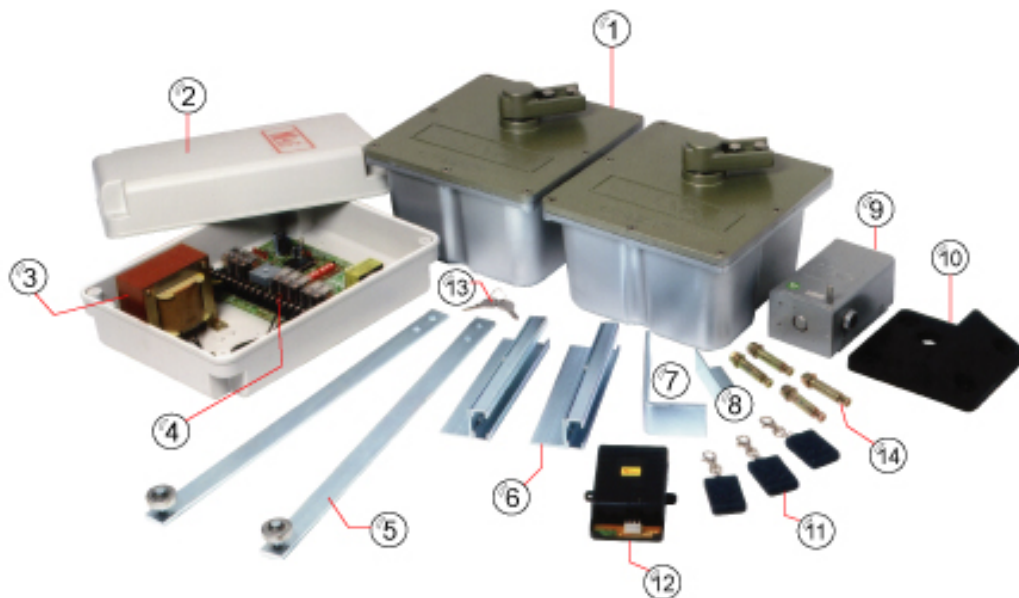


Application note

MAG SW200P is a complete underground swing gate operator system.

Components in MAG SW200P



1	Actuator	9	Solenoid lock
2	Weatherproof PVC box	10	Stopper - solid mild steel PVC coated
3	Transformer (upgraded 5A)	11	Remote control transmitter
4	F2 Controller board	12	Remote control receiver
5	Arm (extended length)	13	Key for manual opening solenoid lock
6	Arm bracket	14	Anchor
7	L-bar		
8	Right angle bar		

Preliminary check

To ensure trouble-free operation, make sure that the gate (whether existing or yet to be installed) has the following specification:

- Max gate weight per leaf is 300kg
- Strong and rigid leaf frame
- No obstacle over its entire travel path
- Gate leaf can be fully open and close smoothly without any jerking or vibration
- No sideways oscillation of the leaf
- Upper and lower hinges on pillar is in perfect condition.
- Gate should be perfectly balanced on the hinges and not fallen to one side.

If any modification, welding or brazing is required on the gate, it should be done before installing the operator system. The condition of the gate structure will have direct affect on the reliability and safety of the automation system.

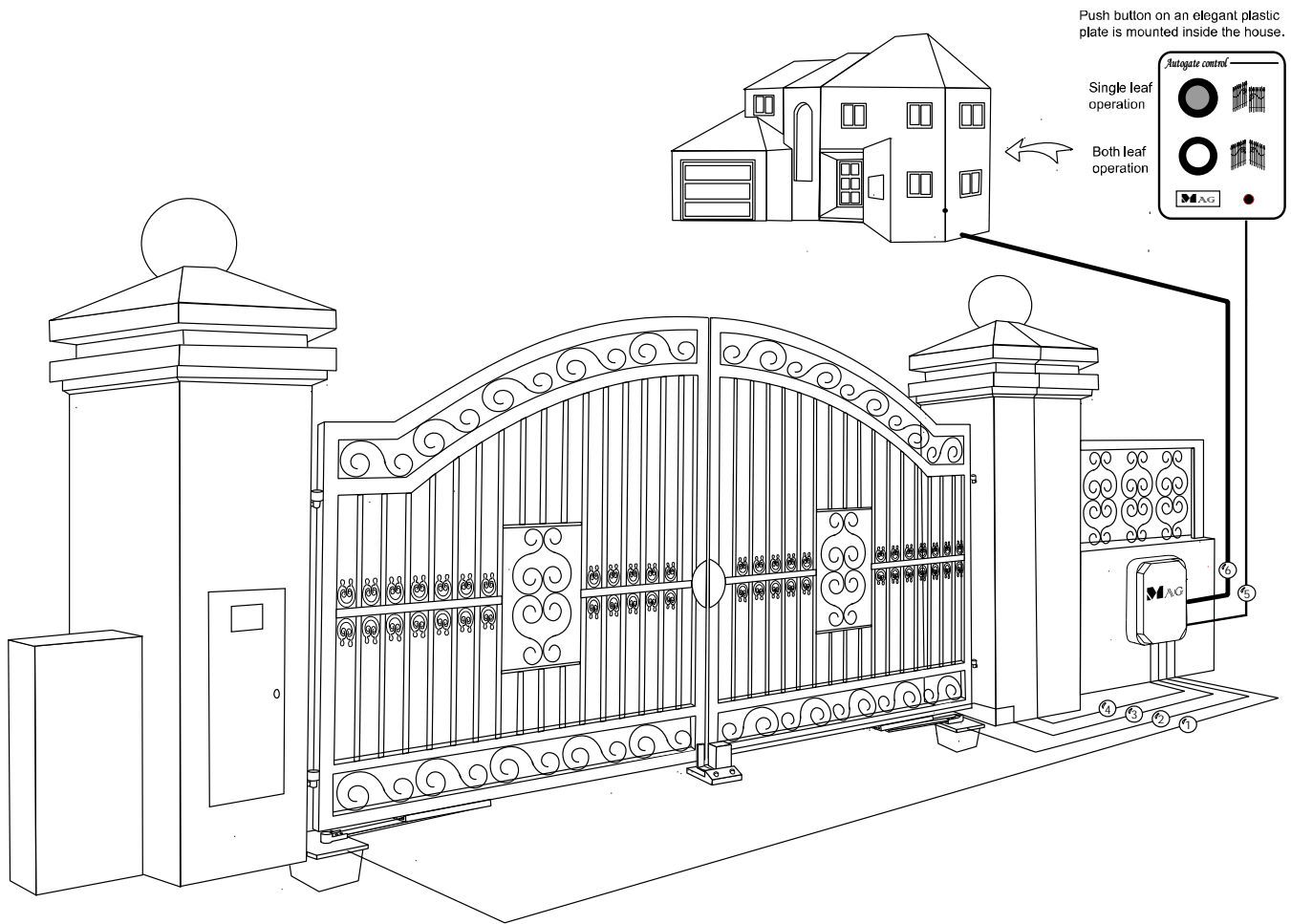
Improper condition of gate will shorten operator system life time and cause undesired performance. We are ready to install SW2000P after making sure all the above items are checked.

