plate, please assemble two post brackets and one rear metal plate according to **Figure 18**.
5. Loosen the two screws and remove the back cover of the motor as shown in **Figure 19**.
6. Place the leaves in the closed position.



7. Refer to the distance of "B" in **Figure 17**, place the rear plate in the correct position on the mounting surface. Inspect if the distance is proper as shown in **Figure 23** i.e. the position the front plate of the motor to be installed.
8. Place two post brackets on the surface to be installed and mark the drilling points, then drill minimum diameter of 8mm holes by four on the mounting surface to be installed and fasten up the brackets with screws and washers.
9. Please make sure the front plate is completely installed horizontally.

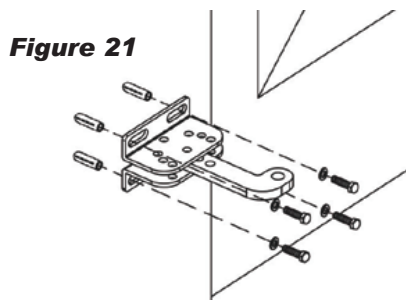
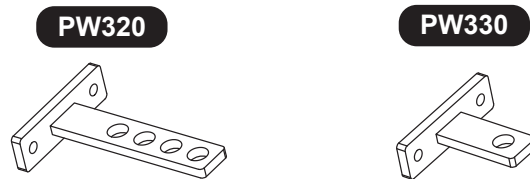
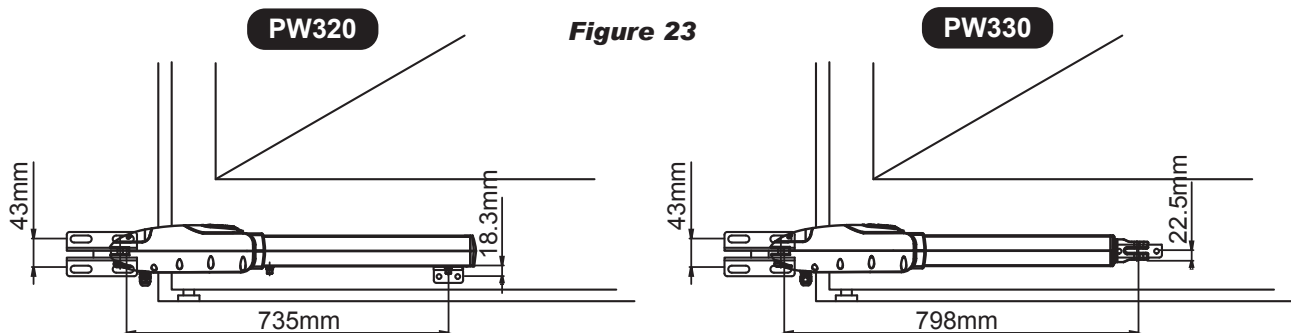


