

MODEL SW420

LIGHT-DUTY RESIDENTIAL SWING GATE OPERATOR

OWNER'S MANUAL



Intended for professional installation only.

Visit www.liftmaster.com to locate a professional installing dealer in your area.

This manual is to be left with the property owner.

Model SW420 is for vehicular passage gates only and is not intended for pedestrian passage gate use.

Serial # (located on electrical box cover) _____

Installation Date _____



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OPERATOR NOTES

WARRANTY POLICY

IMPORTANT NOTE

- BEFORE attempting to install, operate or maintain the operator, you **MUST** read and fully understand this manual and follow all safety instructions.
- These instructions are intended to highlight certain safety related issues. These instructions are not intended to be comprehensive. Because each application is unique, it is the responsibility of the purchaser, designer, installer and end user to ensure that the total gate system is safe for its intended use.

CARTON INVENTORY

Before beginning your installation check that all components were supplied and received undamaged. Refer to list below for factory supplied parts.

HARDWARE KIT SW420 (K77-SW420)

PART NO.	DESCRIPTION	QTY.
01-G0582	Safety Gate Brochure	1
02-401-SP	Stop Button	1
07-2705	Arm Stop	1
10-2111	Gate Bracket	1
11-2754	U-Bolt Nut Tool	1
12-2727	Bushing 3/8"	3
40-3505	Warning Sign	2
80-10026	Washer, Shim 3/8"	2
80-206-65	Spacer	4
80-2754	U-Bolt Nut	2
82-HN38-16	Bolt 3/8-16 x 1"	1
82-HN38-18	Hex Head Bolt 3/8-16	2
82-SH37-10	Socket Head Bolt 3/8-24	1
85-FW-38S	Flat Washer 3/8"	1

WARNING

Mechanical

WARNING

Electrical

CAUTION

When you see these Safety Symbols and Signal Words on the following pages, they will alert you to the possibility of **serious injury or death** if you do not comply with the warnings that accompany them. The hazard may come from something mechanical or from electric shock. Read the warnings carefully.

When you see this Signal Word on the following pages, it will alert you to the possibility of damage to your gate and/or the gate operator if you do not comply with the cautionary statements that accompany it. Read them carefully.

OPERATOR DIMENSIONS AND SPECIFICATIONS

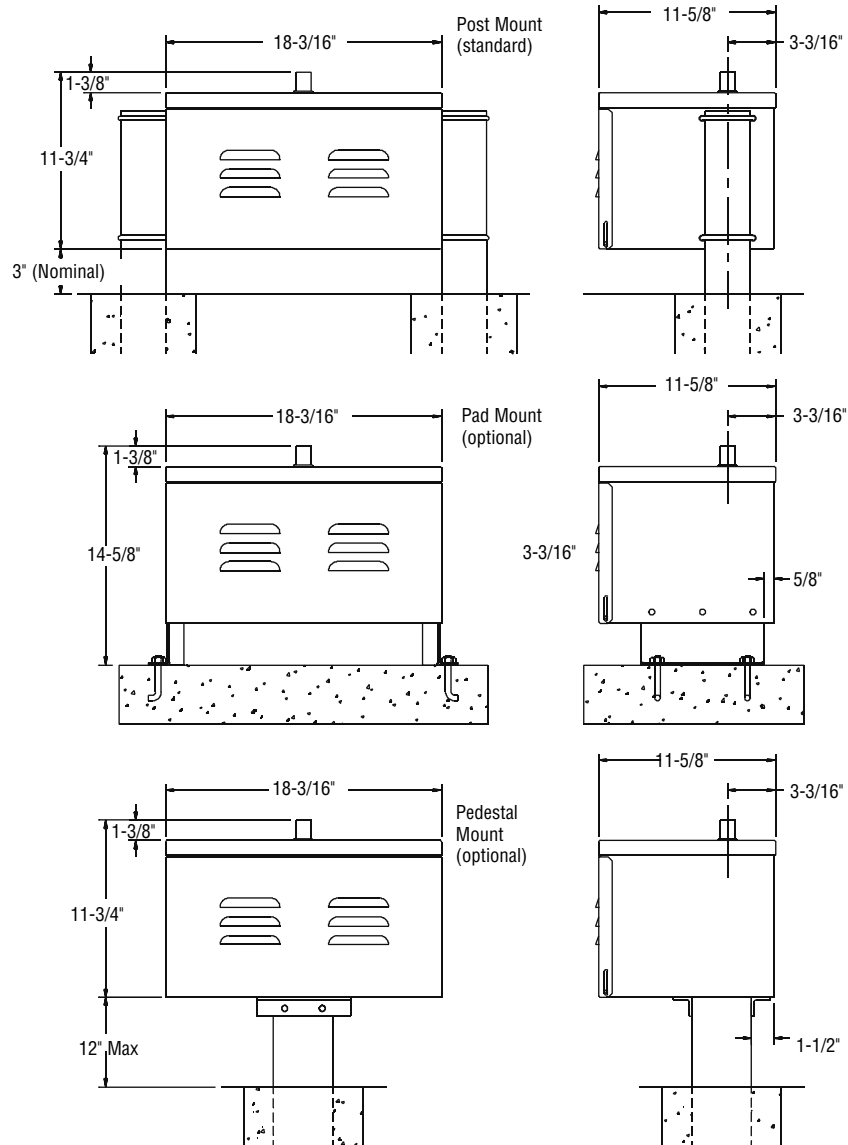
MODEL SW420

• 1/3 HP Motor

Maximum Gate Starts – **10/hr.**

Maximum Gate Weight – **300 lbs. (136.1 kg)**

Maximum Gate Width – **12 ft. (3.7 m)**



UL325 MODEL CLASSIFICATIONS

The SW420 is intended for use with vehicular swing gates. The opener can be used in Class I, Class II, Class III and Class IV applications.

CLASS I – RESIDENTIAL VEHICULAR GATE OPERATOR

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

CLASS II – COMMERCIAL/GENERAL ACCESS VEHICULAR GATE OPERATOR

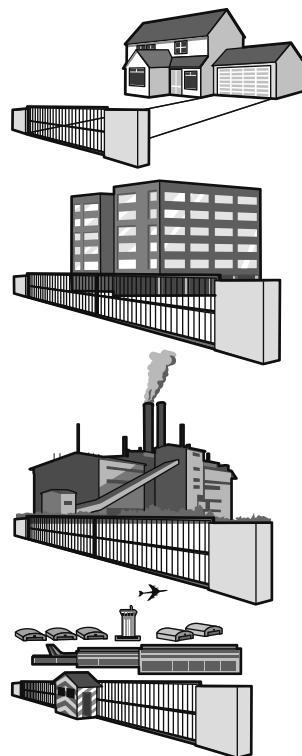
A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units) hotel, garage, retail store or other building servicing the general public.

CLASS III – INDUSTRIAL/LIMITED ACCESS VEHICULAR GATE OPERATOR

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

CLASS IV – RESTRICTED ACCESS VEHICULAR GATE OPERATOR

A vehicular gate operator (or system) intended for use in a guarded industrial location or building such as an airport security area or other restricted access locations not servicing the general public, in which unauthorized access is prevented via supervision by security personnel.



SAFETY ACCESSORY SELECTION

All UL325 compliant LiftMaster gate operators will accept external entrapment protection devices to protect people from motorized gate systems. UL325 requires that the type of entrapment protection correctly matches each gate application. Below are the six types of entrapment protection systems recognized by UL325 for use on this operator.

ENTRAPMENT PROTECTION TYPES

Type A: Inherent obstruction sensing system, self-contained within the operator. This system must sense and initiate the reverse of the gate within two seconds of contact with a solid object.

Type B1: Connections provided for a non-contact device, such as a photoelectric eye can be used as a secondary protection.

Type B2: Connections provided for a contact sensor. A contact device such as a gate edge can be used for secondary protection.

Type C: Inherent adjustable clutch or pressure relief valve.

Type D: Connections provided for a control requiring continuous pressure to operate the operator open and close.

Type E: Built-in audio alarm. Examples include sirens, horns or buzzers.

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



UL325 ENTRAPMENT PROTECTION REQUIREMENTS

GATE OPERATOR ENTRAPMENT PROTECTION

UL325 Installation Class	Slide Gate Operator		Swing & Gate Barrier (Arm) Operator	
	Primary Type	Secondary Type	Primary Type	Secondary Type
Class I & II	A	B1, B2 or D	A or C	A, B1, B2, C or D
Class III	A, B1 or B2	A, B1, D or E	A, B1, or C	D or E
Class IV	A, B1, B2 or D	A, B1, B2, D or E	A, B1, C or D	A, B1, C, D or E

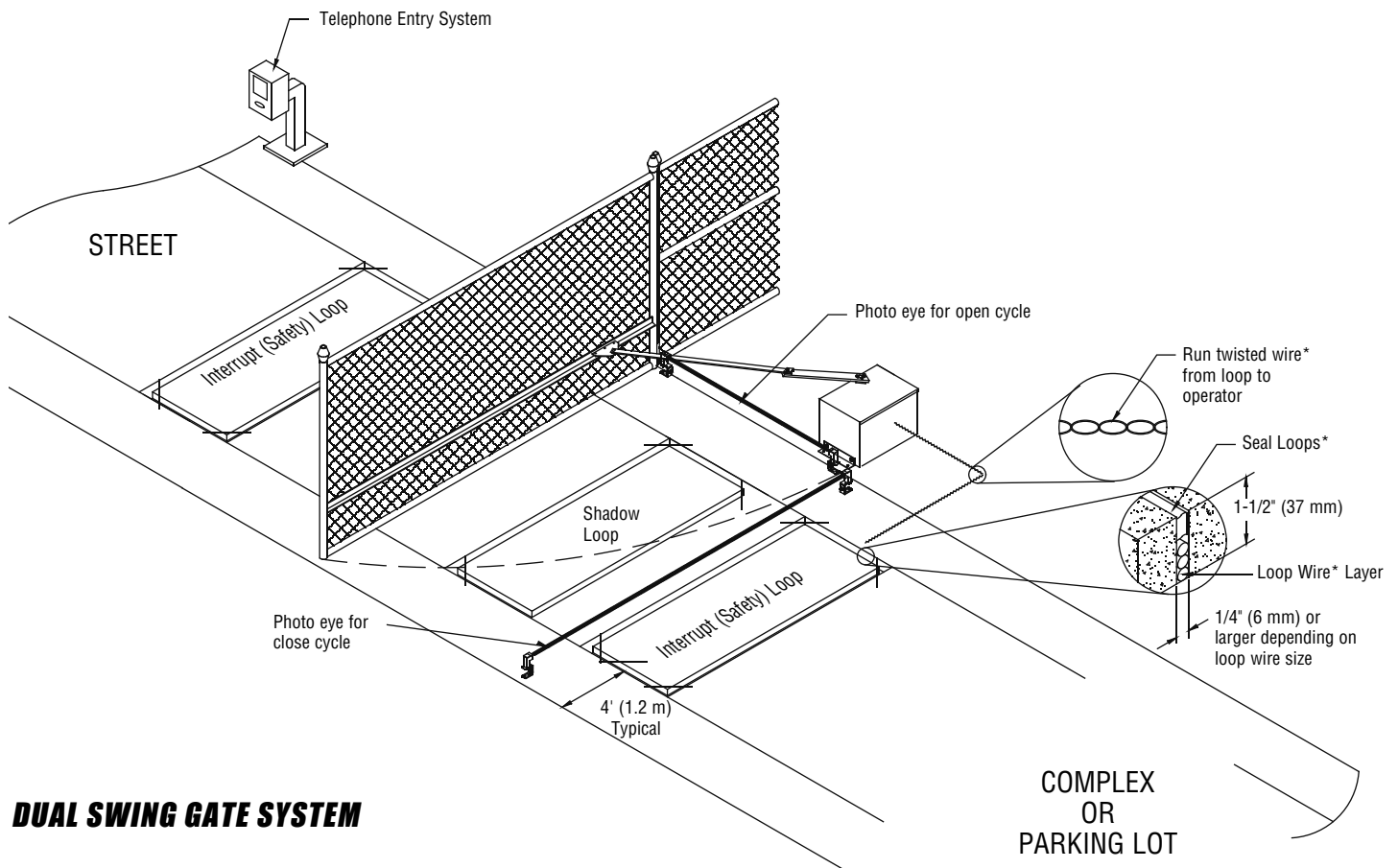
The chart above illustrates the entrapment protection requirements for each of the four UL325 classes.

