



**DC  
SLIDE  
MANUAL**

# ALL-O-MATIC®

SL-45DC | SL-90DCFP | SL-100DC | SL-150DC

## DC SLIDE GATE OPERATORS MANUAL

**UL325  
COMPLIANT**

**UL991  
COMPLIANT**

**CANADA  
CSA C22.2  
COMPLIANT**



**ALL-O-MATIC**  
MANUAL

Rev. UL2 10/17



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# IMPORTANT SAFETY INSTRUCTIONS

## **WARNING**

TO REDUCE THE RISK OF **INJURY**:

**READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS. DO NOT START INSTALLATION UNTIL YOU HAVE READ AND UNDERSTAND THESE DIRECTIONS. IF THERE IS SOMETHING YOU DO NOT UNDERSTAND, PLEASE CALL US.**

**NEVER** let children operate or play with gate controls.

Locate the control station and make sure it is (a) within sight of the gate and (b) at a minimum height of 5 feet so small children cannot reach it.

Install the enclosed entrapment warning signs next to the control station and in a prominent location.

For operators equipped with a manual release, instruct the end user on the correct operation of the manual release. Use the manual release only when the gate is not moving. It is advised that the power be turned off.

Always keep people and objects away from the gate. No one should cross the path of a moving gate.

The gate operator must be tested monthly. The gate must reverse on contact with a rigid object, or stop when an object activates the non-contact sensor(s). Always re-test the operator after adjusting the limits and/or force. Failure to adjust and re-test the gate operator properly may cause severe injury or death.

Keep gate(s) properly maintained. Have a qualified service technician make repairs to gate hardware and make proper adjustments to gate operator.

This gate entrance/exit is for vehicles only. Pedestrians must use a separate entrance.

There is nothing on a gate operator that is easily repaired or adjusted without a great deal of experience. Call a qualified gate service technician who knows your gate operator.

## SAVE THESE INSTRUCTIONS

# IMPORTANT SAFETY INSTRUCTIONS (CONTINUED)

## INSTALL THE GATE OPERATOR ONLY WHEN YOU HAVE READ THE FOLLOWING

### BEFORE GATE OPERATOR INSTALLATION

- Confirm that the gate operator being installed is appropriate for the application.
- Confirm that the gate is designed and built according to the current published industry standards.
- Confirm that all appropriate safety features and safety accessory devices are being installed, including all entrapment protection devices.
- Make sure that the gate opens and closes freely (by hand) before installing the operator.
- Repair or replace worn or damaged gate hardware before installing the gate operator.
- Eliminate all gaps in the sliding gate below a 6 foot height that permits a 2 1/4" sphere to pass through any location. This includes the area of the adjacent fence covered when the gate is in the open position
- Eliminate all gaps in a swing gate below a 4 foot height that permits a 4" sphere to pass through any location. This includes the hinge area of the gate.
- Install a proper electrical ground to the gate operator.
- Controls intended for user activation must be located at least 6 feet 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.
- The stop and/or reset button must be located in the line of sight of the gate. Activation of the operator reset control shall not cause the operator to move.
- Install a minimum of 2 warning signs, one on each side of the gate where they are easily visible.
- Take pictures of the installation.
- Test all safety features for proper function before placing the automatic vehicular gate in operation.

### GATE OPERATOR INSTALLATION

- Operator must be disconnected from the power source before attempting any installation of accessories.
- Install gate operator according to the installation instructions in this manual.
- Adjust the operator clutch or load sensing device to the minimum force setting that will allow for reliable gate operation.
- Install the operator inside the fence line. Do not install the operator on the public side of the fence line.

### MAINTENANCE

- Train owners/users on the basic functions and safety features of the gate system, including how to turn off the power and operate the manual disconnect feature.
- Leave safety instructions, product literature, installation manual, and maintenance manual with the owner or end user.
- Explain to the owner or end user the importance of routine service and operator testing on a monthly basis.

# UL 325 CLASS TYPES AND OBSTRUCTION SENSING SYSTEMS

Each class must have (2) monitored entrapment protection devices in each entrapment zone to sense and react to obstructions within 2 seconds.

All-O-Matic's gate operators conform to the most rigid Class One.

## UL 325 CLASS TYPES

### **CLASS ONE: RESIDENTIAL**

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

### **CLASS TWO: COMMERCIAL OR GENERAL PUBLIC ACCESS**

- A vehicular gate operator intended for use at a commercial location or building, such as a multi-family housing unit (five or more single family units), hotel, garages, retail stores, or other buildings accessible by or servicing the general public.

### **CLASS THREE: INDUSTRIAL OR LIMITED ACCESS**

- A vehicular gate operator intended for use at an industrial location or building, such as a factory, loading dock area, or other locations not accessible by or intended to service the general public.

### **CLASS FOUR: RESTRICTED ACCESS**

- A vehicular gate operator intended for use at a guarded industrial location or building, such as airport security areas or other restricted access locations not servicing the general public and where unauthorized access is prevented via supervision by security personnel.

## THE SIX TYPES OF OBSTRUCTION SENSING SYSTEMS

### **TYPE A:**

- Inherent entrapment protection system. This system must sense and initiate the reverse of the gate within 2 seconds of contact with a solid object.

### **TYPE B1:**

- Non-contact sensor (photoelectric sensor or equivalent). This system shall, upon sensing an obstruction in the direction of the gate travel, reverse the gate within a maximum of 2 seconds.

### **TYPE B2:**

- Contact sensor (edge device or equivalent). This system shall, upon sensing an obstruction in the direction of the gate travel, initiate the reversal of the gate within a maximum of 2 seconds.

### **TYPE C:**

- Inherent force limiting, inherent adjustable clutch, or pressure relief valve.

### **TYPE D:**

- Actuating device requiring continuous pressure to maintain opening or closing motion of the gate.

# OPERATOR SPECIFICATIONS

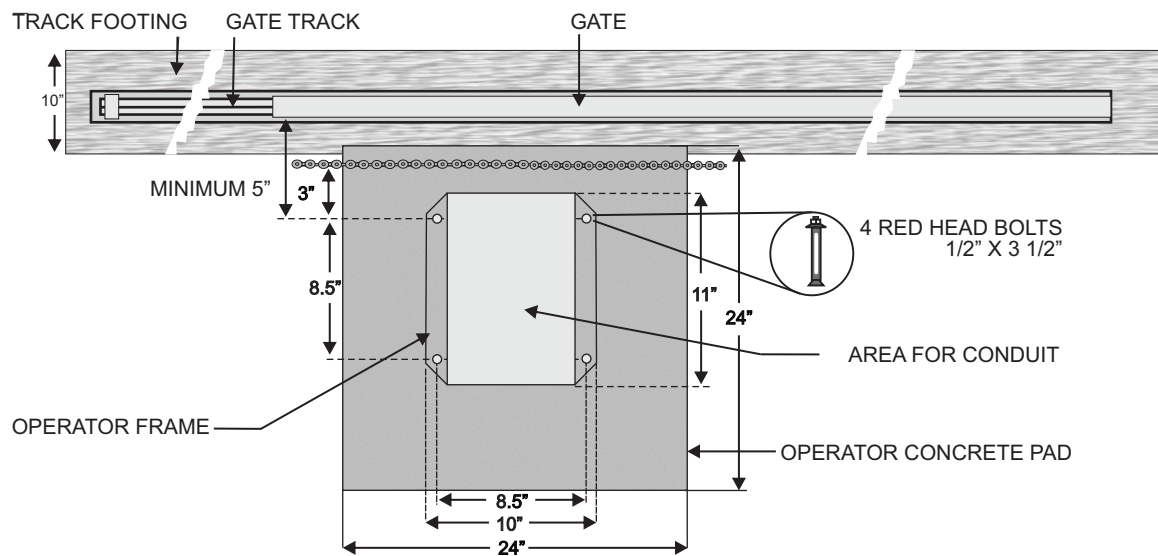
|                             | SL-45 DC                                                                                                         | SL-90 DC                                                                                                          |
|-----------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Max Gate Weight</b>      | 800 lbs.                                                                                                         | 1,600 lbs                                                                                                         |
| <b>Max Gate Length</b>      | 30'                                                                                                              | 50'                                                                                                               |
| <b>Warranty</b>             | 5 year residential                                                                                               | 7 year residential<br>5 year commercial                                                                           |
| <b>Motor</b>                | 24 VDC brushless with planetary gear box                                                                         | 24 VDC brushless<br>1/2 HP motor equivalent                                                                       |
| <b>Gate Speed</b>           | 12" per second                                                                                                   | 12" per second                                                                                                    |
| <b>Power Input</b>          | 115 VAC 50/60Hz single phase - 2Amps<br>230 VAC 50/60Hz single phase - 1Amp<br>24 VDC solar panel up to 80 watts | 115 VAC 50/60Hz single phase - 4Amps<br>230 VAC 50/60Hz single phase - 2Amps<br>24 VDC solar panel up to 80 watts |
| <b>Duty Cycle</b>           | Continuous                                                                                                       | Continuous                                                                                                        |
| <b>Temperature Range</b>    | -40° to 160°                                                                                                     | -40° to 160°                                                                                                      |
| <b>Gear Box Ratio</b>       | Approx. 29:1                                                                                                     | 20:1 with internal disconnect                                                                                     |
| <b>Dimensions</b>           | 11" W X 14.5" L X 15.5" H                                                                                        | 15.5" W X 18.5" L X 17" H                                                                                         |
| <b>Shipping Weight</b>      | 60 lbs.                                                                                                          | 93 lbs.                                                                                                           |
| <b>Emergency Release</b>    | Push open in the event of a power failure                                                                        | Foot pedal release                                                                                                |
| <b>Belt Size</b>            | N/A                                                                                                              | 4L-230                                                                                                            |
| <b>Main Sprocket</b>        | 41B15 X 5/8" bore                                                                                                | 41B22 X 7/8" bore                                                                                                 |
| <b>Chain Size</b>           | 41NP (20' included)                                                                                              | 41NP (20' included)                                                                                               |
| <b>Gear Box Sprocket</b>    | 41B15 x 5/8" bore                                                                                                | 41B12 X 7/8" bore                                                                                                 |
| <b>Limit Shaft Sprocket</b> | 41B10 X 5/8" bore                                                                                                | 41B15 X 5/8" bore                                                                                                 |
| <b>Breaker Requirement</b>  | 20 amp dedicated                                                                                                 | 20 amp dedicated                                                                                                  |
| <b>Gearbox Pulley</b>       | N/A                                                                                                              | 2.5" with 5/8" bore                                                                                               |
| <b>Motor Pulley</b>         | N/A                                                                                                              | 2" with 5/8" bore                                                                                                 |
| <b>UL Classes</b>           | I & II                                                                                                           | I, II, III & IV                                                                                                   |

# OPERATOR SPECIFICATIONS (CONTINUED)

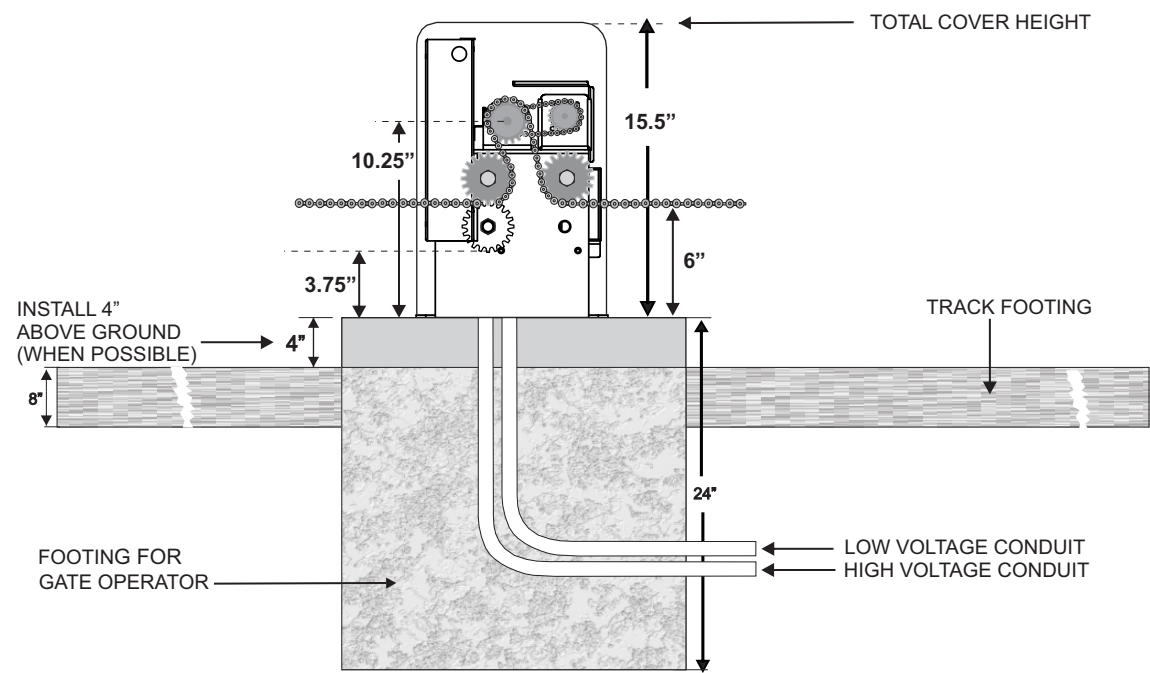
|                             | SL-100 DC<br>SL-100 DCFP                                                                                            | SL-150 DC                                                                                                    |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Max Gate Weight</b>      | 2,000 lbs.                                                                                                          | 1/2 HP: 3,000 lbs.<br>1 HP: 4,000 lbs.                                                                       |
| <b>Max Gate Length</b>      | SL-100DC - 45'<br>SL-100DC FP - 50'                                                                                 | 60'                                                                                                          |
| <b>Warranty</b>             | 7 year residential<br>5 year commercial                                                                             | 7 year residential<br>5 year commercial                                                                      |
| <b>Motor</b>                | 24 VDC brushless<br>1/2 HP motor equivalent                                                                         | 24 VDC brushless<br>1/2 and 1 HP motor equivalent                                                            |
| <b>Gate Speed</b>           | 12" per second                                                                                                      | 12" per second                                                                                               |
| <b>Power Input</b>          | 115 VAC, 50/60Hz single phase - 6Amps<br>230 VAC, 50/60Hz single phase - 3Amps<br>24 VDC solar panel up to 80 watts | 115/230 VAC, 50/60Hz single phase 1/2 HP: 6/3.5Amps, 1 HP:<br>8/4.5Amps<br>24 VDC solar panel up to 80 watts |
| <b>Duty Cycle</b>           | Continuous                                                                                                          | Continuous                                                                                                   |
| <b>Temperature Range</b>    | -40° to 160°                                                                                                        | -40° to 160°                                                                                                 |
| <b>Gear Box Ratio</b>       | SL-100 DC - 10:1<br>SL-100 DCFP - 20:1                                                                              | 30:1 with internal clutch                                                                                    |
| <b>Dimensions</b>           | 12" W X 17.5" L X 23.5" H                                                                                           | 15" W X 19.5" L X 25" H                                                                                      |
| <b>Shipping Weight</b>      | 130 lbs.                                                                                                            | 150 lbs.                                                                                                     |
| <b>Emergency Release</b>    | SL-100 DC: Push open<br>SL-100 DCFP: Foot pedal release                                                             | Foot pedal release                                                                                           |
| <b>Belt Size</b>            | SL-100 DC: 4L-300<br>SL-100 DCFP: 4L-260                                                                            | N/A                                                                                                          |
| <b>Main Sprocket</b>        | 41B22 X 7/8" bore                                                                                                   | 40B22 X 1" bore                                                                                              |
| <b>Chain Size</b>           | 41NP (20' included)                                                                                                 | 40NP (20' included)                                                                                          |
| <b>Gear Box Sprocket</b>    | SL-100 DC: N/A<br>SL-100 DCFP: 41B14 x 7/8"                                                                         | 40B22 X 1" bore                                                                                              |
| <b>Limit Shaft Sprocket</b> | SL-100 DC: N/A<br>SL-100 DCFP: 41B15 x 5/8" bore                                                                    | 41B10 X 5/8" bore                                                                                            |
| <b>Breaker Requirement</b>  | 20 amp dedicated                                                                                                    | 20 amp dedicated                                                                                             |
| <b>Gearbox Pulley</b>       | SL-100 DC: 5" with 5/8" bore<br>SL-100 DCFP: 2.5" with 5/8" bore                                                    | N/A                                                                                                          |
| <b>Motor Pulley</b>         | 2" with 5/8" bore                                                                                                   | N/A                                                                                                          |
| <b>UL Classes</b>           | I, II, III & IV                                                                                                     | I, II, III & IV                                                                                              |