Suggested installation steps:

1. Doing all wiring groundwork (hacking the floor) at installation site
2. Installation of stopper at center (to get center position of gate)
3. Welding solenoid lock to gate leaf center frame
4. Make two holes at the floor level for putting in the actuator
5. Installation of the actuator
6. Installing PVC box and control panel to the pillar wall
7. Installation of arm bracket to gate leaf bottom frame
8. Mounting the arm to the arm bracket
9. Install push button inside the house
10. Testing and commissioning

Standard wiring and installation layout

The below typical layout can be used to plan wiring groundwork at actual installation site. Use suitable rigid and/or flexible pipes for laying cables to protect them from any external damages. Always keep low voltage accessory cables separated from 230V power cables. To avoid interference, use separate sheaths. It is suggested to use the following recommended cable specification.

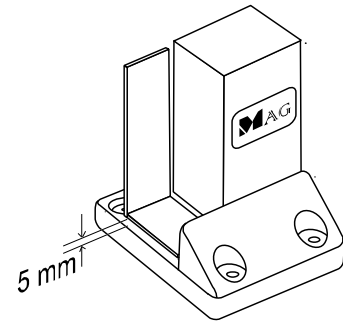
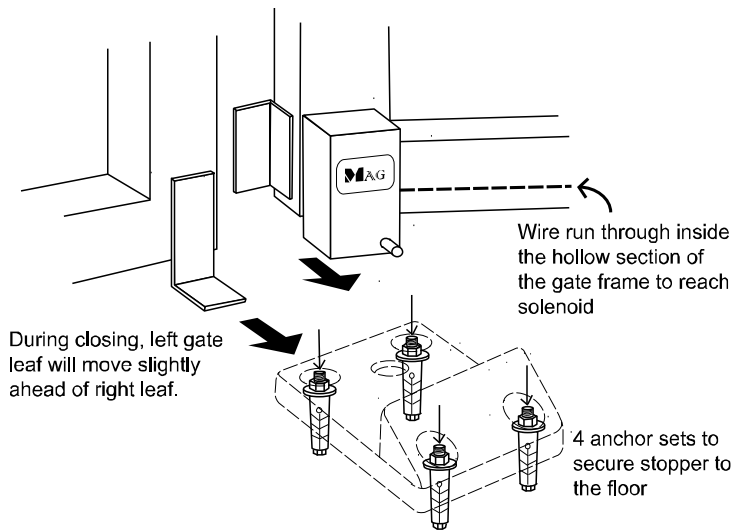


Item	Description	Wire specification
1	Actuator no 1	2 core, 1.5 mm diameter
2	Actuator no 2 (w/ lock)	2 core, 1.5 mm diameter
3	Solenoid lock (wire runs inside the hollow lower frame)	2 core, 1.5 mm diameter
4	Pillar light control	2 core, 1.5 mm diameter
5	Push button	3 core, 1.5 mm diameter
6	Power supply AC230V	3 core, 2.5 mm diameter

Installing stopper and solenoid lock

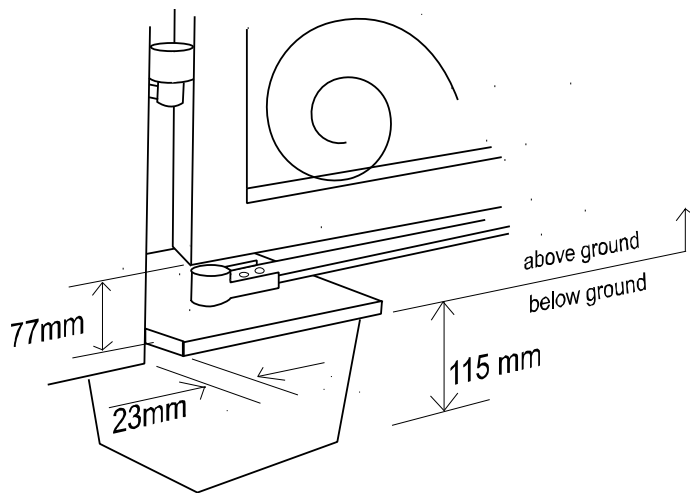
Stopper and solenoid lock are installed at the center of two gate leaf. L-bar and Right angle-bar are welded onto the gate leaf lower frame. Solenoid lock knob will be pushed in by stopper at fully closed position. Knob will then release the plunger down and securely lock the gate.

By factory default all system is configured to open outward. To open inward, installer will need to replace the solenoid lock's "outward spring" with "inward spring".