In order to complete a proper installation you must satisfy the entrapment protection chart shown above. That means that the installation must have one primary means of entrapment protection and one independent secondary means of entrapment protection. Both primary and secondary entrapment protection methods must be designed, arranged or configured to protect against entrapments in both the open and close directions of gate travel.

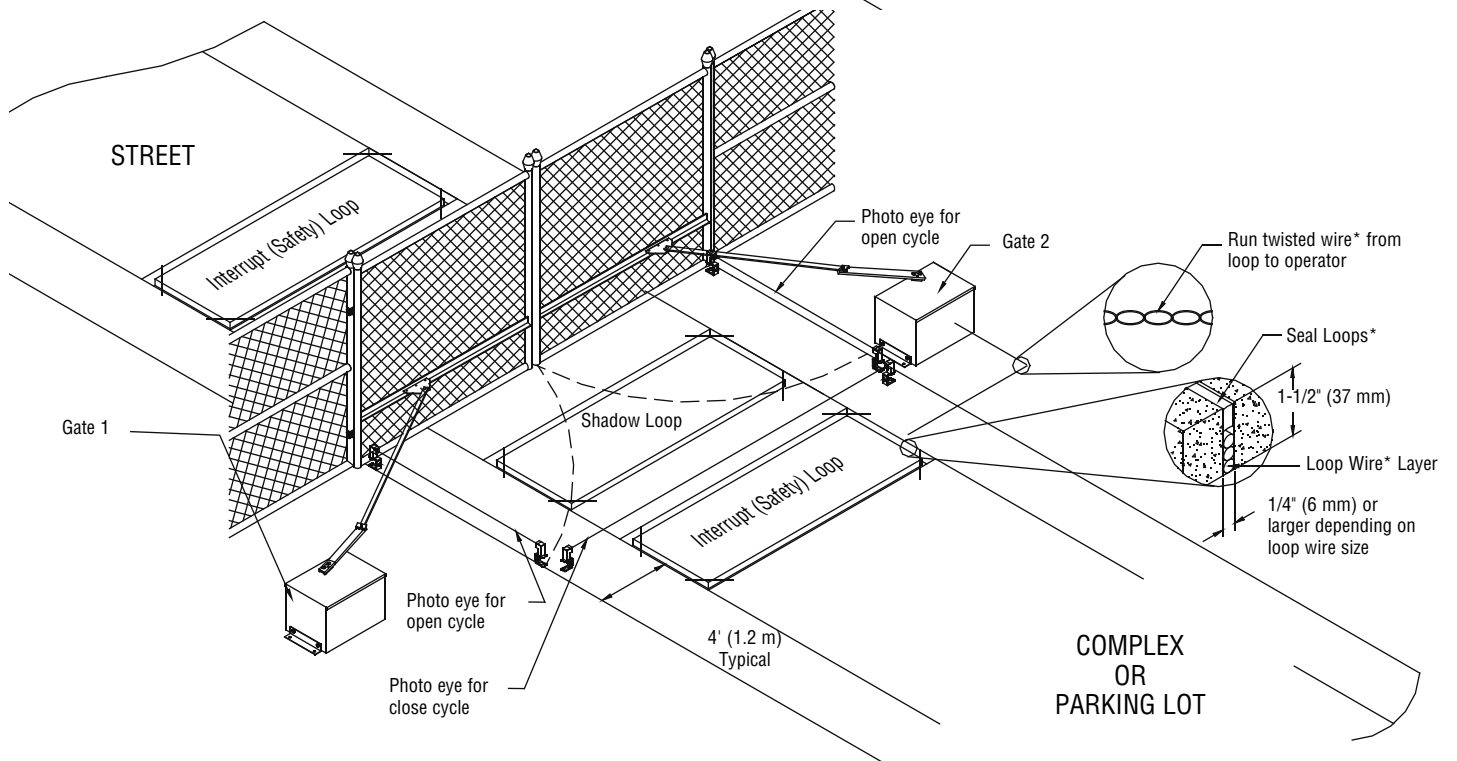
For Example: For a slide gate system that is installed on a single-family residence (UL325 Class I) you must provide the following: As your primary type of entrapment protection you must provide Type A- inherent (built into the operator) entrapment sensing and at least one of the following as your secondary entrapment protection: Type B1- Non-contact sensors such as photoelectric eyes, Type B2- Contact sensors such as gate edges or Type D- Constant pressure control.

SUGGESTED SAFETY PROTECTION DEVICE LOCATIONS

SWING GATE SYSTEM



DUAL SWING GATE SYSTEM



* REFER TO LOOP MANUFACTURER'S INSTRUCTIONS FOR DETAILED INSTALLATION & LOOP WIRING INSTRUCTIONS.

SAFETY INSTALLATION INFORMATION

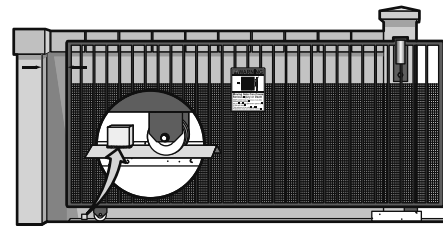
1. Vehicular gate systems provide convenience and security. Gate systems are comprised of many component parts. The gate operator is only one component. Each gate system is specifically designed for an individual application.
2. Gate operating system designers, installers and users must take into account the possible hazards associated with each individual application. Improperly designed, installed or maintained systems can create risks for the user as well as the bystander. Gate systems design and installation must reduce public exposure to potential hazards.
3. A gate operator can create high levels of force in its function as a component part of a gate system. Therefore, safety features must be incorporated into every design. Specific safety features include:
 - Gate Edges
 - Guards for Exposed Rollers
 - Photoelectric Sensors
 - Screen Mesh
 - Vertical Posts
 - Instructional and Precautionary Signage
4. Install the gate operator only when:
 - a. The operator is appropriate for the construction and the usage class of the gate.
 - b. All openings of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 4' (1.2 m) above the ground to prevent a 2 1/4" (6 cm) diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that the gate covers in the open position.
 - c. All exposed pinch points are eliminated or guarded, and guarding is supplied for exposed rollers.
5. The operator is intended for installation only on gates used for vehicles. Pedestrians must be supplied with a separate access opening. The pedestrian access opening shall be designed to promote pedestrian usage. Locate the gate such that persons will not come in contact with the vehicular gate during the entire path of travel of the vehicular gate.
6. The gate must be installed in a location so that enough clearance is supplied between the gate and adjacent structures when opening and closing to reduce the risk of entrapment. Swinging gates shall not open into public access areas.
7. The gate must be properly installed and work freely in both directions prior to the installation of the gate operator.
8. Controls intended for user activation must be located at least six feet (6') away from any moving part of the gate and where the user is prevented from reaching over, under, around or through the gate to operate the controls. Outdoor or easily accessible controls shall have a security feature to prevent unauthorized use.
9. The Stop and/or Reset (if provided separately) must be located in the line-of-sight of the gate. Activation of the reset control shall not cause the operator to start.
10. A minimum of two (2) WARNING SIGNS shall be installed, one on each side of the gate where easily visible.
11. For a gate operator utilizing a non-contact sensor:
 - a. Reference owner's manual regarding placement of non-contact sensor for each type of application.
 - b. Care shall be exercised to reduce the risk of nuisance tripping, such as when a vehicle trips the sensor while the gate is still moving.
 - c. One or more non-contact sensors shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate or barrier.
12. For a gate operator utilizing a contact sensor such as an edge sensor:
 - a. One or more contact sensors shall be located where the risk of entrapment or obstruction exists, such as at the leading edge, trailing edge and post mounted both inside and outside of a vehicular horizontal slide gate.
 - b. One or more contact sensors shall be located at the bottom edge of a vehicular vertical lift gate.
 - c. A hard wired contact sensor shall be located and its wiring arranged so the communication between the sensor and the gate operator is not subject to mechanical damage.
 - d. A wireless contact sensor such as the one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions shall be located where the transmission of the signals are not obstructed or impeded by building structures, natural landscaping or similar obstruction. A wireless contact sensor shall function under the intended end-use conditions.
 - e. One or more contact sensors shall be located on the inside and outside leading edge of a swing gate. Additionally, if the bottom edge of a swing gate is greater than 6" (152 mm) above the ground at any point in its arc of travel, one or more contact sensors shall be located on the bottom edge.
 - f. One or more contact sensors shall be located at the bottom edge of a vertical barrier (arm).

GATE CONSTRUCTION INFORMATION

Vehicular gates should be installed in accordance with ASTM F2200: Standard Specification for Automated Vehicular Gate Construction. For a copy, contact ASTM directly at 610-832-9585 or www.astm.org.

1. GENERAL REQUIREMENTS

- 1.1 Gates shall be constructed in accordance with the provisions given for the appropriate gate type listed, refer to ASTM F2200 for additional gate types.
- 1.2 Gates shall be designed, constructed and installed to not fall over more than 45 degrees from the vertical plane, when a gate is detached from the supporting hardware.
- 1.3 Gates shall have smooth bottom edges, with vertical bottom edged protrusions not exceeding 0.5 inches (12.7 mm) when other than the exceptions listed in ASTM F2200.
- 1.4 The minimum height for barbed tape shall not be less than 8 feet (2.44 m) above grade and for barbed wire shall not be less than 6 feet (1.83 m) above grade.
- 1.5 An existing gate latch shall be disabled when a manually operated gate is retrofitted with a powered gate operator.
- 1.6 A gate latch shall not be installed on an automatically operated gate.
- 1.7 Protrusions shall not be permitted on any gate, refer to ASTM F2200 for Exceptions.
- 1.8 Gates shall be designed, constructed and installed such that their movement shall not be initiated by gravity when an automatic operator is disconnected.
- 1.9 A pedestrian gate shall not be incorporated into a vehicular gate panel or that portion of the adjacent fence that the gate covers in the open position.
- 3.1.4 Positive stops shall be required to limit travel to the designed fully open and fully closed positions. These stops shall be installed at either the top of the gate, or at the bottom of the gate where such stops shall horizontally or vertically project no more than is required to perform their intended function.
- 3.1.5 All gates shall be designed with sufficient lateral stability to assure that the gate will enter a receiver guide, refer to ASTM F2200 for panel types.
- 3.2 The following provisions shall apply to Class IV vehicular horizontal slide gates:
 - 3.2.1 All weight bearing exposed rollers 8 feet (2.44 m), or less, above grade shall be guarded or covered.
 - 3.2.2 Positive stops shall be required to limit travel to the designed fully open and fully closed positions. These stops shall be installed at either the top of the gate, or at the bottom of the gate where such stops shall horizontally or vertically project no more than is required to perform their intended function.