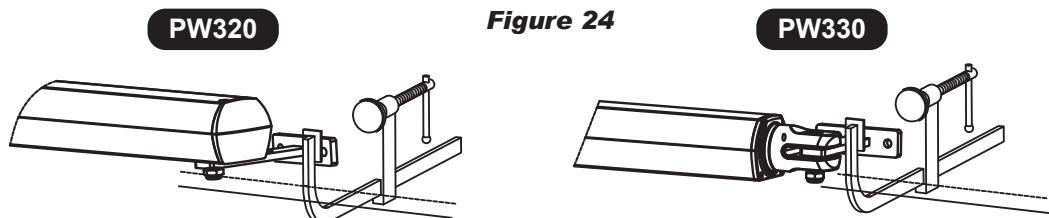
Figure 22



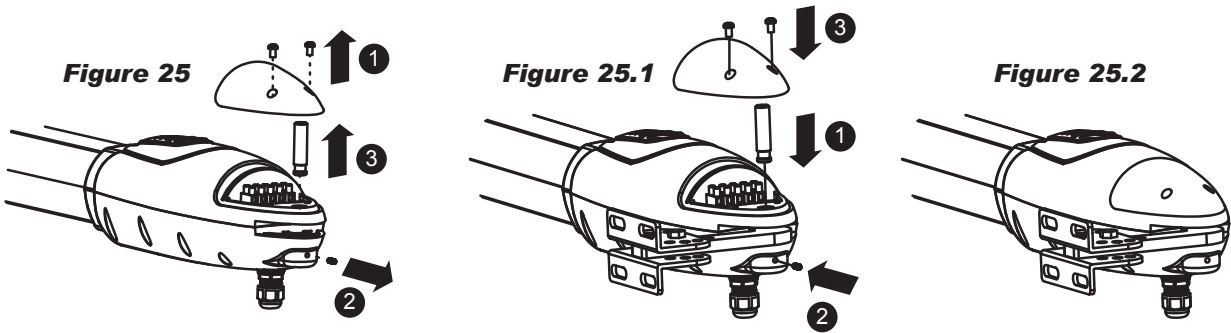
10. Refer to **Figure 23**, the distance between front plate of the motor and rear plate is 735mm (PW320) / 798mm (PW330), the difference in height is 18.3mm (PW320) / 22.5mm (PW330).



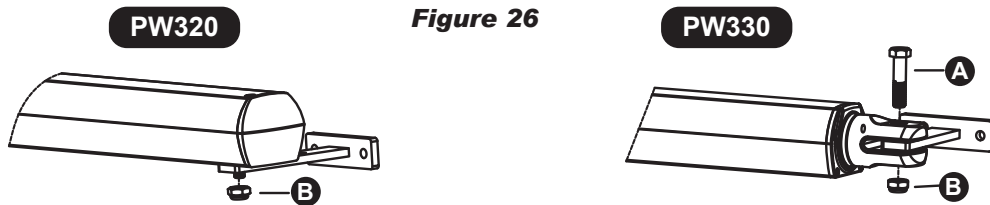
11. Clamp and fix the motor front plate on the door temporarily.



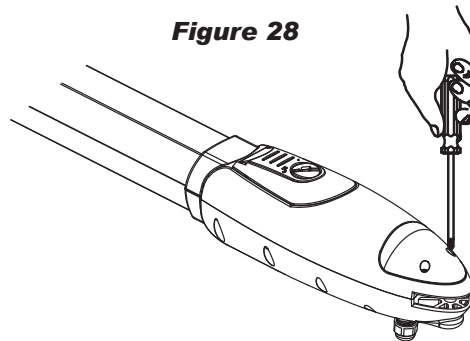
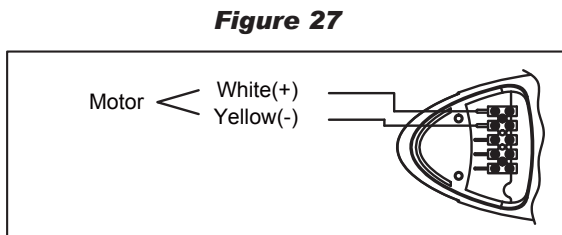
12. Lift up the motor and insert the screws into the front plate.
13. Open the gear motor cover and release the screw, then take out the bolt as below **Figure 25**. Lift the motor overhead and push the gate to the end until the screw holes of the motor end matches the holes on the rear plate as shown in **Figure 25.1** and fasten the motor to the rear plate with bolt and screw as shown in **Figure 25.2**.



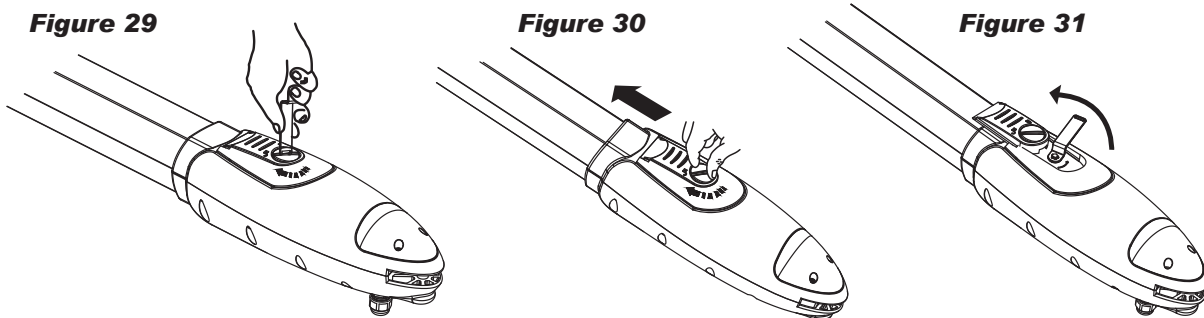
14. Fasten the nut tightly and loosen it for half round for motor supporting in rotating.
15. Fasten the motor front end to the front plate with the bolt (A) and nut (B) tightly. Fully tighten the screw.



