Model **HCTDCUL**

HCTDCUL
Motor Unit

HCT08
8 Foot Rail

HCT10
10 Foot Rail

HCT12
12 Foot Rail

HCT14
14 Foot Rail

HCT16
16 Foot Rail

LiftMaster

Battery Backup

Security+

myQ

> OPERATOR REQUIRES A LIFTMASTER EXTERNAL MONITORED ENTRAPMENT PROTECTION DEVICE BE INSTALLED IN ALL ENTRAPMENT ZONES

- THIS PRODUCT IS TO BE INSTALLED AND SERVICED BY A TRAINED TECHNICIAN ONLY.

- This model is for use on vehicular passage gates or commercial doors ONLY and not intended for use on pedestrian passage gates.

- Install the operator at least 8 feet (2.4 m) above the floor.

- This model is intended for use in Class II, III and IV vehicular trolley gate or commercial door applications.

- This gate/door operator is compatible with MyQ® and Security+ 2.0® accessories.

Access installation and technical support guides or register this product

LiftMaster
PHOTOREGISTER™

HCTDCULTECH
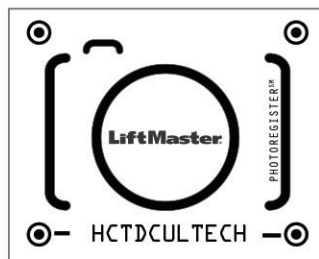
1. **Take a photo** of the camera icon including the points (◉).

2. **Send It In** by texting the photo to 71403.

c(UL)us LISTED

For more information:
www.devancocanada.com
or call toll free at 855-931-3334

LiftMaster®
ELITE SERIES®

TABLE OF CONTENTS

SAFETY

Safety Symbol and Signal Word Review

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.*

⚠ **WARNING**

MECHANICAL

⚡ **WARNING**

ELECTRICAL

⚠ **CAUTION**

⚠ **WARNING:** This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to *www.P65Warnings.ca.gov.*

Usage Class

Class I - Residential Vehicular Gate Operator

A vehicular gate operator (or system) intended for use in garages or parking areas associated with a residence of one-to four single families.

### Class II - Commercial/General Access Vehicular Gate

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, garages, retail store, or other buildings accessible by or servicing the general public.

Class III - Industrial/Limited Access Vehicular Gate

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 accessible by or 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.
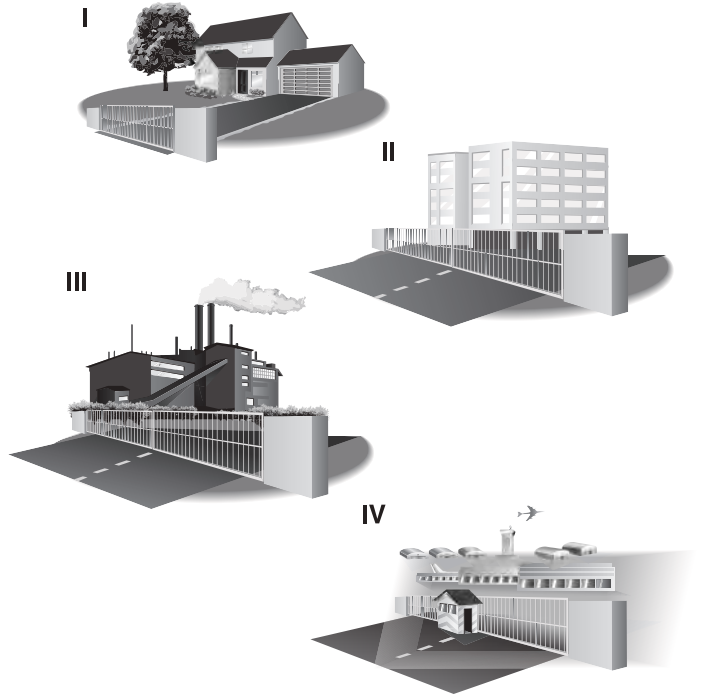
UL325 Entrapment Protection Requirements

- A **minimum of two** independent* monitored entrapment protection devices are required to be installed at each entrapment zone
- Every installation is unique. It is the responsibility of the installer to install external monitored entrapment protection devices in **each entrapment zone**
- This vehicular vertical lift gate operator will operate only after installation of a minimum of two independent* monitored entrapment protection devices in the close direction and one in the open direction of gate travel. If no entrapment zone exists in the open direction of gate travel, then the inherent (built into the operator) is all that is required in that direction.
- Entrapment protection device types include inherent (built into the operator), monitored external photoelectric sensors or monitored external edge sensors
- This operator is provided with an inherent entrapment protection device built into the operator that serves as one of the two independent devices

* Independent - the same type of device shall NOT be used for both entrapment protection devices.

IMPORTANT SAFETY INSTRUCTIONS

⚠ WARNING

To reduce the risk of INJURY or DEATH:

- READ AND FOLLOW ALL INSTRUCTIONS.
- NEVER let children operate or play with gate/door controls. Keep the remote control away from children.
- ALWAYS keep people and objects away from the gate/door. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE/DOOR.
- Test the gate/door operator monthly. The gate/door MUST reverse on contact with an object or reverse when an object activates the noncontact sensors. After adjusting the force or the limit of travel, retest the gate/door operator. Failure to adjust and retest the operator properly can increase the risk of INJURY or DEATH.
- Use the emergency release ONLY when the gate/door is closed. Use caution when using this release when the gate/door is open. Weak or broken springs may cause the gate/door to fall rapidly, causing severe INJURY or DEATH.
- KEEP GATES/DOORS PROPERLY OPERATING AND BALANCED. Read the gate/door manufacturer's owner's manual. An improperly operating or balanced gate/door could cause severe INJURY or DEATH. Have a qualified service person make repairs to gate/door hardware. Have trained gate/door systems technician make repairs to cables, spring assemblies, and other hardware.
- The entrance is for vehicles ONLY. Pedestrians MUST use separate entrance.

- # SAVE THESE INSTRUCTIONS.

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:
   - Edges Sensors (contact)
   - Guards for Exposed Rollers
   - Photoelectric Sensors
   - Screen Mesh
   - Vertical Posts
   - 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 shall be designed, guarded or screened to prevent a 4 in. (102 mm) diameter sphere from passing through the openings anywhere in the gate.
   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. Permanently mounted access controls intended for users to activate, 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. Exception: Emergency access controls only accessible by authorized personnel (e.g. fire, police) may be placed at any location in the line-of-sight of the gate.

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. One must be installed near wall mounted control.

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. See *Install Entrapment Protection* section.
    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.
    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 device such as one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions shall be located where the transmission of the signals are not obstructed or impeded by building structures, natural landscaping or similar obstruction. A wireless device shall function under the intended end-use conditions.

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.

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, in accordance with the following.

1.8.1 Vehicular vertical lift gate. Shall be restrained from movement along the lineal path its travel.

1.8.2 Vehicular overhead pivot gate. Shall be restrained from movement along the translational path of its travel.

1.9 For pedestrian access in the vicinity of an automated vehicular gate, a separate pedestrian gate shall be provided. The pedestrian gate shall be installed in a location such that a pedestrian shall not come in contact with a moving vehicular access gate. A pedestrian gate shall not be incorporated into an automated vehicular gate panel.

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 When the gate operator requires replacement, the existing gate shall be upgraded to conform to the provisions of this specification.

2.4 When the gate of an automated gate system requires replacement, the new gate shall conform to the provisions of this specification.

3. Vehicular Vertical Lift Gates

3.1 The following provisions shall apply to Class I, Class II and Class III vehicular vertical lift gates:

3.1.1 All openings shall be designed, guarded or screened to prevent a 4 in. (102 mm) diameter sphere from passing through the openings anywhere in the gate.

3.1.2 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 4 in. (102 mm).

Exception: All other fixed stationary objects greater than 16 in. (406 mm) from the gate frame shall not be required to comply with this section.

3.1.3 Horizontal and vertical framing members of a gate shall be smooth, and shall not include horizontal protrusions other than gate hardware.

3.1.4 A positive stop shall be required to limit travel to the designed fully open position.

3.2 Class IV vehicular vertical lift gates shall be designed, constructed and installed in accordance with security related parameters specific to the application in question.

4. Vehicular Overhead Pivot Gates

4.1 The following provisions shall apply to Class I, Class II and Class III vehicular overhead pivot gates:

4.1.1 All weight bearing exposed rollers 8 ft (2.44 m), or less, above grade shall be guarded or covered.

4.1.2 All openings shall be designed, guarded or screened to prevent a 4 in. (102 mm) diameter sphere from passing through the openings anywhere in the gate.

4.1.3 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 in. (57 mm).

Exception: All other fixed stationary objects greater than 16 in. (406 mm) from the gate frame shall not be required to comply with this section.

4.1.4 Horizontal and vertical framing members of a gate shall be smooth, and shall not include protrusions other than gate hardware.

4.1.5 Where required, positive stops shall limit travel to the designed fully open position, or the designed fully closed position, or both.

4.1.6 All jamb materials, track materials and related hardware shall be designed to support the weight of the gate at any position of the gate.

4.2 Class IV vehicular overhead pivot gates shall be designed, constructed and installed in accordance with security related parameters specific to the application in question.
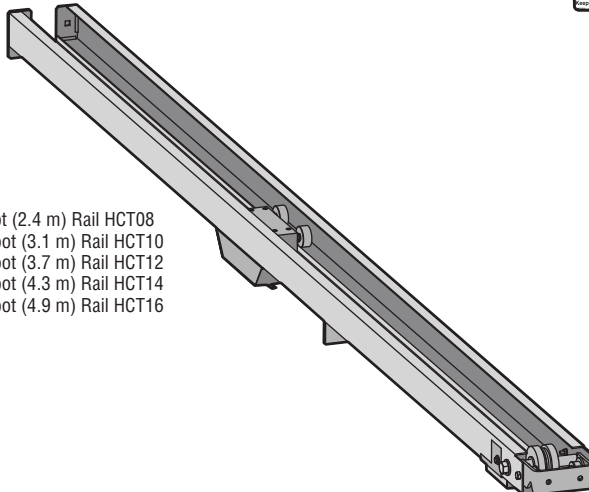
Carton Inventory

NOT SHOWN: Documentation Packet (includes installation manual and antenna)

HCTDCUL Motor Unit
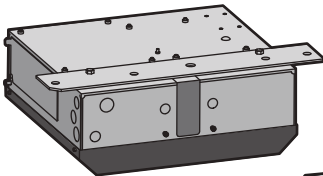
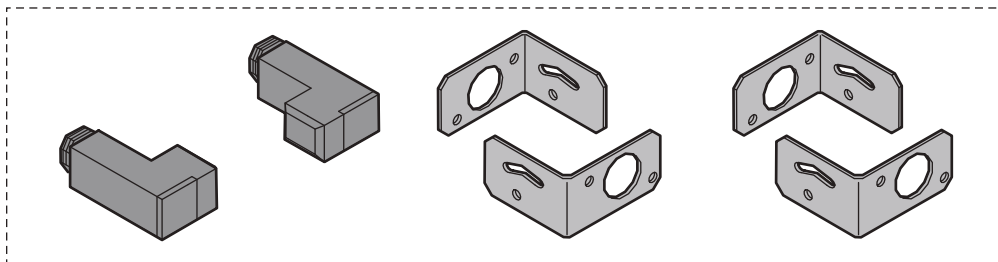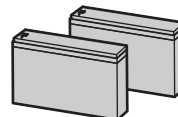Warning Signs (2) and Warranty Card

Battery 12 Vdc 7AH (2)

8 Foot (2.4 m) Rail HCT08
10 Foot (3.1 m) Rail HCT10
12 Foot (3.7 m) Rail HCT12
14 Foot (4.3 m) Rail HCT14
16 Foot (4.9 m) Rail HCT16

LiftMaster Photoelectric Sensors (CPSUN4G)

6

Operator Specifications

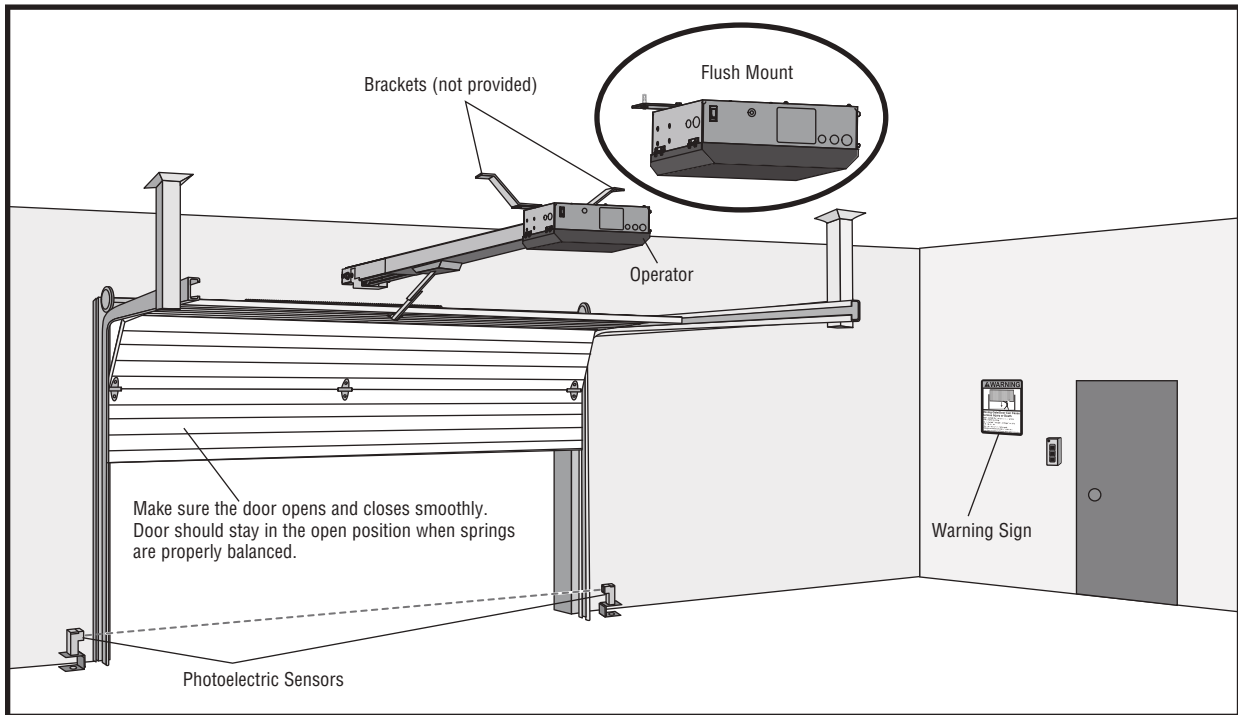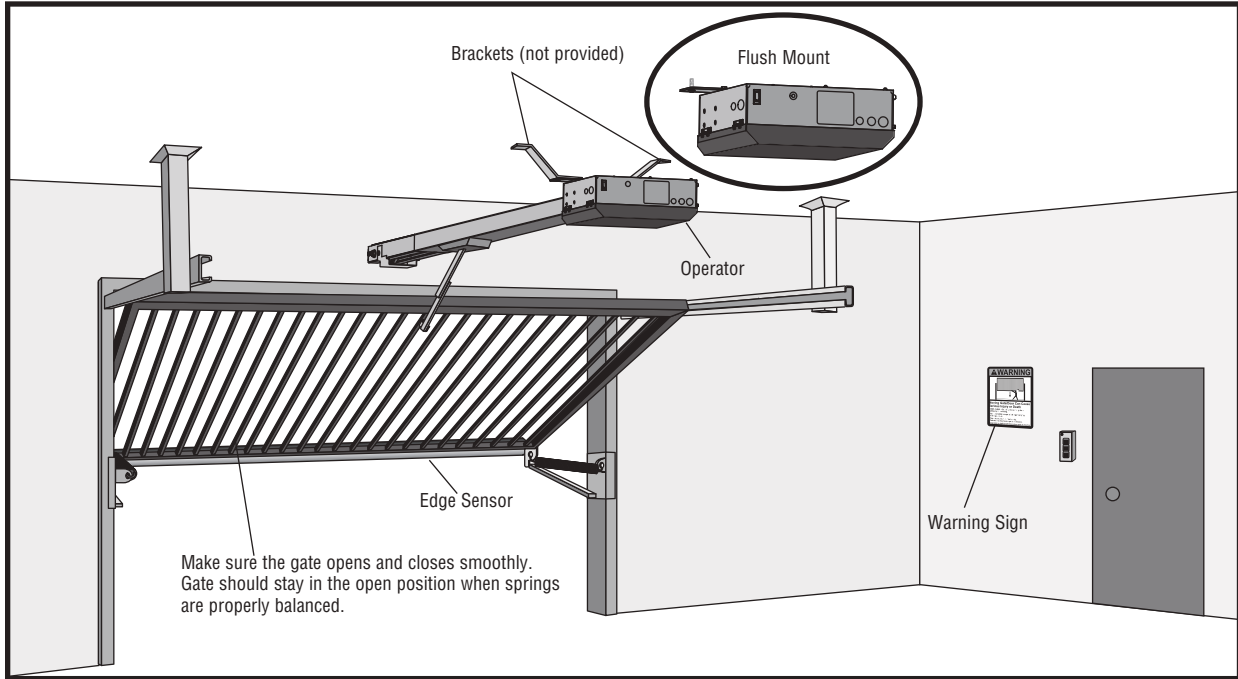|	
Usage Classification	Class II, III, & IV
Main AC Supply	120 Vac, 4 Amps **OR** 240 Vac, 2 Amps
System Operating Voltage	24 Vdc Transformer Run / Battery Backup
Accessory Power	24 Vdc, 500mA max. for ON + SW (switched)
Solar Power Max	24 Vdc at 60 watts max.
Variable Operating Lengths (Operator Weights)	8 foot (2.4 m) gate - 11.75 foot (3.6 m) operator length (130 lbs. [58.9 kg]) 10 foot (3.1 m) gate - 13.75 foot (4.2 m) operator length (145 lbs. [65.7 kg]) 12 foot (3.7 m) gate - 15.75 foot (4.8 m) operator length (160 lbs. [72.5 kg]) 14 foot (4.3 m) gate - 17.75 foot (5.4 m) operator length (175 lbs. [79.4 kg]) 16 foot (4.9 m) gate - 19.75 foot (6.0 m) operator length (190 lbs. [86.2 kg])
Maximum Gate/Door Weight	1000 lbs. (453.6 kg)
Maximum Gate/Door Width (sectional and one-piece)	22 ft. (6.7 m)
Travel Speed	Default - 8 inches (20.3 cm) per second Fast - 11 inches (27.9 cm) per second (open speed only)
Maximum Daily Cycle Rate	HCT08, HCT10 and HCT12 - Continuous HCT14 and HCT16 - 500 cycles a day
Maximum Duty Cycle	Continuous
Operating Temperature	-20°C to 60°C (-4°F to 140°F)
Expansion Board	Provided
External Entrapment Protection Device Inputs (non-contact and/or contact)	Main board - up to 2 close entrapment protection devices and 1 open entrapment protection device. Expansion board - up to 3 entrapment protection devices configurable to either close or open and up to 4 edge sensors using wireless edge sensor kit model LMWEKITU .
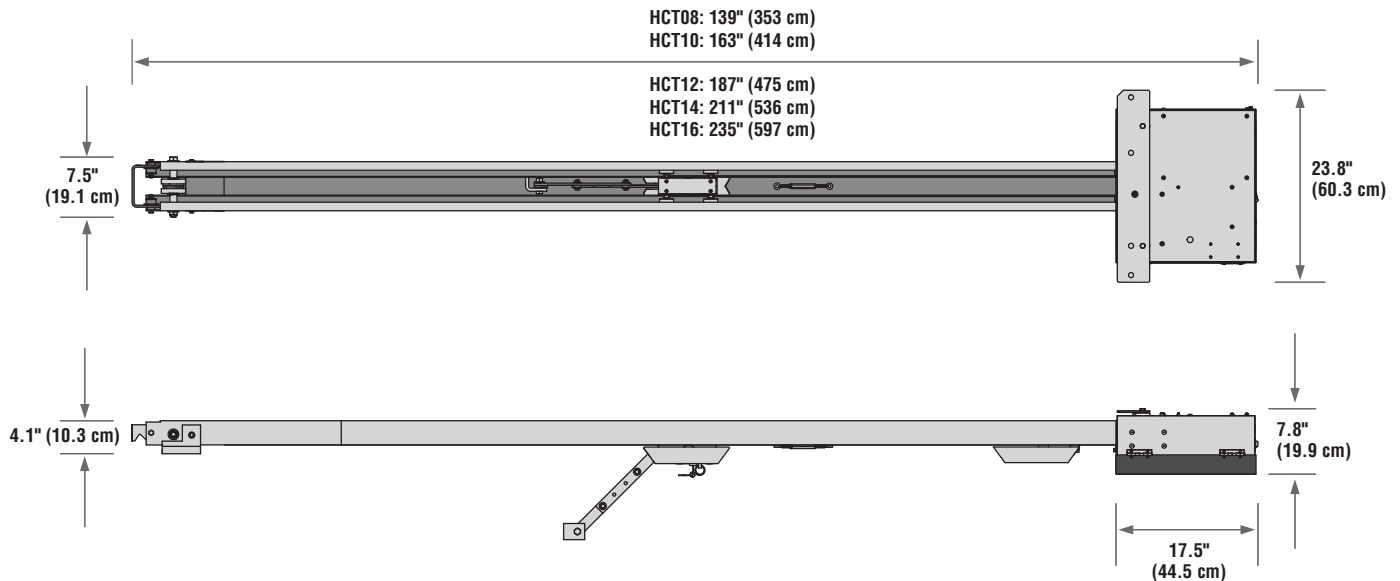
Overview of Typical Installation

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

NOTE: One or more contact or non-contact external monitored entrapment protection systems shall be located where the risk of entrapment or obstruction exists at either the opening or closing direction. Care shall be exercised to reduce the risk of nuisance tripping, such as when a vehicle trips the sensor while the gate/door is still moving. See page 13 for installation of required entrapment protection devices.