# SL-45 DC CONCRETE PAD

**TOP VIEW**

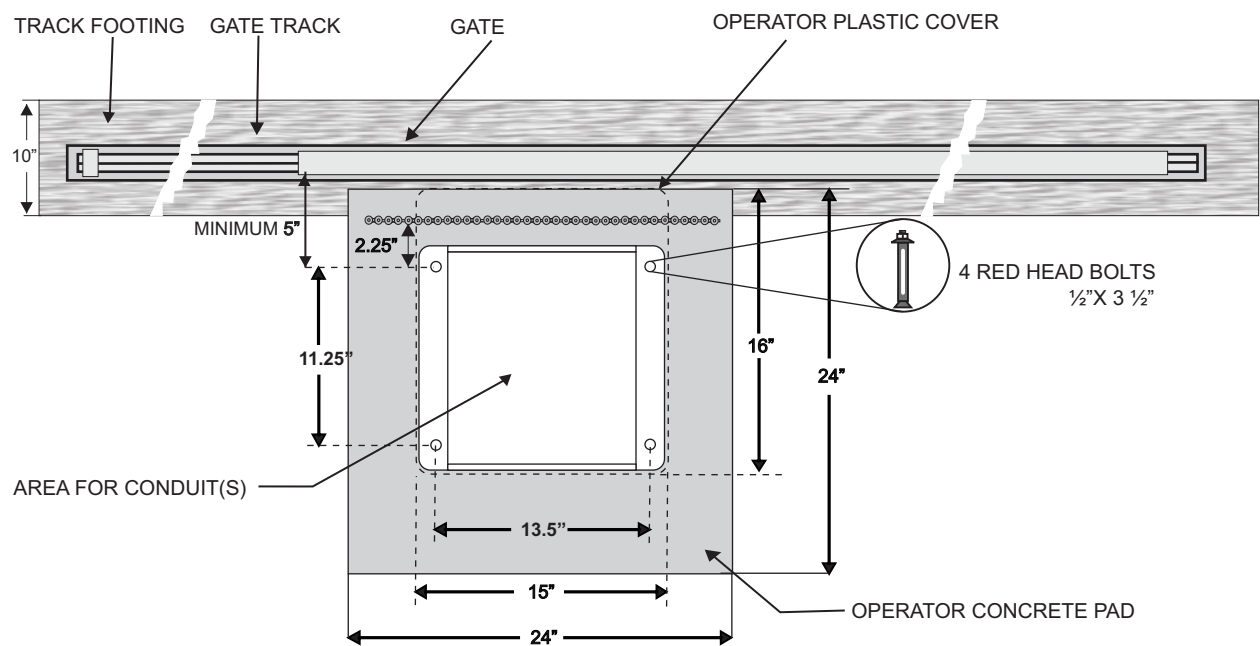


**FRONT VIEW**

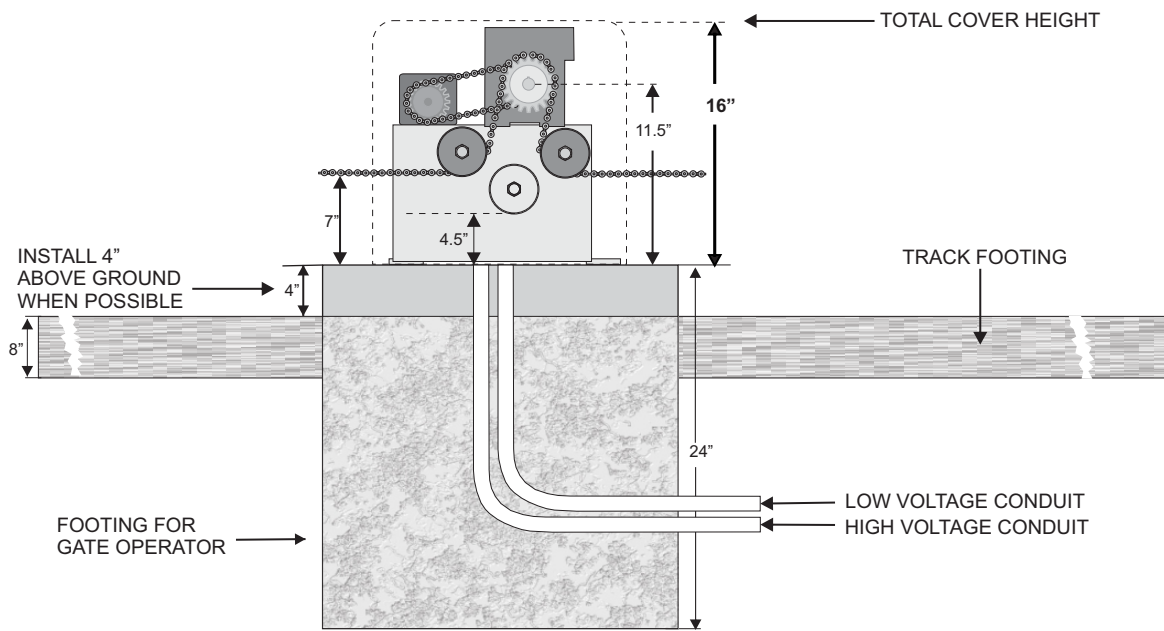


# SL-90 DC CONCRETE PAD

## TOP VIEW

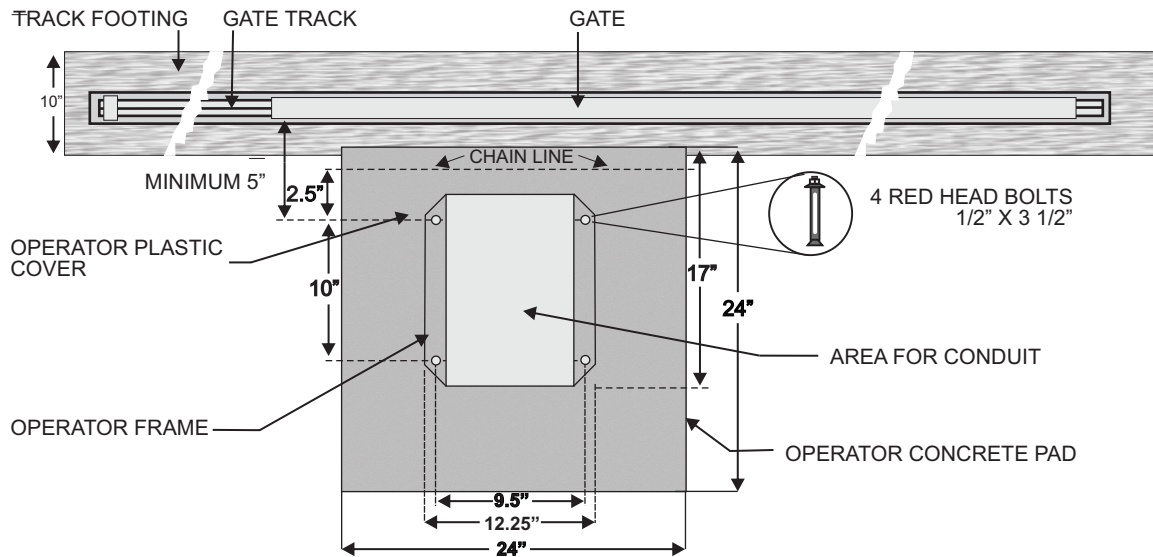


## FRONT VIEW

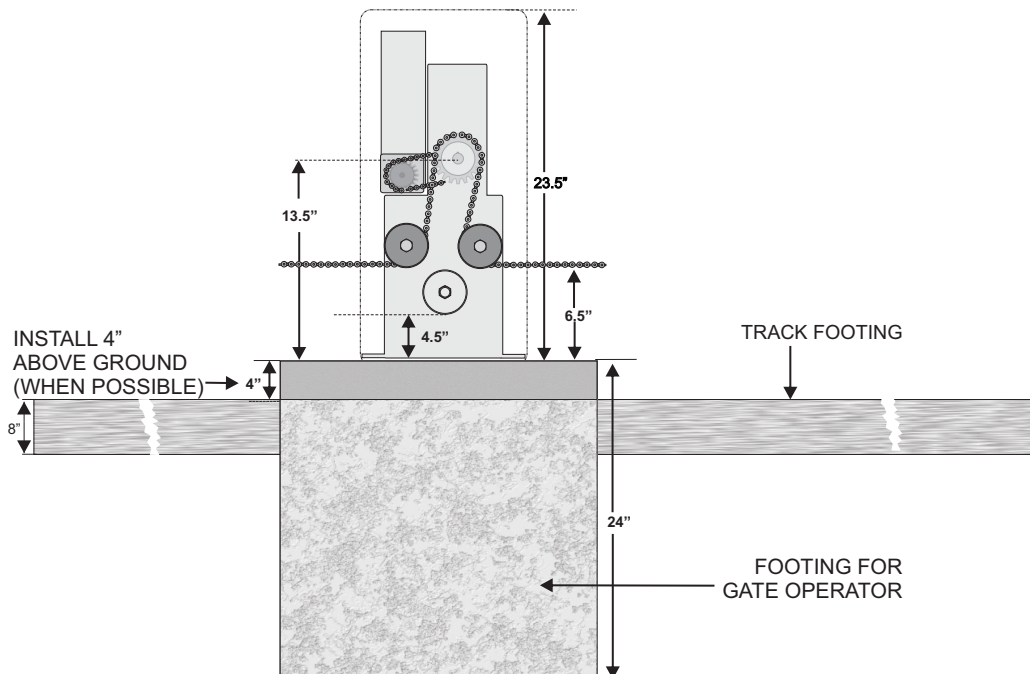


# SL-100 DC [FP] CONCRETE PAD

## TOP VIEW

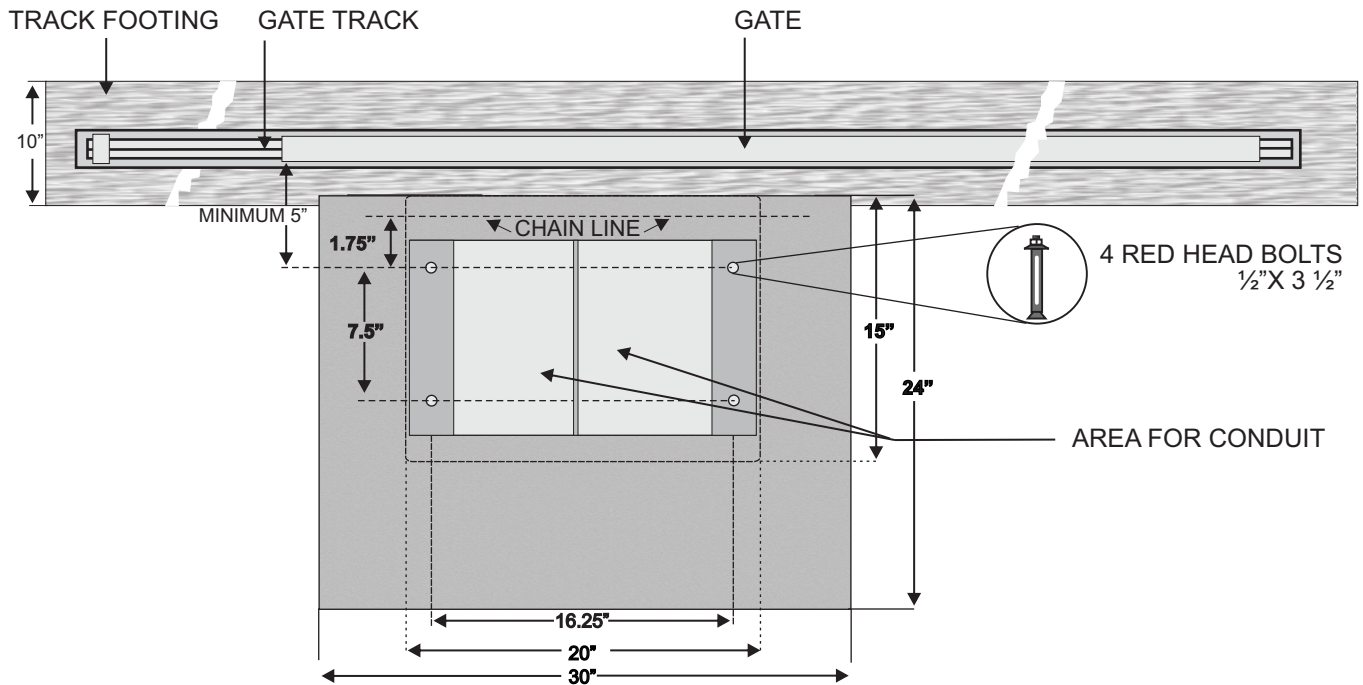


## FRONT VIEW

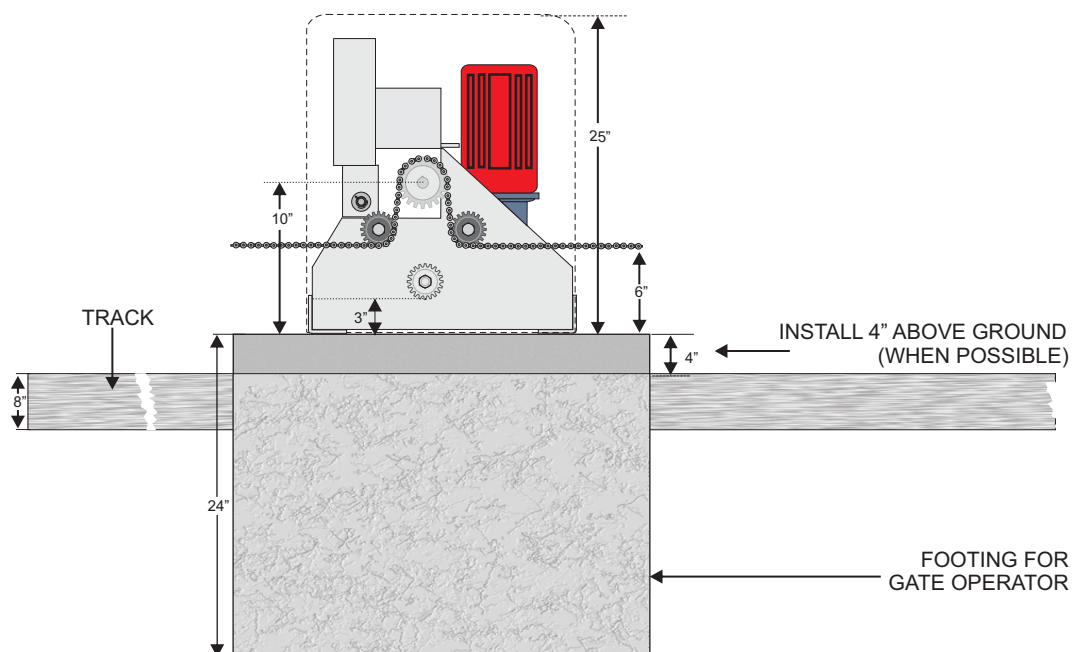


# SL-150 DC CONCRETE PAD

## TOP VIEW

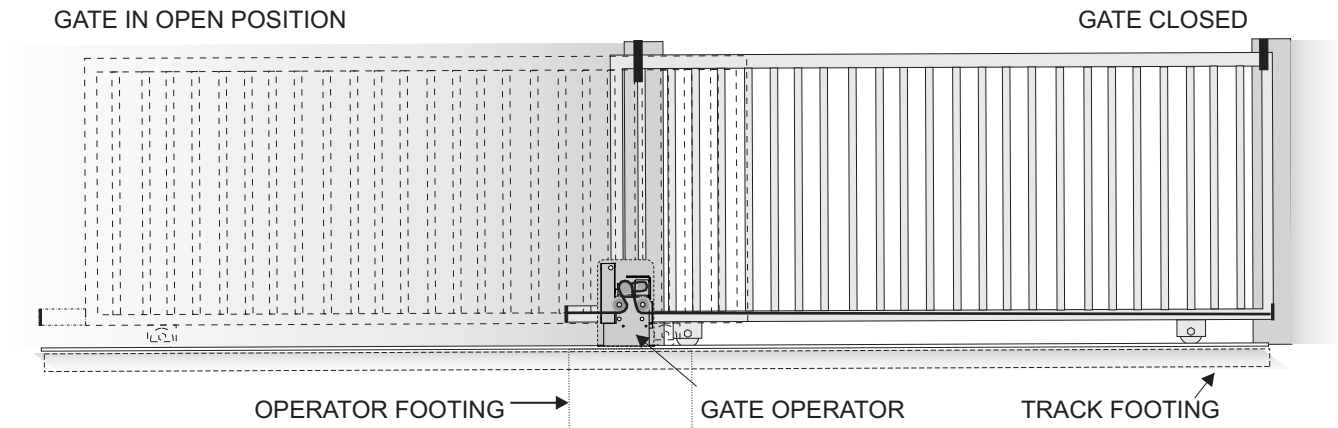


## FRONT VIEW

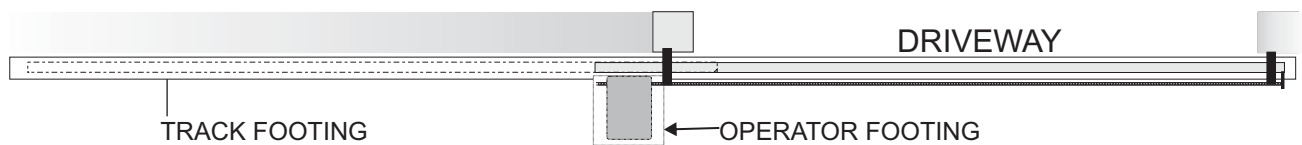


# FRONT MOUNT INSTALLATION

## FRONT VIEW

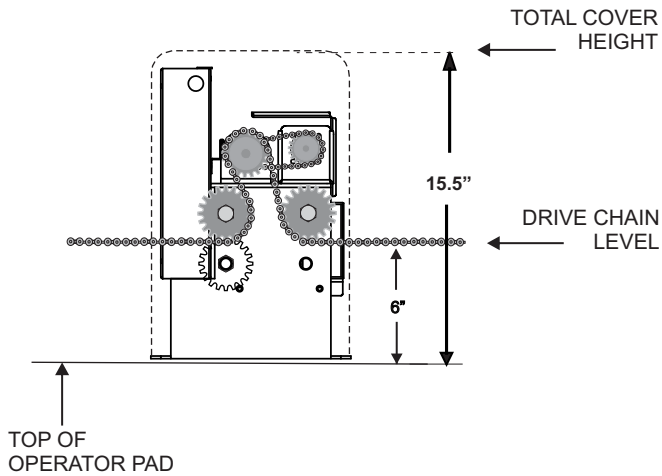


## OVERHEAD VIEW

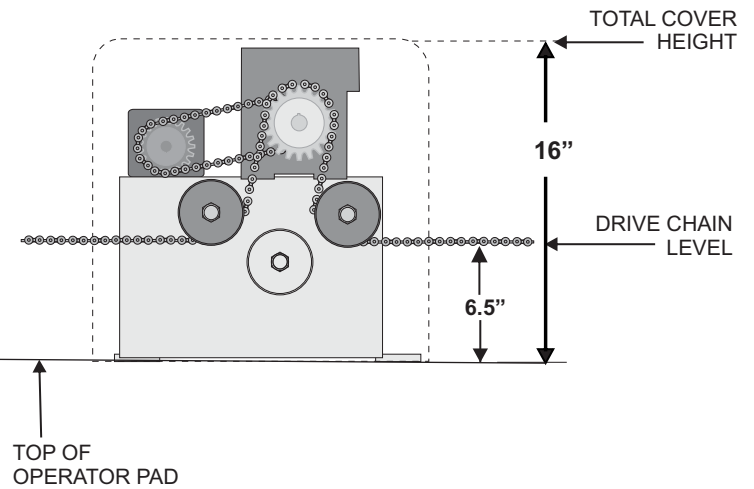


# FRONT MOUNT INSTALLATION (CONTINUED)

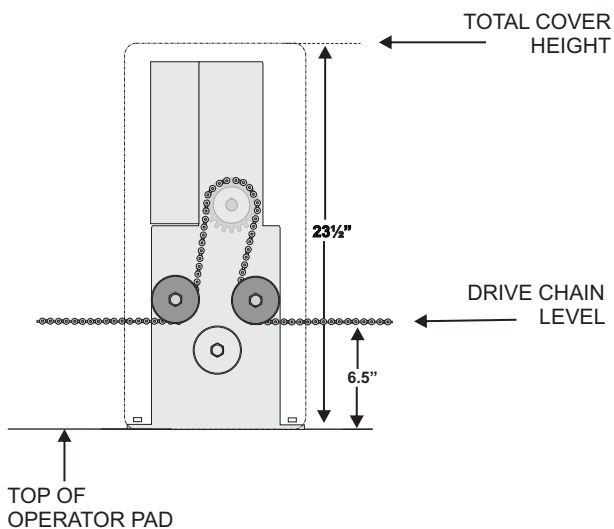
**SL-45 DC**



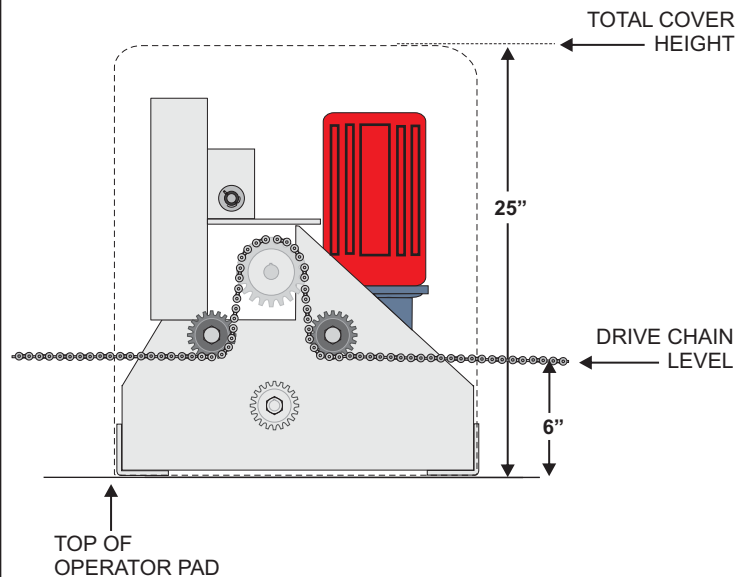
**SL-90FP DC**



**SL-100 DC & SL-100 DC FP**

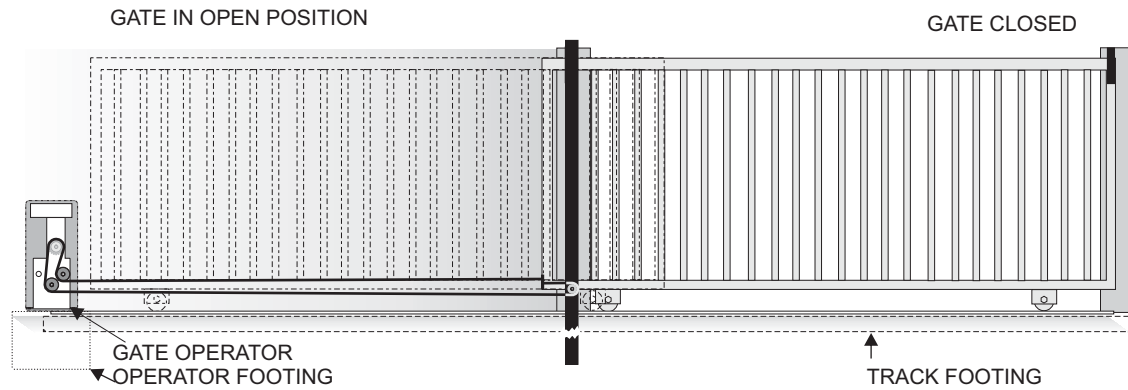


**SL-150 DC**

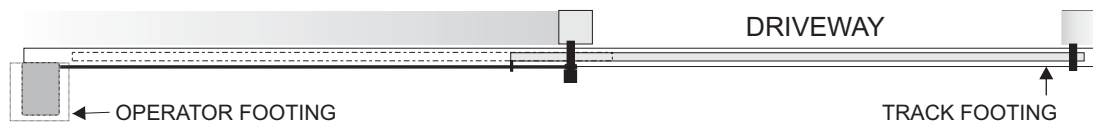


