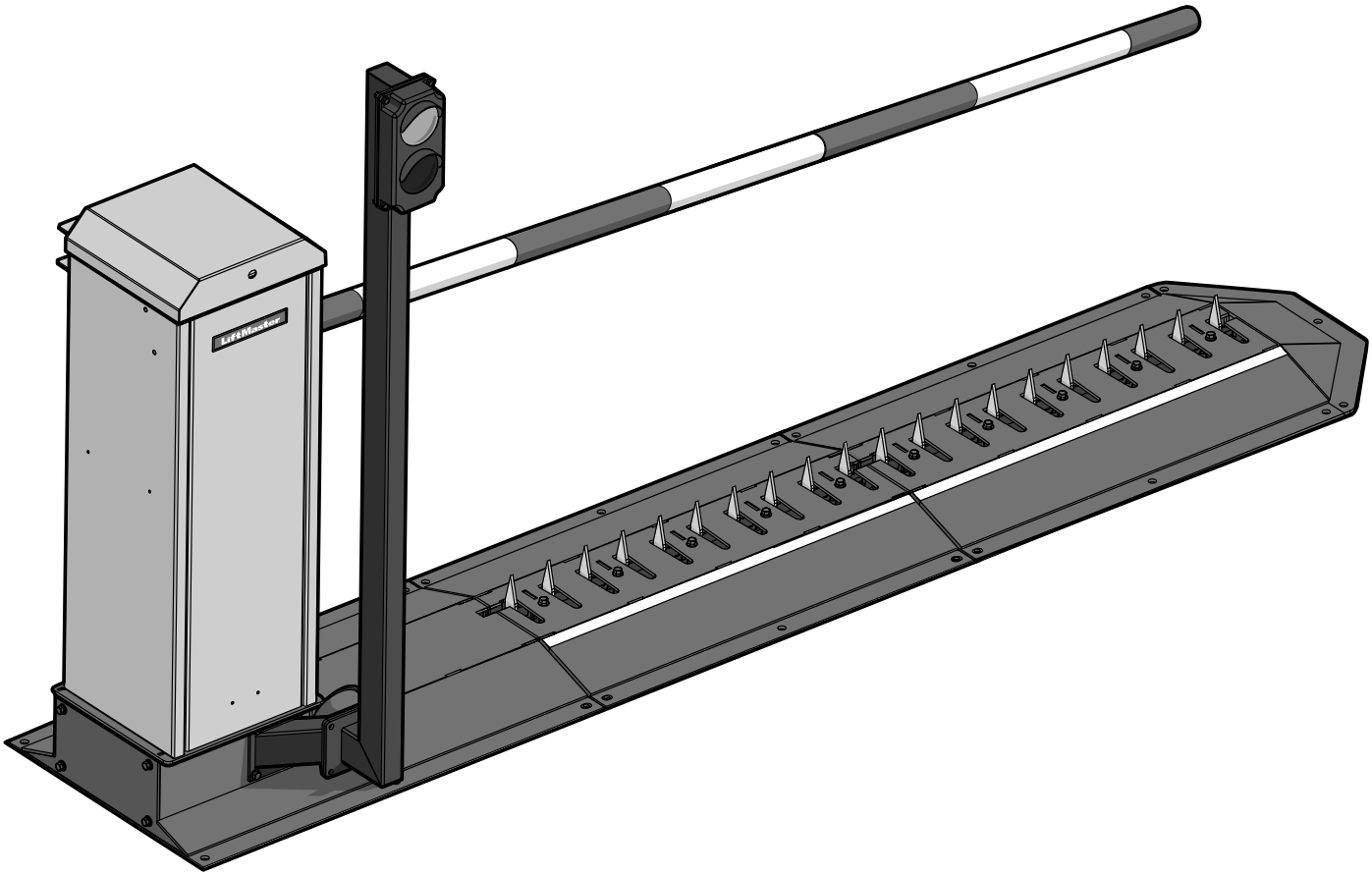
LiftMaster®

MATTS MOTORIZED TRAFFIC CONTROL DC BARRIER GATE OPERATOR

RADIO RECEIVER INCLUDED

MTS – SURFACE MOUNT
MTF – FLUSH MOUNT IN-GROUND

INSTALLATION MANUAL



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

IMPORTANT: *Read and understand Warranty Page first. Batteries (included) MUST be connected for proper operation of operator. Use (2) LiftMaster 12 Vdc 7AH (Part # MBAT).*

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 commercial door and gate operator unless you are an Authorized Service Technician.*

⚠ WARNING

MECHANICAL

⚠ WARNING

ELECTRICAL

CAUTION

SAFETY

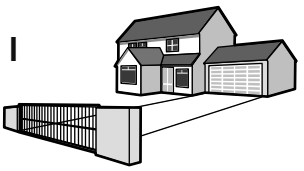
WARNING: This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to *www.P65Warnings.ca.gov*

UL325 MODEL CLASSIFICATIONS

CLASS I – RESIDENTIAL VEHICULAR GATE OPERATOR

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

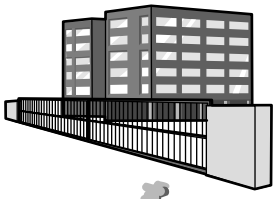
I



CLASS II – COMMERCIAL/GENERAL ACCESS VEHICULAR GATE OPERATOR

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

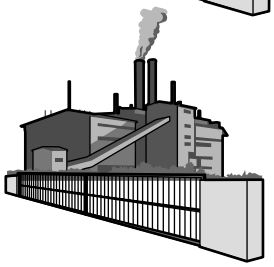
II



CLASS III – INDUSTRIAL/LIMITED ACCESS VEHICULAR GATE OPERATOR

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

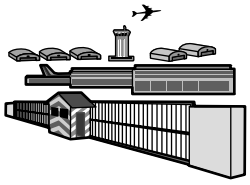
III



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.

IV



UL325 ENTRAPMENT PROTECTION REQUIREMENTS

This vehicular barrier (arm) operator is not intended to move toward a rigid object closer than 16 in (406 mm), and does not have a pinch point between moving parts by virtue of the operator's design. Therefore there are no entrapment zones to protect and UL 325 does not require a means to protect against entrapment.

This operator is provided with inherent (built into the operator) entrapment protection only. It is not provided with an external entrapment protection means.

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

SAFETY

SAFETY INSTALLATION INFORMATION

1. Vehicular gate systems provide convenience and security. Gate systems are comprised of many component parts. The gate operator is only one component. Each gate system is specifically designed for an individual application.
2. Gate operating system designers, installers and users must take into account the possible hazards associated with each individual application. Improperly designed, installed or maintained systems can create risks for the user as well as the bystander. Gate systems design and installation must reduce public exposure to potential hazards.
3. A gate operator can create high levels of force in its function as a component part of a gate system. Therefore, safety features must be incorporated into every design. Specific safety features include:
   - Gate Edges
   - 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 of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 6' (1.8 m) above the ground to prevent a 2-1/4" (6 cm) diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that the gate covers in the open position.
   c. All exposed pinch points are eliminated or guarded, and guarding is supplied for exposed rollers.
5. The operator is intended for installation only on gates used for vehicles. Pedestrians must be supplied with a separate access opening. The pedestrian access opening shall be designed to promote pedestrian usage. Locate the gate such that persons will not come in contact with the vehicular gate during the entire path of travel of the vehicular gate.
6. The gate must be installed in a location so that enough clearance is supplied between the gate and adjacent structures when opening and closing to reduce the risk of entrapment. Swinging gates shall not open into public access areas.
7. The gate must be properly installed and work freely in both directions prior to the installation of the gate operator.
8 Controls intended for user activation must be located at least six feet (6') away from any moving part of the gate and where the user is prevented from reaching over, under, around or through the gate to operate the controls. Outdoor or easily accessible controls shall have a security feature to prevent unauthorized use.
9. The Stop and/or Reset (if provided separately) must be located in the line-of-sight of the gate. Activation of the reset control shall not cause the operator to start.
10. A minimum of two (2) WARNING SIGNS shall be installed, one on each side of the gate where easily visible.
11. For a gate operator utilizing a non-contact sensor:
    a. Reference owner's manual regarding placement of non-contact sensor for each type of application.
    b. Care shall be exercised to reduce the risk of nuisance tripping, such as when a vehicle trips the sensor while the gate is still moving.
    c. One or more non-contact sensors shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate or barrier.
12. For a gate operator utilizing a contact sensor such as an edge sensor:
    a. One or more contact sensors shall be located where the risk of entrapment or obstruction exists, such as at the leading edge, trailing edge and post mounted both inside and outside of a vehicular horizontal slide gate.
    b. One or more contact sensors shall be located at the bottom edge of a vehicular vertical lift gate.
    c. A hard wired contact sensor shall be located and its wiring arranged so the communication between the sensor and the gate operator is not subject to mechanical damage.
    d. A wireless contact sensor such as the one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions shall be located where the transmission of the signals are not obstructed or impeded by building structures, natural landscaping or similar obstruction. A wireless contact sensor shall function under the intended end-use conditions.
    e. One or more contact sensors shall be located on the inside and outside leading edge of a swing gate. Additionally, if the bottom edge of a swing gate is greater than 4" (101.6 mm) above the ground at any point in its arc of travel, one or more contact sensors shall be located on the bottom edge.
    f. One or more contact sensors shall be located at the bottom edge of a vertical barrier (arm).

INTRODUCTION

IMPORTANT INFORMATION FOR INSTALLATION OF ALL TRAFFIC SPIKE SYSTEMS

⚠ WARNING

Traffic Spike Systems are an inherently DAMAGING product and are intended to puncture tires. There are risks and liabilities involved in the use of these products. To minimize potential INJURY or DAMAGE, it is imperative to take ALL safety measures in the installation, location and site conditions, traffic and pedestrian flow, and use and maintenance of the units. Warning signs should be installed at ALL sites where spikes are installed. DO NOT allow pedestrian traffic in the area of the barriers. A separate pathway for pedestrian traffic MUST be provided. Illumination of the units is necessary if the site conditions require visibility at night.

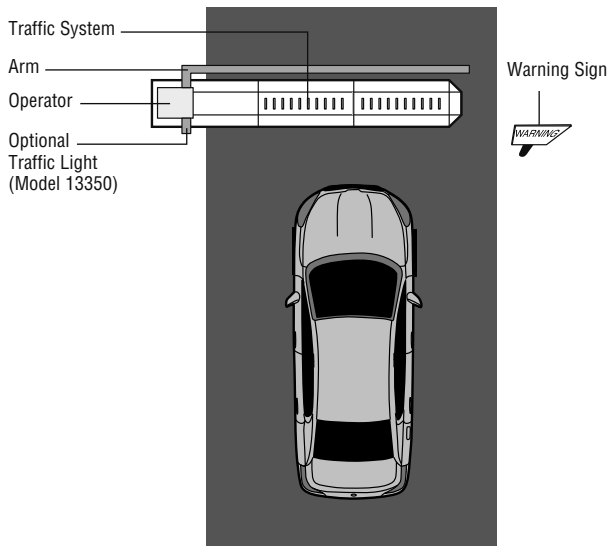
These instructions are provided in order for you to receive the maximum performance from your traffic control system. Failure to strictly follow these installation instructions will result in broken or bent teeth, broken springs, correct direction tire damage, inability to puncture tires of wrong-way traffic, and a multitude of other malfunctions. LiftMaster will not be responsible for property, vehicles, tires, or personal damage resulting from improper installation or use. LiftMaster will not be responsible for repairing malfunctions or replacing parts resulting from improper installation or use. Replacement parts needed in order to repair damage or malfunction caused by improper installation or abuse are not covered under your warranty.

SIGNAGE

- Warning signs are strongly recommended to warn drivers of the inherent danger of the device, including a notice for pedestrian traffic to stay clear of the area (Warning Sign Model 14115 [lighted] or 14150 [reflective]).
- Use caution when installing near high pedestrian traffic areas. If there will be traffic after dark be sure to provide adequate lighting in the area and use the Lighted Warning Sign. Be sure your customer is aware of these inherent dangers.

GENERAL INSTRUCTIONS

- The traffic system must be installed on a solid surface asphalt or concrete. Traffic spikes systems should not be installed in dirt, on any curve, inclines or where the road surface is uneven or where the road surface is in poor condition. Also, do not install in areas where there is significant water runoff that could potentially cause damage to the components of the units.
- The surface should be clean, dry, level and as smooth as possible.
- If you are installing a heater element in your system, you will need to plan for the location of the thermo device and power. See instructions with your heater cable.
- Make sure the installation staff has a safety vest and is wearing safety glasses.



