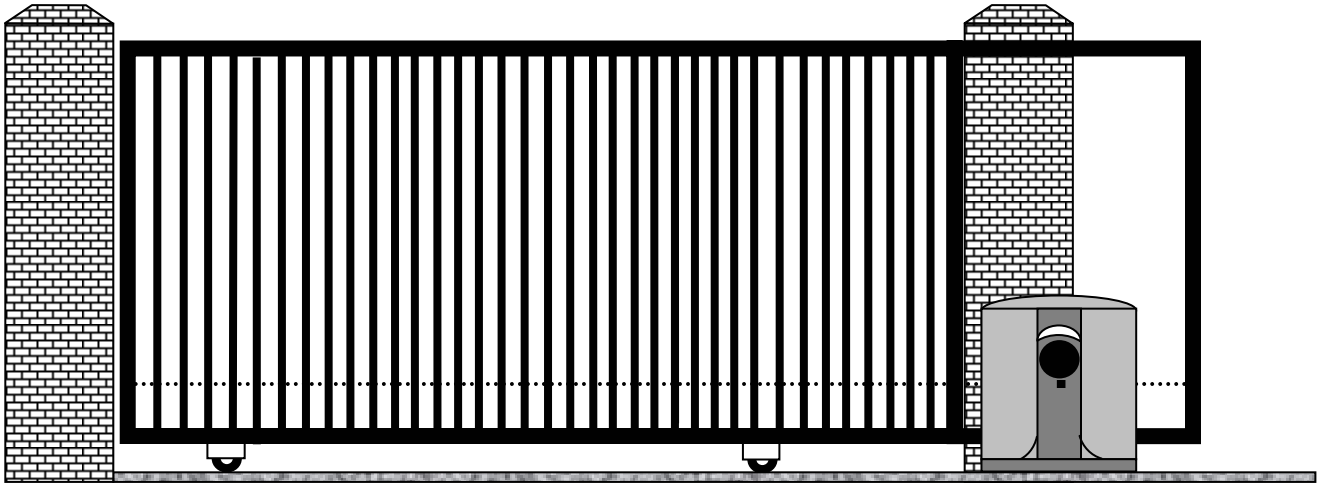
USAutomatic

PATRIOT RSL

High Quality Low Voltage
Vehicular Slide Gate Operator
Solar or AC Charged



PATRIOT RSL Slide Gate Operator

Installation/Owners Manual

PROUDLY MADE IN THE USA
www.usautomatic.com

INTRODUCTION

This operator is intended to be installed on vehicular Class I or Class II gates as defined by UL-325. Maximum gate load not to exceed 600 pounds.

PLEASE READ THIS ENTIRE MANUAL CAREFULLY PRIOR TO INSTALLATION. In doing so, along with performance of the installation in step-by-step order, you will achieve optimal results. We strongly recommend that all installation and service personnel pay particularly close attention to the safety systems section of this manual and UL-325. In addition to the current sense feature that is provided, other safety devices are necessary to make each particular installation as safe as possible to reduce the risk of personal injury and/or property damage. A trained and authorized service technician or the factory should be consulted for assistance.

Cautions - Very Important

- Do not attempt to enter the gate area while the gate is moving. Wait until the gate comes to a complete stop.
- Operate the gate only when it is fully visible, free of persons or obstructions, and properly adjusted.
- Do not allow children to play in the area of the gate. Do not allow anyone to ride on the gate.
- Do not allow children to play with the remote control or any other activation device.
- Do not attempt to "beat the gate" while the gate is opening or closing. This is extremely dangerous.
- Test the current sense feature and all safety devices regularly to insure correct operation.
- Study the entire Safety Section, paying particularly close attention to the Entrapment zones on page 20-22 and be aware of these areas not only during use but also during any adjustments to the unit.
- Modifying the AC charger power cord will void the charger warranty.

Other Safety Standards

- All control stations should be located at least 6 feet from any moving part of the gate or operator.
- Do not ever install any control device where a user will be tempted to reach through the gate or fence to activate a gate.

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GENERAL REQUIREMENTS

General hand/tools such as wrenches [7/16, 3/4], tape measure, level, clamps, chain cutter, etc. are required. Your particular installation may require a drill, welder or other hardware not provided. Concrete pad mounting or post mounting by a qualified installer is the recommended method of securing the operator.

BATTERY REQUIRED FOR OPERATION (NOT INCLUDED).

We recommend a 12-volt deep cycle gel or AGM battery (33-amp hour minimum). The cable harness supplied with the operator is designed for bolt type battery post found on most marine batteries.

IMPORTANT CAUTIONS:

1. Do not test or operate this unit without first ensuring that all hardware is correctly installed, limit nuts are securely locked in place with the limit locking plate and all objects are clear of sprockets and chain.
2. Do not perform any welding with the control board or the battery connected. Serious damage to the control board and/or battery can occur if attempted.
3. Loose clothing can get caught in chain and sprockets resulting in bodily harm.

GATE QUALIFICATIONS/APPLICATIONS

GATE LENGTH/WEIGHT

This gate operator is rated for vehicular class I or class II slide gates up to 24 feet in length and up to 600 pounds in weight as defined by UL-325. If your gate exceeds either one of these limits, please consult a qualified technician or the factory for alternative solutions.

Note: High quality rollers with bearings will allow your gate to operate with minimal drag (minimal friction) and will decrease the load on the gate operator. Many type of slide gate designs exist. Choose a design that will decrease friction and required torque.

GATE CYCLES PER DAY

Cycles per day will vary depending on the installation. Factors to consider are expected number of cycles per day accessories that are connected to the operator and length of gate. The low current receiver which is standard equipment used in conjunction with solar friendly accessories will maximize the number of cycles per day. Solar charged systems should not exceed 15 complete open/close cycles per day without additional solar panels. This gate operator, whether AC or Solar charged, should never be used in applications, which exceed 100 complete open/close cycles per day. Holding the gate open can decrease cycles during high cycle time periods. If more cycles are required, a high traffic gate opener should be used. For help determining number of cycles possible per day contact the factory for detailed information.

IMPORTANCE OF A PROPERLY DESIGNED GATE

As a general rule, a gate, which is to be automatically operated, must be stronger and smoother than one, which will be manually operated. Since the gate is a major component of the system, great care and concern must be given to the gate design.

A GATE OPERATOR CANNOT OVERCOME A POORLY DESIGNED GATE.

a) Does the gate slide smoothly without binds or excessive resistance? Slide gates should slide level and plumb if possible to prevent the operator from having to pull the gate up or down grade when opening or closing. Low quality wheels and rollers usually create drag, which will cause operator problems.

   The use of high quality bearing wheels and rollers are highly recommended.

b) Is the gate frame of substantial strength without excessive weight?

c) Will the frame withstand normal wind load conditions without sway or vibration?

d) Will the gate hit the catch correctly without being hand-guided or pushed into the catch?

e) Are the bearings / wheels suited for the number of cycles expected per day?

f) Is the track area designed to keep dirt and rocks from obstructing the gate movement?

If any of these problems exist, they must be corrected to achieve a reliable automatic gate system.

MOUNTING SITE REVIEW

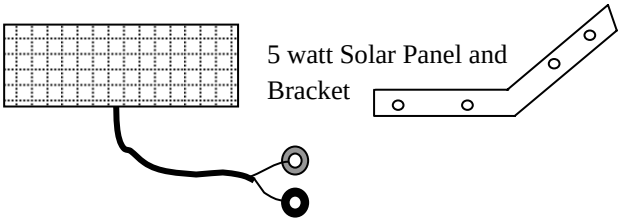
Installers should ask themselves these questions prior to installation and predetermine the solution to any problems, which may occur.

a) Does sufficient space exist for mounting and future servicing of the operator?
b) *Will the unit open the gate by sliding to the left or the right? See note below.
c) How will the chain brackets attach to the gate?
d) How will the operator be mounted (on a pad or on a post)?
e) How will the charging unit (AC or Solar) be brought to the control box?
f) How and where will the solar panel mount if solar charged, so that optimum sunlight is received?
g) How will control wiring, if any, be brought to the control box?
h) Have all safety concerns been addressed? (See Safety Section Pgs. 18-22)

NOTE: *Standing on the operator side of the gate, an operator installed to the left of the drive is a left hand installation, an operator installed to the right is a right hand installation.

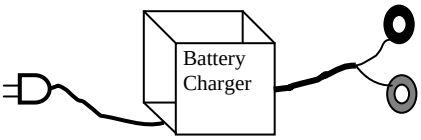
PARTS INCLUDED

The Patriot RSL slide gate operator is shipped in two separate boxes. One box contains the operator chassis, emergency release access cover and the operator cover. The second box contains charging device (with bracket for solar), secondary entrapment siren, chain brackets, chain, transmitter, chain adjustment bolts, and the installation/user manual with safety placards.



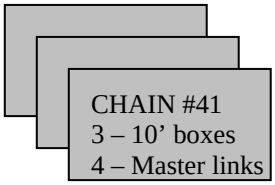
5 watt Solar Panel and Bracket

OR

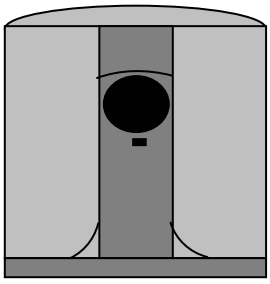


Chain Bracket
2 supplied
2"x6" (1/2" hole)

2- ½" x 6" Chain Adjustment Bolts
4- ½ inch Nuts

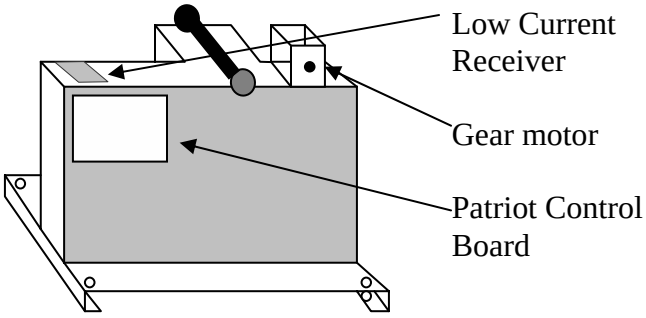


1- 2 button Transmitter



UV treated
Polyethylene Cover

4 – ¼" bolts/washers



Operator Chassis

Safety Placards
2 supplied.

Secondary Entrapment Siren +12vdc
2 push in

Emergency release access cover

1 – cover, screw and nut

- **Placards (Two supplied) should be visible from inside and outside of gate.**

NOTE: ***12 Volt DC deep cycle battery (33-amp hour minimum) required. (Not Included) Gel or AGM type recommended***

Operator Illustration and Descriptions

TOP VIEW

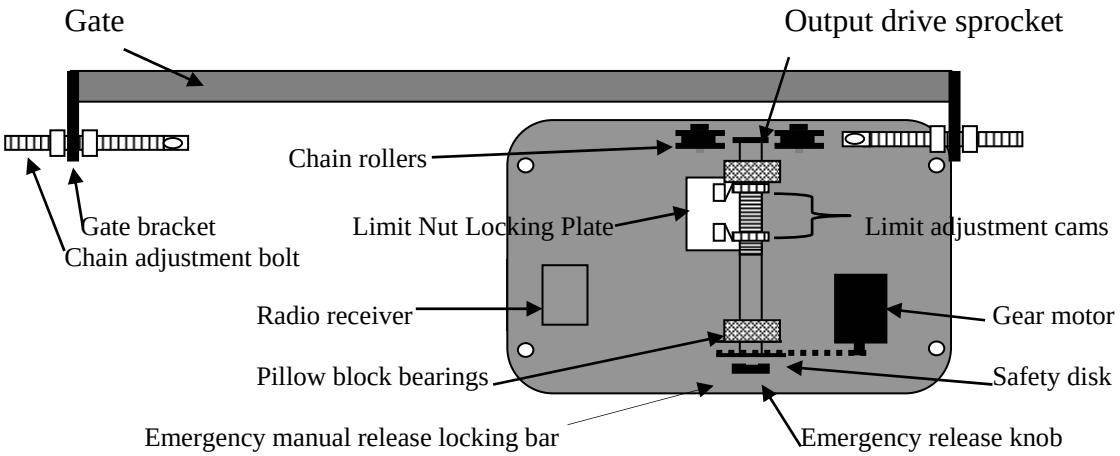


Illustration 1

FRONT VIEW

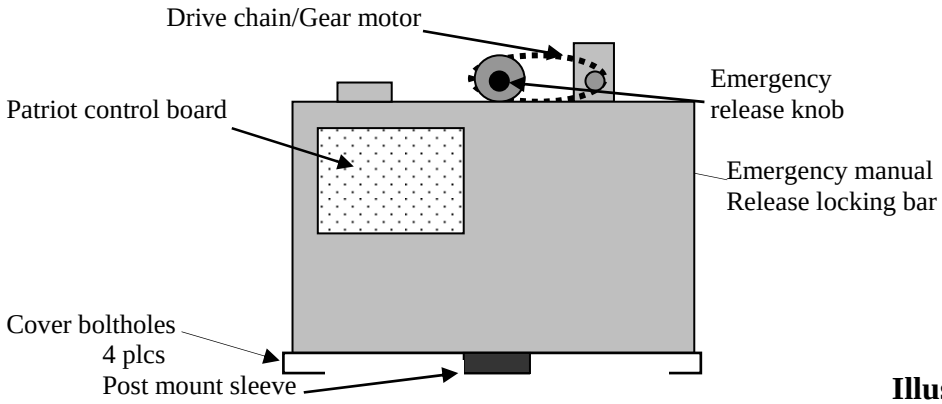


Illustration 2

REAR VIEW

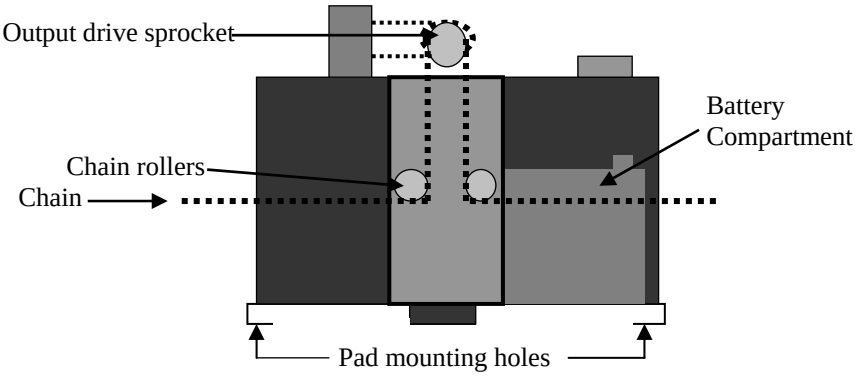


Illustration 3

Note: USAutomatic is not responsible for failure to comply with UL-325 standards, local building codes or improper installations.