# REAR MOUNT INSTALLATION

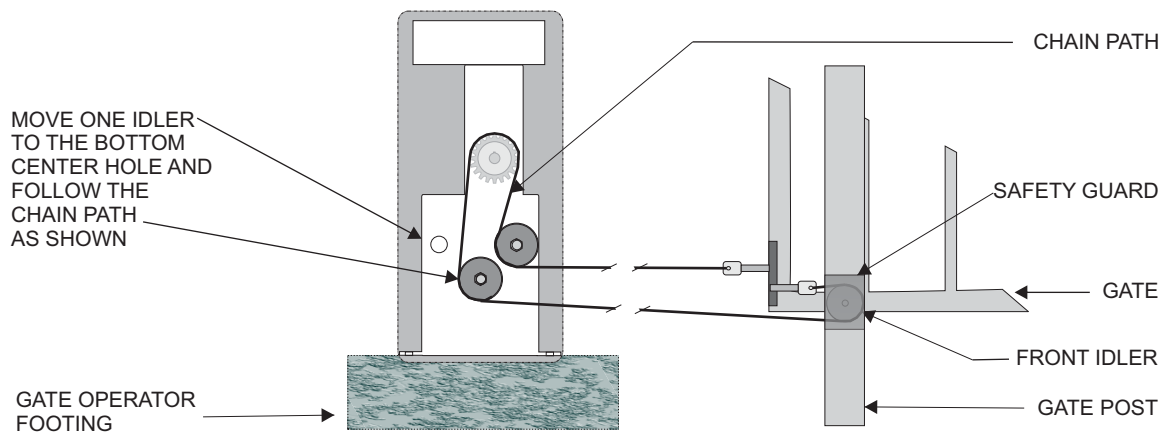
## FRONT VIEW



## OVERHEAD VIEW

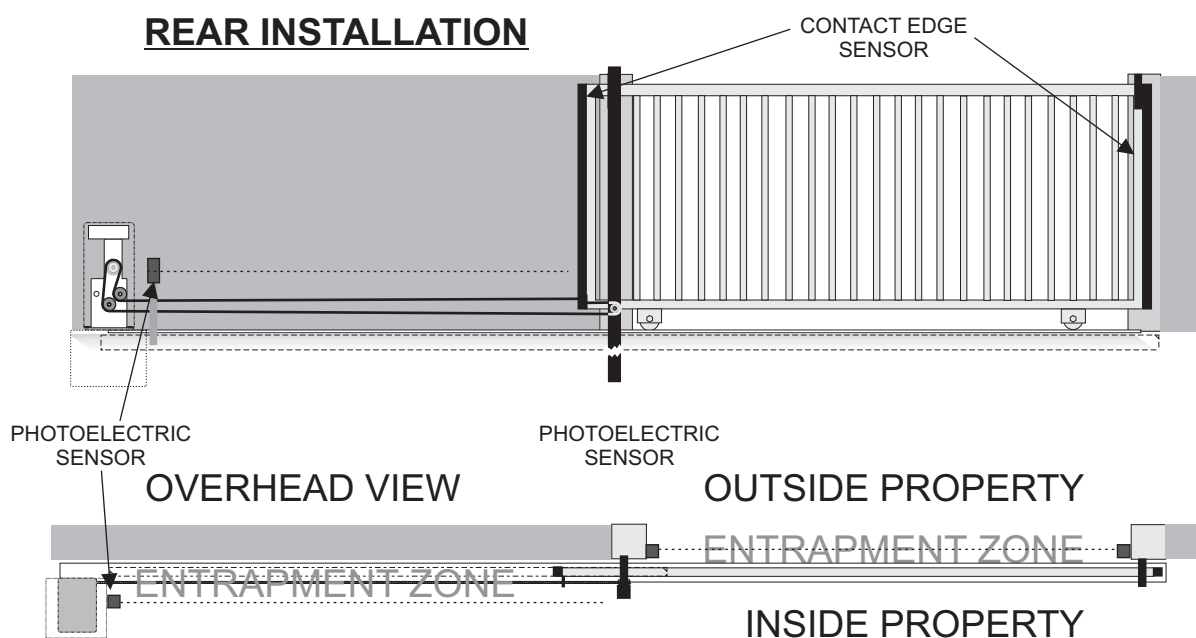
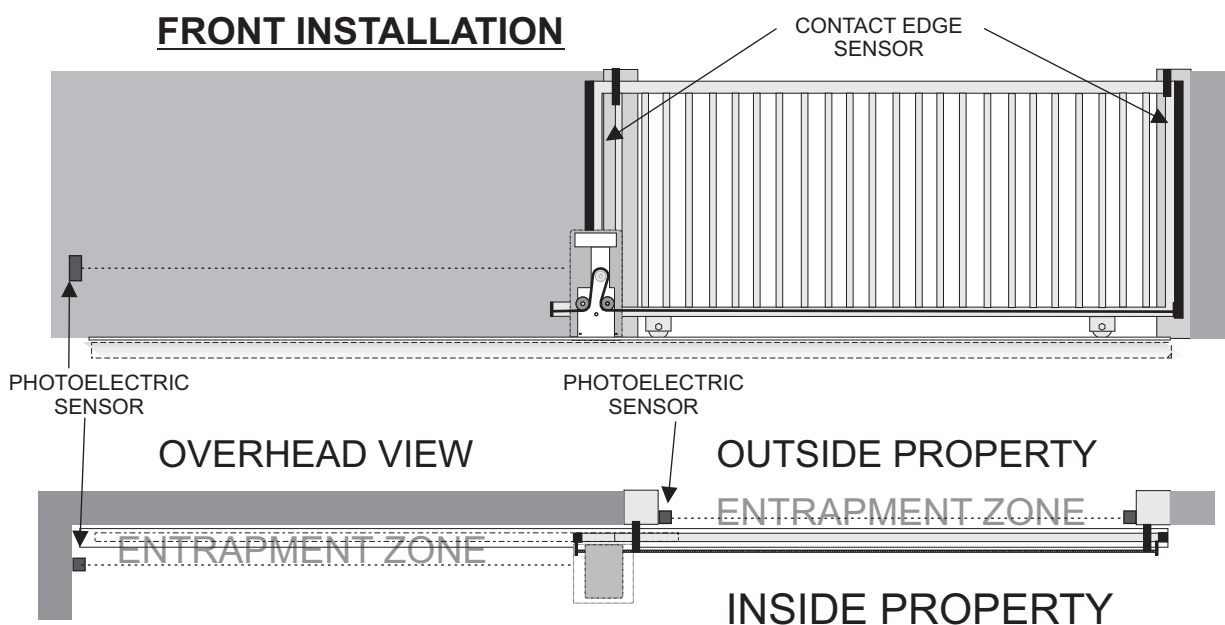


## CHAIN CONNECTION TO GATE



# ENTRAPMENT PROTECTION INSTALLATION

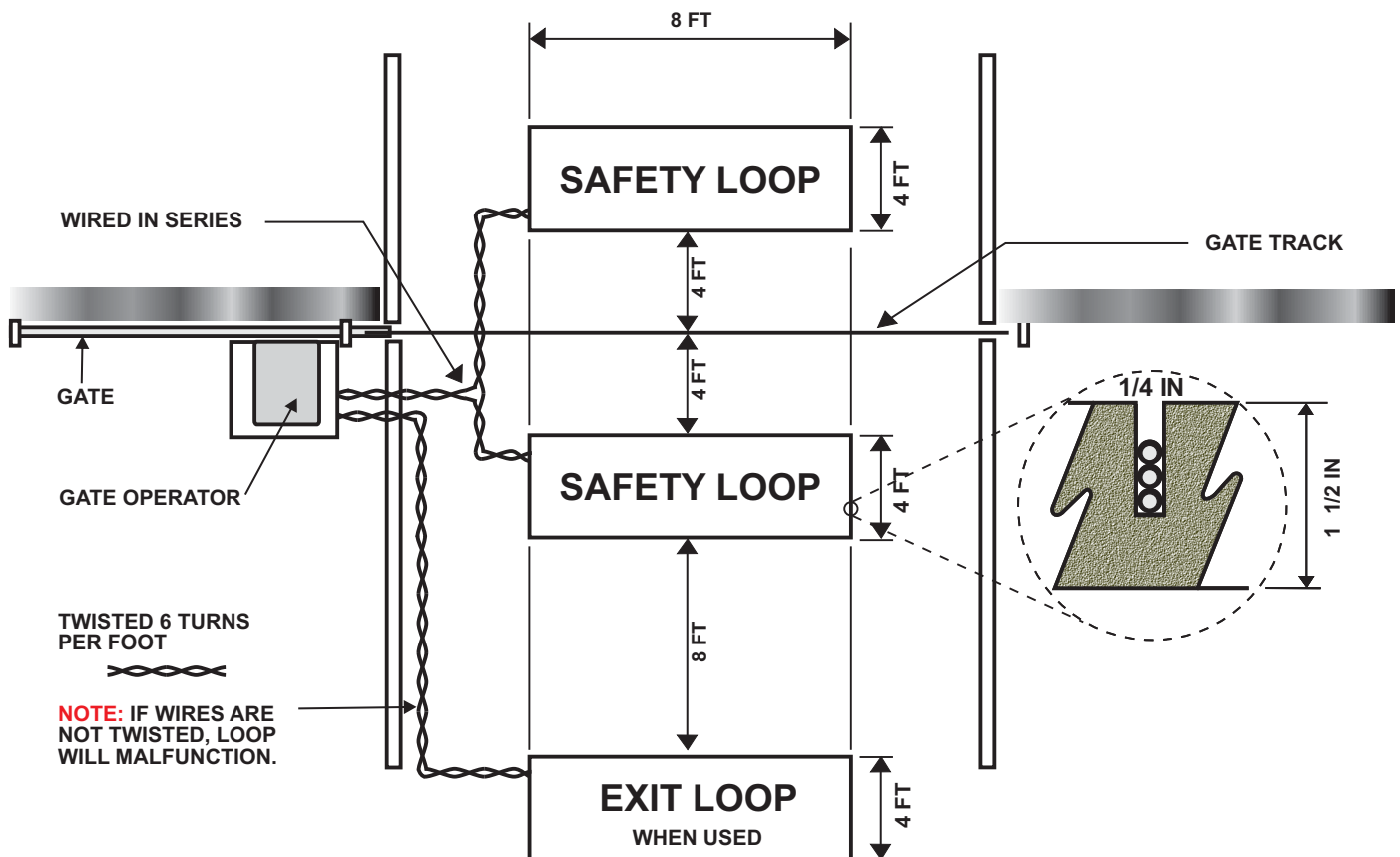
- A minimum of (2) monitored entrapment protection devices are **REQUIRED** for each entrapment zone.
- An entrapment zone is a location or point of contact where a person can become entrapped between a moving gate and a rigid object.
- The operator is equipped with an inherent entrapment protection system (ERD).
- The gate operator requires an external monitored entrapment protection device (non-contact photoelectric sensor or contact edge) for each entrapment zone prior to gate operation. The operator cycles power to the external entrapment protection device and checks for device signals. If the operator does not receive the correct feedback from the device, the gate will not operate.



