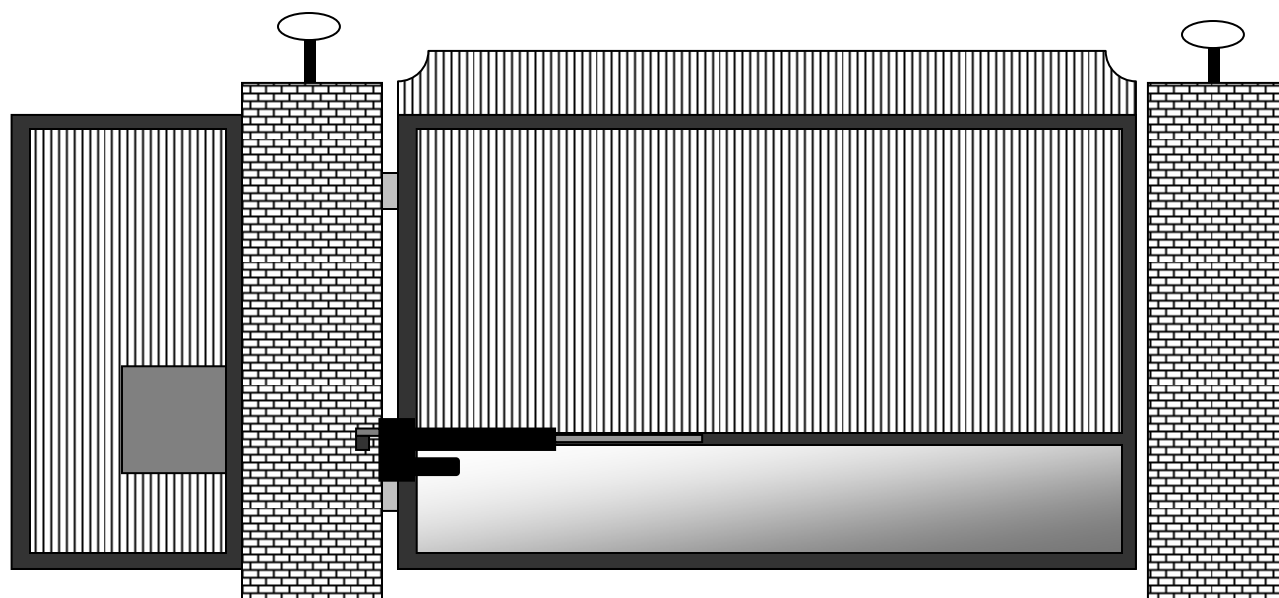


# ***PATRIOT***

*High Quality Low Voltage  
Vehicular Swing Gate Operator  
Solar or AC Charged*



***PATRIOT I*** Single Swing Gate Operator

***PATRIOT II*** Dual Swing Gate Operator

## **Installation/Owners Manual**



**PROUDLY MADE IN THE USA**

[www.usautomatic.com](http://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 should not exceed 650 pounds.

PLEASE READ THIS ENTIRE MANUAL CAREFULLY PRIOR TO INSTALLATION.

Perform 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/transmitter 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 (page 22-25), paying particularly close attention to the Entrapment zones on page 23-25 and be aware of these areas not only during use but also during any adjustments to the unit.
- ⇒ The USAutomatic battery charger is designed to operate with +12 vdc battery rated at 33-amp hour minimum. Maintenance free lead acid, Gel type or AGM batteries are recommended.
- ⇒ **Modifying the charger AC supply 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.
- ⇒ Never 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 combination wrenches, tape measure, level, clamps, etc. are required. Your particular installation may require a drill or other hardware not provided. Welding by a qualified welder is the recommended method of securing the linear actuator mounts to the gate and hinge post. Bolt on brackets is an option, but they must be very securely attached (i.e. carriage bolts with lock nuts and washers). Lag type bolts are not recommended. Loose or unstable operator mounts will result in improper operation.

### **BATTERY REQUIRED FOR OPERATION (NOT INCLUDED).**

We recommend a +12 vdc maintenance free lead acid, Gel or AGM battery rated at a minimum of 33-amp hours. The actuator harness is equipped with 3/8" ring terminals designed to connect to bolt type battery posts. The USAutomatic charger is designed for this type of battery. Using a smaller amp hour battery may cause damage to the charging system.

### **IMPORTANT CAUTIONS:**

1. Do not test or operate this unit without the actuator securely attached to the gate. Serious damage to the actuator limit switch assembly may occur if attempted.
2. Do not perform any welding while the actuator cable is plugged into the control board or with the battery connected. Serious damage to the control board and/or battery will occur if attempted.
3. Always disconnect the battery power from the unit prior to connecting any devices.

## **GATE QUALIFICATIONS/APPLICATIONS**

### **GATE LENGTH/WEIGHT**

This gate operator is rated for vehicular class I or class II swing gates up to 16 feet in length and up to 650 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. (Example: Convert one 20' gate into two 10' gates and use a dual gate operator.)

**Note:** *The total gate opening normally cannot exceed 120 degrees.  
Consult a service technician or the factory if greater opening is required.*

### **GATE CYCLES PER DAY**

Solar charged systems have a limit on the number of cycles they can provide on a daily basis. System design must consider stand-by current consumption of all accessories and number of cycles expected per day. A solar operator will not need additional solar panels in most installations if solar friendly accessories are used. Contact the factory for help designing a solar friendly system. This actuator type opener, whether AC or Solar charged, should never be used in applications that require 150 or more complete open/close cycles per day. Holding the gate open can decrease cycles during high cycle time periods. A high traffic gate operator should be used if more cycles are required.

## **IMPORTANCE OF A PROPERLY DESIGNED GATE**

As a general rule, an automatically operated gate must be stronger and smoother than a manually operated gate. 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 swing smoothly without binds or excessive resistance? Swing gates should swing level and plumb to prevent the operator from having to lift the gate open or closed. Swing gates should not require a wheel to support them. Wheels usually create drag, which will cause operator problems. A wheel is generally a sign of a weak hinge system or a weak gate frame.
- B. Is the gate frame of substantial strength without excessive weight? Will the frame withstand normal wind load conditions without sway or vibration? Will the gate close correctly without being hand-guided or lifted to close?
- C. Are the hinges suited for the number of cycles expected per day?  
We recommend bearing type hinges to reduce friction drag.
- D. Will a reinforcement brace be required to attach the operator to the gate or does a suitable cross member exist in the gate design?

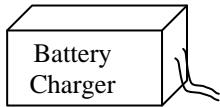
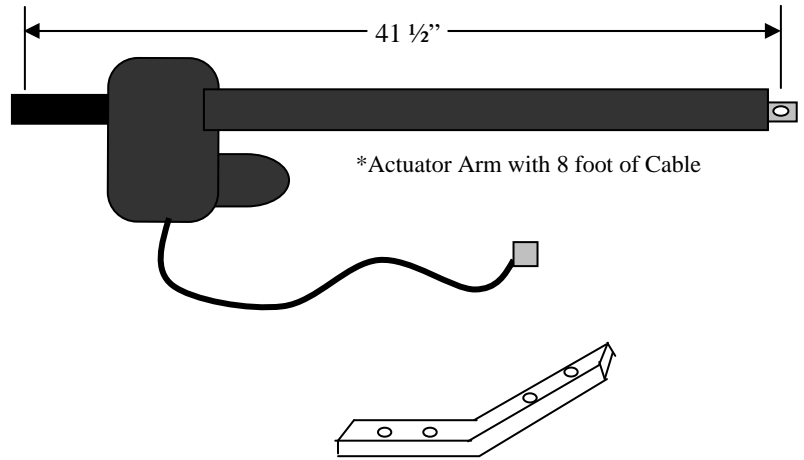
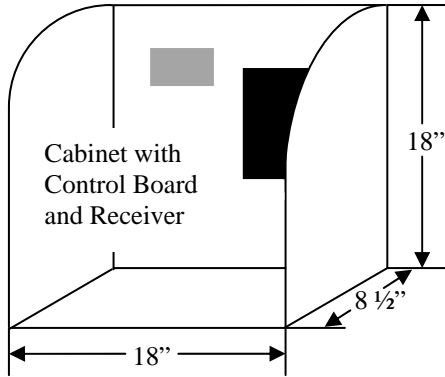
If any of these problems exist, they must be corrected to achieve a reliable automatic gate system.

## **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 and control box?
- B. Will the unit push the gate open to the outside or pull the gate open to the inside?
- C. How will the actuator mounts be secured at the hinge and to the gate?
- D. How will the control box be mounted so it is secure enough to support the weight of the battery and be located within 8 feet of the actuator arm to prevent splicing of the actuator cable?
- E. How will power be brought to the control box if AC charged?
- E. How and where will the solar panel be mounted, if solar charged, so that optimum sunlight is received?
- G. How will exterior control wiring, if any, be brought to the control box?
- H. Have all safety concerns been addressed? (See Safety Section Pgs. 22-25)

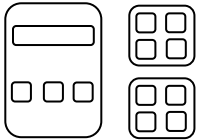
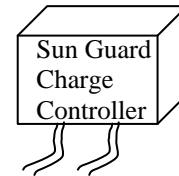
# PARTS INCLUDED



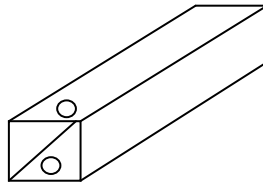
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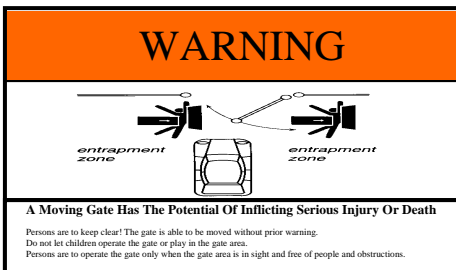
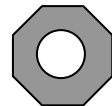
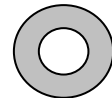
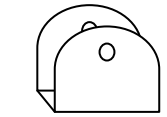
Solar Panel with Bracket and hardware



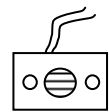
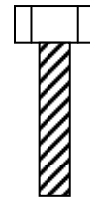
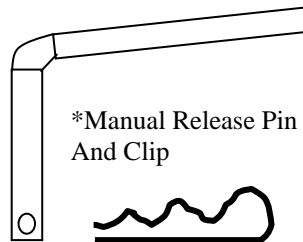
One 4-Button visor mount and two 4-Button key fob remote/transmitters



\* 2" X 2" X 17" Hinge Mount Tube



2- Placards

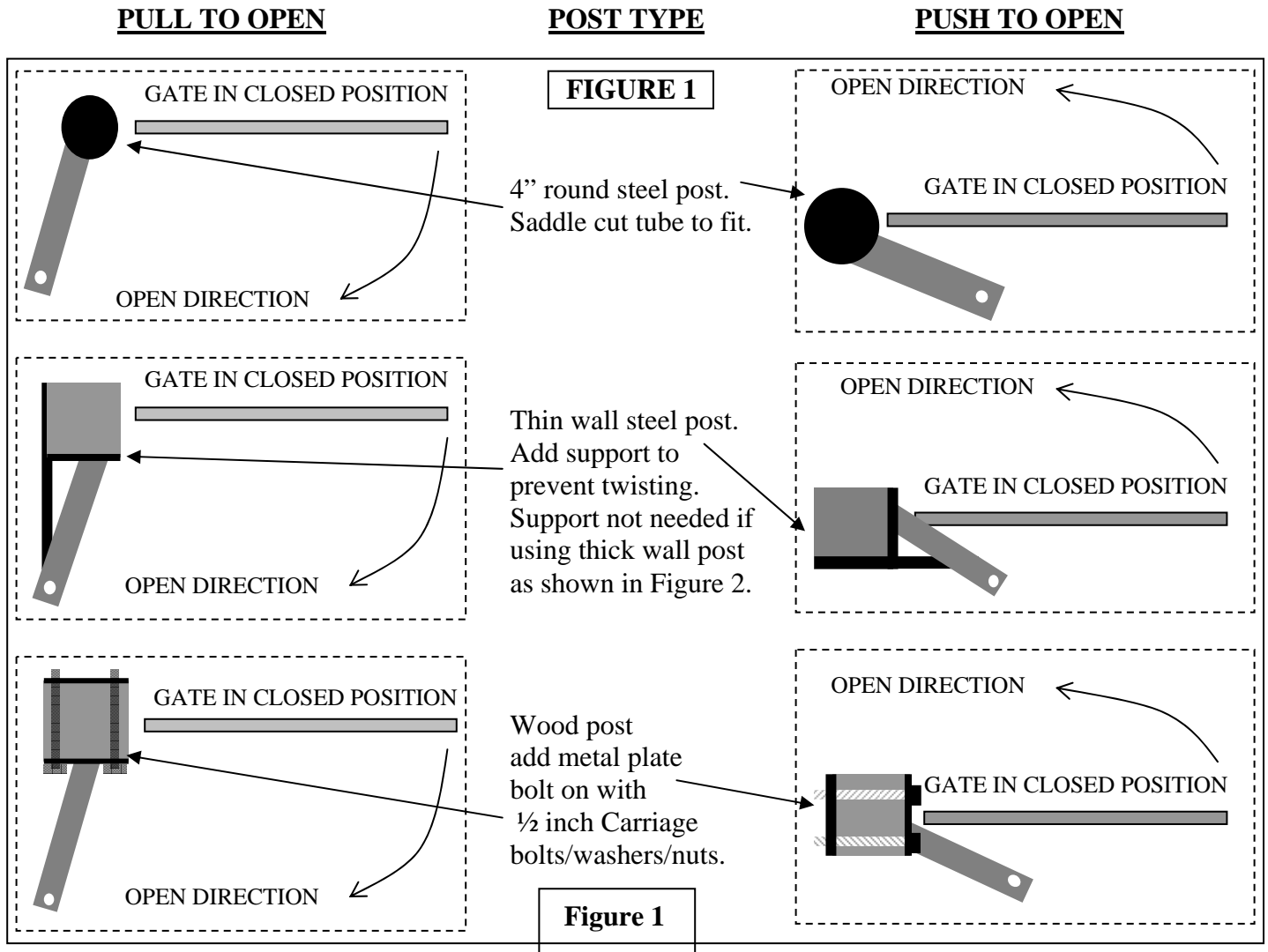


- **\*For Patriot II quantity is doubled.**
- **Additionally, 40' of Master/Slave Actuator cable provided with the Patriot II**
- **Placards (Two supplied) should be visible from inside and outside of gate.**