21. Connect the motor power cable as shown in **Figure 27**.
22. Close the gear motor cover by tightening the two screws as shown in **Figure 28**.



23. Gear Motor Release
 - 1) Turn the round plate on the release part to "OPEN" position. See **Figure 29**.
 - 2) Push out the release part to the end. See **Figure 30**.
 - 3) Use the release key to turn the pin anti-clockwise to the end. See **Figure 31**.



2.3.3 PKS-1 Key Selector

- 1). PKS-1 key selector is installed outside and close to the gate at the height of about 100cm, so that it could be used by most people. Decide the installation position of PKS-1 first. See **Figure 2.3.3 (1)**.
- 2). Remove the round cover (A) by prizing it out with a screwdriver. See **Figure 2.3.3 (2)**.
- 3). Unscrew the two screws beside the lock body. See **Figure 2.3.3 (3)**.
- 4). Turn the key and separate the bottom of the shell with the lock body. See **Figure 2.3.3 (4)**.

Figure 2.3.3 (1)

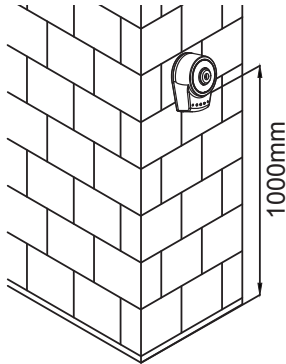


Figure 2.3.3 (2)

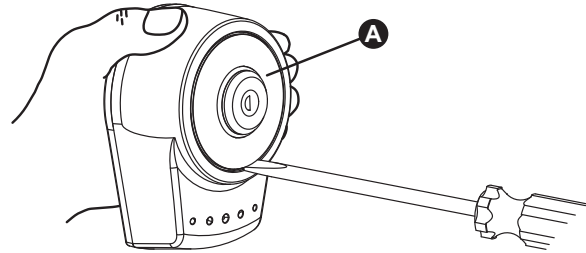


Figure 2.3.3 (3)

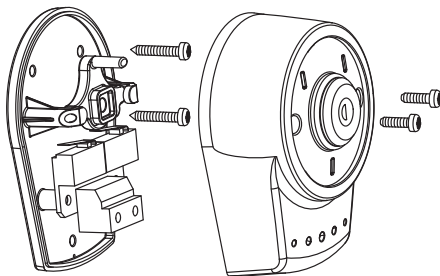
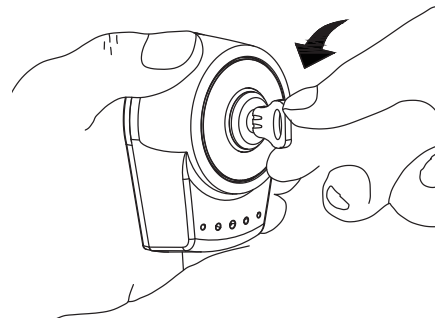


Figure 2.3.3 (4)



- 5). Breach the three holes at the bottom and mark the points by the holes as reference.
- 6). Drill the holes in the wall and fix the bottom to the wall by three screws. See **Figure 2.3.3 (5)**.
- 7). Connect the electric wires to the terminals as shown in **Figure 2.3.3(6)**, and it's not required to distinguish any polarity. The terminals can be removed for connecting the wires easily.
- 8). Turn the key and insert the shell on the bottom. Turn the key back to the center position and the shell will be fixed to the bottom.
- 9). Tighten the lock body with the two screws and insert the round cover by pressing it to attach to the whole unit.