# LOOP LAYOUT

- Below is a typical loop layout. When connecting to an All-O-Matic circuit board, use the following:
  - SAFETY LOOP** - Normally Closed (N.C.) Contacts
  - EXIT/OPEN CMD** - Normally Open (N.O.) Contacts(See page 27 for LPR-1 loop rack wiring)
- Wires **MUST** be twisted from the exit point of the loop saw cut to the loop detector.
- Twist loop wires 6 turns per foot, as shown below. Improper twisting of wires can cause loop issues.
- When using an inside and outside safety loop, loops must be **WIRED IN SERIES**.

## OUTSIDE PROPERTY



## INSIDE PROPERTY

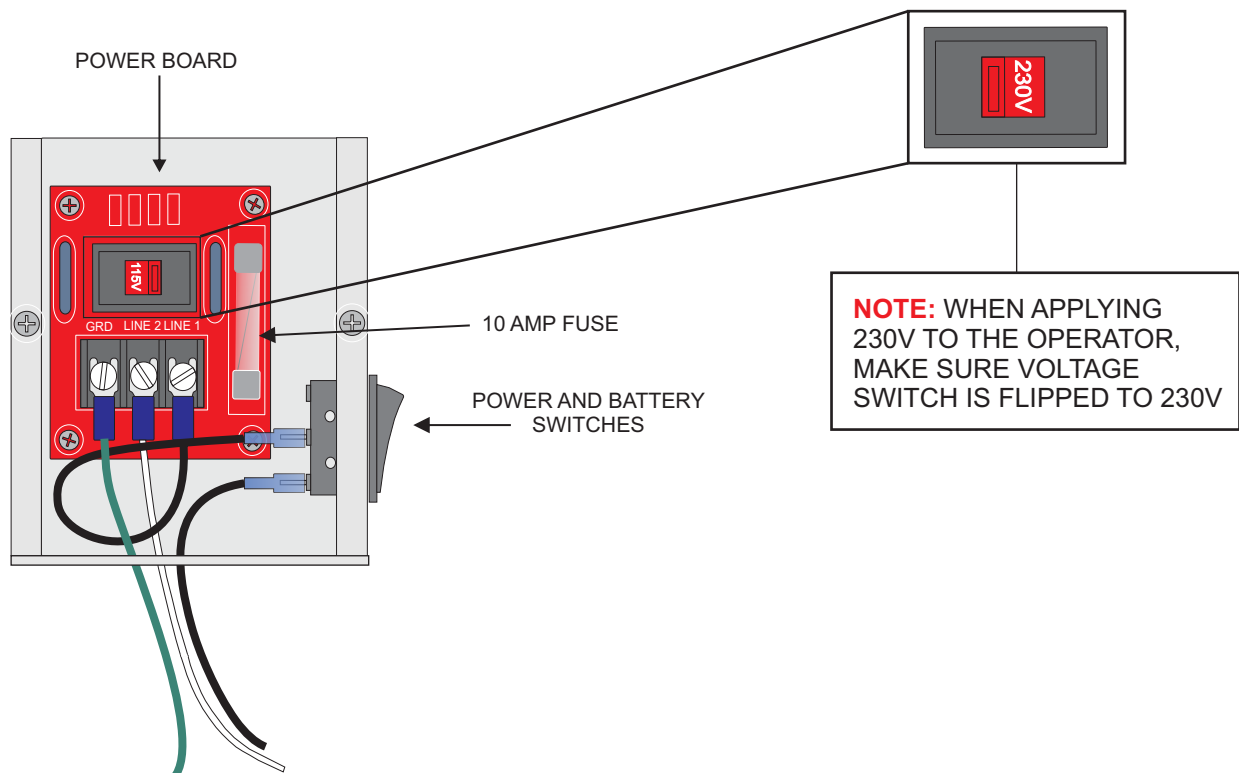
# ELECTRICAL CONNECTION

## OPERATORS **MUST** BE PROPERLY GROUNDED!

- All gate operators **MUST** be properly grounded. This minimizes or prevents damage due to electrical charge, such as a near lightning strike or an electrical static discharge.
- Use a single wire for the ground. **DO NOT** splice two wires for the ground. If the wire breaks or is cut, replace it with a single length wire. **NEVER** use two wires for the ground.
- Check the local city code for proper earth ground rod type and grounding procedures.
- Use UL listed conduits for power wire enclosure.

- Use a minimum of a **20-amp**, dedicated circuit for power.

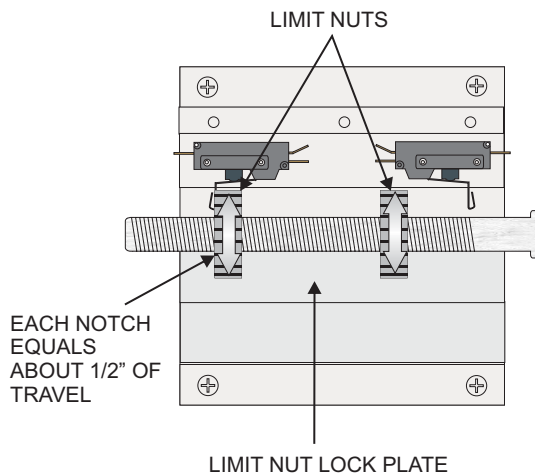
| Power  | 115 VAC 50/60Hz | 230 VAC 50/60Hz Single Phase |
|--------|-----------------|------------------------------|
| LINE 1 | 115V HOT        | 230V LINE 1                  |
| LINE 2 | 115V NEUTRAL    | 230V LINE 2                  |
| GND    | GROUND          | GROUND                       |



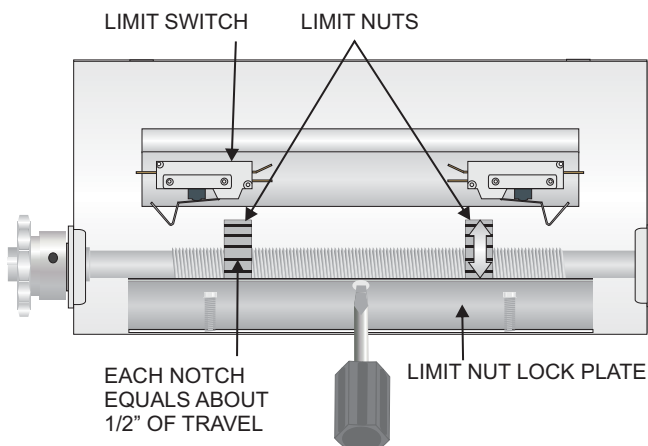
# GATE TRAVEL ADJUSTMENT

Locate the limit switches (limit switches will be in the limit box on SL-150 DC) and follow the steps below:

- 1: Turn the power **OFF** on the operator.
- 2: Push the limit lock plate down (on the SL-45 DC, SL-90 DC, and SL-100 DC) or outwards (on the SL-150 DC)
- 3: Turn the limit nut toward the switch to DECREASE travel and away from the switch to INCREASE travel.
- 4: Place limit plate back to its locked position. (**MUST** be done for gate to hold its limits)
- 5: Turn the power **ON** to the operator.
- 6: Run the gate operator open and close. If additional adjustment is needed, repeat the steps.



**SL-45 DC**  
**SL-90 DC**  
**SL-100 DC[FP]**



**SL-150 DC**

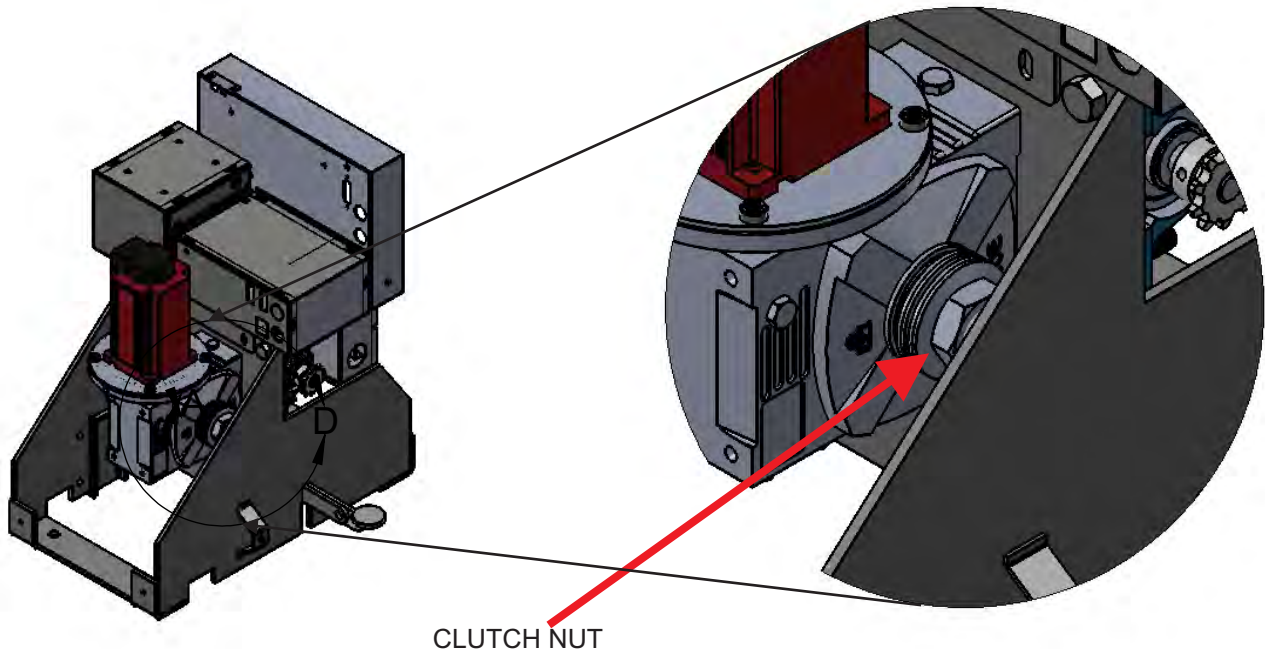
# SL-150 DC CLUTCH ADJUSTMENT

The SL-150 DC gearbox is equipped with an internal clutch to protect the operator when gate is reversed in mid-cycle.

The clutch comes from the factory set at 60 lbs. of torque. In some applications, where the gates are heavier than normal, the clutch may require some adjustment to increase the amount of torque. It is important to have the clutch tight enough to be able to move the gate without slipping. It is as important to not over tighten the clutch, as it is a method of protecting the operator.

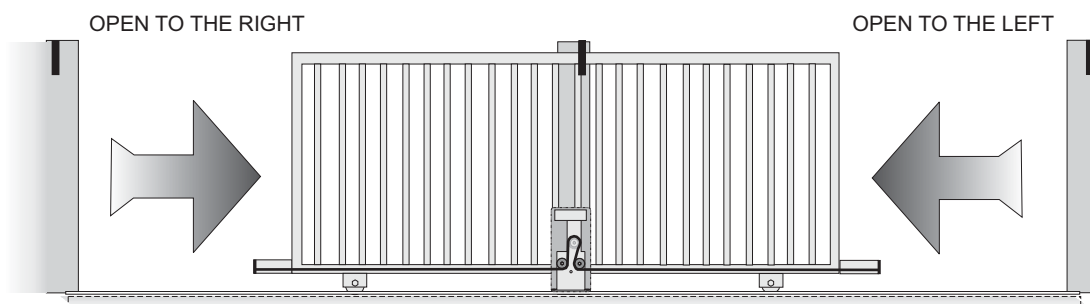
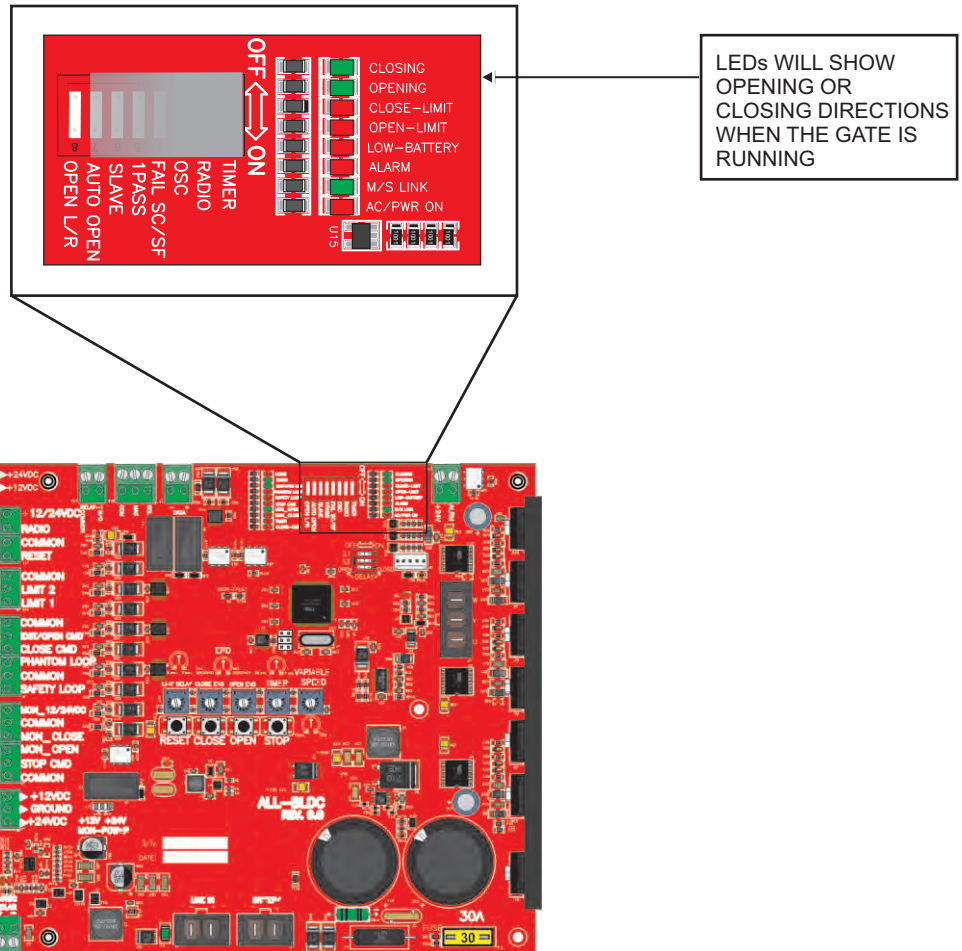
**Follow these instructions to adjust the clutch when necessary:**

- To increase the torque, use a pipe wrench to turn the clutch nut clockwise .
- Turn the nut 1/2 a turn at a time until the operator is able to move the load of the gate without the clutch slipping.
- Once the operator is able to move the gate without the clutch slipping, turn the nut one full turn. This will allow the operator to move the gate, but also slip when the gate is reversed mid cycle or in the event the gate gets jammed.



# GATE OPENING DIRECTION SETTING

- Use OPEN L/R" dipswitch (#8) to change the opening direction of the operator.
- The direction of gate opening is determined from behind the gate operator.
- LEDs will show opening and closing direction when the gate is moving.
- OPEN L/R switch "OFF" is for left hand opening
- OPEN L/R switch "ON" is for right hand opening



# PROGRAMMABLE RELAY AND LEAF DELAY

## RELAY SETTINGS

Board model ALL-BLDC includes a programmable relay (N.O.) with four different configurations. See table below for switch settings. Use the "Leaf Delay" potentiometer to adjust the delay time from 0 to 6 seconds.