**NOTE: +12 Volt maintenance free lead acid, Gel or AGM battery recommended. 33-amp hour minimum required. (Not Included)**

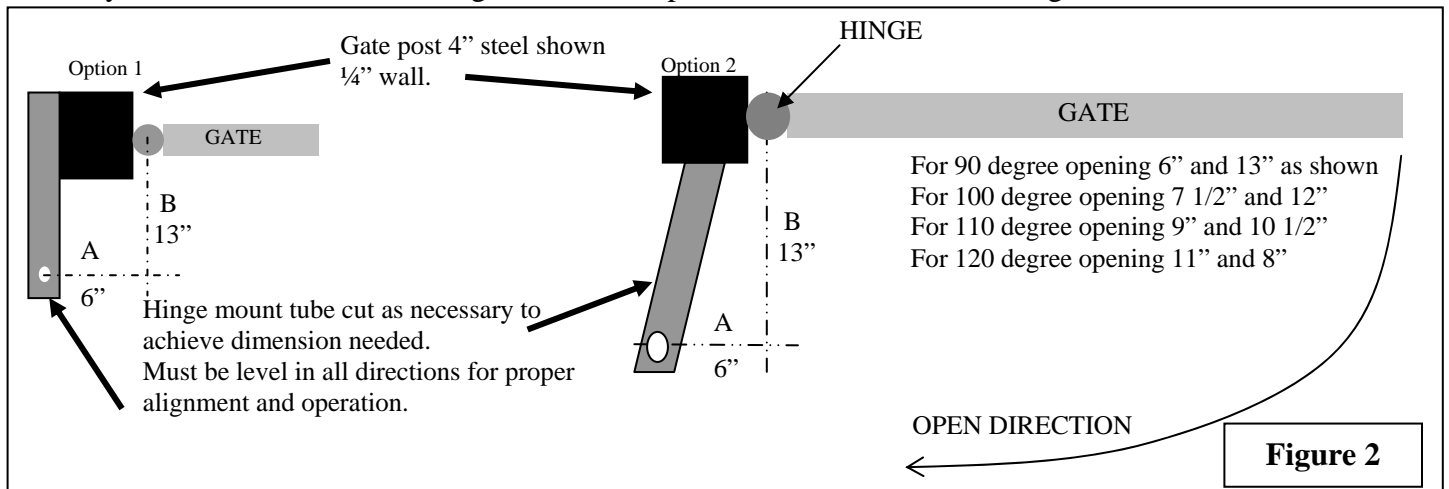
# STEP 1 Hinge Mount Tube Installation

Use the diagrams in Figure 1 below to determine the type of installation and gatepost required. These diagrams show left hand installation - reverse for right hand installation. Figures 2 and 3 show installation for thick wall posts.



# STEP 2 Hinge Mount Tube Installation (Pull to Open Installation Top View)

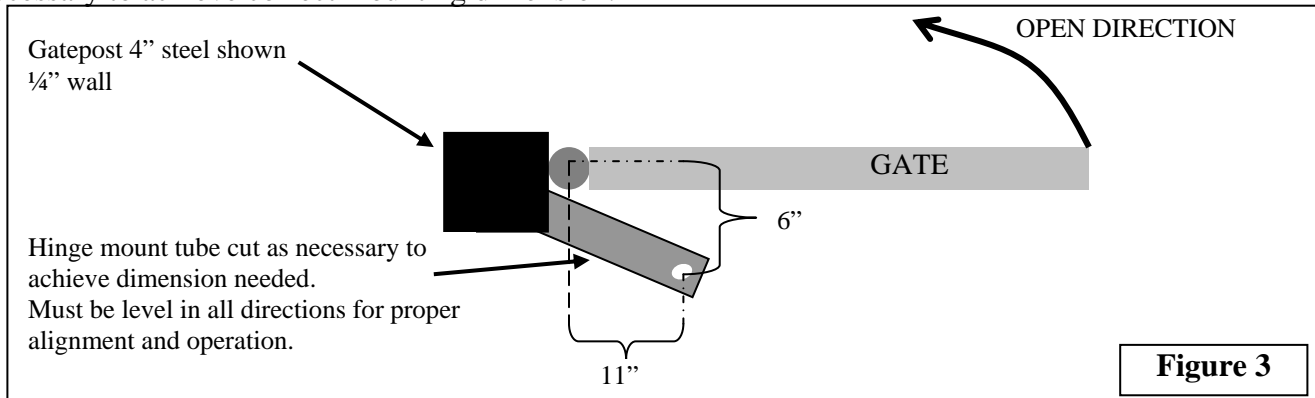
Use dimensions in figure 2 to determine mounting location of Hinge mount tube, cut hinge mount tube as necessary to achieve correct mounting dimension. Option 1 offers maximum strength.





## STEP 2a Hinge Mount Tube Installation (Push to Open Installation Top View)

Use dimensions in figure 3 to determine mounting location of Hinge mount tube, cut hinge mount tube as necessary to achieve correct mounting dimension.



Regardless of method used, the hinge mount tube should be very secure since the entire force of the gate is directed to this mount. The post must be of adequate strength to resist twisting as well.

## STEP 3 Hinge Mount Tube Installation (Vertical Height Positioning)

**NOTE: The gate bracket vertical mounting location on the gate must be determined before installing the hinge mount tube. The approximate distance from the hinge to the gate bracket mounting position is 55". The exact location will be determined on page 8 or 9 under gate bracket installation step 4b or 4c depending on the installation type.**

Now that the type of installation (Pull to Open or Push to Open) has been determined, the vertical height position of the hinge mount tube must be determined. Refer to page 9, figures 9 - 9D, to help determine the mounting location of the gate bracket, which is needed to determine the location of the hinge mount tube.

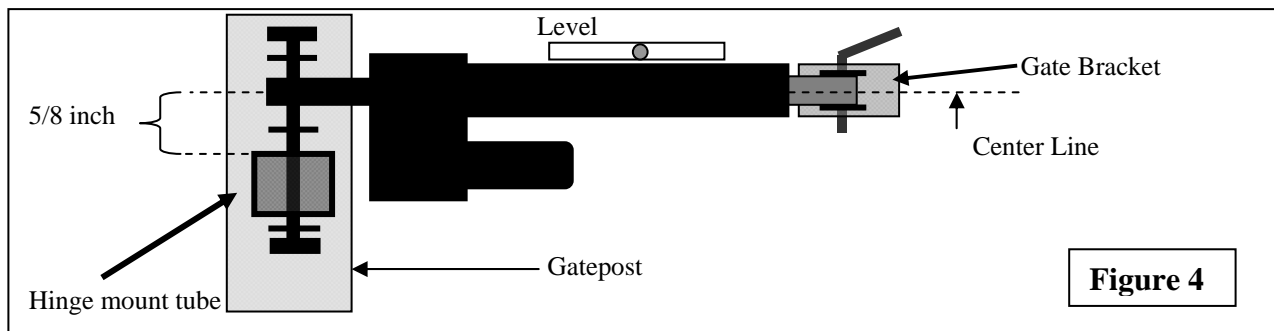
Once the approximate gate bracket location is determined, mark the center point of the gate bracket location on the gate.

Using a level, determine the centerline point on the gatepost that is level with the gate bracket centerline mark made previously. Mark the gatepost centerline point, see figure 4.

The topside of the hinge mount tube will be installed 5/8" below the centerline mark on the gatepost. Measure down 5/8" below the centerline point and mark the gatepost, see figure 4.

Before welding in place, ensure that the hinge mount tube is level in all directions.

**NOTE: The top side of the hinge mount tube must be installed 5/8" below the centerline of the gate bracket. This will ensure that the actuator is level when installed.**



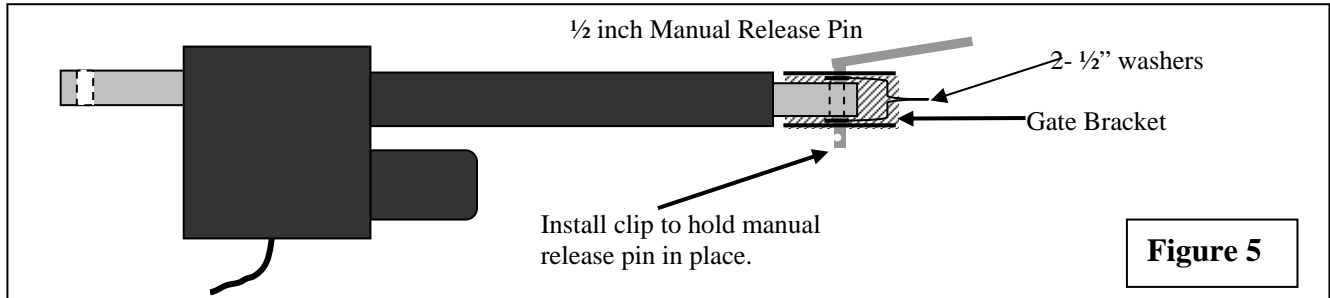
**NOTE: The 1/2" hole in the hinge mount tube is the pivot point for the actuator rear adapter, it must be correct for proper operation. Before welding in place verify dimensions in figure 2 or 3 depending on installation type.**

Once the location of the hinge mount tube is verified, weld it in place.

## STEP 4 Gate Bracket Installation (Prepare Actuator for Installation)

**NOTE:** Do not operate the actuator before performing all installation steps. There is no need to extend the actuator before all installation steps are complete. If you must operate the actuator, ensure that the extension screw does not rotate while operating to avoid possible actuator damage.

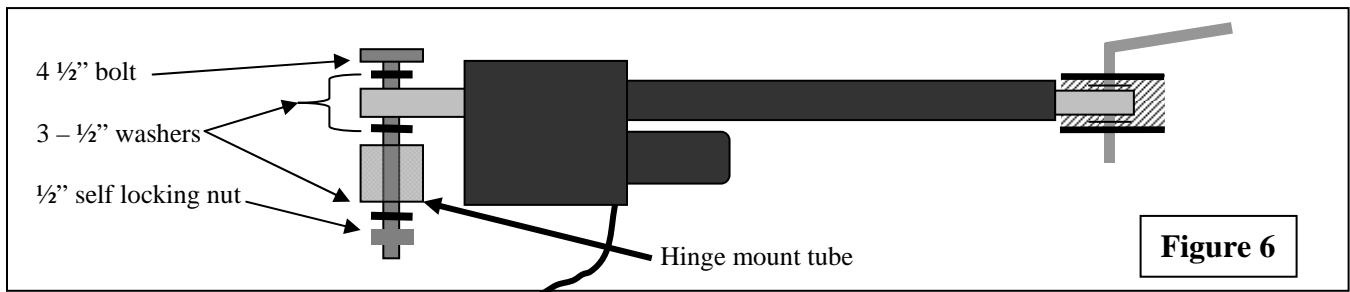
Assemble the Gate bracket to the actuator as shown in figure 5.