Brackets (not provided)

Flush Mount

Operator

Edge Sensor

Warning Sign

Make sure the gate opens and closes smoothly. Gate should stay in the open position when springs are properly balanced.

Brackets (not provided)

Flush Mount

Operator

Warning Sign

Make sure the door opens and closes smoothly. Door should stay in the open position when springs are properly balanced.

Photoelectric Sensors

Illustrations are for reference only; your application may look different.

IMPORTANT INSTALLATION INSTRUCTIONS

⚠ WARNING

TO REDUCE THE RISK OF SEVERE INJURY OR DEATH:

1. READ AND FOLLOW ALL INSTRUCTIONS.

2. Install operator ONLY on properly balanced and lubricated gate/door. An improperly balanced gate/door may NOT reverse when required and could result in SEVERE INJURY or DEATH.

3. ALL repairs to cables, spring assemblies and other hardware MUST be made by a trained systems technician BEFORE installing operator.

4. Disable ALL locks and remove ALL ropes connected to gate/door BEFORE installing operator to avoid entanglement.

5. Install gate/door operator 8 feet (2.4 m) or more above floor.

6. NEVER connect operator to power source until instructed to do so.

7. Any openings shall be designed, guarded or screened to prevent a 4" (10.2 cm) diameter sphere from passing through the openings anywhere in the gate/door.

8. Entrapment protection devices MUST be installed to protect anyone who may come near a moving gate/door. Upon completion of installation, test entrapment protection device.

9. Too much force on gate/door will interfere with proper operation of safety reversal system.
   - NEVER increase force beyond minimum amount required to move gate/door.
   - NEVER use force adjustments to compensate for a binding or sticking gate/door.
   - If one control (force or travel limits) is adjusted, the other control may also need adjustment.

10. Install control station:
    - within sight of the gate/door
    - out of reach of small children at a minimum height of 5 feet (1.5 m) above floors, landings, steps or any other adjacent walking surface.
    - at least 6 feet (1.8 m) from the gate/door or ANY moving part of the gate/door

11. This operator is intended for vehicular use ONLY. To prevent INJURY to pedestrians, a separate pedestrian access should be supplied, visible from the gate/door. Locate the pedestrian access where there is NOT a chance of INJURY at ANY point during full movement of the gate/door.

12. Install Warning signs on EACH side of gate/door in PLAIN VIEW. Install one Warning Sign next to the control station. Permanently secure each Warning sign in a suitable manner using fastening holes.
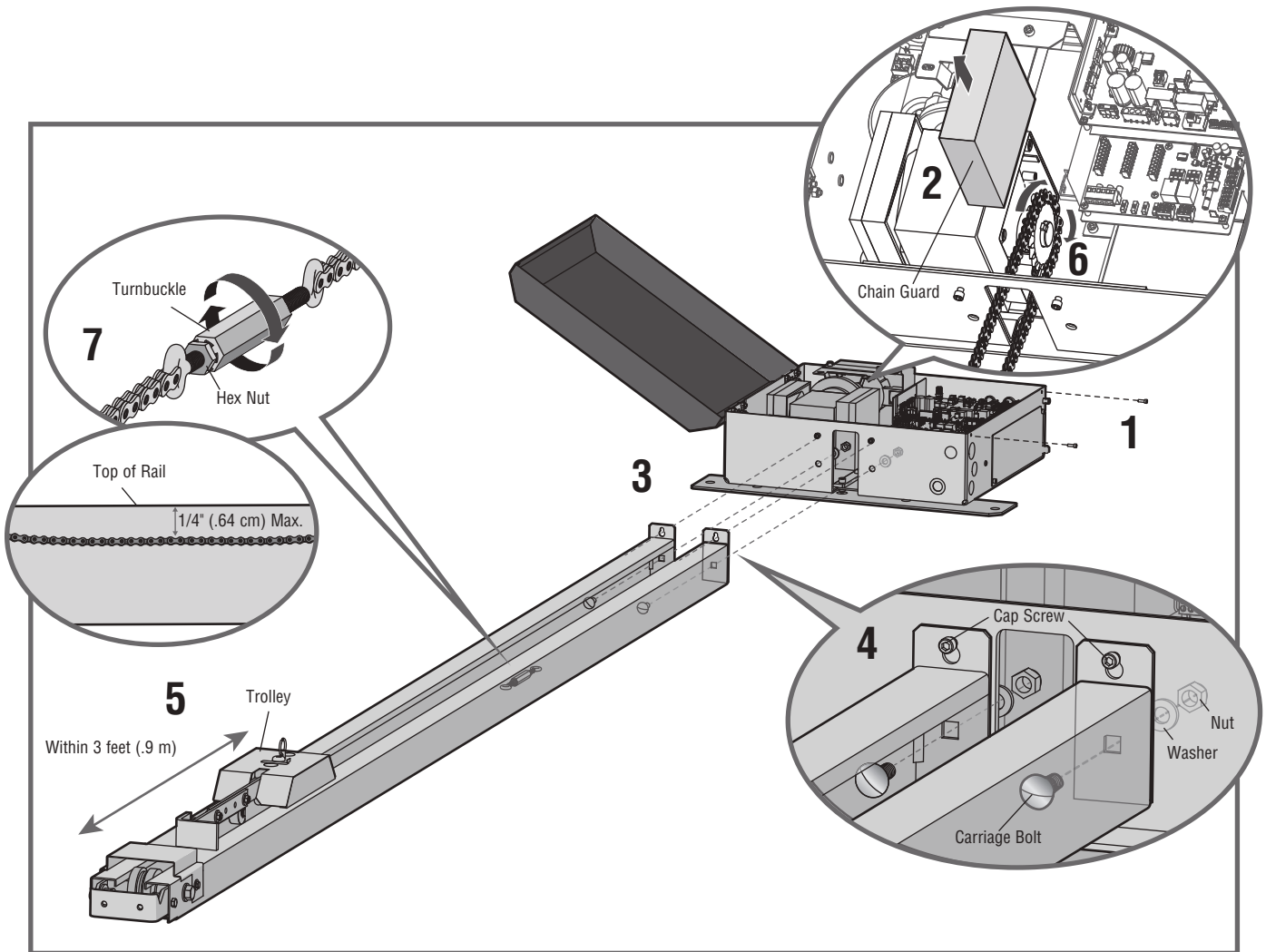
13. ## SAVE THESE INSTRUCTIONS.

⚠CAUTION

- ALWAYS wear protective gloves and eye protection when changing the battery or working around the battery compartment.
- NEVER wear watches, rings or loose clothing while installing or servicing operator. They could be caught in gate/door or operator mechanisms.

Step 1 Connect Rail to Operator

1. Remove the screws and open the cover of the operator.
2. Remove the chain guard from the chassis.
3. Lay the rail on the floor. Align the key holes on the end of the rail with the cap screws on the chassis.
4. Attach the rail to the chassis with the carriage bolts, lock nuts, and washers provided. Tighten cap screws on key holes.
5. Cut the cable tie on the chain and position the trolley within 3 feet (.9 m) of the end of the rail.
6. Wrap the chain around the sprocket.
7. Adjust the chain tension with the turnbuckle so that the chain hangs no more than 1/4" (.64 cm) from the top of the rail. Tighten the hex nut to secure the chain.
8. Reattach the chain guard to the chassis.
9. Close the cover and attach with screws.

Turnbuckle

7

Hex Nut

Top of Rail

1/4" (.64 cm) Max.

5

Trolley

Within 3 feet (.9 m)

3

2

Chain Guard

6

1

4

Cap Screw

Nut

Washer

Carriage Bolt

Step 2 Install Vented Plug

1. Remove the dome plug from the operator chassis.
2. Remove the solid plug in the gear reducer and replace it with the vented plug (provided in bag with manual).
3. Tighten the vented plug with a socket or Allen wrench.
4. Re-insert the dome plug.
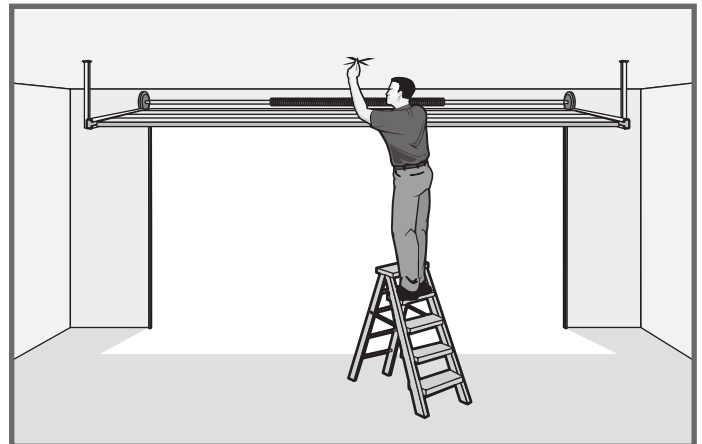

Dome Plug

Vented Plug
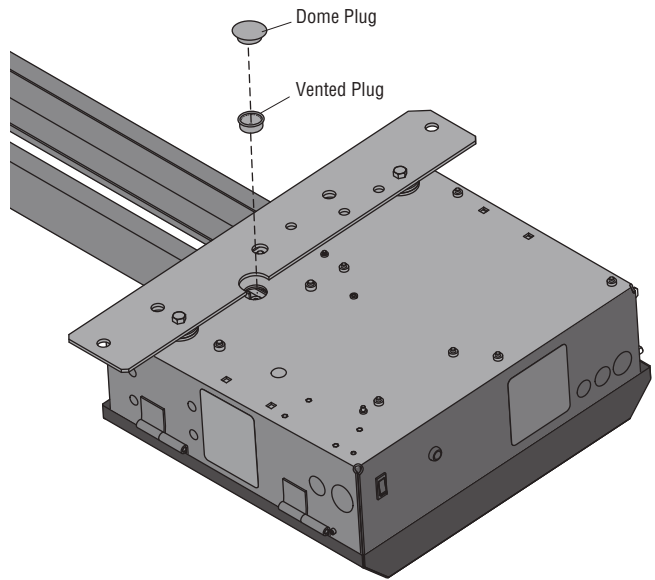
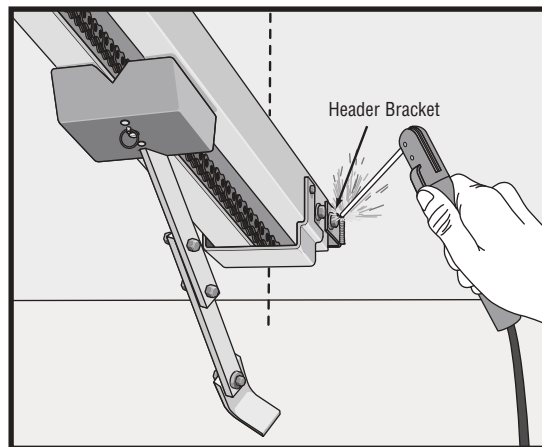## Step 3 Determine Location for Operator

1. With the gate/door closed, mark the center.
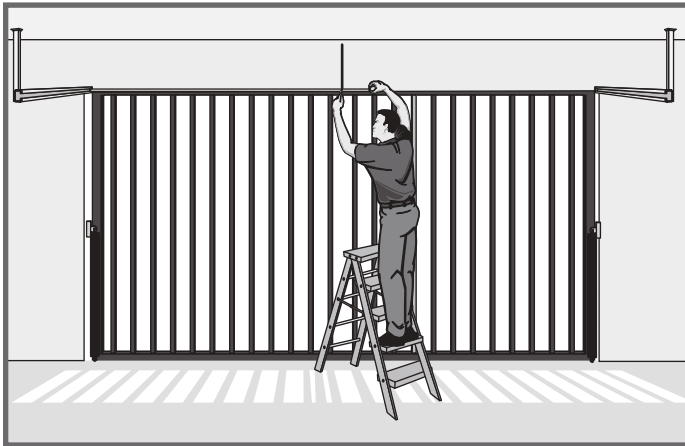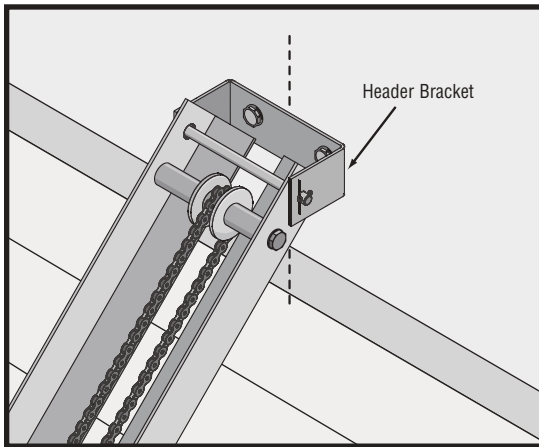

2. Open the gate/door and mark the center point on the ceiling.

Step 4 Mount the Operator

1. Place the motor unit on packing material to protect the cover. Make sure the header bracket is in the center of the opening. Bolt or weld the header bracket to the wall.

Header Bracket

Header Bracket

2. Lift the operator and align with center mark on ceiling. Have someone hold the operator in place or use a post as a temporary support. Bolt the operator to the ceiling. (A support post is not part of the operator. Use only for installation.) *NOTE: The HCT14 and HCT16 rails have an additional mounting hole in the middle of the rail for installing an additional support bracket (not included).*

Concrete Anchor
1/2" x 3 1/2"

Brackets
(not provided)

Flush
Mount

Temporary
Support
Post
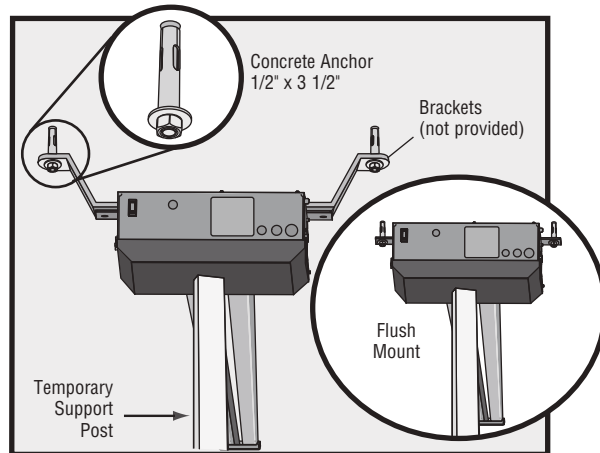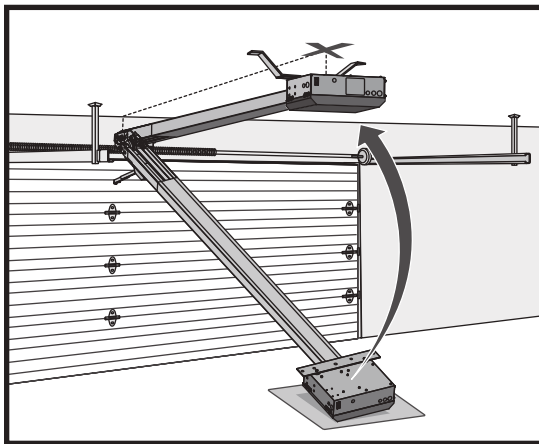
3. Bolt or weld arm to gate/door.

Arm

Door Arm
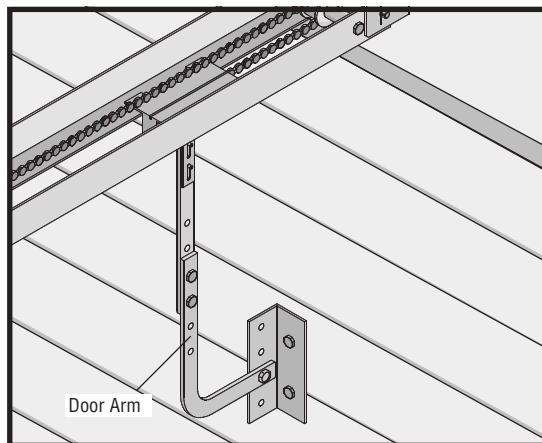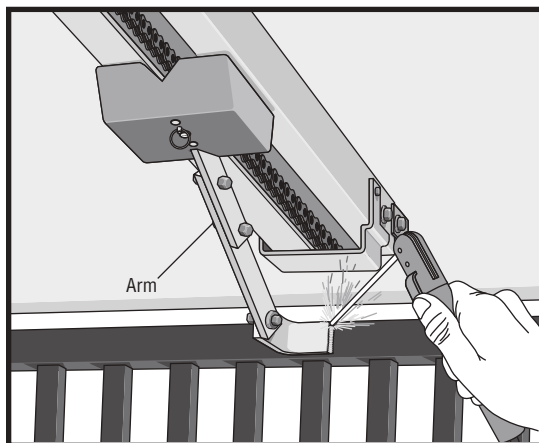
⚠ WARNING

To prevent SERIOUS INJURY or DEATH from a moving gate/door:
- Entrapment protection devices MUST be installed to protect anyone who may come near a moving gate/door.
- Locate entrapment protection devices to protect in BOTH the open and close gate/door cycles.
- Locate entrapment protection devices to protect between moving gate/door and RIGID objects, such as posts, or walls.

Step 5 Install Entrapment Protection

Entrapment protection MUST be installed according to the following UL 325 requirements:

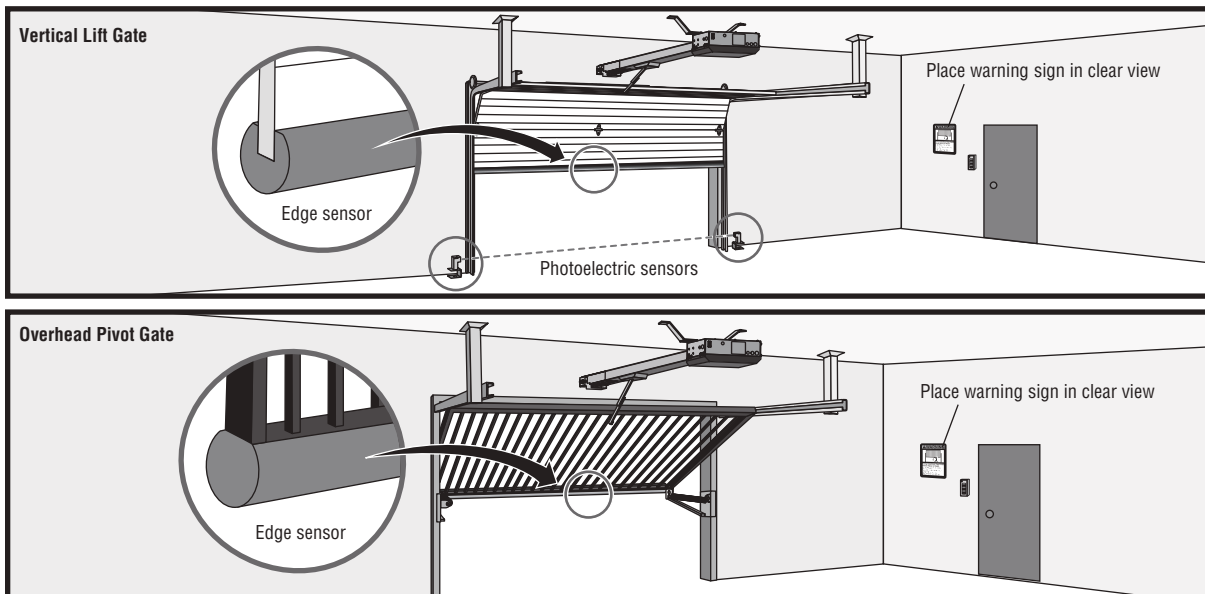- Vertical gate/door operators require the installation of the first external monitored entrapment protection device in the close direction to function.
- Every installation is unique. It is the responsibility of the installer to ensure that ALL entrapment zones are protected with an external monitored entrapment protection device, protecting both the open and close gate/door cycles.
- **LiftMaster monitored external entrapment protection devices MUST be used with LiftMaster operators to meet UL325 requirements, see *Accessories*.**
- Test ALL entrapment protection devices after completing installation of the operator. For testing instructions, refer to the manual provided with your entrapment protection device.