- (1) 1 second pulse for every open start cycle  
- Typically used for a cycle counter
- (2) "ON" when the gate is in motion  
- Typically used for an audible alarm or strobe light to warn when the gate is in motion.
- (3) Alarm system output  
- Activates the relay when the gate is forced open
- (4) "ON" when gate is not fully closed  
- Typically used for a gate position indicator

| S1  | S2  | RELAY FUNCTION                        |
|-----|-----|---------------------------------------|
| OFF | OFF | ONE SECOND PULSE FOR EVERY OPEN START |
| ON  | OFF | ON WHEN GATE IS IN MOTION             |
| OFF | ON  | ALARM SYSTEM OUTPUT                   |
| ON  | ON  | ON WHEN GATE IS NOT FULLY CLOSED      |

## DELAY SETTINGS

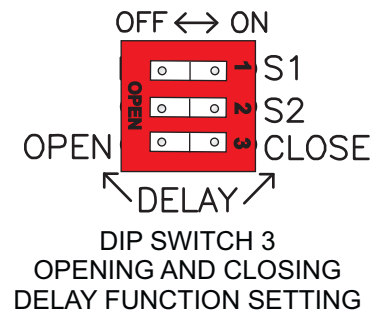
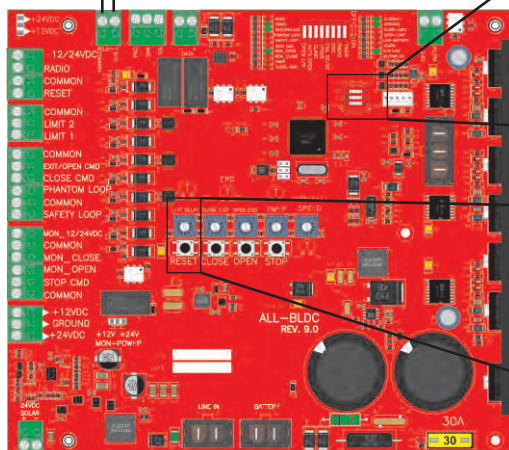
The ALL-BLDC board includes a delay option for open or close cycles. This delay option is most commonly used on swing gate applications. However, some slide gate applications may require a pre-warn strobe light or siren. In these applications this delay could be used for the pre-warn delay in conjunction with the RELAY function ON WHEN GATE IN MOTION.

Use the dip-switch 3 to set the desired delay direction.

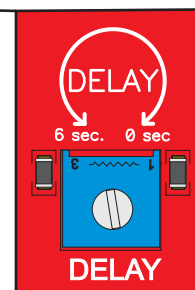
- Flip the dip-switch 3 to the OFF position for the delay on opening direction
- Flip the dip-switch 3 to the ON position for delay on closing direction
- Use leaf delay potentiometer to adjust the delay
- It has adjustment from 0-6 seconds.
- Turn clockwise for less time
- Turn counter-clockwise for more time

DEVICE  
POWER SUPPLY

DEVICE



0 TO 6 SECOND DELAY ADJUSTMENT



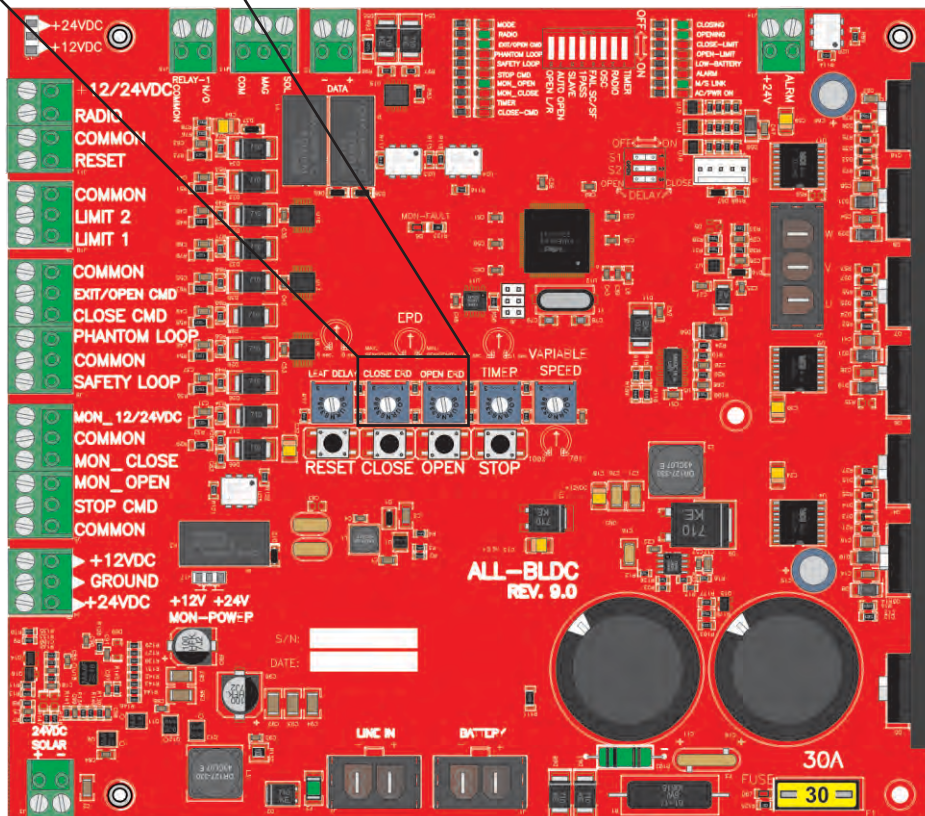
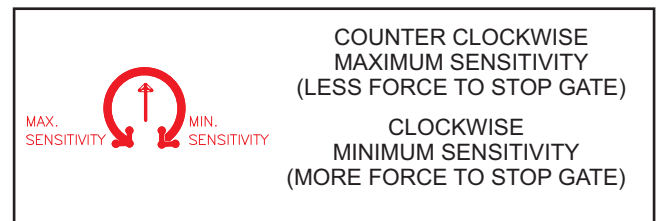
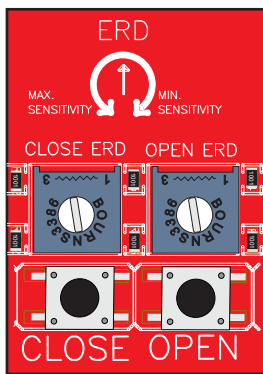
# ELECTRONIC REVERSING DEVICE (ERD) ADJUSTMENT

All BLDC boards are equipped with an Electronic Reversing Device (ERD), which will cause the gate to reverse direction when it comes in contact with an obstruction.

The amount of force required to reverse the gate's direction depends on the ERD sensitivity setting.

The ERDs must be adjusted for the operator to provide regular, reliable & safe operations. If the gate reverses direction on its own without hitting an obstruction, the ERD is too sensitive. If the gate does not reverse when it hits an obstruction, the ERD is not sensitive enough.

The gate operator ERDs shall be tested and adjusted every six months by a qualified technician.



# TIMER ADJUSTMENT AND RADIO SETTING

**TIMER ON:** Automatic timer to close can be set from 1 to 60 seconds

**TIMER OFF:** Gate operation is “push button to open, push button to close”

**RADIO ON:** To override the timer and allow the radio receiver to close the gate before the timer



Turn potentiometer counter clockwise for more time



Turn potentiometer clockwise for less time

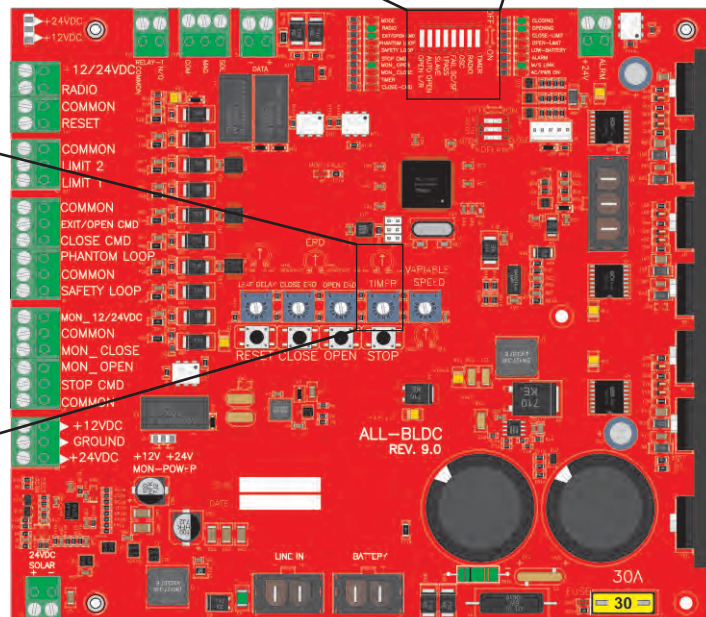
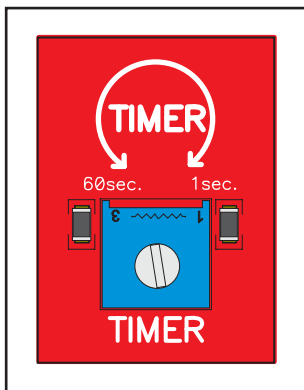
**NOTE:** If Potentiometer is turned all the way counter clockwise, the timer is disabled and the gate WILL NOT close automatically.

TIMER “ON” TO  
ACTIVATE THE TIMER

RADIO “ON” = ALLOWS THE  
TRANSMITTER TO CLOSE  
THE GATE BEFORE THE TIMER

OFF ← → ON

TIMER  
RADIO  
OSC  
FAIL SC/SF  
1-PASS  
SLAVE  
AUTO OPEN  
OPEN L/R



# DIP SWITCH FUNCTIONS

## TIMER

**TIMER** switch “ON” activates the automatic close timer.

## RADIO

**RADIO** switch “ON” allows the radio receiver to override the automatic close timer.

## OSC

**OSC** switch “ON” allows the radio receiver to stop and reverse the gate in any direction. During a cycle, the first signal stops the gate. A second signal reverses the gate.

## FAIL SC/SF

**ON** for **Fail-Safe**: Upon power failure, board will monitor battery voltage to make sure gate opens before battery completely drains. **OFF** for **Fail-Secure**: Upon power failure, gate will run until battery is low and lock closed.

## 1-PASS

**1-PASS** switch “ON” allows the gate to open until one vehicle goes over the safety loop. Once the vehicle has cleared the loop, the gate will stop and close. If a second vehicle goes over the loop while the gate is closing, the gate will stop. The vehicle must get off of the loop before the gate continues to close, forcing the second vehicle to present valid credentials. This is a true one pass, anti-tailgating feature to be used with safety loops.

## SLAVE

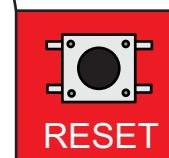
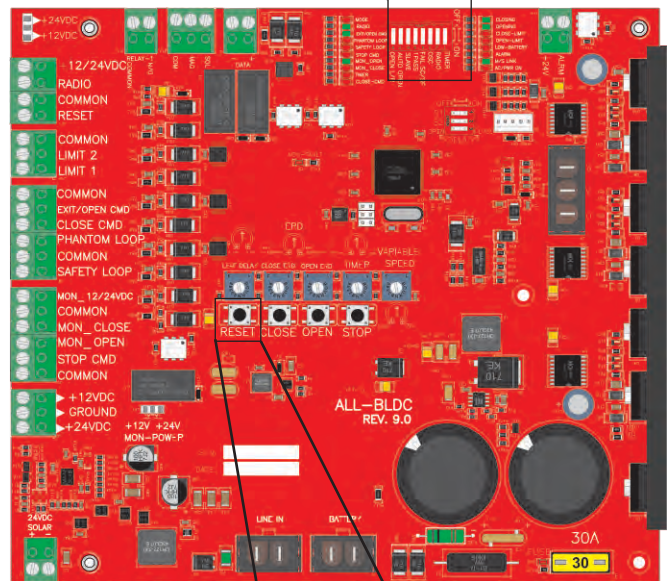
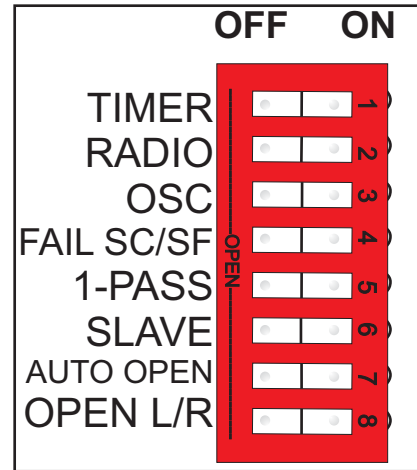
This feature is used in dual gate applications. The **SLAVE** switch will be “ON” only on the slave operator. All other dip switches will be “off”. **SLAVE** switch will be “OFF” on the master operator. Set desired dip switch settings on the master operator only.

## AUTO OPEN

This feature is to automatically open the gate on power interruption. It is a very particular feature used in areas where the fire department requires the gate to open automatically after a power outage. Set this dip switch “ON” when this feature is desired.

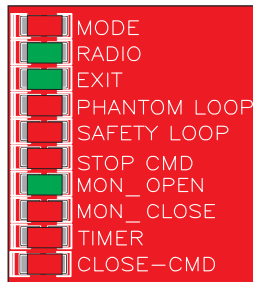
## OPEN L/R

**OPEN L/R** switch “ON” is used for right hand opening of the gate. The “OFF” position is used for left hand opening of the gate.



**NOTE:** IF ANY CHANGES ARE MADE TO THE DIPSWITCHES WITH THE POWER ON, PRESS THE **MAIN RESET** BUTTON TO RECOGNIZE THE CHANGES.

# LED DIAGNOSTICS



## **MODE**

Blinks **once** every two seconds when there is a problem with the motor **hall sensor** feedback. Blinks twice every **two seconds** when a **motor overload** is detected. Blinks **three** times every two seconds when the gate is **jammed**.

## **RADIO**

ON when the RADIO input is activated (closed circuit to common).

## **EXIT**

ON when the EXIT input is activated (closed circuit to common).

## **PHANTOM LOOP**

ON when the PHANTOM LOOP input is activated (closed circuit to common).

## **SAFETY LOOP**

ON when the SAFETY LOOP input is activated (open circuit to common)

## **STOP\_CMD**

ON when the STOP CMD input is activated (open circuit to common). Also when foot pedal is pressed down, on operators that include the foot pedal.

## **MON\_OPEN**

ON when the MON-OPEN input is activated (open circuit to open) or when a device is not installed.

## **MON\_CLOSE**

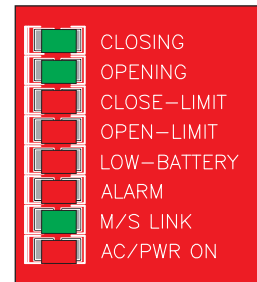
ON when the MON\_CLOSE input is activated (open circuit to common) or when a device is not installed.

## **TIMER**

Blinks when the timer is counting down to close automatically.

## **CLOSE-CMD**

ON when the CLOSE-CMD input is activated (closed circuit to common).



## **CLOSING**

ON while the gate is in the close cycle.

## **OPENING**

ON while the gate is in the open cycle.

## **CLOSE-LIMIT**

ON while the limit nut is activating the close limit switch.

## **OPEN-LIMIT**

ON while the limit nut is activating the open limit switch.

## **LOW-BATTERY**

ON when the batteries are low.

## **ALARM**

Blinks every 30 seconds (alarm will also beep) when the batteries are low, bad, or disconnected. Turns on for 5 minutes (alarms also goes off) when the operator goes into shut down mode due to the gate hitting an obstruction (ERD).

## **M/S LINK**

ON when master/slave communication is active.

## **AC/PWR ON**

ON when AC power is on.

**TIPS:** When troubleshooting, it is important to note what lights are ON. It is very helpful to pay attention to the lights as they tell us what the boards is doing and what inputs are active.