## STEP 4a Gate Bracket Installation (Installing the actuator)

Mount the actuator to the hinge mount tube as shown in Figure 6.

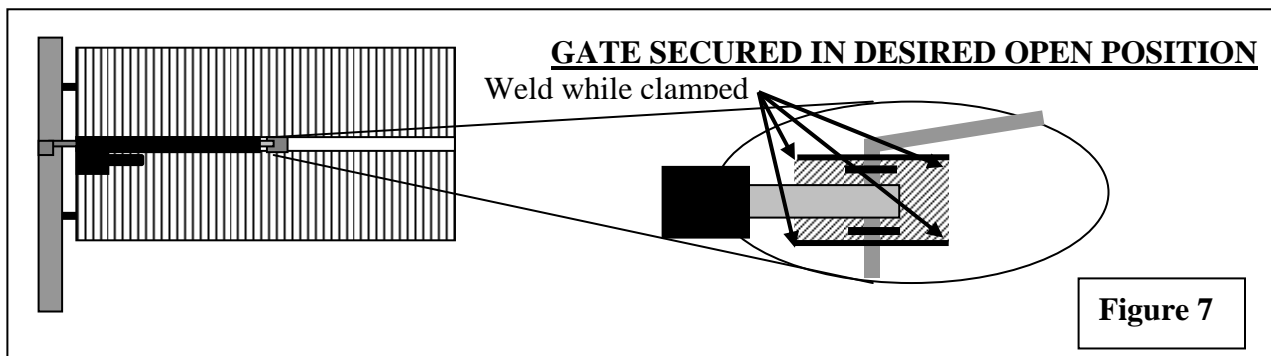
The actuator can be installed upside down at this point to make limit switch adjustments needed later easier to access. Remember to flip actuator back to position shown in figure 6 after all adjustments are made.



## STEP 4b Gate Bracket Installation (PULL to Open Only)

The actuator is adjusted to the fully retracted or open position from the factory. Once the actuator is connected to the hinge mount tube, swing the gate to the desired open position and block in place to secure the gate. Move the actuator around so that the gate bracket can be attached to the gate. Ensure the gate is in the fully open position.

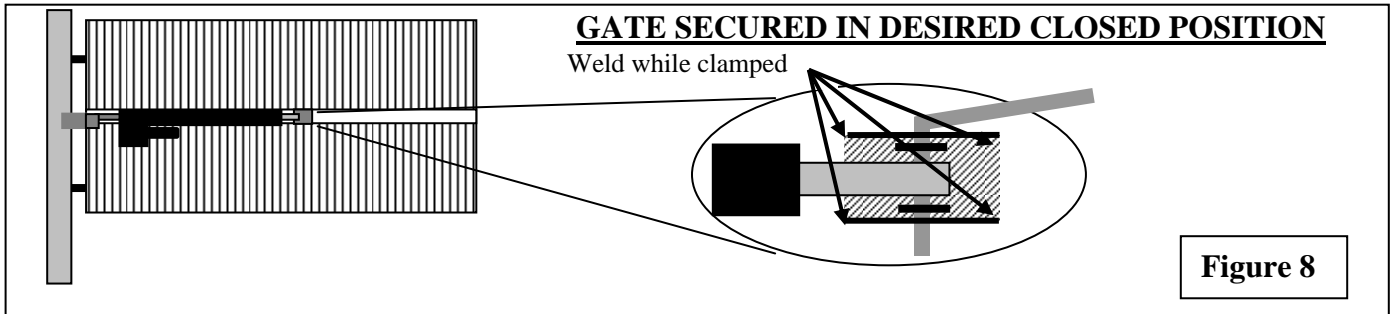
Clamp the gate bracket to the gate (verify actuator is level before welding). Be sure that your gate does not move while clamping. The location of the gate will set your open position. The actuator cylinder will be level if all steps were performed accurately. Weld gate bracket to the gate and verify actuator is still level.



## STEP 4c Gate Bracket Installation (PUSH to Open Only)

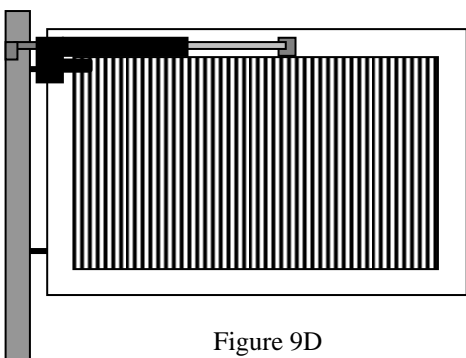
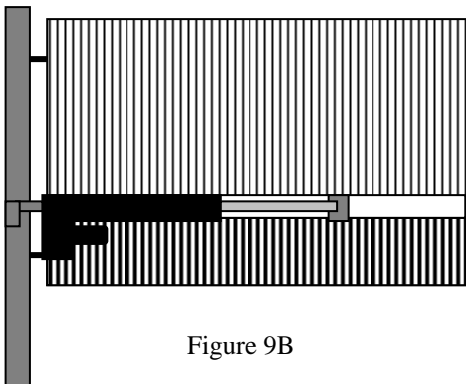
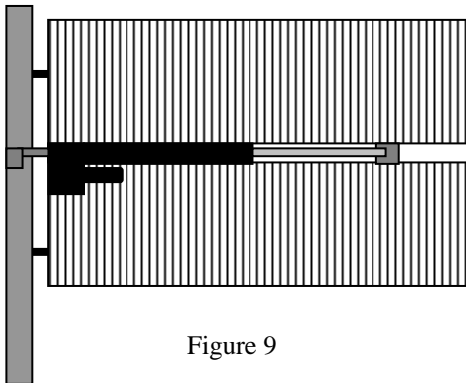
The actuator is adjusted to the fully retracted or closed position from the factory. Once the actuator is connected to the hinge mount tube, swing the gate to the desired closed position and block in place to secure the gate. Move the actuator around so that the gate bracket can be attached to the gate. Ensure the gate is in the fully closed position.

Clamp the gate bracket to the gate (verify actuator is level before welding). Be sure that your gate does not move while clamping. The location of the gate will set your close position. The actuator cylinder will be level if all steps were performed accurately. Weld gate bracket to the gate and verify actuator is still level.

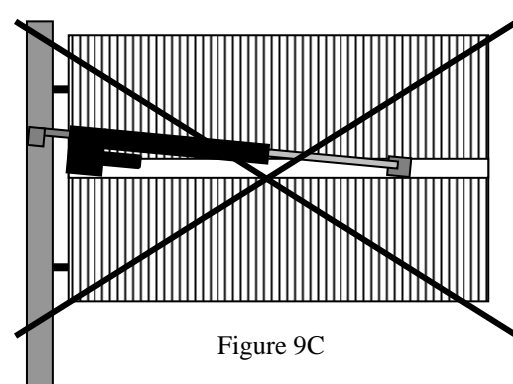
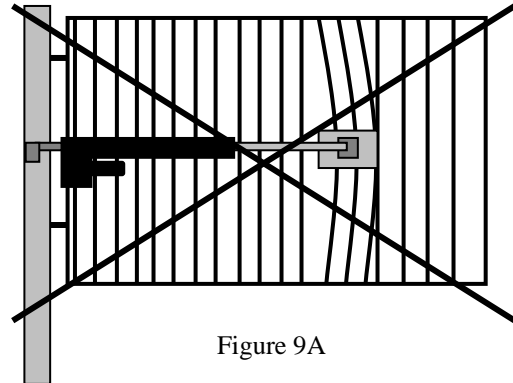


Diagrams for help in determining hinge mount tube vertical position and gate bracket installed position.

### Correct Installation



### Incorrect Installation



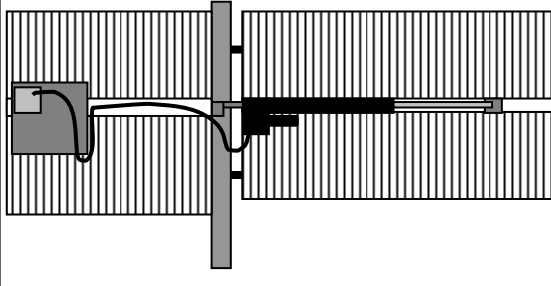
### IMPORTANT:

The gate bracket must be welded in an area that can withstand the full force of the gate. Do not simply weld across a few pickets or bending of the pickets will occur. Add a cross bar if necessary or weld the bracket to the gate frame.

## STEP 5 Mounting Control Box

When deciding where to mount the control box remember the actuator cable for the master gate is 8 feet in length. If possible mount the control box in a location that will allow the cable to be neatly routed. Do not splice cable for additional length unless absolutely necessary. If it must be longer than 8 feet see step 6.

**Correct** – Install control box to fence by welding or screws. If drilling is required remove control board and all electronic devices to avoid damage from metal shavings.



**Incorrect** – Do not mount in areas by automatic sprinklers. All electronics must stay dry.

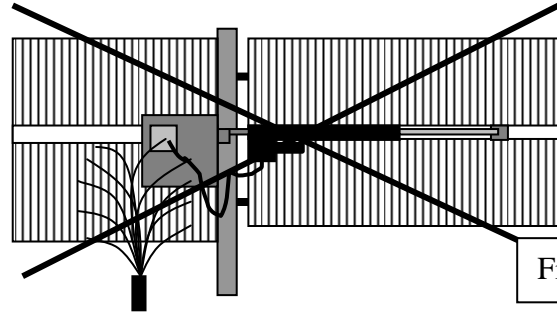
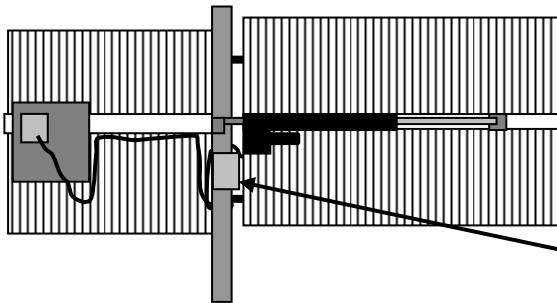


Figure 10

After securely mounting control box install battery and all electronic components. Install plastic grommet in the bottom of the control box (see figure 14) then route actuator cable through the bottom of control box and secure in place with strain relief provided. Do not connect to battery or control board at this time.

## STEP 6 Splicing Master Actuator Cable (only if required)



If 8' actuator cable must be spliced, a watertight junction box must be used to prevent moisture from splice. The wire used for the splice should be no smaller than the actuator cable wire provided. Use only approved wire nuts or crimp splices for connection. Make second splice inside control box. 5-conductor cable (2-12 gauge, 3-18 gauge wires). Extension cable is sold separately.

Junction Box (Watertight)

Figure 11

## STEP 7 Splicing Slave Actuator Cable (Required on Patriot II installation)

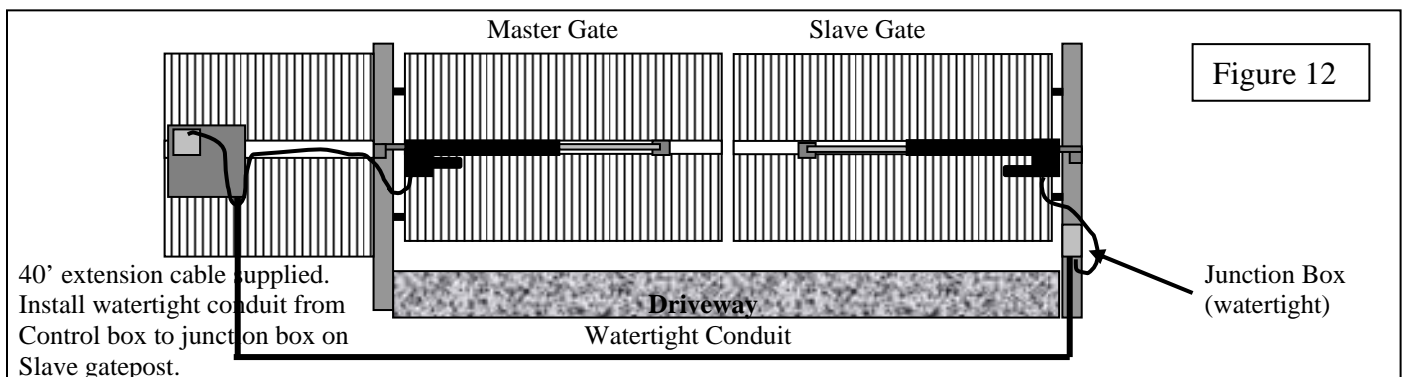


Figure 12

40' extension cable supplied. Install watertight conduit from Control box to junction box on Slave gatepost.

