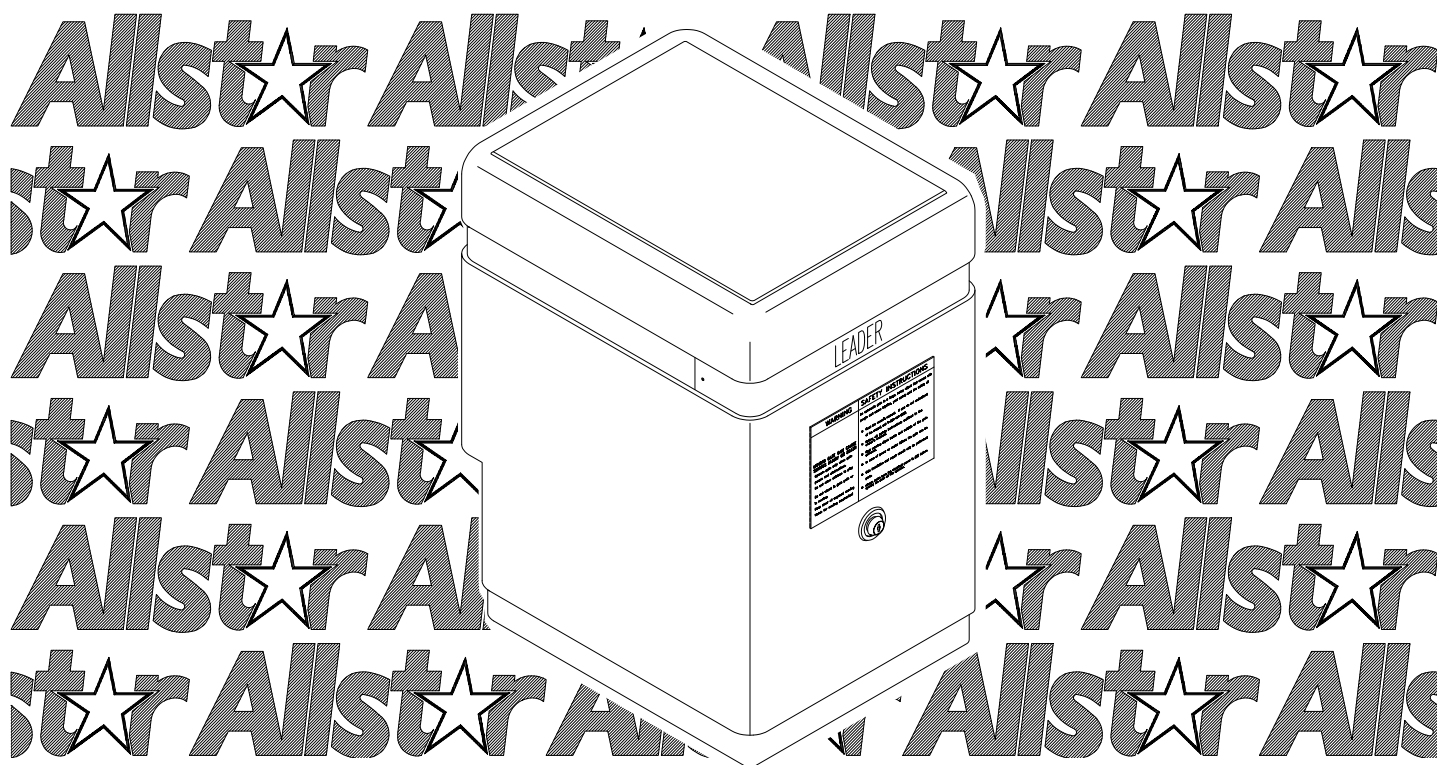


INSTALLATION AND OWNER'S MANUAL

LEADER + 1

**Model LPX1700 Series - Heavy Duty
Vehicular Slide Gate Operator**



107063



**PROVEN
CGA2K™
TECHNOLOGY!**

Serial #:
Date Installed:
Your Dealer:

As of date of manufacture meets
all ANSI/UL 325 Safety
Requirements for Vehicular gate
operators.



**READ THIS MANUAL
CAREFULLY BEFORE
INSTALLATION OR USE**

SAVE THESE INSTRUCTIONS

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WARNING HIGH VOLTAGE					<i>Figure 1</i>
ONLY A QUALIFIED TECHNICIAN SHOULD SERVICE THIS GATE OPERATOR					
PERIODICALLY TEST SENSITIVITY OF OVERLOAD				*** READ MANUAL ***	
LOG DATE OVERLOAD TEST				DATES OPERATOR SERVICED	
DATE TESTED	DATE TESTED	DATE TESTED	DATE TESTED		




READ THESE STATEMENTS CAREFULLY AND FOLLOW THE INSTRUCTIONS CLOSELY.

The Warning and Caution boxes throughout this manual are there to protect you and your equipment. Pay close attention to these boxes as you follow the manual.




WARNING

Indicates a MECHANICAL hazard of INJURY OR DEATH. Gives instructions to avoid the hazard.




CAUTION

Indicates a MECHANICAL hazard of DAMAGE to your gate, gate operator, or equipment. Gives instructions to avoid the hazard.



WARNING

Indicates an ELECTRICAL hazard of INJURY OR DEATH. Gives instructions to avoid the hazard.



CAUTION

Indicates an ELECTRICAL hazard of DAMAGE to your gate, gate operator, or equipment. Gives instructions to avoid the hazard.



The LPX1700 Vehicular Gate Operator will provide convenience and assurance to the ultimate users for many years. It is ruggedly built of the finest materials and has been thoroughly inspected and tested at the factory. It has many features that will aid in the installation and testing of the complete gate system. The LPX1700 is certified to comply with the ANSI / UL Standard for Safety 325.



NOTICE - BEFORE ATTEMPTING INSTALLATION, READ THIS MANUAL CAREFULLY SO YOU WILL BE THOROUGHLY FAMILIAR WITH THE FEATURES OF THE LPX1700 AND ITS PROPER INSTALLATION PROCEDURES.

The LPX1700 slide gate operator (models without suffix or with suffix "S" only) is designated a Class I Residential Vehicular Slide Gate Operator and is intended to operate a vehicular slide gate installed on a residential home, maximum of four single families in the dwelling, or a garage or parking area associated with such a home. The LPX1700 vehicular gate operator (again models without suffix or with suffix "S" only) is also designated as a Class II Vehicular Slide Gate Operator for use in a commercial location or multi-family home. The LPX1700 vehicular gate operator (all models) is also designated as a Class III (industrial location not intended to service the general public); and IV (secure or restricted access locations, i.e. airports and prisons). **THE LPX1700 (with appropriate suffix) MAY BE USED IN ANY CLASS LOCATION.**

Because the LPX1700 (as well as gate operators sold by other manufacturers) is designed to start and move gates weighing as much as 1700 pounds, or more, the LPX1700 is capable of producing high levels of force. It is important in the design of the total gate system that designers, installers and users be aware of the hazards that may be associated with the **IMPROPER** design, installation and use of vehicular gate systems and gate operators.

The gate operator is only one part of a complete automatic gate operating system. As each location and usage is different, a properly designed system will include all applicable safety devices.

As the designer and installer of the GATE SYSTEM, you must advise the purchaser on the proper use of the gate system.

The LPX1700 has exclusive Allstar Gate System Technology that provides several features to help reduce the hazards of your gate system.

Built-In Overload Detector Sensing System

The LPX1700 has a built-in "overload detector" that can help reduce the hazards of your gate system. This device, however, must not be considered as the primary defense system. Consider all available options (electric leading edges, photoelectric sensors, protective screen mesh, etc) to eliminate hazards in your gate system design.

The LPX1700's built-in overload detector will activate if there is an abrupt slow down in the speed of the gate operator (the operator has detected an obstruction in its path). A second detection of an obstruction before the gate reaches the Open or Close limit will result in the operator going into Alarm Mode. The alarm continues to sound warning until a fixed wire input is activated or five (5) minutes pass. The overload detection point is an adjustable setting that must be determined at the time of installation. This setting must be tested periodically to ensure proper operation. Diligent maintenance of the gate hinges and hardware will assure the most responsive operation of the overload detector. See pages 17, 18, and 25.

ADVISE THE PURCHASER TO CHECK THE SENSITIVITY OF THE OVERLOAD PERIODICALLY AND, AFTER REMOVING THE CONTROL BOX COVER, LOG THE DATE TESTED ON THE LOG LOCATED ON PAGE 2 OF THIS MANUAL (See Fig. 1, pg. 2).

PRE-INSTALLATION NOTES / 3

Connections for External Entrapment Prevention Sensors

Because all gate system installations are different, the LPX1700 motor control board terminal connections provides independent connections for Open and Close non-contact (photoelectric) and contact (edge) sensors. In this way a photoelectric sensor could be utilized to guard the gate area when closing and an edge sensor could provide the protection when opening. Depending on the particular application a combination contact and non-contact sensor protection system for the open and close directions may provide more effective entrapment protection than a single device for both directions. See pages 4, 5, 11, 12, 13, 21, 25, and 26.



NOTICE - THE IMPORTANT SAFEGUARDS AND INSTRUCTIONS IN THIS MANUAL CANNOT COVER ALL POSSIBLE CONDITIONS AND SITUATIONS WHICH MAY OCCUR DURING ITS USE, IT MUST BE UNDERSTOOD THAT COMMON SENSE AND CAUTION MUST BE EXERCISED BY THE PERSON(S) INSTALLING, MAINTAINING, AND OPERATING THE EQUIPMENT DESCRIBED HEREIN. DO NOT USE THIS EQUIPMENT FOR OTHER THAN ITS INTENDED PURPOSE - OPERATING A VEHICULAR SLIDE GATE.

Audio Alarm and Safe Secure™ Open/Close Push Button Enable-on-Alarm Only (Patent No. 6,611,205)

The LPX1700's audio alarm sounds when a second occurrence of the built-in overload activation is registered before an end limit (open or close) is reached. The Safe Secure™ Open/Close Push Button Enable-on-Alarm Only feature can be set to provide an accessible control station whose Open and Close inputs are functional in an emergency situation only. See pages 17, 19, 24, and 26. Diligent maintenance of the gate rollers and track will avoid nuisance operation of the overload detector and thereby avoid nuisance operation of the audio alarm.

SMART™ Self adjusting MAXimum Run Timer

The LPX1700 has a Self adjusting MAXimum Run Timer, SMART™. The amount of time for the first few cycles of operation are registered and averaged within the motor controller circuitry. After the first few initial cycles, if the gate is activated and no other command is given or an end limit (open or close) is not reached in the previously counted cycle time plus approximately 2 seconds, the operator will be turned off. See page 19.

Fail Secure Lock Mechanism: For the utmost in security, the LPX1700 models are equipped with a Fail Secure operator locking mechanism. The lock is active whenever the gate is not moving and must be released via the integral Solenoid Lock Lever to manually move the gate. See Page 24, Manual Operation.

Auto Re-Close : Enables an automatic continuation of the closure of the gate from a partially closed position when the close movement was interrupted by a non-contact (photoelectric) sensor or contact (edge) sensor input and the sensor is then cleared. Also allows for an automatic continuation of the opening movement from a partially open position if the open movement was interrupted by a non-contact (photoelectric) sensor and the sensor is cleared. See page 17.

Built-In Three Button Control Station: For ease of initial set-up and maintenance service, the operator's motor control board features Open, Close, and Stop buttons on the board surface.

OTHER FEATURES

Auto Close Timer: Adjustable from 2 to 60 seconds, provides an automatic closure of the gate from the full open position. See page 17.

Diagnostic LEDs on the Motor Controller Board: Provides a visual indication of the status of the gate system operation. See page 18.

Built-In Free Exit and Reversing Loop Detector Sockets: Two loop detector sockets are built-in and pre-wired to the operator's control system. See pages 7, 14, and 19.



WARNING!

TO REDUCE THE RISK OF SEVERE INJURY OR DEATH: READ AND FOLLOW ALL INSTALLATION INSTRUCTIONS AND GATE SYSTEM DESIGN PARAMETERS!

GATE SYSTEM DESIGN AND INSTALLATION SAFETY CHECK LIST:

- The LPX1700 operator may be installed on a Class I, II, III, or IV Vehicular Slide Gate. See page 3 for an explanation of the different Class locations. See the last page of this manual for the operator specifications (voltage, maximum gate weight & length etc.).
- Make sure that the gate moves freely, all rollers are in good working order, the gate does not bind in any manner and the gate area is clean and free of irregularities. **DO NOT INSTALL THE OPERATOR UNTIL ALL GATE PROBLEMS HAVE BEEN CORRECTED.**
- Do not increase the built-in overload detector adjustment to compensate for a poorly working gate. A well maintained gate will ensure easy manual operation (if needed) and maximum operator obstruction sensitivity.
- Install the operator on the inside of the property/fence line. **DO NOT** install an operator on the public side of the fence line or gate.
- Make sure the gate operating system is placed far enough back from the road to eliminate traffic backup. The distance from the road, size of the gate, usage level and gate cycle/speed must be taken into consideration to eliminate potential hazards.
- The gate must be installed in a location so that enough clearance is supplied between the gate and any adjacent structures when opening and closing to reduce the risk of entrapment.
- For ORNAMENTAL “GRILL TYPE” GATES (or any other type of open gate where a handhold or toehold may be achieved), injuries may occur when people put arms through the openings or children

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Figure 2

“ride” the gate by standing on the bars and holding on to the gate. **THIS POTENTIAL HAZARD CAN BE MINIMIZED BY INSTALLING A MESH SCREEN ON THE GATE.** It is strongly recommended that the entire gate and adjacent fence area the gate covers when open be meshed or guarded such that a handhold or toehold cannot be achieved. At a minimum all openings on a horizontal slide gate must be guarded or screened from the bottom of the gate to a minimum of 4 feet above the ground to prevent a 2-1/4 inch (57.15 mm) sphere from passing through the openings anywhere in the gate, and in that portion of the fence the gate covers when in the open position. See Figure 2.

- All LPX1700 gate operators are **VEHICULAR GATE OPERATORS** and as such are **NOT INTENDED FOR PEDESTRIAN** traffic. In installations where pedestrian passage through the fence is necessary, install a pedestrian access opening. The pedestrian access opening shall be designed to promote pedestrian usage. Locate the vehicular gate and the pedestrian access opening such that persons will not come into contact with the vehicular gate during the entire path of travel of the vehicular gate. See page 25 for additional information.
- Install leading edge detectors and/or photocells in your design to protect system entrapment zones. TYMETAL can provide these products for incorporation in your gate system design.
- Use the illustration at left (Figure 3) and the information and diagrams on pages 11, 12, and 13 to minimize the risk of injury in your design of the swing gate operator system. **IDENTIFY THE ENTRAPMENT ZONES AND PINCH POINT AREAS IN YOUR GATE.** Design the gate installation to minimize the risk of entrapment in these areas. Install additional safety equipment such as four wire edges and photocells to further minimize risk. All entrapment zones are required to be protected.
- **Entrapment Zones:** Design in personal entrapment protection devices to protect people from entrapment in the zones shown in Figure 3 at left and the information and diagrams on pages 11, 12, and 13. Install vertical posts with gate edges attached on both sides of the gate to prevent body entrapment.