INTRODUCTION

FEATURES, TOOLS NEEDED, AND OPERATOR SPECIFICATIONS

FEATURES

- Full service controller with eight inputs and LED indicators for loops, card reader, radio, etc.
- Reversible arm direction for right or left handed operation.
- Instant Reverse Device (IRD) monitor senses obstructions during motion.
- Fail safe (auto open on AC power failure).
- Raise gate input memory will memorize multiple vehicles – ideal for bar code scanners and AVI.
- Ability to STOP arm in close travel if tail-gating is sensed at close loop.
- Anti-tail gate alarm - fires K1 relay to trigger a warning device when tail-gating is sensed.
- SAMS with “memory” - allows MATTS to open a slide/swing gate first then raises arm.
- Dynamic motor braking to preserve arm positioning.
- Direct drive gear reducer eliminates many parts that might otherwise fail.
- State of the art MOSFET motor drive technology, NO contactors or relays.
- Soft start and stop in open and close travel motions.
- No limit switches to fail - uses magnetic (Hall Effect) sensors to monitor arm position.
- Maximum Run Timer for motor with anti-tamper protection in closing direction.
- Each operator configurable as primary or second operator.
- LED diagnostics for easy troubleshooting.
- Adjustable Timer-To-Close with on/off selection.
- Transient voltage protection on all inputs.

TOOLS NEEDED

During assembly, installation, and adjustment of the operator, the tools listed below may be needed.

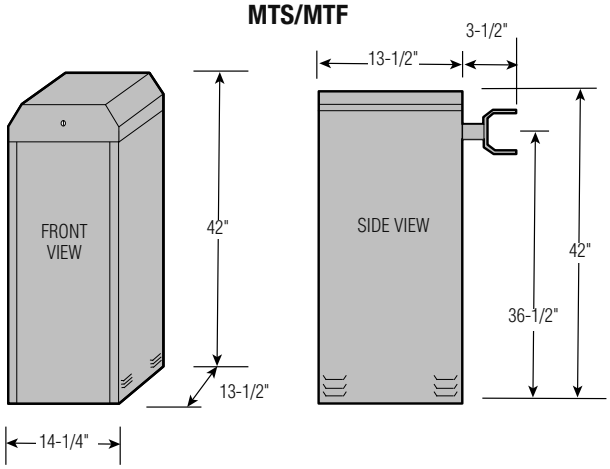
- 9/16" Wrench for Spike System Coupler and Turnbuckle Jam Nuts
- 9/16" Socket for Top Plate
- 7/16" Socket for Guide Roller
- 9/16" Wrench for 3/8" Anchors
- 4.5 mm Allen Wrench
- 3/16" Allen Wrench
- Precision Screwdrivers (Phillips and Flat Head)
- Cable Cutters and Strippers

OPERATOR SPECIFICATIONS

This model is intended for use in vehicular gate applications.

- Intended Usage Class II, III, IV
- High torque 24 volt Permanent Magnet DC motor
- On 120 Vac installations, unswitched duplex outlet gives convenient supply for 120 Vac accessories
- Built in battery run - inherent 24 Vdc backup power with regulated 24 Vdc for accessories
- Capable of being powered from 120 (or 230 Vac when separately purchased accessory installed), 230 Vac, or UL Listed Class 2 Solar Power
- Break away mount design for the 12-15 foot x 3 inch tubular aluminum barrier arm
- Heater option MUST be used if temperature is 30° or below. Heater option available for 120 Vac operators ONLY. Refer to Accessories page.
- All rust proof aluminum construction with white powder coat baked on enamel. Molded Polyethylene UV stabilized cover never needs wax or paint (excludes towers).

MTS/MTF



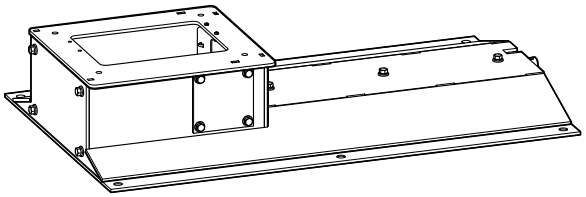
INSTALLATION

INSTALL THE MOTORIZED TRAFFIC CONTROL BASE AND EXTENSIONS

⚠ WARNING

Place adequate warning barricades in the traffic lane to divert traffic during the construction process and until ready to activate.

ROUTE THE CONDUIT



Check the national and local building codes before installation.

The conduits should be installed to fit the 3-1/2" x 3-1/2" (8.9 cm x 8.9 cm) opening in the pedestal base plate or the 10-1/4" x 8-1/4" (26 cm x 21 cm) opening in the tower base plate. Install conduits for the 120/230 Vac main power, low voltage control wiring, and one or two extra for loop sensor leads. Conduit size should be limited to 1/2" (1.3 cm) when possible to reduce crowding if more than four are needed. All conduits must be UL approved.

FOR SURFACE MOUNTED SYSTEMS

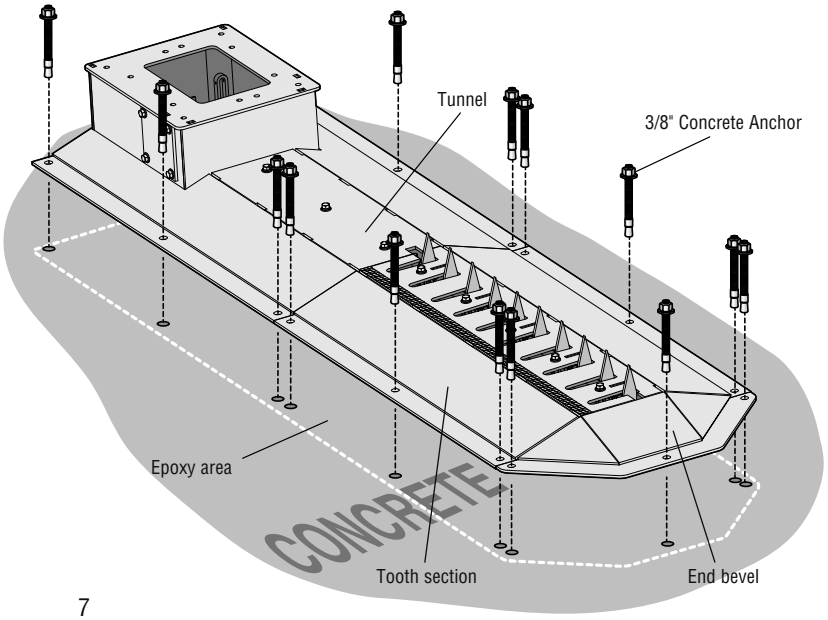
LiftMaster Traffic Control Systems can be surface mounted using one of two methods of application or a combination of the two.

- The first is by bolting the units down to a concrete surface (not recommended for asphalt).
- The second is by affixing them to the road surface using epoxy in the case of asphalt (tarmac) road surfaces.

1. Carefully determine the location for your Traffic Control Units. Normally you would want the units placed at least 15' – 20' (4.5m – 6m) into the lane. When gate arms are in the vertical position or rotated to an open position, the closest part of the gate arm and support shall have a lateral offset of at least 2 feet (61 cm) from the face of the curb or the edge of the traveled way.
2. Clean the area with a weed blower, broom or other method to ensure a clean and dry surface.
3. Mark the location with a chalk line or other suitable mark to assist in aligning and locating the units in the desired position. You may also place the individual segments in the location you wish to install them and then mark the location. Make sure the teeth are oriented the correct way.
4. Lay out all components of the traffic controller (operator, tunnel assembly, teeth and top plate assembly, and end bevel) as they will be when installed. Standard execution is to locate the operator on the left side of the traffic lane. Some applications may require a right handed system where the operator is located on the right side of the traffic lane.
5. Check to make sure there are no obstructions in the traffic lane and check for proper traffic flow angles. Traffic controllers must not be installed on any curves, slopes, grades or anywhere that immediate turns are required before or after the units.
6. Set operator and tunnel, teeth sections, and end bevel in desired location. Bolt the operator and tunnel section down.
7. Remove the top plates or the tunnel and teeth sections.
8. The coupling joins the shafts between sections, providing positive drive and assuring proper tooth alignment. Align the adjoining shafts and fasten together with coupler.
9. With the tooth section located so the shaft can slide into the coupling, slide the entire tooth section so it is flush against the operator tunnel.
10. Bolt the tunnel and tooth section together.
11. Bolt the first tooth section.
12. Remove coupler, if present, from the last tooth section. Place the end bevel at the end of the last tooth section. Bolt it to the adjacent tooth section and then bolt it down.

BOLTING TO CONCRETE SURFACE ONLY

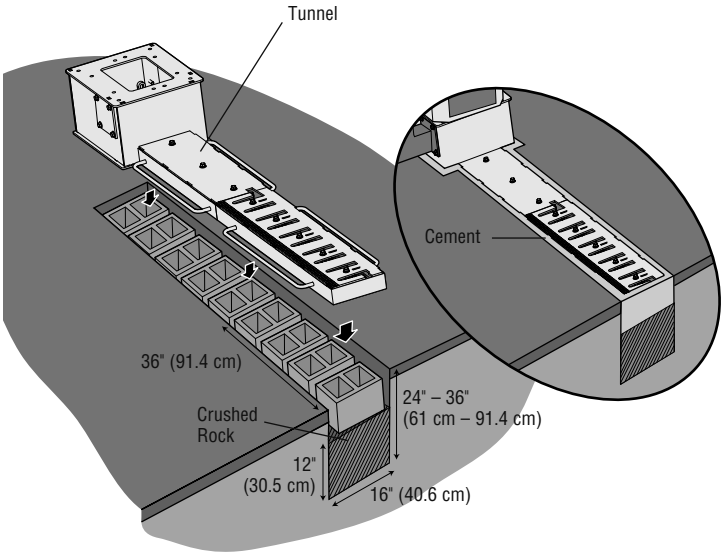
1. When bolting into concrete (not recommended for asphalt) drill holes in the road surface in the corresponding larger hole on each spike section.
2. Place your anchors per manufacturer's instructions. Do not use an anchor that will stick up above the traffic control unit that could cause damage to the passing tires. The recommended product is a 3/8" large diameter concrete anchor.
3. If additional holding force is desired, add epoxy as mentioned on the following page.



INSTALLATION

TOOLS NEEDED FOR FLUSH MOUNT INSTALLATIONS

- Excavation and cement mixing equipment: water, shovel, wheelbarrow, flat-trowel
- 1 yard of 3000 PSI premix cement
- Crushed rock
- 6 to 18 open web hollow blocks (standard 8 x 8 x 16 CMU's), depending on your preference

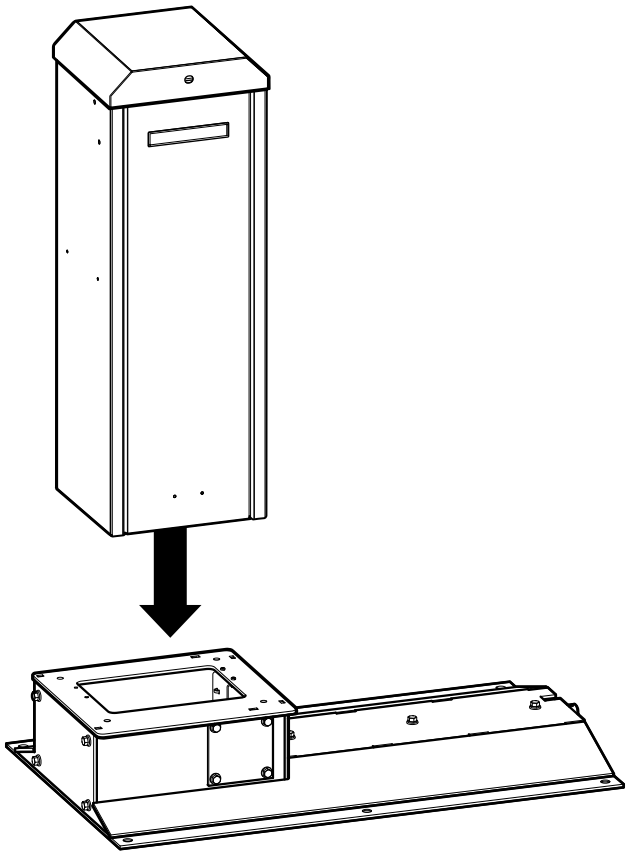


1. Carefully determine the location for your Traffic Control Units. Normally, you would want the units placed at least 15' – 20' (4.5m – 6m) into the lane. When gate arms are in the vertical position or rotated to an open position, the closest part of the gate arm and support shall have a lateral offset of at least 2 feet (61 cm) from the face of the curb or the edge of the traveled way.
2. Excavate the placement area 24" – 36" (61 cm – 91.4 cm) deep, (depending on drainage needs in your area) by a minimum of 36" (91.4 cm) long and 16" (40.6 cm) wide, per unit installed.
3. Partially fill with crushed rock and position the cement blocks as a base to support the top plate of the traffic controller unit level, flush with the pavement surface, to allow for proper drainage. This placement area will be 24" (61 cm) inches deep by a minimum of 28" (71 cm) long and 26" (66 cm) wide. Partially fill with crushed rock to a depth of 12" (30.5 cm).
   IMPORTANT: *Locate power source conduit if it is to be below the ground, before pouring concrete.*
   TIP: *To keep the controller unit level with the surface during installation, bolt two flat steel bars, approximately 24" (61 cm) long, perpendicular to the unit to the top plate at either end, creating leveling-handles. Prepare the steel bars by drilling holes to match a pair of bolt holes in the top plate. Bolt the bars perpendicular to the top plate using the existing pairs of bolts approximately 18" (45.7 cm) from each end of the unit. This creates temporary handles and flaps that will keep the controller unit level with the existing pavement while the cement cures.*
4. Pour cement around the outside unit to set it in place, fill the excavation and even the pavement surface. Do not pour cement into the inside of the traffic system, pour only around the perimeter.
5. After the cement has set and cured, unbolt the leveling-handles and replace the bolts in the top plate. Normal traffic may proceed over the controller.
6. With the tooth section located so that the coupling shaft will connect with the opposite connection shaft, slide the entire tooth section so that it is flush against the operator.
7. Repeat the alignment and connection process for any and all remaining tooth sections, bolting or using epoxy to fasten each section once the sections are all connected. Tighten all hex head screws so each tooth section is attached to the next tooth section and the tunnel shaft.
8. Reinstall the top plates of the teeth sections and the operator tunnel.