Figure 2.3.3 (5)

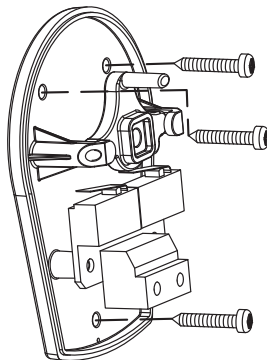
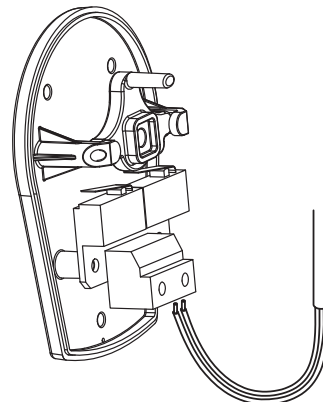


Figure 2.3.3 (6)



2.3.4 PPB-1 Push Button

- 1). PPB-1 push button is installed indoors at the height of about 100cm, so that it could be used by most people.
- 2). Remove the round cover (A) by prizing it out with a screwdriver. See **Figure 2.3.4 (1)**.
- 3). Unscrew the two screws beside the button.
- 4). Separate the upper shell with the bottom. See **Figure 2.3.4 (2)**.
- 5). Breach the three holes at the bottom and mark the points by the holes as reference.
- 6). Drill the holes in the wall and fix the bottom to the wall by three screws. See **Figure 2.3.4 (3)**.
- 7). Connect the electric wires to the terminals as shown in **Figure 2.3.4 (4)**, and it's not required to distinguish any polarity. The terminals can be removed for connecting the wires easily.
- 8). Attach the upper shell to the bottom and screw them up by two screws and insert the round cover by pressing it to attach to the whole unit.

Figure 2.3.4 (1)

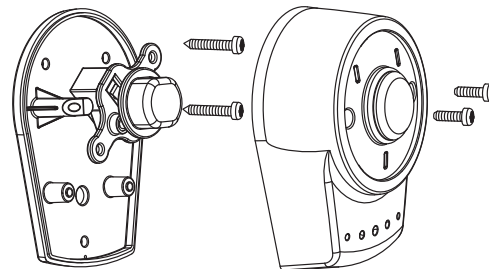
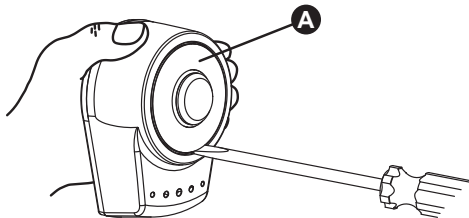


Figure 2.3.4 (3)

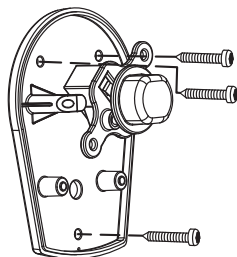
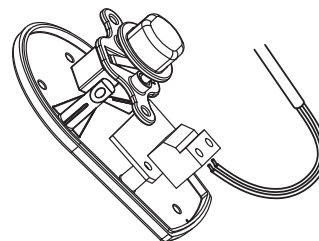


Figure 2.3.4 (4)



2.3.5 PF-1 Flashing Light

- 1). Decide the installation position of the flashing light. The flashing light has to be installed near the gate and easy to be seen by users and passersby. The flashing light can be installed horizontally or vertically. See **Figure 2.3.5 (1)**.
- 2). Unscrew the four screws on the light base and separate the base with the bottom as shown in **Figure 2.3.5 (2)**.
- 3.) Connect the wires and penetrate the wires into the hole of the base. See **Figure 2.3.5 (3)**.
- 4.) Drill the holes in the wall and fix the bottom to the wall by three screws. See **Figure 2.3.5 (4)**.

Figure 2.3.5 (1)

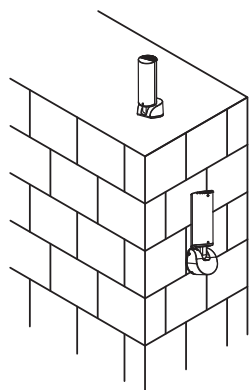


Figure 2.3.5 (2)

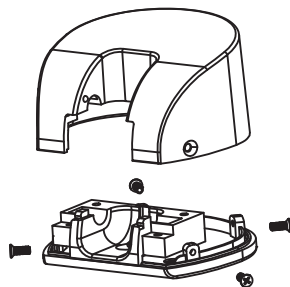


Figure 2.3.5 (3)