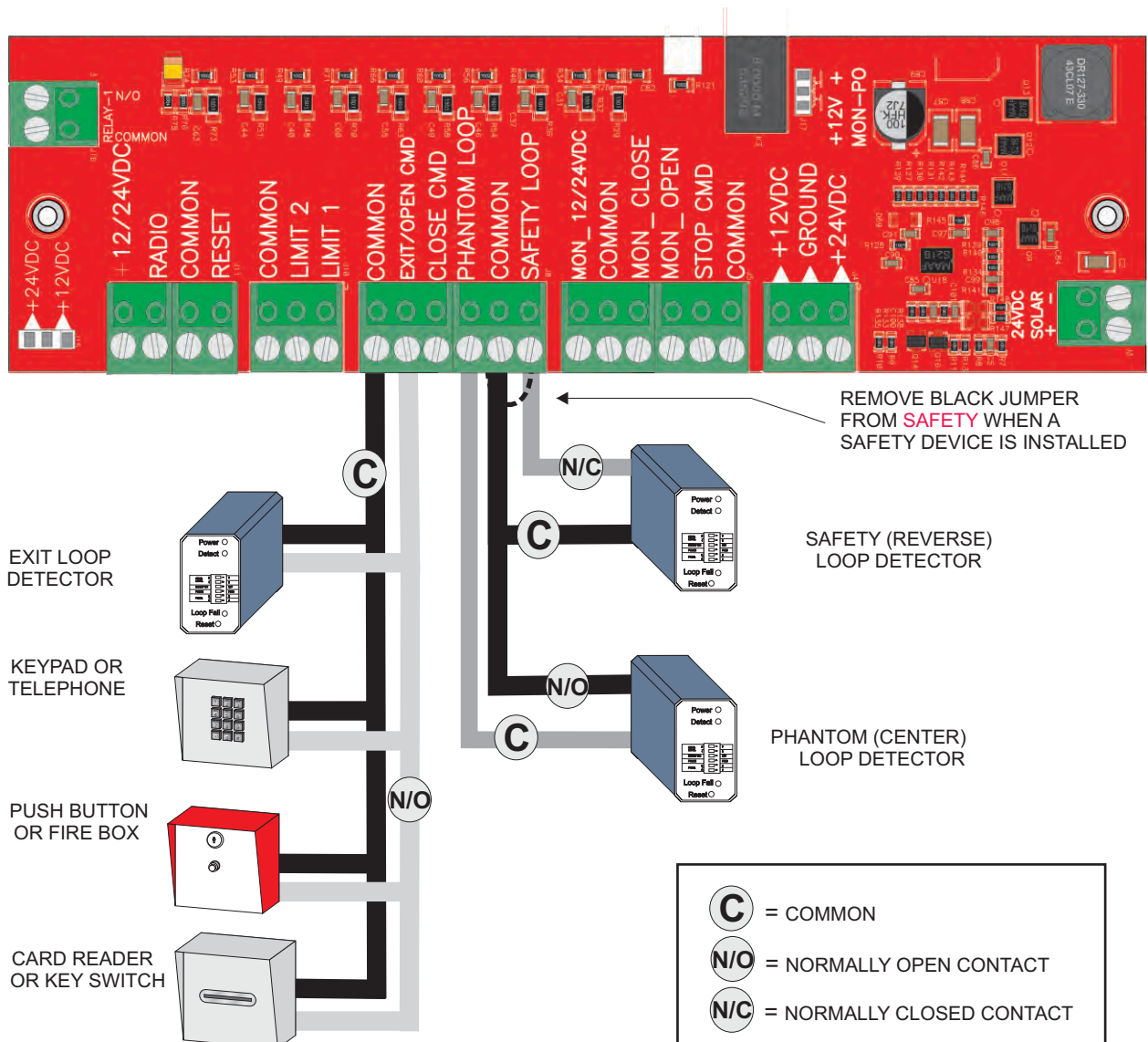
When calling ALL-O-MATIC for technical support please have the name of the lights that are ON in the control board. This will speed up the process to get the gate operator up and running.

# ACCESSORY CONNECTIONS

The circuit board has 12/24VDC terminals that provide up to 750mAmps on 24VDC and 500mAmps on 12VDC to power accessories such as loop detectors, keypads, etc. If the total current draw of your accessories exceeds the rated current for any of the 12/24VDC terminals, a separate power supply (transformer) is required.

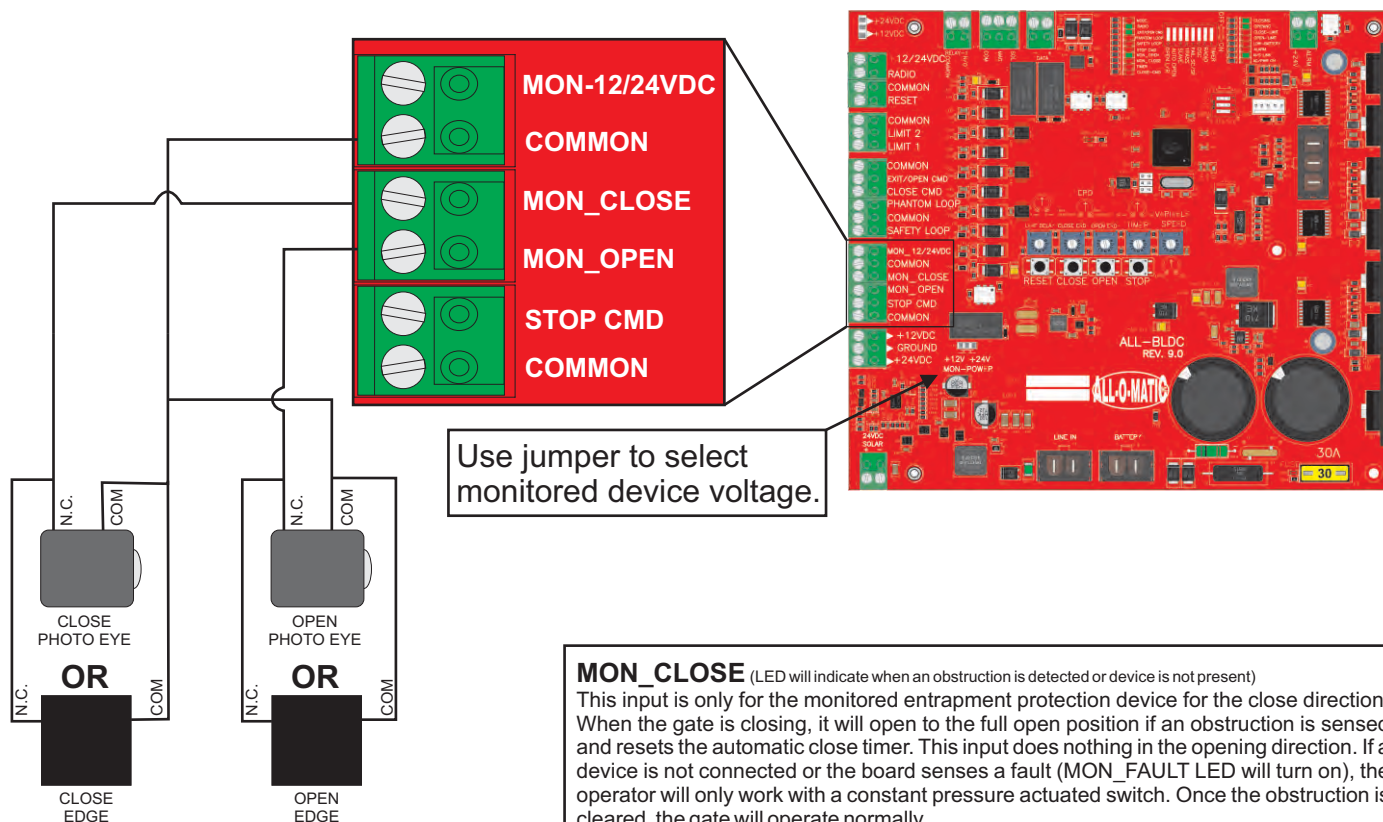
When installing a safety loop detector or pedestrian switch (STOP\_CMD), make sure to remove the black jumper between the COMMON and SAFETY terminal for the safety detector and/or black jumper between STOP\_CMD and COMMON for pedestrian switch.

| NO Contacts        | NC Contacts          |
|--------------------|----------------------|
| Exit Loop Detector | Safety Loop Detector |
| Keypad             | Photo Eye            |
| Telephone System   | Pedestrian Switch    |
| Push Button        |                      |
| Card Reader        |                      |



# MONITORED ENTRAPMENT PROTECTION DEVICE CONNECTIONS

- There are 2 types of sensors that can be connected to the gate operator for UL 325 monitored entrapment compliance: non-contact sensors (photo eye) and contact sensors (edge sensors).
- Monitored entrapment protection devices use 4 wires to connect to the board. From the device, connect the **RELAY COMMON** to the board **COMMON** and the **NORMALLY CLOSED** relay contact to the assigned **MON\_OPEN** or **MON\_CLOSE** input. Connect the power wires to the **COMMON** and **MON-12/24VDC**.
- **IMPORTANT:** You must use the MON-12/24VDC to properly monitor entrapment protection devices. To turn this voltage on for initial setup, press reset button on the board. Do not use the 24 VDC terminal on the board's terminal strip.
- **NOTE:** The power to the **MON-12/24VDC** terminal will be off when the gate is at rest (not moving). It will be normal to see the **MON\_OPEN** and **MON\_CLOSE** LEDs when the gate is closed. If the auto close timer is **OFF** it will do the same when the gate is at rest in the open position. Also, if no devices are connected both of these lights will stay ON.
- Please refer to the device manufacturer wiring instructions for details (on next page), making sure to follow the normally closed wiring directions. Some devices may work on monitoring interfaces other than normally closed.
- Should there be a need for more than 1 entrapment protection device for each direction, use a multi-input module from Miller Edge (model: MIM-62).



## MON\_CLOSE

(LED will indicate when an obstruction is detected or device is not present)

This input is only for the monitored entrapment protection device for the close direction. When the gate is closing, it will open to the full open position if an obstruction is sensed and resets the automatic close timer. This input does nothing in the opening direction. If a device is not connected or the board senses a fault (MON\_FAULT LED will turn on), the operator will only work with a constant pressure actuated switch. Once the obstruction is cleared, the gate will operate normally.

## MON\_OPEN

(LED will indicate when an obstruction is detected or device is not present)

This input is only for the monitored entrapment protection device for the open direction. When the gate is opening, it will reverse for 2 seconds and stop if it senses an obstruction. This input does nothing in the closing direction. If a device is connected and the board detects a fault (MON\_FAULT LED will turn on), the operator will only work with a constant pressure actuated switch. Once the obstruction is cleared, the gate will operate normally.

# MONITORED ENTRAPMENT PROTECTION DEVICE CONNECTIONS

| ENFORCER E-960-D90GQ/<br>E-931-S33RRGQ / E-931-S50RRGQ |                          |
|--------------------------------------------------------|--------------------------|
| CONTACT                                                | BOARD TERMINAL           |
| N.C.                                                   | MON_CLOSE OR<br>MON_OPEN |
| COM                                                    | COMMON                   |
| 12-30 VDC/AC                                           | COMMON                   |
| 12-30 VDC/AC                                           | MON_12/24VDC             |

| ENFORCER<br>E-936-S45RRGQ |                          |
|---------------------------|--------------------------|
| WIRE                      | BOARD TERMINAL           |
| BLACK                     | MON_CLOSE OR<br>MON_OPEN |
| WHITE                     | COMMON                   |
| BLUE                      | COMMON                   |
| BROWN                     | MON_12/24VDC             |

| ALLEN BRADLEY<br>GRU-24 |                          |
|-------------------------|--------------------------|
| WIRE                    | BOARD TERMINAL           |
| BLACK                   | MON_CLOSE OR<br>MON_OPEN |
| ORANGE                  | COMMON                   |
| BLUE                    | COMMON                   |
| BROWN                   | MON_12/24VDC             |

| OMRON<br>E3K-R10K4-NR |               |                          |
|-----------------------|---------------|--------------------------|
| SWITCH                | CONTACT       | BOARD TERMINAL           |
| LIGHT ON              | N.O.1         | MON_CLOSE OR<br>MON_OPEN |
|                       | COM           | COMMON                   |
|                       | 24 TO 240 VAC | COMMON                   |
|                       | 24 TO 240 VAC | MON_12/24VDC             |

| EMX<br>IRB-RET / IRB-MON |               |                          |
|--------------------------|---------------|--------------------------|
| SWITCH                   | CONTACT       | BOARD TERMINAL           |
| SW1 - OFF                | N.C.          | MON_CLOSE OR<br>MON_OPEN |
| SW2 - OFF                | COM           | COMMON                   |
| SW3 - OFF                | POWER/<br>VRX | COMMON                   |
| SW4 - ON                 | POWER/<br>VRX | MON_12/24VDC             |

| EMX<br>IRB-325 |                          |
|----------------|--------------------------|
| CONTACT        | BOARD TERMINAL           |
| N.C.           | MON_CLOSE OR<br>MON_OPEN |
| COM            | COMMON                   |
| POWER          | COMMON                   |
| POWER          | MON_12/24VDC             |

| EMX<br>NIR-50 |                          |
|---------------|--------------------------|
| WIRE          | BOARD TERMINAL           |
| BLACK         | MON_CLOSE OR<br>MON_OPEN |
| WHITE         | COMMON                   |
| BLUE          | COMMON                   |
| BROWN         | MON_12/24VDC             |

| TRANSMITTER SOLUTIONS<br>R50R-UL/R32P-UL/SR33HD/SR66HD |                          |
|--------------------------------------------------------|--------------------------|
| CONTACT                                                | BOARD TERMINAL           |
| N.C. (3)                                               | MON_CLOSE OR<br>MON_OPEN |
| COM (5)                                                | COMMON                   |
| NON POLARITY (1)                                       | COMMON                   |
| 12-30 VDC/AC (2)                                       | MON_12/24VDC             |

| MILLER EDGE<br>REFLECTI-GUARD/RG-K |                          |
|------------------------------------|--------------------------|
| CONTACT                            | BOARD TERMINAL           |
| TB 2 - N.C.                        | MON_CLOSE OR<br>MON_OPEN |
| TB 2 - COM                         | COMMON                   |
| TB 1 - POWER IN (-)                | COMMON                   |
| TB 1 - POWER IN (+)                | MON_12/24VDC             |

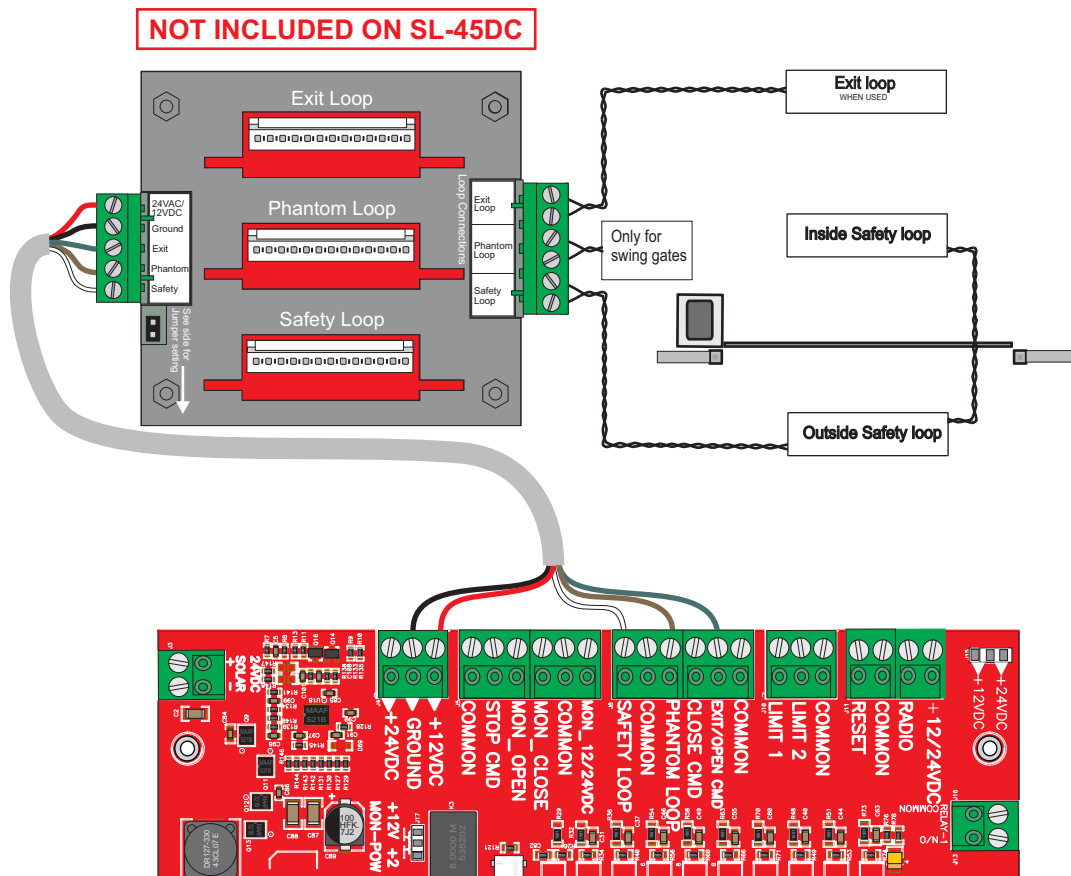
| TRANSMITTER SOLUTIONS<br>iGAZE RE KIT |               |                          |
|---------------------------------------|---------------|--------------------------|
| SWITCH                                | CONTACT       | BOARD TERMINAL           |
| ALL OFF                               | N.C.1         | MON_CLOSE OR<br>MON_OPEN |
|                                       | COM           | COMMON                   |
|                                       | (-) 12/24 VDC | COMMON                   |
|                                       | (+) 12/24 VDC | MON_12/24VDC             |

| EMX<br>WEL-200                        |                       |
|---------------------------------------|-----------------------|
| CONTACT                               | BOARD TERMINAL        |
| RELAY CLOSE (NC)<br>RELAY OPEN (NC)   | MON_CLOSE<br>MON_OPEN |
| RELAY CLOSE (COM)<br>RELAY OPEN (COM) | COMMON<br>COMMON      |
| POWER                                 | COMMON                |
| POWER                                 | MON_12/24VDC          |

| MILLER EDGE RBAND<br>MINIMUM 6 WIRES REQUIRED |                    |                        |
|-----------------------------------------------|--------------------|------------------------|
| SWITCH                                        | CONTACT            | BOARD TERMINAL         |
| SW 1 - ON                                     | CS 1<br>CS 2       | MON_CLOSE<br>MON_OPEN  |
| SW 2 - OFF                                    | CS 1<br>CS 2       | COMMON<br>COMMON       |
| SW 3 - ON                                     | COM.A<br>TEST      | COMMON<br>MON_12/24VDC |
| SW 4 - ON                                     | 12/24 (+)<br>AC/DC | 24-VDC<br>GROUND       |

# PLUG-IN DETECTOR INSTALLATION

- The SL-90 DC, SL-100 DC[FP] and SL-150DC models come equipped with the pre-wired LPR-1 loop rack for safety and exit plug in loop detectors, making installation quick and efficient.
- Hardwired loop detectors with harnesses can also be installed. The circuit board has 12 VDC and 24 VDC terminals to power the detector of your choice. See “Accessory Connections” page for wiring instructions.
- Wire one or more safety devices **in series** with the loop rack wires. To do this, remove the white wire (**N.C**) from the loop rack off of the SAFETY terminal on the circuit board and wire nut to the COM of the additional device. Connect the N.C. contact of the additional device to the SAFETY terminal of the board.
- **IMPORTANT:** Use different frequencies for each loop detector to eliminate interference.



