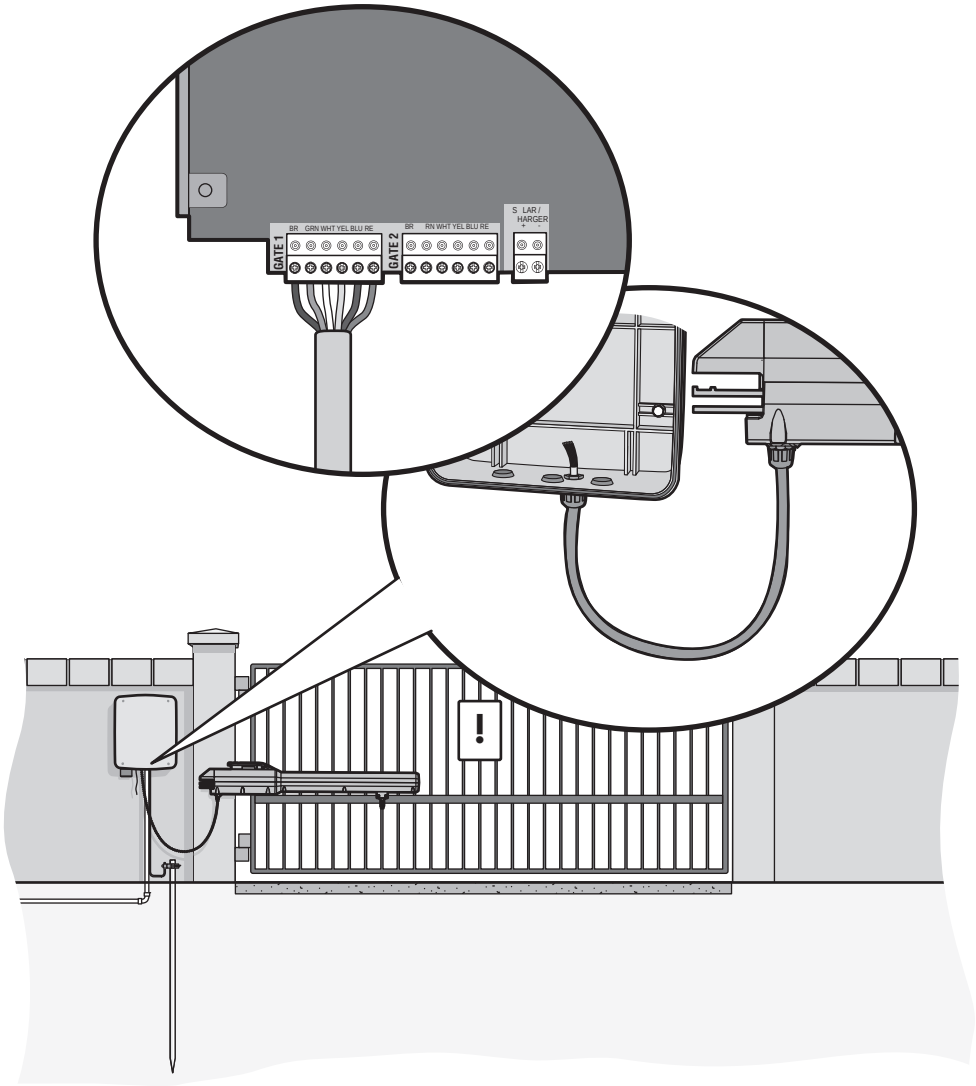
WIRE THE OPERATOR ARM TO THE CONTROL BOARD

1 Insert the operator cable through the watertight connector mounted in the bottom of the control box.

2 Extend the operator cable and wires to the **Gate 1** connector and connect as shown.

3 Tighten watertight connector nut.



If installing one operator, proceed to page 22. If installing two operators, continue to the next page.

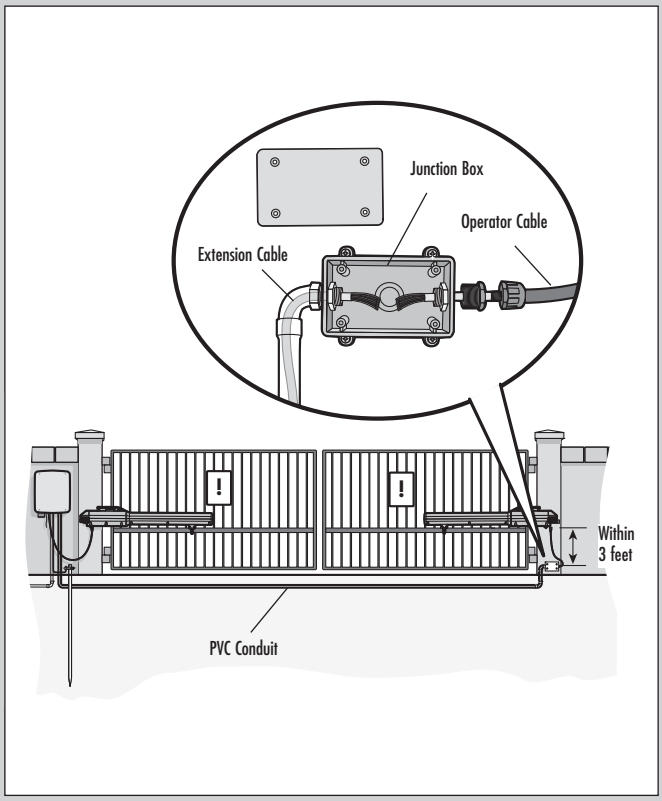
DUAL GATES ONLY

INSTALL THE EXTENSION CABLE AND JUNCTION BOX

Before digging, contact local underground utility locating companies. The following items are required to complete the junction box installation:

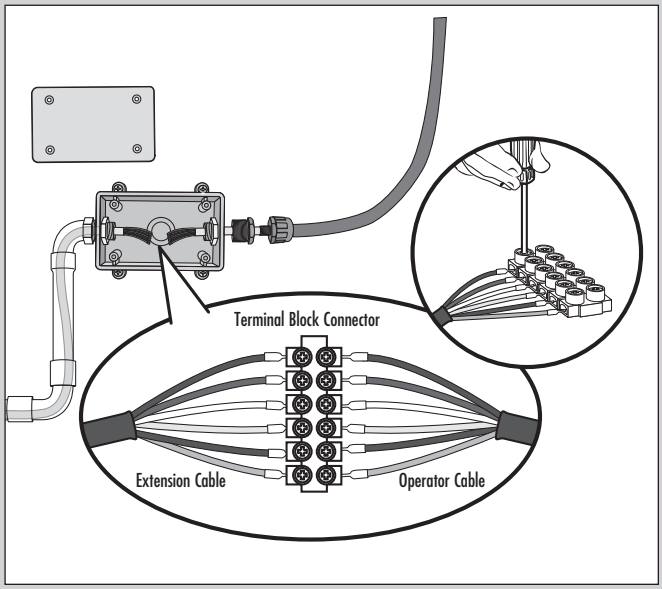
- 4 x 4 Junction Box with 3/4" NPT threaded port holes
- Screws
- PVC Conduit

1. Trench across driveway to bury the extension cable. Use PVC conduit to prevent damage to cables.
2. Open the junction box by removing screws (4) and set aside.
3. Mount the junction box within 3 feet (0.9 m) of second operator.
4. Route operator cable and extension cable through watertight connector nut and watertight connector.
5. Insert cables and watertight connectors into the holes in the bottom of the junction box (not provided).
6. Feed extension cable through PVC conduit and secure with nut.



WIRE THE EXTENSION CABLE TO THE SECONDARY OPERATOR

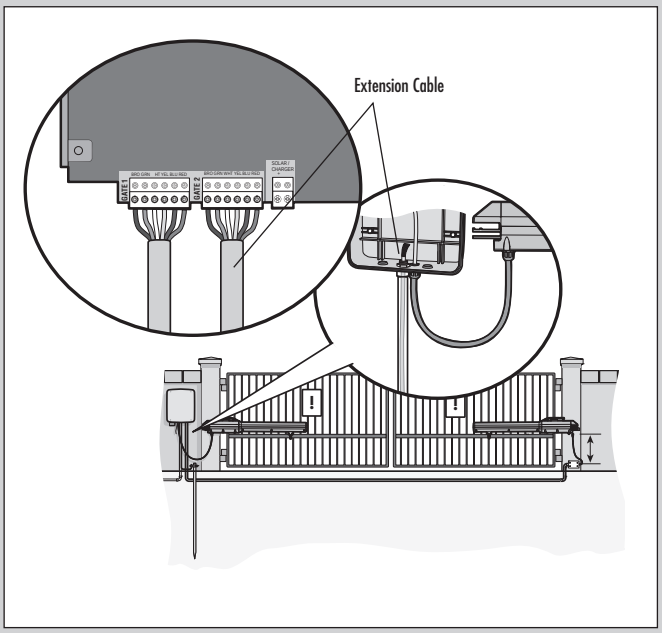
1. Insert wires from extension cable and operator cable into the terminal block connector as shown (like-colored wires must face each other).
2. Put wires inside of junction box.
3. Secure operator and extension cables with watertight connector nut.
4. Reinstall cover.



DUAL GATES ONLY

WIRE THE EXTENSION CABLE TO THE CONTROL BOARD

1. Choose a knockout in the bottom of the control box.
2. Insert a watertight connector through the knockout and tighten with nut.
3. Insert the extension cable through watertight connector.
4. Extend the cable and wires to **Gate 2** connector on the control board. Connect wires as shown.
5. Tighten the watertight connector nut to secure extension cable to control box.



SET THE BIPART DELAY

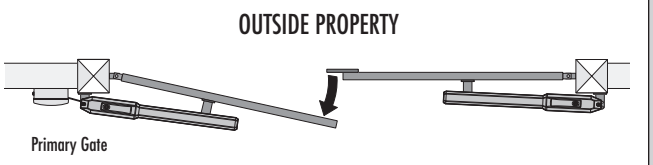
Occasionally in dual gate installations, one gate will need to open first and close second. This would happen if there was an ornamental overhang on one gate or if using a solenoid lock, for example. This gate is called the Primary gate and needs to be connected to Gate 1 connections on the control board. Thus, it is preferred that the control box be installed on the same side as this gate. If there is no appropriate location on that side for the control box, then mount the control box on the opposite side, but connect the operator closest to the control box to the Gate 2 connector and the operator on the opposite side to the Gate 1 connector.

NOTE: *The gate with the longer travel span (opening) must be set as the primary gate (GATE 1).*

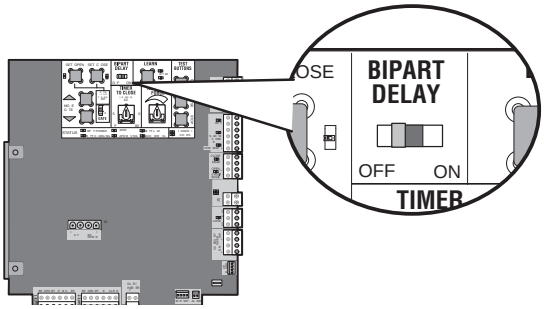
1. The BIPART DELAY switch on the control board needs to be set to the ON position.

The following illustration shows a dual gate configuration with a decorative overlapping piece on the outside of the gate.

If a solenoid lock is being used on a gate, the gate with the lock attached to it is the primary gate.



Primary Gate - Connect to Gate 1 Connector on Control Board.



POWER WIRING

This operator can be wired for either 120 Vac or a solar panel (not provided). Follow the directions according to your application. For dual gate applications, power will have to be connected to each operator. Main power supply and control wiring MUST be run in separate conduits.