INSTALLATION

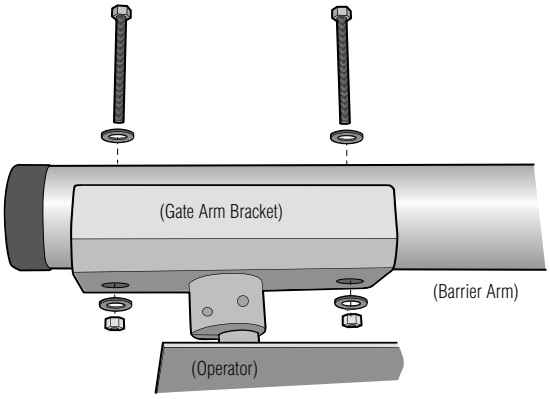
ATTACH THE OPERATOR TO THE BASE

1. Position the operator and secure to the base using the included hardware.



INSTALL THE BARRIER ARM

1. Line up the holes in the barrier arm with the slotted holes in gate arm bracket.
2. Insert the bolts through the barrier arm and gate arm bracket.
3. Secure with the flat washers and nylon nuts (It is recommended to use ONLY nylon nuts).



WIRING

⚠⚠ WARNING

To reduce the risk of SEVERE INJURY or DEATH:

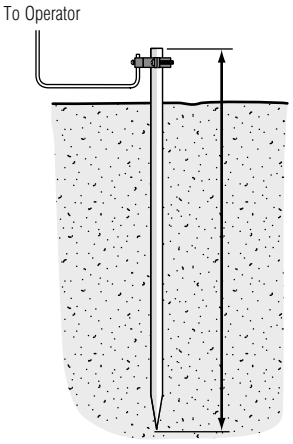
- ANY maintenance to the operator or in the area near the operator MUST NOT be performed until disconnecting the electrical power and locking-out the power via the operator power switch. Upon completion of maintenance the area MUST be cleared and secured, at that time the operator may be returned to service.
- Disconnect power at the fuse box BEFORE proceeding. Operator MUST be properly grounded and connected in accordance with 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.
- BEFORE installing power wiring or control stations be sure to follow ALL specifications and warnings described below. Failure to do so may result in SEVERE INJURY to persons and/or damage to operator.

EARTH GROUND ROD

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

1. Install the earth ground rod within 3 feet (.9 m) of the operator.
2. Run wire from the earth ground rod to the operator.

NOTE: *If the operator is not grounded properly the range of the remote controls will be reduced and the operator will be more susceptible to lightning and surge damage.*



POWER WIRING

Use UL approved 14AWG (or larger) 600 volt insulated wire only.

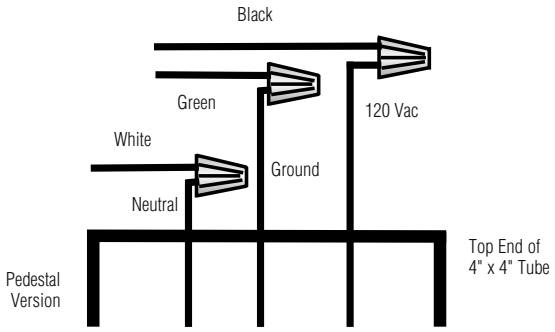
NOTE: *Do not connect the batteries until instructed.*

120 VAC

1. Ensure your main power is OFF before connecting the AC power.
2. The AC wiring should be connected to the wires exiting the conduit or pedestal post. Connect AC power to the operator:
   - Connect the black wire to the incoming 120 Vac hot lead.
   - Connect the white wire to the incoming neutral lead.
   - Connect the green wire to the ground.
3. Do not connect any of the AC power wires directly to the control board.

230 VAC

The 120 to 230 Vac conversion kit will need to be purchased for 230 Vac operation. See Accessories page.



120 VAC

WIRING

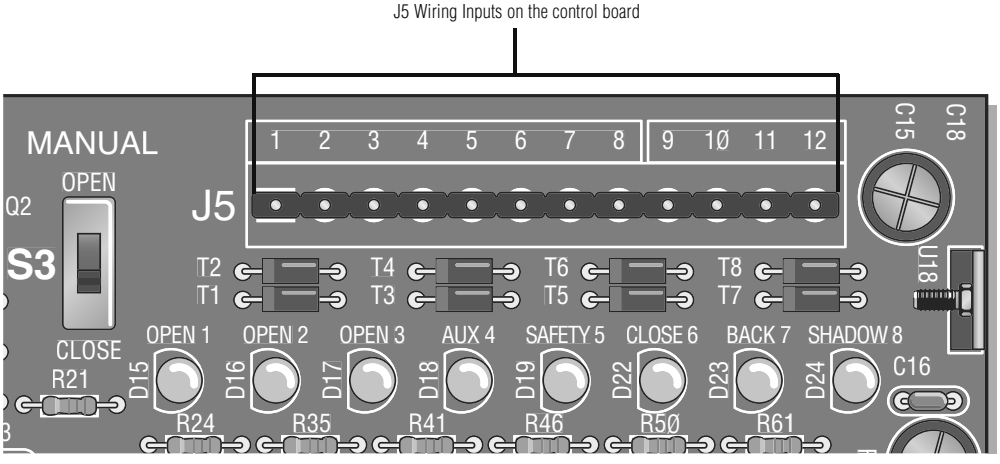
INPUTS (J5 TERMINAL STRIP)

CAUTION
DO NOT connect ANY device which would deliver ANY voltage of ANY kind to these terminals.

The J5 terminal strip is used for controlling the barrier arm with various accessories such as receivers, loop detectors, access controls, and push button stations. Use common and normally open contacts from devices connected to these inputs. The J5 terminal strip is located on the top of the control board. Make connections to the appropriate points for the desired operation. Wires should be UL approved 600 volt rated and at least 18 AWG. They are to be routed through the upper grommet in chassis to avoid chafing. All external control devices must have normally open dry contacts.

TERMINAL	INPUT	EXPLANATION
1,2,3	OPEN	These inputs will trigger gate open when pulsed or hold gate open with maintained contact. When released gate will close if closing timer is on or if close input is given.
4	AUXILIARY OPEN	Same as 1, 2 and 3 with S2 switch 6 off. With S2-6 DIP switch in the ON position, the Multiple Vehicle Memory will activate, with inputs on terminal 4 and Common (COM) on the J5 terminal strip. Use with laser scanners or card readers and (transmitters with timed anti-pass back). With S1 switch 5 on, this input becomes a momentary **pulse open, pulse close.**
5	SAFETY	This input is generally not used with the MATTS. If used its function is to make gate reverse and go back to the open position if it was closing. Input is disabled when gate is closed.
6	CLOSE	When used with a vehicle detector, it is recommended that the presence contacts (N.O. & C.) be used for the close input. This input will close gate after input is applied and then removed. It will stop the open cycle and reverse gate to close. **EXAMPLE:** Car crosses over close loop before arm reaches full open position- gate will reverse and close. ***NOTE:*** *The close input also acts as a safety-stop in that if gate is closing and a tailgater is sensed at the close input, the gate WILL STOP its closing motion and not continue to close until the close input is removed or gate is re-opened.*
7	BACK-AWAY (FREE EXIT)	This input is used as a free exit input to open gate. When input is active, gate will open and close immediately once input is removed. **EXAMPLE:** Car pulls up to exit loop, gate opens; car "backs-away" from exit loop and gate closes.
8	SHADOW (SAMS)	Used to monitor an auxiliary open limit switch of another operator in the same lane. SAMS with memory feature, see page 19.
9,10,11,12	COMMON	These are the commons (0 Vdc) to be used to activate above inputs.

NOTE: *Above inputs are tied to LED indicators to show input command activity.*

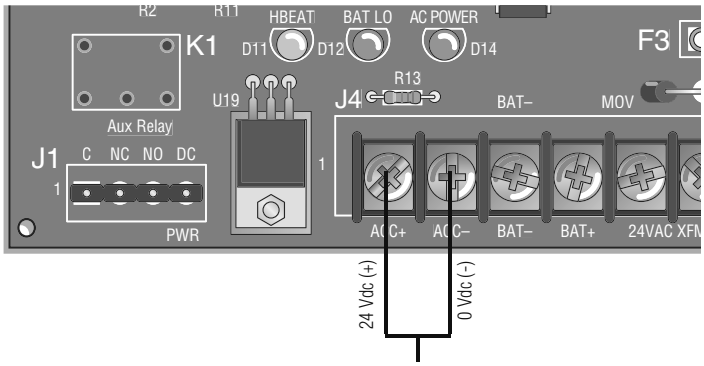


WIRING

ACCESSORY AND RELAY CONNECTIONS

These terminals will provide battery backed power to 24 Vdc devices and are located at the bottom of the control board at J4 terminals 1 and 2. Terminal 1 is 24 Vdc (+) and number 2 is 0 Vdc (-). Peripheral CLASS 2 low voltage devices that require
24 Vdc power maybe connected here (500 ma. maximum).

EXAMPLE: Vehicle detector, radio receiver.

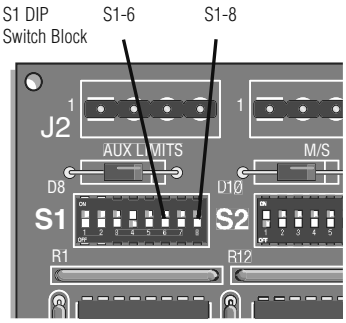


Relay Connection Terminals on the J4 Terminal Block

The K1 Relay (optional) and terminal strip (J1) are used for auxiliary devices such as Counters, Alarms,Buzzers, and SAMS (Sequence Access Management System).

RELAY OUTPUT K1 - (OPTIONAL)

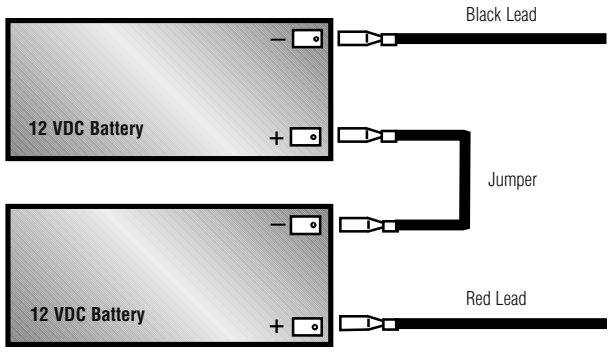
S1-6	*S1-8*	*RESULT*
OFF	OFF	Relay will fire (latch) when gate is not closed.
ON	OFF	Relay will fire when arm is pushed up off of limit switch (use with slip clutch option) and fires relay when a tail-gate is detected by the close loop - ANTI TAIL-GATE ALARM.
OFF	ON	Relay will pulse relay when arm reaches full open position.
ON	ON	Relay will only pulse when input is given to J5 1,2,3 inputs. (Refer to pages 14-15.)



BATTERY INSTALLATION

Connecting the battery leads – Always connect AC power before installing batteries.

1. Connect AC power BEFORE installing batteries.
2. Install two new, fully charged 12 volt DC batteries on shelf next to motor.
3. Connect red lead from the operator control board to the positive (RED +) terminal of one battery.
4. Connect the black lead from the operator control board to the (BLACK -) terminal of the OTHER battery.
5. Connect the jumper (provided) between the remaining terminals of each battery if one is not already in place.



IMPORTANT: *Do not run operator without installing the batteries.*

Replace batteries in pairs using LiftMaster 29-NP712 batteries. Failure to install batteries correctly will cause damage and will not be covered by warranty.

PRIMARY/SECOND WIRING

1. In a primary/second configuration, either operator can be the primary.
2. Choose an operator to be the primary and then direct all control wiring to it (also install vehicle detectors and receivers in it).
3. At the primary, any input (at J5) with control wires (detectors, receivers, keypads, timers, etc.) to it must also be run to the same terminals of the second. Along with these control wires, both operators MUST share a common ground connection from chassis to chassis (or from common to common, i.e., primary gate J5 terminal #12 to second gate J5 terminal #12).

EXAMPLE: If only open and close are used at primary then three wires will run between gates (Figure 1).

If it is required that if one gate senses an obstruction, the other reverses also, then 3 additional wires must be run between the primary **J3** and second **J3** (Figure 2). These connections are for transmitting IRD (obstruction signals) between both operators. This will allow the primary or second to inform the other that a closing obstruction has occurred and for it to reverse and open. **SET** switches on **S2**, **1-8** the same on both gates.

