

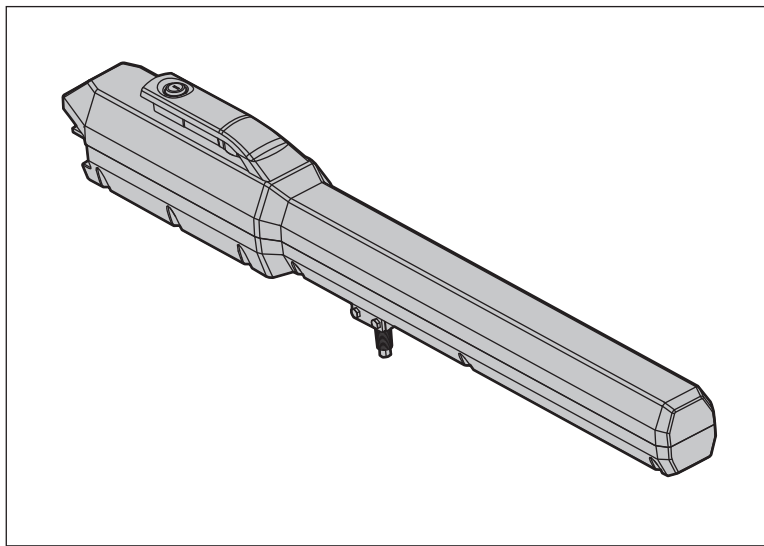
# LiftMaster®

ELITE SERIES®

## LA500 & LA500-S

### VEHICULAR SWING GATE OPERATOR

#### INSTALLATION MANUAL



*Your model may look different than the model illustrated in this manual.*

**THIS PRODUCT IS TO BE  
INSTALLED AND SERVICED BY  
A TRAINED GATE SYSTEMS  
TECHNICIAN ONLY.**

Visit [www.liftmaster.com](http://www.liftmaster.com) to  
locate a professional installing  
dealer in your area.

This model is for use on vehicular  
passage gates **ONLY** and not  
intended for use on pedestrian  
passage gates.

This model is intended for use in  
Class I, II, III and IV vehicular swing  
gate applications.

**UL325**  
compliant



**UL991**  
compliant



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## SAFETY

When you see these Safety Symbols and Signal Words on the following pages, they will alert you to the possibility of serious injury or death if you do not comply with the warnings that accompany them. The hazard may come from something mechanical or from electric shock. Read the warnings carefully.

When you see this Signal Word on the following pages, it will alert you to the possibility of damage to your gate and/or the gate operator if you do not comply with the cautionary statements that accompany it. Read them carefully.

### IMPORTANT NOTE

- *BEFORE attempting to install, operate or maintain the operator, you must read and fully understand this manual and follow all safety instructions.*
- *DO NOT attempt repair or service of your gate operator unless you are an Authorized Service Technician.*

### SAFETY SYMBOL AND SIGNAL WORD REVIEW

 **WARNING**

MECHANICAL

 **WARNING**

ELECTRICAL

**CAUTION**

### UL325 MODEL CLASSIFICATIONS

#### 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

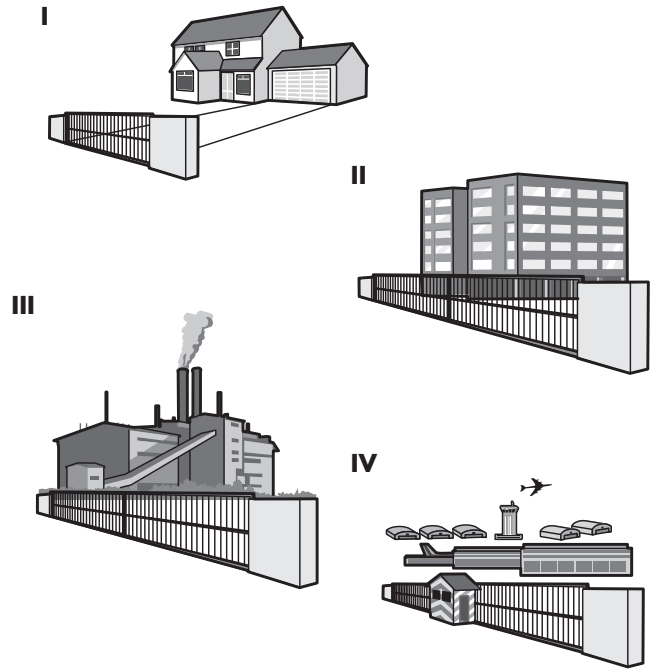
A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units) hotel, garage, retail store or other building servicing the general public.

#### CLASS III – INDUSTRIAL/LIMITED ACCESS VEHICULAR GATE OPERATOR

A vehicular gate operator (or system) intended for use in a industrial location or building such as a factory or loading dock area or other location not intended to service 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.



### UL325 ENTRAPMENT PROTECTION REQUIREMENTS

This chart illustrates the entrapment protection requirements for the UL325 classes.

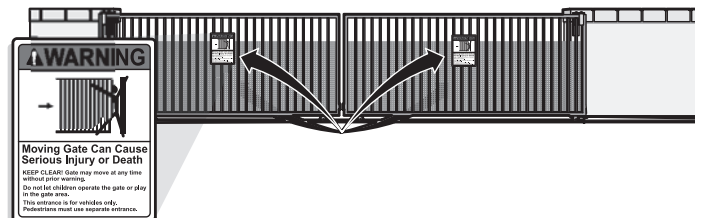
GATE OPERATOR ENTRAPMENT PROTECTION		
UL325 Classification	Swing Gate Operator	
	Primary Type	Secondary Type
CLASS I-CLASS IV	A	B1 or B2

In order to complete a proper installation you must satisfy the entrapment protection chart shown. That means that the installation must have one primary means of entrapment protection and one independent secondary means of entrapment protection. Both primary and secondary entrapment protection methods must be designed, arranged or configured to protect against entrapments in both the open and close directions of gate travel.

For Example: For a gate system that is installed on a single-family residence (UL325 Class I) you must provide the following: As your primary type of entrapment protection you must provide

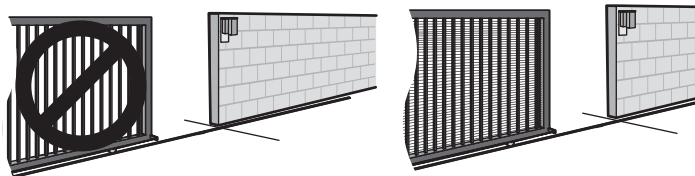
- Type A - Inherent (built into the operator) entrapment sensing and at least one of the following as your secondary entrapment protection:
- Type B1 - Non-contact sensors such as photoelectric sensors,
- Type B2 - Contact sensors such as gate edges

**NOTE:** UL requires that all installations must have warning signs placed in plain view on both sides of the gate to warn pedestrians of the dangers of motorized gate systems.



### SAFETY INSTALLATION INFORMATION

1. Vehicular gate systems provide convenience and security. Gate systems are comprised of many component parts. The gate operator is only one component. Each gate system is specifically designed for an individual application.
2. Gate operating system designers, installers and users must take into account the possible hazards associated with each individual application. Improperly designed, installed or maintained systems can create risks for the user as well as the bystander. Gate systems design and installation must reduce public exposure to potential hazards.
3. A gate operator can create high levels of force in its function as a component part of a gate system. Therefore, safety features must be incorporated into every design. Specific safety features include:
  - Gate Edges
  - Photoelectric Sensors
  - Vertical Posts
  - Guards for Exposed Rollers
  - Screen Mesh
  - Instructional and Precautionary Signage
4. Install the gate operator only when:
  - a. The operator is appropriate for the construction and the usage class of the gate.
  - b. All openings of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 4 feet (1.2 m) above the ground to prevent a 2-1/4 inches (6 cm) diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that the gate covers in the open position.



- c. All exposed pinch points are eliminated or guarded, and guarding is supplied for exposed rollers.
5. The operator is intended for installation only on gates used for vehicles. Pedestrians must be supplied with a separate access opening. The pedestrian access opening shall be designed to promote pedestrian usage. Locate the gate such that persons will not come in contact with the vehicular gate during the entire path of travel of the vehicular gate.

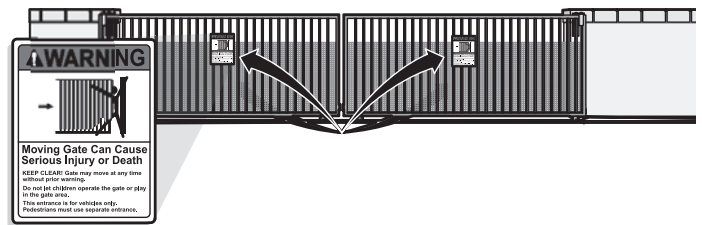


6. The gate must be installed in a location so that enough clearance is supplied between the gate and adjacent structures when opening and closing to reduce the risk of entrapment. Swinging gates shall not open into public access areas.
7. The gate must be properly installed and work freely in both directions prior to the installation of the gate operator.

8. Controls intended for user activation must be located at least 6 feet (1.8 m) away from any moving part of the gate and where the user is prevented from reaching over, under, around or through the gate to operate the controls. Outdoor or easily accessible controls shall have a security feature to prevent unauthorized use.