Definitions

ENTRAPMENT: The condition when a person is caught or held in a position that increases the risk of injury.

VERTICAL LIFT GATE ENTRAPMENT ZONE: Locations between a moving gate or exposed operator components and a counter opposing edge or surface where entrapment is possible up to 2.4 m (8 ft) above grade. Such locations occur when the gap between a moving gate and fixed counter opposing edges or surfaces, other than the ground or floor at the bottom of the gate, is greater than 101.6 mm (4 in) and less than 406 mm (16 in) or when the gap between a moving gate and fixed counter opposing edges or surfaces at the bottom of the gate is less than 406 mm (16 in).

OVERHEAD PIVOT GATE ENTRAPMENT ZONE: Locations between a moving gate or exposed operator components and a counter opposing edge or surface where entrapment is possible up to 2.4 m (8 ft) above grade. Such locations occur when the gap, measured in the horizontal plane parallel to the roadway (such as a gate support post) and the gate frame when the gate is in either the fully open position or fully closed position, is greater than 57 mm (2-1/4 in) and less than 406 mm (16 in) or when the gap between a moving gate and fixed counter opposing edges or surfaces at the bottom of the gate is less than 406 mm (16 in).

Vertical Lift Gate — Edge sensor — Photoelectric sensors — Place warning sign in clear view

Overhead Pivot Gate — Edge sensor — Place warning sign in clear view

Illustration is for example only; your site may have additional entrapment zones which MUST be protected.

Wire Entrapment Protection Devices

There are three options for wiring the entrapment protection devices depending on the specific device and how the device will function. Refer to the specific entrapment protection device manual for more information. These entrapment protection device inputs are for monitored devices, which include pulsed photoelectric sensors, resistive edge sensors, and pulsed edge sensors. **Only one <u>monitored</u> entrapment protection device may be wired to each input.** Additional entrapment protection devices may be wired to the expansion board.

## Control Board

CLOSES EYES/INTERRUPT

(2 Terminals) The CLOSE EYES/INTERRUPT input is for photoelectric sensor entrapment protection for the close direction. When an obstruction is sensed during gate closing the gate will open to the full open position and resets the Timer-to-Close. This input will be disregarded during gate opening.

CLOSE EDGE

(2 Terminals) The CLOSE EDGE input is for edge sensor entrapment protection for the close direction. When an obstruction is sensed during gate closing the gate will reverse to the full open position, disengaging the Timer-to-Close. This input will be disregarded during gate opening.

OPEN EYES/EDGE

(2 Terminals) The OPEN EYES/EDGE input is for photoelectric sensor or edge sensor entrapment protection for the open direction. When an obstruction is sensed during gate opening the gate will reverse for 4 seconds then stop. This input will be disregarded during gate closing.
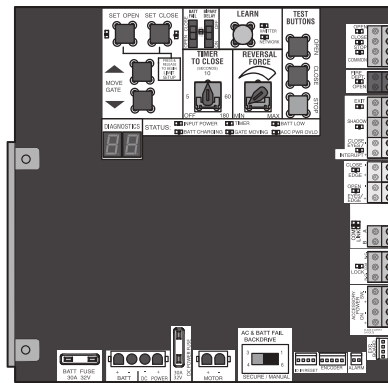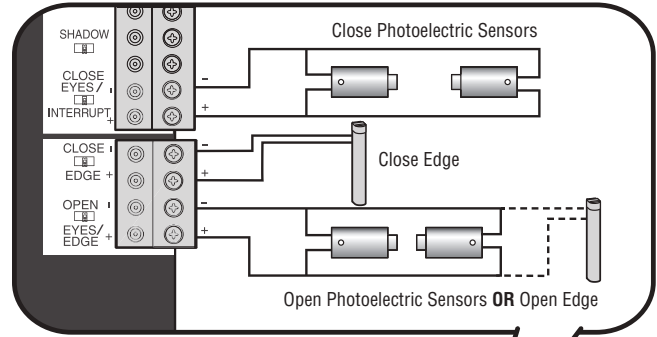
Expansion Board

EYE ONLY and COM

Open or Close Direction Photoelectric Sensors, the functionality is based on the switch settings (located next to the terminals)

Switch set to CLOSE: gate reverses fully when an obstruction is sensed

Switch set to OPEN: gate reverses 4 seconds when an obstruction is sensed

EYE/EDGE and COM

Open or Close Direction Photoelectric Sensors or Edge Sensor, the functionality is based on the switch settings (located next to the terminals)

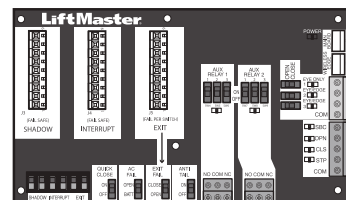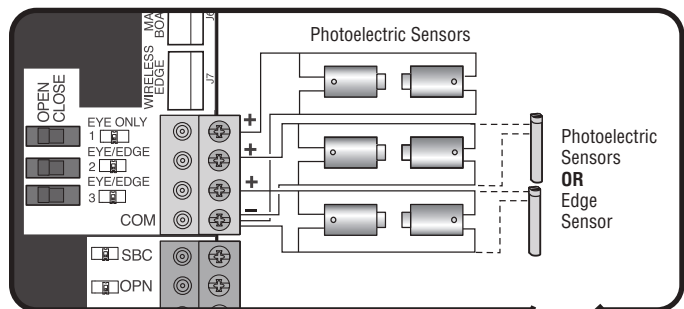**Switch set to CLOSE:** gate reverses fully when an obstruction is sensed

Switch set to OPEN: gate reverses 4 seconds when an obstruction is sensed

⚠ ⚡ 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.
- 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.

Step 6 Power Wiring

All control wiring used to connect external devices to Class 2 circuits of the operator must be (QPTZ) Power-Limited Circuit Cables, Type CL2, CL2P, CL2R, or CL2X or other cable with equivalent or better electrical, mechanical, and flammability ratings.

NOTE: *The operator can also be powered by solar panels, refer to the dealer extranet on LiftMaster.com for more information.*
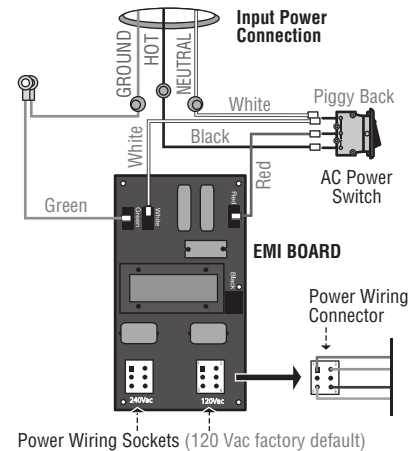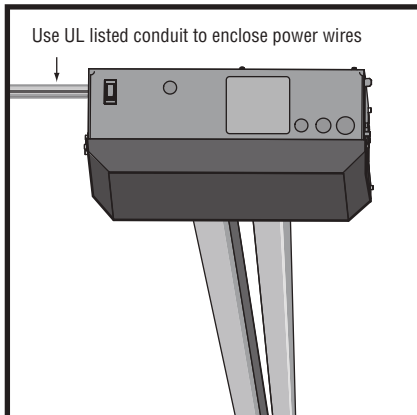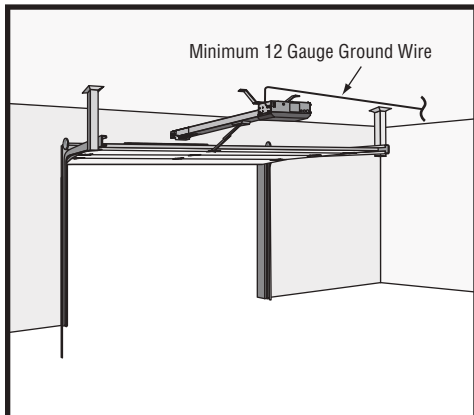
Proper grounding gives an electrical charge, such as from an electrical static discharge or a near lightning strike, a path from which to dissipate its energy safely into the earth. The ground wire MUST be a single, whole piece of wire. NEVER splice two wires for the ground wire. If you should cut the ground wire too short, break it, or destroy its integrity, replace it with a single wire length. Use the proper type earth ground rod for your local area. In certain circumstances, metal water pipes may be allowed for grounding the operator. Check and follow all local codes for proper grounding procedures.

AMERICAN WIRE GAUGE (AWG)	MAXIMUM WIRE LENGTH (120 VAC)	MAXIMUM WIRE LENGTH (240 VAC)
14	130 feet (39.6 m)	260 feet (79.3 m)
12	205 feet (62.5 m)	410 feet (125 m)
10	325 feet (99.1 m)	650 feet (198.1 m)
8	520 feet (158.5 m)	1,040 feet (317 m)
6	825 feet (251.5 m)	1,650 feet (502.9 m)
4	1,312 feet (399.9 m)	2,624 feet (799.8 m)
NOTE: *Use copper conductors ONLY.*		

1. Turn off the AC power from the main power source circuit breaker.
2. Run the AC power wires to the operator.
3. Loosen the nut on the cover of the EMI board and slide the cover back.
4. Connect the green wire to the ground wire using a wire nut.
5. Connect the white wire to NEUTRAL using a wire nut.
6. Connect the black wire to HOT using a wire nut.
7. Ensure the power wiring connector is connected to either the 120 or 240 Vac socket depending on the application. Factory default is 120 Vac.
8. Slide the EMI cover back and tighten nut.
9. Connect the batteries then turn on the AC power. Connect the J15 plug to the control board.

NOTE: *The AC Power switch on the operator will turn the incoming 120/240 Vac power ON or OFF. The operator's AC Power switch ONLY turns off AC power to the control board and DOES NOT turn off battery power.*

Minimum 12 Gauge Ground Wire

Use UL listed conduit to enclose power wires

Input Power Connection

GROUND HOT NEUTRAL

White — Piggy Back

White

Black

Red

AC Power Switch

Green

EMI BOARD

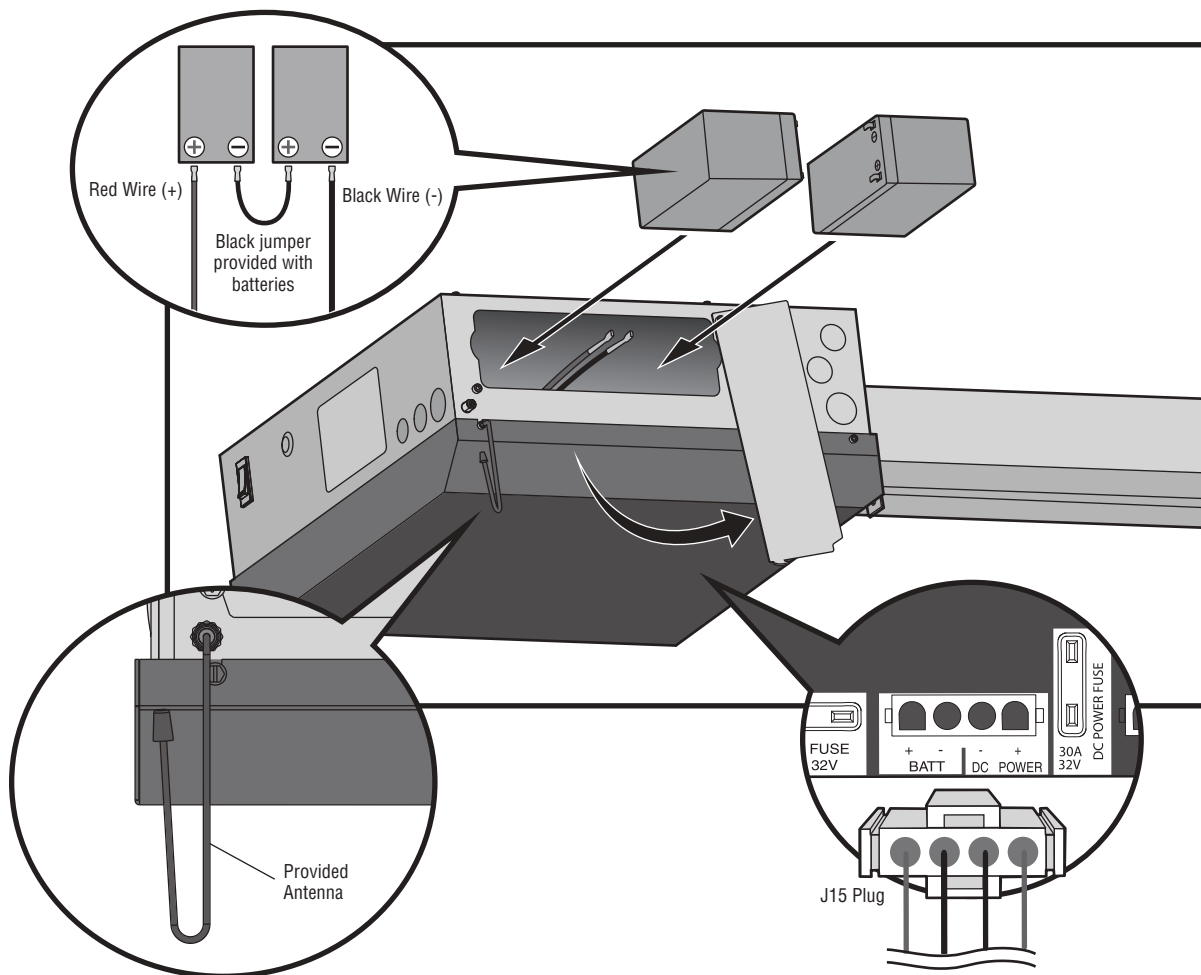Power Wiring Connector

Power Wiring Sockets (120 Vac factory default)

Step 7 Connect Batteries and Attach Antenna

The batteries are charged in the circuit by the integrated transformer. The batteries are for battery backup.

1. Unplug the J15 plug labeled BATT on the control board by squeezing the plug and pulling it from the control board. This disconnects the ac/dc power to the control board.
2. Loosen the screws on the battery cover and rotate out of the way.
3. Connect the red wire to the positive (+) terminal on one battery and connect the black wire to the negative (-) terminal on the other battery.
4. Connect the black jumper (included with the batteries) between the positive (+) terminal of one battery to the negative (-) terminal of the other battery.
5. Insert the batteries as shown.
6. Reattach the battery cover.
7. Plug the J15 plug back into the control board. This will power up the control board. *NOTE: You may see a small spark when plugging the J15 plug into the board.*
8. Attach the provided antenna in the orientation shown. ONLY use the provided antenna.
9. Turn ON AC power to the operator.
10. Turn ON the AC power switch on the operator.

Red Wire (+)

Black Wire (-)

Black jumper provided with batteries

Provided Antenna

FUSE 32V

BATT
+   -

DC POWER
-   +

DC POWER FUSE

30A 32V

J15 Plug

Limit and Force Adjustment

Introduction

Your operator is designed with electronic controls to make travel limit and force adjustments easy. The adjustments allow you to program where the gate/door will stop in the open and close position. The electronic controls sense the amount of force required to open and close the gate/door. The force is adjusted automatically when you program the limits but should be fine tuned using the REVERSAL FORCE dial on the control board (refer to *Fine Tune the Force* section) to compensate for environmental changes. The limit setup LEDs (located next to the SET OPEN and SET CLOSE buttons) indicate the status of the limits, refer to the table to the right.

The limits can be set using the control board (below) or a remote control (refer to *Limit Setup with a Remote Control* in the Appendix). Setting the limits with a remote control requires a 3-button remote control programmed to OPEN, CLOSE, and STOP.

NOTE: *The TEST buttons on the control board will not work until the limits have been set and the required entrapment protection devices are installed.*

Initial Limits and Force Adjustment

The gate/door MUST be attached to the operator before setting the limits and force.

1. Press and release the SET OPEN and SET CLOSE buttons simultaneously to enter limit setting mode.
2. Press and hold one of the MOVE GATE buttons to move the gate/door to the open or close limit.
3. Press and release the SET CLOSE or SET OPEN button depending on which limit is being set.
4. Press and hold one of the MOVE GATE button to move the gate/door to the other limit.
5. Press and release the SET CLOSE or SET OPEN button depending on which limit is being set.
6. Cycle the gate/door open and close. This automatically sets the force.

When limits are set properly the operator will automatically exit limit setting mode.

LIMIT SETUP LEDS			
SET OPEN LED	**SET CLOSE LED**	**OPERATOR MODE**	**EXPLANATION**
OFF	OFF	NORMAL MODE	Limits are set
BLINKING	BLINKING	LIMIT SETTING MODE	Limits are not set
BLINKING	ON	LIMIT SETTING MODE	Open limit is not set
ON	BLINKING	LIMIT SETTING MODE	Close limit is not set
ON	ON	LIMIT SETTING MODE	Limits are set
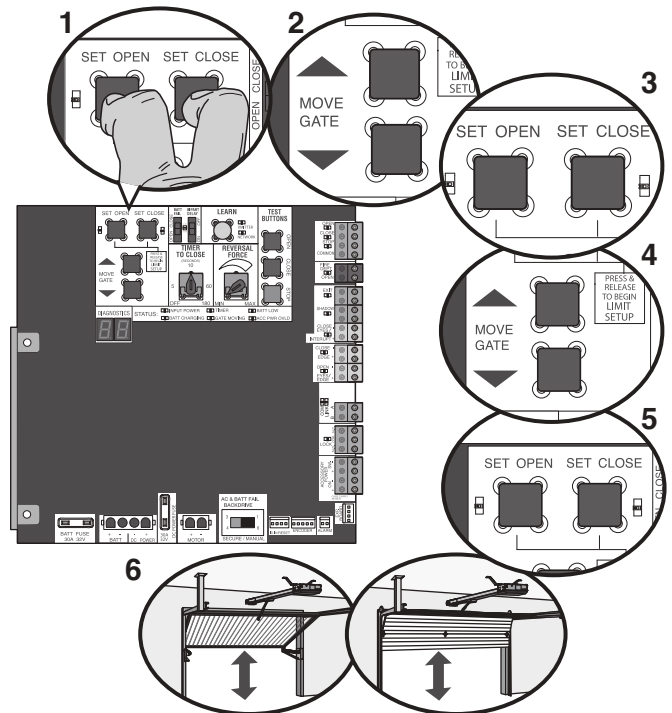
Fine Tune the Force

Once the initial limits have been set, the REVERSAL FORCE DIAL on the control board is used for fine tuning the force where wind or environmental changes may affect the gate/door travel. The REVERSAL FORCE DIAL is set to minimum at the factory.

Based on the length and weight of the gate/door it may be necessary to make additional force adjustments. The force setting should be high enough that the gate will not reverse by itself nor cause nuisance interruptions, but low enough to prevent serious injury to a person. The force setting is the same for both the open and close gate/door directions.

1. Open and close the gate/door with the TEST BUTTONS.

2. If the gate/door stops or reverses before reaching the fully open or closed position, increase the force by turning the force control slightly clockwise.