FIGURE 1

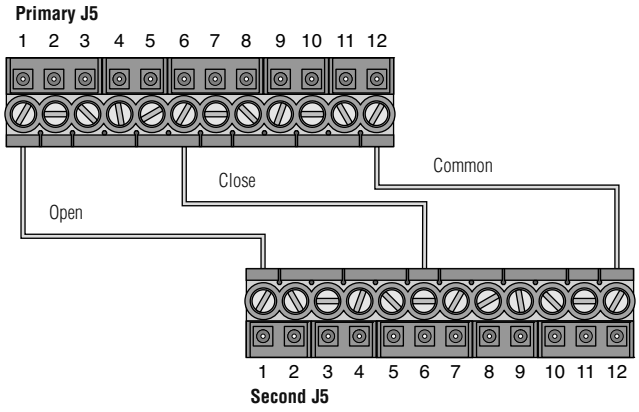
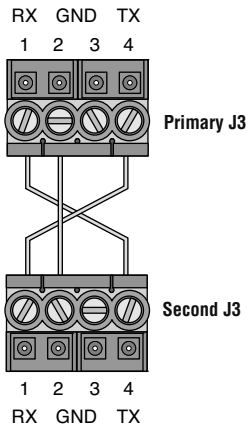


FIGURE 2



IRD - Obstruction Signal Connections Terminal 1 of Primary must go to terminal 4 of Second and terminal 1 of Second must go to terminal 4 of Primary. Terminal 2 of Primary must go to terminal 2 of Second.

INSTALL THE RECEIVER

APPLICATION

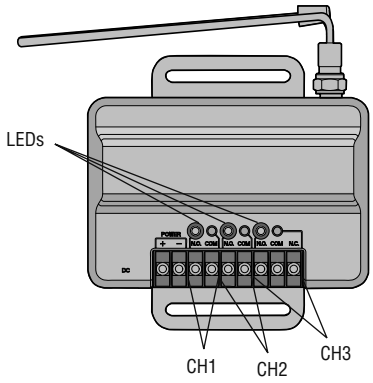
The receiver can be used as a single or three channel receiver to control up to 3 gates or commercial door operators. The receiver can also be used with a 3-button remote control to operate the OPEN, CLOSE, and STOP feature on a commercial door operator. The receiver is not for use with MyQ® enabled garage door openers or devices.

Each channel is compatible with a certain number of remote controls and keypads. Refer to the list below:

- CH1: 50 remote controls and 2 keypads
- CH2: 20 remote controls and 2 keypads
- CH3: 20 remote controls and 2 keypads

When the channel has reached full capacity for remote controls, all LEDs will blink 3 times. When the channel has reached full capacity for keypads, all LEDs will blink 4 times. Additional accessories can be programmed, however, the newly programmed accessory will replace the first programmed accessory.

NOTE: *The receiver will only allow you to program a button on the remote control to one channel at a time. For example, if the button on the remote control is already programmed to channel 1 and then is programmed to channel 3, the button will be erased from channel 1 and will only work on channel 3.*



INSTALLATION

The receiver and antenna use TV Type F coaxial connectors. The antenna can be connected directly to the receiver or it can be installed remotely using a coaxial cable extension kit (Model 86LM, 15 ft. or 86LMT, 25 ft.).

1 Select a location for the receiver which allows access to the terminals and space for the antenna. Ensure antenna does not touch metal surfaces. DO NOT bend or fold the antenna.

2 Fasten the receiver securely with the hook and loop fasteners (provided) or screws (not provided).

3 After installation is complete, connect power. You may use 85LM plug-in or 95LM wired-in transformer, or power provided from your operator (9-30 V AC, 9-34 Vdc or see power ratings on next page). ***NOTE:*** *The receiver can command the operator to close the door or gate by constant pressure. This feature is only available with a wireless control panel (Model 885LM). To enable this feature, press and hold the push bar until the gate or garage door moves to the closed position.*

⚠⚠ WARNING

To prevent possible SERIOUS INJURY or DEATH from electrocution:

- Be sure power is NOT connected BEFORE installing the receiver.

To prevent possible SERIOUS INJURY or DEATH from a moving gate or garage door:

- ALWAYS keep remote controls out of reach of children. NEVER permit children to operate, or play with remote control transmitters.
- Activate gate or door ONLY when it can be seen clearly, is properly adjusted, and there are no obstructions to door travel.
- ALWAYS keep gate or garage door in sight until completely closed. NEVER permit anyone to cross path of moving gate or door.

⚠ WARNING

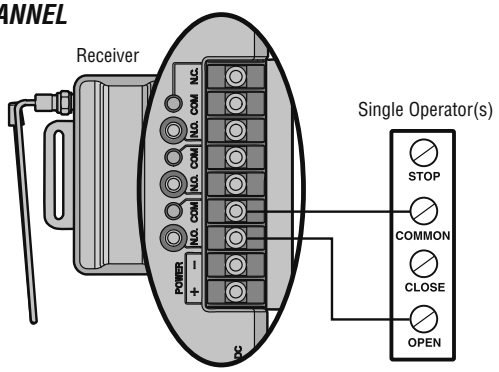
To prevent possible SERIOUS INJURY or DEATH, the use of CONSTANT OPERATION on residential openers is PROHIBITED.

When a receiver is used to activate a commercial door opener, a reversing edge MUST be installed on the bottom of the door. Failure to install a reversing edge under these circumstances may result in SERIOUS INJURY or DEATH to persons trapped beneath the door.

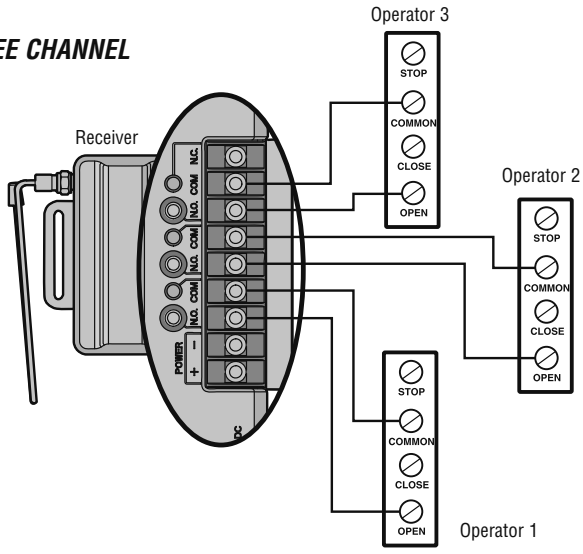
WIRING

Refer to your commercial door operator or gate operator owner manual or wiring diagrams for specific wiring information.

SINGLE CHANNEL

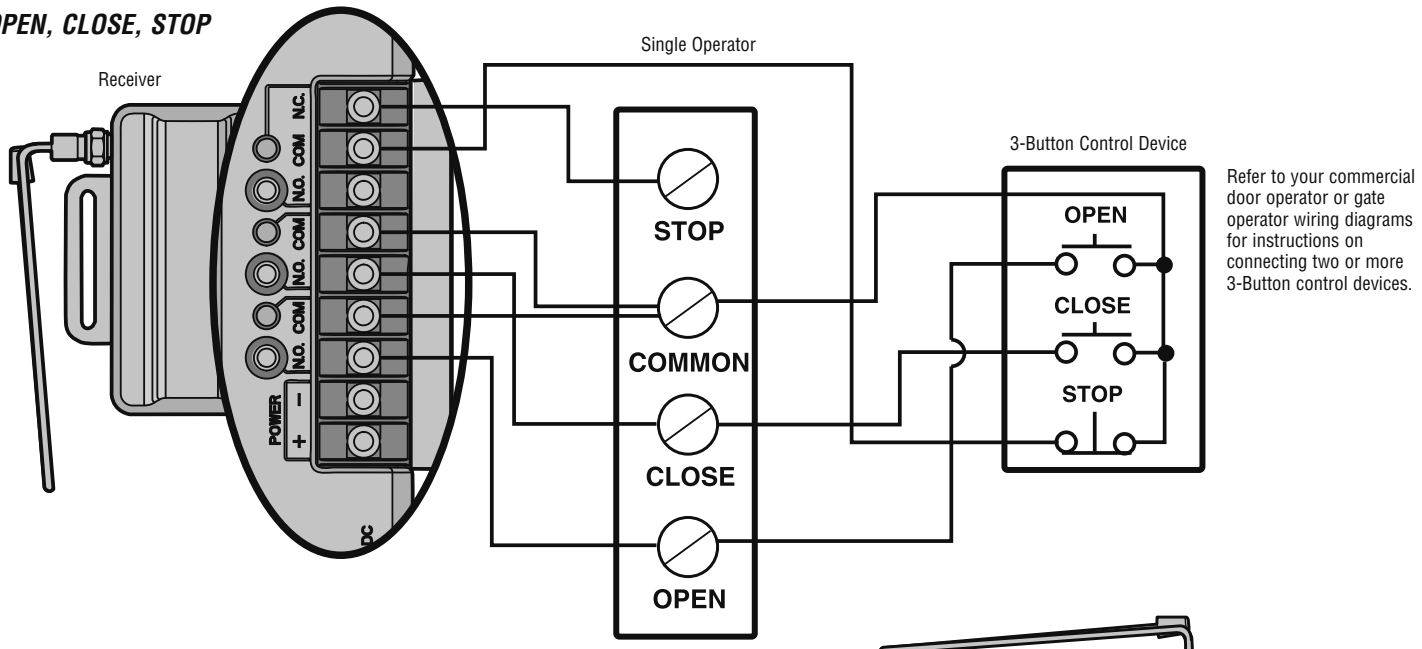


THREE CHANNEL



WIRING CONTINUED

OPEN, CLOSE, STOP



PROGRAMMING

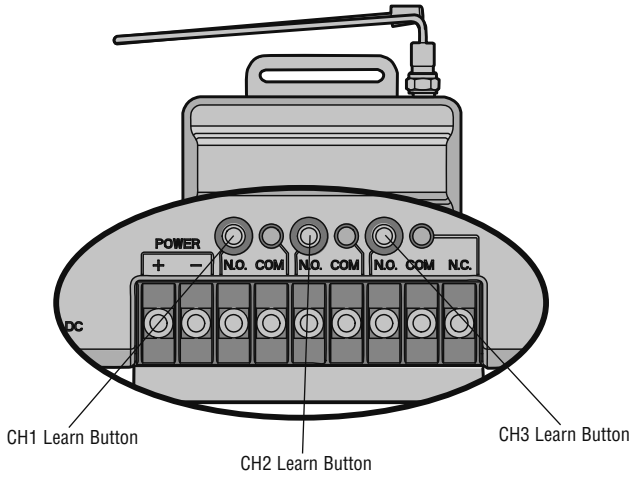
PROGRAM A SINGLE BUTTON REMOTE CONTROL

1 Press and release the Learn button for the selected channel on the receiver. The corresponding LED will glow steadily for 30 seconds.

2 Within 30 seconds press and hold the button on the remote control that you wish to program to the receiver.

3 Release the remote control button when the LED on the receiver blinks, then turns off. Programming is complete.

Repeat the steps above for each remote control you would like to program.



PROGRAM A 3-BUTTON REMOTE CONTROL AS OPEN, CLOSE, AND STOP

1 Press and release the CH1 Learn button on the receiver.

2 Within 30 seconds press the desired OPEN button on the remote control.

3 Press and release the CH2 Learn button on the receiver.

4 Within 30 seconds press the desired CLOSE button on the remote control.

5 Press and release the CH3 Learn button on the receiver.

6 Within 30 seconds press the desired STOP button on the remote control.

NOTE: *If a remote control button is not pressed within 30 seconds, the LED next to the selected Learn button will turn OFF. In that case, repeat the programming.*

TO ERASE THE MEMORY

1 Press and hold the Learn button for the channel you want to erase. Release the button when the corresponding LED turns off; the memory has been erased.

SPECIFICATIONS

Contact Rating . . . . . 5 Amps 28 Vac or dc Max.
Power. . . . . .9-30V AC or 9-34V DC, 50mA, 60Hz
RF Frequency: . . . . . .310, 315, and 390 MHz

NOTE: *If your operator does not meet the power specifications you will need a transformer (Model 85LM plug-in or 95LM wired-in).*

COMPATIBLE ACCESSORIES

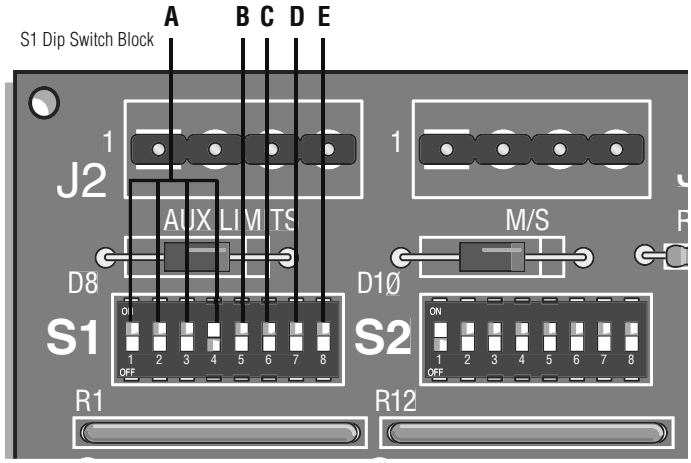
Remote Controls . . . . . .Models 811LM, 813LM, 891LM, 893LM, 890MAX, 893MAX, 895MAX, 892LT, 894LT
Keypads . . . . . Models 877LM, 877MAX
Antenna Extension Kits . . . . . .Models 86LM, 86LMT
Antenna Only K77-36541

NOTICE: To comply with FCC and/or Industry Canada (IC) rules. adjustment or modifications of this receiver are prohibited. THERE ARE NO USER SERVICEABLE PARTS.