9. The Stop and/or Reset (if provided separately) must be located in the line-of-sight of the gate. Activation of the reset control shall not cause the operator to start.
10. A minimum of two (2) WARNING SIGNS shall be installed, one on each side of the gate where easily visible.



11. For a gate operator utilizing a non-contact sensor:
  - a. Reference owner's manual regarding placement of non-contact sensor for each type of application.
  - b. Care shall be exercised to reduce the risk of nuisance tripping, such as when a vehicle trips the sensor while the gate is still moving.
  - c. One or more non-contact sensors shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate or barrier.
12. For a gate operator utilizing a contact sensor such as an edge sensor:
  - a. One or more contact sensors shall be located where the risk of entrapment or obstruction exists, such as at the leading edge, trailing edge and post mounted both inside and outside of a vehicular horizontal slide gate.
  - b. One or more contact sensors shall be located at the bottom edge of a vehicular vertical lift gate.
  - c. A hard wired contact sensor shall be located and its wiring arranged so the communication between the sensor and the gate operator is not subject to mechanical damage.
  - d. A wireless contact sensor such as the one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions shall be located where the transmission of the signals are not obstructed or impeded by building structures, natural landscaping or similar obstruction. A wireless contact sensor shall function under the intended end-use conditions.
  - e. One or more contact sensors shall be located on the inside and outside leading edge of a swing gate. Additionally, if the bottom edge of a swing gate is greater than 6 inches (152 mm) above the ground at any point in its arc of travel, one or more contact sensors shall be located on the bottom edge.
  - f. One or more contact sensors shall be located at the bottom edge of a vertical barrier (arm).

### GATE CONSTRUCTION INFORMATION

Vehicular gates should be installed in accordance with ASTM F2200: Standard Specification for Automated Vehicular Gate Construction. For a copy, contact ASTM directly at 610-832-9585 or [www.astm.org](http://www.astm.org).

#### 1. GENERAL REQUIREMENTS

- 1.1 Gates shall be constructed in accordance with the provisions given for the appropriate gate type listed, refer to ASTM F2200 for additional gate types.
- 1.2 Gates shall be designed, constructed and installed to not fall over more than 45 degrees from the vertical plane, when a gate is detached from the supporting hardware.
- 1.3 Gates shall have smooth bottom edges, with vertical bottom edged protrusions not exceeding 0.50 inches (12.7 mm) when other than the exceptions listed in ASTM F2200.
- 1.4 The minimum height for barbed tape shall not be less than 8 feet (2.44 m) above grade and for barbed wire shall not be less than 6 feet (1.83 m) above grade.
- 1.5 An existing gate latch shall be disabled when a manually operated gate is retrofitted with a powered gate operator.
- 1.6 A gate latch shall not be installed on an automatically operated gate.
- 1.7 Protrusions shall not be permitted on any gate, refer to ASTM F2200 for Exceptions.
- 1.8 Gates shall be designed, constructed and installed such that their movement shall not be initiated by gravity when an automatic operator is disconnected.
- 1.9 A pedestrian gate shall not be incorporated into a vehicular gate panel or that portion of the adjacent fence that the gate covers in the open position.

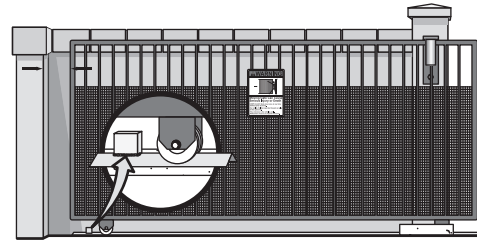
#### 2. SPECIFIC APPLICATIONS

- 2.1 Any non-automated gate that is to be automated shall be upgraded to conform to the provisions of this specification.
- 2.2 This specification shall not apply to gates generally used for pedestrian access and to vehicular gates not to be automated.
- 2.3 Any existing automated gate, when the operator requires replacement, shall be upgraded to conform to the provisions of this specification in effect at that time.

#### 3. VEHICULAR HORIZONTAL SLIDE GATES

- 3.1 The following provisions shall apply to Class I, Class II and Class III vehicular horizontal slide gates:
  - 3.1.1 All weight bearing exposed rollers 8 feet (2.44 m), or less, above grade shall be guarded or covered.
  - 3.1.2 All openings located between 48 inches (1.22 m) and 72 inches (1.83 m) above grade shall be designed, guarded or screened to prevent a 4 inch (102 mm) diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that covers in the open position.

- 3.1.3 A gap, measured in the horizontal plane parallel to the roadway, between a fixed stationary object nearest the roadway, (such as a gate support post) and the gate frame when the gate is in either the fully open position or the fully closed position, shall not exceed 2 1/4 inches (57 mm), refer to ASTM F2200 for Exception.
- 3.1.4 Positive stops shall be required to limit travel to the designed fully open and fully closed positions. These stops shall be installed at either the top of the gate, or at the bottom of the gate where such stops shall horizontally or vertically project no more than is required to perform their intended function.
- 3.1.5 All gates shall be designed with sufficient lateral stability to assure that the gate will enter a receiver guide, refer to ASTM F2200 for panel types.
- 3.2 The following provisions shall apply to Class IV vehicular horizontal slide gates:
  - 3.2.1 All weight bearing exposed rollers 8 feet (2.44 m), or less, above grade shall be guarded or covered.
  - 3.2.2 Positive stops shall be required to limit travel to the designed fully open and fully closed positions. These stops shall be installed at either the top of the gate, or at the bottom of the gate where such stops shall horizontally or vertically project no more than is required to perform their intended function.



#### 4. VEHICULAR HORIZONTAL SWING GATES

- 4.1 The following provisions shall apply to Class I, Class II and Class III vehicular horizontal swing gates:
  - 4.1.1 Gates shall be designed, constructed and installed so as not to create an entrapment area between the gate and the supporting structure or other fixed object when the gate moves toward the fully open position, subject to the provisions in the 4.1.1.1 and 4.1.1.2.
    - 4.1.1.1 The width of an object (such as a wall, pillar or column) covered by a swing gate when in the open position shall not exceed 4 inches (102 mm), measured from the centerline of the pivot point of the gate, refer to ASTM F2200 for exception.
    - 4.1.1.2 Except for the zone specified in Section 4.1.1.1, the distance between a fixed object such as a wall, pillar or column, and a swing gate when in the open position shall not be less than 16 inches (406 mm), refer to ASTM F2200 for exception.
  - 4.2 Class IV vehicular horizontal swing gates shall be designed, constructed and installed in accordance with security related parameters specific to the application in question.

### REQUIRED ENTRAPMENT PROTECTION DEVICES

#### WARNING

To prevent **SERIOUS INJURY** or **DEATH** from a moving gate:

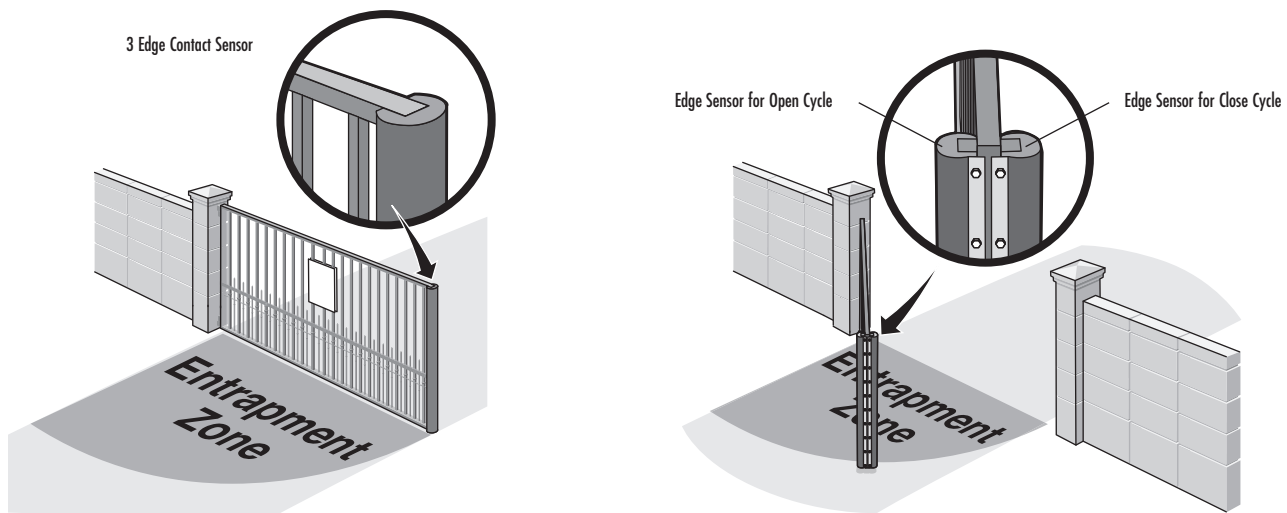
- Entrapment protection devices **MUST** be installed to protect anyone who may come near a moving gate.
- Locate entrapment protection devices to protect in **BOTH** the open and close gate cycles.
- Locate entrapment protection devices to protect between moving gate and **RIGID** objects, such as posts or walls.

An entrapment zone is every location or point of contact where a person can become entrapped between a moving gate and a stationary object. All gate operator systems **REQUIRE** two independent entrapment protection systems for each entrapment zone. This operator contains an inherent (internal) entrapment protection system (the primary entrapment protection system) and **REQUIRES** the addition of an external entrapment protection system (non-contact photoelectric sensor or contact safety edge sensor) for **EACH** entrapment zone.