3. Perform the "Obstruction Test" after every limit and force setting adjustment (see below).
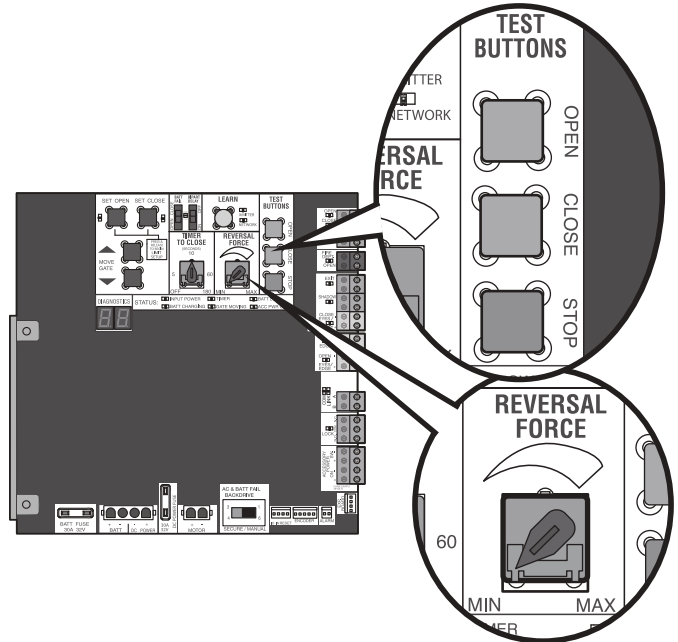
Adjust the Limits

After both limits are set and the operator is ready to run, one limit can be adjusted independently from the other by following steps 1-3 of the Initial Limit and Force Adjustment section.
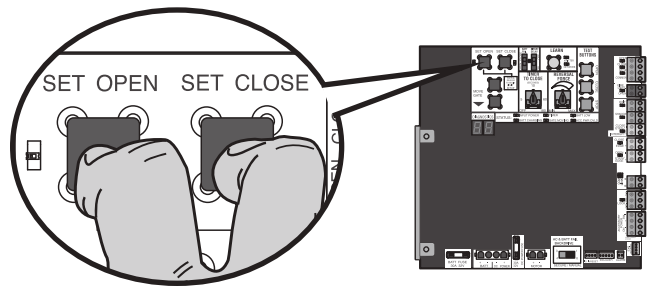
Obstruction Test

The operator is equipped with an inherent (built in to the operator) obstruction sensing device. If the gate/door encounters an obstruction during motion, the operator will reverse direction of the gate/door and then stop The following procedure will test ONLY the inherent (built in to the operator) obstruction sensing device:

1. Open and close the gate/door with the TEST BUTTONS, ensuring that the gate/door is stopping at the proper open and close limit positions.

2. Place an object under the open gate/door. Make sure that any external entrapment protection devices will NOT be activated by the object.

3. Run the gate/door in the close direction. The gate/door should stop and reverse upon contact with the object. If the gate/door does not reverse off the object, reduce the force setting by turning the force control slightly counter-clockwise. The gate/door should have enough force to reach both the open and close limits, but MUST reverse after contact with an object.

4. Repeat the test for the open direction.

Test the operator after any adjustments are made.

AC POWER SWITCH

EMI BOARD

RESET BUTTON

CONTROL BOARD

EXPANSION BOARD

RAIL

TROLLEY
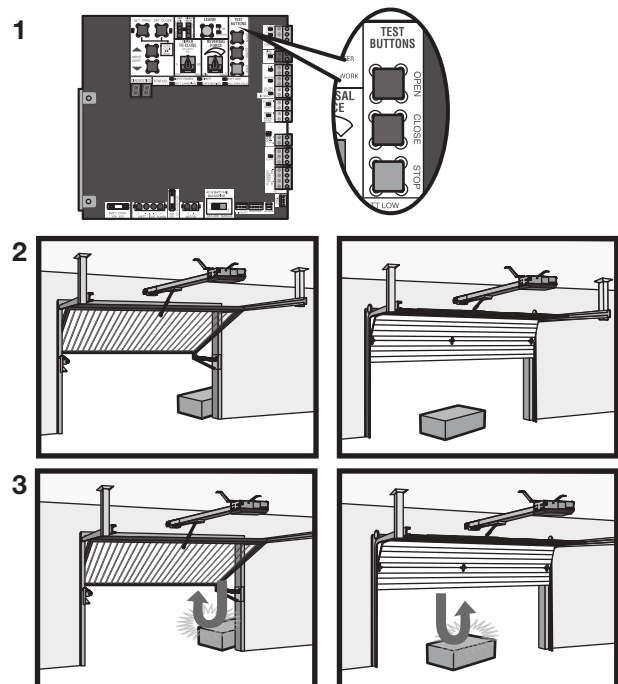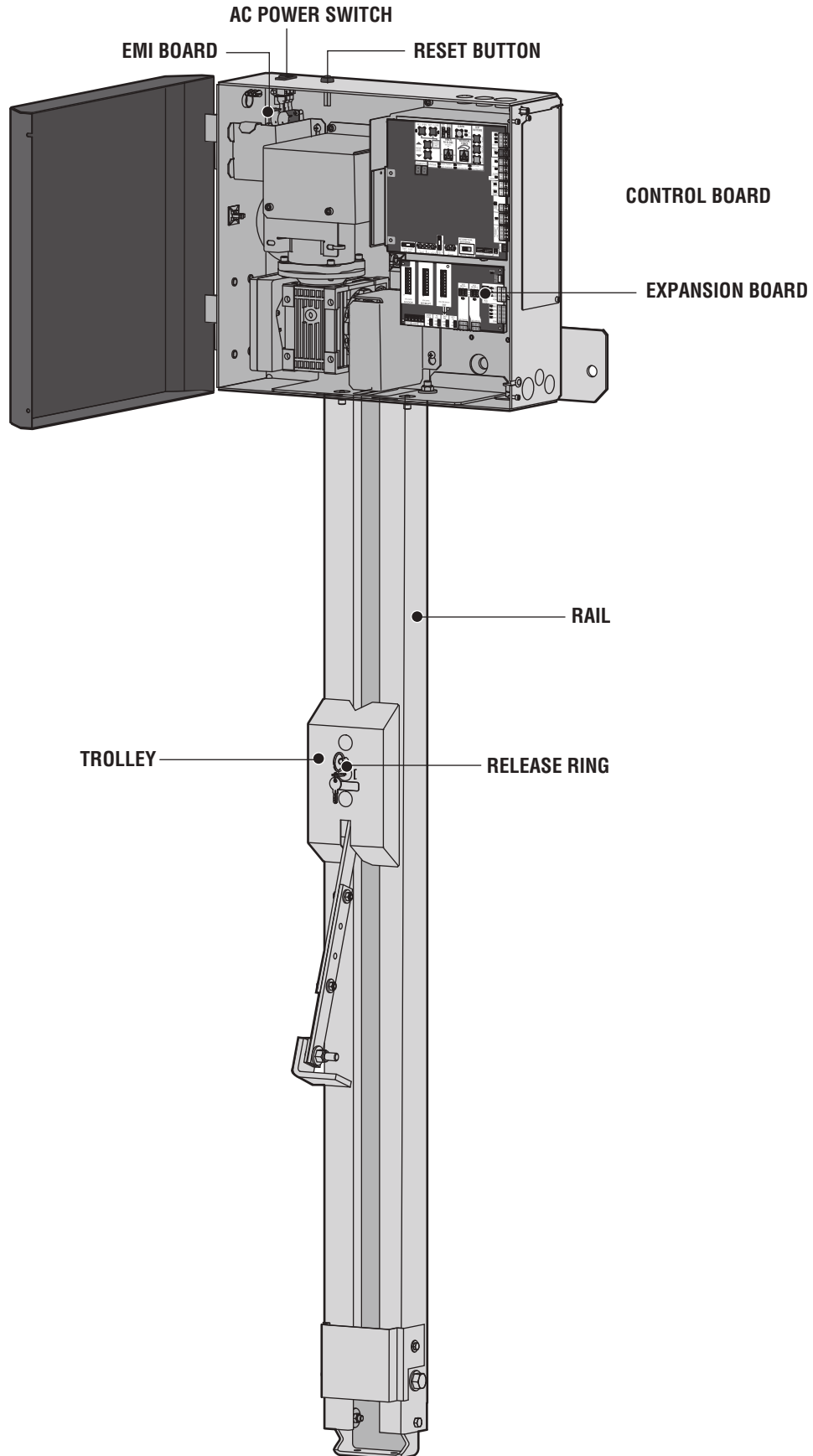
RELEASE RING

Remote Controls (Not Provided)

A total of 50 Security+ 2.0® remote controls or KPW250 keypads and 2 keyless entries (1 PIN for each keyless entry) can be programmed to the operator. When programming a third keyless entry to the operator, the first keyless entry will be erased to allow the third keyless entry to be programmed. When the operator's memory is full it will exit the programming mode and the remote control will not be programmed. The memory will need to be erase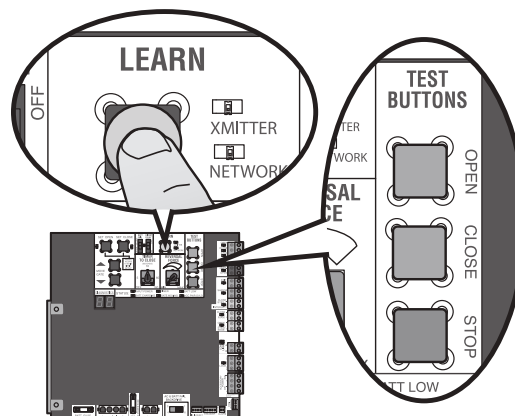d before programming any additional remote controls. *NOTE: If installing an 86LM to extend the range of the remote controls DO NOT straighten the antenna.*

There are 3 different options for programming the remote control depending on how you would like the remote control to function. Choose a programming option:

OPTION	DESCRIPTION	PROGRAMMING STEPS
Single button as OPEN only	Program a single button on the remote control for open only. The Timer-to-Close can be set to close the gate.	1. Press and release the LEARN button (operator will beep and green XMITTER LED will light). *NOTE: The operator will time out of programming mode after 30 seconds.* 2. Press the OPEN button. 3. Press the remote control button that you would like to program.
Single button (SBC) as OPEN, CLOSE, and STOP	Program one remote control button as an open, close, and stop.	1. Press and release the LEARN button (operator will beep and green XMITTER LED will light). *NOTE: The operator will time out of programming mode after 30 seconds.* 2. Press the remote control button that you would like to program.
Three separate buttons as OPEN, CLOSE, and STOP	Program each remote control button as an open, close, and stop.	1. Press and release the LEARN button (operator will beep and green XMITTER LED will light). *NOTE: The operator will time out of programming mode after 30 seconds.* 2. Press the OPEN, CLOSE, or STOP button, depending on the desired function. 3. Press the remote control button that you would like to program.

The operator will automatically exit learn mode (operator will beep and green XMITTER LED will go out) if programming is successful. To program additional Security+ 2.0® remote controls or remote control buttons, repeat the programming steps above.

Entering programming mode using external reset button or 3-button control station:

1. Make sure gate/door is closed.
2. Give the operator an OPEN command.
3. Within 30 seconds, when the gate/door is at the open limit press and release the RESET/STOP button twice to put the operator into programming mode. *NOTE: The operator will time out of programming mode after 30 seconds.*

LiftMaster Internet Gateway (not provided)

You will need a broadband internet connection and a Wi-Fi® router to use the LiftMaster Internet Gateway.

To program the operator to the LiftMaster Internet Gateway:

Using the learn button on the opertaor's control board

1. Connect the ethernet cable to the LiftMaster Internet Gateway and the router.
2. Connect power to the LiftMaster Internet Gateway.
3. Create an online account by visiting www.myliftmaster.com.
4. Register the LiftMaster Internet Gateway.
5. Use an internet enabled computer or smartphone to add devices. The LiftMaster Internet Gateway will stay in learn mode for three minutes.
6. Press the Learn button twice on the primary operator (the operator will beep as it enters learn mode). The LiftMaster Internet Gateway will pair to the operator if it is within range and the operator will beep if programming is successful.

Using the reset button or 3-button control station

1. Connect the ethernet cable to the LiftMaster Internet Gateway and the router.
2. Connect power to the LiftMaster Internet Gateway.
3. Create an online account by visiting www.myliftmaster.com.
4. Register the LiftMaster Internet Gateway.
5. Use an internet enabled computer or smartphone to add devices. The LiftMaster Internet Gateway will stay in learn mode for three minutes.
6. Ensure gate/door is closed.
7. Give the operator an OPEN command.
8. Within 30 seconds, when the gate/door is at the open limit press and release the reset button 3 times (on primary gate) to put primary operator into High Band Learn Mode (the operator will beep as it enters learn mode). The LiftMaster Internet Gateway will pair to the operator if it is within range and the operator will beep if programming is successful.

The status as shown by the LiftMaster Internet Gateway app will be either "open" or "closed". The gate/door operator can then be controlled through the LiftMaster Internet Gateway app.

Erase All Codes

1. Press and release the LEARN button (operator will beep and green XMITTER LED will light).
2. Press and hold the LEARN button again until the green XMITTER LED flashes and then release the button (approximately 6 seconds). All remote control codes are now erased.

Erase Limits

1. To erase the limits, press and hold the SET OPEN and SET CLOSE buttons simultaneously (5 seconds) until both the SET OPEN and SET CLOSE LEDs blink rapidly and the operator beeps.
2. Release the buttons and the SET OPEN and SET CLOSE LEDs will blink slowly indicating the limits will need to be set.

Constant Pressure Override (CPO)

Constant Pressure Override is for use with KPW5 and KPW250 keypads (not provided). The KPW5/KPW250 wireless commercial keypads are security keypads and can only be programmed to ONE gate operator (see the KPW5/KPW250 manual for complete programming instructions).

The Constant Pressure Override feature is intended to temporarily override a fault in the entrapment protection system, in order to operate the gate until the external entrapment protection device is realigned or repaired. Use the feature only in line of sight of the gate when no obstructions to travel are present. External entrapment protection devices include LiftMaster monitored photoelectric sensors and LiftMaster monitored wired and wireless edge sensors. Be sure to repair or replace these devices promptly if they are not working properly.

To use Constant Pressure Override:

1. Enter a valid 4-digit PIN.
2. Press and hold # for 5 seconds to enter CPO. Continue to hold # to keep the operator in motion. A continuous tone will sound until limit is met and/or # is released.
3. The operator will stop when either the operator reaches a limit or the user releases #.

Gate Hold Open Feature

The gate hold open feature will disable the timer and keep the gate at the open limit. The gate hold open feature can be activated through the Reset Button as described on page 25 or through the KPW5 and KPW250 keypads (not provided).

To use the gate hold open feature:

1. Enter a valid 4-digit PIN when the gate is at the Open Limit and the timer is running
2. The Operator will chirp indicating the timer is canceled.

To restart the gate:

1. Re-enter the 4-digit PIN
2. Activate a Hard input or a programmed remote

To Remove and Erase Monitored Entrapment Protection Devices

1. Remove the entrapment protection device wires from the terminal block.
2. Press and release the SET OPEN and SET CLOSE buttons simultaneously. The SET OPEN and SET CLOSE LEDs will turn on (entering learn limit mode).
3. Press and release both SET OPEN and SET CLOSE buttons again to turn off the SET OPEN and SET CLOSE LEDs (exiting learn limit mode).

Limit Setup with a Remote Control

To set the limits using a remote control, first you will need a 3-button remote control that has been programmed for OPEN, CLOSE, and STOP. Refer to the Programming section.

Initial Limits and Force Adjustment

The gate/door MUST be attached to the operator before setting the limits and force.

Ensure the gate/door is closed.

1. Press and release the SET OPEN and SET CLOSE buttons simultaneously to enter limit setting mode.
2. Press and hold the OPEN or CLOSE button on the remote control until the gate/door reaches the desired open position. The gate/door can be jogged back and forth using the OPEN and CLOSE buttons on the remote control.
3. Once the gate/door is in the desired open position, press and release the STOP button on the remote control.
4. Press and release the OPEN button on the remote control again to set the open limit.
5. Press and hold the CLOSE or OPEN button on the remote control until the gate/door reaches the desired close position. The gate/door can be jogged back and forth using the OPEN and CLOSE buttons on the remote control.
6. Once the gate/door is in the desired close position, press and release the STOP button on the remote control.
7. Press and release the CLOSE button on the remote control again to set the close limit.
8. Cycle the gate/door open and close. This automatically sets the force.

When limits are set properly the operator will automatically exit limit setting mode.

Refer to the *Adjustment* section and follow the instructions for *Fine Tune the Force* and *Obstruction Test* . Perform the "Obstruction Test" after every limit and force setting adjustment.

Adjust the limits

If the limits have already been set the operator will exit the limit setting mode after resetting each limit.

Set the Close Limit Only

1. Press and release the SET OPEN and SET CLOSE buttons simultaneously to enter limit setting mode.
2. Press and hold the CLOSE button on the remote control until the gate/door reaches the desired close position. The gate/door can be jogged back and forth using the OPEN and CLOSE buttons on the remote control.
3. Once the gate/door is in the desired close position, press and release the STOP button on the remote control.
4. Press and release the CLOSE button on the remote control again to set the close limit.

When the close limit is set properly the operator will automatically exit limit setting mode.

Set the Open Limit Only

1. Press and release the SET OPEN and SET CLOSE buttons simultaneously to enter limit setting mode.
2. Press and hold the OPEN button on the remote control until the gate/door reaches the desired open position. The gate/door can be jogged back and forth using the OPEN and CLOSE buttons on the remote control.
3. Once the gate/door is in the desired open position, press and release the STOP button on the remote control.
4. Press and release the OPEN button on the remote control again to set the open limit.

When the open limit is set properly the operator will automatically exit limit setting mode.
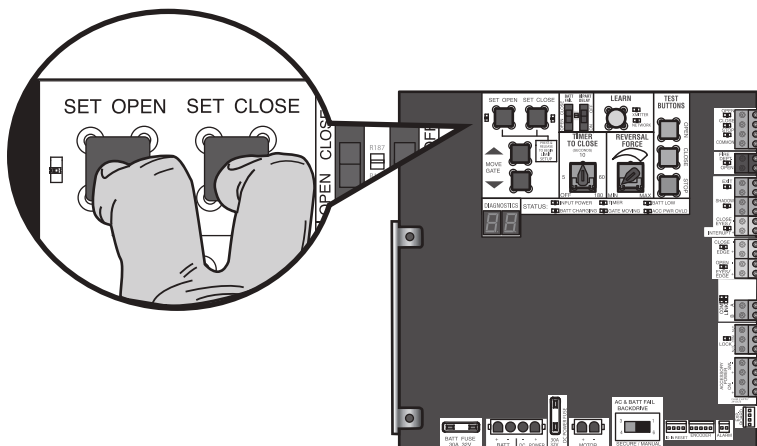
3-Button Remote Control programmed for OPEN, CLOSE, and STOP
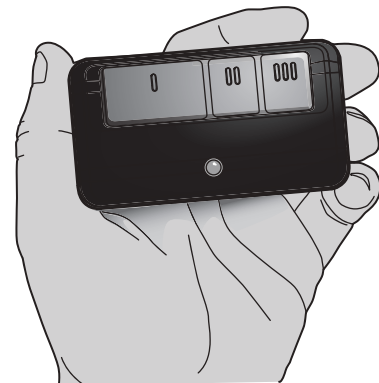
Gate/Door Operator Setup Examples

The following are example setups for the gate/door operator. Your specific site requirements may be different. Always setup the operator system to the site requirements, including all necessary entrapment protection devices.