This device complies with Part 15 of the FCC rules and IC RSS-210. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FEATURES AND FUNCTIONS

S1 DIP SWITCHES



A FAST RUN TIMER (FULL SPEED RUN TIMER)

DIP Switch S1-1 to S1-4

When the gate operator activates, it ramps up and slows down for a fixed amount of time, but will run at full speed for variable amounts of time depending upon the settings of the S1-1 to S1-4 DIP switches.

Each DIP switch represents increments of 1/8 second.

When DIP switches S1-1, S1-2 and S1-3 are in the ON position, the Fast Run Timer is set to 2-3/8 seconds by factory default.

When DIP switches S1-1 to S1-4 are set in the OFF position, the full speed run time is 1-1/2 seconds.

The longer the operator runs at full speed, the less ramp up and slow down time. When adjusting, make sure the Fast Run Timer settings DO NOT overrun the slow down time.

B SINGLE BUTTON FUNCTION (INCLUDING PULSE RADIO RECEIVER OPEN/CLOSE)

DIP Switch S1-5

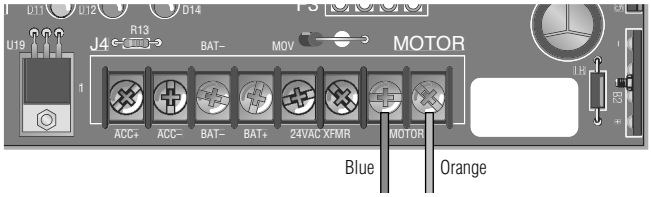
With S1-5 DIP switch in the ON position, the Single Button Function (Command to Open/Command to Close) will activate, with inputs on terminal 4 and Common (COM) on the J5 terminal strip. Any of the terminals 9-12 on the J5 terminal strip can be used for common.

When using this feature with the radio receiver (provided), move the radio wire from terminal 1 to terminal 4 on the J5 terminal strip.

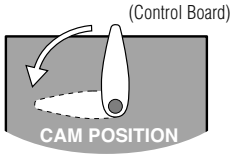
C HANDING THE BARRIER ARM

DIP Switch S1-7

The J4 Motor Wiring is controlled by DIP switch S1-7. The Handing of the Barrier Arm may be changed from right-hand to left-hand operation by reversing the factory default motor connections.
NOTE: *Right-hand or left-hand operation is* ***determined by facing the control board*** *with the barrier arm in the CLOSED position. If the barrier arm is to the right, it is set for right-hand gate operation.*



1. Disconnect power to the operator.
2. For *left-hand operation* reverse the motor wires on J4-7 (blue wire) and J4-8 (orange wire) (see above).
3. Set DIP switch S1-7 to the ON position.
4. Turn the motor pulley until the barrier arm is to the left.
5. Turn the Limit Cam so the Limit Cam is parallel to the arm and just behind the limit sensor.
6. Connect power to the operator.



D K1 RELAY (OPTIONAL)

DIP Switch S1-8

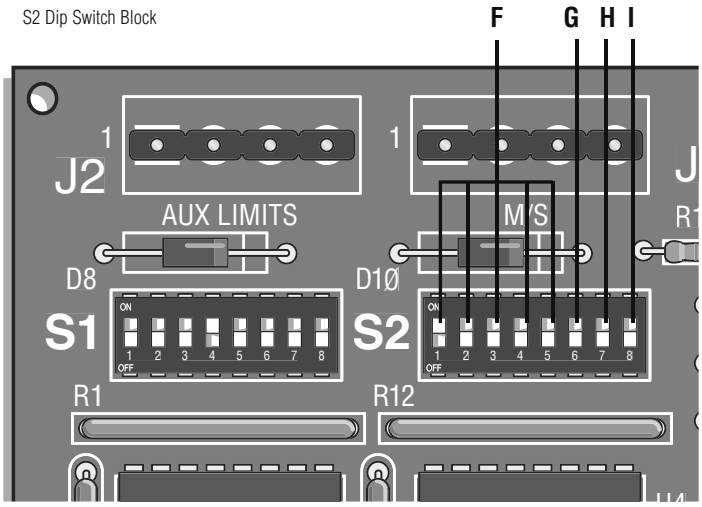
Auxiliary devices such as Counters, Alarms, Buzzers, and SAMS (Sequence Access Management System), can be wired into the K1 Relay and terminal strip (J1).

When S1-8 DIP switch is in the OFF position, the K1 Relay will activate throughout the OPEN cycle.

When S1-8 DIP switch is in the ON position, the K1 Relay will be activated briefly until the OPEN LIMIT (OLS) is reached.

FEATURES AND FUNCTIONS

S2 DIP SWITCHES



F **TIMER-TO-CLOSE**

DIP Switch S2-1 to S2-5

The S2-1 to S2-5 DIP switches will set the period of time the gate remains opened after reaching the OPEN position.

Each DIP switch represents the number of seconds the gate will remain OPEN before CLOSING. With the S2-3 DIP switch in the ON (factory default) position, there are 4 seconds to allow a vehicle enough time to move out of the path of the closing barrier arm.

Turning multiple switches ON will combine the amount of time the barrier arm remains OPEN.

The maximum hold OPEN time is 32 seconds.

To de-activate this feature turn S2-7 DIP switch to the OFF position.

G **MULTIPLE VEHICLE MEMORY**

DIP Switch S2-6

With S2-6 DIP switch in the ON position, the Multiple Vehicle Memory will activate, with inputs on terminal 4 and Common (COM) on the J5 terminal strip. Any of the terminals 9-12 on the J5 terminal strip can be used for common.

NOTE: *With Multiple Vehicle Memory activated, the barrier arm will remain OPEN until the pre-authorized number of vehicles pass over the Close Loop.*

H **AUTO CLOSE**

DIP Switch S2-7

The S2-7 DIP switch (Auto Close) should be activated in case one or more of the pre-authorized vehicles DO NOT pass through the gate. The barrier arm will close after the set amount of time elapses and the count memory is reset to zero.

I **FAIL SAFE (AUTO OPEN ON AC POWER FAILURE)**

DIP Switch S2-8

With S2-8 DIP switch in the ON position, the barrier arm will automatically OPEN approximately 15 seconds after a loss of power. Once the power has been restored the operator will resume normal operation after any input.

With S2-8 DIP switch in the OFF position, the barrier arm will resume normal operation until the batteries drop below 50% at which time the barrier arm will OPEN and remain opened until the batteries are fully charged.

ADJUSTMENTS

⚠ WARNING

To reduce the risk of SERIOUS INJURY or DEATH:

- Disconnect power BEFORE performing ANY adjustments near drive shaft.

INSTANT REVERSE DEVICE (IRD)

Adjustments to be done by qualified service persons only.

The instant reverse device is an internal circuit that continuously monitors the motor's current for increased draw in order to detect obstructions. If the arm is obstructed while closing the arm will reverse to the open position, time out (using the time delay set at S-2 switches 1-5) and then close. If arm is obstructed while opening, the arm will stop, time out (using the time delay set at S-2 switches 1-5) and then close.

Turning the IRD1 right (clockwise more sensitive), or left (counter clockwise less sensitive) in small increments will allow sensitivity adjustments (IF ARM DOES NOT REVERSE, DO NOT CONTINUE TO FORCE).

1. Place an obstruction in the path of the arm. Adjust sensitivity so that consistent reversal occurs when the arm hits the obstruction. If the gate stops while opening then the **IRD** is TOO sensitive.

NOTE: *Instant reverse device (IRD) should be tested monthly to ensure proper operation.*

ADJUST THE BARRIER ARM

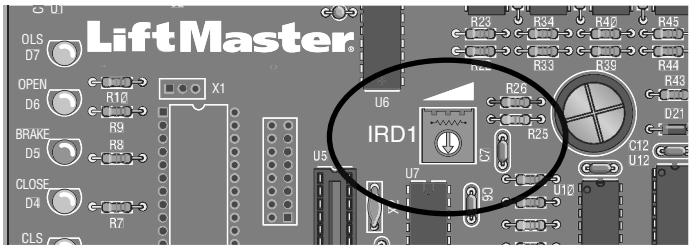
The arm should be level in the HORIZONTAL POSITION. If the arm is not level it can be adjusted by sliding the control board and/or adjusting the limit cam. The control board has two sensors on the back of the control board that sense when the limit cam has reached the open and close limit.

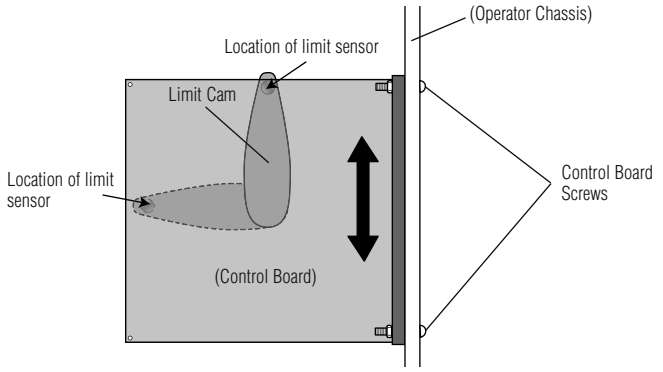
- **If the arm is closing too far:** Loosen the control board screws and slide the control board UP to increase the time it takes for the limit cam to travel between each sensor.
- **If the arm is not closing far enough:** Loosen the control board screws and slide the control board DOWN to decrease the time it takes for the limit cam to travel between each sensor.
- **If the arm is not stopping at the limits:** Move the limit cam closer to the control board by loosening the set screw on the limit cam.

After any adjustment open and close the arm to test if the arm is level. Ensure the limit cam set screw and control board screws are tight when adjustments are done.

NOTES:

- *In some cases, additional adjustments may be required after the belt wears in.*
- *To prevent entrapment, allow for two (2) feet minimum clearance past end of arm when in down position.*





IMPORTANT SAFETY INSTRUCTIONS

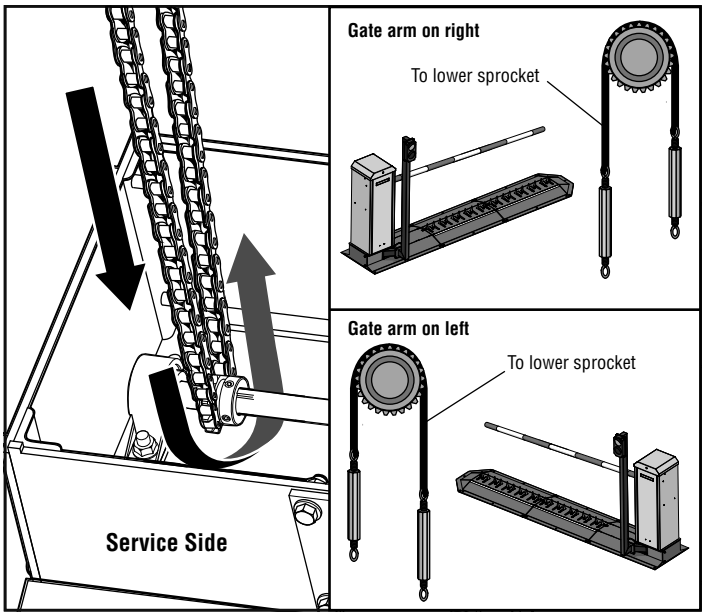
⚠⚠ WARNING

TO REDUCE THE RISK OF SEVERE INJURY OR DEATH:

1. READ AND FOLLOW ALL INSTRUCTIONS.
2. NEVER let children operate or play with gate controls. Keep the remote control away from children.
3. ALWAYS keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.
4. Test the gate operator monthly. The gate MUST reverse on contact with a rigid object or stop when an object activates the non-contact sensors. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate operator properly can increase the risk of INJURY or DEATH.
5. Use the emergency release ONLY when the gate is not moving.
6. KEEP GATES PROPERLY MAINTAINED. Read the owner's manual. Have a qualified service person make repairs to gate hardware.
7. The entrance is for vehicles ONLY. Pedestrians MUST use separate entrance.
8. Disconnect ALL power BEFORE performing ANY maintenance.
9. ALL maintenance MUST be performed by a LiftMaster professional.
10. SAVE THESE INSTRUCTIONS.