Your application may contain one or many entrapment zones. Property owners are obligated to test entrapment protection devices monthly.

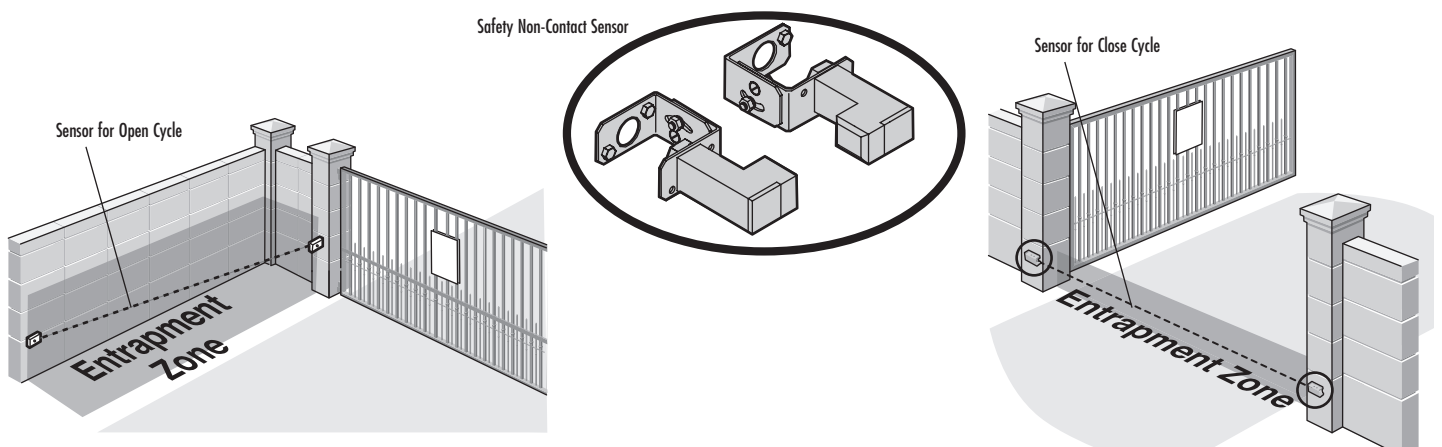
#### CONTACT SENSORS (EDGE SENSORS)

If the electrically activated edge sensor comes in contact with an obstruction while the gate is moving, the gate will stop and reverse. The gate will not be able to travel in that direction until the obstruction is cleared. Use non monitored edge sensor models G65MG0204, G65MGR020, or G65MGS020.



#### NON-CONTACT SENSORS

If the photoelectric sensor beam gets blocked while the gate is moving, the gate will stop and reverse. The gate will not be able to travel in that direction until the obstruction is cleared. It is best to use monitored photoelectric sensors, model CPS-UN4. If a monitored photoelectric sensor is not working or loses power or the beam is blocked, then **ALL** gate operation in that direction will stop. Unmonitored photoelectric sensor models AOMRON and RETROAB are also acceptable.



### IMPORTANT SAFETY INFORMATION

#### INSTALLATION

#### WARNING

To prevent **SERIOUS INJURY** or **DEATH** from a moving gate:

- Pinch points must be guarded at all times. Install enclosed-style gate tracks and roller guards.
- Place screen mesh 4 feet (1.2 m) high on the gate to prevent access through openings anywhere the gate may travel.
- Mount controls at least 6 feet (1.8 m) from the gate or ANY moving part of the gate.
- Install Warning signs on EACH side of gate in PLAIN VIEW. Permanently secure each Warning sign in a suitable manner using fastening holes.
- This operator is intended for vehicular use only. To prevent **INJURY** to pedestrians, a separate pedestrian access should be supplied, visible from the gate. Locate the pedestrian access where there is not a chance of **INJURY** at any point during full movement of the gate.
- Contact sensors **MUST** be located at the leading and trailing edges, and post mounted both inside and outside a horizontal swing gate. Non-contact sensors such as photo eyes **MUST** be mounted across the gate opening and operate during BOTH the open and close cycles.
- Entrapment protection devices **MUST** be installed to protect anyone who may come near a moving gate.
- Locate entrapment protection devices to protect in BOTH the open and close gate cycles.
- Locate entrapment protection devices to protect between moving gate and RIGID objects, such as posts or walls.
- Too much force on gate will interfere with proper operation of safety reversal system.
- NEVER increase force beyond minimum amount required to move gate.
- NEVER use force adjustments to compensate for a binding or sticking gate.
- If one control (force or travel limits) is adjusted, the other control may also need adjustment.
- After ANY adjustments are made, the safety reversal system **MUST** be tested. Gate **MUST** reverse on contact with a rigid object.
- DO NOT touch the heater when switch is on, heater may be hot.

#### CAUTION

- To **AVOID** damaging gas, power or other underground utility lines, contact underground utility locating companies **BEFORE** digging more than 18 inches (46 cm) deep.
- **ALWAYS** wear protective gloves and eye protection when changing the battery or working around the battery compartment.

#### WIRING

#### WARNING

To reduce the risk of **SEVERE INJURY** or **DEATH**:

- ANY maintenance to the operator or in the area near the operator **MUST NOT** be performed until disconnecting the electrical power (AC or solar and battery) and locking-out the power via the operator power switch. Upon completion of maintenance the area **MUST** be cleared and secured, at that time the unit may be returned to service.
- Disconnect power at the fuse box **BEFORE** proceeding. Operator **MUST** be properly grounded and connected in accordance with national and local electrical codes. **NOTE:** *The operator should be on a separate fused line of adequate capacity.*
- ALL electrical connections **MUST** be made by a qualified individual.
- **DO NOT** install ANY wiring or attempt to run the operator without consulting the wiring diagram. We recommend that you install an edge sensor **BEFORE** proceeding with the control station installation.
- ALL power wiring should be on a dedicated circuit and well protected. The location of the power disconnect should be visible and clearly labeled.
- ALL power and control wiring **MUST** be run in separate conduit.

#### ADJUSTMENT

#### WARNING

To reduce the risk of **SEVERE INJURY** or **DEATH**:

- Without a properly installed safety reversal system, persons (particularly small children) could be **SERIOUSLY INJURED** or **KILLED** by a moving gate.
- Too much force on gate will interfere with proper operation of safety reversal system.
- NEVER increase force beyond minimum amount required to move gate.
- NEVER use force adjustments to compensate for a binding or sticking gate.
- If one control (force or travel limits) is adjusted, the other control may also need adjustment.
- After ANY adjustments are made, the safety reversal system **MUST** be tested. Gate **MUST** reverse on contact with a rigid object.



### IMPORTANT SAFETY INFORMATION

#### ADDITIONAL FEATURES

#### WARNING

To prevent SERIOUS INJURY or DEATH from a moving gate:

- Entrapment protection devices **MUST** be installed to protect anyone who may come near a moving gate.
- Locate entrapment protection devices to protect in **BOTH** the open and close gate cycles.
- Locate entrapment protection devices to protect between moving gate and **RIGID** objects, such as posts or walls.

#### MAINTENANCE AND OPERATION

#### WARNING

To reduce the risk of SEVERE INJURY or DEATH:

- **READ AND FOLLOW ALL INSTRUCTIONS.**
- **ANY** maintenance to the operator or in the area near the operator **MUST NOT** be performed until disconnecting the electrical power (AC or solar and battery) and locking-out the power via the operator power switch. Upon completion of maintenance the area **MUST** be cleared and secured, at that time the unit may be returned to service.
- Disconnect power at the fuse box **BEFORE** proceeding. Operator **MUST** be properly grounded and connected in accordance with national and local electrical codes. **NOTE:** *The operator should be on a separate fused line of adequate capacity.*
- **NEVER** let children operate or play with gate controls. Keep the remote control away from children.
- **ALWAYS** keep people and objects away from the gate. **NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.**
- Test the gate operator monthly. The gate **MUST** reverse on contact with a rigid object or reverse when an object activates the non-contact sensors. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate operator properly can increase the risk of **INJURY** or **DEATH**.
- Use the manual disconnect release **ONLY** when the gate is not moving.
- **KEEP GATES PROPERLY MAINTAINED.** Read the owner's manual. Have a qualified service person make repairs to gate hardware.
- **ALL** maintenance **MUST** be performed by a LiftMaster professional.
- Activate gate **ONLY** when it can be seen clearly, is properly adjusted and there are no obstructions to gate travel.
- To reduce the risk of **FIRE** or **INJURY** to persons use **ONLY** LiftMaster part 29-NP712 for replacement batteries.
- **SAVE THESE INSTRUCTIONS.**

#### CAUTION

- **ALWAYS** wear protective gloves and eye protection when changing the battery or working around the battery compartment.

#### TROUBLESHOOTING

#### WARNING

To protect against fire and electrocution:

- **DISCONNECT** power (AC or solar and battery) **BEFORE** installing or servicing operator.

For continued protection against fire:

- Replace **ONLY** with fuse of same type and rating.