AMERICAN WIRE GAUGE (AWG)	MAXIMUM WIRE LENGTH (120 VAC)	MAXIMUM WIRE LENGTH (240 VAC)
14	130 feet	260 feet
12	205 feet	410 feet
10	325 feet	650 feet
8	520 feet	1040 feet
6	825 feet	1650 feet
4	1312 feet	2624 feet

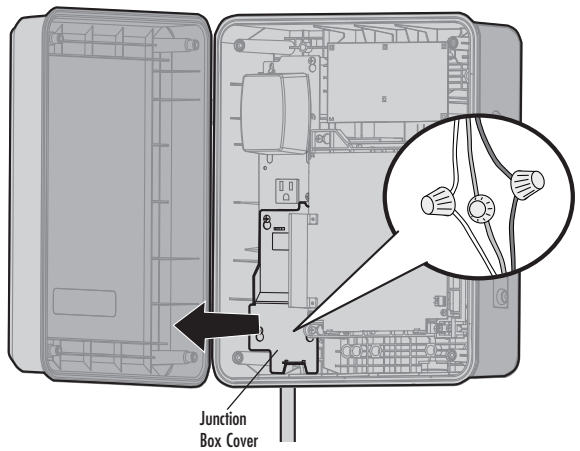
NOTE: *Use copper conductors ONLY.*

NUMBER OF CYCLES PER DAY								
Swing Gate Installation (6 ft. 1200 lb. gate/ 19 ft. 500 lb. gate)								
	CONFIGURATION				SINGLE GATE		DUAL GATE	
	Solenoid Lock	50 mA	100 mA	300 mA	7AH Batteries (standard)	33AH Batteries (optional for Large Metal Control Box)	7AH Batteries (standard)	33AH Batteries (optional for Large Metal Control Box)
TOROID POWERED					Continuous	Continuous	Continuous	Continuous
	✔				Continuous	Continuous	2059	2056
		✔			Continuous	Continuous	Continuous	Continuous
			✔		Continuous	Continuous	Continuous	Continuous
				✔	Continuous	Continuous	Continuous	Continuous
BATTERY POWERED					215	1202	98	612
	✔				122	763	71	443
		✔			207	1292	96	600
			✔		200	1249	94	590
				✔	178	1111	88	554
TRANSFORMER POWERED					1726	1720	1347	1340
	✔				1359	1352	1147	1140
		✔			1670	1663	1301	1293
			✔		1615	1607	1257	1248
				✔	1391	1380	1075	1064

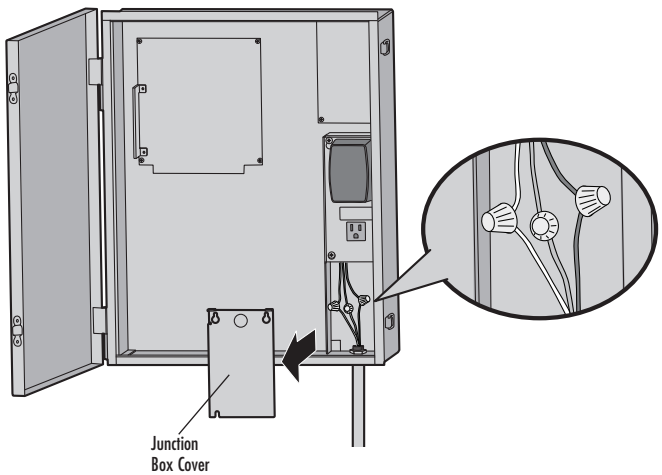
120 VAC

1. Turn off the AC power from the main power source circuit breaker.
2. Run the AC power wires to the control box.
3. Remove the junction box cover.
4. Connect the green wire to the earth ground rod wire using a wire nut.
5. Connect the white wire to NEUTRAL using a wire nut.
6. Connect the black wire to HOT using a wire nut.
7. Replace the junction box cover. Ensure the wires are not pinched.

STANDARD CONTROL BOX



LARGE METAL CONTROL BOX (XLM)



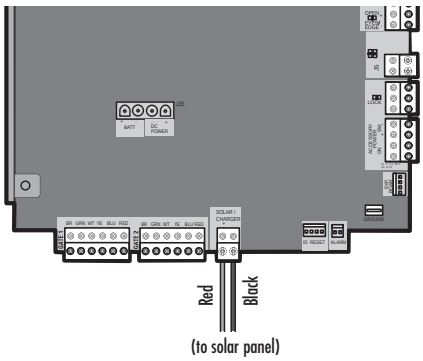
POWER WIRING CONTINUED...

SOLAR PANEL(S)

NOT PROVIDED. SEE ACCESSORIES.

The solar panel(s) must be located in an open area clear of obstructions and shading for the entire day. The gate operator is not supported in northern climates where temperatures reach below -4˚F. This is due to cold weather and a reduced number of hours of sunlight during the winter months. Cycle rate may vary from solar chart for areas that reach below 32˚F. Solar panels should be cleaned on a regular basis for best performance to ensure proper operation. For solar applications, a minimum of two 10W solar panels in series and two 7AH batteries are recommended. For Zone 3 cold weather sites, two 33AH batteries are recommended (for Large Metal Control Box (XLM) ONLY). We recommend LiftMaster low power draw accessories to minimize power draw, refer to accessory page.

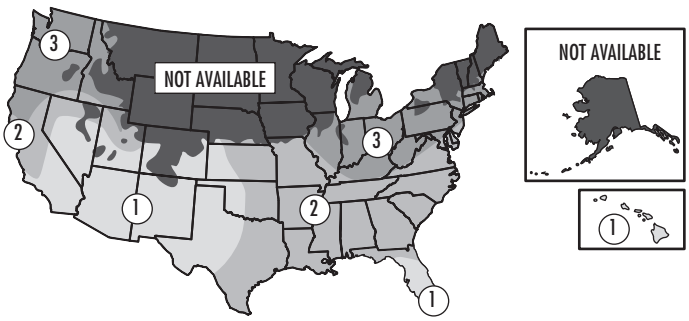
1. Locate the solar/charge plug on the control board and remove the transformer wires from the plug.
2. Connect the red (+) wire from the solar panel to the solar/charge plug (+).
3. Connect the black (-) wire from the solar panel to the solar/charge plug (-).
4. Plug in the solar/charge plug.



NUMBER OF CYCLES PER DAY (SOLAR)

Swing Gate Installation (6 ft. 1200 lb. gate/19 ft. 500 lb.)

	CONFIGURATION				ZONE 1 (6 Hrs sunlight/day)		ZONE 2 (4 Hrs Sunlight/day)		ZONE 3 (2 Hrs Sunlight/day)	
	Low Band	High Band	Expansion Board	1 Loop (LD7LP)	7AH Batteries (standard)	33AH Batteries (optional)	7AH Batteries (standard)	33AH Batteries (optional)	7AH Batteries (standard)	33AH Batteries (optional)
Single Gate										
20W SOLAR PANEL *NOTE: 20W would be two 10W (12V) panels in series.*					120	154	76	96	33	38
	✔				117	151	74	93	30	35
	✔	✔			111	144	68	87	25	29
	✔		✔		109	142	66	84	23	27
	✔	✔	✔	✔	99	131	56	74	13	17
40W SOLAR PANEL *NOTE: 40W would be two 20W panels in series.*					156	202	101	128	45	54
	✔				154	199	98	125	42	51
	✔	✔			148	193	92	119	37	45
	✔		✔		145	190	90	117	35	43
	✔	✔	✔	✔	135	179	80	106	25	33
Dual Gates										
20W SOLAR PANEL *NOTE: 20W would be two 10W (12V) panels in series.*					54	69	34	43	15	17
	✔				53	68	33	42	13	16
	✔	✔			50	65	31	39	11	13
	✔		✔		49	64	30	38	10	12
	✔	✔	✔	✔	45	60	25	33	6	7
40W SOLAR PANEL *NOTE: 40W would be two 20W panels in series.*					71	92	46	58	20	24
	✔				70	90	44	57	19	23
	✔	✔			67	87	42	54	16	20
	✔		✔		66	86	41	53	16	19
	✔	✔	✔	✔	62	81	36	48	11	15

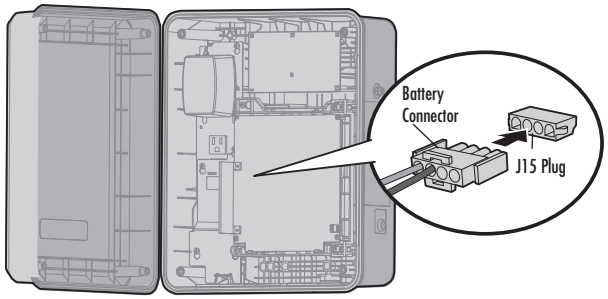


CONNECT BATTERIES

The batteries are charged in the circuit by the transformer or solar panel.

STANDARD CONTROL BOX

1. Turn OFF AC power to the operator at the circuit breaker.
2. Plug the battery connector to the J15 plug labeled BATT(-)(+) DC(-)(+) on the control board. The control board will power up.
3. Turn ON AC power to the operator.



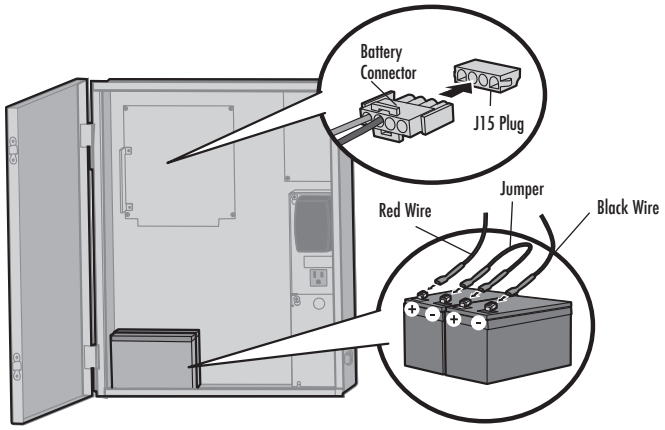
CONNECT BATTERIES

The batteries are charged in the circuit by the transformer or solar panel.

LARGE METAL CONTROL BOX (XLM)

7AH BATTERIES

1. Turn OFF AC power to the operator at the circuit breaker and unplug the transformer.
2. Unplug the battery connector to the J15 plug labeled BATT(-)(+) DC(-)(+) on the control board by squeezing the plug and pulling it from the control board.
3. Connect a jumper between the positive (+) terminal of one battery to the negative (-) terminal of the other battery.
4. Connect the red wire from the J15 plug labeled BATT (+) to the positive (+) terminal of the battery.
5. Connect the black wire from the J15 plug labeled BATT (-) to the negative (-) terminal of the battery.
6. Plug the J15 plug into the control board. The control board will power up.
7. Plug the transformer in.
8. Turn ON AC power.



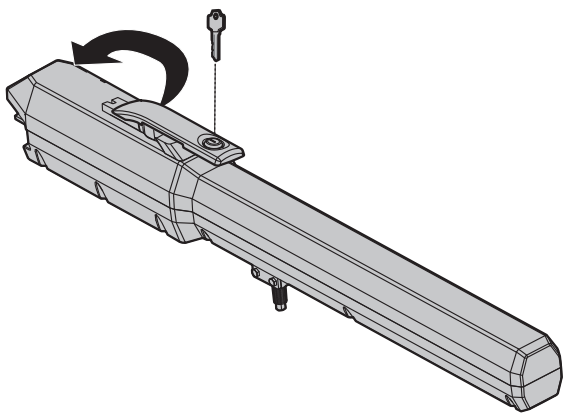
33AH BATTERIES

33AH batteries can be used in place of the 7AH batteries for a Large Metal Control Box (XLM) solar application ONLY. A wall or column mount installation is recommended when using the 33AH batteries.

ENGAGE THE OPERATOR

1. Turn the release lever clockwise 180°. This engages the motor.
2. Turn the key clockwise 180°. This locks the release lever.

The operator is now engaged.



LIMIT AND FORCE ADJUSTMENT

⚠ WARNING

To reduce the risk of SEVERE INJURY or DEATH:

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

INTRODUCTION

Your operator is designed with electronic controls to make travel limit and force adjustments easy. The adjustments allow you to program where the gate will stop in the open and close position. The electronic controls sense the amount of force required to open and close the gate. The force is adjusted automatically when you program the limits but should be fine tuned using the REVERSAL FORCE dial on the control board (refer to Fine Tune the Force section) to compensate for environmental changes.