INSTALL THE DRIVE CHAIN

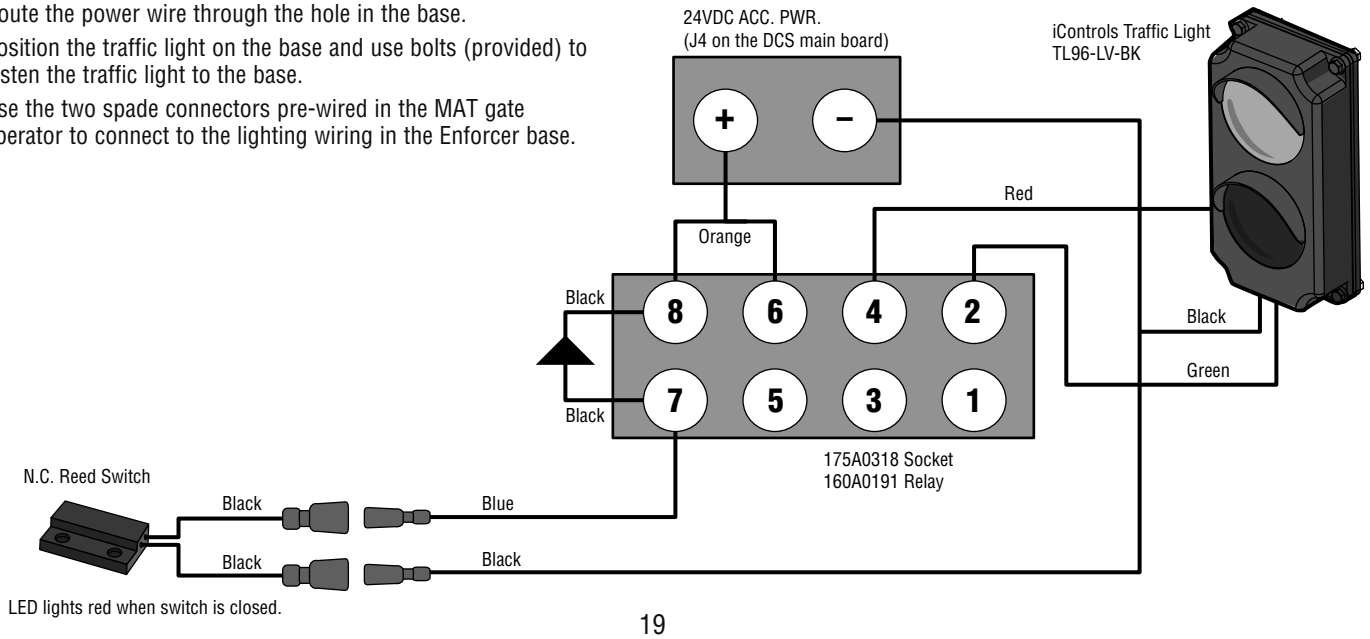
1. Leave the gate opener on the open limit and remove all power to the gate opener. ***NOTE:*** *Ensure that batteries are also disconnected.*
2. Position the turnbuckle assembly over top drive sprocket.From the service side, if the gate arm extends to the left, the left turnbuckle should be one link higher than the right. From the service side, if the gate arm extends to the right, the right turnbuckle should be one link higher.
3. Rotate the threaded shafts so that the thin edge faces you. This allows links in the lift chain to be aligned with the teeth of the lower sprocket.
4. Route lower lift chain as follows:
   From the service side, the teeth sections extend to your LEFT: Use supplied master link kit to attach one end of the long chain to the left side of the turnbuckle assembly.
   Route the long chain around the base sprocket from front (closest to you), underneath the sprocket, and to the rear.
   From the service side, the teeth sections extends to your RIGHT: Use supplied master link kit to attach one end of the long chain to the right side of the turnbuckle assembly. Route the long chain around the base sprocket from front (closest to you), underneath the sprocket, and to the rear.
   NOTE: *For surface mounted units, some of the surface material may need to be removed to prevent the chain from rubbing on the surface.*
5. Attach the remaining end of the lift chain to remaining threaded shaft using the supplied master link.
6. Note that the threaded shafts will be installed in the turnbuckles at the approximate position for proper chain tension, but minor adjustment may be required. Adjust the chain tension as needed to take up slack. The chain should not droop, but it should be pinched with fingers easily. Too much chain tension will cause unneeded wear and stress on the system.
7. Check the chain alignment from top to bottom shafts. The chain should be in line and should not angle to either side. The lower sprocket inside the base can be adjusted by loosening the two set screws. The sprocket is keyed to prevent rotation, but can be shifted left or right along the shaft.
8. Loosen the hardware that holds the guide roller assembly under the center battery tray cutout. Adjust the rollers to ensure that the chain does not rub on the tray, and tighten the bolts.
9. Manually spin the MAT pulley to close the boom. Verify that spikes are in the true vertical position when the boom is lowered.
10. Reconnect main power and batteries.
11. Test system, adjusting limits as needed.
12. If a traffic light is present, verify proper operation – light is green only when boom is in the full vertical position. The light is red all other times.



Limit arm rotational position can be adjusted on the lower shaft with set screw (picture). With boom raised (open) and spikes lowered, rotate the arm containing the magnet until the light turns solid green. Tighten allen/set screws.

INSTALL THE TRAFFIC LIGHT

1. Route the power wire through the hole in the base.
2. Position the traffic light on the base and use bolts (provided) to fasten the traffic light to the base.
3. Use the two spade connectors pre-wired in the MAT gate operator to connect to the lighting wiring in the Enforcer base.



OPERATION AND MAINTENANCE

⚠ WARNING

To avoid SERIOUS PERSONAL INJURY or DEATH from electrocution, disconnect ALL electric power BEFORE performing ANY maintenance.

Check at the intervals listed in the following chart:

ITEM	PROCEDURE	EVERY 3 MONTHS	EVERY 6 MONTHS	EVERY 12 MONTHS	EVERY 24 MONTHS
Fasteners	Check and tighten as required		●	◆	
Bearings and Shafts	Check for wear and lubricate	●		◆	
Battery Maintenance	Replace batteries.			◆	●

♦ **Repeat ALL procedures.**

GENERAL SERVICE

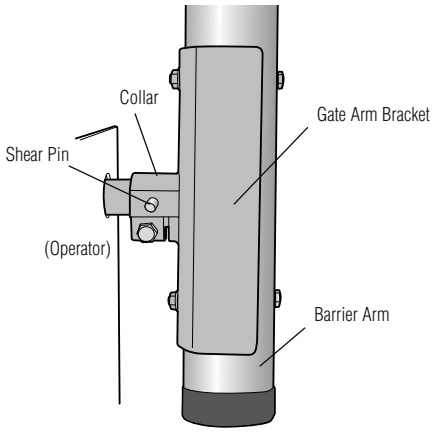
- If the belt is loose or needs replacement, adjust with 4 bolts that support motor to allow 1/4" play.
- Battery voltage should be 27.5 +0.05, -0 Vdc disconnected (set with R63, shown on the Control Board Layout page).

SHEAR PIN REPLACEMENT

If gate arm is vandalized and the tapered pin in the output shaft has been sheared, it must be replaced correctly and with the right pin type. Replacement must be done by always punching out the pin (or pieces) from the small end only. If drilling is required, DO NOT DAMAGE THE SHAFT, use a drill bit smaller than the small hole size of the pin. (Correct pin (P/N MA013) is a 2" pin with a number 6 taper only.)

NEVER USE A BOLT AS A TEMPORARY FIX, THIS WILL DAMAGE THE SHAFT AND COLLAR.

1. Turn the S3 Manual Open switch to OPEN on the control board to rotate gate arm bracket to the up position.
2. Disconnect AC power and disconnect batteries.
3. Remove the gate arm bracket and pieces in collar.
4. Drive out pin pieces with hammer and punch (Solid sharp blows are better than light ones).
5. Reinstall gate arm bracket.
6. Lightly oil the new pin and insert into collar.
7. Fully seat pin in shaft by tapping on large end.
8. Reinstall the barrier arm if required.
9. Connect AC power and batteries.
10. Turn off S3 Manual Open switch to CLOSE to put gate into operation.



BATTERY

BATTERY DISPOSAL

Replaced batteries must be treated as a hazardous waste and disposed of in accordance with State, Local, and Federal Regulations.

BATTERY REPLACEMENT

Replace batteries in pairs using LiftMaster 29-NP712 batteries. Failure to install batteries correctly will cause damage and will not be covered by warranty.

BATTERY MAINTENANCE / TESTING

The batteries are maintenance free. However, to ensure proper and safe operation, it is recommended that the batteries be replaced every two years. Battery testing is conducted automatically. See the Battery Test Description section for manually initiating the battery test.

BATTERY HANDLING / STORAGE

LiftMaster does not recommend storage of batteries in the field. Batteries are intended for immediate use.

ADDITIONAL FEATURES

SUGGESTED LOOP SENSOR LOCATIONS

Do not allow control devices to be within 10 feet of gate or operator.

***RECOMMENDATIONS**:*

- *If vehicle detectors are used to open or close the gate, use of the presence contacts are recommended. Using the pulse contacts will REDUCE the gate's safe operation.*
- *If closing timer is to be used, use **ONLY** on a dedicated free exit.*

FREE EXIT ON VEHICLE APPROACH

Gate will open when sensed by exit loop and then close once the close loop is cleared. If the vehicle pulls up to the exit loop and then backs away, it will close.

Space between loops will be 4 to 10 feet.

Terminal #7 is back away (free exit).

Terminal #6 is close input.

ENTRY WITH ACCESS CONTROL DEVICE

Gate will open when activated by an access control device. When vehicle passes and clears close loop, gate will close.

***NOTE:** If a second vehicle tail-gates and is sensed at the close loop, gate will stop its closing motion until loop is cleared again.*

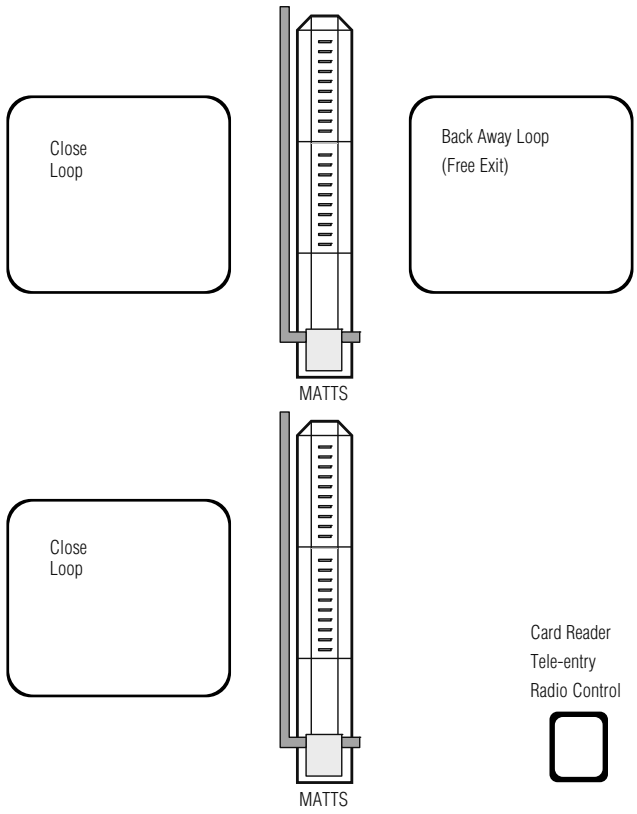
Terminal #6 is close input.

Terminals #1, 2, and 3 are open inputs.

DUAL DIRECTION AS ENTRY OR FREE EXIT

Dual direction is a combination of both of the above configurations to provide the ability for traffic to enter or exit in the same lane.

Space between loops will be 4 to 10 feet.



ADDITIONAL FEATURES

TRAP INSTRUCTIONS

INSTALL THE K1 AUXILIARY RELAY AND CONNECTOR AT MATTS CONNECTED TO THE ACCESS DEVICE

1. Press the relay into the K1 location ensuring the pins are properly aligned.
2. Press the connector into the J1 connector pins.

INSTALL THE K1 AUXILIARY RELAY AND CONNECTOR AT THE SECOND

1. Press the relay into the K1 location ensuring the pins are properly aligned.
2. Press the connector into the J1 connector pins.

WIRE THE CONNECTIONS BETWEEN THE OPERATORS

1. Connect the Normally open output (NO) of the K1 relay on the trap operator to the OPEN input (J5 - term#2) of the second operator.
2. Connect the common output (C) of the K1 relay of the trap operator to the common of the second operator (J5 - term#12).
3. Connect the Normally open output (NO) of the K1 relay on the second operator to the INTERLOCK input of the trap operator (J5 - term#8).
4. Connect the common output (C) (J5 - term#12) of the second operator to the common of the trap operator (J5 - term#12).

SET THE DIP SWITCHES AT THE TRAP OPERATOR

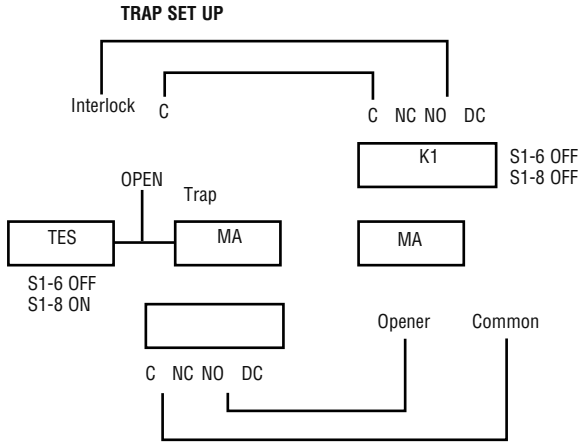
1. Set switch bank S1 to 00100001 where 1 is up and 0 is down.
2. Set switch bank S2 to 00100010 where 1 is up and 0 is down.