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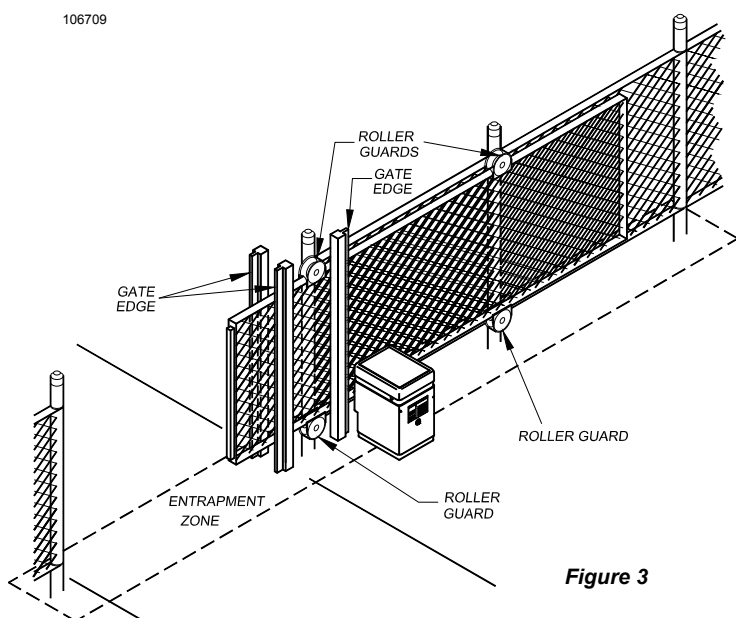


Figure 3



ALL APPROPRIATE SAFETY FEATURES MUST BE INCORPORATED INTO YOUR GATE SYSTEM.

- **Pinch Points:** Use protective measures (guards, padded edges, etc.) to protect people from the pinch points shown in Figure 3 at left and the information and diagrams on pages 11, 12, and 13. Attach roller guards in cantilevered gate systems to minimize the risk of hands being caught between the top of the gate and the roller.
- DO NOT consider the built-in overload detector as the primary defense system. Consider all options in the gate system design.
- DO NOT connect any auxiliary equipment to the LPX1700 operator (detectors, card readers, etc.) until the gate operator and all its functions are fully tested. Only connect one device at a time and ensure its proper function(s) before moving on to the next device.
- DO NOT locate any control device (key switch, switch, key pad, card reader, etc.) in a position where it may be activated by a person reaching through the gate or while touching the gate in any manner. Locate all control devices a minimum of 10 feet from the gate when opened or closed.
- Outdoor or easily accessible controls must be of the security type to prevent unauthorized use of the system.
- Install all devices that will Open, Close or Stop the gate in such a manner that THE GATE WILL BE IN FULL VIEW WHEN THE DEVICE IS OPERATED.
- Before activating the "timer to close" option of the LPX1700, ENSURE THE PERSONAL ENTRAPMENT PROTECTION DEVICES (operator reversing feature, edges, photocells) ARE OPERATING and install VEHICLE DETECTOR LOOPS AND VEHICLE DETECTORS for protection of user vehicles. Read the manual for information on the installation of these devices. IF VEHICLE DETECTOR LOOPS HAVE BEEN INSTALLED TO PREVENT THE GATE FROM CLOSING ON A VEHICLE, INSTRUCT THE USER TO PERIODICALLY CHECK THE OPERATION OF THE DETECTORS.
- USE EXTREME CAUTION WHEN WORKING NEAR THE BELTS AND PULLEYS when the operator cover is removed. Apply power to the operator only when instructed to do so.
- When the outer cover of the LPX1700 and the handy box covers are removed, high voltage will be exposed. EVEN IF THE RED POWER LIGHT IS NOT LIGHTED, HIGH VOLTAGE AC IS STILL PRESENT. NEVER LEAVE THE INSTALLATION WITH THE HANDY BOX OR OUTER COVERS REMOVED.
- ALWAYS TURN OFF THE POWER BEFORE ATTEMPTING SERVICE OF EITHER THE ELECTRICAL OR MECHANICAL SYSTEMS.
- SECURELY ATTACH THE WARNING SIGNS provided with the LPX1700 on the gate (one on the outside and one on the inside) where they can be seen by persons in the area of the gate to alert them of automatic gate operation. (If the user refuses to have the warning signs installed, it is recommended that you note this on your records and have the user sign a disclaimer.) See Figure 4.

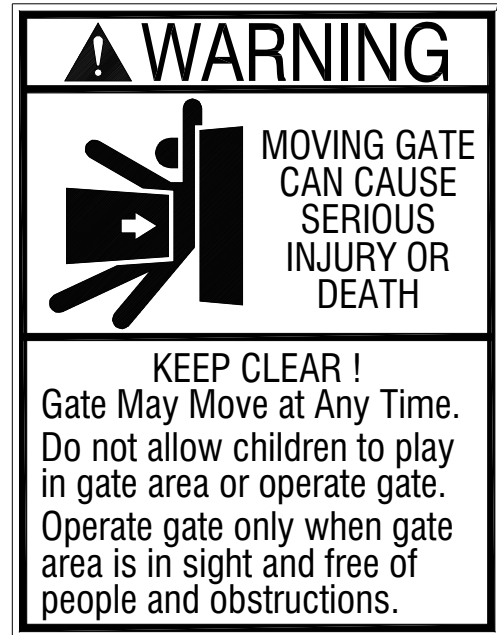


Figure 4

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AS THE INSTALLER YOU ARE RESPONSIBLE FOR:

- 1 ASSURING THAT THE GATE AND OPERATOR SYSTEM, WHEN FULLY INSTALLED AND OPERABLE, COMPLIES WITH ALL APPLICABLE REQUIREMENTS OF UL325: STANDARD FOR SAFETY FOR DOOR, DRAPERY, GATE, LOUVER AND WINDOW OPERATORS AND SYSTEMS.
- 2 ASSURING THAT THE OWNER/END USER OF THE SYSTEM UNDERSTANDS ITS BASIC OPERATION AND SAFETY FEATURES. IN PARTICULAR, BE SURE THE OWNER/END USER UNDERSTANDS THE LOCATION AND OPERATION OF A MANUAL DISCONNECT (WHERE PROVIDED) OR HOW TO OPERATE THE GATE .
- 3 YOU ALSO HAVE THE PRIMARY RESPONSIBILITY OF INSURING THAT ALL POSSIBLE OPERATIONAL HAZARDS HAVE BEEN CONSIDERED AND ELIMINATED. YOU MUST ADVISE AND WARN THE PURCHASER AND THE ULTIMATE USER OF ANY HAZARDS THAT YOU HAVE NOT BEEN ABLE TO ELIMINATE.
- 4 POINTING OUT TO THE OWNER/END USER OF THE GATE SYSTEM THAT CHILDREN OR PETS ARE NOT ALLOWED TO PLAY ON OR NEAR THE GATE, FENCE OR ANY PART OF THE SYSTEM, AND THAT THE SAFETY INSTRUCTIONS SUPPLIED WITH THIS OPERATOR AND THEIR IMPLEMENTATION ARE THE RESPONSIBILITY OF THE OWNER/END USER.
- 5 LEAVING THE INSTALLATION AND MAINTENANCE MANUAL FOR THIS OPERATOR AS WELL AS ANY ADDITIONAL SAFETY INFORMATION SUPPLIED WITH THIS OPERATOR OR OTHER COMPONENTS OF THE GATE SYSTEM WITH THE OWNER/END USER.
- 6 NOT PLACING IN SERVICE THIS OPERATOR IF YOU HAVE ANY QUESTIONS ABOUT THE SAFETY OF THE GATE OPERATING SYSTEM. CONSULT THE OPERATOR MANUFACTURER.

LPX1700	WIRE SIZE and RECOMMENDED MAXIMUM RUN LENGHTS							
Unit Voltage & Phase	#16 Ga.	#14 Ga.	#12 Ga.	#10 Ga.	#8 Ga.	#6 Ga.	#4 Ga.	#2 Ga.
120 V, 1P	N/A	N/A	90 Feet	150 Feet	240 Feet	380 Feet	600 Feet	970 Feet
208 V, 1P	115 Feet	200 Feet	315 Feet	500 Feet	775 Feet	1250 Feet	1950 Feet	3000 Feet
240 V, 1P	140 Feet	225 Feet	360 Feet	575 Feet	900 Feet	1450 Feet	2200 Feet	>2200 Feet
208 V, 3P	275 Feet	425 Feet	700 Feet	1075 Feet	1700 Feet	2500 Feet	>2500 Feet	>2500 Feet
240 V, 3P	325 Feet	525 Feet	825 Feet	1325 Feet	2100 Feet	>2500 Feet	>2500 Feet	>2500 Feet
480 V, 3P	1000 Feet	1600 Feet	2500 Feet	>2500 Feet	>2500 Feet	>2500 Feet	>2500 Feet	>2500 Feet



operator from the breaker panel. Refer to the table below to determine the correct wire size. For distances greater than 1600', it is recommended that your local utility be contacted to install a service feeder for the installation.

Wiring from external controls such as guard shack, telephone entry, keypad or card reader systems should be brought to the operator by a conduit separate from the High Voltage AC electrical hookup. Low voltage control wires **MUST NEVER** be routed in the same conduit as the High Voltage AC power wires. For conduit placement see Figures 5, 6, & 7. Always consult and follow all local electrical codes.

MAKE SURE POWER IS OFF BEFORE WIRING OR SERVICING THE OPERATOR.

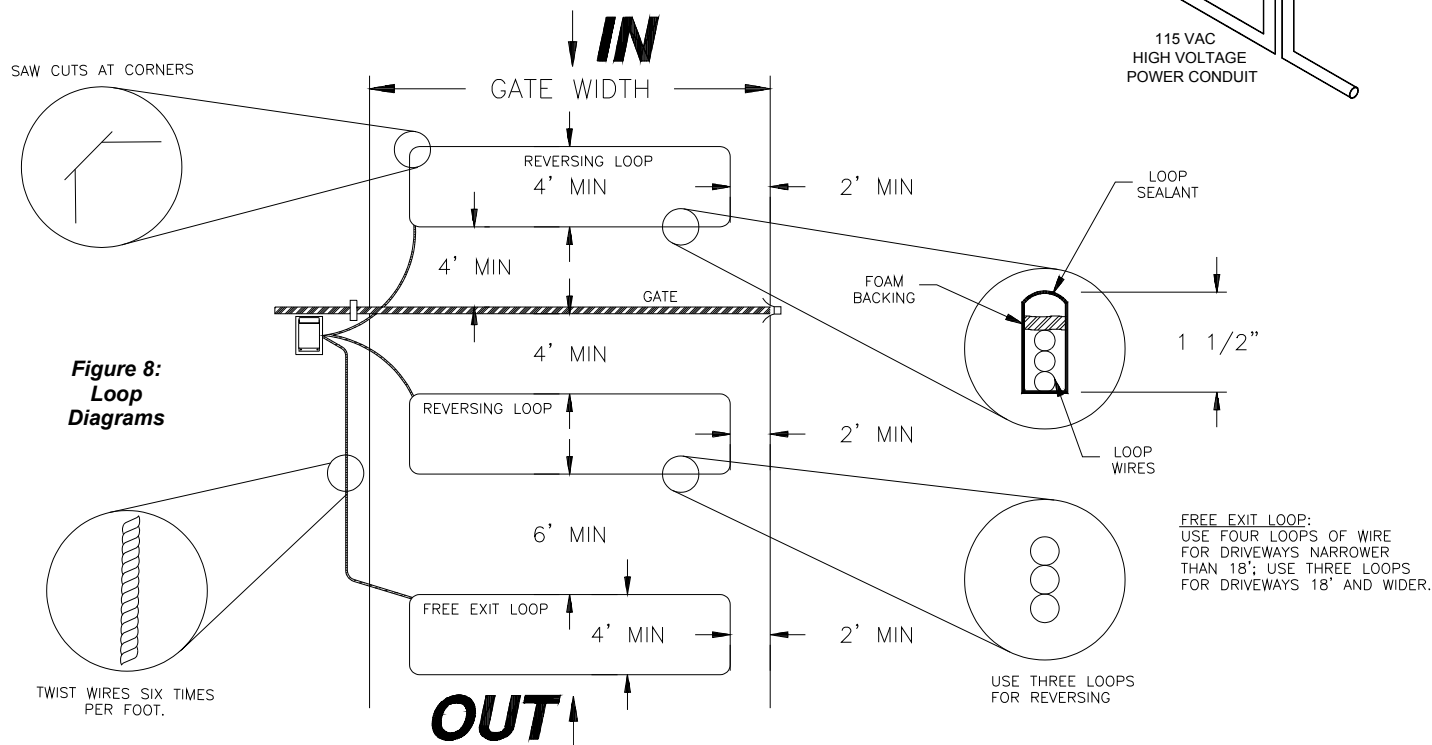
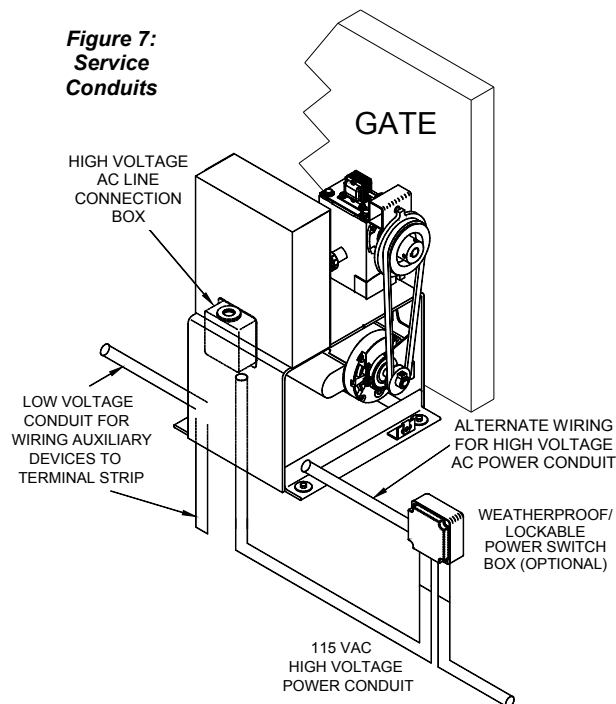


WARNING!

RISK OF ENTRAPMENT

Vehicle detector loops will not detect smaller vehicles such as motorcycles, golf carts, bicycles, or pedestrians. Photoelectric detectors, edge detectors and separate pedestrian access must be installed.

**Figure 7:
Service
Conduits**



PLACING THE VEHICLE DETECTOR LOOPS

Proper placement of vehicle detector wire loops is critical if the loops are to provide satisfactory, extended service. The most important considerations are: 1) Proper wire type and, 2) Good, tight connections from the loop to the loop terminating connector. When a "Stand Alone" vehicle detector is used, the detection loop is connected to the wire harness on the detector itself. (See WIRING VEHICLE DETECTORS, Page 14.)

The LPX1700 provides for the use of two loop systems: 1) A "reversing" loop that will prevent the gate from closing on a vehicle that has stopped in the path of the gate and, 2) A "free exit" loop that will open the gate by detecting a vehicle which is inside the gated area

and wishes to leave. If "free exit" detection is not desired, this loop will not be needed. Note the "reversing" loop is normally made up of two loops connected to one detector. See Figure 8 above.

Two different types of installations will usually be encountered: 1) If the driveway material is already in place, saw cuts will be needed to accommodate the loop wires.