Mounting Operator

NOTE: Do not mount in areas by automatic sprinklers, or flood-prone areas. It is important that the control board, control devices, and the battery compartment remain dry.

Correct Installation

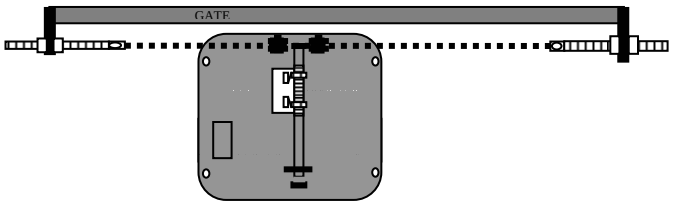


Illustration 4

Incorrect Installation

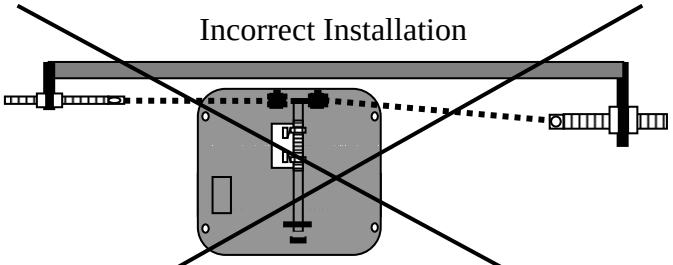


Illustration 5

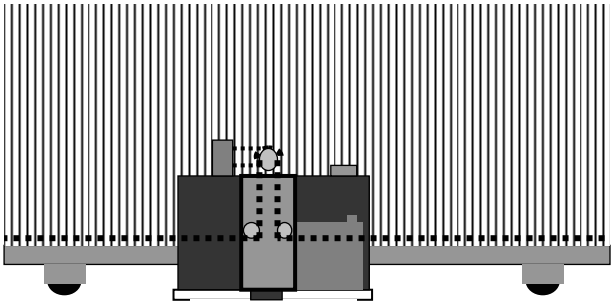


Illustration 6

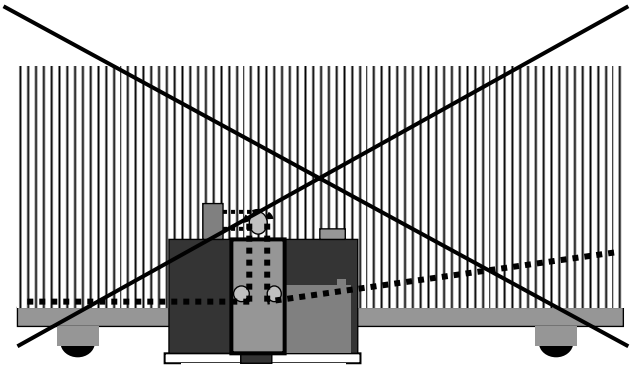
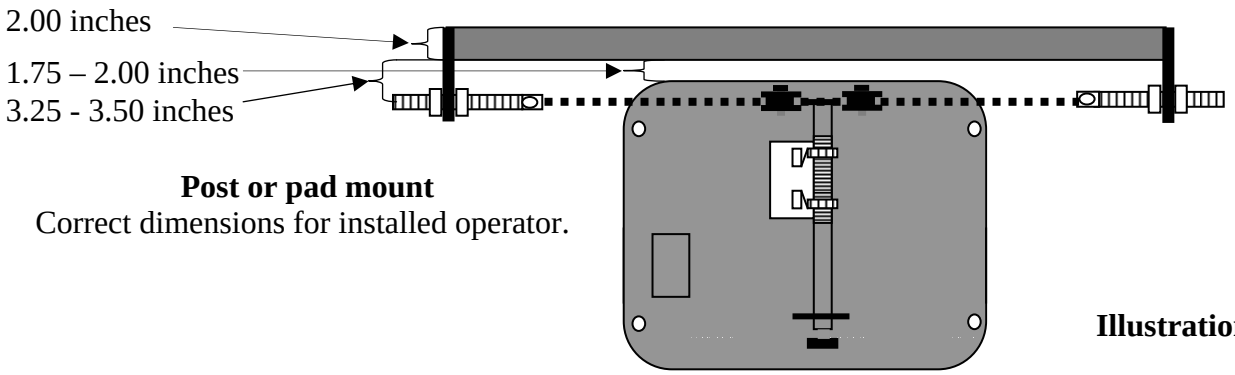


Illustration 7



Post or pad mount
Correct dimensions for installed operator.

Illustration 8

Mounting Operator

PAD MOUNT:

The operator base has four predrilled holes and four access holes, which are covered with press in hole plugs. These holes are sized to accommodate ½ anchor bolts and the plugged hole will accept a standard size ¾ inch socket. Keep the operator parallel with the gate while securing. See illustrations 9,13 and 14 for dimensions.

POST MOUNT:

The operator base is equipped with a four-inch post receiver located on the bottom of the base. This receiver will accept a square or round four-inch post. Keep the operator parallel with the gate and level while securing in place. See illustration 10 for dimensions.

Set the operator in place (pad or post). Ensure that the chain bolts once installed will be properly aligned with the chain rollers, see illustrations 4 – 8. Once alignment is verified secure operator in place using bolts for pad installation and welding for post installation. Keep the operator parallel with the gate while securing in place.

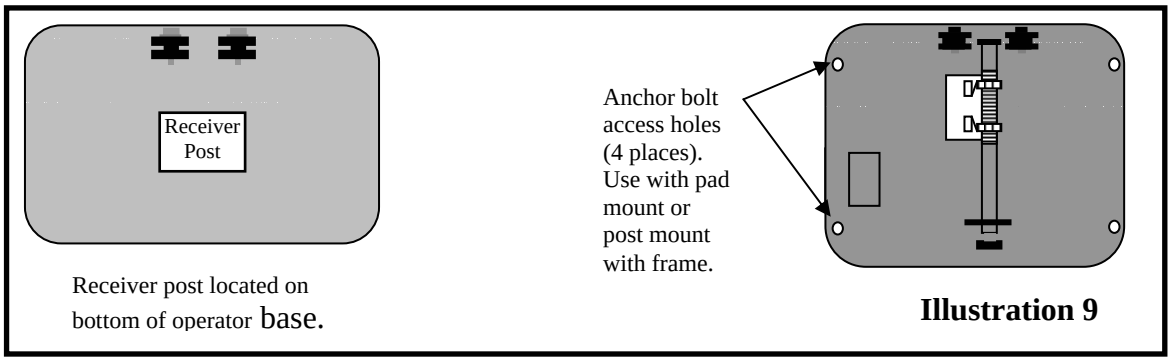


Illustration 9

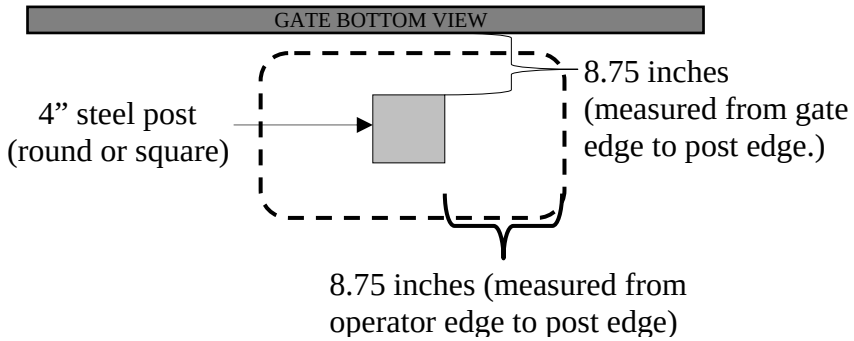
NOTE: Regardless of mounting method ensure that operator base does not extend into the driveway area, where damage from traffic could occur.

STEP 1 Post Mount Installation

POST SPECIFICATIONS

Steel post is an optional mounting method. The type of post the operator is designed to handle is a 4-inch round or square thick wall post. The operator can be installed directly onto the post or a steel frame can be constructed on the top of post. If the method chosen is to construct a frame see dimensions in pad mount section (Illustrations 13,14) for bolt locations and size. If the direct post mount option is chosen use the dimensions that follow to install, also consider that additional bracing might be needed.

POST LOCATION TO GATE EDGE AND HOLE PREPARATION



When determining post location ensure that the operator's outer edge is a safe distance away from the drive to avoid damage from traffic.
See illustration 13 for operator base overall dimensions.

Illustration 10

Post must be parallel to gate edge. Hole depth should be at least 36 inches and bell shaped to reduce operator movement to a minimum. **The post must be concreted in place.**

NOTE: Remember to mount the operator high enough above ground level so that the post and operator can be welded securely.

STEP 1 Pad Mount Installation

CONCRETE PAD CONSTRUCTION

The mounting foundation must be very stable and of sufficient strength to prevent any movement. Mounting site must be clear of flooding.

Cross Section View

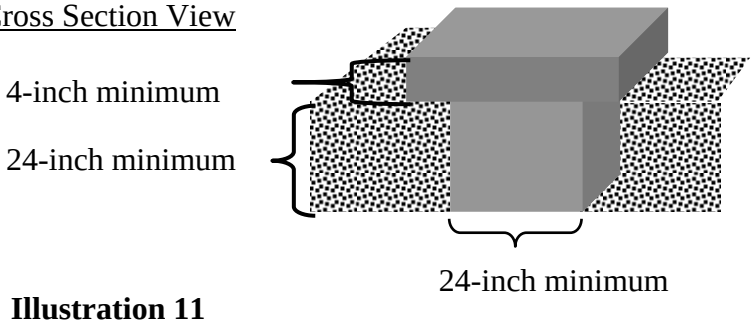


Illustration 11

TOP VIEW PAD

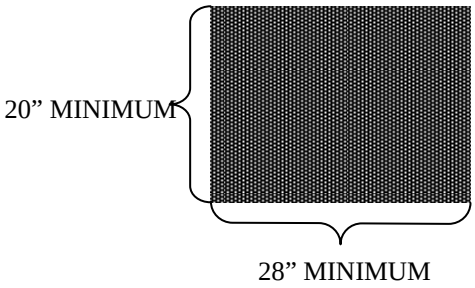
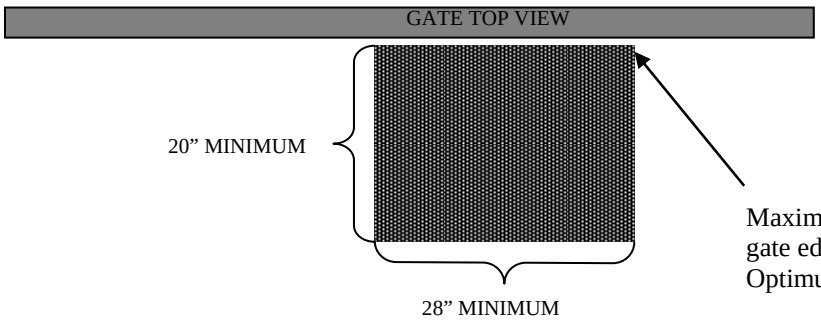


Illustration 12

Illustration shown is for dirt surface area. Surface areas of different material may require different pad dimensions.

CONCRETE PAD LOCATION TO GATE



When determining pad location ensure that the operator’s outer edge is a safe distance away from the driveway to avoid damage from traffic.

Illustration 13

CONCRETE PAD ANCHOR BOLT LOCATION

Concrete pad top view measures 20” x 28”. This allows for 4” of concrete between the anchor bolts and the outer edge of the pad. Use the drawing below to locate the four anchor bolts.

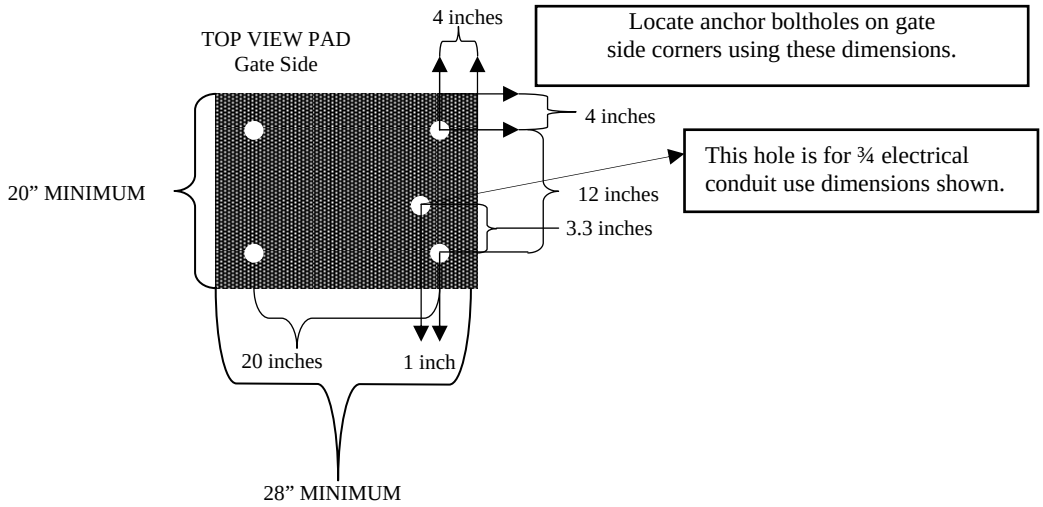


Illustration 14

Note: USAutomatic is not responsible for failure to comply with UL-325 standards, local building codes or improper installations.

STEP 2 Mounting of Chain Brackets to Gate

With the operator securely mounted use the following procedure to locate and install gate brackets to gate ends.

1. Install the chain adjustment bolt into the chain bracket as shown in illustration 15 below.
2. Slide the gate fully open. Using the diagram below locate the correct position for the gate bracket. Clamp the bracket in place and repeat for gate in the fully closed position. Before welding gate brackets in place refer to illustrations 4 – 8 to ensure correct installation. Once alignment is correct weld chain brackets in place.