2. SPECIFIC APPLICATIONS

- 2.1 Any non-automated gate that is to be automated shall be upgraded to conform to the provisions of this specification.
- 2.2 This specification shall not apply to gates generally used for pedestrian access and to vehicular gates not to be automated.
- 2.3 Any existing automated gate, when the operator requires replacement, shall be upgraded to conform to the provisions of this specification in effect at that time.

3. VEHICULAR HORIZONTAL SLIDE GATES

- 3.1 The following provisions shall apply to Class I, Class II and Class III vehicular horizontal slide gates:
 - 3.1.1 All weight bearing exposed rollers 8 feet (2.44 m), or less, above grade shall be guarded or covered.
 - 3.1.2 All openings located between 48 inches (1.22 m) and 72 inches (1.83 m) above grade shall be designed, guarded or screened to prevent a 4 inch (102 mm) diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that covers in the open position.
 - 3.1.3 A gap, measured in the horizontal plane parallel to the roadway, between a fixed stationary object nearest the roadway, (such as a gate support post) and the gate frame when the gate is in either the fully open position or the fully closed position, shall not exceed 2-1/4 inches (57 mm), refer to ASTM F2200 for Exception.

4. VEHICULAR HORIZONTAL SWING GATES

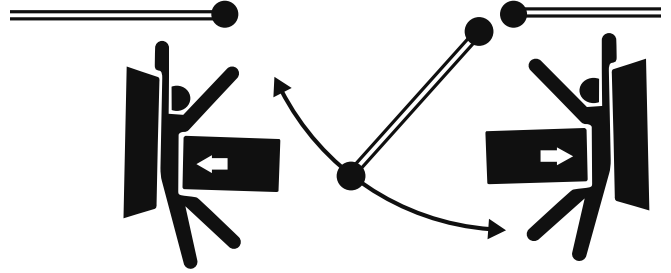
- 4.1 The following provisions shall apply to Class 1, Class II and Class III vehicular horizontal swing gates:
 - 4.1.1 Gates shall be designed, constructed and installed so as not to create an entrapment area between the gate and the supporting structure or other fixed object when the gate moves toward the fully open position, subject to the provisions in the 4.1.1.1 and 4.1.1.2.
 - 4.1.1.1 The width of an object (such as a wall, pillar or column) covered by a swing gate when in the open position shall not exceed 4 inches (102 mm), measured from the centerline of the pivot point of the gate, refer to ASTM F2200 for exception.
 - 4.1.1.2 Except for the zone specified in Section 4.1.1.1, the distance between a fixed object such as a wall, pillar or column, and a swing gate when in the open position shall not be less than 16 inches (406 mm), refer to ASTM F2200 for exception.
 - 4.2 Class IV vehicular horizontal swing gates shall be designed, constructed and installed in accordance with security related parameters specific to the application in question.

SAFETY PRECAUTIONS FOR SWING AND ORNAMENTAL "GRILL TYPE GATES"

⚠ WARNING

To prevent SERIOUS INJURY or DEATH from a moving gate:

- Entrapment protection devices **MUST** be installed to protect anyone who may come near a moving gate.
- Locate entrapment protection devices to protect in **BOTH** the open and close gate cycles.
- Locate entrapment protection devices to protect between moving gate and **RIGID** objects, such as posts.
- A swinging gate shall **NOT** open into public access ways.

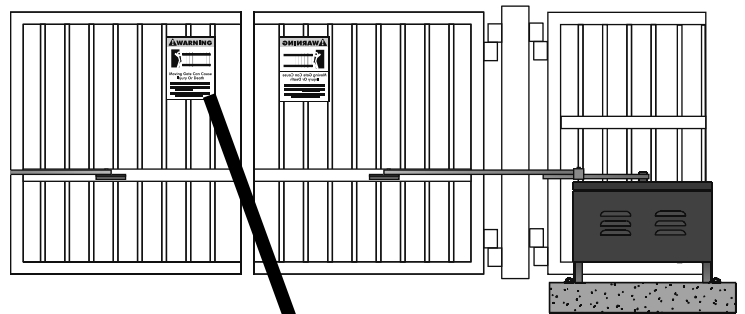


WARNING SIGN PLACEMENT

⚠ WARNING

To prevent SERIOUS INJURY or DEATH from a moving gate:

- Install warning signs on **EACH** side of gate in **PLAIN VIEW**.
- Permanently secure each warning sign in a suitable manner using fastening holes.



INSTALLATION

POST MOUNTING

1. Locate and anchor two posts made of 3" (7.6 cm) outer diameter heavy walled pipe. Posts should be parallel and square to the gate.

IMPORTANT NOTE: The distance between mounting posts and the relative location of the operator to the gate and fence is critical.

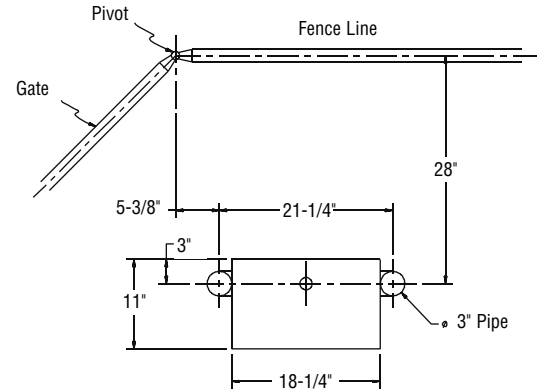
2. Locate electrical conduit, as required, prior to pouring concrete.
3. Locate post mount holes on each end of the cabinet. There are (3) sets of holes vertically.

The preferred method of post mounting is to use the (2) sets of holes nearest to the rear side of the cabinet. Knock out the post mount holes that have been selected.

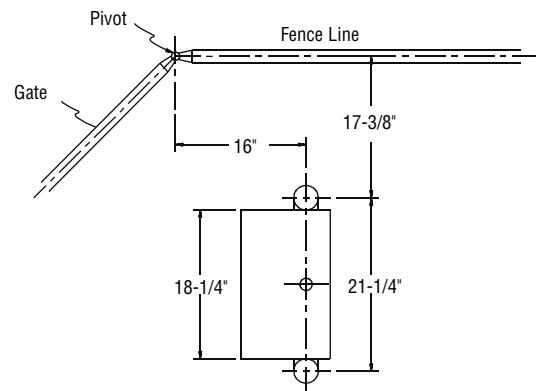
NOTE: The preferred method of post mounting is to use the (2) sets of holes nearest to the rear side of the cabinet. If mentioned holes are used, the upper rear holes are larger than the other holes. This is because a special nut is required for the U-bolt in these holes due to an inaccessibility of tools inside the cabinet in the area of these holes.

4. Insert the U-bolt nut through the cabinet wall from the inside and onto the leg of the U-bolt. This nut can be tightened with a wrench from outside the cabinet. A special tool is provided for this purpose.

Figure 1

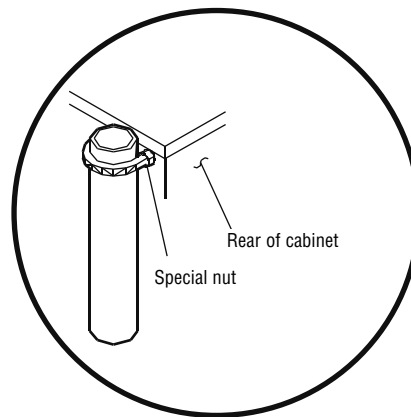
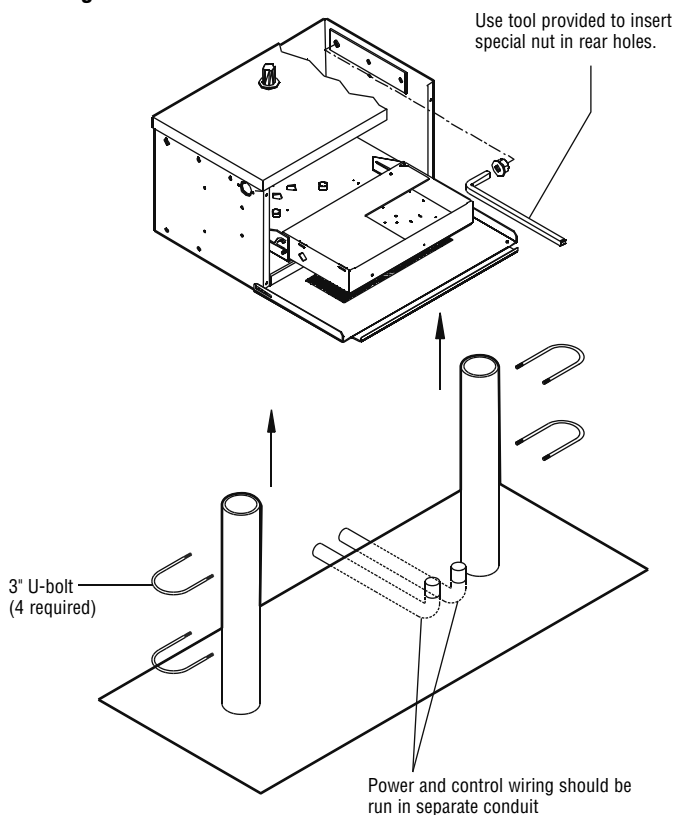


Parallel Mount



Perpendicular Mount

Figure 2



INSTALLATION

PAD MOUNTING

1. Layout the concrete pad (Figure 1).

IMPORTANT NOTE: The relative location of the operator to the fence and the gate is critical. Be sure that the measurements for operator mounting are taken from the centerline of the fence and of the gate hinge.