2) For loops where the paving material will be installed after the loop is positioned, it is necessary that the loop wires be placed in Schedule 40 PVC pipe to maintain uniform loop spacing with respect to the surface of the pavement. The loop should be placed 1.5 inches below the surface of the pavement and at least 2" above any reinforcing steel. The lead-in wires need not be in PVC, but must have at least six (6) twists per running foot.



For a saw-cut installation, observe the method recommended in Figure 8 for the corners. When installing a two-loop reversing system it is best to bring the twisted lead wires from each loop to the operator so that the loops may be properly phased. The saw cut must be to a depth of 1.5 inches, clean and with no sharp corners. After placing the wires, it is essential that the wires be held tightly in place by the foam backing and that no voids exist that can collect water which might freeze and push the loop wires out of the slot. The sealant used should match the paving material and should not be hard setting. The lead-in wires must have at least six (6) twists per foot.

NO SPLICES ARE ALLOWED IN THE LOOP OR THE LEAD-IN WIRE TO THE FIRST JUNCTION BOX. Above ground splices may be used providing the wire is twisted, soldered and moisture sealed. For best long term results, do not use wire nuts anywhere in the loop system. For connections to the loop detector, gas tight crimp type terminals should be used, and soldered if possible.

THE WIRE USED FOR THE LOOPS MUST BE HEAT AND WATER RESISTANT. CROSS-LINK POLYETHYLENE INSULATED, TYPE XLPE OR RHW IS BEST. U.S.E. IS ALSO SATISFACTORY. DO NOT USE PVC INSULATED WIRE. WIRE SIZE SHOULD BE #16 GA STRANDED OR LARGER.



C: INSTALLING THE OPERATOR

TOOLS REQUIRED

The following tools and materials are required for proper installation of the operator:

1. Two 3/4" wrenches. (For tightening hex nuts on the chain take-up bolts.)
2. Chain cutting tool. (For adjusting chain length.)
3. Wire cutter, stripper and crimping tools. (For attaching accessory equipment to the control box barrier strip.)
4. Standard screwdriver. (For junction box face plate.)
5. Very small standard screw driver. (For adjusting controller board trimmer potentiometers.)
6. Phillips head screwdriver. (For control box face plate.)
7. Electric arc welder or an electric drill with a 3/8" bit. (For attaching chain brackets to gate.)
8. Several feet of 18 AWG or 22 AWG insulated multi-strand electrical wire. (For attaching accessory equipment to the control box barrier strip.)
9. Four 1/2" anchor bolts with hex nuts, flat washers and lock washers. (For attaching the operator to the concrete pad.) Additional flat washers may be required as leveling shims (see Page 9).
10. 1/2", 9/16" & 5/8" wrenches for various fasteners.

UNPACKING CHECKLIST

The following is a check list of the various parts included with the LPX1700 operator:

1. (1) LPX1700 Slide Gate Operator w/Cover
2. (2) Gate Warning Signs
3. (1) Installation Manual
4. (2) End Chain Brackets
5. (1) Chain Take-up Bolt Kit
6. (25 ft) #41 Chain
7. (2) Master Links



ATTACHING THE CHAIN BRACKETS and PLACING THE LPX1700 OPERATOR

The chain brackets provided with the LPX1700 operator are mounted on each end of the gate with the centerline of the slot 8" above the top of the operator pad. You will normally require a welder, or an electric drill with a 3/8" bit, for attaching the chain brackets to the gate. See Figures 9 and 10.

From the center of the slot in the bracket, run a string line taught from one chain mounting bracket to the other. Place the operator on the new pad or existing concrete base and position the unit so that the string is centered on the primary drive sprocket, centered on the pad from left to right, and parallel with the gate frame as shown in Figure 10a. Using the operator as a template, mark and drill the appropriate holes for the required anchor bolts (four [4] 1/2" anchor bolts are required). Install the anchor bolts per the bolt manufacturers instructions.

Re-sit the operator over the anchor bolts, making sure the operator is sitting level. If any corners of the operator are resting above the pad,

place flat washers as shims between the operator and concrete pad (around the anchor bolts). Place the flat washers, lock washers and nuts on the anchor bolts and tighten down the operator securely.

Attach one end of the chain to the gate and thread the other end through the idler pulleys and drive sprocket. Attach the free end to the bracket on the opposite end of the gate and tension the chain. See Figs. 9 & 10. Do not over-tension the chain.

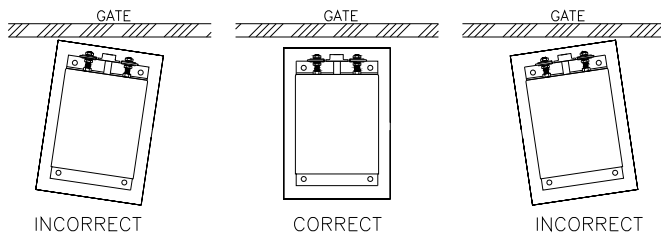


Figure 10a: Parallel Placement

ELECTRICAL POWER CONNECTIONS

Ideally, the conduit containing the hook-up wires should exit the concrete pad under the operator. There is a 3" gap in the front of the

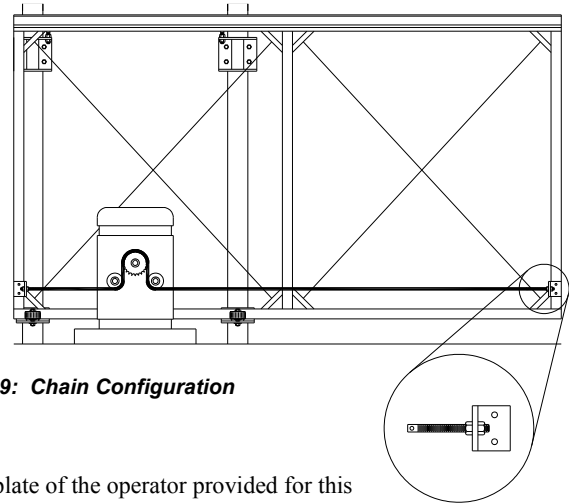


Figure 9: Chain Configuration

bottom plate of the operator provided for this purpose. Run flexible conduit from the point where the conduit exits the pad and attach it to the bottom of the High Voltage AC Line Connection box under the operator's control box. Review Figures 5 and 7, pages 6 and 7. If the hook-up exits the pad external to the operator, there's a 7/8" diameter hole in each side of the frame near the front of the operator. Connect the conduit to either hole and cut a small slot in the 1-1/2" high skirt around the base of the cover. This will allow the cover to fit down flush with the conduit in place. Review Figure 7, Page 7. Remove the High Voltage AC Line Connection box face plate. Using the wire nuts provided, attach the electrical service lead wires to the electrical hook-up wires in the connection box per the wiring diagram on page 23.

NOTE: The LPX1700 control board comes equipped with a built-in surge protection which MAY prevent damage to the controller board in the event of a nearby lightning strike or a surge in the power lines. For the surge protector to function, and as a general precaution, the operator must be properly grounded.

ADDITIONAL LIGHTNING PROTECTION

For those areas where a high probability of ground lightning strikes exists (Florida, Georgia, etc.), additional lightning protection should be installed in the LPX1700. Although it may not be possible to protect against all strikes, additional protection will substantially reduce the occurrence of lightning damage. Industry lightning data indicates that the most strikes enter an appliance through the power lines. Effective protection requires that the surge current from the lightning strike be shunted to ground. This must be done without raising the potential of the circuitry in the LPX1700, with respect to ground, to the levels that will damage the solid state circuitry. Lightning strikes generate enormous currents for very short periods of time. Unfortunately, the period of time is long enough to damage solid state components and many times, other components. The key to success is a very low resistance path from the surge protector to ground for these currents in addition to a surge protector that will act fast enough to protect the solid state circuitry. Several manufacturers offer suitable surge protectors.



WARNING!

RISK OF ELECTROCUTION

Do not begin the electrical connection procedures until the power is turned off at the circuit breaker.



WARNING!

TO REDUCE THE RISK OF DAMAGE DUE TO LIGHTNING, ENSURE A SOLID GROUND FROM THE LPX1700 GROUND WIRE IN THE SERVICE ENTRANCE 4 x 4 HANDY BOX TO THE ELECTRICAL SERVICE GROUND OR TO A EARTH GROUND STAKE NEAR THE LPX1700.

10 | C: INSTALLING THE OPERATOR



CONTROL AND ACCESSORY DEVICES WIRING

IMPORTANT - remove power from the operator before attempting to connect an accessory device or control station.

With the exception of the actual physical loop wires, all accessory equipment is hooked-up to the 26 position terminal connector block located on the operator motor control board. See Figure 11. There are no installer connections inside the control box. **NO ACCESSORY EQUIPMENT SHOULD BE INSTALLED IN THE CONTROL BOX!**

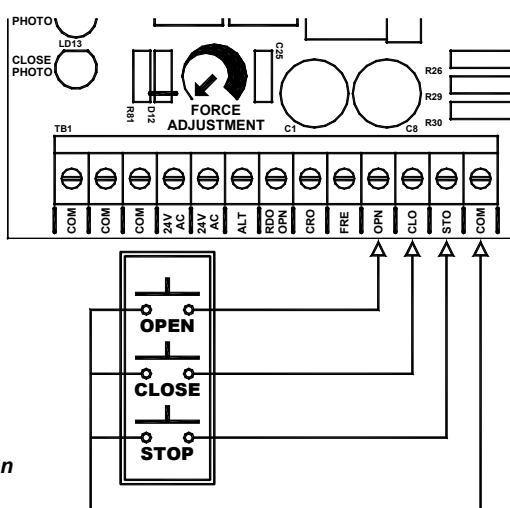
If local electrical codes permit, use the operator's bottom plate for mounting accessory components. Otherwise, install the accessory equipment in an appropriate electrical box. The thirteen (13) command inputs for the LPX1700 require a switch closure to COMMON of less than 100 OHMS resistance and for more than 100 milliseconds duration. Two of the inputs - ALTERNATE and RADIO OPEN - are momentary inputs where the signal must be released and re-entered to be recognized. The remaining inputs can be continuous signals. Each terminal position is printed with an abbreviated description of the function the input or output, again see Figure 11. For the full description of the function of each terminal position, see the Reference Chart on Page 17 and 18.

WIRING A 3-BUTTON STATION

The LPX1700 motor control board has a built-in three button station (Open, Close, Stop) on board. See Figure 12 for instructions on wiring an external 3-button station if desired.

NOTE: The STOP button is configured from the factory for normally OPEN

Figure 12:
Wiring 3 Button Station



WIRING 3-BUTTON STATION WITH NORMALLY OPEN STOP

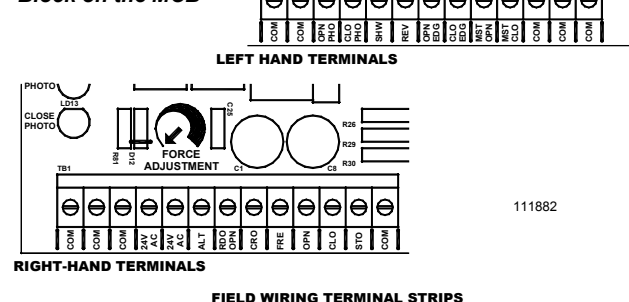
operation and can be field set for Normally CLOSED operation if desired. See Page 15 for the explanation of the LPX1700 switch settable options.

BI-PARTING (Master/Slave, Primary/Secondary) APPLICATION

In a bi-parting application, two operators are required, one operating in a left-hand mode, the other in a right-hand mode (see Left Hand and Right Hand Installations on Page 15). Both operators must be wired for AC power (as previously described) but share a common set of input controls. In general, all of the preceding instructions concerning installation of individual operators can be followed in a bi-parting application except the following:

Choose one of the operators to be the Master (Primary) and the other to be the Slave (Secondary). Route all of the control wiring to the Primary operator first. This will prevent grounding loop problems. All accessory equipment should also be wired to the Primary operator.

Figure 11:
26 Position
Terminal Connector
Block on the MCB



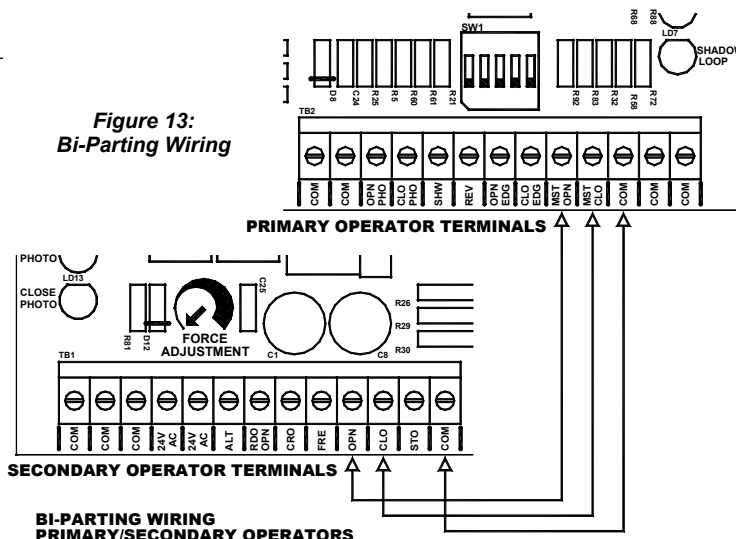
Connect terminal MST OPN (MASTER OPEN) on the Primary operator to terminal OPN (OPEN) on the Secondary operator. Connect terminal MST CLO (MASTER CLOSE) on the Primary operator to terminal CLO (CLOSE) on the Secondary operator. Connect a COM (COMMON) terminal on the Primary operator to a COM (COMMON) terminal on the Secondary operator. Use conduit SEPARATE from AC power service. See Figure 13 for the correct wiring.

Lastly, set the Switch Selectable Option SW1 (Switch 5, Page 15) in

NOTICE: A separate High Voltage AC electrical connection is required for each operator in a bi-parting installation.



Figure 13:
Bi-Parting Wiring



**BI-PARTING WIRING
PRIMARY/SECONDARY OPERATORS**

the Secondary operator to the ON position and ensure Switch Selectable Option SW1 (Switch 5) in the Primary operator is set to the OFF position. See Page 15 for location and further explanation of the Switch Selectable Options.