# INTRODUCTION

## OPERATOR SPECIFICATIONS + CARTON INVENTORY & OPERATOR DIMENSIONS

### OPERATOR SPECIFICATIONS

This model is intended for use in vehicular swing gate applications:

**Gate Classifications:** CLASS I, II, III, & IV

**Main AC Supply:** 120 Vac or 240 Vac

**Solar Power Max:** 24 Vdc at 50 watts max.

**Input Rating:** 8 Amps at 120 Vac or 1 Amp at 240 Vac

**Input Rating Excluding Accessory Outlets:** 2 Amps at 120 Vac or 1 Amp at 240 Vac

**\*Input Rating of Accessory Outlets:** 6 Amps at 120 Vac

**\*NOTE:** The accessory outlets are not connected for the 240 Vac rating.

**Main Supply (Motor):** 24 Vdc

**Accessory Power:** 24 Vdc nominal Class II battery voltage source is limited to:

- Accessory wire up to 50 feet - 500 mA
- Accessory wire 50 feet up to 250 feet - 250 mA
- Accessory wire 250 feet up to 1000 feet - 100 mA

**NOTE:** Increased accessory power drawn from the operator will shorten the battery life (solar applications ONLY).

**Full Cycle Time:** 32 seconds (90 degree opening)

**Maximum Travel Range:** 115 degrees

**Maximum Gate Weight/Length:**

- 1600 lbs./8 foot
- 800 lbs./16 foot
- 600 lbs./18 foot

**Ambient Temperature:** -40°C to 60°C (-40°F to 140°F)

**Fuse Protection Battery:** 30 Amp

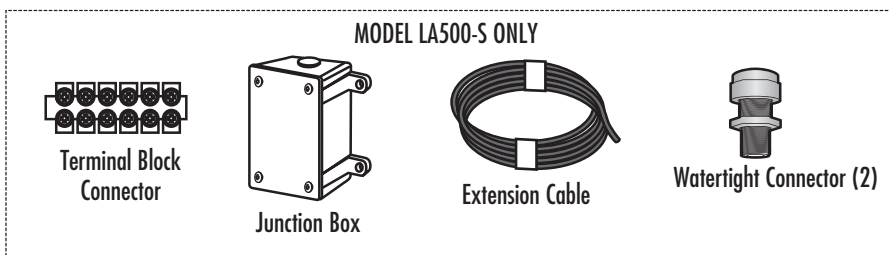
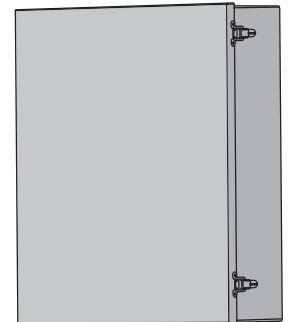
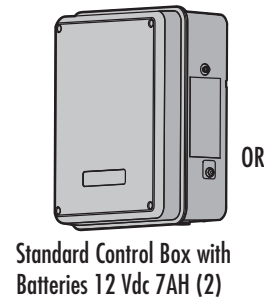
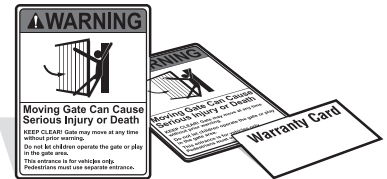
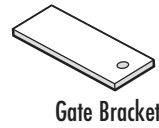
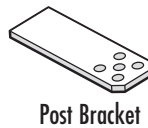
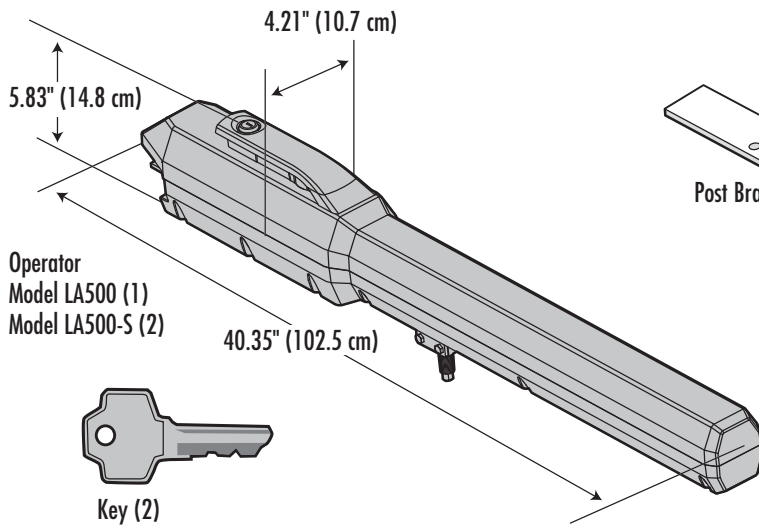
**Fuse Protection DC Power:** 30 Amp

**Daily cycle rate for direct plug-in transformer power:** 300 cycles/day

**Daily Cycle Rate for toroid transformer (accessory) power:** 300 cycles/day semi-continuous duty

### CARTON INVENTORY & OPERATOR DIMENSIONS

**NOT SHOWN:** Documentation Packet, Hardware Bag



### FEATURES

#### OPERATOR FEATURES

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- Advanced “Centerpiece” Control Board
- EMI AC Power Surge Protection and Filter Board
  - Main AC voltage input selection: 120 Vac (factory setting) or 240 Vac (field change)
- DC motor with extended brush life
- AC powered with integrated EverCharge® Power Management System
- 24 Vdc accessory power
- Programmable with up to 50 remote controls and 2 keyless entries. Compatible with MyQ™ devices and Security+ 2.0™ codes at either 310, 315, 390 MHz, or 433 MHz
- Manual - Secure power failure selection
- SAMS compatible
- Slow-start and slow-stop gate motion
- Reset Button
- Audible Alarm
- Standard Control box has integrated internal antenna with external antenna option. Large Metal Control Box (XLM) has external antenna.
- Electronic limit adjustment and control from the remote control
- Wireless primary/secondary (refer to pages 20 and 21)

#### CONTROL BOARD FEATURES

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- Electronic Limit adjustment and control
- Adjustable reversal force
- Adjustable Timer-to-Close (TTC)
- Maximum Run Timer
- Bipart Delay switch (dual gate applications)
- Feedback and Diagnostic LEDs
- Integrated Radio Receiver, Single Button Control (SBC) and 3-Button Station control, three radio frequencies supporting Security+ 2.0™
- COMMANDS:
  - OPEN, CLOSE, or STOP: accessory connection and on-board button
  - Single Button Close (SBC): accessory connection
  - FIRE DEPARTMENT OPEN: accessory connection
  - INTEGRATED RADIO RECEIVER:
- LOOPS:
  - EXIT, SHADOW, or INTERRUPT LOOP: accessory connection

#### EXPANSION BOARD FEATURES

---

- Plug-in Loop Detector Connectors (Model LOOPDETLM Loop Detector)
  - SHADOW
  - INTERRUPT
  - EXIT, with Fail Open/Fail Close selection
- Quick-Close ON/OFF selection switch
- AC Fail Open/Battery selection switch
- Low Battery Open/Close selection switch
- Anti-Tail ON/OFF selection switch
- Single Button Control (SBC) accessory connection
- 3-Button station accessory connection
- AUX Relays (2) each independently selectable operation:
  - OPEN LIMIT: ON at open limit switch
  - CLOSE LIMIT: OFF at close limit switch
  - GATE MOVING: ON with gate moving
  - PRE-ALERT DELAY: ON 3 seconds before gate motion
  - TAMPER: ON when gate manually pulled from close limit
  - POWER: ON with AC or Solar power available
  - CYCLE QUANTITY: LEDs blink operational cycle count

# PREPARATION

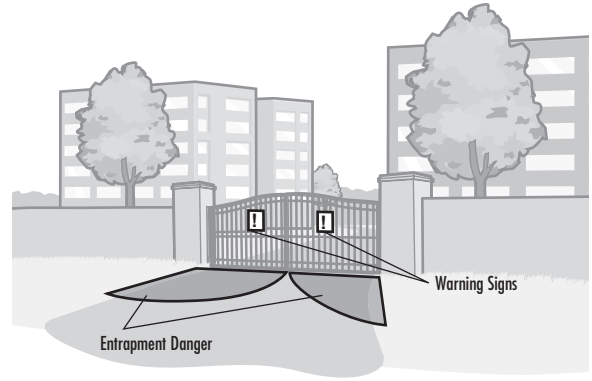
## SITE PREPARATION

Check the national and local building codes **BEFORE** installation.



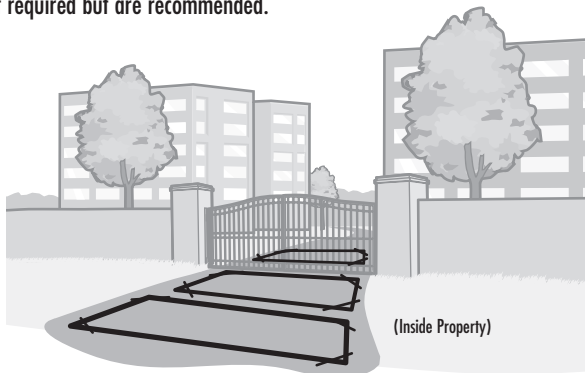
### SAFETY

Entrapment protection devices are required to protect against any entrapment or safety conditions encountered in your gate application (refer to page 5 for more details). Install warning signs on both sides of the gate.