COMMERCIAL/GENERAL ACCESS: A residential community (more than four homes) having one or more gated entrances/exits, allowing vehicle access trumps security concerns

COMMERCIAL: Business site where security (gate/door closed) is important

INDUSTRIAL: Large business site where security is required

| SETTING	COMMERCIAL/GENERAL ACCESS	COMMERCIAL	INDUSTRIAL
Quick Close switch setting	Normally set to OFF. Normal gate/door close (timer or control).	Normally set to OFF. Normal gate/door close (timer or control).	Set to ON, so that gate/door closes immediately after vehicle passes CLOSE EYES/Interrupt loop.
AC Fail Open switch setting	Normally set to BATT. For local jurisdiction requirement, set to OPEN so that the gate/door will open approximately 15 seconds after AC power fail.	Normally set to BATT. Run on battery if AC power fails.	Normally set to BATT. Run on battery if AC power fails.
Low Battery switch setting	Normally set to OPEN. If powered from battery and battery is low, gate/door automatically opens and stays open.	Normally set to CLOSE. If powered from battery and battery is low, gate/door stays closed.	Normally set to CLOSE. If powered from battery and battery is low, gate/door stays closed.
Anti-Tail switch setting	Normally set to OFF. CLOSE EYES/Interrupt loop reverses a closing gate/door.	Set to ON. In attempt to prevent vehicle tail-gating, CLOSE EYES/ Interrupt loop pauses a closing gate/door.	Set to ON. In attempt to prevent vehicle tail-gating, CLOSE EYES/ Interrupt loop pauses a closing gate/door.
Bipart Delay switch setting	Normally set to OFF. Normal open speed.	Set to ON for high speed open to help flow in high traffic areas.	Set to ON for high speed open to help flow in high traffic areas.
Aux Relay Out – Open Limit Switch	Use with SAMS (Sequence Access Management System).	1. Use with SAMS (Sequence Access Management System). 2. Connect "Gate Open" indicator (e.g. light).	1. Use with SAMS (Sequence Access Management System). 2. Connect "Gate Open" indicator (e.g. light).
Aux Relay Out – Close Limit Switch	Typically not required.	Connect "Gate Close/Secure" indicator (e.g. light).	Connect "Gate Close/Secure" indicator (e.g. light).
Aux Relay Out – Gate/door Motion	Attach alert signal (audible or visual alert system).	Attach alert signal (audible or visual alert system).	Attach alert signal (audible or visual alert system).
Aux Relay Out – Pre-Motion Delay	Attach alert signal (audible or visual alert system).	Attach alert signal (audible or visual alert system).	Attach alert signal (audible or visual alert system).
Aux Relay Out – Power	Attach visual alert to know when system is charging batteries (i.e. not running on batteries).	Attach visual alert to know when system is charging batteries (i.e. not running on batteries).	Attach visual alert to know when system is charging batteries (i.e. not running on batteries).
Aux Relay Out – Tamper	Attach alert signal (audible or visual alert system) to indicate if gate/door is manually tampered with by being pushed off of close limit.	Attach alert signal (audible or visual alert system) to indicate if gate/door is manually tampered with by being pushed off of close limit.	Attach alert signal (audible or visual alert system) to indicate if gate/door is manually tampered with by being pushed off of close limit.
Cycle Quantity Feedback	Use during servicing only to determine operator cycles.	Use during servicing only to determine operator cycles.	Use during servicing only to determine operator cycles.
Fire Dept Open Input	Connect emergency access system (Knox box switch, SOS system, etc.).	Typically not required.	Typically not required.

Control Board Overview

1 SET OPEN Button: The SET OPEN button sets the OPEN limit. See *Adjust Limits* section.

2 SET CLOSE Button: The SET CLOSE button sets the CLOSE limit. See *Adjust Limits* section.

3 MOVE GATE Buttons: The MOVE GATE buttons will either open or close the gate/door when the operator is in Limit setting mode. See Adjust Limits section.

4 BATT FAIL:

- When AC power is OFF and battery voltage is critically low the gate/door will latch at a limit until AC power is restored or batteries voltage increases.
- Option select switch set to OPEN forces gate/door to automatically open and then latch at the OPEN limit until AC power is restored or battery voltage increases.
- Option select switch set to CLOSE forces gate/door to latch at CLOSE limit if at CLOSE limit or on next CLOSE command until AC power restored or battery voltage increases.
- Constant pressure on a hard command input overrides to open or close the gate/door.
- Critically low battery is less than 23 V

5 BIPART DELAY Switch: The BIPART DELAY switch is used to select the opening speed. See page 25.

6 LEARN Button: The LEARN button is for programming remote controls and the network.

7 TIMER-TO-CLOSE dial: The TIMER-TO-CLOSE (TTC) dial can be set to automatically close the gate after a specified time period. The TTC is factory set to OFF. If the TTC is set to the OFF position, then the gate/door will remain open until the operator receives another command from a control. Rotate the TIMER-TO-CLOSE dial to the desired setting. The range is 0 to 180 seconds, 0 seconds is OFF. *NOTE: Any radio command, single button control, or CLOSE command on the control board prior to the TTC expiring will close the gate/door. The TTC is reset by any signals from the open controls, loops, close edges, and close photoelectric sensors (IR's).*

8 REVERSAL FORCE dial: The REVERSAL FORCE dial fine tunes the force. See *Force Adjustment* section.

9 TEST BUTTONS: The TEST BUTTONS will operate the gate/door (OPEN, STOP and CLOSE).

10 STATUS LEDs: The STATUS LEDs indicate the status of the operator. See Status LED Chart in the Troubleshooting section.

11 DIAGNOSTICS Display: The diagnostics display will show the operator type, firmware version, and codes. The operator type will display as "HC" followed by a "24" which indicates the operator type as HCTDCUL. The firmware version will show after the operator type, example "1.2".

12 BACKDRIVE Switch: ALWAYS set to SECURE to enable motor braking. To manually move the gate/door see page 26.
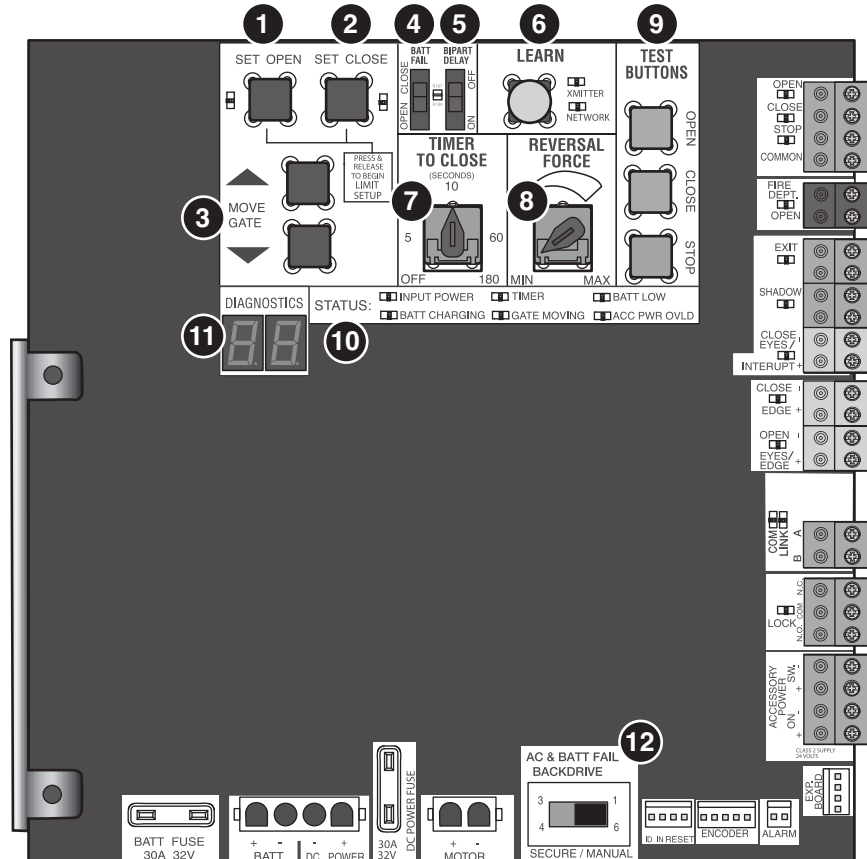
Reset Button

The reset button is located on the side of the control box and serves several functions:

- Press the reset button to stop a moving gate/door during a normal open/close cycle, like a stop button.
- Press the reset button once while the gate/door is in open position to disable the Timer-to-Close. The gate/door will stay in the open position. To restart the Timer-to-Close either press the reset button or activate the gate/door with a programmed remote control.
- Press the reset button to shut off the alarm and reset the operator.

Reset Button

Operator Alarm

If a contact sensor detects an obstruction twice consecutively the alarm will sound (up to 5 minutes) and the operator will need to be reset. If a command is given after the initial 5 minutes the operator will beep. The operator alarm will beep 3 times with a command if the battery is low.
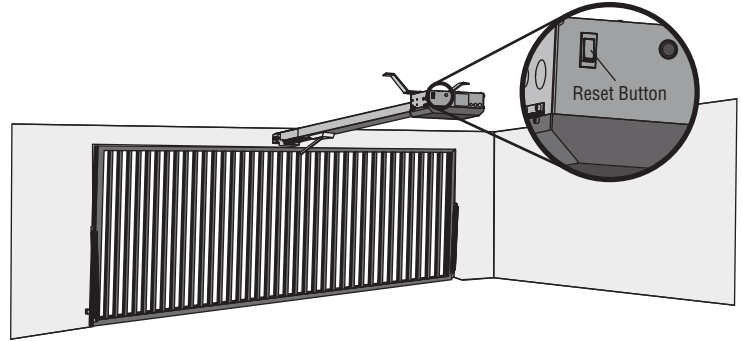
When the inherent force of the operator (RPM/current sensor) detects the following (twice consecutively) the alarm will sound (up to 5 minutes) and the operator will need to be reset:

A. The gate/door hits an obstruction.
B. The gate/door has a broken wheel(s) or damaged track.
C. The gate/door has broken springs or hardware.
D. Trolley is hitting the chassis or an unwanted object.

Remove any obstructions. Toggle the reset switch to shut off the alarm and reset the operator. After the operator is reset, normal functions will resume.

A
B
C
D
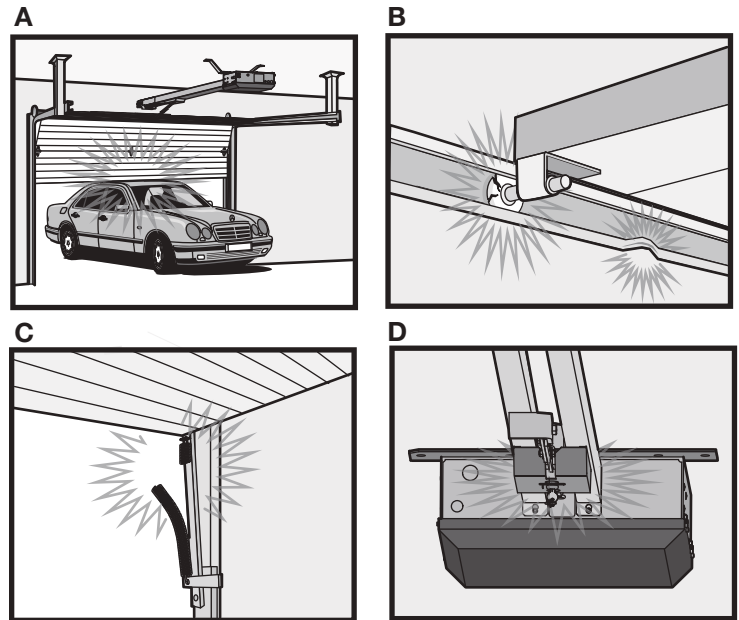
Adjustable Open Speed

The HCTDCU provides a high speed open option to help flow in high traffic areas. Select the open speed using the BIPART DELAY switch.

BIPART DELAY OFF (default) = 8 in./sec. open speed

BIPART DELAY ON (fast) = 11 in./sec. open speed

NOTE: *After changing the open speed, the force will need to be reset to account for the change of power used, see Limit and Force Adjustment section.*
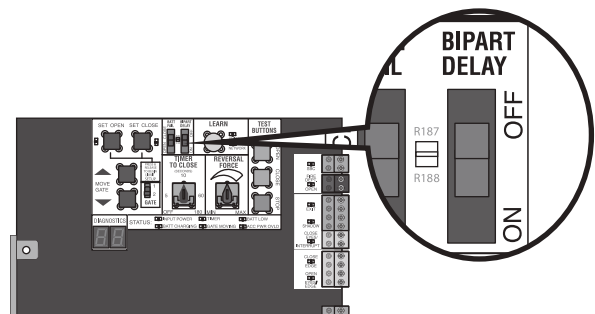
Remote control

Single Button Control (SBC) Functionality

Once the remote control has been programmed the operator will operate as follows:

When gate/door is in the closed position, activation of the remote control button will open the gate/door. During the open cycle another activation of the remote control will stop the gate/door and the next activation of the remote control will close the gate/door.

When the gate/door is in the open position, activation of the remote control button will close the gate/door. If the remote control is activated while the gate/door is closing, the gate/door will stop and the next activation will open the gate/door.

Manual Disconnect

<table>
<tr><td>⚠ WARNING</td></tr>
</table>

To reduce the risk of SERIOUS INJURY or DEATH from a falling gate/door:

- If possible, use manual release to disengage trolley ONLY when gate/door is CLOSED. Weak or broken springs or unbalanced gate/door couldresult in an open gate/door falling rapidly and/or unexpectedly.
- NEVER use emergency release unless gate/door is clear of persons and obstructions.

Step 1
Insert key and turn to unlock position.
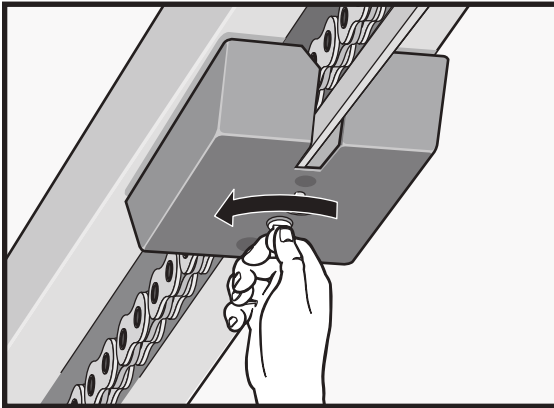
Step 2
Pull down the release ring.
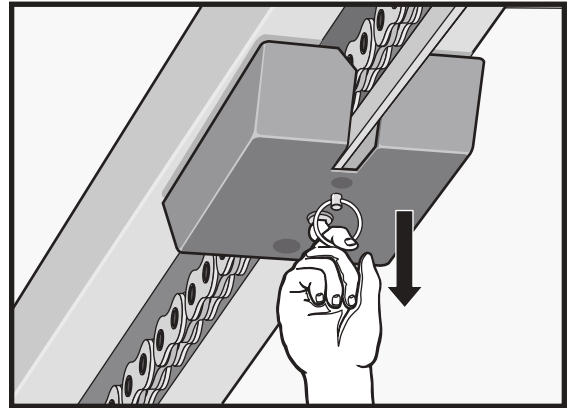
Step 3
Insert key and turn to unlock position.
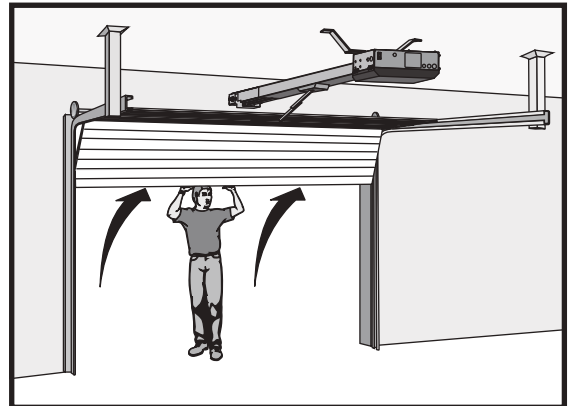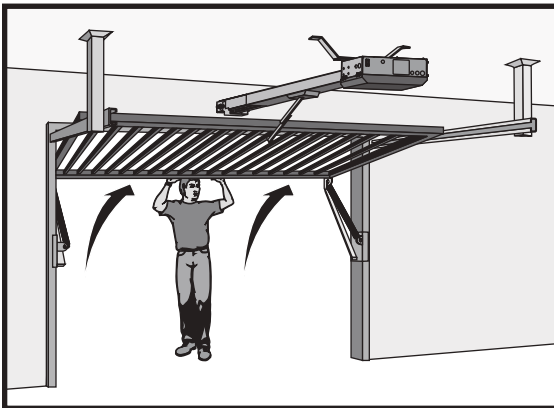
The trolley will automatically re-engage when power is restored and run command is given. When the cylinder lock is in the locked position, the release ring will not disengage. If the cylinder lock is in the unlocked position, the release ring will always be accessible to disengage.

All control wiring used to connect external devices to Class 2 circuits of the operator must be (QPTZ) Power-Limited Circuit Cables, Type CL2, CL2P, CL2R, or CL2X or other cable with equivalent or better electrical, mechanical, and flammability ratings.

External Control Devices

EXIT (2 Terminals)

This input is a soft open command (maintained switch does not override external safeties and does not reset alarm condition). Used for exit probe, telephone entry, external exit loop detector, or any device that would command the gate/door to open.

- Opens a closing gate/door and holds open an open gate/door, if maintained, pauses Timer-to-Close at OPEN limit.

SHADOW (2 Terminals)

This input is used for external shadow loop detector when loop is positioned under the swing of the gate/door.

- Holds open gate/door at open limit
- Only active when the gate/door is at the OPEN limit, disregarded at all other times
- Pauses Timer-to-Close at OPEN limit

### INTERRUPT (2 Terminals)

This input is used for photoelectric sensors and external interrupt loop detector when loop is on the outside of the gate/door.

- Holds open gate/door at open limit
- Stops and reverses a closing gate/door to open limit
- Pauses Timer-to-Close at OPEN limit, activates quick close and anti-tailgate features when enabled on the expansion board
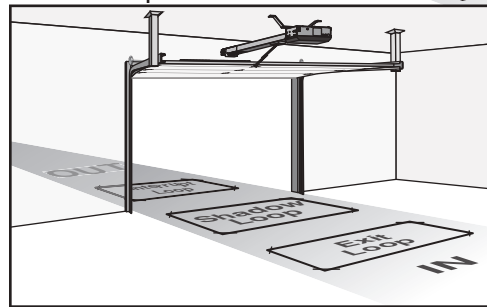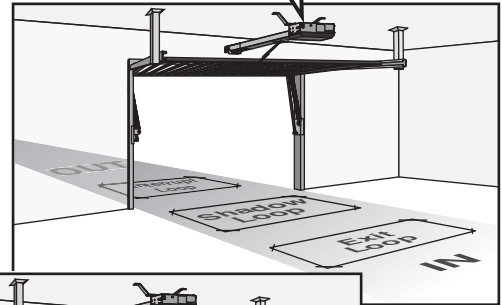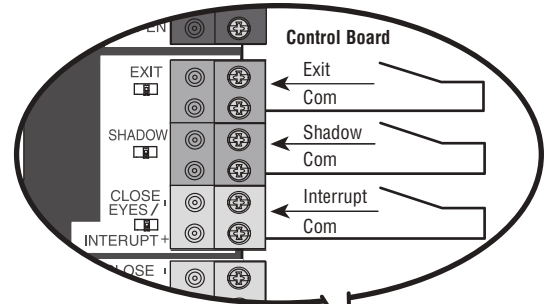
External Reset Button

The externally located reset button serves several functions:

- Press the reset button to stop a moving gate/door during a normal open/close cycle, like a stop button.
- Press the reset button once while the gate/door is in open position to disable the Timer-to-Close. The gate/door will stay in the open position. To restart the Timer-to-Close either press the reset button or activate the gate/door with a programmed remote control.
- Press the reset button to shut off the alarm and reset the operator.

WIRING

- **STOP and COM:** Stops a moving gate/door. Hard stop (maintained switch overrides Open and Close commands and resets alarm condition). Cancels/resets Timer-to-Close at OPEN limit. Overrides Open and Close commands (within line-of-sight)
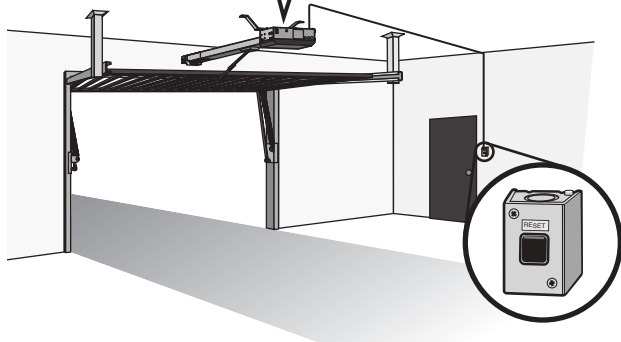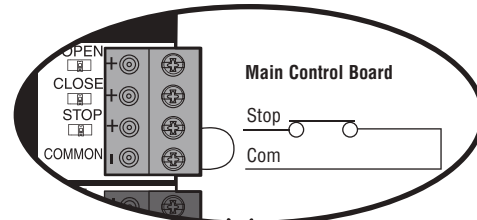
Miscellaneous wiring

Three button control station (4 Terminals)

- **OPEN and COM:** Opens a closed gate/door. Hard open (maintained switch overrides external safeties and resets alarm condition). If maintained, pauses Timer-to-Close at OPEN limit. Opens a closing gate/door and holds open an open gate (within line-of-sight).