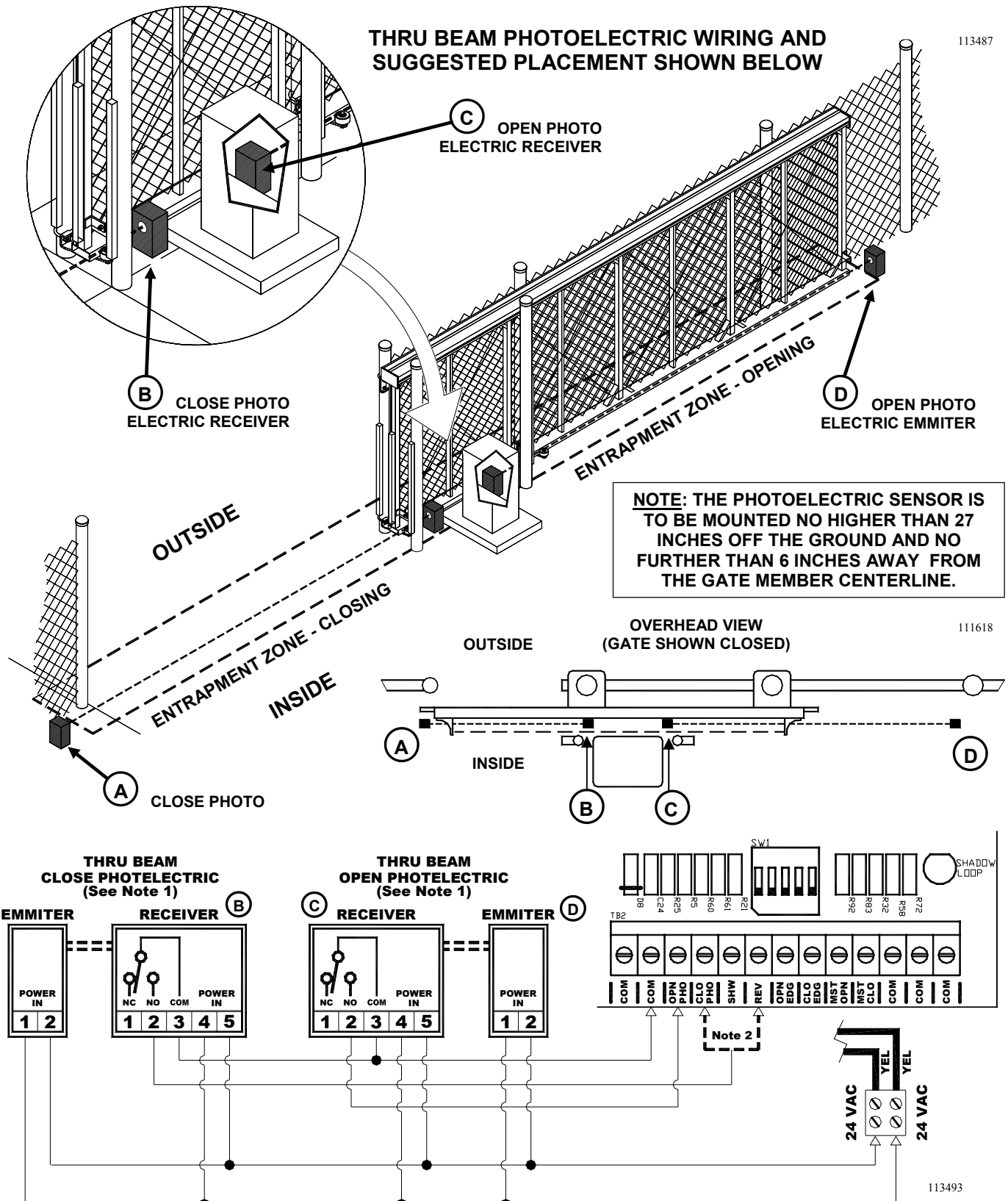
WARNING!

**IMPROPER WIRING COULD CAUSE
ELECTROCUTION OR DAMAGE TO CIRCUITRY.
FOLLOW LOCAL BUILDING AND ELECTRICAL
CODES.**



C: INSTALLING THE OPERATOR / 11

WIRING AND SUGGESTED PLACEMENT OF OPTIONAL NON-CONTACT SENSOR (PHOTOELECTRIC) SECONDARY ENTRAPMENT PROTECTION DEVICES



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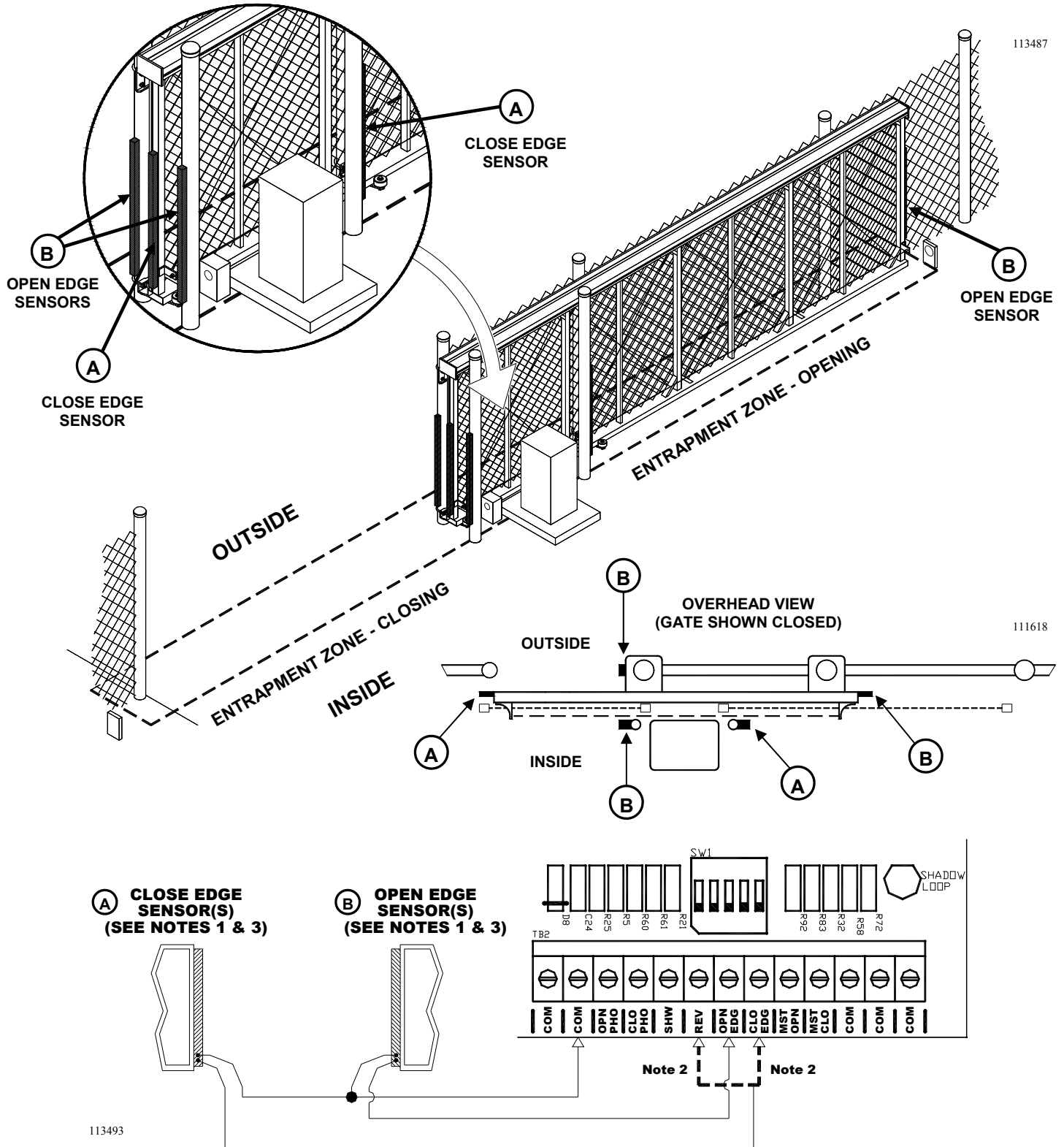


1 - USE A UL RECOGNIZED COMPONENT THAT COMPLIES WITH CURRENT UL 325 REQUIREMENTS, TERMINAL NUMBERS ABOVE REPRESENT MODEL E3K, WIRING FOR OTHERS SIMILAR

2 - SELECT TERMINAL BASED ON FUNCTION DESIRED. SEE TERMINAL STRIP REFERENCE CHART



WIRING AND SUGGESTED PLACEMENT OF OPTIONAL CONTACT SENSOR (ELECTRIC EDGE) SECONDARY ENTRAPMENT PROTECTION DEVICES



- 1 - USE A UL RECOGNIZED COMPONENT THAT COMPLIES WITH CURRENT UL 325 REQUIREMENTS, AN EDGE SENSOR THAT ACTIVATES ON THREE (3) SIDES SHOULD BE USED
- 2 - SELECT TERMINAL BASED ON FUNCTION DESIRED, SEE TERMINAL STRIP REFERENCE CHART
- 3 - MULTIPLE EDGE SENSORS MAY BE CONNECTED IN PARALLEL

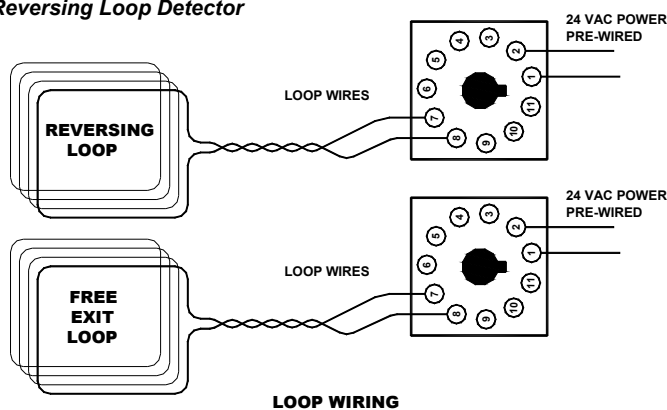
14 | C: INSTALLING THE OPERATOR



INSTALLING AND WIRING VEHICLE DETECTORS

REVERSING LOOP VEHICLE DETECTOR: If a Reversing Loop Vehicle Detector is to be a part of this installation, start with this first. The Reversing Loop socket is pre-installed in the rear of the control panel and is the socket closest to the operator side wall. The actual loop is installed in the concrete or asphalt surface in accordance with the manufacturer's instructions and the information outlined earlier in this manual (see Page 7). Connect the wires from the actual Reversing loop to Terminals 7 and 8 on the Reversing Loop socket, see Figure 14. If employing two (2) Reversing Loops as shown in the diagram on Page 7, and are connecting the loops to the same Loop Detector, wire in series as shown in Figure 14a. Install a 24 VAC powered, 11 pin (round configuration) vehicle detector module into the detector socket. The vehicle detector module must have a relay contact output.

Figure 14: Wiring A Free Exit or Reversing Loop Detector



FREE EXIT VEHICLE DETECTOR: If also employing a Free Exit Loop Vehicle Detector, make connections to this socket now. The Free Exit Loop socket is pre-installed in the rear of the control panel and is the socket towards the middle. The actual loop is installed in the concrete or asphalt surface in accordance with the manufacturer's instructions and the information outlined earlier in this manual (see

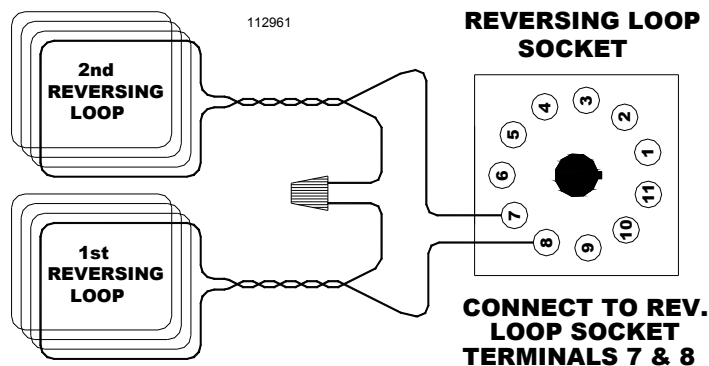


Figure 14a: Connecting Loops in Series

Page 7). Connect the wires from the actual Free Exit loop to Terminals 7 and 8 on the Free Exit Loop Socket, see Figure 14. Install a 24 VAC powered, 11 pin (round configuration) vehicle detector module into the detector socket. The vehicle detector module must have a relay contact output.

Set the frequency and sensitivity switches on the Loop Detector Module(if any) according to the loop detector manufacturer's instructions.

WIRING A RADIO RECEIVER

Radio receivers must be of the 4-wire connection hook-up type (where the power input for the receiver is separate from the receiver's output connection). This is necessary as the LPX1700 control board 24 VAC is isolated from chassis ground. A 3-prong receiver **CANNOT** be installed in association with the LPX1700 control board.

Connect the receiver's two wires for power to terminals 24 VAC and COM (Common). Connect one of the two wires for the relay to terminal RDO OPN (Radio Open) or terminal ALT (Alternate) depending on the function desired (see descriptions on the chart on page 20 and 24) and the other wire to terminal COM (Common) on the LPX1700 motor control board terminal connector block. See Figure 15 for connecting a four wire radio receiver.

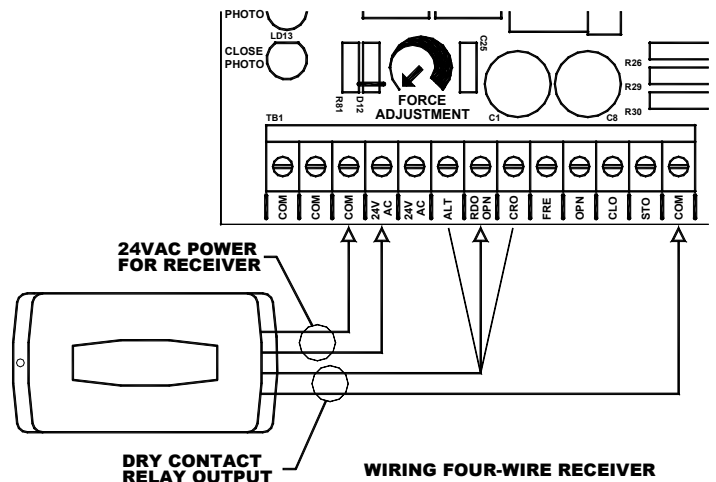


Figure 15: Wiring 4-Wire Receiver

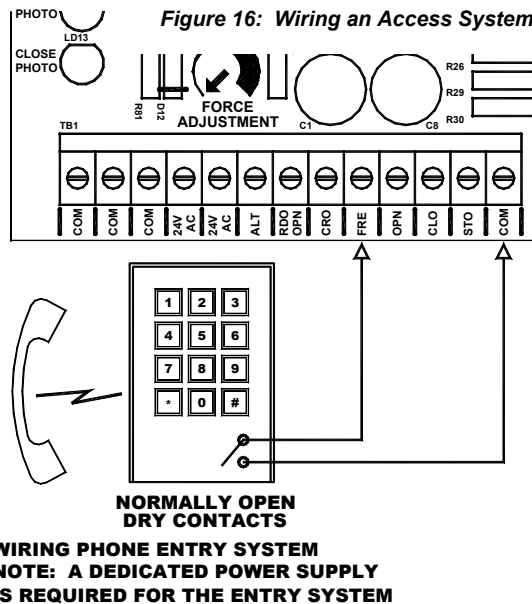
WIRING A KEYPAD OR TELEPHONE ENTRY SYSTEM

Install according to the manufacturer's instructions. Follow Figure 16, next page for connections to the LPX1700.



WARNING!

RISK OF ENTRAPMENT!
TO REDUCE THE RISK OF INJURY OR DEATH: LOCATE KEYPAD, CARD READER, KEY SWITCH OR SIMILAR ENTRY DEVICES IN A LOCATION WHERE A USER CAN NOT REACH THROUGH THE GATE OR FENCE TO ACTIVATE THE GATE OPERATOR. THE RECOMMENDED DISTANCE BETWEEN THE GATE OR FENCE AND ACCESSORY SWITCH IS 10 FEET.