2. Locate electrical conduit, as required, prior to pouring concrete.

3. Pour concrete pad.

4. Bolt the (2) pad mount brackets to the bottom of the operator with the hardware provided.

5. Secure the operator to the concrete pad. It is very important that the operator be level and square to the gate.

Figure 1

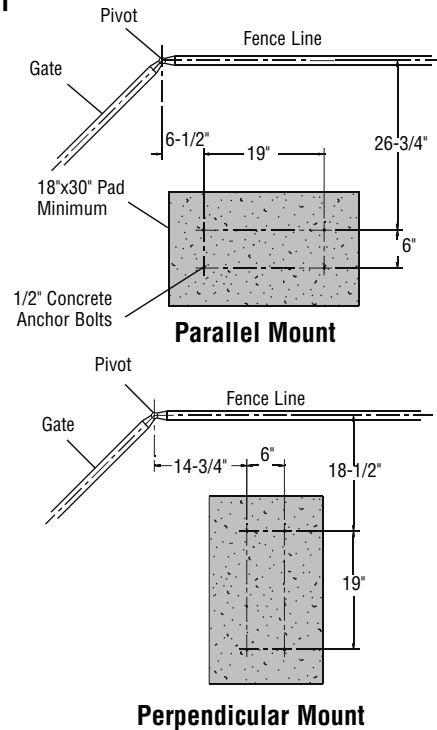
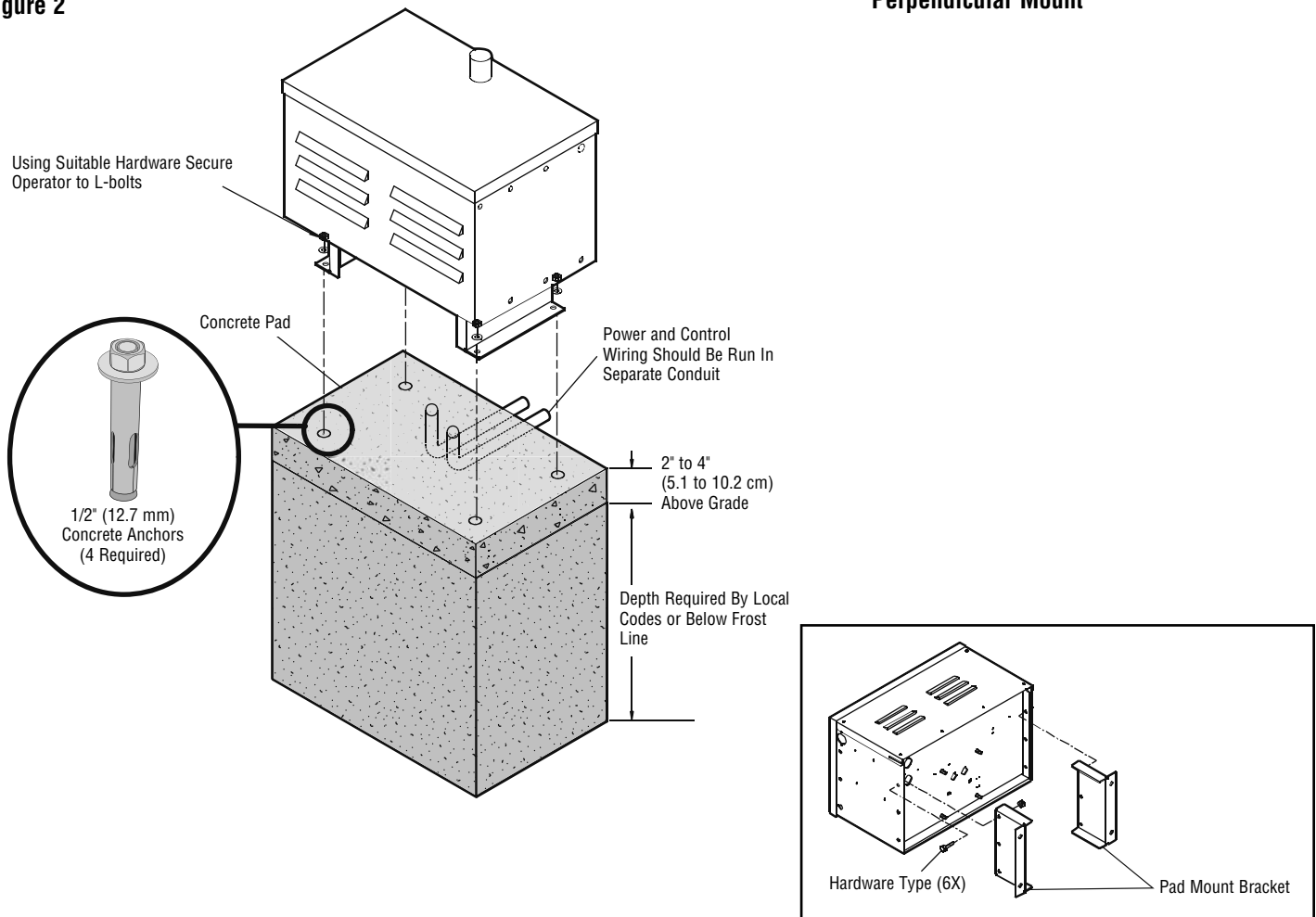


Figure 2



INSTALLATION

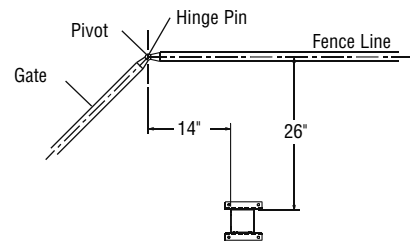
PEDESTAL MOUNTING

1. Locate and anchor pedestal. Pedestal should be parallel and square to the gate.

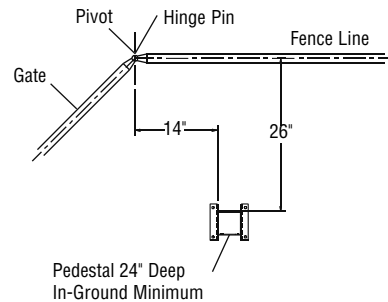
IMPORTANT NOTE: The distance between mounting pedestal and the relative location of the operator to the gate and fence is critical.

2. Locate electrical conduit, as required, prior to pouring concrete.
3. Bolt the mounting brackets to the pedestal.
4. Secure the operator to the pedestal by dropping it onto the pedestal and allowing the mounting studs to slip through the holes on the pedestal brackets. Secure with hex nuts provided.

Figure 1

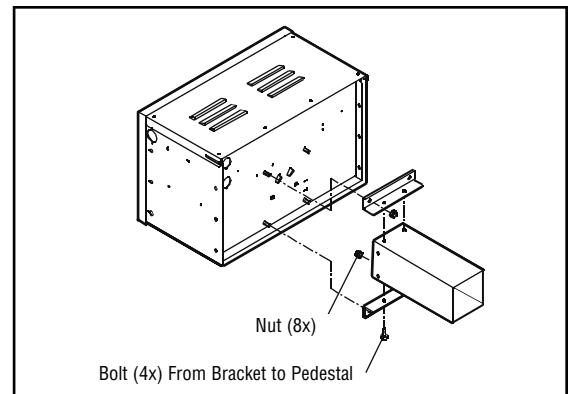
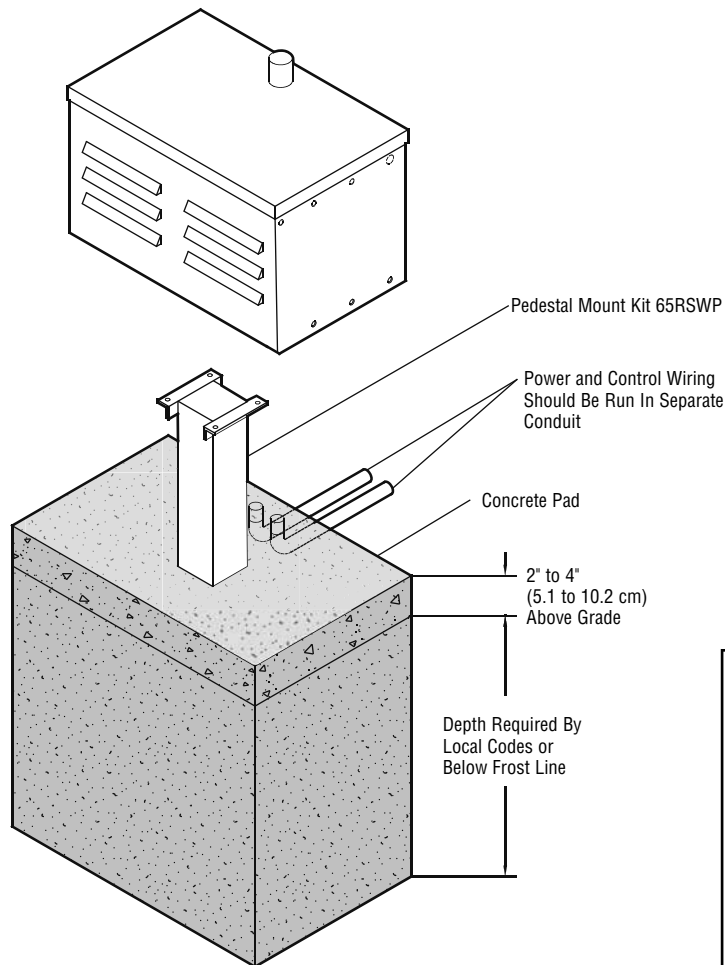


Parallel Mount



Perpendicular Mount

Figure 2



INSTALLATION

CONTROL ARM ASSEMBLY

1. Assemble the control arm to the operator hub.
2. Push up the manual release pin from below the hub and through the control arm. Retain in place with clevis pin. Use 3/8" washers to reduce play between the clevis pin and the top of the control arm.
3. When the manual release pin is allowed to drop down, the control arm should swivel freely about the hub. Leave the arm free to pivot at this time.
4. Fasten the arm stop to the extension arm. Left hand or right hand installations call for mounting the arm stop on opposite sides of the extension arm.
5. Secure the extension arm to the control arm using the hardware provided.

CAUTION

If the arm stop is installed incorrectly, the gate will be prevented from opening and damage to the operator may result!

6. Assemble the gate bracket to the extension arm as shown.
7. Put the gate in the fully closed position and extend the arm assembly out to the closed gate. Mark the point on the gate where the gate bracket will mount to the gate.
8. The gate bracket must be installed on a structural member of the gate. If require, install a horizontal support on the gate at the appropriate height.
9. Attach the gate bracket with U-bolts or by welding.

Figure 1

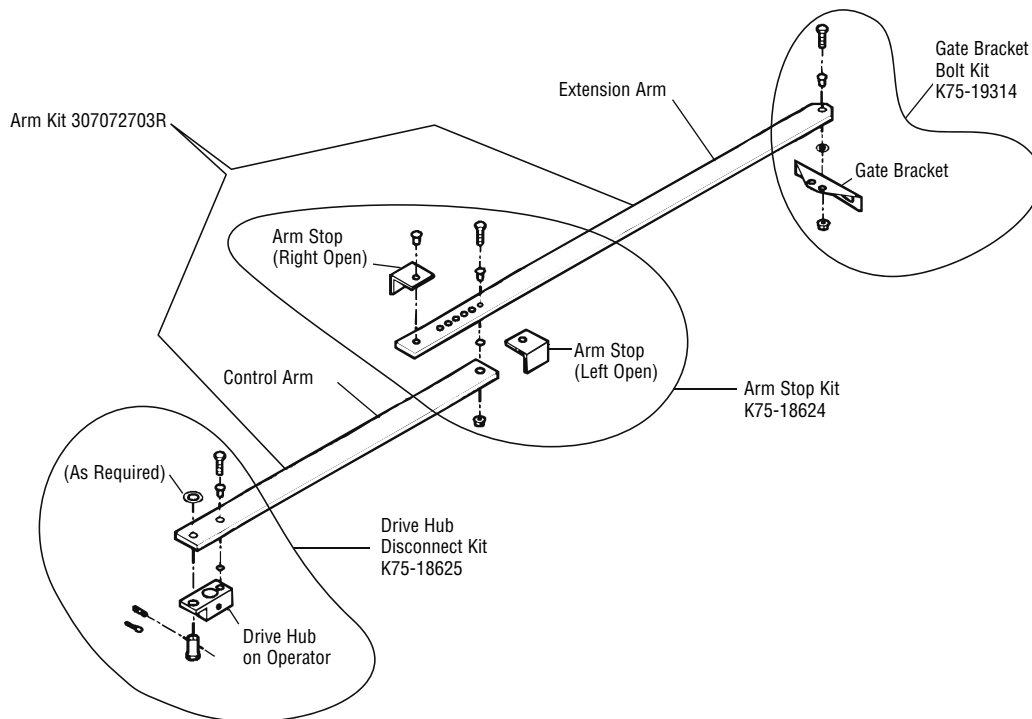
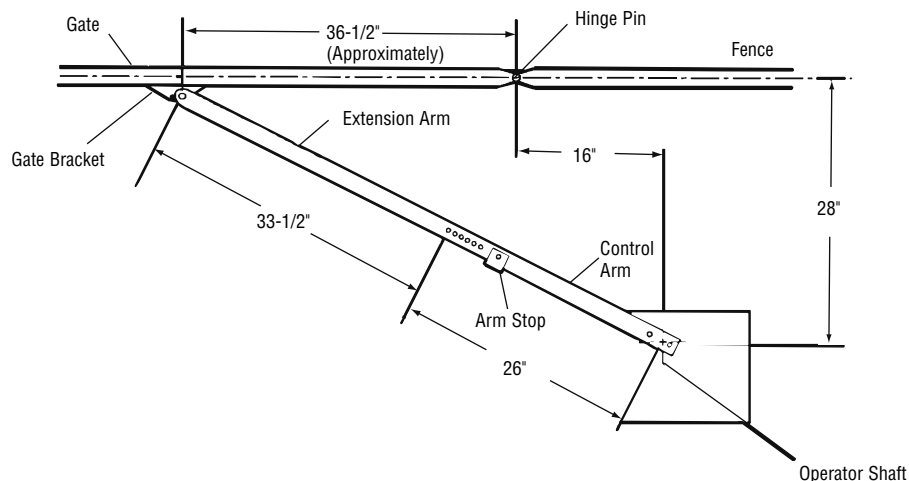