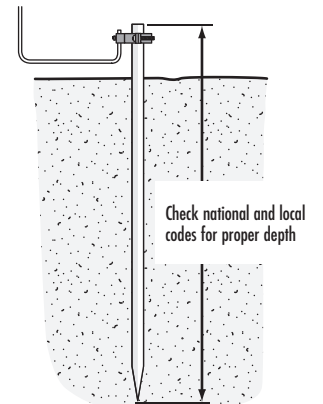
### VEHICLE LOOPS

The vehicle loops allow the gate to stay open when vehicles are obstructing the gate path. Suggested for vehicles 14 feet (4.27 m) or longer. Vehicle loops are not required but are recommended.



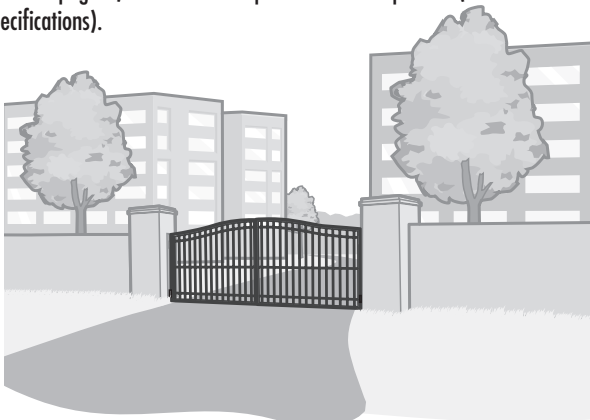
### EARTH GROUND ROD

Proper grounding gives an electrical charge, such as from an electrical static discharge or a near lightning strike, a path from which to dissipate its energy safely into the earth. Without this path, the intense energy generated by lightning could be directed towards the gate operator. Although nothing can absorb the tremendous power of a direct lightning strike, proper grounding can protect the gate operator in most cases.



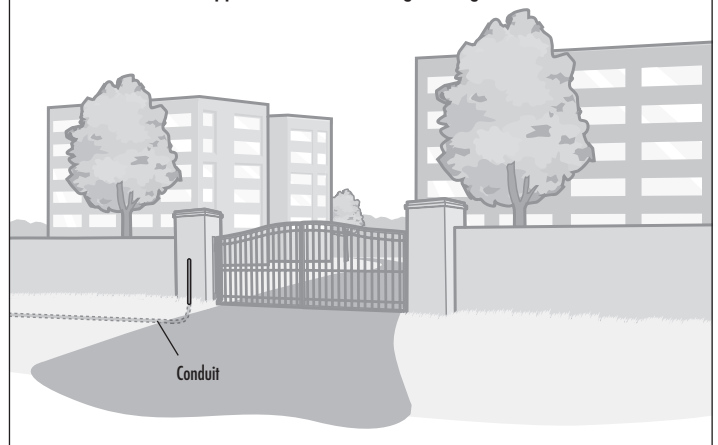
### GATE

Gate must be constructed and installed according to ASTM F2200 standards (refer to page 4). Gate must fit specifications of operator (refer to specifications).



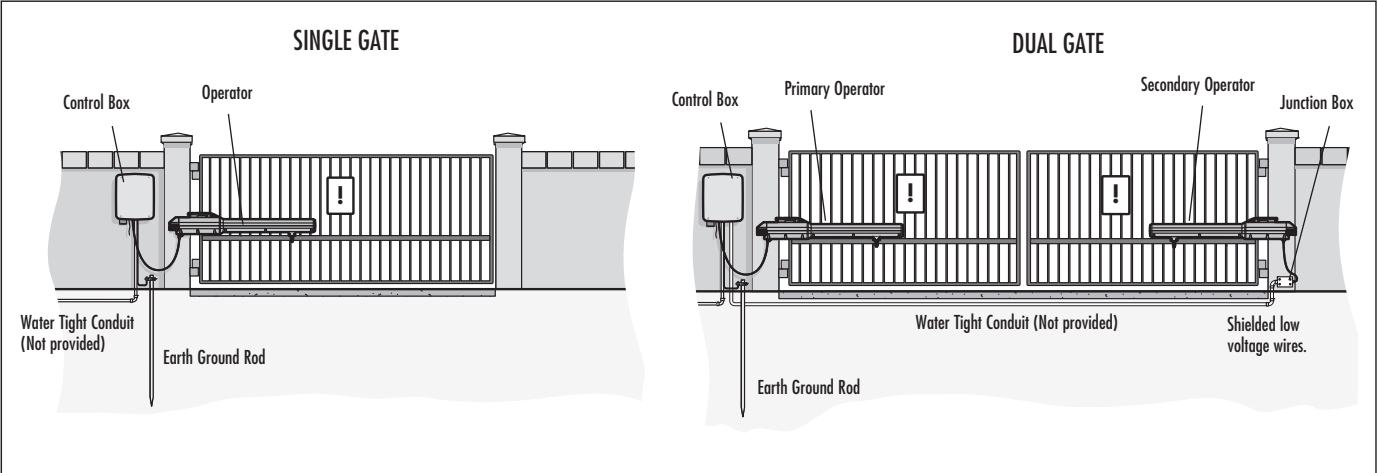
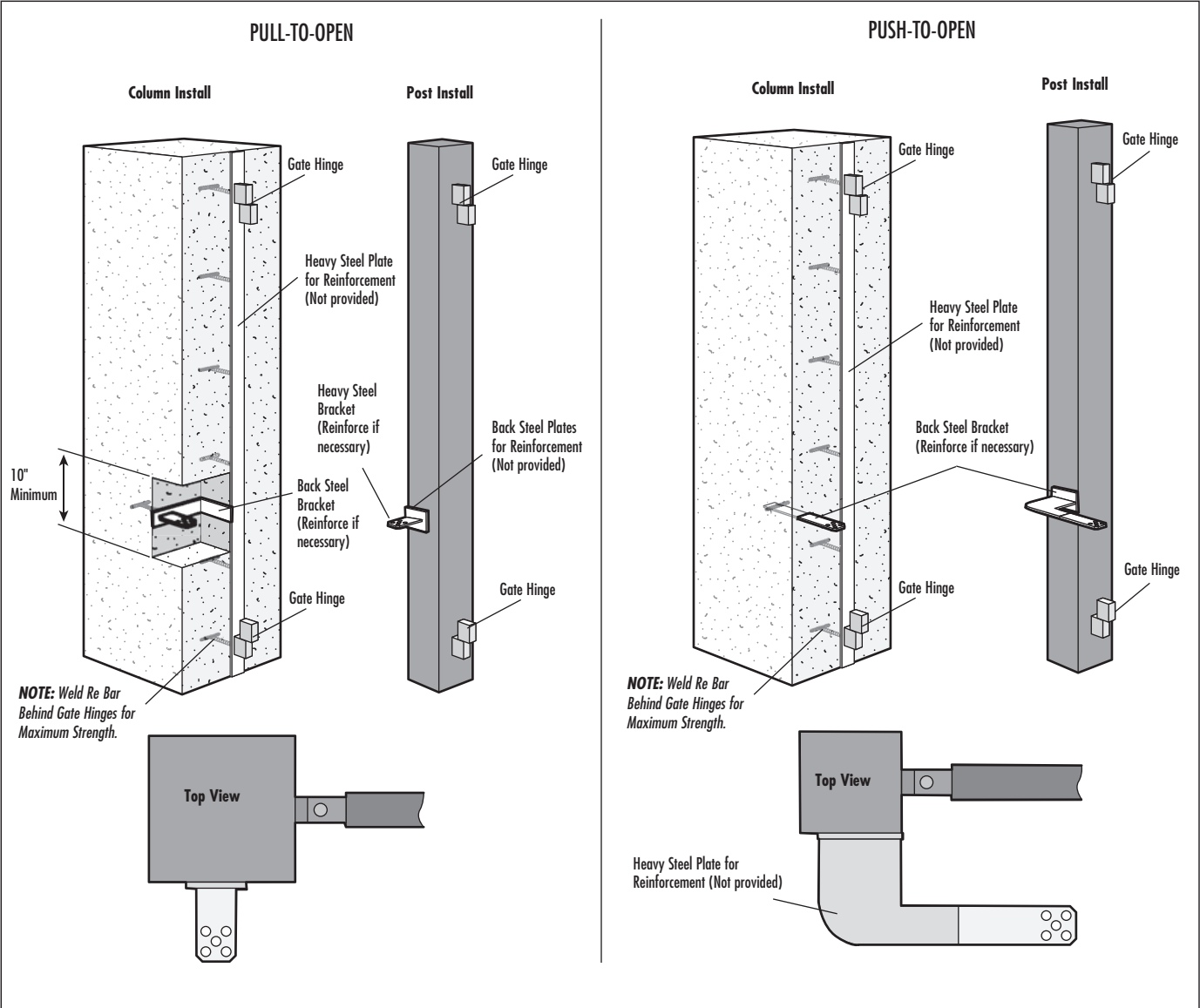
### CONDUIT

Conduit must be UL approved for low and high voltage.



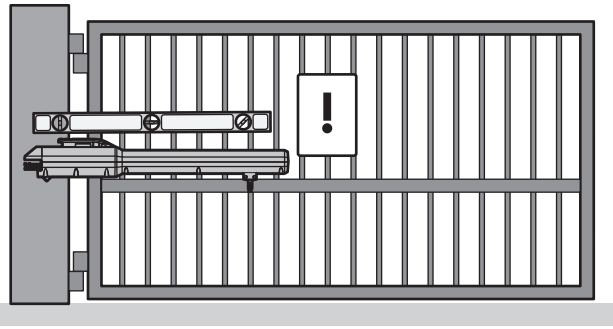
**INSTALLATION TYPES**

Identify your installation type. The installation steps in this manual will show a typical Pull-to-Open application.