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

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

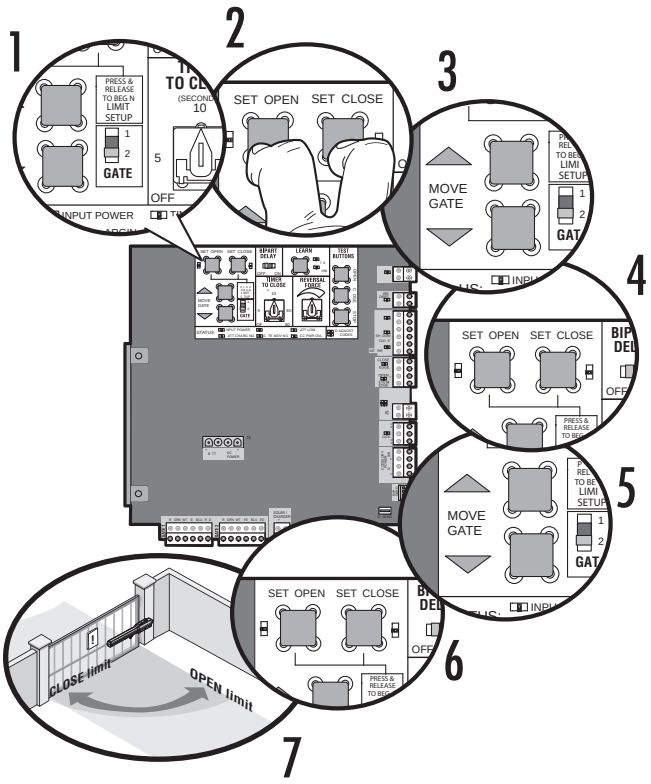
INITIAL LIMITS AND FORCE ADJUSTMENT

For dual gate applications the limits will have to be set for each operator. The gate MUST be attached to the operator before setting the limits and force.

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

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

DUAL GATES: Set the GATE switch to the 2 position and repeat steps 2-7 for the secondary gate.



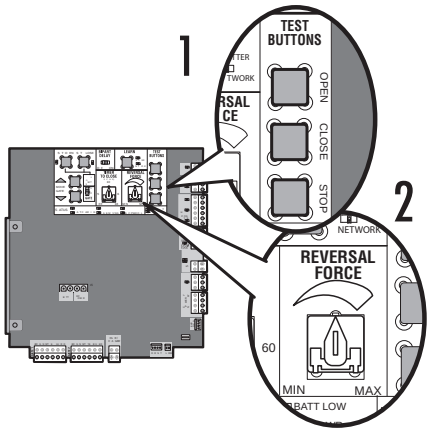
ADJUSTMENT

FINE TUNE THE FORCE

The FORCE DIAL on the control board is used for fine tuning the force in cases where wind or environmental changes may affect the gate travel.

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

1. Open and close the gate with the TEST BUTTONS.
2. If the gate stops or reverses before reaching the fully open or closed position, increase the force by turning the force control slightly clockwise.
3. Perform the "Obstruction Test" after every force setting adjustment (see below).

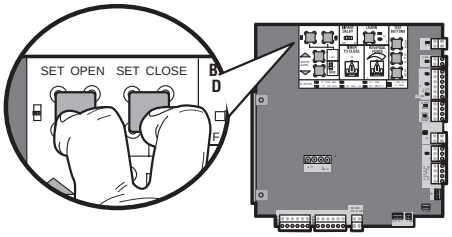


ADJUST THE LIMITS

If the limits have already been set the operator will exit the limit setting mode after resetting each limit. Each limit is set separately by following steps 1-3 of the Initial Limit and Force Adjustment section.

ERASE LIMITS

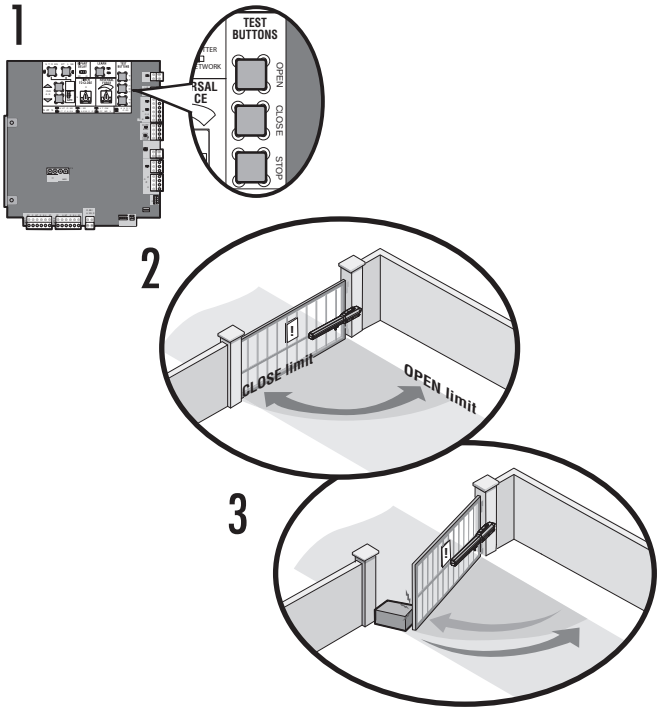
1. To erase the limits, press and hold the SET OPEN and SET CLOSE buttons simultaneously (5 seconds) until both the SET OPEN and SET CLOSE LEDs blink rapidly and the operator beeps.
2. Release the buttons and the SET OPEN and SET CLOSE LEDs will blink slowly indicating the limits will need to be set.



OBSTRUCTION TEST

The operator is equipped with an automatic obstruction sensing feature. If the gate encounters an obstruction during motion, the operator will automatically reverse direction of the gate for a short time and then stop the gate. After any adjustments are made, test the operator:

1. Open and close the gate with the TEST BUTTONS, ensuring that the gate is stopping at the proper open and close limit positions.
2. Place a solid object between the open gate and a rigid structure. Ensure that the gate, the solid object, and the rigid structure can withstand the forces generated during this obstruction test.
3. Run the gate in the close direction. The gate should stop and reverse upon contact with the solid object. If the gate does not reverse off the solid object, reduce the force setting by turning the force control slightly counter-clockwise. The gate should have enough force to reach both the open and close limits, but MUST reverse after contact with a solid object.
4. Repeat the test for the open direction.



PROGRAMMING

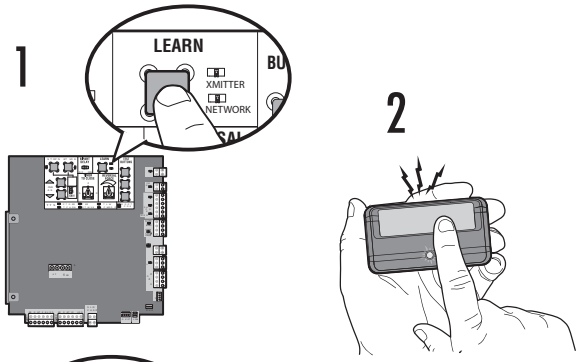
REMOTE CONTROLS

A total of 50 Security✚ 2.0™ remote controls and 2 keyless entries (1 PIN for each keyless entry) can be programmed to the operator. ***NOTE:*** *When the memory is full the operator will exit programming mode and the remote control/keyless entry will not be programmed. The memory will need to be erased before programming any additional remote controls/keyless entries. If installing an 86LM to extend the range of the remote controls DO NOT bend the antenna.*

TO ADD OR REPROGRAM A REMOTE CONTROL (NOT PROVIDED)

1. Press and release the LEARN button (operator will beep and green XMITTER LED will light).
2. Press the remote control button for the desired function. The operator will automatically exit learn mode (operator will beep and green XMITTER LED will go out) if programming is successful.

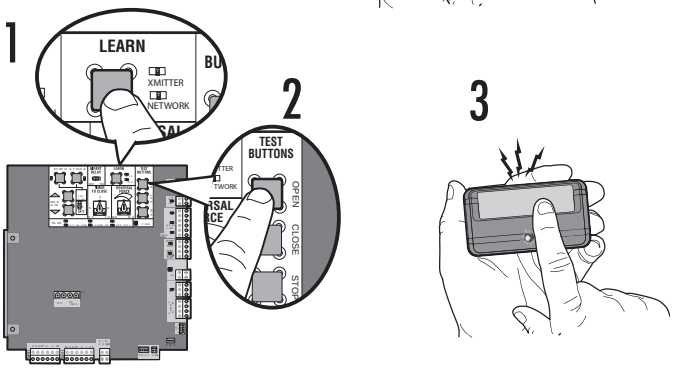
This programming step will program a single button as an open, close, and stop. To program additional Security✚ 2.0™ remote controls, repeat the steps until all the remote controls are programmed.



PROGRAM OPEN ONLY ON A 1-BUTTON REMOTE CONTROL

1. Press and release the LEARN button (operator will beep and green XMITTER LED will light).
2. Press the OPEN button.
3. Press the remote control button. The operator will automatically exit learn mode (operator will beep and green XMITTER LED will go out) if programming is successful.

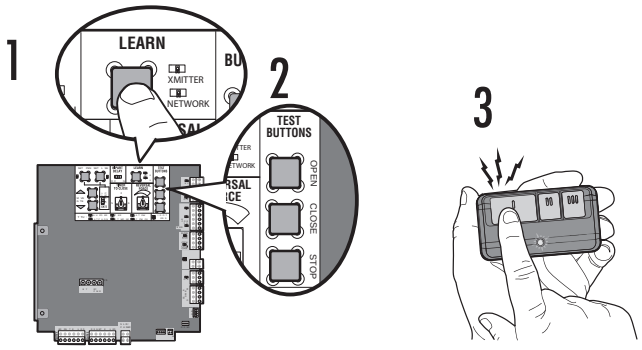
To program additional Security✚ 2.0™ remote controls, repeat the steps until all the remote controls are programmed.



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

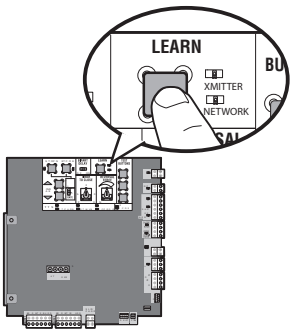
1. Press and release the LEARN button (operator will beep and green XMITTER LED will light).
2. Press the OPEN, CLOSE, or STOP button for the desired function.
3. Press the remote control button for the desired function. The operator will automatically exit learn mode (operator will beep and green XMITTER LED will go out) if programming is successful.

To program additional buttons or Security✚ 2.0™ remote controls, repeat the steps until all the buttons or remote controls are programmed.



ERASE ALL CODES

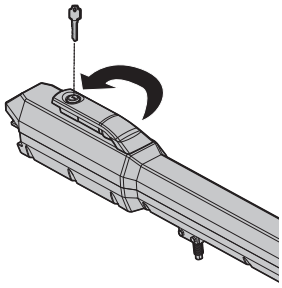
1. Press and release the LEARN button (operator will beep and green XMITTER LED will light).
2. Press and hold the LEARN button again until the green XMITTER LED goes out (approximately 6 seconds). All remote control codes are now erased.



OPERATION

MANUAL RELEASE

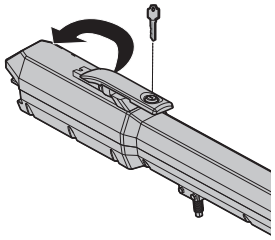
In case of a power failure, the operator can be disengaged from the gate. With an operator, the release action may sometimes feel stiff/jerky, which is normal and has no effect on function.



RELEASE

1. Insert the key into the lock.
2. Turn the key counter-clockwise 180°.
3. Turn the release lever counter-clockwise 180°.