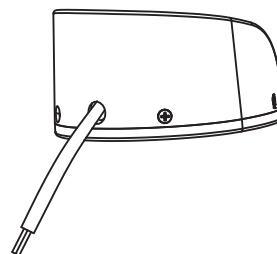
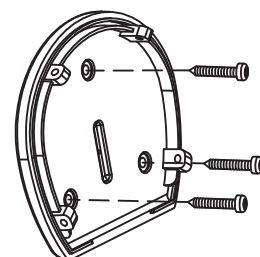


Figure 2.3.5 (4)



- 5). Connect the four wires of the light and the antenna to the PCB terminals and place the wires into the conduit if necessary. See **Figure 2.3.5 (5)**.
- 6). Tighten the four screws back on the light base. **Figure 2.3.5 (6)**
- 7). Replacing the bulb set. See **Figure 2.3.5 (7)**
 - 7.1) Unscrew the flashing light wires from the PCB terminals and make sure the power of the light is off.
 - 7.2) Release the three screws (A) \ (B) \ (C) of the flashing light cover.
 - 7.3) Separate the flashing light cover and replace the bulb set with a new one.
 - 7.4) Tighten the three screws (A) \ (B) \ (C) of the flashing light cover.

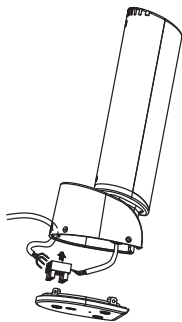


Figure 2.3.5 (5)

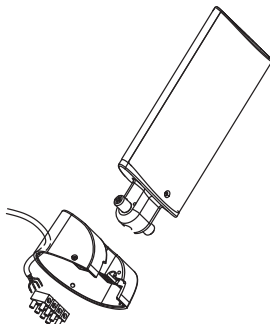


Figure 2.3.5 (6)

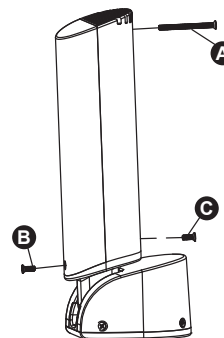


Figure 2.3.5 (7)

2.3.6 PH-2 Photocells

- 1). Open the cover **Figure 2.3.6 (1)** and connect wires **Figure 2.3.6 (2)**.
- 2). Mounted the receiver and transmitter on the proper position **Figure 2.3.6 (3)**.
- 3). Ensure there are no obstacles between receiver and transmitter.
For optimal efficiency, the receiver and transmitter should be properly aligned.
- 4). Power-up the photocells and make sure the LED light on receiver and transmitter are ON.

Figure 2.3.6 (1)

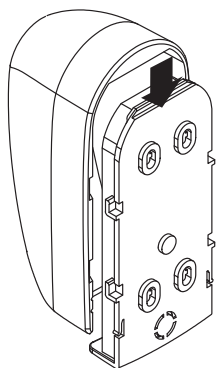


Figure 2.3.6 (2)

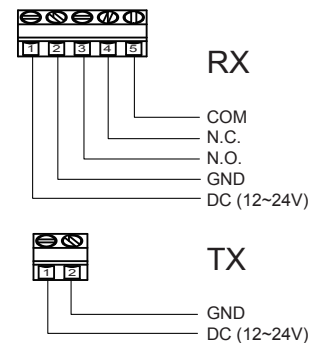
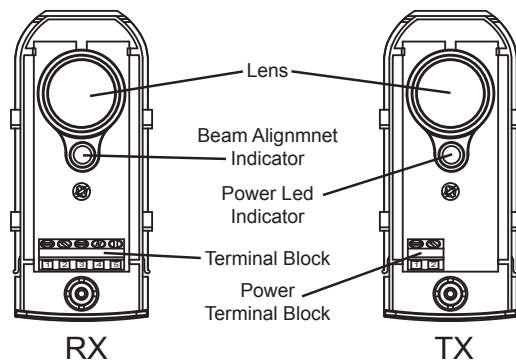
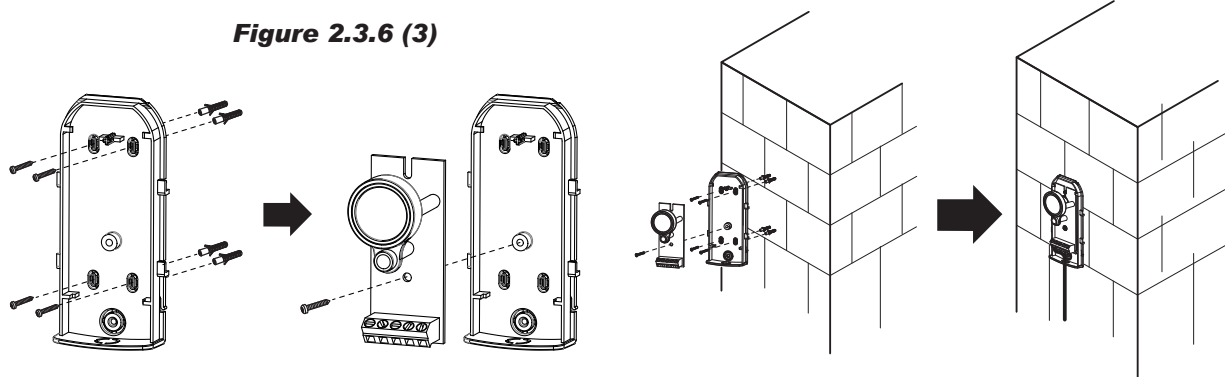