Figure 2



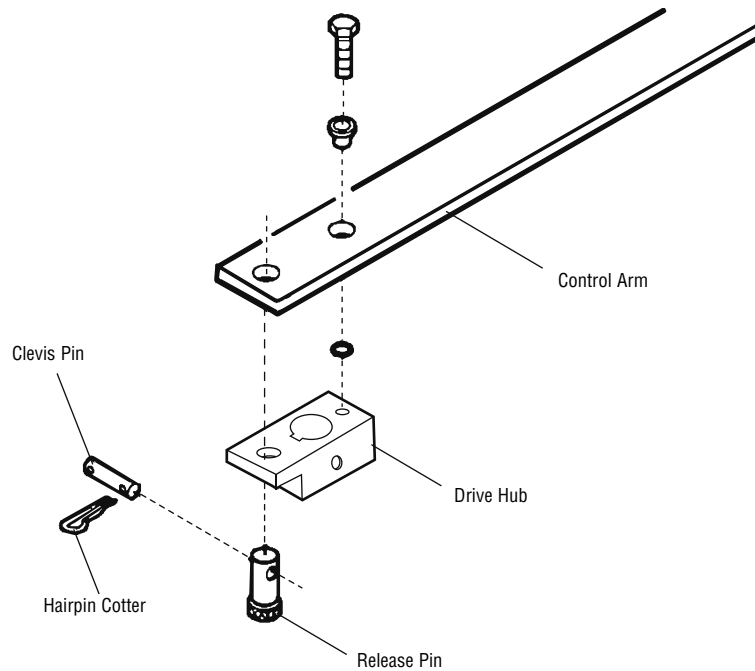
INSTALLATION

MECHANICAL DISCONNECT

The operator can be disconnected from the gate, so the gate can be manually opened or closed. Disconnect the control arm from the drive hub by removing the hairpin cotter and then the clevis pin and allowing the manual release pin to drop down through the hub. The arm should now be free and the gate can be opened and closed normally.

NOTE: If desired, a padlock can be used in place of the clevis pin to hold the manual release pin in place.

Figure 1



WIRING

WARNING

To reduce the risk of SEVERE INJURY or DEATH:

- ANY maintenance to the operator or in the area near the operator **MUST NOT** be performed until disconnecting the electrical power and locking-out the power via the operator power switch. Upon completion of maintenance the area **MUST** be cleared and secured, at that time the unit may be returned to service.
- Disconnect power at the fuse box **BEFORE** proceeding. Operator **MUST** be properly grounded and connected in accordance with local electrical codes. **NOTE:** *The operator should be on a separate fused line of adequate capacity.*
- ALL electrical connections **MUST** be made by a qualified individual.
- **DO NOT** install ANY wiring or attempt to run the operator without consulting the wiring diagram. We recommend that you Install an optional reversing edge **BEFORE** proceeding with the control station installation.
- ALL power wiring should be on a dedicated circuit and well protected. The location of the power disconnect should be visible and clearly labeled.
- ALL power and control wiring **MUST** be run in separate conduit.
- **BEFORE** installing power wiring or control stations be sure to follow ALL specifications and warnings described below. Failure to do so may result in SEVERE INJURY to persons and/or damage to operator.

POWER WIRING INSTALLATION

Wiring Specifications (STRANDED COPPER WIRE)

On a Dual Gate System, each unit must be installed on ITS OWN separate circuits

SINGLE PHASE		
	115 Vac	230 Vac
WIRE GAUGE 6		
• 1/3 HP Motor —————	615ft.	3077ft.
WIRE GAUGE 8		
• 1/3 HP Motor —————	432ft.	1942ft.
WIRE GAUGE 10		
• 1/3 HP Motor —————	271ft.	1218ft.
WIRE GAUGE 12		
• 1/3 HP Motor —————	170ft.	763ft.

NOTE: Calculated using NEC guidelines. Local codes and conditions must be reviewed for suitability of wire installation. All power wiring should be dedicated and protected. Location of primary power disconnect should be labeled.

WIRING

ON/OFF SWITCH POWER WIRING

NOTE: Before running power wiring refer to wiring specifications on page 14 for correct wire gauges.

Secure all electrical power connections inside the disconnect switch electrical box. Refer to electrical wiring diagram on page 30.

SINGLE PHASE

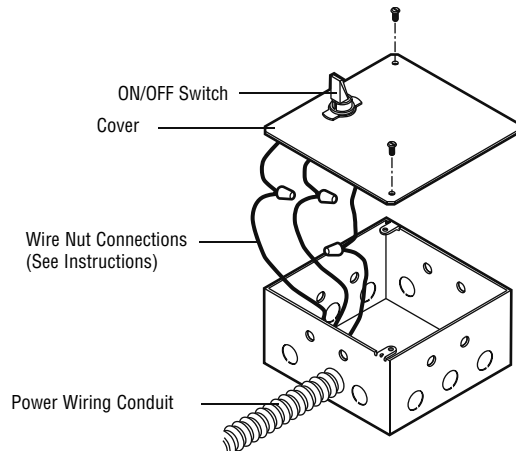
All single phase operators will have the following:

115V

- L1 (NEUTRAL), WHITE
- L2 (HOT), BLACK
- GROUND, GREEN

208/230V

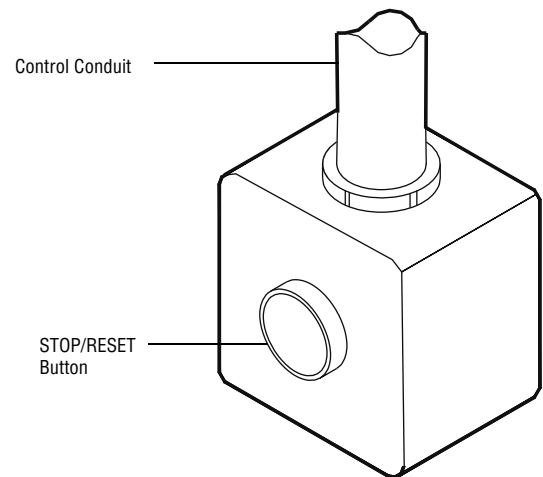
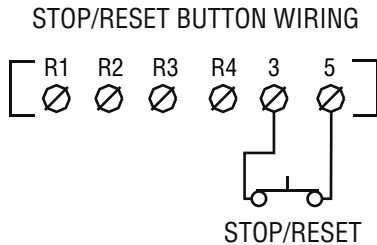
- L1 (HOT), BLACK
- L2 (HOT), BLACK
- GROUND, GREEN



STOP/RESET BUTTON CONTROL WIRING (REQUIRED)

1. This control will function as a Stop/Reset command and is to be wired within line of sight of the gate. **The operator will not function unless this circuit is completed.**
2. Wire control station to terminals 3 and 5 in the control box on the operator.

FIELD WIRING TERMINALS



ADJUSTMENT

PROGRAMMING THE RADIO RECEIVER

SET SECURITY MODE

The Universal Receiver can be used with up to 15 315 MHz rolling code remote controls or PINs in HIGH security mode. Alternately, it can be used with up to 31 of any type of 315 MHz remote control in NORMAL security mode, including any combination of rolling code, billion code, or dip switch remotes.

The jumper must be set at the HIGH position for the receiver to operate in HIGH security mode. It must be set at NORMAL position to operate at the NORMAL mode (Figure 1).

When changing from NORMAL to HIGH security mode, any previous remote control codes must be erased. Repeat Steps 2 and 3 in the Programming Section below to reprogram the receiver for each remote control in use.

The receiver is factory set at HIGH.

⚠ WARNING

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

SET OUTPUT DURATION

For commercial applications, the receiver can be set for either constant or momentary closure on the output contacts. Use of constant closure is prohibited on residential garage door openers because it overrides the safety reversal devices.

With the jumper in the "M" (Momentary) position, the contacts will close for 1/4 second regardless of the length of radio transmission. With the jumper in "C" (Constant) position, the contacts will stay closed as long as the radio continues transmitting (Figure 2).

The receiver is factory set at M.

PROGRAMMING THE REMOTE TO THE RECEIVER

1. Pry open the front panel of receiver case with a coin or a screwdriver. Reconnect power to opener (Figure 3).
2. Press and release the "learn" button on the receiver. The learn indicator light will glow steadily for 30 seconds.
3. Within 30 seconds, press and hold the button on the hand-held remote that you wish to operate your garage door.

The opener will now operate when the push button on either the receiver or the remote control is pressed.

Repeat Steps 2 and 3 for each remote control that will be used to operate the garage door opener.

To erase all remote control codes:

Press and hold the "learn" button on the receiver panel until the indicator light turns off (about 6 seconds). All remote control codes are now erased. Then follow the steps above to reprogram each remote control.