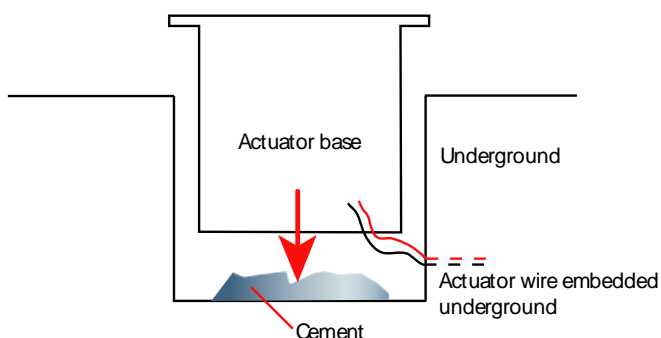
Solenoid lock and L-bar must maintain 5 mm gap above the stopper surface to avoid damaging the rubber coating.

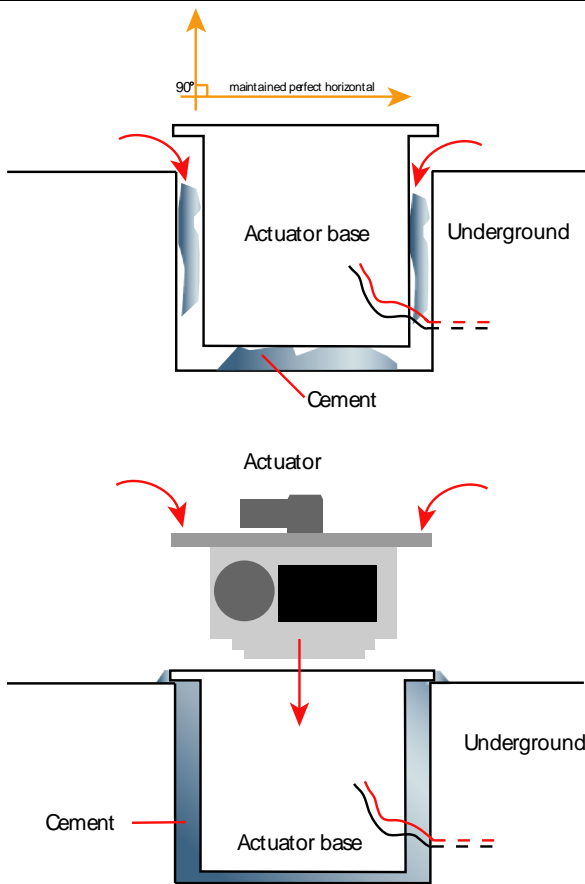
Installing actuator



Steps:

1. The drawing on the side suggests optimal position to install the actuator underneath the gate leaf.
2. Remove actuator from the base.
3. Make two rectangular holes to fit in the actuator base. For easier measurement, installer can just put the base cover up-side-down onto the floor and do marking. Just accommodate additional 15 mm clearance space on each side to put cement.
4. After making the holes, put the base in to see if it can fit. The top part of the base should be on top of floor.
5. Put some cement at the hole's bottom.
6. Insert the actuator wire through the hole opening available at the bottom of the base.
7. Press the base into the hole.





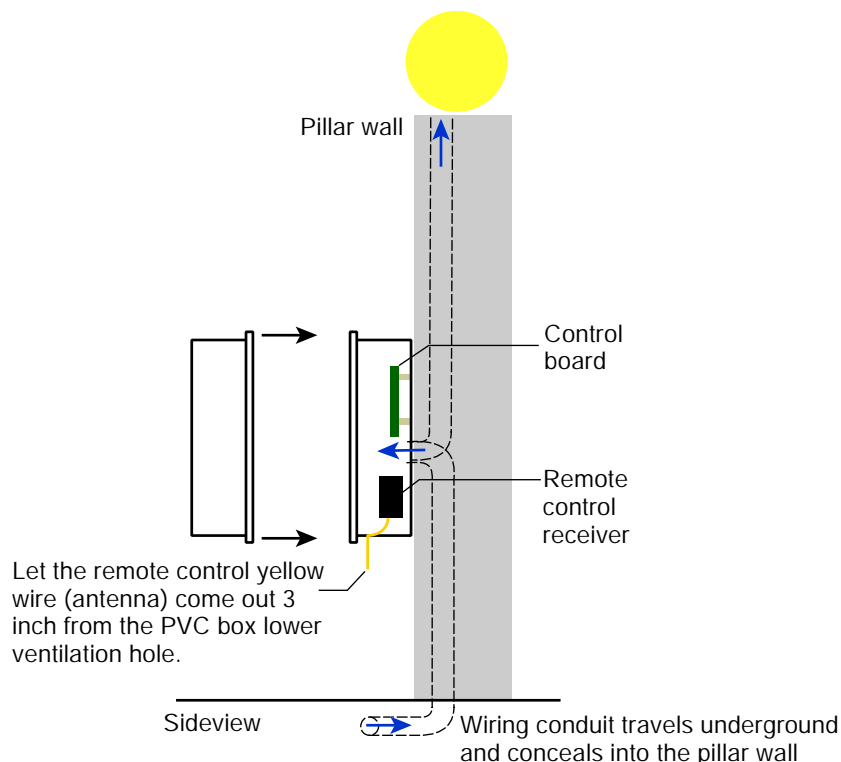
8. Fill in cement from the both side
9. Press the base further down while maintaining perfect horizontal alignment.
10. Cement should fill the entire hole
11. After base is securely installed into the hole, connect wiring to actuator,
12. Install actuator onto its base. The top plate is supposed to be on top of floor surface after installation.
13. Proceed to install other components while waiting for the cement to dry.

Special note: Avoid installing the arm now because it might cause actuator to dislocate when the cement is not fully dried yet.