Figure 2.3.6 (3)



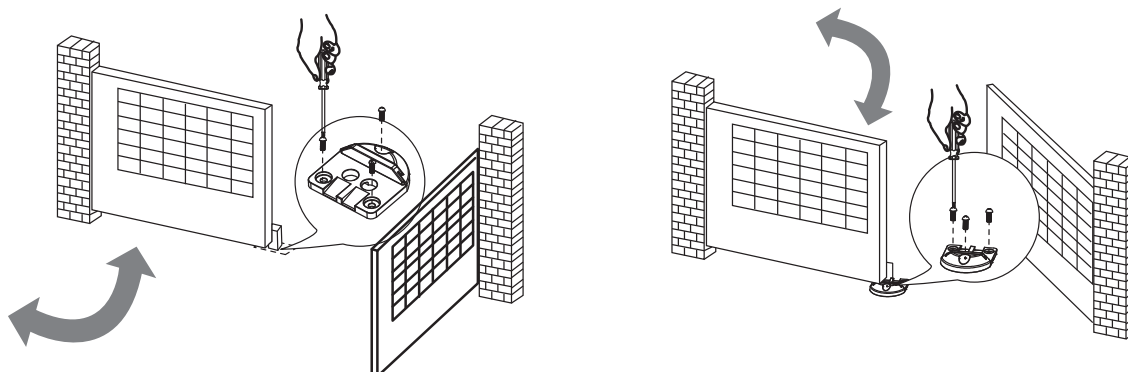
2.3.7 PEL-1 Electric Latch and PS-1 Stopper

1. Stopper:

- 1). Before installing the stopper, please make sure the gates are in close positions and the surface to be installed is flat.
- 2). Place the stopper on the ground using the bottom as reference, and mark the 3 drilling points.

See **Figure 2.3.7 (1)** For the gate opened inward.

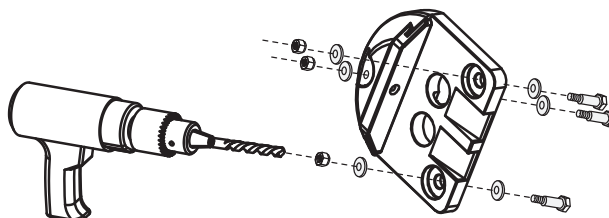
See **Figure 2.3.7 (2)** For the gate opened outward.



Note: If the gate is opened outward, place the stopper in opposite direction.

- 3). Drill the 3 marked points, and then securely attach the stopper to the ground with screws and washers.

See **Figure 2.3.7 (3)**



2. Electric Latch:

(If the gate is opened outward)

- 1). If the gate is opened outward, please change the spring inside and screw it in the different place.

See **Figure 2.3.7 (4)**, **Figure 2.3.7 (5)**, **Figure 2.3.7 (6)** & **Figure 2.3.7 (7)**

Figure2.3.7(4) Unscrew the screws. **Figure2.3.7(5)** Take the casing off.

Figure2.3.7(6)
The location of the spring.