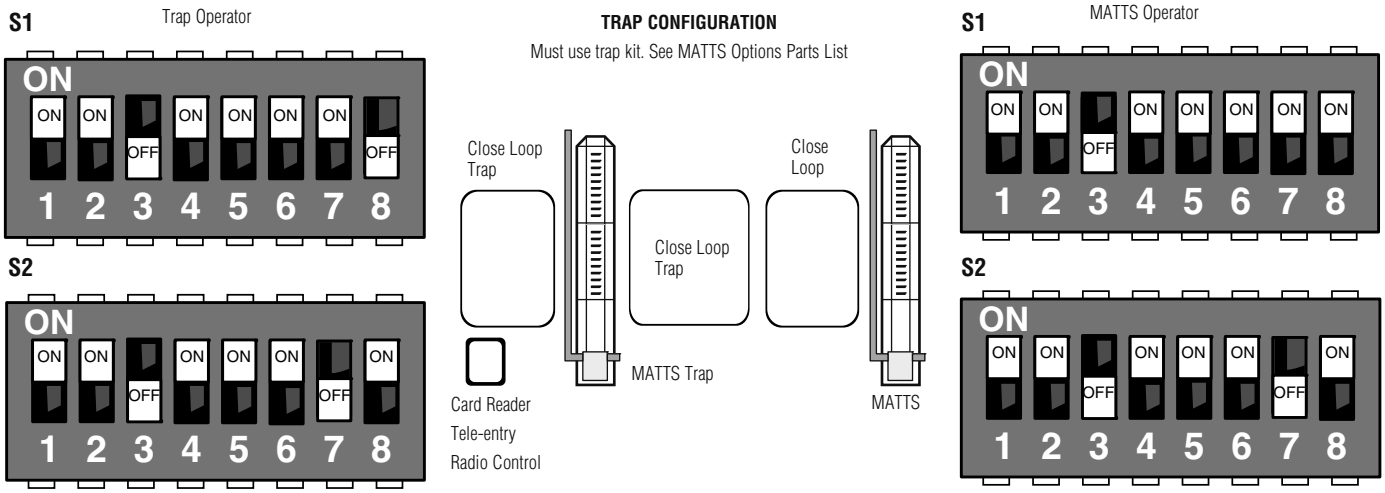
SET THE DIP SWITCHES AT THE SECOND OPERATOR

1. Set switch bank S1 to 00100000 where 1 is up and 0 is down.
2. Set switch bank S2 to 00100010 where 1 is up and 0 is down.

RECONNECT THE POWER AND TEST

1. Reconnect the DC power by replacing the neutral (Black) wire to the battery terminal.
2. Reconnect the AC Power to the operator.
3. To test, activate the following sequence of inputs:
   - Open the trap gate using the access device.
   - When the trap gate is open, activate the close loop on the trap operator. The trap gate will close and the second gate should open.
   - When the second gate is open, activate the close loop on the second operator. The second gate should close.





ADDITIONAL FEATURES

SEQUENCE ACCESS MANAGEMENT SYSTEM (SAMS) WITH "MEMORY"

SAMS WITH OTHER OPERATORS
Requires the K1 Relay Option (Order SAMS Kit)

This feature allows a logical interface between the MATTS barrier gate and a swing, slide, etc. gate operator (or MTC-31). All that is required is 4 wires between the MATTS barrier gate and the other operator. It will be necessary to have one set of dedicated/isolated dry contacts - {C. and N.C.} COMMON and NORMALLY CLOSED be available at the other operator's OPEN LIMIT SWITCH. Most operators will require that this EXTRA limit switch be added to their open limit switch assembly.

OPERATION

A one second pulse from access control device to the MATTS will energize its K1 relay sending an open signal to the other operator causing it to open. However, the MATTS barrier arm will not raise yet. When the other operator reaches its full open limit switch, this will open the COMMON and NORMALLY CLOSED contact on the EXTRA open limit switch. This will allow the original signal from your access control device (that was stored in memory) to now raise the barrier arm. As long as the other operator is in the full open position, any additional open pulse sent will in turn energize the MATTS K1 relay to send another open signal to the other operator as well as cause the arm to raise again if it has closed via a car crossing the MATTS close loop.

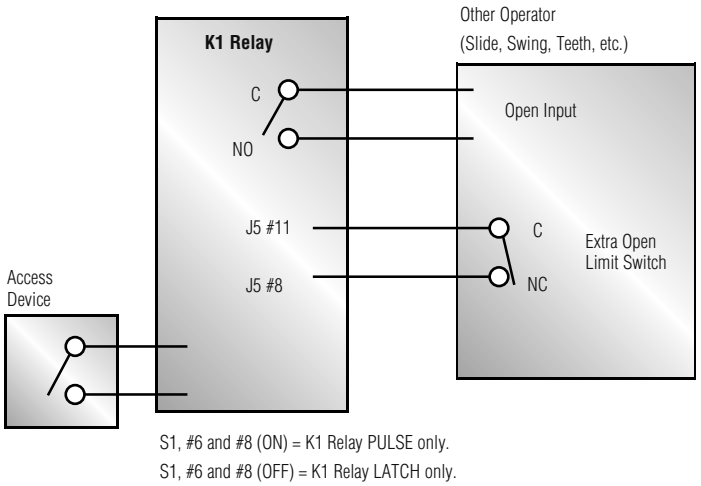
WIRING:

1. Run 2 wires from the other operator's isolated common & normally closed contacts of its open limit switch to the MATTS J5#8 and one of the commons J5, #9-12.
2. Run 2 wires from the MATTS K1 relay (common & normally open) to the other operators common and open input. (**WARNING:** Max of 30 VOLTS at .5 amps through relay). J5 #8 was the unused SHADOW LOOP input on the MATTS. ***NOTE:*** *A separate open device (24 hour timer, toggle switch) can be run to the other operator to control it without raising the gate arm. Tampering with the other operator's safety loops, safety edges and reverse sensors WILL NOT cause the arm to raise if one tripped. The arm will only raise if an intended open signal was sent to the MATTS.*

NOTES:

- *For motorized teeth, vertical pivot or overhead operator, leave S1-6, S1-8 OFF (this will keep the K1 relay latched down until the arm reaches the down position. This will keep the other gate operator locked open or teeth locked down until the arm closes completely).*
- *In this mode, if the arm senses an impact, the K1 relay will stay energized holding open (or teeth down) the other operator until the arm times out and closes.*

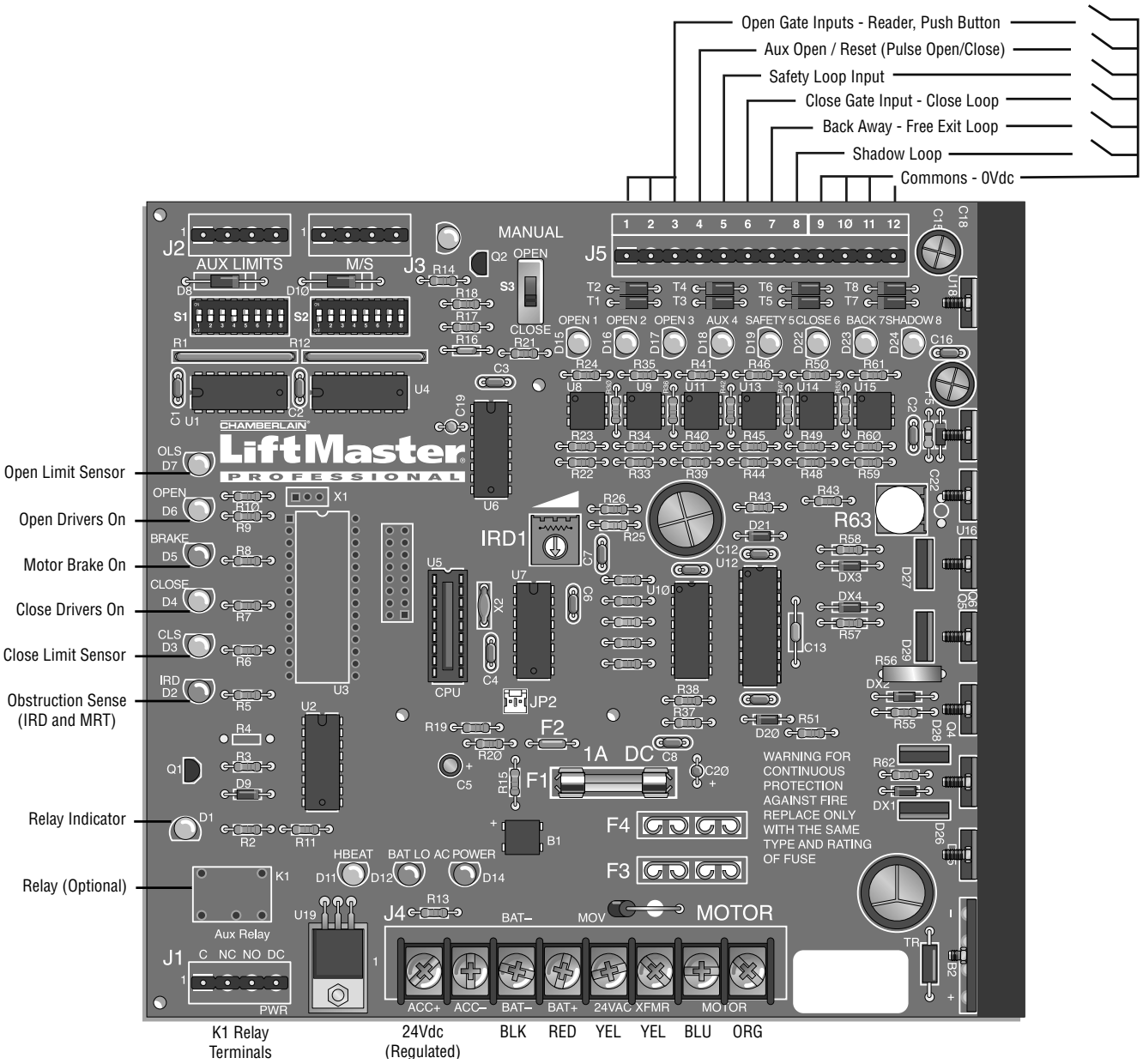
NOTE: *Insert a jumper across the JP2 terminal to allow the SAMS feature to work with the multiple vehicle memory count selection, use the K1 relay to open the sequenced gate (S1-5 off, S2-6 on, jumper across JP2). This allows gate to store input counts via J5 #4 but not raise the arm until the sequenced slide or swing gate has fully opened.*



S1, #6 and #8 (ON) = K1 Relay PULSE only.
S1, #6 and #8 (OFF) = K1 Relay LATCH only.

ADDITIONAL FEATURES

CONTROL BOARD LAYOUT AND INPUT LOCATIONS



INPUT LOCATIONS

Requires the K1 Relay Option (Order SAMS Kit)

Accessory power is 24 Vdc regulated rated at 500 ma. [1/2 amp].

NOTE: *J5 #8 is now the SAMS with memory input (see page 15).*

D11: Heart beat. Shows that the processor and program are running properly.

D12: Battery status. See diagnostic procedures.

D14: AC power indicator. Shows that AC power is present.

S3: Manual open. To allow gate to be opened or closed during service of operator.

F3: 10 amp ATO type fuse for 24 Vac input power. (UL listed fuse only.)

F4: 15 amp ATO type fuse for 24 Vdc battery input power. (UL listed fuse only.)

TROUBLESHOOTING

WARNING - DISCONNECT BATTERIES AND AC POWER BEFORE SERVICING ANY MECHANICAL OR MOVING COMPONENTS.