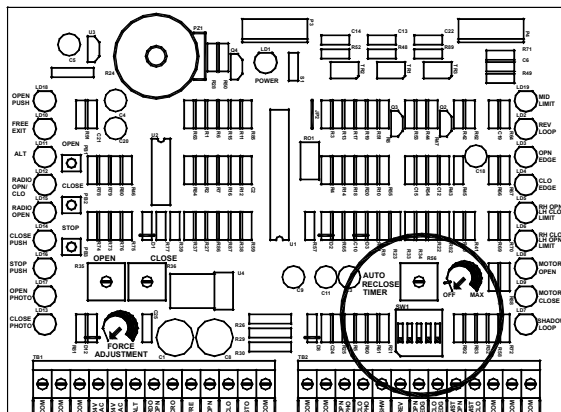
SETTING THE SWITCH SELECTABLE OPTIONS

There are five (5) option selection switches on the LPX1700 motor control board that result in five (5) switch selectable options, see Figure 17. The switches are contained in a 5-pole dip switch package at the bottom right of the motor control board. The sections that follows describes each of the following options they select:

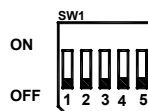
- Switch 1 - Safe Secure Operation Mode (Patent No. 6,611,205)
- Switch 2 - Right-hand / Left Hand Installation
- Switch 3 - Normally Open / Normally Closed Stop Input
- Switch 4 - Pre-Move Delay and Alarm-In-Motion
- Switch 5 - Slave Operation

Safe Secure™ OPEN/CLOSE PUSH BUTTON ENABLE/DISABLE

Switch SW1 (Switch 1) controls the Open/Close Input Enable/Disable



**FIGURE 17:
LOCATION OF
SELECTABLE SWITCHES**



Feature.

SWITCH 1 OFF: Activating the Open or Close buttons the gate will open or close fully. Activation of the Open while the gate is closing will cause it to re-open. Activation of the Close while the gate is opening has no effect. Continuous activation of an opposing button while the gate is on a limit will prevent operation in that direction. Continuous signal required to move the gate when in the alarm mode.

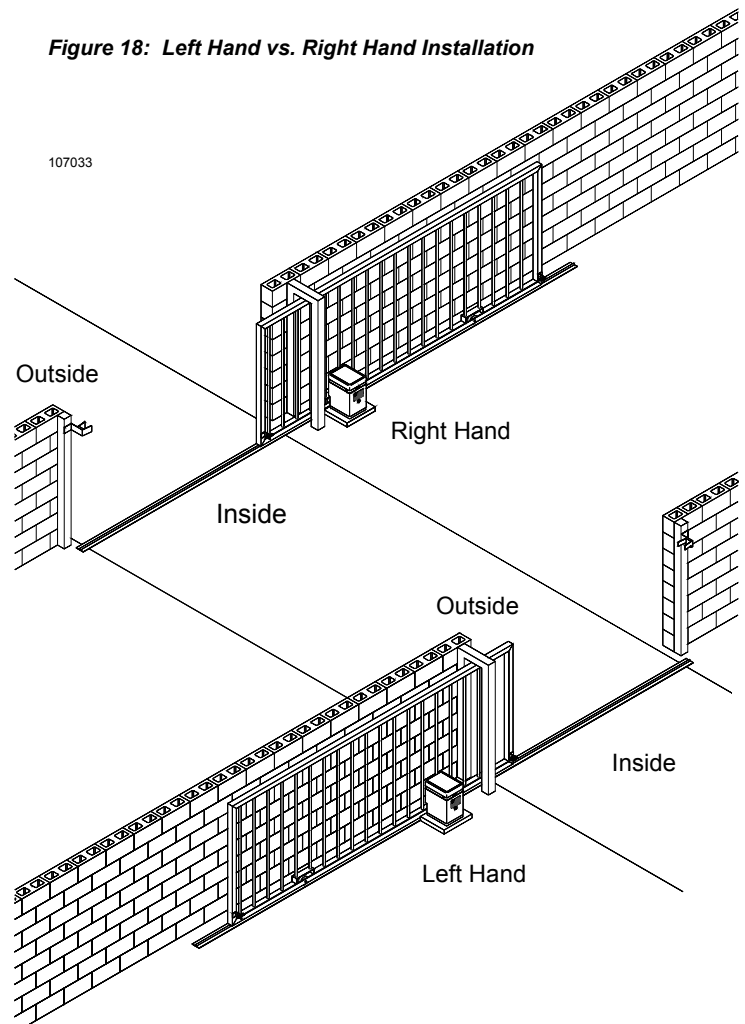
SWITCH 1 ON: Gate does not respond to the Open or Close pushbutton input when in the normal mode. Continuous signal required to move the gate when in the alarm mode. This patented feature allows a three button station to be mounted in a safe yet possibly unsecured location as the OPEN and CLOSE buttons will only be active when in the alarm mode. STOP is always active.

LEFT- OR RIGHT-HAND INSTALLATIONS

The LPX1700 operator can be quickly and easily configured for left-hand or right-hand gate installations, Selectable Switch SW1 (Switch 2) controls this option. On a normal drive installation, when standing inside the gate and facing outwards, if the operator is on the right side of the gate, it's a right-hand installation. If the operator is on the left side of the gate, it's a left-hand installation. See Figure 18 for a pictorial of a right-hand and left-hand installations.

SWITCH 2 OFF: The operator is configured for Right-hand operation, this is how the operator is shipped from the factory.

Figure 18: Left Hand vs. Right Hand Installation





SWITCH 2 ON: The operator is configured for Left-hand operation.

The motor Open and Close outputs and the open and close limit inputs are reversed by the control logic so rewiring is not necessary.

NORMALLY OPEN / NORMALLY CLOSED STOP

Selectable Switch SW1 (Switch 3) allows a Normally Open (where applicable/desired) or a Normally Closed Stop button (mandatory when selected) to be connected to the motor control board terminal block.

SWITCH 3 OFF: A Normally Open Stop input is connected to the motor control board terminal block (where applicable/desired), this is how the operator is shipped from the factory.

SWITCH 3 ON: A Normally Closed Stop input MUST be connected to the motor control board terminal block for normal operation of the gate operator.

PRE-MOVE DELAY/ALARM AND ALARM IN MOTION

Selectable switch SW1 (Switch 4) controls the Pre-Move Delay / Alarm and Alarm -In-Motion Option.

SWITCH 4 OFF: The operator functions normally, alarm only sounds if there is two sequential activations of the inherent overload device, see pages 3, 17, 18, and 24.

SWITCH 4 ON: There is a 3 second pre-move delay before the gate starts movement in any direction (except after an obstruction reversal). In addition, the on-board alarm will sound during the pre-move delay time and when the gate is in motion.

Please note that the pitch of this selectable alarm is different than the alarm that sounds after two sequential activations of the inherent overload device, see pages 3, 17, 18, and 24.

BI-PARTING (Master/Slave, Primary/Secondary) CONFIGURATION

Switch SW1 (Switch 5) controls the Master/Slave (Primary/Secondary) Terminals (MST OPN/ MST CLO) configuration settings. The setting is used when two operators are to be used in a Bi-Parting (Right-hand/ Left-hand) application, see page 10.

SWITCH 5 OFF: The operator is configured for a stand alone operation or for Master (Primary) operation.

SWITCH 5 ON: The operator is configured for a Slave (Secondary) operation, the Auto ReClose function is disabled and all other inputs will function normally (safety inputs).

SETTING THE LIMIT SWITCHES

Before turning on the main power, set the limit switches which are located on top of the frame, between the control box and the reducer gearbox. See Figure 19. In a right-hand installation, the switch nearest the control box is the open limit switch. In a left-hand installation, the switch closest to the gearbox is the open limit switch.

Manually push the gate all the way open. Press down on the spring loaded detent plate and rotate the open limit nut toward the open limit switch contactor until you hear the open limit switch click. Rotate the limit nut two more slots to give the operator time to stop the gate after the limit switch has been activated. Release the detent plate and make sure it drops into the slots on both limit nuts.

Manually push the gate all the way closed. Depress the detent plate and rotate the close limit nut clockwise until the close limit switch clicks. Again rotate the close limit nut two more slots. Release the detent plate and make sure both limit nuts are firmly seated.

The limit switches are now roughly adjusted. If the gate should stop short of fully opened or closed, or if it bangs against the end stops during operation, the limit switches can be fine-tuned after the operator is powered up. (See FINAL SETTING OF THE LIMIT SWITCHES, page 18).

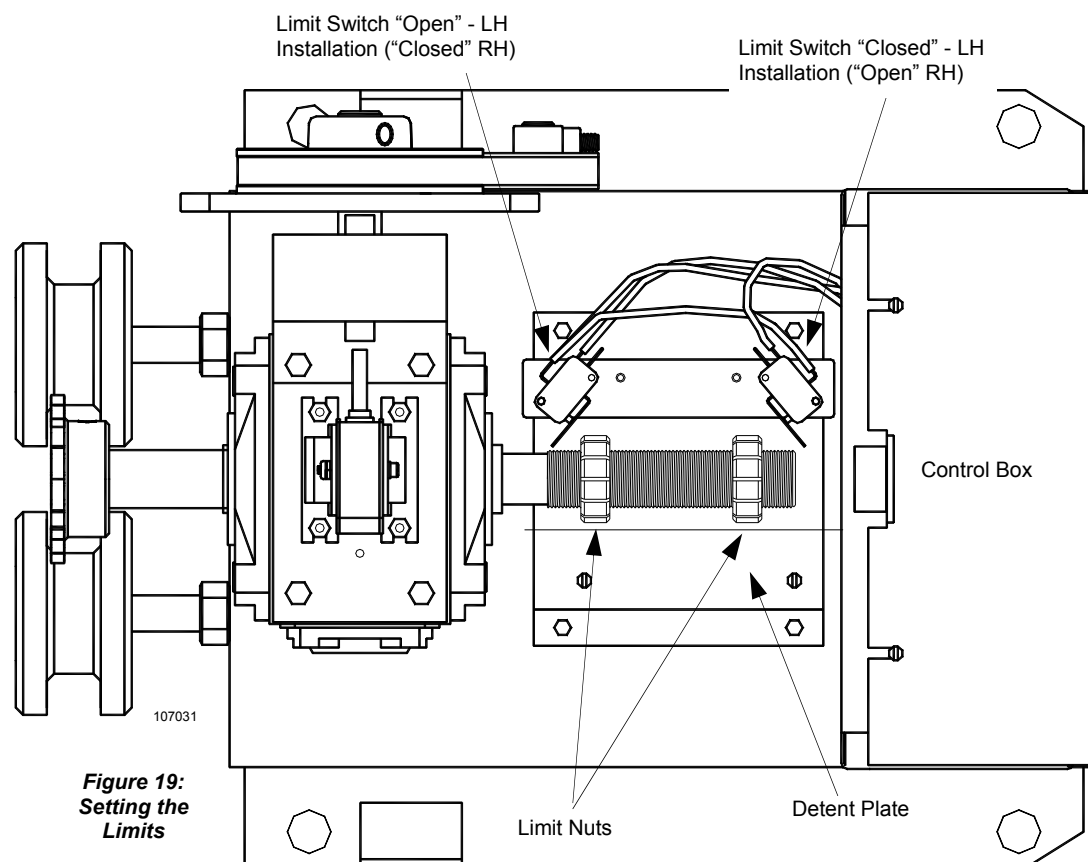


Figure 19:
Setting the
Limits



WARNING!

RISK OF ELECTROCUTION

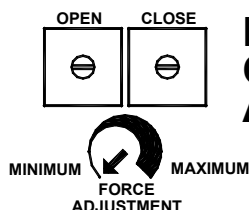
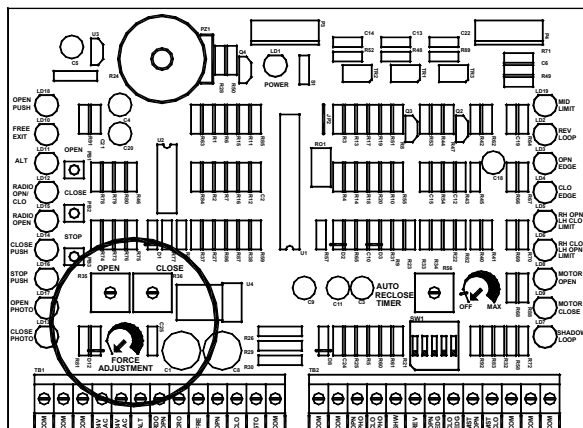
DO NOT BEGIN TO SET OR RESET THE FOLLOWING ADJUSTMENTS UNTIL THE POWER IS TURNED OFF AT THE LPX1700 CONTROL BOX

SETTING THE OBSTRUCTION DETECTION OVERLOAD FORCE

The operator is equipped with an obstruction detection circuit which will detect MOST obstructions in the gate's path. See Figure 20. The overload force can be independently adjusted for OPEN and CLOSE with the potentiometers on the controller board labeled, "OVERLOAD FORCE". Turning a potentiometer clockwise increases the force required to activate and turning it counterclockwise decreases the force required.

The LPX1700 is shipped from the factory with the potentiometers set at the minimum force setting. Turn the potentiometer 1/8 turn clockwise to prevent the overload circuit from tripping due to the gate's inherent friction.

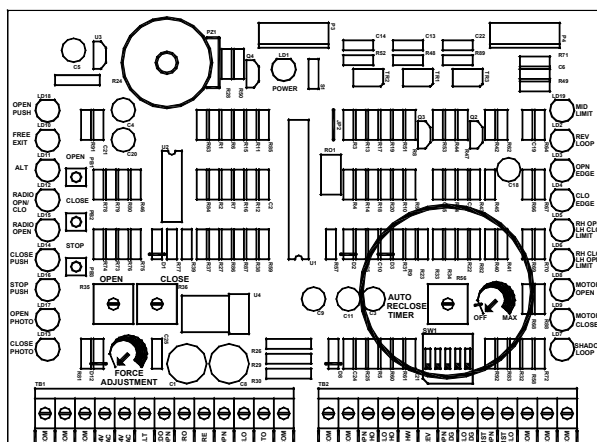
See FINAL SETTING OF THE OBSTRUCTION DETECTION OVERLOAD FORCE on Page 18.



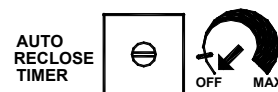
LOCATION OF OVERLOAD FORCE ADJUSTMENT

Figure 20:
Overload Force Adjustments

Figure 21: Location of Auto-Close Timer Adjustment



LOCATION OF TIMER ADJUSTMENT



TIMER TO CLOSE SETTING

The Timer to Close is controlled by the setting of the "AUTO CLOSE TIMER" potentiometer on the control board, see Figure 21. When the pot is adjusted fully counter-clockwise the Timer-To-Close is disabled. Turning the pot approximately 1/4 turn clockwise will enable the Timer To Close function with a delay of approximately 2 seconds between the gate reaching the full open position and automatically closing. To increase the time delay continue to turn the pot in the clockwise direction to a maximum delay of 60 seconds (one minute).

AUTO RE-CLOSE (TIMER-TO-CLOSE FUNCTION)

If the Timer To Close function is enabled (see above), this activates the Auto Re-Close feature on the motor control board. When the auto-re-close is activated, the gate will re-close after stopping and backing-off from a non-contact sensor input if the close movement was initiated by the Timer-To-Close function on the control board. The gate will additionally re-close once if the sensor input was received from a contact sensor. The gate WILL NOT re-close if the inherent overload sensor was activated or on the second sensor input received from a contact sensor in the same close cycle. In the Slave Mode the Timer To Close is automatically disabled.