Operator is in manual mode and the gate can be opened and closed manually.



ENGAGE

1. Turn the release lever clockwise 180°. This engages the motor.
2. Turn the key clockwise 180°. This locks the release lever.
3. Remove the key and store in a safe place.

The operator is now engaged.

RESET BUTTON

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

Pressing the reset button will stop a moving gate during a normal open/close cycle, like a stop button. The operator does not need to be reset after doing this.

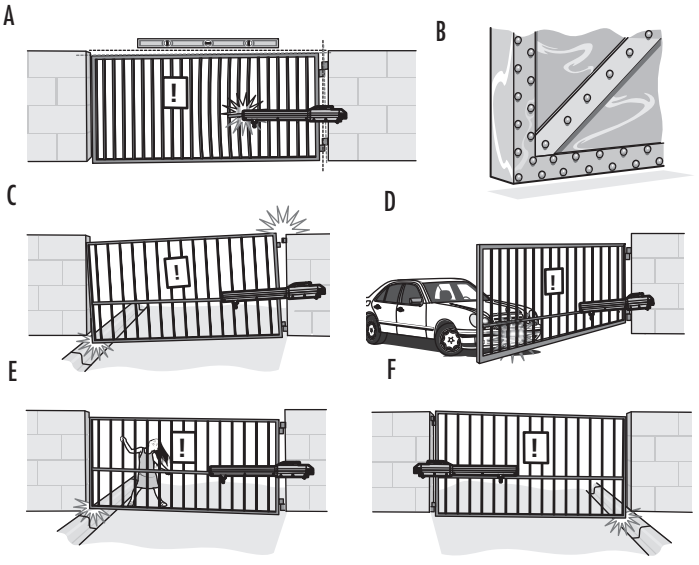
PROGRAMMING LIMITS RESET

If a mistake is made while programming the limits press the reset button to start over.

OPERATOR ALARM

If a contact sensor detects an obstruction twice consecutively the alarm will sound (up to 5 minutes) and the operator will need to be reset.

When the inherent force of the operator (RPM/current sensor) detects the following (twice consecutively) the alarm will sound (up to 5 minutes) and the operator will need to be reset:



A. The operator arm or gate is incorrectly installed.
B. The gate does not meet specifications.
C. Gate hinges are too tight or broken and the gate is not moving freely.
D. The gate is moving and a car pushes the gate.
E. A foreign object is on the gate frame while the gate is moving.
F. The gate hits the driveway, curb or other, and gets stuck or bent in an awkward position.

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

The operator alarm will beep 3 times with a command if the battery is low.

REMOTE CONTROL

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

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

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

PARTY MODE

If the Timer-to-Close feature is enabled and you would like the gate to remain open, open the gate fully, then press the reset button. The next command given by a LiftMaster remote control or SINGLE BUTTON on the control board will close the gate and return the operator to normal operation.

NOTE: *If an alternative radio receiver is wired to the operator, the receiver must be wired to the SINGLE BUTTON and CTRL PWR inputs.*

MAINTENANCE

MAINTENANCE CHART

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

DESCRIPTION	TASK	CHECK AT LEAST ONCE EVERY		
		MONTH	6 MONTHS	3 YEARS
Entrapment Protection Devices	Check and test for proper operation	X		
Warning Signs	Make sure they are present	X		
Manual Release	Check and test for proper operation		X	
Gate	Inspect for wear or damage	X		
Accessories	Check all for proper operation		X	
Electrical	Inspect all wire connections		X	
Mounting Hardware	Check for tightness		X	
Operator	Inspect for wear or damage		X	
Batteries	Replace			X

NOTES:

- *Severe or high cycle usage will require more frequent maintenance checks.*
- *It is suggested that while at the site voltage readings be taken at the operator. Using a digital voltmeter, verify that the incoming voltage to the operator it is within ten percent of the operator's rating.*

BATTERIES

Batteries will degrade over time depending on temperature and usage. For best performance, the batteries should be replaced every 3 years. Use only LiftMaster part 29-NP712 for replacement batteries. The operator comes with two 7AH batteries.

Two 33AH (A12330SGLPK) may be used in place of the 7AH batteries for a Large Metal Control Box solar installation. A Battery tray (Model K10-36183) is required for the 33AH application.

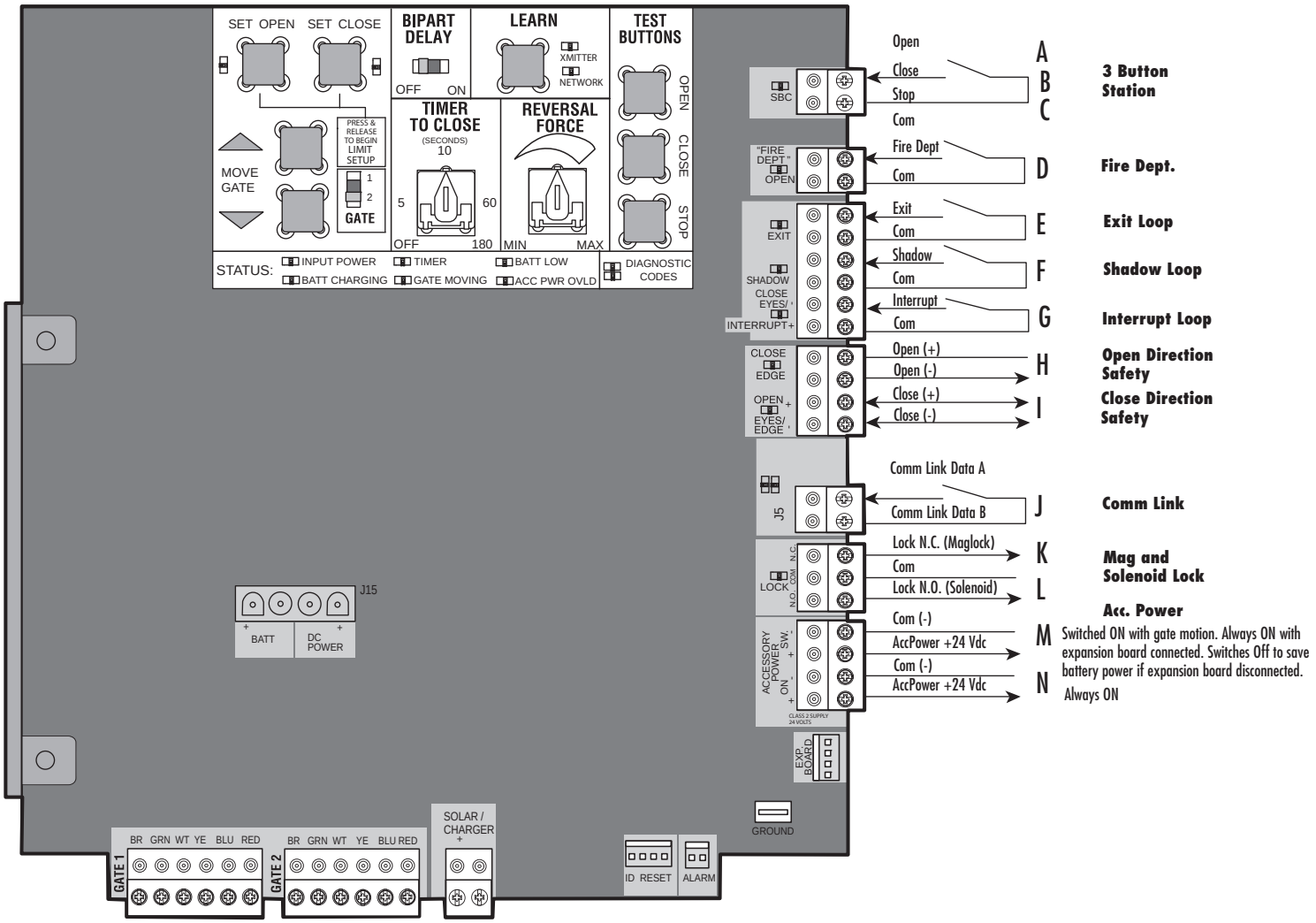
The batteries contain lead and need to be disposed of properly. Batteries do not perform well in extremely cold temperatures.

The operator alarm will beep 3 times with a command if the battery is low.

ADDITIONAL FEATURES

CONTROL BOARD OVERVIEW

SET OPEN Button	The SET OPEN button sets the OPEN limit. See Adjust Limits section.
SET CLOSE Button	The SET CLOSE button sets the CLOSE limit. See Adjust Limits section.
MOVE GATE Button	The MOVE GATE buttons will either open or close the gate when the operator is in Limit setting mode. See Adjust Limits section.
BIPART DELAY Switch	The Bipart delay switch is used only for dual gates. See Bipart Delay section.
LEARN Button	The LEARN button is for programming remote controls and the network.
TIMER-TO-CLOSE dial	The TIMER-TO-CLOSE (TTC) dial can be set to automatically close the gate after a specified time period. The TTC is factory set to OFF. If the TTC is set to the OFF position, then the gate will remain open until the operator receives another command from a control. Rotate the TIMER-TO-CLOSE dial to the desired setting. The range is 0 to 180 seconds, 0 seconds is OFF. ***NOTE:*** *Any radio command, single button control, or CLOSE command on the control board prior to the TTC expiring will close the gate. The TTC is reset by any signals from the open controls, loops, close edges, and close photoelectric sensors (IR's).*
REVERSAL FORCE dial	The REVERSAL FORCE dial adjusts the force. See Force Adjustment section.
TEST BUTTONS	The TEST BUTTONS will operate the gate (OPEN, STOP and CLOSE).
STATUS LEDs	The STATUS LEDs are diagnostic codes for the operator. See Status LED Chart in the Troubleshooting section.



ADDITIONAL FEATURES

ACCESSORY FEATURES ON CONTROL BOARD

A	**Open Input (& common) (3-Button Control Station, 4 terminals total)**	Open command - opens a closed gate. Hard open (maintained switch overrides external safeties and resets alarm condition) If maintained, pauses Timer-to-Close at OPEN limit. Opens a closing gate and holds open an open gate (within line-of-sight).
B	**Close Input (& common) (3-Button Control Station, 4 terminals total)**	Close command - closes an open gate. Hard close (maintained switch overrides external safeties and resets alarm condition within line-of-sight)
C	**Stop Input (& common) (3-Button Control Station, 4 terminals total)**	Stop command - stops a moving gate. Hard stop (maintained switch overrides Open and Close commands and resets alarm condition) If maintained, pauses Timer-to-Close at OPEN limit. Overrides Open and Close commands (within line-of-sight).
D	**Fire Dept Open Input (2 terminals)**	Acts as hard open. Maintained input overrides (ignores) external safeties (photoelectric sensor and edge), pauses Timer-to-Close momentary input logic as single button control and safeties remain active, re-enables Timer-to-Close.
E	**Exit Loop Input (2 terminals)**	Open command - opens a closed gate. Soft open (maintained switch does not override external safeties and does not reset alarm condition) If maintained, pauses Timer-to-Close at OPEN limit. Opens a closing gate and holds open an open gate.
F	**Shadow Loop Input (2 terminals)**	Loop detector connection when loop is positioned under gate. - Holds open gate at open limit - Disregarded at CLOSE limit and during gate motion - Pauses Timer-to-Close at OPEN limit
G	**CLOSE EYES/Interrupt Loop Input (2 terminals)**	CLOSE EYES/Interrupt Loop detector connection when loop is along the side of the gate. - Holds open gate at open limit - Stops and reverses a closing gate to open limit - Pauses Timer-to-Close at OPEN limit Close Direction Photoelectric Sensors, IR, or Infra-red detector wired to CLOSE EYES Input, disregarded during gate opening. Pulsed Photoelectric Sensors = monitored device putting out a pulse train when unblocked. Photoelectric Sensors, IR, Infra-red detector, contact opens fully with obstruction.
H	**Close Edge (2 terminals)**	Close Direction Edge Sensor to Close Safety Input, disregarded during gate opening
I	**Open Eyes/Edge (2 terminals)**	Open Direction Photoelectric Sensors, IR, Infra-red detector wired or Edge Sensor to Close Entrapments Input, disregarded during gate closing, Pulsed Photoelectric Sensors = monitored device putting out a pulse train when unblocked. Photoelectric Sensors, IR, Infra-red detector, edge sensor = normally open contact, contact reverses for 2 seconds with obstruction.
J	**Comm Link (2 terminals)**	Commercial Link (two wires) - connects two operators together (primary-secondary wired connection)
K	**Lock Outputs: Maglock (2 terminals, N.C. and COM)**	Relay contact output, Normally - closed (N.C.) output for maglocks Relay activates prior to motor activation and during motor run. Relay is off when motor is off.
L	**Solenoid Lock & Common (2 terminals, N.O. and COM)**	Normally - open (N.O.) output for solenoid locks Relay activates prior to motor activation and during motor run. Relay is off when motor is off.
M	**Accessory Power Out Switched, (2 terminals)**	24 Vdc voltage out to power accessories, will turn off when gate is not in motion to save battery power Always on if Expansion Board is connected.
N	**Accessory Power Out Un-switched, (2 terminals)**	24 Vdc voltage out to power accessories, always ON

ADDITIONAL FEATURES

EXPANSION BOARD OVERVIEW

CAUTION

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

QUICK CLOSE Switch

OFF: No change to the gate's normal operation.
ON: When CLOSE EYES/Interrupt loop is deactivated it causes an opening or a stopped gate to close (ignores the Timer-to-Close).