**Important:** The length of the slave cable should be as short as possible.

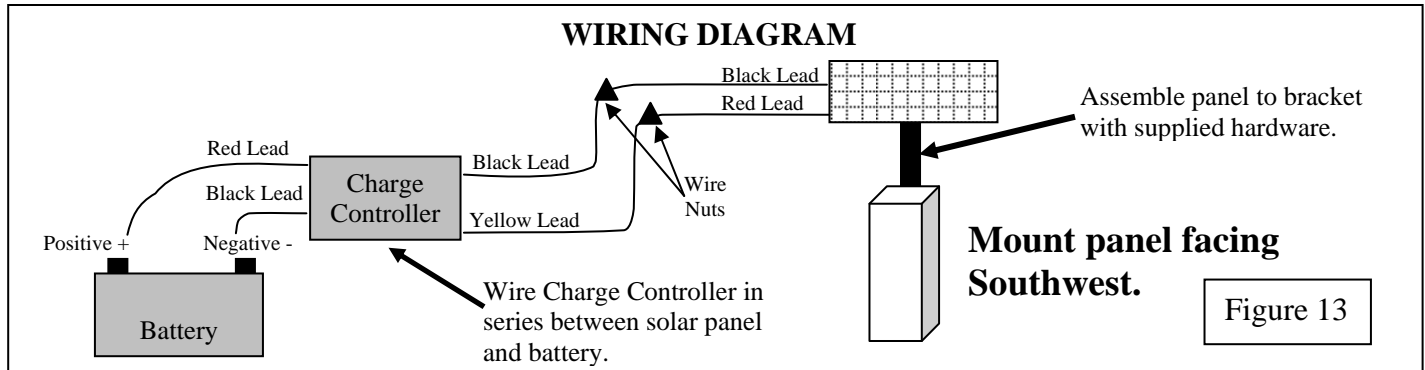
The supplied 40' slave cable contains two 12 gauge wires and three 18 gauge wires. Cut the slave actuator cable to the desired length and splice the extension cable by matching the wire colors.

**NOTE:** Failure to install extension cable into watertight conduit and keep all connections dry will result in future problems.

## STEP 8 Installation of Charging Device

### SOLAR PANEL AND SOLAR CHARGE CONTROLLER

Locate and mount the solar panel bracket so that the panel faces southwest and maintains the preformed 45-degree angle. The standard cable is 15' 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 control box. The charger requires a receptacle for 110-volt AC supply. The recommended location is inside the control box. A licensed electrician should install the receptacle per local building codes

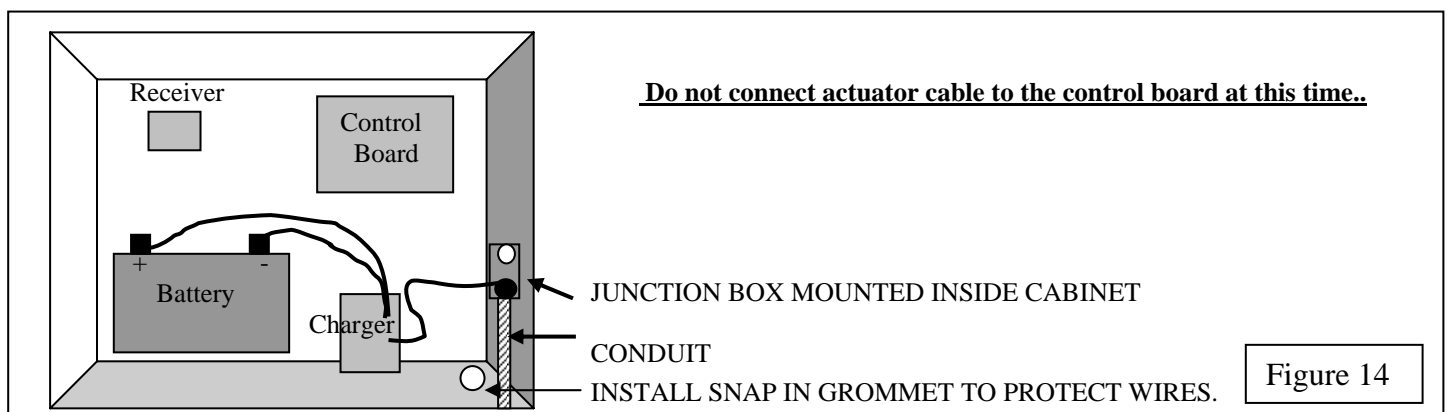
**Modifying the charger power cord will void the charger warranty.**

**Note: USAutomatic recommends an AC surge protector on all 110-volt AC installations, especially in lightning prone areas. Do not modify the AC cord on the charger.**

### Connecting Actuator Cable and Charging Device to Battery (solar panel or AC charger)

Connect the charging device (solar charge controller or AC charger) ring terminals and the actuator cable ring terminals to the battery (red to + and black to -). Patriot II installations have 2 sets of actuator ring terminals to connect.

Connect the charger power cord to the 110-volt AC receptacle. The red light on the charger should come on and the yellow light should begin to blink. If the red light does not come on, check the 110-volt AC power.



## STEP 9 Connecting Actuator Cable to Control Board

Before connecting the actuator cable to the control board check the following:

Verify that all previous steps were performed.

Verify that the battery connections are correct, red leads to positive and black leads to negative.

Verify that nothing is in the path of the gate, if by chance it begins to move when power is applied.

Be prepared to disconnect the actuator cable, if needed to stop the gate if it begins to move.

### Patriot I

Locate the master actuator cable and plug it into the “Master” actuator connector (see figure 15) on the control board. You might here a beep from the control board when power is supplied. This is not a problem.

### Patriot II

Locate the master actuator cable and plug it into the “Master” actuator connector (see figure 15) on the control board. You might here a beep from the control board when power is supplied. This is not a problem.

Locate the slave actuator cable and plug it into the “Slave” actuator connector (see figure 15).

## STEP 10 Current Sense Adjustment

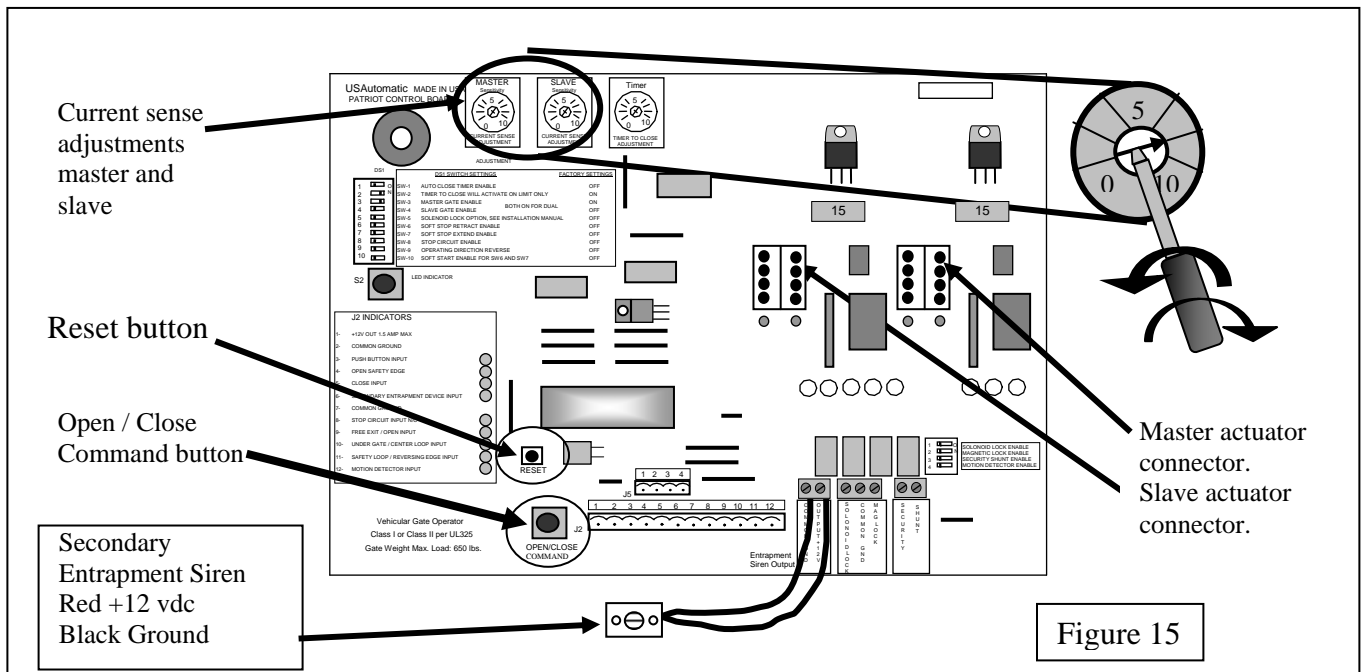
The control board has two current sense adjustments, MASTER and SLAVE (see figure 15). On single gate installations adjust both to the same setting, on dual gates adjust each one to the desired setting. Adjust sensitivity so that the gate force required to sense an obstruction is at the desired level.

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 sensitivity adjustments in figure 15. 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.



## **STEP 11 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 17). Factory default dipswitch settings are 2 and 3 on.

Identify you installation below and verify dipswitch settings:

### **Patriot I (Pull to Open)**

Dipswitches 2, 3 should be in the on position.

### **Patriot I (Push to Open)**

Dipswitches 2, 3, 9 should be in the on position.

### **Patriot II (Pull to Open)**

Dipswitches 2, 3, 4 should be in the on position.

### **Patriot II (Push to Open)**

Dipswitches 2, 3, 4, 9 should be in the on position.

### **NOTE: Push to Open Installations Only:**

**Push to Open installations do not require rewiring of the actuator 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 lights below the actuator plug on the control board will show open when closed and closed when open.**

## **STEP 12 Operating the Gate**

**NOTE: If soft stop is going to be used disconnect extension tube from gate at this point and turn the extension screw 6 turns counter clockwise. This will screw the extension screw outward and once reconnected to gate it will not be fully open. Once the gate has cycled, then make necessary limit switch adjustment.**

You should be able to stop the motor with the “Open/Close Command” button or the “Reset” button on the control board (see figure 15 on page 12) without having to disconnect the actuator plug from the control board, but in cases of incorrect wiring, the plug can be used as an emergency power shut-off.

If you have an understanding of the sensitivity feature, how to disconnect the actuator plug in an emergency, and have verified the dipswitch settings in step 11 it is time to operate the gate.

**NOTE: In most installations the current sense beeper on the control board will beep when the gate begins to operate. This is not a problem. If the beep is constant the gate will stop and reverse direction.**

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. If the gate operates and then reverses direction then a current sense adjustment must be made (see page 12, step 10).

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

The gate should operate without current sensing if adjustment was made correctly. If operator still current senses then readjust the sensitivity. Most installations will operate correctly with a setting of 5. Remember to set slave sensitivity also.

The gate should stop about 24” before the desired stop position. Final adjustment will be made later.

Press the “Open / Close Command” pushbutton again.

The gate should return to the original retracted position (the install position).

## **STEP 13 Making Final Adjustments**

If the gate stopped short of the desired stop position on page 13, step 12, then the limit switch needs to be adjusted. Refer to the Limit Switch Adjustment on page 15 to determine which adjustment to make.

## **STEP 14 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 they will be highly visible to anyone on either side of the gate.

## **STEP 15 Installing Secondary Entrapment Siren (UL-325 requirement)**

The secondary entrapment siren connects to the control board (figure 15). 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 (see figure 15) 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.

**CAUTION:** To reduce the risk of injury, USAutomatic strongly recommends the installation of safety devices such as Photo Eye Sensors, Safety Loops, 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 22 to 25.