- **CLOSE and COM:** Closes an open gate/door. Hard close (maintained switch overrides external safeties and resets alarm condition within line-of-sight)

- **STOP and COM:** Stops a moving gate/door. Hard stop (maintained switch overrides Open and Close commands and resets alarm condition). Cancels/resets Timer-to-Close at OPEN limit. Overrides Open and Close commands (within line-of-sight).
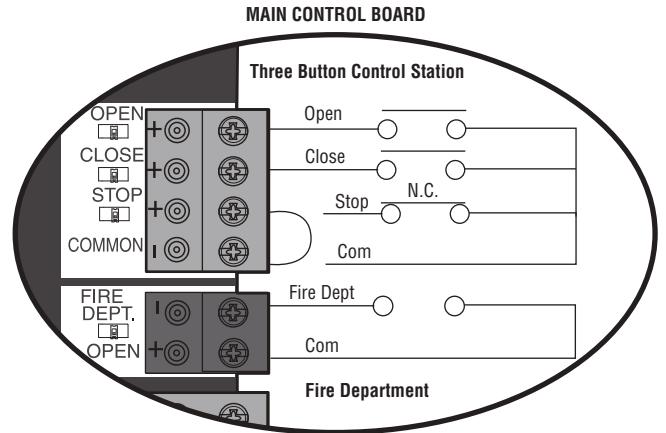
Fire department open input (2 Terminals)

Acts as hard open.

Maintained input overrides (ignores) external safeties (photoelectric sensor and edge), pauses Timer-to-Close momentary input logic as single button control and safeties remain active, re-enables Timer-to-Close.

Opens a closing gate/door and holds open an open gate/door (within line-of-sight). Bypasses any pre-warning delay.

Accessory power 24 VDC, MAX 500 mA (4 Terminals)

- **SWITCHED:** Switched ON when the gate/door is in motion. Turns off after a 5 second delay when the gate/door stops. The power will remain ON at the open limit when Timer-to-Close is enabled and when the Timer-to-Close is counting down.

- **UNSWITCHED:** 24 Vdc voltage out to power accessories, always ON.

MAIN CONTROL BOARD

Three Button Control Station

Fire Department

MAIN CONTROL BOARD

Accessory Power Switched

Accessory Power Unswitched
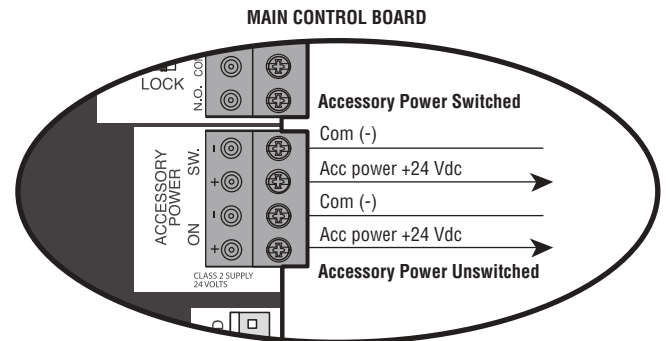
Red/Green Light

The RGL24LY is a low power red/green LED light accessory used to indicate the door status where upward visibility is limited.

The RGL24LY light control is directly powered from the main control board and is enabled by AUX 1 and AUX 2 switches on the expansion board. See table on page 31 for red/green light functionality. The RGL24LY will run when the operator is on battery backup power.

Wiring

1. Connect the COM terminal of the RGL24LY light to the NEGATIVE (-) terminal of ACCESSORY POWER ON on the main board.
2. Connect the RED terminal of the RGL24LY to the NORMALLY OPEN (N.O.) terminal of AUX RELAY 1 on the expansion board.
3. Connect the GREEN terminal of the RGL24LY to the NORMALLY OPEN (N.O.) terminal of AUX RELAY 2 on the expansion board.
4. Connect the COM terminals of AUX RELAY 1 and 2 to the POSITIVE (+) terminal of ACCESSORY POWER ON on the main board. Wire not provided.
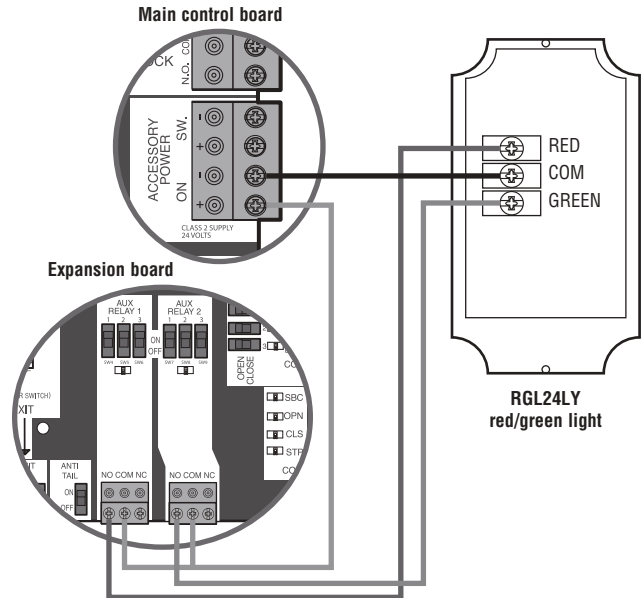
Custom Lights or Annunciators

Other devices can be controlled by the AUX relays in red/green warning mode. These devices require their own power source which is switched from the AUX relays. AUX 1 and 2 provide N.O and N.C options and are rated to 10A.

3rd Party Radios

Power:

1. Make sure the radio is rated for 24 V (look at its nameplate or the transformer in use).
2. Check for AC or DC.
3. **AC, AC/DC, or no polarity:** Connect power wires to the ACCESSORY POWER ON terminal of the main board.
   DC and shows polarity: Connect the positive wire to the positive (+) terminal of ACCESSORY POWER ON on the main board. Connect the negative wire to the negative (-) terminal of ACCESSORY POWER ON on the main board.
4. The ACC PWR OVLD LED on the main board will light if there is a problem with the radio.

Signal:

1. Locate the signal wires from the receiver. There may be one or two.
2. **For a single wire receiver:** Connect to the positive(+) terminal of the desired input.
   For a 2 wire receiver: Connect to the positive(+) and negative (-) terminal of the desired input.

For open-stop-close-stop operation: connect to the SBC terminal on the expansion board.

For open only operation: connect to the OPEN terminal on the expansion board or the EXIT terminal on the main board. The Timer-to-Close (TTC) must be set to close the door, see page 24.

Main control board

Expansion board

RGL24LY red/green light

RED
COM
GREEN

Main control board

(+) RELAY

COMMON
24 V

3rd Party Radio
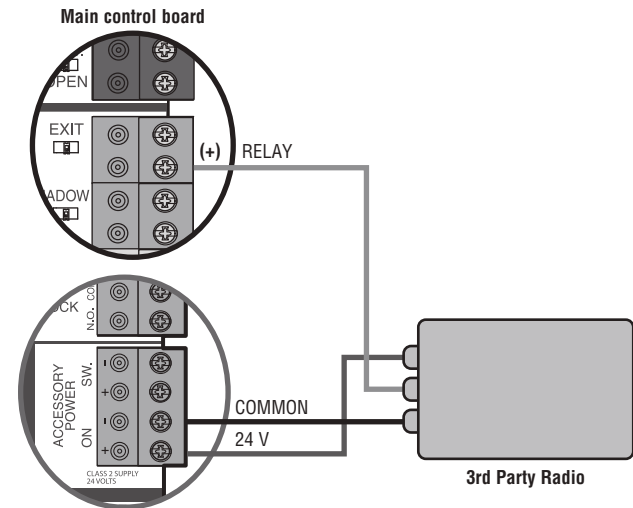
⚠ CAUTION

- To AVOID damaging the circuit board, relays or accessories, DO NOT connect more than 42 Vdc (32 Vac) to the AUX relay contact terminal blocks.

Expansion Board Overview

1. **QUICK CLOSE switch:**

   OFF: No change to the gate/door's normal operation.

   ON: When CLOSE EYES/Interrupt loop is deactivated it causes an opening or a stopped gate to close (ignores the Timer-to-Close).

2. **AC FAIL switch:**

   OPEN: Loss of AC power will cause the gate/door to open approximately 15 seconds after AC power fail and remain OPEN until AC power is restored (enabling the Timer-to-Close).

   BATT: With loss of AC power, gate/door will remain in present position and operator is powered from batteries.

3. **EXIT FAIL switch:**

   When set to OPEN, if the EXIT plug-in loop detector (Model LOOPDETLM) detects a fault, then the gate/door will open and remain open until fault is cleared. When set to CLOSE, then plug-in EXIT loop detector faults are ignored (EXIT loop is faulted and inoperative).

4. **ANTI-TAIL switch:**

   OFF: When CLOSE EYES/Interrupt loop is activated it causes a closing gate/door to stop and reverse.

   ON: When CLOSE EYES/Interrupt loop is activated it causes a closing gate/door to pause. Once the vehicle is clear the gate/door will continue to close.

5. **AUX RELAY switches:**

   Set the AUX RELAY switches as needed to obtain the desired function as shown on the following page.

6. **EYE/EDGE switches:**

   Set the EYE/EDGE switches as needed to obtain the desired OPEN or CLOSE functionality.

7. **1, 2, and 3 LEDs:**

   LEDs indicating the status of the EYE/EDGE inputs. Also used to check the firmware version of the expansion board:

   1. Locate the 1, 2, and 3 LEDs on the expansion board.
   2. Disconnect AC/DC power to the main control board for 15 seconds.
   3. Connect power. The 1, 2, and 3 LEDs will flash in sequence until the main control board firmware revision is displayed. When the green POWER LED glows solid the LED 1 will flash the version number, then stop, then the LED 2 will flash the revision number (for example: For version 5.1 when the green POWER LED is solid the LED 1 will flash 5 times, then stop, then the LED 2 will flash once).

8. **MAIN BOARD input:**

   Input Connection for the main board connector.
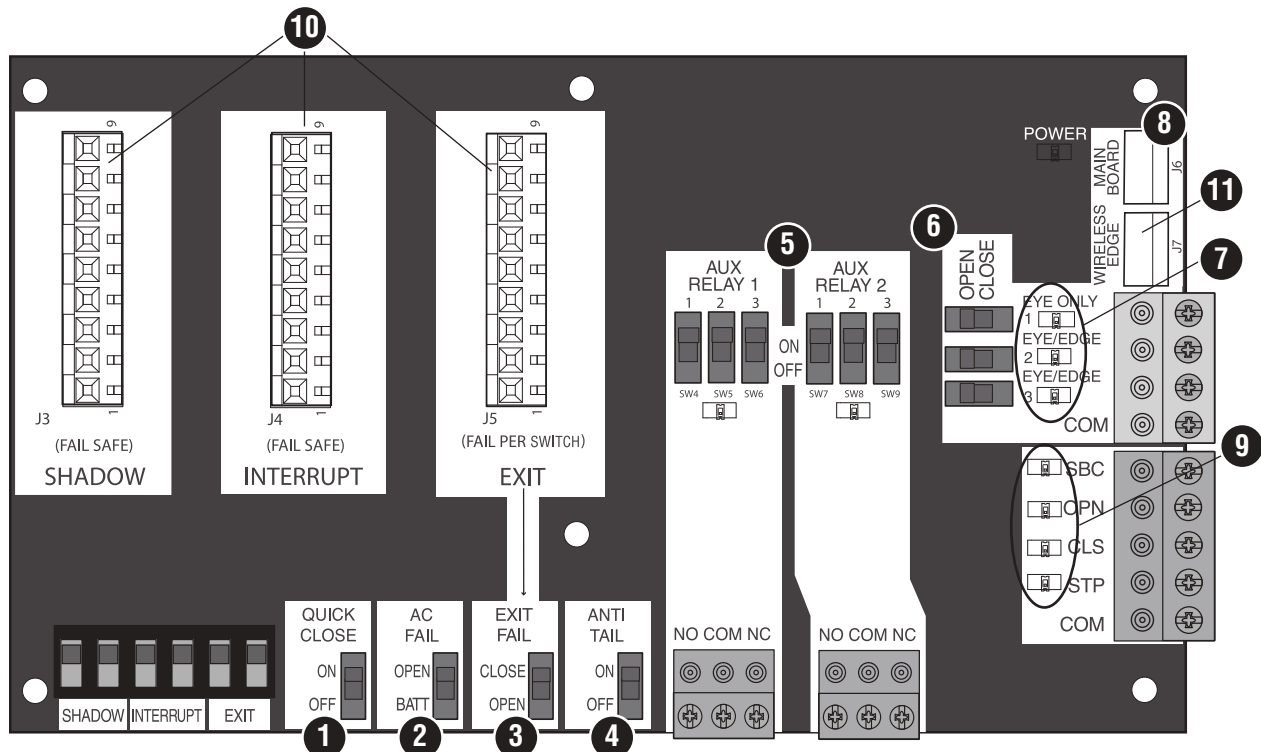
9. **Input LEDs:**

   LEDs indicating the status of the SBC, OPN, CLS, and STP inputs.

10. **Loop detector inputs:**

    Inputs for the Plug-In Loop Detectors (Model LOOPDETLM)

11. **Wireless edge input:**

    Input for the Wireless Edge Kit (Model LMWEKITU)

Auxiliary relay 1 and 2

Normally Open (N.O.) and Normally Closed (N.C.) relay contacts to control external devices, for connection of Class 2, low voltage (42 Vdc [34 Vac] max 5 Amps) power sources only. Function of relay contact activation determined by switch settings.

AUX RELAY SETTING	SWITCH SETTINGS 1	2	3	AUX RELAY 1	AUX RELAY 2
Off (no feature selected)	OFF	OFF	OFF	Relay always off. Use this Aux Relay setting to conserve battery power.	
Open Limit Switch	OFF	OFF	ON	Energizes at open limit. Use with SAMS (Sequenced Access Management System, jointly with barrier gate).	
Close Limit Switch	OFF	ON	OFF	Energizes when not at close limit. For an additional audible or visual display, connect an external light (low voltage).	
Gate/Door Motion	OFF	ON	ON	Energizes when motor is on (gate/door in motion). For an additional audible or visual display, connect an external buzzer or light (low voltage).	
Pre-Motion Delay	ON	OFF	OFF	Energizes 3 seconds before gate/door motion and remains energized during gate/door motion. The onboard alarm will sound. For an additional audible or visual display, connect an external buzzer or light (low voltage).	Energizes 3 seconds before gate/door motion and remains energized during gate/door motion. For an additional audible or visual display, connect an external buzzer or light (low voltage).
Power	ON	ON	OFF	Energizes when AC power or solar power is present. There is approximately a 10-12 second delay before relay cutoff, after AC shutdown.	Energizes when on battery power. There is approximately a 10-12 second delay before relay cutoff, after AC shutdown.
Tamper	ON	OFF	ON	Energizes if gate/door is manually tampered with by being pushed off of close limit. For an additional audible or visual display, connect an external buzzer or light (low voltage).	
Cycle Quantity Feedback*	ON	ON	ON	The 1, 2, and 3 LEDs will blink out the cycle count (cycle count is stored on the control board). See below.	Red/green light functionality, see below.

* Cycle count

First, note the current Aux Relay switch positions. To determine the actual cycles that the gate/door operator has run (in thousands), set all three Aux Relay switches to the ON setting for Aux Relay 1. The Expansion Board's 1, 2, and 3 LEDs will blink out the cycle count, with 1 LED blinking 1000's, 2 LED blinking 10,000's, 3 LED blinking 100,000's, and simultaneously all three LED's blink 1,000,000's (e.g. 1 LED blinks 3 times, 2 LED blinks 6 times, and 3 LED blinks once. Cycle count is 163,000.). Cycle count displayed is between 1,000 and 9,999,000 cycles. After servicing, set Aux Relay switches back to their appropriate positions. Cycle count cannot be reset or changed. If under 1,000 cycles the 1, 2, and 3 LEDs will turn on for 10 seconds, then turn off.

NOTE: The expansion board will flash the cycle count 3 times then all the LEDs will turn on solid for 10 seconds then turn off.

AUX RELAY 1   **AUX RELAY 2**
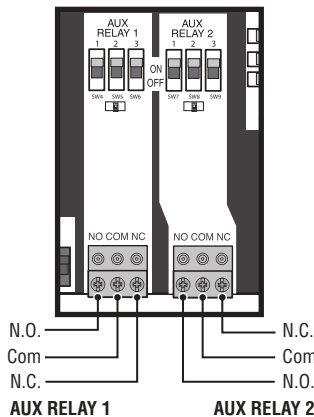
RED/GREEN LIGHT FUNCTIONALITY		
Red light wired to AUX RELAY 1. Green light wired to AUX RELAY 2.		
GATE STATE	AUX RELAY 1 SWITCHES 1 OFF / 2 OFF / 3 OFF	AUX RELAY 2 SWITCHES 1 ON / 2 ON / 3 ON
Closed	Red light OFF*	Green light OFF
Opening	Red light ON/Flash	Green light OFF
Open	Red light OFF	Green light ON
Closing	Red light ON/Flash	Green light OFF
Defined Mid Stop	n/a	n/a
Undefined Mid Stop	Red light ON	Green light OFF
Timer more than 5 seconds	Red light OFF	Green light ON
Timer less than 5 seconds	Red light ON/Flash	Green light OFF
* For red light ON when gate/door is closed, set switch 1 on AUX RELAY 1 to ON		

Auxiliary Relay Wiring Example

Class 2 Power Source (42 Vdc [34 Vac], 5 A max)

Aux Relay

N.C.
COM
N.O.

Warning Light
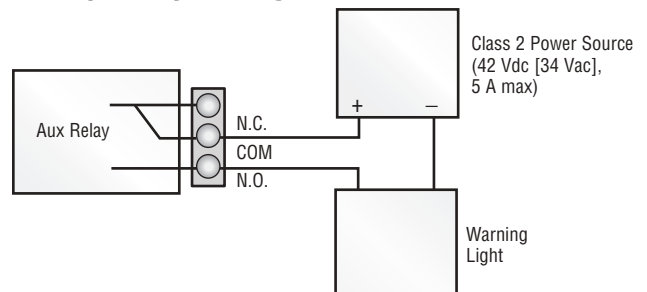
Wiring Accessories to the Expansion Board

Refer to the chart below and the corresponding image for a description of the expansion board inputs.

| 1	Wireless edge	Connection for wireless edge receiver
2	Entrapment Protection Device Inputs (4 terminals total), Open or Close Direction based on switch setting next to inputs	**EYES ONLY Input:** Open or Close Direction Photoelectric Sensors, Close: reverses fully, Open: stops gate/door **EYES/EDGE Input(s):** Open or Close Direction Photoelectric Sensors, Infra-red detector wired or Edge Sensor, Close: reverses fully, Open: stops gate/door
3	Single Button Control, SBC (2 terminals)	Gate command sequence - Open, Stop, Close, Stop, ... Soft Open ,Soft Close, Soft Stop (maintained switch does not override external safeties and does not reset alarm condition)
4	Open Input (& common) (3-Button Control Station, 4 terminals total)	Open command - opens a closed gate/door. Soft open (maintained switch does not override external safeties and does not reset alarm condition) If maintained, pauses Timer-to-Close at OPEN limit. Opens a closing gate/door and holds open an open gate/door.
5	Close Input (& common) (3-Button Control Station, 4 terminals total)	Close command - closes an open gate/door. Soft close (maintained switch does not override external safeties and does not reset alarm condition).
6	Stop Input (& common) (3-PB station, 4 terminals total)	Stop command - stops a moving gate/door. Hard stop (maintained switch overrides Open and Close commands and resets alarm condition) If maintained, pauses Timer-to-Close at OPEN limit. Overrides an Open or Close command.
7	Exit Loop Input (2 terminals)	Loop wire connection for plug-in loop detector when loop is inside secured area near gate/door. Open command - opens a closed gate/door. Soft open (maintained switch does not override external safeties and does not reset alarm condition) If maintained, pauses Timer-to-Close at OPEN limit. Opens a closing gate/door and holds open an open gate/door.
8	Shadow Loop Input (2 terminals)	Loop wire connection for plug-in loop detector when loop is positioned under the gate/door. • Holds open gate/door at open limit • Disregarded during gate/door motion • Pauses Timer-to-Close at Open Limit
9	Interrupt Loop Input (2 terminals)	Loop wire connection for plug-in loop detector when loop is along the side of the gate/door. • Holds open gate/door at open limit • Stops and reverses a closing gate/door • Pauses Timer-to-Close at Open Limit
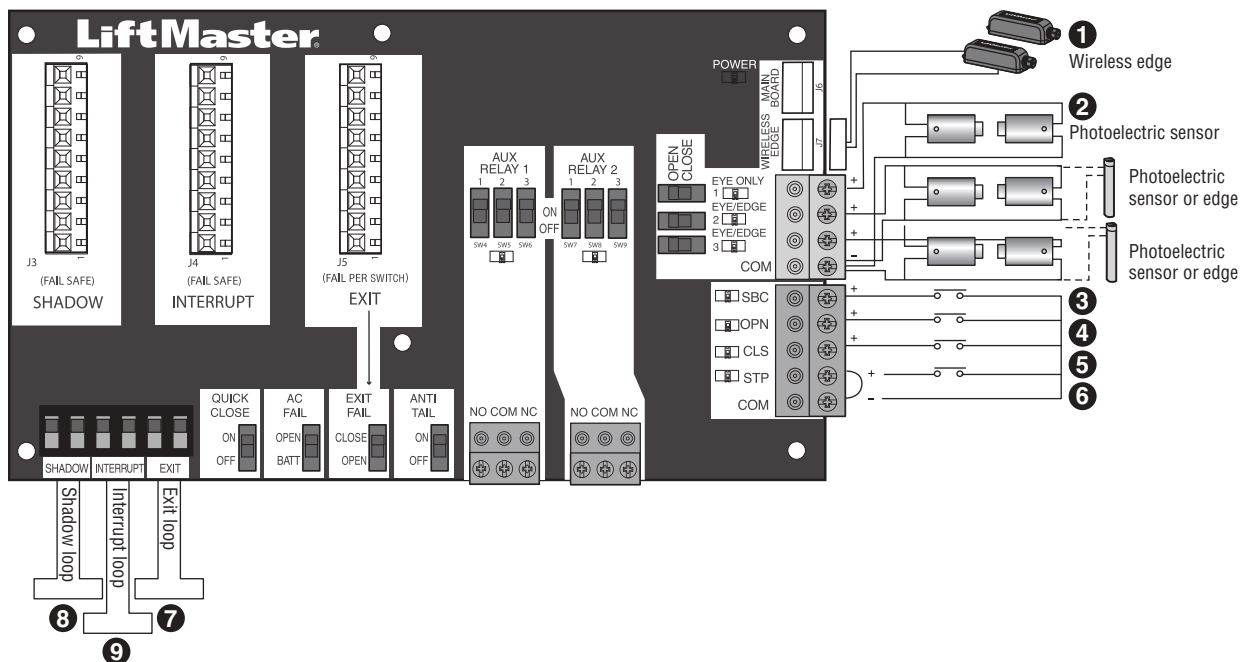
IMPORTANT SAFETY INSTRUCTIONS

⚠ 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.
- 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/door. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE/DOOR.
- The entrance is for vehicles ONLY. Pedestrians MUST use separate entrance.