AC FAIL OPEN/BATT Switch

OPEN: Loss of AC power will cause gate to immediately OPEN and remain OPEN until AC power is restored (enabling the Timer-to-Close).
BATT: With loss of AC power, gate will remain in present position and operator is powered from batteries.

LOW BATT/EXIT LOOP FAIL Switch

- When AC power is OFF and battery voltage is low the gate will latch at a limit until AC power is restored or batteries voltage increases.
- Option select switch set to OPEN forces gate to latch at the OPEN limit if it is at the OPEN limit or on next open command until AC power is restored or battery voltage increases.
- Option select switch set to CLOSE forces gate to latch at CLOSE limit if at CLOSE limit or on next CLOSE command until AC power restored or battery voltage increases.
- Constant pressure on a hard command input overrides to open or close the gate.
- Low battery detect point = 22 V
- When set to OPEN, if the EXIT plug-in loop detector detects a fault, then the gate will open and remain open until fault is cleared. When set to CLOSE, then plug-in EXIT loop detector faults are ignored (EXIT loop is faulted and inoperative).

ANTI-TAIL OPEN/CLOSE SELECTION switch

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

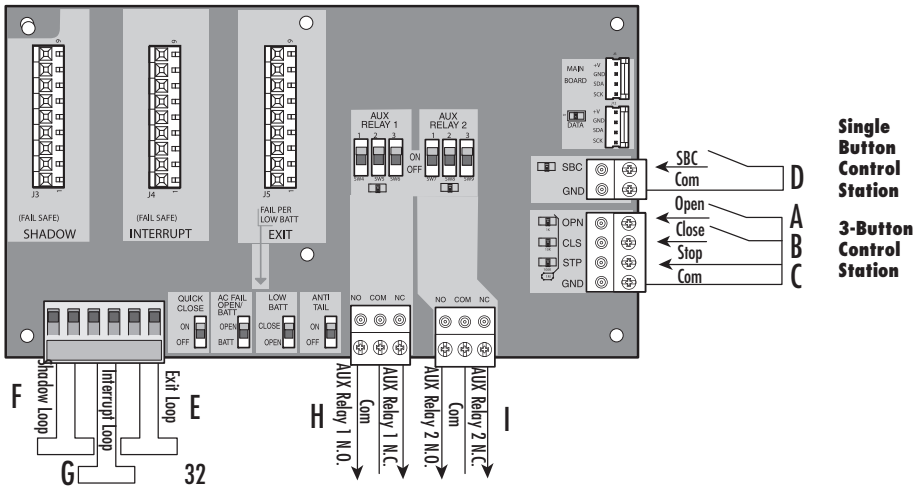
AUX RELAY switches

Set the AUX RELAY switches as needed to obtain the desired function:

AUX RELAY SETTING	SWITCH SETTINGS			AUX RELAY 1	AUX RELAY 2
	1	2	3		
Off (no feature selected)	OFF	OFF	OFF	Relay always off. Use this Aux Relay setting to conserve battery power.	Relay always off. Use this Aux Relay setting to conserve battery power.
Open Limit Switch	OFF	OFF	ON	Energizes at open limit. Use with SAMS (Sequenced Access Management System, jointly with barrier gate)	Energizes when at open limit. Use with SAMS (Sequenced Access Management System, jointly with barrier gate)
Close Limit Switch	OFF	ON	OFF	Energizes when not at close limit. Connect "Gate Close/Secure" indicator (e.g. light).	Energizes when not at close limit. Connect "Gate Not Closed/Secure" indicator (e.g. light).
Gate Motion	OFF	ON	ON	Energizes when motor is on (gate in motion). Connect "Gate In Motion" indicator (e.g. warning light or sounder).	Energizes when motor is on (gate in motion). Connect "Gate In Motion" indicator (e.g. warning light or sounder).
Pre-Motion Delay	ON	OFF	OFF	Energizes 3 seconds before gate motion and remains energized during gate motion. Connect "Gate In Motion" indicator (e.g. warning light or sounder).	Not used.
Power	ON	ON	OFF	Energizes when AC power or solar power is present. There is approximately a 10-12 second delay before relay cutoff, after AC shutdown.	Energizes when on battery power. There is approximately a 10-12 second delay before relay cutoff, after AC shutdown.
Tamper	ON	OFF	ON	Energizes if gate is manually tampered with by being pushed off of close limit. Connect alert (e.g. light or sounder).	Energizes if gate is manually tampered with by being pushed off of close limit. Connect alert (e.g. light or sounder).
Cycle Quantity Feedback*	ON	ON	ON	The OPEN, CLOSE, and STOP LEDs will blink out the cycle count See below.	Not used.

CYCLE COUNT

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

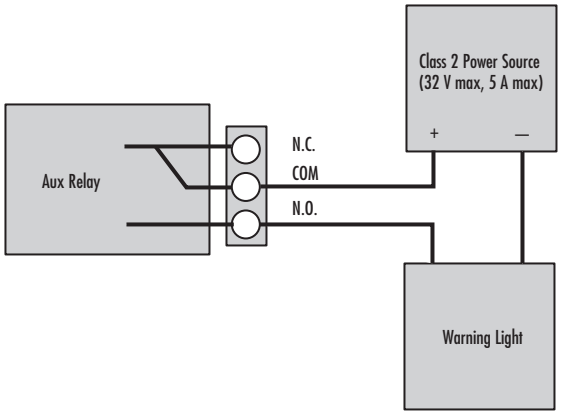


ADDITIONAL FEATURES

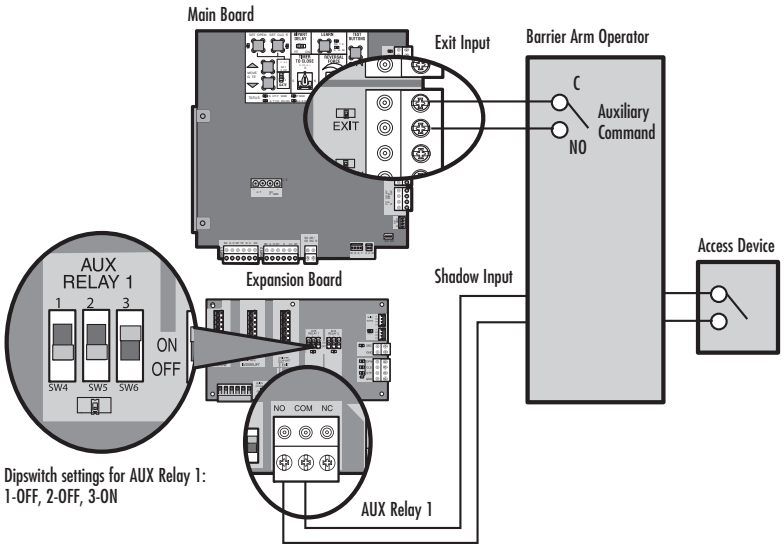
ACCESSORY FEATURES ON EXPANSION BOARD

A	**Open Input (& common) (3-Button Control Station, 4 terminals total)**	Open command - opens a closed gate. Soft close (maintained switch does not override external safeties and does not reset alarm condition) If maintained, pauses Timer-to-Close at OPEN limit. Opens a closing gate and holds open an open gate.
B	**Close Input (& common) (3-Button Control Station, 4 terminals total)**	Close command - closes an open gate. Soft close (maintained switch does not override external safeties and does not reset alarm condition)
C	**Stop Input (& common) (3-PB station, 4 terminals total)**	Stop command - stops a moving gate. Hard stop (maintained switch overrides Open and Close commands and resets alarm condition) If maintained, pauses Timer-to-Close at OPEN limit. Overrides an Open or Close command.
D	**Single Button Control, SBC (2 terminals)**	Gate command sequence - Open, Stop, Close, Stop, ... Soft open (maintained switch does not override external safeties and does not reset alarm condition)
E	**Exit Loop Input (2 terminals)**	Loop wire connection for plug-in loop detector when loop is inside secured area near gate. Open command - opens a closed gate. Soft open (maintained switch does not override external safeties and does not reset alarm condition) If maintained, pauses Timer-to-Close at OPEN limit. Opens a closing gate and holds open an open gate.
F	**Shadow Loop Input (2 terminals)**	Loop wire connection for plug-in loop detector when loop is along side gate. - Holds open gate at open - Disregarded at Close limit and during gate motion - Pauses Timer-to-Close at Open Limit
G	**Interrupt Loop Input (2 terminals)**	Loop wire connection for plug-in loop detector when loop is positioned under gate. - Holds open gate at open - Stops and reverses a closing gate - Pauses Timer-to-Close at Open Limit
H	**AUX Relay #1**	Normally - open and normally - closed relay contacts to control external devices, Function of relay contact activation determined by AUX Relay #1 option switch settings. (For connection of Class 2, low voltage (<32 V), DC or AC, max 5 Amps, power sources only)
I	**AUX Relay #2**	Normally-open and normally-closed relay contacts to control external devices, Function of relay contact activation determined by AUX Relay #2 option switch settings. (For connection of Class 2, low voltage (<32 V), DC or AC, max 5 Amps, power sources only)

AUX RELAY WIRING EXAMPLE



SAMS WIRING WITH RELAYS NOT ENERGIZED



GATE OPERATOR SETUP EXAMPLES

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

RESIDENTIAL SMALL: One to four residential homes sharing a gated entrance/exit, allowing vehicle access trumps security concerns

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

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

INDUSTRIAL: Large business site where security is required

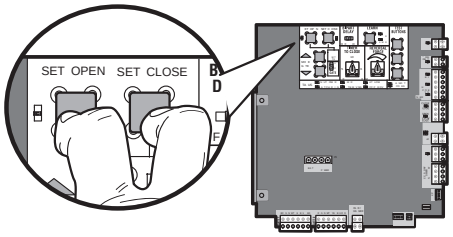
Setting	RESIDENTIAL SMALL	RESIDENTIAL LARGE	COMMERCIAL	INDUSTRIAL
Quick Close switch setting	Normally set to OFF. Normal gate close (timer or control).	Normally set to OFF. Normal gate close (timer or control).	Normally set to OFF. Normal gate close (timer or control).	Set to ON, so that gate closes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

LIMIT SETUP WITH A REMOTE CONTROL

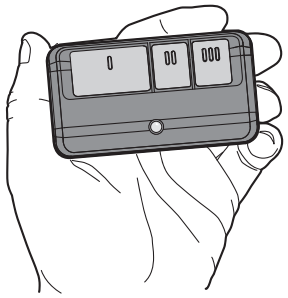
To set the limits using a remote control, first you will need a 3-button remote control that has been programmed for OPEN, CLOSE, and STOP. Refer to the Programming section.