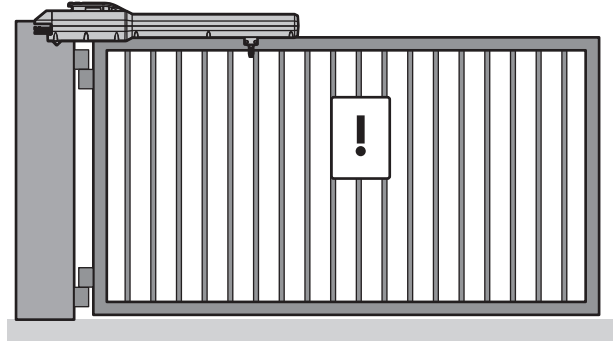


### MOUNTING OPTIONS

#### MOUNTING DOs

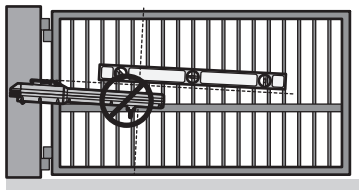


Weld a horizontal bar across entire gate on any installation for strength. Make sure that the operator is mounted level or it will not function properly.

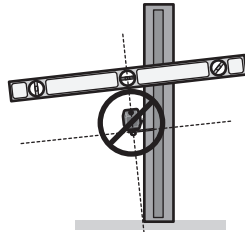


The operator can be mounted on top of the gate frame.

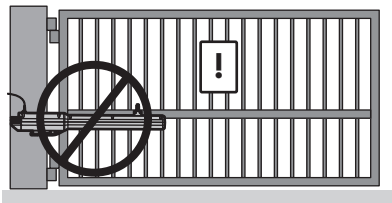
#### MOUNTING DON'Ts



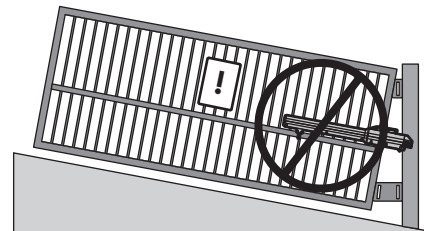
An off-level installation may cause the gate or operator to fail prematurely.



DO NOT weld the crossbar on just a few pickets, or they could bend.



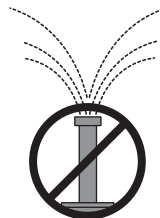
DO NOT install upside down.



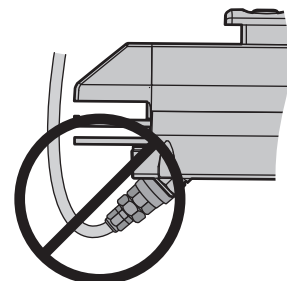
DO NOT install on uphill or downhill gates.



DO NOT install on ANY pedestrian passageways, doorways, or gates.



DO NOT install next to sprinklers or any area that may expose the bottom of operator to water.



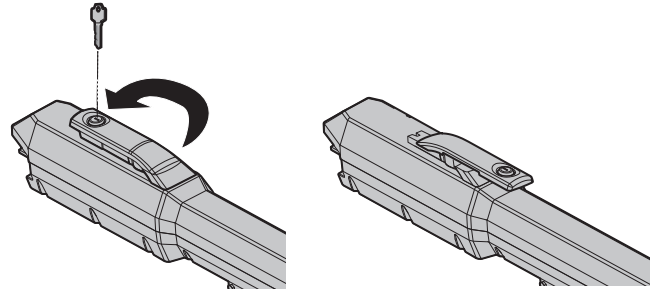
DO NOT over-bend the cord from the operator. Doing this will cause the wires to eventually break.

# INSTALLATION

## MANUAL RELEASE + DETERMINE THE POSITION OF THE POST BRACKET

### MANUAL RELEASE

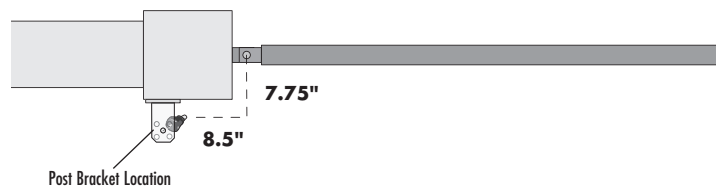
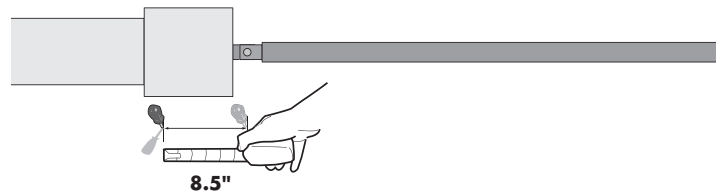
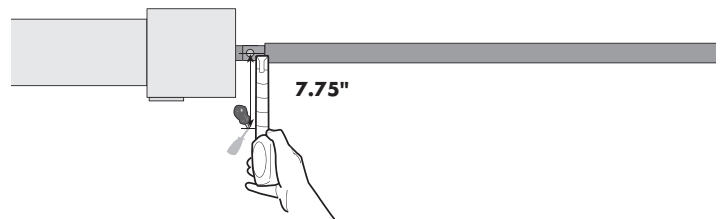
- 1 Insert the key into the lock and turn it 180 degrees counterclockwise.
- 2 Turn the release lever 180 degrees counterclockwise. The operator is now in manual mode.



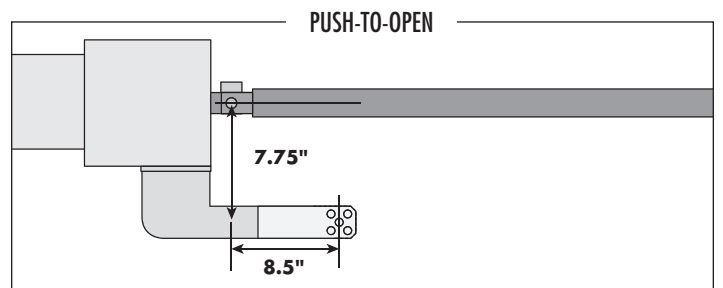
If this operator is a replacement for a Miracle-One™ operator, use the existing post bracket and gate bracket. Remove the Miracle-One™ operator from the brackets and proceed to page 15.

### DETERMINE THE POSITION OF THE POST BRACKET

- 1 Close the gate.
- 2 Choose a vertical mounting location for the post bracket.
- 3 Place a measuring tape under the center of the gate hinge point and measure out 7.75 inches.
- 4 Use a screwdriver or dowel rod to temporarily mark the location of the first measurement.
- 5 Measure 8.5 inches from the previous mark.
- 6 Use a screwdriver to mark the location of the second measurement.
- 7 Align the post bracket as close as possible above the screwdriver or dowel rod and tack weld the post bracket in the desired vertical position.



If your application is Push-to-Open, refer to the illustration to the right.