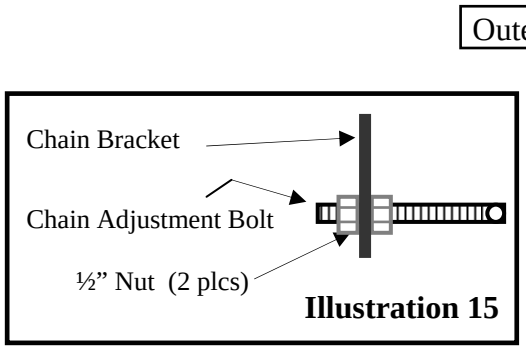
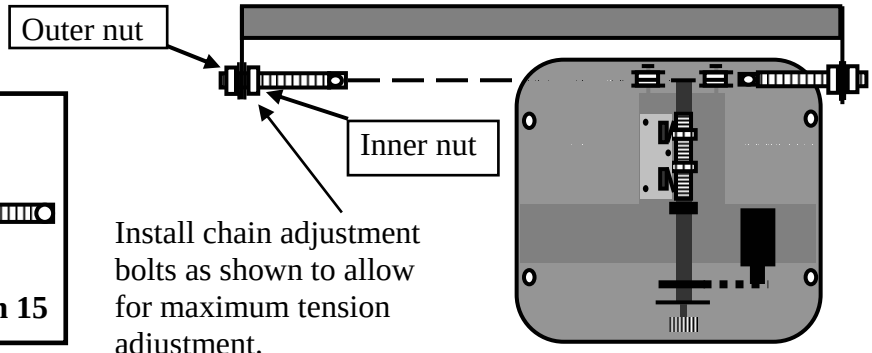


Illustration 15

TOP VIEW (GATE FRAME 2")



Install chain adjustment bolts as shown to allow for maximum tension adjustment.

Illustration 16

STEP 3 Connecting Chain

Using the master links supplied connect one end of chain to one of the chain adjustment bolts. Use additional master links to connect chain together as needed to route chain through the operator (See Illustration 3,16).

In most installations the chain will have to be cut to the desired length. To determine the desired chain length loosen the chain adjustment bolts to allow for maximum adjustment (illustration 15). Pull the emergency release knob to allow the chain to roll freely through the operator. Pull the chain to mate up with the remaining chain adjustment bolt and mark link that needs to be cut. Once link is cut install master link and connect to chain adjustment bolt.

CHAIN TENSION ADJUSTMENT

The outer ½" nut on the chain adjustment bolt adjust chain tension, it is important not to over tighten the chain or premature wear will result. It is also important not to allow the chain to be to loose. Once the chain tension is correct secure the inner ½ inch nut by tightening it against the chain bracket. The chain will have a few inches of drop across the span of the gate when correct.

GATE POSITION BEFORE OPERATING

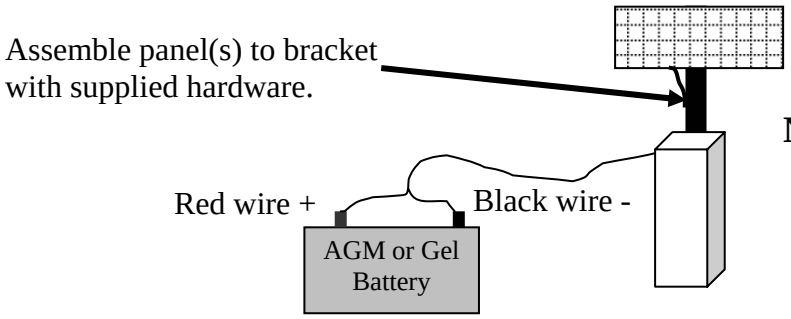
After the chain is connected to the gate verify that the gate rolls freely from the fully open position to the fully closed position. If any friction points exist they must be corrected. Open the gate to the center position and push the emergency release knob back in place, it might be necessary to roll the gate while pushing the knob back in place.

NOTE: The gate must be in the center position (half open) at this time.

STEP 4 Installation of Charging Source

SOLAR PANEL

Locate and mount the solar panel bracket so that the panel faces southwest and maintains the preformed 45-degree angle. The standard cable is 10' in length and must feed in through the bottom of the control box. Pay attention to the distance when determining your mounting location. Although the cable can be extended with watertight connectors, charging power is diminished. Sometimes it is necessary to locate the panel farther away to achieve optimum sunlight, but consider that optimum sunlight might not mean optimum charging if the distance is too great. Use #16 gauge wire or larger and keep length as short as possible.



NOTE: *Avoid shaded areas if possible. Panels should face southwest for optimum charging. See explanation above for details.*

AC CHARGER

Locate and install the AC battery charger inside the operator chassis. A hole has been pre-punched for conduit in the base of the operator (Illustration 14 page 9). The charger requires a receptacle for 110-volt AC supply; recommended location is above the pre-punched hole. A licensed electrician per local building codes should install the receptacle.

Modifying the charger power cord will void the charger warranty.

Note: USAutomatic recommends an AC surge protector on all 110-volt AC installations, especially in lightning prone areas.

STEP 5 Control Board Dipswitch Setting Verification

NOTE: This check must be performed before operating the gate for the first time. Failure to do so may damage the gate operator.

Before operating the gate lets make sure the Patriot control board dipswitches are set correctly for your installation. Locate the dipswitches on the Patriot Control board (see page 16).
Factory default dipswitch settings are 2 and 3 on, right hand installation operator installed on right side of drive viewed from inside the property.

Identify your installation below and verify dipswitch settings:

Patriot I (Right hand installation)	**Patriot I (Left hand installation)**
Dipswitches 2, 3 should be in the on position.	Dipswitches 2, 3, 9 should be in the on position.

NOTE: Left Hand Installations Only: (Inside property operator on left side of drive)

Left hand installations do not require rewiring the harnesses. The Patriot control board dipswitch 9 eliminates the need to do this. Failure to turn dipswitch 9 on will cause improper gate operation. Verify your installation type and verify dipswitch settings.

NOTE: The only thing to remember is that when dipswitch 9 is on, the Limit LED's below the actuator plug on the control board will show open when closed and closed when open.

Step 6 Current Sense Adjustment

The control board has two current sense adjustments, MASTER and SLAVE (see illustration 17). Dual gates will require adjustment of both, adjust sensitivity so that the gate force required to sense an obstruction is at the desired level.

Remember if the gate reverses direction when operating without contacting an obstruction, then minimizing sensitivity (increase force) may be required. Do not increase more than necessary.

The adjustment has a maximum rotation of 1 turn, beginning at 0 and ending at 10. The factory setting is around number 3. Do not force the adjustment past the stop points.

IMPORTANT NOTE:

Locate the current sense adjustments below. Notice that there are two adjustments MASTER and SLAVE. We intentionally set the sensors at a highly sensitive setting. This may need to be adjusted to achieve gate movement without tripping the sensitivity circuit and causing the gate to reverse direction. If the gate reverses direction twice and then stops the control board will need to be reset.

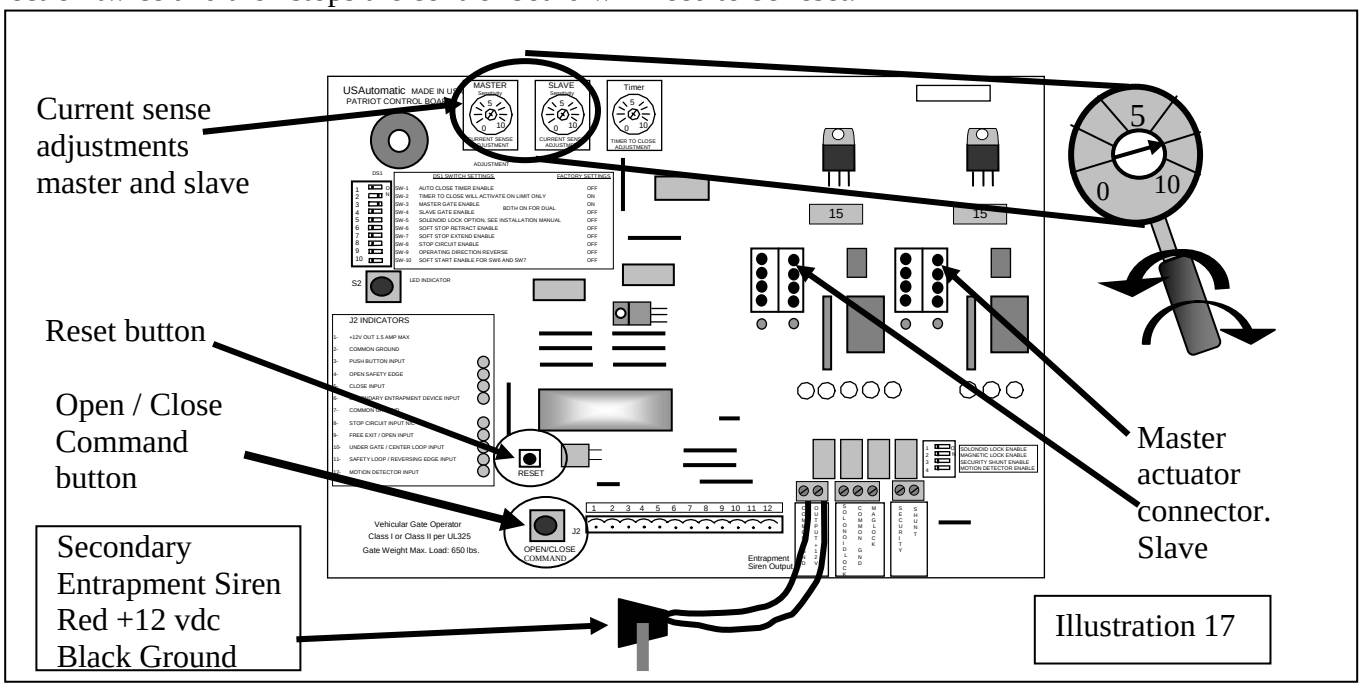


Illustration 17

STEP 7 Connecting Control Board / Battery to the Wiring Harness

Verify that the wiring harness is not connected to the control board. Install the battery into the backside of the operator. Connect the wiring harness Red wire to the positive post of the battery and the black wire to the negative post of the battery. Connect the wiring harness to the Master connector on the control board.

STEP 8 Operating the Gate (Keep hands away from moving parts)

Verify that the gate is in the half open position and no objects are in the path of the gate.
Locate the "Open / Close Command" pushbutton on the Patriot control board, this will be used to operate the gate.

Press the "Open / Close Command" pushbutton to operate the gate. Gate should travel in the open direction if all settings are correct. If gate reverses direction a current sense adjustment must be made (see step 6 above).

Once current sense adjustment is made press the "Open / Close Command" button again.

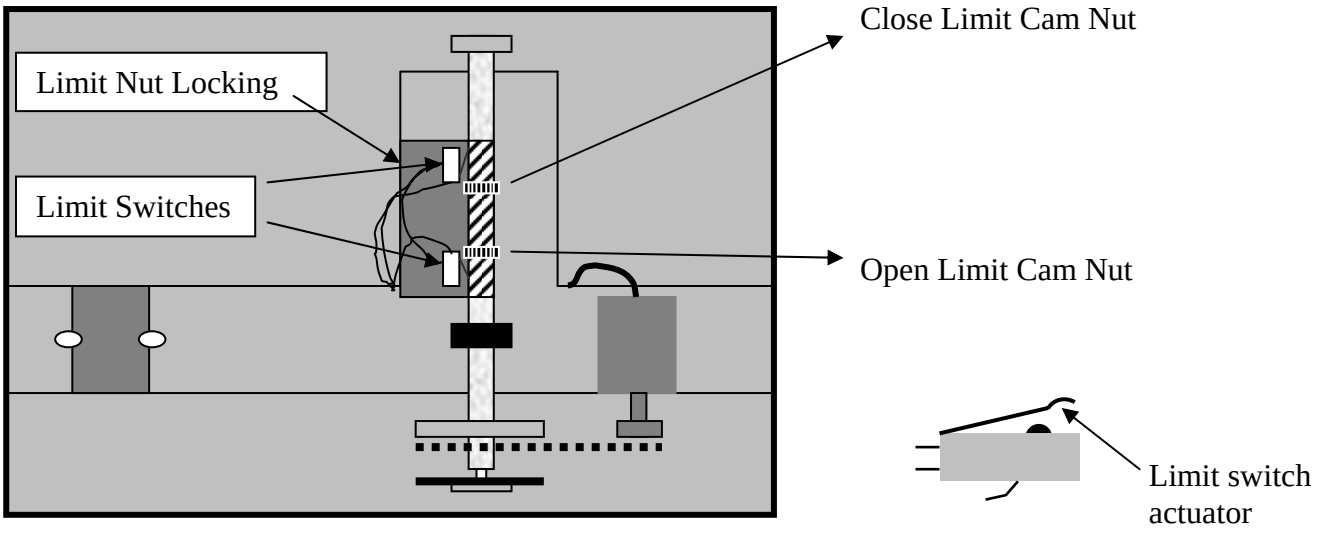
If gate travels past the desired stop position adjust the limit switches, see page 13.

LIMIT SWITCHES

The limit switch adjustments are located on the top shelf of the operator. Remove the cover from the operator to make adjustments. The normal settings from the factory allow for about 15 feet of travel. You will most likely have to adjust the limits for your installation. To adjust limits press down on the limit plate assembly, this will release the limit plate from the limit adjustment cams and allow the cams to turn. Turn the limit adjustment cam, which corresponds to the direction you want to adjust.

NOTE: WHEN THE LIMIT ADJUSTMENT CAM DEPRESSES THE LIMIT SWITCH ACTUATOR THE GATE WILL STOP.

Top view of the operator



NOTE: DO NOT ADJUST THE LIMIT CAM NUTS PAST THE LIMIT SWITCH ACTUATOR ARM.THIS MAY RESULT IN DAMAGE TO THE LIMIT SWITCH. ENSURE THE LIMIT PLATE ASSEMBLY SNAPS INTO THE GROOVES ON THE LIMIT CAM NUTS PRIOR TO OPERATION.

CAUTION: To reduce the risk of injury, USAutomatic strongly recommends the installation of additional safety devices such as Photo Eye Sensors and Safety Edges. Consult an authorized installing dealer or the factory for a complete explanation of options and see the Safety Section of this manual on pages 18 to 22.

STEP 9 Making Final Adjustments

Once gate is operating correctly using the "Open / Close Command" pushbutton it is time to setup the radio controls, transmitter and receiver. If your operator was supplied with the low current receiver see page 33 for programming instructions. If not see instructions for your specific radio controls.

If you have an understanding of the sensitivity feature, test the sensitivity by manually stopping the gate in mid travel. The sensitivity setting most likely will be around a 5 or 7 setting on the adjustment.

Operate the gate using the transmitter, the gate should stop in the desired position if not readjust the limit switches. If the transmitter is not operating or operating incorrectly reprogram transmitter and receiver.

STEP 10 Installing Secondary Entrapment Siren **(UL-325 requirement)**

The secondary entrapment siren connects to the control board (Page 12, illustration 17). This siren is very loud and will be activated when the current sense circuit stops the gate twice prior to reaching a fully open or close limit. The siren will operate for 5 minutes before shutting off. The "Reset" button on the control board (Page 12, illustration17) can be pushed to turn off the siren, and reset the control board. The control board must be reset using the "Reset" button in either case before the gate will operate. The frame has two pre-punched holes below the control board use these to secure the siren in place using the two snap in plastic fasteners.