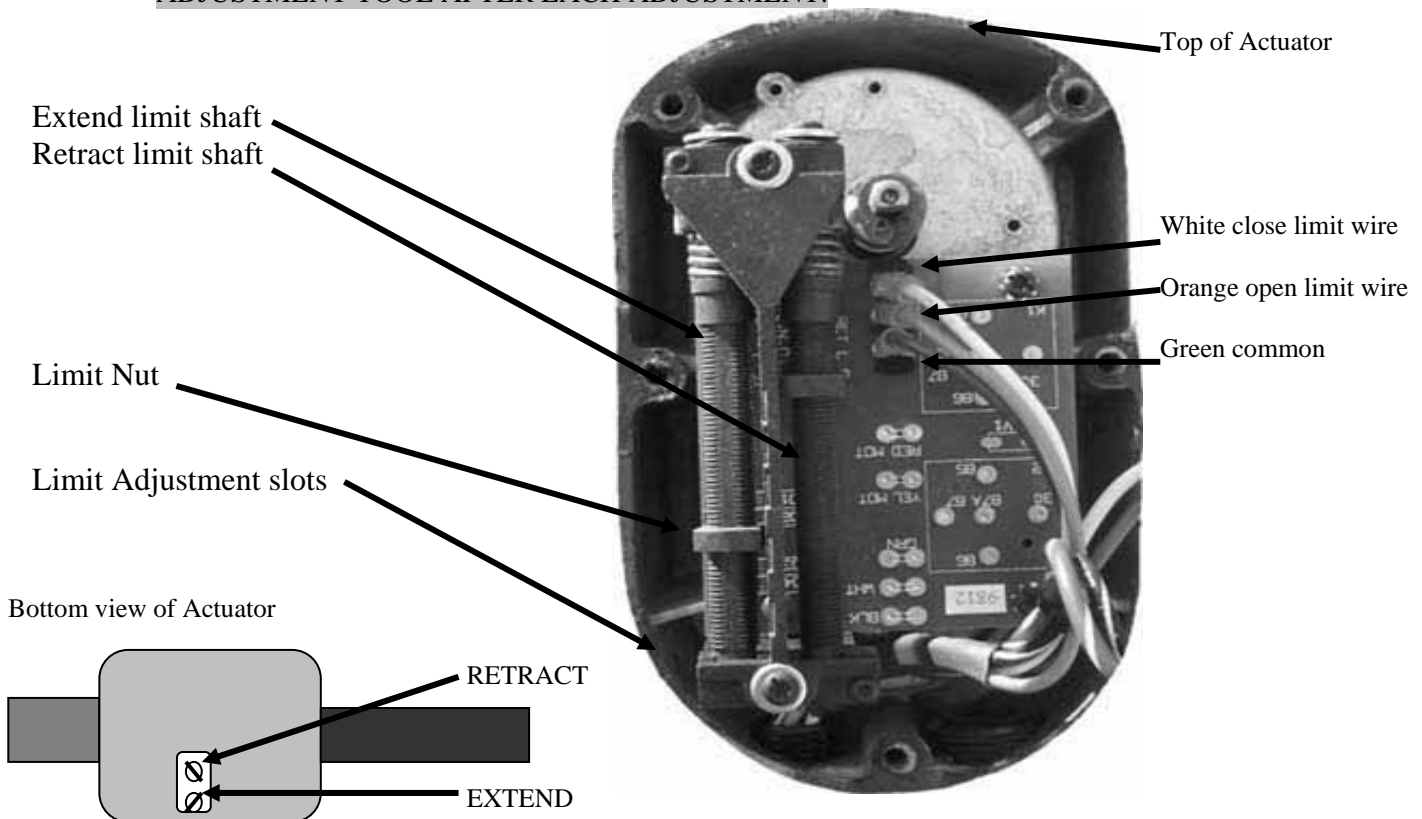


# Limit Switch Adjustment

The limit switch adjustments are located on the bottom of the actuator. Remove the dust plug to make adjustments. A flat blade screwdriver is included with the operator for adjustment purposes.

If soft stop is going to be used turn dipswitch 6 or 7 (see page 17) on at this time. Prior to operating the gate the actuator extension tube needs to be turned 6 turns in the counter clockwise direction. Disconnect from gate bracket to turn.

**NOTE:** ALL ADJUSTMENTS SHOULD BE MADE IN THE MID TRAVEL (1/2 OPEN) POSITION. DO NOT FORCE THE ADJUSTMENT; FORCING WILL DAMAGE THE LIMIT ASSEMBLY. REMOVE THE ADJUSTMENT TOOL AFTER EACH ADJUSTMENT.



**NOTE:** For adjustment purposes only you might find it easier to flip the actuator upside down to access the limit switch adjustment screws. Once adjustments are completed, flip the actuator back to the correct final installation position. See page 8, figure 6.

The following will assist you. Shown below are adjustments for pull to open and push to open installation.

## Pull to Open Installation Only

To extend more or close gate more.  
To extend less or close gate less.

To retract more or open gate more.  
To retract less or open gate less.

## Push to Open Installation Only

To extend more or open gate more.  
To extend less or open gate less.

To retract more or close gate more.  
To retract less or close gate less.

Turn the extend adjust clockwise.  
Turn the extend adjust counter clockwise.

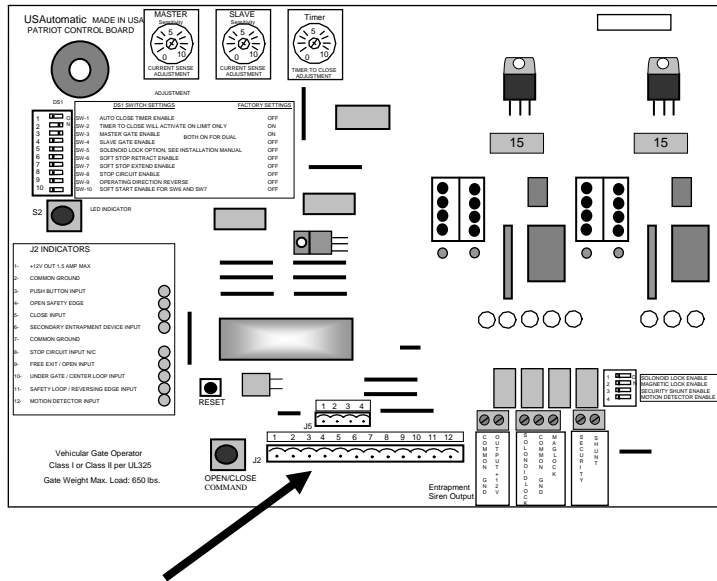
Turn the retract adjust clockwise.  
Turn the retract adjust counter clockwise.

Turn the extend adjust clockwise.  
Turn the extend adjust counter clockwise.

Turn the retract adjust clockwise.  
Turn the retract adjust counter clockwise.

# Circuit Board Terminal Description For Accessories

## Patriot Control Board



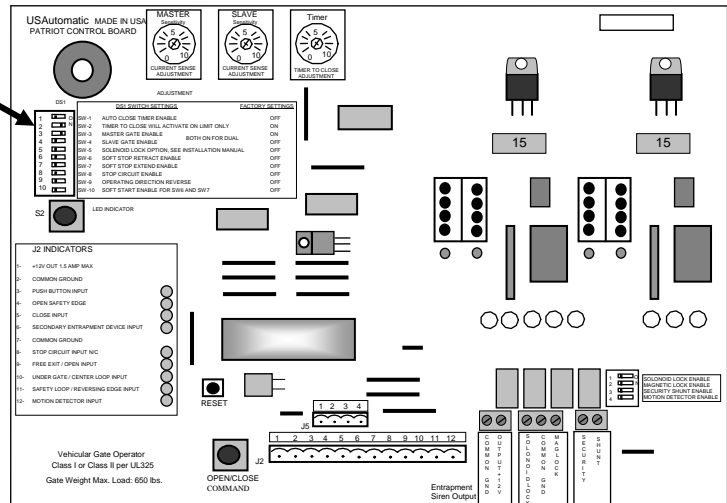
The Accessory connector is a plug, which can be removed from the control board for ease of wiring and troubleshooting purposes. Place finger below connector and pull out to remove.

### TERMINAL DESCRIPTION

- |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1</b>  | <b>+ 12 vdc Output.</b><br>*Maximum current output 1.5 amp (1500 milliamps)                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>2</b>  | <b>Common Ground Input</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>3</b>  | <b>Push Button Input.</b> (normally open contacts)<br>Push button, radio control, keypad, etc.                                                                                                                                                                                                                                                                                                                                                                              |
| <b>4</b>  | <b>Open Safety Edge</b> (normally open contacts)<br>(Stops gate when opening)                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>5</b>  | <b>Close Input</b> (normally open contacts)                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>6</b>  | <b>Secondary Entrapment Input</b> (normally open contacts)                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>7</b>  | <b>Common Ground Input</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>8</b>  | <b>Stop Circuit Input</b> (normally closed contacts)<br>* DS1 switch #8 must be on for stop circuit function to be enabled.                                                                                                                                                                                                                                                                                                                                                 |
| <b>9</b>  | <b>Free Exit/Open Input</b> (normally open contacts)<br>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. Receiver relay 2 pre-wired for latching open. |
| <b>10</b> | <b>Center Loop or Under Gate Loop Input</b> (normally open contacts)                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>11</b> | <b>Safety Loop/Photo-eye/Reversing Edge Input</b> (normally open contacts)                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>12</b> | <b>Motion Detector Input</b> (normally open contacts)<br>(Stops a closed gate from opening)(Active on close limit only)<br>* DS2 Switch 4 must be on for Motion Detector function to be enabled                                                                                                                                                                                                                                                                             |

# FUNCTION OF PROGRAM SWITCH SETTINGS – DS1

## DS1 Programming Dipswitches

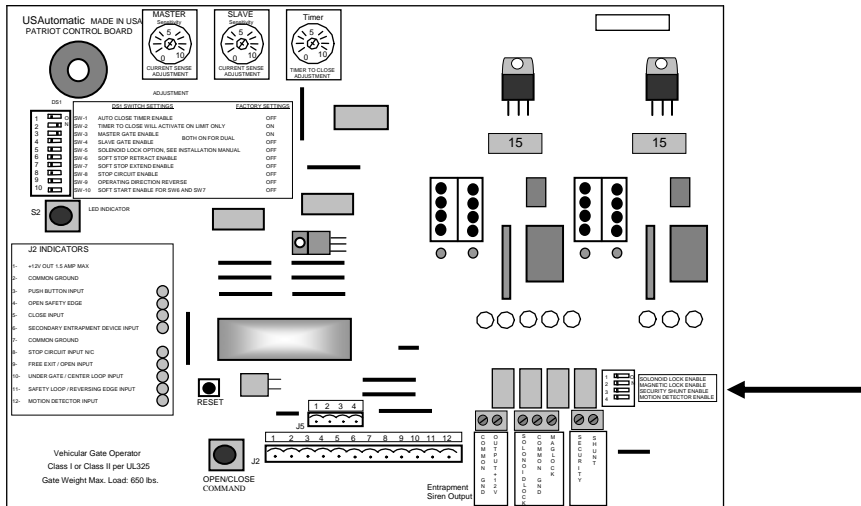


*Factory settings are shown in bold italic type*

- 1 Automatic Close Timer Enable (Not recommended unless safety devices are installed)  
**ON** Timer to close is activated (Adjustable from approximately 2 to 120 seconds)  
**OFF** *Timer to close is disabled*
- 2 Open limit timer to close function  
**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 (Both Master and Slave on for dual)  
**ON** Slave gate operator enabled to function  
**OFF** *Slave gate operator disabled*
- 5 Solenoid Lock Option, (See Accessory Wiring page 35)  
**ON** DS2 SW 1 must be on, output +12 vdc with delay when gate is operating  
**OFF** *No function, see DS 2 SW 1 page 18 for more information*
- 6 Soft Stop Retract Enable  
**ON** Enables soft stop for retract position  
**OFF** *Disables soft stop for retract position*
- 7 Soft Stop Extend Enable  
**ON** Enables soft stop for extend position  
**OFF** *Disables soft stop for extend position*
- 8 Stop circuit enable \* A normally closed pushbutton is required  
**ON** Allows for a stop button input to be utilized  
**OFF** *Disables the stop button function*
- 9 Operating Direction Reverse (must be on for push to open installations to operate correctly)  
**ON** Push to Open  
**OFF** *Pull to Open*
- 10 Not used at this time

# FUNCTION OF PROGRAM SWITCH SETTINGS – DS2

## DS2 Programming Dipswitches



### 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 releases 3 seconds after gate begins to move. For gate in operation indicator to operate DS1 SW 5 must also be ON.

(Energizes = +12 vdc output 1.5 amp max)

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

#### 2 Magnetic lock enable

**ON** Magnetic lock output energizes on Master Limit and releases half second before gate begins to open

(Energizes = +12 vdc output 1.5 amp max)

**OFF** *Magnetic lock output is inactive*

#### 3 Security Shunt Circuit Enable / Open Gate Indicator / Photo-Eye Power Control

**ON** Security shunt circuit relay is active (closed circuit)(wire in parallel)  
Relay activates half second before gate begins to open and stays activated until 4 seconds after gate reaches a closed limit.