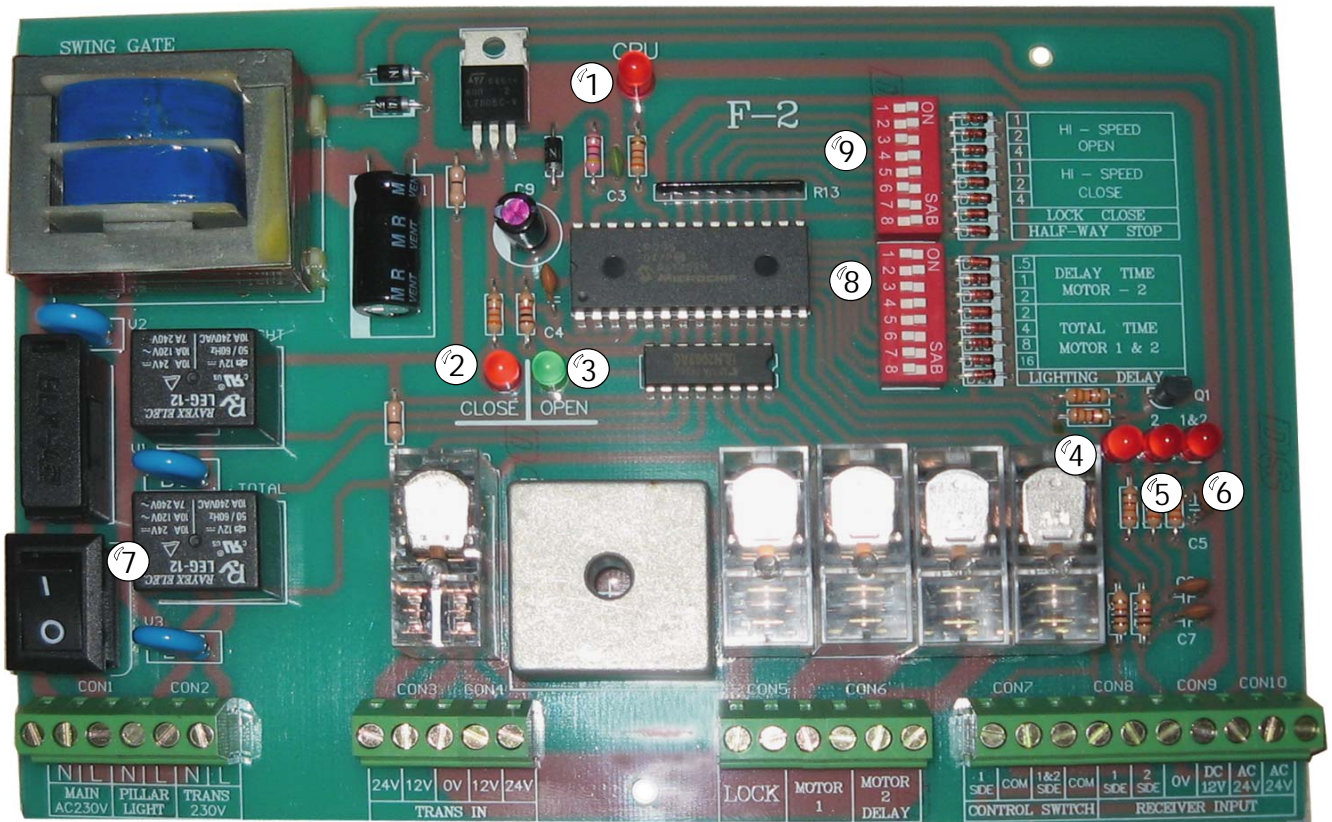
Installing control panel

The PVC box base is mounted onto the wall through using screws. The wiring hole into the control box can be sealed with silicon to prevent insects or water to go in. Remote control, transformer and control panel is installed inside the weather proof PVC box.

IMPORTANT NOTE: Please ensure the PVC box installation direction is correct. The ventilation and wiring holes are supposed to be at the bottom side. Rain water will drop in if these holes are at the top side of PVC box.



F2 control board



LED indicator

- 1 **CPU**
Blinking continuously if CPU is in good condition. If light up, CPU is hanged or have problem. Hang can be resolved by turning the panel OFF and ON again.
- 2 **CLOSE**
Lights up when gate is in closed position.
- 3 **OPEN**
Lights up when gate is in opened position.
- 4 **1**
Lights up when 1 side push button is pressed. As a visual feedback to confirm panel received the signal from push button or remote control.
- 5 **2**
Lights up when 2 side push button is pressed. As a visual feedback to confirm panel received the signal from push button or remote control.
- 6 **1&2**
Lights up when 1/2S push button is pressed. As a visual feedback to confirm panel received the signal from push button or remote control.

Others

- 7 **Power switch**
This will turn ON / OFF the panel. Turn OFF and turn ON the panel to reset the CPU.

Dip switch

There are 8 switches in the Dip switch - each switch is numbered accordingly.

- Slide the white switch to RIGHT side as "ON" position.
- Slide the white switch to LEFT side as "OFF" position.