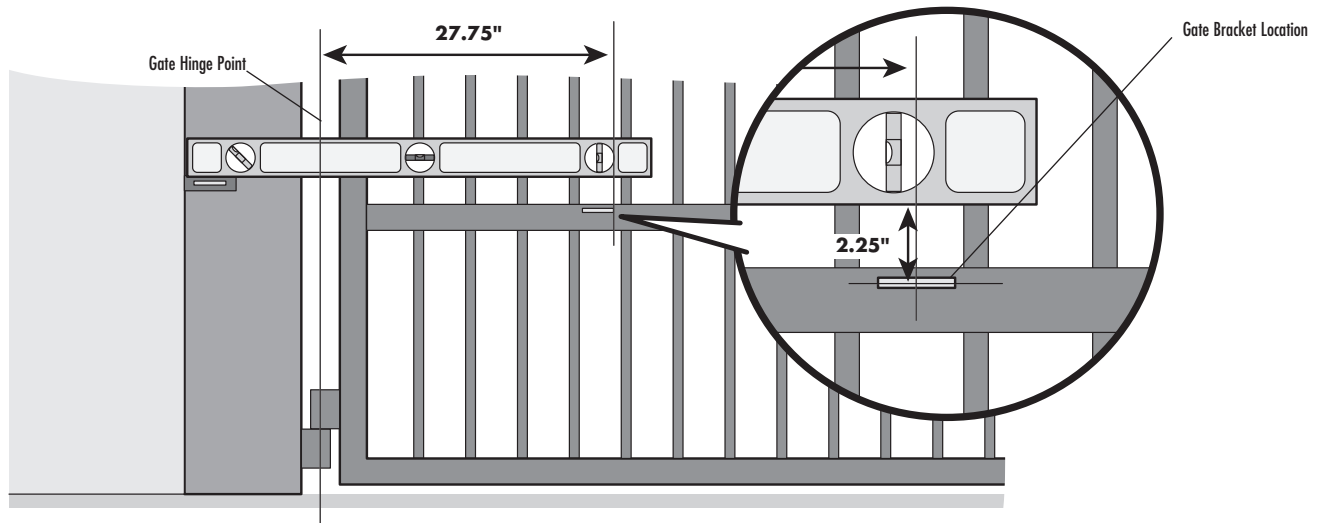
# INSTALLATION

DETERMINE THE POSITION OF THE GATE BRACKET + WELD THE BRACKETS

## DETERMINE THE POSITION OF THE GATE BRACKET

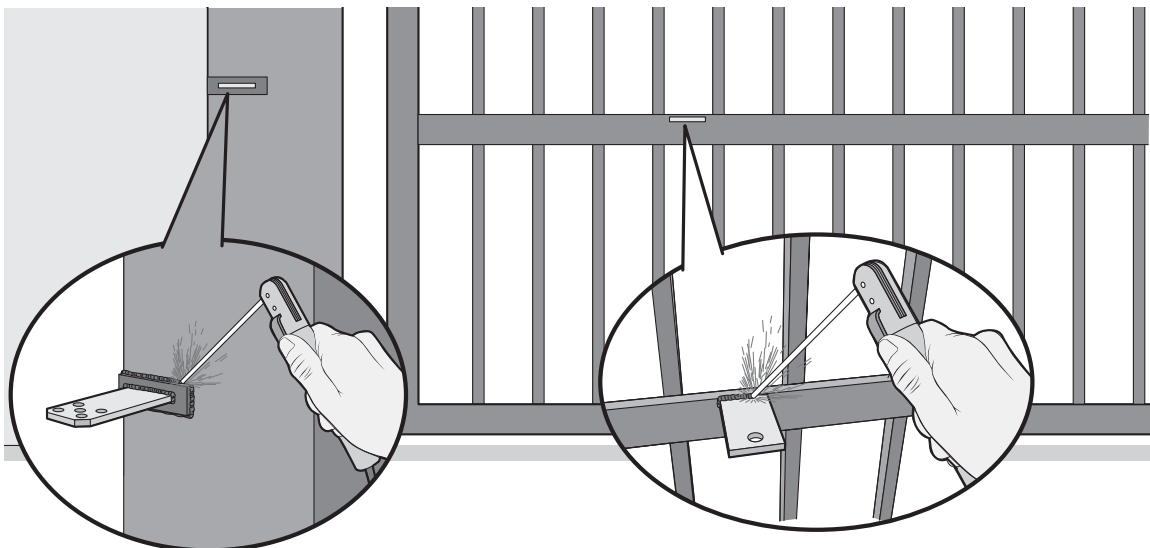
The gate bracket **MUST** be installed in an area that can withstand heavy forces. Additional reinforcement steel plates may be necessary for mounting.

- 1 Position a level on the post bracket and measure 27.75 inches over from the gate hinge point and mark the location on the gate.
- 2 Measure 2.25 inches down from the previous mark and tack weld the gate bracket in this position.



## WELD THE BRACKETS

- 1 Position the operator on the brackets and make sure the operator is level and positioned correctly on the gate.
- 2 Remove the operator from the gate.
- 3 Completely weld around the post bracket and gate bracket.



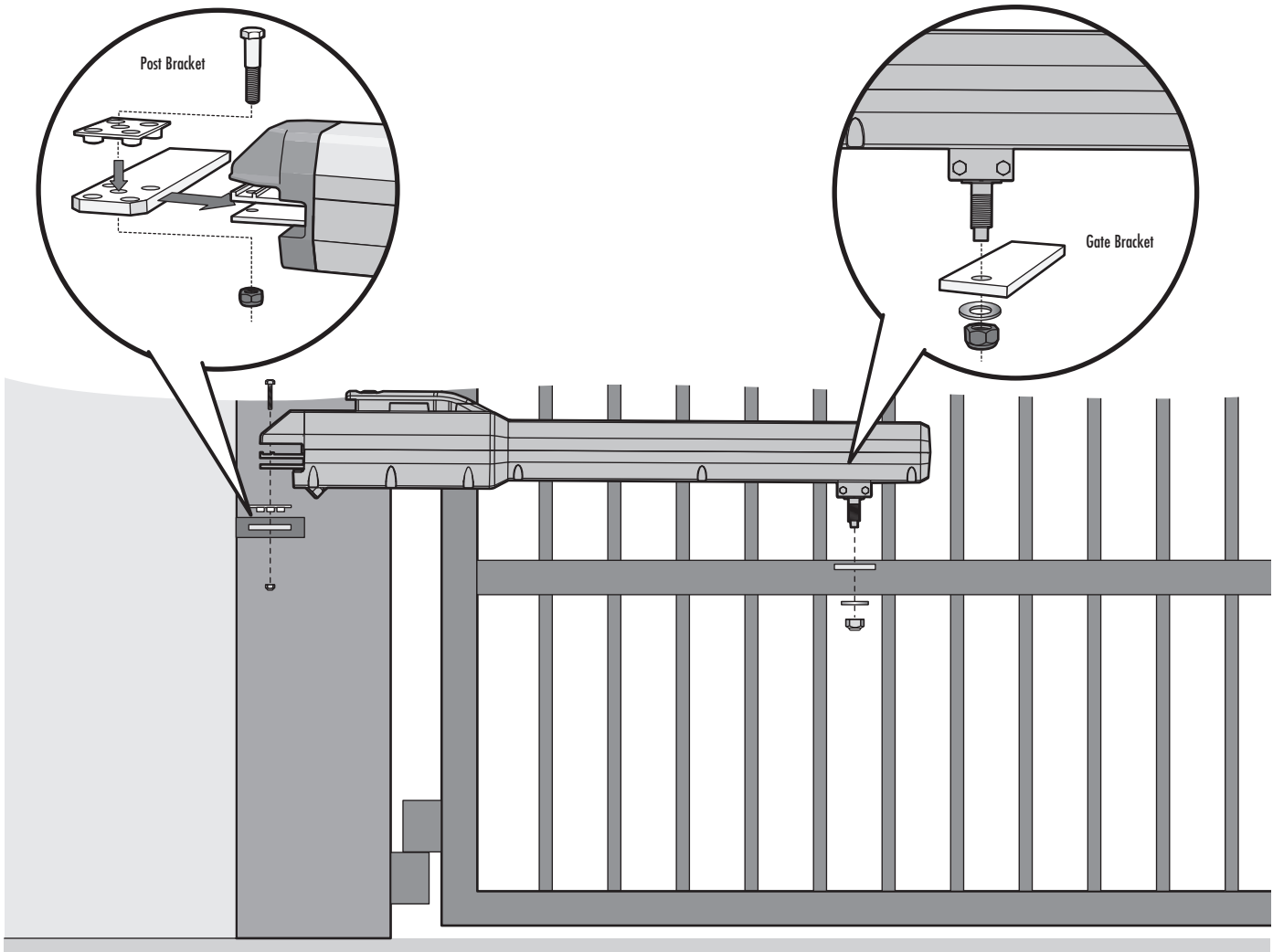


# INSTALLATION

## ATTACH THE OPERATOR TO THE BRACKETS

### ATTACH THE OPERATOR TO THE BRACKETS

- 1 Attach the operator to the post bracket with the bolt, mounting plate, and nut as shown.
- 2 Attach the operator to the gate bracket with the bolt, washer, and nut as shown. Tighten the nut until it reaches the bottom of the gate bracket, then turn the nut a half turn, making sure not to overtighten.



For dual gate applications, repeat the previous installation steps to install the second operator.

# INSTALLATION

## STANDARD CONTROL BOX

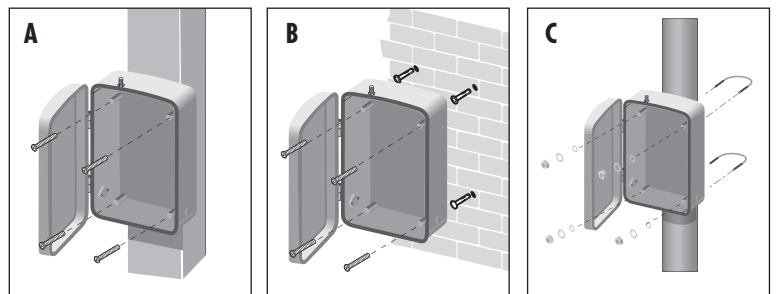
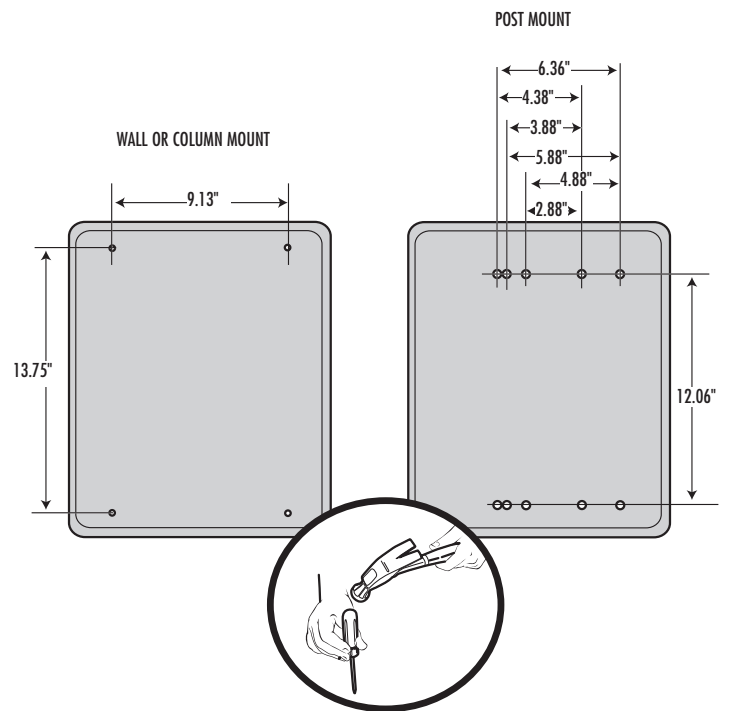
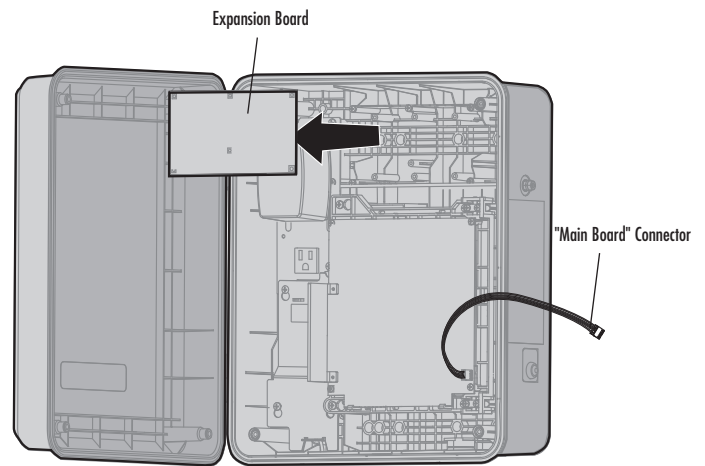
For Large Metal Control Box installation, refer to the following page.