⚠ WARNING

To prevent possible SERIOUS INJURY or DEATH from electrocution:

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

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

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

NOTICE: To comply with FCC and/or Industry Canada (IC) rules, adjustment or modifications of this receiver and/or transmitter are prohibited, except for changing the code setting or replacing the battery. THERE ARE NO OTHER USER SERVICEABLE PARTS.
Tested to Comply with FCC Standards FOR HOME OR OFFICE USE. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Figure 1

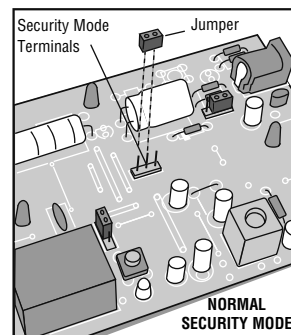
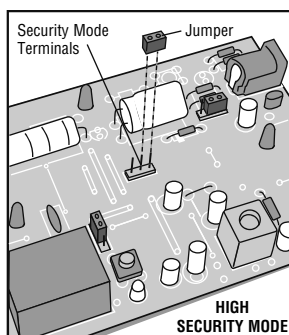


Figure 2

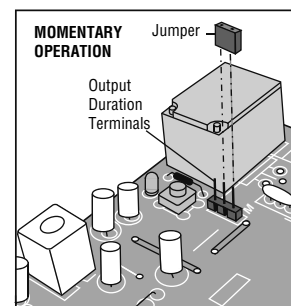
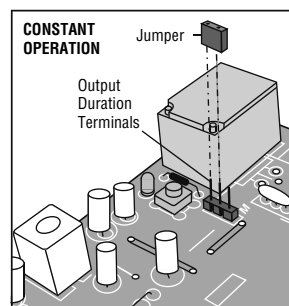
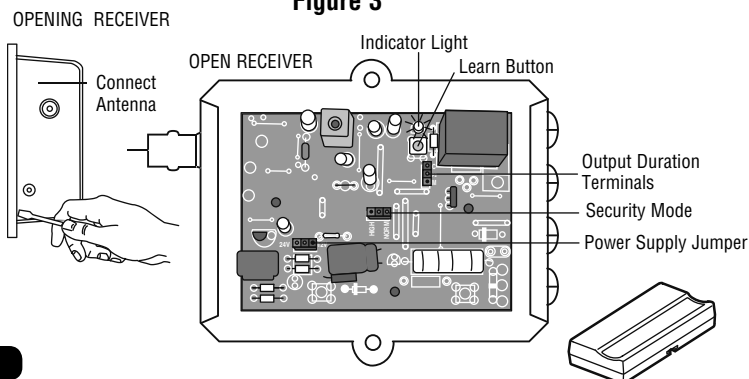


Figure 3



ADJUSTMENT

LIMIT SWITCH ADJUSTMENT

NOTE: For limit location and configuration refer to Figure 1.

1. Before turning on power, disconnect extension arm from gate bracket so gate is no longer connected to operator. Push manual release pin up through the control arm, slide clevis pin in place and secure with a cotter pin.
2. The (3) collars are held to shaft by set screws. The collars should now be loose on the shaft. If not, loosen all set screws until collars are moving freely on shaft.

TO ADJUST CLOSE LIMIT SWITCH

3. Turn on electrical power.
4. Press CLOSE button (if installed) or connect terminals 4 & 5 on J1 terminal strip to cause the gate to close. The control arm should move in the close direction.
5. When control arm is pointed in approximate direction of gate bracket (on fully closed gate) press STOP button or release terminals to stop control arm.

NOTE: If control arm does not move far enough to point in proper direction, the close limit switch has been prematurely actuated. Turn off power, loosen set screw on close limit cam and rotate nut away from close limit switch. Repeat steps 3 and 4 until control arm is pointed in correct direction.

6. Turn off power. Be sure close limit cam is freely turning. Rotate cam in close direction. Stop when cam just clicks close limit switch. Tighten set screw.
7. Reconnect gate bracket to extension arm. If arm has moved too far in close direction to allow connection of gate bracket turn off power, connect terminals 5 & 7 to rotate arm in opposite direction, and press STOP button when arm is in desired position.

TO ADJUST OPEN LIMIT SWITCH

8. Turn on power. Press OPEN button (if installed) or connect terminals 5 & 7 on J1 terminal strip. Gate should open. If gate does not open the open limit cam may be already actuating open limit switch or an improper electrical connection may have been made. Turn off power, inspect, correct and repeat this step.
9. When gate reaches desired fully open position press STOP button or release terminals. Turn off power. Limit cam should turn freely. Rotate cam in open direction. Stop when cam just clicks the open limit switch. Tighten set screw.
10. Fine tune both switch settings by using J1 terminals 4 & 5 (to CLOSE) of 5 & 7 (to OPEN) and the factory supplied STOP button to move gate and rotating limit collars slightly to alter gate travel. Rotate cam away from limit switch to increase travel, toward switch to decrease travel.

CAUTION

NEVER place hands or tools inside operator or near drive mechanism unless power is off.

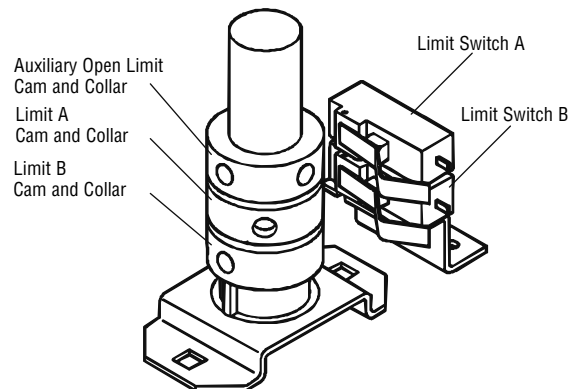
CAUTION

When following limit switch adjustment procedure, the motor belt will turn and the control arm will move during some steps. Keep hands and tools out of operator and away from arm and drive shaft unless power is off or **SERIOUS INJURY** may occur.

CAUTION

Be aware that operator arm may start to move if a control device has been improperly connected. Keep hands and tools out of operator and away from arm and drive shaft.

Figure 1



LIMIT DIRECTION

DIRECTION OF GATE TO OPEN	OPEN LIMIT	CLOSE LIMIT
RIGHT (FACTORY DEFAULT)	A	B
LEFT	B	A

ADJUSTMENT

RPM SENSOR (HALL EFFECT) ADJUSTMENT

NOTE: Normally the RPM sensor (hall effect) does not need adjustment, but may go out of alignment due to shipping vibration or rough handling.

These operators use an internal entrapment protector system. This system consists of the control board, magnet, and RPM sensor. It may become necessary to adjust the sensor for correct alignment. To do so please perform the following steps:

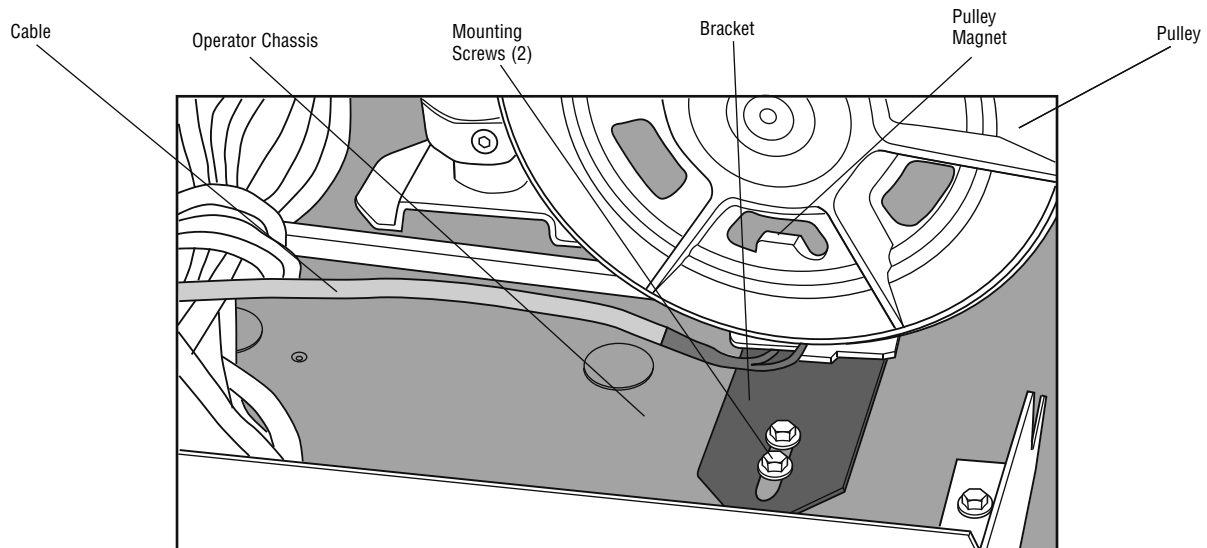
1. Loosen the two screws holding the hall bracket to the frame.
2. Adjust the bracket so that the sensor is:
 - a. Parallel with the pulley.
 - b. .020" (.051 cm) away from the pulley's magnet. Use a feeler gauge to measure the distance.
3. Tighten screws to secure assembly.
4. Manually rotate pulley to ensure that each magnet clears the sensor board.

If a magnet does not clear the board, re-adjust the RPM (hall effect) assembly accordingly.

WARNING

To reduce the risk of SEVERE INJURY or DEATH:

- Disconnect power BEFORE performing ANY adjustments.



ADJUSTMENT

SEQUENCED ACCESS MANAGEMENT SYSTEM (SAMS)

The Sequenced Access Management System or SAMS allows the customer more control when managing vehicular entrances to areas such as apartment complexes, businesses and gated communities. The basic concept of the system is that traffic is controlled by two gates installed in tandem, a fast moving gate such as a barrier gate operator and a slower moving more secure or ornamental gate such as a single or pair of slide/swing gate operator. The design of this gate system balances the demands of speed during high traffic periods with security during low traffic periods. Barrier gates typically have the fastest open times of the many gate operator types and the slide or swing gates allow you to effectively seal off the perimeter of the complex you are planning to secure.

SAMS OPERATION

1. When an authorized vehicle accesses the gate system, the SAM system responds by first opening the gate farthest from the vehicle, the swing or slide gate.
2. Once the swing or slide gate is open, the barrier gate begins its open cycle.
3. Once the barrier is open the vehicle may pass through the SAM system. At this point you have two options in how you would like to initiate the SAM systems closure. You may chose to:
 - a. Use a timer to close system to automatically close the barrier gate after a preset amount of time or
 - b. Use a loop system to close the barrier gate after the vehicle has passed through the SAM system.
4. Once the barrier gate is closed the slide or swing gate will activate its internal timer to close and begin closing.
5. If another authorized vehicle accesses the SAM system before the slide or swing begins to close the barrier will open and allow the vehicle to pass through the SAM system.
6. If another authorized vehicle accesses the SAM system during the slide or swing gates closing cycle the SAM system will reopen the slide or swing gate. Once the slide or swing gate reaches the open position the barrier will then open to allow the vehicle to pass through the SAM system.
7. If no other authorized vehicles access the SAM system the swing or slide gate will close followed by the barrier.

NOTE: Connect all entry devices to the slide or swing gate. If using a device, such as a 7-day timer, to latch the slide or swing gate open during high traffic times, connect the device's N/O relay output to the control board's Interrupt Loop input. Once the device activates the Interrupt Loop input, the next vehicle to access the SAMS system will lock the gate in the open position until the device deactivates. When the device deactivates, the timer to close will automatically close and secure the gate.

SAMS WIRING

1. Install conduit between the BG770 and the SW420 for SAMS control wiring.
2. Run a 4-conductor cable in the conduit between the BG770 SW420.
3. Locate the SAMS relay terminals (J5) on the control board in the SW420 and locate the auxiliary limit switch in the BG770.
4. Attach a wire from the SAMS relay terminal (J5) on the control board to terminal 1 on the BG770 terminal strip.
5. Attach a wire from the SAMS relay terminal (J5) on the control board to terminal 3 on the BG770 barrier gates terminal strip.
6. Attach a wire from terminal J1-5 on the control board to the common (COM) on the auxiliary limit switch in the barrier gate.
7. Attach a wire from terminal J1-8 on the control board to the normally open (NO) on the auxiliary limit switch.
8. Test for correct functionality of the SAM system.