8 Dip switch 1

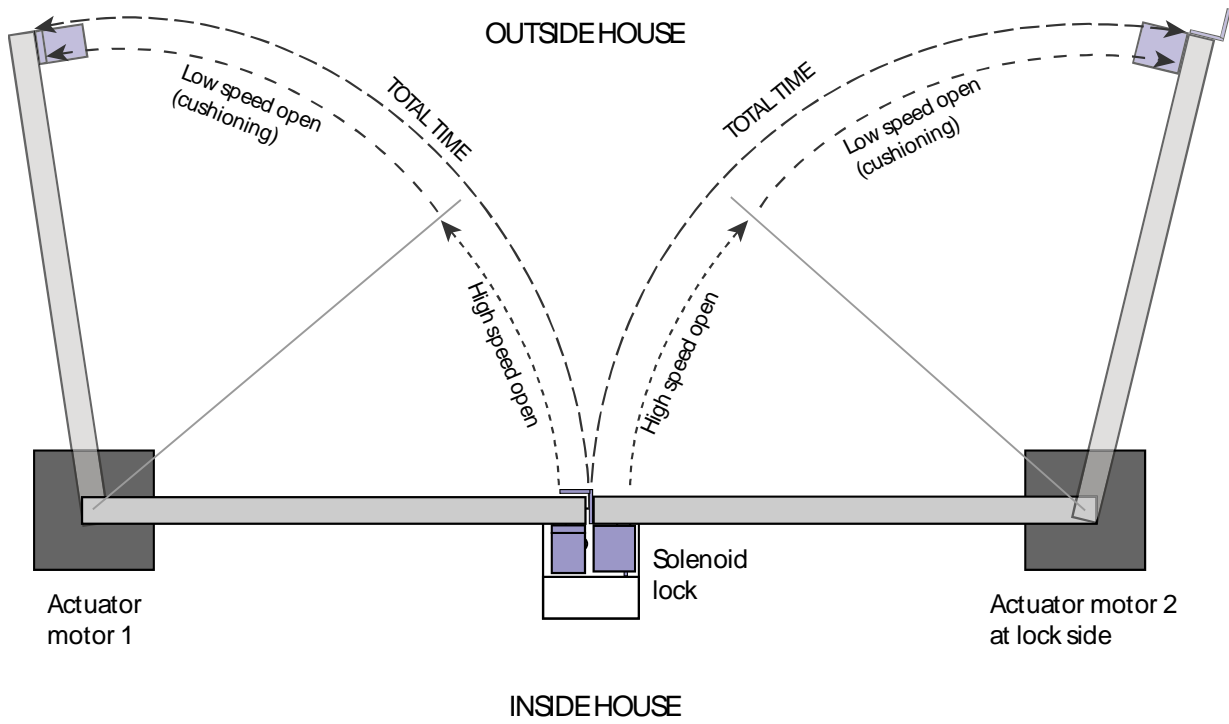
Switch	Function
1, 2, 3	<p>Delay time Motor-2 During closing, motor-1 will move first and followed by motor-2 (lock side). This setting defines how long motor 2 shall wait after motor 1 started to move. Delay time range from 0 to 3.5 sec maximum with 0.5 sec minimum adjustment steps.</p> <p>Switch 1 - 0.5 sec Switch 2 - 1 sec Switch 3 - 2 sec</p> <p>Example to set 1.5 sec delay time (= 0.5 sec + 1 sec), switch 1 and switch 2 shall be switched to "ON" position</p>
4, 5, 6, 7	<p>Total time Motor 1 & 2 Total operation time for motor-1 and motor-2. Internal default timer = 2 sec. Total time range from 2 sec to 20 sec with 2 sec minimum adjustment steps.</p> <p>Switch 4 - 2 sec Switch 5 - 4 sec Switch 6 - 8 sec Switch 7 - 16 sec</p> <p>Example to set 8 sec total time (= Internal timer 2 sec + 2 sec + 4 sec), switch 4 and switch 5 shall be switched to "ON" position.</p> <p>For closing, TOTAL time = High-speed close + Low-speed close.</p> <p>For opening, TOTAL time = High-speed open + Low-speed open.</p>
8	<p>Lighting delay Automatic pillar light control.</p> <p>"ON" - Pillar light turn on when gate start to open and turn off 30 sec after gate is closed.</p> <p>"OFF" - Pillar light turn on as long as the actuator is powered.</p>

Dip switch 2

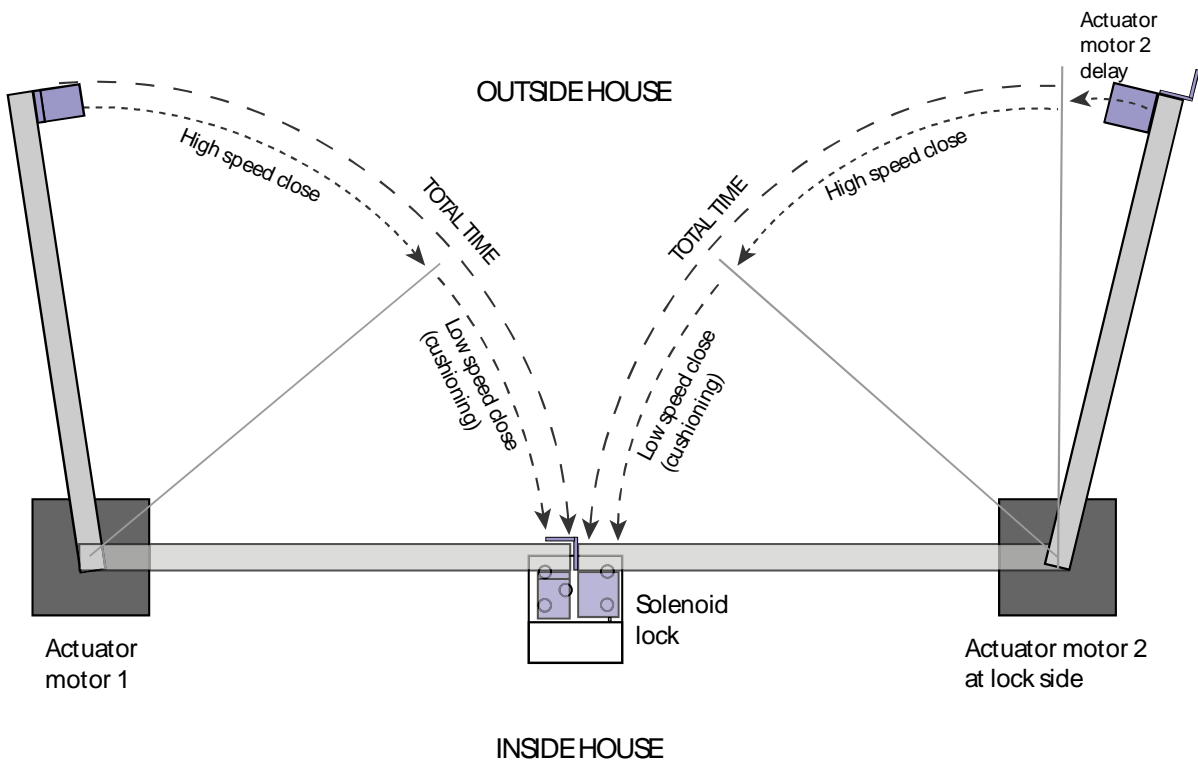
Switch	Function
1, 2, 3	<p>High speed open During opening, actuator will first move in high speed and then followed by low speed cushioning. This setting defines how long the actuator shall move in high speed before the low speed cushioning starts.</p> <p>There is an internal fixed 0.5 sec. High-speed open time range from 0.5 sec to 7.5 sec with 1 sec minimum adjustment step.</p> <p>Switch 1 - 1 sec Switch 2 - 2 sec Switch 3 - 4 sec</p> <p>Example to set 3.5 sec delay time (= 0.5 sec internal + 1 sec + 2 sec), switch 1 and switch 2 shall be switched to "ON" position</p>
4, 5, 6	<p>High speed close During closing, actuator will first move in high speed and then followed by low speed cushioning. This setting defines how long the actuator shall move in high speed before the low speed cushioning starts.</p> <p>There is an internal fixed 0.5 sec. High-speed open time range from 0.5 sec to 7.5 sec with 1 sec minimum adjustment step.</p> <p>Switch 1 - 1 sec Switch 2 - 2 sec Switch 3 - 4 sec</p> <p>Example to set 3.5 sec delay time (= 0.5 sec internal + 1 sec + 2 sec), switch 1 and switch 2 shall be switched to "ON" position</p>
7	<p>Lock close At beginning of opening, lock will be energized momentary to pull the plunger up. During opening, lock might hit obstacle causing the plunger to fall down. Therefore, there is an option whether to energize the lock and pull the plunger up again at the beginning of closing.</p> <p>"ON" Lock will be energized again at the beginning of closing.</p> <p>"OFF" Lock will <u>NOT</u> be energized at the beginning of closing.</p>
8	<p>Half way stop</p> <p>"ON" - Enable half way stop Closed → press once to open → press again to stop half way → press again to close.</p> <p>"OFF" - Disable half way stop Closed → press once to open → press again to close</p>