INITIAL LIMITS AND FORCE ADJUSTMENT

For dual gate applications the limits will have to be set for each operator. The gate MUST be attached to the operator before setting the limits and force.



3-Button Remote Control programmed for OPEN, CLOSE, and STOP



Ensure the gate is closed.

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

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

ADJUST THE LIMITS

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

Set the Close Limit Only

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

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

Set the Open Limit Only

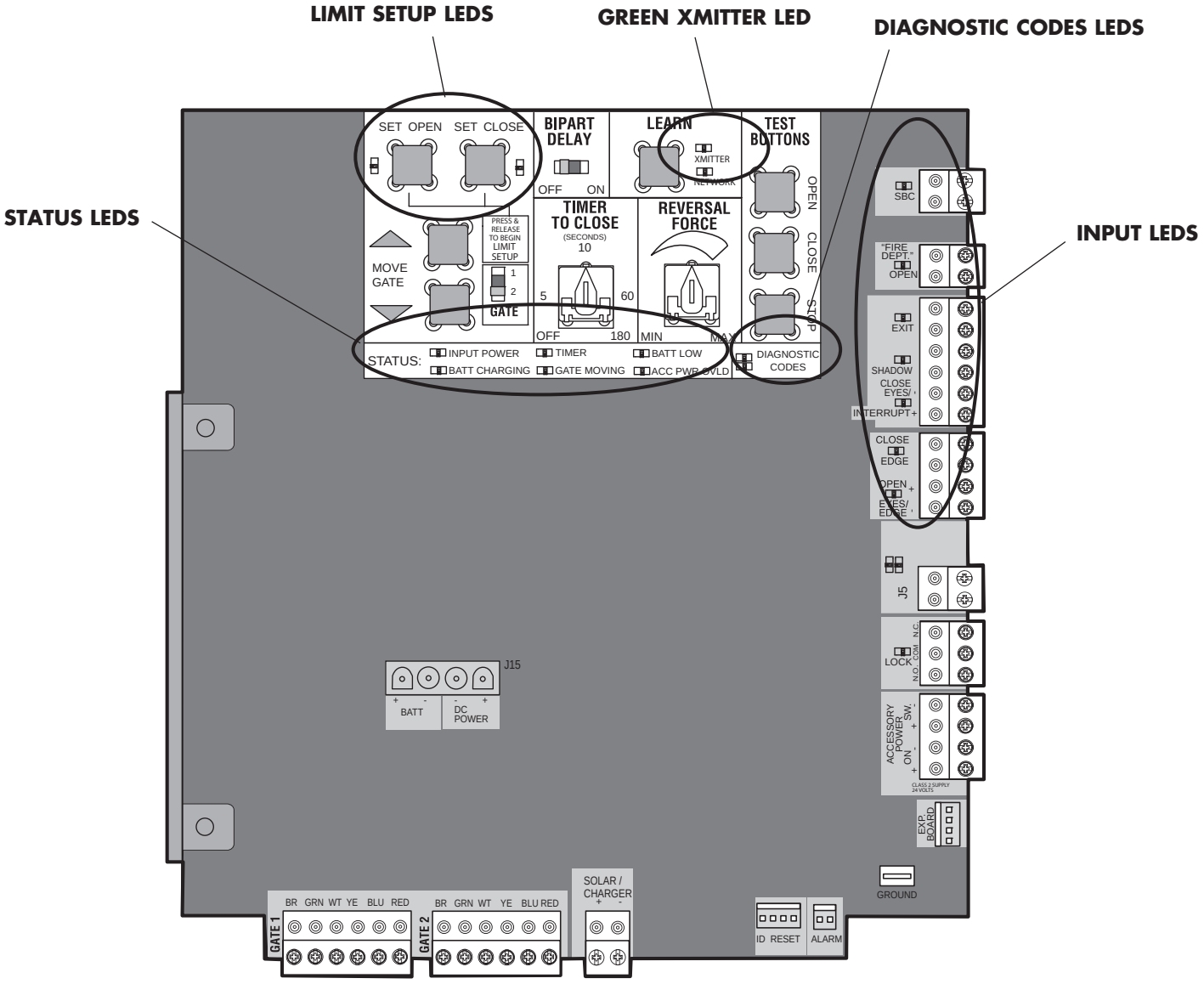
1. Press the SET OPEN and SET CLOSE buttons simultaneously to enter limit setting mode.
2. Press and hold the OPEN button on the remote control until the gate reaches the desired open position. The gate can be jogged back and forth using the OPEN and CLOSE buttons on the remote control.
3. Once the gate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

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

TROUBLESHOOTING

CONTROL BOARD LEDS

The control board is equipped with many LEDs that have a variety of functions. The control board LEDs indicate the status of the operator, assist with programming, and diagnose potential problems with the operator.



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

GREEN XMITTER LED	
XMITTER LED	**EXPLANATION**
OFF	No remote control activity, normal operation.
ON	Programming mode active.
FAST	Recognized remote control signal.
FASTER	Unrecognized remote control signal.
FASTEST	Remote controls are being erased.

CONTROL BOARD LEDS

DIAGNOSTIC CODES LEDS

YELLOW DIAGNOSTIC LED

# BLINKS	MEANING	CORRECTION
1 BLINK	*Low Power Mode*	(not an error)
2 BLINKS	*ID resistor failure*	Check ID resistor wiring, clear limit settings and reset limits
3 BLINKS	*Exceeded Maximum Run Timer*	Check gate travel, if necessary adjust force setting
5 BLINKS	*RPM (obstruction)*	Check for obstruction, if necessary adjust force setting
6 BLINKS	*Current (obstruction)*	Check for obstruction, if necessary adjust force setting
7 BLINKS	*Position failure*	Check gate travel, clear limit settings and reset limits
12 BLINKS	*Loop Error*	One of the loops is in error. Refer to the loop detector to determine the error.

RED DIAGNOSTIC LED

# BLINKS	MEANING	CORRECTION
2 BLINKS	*Current Sense*	Motor control circuit fault, replace control board
3 BLINKS	*FET Failure*	Motor control circuit fault, replace control board
4 BLINKS	*RAM Failure*	Memory failure, replace control board
5 BLINKS	*Flash Memory Failure*	Memory failure, replace control board
6 BLINKS	*EEPROM Failure*	Memory failure, replace control board
7 BLINKS	*Watchdog Failure*	Controller failure, replace control board
8 BLINKS	*Brownout*	Check power harness or line voltage
9 BLINKS	*Fail*	Control Board failure
10-14 BLINKS	*Software Failure*	Cycle power to the control board. If continues replace control board.

STATUS LEDS

INPUT POWER	OFF	OFF state
	ON	AC charger or Solar power available
BATT CHARGING	OFF	Not charging
	ON	Trickle charge
	FAST BLINK	High current charge
	FASTER BLINK	Over voltage error
TIMER	OFF	The timer is disabled
	ON	The timer is enabled
	MEDIUM BLINK	The timer is running
	FAST BLINK	The timer is paused
	FASTER BLINK	The timer is cancelled
GATE MOVING	OFF	The gate is stopped
	ON	The gate is opening or closing
	FASTEST BLINK	The operator is in E2
BATT LOW	OFF	No battery error
	ON	Battery low error
	SLOW BLINK	Battery dead error
	MEDIUM BLINK	Battery over current error
	FAST BLINK	Battery over voltage error
	FASTER BLINK	Extreme temperature error
	FASTEST BLINK	Battery disconnected error
ACC PWR OVLD	OFF	OFF state
	ON	Accessory overload protector opened

INPUT LEDS

OPEN INPUT	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
CLOSE INPUT	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
STOP INPUT	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
FIRE DEPT INPUT	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
SBC INPUT	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
OPEN SAFETY INPUT	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator
CLOSE SAFETY INPUT	OFF	Input inactive
	ON	Input active
	BLINK	Input active on other operator

TROUBLESHOOTING

TROUBLESHOOTING CHART

FAULT	POSSIBLE CAUSES	CORRECTIONS
Operator does not run and diagnostic LED not on.	a) No power to control board b) Open fuse c) If on battery power only, low or dead batteries d) Defective control board	a) Check AC and battery power b) Check fuses c) Charge batteries by AC or solar power or replace batteries d) Replace defective control board
Control board powers up, but motor does not run.	a) Check DIAGNOSTIC LEDs b) Reset button is stuck c) Stop button active d) If on battery power only, low or dead batteries e) Open or Close input active f) Entrapment Protection Device active g) Vehicle loop detector or probe active h) Defective control board	a) Use Diagnostic code to identify issue b) Check Reset button c) Check Stop button is not “stuck on” d) Charges batteries by AC or solar power or replace batteries e) Check all Open and Close inputs for a “stuck on” input f) Check all Entrapment Protection Device inputs for a “stuck on” sensor g) Check all vehicle detector inputs for a “stuck on” detector h) Replace defective control board
Relay clicks with command, but motor does not turn on.	a) Arm jammed or not connected b) Defective motor or motor wires c) Defective control board	a) Disengage the arm and ensure arm moves freely b) Inspect motor wires for open wire, shorted wires, damage, etc. Else, replace arm. c) Replace defective control board.
Arm moves, but cannot set correct limits.	a) Arm does not extend or retract enough during travel b) Arm is interfering with mounting bracket c) Gate is too difficult to move	a) Disengage the arm and ensure arm moves freely b) Examine the hinge point where the arm mounts to the gate post. Make sure that the arm housing does not hit or interfere with the gate post or mounting bracket. Correct as necessary. c) Disconnect arm from gate and move gate manually. Gate must move easily and freely through its entire range, limit-to-limit. Repair gate as needed.
Gate does not fully open or fully close when setting limits.	a) Arm does not extend or retract enough during travel b) Arm is interfering with mounting bracket c) Gate is too difficult to move	a) Disengage the arm and ensure arm moves freely b) Examine the hinge point where the arm mounts to the gate post. Make sure that the arm housing does not hit or interfere with the gate post or mounting bracket. Correct as necessary. c) Remove arm from gate and move gate manually. Gate must move easily and freely through its entire range, limit-to-limit. Repair gate as needed.
Operator does not respond to a wired control/command (example: Open, Close, SBC, etc.)	a) Check DIAGNOSTIC LEDs b) Check Open and Close command input LEDs c) Stop button is active d) Reset button is stuck e) If on battery power only, low or dead batteries f) Entrapment Protection Device active g) Vehicle loop detector or vehicle probe active h) Defective control board	a) Use Diagnostic code to identify issue b) Check all Open and Close inputs for a “stuck on” input c) Check Stop button is not “stuck on” d) Check Reset button e) Charges batteries by AC or solar power or replace batteries f) Check all Entrapment Protection Device inputs for a “stuck on” sensor g) Check all vehicle detector inputs for a “stuck on” detector h) Replace defective control board
Operator does not respond to a wireless control or transmitter	a) Check DIAGNOSTIC LEDs b) Check XMITTER LED when wireless control is active c) Stop button is active d) Reset button is stuck e) Poor radio reception f) Defective control board	a) Use Diagnostic code to identify issue b) Activate wireless control and check XMITTER LED is on. Re-learn wireless control/ transmitter to control board. Replace wireless control as needed. c) Check Stop button is not “stuck on” d) Check Reset button e) Check if similar wired control operates correctly. Check if wireless controls works properly when within a few feet of operator. Check operator’s antenna and antenna wire. Check other wireless controls or devices. f) Replace defective control board