- Test the gate/door operator monthly. The gate/door MUST reverse on contact with an object or reverse when an object activates the noncontact sensors. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate/door operator properly can increase the risk of INJURY or DEATH.
- Use the manual disconnect release ONLY when the gate/door is NOT moving.
- KEEP GATES/DOORS PROPERLY MAINTAINED. Read the owner's manual. Have a qualified service person make repairs to gate/door hardware.
- Activate gate/door ONLY when it can be seen clearly, is properly adjusted and there are no obstructions to gate/door 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.

Maintenance Chart

Disconnect all power (AC, solar, battery) to the operator before servicing. The operator's AC Power switch ONLY turns off AC power to the control board and DOES NOT turn off battery power. ALWAYS disconnect the batteries to service the operator.

DESCRIPTION	TASK	CHECK AT LEAST ONCE EVERY		
		MONTH	6 MONTHS	3 YEARS
Entrapment Protection Devices	Check and test inherent (built into the operator) and external devices for proper operation	X		
Warning Signs	Make sure they are present and replace if worn or broken, see *Accessories*	X		
Manual Disconnect	Check and test for proper operation		X	
Gate/Door	Inspect for wear or damage; ensure it still complies with ASTM F2200, see page 5	X		
Gate/Door Track	Make sure the gate/door track runs smoothly.	X		
Accessories	Check all for proper operation		X	
Electrical	Inspect all wire connections		X	
Operator	Inspect for wear or damage		X	
Chain	For chain maintenance, adjust the turnbuckle.		X	
Batteries	Replace			X

Batteries

Batteries will degrade over time depending on temperature and usage. The operator alarm will beep 3 times with a command if the battery is low. Batteries do not perform well in extremely cold temperatures. For best performance, the batteries should be replaced every 3 years. Use only LiftMaster part 29-NP712 for replacement batteries. The batteries contain lead and need to be disposed of properly.

The operator comes with two 7AH batteries.

⚡ WARNING

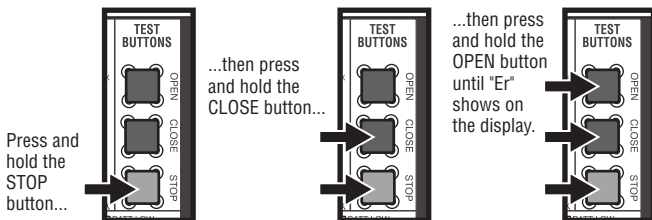| To protect against fire and electrocution:	For continued protection against fire:
• DISCONNECT power (AC or solar and battery) BEFORE installing or servicing operator.	• Replace ONLY with fuse of same type and rating.

Diagnostic Codes

NOTE: *When cycling or disconnecting power (ac/dc) to the control board, it is recommended that you unplug the J15 plug.*

To View the Codes

The codes will show on the diagnostic display.

Press and hold the STOP button...

...then press and hold the CLOSE button...

...then press and hold the OPEN button until "Er" shows on the display.

The operator will show the code sequence number followed by the code number:

CODE SEQUENCE NUMBER
The first number shown is the most recent code (example: "01"). The display will show the sequence of codes that occurred starting with "01" and going up to code "20".

A SECOND LATER....

CODE NUMBER
The second number shown after the code sequence number is the code itself (31-99, example" "31"). Refer to the chart on the following page for an explanation of each code.

To Scroll Through the Saved Codes

Press the OPEN button to cycle to the most recent code ("01").

Press the CLOSE button to cycle to the oldest code (up to "20").
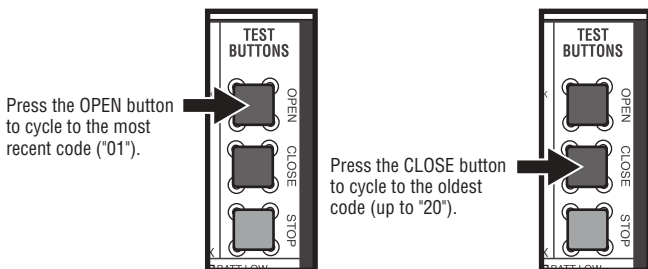
The operator will only keep track of up to 20 codes, then will start saving over the oldest codes as new codes occur.

DIAGNOSTICS DISPLAY   **OPEN, CLOSE, & STOP BUTTONS**
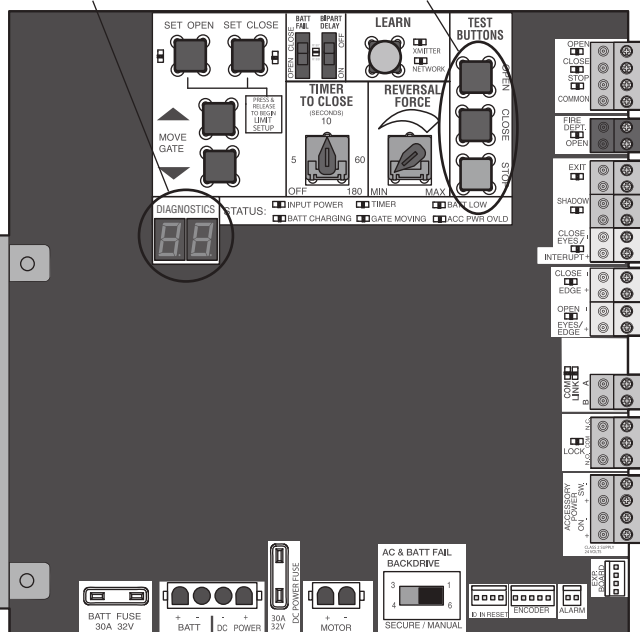
To Exit

Press and release the STOP button to exit. The display will also time out after two minutes of inactivity.

To Reset the Code History

1. Press and hold the STOP button for six seconds. The display will show "Er" then "CL" alternately for six seconds.
2. Release the STOP button. The code history has now been reset and the display will show "- -" until a new code occurs.
3. Press and release the STOP button to exit.

Diagnostic Codes Table

Some codes are saved in the code history and some are not. If a code is not saved it will briefly appear on the display as it occurs, then disappear.

| | LiftMaster System | | Installed System | | Informational | | External Entrapment Protection | | Inherent Entrapment Protection |

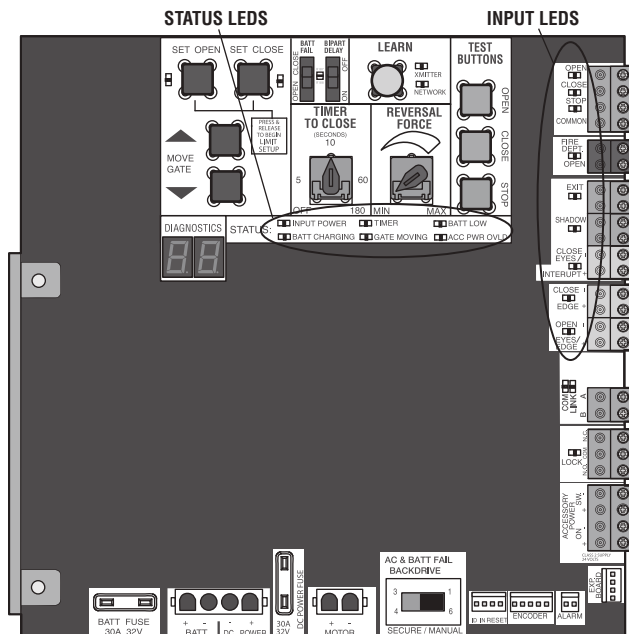| Code	Meaning	Solution	Saved
31	Main control board has experienced an internal failure.	Disconnect all power, wait 15 seconds, then reconnect power (reboot). If issue continues, replace main control board.	NO
34	Absolute Position Encoder Error, not getting position information from encoder	Check APE assembly and wiring connections. Replace the APE assembly if necessary.	YES
35	Max-Run-Time Exceeded Error	Check for an obstruction, then reprogram the limits.	YES
36	Product ID Error	Was the control board just replaced? If so, erase limits, enter limit setup mode and set limits. If not, disconnect all power, wait 15 seconds, then reconnect power before changing product ID harness.	YES
37	Product ID Failure	Unplug product ID harness then plug back in. Disconnect all power, wait 15 seconds, then reconnect power before replacing product ID harness.	YES
38	Hard Stop Limit	Limit may be set too tightly against a non-resilient hard stop (re-adjust limit). Operator may be at end of travel (re-adjust mounting).	NO
40	Battery overvoltage	Too much voltage on the battery. Check harness. Make sure there is NOT a 24V battery on a 12V system.	YES
41	Battery overcurrent	Possible short of the battery charge harness. Check harness. Make sure you do NOT have a 12V battery on a 24V system.	YES
42	No battery at boot up	Check battery connections and installation. Replace batteries if depleted to less than 20V on a 24V system or less than 10V on a 12V system. Make sure there is NOT a single 12V battery on a 24V system.	YES
43	Exit Loop Error	Failure or missing loop (SHORT or OPEN - LiftMaster Plug-in Loop Detector only) Check loop wiring throughout connection. May be a short in the loop, or an open connection in the loop.	YES
44	Shadow Loop Error		
45	Interrupt Loop Error		
46	Wireless edge battery low	Replace batteries in wireless edge.	YES
50	Door out of balance detected	Check counterbalance spring condition and setting.	YES
53	Brownout occurred	AC/DC board supply dipped below allowable level. Review power supply and wiring. If rebooting, ensure enough time for discharge of power to force a fresh boot.	YES
60	Minimum number of monitored entrapment protection devices not installed.	Review monitored entrapment protection device connections. Vertical gate/door operators require the installation of the first external monitored entrapment protection device in the close direction to function.	NO
61	CLOSE EYE/INTERRUPT held more than 3 minutes	Check wired input on main control board; check for alignment or obstruction.	YES
62	CLOSE EDGE held more than 3 minutes		
63	OPEN EYE/EDGE held more than 3 minutes		
64	CLOSE EYE/INTERRUPT held more than 3 minutes	Check wired input on expansion board; check for alignment or obstruction.	YES
65	CLOSE EYE/EDGE held more than 3 minutes		
66	OPEN EYE/EDGE held more than 3 minutes		
67	Wireless edge triggered more than 3 minutes	Check wired input for wiring issue or obstruction.	YES
68	Wireless edge loss of monitoring	Check wireless edge inputs.	YES
69	Wireless edge triggered	IF an obstruction occurred, no action required. If an obstruction did NOT occur, check inputs and wiring.	NO

TROUBLESHOOTING

Code	Meaning	Solution	Saved
70	CLOSE EYE/INTERRUPT triggered, causing reversal, preventing close, or resetting TTC	IF an obstruction occurred, no action required. If an obstruction did NOT occur, check alignment, inputs, and wiring on main control board	NO
71	CLOSE EDGE triggered, causing reversal, NO preventing close, or canceling TTC		
72	OPEN EYE/EDGE triggered, causing reversal or preventing opening		
73	CLOSE EYE/INTERRUPT triggered, causing reversal, preventing close, or resetting TTC	IF an obstruction occurred, no action required. If an obstruction did NOT occur, check alignment, inputs, and wiring on expansion board.	NO
74	CLOSE EYE/EDGE triggered, causing reversal and preventing close or canceling TTC		
75	OPEN EYE/EDGE triggered, causing reversal or preventing opening		
82	Close input (EYE/EDGE) communication fault (expansion board)	Check the connections between the main board and the expansion board.	YES
83	Open input (EYE/EDGE) communication fault (expansion board)		
84	Non-monitored device detected on the wireless safety system	Non-monitored contact closure devices are not supported. Make sure connected devices are monitored. Check edges for proper orientation and resistive end cap connection.	YES
91	Force Reversal	Check for obstruction. If no obstruction, check that the mechanical assembly is engaged and free to move. See section on Limit and Force Adjustment, and Obstruction Test.	YES
93	RPM / STALL Reversal	Check for obstruction. If no obstruction, check the operator wiring and that the mechanical assembly is engaged and free to move. Replace APE assembly.	YES
99	Normal Operation	No action required	YES

Control Board LEDs

STATUS LEDS		
INPUT POWER	OFF	OFF state
	ON	AC charger or Solar power available
BATT CHARGING	OFF	Not charging
	ON	Three stage battery charging
TIMER	OFF	The timer is disabled
	ON	The timer is enabled
	MEDIUM BLINK (1 blink per second)	The timer is running
	FAST BLINK (2 blinks per second)	The timer is paused
	FASTEST BLINK (8 blinks per second)	The timer is canceled
GATE/DOOR MOVING	OFF	The gate/door is stopped
	ON	The gate/door is opening or closing
	MEDIUM BLINK (1 blink per second)	Operator is in E1 (single entrapment)
	FASTEST BLINK (8 blinks per second)	The operator is in E2 (double entrapment)
BATT LOW	OFF	No battery error
	ON	Battery low
	BLINK (1 blink per second)	Battery critically low
ACC PWR OVLD	OFF	OFF state
	ON	Accessory overload protector opened

INPUT LEDS		
OPEN, CLOSE, STOP INPUT	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
FIRE DEPT INPUT	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
EXIT	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
SHADOW	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
CLOSE EYES/INTERRUPT	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
CLOSE EDGE	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
OPEN EYES/EDGE	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
LOCK	OFF	Maglock relay inactive
	ON	Maglock relay active

Troubleshooting Chart

SYMPTOM	POSSIBLE CAUSES	SOLUTIONS
Operator does not run and diagnostic display not on.	a. No power to control board b. Open fuse c. If on battery power only, low or dead batteries d. Defective control board	a. Check AC and battery power b. Check fuses c. Charge batteries by AC or solar power or replace batteries d. Replace defective control board
Control board powers up, but motor does not run.	a. Reset switch is stuck b. Stop button active or jumper not in place for stop circuit c. If on battery power only, low or dead batteries d. Open or Close input active e. Entrapment Protection Device active f. Vehicle loop detector or probe active g. Defective control board	a. Check reset switch b. Check Stop button is not "stuck on", or verify that the stop button is a normally closed circuit, or put a jumper on the stop circuit. c. Charges batteries by AC or solar power or replace batteries d. Check all Open and Close inputs for a "stuck on" input e. Check all Entrapment Protection Device inputs for a "stuck on" sensor f. Check all vehicle detector inputs for a "stuck on" detector g. Replace defective control board
Gate/door moves, but cannot set correct limits.	a. Gate/door does not move to a limit position b. Gate/door is too difficult to move c. Limits are set too close (slide gate applications only)	a. Use manual disconnect, manually move gate/door, and ensure gate/door moves easily limit to limit. Repair gate/door as needed. b. Gate/door must move easily and freely through its entire range, limit to limit. Repair gate/door as needed. c. Ensure the gate/door moves at least four feet between the OPEN limit and the CLOSE limit.
Gate/door does not fully open or fully close when setting limits.	a. Gate/door does not move to a limit position b. Gate/door is too difficult to move	a. Use manual disconnect, manually move gate/door, and ensure gate moves easily limit to limit. Repair gate/door as needed. b. Gate/door must move easily and freely through its entire range, limit to limit. Repair gate/door as needed.
Operator does not respond to a wired control/command (example: Open, Close, SBC, etc.)	a. Check Open and Close command input LEDs b. Stop button is active c. Reset button is stuck d. If on battery power only, low or dead batteries e. Entrapment Protection Device active f. Vehicle loop detector or vehicle probe active	a. Check all Open and Close inputs for a "stuck on" input b. Check Stop button is not "stuck on" c. Check Reset button d. Charges batteries by AC or solar power or replace batteries e. Check all Entrapment Protection Device inputs for a "stuck on" sensor f. Check all vehicle detector inputs for a "stuck on" detector
Operator does not respond to a wireless control or transmitter	a. Check XMITTER LED when wireless control is active b. Stop button is active c. Reset button is stuck d. Poor radio reception	a. Activate wireless control and check XMITTER LED is on. Re-learn wireless control/transmitter to control board. Replace wireless control as needed. b. Check Stop button is not "stuck on" c. Check Reset button d. Check if similar wired control operates correctly. Check if wireless controls works properly when within a few feet of operator. Check operator's antenna and antenna wire. Check other wireless controls or devices.
Gate/door stops during travel and reverses immediately.	a. Control (Open, Close) becoming active b. Vehicle loop detector active c. Low battery voltage	a. Check all Open and Close inputs for an active input b. Check all vehicle detector inputs for an active detector c. Battery voltage must be 23.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSES	SOLUTIONS
Gate/door opens, but will not close with transmitter or Timer-to-Close.	a. Open control active b. Vehicle loop detector active c. Loss of AC power with AC FAIL set to OPEN d. Low battery with LOW BATT set to OPEN e. Fire Dept input active f. Timer-to-Close not set g. Close Entrapment Protection Device active	a. Check all Open inputs for an active input b. Check all vehicle detector inputs for an active detector c. Check AC power and AC Fail option setting d. Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 23.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries. e. Check Fire Dept input f. Check Timer-to-Close (TTC) setting g. Check all Entrapment Protection Device inputs for an active sensor
Gate/door closes, but will not open.	a. Vehicle loop detector active b. Low battery with LOW BATT option set to CLOSE	a. Check all vehicle detector inputs for an active detector b. Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 23.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries.
Exit loop activation does not cause gate/door to open.	a. Exit vehicle detector setup incorrectly b. Defective Exit loop detector c. Low battery with LOW BATT option set to CLOSE	a. Review Exit loop detector settings. Adjust settings as needed. b. Replace defective Exit loop detector. c. Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 23.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries.
Interrupt loop does not cause gate/door to stop and reverse.	a. Vehicle detector setup incorrectly b. Defective vehicle loop detector c. Anti-tail set to ON	a. Review Interrupt loop detector settings. Adjust settings as needed. b. Replace defective Interrupt loop detector. c. Set anti-tail to OFF.
Shadow loop does not keep gate/door at open limit.	a. Vehicle detector setup incorrectly b. Defective vehicle loop detector	a. Review Shadow loop detector settings. Adjust settings as needed. b. Replace defective Shadow loop detector.
Obstruction in gate/door's path does not cause gate/door to stop and reverse.	a. Force adjustment needed	a. Refer to the Adjustment section to conduct the obstruction test and perform the proper force adjustment that is needed.
Photoelectric sensor does not stop or reverse gate/door.	a. Incorrect photoelectric sensor wiring b. Defective photoelectric sensor	a. Check photoelectric sensor wiring. Retest that obstructing photoelectric sensor causes moving gate/door to stop, and may reverse direction. b. Replace defective photoelectric sensor. Retest that obstructing photoelectric sensor causes moving gate/door to stop, and may reverse direction.
Edge Sensor does not stop or reverse gate/door.	a. Incorrect edge sensor wiring b. Defective edge sensor	a. Check edge sensor wiring. Retest that activating edge sensor causes moving gate/door to stop and reverse direction. b. Replace defective edge sensor. Retest that activating edge sensor causes moving gate/door to stop and reverse direction.
Alarm sounds for 5 minutes or alarm sounds with a command.	a. Double entrapment occurred (two obstructions within a single activation)	a. Check for cause of entrapment (obstruction) detection and correct. Press the reset button to shut off alarm and reset the operator.
Alarm beeps three times with a command.	a. Low battery	a. Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 23.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries
Alarm beeps when running.	a. Expansion board setting b. Constant pressure to open or close is given	a. Pre-warning is set to "ON" b. Constant pressure to open or closed is given
Expansion board function not controlling gate/door.	a. Defective main board to expansionboard wiring b. Incorrect input wiring to expansion board c. Defective expansion board or defective main board	a. Check main board to expansion board wiring. If required, replace wire cable. b. Check wiring to all inputs on expansion board. c. Replace defective expansion board or defective main board