Timing diagram

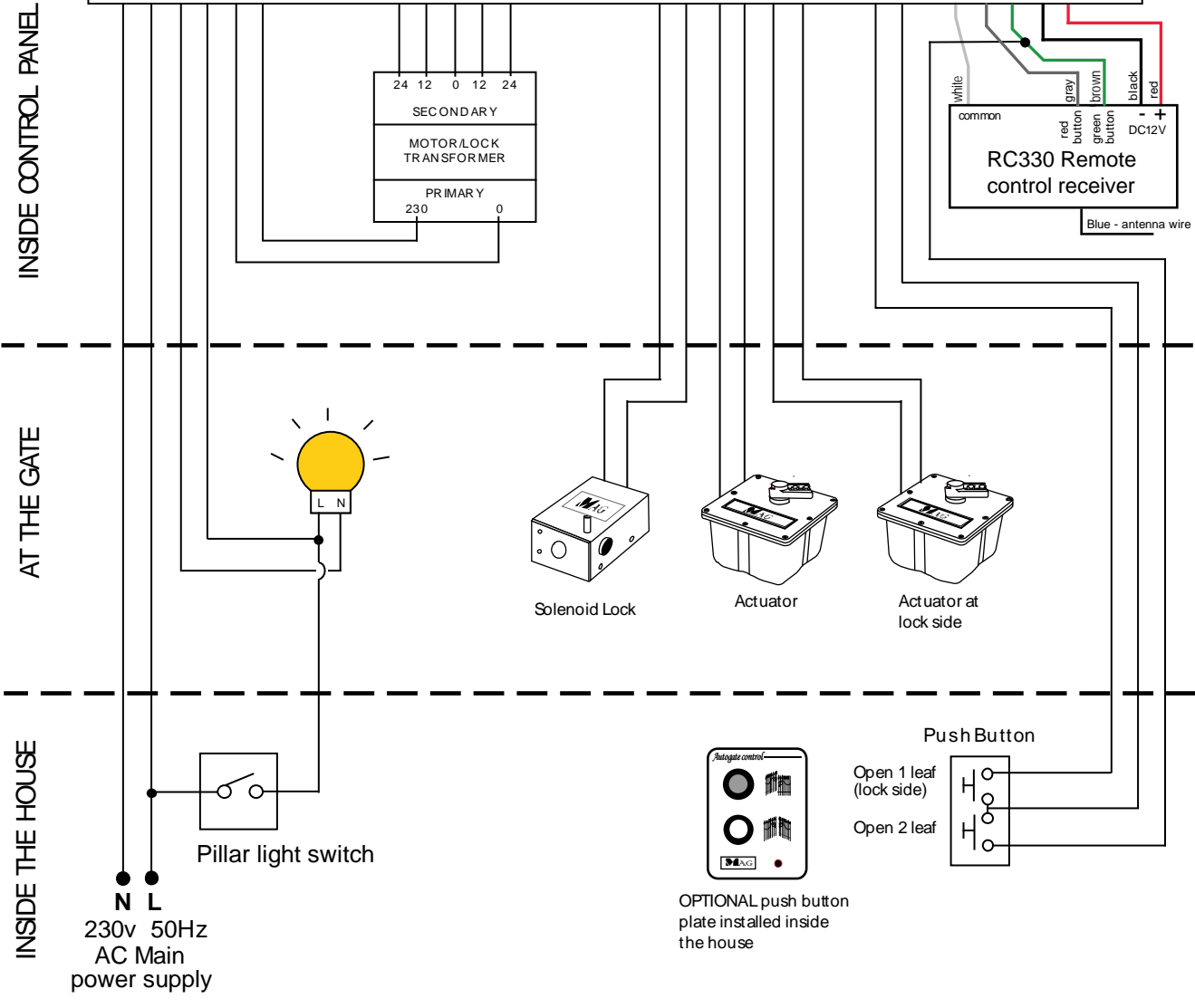
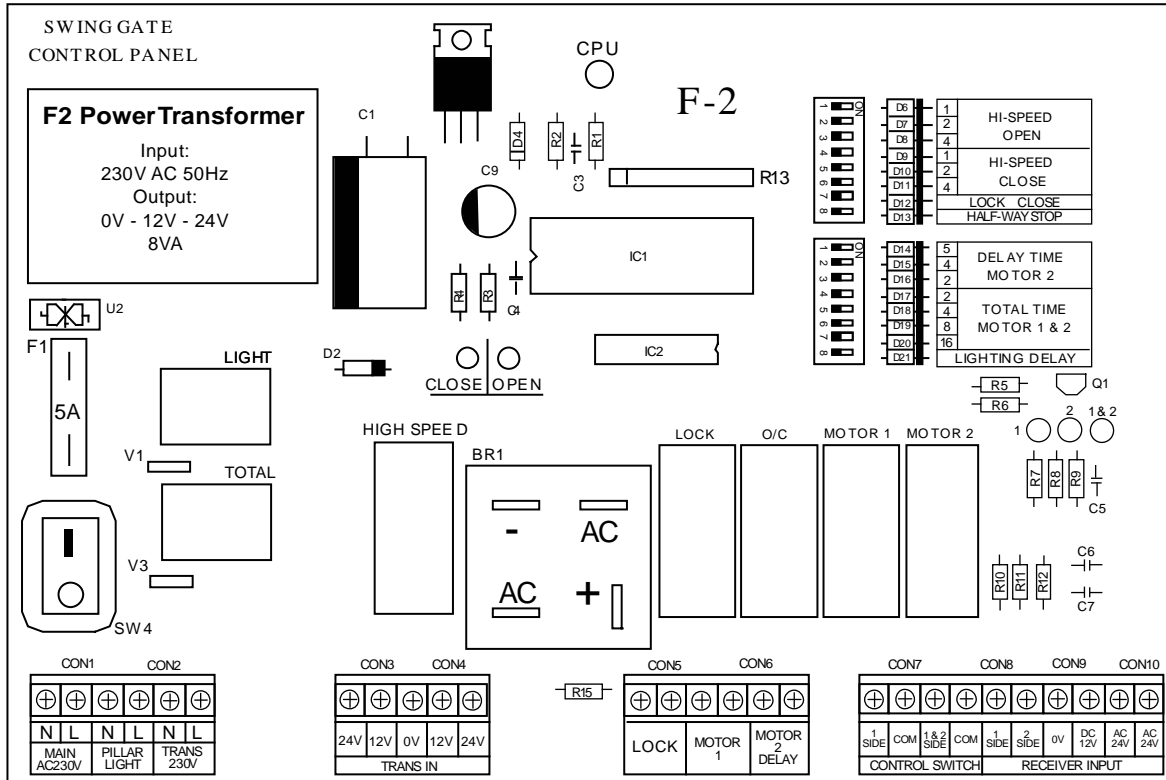
Opening of gate