FINAL INSTALLATION CHECKLIST

(Before powering up the operator for the first time.)

1. Use a voltmeter to assure the service voltage to the operator is appropriate per the operator nameplate label. Connection to an improper High Voltage AC service is the most common cause of board failure in new installations and is NOT COVERED BY WARRANTY!
2. No accessory equipment is installed in the control box.
3. Routing for all wiring from the field devices into the operator has the wires well clear of the motor V-belt and the limit switches.
4. The junction box cover is securely fastened.

WARNING!

RISK OF ENTRAPMENT.

THE OVERLOAD POTENTIOMETER MUST BE SET MORE PRECISELY PRIOR TO COMPLETING THE OPERATOR INSTALLATION

Restart the gate and give the leading edge a firm blow with the heel of your palm. Don't stand directly in the gate's path while testing the obstruction overload force. The obstruction detection should respond



immediately to the blow, the gate will pause and reverse approximately two inches. The overload potentiometer must be adjusted to the least force setting possible without causing "self-tripping" due to the gate's inherent friction or to variations in the track. Try readjusting the potentiometer several times by small increments, testing the gate in both directions of travel, until you are satisfied. Additional allowance must be made for high wind area applications.

TO THE END USER: Test your obstruction detection overload force on a monthly basis and have a qualified technician readjust for least force setting as necessary.

TESTING THE OPERATOR LOCK

For LPX1700 models, the lock mechanism engages whenever the operator is not moving the gate (Fail Secure Lock). Manual operation of the gate requires mechanically disengaging the lock, see page 24.

SMART™ SETTING - SELF ADJUSTING MAXIMUM RUN TIMER

The LPX1700 is equipped with a Self adjusting **Maximum Run Timer**, SMART™, that will turn the LPX1700 OFF if a Limit Switch command is not received within a few seconds of the time required to fully Open or Close the gate. Valid commands received during the cycle, such as activation of the **OVERLOAD** or a new input command, will automatically reset and restart the MRT.

To set the SMART™ Maximum Run Time and check that the limits are properly adjusted, fully open and close the gate five (5) times. The control board will sense the time required and add approximately two seconds.

BI-PARTING INSTALLATION FINAL SETTINGS

LIMIT SWITCHES - Push both gates together in the center of the driveway to set the closed limits. Push each gate open an equal amount to set the open limits. After cycling the gates the settings can be fine tuned to insure that the gates stop in their open positions at the same time.

SWITCH SELECTABLE OPTIONS - Make sure the selectable option on Switch 5 is set in the OFF position for the primary operator and the ON position for the secondary operator. Set the primary operator's other switches to the desired position according to the functions required or desired. With the exception of Switch 2, set the secondary operator's other switch selectable options to the OFF position. Note on Switch 2 that normally one of the operators installed in a bi-parting application will be right-hand and the other left-hand.

When properly adjusted, the two operators will perform as a true Master/Slave installation. If the motor overload circuit in one operator should respond to an obstruction not encountered by the other, the gates will temporarily get out of sync. Synchronization will be restored after the next input command cycle.

OPERATIONAL TESTS FOR VEHICLE LOOP DETECTORS AND AUXILIARY EQUIPMENT

You are now ready to test the auxiliary equipment. **INSTALLATION STEPS DETAILED IN SECTIONS A, B, C AND D (TO THIS POINT) MUST BE COMPLETE BEFORE PROCEEDING.**

REVERSING LOOP VEHICLE DETECTOR

Reversing Loop Pre-test: Pre-test the vehicle detector independently using the presence lamp on the front panel of the detector and a metal plate over the loop. When you are satisfied that the detector is working properly, proceed to the Reversing Loop Full Function Test (next).

Reversing Loop Full Function Test: Give the gate an open command and allow the close timer to start the gate to close. Place a metal plate over the loop and observe that the "REVERSING LOOP" light comes ON the operator control board (see page 18) and the gate stops moving close and re-opens.

FREE EXIT VEHICLE DETECTOR

Free Exit Pre-test: Move the gate to the Full Open Position. Test the vehicle detector independently using the presence lamp on the front panel of the detector module and a metal plate over the loop. When you are satisfied that the detector is working properly, proceed to the Free Exit Loop Full Function Test (next).

Free Exit Loop Full Function Test: Ensure the Timer-To-Close function is **ENABLED** and move the gate to the Full Close Position. Place the metal plate over the **FREE EXIT LOOP** and observe that the gate opens to the fully open position. Leave the metal plate on the loop for at least one minute. Observe that the gate does not close. Remove the plate from the loop and observe that the gate closes. (Some vehicle detectors will "tune out" a constant obstruction to the loop after 15 to 30 minutes.)

Testing other Auxiliary Equipment Devices: After you are satisfied that all the loops are functioning properly, proceed with the testing of the additional devices, such as a radio receiver, telephone entry or key pad. Observe the precautions regarding radio receivers. Connect other entry devices to the appropriate terminal determined by the function desired per the chart pages 20 and 21.

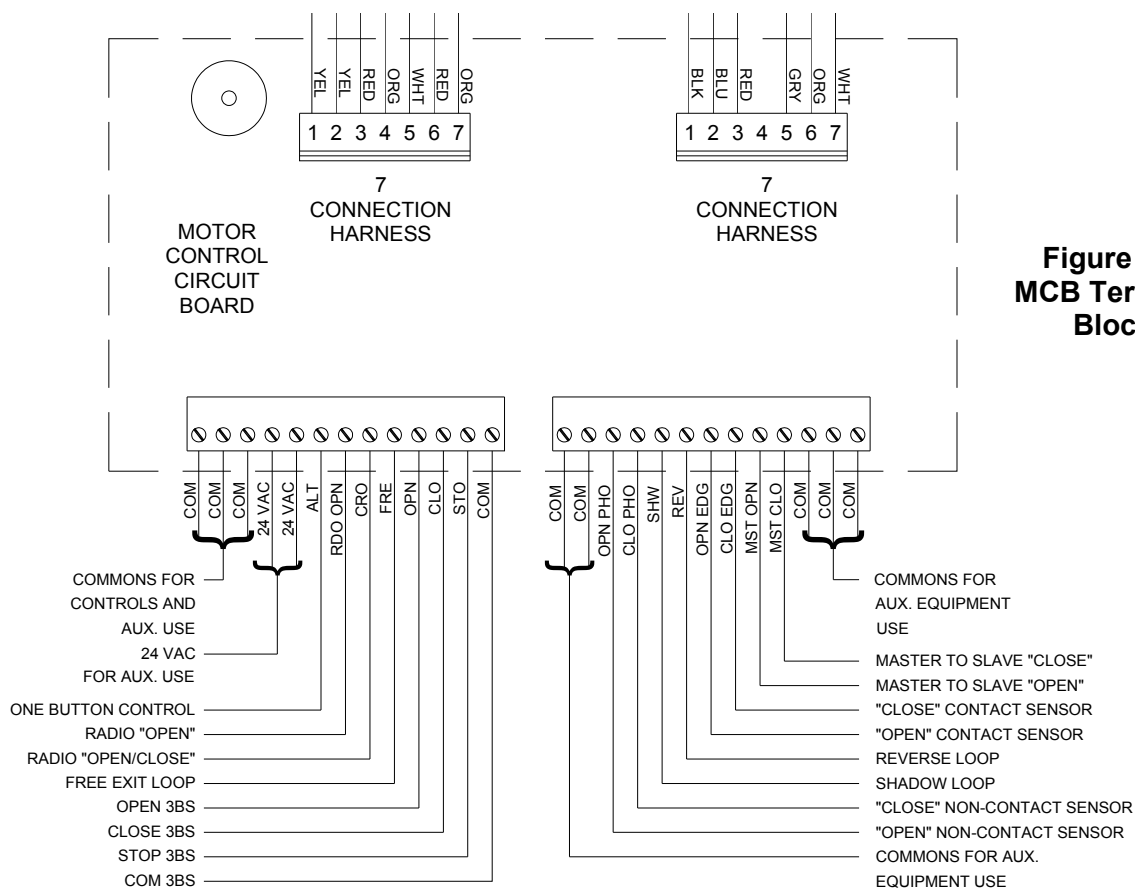


Figure 23:
MCB Terminal
Block

MOTOR CONTROL BOARD TERMINAL BLOCK REFERENCE CHART

NAME	DESCRIPTION
COM	COMMON Common connection for low voltage signal inputs and 24 Volt AC power. Three (3) terminals on the left, right, and center of the motor control board.
24V AC	24 VAC Provides maximum 10 VA auxiliary power for accessories. Connect one power lead from an auxiliary device to 24V AC and one power lead to a common terminal.
24V AC	24 VAC Provides maximum 10 VA auxiliary power for accessories. Connect one power lead from an auxiliary device to 24V AC and one power lead to a common terminal.
ALT	ONE BUTTON CONTROL Momentary input, must be released and re-entered to be recognized. When activated, a gate that is moving will stop; a gate that is stopped will begin moving in the opposite direction of the previous direction of travel. This input is ignored during an alarm mode and will not operate the gate. Connect appropriate access control devices to this terminal and COM (Common).

NAME	DESCRIPTION
RDO OPN	RADIO OPEN When activated, a gate that is stopped will move open; a gate that is moving close will stop, pause and move open; a gate that is moving open will continue to continue to move open. This input is ignored during an alarm mode and will not operate the gate. Connect appropriate access control devices to this terminal and COM (Common).
CRO	RADIO OPEN/CLOSE When activated, a gate that is stopped will move open; a gate that is moving close will stop, pause and move open; a gate that is moving open will stop; a gate that is stopped at the open limit will move close, a gate that is stopped at the mid position limit (if applicable) will move open. This input is ignored during an alarm mode and will not operate the gate. Connect appropriate access control devices to this terminal and COM (Common).
FRE	FREE EXIT LOOP Momentary input, must be released and re-entered to be recognized. When activated, a gate that is stopped will move open; a gate that is moving close will stop, pause and move open; a gate that is moving open will continue to continue to move open. This input is ignored during an alarm mode and will not operate the gate. The output from the pre-installed FE loop socket is pre-wired to this terminal. Connect appropriate access control devices to this terminal and COM (Common). Preferred terminal for most HOLD OPEN functions.



MOTOR CONTROL BOARD TERMINAL BLOCK REFERENCE CHART (CONT.)

NAME	DESCRIPTION
CLO	CLOSE 3BS When activated a gate that is stopped will move close; a gate that is opening will continue to move open; a gate that is closing will continue to move close. Continuous signal required to move the gate when in the alarm mode. See also the section on Switch Options and Functions for alternate operation. Connect appropriate access control devices to this terminal and COM (Common). Typically used with a three button station (3BS).
OPN	OPEN 3BS When activated, a gate that is stopped will move open; a gate that is moving close will stop, pause and move open; a gate that is moving open will continue to continue to move open. Continuous signal required to move the gate when in the alarm mode. See also the section on Switch Options and Functions for alternate operation. Connect appropriate access control devices to this terminal and COM (Common). Typically used with a three button station (3BS).
STO	STOP 3BS When activated, a gate that is stopped will remain stopped; a gate that is moving will stop. As long as this input is activated the gate will not respond to any other command. This input is active during an alarm mode. Connect appropriate access control devices to this terminal and COM (Common). Typically used with a three button station (3BS).
OPN PHO	OPEN NON-CONTACT SENSOR When activated, a gate is moving open will stop; a gate that is moving close will continue to move close; a gate that is stopped will not move open until the input becomes inactive. Continuous activation will prevent the gate from moving in the open direction. When the input is removed a gate that was moving open prior to activation will resume moving in the open direction. This input is intended for photoelectric eye systems and other non-contact devices as appropriate. Connect here and to COM (Common). Multiple devices may be connected in parallel.
CLO PHO	CLOSE NON-CONTACT SENSOR When activated, a gate is moving close will stop, pause and reverse open for 2 seconds; a gate that is moving open will continue to move open; a gate that is stopped will not move close until the input becomes inactive. Continuous activation will prevent the gate from moving in the close direction. When the input is removed a gate that was moving close prior to activation will resume moving in the close direction. This input is intended for photoelectric eye systems and other non-contact devices as appropriate. Connect here and to COM (Common). Multiple devices may be connected in parallel.

NAME	DESCRIPTION
SHW	SHADOW LOOP When activated, a gate that is stopped at the Open Limit will not move close until this input is inactive. Connect appropriate devices to this terminal and COM (Common). Typically used with a Vehicular Loop Detectors.
REV	REVERSING LOOP When activated, a gate that is moving close will stop, pause and reverse open; a gate that is moving open will continue to move open; a gate that is stopped will not move close until this input is inactive. The output from the pre-installed Reverse Loop socket is pre-wired to this terminal. Connect appropriate devices to this terminal and COM (Common). Typically used with a Vehicular Loop Detectors.
OPN EDG	OPEN CONTACT SENSOR When activated, a gate that is moving open will stop, pause and reverse close for 2 seconds; a gate that is moving close will continue to move close; a gate that is stopped will not move open until this input is inactive. The first activation of this input while the gate is moving open will disable the auto reclose function. Connect appropriate devices to this terminal and COM (Common). Typically used with Pressure Sensitive Edge devices.
CLO EDG	CLOSE CONTACT SENSOR When activated, a gate that is moving close will stop, pause and reverse open for 2 seconds; a gate that is moving open will continue to move open; a gate that is stopped will not move close until this input is inactive. A gate that was moving close prior to the first activation of this input will resume moving close after this input becomes inactive. The second activation of this input while the gate is moving close will disable the auto reclose function. Connect appropriate devices to this terminal and COM (Common). Typically used with Pressure Sensitive Edge devices.
MST OPN	MASTER TO SLAVE "OPEN" This terminal connection is used for Master/Slave (Primary/Secondary) installations. This output is connected via a wire to the Open (OPN) input of the slave (secondary) gate. This is used to command the slave gate to open.
MST CLO	MASTER TO SLAVE "CLOSE" This terminal connection is used for Master/Slave (Primary/Secondary) installations. This output is connected via a wire to the Close (CLO) input of the slave (secondary) gate. This is used to command the slave gate to close.

IMPORTANT SAFETY INSTRUCTIONS

 **WARNING!**

TO REDUCE THE RISK OF SEVERE INJURY OR DEATH

1. READ AND FOLLOW ALL INSTRUCTIONS AND WARNINGS IN THIS MANUAL.
2. Never let children operate or play with gate controls. Keep the remote control away from children.
3. Always keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.
4. Test the gate operator monthly. The gate MUST reverse on contact with a rigid object or stop when an object activates the non- contact sensor. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate operator properly can increase the risk of injury or death.
5. Use the emergency release (if applicable on this operator) only when the gate is not moving.
6. KEEP GATES PROPERLY MAINTAINED. Read the owner's manual. Have a qualified service person make repairs to gate hardware.
7. The entrance is for vehicles only. Pedestrians must use separate entrance.
8. SAVE THESE INSTRUCTIONS.