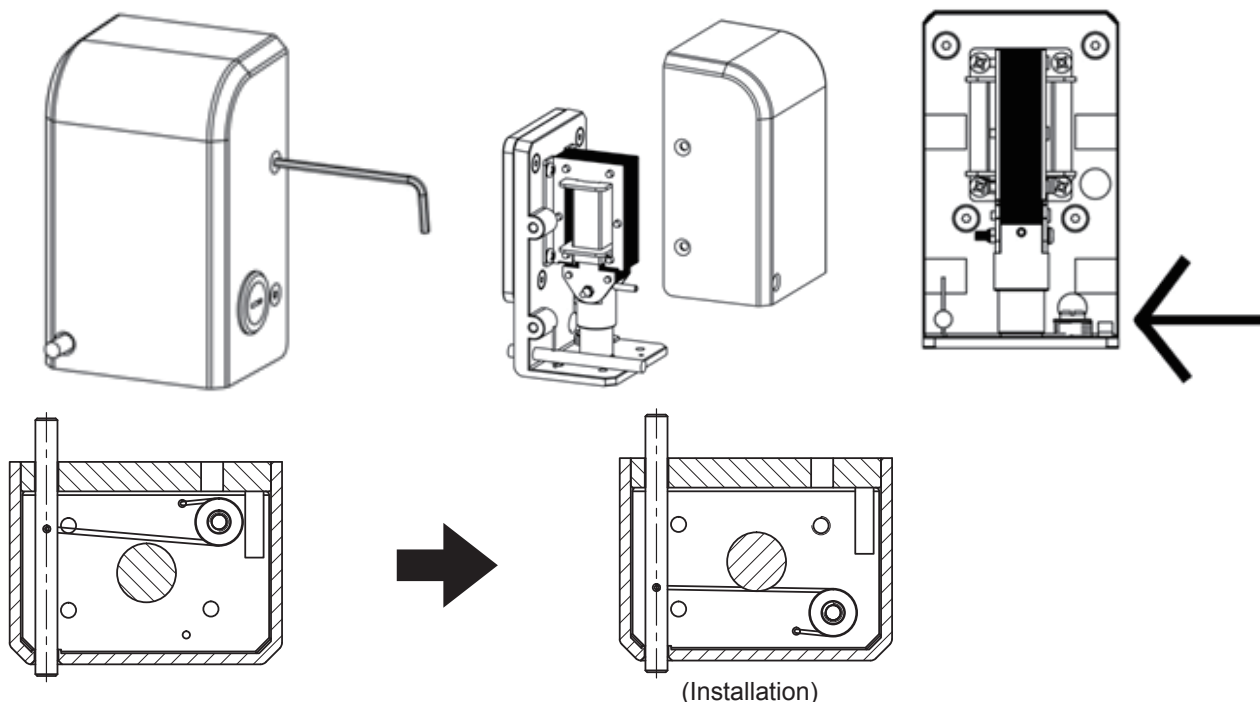


Figure2.3.7(7)

Change the spring and screw it in the different place.

- 2). Weld the back plate of the electric latch to the surface on the master gate. See **Figure 2.3.7 (8)**. Please avoid melting the wires by the heat of the fixed plate.

Figure2.3.7(8) For the gate opened inward.

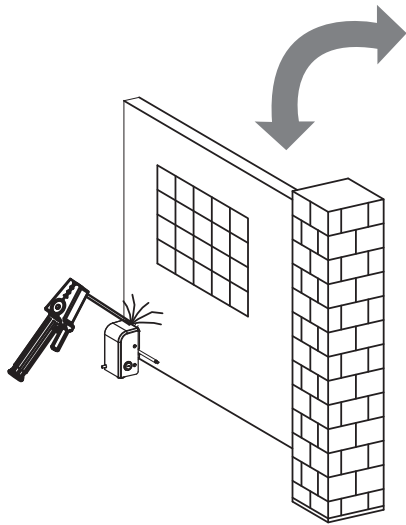
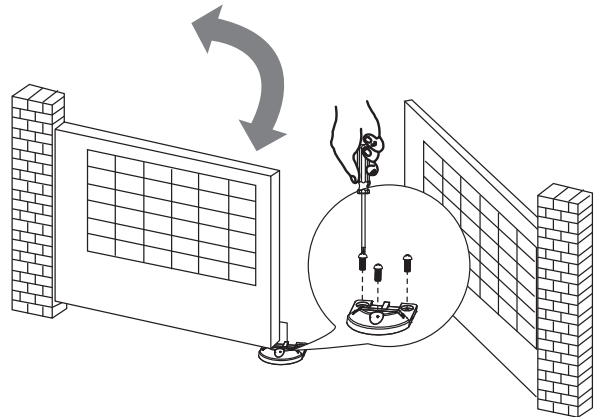


Figure2.3.7(9) For the gate opened Outward.