### STANDARD CONTROL BOX

#### MOUNT THE CONTROL BOX

The control box MUST be mounted within 5 feet (1.52 m) of the gate operator. Mount the control box as high as possible for best radio reception. Make sure the control box is level.

- 1 Remove the screws and open the control box.
- 2 Disconnect the connector labeled "Main Board" on the expansion board.
- 3 Remove the expansion board by removing the screws.
- 4 Select the mounting holes and remove the knockouts using a screwdriver and hammer.
- 5 Secure the control box to mounting surface.
  - A. **Column:** Use the provided screws (4).
  - B. **Wall:** Use the provided screws (4).
  - C. **Post:** Use U-bolts and rubber washers (not provided) to ensure a watertight seal. Make sure the U-bolts do not protrude more than 3/4 inch from the control box because this can short the control board.
- 6 Reinstall the expansion board and connect the "Main Board" connector to the expansion board.



# INSTALLATION

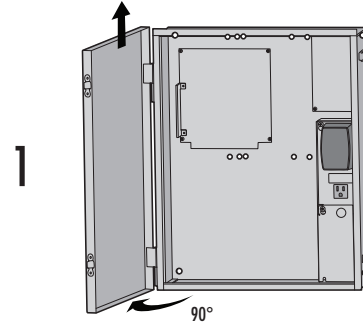
## LARGE METAL CONTROL BOX (XLM)

### LARGE METAL CONTROL BOX (XLM)

#### MOUNT THE CONTROL BOX (XLM)

The control box MUST be mounted within 5 feet (1.52 m) of the gate operator. Mount the control box as high as possible for best radio reception. Make sure the control box is level.

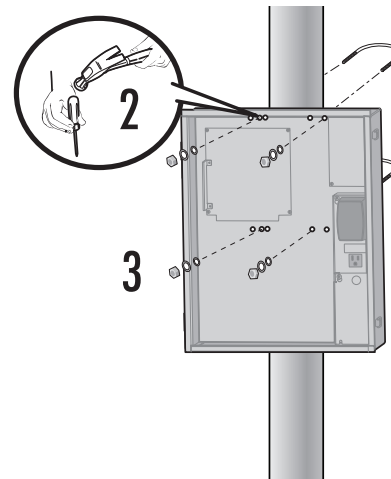
- 1 Open the control box. The control box door may be removed by opening the door 90°. Lift the door from the hinges and set aside until the installation is complete.



#### POST MOUNT

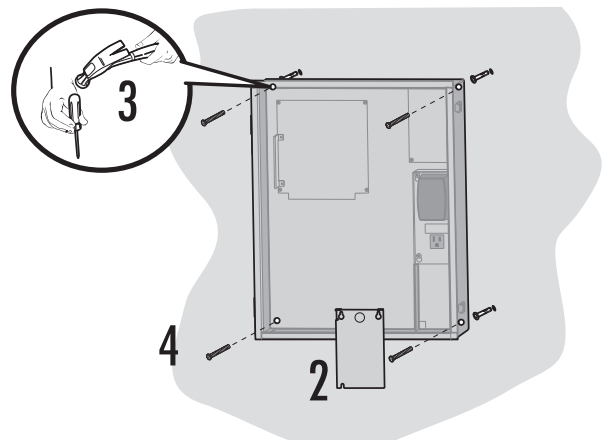
- 2 The control box can be mounted to a post with 'U' bolts (refer to chart). The knock out will accommodate a 3/8" diameter 'U' bolt. Select center mounting holes (top and bottom) and knock out using a screwdriver and hammer.
- 3 Secure the control box to mounting surface with U-bolts and rubber washers (not provided) to ensure a watertight seal.

TYPE AND SIZE	'U' BOLT OPENING
Standard 3" Round Pipe	3-1/2"
Standard 4" Square Post	4"
Standard 6" Square Post	6"



#### WALL OR COLUMN MOUNT

- 2 Remove the electrical outlet cover by loosening the screws and sliding the cover up.
- 3 Use knock outs located at the 4 corners of the control box and knock out using a screwdriver and hammer.
- 4 Secure the control box to mounting surface using the provided screws (4).



# WIRING

## WIRE THE ENTRAPMENT PROTECTION DEVICES + EARTH GROUND ROD

### WIRE THE ENTRAPMENT PROTECTION DEVICES

Entrapment protection devices are required. Refer to page 5 for more information regarding application.

#### ⚠ WARNING

To prevent **SERIOUS INJURY** or **DEATH** from a moving gate:

- Entrapment protection devices **MUST** be installed to protect anyone who may come near a moving gate.
- Locate entrapment protection devices to protect in **BOTH** the open and close gate cycles.
- Locate entrapment protection devices to protect between moving gate and **RIGID** objects, such as posts or walls.

**1** Connect the entrapment protection device to the **EYES EDGE** terminal on the control board. These inputs are for pulsed photoelectric sensors and dry contact edges.

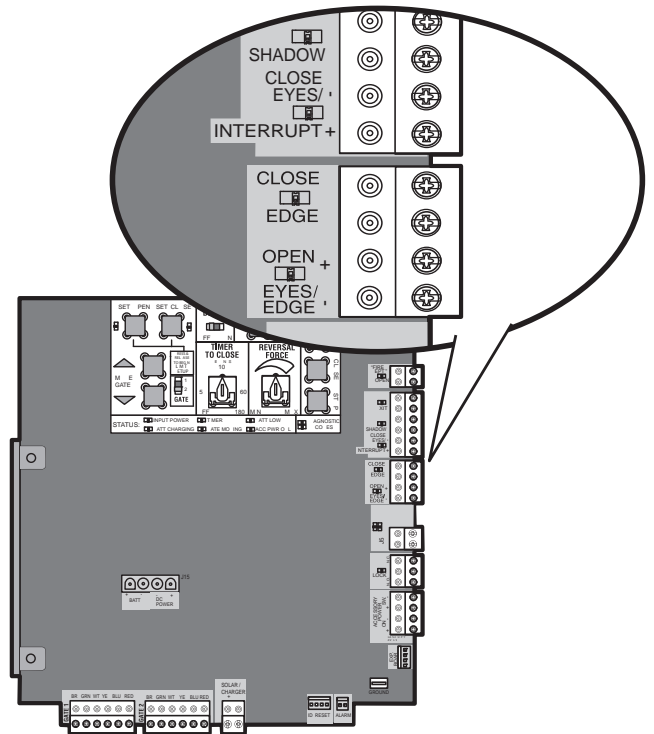
- Close Photoelectric Sensor Entrapment Protection: Connect wires from the photoelectric sensors to the Inputs on the **CLOSE EYES/INTERRUPT** terminal.
- Close Edge Entrapment Protection: Connect wires from the entrapment protection device to the Inputs on the **CLOSE EDGE** terminal.
- Open Entrapment Protection: Connect wires from the entrapment protection device to the Inputs on the **OPEN EYES/EDGE** terminal.

**NOTE:** Refer to the "Accessory Features on the Control Board" section on page 31.

#### TO ERASE LEARNED MONITORED PHOTOELECTRIC SENSORS

- 1** Remove the photoelectric sensor wires from the terminal block.
- 2** Press the **SET OPEN** and **SET CLOSE** buttons simultaneously until the **SET OPEN** and **SET CLOSE** LEDs turn on.
- 3** Press both **SET OPEN** and **SET CLOSE** buttons again to turn off the **SET OPEN** and **SET CLOSE** LEDs.

**NOTE:** For dual gate applications repeat the steps above on the other operator.



### EARTH GROUND ROD

Use the proper earth ground rod for your local area. The ground wire must be a single, whole piece of wire. Never splice two wires for the ground wire. If you should cut the ground wire too short, break it, or destroy its integrity, replace it with a single wire length.

- 1** Install the earth ground rod within 3 feet of the control box.
- 2** Run wire from the earth ground rod to the control box.

**NOTE:** If the operator is not grounded properly the range of the remote controls will be reduced.