STEP 11 Installing Safety Placards **(UL-325 requirement)**

Mount safety placards on gate. Two signs are provided. Place one sign on each side of the gate where it will be highly visible to anyone on either side of the gate.

STEP 12 Installing Cover

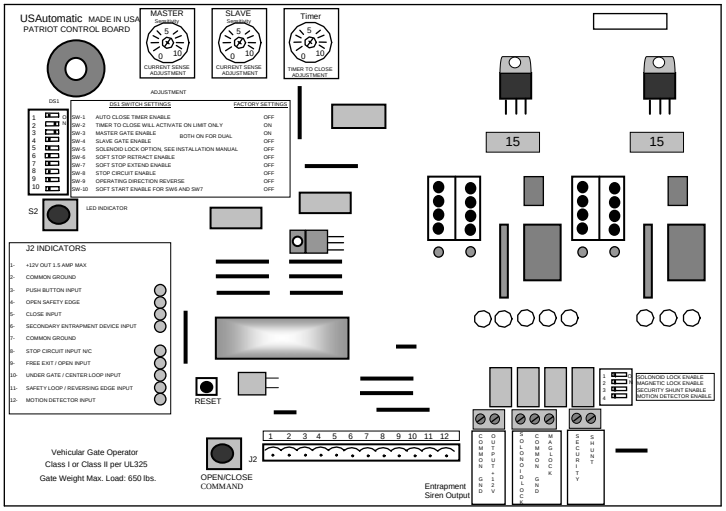
Locate the emergency release access cover (round cover with USAutomatic logo), the shoulder screw and nut. Install screw through emergency release access cover and install onto operator cover using the supplied nut. Tighten nut securely.

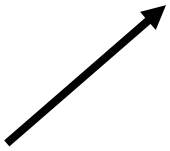
Place the cover over the operator with the emergency release knob visible through the access hole. Secure in place using the 4 – ¼" bolts and flat washers supplied. Slide the locking bar through slot cut below access hole and secure to emergency manual release access cover, using a lock.

NOTE: USAutomatic strongly recommends the Emergency manual release access cover be securely locked in place using the locking bar and pad lock (pad lock not supplied)

Circuit Board & Terminal Description

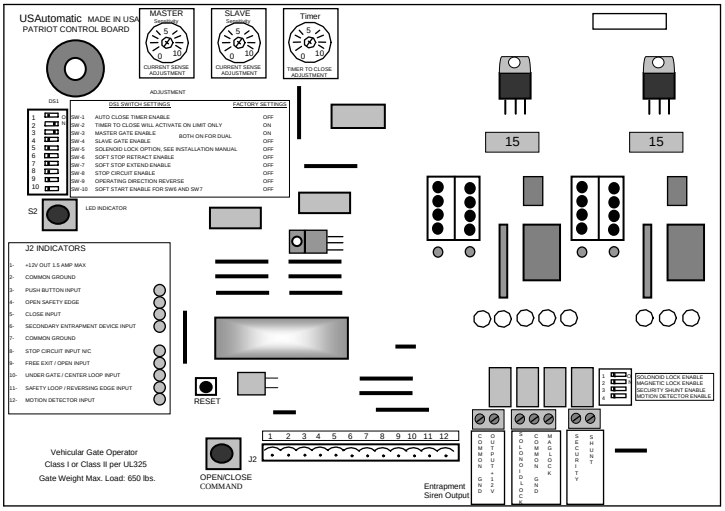
Patriot Control Board





TERMINAL	DESCRIPTION
1	**+ 12 volt DC Output**. *Maximum current output 1.5 amp (1500 milliamps)
2	**Common Ground Input**
3	**Push Button Input**. (normally open contacts) Push button, radio control, keypad, etc.
4	**Open Safety Edge** (normally open contacts) (Stops gate while opening)
5	**Close Input** (normally open contacts)
6	**Secondary Entrapment Input** (normally open contacts)
7	**Common Ground Input**
8	**Stop Circuit Input** (normally closed contacts) * DS1 switch #8 must be on for stop circuit function to be enabled.
9	**Free Exit/Open Input** (normally open contacts) Loop input or any hold open input such as a 7-day timer, telephone access unit, or maintain contact switch (normally open contacts). These devices open the gate and will prevent the gate from closing if the contact is maintained. Once the contacts have been released, the gate can be closed with a closing signal device or the automatic close timer feature.
10	**Center Loop or Under Gate Loop Input** (normally open contacts)
11	**Safety Loop/Reversing Edge Input/Photo-Eye** (normally open contacts)
12	**Motion Detector Input** (normally open contacts) (Stops a closed gate from opening)(Active on close limit only)

DS1 Programming Switches



Factory settings are shown in bold italic type

1 Automatic close timer enable
- ON — Timer to close is activated (Safety accessories recommended if turned on)
- ***OFF*** — ***Timer to close is disabled***

2 Timer to close will activate on limit only
- ***ON*** — ***Timer to close activates only if open limit is activated***
- OFF — Timer to close works from any point the gate is stopped

3 Master Gate Enable
- ***ON*** — ***Master gate operator enabled to function***
- OFF — Master gate operator disabled

4 Slave Gate Enabled
- ON — Slave gate operator enabled to function
- ***OFF*** — ***Slave gate operator disabled***

Both must be on for dual gate operation

5 Solenoid lock option
- ON — ***In addition to solenoid lock DS2, outputs 12vdc when gate is moving***
- ***OFF*** — ***Disables 12vdc output when gate is moving***

6 Soft stop open enable (Right hand installation, if switch 9 is on then close enable)
- ON — Enables soft stop for open position
- ***OFF*** — ***Disables soft stop for open position***

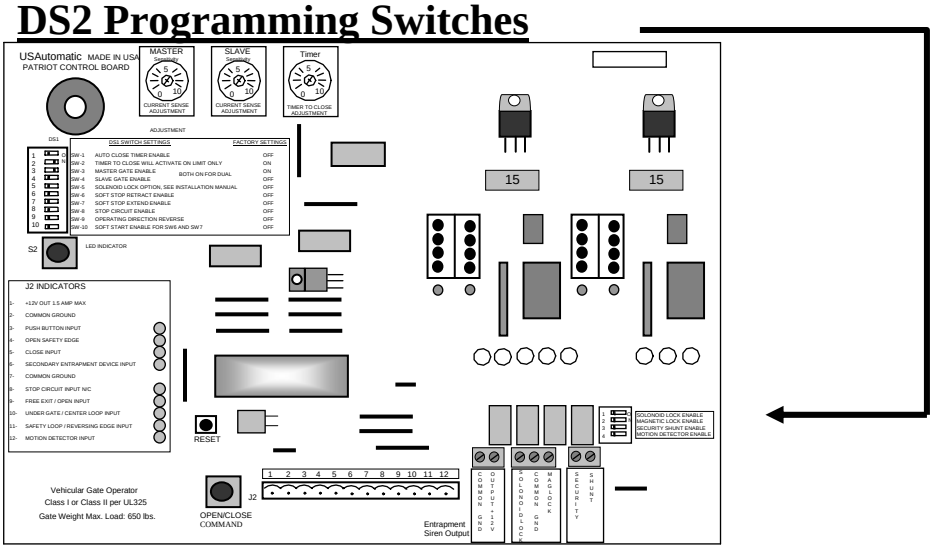
7 Soft stop close enable (Right hand installation, if switch 9 is on then open enable)
- ON — Enables soft stop for extend position
- ***OFF*** — ***Disables soft stop for extend position***

8 Stop circuit enable
- ON — Allows for a stop button input to be utilized
  * a normally closed pushbutton is required
- ***OFF*** — ***Disables the stop button function***

9 Operating Direction Reverse
- ON — Left Hand Slider installation (See note bottom page 11)
- ***OFF*** — ***Right Hand Slider Installation***

10 Not used at this time
- ON — N/A
- ***OFF*** — ***N/A***

DS2 Programming Switches



Factory settings are shown in bold italic type

1 Solenoid lock enable / Gate in operation indicator

ON Solenoid lock output energizes half second before gate begins to move and remains energized until four seconds after reaching a limit (+12Vdc output 1.5 amp max)

OFF ***Solenoid lock / gate in operation indicator is inactive***

2 Magnetic lock enable

ON Magnetic lock relay is active and will release half second before gate begins to open (+12 vdc output 1.5 amp max)

OFF ***Magnetic lock relay is inactive***

3 Security Shunt Circuit Enable / Open Gate Indicator

ON Security shunt circuit relay is active (closed circuit)(wire in parallel)

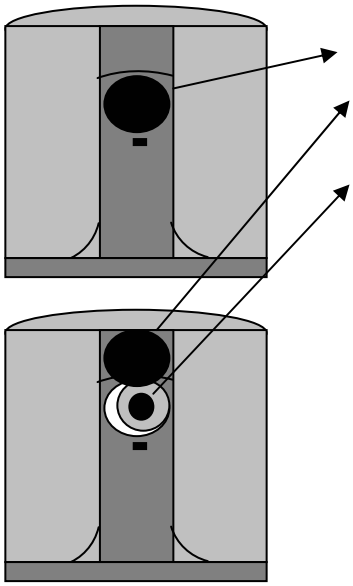
OFF ***Security shunt circuit relay is inactive (open circuit)***

4 Motion Detector Enable

ON Activates motion detector input (if input is activated gate will not open)

OFF ***Disables motion detector input***

Emergency Manual Release



Emergency manual release cover
Remove lock and rotate emergency manual release cover to the up position.

Pull manual release knob out (about ¾ inch)
Once knob has been pulled the gate can then be pushed by hand.
If knob cannot be pulled the gate may need to be agitated left or right.

To reset the knob push in on knob and roll gate until knob snaps in place. It may be necessary to tap the knob inward to fully lock in place.

WARNING: *Only insert hand into access hole as far as needed to grip the release knob.*
Trying to insert hand farther can result in injury.

SAFETY SECTION

USAutomatic gate operators are certified to UL-325 Vehicular Class I and Class II slide gate standards.

UL325 identifies four different classes of gate operators. These classes are listed below:

Class I: Residential vehicular gate operator- a vehicular gate operator (or system) intended for use in a home of one to four single family dwellings or a garage or parking area associated therewith.

Class II: Commercial/General access vehicular gate operator- a vehicular gate operator (or system) intended for use in a commercial location or building such as multi-family housing unit (five or more single family units), hotel garages, retail store, or other buildings servicing the general public.

Class III: Industrial/Limited access vehicular gate operator- a vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not intended to serve the general public.

Class IV: Restricted Access vehicular gate operator- a vehicular gate operator (or system) intended for use in a guarded industrial location or building such as an airport security area or other restricted access locations not servicing the general public, in which unauthorized access is prevented via supervision by security personnel.

The Patriot slide gate operator is designed and intended for use on Class I or Class II vehicular gate installations. The maximum load of each gate leaf should not exceed 600 pounds with a length not to exceed twenty-four feet.

SECONDARY ENTRAPMENT DEVICES

USAutomatic has designed all control boards with secondary entrapment device inputs and secondary safety devices must be installed with all installations. USAutomatic recommends the use of the following devices and has provided herein instructions for the connection of such devices. UL-325 compliant devices are recommended. This list does not contain all devices only the ones which have been tested and recommended at the time of printing.

NOTE: USAutomatic recommends that these devices be CONNECTED after proper gate installation and operation has been verified. Then connect one device and verify proper operation before installing the next device. Ensure that power is disconnected from the control board prior to connecting any wires to the control board.

Contact Safety Devices: Safety Edges (wireless)
Manufacturer - Miller Edge

Non-Contact Safety Device: Photo Eyes
Manufacturer – EMX Industries INC.

Entrapment Alarm Devices: Sirens
Manufacturer – USAutomatic

Model	Description
W12b-3	Piezoelectric siren, 108db +12vdc

NOTE: For information about installation or applications, consult factory

SAFETY SECTION

INSTALLATION

a) Install the gate operator only when:

1) The operator is appropriate for the construction of the gate and the usage class of the gate,
2) All openings of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 4 feet (1.2m) above the ground to prevent a 2 ¼ inch (57.15mm) diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that the gate covers in the open position,
3) All exposed pinch points are eliminated or guarded, and
4) Guarding is supplied for exposed rollers.

b) Only install on vehicular gates, pedestrians must be supplied with a separate access opening.

c) The gate is installed in a location where enough space is supplied between adjacent structures and the gate so that when opening or closing the chance of entrapment is reduced.

d) The gate must be properly installed and work freely in both directions prior to the installation of the gate operator. Do not minimize the sensitivity adjustment to compensate for an improper gate installation.

e) Locate all controls at least six feet away from the gate to eliminate the chance of the person operating the gate from coming in contact with the moving gate. Do not install external buttons, which can be used to operate the gate within the reach of children.

f) All placards must be installed one on each side of the gate and be visible in the gate area.

g) For gate operators utilizing a non-contact sensor:

1) See instructions on the placement of non-contact sensors for each type of application,
2) Care shall be exercised to reduce the risk of nuisance tripping, such as when a vehicle, trips the sensor while the gate is moving, and
3) One or more non-contact sensors shall be located where the risk of entrapment or obstruction exist, such as the perimeter reachable by a moving gate or barrier.

h) For gate operators utilizing a contact sensor:

1) One or more contact sensors shall be located at the leading edge, trailing edge, and post mounted both inside and outside of a vehicular horizontal slide gate.
2) A hardwired contact sensor shall be located and it's wiring arranged so that the communication between the sensor and the gate operator is not subjected to mechanical damage.
3) A wireless contact sensor such as one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions shall be located where the transmission of the signals are not obstructed or impeded by building structures, natural landscaping or similar obstruction. A wireless contact sensor shall function under the intended end-use conditions.