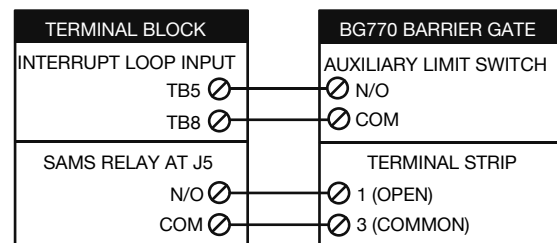
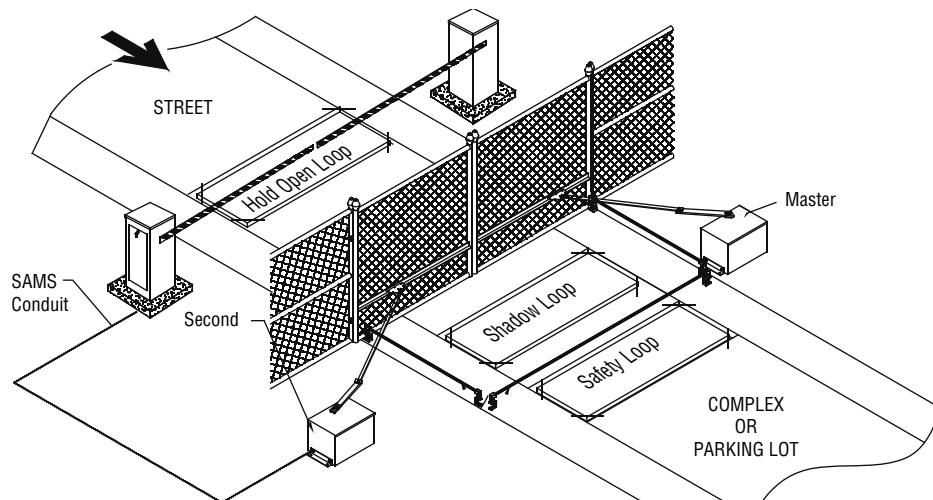


Figure 1



ADJUSTMENT

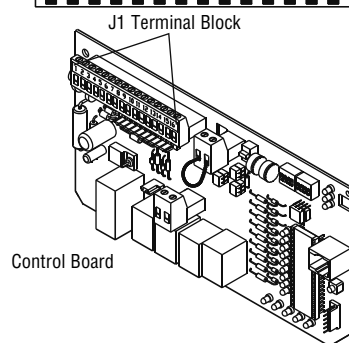
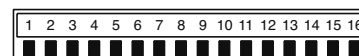
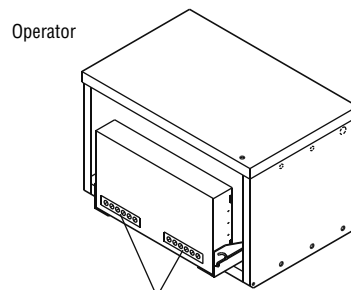
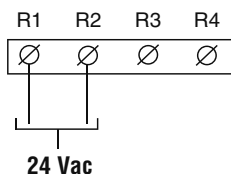
ACCESSORY WIRING

All inputs are normally open and momentary, except the stop (N.C.). The following instructions are based upon UL325, and include recommendations for significant increase in safety.

We strongly recommend that you follow the UL guidelines presented throughout the manual. Refer to instructions shipped with optional control devices for mounting, wiring, programming and adjustment.

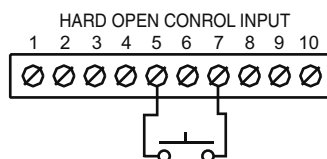
24 Vac Accessory Power

Can be found at terminals R1 and R2 located on radio terminal block.



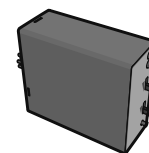
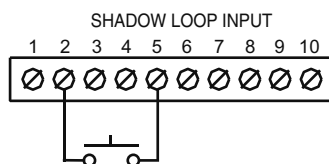
J1 Terminals 1 & 5 - Residential Radio (single button) Input

These terminals are intended for use with a radio receiver in a residential application or as a single button control. This allows the user to open the gate by activating the remote control when the gate is closed or between limits. This input also gives the user the ability to close the gate by activating the remote control when the gate is on the open limit.



J1 Terminals 2 & 5 - Shadow Loop Input

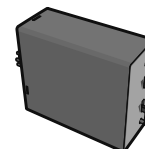
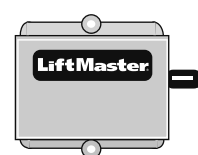
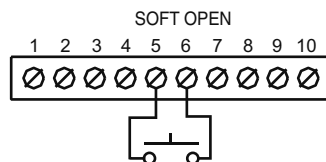
These terminals are intended for use with a loop detector and is primarily used on swing gate operators. This input protects cars by preventing the gate from moving off of the **open or close limit** when the shadow loop input is active.



J1 Terminals 6 & 5 - Soft Open

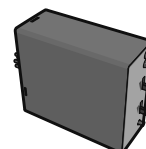
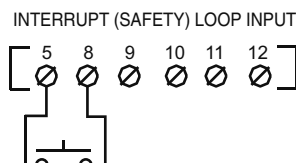
These terminals are intended for use as a general open control. Accessories that may be wired to this input include: Telephone Entry Systems, Radio Receiver (Commercial Applications), Exit Loop Detector, Keypads, 7-Day Timer.

NOTE: Will not override a double entrapment (signalled by the gate stopped and entrapment alarm on).



Field Wiring Terminals 8 & 5 - Interrupt (Safety) Loop Input

These terminals are intended for use with a loop detector. This input functions to reverse a closing gate to the open limit. Latching this input will reset the timer to close.



ADJUSTMENT

ACCESSORY WIRING

Field Wiring Terminals 9 & 5 - Obstruction Open (Edge/Photo Eye Input)

Edge Input: See Programming Section

This input will reverse an opening gate to the close limit.

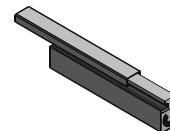
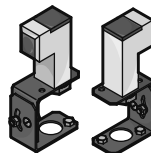
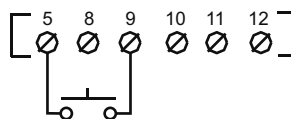
Activating this input when the gate is closing will have no effect.

NOTE: If upon reversal a second separate obstruction is detected (gate edge or RPM sensor), gate will stop and alarm.

Photo Eye Input: See Programming Section

This input will pause an opening gate. Once the input (photo eye) is cleared, the gate continues to open. Activating this input when the gate is closing will have no effect.

OBSTRUCTION OPEN (EDGE/PHOTO EYE INPUT)



Field Wiring Terminals 10 & 5 - Obstruction Close (Edge/Photo Eye Input)

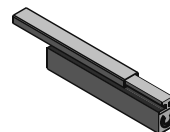
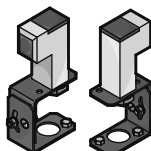
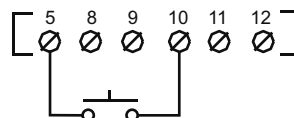
Edge Input: See Programming Section

This input will reverse a closing gate to the open limit. When reaching the open limit the timer to close, if enabled, will be disabled until another command is given. Activating this input when the gate is closing will have no effect. **NOTE:** If upon reversal a second separate obstruction is detected (gate edge or RPM sensor), gate will stop and alarm.

Photo Eye Input: See Programming Section

This input will reverse a closing gate to the open limit. This input will not affect the timer to close. Activating this input when the gate is closing will have no effect.

OBSTRUCTION CLOSE (EDGE/PHOTO EYE INPUT)

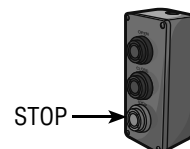
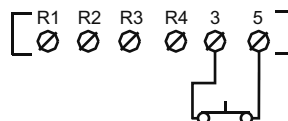


Field Wiring Terminals 3 & 5 - Stop/Reset Control Input

These terminals are intended for use with a single stop/reset button or the stop control of a three-button station that is installed within line of sight of the gate. This input functions to stop the gate or to reset the gate after an entrapment fault.

NOTE: This input uses a normally closed circuit and the operator will not run until a stop control is installed.

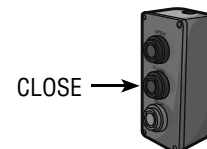
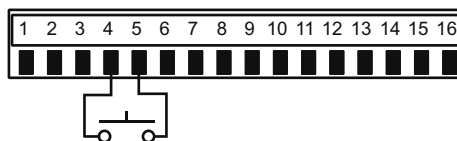
STOP/RESET BUTTON WIRING



J1 Terminals 4 & 5 - Hard Close Control Input

These terminals are intended for use only with the close control of a three-button station that is installed within line of sight of the gate. A momentary activation of this input will cause the gate to close. **Activation of this input for longer than three seconds will enable the control to be used as a constant pressure override device.** This will allow the user, in emergencies, to override a failed accessory such as a loop detector or photo eye.

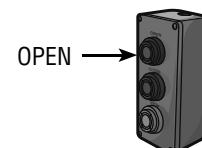
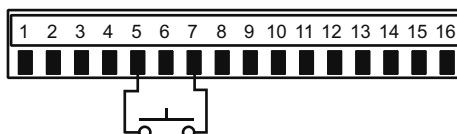
HARD CLOSE CONTROL INPUT



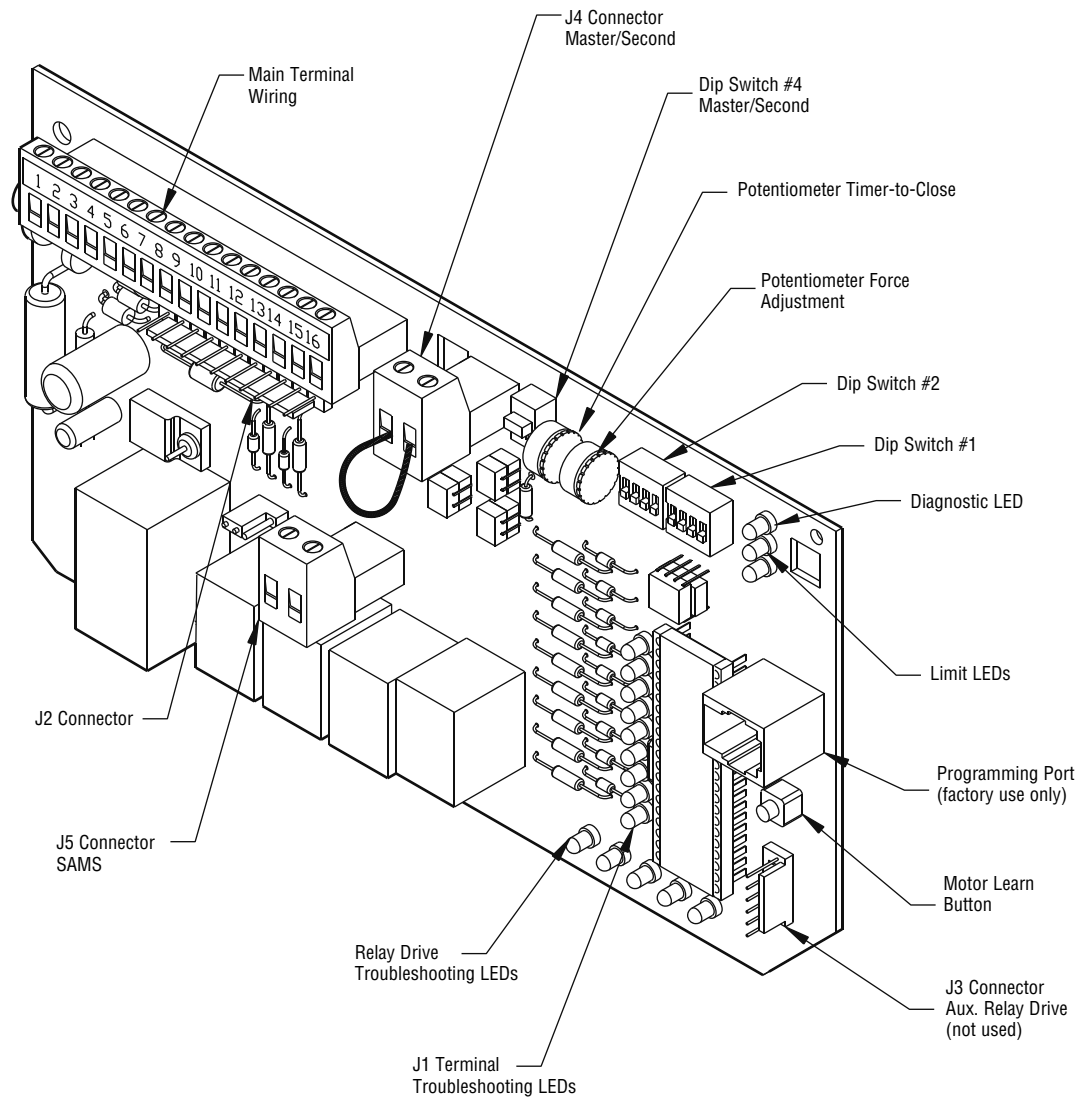
J1 Terminals 7 & 5 - Hard Open Control Input

These terminals are intended for use only with the open control of a three-button station that is installed within line of sight of the gate. A momentary activation of this input will cause the gate to open. **Activation of this input for longer than three seconds will enable the control to be used as a constant pressure override device.** This will allow the user, in emergencies, to override a failed accessory such as a loop detector or photo eye.