- 3). The gap between the bottom of electric latch and the stopper should be less than 7mm. See **Figure 2.3.7 (10)**

Figure2.3.7(10) For the gate opened inward.

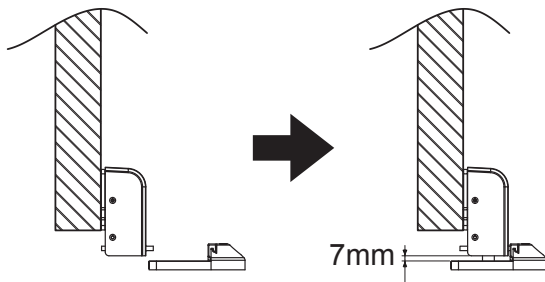
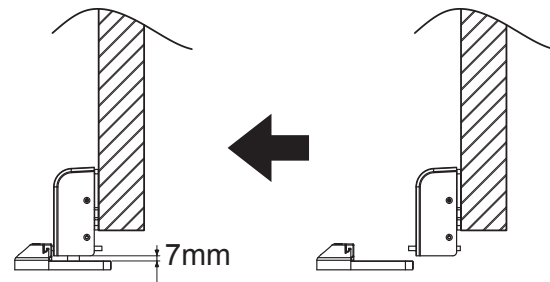


Figure2.3.7(11) For the gate opened Outward.



- 4). Connect the wires of the electric latch to the terminal LAT(+) and LAT(-) on the PCB.

3) Technical Characteristics

3.1/3.2 PW320 / PW330

	PW320	PW330
Motor	24Vdc motor with mechanical release	24Vdc motor with mechanical release
Gear type	Worm gear	Worm gear
Max Absorbed Power	144W	144W
Peak thrust	3000N	3500N
Nominal thrust	2500N	3000N
Stroke length	356mm with mechanical stop/400mm without mechanical stop.	350mm
Power supply	24Vdc	24Vdc
Nominal input power	2A	2A
Maximum operating current	5.5A for maximum 10 seconds.	5.5A for maximum 10 seconds.
Maximum gate weight	250 kg per leaf	350 kg per leaf
Maximum gate length	3 meters	4 meters
Duty cycle	20%	20%
Operating Temperature	-20°C~+50°C	-20°C~+50°C
Dimension	819mm * 115mm * 106mm	844mm * 115mm * 106mm
Weight	6.0kg	6.25kg

3.3 PH-2 Photocells

Detection type	Through beam
Operating distance	25 meters
Response time	100ms
Input voltage	AC/DC 12~24V
Operating Temperature	-20°C~+60°C
Protection class	IP54
Dimension	96mm * 45mm * 43mm

3.4 PKS-1 Key Selector

Application	For outdoor use
Installation	Wall mounted vertically
Operating Temperature	-20°C~+50°C
Dimension	85mm*60.5mm*40.5mm

3.5 PPB-1 Push Button

Application	For indoor use
Installation	Wall mounted vertically
Operating Temperature	-20°C~+50°C
Dimension	85mm*60.5mm*40.0mm

3.6 PF-1 Flashing Light

Application	For warning purpose during leaves movement
Lamp	24Vdc Halogens bulb
Operating Temperature	-20°C~+50°C
Installation	horizontally or vertically installed
Dimension	205mm * 80mm * 75mm

3.7 PR-1 Radio Transmitter

Application	Radio transmitter for remote control of PW320/PW330
Frequency	433.92Mhz
Coding	Rolling code
Buttons	2, for single-gate or dual-gate operation
Power Supply	3V with one CR2032 button type lithium battery
Operating Temperature	-20°C~+50°C
Dimension	71.5mm * 33mm * 14mm

3.8 PEL-1 Electric Latch

Application	For locking the gate.
Power Supply	24Vdc
Operating Temperature	-20°C~+50°C
Operating Current	5A
Dimension	61mm * 55mm * 120mm



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FOR SWING GATES

- Worm gear provides durability and silence in motor operation.
- Slowdown during opening and closing phase.