WARNING: TO REDUCE THE RISK OF INJURY OR DEATH

1. **READ AND FOLLOW ALL INSTRUCTIONS**
2. **Never let children operate or play with gate controls. Keep remote control away from children.**
3. **Always keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF A MOVING GATE.**
4. **Test gate operator monthly. The gate must stop and reverse directions upon contacting a rigid object or when the secondary entrapment device is activated.**
5. **After all adjustments have been made to the limit switches, sensitivity (current sense) circuit, secondary entrapment devices and all other external devices installed the safety devices must be checked again. Failure to adjust and retest the gate operator can increase the risk of injury or death.**
6. **Verify that the emergency release (manual release) knob can be pulled easily. This should only be checked when power is disconnected from the operator.**
7. **KEEP GATES PROPERLY MAINTAINED. Read the user manual and have a qualified service technician make repairs to the gate hardware.**
8. **THE ENTRANCE IS TO BE USED BY VEHICLES ONLY. Pedestrians must use a separate entrance.**
9. **SAVE THESE INSTRUCTIONS**

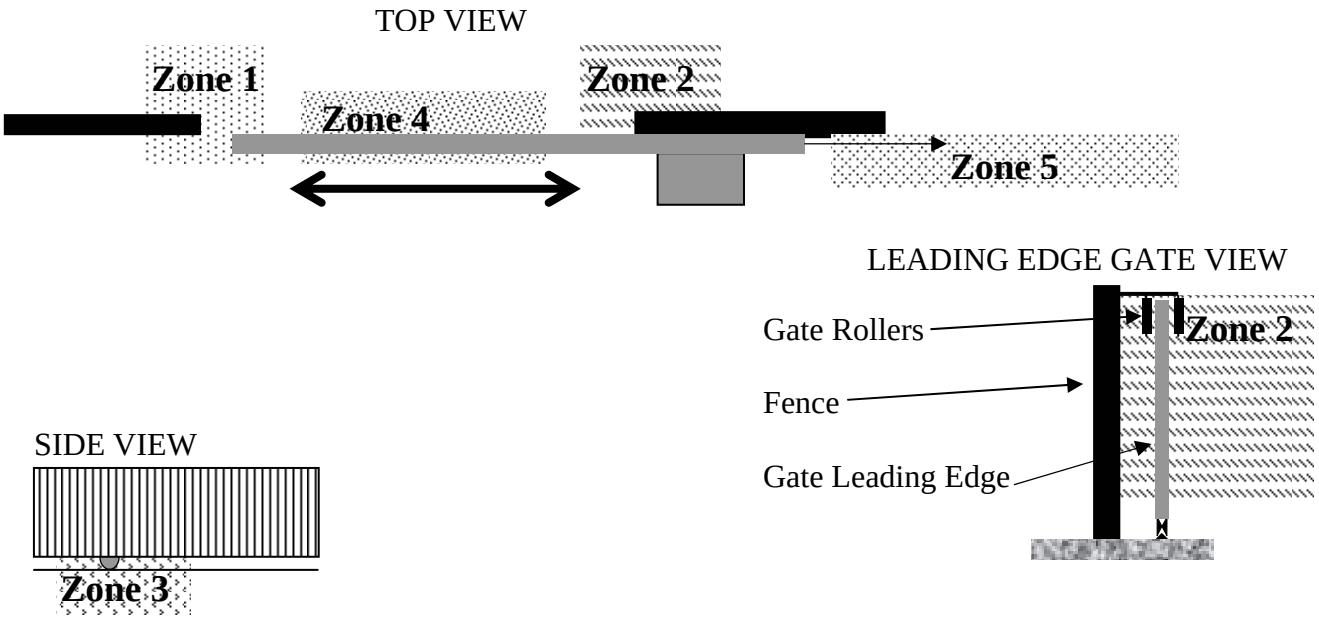
SAFETY SECTION

All safety features required by UL-325 and more are incorporated in the capabilities of all USAutomatic Control boards and should be utilized, including but not limited to, safety edges, photo electric eyes, reverse sensing, and motion sensing.

Cautions - Very Important

- Do not attempt to enter the gate area while the gate is moving. Wait until the gate comes to a complete stop.
- Operate the gate only when it is fully visible, free of persons or obstructions, and properly adjusted.
- Do not allow children to play in the area of the gate. Do not allow anyone to ride on the gate.
- Do not allow children to play with the remote control or any other activation device.
- Do not attempt to "beat the gate" while the gate is opening or closing. This is extremely dangerous.
- Test the current sense feature and all safety devices regularly to insure correct operation.
- Study this entire Safety Section paying particularly close attention to the entrapment zones shown below and be aware of these areas not on during use but also during any adjustments to the unit.

ENTRAPMENT ZONES

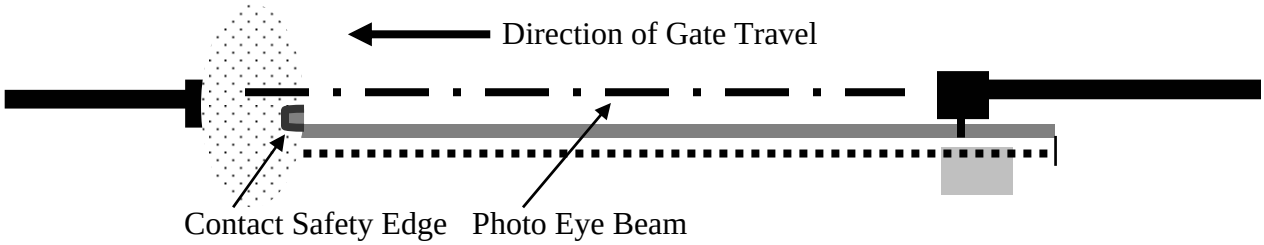


Zone 1 The leading edge of the gate & fence post.
Zone 2 Between the gate and fence pocket.
Zone 3 The gate track and wheel.
Zone 4 The path the gate travels across the drive. (traffic area)
Zone 5 The path the gate travels when opening (back track gate area)

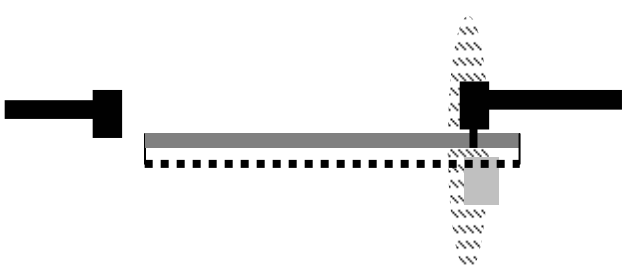
SAFETY SECTION

Remedies for Safety Concerns

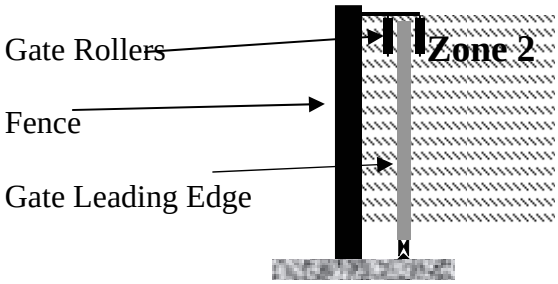
Zone 1 Safety edges and photo electric eyes are the most common types of protection available.



Zone 2 A safety edge may also be utilized here but the best remedy is to eliminate pinch points when designing the gate. Most injuries at this point result from negligence, such as reaching through the gate to activate a button, key switch, etc., or riding the gate open.

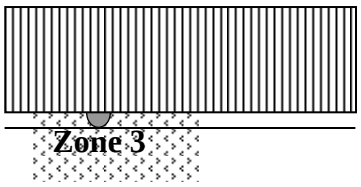


LEADING EDGE GATE



Zone 3 This area is best protected with proper gate construction and installation. Care must be taken to minimize the exposed wheel to track area. A photo-eye or contact edge might also work in this area depending on your gate construction.

SIDE VIEW



See Safety section page 19 under installation a.) 3 and 4 for more information.

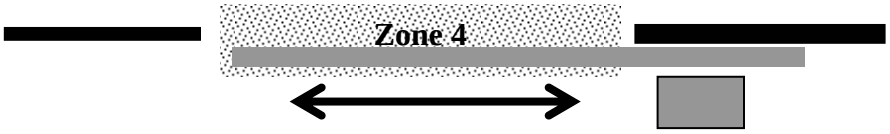
NOTE: All control stations should be located at least 6 feet from any moving part of the gate or operator.

Never install any control device where a user will be tempted to reach through the gate or fence to activate a gate.

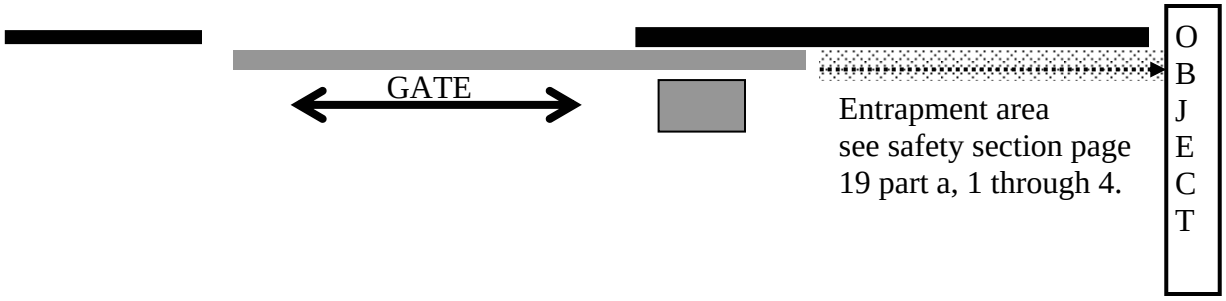
SAFETY SECTION

Remedies for Safety Concerns

Zone 4 This area is best protected with a photo eye or contact edge wired to the secondary entrapment input or safety loop input depending on the desired function of the safety device. The beam should be installed parallel to the gate and extend across the drive area to prevent the gate from closing or opening on an object in the path of the gate. If the intent of the beam is to prevent the gate from closing when an object is present. Wire the photo eye to safety loop input on the control board.



Zone 5 Safety edges and photo eyes are the most common types of protection available. The safety device used should be wired to the secondary entrapment input.



Every installation is unique and it is the installer's responsibility to recognize and remedy all safety concerns. Please consult a qualified dealer or the factory for a complete explanation of the remedies shown above and additional tips pertaining to your installation.

MONTHLY SERVICE

All gate operators require periodic checking and adjustments by a qualified technician of the control mechanism for force (load), speed and sensitivity. All external accessories and secondary safety devices must be checked. Secondary safety devices need to be checked at least once a month for proper operation.

Periodic checking is also advised for the following:

1. **Battery cells water level. (use distilled water if needed) Gel batteries are recommended**
2. **Wheels and gate rollers for wear and grease if necessary.**
3. **Check bolts and sprocket set screws for correct tightness.**
4. **Inspect weld points for cracks or other defects.**
5. **Inspect wiring for cuts, nicks or other defects.**
6. **Inspect drive chain and sprockets for tension and wear. Adjust or replace as necessary.**
7. **Time to open or close the gate, this will be first indication of a battery or charging problem.**

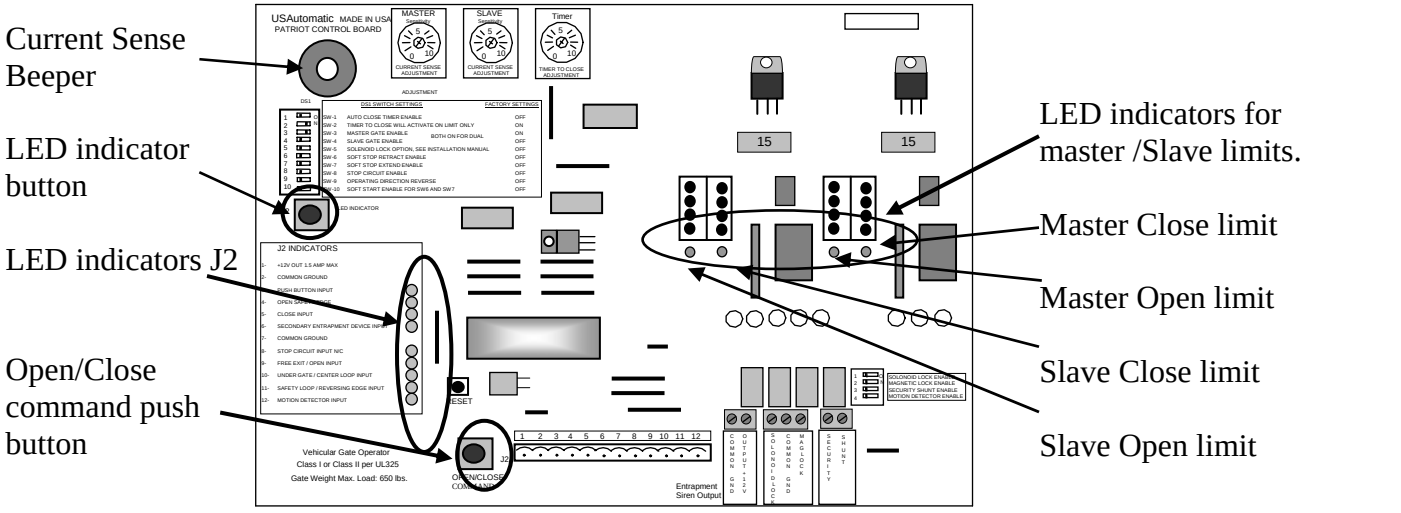
Troubleshooting Introduction

The USAutomatic control board is equipped with three unique features to assist in troubleshooting a gate system.

1. The first and most helpful is the series of LED indicating lights. These lights will help to identify problems with the limit switches and all control circuits. To use the indicators, press and hold the LED indicator button on the control board. (The lights are not active at all times to save battery life). Any circuits or limit switches that are activated will be identified by the illumination of the adjacent LED indicating light.

2. The second feature to assist in troubleshooting is the current sense beeper. The beeper will sound anytime the current sense circuit is activated. This is useful in detecting a false reverse due to an improper or too sensitive current reverse setting or a gate that is requiring excessive force to move.

3. The third feature to assist in troubleshooting is the on board open/close command pushbutton. This button makes it possible to operate the gate with the twelve terminal wiring plug removed without having to short across terminal pins.



TROUBLESHOOTING SECTION

OUTLINE

1 My slide gate operator will not operate.

2 Emergency release knob cannot be pulled.

3 I can hear gate operator running but my gate is not moving.

4 Gate operates slowly when opening or closing, may stop before cycle is complete.

5 My gate will not automatically close.

6 Gate begins to open or close but stops and reverses after a couple of seconds.

7 Gate opening or closing stops and reverses direction and then stops and will not operate.

8 Gate opens or closes correctly then immediately reverses direction.

9 Gate closes then opens back up in 10 seconds or more, auto close timer is on.

10 Control board 15 amp fuse blows when open/close command is given.

11 Transmitter (Remote control) will not operate the gate.

12 Photo eye, safety loop or other safety accessory will not reverse the gate when closing.

13 Pressing the "RESET" button only, causes the gate to operate.

14 Gate opens using transmitter, but will not close using transmitter (low current receiver only)

15 Gate only operates when the "LED INDICATOR" is pressed.

Terms and Definitions

LED - Light emitting diode, small red lights on control board.

Control board- Located inside the metal box just above the battery.

Receiver - Located inside the metal box in the upper right corner, coax cable connected to it.

Transmitter - Hand held push button, which is used to operate the gate, sends signal to receiver.

Harness - Wire bundle connected to the control board, limit switch plate and motor.

Connector - Control board has two types. Two white 8-pin connectors (X1 and X2) are used to connect actuator to control board and one green 12-pin connector (J2) (located bottom center of control board) to connect receiver and accessories to control board. Both are plug type and can be disconnected (unplugged from control board) without disconnecting wires.