NOTES



BASIC OPERATIONAL GUIDE

- Whenever the operator is powered up it will function (for one cycle) as if option switch 4 is ON (Pre-move / Alarm-In-Motion). If the Timer To Close is active and the gate is open, the gate will close after it times out. If the Free Exit input is active (from a seven day timer for example) the gate will start open.
- If the gate is fully closed an Open Button, Alternate, Radio or Free Exit input will cause the gate to begin moving in the open direction.
- If the gate is fully open a Close Button, Alternate, or Radio input will cause the gate to begin moving in the close direction.
- If the gate is moving in a Close direction a Close Non-Contact Sensor, Close Contact Sensor input or a Close Overload activation will cause the gate to stop, pause and reverse for approximately 2 inches in the Open direction.
- If the gate is moving in a Close direction an Open Button, Radio, Reversing, or Free Exit Loop input will cause the gate to stop, pause, reverse and run in the Open direction.
- If the gate is moving in a Close direction a Stop Button or Alternate input will cause the gate to stop. A subsequent Alternate input will cause the gate to begin moving in the Open direction.
- If the gate is moving in an Open direction an Open Non-Contact Sensor, Open Contact Sensor input or an Open Overload activation will cause the gate to stop, pause and reverse for approximately 2 inches in the Open direction.
- If the gate is moving in an Open direction a Stop or Alternate input will cause the gate to stop. A subsequent Alternate input will cause the gate to begin moving in the Close direction.
- Two sequential activations of the operator's integral Overload detector (Open or Close direction) before the gate reaches a limit will cause the operator to go into the alarm mode. Also a combination of an Edge (OPN EDG or CLO EDG) activation and the operator's integral overload detection will cause the operator to go into the alarm mode. To reset the operator remove the obstruction and either use constant pressure on a control button connected to the OPEN or CLOSE input and move the gate to a fully open or closed position or turn off and restore the power to the operator. PLEASE NOTE the alarm as described above is of a different pitch than the pre-move delay alarm and alarm in motion that can be set to operate as one of the switch selectable options, see page 15.

MANUAL OPERATION - All LPX17000 models employ Allstar's Fail Secure Lock Mechanism where the lock is activated whenever the gate is not moving. The gate can be moved open or close in case of power failure or other need to move the gate manually without disconnecting the operator chain. Take off the operator cover by first removing any lock attached to the lock tab on the operator front, remove the cover attachment bolts then lift the cover over the tab and directly overhead off the unit. Remove power from the unit by turning the Main Power Switch on the control box to the OFF position or turn off power at the main circuit breaker box feed. Move the Manual Operation Actuator Lever to the RELEASE (UN-SECURE) position (see Figure 25) by pulling the lever up slightly to clear the tab and moving it toward the gate. Ensure the lever is resecured on the tab in the RELEASE (UN-SECURE) position. Firmly grasp the leading edge of the gate. Push or pull the gate in the direction desired. The amount of force required to move the gate will depend on the gate weight and the inherent friction of the overall system. Manual operation is to be attempted only when the operator is not moving the gate under power.

To place the unit back into RUN (SECURE) operation reverse the steps above. Before replacing the cover ensure the Manual Operation Actuator Lever is resecured on the tab in the RUN (SECURE) position and the Main Power Switch is moved to the ON position. Restore power at the main circuit breaker box feed (if applicable).

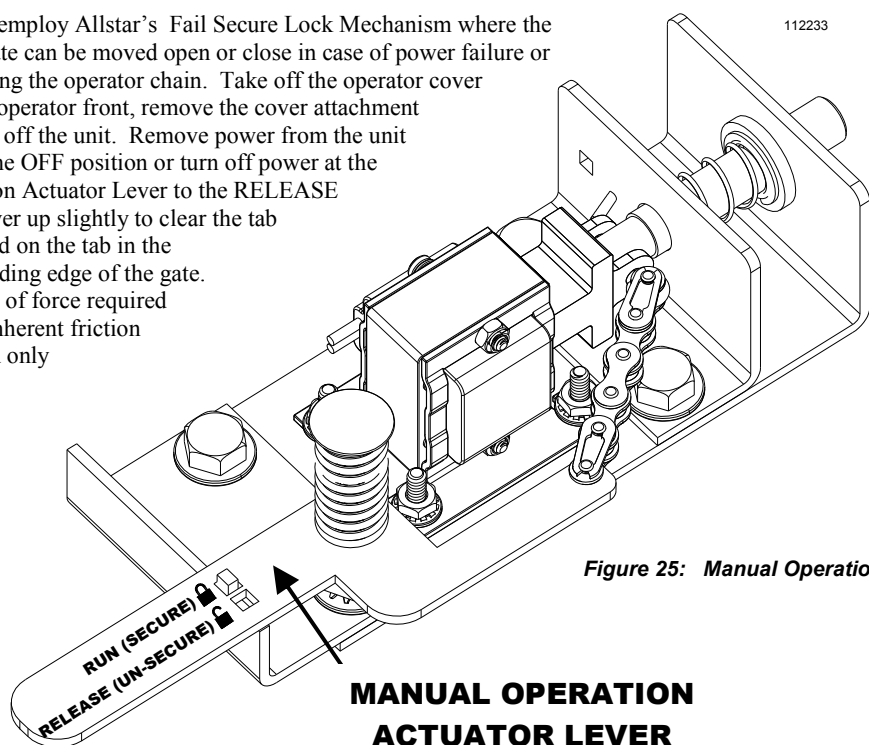


Figure 25: Manual Operation

**MANUAL OPERATION
ACTUATOR LEVER**

To the Owner/End User of the LPX1700 Gate Operator:

Thank you for choosing an Allstar Corp. product. We are confident you will have many years of use and satisfaction with your gate operator.

Our Gate Operator is part of your unique gate operating system, which may consist of a variety of components, including the gate, the gate tracks, posts, and electronic features. These components combined present certain risks and safety issues of which you, the end user, must be aware.

Each unique system presents a unique set of hazards which we cannot possibly address individually. These instructions will help you to identify the potential risks and safety issues your gate operator system presents, and guide you as you make your system as safe as possible for everyone who uses it.

Your first step is to consider the intended use of the gate system, who will be using the gate system, and in what manner the system is installed. You should have a clear understanding of how often the gate will be opened, who will be opening it, whether children and the general public will be near the gate system, and how close the gate system is to public property. Once you have answered these questions, you are ready to decide what safety measures must be taken to prevent injury.

- To minimize the risk of entrapment in your gate system, install the following safety features:
- Electric gate edges
 - Enclosed tracks
 - Vertical guard posts
 - Protective screen mesh
 - Photoelectric sensors
 - Instructional and precautionary signs
 - Covers for exposed rollers

Each safety feature is a separate component in your gate system. Read and follow all instructions for each of the components of your unique system. **Ensure that all instructions for mechanical components, safety features and the LPX1700 Gate Operator are available for everyone who will be using your gate system.**

The two warning signs shipped with your Gate Operator (See Figure 2, Page 4 of this manual) must be installed in prominent positions on both sides of your gate. Keep them clean and legible.

Read and follow the safety points on this and the following page which present the basic guidelines for the safest operation of your gate operator system.

SAVE THESE INSTRUCTIONS !



PRECAUTIONS FOR PEDESTRIAN TRAFFIC OR RESIDENTIAL AREAS

The internal operator overload sensor may not be adequate entrapment protection in all situations to prevent arm, leg, or hand injuries. Padded electric gate edges, roller guards, pneumatic gate edges, or photoelectric sensors are therefore necessary when automatic gates are used near pedestrian traffic. See the figure below. **Use of pedestrian walk gate is mandatory where there is nearby pedestrian traffic.**



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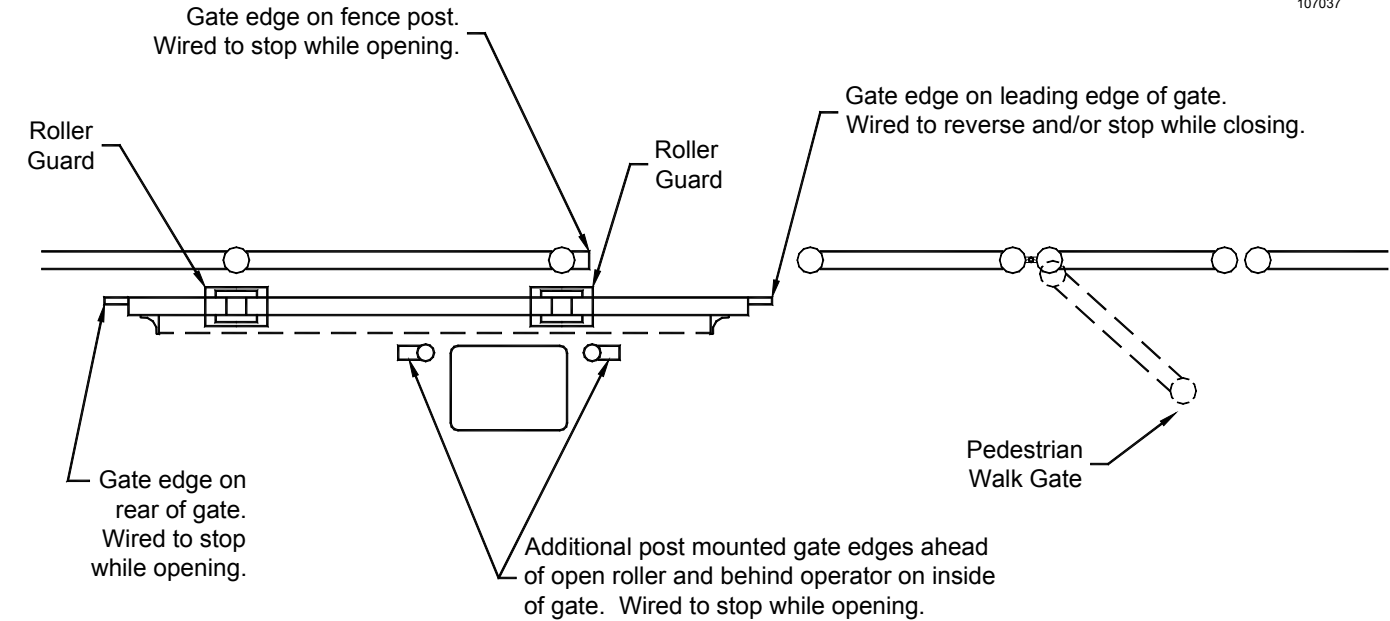


Figure 26: Entrapment Protection



AVOID ENTRAPMENT: Stay away from the **path** of the gate and all moving parts (gate arms, etc.) at all times. Keep clear of the pinch points identified below. Install guards or other safety features to prevent access to pinch point areas. Install guards on open rollers.

NO CHILDREN OR PETS ALLOWED: Never allow a child to operate gate controls, “ride” a gate, or play in the area of a gate. **Install and store all controls out of children’s reach.** Also, pets must be kept away from the gate. Install a pedestrian gate in applications where children or pets need access. This entrance is for vehicles only. Pedestrians must use a separate entrance.

LOCATE MANUAL CONTROLS SAFELY: A manual control such as a pushbutton or keyswitch must be included in your gate system design to be used if automatic controls such as radio controls or loop detectors do not function. Carefully consider the placement of the manual control: It must be **out of reach of the gate** so that no one pushing the button or inserting the card is in the path of the gate or moving parts; it must also be **within sight of the gate** so that the operator can watch the gate and gate area during operation. **The recommended minimum distance between the gate or fence and manual control accessory is 10 feet.**

INSTALL SAFETY DEVICES: In residential applications or in areas where pedestrians may be present, or if your gate closes automatically, be sure an electric edge(s) and/or a photoelectric sensor(s) has (have) been installed and is/are operating properly. These features are intended to detect pedestrian traffic and prevent injury or entrapment. Loop detectors may be installed to detect vehicular traffic and prevent vehicular damage.

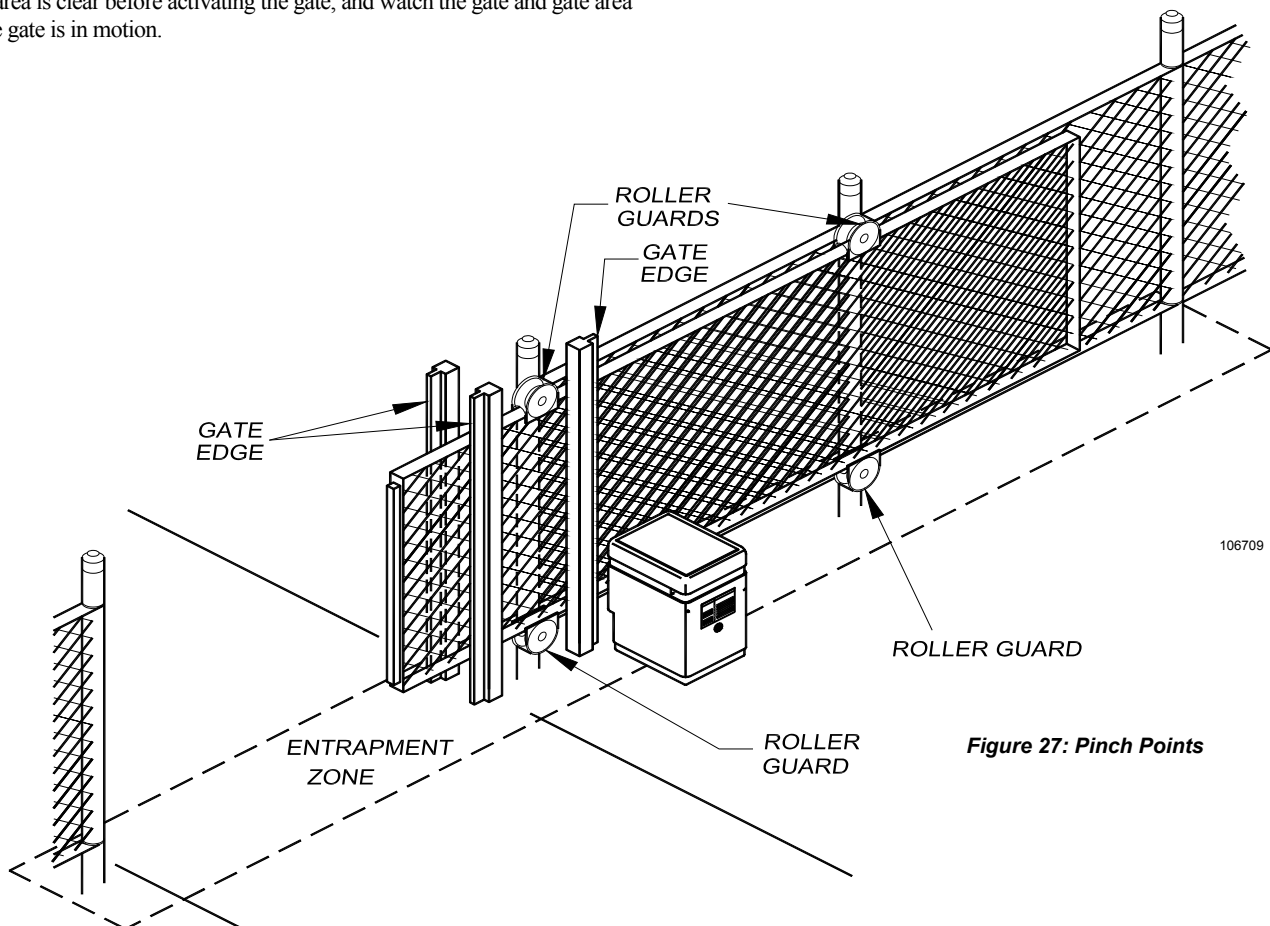
KEEP GATE IN SIGHT: Never activate the gate unless it is in sight. Install mounted controls in full view of the gate. Be sure the gate area is clear before activating the gate, and watch the gate and gate area as the gate is in motion.