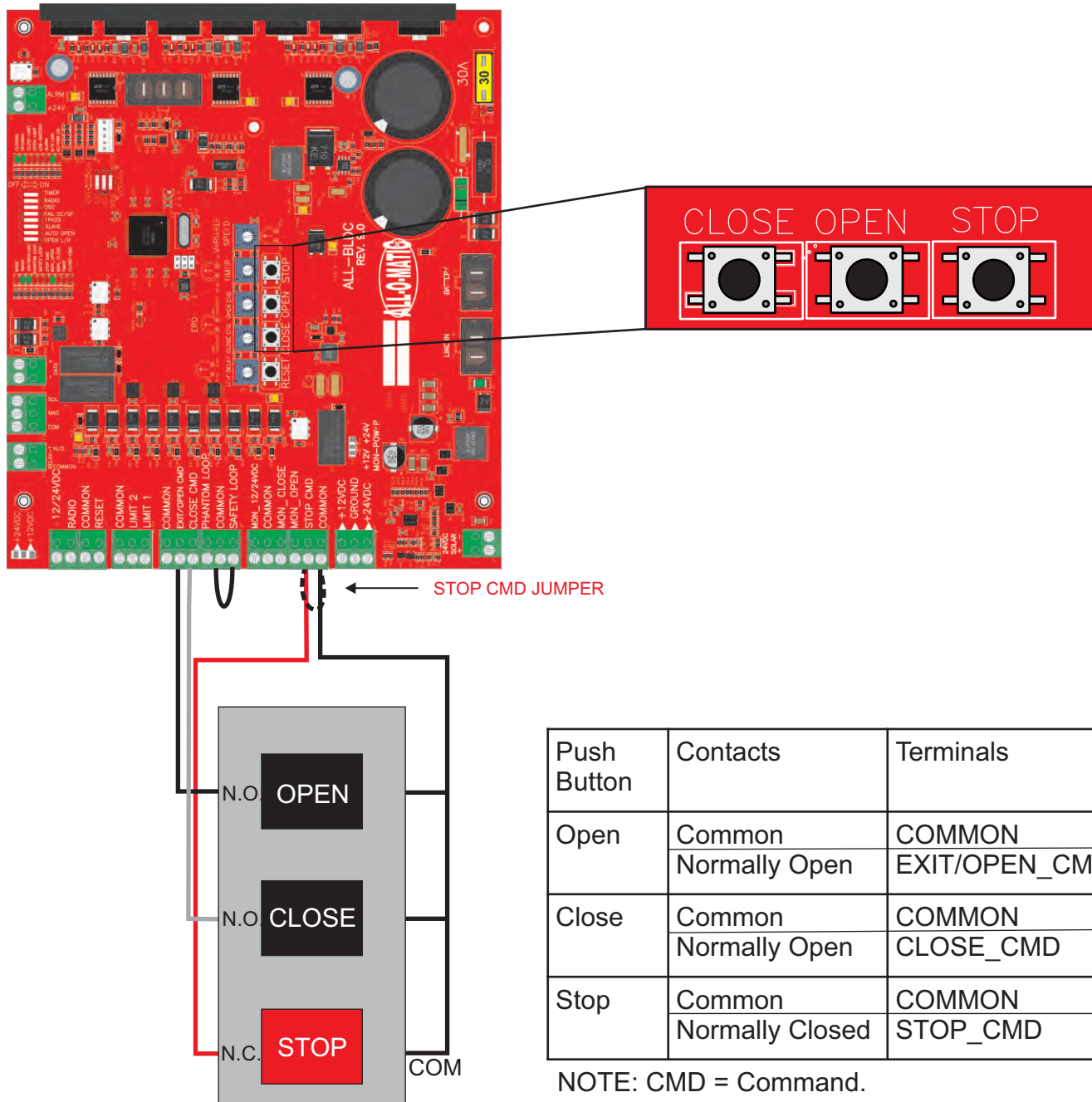
## COMPATIBLE PLUG IN DETECTORS

| LOOP RACK      | DC BOARD | WIRE COLOR |
|----------------|----------|------------|
| 24VAC<br>12VDC | 12-VDC   | RED        |
| GROUND         | GROUND   | BLACK      |
| EXIT           | EXIT     | GREEN      |
| PHANTOM        | PHANTOM  | BROWN      |
| SAFETY         | SAFETY   | WHITE      |

| BRAND     | MODEL    | JUMPER SETTING |
|-----------|----------|----------------|
| RENO A&E  | H2       | OFF            |
| EDI       | LMA-1800 | OFF            |
| DIABLO    | DSP-40S  | ON             |
| DIABLO    | DSP-55   | OFF            |
| DIABLO    | DSP-50   | OFF            |
| NORTHSTAR | NP2-ES   | ON             |

# THREE BUTTON STATION CONNECTION

- A three button station and reset push button are integrated on the board to make limit and ERD adjustments easier.
- An external three button station may also be installed. See diagram below for wiring instructions.
- **NOTE:** STOP\_CMD jumper must be removed if a three button station is installed.



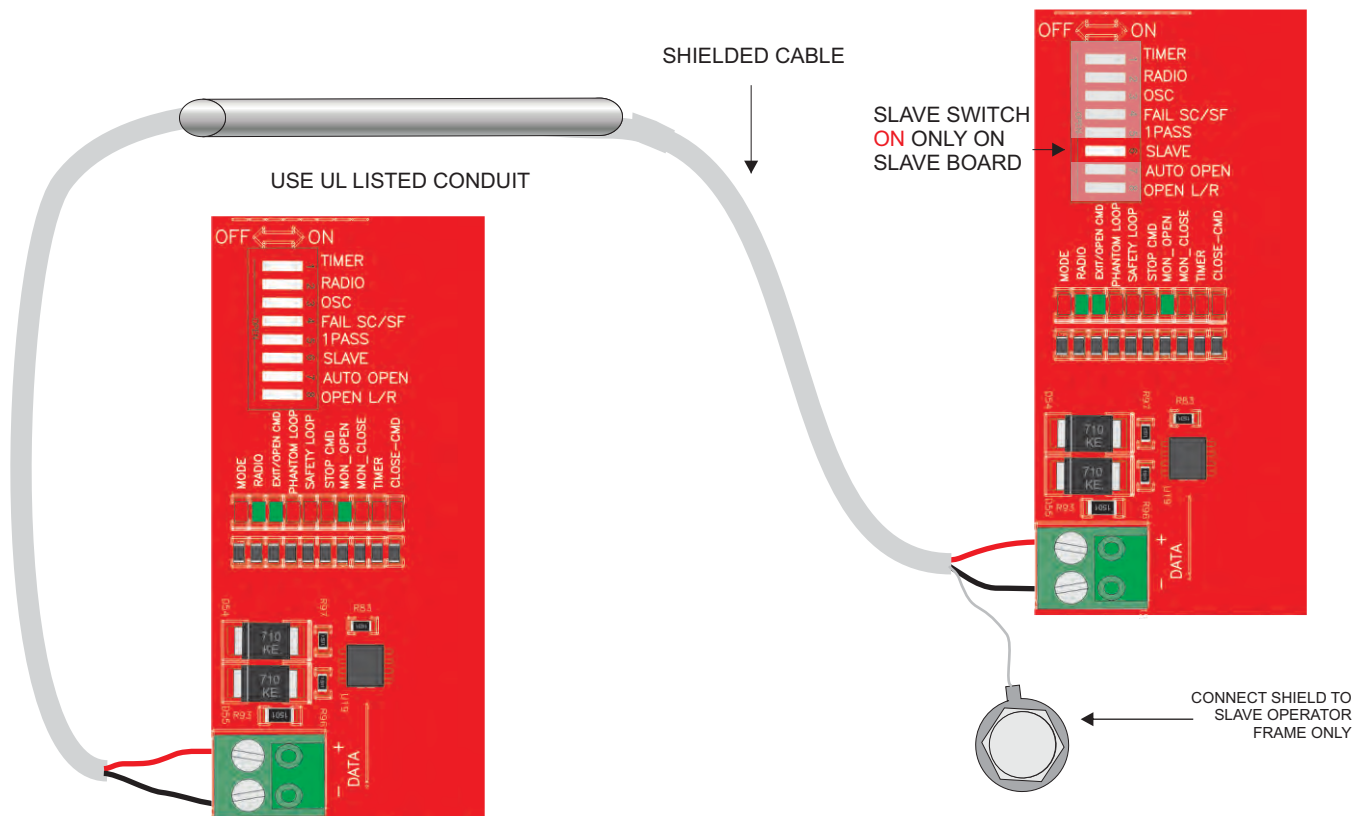
# MASTER/SLAVE CONNECTION

## BEFORE CONNECTING MASTER/SLAVE COMMUNICATION WIRES, TAKE THE FOLLOWING STEPS:

- 1: Test and adjust the limit switches and ERDs for each operator as stand alone machines.
- 2: Once the machines have been adjusted, turn SLAVE dip switch "ON" to the slave board.  
Press the RESET button on the slave board.
- 3: Connect the master/slave communication wires to "DATA -" and "DATA +".  
The "M/S LINK" LED should be "ON" on both machines.
- 4: Connect all accessories to the master operator. Accessories installed on the slave operator **will not work**.

### MASTER BOARD

### SLAVE BOARD



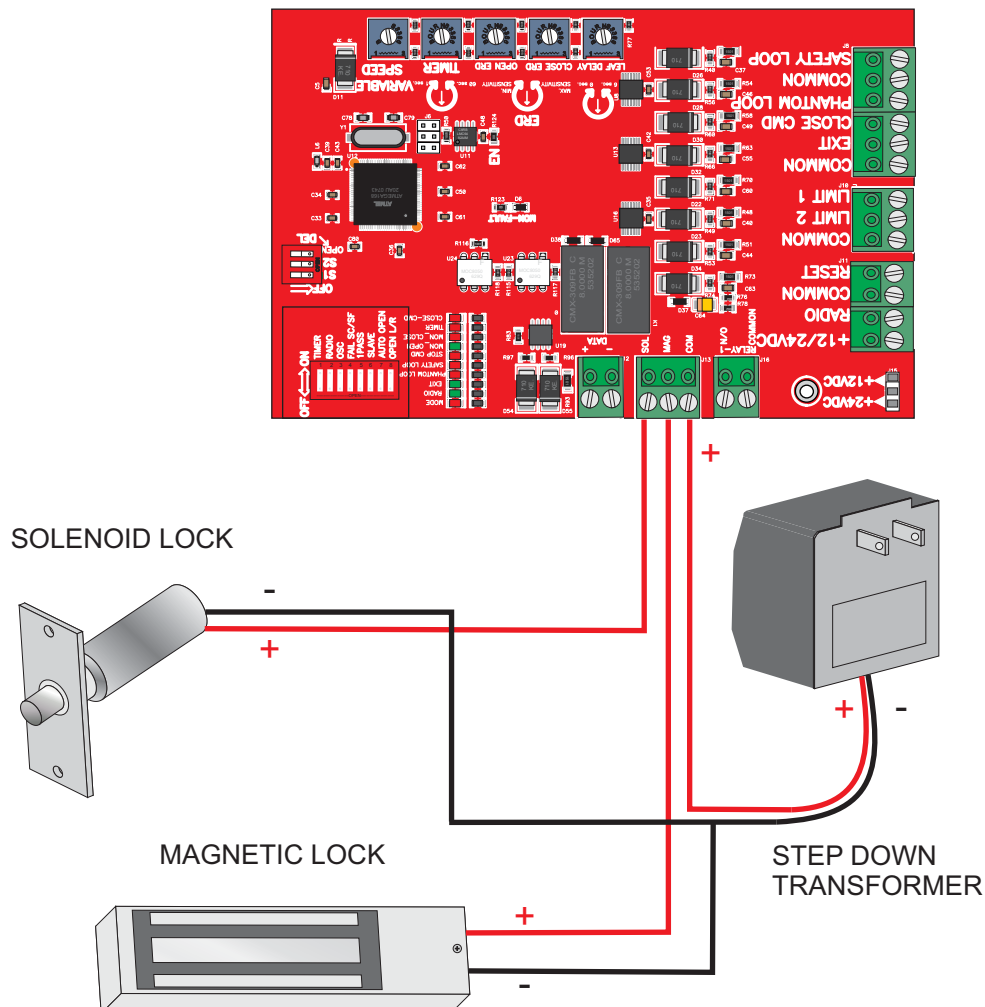
# MAGNETIC/SOLENOID LOCK CONNECTION

Magnetic lock installation requires a step down transformer with the appropriate voltage for the specific lock accessory. Most operators include a 120VAC outlet for the step down transformer. The **SL-45DC** does not include a 120VAC outlet.

**Connections:** Plug the lock device transformer to the 120VAC outlet plug.

**For Magnetic Lock:** Wire nut one wire from transformer directly to one wire of the magnetic lock. The other wire from transformer will be connected to the board relay plug **COM** input and the other wire of the magnetic lock connects to the board **MAG** relay output. See illustration below.

**For Solenoid Lock:** Wire nut one wire from transformer directly to one wire of the solenoid lock. The other wire from transformer will be connected to the board relay plug **COM** input and the other wire of the solenoid lock connects to the board **SOL** relay output. See illustration below.



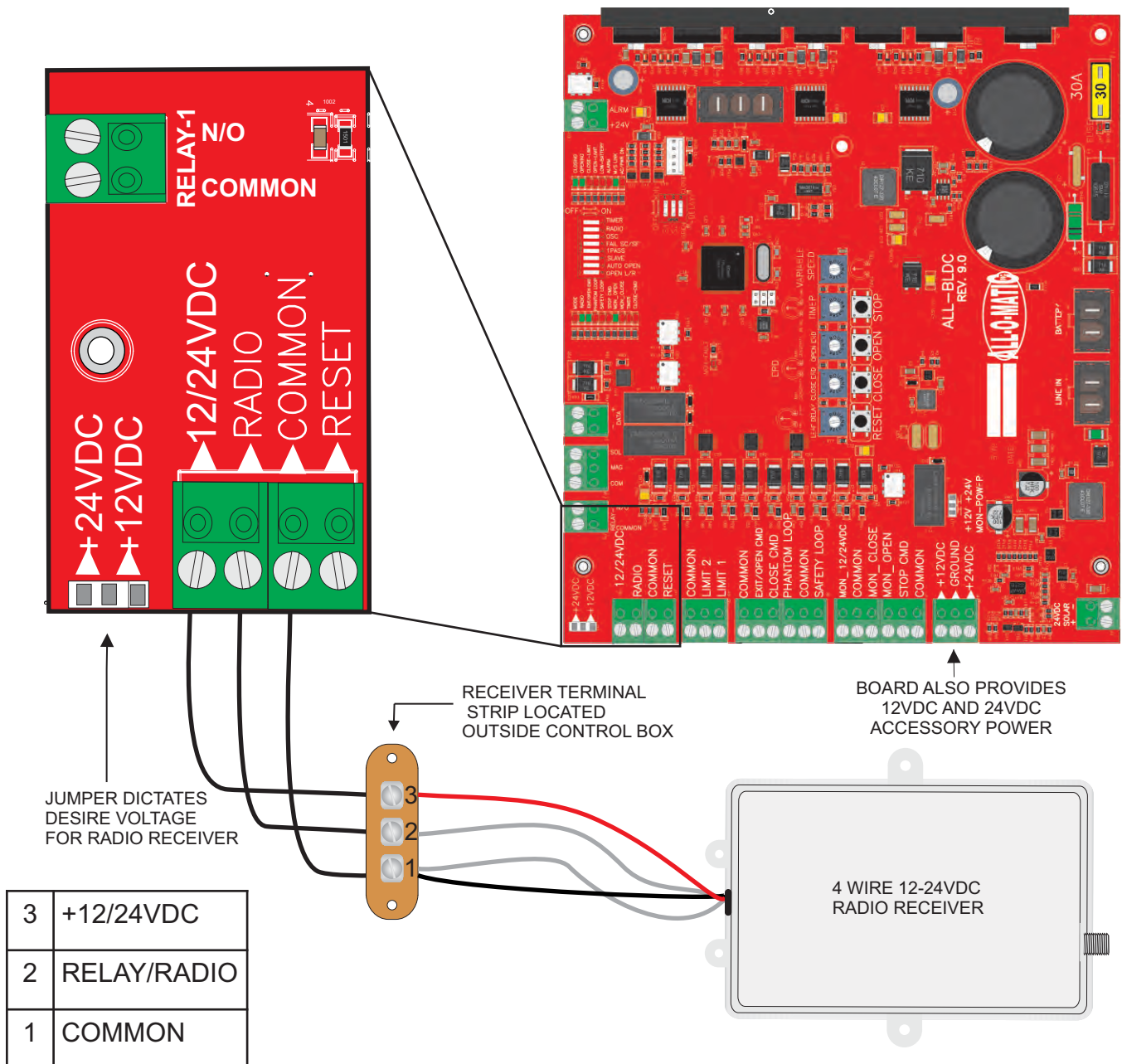
# RADIO RECEIVER CONNECTION

There are two types of receivers: 3-wire and 4-wire:

3 wire receivers can mount on the radio receiver terminal strip located outside of the control box.