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

#### 4 Motion Detector Enable

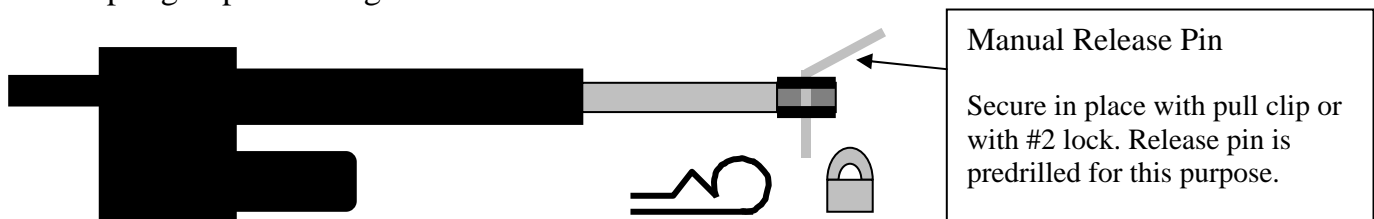
**ON** Enables motion detector input J2 pin 12 (if input is activated, gate will not open)

**OFF** *Disables motion detector input J2 pin 12*

## Emergency Manual Release

**NOTE:** Before detaching actuator arm from gate, turn DS1 dipswitch 3 and 4 to the “OFF” position (page 17). This will keep the actuator from operating while disconnected from the gate.

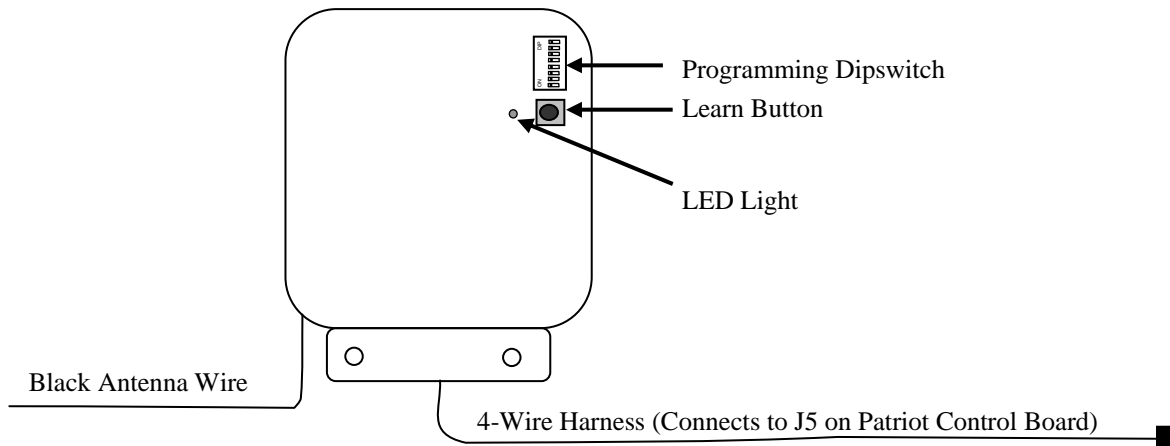
Remove the manual release pin at the gate bracket and open the gate by hand. Secure the gate before attempting to pass through.



# **STEP 16 RADIO EQUIPMENT INSTALLATION AND PROGRAMMING**

## **STEP 16a Oracle Enabled Operators**

Location of parts in Oracle Dual Frequency Gate Control Unit (“DFGCU”)



### DFGCU Programming Dipswitches

All dipswitches should remain in the off position. If the gate needs to be set for latch open, set feature as follows.

Switch 6 – Enable Latch Mode for output 2

<i>Off</i>	<i>No action</i>	<i>Factory Default</i>
On	Latch Mode Enabled	

## **STEP 16b Oracle DFGCU and Remote/Transmitter Programming**

The key fob and the Futura remote/transmitter supplied with the operator transmit on 315 MHz. If installing a Futura Pro remote/transmitter or other Oracle equipment working on 900MHz, please refer to Oracle documentation.

For HomeLink or other automobile transmitter programming, see your vehicle manual or dealer.

### **Learning Remote/Transmitter (Key fob or Futura) – 315 MHz**

- On the DFGCU, press and hold the learn button down until the red LED light is on solid
- Release the learn button and press the learn button again
  - When the red LED light starts flashing rapidly, release the learn button
- Press the remote/transmitter button you wish to learn to the gate operator
  - Multiple remote/transmitters can be programmed one after the other in quick succession
- Once all devices are programmed, wait 10 seconds for the red LED light to double blink four times to signify exiting learn mode

## **Total Remote/Transmitter Memory Deletion for Key Fob or Futura – 315 MHz**

- On the DFGCU, press and hold the learn button down until the LED is on solid
- Release the learn button and press the learn button again
- Hold the learn button down for 8 seconds or until the red LED light goes steady
- Release the learn button
- The red LED light will double blink four times to signify exiting learn mode

## **Latch Mode for DFGCU**

Turn the DFGCU dispswitch #6 on to enable latch mode for output 2.

To latch the gate open, the gate must be in either the fully open or fully closed position. If the gate is closed, press and hold the remote/transmitter button used to operate the gate down until the gate is fully open. Once the gate stops moving, release the remote/transmitter button.

If the gate is open, press and hold the remote/transmitter button used to operate the gate down. The gate should start to close. Keep holding the button down and the gate will stop and reverse to the fully open position. Once the gate stops moving, release the remote/transmitter button.

## **Release Gate from Latch Open Condition**

Press and hold the remote/transmitter button used to operate the gate down for 8 seconds. Then wait for close timer to close gate or press the remote/transmitter a second time to manually close the gate.

A command from any Oracle Pro 900 MHz devices installed on the system will release latch mode as well.. 900 MHz devices include: Futura Pro remote/transmitters, push to exit buttons, GAPS, Mini Gaps or wireless keypads.

## **Programming Other Oracle Devices To DFGCU**

Refer to the programming instructions supplied with your Oracle product for programming instructions.

## **STEP 16c LCR Remote/Transmitter & Receiver** (model 433DSR2LC) **Programming**

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 if activated.

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.*

## **SAFETY SECTION**

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

UL-325 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.

Patriot I and Patriot II gate operators are intended to be installed as Class I or Class II vehicular gate operators, and the maximum load of each gate leaf should not exceed 650 pounds with a length not to exceed sixteen feet.

## **SAFETY SECTION**

### **INSTALLATION**

Install the gate operator when:

- The operator is appropriate for the construction of the gate and the usage class is correct for the installation.
- All exposed pinch points are eliminated or guarded.
- Only install on vehicle gates, pedestrians must be supplied with a separate access opening.
- The gate is installed in a location where enough space is supplied between adjacent structures and the gate that when opening or closing the chance of entrapment is reduced.
- Swing gates shall not open into public access areas.
- The gate is properly installed and swings freely in both directions. Do not over adjust the sensitivity adjustment to compensate for an improper gate installation.
- 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.
- All placards must be installed one on each side of the gate visible in the gate area.
- Contact sensors used for secondary entrapment safety devices and their wiring must be installed in a manner protects them from mechanical damage.
- Non-Contact sensors used for secondary entrapment safety devices must be located so that the signal from the transmitter to the receiver is not interfered with by adjacent structures. All exposed wiring must also be protected from mechanical damage.

## **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 UL-325 listed safety devices.

**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.*



## **WARNING: TO REDUCE THE RISK OF INJURY OR DEATH**

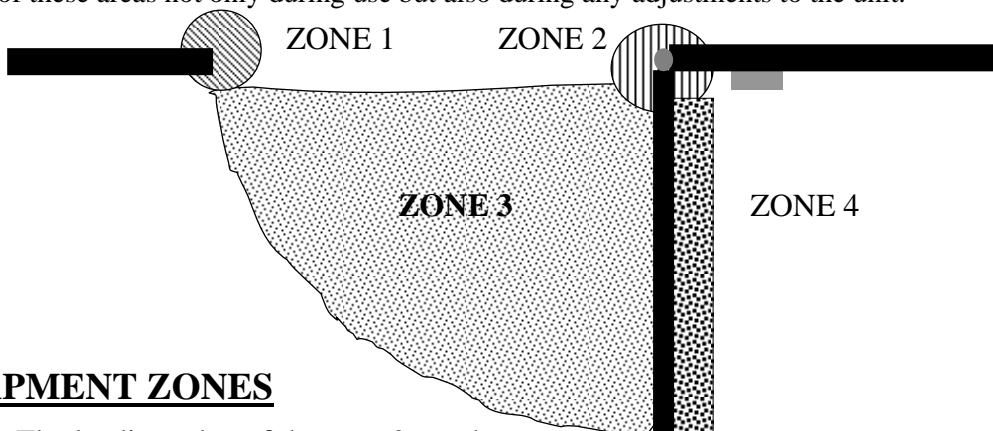
1. **READ AND FOLLOW ALL INSTRUCTIONS**
2. **Never let children operate or play with gate controls. Keep remote/transmitter control away from children.**
3. **Always keep people and objects away from the gate.**
4. **NO ONE SHOULD CROSS THE PATH OF A MOVING GATE.**
5. **Test gate operator monthly. The gate must stop and reverse directions upon contacting a rigid object or when the secondary entrapment device is activated.**
6. **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.**
7. **Verify that the emergency release (manual release) pin can be easily removed. This should only be checked when power is disconnected from the operator.**
8. **KEEP GATES PROPERLY MAINTAINED. Read the user manual and have a qualified service technician make repairs to the gate hardware.**
9. **THE ENTRANCE IS TO BE USED BY VEHICLES ONLY. Pedestrians must use a separate entrance.**
10. **SAVE THESE INSTRUCTIONS**

## **SAFETY SECTION**

All safety features required by UL-325 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/transmitter 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 only during use but also during any adjustments to the unit.



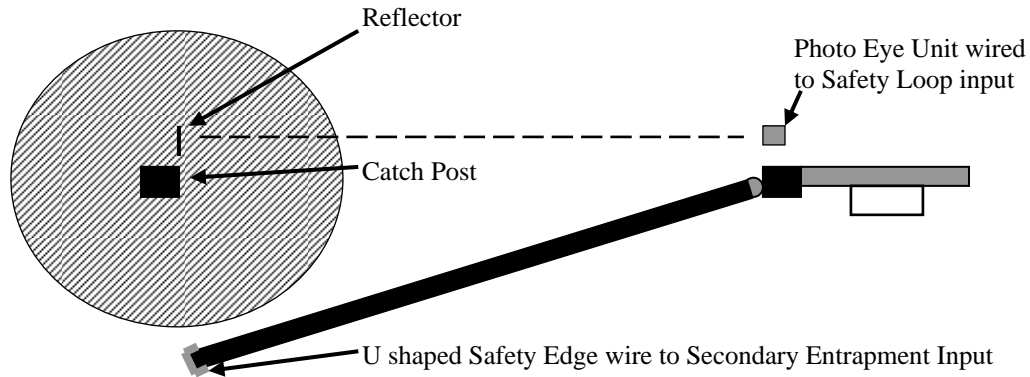
### **ENTRAPMENT ZONES**

- Zone 1 The leading edge of the gate & catch post.
- Zone 2 Between the gate and hinge post.
- Zone 3 The arc of the gate or gate path.
- Zone 4 The space between the gate when open and any obstruction such as fence, wall, landscaping, etc
- Zone 5 (Not shown above - see page 25) the point where two bi-parting gates come together when closing. This is similar to Zone 1.

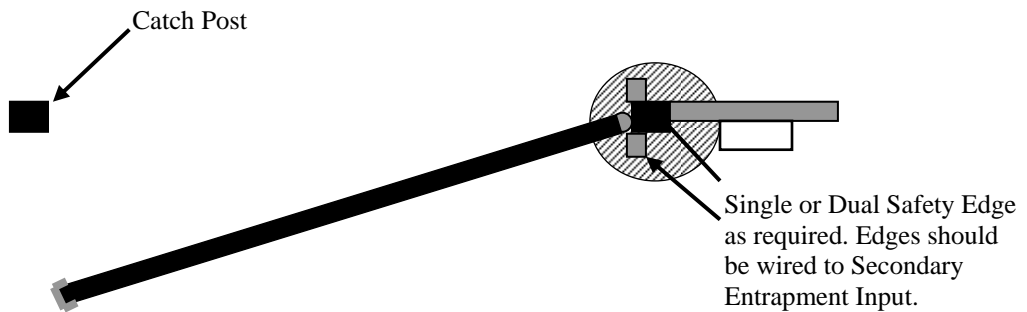
# SAFETY SECTION

## 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 hinges. Most injuries at this point result from negligence, such as reaching through the hinge area or the gate to activate a button, key switch, etc.