PREVENT PERSONAL INJURY OR DEATH: Do not stand near or on the gate. Gate may be activated without notice. Do not allow anyone to “ride” the gate, or place arms or legs through the gate. The force of the gate can cause serious personal injury or death. No one should cross the path of a moving gate.

VERY IMPORTANT: Test your obstruction detection **overload force** on a monthly basis and have a qualified technician readjust for **least force setting as necessary.**

MAINTAIN THE GATE AND GATE HARDWARE: A damaged gate or one that cannot be easily opened and closed manually must be repaired before installing a gate operator. A poorly operating gate may cause the load sensing device of the operator to fail, causing a risk of entrapment. **Never overtighten the clutch or load sensing device to compensate for a poorly operating slide gate.** Correct all mechanical problems on the gate and gate hardware before installing the gate operator. Have a qualified service technician make repairs to the gate and gate hardware.

MAINTAIN ALL COMPONENTS OF GATE SYSTEM: Follow the maintenance instructions included with the gate, the gate operator, and the safety features and/or accessories that make up your gate operator system. Have a professional service technician perform any adjustments or maintenance to the components. **Fully test all safety features monthly. If faulty equipment is discovered or suspected, discontinue the use of the gate operator system immediately, and have the equipment serviced or replaced by a qualified service technician.** The gate must reverse on contact with a solid, rigid object or when an object activates the non-contact sensors. After adjusting the force or limits of travel, retest the gate operator. Failure to adjust and retest the gate operator properly can increase the risk of injury or death.



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Figure 27: Pinch Points

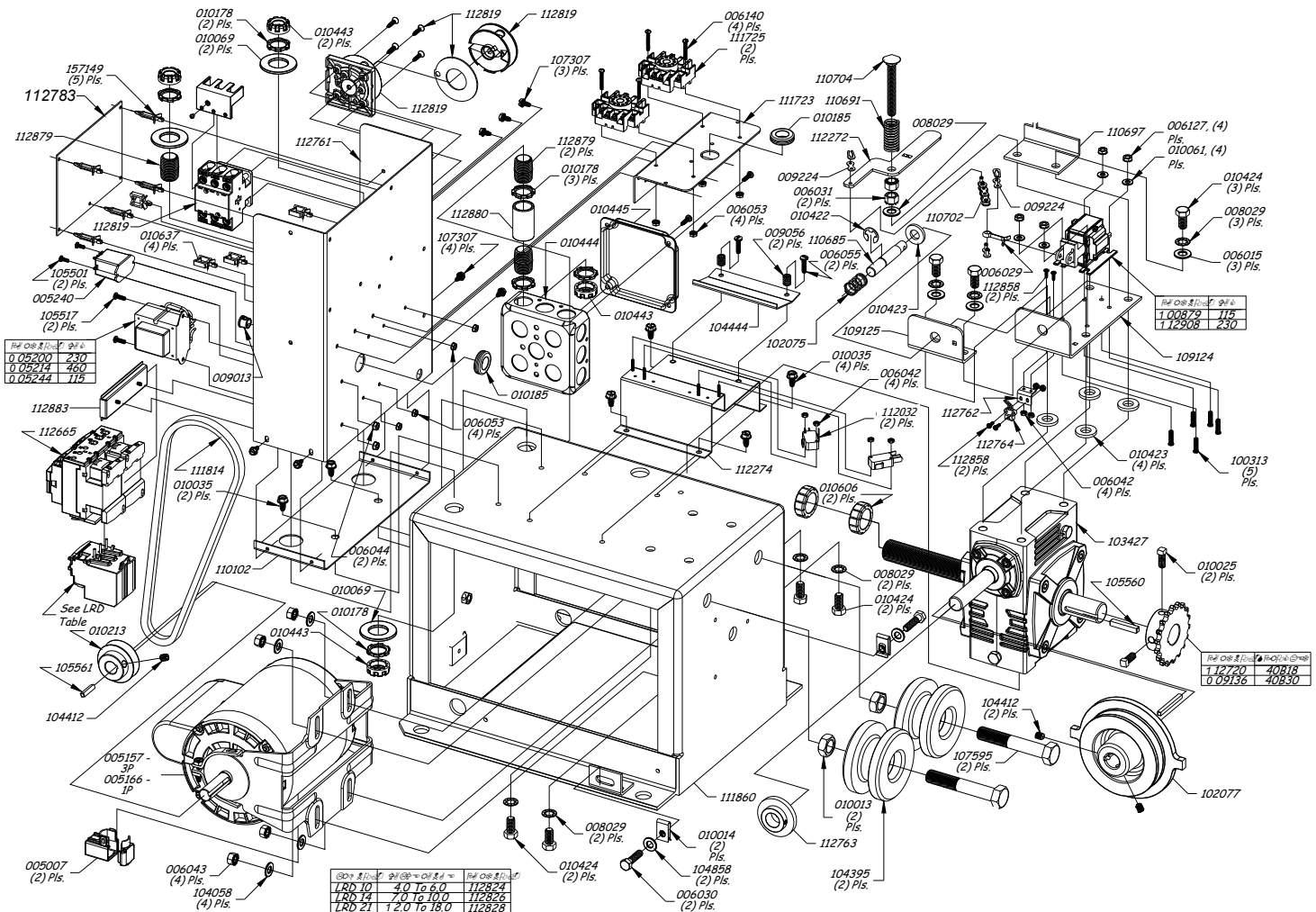
26 | E: END USER INSTRUCTIONS GATE OPENER OPERATION & SAFETY GUIDE



It is recommended that the following maintenance be performed on the operator at a minimum:

- ✓ **Monthly** - Check the function of all safety devices (inherent sensing, photo-eyes and safety edges).
- ✓ **Every 4 Months** - Check the drive chain tension (1" to 2" sag maximum between chain support brackets). Tighten if necessary.
- ✓ **Yearly** - Check the V-belt for visible signs of wear or cracking.
- ✓ **Yearly** - Check all wiring for integrity of insulation.
- ✓ **Yearly** - Check the tightness of all electrical connections.
- ✓ **Yearly** - Lubricate the drive chain with a high grade chain/cable lube spray.
- ✓ **Yearly** - Remove any foreign matter from the interior of unit.

OPERATOR EXPLODED VIEW AND PARTS LIST



005007 CON,3/8 FLEX Conduit,90 Deg	010014 Nut,5/16-18,U.Tinnerman	104412 Screw,Set,5/16-18 x 3/8,Hex	112274 Bracket ASSY, Limit Switch
005157 Motor,1HP,3P,56 Frame,ODP	010025 Screw,Set,5/16-18 x 3/4	104444 Plate,Limit Detent,2-1/4 X 4-5/8	112032 Switch w/Lever, SPDT,S. Roller
005166 Motor,1HP,1P,56 Frame,ODP	010035 Screw,1/4-20 x 1/2,HXWF,SS	104558 Nut,5/16-24,AC	112665 Contactor Reversing,24V
005200 XFMR,208/240V-24V,40VA	010061 Washer,#10,Flat,SAE	105501 Screw,6-32 x 3/8,CR RHM,ZP	112720 Sprocket,40B18,1 TB,1/4 Key
005214 XFMR,460V-24V,40VA	010069 Washer,7/8,Flat,SAE	105517 Screw,8-32 x 1/2,PHRM	112761 Control Box Base Plate
005240 Relay,24VAC Coil,DPDT,CDO	010178 Nut,1/2,Lock,Conduit Pipe	105560 Key,1/4 x 1/4 x 1-1/2	112762 Bracket Mt,Hall Effect Sensor
005244 XFMR,120V-24V,40VA	010185 Grommet,5/8 ID for 7/8 Hole	105561 Key,3/16 x 3/16 x 1	112763 Magnet,2" Dia. x 0.25
006015 Washer,3/8,Flat	010213 Pulley,2 OD,5/8 Bore	106648 Nut,5/8-18,HX,JAM	112764 Sensor,Commutation,4.5-24 Vdc
006029 Pin,3/16 x 1,Cotter,ZI	010422 Ring,Retaining,0.4,T/E	107307 Screw,10-24 x 3/8,HXSLW	112783 Motor Control Board,Universal
006030 Screw,5/16-18 x 1,HXC,ZI	010423 Grommet,1/2 ID x 1 OD	107595 Screw,5/8-18 x 3-3/4 HXC,ZI	112819 Switch,Disconnect,25 Amp
006031 Nut,3/8-16,Hex,Captive Lk Wshr	010424 Screw,3/8-16 x 3/4,Hex Head	109124 Bracket,Lock,Base,Leader	112824 Relay,Ovrid,4.0-6.0A,LRD10
006042 Nut,4-40,Hex,Captive Lk Wshr	010443 Bushing,Anti-Short,1/2 Nipple	109125 Bracket,Lock,Guide,Leader	112826 Relay,Ovrid,7.0-10.0A,LRD14
006043 Nut,5/16-18,Hex,Captive Lk Wshr	010444 Handy Box,4 x 4 x 1-1/2,Gang	110102 Control Box, End Plate	112828 Relay,Ovrid,12.0-18.0A,LRD21
006044 Nut,8-32,Hex,Captive Lk Wshr	010445 Cover Plate,Handy Box,4 x 4	110685 Pin,Lock,1/2 Dia. x 3.03	112858 Screw,4-40 x 3/8,PH,PH,ZI,SS
006053 Nut,6-32,Hex,Captive Lk Wshr	010606 Limit Nut,1 In x 16 TPI	110691 Spring,Comp,0.09 x 0.7 x 2.5L	112879 Nipple,Close,1-1/8 Inch
006055 Screw,10-24 x 3/4 Pan Head	010637 Clamp,Cable,Latch Gate,Hevco	110697 Bracket,Arm Lock,Base	112880 Coupler,Conduit,1/2 NPT,Strght
006127 Nut,10-24,Hex,Captive Lk Wshr	100313 Insert,IHD Stud,10-24 x 3/4L	110702 Chain,Solenoid Link,#65 Roller	112883 Bracket,Contactor Mt,Din Rail
006140 Screw,6-32 x 1 Round Head	100879 Solenoid,115V,Horzntal Link,8#	110704 Screw,3/8-16 x 3,Carriage	112908 Solenoid,230V,Horzntal Pull,8#
008029 Washer,3/8,Internal Tooth Lock	102075 Spring,0.6 O.D. x 1.25L,S/S CO	111723 Plate,L,Loop Socket Mounting	112975 XFMR,230/460V-120V,50 VA
009013 Bushing,1/2" Hole,SB-500-6	102077 Pulley,Lock PLT,Contins Duty	111725 Socket,Octal,11 Pin	(Not Shown, 460 V only)
009056 Spring,Compression,#8698	103427 Reducer,Speed,w/Shaft,10:1	111814 Belt,V,4L310	157149 Standoff,PCB,3/4IN
009136 Sprocket,40B30,1 TB,1/4 Key	104058 Washer,5/16,Flat,SAE	111860 Frame,7 Ga.,Mitre Corner Style	
009224 Link,Connecting,3 PC,#65 (#48)	104395 Pulley,Idler,UHMW,3.5 OD	112272 ASSY,Arm,Bent,Lock Release	





PHYSICAL

PAD: 18-1/4" W x 18-1/4"D x 3"H Elevation
 OVERHEAD CLEARANCE: Minimum 25" Required
 UNIT SIZE: 15"W x 19"D x 24-1/4" H
 FRAME: Welded, Uni-Body; Phosphatized And Painted to UL Standards
 COVER: Architecturally Designed, Rust Free LLPE; Lockable To Prevent Unauthorized Access
 SHIPPING WEIGHT: 115 lbs.

ELECTRICAL

PRIMARY VOLTAGE: 115 to 460 VAC, 60 Hz, 1 or 3 Phase
 ELECTRICAL SOURCE: Appropriate Amp Rated Service From Breaker Panel Required Per Operator
 CONTROL VOLTAGE: 5 VDC
 RADIO RECEIVER POWER: 24 VAC, 20 mA
 MOTOR: 1 HP, Continuous Duty
 AUTO TIMER-TO-CLOSE: Built-In, Adjustable From 2-65 Seconds

DRIVE

DRIVE SYSTEM: Gearbox; 10:1; With Bronze Worm & Pinion Gears
 SPEED REDUCTION: 22.2:1 (Motor to Gear Box Output Shaft)
 OUTPUT SHAFT: 1" dia., Ball-Bearing Mounted
 DRIVE MECHANISM: 18-Tooth Sprocket; #40 Chain (Standard) 30-Tooth Sprocket; #40 Chain (High Speed)
 LIMITS: Independent Open & Close; Displaced Cam With Micro-Switch Contacts; Adjustable Without Tools
 OPERATOR LOCK: Fail Secure; Electro-Mechanical, AC Solenoid; Engages When Gate Stops (Partially or Fully Opened or Closed), Must be Manually Disengaged to Move the Gate.

CAPACITIES

MAX. GATE WEIGHT: 1,700 lbs., Level Grade
 MAX. GATE WIDTH: 35 ft. maximum Standard 56 ft. maximum for High Speed Option - (Class III and IV)
 MAX. CYCLES PER HOUR: 45 Open/Close Per Hour; 800 Open/Close Per Day (All Calculations Based On Typical 20' Gate On Level Grade)
 GATE SPEED: 11.8 inches / second (Standard) 18 inches / second (High Speed)

Specifications subject to change without notice. Consult the factory.

Manufacturer's Limited Warranty

Linear LLC warrants its Allstar brand gate operators to be free from defect in material and workmanship for a period of five (5) years from the date of purchase for single family home use and three (3) years from the date of purchase for multi-family and commercial use. This warranty covers all components except the electronic circuit boards which are warranted for three (3) years from the date of purchase for single family home use and two (2) years from the date of purchase for multi-family and commercial use. To obtain service contact your dealer.

To obtain service under this warranty the buyer must obtain authorization instructions for the return of any goods from Linear before returning the goods. The goods must be returned with complete identification, with copy of proof-of-purchase, freight prepaid and in accordance with Linear's instructions or they will not be accepted. In no event will Linear be responsible for goods returned without proper authorization or identification.

Goods returned to Linear for warranty repair within the warranty period, which upon receipt by Linear are confirmed to be defective and covered by this limited warranty, will be repaired or replaced at Linear's sole option, at no cost and returned pre-paid. Defective parts will be repaired or replaced with new or factory rebuilt parts at Linear's sole option.

This limited warranty does not cover non-defect damage, damage caused by unreasonable use, damage caused by improper installation or care, vandalism or lightning, fire or excessive heat, flood or other acts of God (including, but not limited to misuse, abuse or alterations, failure to provide reasonable and necessary maintenance), labor charges for dismantling or reinstalling a repaired or replaced unit, or replacement batteries.

These warranties are in lieu of all other warranties, either expressed or implied. All implied warranties of merchantability and/or fitness for a particular purpose are hereby disclaimed and excluded. Under no circumstances shall Linear be liable for consequential, incidental or special damages arising in connection with the use or inability to use this product. In no event shall Linear'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 the Linear any other liability in connection with the sale of this product.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state. Warranty effective after October 1st, 2007.

For Information:
 877-441-9300 800-421-1587 www.allstarcorp.com

This Gate Operator is built in the USA and complies with all requirements of ANSI/UL Standard 325.