Closing of gate



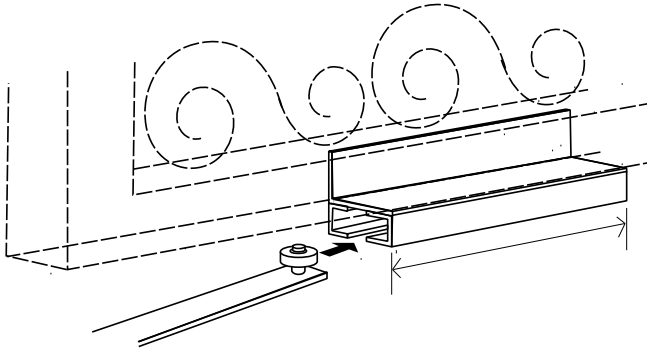
Wiring connection



Installing arm and arm bracket

Bracket must contain the arm's bearing roller movement as the gate open or close. The bracket mounted should be able to completely include the maximum traveling path of the roller bearing as the gate swing from fully close to fully open position.

The final location of the bracket varies depending on the installation site - and it has to be measured again for every new installation. Failure to mount the bracket accurately will cause the bearing roller to fall out when gate is fully open or fully close.

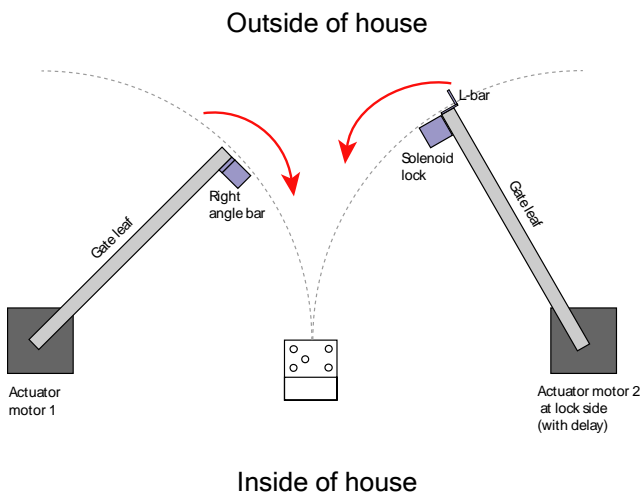


Steps:

1. After the cement of actuator is dried
2. Move gate leaf at fully *closed* position to measure the starting position to mount bracket. Move gate to intended *opened* position to measure the ending position to mount bracket.
3. Spot weld the bracket and put in the arm
4. Test fully open and close to see if it is smooth.
5. If confirm position is OK, then full weld the bracket to the gate leaf.

Final testing and commissioning

By factory default all system is configured to open outward when startup.