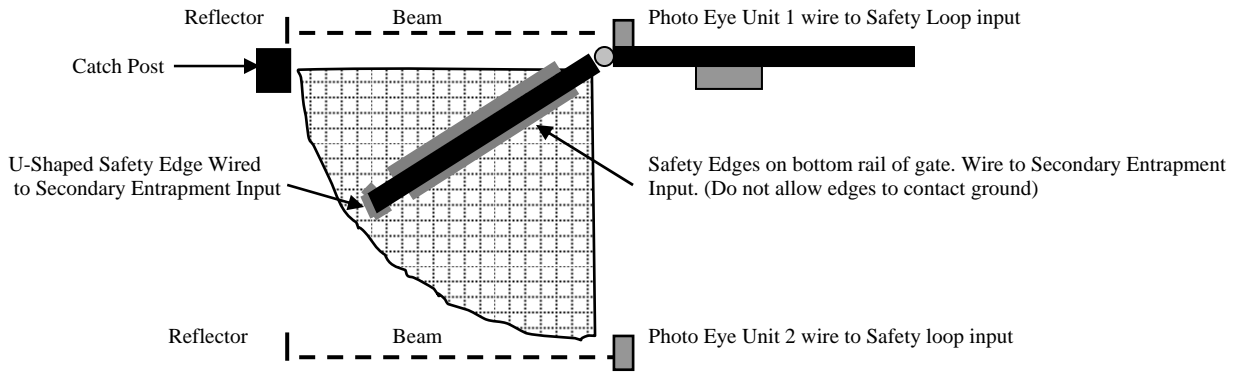
**NOTE:** All control stations should be located at least 6 feet from any moving part of the gate or operator.

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

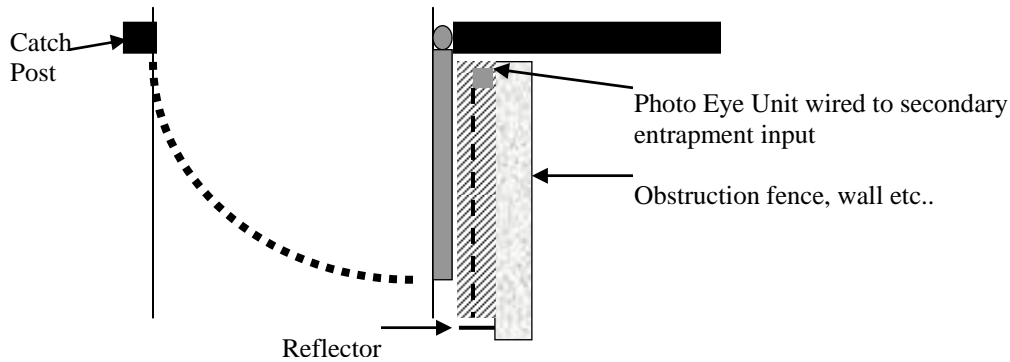
# SAFETY SECTION

## Remedies for Safety Concerns

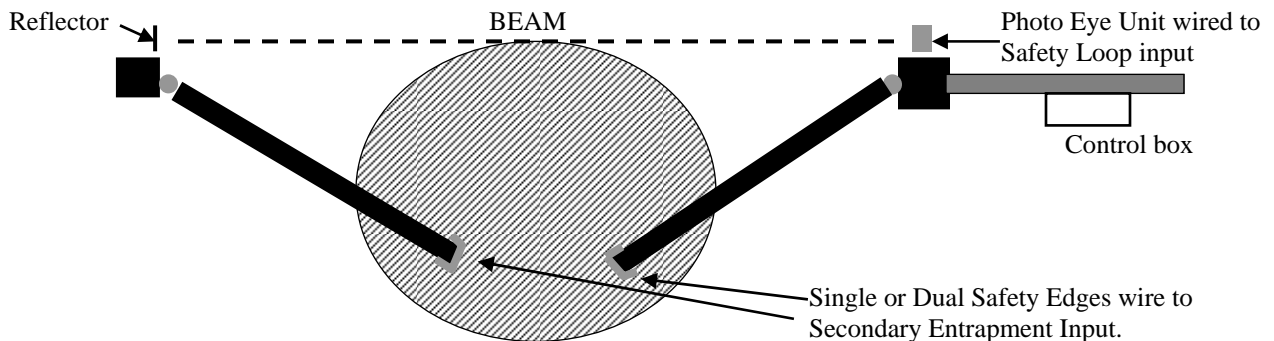
**Zone 3** Safety edges are the best protection. A photo eye may also be used. For vehicle traffic, magnetic vehicle detectors and wire sensing loops are preferred.



**Zone 4** This area is best protected with a photo eye wired to the secondary entrapment input. The beam should be installed parallel to the gate in the open position or along the obstructing wall or fence.



**Zone 5** Safety edges and photo eyes are the most common types of protection available.



**NOTE:** When gates are fully closed, Safety Edges must not contact each other. This can cause false obstruction sensing

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.

# Periodic 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:

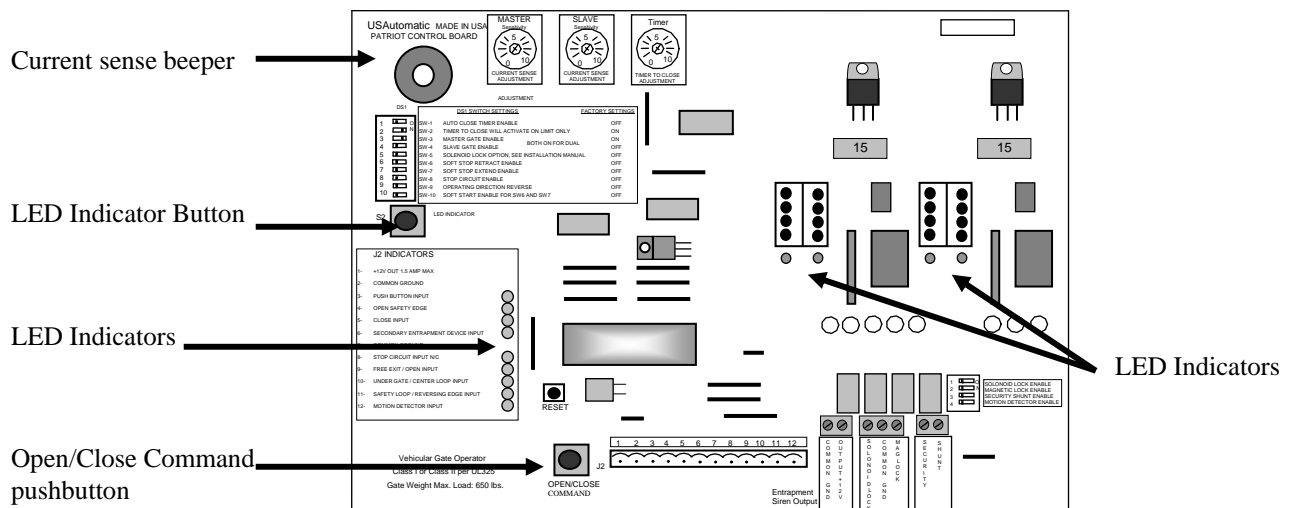
1. Check battery connections and verify terminals are clean. Maintenance free batteries recommended.
2. Hinges and pivot points need to be greased. Apply grease to actuator stainless tube as needed.
3. Bolts for correct tightness.
4. Inspect weld points for cracks or other defects.
5. Inspect wiring for cuts, nicks or other defects.
6. Inspect hinge post to ensure it is not moving or twisting.
7. If AC charger is used verify proper charger operation. Refer to charger instructions.
8. Verify that the inside of the control cabinet remains clean and free of insects. Do not spray control board with bug spray.

# Troubleshooting Guide

## Introduction

The Patriot 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 actuator limit switches and all control circuits. To use the indicators, press and hold the “LED Indicator” button on the control board. (The LED’s are not active unless the LED indicator push button is pressed and held to save battery life). Any circuits or limit switches that are activated will be obvious by the illumination of the adjacent LED.
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 which 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 Single gate will not operate.
- 2 Dual gate will not operate.
- 3 Single or Dual gate opens or closes slowly.
- 4 Gate will not automatically close.
- 5 Gate begins to open or close, but stops and reverses after a couple of seconds.
- 6 Single Gate opens correctly then closes immediately or single Gate closes correctly and then opens immediately.
- 7 Dual Gate opens correctly then closes immediately or dual Gate closes correctly then opens immediately.
- 8 Control board 15 amp fuse blows when “Open / Close Command” is given.
- 9 Remote/Transmitter will not operate the gate. (Multi-Code/Digi-Code and Low Current Receiver models)
- 10 Photo eye, safety loop or other safety accessory will not reverse the gate when closing.
- 11 Pressing the “RESET” button only, causes the gate to operate.
- 12 Gate opens with the transmitter but will not close with the transmitter
- 13 Gate only operates when the “LED INDICATOR” is pressed.
- 14 Oracle Remote/Transmitter will not operate the gate.

### **Terms and Definitions**

- LED - Light Emitting Diode - small red lights on control board.
- Control board- Located inside the metal box in the upper right corner.
- Receiver - Located inside the metal box in the upper left corner - coax cable connected to it.
- Remote/  
Transmitter - Hand held push button, which is used to operate the gate - sends signal to receiver.
- Actuator - Connected to gate and hinge post - contains the motor, gearbox and extension tube.
- Connector - Control board has three types of connectors. Two white 8-pin connectors (X1 and X2) are used to connect actuator to control board, one green 12-pin connector (J2) (located bottom center of control board) to connect third party receivers and accessories to control board and one white 4-pin connector (J5) to connect Oracle Enabled DFGCU to control board. All three 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, is located in the lower right corner of the control board with functions listed beside each. See manual (page 17-18) for more information.
- Push Buttons - Three are located on the control board. “Open / Close Command” used to operate the gate, “LED Indicator” used to activate the LED’s and “Reset” used to reset the control board after current sensing twice before a limit is reached.

**Note: Never run the actuator while it is disconnected from the gate. Damage may occur. Always have the actuator connected during troubleshooting in case the operator starts working to prevent damaging internal components.**

## **1. My single gate will not operate Patriot I:**

- 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” button, 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 a 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 actuator is connected to the control board (Master or Slave). If switches are correct and the fuse is good and clicking sound is heard, then the battery needs to be load tested to determine its condition. Charge or replace the battery depending on results. Try connecting jumper cables from your 12vdc vehicle’s battery to the gate operator’s battery as a quick battery test.
- STEP 4 Press and hold the “LED Indicator” push button and observe all of the red LED’s (see page 26 for location):
- If the two limit LED’s located below the actuator plug are both on, the operator will not operate. You must adjust the limit switch (see page 15.) Example: If both limit LED’s are on when the gate is in the closed position, and actuator is connected to the gate, the problem is with the open limit switch. Adjust the open limit until the LED goes off and continue to adjust until the gate is at the desired stopping position. Both LED’s should never be on simultaneously.
  - 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 the accessory 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, reconnect the green J2 connector and go to step 4b above.
- STEP 6 Verify that DS1 switch 8 is off.
- STEP 7 Disconnect the actuator connector plugged into the control board (X1 or X2). Reconnect the actuator connector to the control board in the other connector (X2 or X1.) Locate the DS1 dipswitches on the control board. Reverse the position of switches 3 and 4. Press the “Open/Close Command” button and verify if the gate operates.

Note: Make sure there is a known good fuse in the side of the board the actuator cable is plugged into.

- STEP 8 Call the factory for more information if the above steps have not worked.

## **2. My dual gate will not operate Patriot II:**

- STEP 1 Follow steps 1 through 6 above.
- STEP 2 Disconnect both of the actuator connectors plugged into the control board (X1 and X2). Then locate the DS1 dipswitches on the control board. Turn off switch 4 (slide to the left) and turn on switch 3 (slide to right).  
Reconnect the connector from the actuator that goes to the gate closest to you. Connect it to the Master (X1) connector on the control board. Press the “Open/Close Command” button and verify that the gate operates.
- STEP 3 If the gate operates correctly, disconnect the actuator plug and connect the other actuator plug into the X1 connector. Press the “Open/Close Command” button and verify that the gate operates correctly. At this point you have tested each actuator individually. If both worked correctly then go back to DS1

and turn switch 3 off and switch 4 on. Then repeat step 2 and 3 again using X2 connector on control board in place of X1.

**STEP 4** If a problem is observed in steps 2 or 3 above most likely it was when the slave actuator (located the greatest distance from control box) was being tested. If this is correct check wiring splices for moisture, correct wiring etc. If the wiring is not in watertight conduit, this is most likely the problem. Tape is not watertight.

### **3. My gate opens/closes slowly:**

**NOTE:** When the gate is running slow the reason is low battery voltage. Two things need to be considered. Battery condition (replace or charge) and what caused the battery to become discharged.

**STEP 1** Determine which situation your operator falls into below:

**Solar charged:** ensure that you have a 33 amp hour minimum maintenance free battery lead acid, GEL or AGM 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 charge controller leads are connected to the battery correctly; panel is facing a Southwestern 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 charge controller wires from battery. Using a DC voltmeter, measure the dc voltage (should measure about 22 volts) and the dc current (should read about 225 ma or more) in the peak sun period. If either of these readings is incorrect the panel may be defective please call the factory. Reconnect panel to charge controller.