Dip Switches - Small switches, which are located on the control board in two places. The primary set DS1 is located in the upper left corner and the secondary set DS2 are located in the lower right corner of the control board with functions listed beside each. See manual (page 16, 17) for more information. Open position is off or switch not closed.

Push Buttons - Three are located on the control board. "Open/Close command" used to operate the gate, "Led Indicator" used to activate the leds and the "Reset" used to reset the control board after current sensing twice before a limit is reached.

Limit Cam Nut Locking Plate – Located on top of the operator, holds the two limit switches and also holds the limit cam nuts in their adjusted position.

Limit Cam Nut - Two limit cam nuts are located on the top of the operator; the limit nut locking plate is spring-loaded and must be depressed before adjusting the limit cam nut. After limit cam nut has been adjusted make certain that the limit nut locking plate fully engages the limit cam nut to keep it from rotating.

Gate Chain - This is the long chain connected to the gate and travels through the operator.

Drive Chain - This is the short chain that connects the gear motor to the manual release shaft.

1. Slide gate operator will not operate:

STEP 1 Remove control box cover locate the "Open/Close Command" push button and press it to operate the gate.

STEP 2 Press the "Reset" push button located above the open close command, then push the "Open/Close Command" push button to operate the gate.

STEP 3 When pressing the "Open/Close Command" push button, listen for a clicking sound, if click is heard then verify: The 15-amp fuse located on the control board is good if not replace it using the spare located on the control board. Also check the dipswitches (3 and 4) for correct switch settings based on where the harness is connected to the control board (Master or Slave). If switches and fuse are good and clicking sound is heard the battery needs to be load tested to determine its condition. Charge or replace depending on results.

STEP 4 Press and hold the "LED Indicator" push button and observe all of the red LED's (see page 23 for location):

a. If the two limit LED's located below the actuator plug are both on the operator will not operate. Verify that only one or no limit LED's are on. If both limit LED's are on adjust limit cam nuts to the correct location.

b. If any of the LED's in the lower left corner of the control board are on then this must be corrected. Locate the accessory, which is activated, and repair or replace. Disconnecting this device will allow the operator to work, without the disconnected accessory function.

STEP 5 Disconnect the green J2 connector. Once disconnected, press the "Open/Close Command" button. If gate operates go to step 4 b above.

STEP 6 Verify that DS1 switch 8 is off.

STEP 7 Call the factory for more information if the above steps have not worked.

2. Emergency release knob cannot be pulled:

STEP 1 If the emergency release knob cannot be pulled first verify that it is not already pulled, by trying to roll the gate. If gate will not move try to pull the emergency release knob while agitating the gate (shake gate in direction of travel).

STEP 2 Emergency release knob that is difficult to pull represents something is in a bind. Check the gate wheels and guide rollers. Verify the chain is on all the rollers and not twisted or over tight.

NOTE: DO NOT ATTEMPT TO MODIFY ANY SCREWS ON THE DRIVE SHAFT.

3. I can hear gate operator running but my gate is not moving:

STEP 1 The most likely cause is the emergency manual release knob is pulled out. To correct open the emergency release cover and push knob in, it may be necessary to roll gate while pushing the knob in. The knob must be pushed in all the way and it may be necessary to remove the cover to verify. When fully pushed in the space between the plastic safety disk and the shaft collar should be about ¼".

STEP 2 Other causes could be the gate chain is disconnected, the drive chain on the gear motor is disconnected or one of the sprockets is freewheeling. Identify any of these by removing the cover and inspecting and correct as necessary.

4. Gate operates slowly when opening or closing, may stop before cycle is complete:

NOTE: When the gate is running slow the reason is low battery voltage, two things need to be considered. Battery condition needs to be checked a load test is needed (replace or charge) and determine what caused the battery to become discharged.

STEP 1 Determine which situation your operator falls into below:

Solar charged, ensure that you have a deep cycle battery installed and if accessories are connected (keypads, loop detectors, any device powered by the battery) verify that the current draw needed to power them does not exceed the

charging power of the solar panel. Verify that solar panel leads are connected to the battery correctly; panel is facing a southwest direction and is not located in a completely shaded area. Inspect panel surface and wires for damage.

Test solar panel for correct voltage and current output, disconnect panel wires from battery and using a DC voltmeter measure the dc voltage (should measure about 22 volts) and the dc current (should read about 250 ma) in the peak sun period. If either, of these readings is incorrect panel maybe defective.
If none of the above check bad then remove battery and have it load tested at a battery shop. Replace if bad.

AC charged, ensure that you have a deep cycle battery rated at a minimum of 33 amp-hour installed. If accessories are connected (keypads, loop detectors, any device powered by the battery) verify that the current draw needed to power them does not exceed the charging power of the charger. Verify that charger leads are connected to the battery correctly; charger is connected to an approved 110 VAC receptacle. Inspect charger and wires for corrosion or damage.

NOTE: The USAutomatic multi stage charger does not output any voltage when disconnected from the battery, you cannot check charger by disconnecting from battery and measuring voltage output. To check charger output disconnect from battery, measure battery voltage and note. Reconnect charger and monitor battery voltage it should rise above the battery voltage noted above.

STEP 2 The charger has lED indicators (lights) on the faceplate, observe the leds that are on or not and refer to the troubleshooting directions furnished with the charger for definitions of different led indicators.

STEP 3 If none of the above check bad then remove battery and have it load tested at a battery shop. Replace if bad.

5. My gate will not automatically close:

NOTE: If DS1 switch 1 is on and switch 2 is off then the gate should automatically close from any position, but if switch 2 is also on the gate will only automatically close if the “open limit” LED (both “open limit” LED’s for dual gate) is on.

STEP 1 Locate the “Open/Close Command “ push button; press the button to verify that the gate will close. If gate closes correctly then proceed to the steps below.

STEP 2 Verify that DS1 switch 1 is on. If not turn it on and recheck gate operation. If gate remains open continue with step 3.

STEP 3 If your installation is a single gate, then only DS1 switch 3 or 4 can be on. If both are on the gate will not automatically close. Turn off the one that is not being used and recheck gate operation.

STEP 4 Locate the “LED Indicator” push button and depress and hold. While pushing the button inspect the LED indicators located just below the X1, X2 (master, slave) actuator plugs, note which LED’s are on. Read note below.

NOTE: The two LED’s located below the X1, X2 actuator plug when on represent the closure of the limit switch. If the left LED is on then the gate should be in the open position, if the LED on the right is on then the gate should be in the closed position. If DS1 switch 9 (operating direction reverse) is on then this is reversed. If the LED for the open position is not on when the gate is fully opened then the auto close will not work if DS1 switch 2 is on. The limit switches need to be adjusted or DS1 switch 2 needs to be turned off. If gate still remains open go to step 5.

STEP 5 Locate the “LED Indicator” push button and depress and hold. While pushing the button inspect the LED indicators located on the control board (lower left corner) and note which ones are on. If any LED’s are on disconnect the green J2 connector from the control board. Press the “Open/Close Command “ push button to close the gate, and then press the button again to open the gate fully and verify the automatic close is working.

STEP 6 If gate automatically closes correctly then the accessory connected to the J2 connector that is activated (LED is on) needs to be repaired.

6. Gate begins to open or close but stops and reverses after a couple of seconds.

STEP 1 Remove gate operator cover and locate the Patriot control board. Locate the sensitivity adjustment (see page 12) potentiometer located on the control board. The white center is adjustable and needs to be turned in a clockwise direction.

STEP 2 Normally a setting of 5 will operate most gates; if your gate requires a setting above 6 there is a good chance that your gate has a problem, which needs to be corrected. Possible causes are incorrect alignment, something is interfering with the gate, guide rollers are binding, gate not level or the gate chain is too tight. Identify and correct problem.

STEP 3 Other causes could be a safety device connected that is activated. Locate the “LED Indicator” push button and press and hold operate the gate and note any LED’s that come on. If LED comes on identify the accessory connected to that input and correct the accessory problem.

STEP 4 Contact the factory for further information.

7. **Gate opening or closing stops and reverses direction and then stops and will not operate**

STEP 1 This is most likely caused by an incorrect sensitivity adjustment. It could also be caused by an obstruction located in the path of the gate.

STEP 2 Open the emergency manual release cover and pull the release knob. Then roll the gate fully open and closed to verify that it is rolling freely. If gate is moving freely then the sensitivity adjustment needs to be checked.

STEP 3 Remove the cover and locate the sensitivity adjustment on the control board. The Master and Slave both need to be checked even if only one is being used. If the setting is above 6 verify again that the gate is moving freely

8. Gate opens or closes correctly then immediately reverses direction:

STEP 1 This is most likely caused by an incorrect limit switch adjustment, which is causing the gate to travel too far and the operator to current sense. The limit switch adjustments are located on the limit plate. Remove the gate operator cover and locate the limit plate and limit cam nuts.

STEP 2 Adjust the limit cam nut so that it is closer to the limit switch for the gate position being worked on. This will cause the limit cam nut to contact the limit switch earlier, which will stop the gate earlier than before. This needs to be done until the gate stops at the desired position. See note below.

STEP 3 It might be necessary to verify limit switch operation. To do this locate the "LED Indicator" push button and hold in. Then depress the limit switch lever and observe the limit LED's located on the control board. The LED should come on when the limit switch lever is depressed and the "LED Indicator" push button is depressed.

NOTE: If DS1 switch 9 is turned on, then the open and close LED lights are reversed. Open LED represents the closed position and the close LED represents the open position.

STEP 4 If the LED lights will not come on then contact the factory.

9. Gate closes then opens back up in 10 seconds or more, auto close timer is on

STEP 1 This is most likely caused by an incorrect DS1 switch 9 setting. When standing on the inside of the property and looking out of the gate which side of the drive is the gate operator installed on? If it is on the right side then DS1 switch 9 should be in the off position. If operator is on the left side of the drive then it should be in the on position.

STEP 2 If this does not correct the problem then the limit wires are connected incorrectly. Locate the limit switches and the orange and white wires connected to them. The white wire should be connected to the switch closest to the gate.

STEP 3 If the gate still operates incorrectly contact the factory.

10. Control board 15 amp fuse blows when open/close command is given.

STEP 1 Fuses blow primarily for one reason, the gate cannot move. Causes might be something keeping the gate from moving, the gate is trying to move in the wrong direction due to incorrect limit switch setting or there might be a wiring problem.

STEP 2 See problem number 8 above and verify.

STEP 3 Press the "LED Indicator" push button and hold it in, observe the LED lights and determine if the open limit or close limit LED is on. Then determine if the correct LED is on for the gate position.

For example if the left LED is on that is the open limit and the gate should be in the open position. The right LED represents the closed position.
See note under problem 8 above.

STEP 4 If the open limit LED is on and the gate is closed if a command to operate is given the gate will try to close more, which can blow a fuse. If the close limit LED is on and the gate is opened a command to operate will try to open the gate more, which can blow a fuse. In either case the limit switches need to be adjusted and then the cause for them becoming misadjusted needs to be determined.

STEP 5 Another possible cause is a bad brake on the gear motor. If the brake is on the motor cannot turn and the fuse will blow. It is possible for low battery voltage to cause this so the battery needs to be checked. If battery load tested good then contact the factory.

STEP 6 If the gear motor brake is the cause the brake can be disconnected to verify. Please contact factory for further troubleshooting and return information.

11. Transmitter will not operate the gate

STEP 1 Verify the battery in the transmitter is good. Also verify that the dipswitches inside the transmitter and receiver are set to match each other. Remove the receiver cover by squeezing the sides and the switches are located inside. Remove the transmitter cover and locate the switches.

STEP 2 Remove the gate operator cover and locate the Patriot control board. Locate the "LED Indicator" push button and the "Push Button Input" LED. Push the "LED indicator" push button and hold, then press the transmitter button and observe the "Push Button LED". The led should come on while the transmitter button is depressed.

STEP 3 If the "Push Button LED" did not come on then make sure that the green J2 connector on the control board is securely connected. Remove the receiver cover by squeezing the sides and the switches are located inside.

STEP 4 If the "Push Button Input" LED in step 1 did come on and the gate did not operate then locate the "Open/Close Command" button located at the bottom center of the Patriot control board. Press the "Open/Close Command" button and note gate operation.

STEP 5 If the gate did not operate in step 3 verify that the 15-amp fuse on the Patriot control board adjacent to the actuator plug being used is not blown, (a fuse can be blown and look good) replacing is the best way to verify fuse is good.

STEP 6 If the gate did not operate in step 3 and the fuse was good in step 4 then most likely a safety accessory connected to the green J2 connector is active. Verify this by depressing the "LED Indicator" push button and observe the leds located in the lower left corner of the Patriot control board. If a LED is on identify the accessory connected to the corresponding J2 connector pin and correct the problem.

STEP 7 Other causes are possible, both the open and close limit LED's are on at the same time, if so adjust limit switches. Control board could be defective; battery could be too weak to operate the gate. Please call the factory for help identifying the cause.

12. Photo-eye, safety loop or other safety accessory will not reverse the gate when closing or hold the gate open

STEP 1 The first thing to check is the accessory wiring. The accessory needs power (+12vdc) wired to battery positive terminal or to J2 pin 1 on the Patriot control board. It also needs ground, which can be wired to the battery or to J2 pin 2 or 7 on the Patriot control board. The other two connections are the "N/O and Common ground". The common ground can be connected to the battery or to J2 pin 2 or 7 on the Patriot control board. The N/O connection must be connected to J2 pin 11 "Safety Loop / Reversing Edge Input". If the accessory is connected as described above it should reverse a closing gate or hold a gate open if the accessory is activated.

STEP 2 Now to determine if the accessory is working correctly and that the Patriot control board is receiving the signal locate the "Led Indicator" push button and the "Safety Loop / Reversing Edge Input" LED (located in the lower left corner of the Patriot control board).

STEP 3 Press and hold the "LED Indicator" push button and observe the "Safety Loop / Reversing Edge Input" LED. Activate the accessory in question (if photo-eye break the beam) if the accessory is working properly the LED light should come on when the device is activated. If the device does not turn on the LED then check wiring, J2 connector connection at the Patriot control board. If wiring is good then the accessory is not operating correctly. Repair accessory and retest.

STEP 4 If the "Safety Loop / Reversing Edge Input" led comes on and the gate does not reverse direction when closing, call the factory for other possible causes and return information.

13. Pressing the "RESET" button only, causes the gate to operate

STEP 1 This problem is probably due to a bad receiver. First locate the "LED Indicator" push button on the Patriot control board. Then locate the "Push Button Input" LED located in the lower left corner of the Patriot control board.