TROUBLESHOOTING

TROUBLESHOOTING CHART

FAULT	POSSIBLE CAUSES	CORRECTIONS
Gate stops during travel and reverses immediately.	a) Check DIAGNOSTIC LEDs b) Inherent force obstruction detection c) External Entrapment Protection Device activation d) Control (Open, Close) becoming active e) Vehicle loop detector active f) Low battery voltage	a) Use Diagnostic code to identify issue b) Check for obstruction in gate's path or travel. Remove arm from gate and move gate manually. Gate must move easily and freely through its entire range, limit-to-limit. Remove obstruction or repair gate as needed. c) Check all Entrapment Protection Device inputs for an active sensor d) Check all Open and Close inputs for an active input e) Check all vehicle detector inputs for an active detector f) Battery voltage must be 22.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries
Gate opens, but will not close.	a) Check DIAGNOSTIC LEDs b) Open control active c) Close Entrapment Protection Device active d) Vehicle loop detector active e) Loss of AC power with AC FAIL set to OPEN f) Low battery with LOW BATT set to OPEN g) Fire Dept input active	a) Use Diagnostic code to identify issue b) Check all Open inputs for an active input c) Check all Entrapment Protection Device inputs for an active sensor d) Check all vehicle detector inputs for an active detector e) Check AC power and AC Fail option setting f) Battery voltage must be 22.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries g) Check Fire Dept input
Gate closes, but will not open.	a) Check DIAGNOSTIC LEDs b) Open Entrapment Protection Device active c) Vehicle loop detector active d) Low battery with LOW BATT switch set to close e) Low battery with LOW BATT option set to CLOSE	a) Use Diagnostic code to identify issue b) Check all Entrapment Protection Device inputs for an active sensor c) Check all vehicle detector inputs for an active detector d) Battery voltage must be 22.0 Vdc or higher e) Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 22.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries
Gate does not close from Timer-to-Close.	a) Timer-to-Close not set b) Open control active c) Close Entrapment Protection Device active d) Vehicle loop detector active e) Loss of AC power with AC FAIL set to OPEN f) Low battery with LOW BATT option set to OPEN g) Fire Dept input active	a) Check Timer-to-Close (TTC) setting b) Check all Open inputs for an active input c) Check all Entrapment Protection Device inputs for an active sensor d) Check all vehicle detector inputs for an active detector e) Check AC power and AC Fail option setting f) Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 22.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries. g) Check Fire Dept input
Vehicle Exit loop activation does not cause gate to open.	a) Check DIAGNOSTIC LEDs b) Exit vehicle detector setup incorrectly c) Defective Exit loop detector or loop wire d) Low battery with LOW BATT option set to CLOSE	a) Use Diagnostic code to identify issue b) Review Exit loop detector settings. Adjust settings as needed. c) Check Exit loop wire. Replace defective Exit loop detector. d) Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 22.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries.
Vehicle Interrupt loop does not cause gate to stop and reverse.	a) Check DIAGNOSTIC LEDs b) Vehicle detector setup incorrectly c) Defective vehicle loop detector or loop wire	a) Use Diagnostic code to identify issue b) Review Interrupt loop detector settings. Adjust settings as needed c) Check Interrupt loop wire. Replace defective Interrupt loop detector
Vehicle Shadow loop does not keep gate at open limit.	a) Check DIAGNOSTIC LEDs b) Vehicle detector setup incorrectly c) Defective vehicle loop detector or loop wire	a) Use Diagnostic code to identify issue b) Review Shadow loop detector settings. Adjust settings as needed c) Check Shadow loop wire. Replace defective Shadow loop detector

TROUBLESHOOTING

TROUBLESHOOTING CHART

FAULT	POSSIBLE CAUSES	CORRECTIONS
Obstruction in gates path does not cause gate to stop and reverse	a) Force setting too high	a) Adjust force setting. Retest that obstruction in gate's path causes gate to stop and reverse direction.
Photoelectric sensor does not stop or reverse gate.	a) Incorrect photoelectric sensor wiring b) Defective photoelectric sensor	a) Check photoelectric sensor wiring. Retest that obstructing photoelectric sensor causes moving gate to stop, and may reverse direction. b) Replace defective photoelectric sensor. Retest that obstructing photoelectric sensor causes moving gate to stop, and may reverse direction.
Edge Sensor does not stop or reverse gate.	a) Incorrect edge sensor wiring b) Defective edge sensor	a) Check edge sensor wiring. Retest that activating edge sensor causes moving gate to stop and reverse direction. b) Replace defective edge sensor. Retest that activating edge sensor causes moving gate to stop and reverse direction.
Alarm sounds for 5 minutes or alarm sounds with a command.	a) Double entrapment occurred	a) Check for cause of entrapment (obstruction) detection and correct. Press the reset button to shut off alarm and reset the operator.
Alarm beeps three times with a command.	a) Low battery	a) Check if AC power is available. If no AC power, then running on batteries and battery voltage must be 22.0 Vdc or higher. Charge batteries by AC or solar power or replace batteries
On dual-gate system, one gate is not commanding the other.	a) Defective or incorrect Operator-to-Operator wiring b) Incorrect Operator-to-Operator wireless learning	a) Check operator-to-operator wiring. b) Relearn the wireless network of one operator to the other operator.
On dual-gate system, incorrect gate opens first or closes first.	a) Incorrect Bipart switch setting	a) Change setting of both operator's Bipart switch settings. One operator should have Bipart switch ON (operator that opens first) and the other operator should have Bipart switch OFF (operator that opens second)
Alarm beeps when running.		
Expansion board function not controlling gate.	a) Defective main board to expansion board wiring b) Incorrect input wiring to expansion board c) Defective expansion board or defective main board	a) Check main board to expansion board wiring. If required, replace wire cable. b) Check wiring to all inputs on expansion board. c) Replace defective expansion board or defective main board
Maglock not working correctly.	a) Maglock wired incorrectly	a) Check that Maglock is wired to N.O. and COM terminals. Check that Maglock has power (do not power maglock from control board accessory power terminals). If shorting lock's NO and COM wires does not activate Maglock, then replace Maglock or Maglock wiring
Solenoid lock not working correctly.	a) Solenoid wired incorrectly	a) Check that Solenoid is wired to N.C. and COM terminals. Check that Solenoid has power (do not power solenoid from control board accessory power terminals). If shorting lock's NC and COM wires does not activate Solenoid, then replace Solenoid lock or Solenoid wiring
Switched (SW) Accessory power remaining on.	a) Main control board is not going to low power mode.	a) Photoelectric sensor inputs may be active.
Accessories connected to Switch (SW) Accessory power not working correctly, turning off, or resetting.	a) Main control board is going to low power mode.	a) With expansion board disconnected and running on batteries (no AC power or solar power available), main board will go into low power mode. Move accessory power to Accy Power ON terminals (+, -). Connect expansion board to prevent low power mode.

TROUBLESHOOTING

TROUBLESHOOTING CHART

FAULT	POSSIBLE CAUSES	CORRECTIONS
Accessories connected to Accessory power not working correctly, turning off, or resetting.	a) Accessory power protector active b) Defective control board	a) Disconnect all accessory powered devices and measure accessory power voltage (should be 23 – 30 Vdc). If voltage is correct, connect accessories one at a time, measuring accessory voltage after every new connection. b) Replace defective control board
Quick Close not working correctly.	a) Quick Close setting incorrect b) Interrupt loop detector or loop wire defective c) Defective Expansion board	a) Check that Quick Close setting is ON b) Check operation of Interrupt Loop detector c) Replace defective Expansion board
Anti-Tailgating not working correctly.	a) Anti-Tail setting incorrect b) Interrupt loop detector or loop wire defective c) Defective Expansion board	a) Check that Anti-Tail setting is ON b) Check operation of Interrupt Loop detector c) Replace defective Expansion board
AUX Relay not working correctly.	a) AUX Relay setting incorrect b) AUX Relay wiring incorrect c) Defective Expansion board	a) Check AUX Relay switches settings b) Check that wiring is connected to either N.O. and COM or to N.C. and COM. c) Set AUX Relay to another setting and test. Replace defective expansion board.

WIRING DIAGRAMS

STANDARD CONTROL BOX

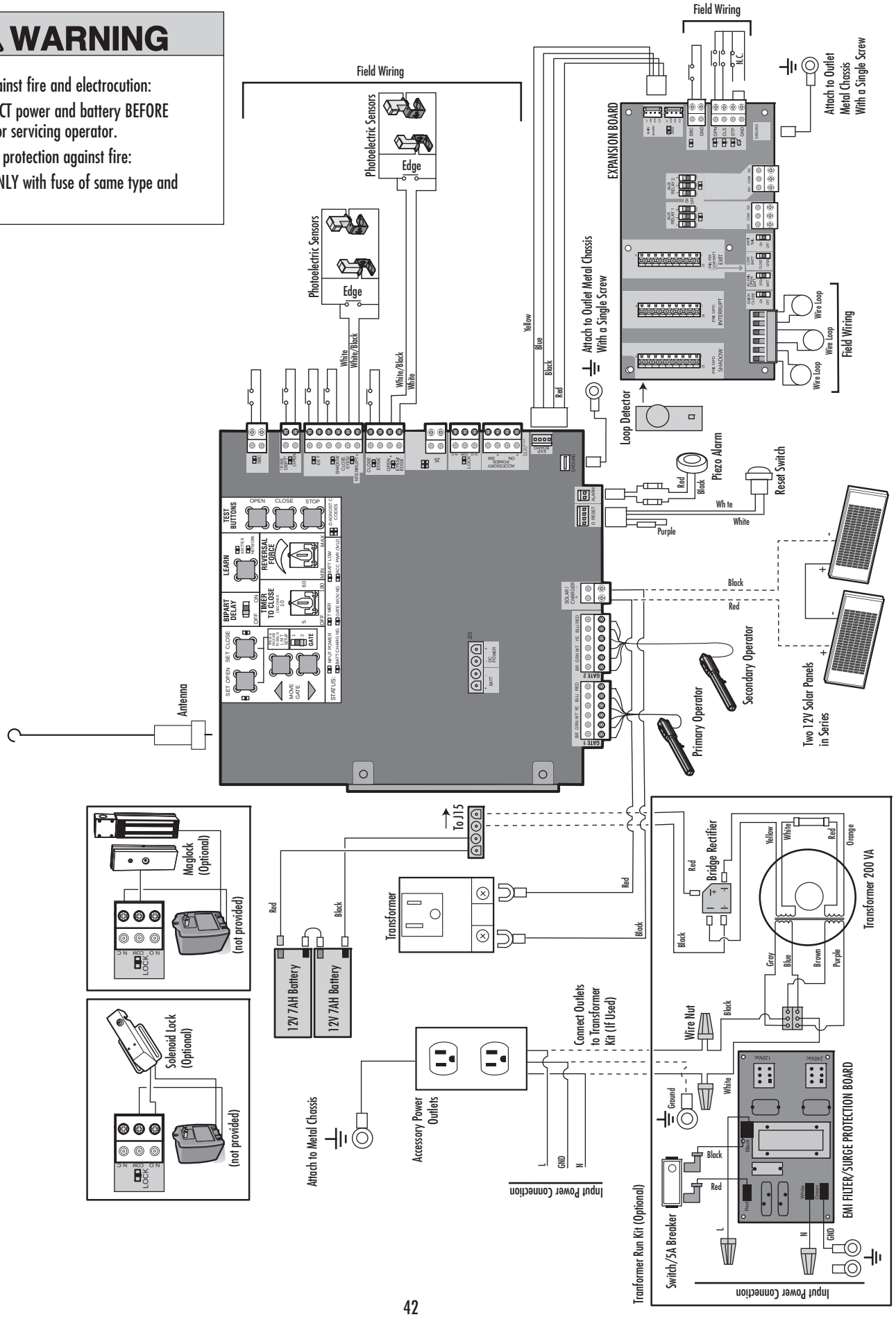
⚠ WARNING

To protect against fire and electrocution:

- DISCONNECT power and battery BEFORE installing or servicing operator.

For continued protection against fire:

- Replace ONLY with fuse of same type and rating.