If none of the above check bad, replace all ring terminals connected to the battery that are possibly corroded. If problem persists then remove battery and have it load tested at a battery shop. Replace if bad.

**AC charged;** ensure that you have a 33 amp hour maintenance free lead acid, GEL or AGM battery. 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 a working approved 110 VAC receptacle. Inspect charger and wires for damage.

**NOTE:** The USAutomatic multi stage charger does not output any voltage or current 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 voltage reading. 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 charger LED's that are on or not and refer to the troubleshooting directions furnished with the charger for definitions of different charger 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.

### **4. 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. 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 observe 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. The limit switches need to be adjusted.

- 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 LED’s 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. 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 or replaced.

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

- STEP 1 Remove control box cover and locate the Patriot control board. Locate the sensitivity adjustment potentiometer (see page 12) 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 8, there is a good chance that your gate has a mechanical problem which needs to be corrected. Possible causes are incorrect hinges, gate touching the ground, gate not level or the actuator arm connected to the gate is bent. Identify and correct problem.

**6. Single Gate opens or closes correctly, then immediately reverses direction:**

- STEP 1 This is most likely caused by an incorrect limit switch adjustment. The limit switch adjustments are located on the bottom of the actuator motor housing, behind the removable rubber plug. Locate the limit switch adjustment screws and determine which one needs to be adjusted (see page 15). Operate the gate. Once it reaches the desired open or close position, stop the gate in that position using the transmitter or “Open/Close Command” push button located on the Patriot control board.
- STEP 2 Locate the “LED Indicator” push button located on the left side of the Patriot control board. Also locate the open and close LED indicators below the actuator plug on the Patriot control board. The left LED represents the open position and the right LED represents the close position. (See note below)
- STEP 3 With the gate in the desired open or close position, press and hold the “LED Indicator.” Observe which of the LED lights come on. If your gate is in the desired open position, then the LED on the left should be on. If not, adjust the retract limit switch (see page 15) until the LED comes on. If gate was in the close position adjust the extend limit switch until the close LED comes on.

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



STEP 4 Once adjusted correctly, the open LED should be on when the gate is opened and the close LED should be on when the gate is closed.

STEP 5 If the LED's will not come on contact the factory.

**7. Dual Gate opens or closes correctly then immediately reverses direction:**

STEP 1 This is most likely caused by an incorrect limit switch adjustment. First determine which gate is in need of adjustment.

STEP 2 Locate the DS1 switches on the Patriot control board. Switch 3 and 4 should be turned on for a dual gate, turn off switch 4. This will disable one gate.

STEP 3 Operate the gate and verify that it stops in the correct position. If so then turn switch 4 back on and turn switch 3 off. Operate the other gate now and verify that it stops in the correct position. One or both should not stop in the correct position.

STEP 4 Once the gate that needs adjustment is identified (possibly both) refer to problem 6, steps 1 through 5 for instructions.

**8. 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. A wiring problem is most likely in a splice that might have been made during installation or it could be in the actuator housing.

STEP 2 Open the control box and locate the Patriot control board, locate the 2 LED's under the actuator connector on the control board. Press the "LED Indicator" push button and hold it in, observe the LED's 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 section 4, page 30.

STEP 3 If the open limit LED is on and the gate is closed, a command to operate the gate will try to close the gate more, which can blow a fuse. If the close limit LED is on and the gate is open a command to operate the gate will try to open 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. The cause generally has to do with wiring; bad actuator plug connection at the Patriot control board or too much adjustment has been made during installation.

STEP 4 If a wiring problem is suspected, the orange, white and green wires are the ones to concentrate on. Check all splices and verify actuator connector is connected at the control board.

STEP 5 If the actuator is suspected of being bad either due to an internal wiring problem or a motor problem, call the factory for further troubleshooting and return information.

**9. Remote/Transmitter will not operate the gate (Identify radio equipment being used)**

STEP 1 Open the control box and locate the Patriot control board. Locate the "LED Indicator" push button and the "Push Button Input" LED. Push and hold the "LED Indicator" push button, then press the transmitter button and observe the "Push Button Input" LED. The LED should come on while the transmitter button is depressed.

**Note:** Step 2 for Multi-Code / Digi-Code radio equipment

STEP 2 If the "Push Button LED" did not come on, make sure that the green J2 connector on the control board is securely connected. Replace the battery in the transmitter and verify that the dipswitches located in the transmitter (above battery) are set identical to the ones located in you receiver. Remove the receiver cover by squeezing the sides and locate the dipswitches inside.

**Note:** STEP 2a for Low Current Receiver radio equipment

- STEP 2a If the “Push Button Input” LED did not come on in step 1 then make sure that the green J2 connector on the control board is securely connected, replace the battery in the transmitter and verify that the transmitter is programmed to operate the receiver (refer to page 21 “LCR Remote/Transmitter Programming .”)
- STEP 3 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 4 If the gate did not operate in step 3, verify 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 5 If the gate did not operate in step 3 and the fuse was good in step 4, 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 LED’s located in the lower left corner of the Patriot control board. If an LED is on, identify the accessory connected to the corresponding J2 connector pin and correct the problem.
- STEP 6 Other possibilities are: the open and close limit LED’s are both on at the same time, adjust limit switches; control board is defective or battery could be too weak to operate the gate. Please call the factory for help identifying the cause.

**10. 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 (+12 vdc) 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 negative terminal or to J2 pin 2 or 7 on the Patriot control board. The other two connections are the “N/O (Normally Open) 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 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 light, check the wiring on the J2 connector and check J2 connector connection to the Patriot control board. If wiring is good, then the accessory is not operating correctly. Repair.
- 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.

**11. 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 LED 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.

**12. 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 21 “Resetting receiver P2 relay to momentary mode”
- STEP 6 If this does not correct the problem return to troubleshooting section 4 and perform steps 1-6.
- STEP 7 If problem is not corrected; call the factory for further troubleshooting.

**13. 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 will take a little patience in locating the problem.
- STEP 2 Verify that the problem exists 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 the “Led Indicator” on the control board and hold 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. Most likely there is 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.

NOTE: If you have a DC volt meter, check the following. Set the gate to the fully open or close position and verify that an open or close limit LED is on when the led indicator is pressed. Take voltage reading on the following J2 connector terminals. Pin 3,4,5,6,8,9,10,11,12. The reading should be 5 vdc. A reading of approximately 2 or 3 vdc indicates a problem. Call the factory for corrective action. This could indicate a bad LED on the corresponding J2 connector pin which can be resolved by removing the LED light from the control board.

**14. Oracle Remote/Transmitter will not operate the gate**

- STEP 1 Press and hold the LED indicator on the control board
- STEP 2 Press the Remote/Transmitter button to operate the gate, the push button input LED on the control board should light. If it does not verify wiring from DFGCU receiver to J5 is not damaged.
- STEP 3 If wiring checked good, verify batteries in remote/transmitter are good. Replace battery if necessary.
- STEP 4 If problem persist refer to page 19 and try “Learning remote/transmitter” again.
- STEP 5 If relearning the remote/transmitter to DFGCU receiver does not correct problem, call factory for help.

## 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.

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.

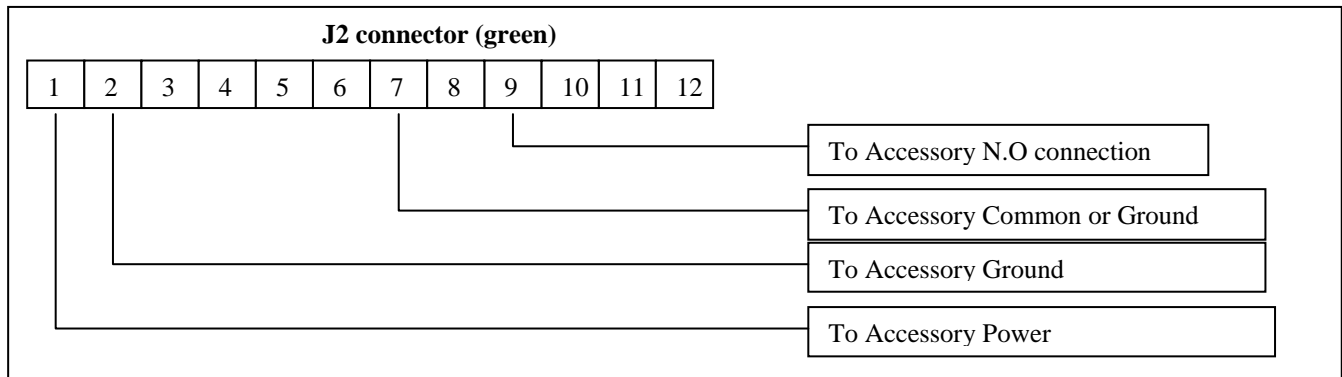
First group of 2 wires are the power wires – voltage connection and ground

Second group of 2 wires are the control wires- N/O connection and common ground or ground

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

The common, common ground or ground connection should be made at J2 pin 2 or 7 on the Patriot control board. In addition the J1 pin 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 should be made at J2 pin? (Identify desired function- see page 16) on the Patriot control board. For example, 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 16 of this manual to understand J2 inputs and 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 18).

## **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. Solar friendly accessories are essential in designing a proper solar gate operator. Contact USAutomatic for information on recommended solar friendly accessories for your solar gate operator.

### **Safety Accessories**

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

Safety Loops, Photo Eyes and/or Motion Detectors

### **Secondary Entrapment Accessories**

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

Contact Edge (wireless), Contact Edge (wired) and/or 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 and/or Long Range Receiver and Transmitter

### **Security Accessories**

Magnetic Lock, Solenoid Lock, Stone Lock, Perimeter Security and/or Proximity Sensor

### **Other Accessories**

3 Button Station, Gate Open Indicator, Gate In Motion Indicator Visual, and/or Gate In Motion Indicator Audible

## **Accessory Wiring**

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

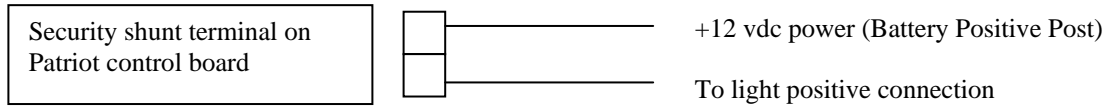
**Solenoid Lock** – This is a +12 vdc output that can output +12 volts two different ways.

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.

**Security Shunt** – This 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 vdc 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 ground or negative post. Light will come on when the gate is not closed. This can in most cases be used to power a Photo Eye in solar applications to reduce battery drain as shown below.

### **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.

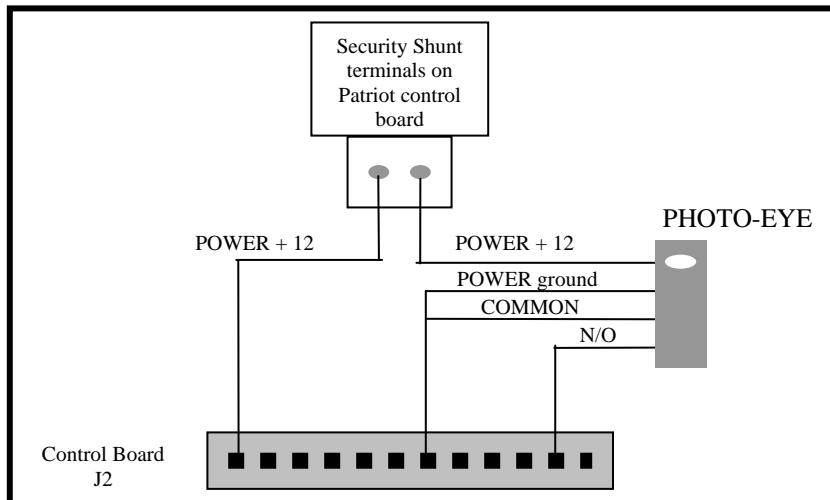
If wired as follows.

**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. Gate open power is on. Contact the factory for more information.**

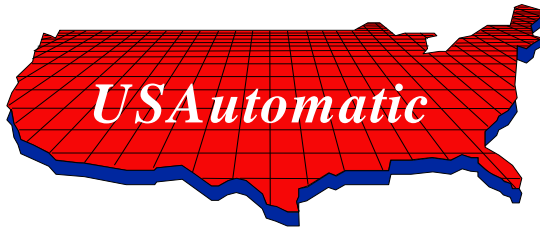
The photo-eye should have 4 wires that need to be identified:

- 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 18) and turn on the security shunt circuit enable dipswitch.







***PATRIOT I***  
***PATRIOT II***  
**Limited 5 Year**  
**Warranty**

The PATRIOT 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 36 months on all other components. Any part, parts, or complete unit found to be defective within this period would, 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.

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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.