Steps:

1. Position both gate leaves approximately 45 deg outward as in the diagram.
2. Press 2 side open push button. Both gate leaves should open outward. If one of them open inward, reverse the wire connection on the corresponding actuator motor.
3. Reset the panel by turning it OFF and ON again. Repeat step 1 and 2 until both actuators are opening outward.
4. Now both gate leaves are in opened position. Press 2 side open push button. Both gate leaves should close. Gate leaf with solenoid lock should move slightly delayed.
5. Check if the solenoid lock plunger is inserted properly into the stopper and the gate is securely locked in closing position.
6. Also check the gate leaf traveling speed. Initial movement should be high speed and followed by low speed cushioning. Adjust timer settings as necessary according to site condition.
7. Installation is completed if the gate can open and close perfectly.

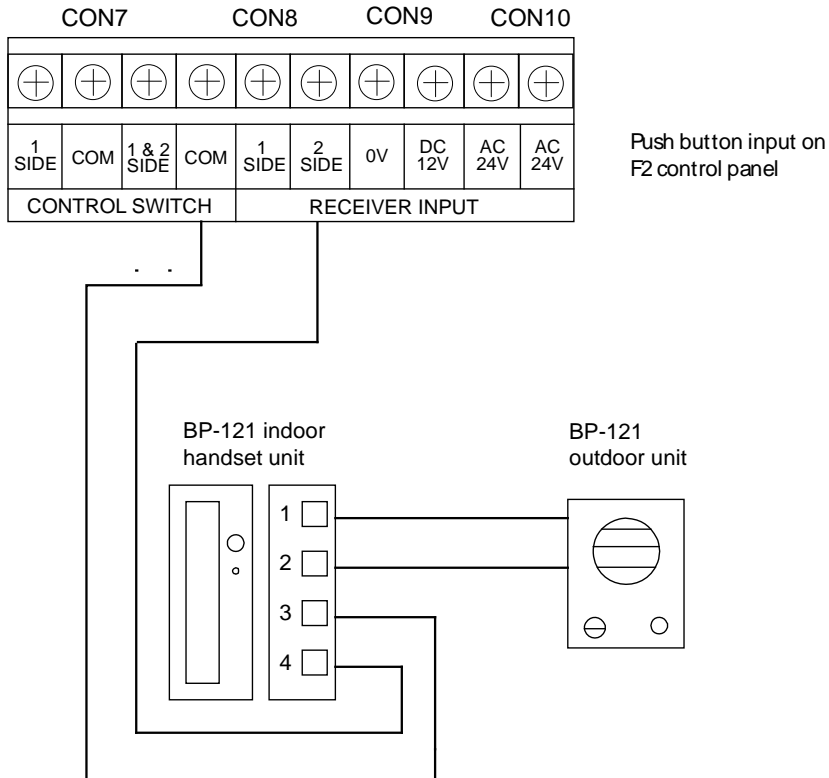
Manual Operation

In the event of power failure, the operator system will continue operation for a period of time using the backup battery. The gate operator system will completely cease to function when backup battery is totally used up. If this happens, user can manually open the door by unlocking the solenoid lock at the center bottom of gate using the key provided. While pulling the gate towards open direction, turn key clockwise to unlock. Plunger will be pulled up allowing the gate to be opened. After opening the gate, remove key and the solenoid lock will remain unlock.



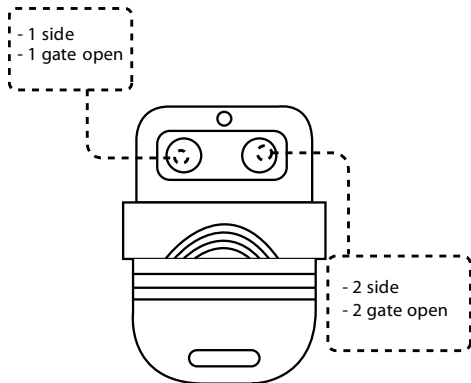
Optional installation of door phone

The following diagram illustrates the connection of Ebelco BP121 DC door phone to F2 control panel. This allow user to talk to visitor and open autogate operator from the indoor handset unit instead of push button. Door phone can be used together with manual push button and wireless remote control. The following connection will open 2 gate leaf when user pressed the push button on handset unit.



Remote Control

The following diagram illustrates the functions of a remote control.



Button Functions



Operating the gate with remote control

Button 1 and button 2 on the wireless remote control transmitter has the same function.

Press once to OPEN.
Press again to STOP.
Press again to CLOSE.

If the operating range of the remote control weakens, please check the battery in the remote control transmitter. Battery needs to be changed every 3 months depending on the frequency of usage. Type of battery used is AE23, 12V.

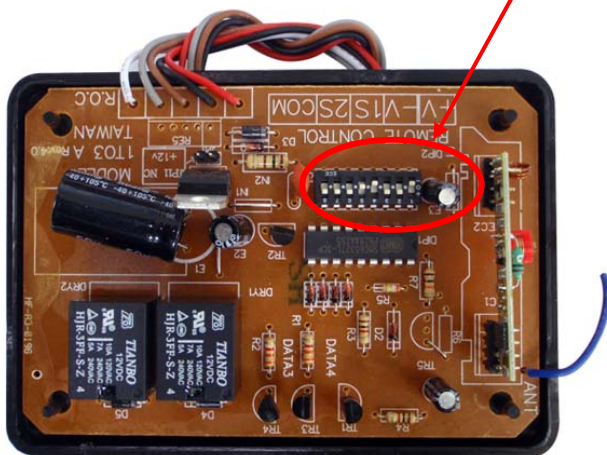
Every set of remote control consist of transmitter and receiver. Each transmitter transmission coding is exact match to the receiver. There are 6561 variation of coding available by setting through DIP switch. User can set to any coding desired. For security reason, it is recommended that user change the coding from the default setting for higher security.

Battery slot
AE23, 12V



Remote control transmitter opened.

Matching coding between transmitter and receiver



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