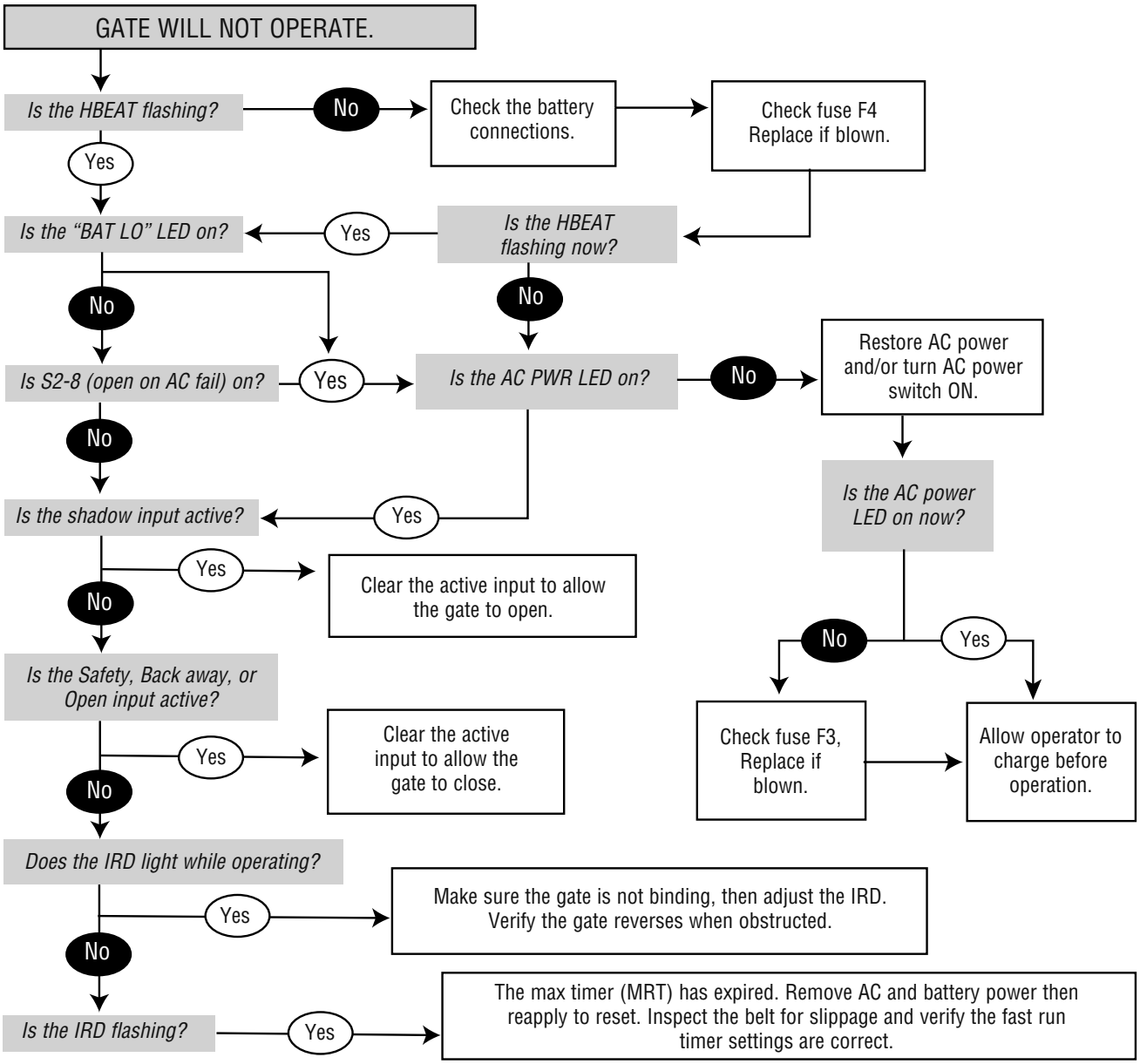
BATTERY CHECKOUT

When the batteries become weak the gate will begin to run noticeably slower.
NOTE: *Batteries should only be checked when you are sure they have had adequate time to fully charge.*

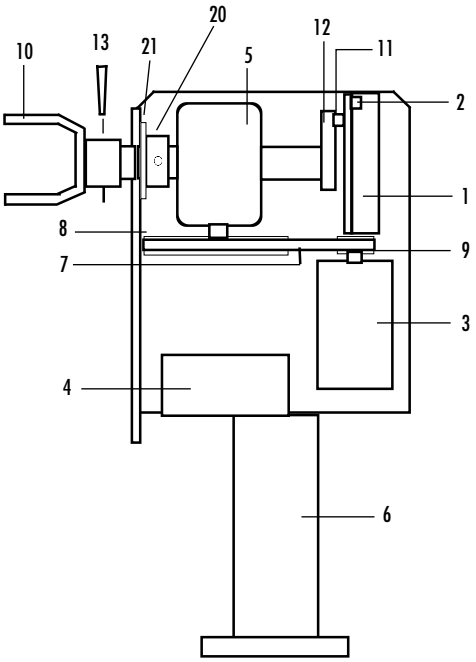
1. Turn off the AC power and run gate for 5 to 10 cycles while observing low battery indicator LED D12. If LED 12 comes ON, batteries are too weak to function properly. If LED 12 does not light, then voltage should be checked as they still maybe near failure. Correct voltage is approximately 24.5 Vdc.
   NOTE: *If LED D12 does light, gate will open to conserve batteries in this test or in a real power loss, even if mode switch 8 on S2 is off.*

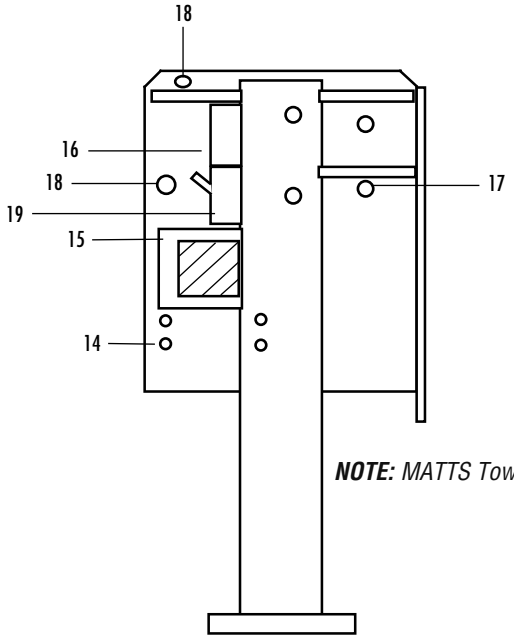
Return of AC power will clear low battery indicator. Correct charge voltage is 27.5 Vdc with batteries not connected (set with R63, shown on the Control Board Layout page).

GATE NOT OPERATING



REPAIR PARTS





NOTE: *MATTS Tower not shown*

PART NUMBERS AND DESCRIPTIONS

ITEM	PART NUMBER	DESCRIPTION
1	MA001	Controller
2	MA002	Removable Connector
3	MA003	DC Motor - 24 Vdc
4	MBAT	12 Vdc 7AH Battery 2 required
5	MA005	Gear Reducer 60:1
6	MA006	Aluminum Chassis
7	MA007	Drive Belt
8	MA008	Reducer Pulley
9	MA009	Motor Pulley
10	MA010	Gate Arm Bracket
11	MA011	Magnet
12	MA012	Cam Arm
13	MA013	Shear Pin
14	MA014	Bolt and Nut (4) Motor
15	MA015	Transformer
16	MA016	120 Vac Duplex Outlet (120 Vac Only)
17	MA017	Bolt and Nut (4) Reducer
19	MA019	On/Off Switch
*	MA020	Operator Cover for MATTS (Not Tower)
*	MA021	Nylon Arm Nuts (2)
*	MA022	Arm Bolts (2)
*	MA023	Gate Arm - 12'
*	73A3	Filter Module
*	74-31243	Surge Suppressor
20	MA036	Collar
21	MA037	Nylon Washer

(*) parts not shown

NOT SHOWN - MATTS UNIQUE PARTS

K99-ENF-SPRKT	Sprocket and shaft kit
K99-ENF-SWITCH	Stoplight switch and relay kit
K99-ENF-DRCHN	Drive chain kit
K99-ENF-BRNGKT	Bearing kit

PARTS SHIPPED

ITEM	QTY
MATTS Operator	1
Controller	1
Operator Cover	1
Installation and Service Manual	1
Arm Bolts with Washers	2
Nylon Nuts	10
7AH Batteries	2

MATTS TOWER UNIQUE PARTS LIST

ITEM	PART NUMBER	DESCRIPTION
*	MA020T	Operator Cover for MATTS Tower
*	MA020D	Operator Door for MATTS Tower

MATTS ARM OPTIONS PARTS LIST

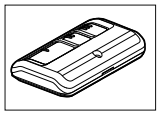
ITEM	PART NUMBER	DESCRIPTION
*	71-TRAP	Trap option
*	71-SPRINT	Sprint option
*	71-TRAPSP	Sprint Trap option

ACCESSORIES

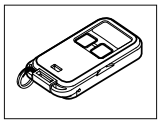
REMOTE CONTROLS

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.

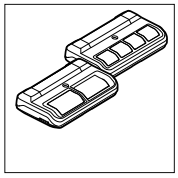
3-BUTTON REMOTE CONTROL
The 3-button remote control can be programmed to control the operator. Includes visor clip.
Model 893MAX



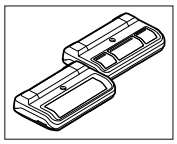
3-BUTTON MINI-REMOTE CONTROL
The 3-button remote control can be programmed to control the operator. Includes key ring and fastening strip.
Model 890MAX



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

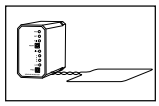


UNIVERSAL SINGLE AND 3-BUTTON REMOTE CONTROLS
Ideal for applications requiring a large number of remote controls.
Models 811LM and 813LM



MISCELLANEOUS

24 VDC LOOP DETECTOR
Model A24



WIRING HARNESS
For the A24. Model A57

HEATER KIT
500 watt with thermostat (MAT and MATS only). Model UN201

SLIP CLUTCH OPTION
For MATTS Gear Box. Model MA005C

K1 RELAY OUTPUT OPTION
Model MA200

ALUMINUM ARM
White, 12' x 3" diameter with warning labels. Model MA023

ALUMINUM ARM:
12' x 3" diameter with yellow/black stripes. Model MA024

ALUMINUM ARM
12' x 3" diameter with reflective yellow/black stripes. Model MA024R (Highly Recommended)

SAMSKIT
Includes required relay and limits.

NYLON ARM NUTS
(Pkg. of 50). Model MA021

NYLON ARM NUTS
(Pkg. of 50), thin. Model MA021A

ADAPTER COLLARS
For padded arm option (2 included). Model MA031

ROUND PADDED ARM
12' x 4" diameter, yellow (requires MA031). Model MA025

REPLACEMENT PAD:
12' x 4" diameter, yellow. Model MA026

REPLACEMENT ARM TUBE
12' x 2" diameter. Model MA027

ROUND PADDED ARM
14' x 4" diameter, yellow (requires MA031). Model MA028

REPLACEMENT PAD
14' x 4", yellow. Model MA029

REPLACEMENT ARM TUBE
14' x 4". Model MA030

COUNTER WEIGHT
Required for all 15' arms. Model MA117

ALUMINUM GATE ARM
White, 15' x 3" (requires MA117). Model MA115

ALUMINUM GATE ARM
15' x 3" with yellow/black stripes (requires MA117). Model MA116

ALUMINUM GATE ARM
15' x 3" with reflective yellow/black stripes (requires MA117). Model MA116R

ARTICULATING PVC (FOLDING) ARM
9' with hardware kit. Model MA034 (Highly Recommended)

HARDWARE KIT
(Only for MA034). Model MA033

PVC ARM: 9'
(Only for MA034). Model MA035

ARTICULATION ALUMINUM (FOLDING) ARM:
10' without hardware kit, with yellow/black stripes. Model MA024-10

MA230VKIT
Includes surge suppressor, wire jumper, duplex box covers and detailed instructions.

WARRANTY

(YOU MUST READ, UNDERSTAND AND AGREE WITH ALL ITEMS IN THE LIMITED WARRANTY)

LiftMaster warrants the **MATTS** to be free of defects in workmanship and materials for a period of 2 years for electronics and mechanical components and includes a 10 year corrosion perforation warranty on the cover and chassis. Warranty will begin from the date of purchase.

LiftMaster reserves the right of final determination as to the existence and causes of any defect or failure. Any part or parts found to be defective and are returned to LiftMaster within the warranty period, shall at our option be repaired or replaced free of charge F.O.B. the factory. Freight is not included at any time on gate arms and chassis. ONLY UPS ground freight is included during the first year of warranty.

The warranty will not apply the following circumstances which are considered beyond our control.

Mis-use, vandalism, accident, neglect, unauthorized repairs or modifications, acts of God (lightning, floods, insect damage, etc.), power surges, units subjected to corrosive environments, incorrect installation or application, the batteries or incorrect battery installation, operation without or failure to use correct battery type, damage to arm bracket and/or gear reducer due to use of incorrect arm.

The warranty set forth above is entirely exclusive and no other warranty whether written or oral, is expressed or implied. LiftMaster specifically disclaims any and all implied warranties, merchantability or fitness for a particular purpose. It is the purchasers sole and exclusive responsibility to determine whether or not the equipment will be suitable for a particular purpose. In no event shall LiftMaster, inc. be held liable for direct, indirect, incidental, special, consequential damages or loss of profits whether based on contract, tort, or any other legal theory during the course of the warranty or at any time there after. The installer and/or end user agree to assume all responsibility for all liability in use of this product, releasing LiftMaster of all liability.

WARNING! MATTS NOT FOR USE WITH BICYCLES OR PEDESTRIANS. YOU MUST PROVIDE APPROPRIATE SIGNAGE BEFORE ACTIVATING THE UNIT. NEVER ALLOW CHILDREN TO PLAY NEAR OR OPERATE AUTOMATIC GATES.

IN ORDER TO INSTALL AND USE THE MATTS, YOU MUST UNDERSTAND AND BE IN FULL UNCONDITIONAL AGREEMENT WITH ALL STIPULATIONS OUTLINED ABOVE. IF YOU ARE NOT IN FULL AGREEMENT, DO NOT PUT UNIT INTO OPERATION. IF OPERATOR IS PUT INTO OPERATION THIS WILL BE CONFIRMATION THAT YOU ARE IN FULL UNCONDITIONAL AGREEMENT WITH ALL OF THE ABOVE STIPULATIONS.

Materials, components, features and specifications are subject to change without notice.