| SYMPTOM	POSSIBLE CAUSES	SOLUTIONS
Switched (SW) Accessory power remaining on.	a. In limit setup mode	a. Learn the limits
Accessories connected to Switch (SW) Accessory power not working correctly, turning off, or resetting.	a. Normal behavior	a. Move accessory to accessory power "ON"
Accessories connected to Accessory power not working correctly, turning off, or resetting.	a. Accessory power protector active b. Defective control board	a. Disconnect all accessory powered devices and measure accessory power voltage (should be 23 – 30 Vdc). If voltage is correct, connect accessories one at a time, measuring accessory voltage after every new connection. b. Replace defective control board
Quick Close not working correctly.	a. Quick Close setting incorrect b. Interrupt loop detector c. Defective Expansion board	a. Check that Quick Close setting is ON b. Check operation of Interrupt Loop detector c. Replace defective Expansion board
Anti-Tailgating not working correctly.	a. Anti-Tail setting incorrect b. Interrupt loop detector c. Defective Expansion board	a. Check that Anti-Tail setting is ON b. Check operation of Interrupt Loop detector c. Replace defective Expansion board
AUX Relay not working correctly.	a. AUX Relay setting incorrect b. AUX Relay wiring incorrect c. Defective Expansion board	a. Check AUX Relay switches settings b. Check that wiring is connected to either N.O. and COM or to N.C. and COM. c. Set AUX Relay to another setting and test. Replace defective expansion board.

⚠ WARNING

To protect against fire and electrocution:
- DISCONNECT power (AC or solar and battery) BEFORE installing or servicing operator.

For continued protection against fire:
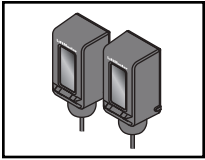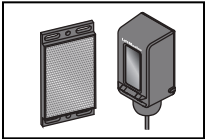- Replace ONLY with fuse of same type and rating.

REPAIR PARTS

Operator Cover
K10-37598

Main Control Board
K1D8389-1CC
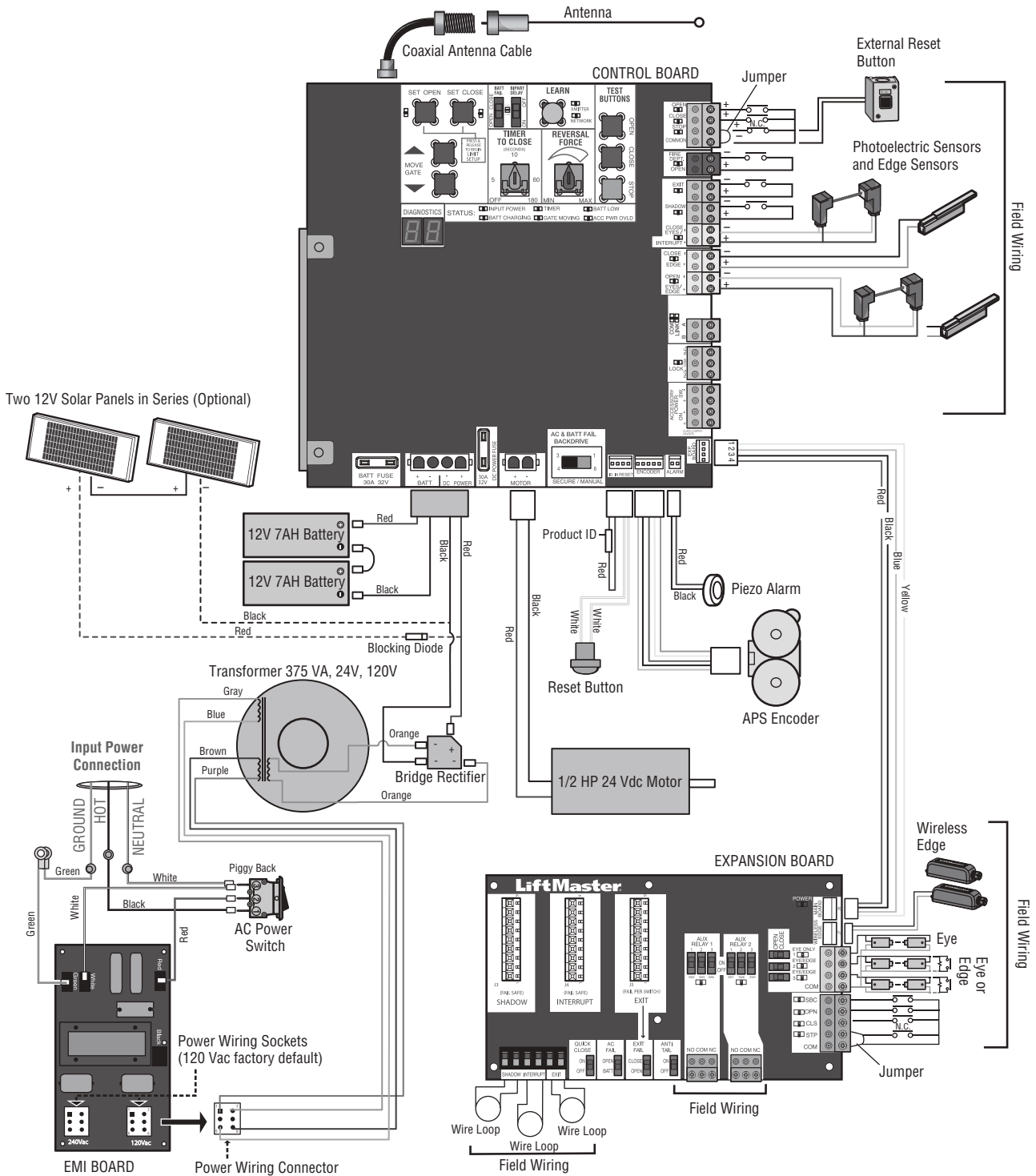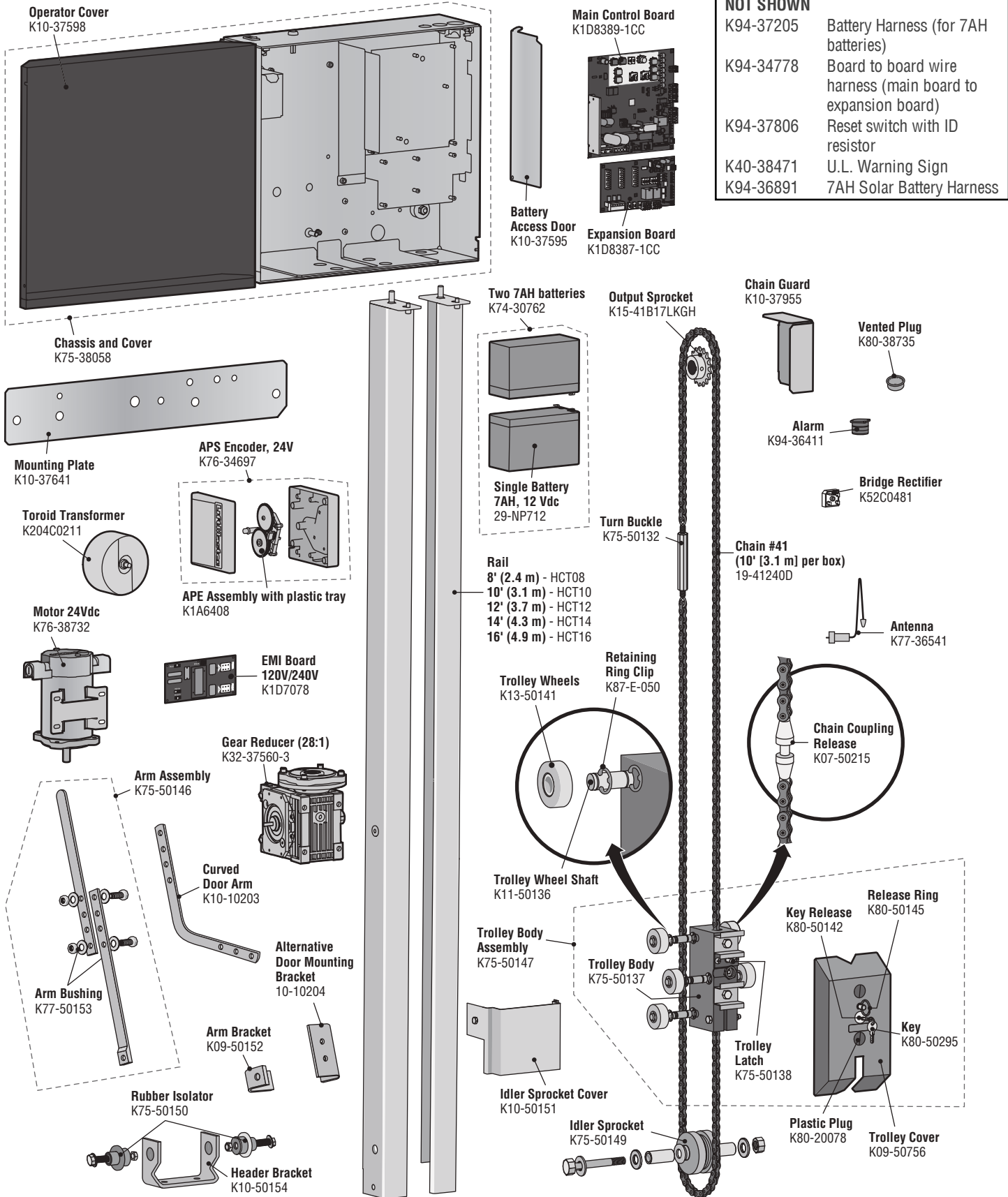
NOT SHOWN

K94-37205	Battery Harness (for 7AH batteries)
K94-34778	Board to board wire harness (main board to expansion board)
K94-37806	Reset switch with ID resistor
K40-38471	U.L. Warning Sign
K94-36891	7AH Solar Battery Harness

Battery Access Door
K10-37595

Expansion Board
K1D8387-1CC

Chassis and Cover
K75-38058

Mounting Plate
K10-37641

APS Encoder, 24V
K76-34697

Two 7AH batteries
K74-30762

Output Sprocket
K15-41B17LKGH

Chain Guard
K10-37955

Vented Plug
K80-38735

Alarm
K94-36411

Bridge Rectifier
K52C0481

Single Battery 7AH, 12 Vdc
29-NP712

Toroid Transformer
K204C0211

APE Assembly with plastic tray
K1A6408

Rail
8' (2.4 m) - HCT08
10' (3.1 m) - HCT10
12' (3.7 m) - HCT12
14' (4.3 m) - HCT14
16' (4.9 m) - HCT16

Turn Buckle
K75-50132

**Chain #41
(10' [3.1 m] per box)**
19-41240D

Antenna
K77-36541

Motor 24Vdc
K76-38732

EMI Board 120V/240V
K1D7078

Retaining Ring Clip
K87-E-050

Trolley Wheels
K13-50141

Chain Coupling Release
K07-50215

Gear Reducer (28:1)
K32-37560-3

Arm Assembly
K75-50146

Curved Door Arm
K10-10203

Trolley Wheel Shaft
K11-50136

Release Ring
K80-50145

Key Release
K80-50142

Alternative Door Mounting Bracket
10-10204

Trolley Body Assembly
K75-50147

Trolley Body
K75-50137

Arm Bushing
K77-50153

Arm Bracket
K09-50152

Key
K80-50295

Trolley Latch
K75-50138

Rubber Isolator
K75-50150

Idler Sprocket Cover
K10-50151

Plastic Plug
K80-20078

Trolley Cover
K09-50756

Idler Sprocket
K75-50149

Header Bracket
K10-50154
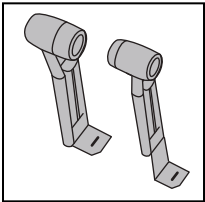
Entrapment Protection

LiftMaster monitored through beam photoelectric sensor
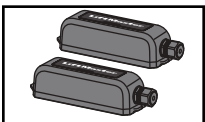Model LMTBUL

LiftMaster monitored retro-reflective photoelectric sensor
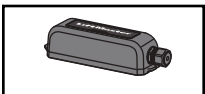Model LMRRUL

LiftMaster Monitered Commercial Protector System®
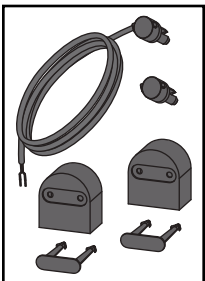Models CPS-UN4 and CPSUN4G

LiftMaster Monitored Dual-Side Photoelectric Sensors
Model CPS-OPEN4

LiftMaster monitored wireless edge kit (transmitter and receiver)
Model LMWEKITU

LiftMaster monitored wireless edge transmitter
Model LMWETXU

Large profile monitored edge (82 ft. roll)
Model L50
Large profile ends kit (10 pair)
Model L50E
Small profile monitored edge (82 ft. roll)
Model S50
Small profile ends kit (10 pair)
Model S50E

Optical Edge System
Model OES-SD16
For a full list of optical edges see LiftMaster.com
PVC Channel
1-3/4" x 1-3/4" - Model OES-4504
2" x 2" - Model OES-5104
Plastic channel
8 ft. (2.4 m) for both small and large profile edges (pack of 10).
Model L50CHP
Aluminum channel
10 ft. (3.1 m) for both small and large edge profiles (pack of 8).
Model L50CHAL
**LiftMaster large profile monitored edges (4ft.,5ft., 6ft.)**
Model L504AL, L505AL, L506AL
**Edge cutting tool**
Model ETOOL

Remote Controls

LiftMaster offers a variety of LiftMaster remote controls to satisfy your application needs. Single-button to 4-button, visor or key chain. The following remote controls are compatible with operators manufactured by LiftMaster after 1993. Contact your authorized LiftMaster dealer for additional details and options.
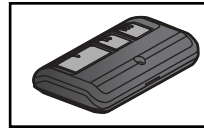
3-button remote control
The 3-button remote control can be programmed to control the operator. Includes visor clip.
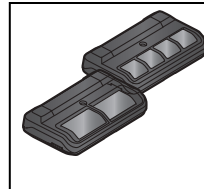Model 893MAX
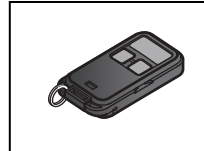
3-button mini-remote control
The 3-button remote control can be programmed to control the operator. Includes key ring and fastening strip.
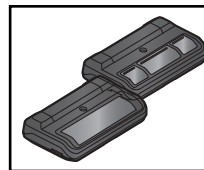Model 890MAX

Security+ 2.0® learning remote controls
One button can control a gate operator and the other (s) can control garage door(s). It can also be programmed to Security+® or Security+ 2.0® code format.
Models 892LT and 894LT

Universal single and 3-button remote controls
Ideal for applications requiring a large number of remote controls.
Models 811LM and 813LM

Miscellaneous

Wireless commercial keypad

Durable wireless keypad with blue LED backlight metal keypad, zinc-alloy metal front cover and 5 year 9V lithium battery. Security+ 2.0® compatible.

Model KPW250

LiftMaster® internet gateway

Internet enabled accessory which connects to the computer and allows you to monitor and control gate operators and lighting accessories enabled by MyQ® technology.
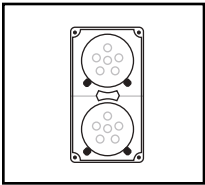
Model 828LM

Commercial access control receiver

Access control receiver for up to 1,000 devices (any combination of remote controls and wireless keyless entries).
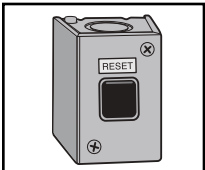
Model STAR1000

Red/Green Traffic Light

Indicates when a gate/door or door reaches the open position. Provides assurance of safe entering and exiting of the facility, reducing the potential for costly accidents.

Model RGL24LY

External Reset Button

Model UNISW

Remote antenna extension kit

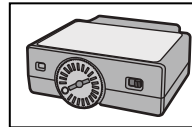The remote antenna extension kit allows the antenna to be remotely installed.

Model 86LM

Commercial access control receiver

Access control receiver for up to 1,000 devices (any combination of remote controls and wireless keyless entries).
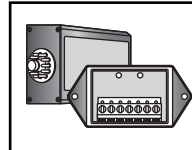
Model STAR1000

Plug-in loop detector

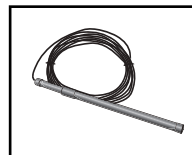Low power. Conveniently plugs into existing control board.

Model LOOPDETLM

Loop Detector

Low power loop detectors mounted and wired separately inside control box. LiftMaster low power accessory.

Model LD7LP

Vehicle sensing probe

The vehicle sensing probe is buried in the ground and can detect a car as it approaches and will then open the gate.
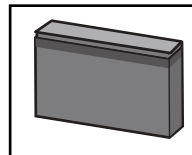
Model CP3

Solar panel kit

This kit is to replace or add a solar panel to the operator application. 60W maximum for 24 Vdc operators and 30W maximum for 12 Vdc operators. Requires a 33AH battery harness.

Models SP10W12V (10 Watt, 12V) and SP20W12V (20 Watt, 12V)

7AH batteries

Standard 7 AMP-Hour Battery, 12 Vdc, to replace original batteries provided with operator. Reuse existing harnesses.

Models 29-NP712 (1) and K74-30762 (2)

LiftMaster Cloud™ connected access protocol - high capacity

Model CAPXL

Warning sign

Model 40-50564

Five Year Commercial Limited Warranty

LiftMaster ("Seller") warrants to the first purchaser of this product, for the structure in which this product is originally installed, that it is free from defect in materials and/or workmanship for a period of 5 year commercial from the date of purchase [and that the HCTDCUL is free from defect in materials and/or workmanship for a period of 5 year commercial from the date of purchase]. The proper operation of this product is dependent on your compliance with the instructions regarding installation, operation, maintenance and testing. Failure to comply strictly with those instructions will void this limited warranty in its entirety.

If, during the limited warranty period, this product appears to contain a defect covered by this limited warranty, call **1-800-528-2806**, toll free, before dismantling this product. Then send this product, pre-paid and insured, to our service center for warranty repair. You will be advised of shipping instructions when you call. Please include a brief description of the problem and a dated proof-of-purchase receipt with any product returned for warranty repair. Products returned to Seller for warranty repair, which upon receipt by Seller are confirmed to be defective and covered by this limited warranty, will be repaired or replaced (at Seller's sole option) at no cost to you and returned pre-paid. Defective parts will be repaired or replaced with new or factory-rebuilt parts at Seller's sole option.

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