WIRING DIAGRAMS

LARGE METAL CONTROL BOX (XLM)

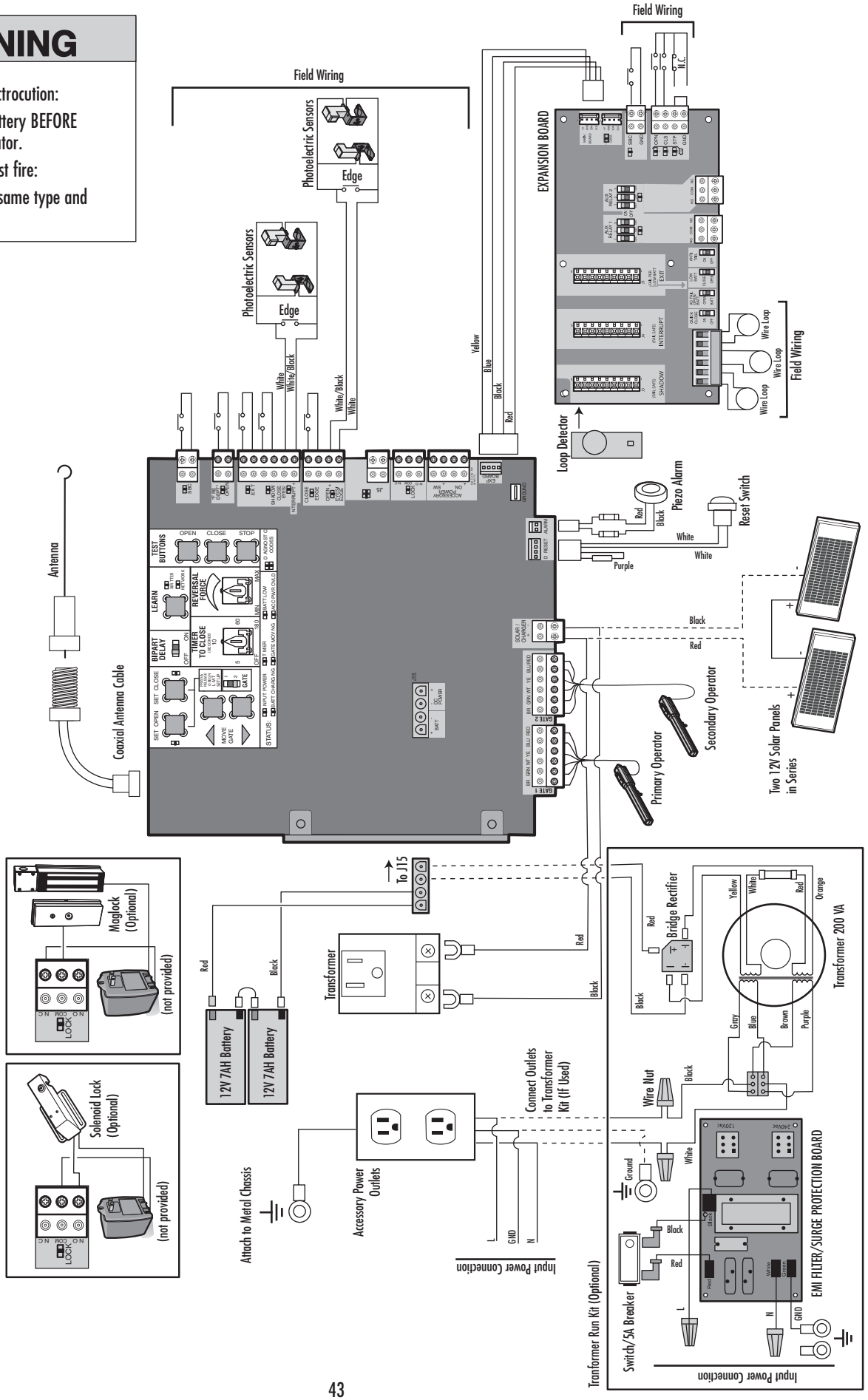
⚠ WARNING

To protect against fire and electrocution:

- DISCONNECT power and battery BEFORE installing or servicing operator.

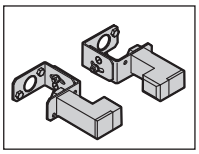
For continued protection against fire:

- Replace ONLY with fuse of same type and rating.



ACCESSORIES

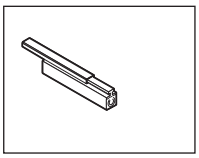
ENTRAPMENT PROTECTION DEVICES



PHOTOELECTRIC SENSORS (NON-CONTACT)

The photoelectric sensors are designed to detect an obstacle in the path of the electronic beam and stop the operator. Includes mounting brackets.

Models AOMRON E3K-R10K4-NR (retro-reflective), RETROAB 60-2728 (retro-reflective), CPS-UN4 (through beam)



SENSING EDGE (2-WIRE, NON-MONITORED, CONTACT)

Sensing edges can detect an obstacle upon contact and stop the operator.

Models G65MG0204, G65MG0205, G65MGR205, and G65MGS205

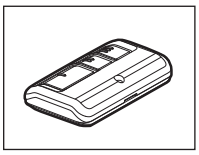
SENSING EDGE CHANNEL

Mounting channel for all MG020 type edges.

Model G65ME120C5

REMOTE CONTROLS

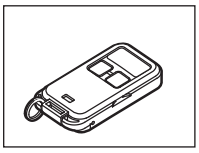
Chamberlain offers a variety of LiftMaster remote controls to satisfy your application needs. Single-button to 4-button, visor or key chain. The following remote controls are compatible with operators manufactured by Chamberlain after 1993. Contact your authorized LiftMaster dealer for additional details and options.



3-BUTTON REMOTE CONTROL

The 3-button remote control can be programmed to control the operator. Includes visor clip.

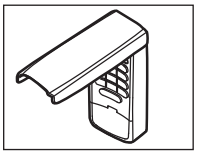
Model 893MAX



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

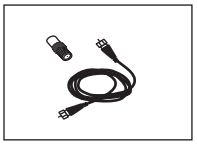


KEYLESS ENTRY

Enables homeowner to operate gate operator from outside by entering a 4-digit code on a specially designed keypad.

Model 877MAX

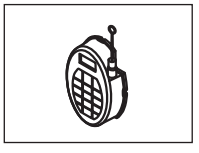
MISCELLANEOUS



REMOTE ANTENNA EXTENSION KIT

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

Model 86LM

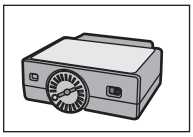


WIRELESS ACCESS CONTROL RECEIVER

Access control receiver for up to 450 remote controls.

Model STAR450-315

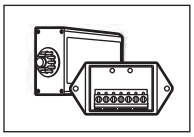
MISCELLANEOUS



PLUG-IN LOOP DETECTOR

Low power. Conveniently plugs into existing control board.

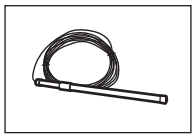
Model LOOPDETLM



LOOP DETECTOR

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

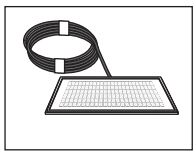
Model LD7LP



VEHICLE SENSING PROBE

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

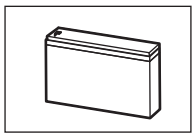
Model CP3



SOLAR PANEL KIT - 10 WATT

This kit is to replace or add a solar panel to the operator application. Up to four solar panels can be connected to the operator.

Model SOLPNL10W12V (requires 2 minimum)



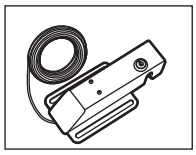
BATTERY FOR GATE ACCESS SYSTEMS

Gate access system batteries replace or upgrade the gate operator batteries.

Model 29-NP712 (standard 7 AMP-Hour Battery, 12 Vdc, to replace original batteries provided with operator, reuse existing harnesses)

Model A12330SGLPK (upgrade 33 AMP-Hour Battery, 12 Vdc, includes 33AH harness. Ideal for solar applications and extended battery backup). For use with Large Metal Control Box ONLY.

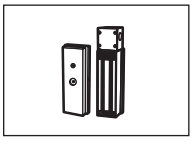
Two identical 12 Vdc batteries are required for each gate operator. Do not mix 7AH and 33AH batteries within a gate operator.



SOLENOID GATE LOCK

The automatic gate lock is a solenoid-driven lock that automatically unlocks when the gate is open and locks when the gate is closed. Can be mounted onto a gate or post. Can be released in case of emergency.

Models GC824 (115 Vac) and GC824-12 (12/24 Vac/dc)



MAGNETIC GATE LOCK

Outdoor magnetic lock, transformer, junction box, mounting plate and hardware. Not for use with Solar Applications. Must be powered separately.

Model MG1300

TRANSFORMER RUN KIT (OPTIONAL

Model LA500HDTKITSTD (for Standard Control Box)

Model LA500HDTKITXLM (for Large Metal Control Box)

WARRANTY

LIFTMASTER 3 YEAR RESIDENTIAL / 2 YEAR COMMERCIAL LIMITED WARRANTY

The Chamberlain Group, Inc. ("Seller") warrants to the first purchaser of this product, for the structure in which this product is originally installed, that it is free from defect in materials and/or workmanship for a period of 3 year residential/ 2 year commercial from the date of purchase [and that the LA500™ and LA500CONT™ are free from defect in materials and/or workmanship for a period of 3 year residential/ 2 year commercial from the date of purchase]. The proper operation of this product is dependent on your compliance with the instructions regarding installation, operation, maintenance and testing. Failure to comply strictly with those instructions will void this limited warranty in its entirety.

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

ALL IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE 3 YEAR RESIDENTIAL/ 2 YEAR COMMERCIAL LIMITED WARRANTY PERIOD SET FORTH ABOVE [EXCEPT THE IMPLIED WARRANTIES WITH RESPECT TO THE LA500™ AND LA500CONT™, WHICH ARE LIMITED IN DURATION TO THE 3 YEAR RESIDENTIAL/ 2 YEAR COMMERCIAL LIMITED WARRANTY PERIOD FOR THE LA500™ AND LA500CONT™], AND NO IMPLIED WARRANTIES WILL EXIST OR APPLY AFTER SUCH PERIOD. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. THIS LIMITED WARRANTY DOES NOT COVER NON-DEFECT DAMAGE, DAMAGE CAUSED BY IMPROPER INSTALLATION, OPERATION OR CARE (INCLUDING, BUT NOT LIMITED TO ABUSE, MISUSE, FAILURE TO PROVIDE REASONABLE AND NECESSARY MAINTENANCE, UNAUTHORIZED REPAIRS OR ANY ALTERATIONS TO THIS PRODUCT), LABOR CHARGES FOR REINSTALLING A REPAIRED OR REPLACED UNIT, OR REPLACEMENT OF BATTERIES.

THIS LIMITED WARRANTY DOES NOT COVER ANY PROBLEMS WITH, OR RELATING TO, THE GATE OR GATE HARDWARE, INCLUDING BUT NOT LIMITED TO THE GATE SPRINGS, GATE ROLLERS, GATE ALIGNMENT OR HINGES. THIS LIMITED WARRANTY ALSO DOES NOT COVER ANY PROBLEMS CAUSED BY INTERFERENCE. ANY SERVICE CALL THAT DETERMINES THE PROBLEM HAS BEEN CAUSED BY ANY OF THESE ITEMS COULD RESULT IN A FEE TO YOU.

UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES ARISING IN CONNECTION WITH USE, OR INABILITY TO USE, THIS PRODUCT. IN NO EVENT SHALL SELLER'S LIABILITY FOR BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE OR STRICT LIABILITY EXCEED THE COST OF THE PRODUCT COVERED HEREBY. NO PERSON IS AUTHORIZED TO ASSUME FOR US ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF THIS PRODUCT.

Some states do not allow the exclusion or limitation of consequential, incidental or special damages, so the above limitation or exclusion may not apply to you. This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

845 Larch Avenue
Elmhurst, Illinois 60126-1196