STEP 2 Press the "Led Indicator" button and observe the "Push Button Input" LED. If the light comes on then the receiver relay is stuck closed and needs to be repaired or replaced.

STEP 3 If the "Push Button Input" LED does not come on, call the factory for further troubleshooting and return information.

14 Gate opens using transmitter, but will not close using transmitter (low current receiver only)

STEP 1 The problem is most likely the programming of the low current receiver (P2 relay is programmed to latch mode)

STEP 2 On the Patriot control board locate press and hold the "LED Indicator" pushbutton.

STEP 3 Look in the lower left corner of the Patriot control board and note any LED's that are on.

STEP 4 If the "OPEN INPUT" is on then the receiver (P2) is programmed to latch mode.

STEP 5 Go to page 33 “Resetting receiver P2 relay to momentary mode”

STEP 6 If this does not correct the problem return to troubleshooting section 5 and perform steps 1-6.

STEP 7 If problem is not corrected, call the factory for further troubleshooting.

15. Gate only operates when the “LED INDICATOR” is pressed.

STEP 1 An accessory wiring problem or a bad control board can cause this, this problem can be intermittent and possibly take a little patience in locating the problem.

STEP 2 Verify that the problem exist when using the “Open /Close Command” on the control board. Press the “Open/Close Command” push button and verify gate will not operate.

STEP 3 Press and hold the “Led Indicator” on the control board then press the “Open/Close Command” push button on the control board. If the gate operates proceed to step 4.

STEP 4 Remove the J2 accessory-wiring plug from the control board. This connector can be disconnected from the control board by placing a finger under the plug and pulling to remove.

STEP 5 Press the “Open/Close Command” push button and verify gate operation. If gate operates then reconnect the J2 connector and verify gate operation using the “Open/Close Command” push button. If gate fails to operate when the J2 connector is reconnected then the problem is most likely in the accessory wiring, a bad ground connection on the accessory. Verify all wiring on the accessories connected to the J2 connector.

STEP 6 If gate fails to operate when the J2 connector is disconnected then the control board is most likely the problem. Please contact the factory for further troubleshooting options.

NOTE: Keep in mind that this is an intermittent problem and it might be necessary to try this a few times to verify the problem.

Accessory Wiring Information

USAutomatic Patriot gate operators are 12 vdc powered, solar charged operators do not require 110-vac for proper operation. Accessories that operate at 12 vdc can be connected directly to the control board or the battery. **Proper accessory selection must be made so that the accessories installed do not drain the solar charged operator battery.**

If accessories selected operate at 110-vac then it will be necessary to have 110-vac power located at the operator control box. Refer to local building codes and have a qualified electrician install the 110-vac power.

Types of Accessories

USAutomatic Patriot control boards are designed to operate with all accessories. Understanding the control board inputs and the desired operation of each accessory is essential when designing the gate operator system.

Safety Accessories

(Primarily used to keep gate from operating when an object is in the gate path)

Safety Loops –
Photo Eyes –
Motion Detector –

Secondary Entrapment Accessories

(Primarily used to protect objects from becoming trapped in and around the gate area)

Contact Edge (wireless) –
Contact Edge (wired) –
Photo Eyes –

Convenience Accessories

Keypads –
Free Exit Device Magnetic Sensor –
Free Exit Device Photo Eye –
Card Reader -
Single Button Station –
Key Switch –
Seven-Day Timer –
Long Range Receiver and Transmitter -

Security Accessories

Magnetic Lock –
Solenoid Lock –
Stone Lock -
Perimeter Security Proximity Sensor –

Other Accessories

3 Button Station –
Gate Open Indicator –
Gate In Motion Indicator Visual –
Gate In Motion Indicator Audible –

Accessory Wiring

Before wiring accessories to the Patriot control board remove the actuator connector plug from the control board, this will disconnect power from the unit while wiring. Refer to the installation instructions provided with the accessory being installed.

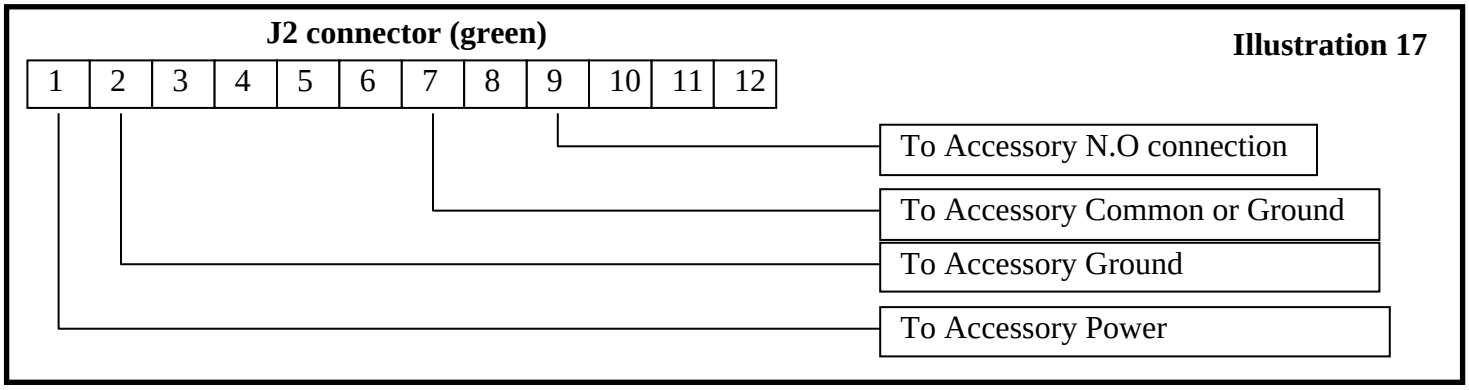
Typically the accessory will have 4 wires that we need to be concerned with (this can vary depending on the manufacturer). These 4 wires can be divided into 2 groups.

First group consisting of 2 wires are the power wires – voltage connection and ground
Second group consisting of 2 wires are the control wires- N/O connection and common ground or ground

The power connection on the Patriot control board should be made at J2 pin 1. This output is protected with an auto resetting 1.5-amp fuse. If the total current draw of all accessories exceeds 1.5 amps then it will be necessary to connect directly to the battery for additional current.

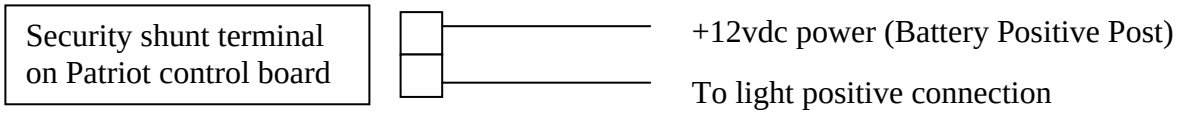
The common, common ground or ground connection on the Patriot control board are located on the J2 connector (green) pin number 2 and 7, in addition the J1pin 2 and J4 pin 2 terminals located beside the J2 connector each have a ground connection. These are clearly marked on the control board. The battery ground or – post can also be used if needed.

The N/O connection on the accessory will be made to the J2 connector (green) pin, which performs the desired function. For example (Illustration 17) if installing a device with the desired function of opening the gate when the accessory is activated then it connects to J2 pin 9. If the desired function is to reverse a gate that is closing when activated then J2 pin 11. Refer to page 15 of this manual to understand J2 inputs and correct pin connections.



The Patriot control board has 3 outputs that can be used to perform multiple functions they are the "Security Shunt", "Solenoid lock" and the "Magnetic lock" outputs. For any of these to operate the appropriate DS2 dipswitch must be turned on. See page 17 for DS2 location and functions.

Security Shunt – is a dry contact switch that is closed anytime the gate is not closed. A proximity switch such as the type installed in a security system to activate an alarm if the contact is broken could be wired here. If the gate is opened by an intended signal the security shunt switch closes and prevents the alarm system from activating. If the gate were forced open then the alarm would be activated. Security shunt can also be used to power +12-volt dc equipment. If the desired function is to have something turned on when the gate is not closed for example a gate open indicator light. The security shunt would be wired as below.



The light's ground connection can be made directly to the battery negative post. Light will come on when the gate is not closed. This can also be used to power a Photo Eye in solar applications to reduce battery drain.

Security Shunt – Used to control a Photo-Eye

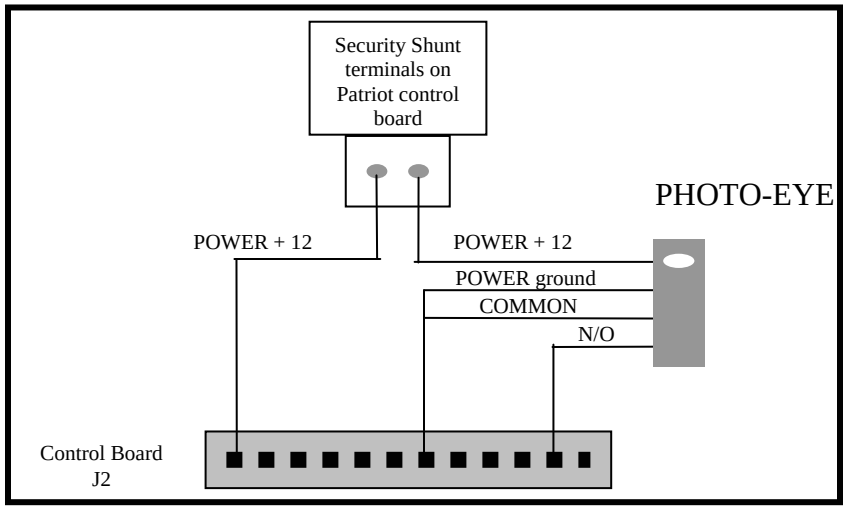
If installing a photo-eye on a solar gate operator the standby current draw of the photo-eye will drain the battery. The Patriot control board is designed to control the photo-eye to avoid this common problem. The Patriot control board will only apply dc power to the photo-eye when the gate is opened. If wired as follows.

NOTE: Do not hold the gate open when using this feature to control the photo-eye +12 vdc power. Remember that the photo-eye will be powered up when the gate is not closed. If the gate is open the power is on. Contact the factory for more information.

The photo-eye should have 4 wires that need to be identified:

1 +12 vdc power
2 Ground
3 N/O or Normally Open
4 Common or common ground

After wiring as shown below locate the DS2 dipswitches on the Patriot control board (see page 17) and turn on the security shunt circuit enable dipswitch.



Accessory Wiring

The +12 vdc output is protected with a 1.5 amp auto-resetting fuse.

Solenoid Lock – This is a +12 vdc output that can output +12 volts two different ways.

1. If DS2 switch 1 is turned "on" and DS1 switch 5 is "OFF," the +12 vdc will come on a half second before the gate begins to open after activation. Once the gate begins to move, the output will go to 0 volts in 4 seconds.
2. The other option is to turn DS2 switch 1 and DS1 switch 5 on. With this setting the solenoid lock output will be +12 vdc a half second before the gate begins to move and remain at +12 vdc until 3 seconds after the gate has stopped on a limit. For example, this can be used to turn on a gate in motion siren or light.

Magnetic Lock – This is a +12 vdc output.

Whenever the gate reaches the closed limit the +12 vdc will be present and remain until the gate is activated to open. The +12 vdc output will be turned "off" one half second before the gate begins to open.

Step 11 Programming Transmitter and Receiver (model 433DSR2LC)

The Transmitter and Receiver provided operate at 433 MHz. Receiver can store up to 22 unique transmitter codes.

Transmitter Setup: (It is recommended that the dipswitches be changed from the default setting)

1. Open the battery compartment door and locate the dipswitches.
2. Change the dipswitches to the settings you prefer. Record for future reference.

Transmitter Left Button to Receiver Programming: (standard Open/Stop/Close function)

1. Press and **hold** the left transmitter button down. Red light on transmitter should be on.
2. On the receiver, push the P1 push-button until the green LD light comes on.
3. Release both buttons. Transmitter left button to receiver programming is complete.

Transmitter Right Button to Receiver Programming: (Hold-Gate-Open) (Only if auto close timer is enabled)

The 2-channel receiver allows for programming the P2 relay from momentary mode (default) to latching mode. Transmitter right button can then be programmed to hold the gate open, over-riding the auto-close feature.

1. Press and **hold** the right transmitter button down. Red light on transmitter should be on.
2. On the receiver, push the P2 push-button until the green LD light comes on.
3. Release both buttons. Transmitter right button to receiver programming is complete.

Receiver Programming: Relay P2 programming from momentary to latching mode (to hold gate open)

1. On the receiver, push the P2 push-button until the green LD light comes on, then release. Green LD light should be steady.
2. While the green LD light is on, push the P1 push-button down and release. Green LD light should be flashing. Latching mode is set.

Verifying Receiver P2 relay is programmed to latching mode:

1. On the receiver, push the P2 push-button until the green LD light comes on, then release.
2. Green LD light should be flashing. If the green LD light is steady, redo the Receiver Programming section above.

Resetting receiver P2 relay to momentary mode:

1. On the receiver, push the P2 push-button until the green LD light comes on, then release. Green LD light should be flashing.
2. While the LD light is flashing, push the P1 push-button down and release. Green LD light should be steady. Momentary mode is set.

Erasing Single Transmitter from Receiver Memory:

The dipswitch settings of the transmitter to delete must be known. If known follow the steps below.

1. Set the dipswitches in a transmitter to match the switch settings of the transmitter code to delete.
2. Press and **hold** the left transmitter button.
3. On the receiver, push the P1 push-button until the green LD light comes on. Then release both.
4. Press and **hold** the right transmitter button.
5. On the receiver, push the P2 push-button until the green LD light comes on. Then release both.
6. Transmitter is now erased from receiver memory.

Erasing all Transmitters from Receiver Memory:

1. Press the P2 button on the receiver until the green LD light comes on. Then release P2 button.
2. While LD light is on press the P1 and P2 buttons simultaneously and hold until the green LD light begins to blink slowly. It should blink 4 times then all transmitter codes are erased.

Contact the factory for advanced programming options.

STEP 12 Programming wireless Keypad (model 433 KPD)

Terms to understand:

Master Password – The 5-digit code used to access programming features. Factory default is "11111." This needs to be changed by the end user for security reasons.

Access Code – The 1 to 5-digit code used to open the gate (24 unique codes are possible). If access code is less than 5 digits it requires the # sign after code is entered. Example: "2 #." If the code is 5 digits the # sign is not required.

Relay 1 – The receiver has 2 relays. P1 (relay 1) is factory wired to the "push button input" on Patriot control board.

Relay 2 – The receiver has 2 relays. P2 (relay 2) is factory wired to the "Free exit/Open input" on Patriot control board.

Security Code (Dip Switch Code) – The keypad does not have dipswitches. Instead, the receiver has a learn mode which can be used to program the keypad to the receiver. The keypad can also be manually programmed if a transmitter is being used. See "Changing Security Code" on page 35.