For 4 wire receivers, connect the relay contact wires to terminals 1 (COMMON) and 2 (RELAY/RADIO) on the receiver terminal strip located outside of the control box (one wire on each terminal). For power connect the black(negative) wire to terminal 1 (COMMON) and the red (positive) wire to terminal 3 (+12/24VDC) on the receiver terminal strip as shown below.

RADIO dip switch ON allows the radio receiver to override the automatic close timer. See TIMER adjustment page for more details.



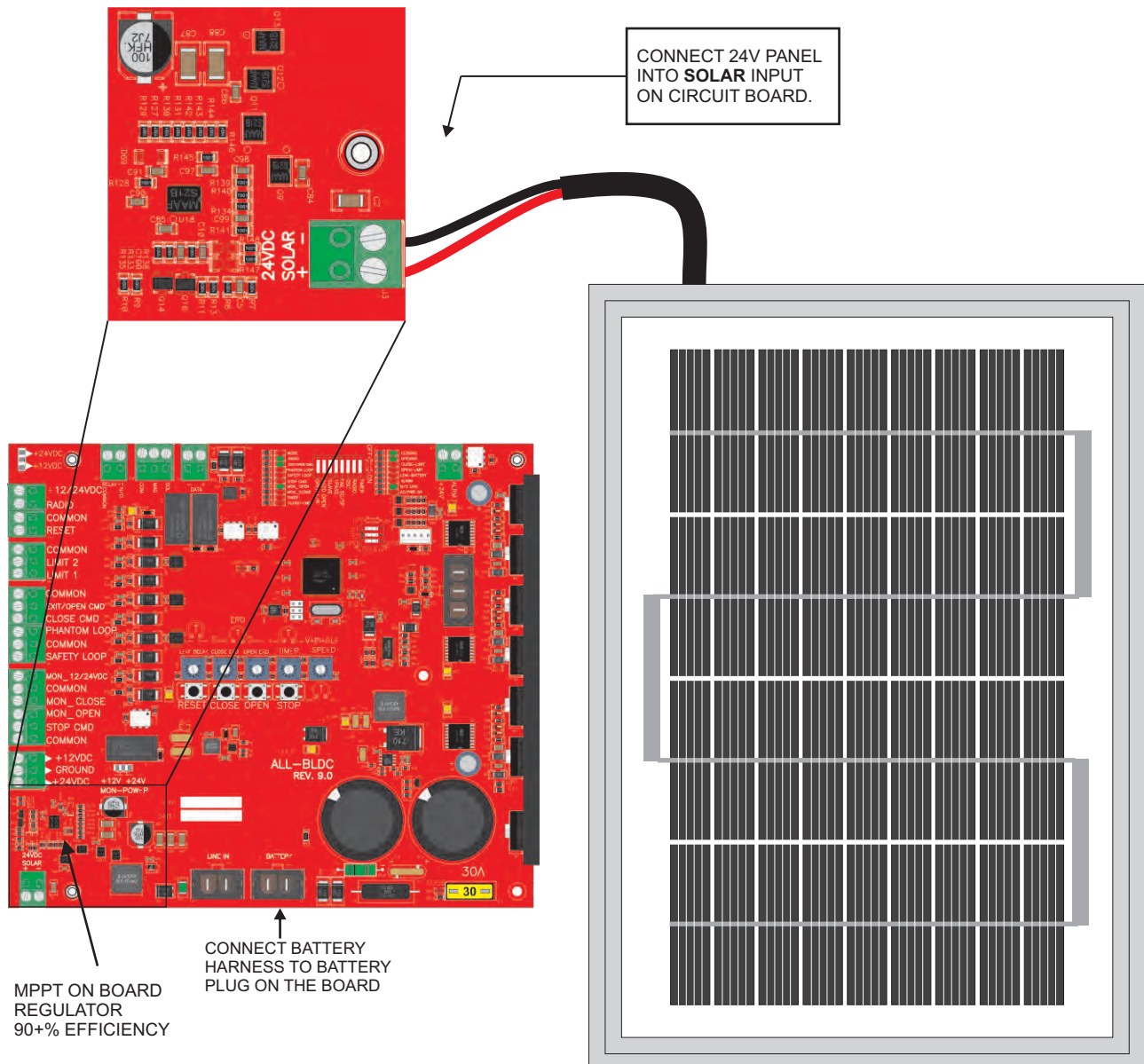
# SOLAR PANEL CONNECTION

The solar panel input requires a minimum of a 24VDC, 40 Watt panel. The charging circuit is limited by 80 watt maximum. With (2) 14Ah, 12VDC batteries, a receiver and (2) monitored entrapment devices connected, this set up will provide about 10 cycles/day.

Be sure to use the SOLAR input for solar panels. The on board solar battery regulator offers a MPPT feature that makes it more efficient than other types of regulators.

For a solar installation, upgrade the batteries according to usage. When the application requires more than 80 watts of solar power, an external charge controller regulator is necessary. See next page for external solar system.

For information on solar applications (solar panel sizes, battery size, etc.), please call All-O-Matic.

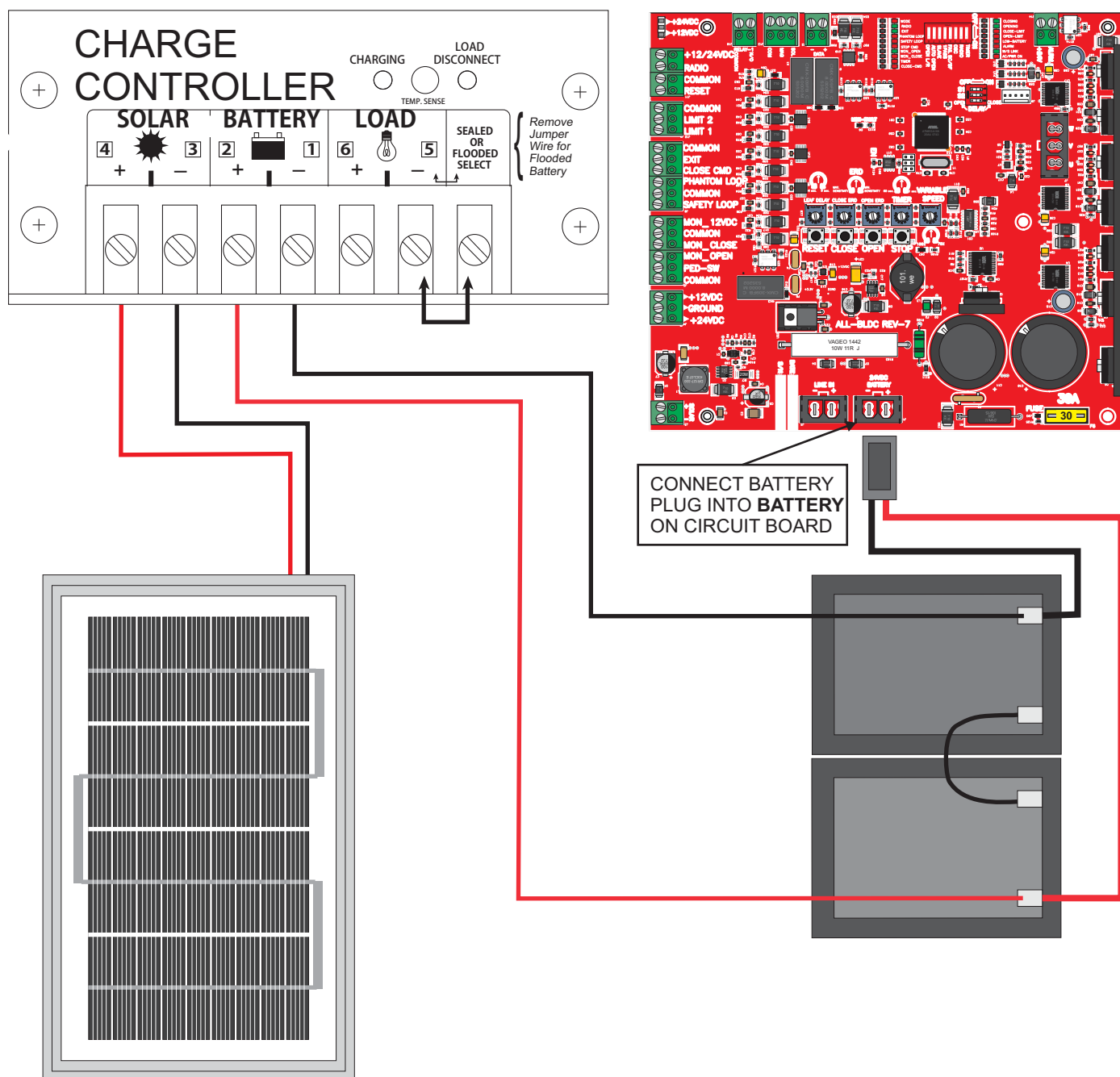


# EXTERNAL SOLAR SYSTEM INSTALLATION

When using an external solar package, connect batteries straight into the **BATTERY** input. The batteries will need to be upgraded to meet application requirements. See wiring below.

For information on solar applications (solar panel sizes, battery size, etc.), please call All-O-Matic.

**IMPORTANT:** When more than two solar panels are needed, special wiring precautions must be taken to prevent damage to batteries and/or charge controller regulator. If the panels are 12VDC they must be wired in series to make 24VDC. If 24VDC panels are used they must be wired in parallel.



# EMERGENCY RELEASE FOR SL-45 DC

## Procedures to manually open the SL-45 DC:

1. Remove operator cover.
2. Turn both power and battery switches OFF.
- 3.. Push gate open



# EMERGENCY RELEASE FOR SL-90 DC, SL-100 DCFP, AND SL-150 DC

## Procedures to manually open the SL-90 DC, SL-100 DCFP, and SL-150 DC:

1. Turn operator power "OFF"
2. Push foot pedal down and move to the side to keep pedal in down position
3. Push gate open

**NOTE:** These operators are equipped with a kill switch on foot pedal. Even if operator power is turned ON, the operator will not run while the foot pedal is down. The **STOP CMD** LED will indicate the foot pedal is pressed down.

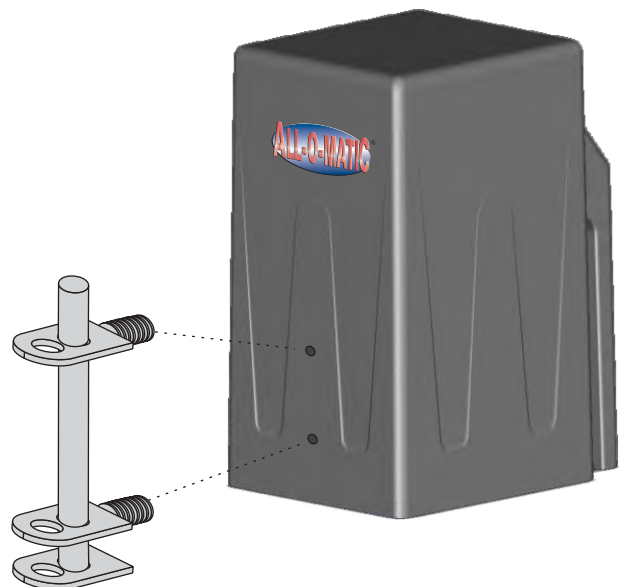
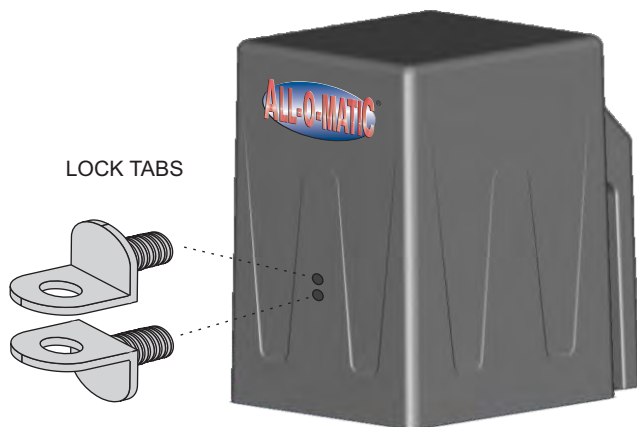
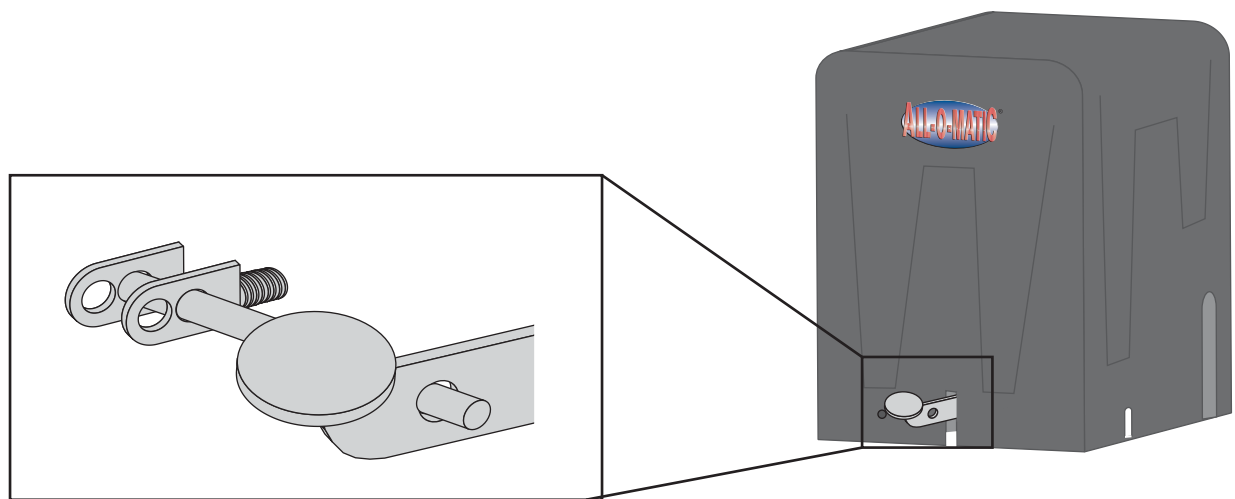


# PAD LOCK TABS

Lock tabs are provided in the hardware bag for the SL-45 DC only.

Remove bolt and install lock tabs for cover to secure with a pad lock.

Lock kits are available for purchase for the SL-90 DC, SL-100 DC, SL-100FP DC, and SL-150 DC.



# WARRANTY AND RECORD

## MANUFACTURER'S LIMITED WARRANTY

**ALL-O-MATIC INC** warrants the following gate operators (SL-90 DC, SL-100 DC[FP], SL-150 DC) for a period of five (5) years in commercial installations and for a period of seven (7) years in residential installations. The SL-45DC will have warranty period of five (5) years in residential installations. The above operators, within their warranty period, are to be free from defects in circuitry, motor, gearbox and workmanship. This warranty begins from the date of purchase to the original owner. Warrantor will repair or, at its option, replace any device which it finds to require service. This device must be sent to the warrantor at the consumer's expense to:

**ALL-O-MATIC INC.  
7820 GLORIA AVE.  
VAN NUYS, CA 91406**

The warrantor will return the repaired or replaced unit to the customer at the consumer's expense. Labor charges for dealer service or replacement are the responsibility of the owner. These warranties are in lieu of all other warranties either expressed or implied, and ALL-O-MATIC INC shall not be liable for consequential damage. All implied warranties of merchantability and or fitness for a particular purpose are hereby disclaimed and excluded. This limitation is not valid in jurisdictions which do not allow limitation of incidental or consequential damages or limitation of warranty periods. In order to obtain this policy, please complete the registration card and send it by mail within 30 days of purchasing from ALL-O-MATIC INC. or your installer. If product is not registered, only a one year warranty on all parts will be provided.

## CUSTOMERS RECORD

Customer Name \_\_\_\_\_

Address \_\_\_\_\_

Purchased from (Installation Co.) \_\_\_\_\_

Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Model Number \_\_\_\_\_

Serial Number \_\_\_\_\_ - \_\_\_\_\_

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# NOTES

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



# ALL-O-MATIC<sup>®</sup>

MANUAL



UL 325 & UL991  
COMPLIANT

CANADA  
CSA C22.2  
COMPLIANT