PUK Code – "Password Unblocking Key." The PUK code is located inside the keypad and is needed when the master password has been lost. Copy and store in a safe place for future reference. Must be 5 digits long – lead with zeros.

" * " Key – located on the keypad is used to cancel last command entered.

Red Light Blinks – When blinking, the keypad is sending a signal to the receiver. Valid access code was entered.

Note: Do not install keypad until "Learning Access Codes in Receiver" has been completed.

Programming New Master Password:

1 Enter the Master Password "11111."
2 Enter "8." If correct, 2 short beeps (if 1 long beep is heard, start over with step 1.)
3 Enter the Master Password (up to 5 digits), if less than 5 digits, "#" is required.
4 Enter "8."
5 Enter the Master Password again to verify.
6 Press "8." If correct, 2 short beeps the New Master Password is set. (If 1 long beep is heard, start over with step 1.)

Programming Master Password Back to Factory Default: (11111)

1 Enter "11111."
2 Press "8" (long beep.)
3 Enter PUK code. (PUK must be 5 digits)
4 Press "8."
5 Enter PUK code to confirm.
6 Press "8" (2 beeps) Master password reset complete.

Programming the Keypad for Operation

Create Access Code: (Code you use to operate the gate)

1 Enter the Master Password "11111."
2 Enter "9." If correct, 2 short beeps (if 1 long beep is heard, start over with step 1.)
3 Enter the new Access Code (up to 5 digits), if less than 5 digits, "#" is required.
4 Enter "9."
5 Enter the new Access Code again to verify.
6 Enter "1" or "2" representing the relay (relay 1 or 2 in the receiver) you want to control. If correct, 2 short beeps (if 1 long beep is heard, start over with step.

Changing Security Code

This keypad has a virtual dipswitch used to create your Security Code. The virtual dipswitch contains nine 3-position switches. The default Security Code has all nine switches in the center position. To ensure neighboring keypads do not interfere with each other, the virtual switches should be positioned in a random pattern, using the following procedure.

Example of random positioning of the virtual dipswitches to create a Security Code is shown below. To enter the Security Code, enter the dipswitch number, followed by the dipswitch position character. The Security Code would be entered as:

1# 20 3* 4* 5# 6* 7# 80 9*

Dipswitch Position	Switch Number								
	1	2	3	4	5	6	7	8	9
#	X				X		X		
0		X						X	
*			X	X		X			X

Use table below to create a random pattern and enter the resulting Security Code in the following procedure.

Dipswitch Position	Switch Number								
	1	2	3	4	5	6	7	8	9
#									
0									
*									

1 Enter the Master Password.
2 Enter "6." If correct, 2 short beeps (if 1 long beep is heard, start over with step 1.)
3 Enter the Security Code created in the table in the previous column. If correct, 2 short beep after each switch number and switch position combination is entered.
4 Enter "#."
5 Enter "6."
6 If correct, 2 short beeps (if 1 long beep is heard, start over with step 1.)

Learning Access Codes in Receiver:

Create Communication With Receiver Relay 1: (Security Code/Dip Switches)

1 Carry keypad to receiver location for programming.
2 Enter the Access Code for relay 1 on the keypad and continue to press the last key entered (red light blinks.)
3 Press P1 (learn button) on the receiver until LD (green light) comes on and relay clicks.

Create Communication With Receiver Relay 2: (Security Code/Dip Switches)

1 Carry keypad to receiver location for programming.
2 Enter the Access Code for relay 2 on the keypad and continue to press the last key entered (red light blinks.)
3 Press P2 (learn button) on the receiver until LD (green light) comes on and relay clicks.

Deleting Single Access Code:

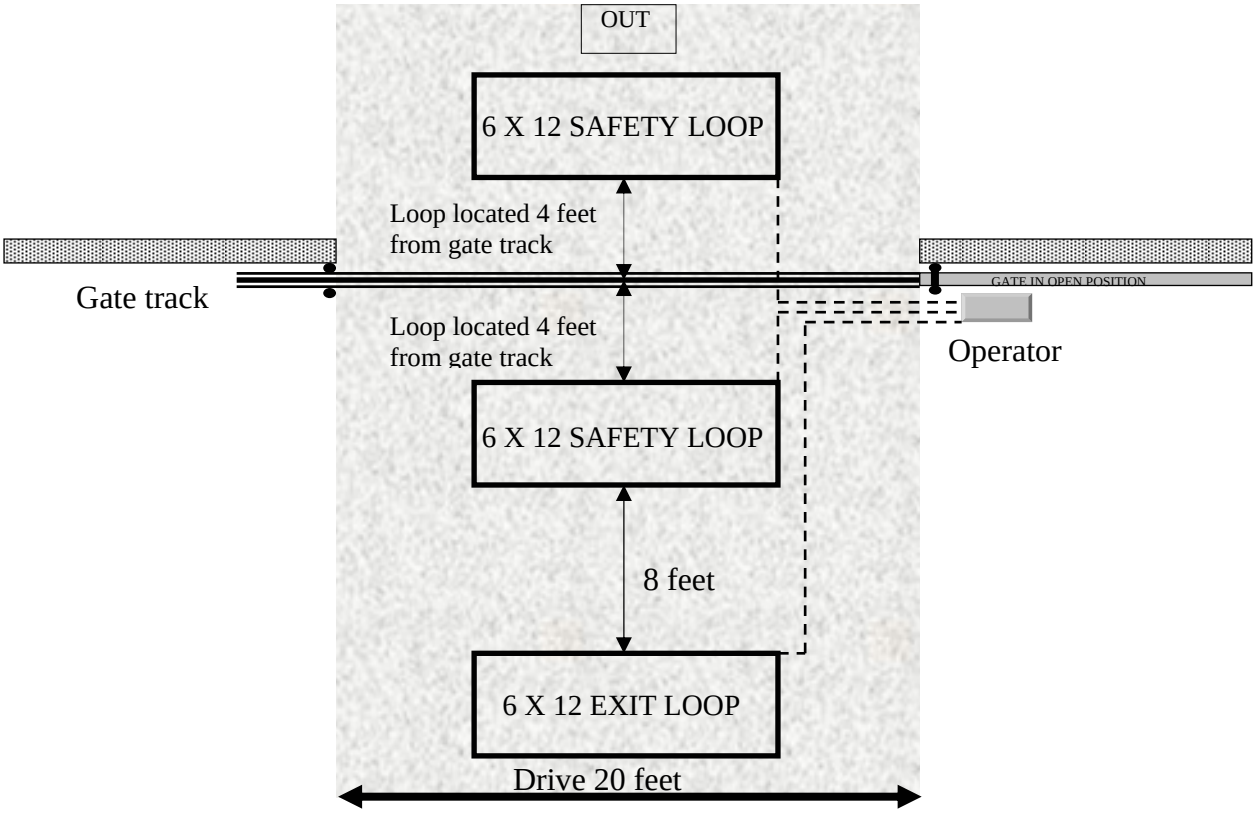
1 Enter the Master Password.
2 Press the “7” key. If correct, 2 short beeps (if 1 long beep is heard, start over with step 1.)
3 Enter the Access Code to be deleted.
4 Press the “7” key.
5 Reenter the Access Code to be deleted.
6 Press the “7” key. If correct, 2 short beeps (if 1 long beep is heard, start over with step 1.)

Deleting All Access Codes:

1 Enter the Master Password.
2 Press the “7” key. If correct, 2 short beeps (if 1 long beep is heard, start over with step 1.)
3 Reenter the Master Password.
4 Press the “7” key.
5 Reenter the Master Password.
6 Press the “7” key. If correct, 2 short beeps (if 1 long beep is heard, start over with step 1.)

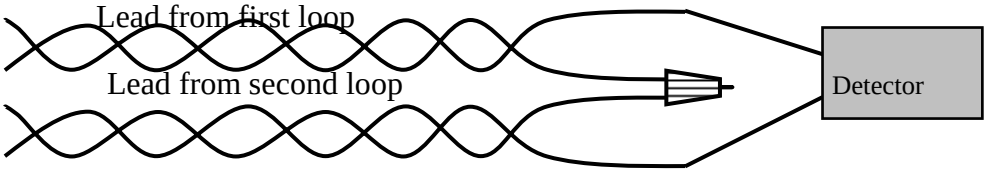
Loops

Safety and Exit Loop Position Diagram

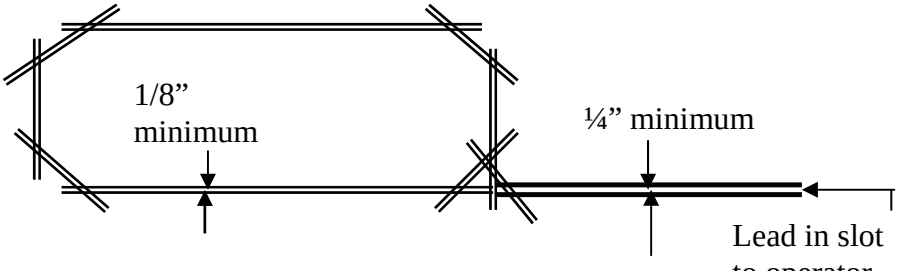


Proper wiring of two loops performing the same function

Example: Inside and Outside Safety Loops

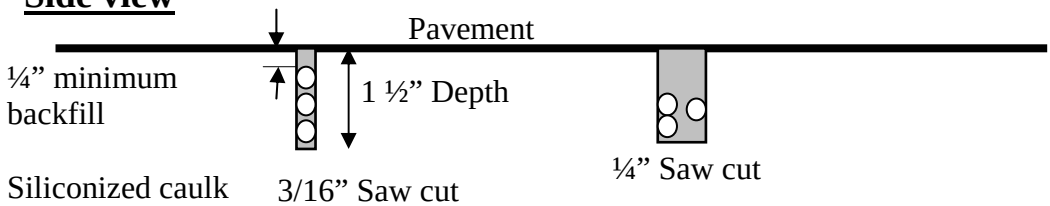


Typical Loop Saw cut - top view



Corners should be crosscut as shown for stress relief. 45 degrees is maximum turn angle allowed. Saw cut width must be at least 1/8" for recommended wire. Lead in slot must be at least ¼" for twisted leads.

Side view



Loops

Loop Size Chart

The loop size is based on the width of the driveway. If the driveway is 14' wide, the loop would be a 6'x6', the minimum. This is determined by subtracting 4' off of each side of the drive, which would leave you 6'.

See chart below for number of turns per loop size, plus lead in. The loop itself should contain between 90 & 125 feet of wire in the loop, plus lead in.

Drive Width Size	Loop Size	Number of Turns 2	3	4
14' & Under	6' x 6'			96’
16'	6' x 8'			112'
18'	6' x 10'		96'	
20'	6' x 12'		108'	
22'	6' x 14'		120'	
24'	6' x 16'		132'	
26'	6' x 18'	96'		
28'	6' x 20'	104'		
30'	6' x 22'	112'		
32'	6' x 24'	120'		

The location of the loop is also important. If a loop is located too close to the gate, it will detect the gate itself, giving false operation. If the loop is too far away from the gate a small vehicle might not be detected. Loops should be approximately 5' from the centerline of a gate when closed. See Loop Position on previous page.

Loops

Other Loop Detector Facts

1. Always clean saw cuts thoroughly with water, air or brush to remove all debris prior to installing wire.
2. Recommended loop wire is TFFN #16 gauge stranded wire. It is available at electric supply distributors.
3. No splices are permitted in the loop or loop leads. One continuous wire should be used.
4. Lead wires should be twisted a minimum of 4 twists per foot to eliminate false sensing. Twists should begin at the edge of the loop and continue to detector.
5. Do not use metal or sharp objects to push the loop wire into the saw cut. The slightest nick or cut in the insulation will cause the loop to ground out and malfunction. To test for shorts, use a megohmeter or "Megger" between either loop lead and earth ground with both leads disconnected from the detector. The resistance should be greater than 50 megohms.
6. Use siliconized caulk for backfill. Gray for concrete, black for asphalt. 25-Year life rating is preferred.
7. Never set adjacent loops on the same frequency. False activation will occur.
8. Almost all brands of detectors have an external or internal sensitivity adjustment. Usually the factory setting is sufficient if internal adjust type. Be very careful and use extreme caution when decreasing sensitivity.
9. Most false activations are caused by an improperly installed loop or a shorted loop. The loop should be tested and validity determined before adjusting sensitivity. See # 5 above.
10. Most detectors used in the gate business are fail-safe. This means that if the loop fails, the gate will be given a continuous signal. When power is disconnected from a detector, the signal output is also given.
11. ASB, or automatic sensitivity boost is now available on most detectors. This feature should be activated if large truck or trailer traffic is likely.

NOTES PAGE

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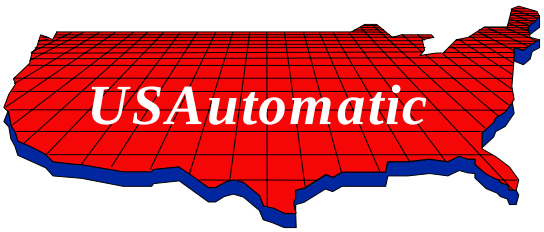

PATRIOT RSL
Slide Gate Operator
Limited 5 Year Warranty

The PATRIOT RSL Slide Gate Operator is warranted to be free of defects in materials or workmanship for a period of 5 years from date of purchase on the electronic control board and 12months on all other components. Any part, parts, or complete unit found to be defective within this period will, at the manufacturer's option be repaired or replaced at no charge if returned freight prepaid. New or factory rebuilt replacement parts are warranted for the remaining portion of the original warranty period. The manufacturer will pay for standard ground freight on the return of the repaired or replaced items under this warranty. The manufacturer will not be responsible for field service or labor charges incurred in the removal or replacement of defective parts. Furthermore, the manufacturer will not be responsible for incidental or consequential damages.

This warranty is in lieu of all other warranties expressed or implied and shall be considered void if damage was due to improper use or installation, connection to an improper power source, or if caused by fire, flood, lightning and other acts of nature, or by vehicles or vandalism.

This warranty gives you specific legal rights, and you may have other rights, which vary from state to state. Some states do not allow limitations or exclusions of implied warranties so these may not apply to you.

Keep this portion for your records

Model:_____ **Serial Number*:**_____

Date of Purchase:_____ **Purchased from:**_____

CUT HERE

RETURN THIS PORTION TO:
USAutomatic, LTD
118 Hillside Drive
Lewisville, Texas 75057
Toll Free 1-888-204-0174

Model: _____ Date of Purchase: _____
Serial #: _____ Purchased from: _____
Name: _____
Address: _____
City: _____ State: _____ Zip: _____

* Serial number can be found by removing cover and looking on control board.