HARD OPEN CONTROL INPUT



CONTROL BOARD ILLUSTRATION



ADJUSTMENT

CONTROL BOARD PROGRAMMING AND FEATURES

MOTOR LEARN FUNCTION (FORCE PROFILE)

This function is preprogrammed at factory. If either board or motor is replaced, the controller will need to be programmed to "LEARN" the specific motor RPM profile of your operator. Switch "S3" is provided for this. This is important for accurate force control. Failure to do so may result in improper and unsafe operation.

To learn the motor:

NOTE: Motor Learn must be performed in stand alone mode.

1. The operator must remain attached to the gate throughout the entire process.
2. Press the motor learn button. The yellow LED should start to flash rapidly.
3. Install a jumper on either the hard open or the hard close input terminals. The motor will run for a few seconds and then stop. If the LED goes out the motor is learned. If the unit activates a limit before completing the learn or some other error occurs the LED will go back to on continuously. If this happens try learning while running in the opposite direction.

NOTE: It is important that the jumper is in constant contact while the gate is moving in learn mode.

FORCE CONTROL

Set the force control pot such that the unit will complete a full cycle of gate travel but can be reversed off an obstruction without applying an unreasonable amount of force. On most operators this will be around the middle of the range.

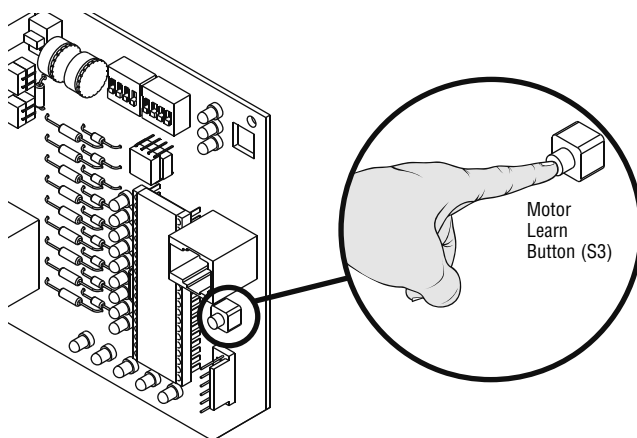
NOTE: For LED location refer to illustration on previous page.

DIAGNOSTICS (LEDS AND CODES)

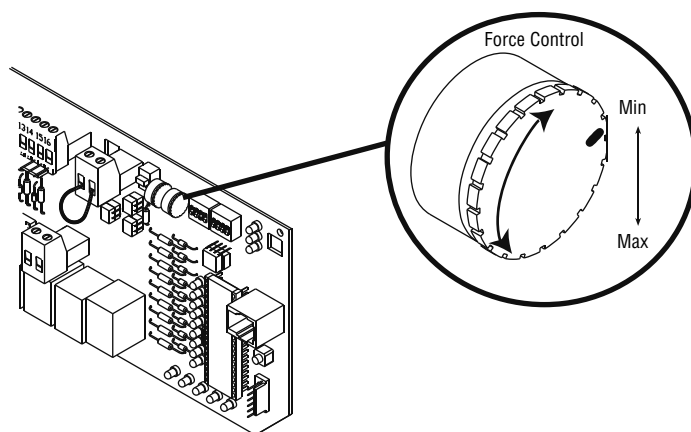
There are three diagnostic LEDs. Two red LEDs (OLS, CLS) are indicators for the open and close limits. The LEDs are illuminated when the limit switch contacts are closed.

The third amber LED (DIAG) is used to blink out diagnostic codes. The number is the count of the number of times the LED is on in an 8 second period. The LED is on for approximately 1/2 second and repeats every second until the number is reached. There will be a pause following each pulse cycle (1-6 pulses) to differentiate between the different diagnostic codes.

MOTOR LEARN BUTTON



FORCE CONTROL



LED Code Flashed	Diagnostic Meaning	Cleared By
OFF	Normal operation	N/A
1	Single entrapment sensed	Control Input
2	Double entrapment	Hard Input*
3	Failed or no hall effect sensor	Removal of problem
4	Exceed maximum motor run time	Hard Input*
5	Limit fault	Control Input
6	Loss of communications between master and second during run mode	Removal of problem
On No Flash	Motor not learned	Completion of Motor Learn Routine

*Hard inputs include open override, close override and stop inputs.

ADJUSTMENT

CONTROL BOARD PROGRAMMING AND FEATURES (CONTINUED)

RELAY DRIVE TROUBLESHOOTING LEDS

There are 5 troubleshooting LEDs on relay drives K1 through K5. These LEDs will be illuminated when the microcontroller relay drive is activated.

LED	LED NAME	DESCRIPTION
D6	Contactor A	On when Contactor A is activated
D5	Contactor B	On when Contactor B is activated
D4	SAM	On when SAM relay is activated
D3	Lock	On when Maglock relay is activated
D2	Alarm	On when Alarm Relay is activated

TROUBLESHOOTING LEDS

There are 9 troubleshooting LEDs.

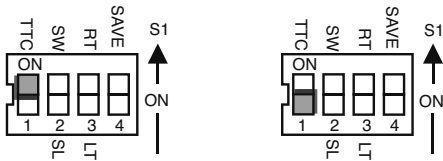
LED	LED NAME	DESCRIPTION
D11	Radio	On when Radio switch is activated
D13	Shadow	On when Shadow Loop is activated
D15	Hard Close	On when Close switch is activated
D17 (Green)	Stop	On when Stop switch is not activated
D19	Soft Open	On when Open switch is activated
D21	Hard Open	On when Open switch is activated
D24	Interrupt (Safety) Loop	On when Interrupt/Safety Loop activated
D29	Obstruction Open	On when Edge is activated or when Photo Eye beam is broken
D31	Obstruction Close	On when Edge is activated or when Photo Eye beam is broken

PROGRAM SETTINGS (DIP SWITCH S1)

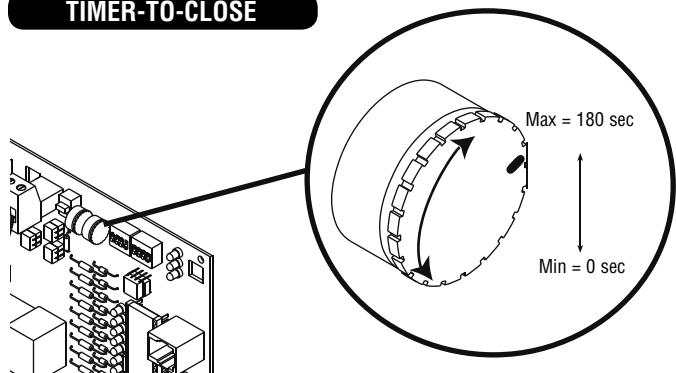
NOTE: For all S1, S2 and S4 switch settings to take effect, the Save Mode switch must be set to the off position.

TIMER-TO-CLOSE ENABLE

This switch enables the auto close timer. The Timer-to-Close feature works in conjunction with the potentiometer located on the board.



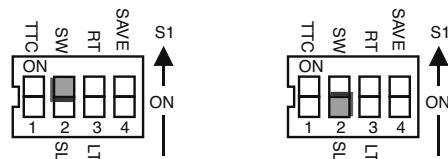
TIMER-TO-CLOSE



SLIDE/SWING

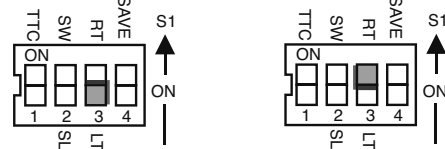
This switch selects slide or swing gate operation, in order to optimize gate behavior for specific application.

SL = Slide • SW = Swing



RIGHT/LEFT OPERATION

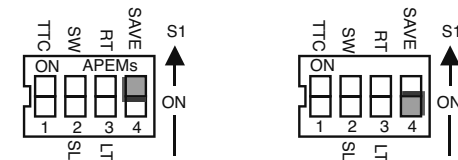
This switch selects the gate opening direction, to the left or to the right. Right/Left operation is determined from the inside of fence looking out.



“SAVE” SWITCH

This switch stores all settings into memory and locks out changes.

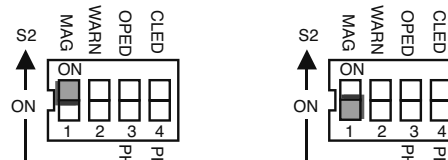
NOTE: For any programming changes to take effect this switch must be in OFF position. When switch is ON, no settings can be changed.



PROGRAM SETTINGS (DIP SWITCH S2)

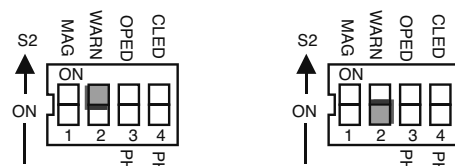
MAGLOCK ENABLE

This switch enables the Maglock feature. On an open command there will be a half second delay after the maglock relay is released before the motor starts.



WARNING ENABLE

This switch enables the gate “in motion” alarm feature. The alarm will beep 3 seconds prior to movement and throughout movement.



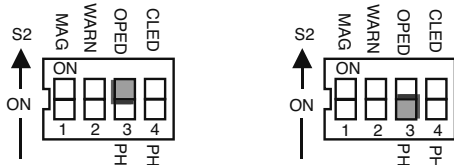
PROGRAM SETTINGS (DIP SWITCH S2)

EDGE/PHOTO OPEN

This switch (S2-3) selects edge or photoelectric sensor for the gate opening protection input.

Open Photo Eye (Pause): When the controller is configured for photo eyes, the input functions to pause the gate during the opening cycle. Once the input is cleared the gate continues to open.

Open Edge: When the controller is configured for safety edges, the input functions to reverse the gate to the close limit when the edge is activated during the opening cycle.



MASTER/SECOND SYSTEMS

Dual Gate Communications

The control board is capable of running the operator in a master or second mode depending on (S4) switch setting.

Before initiating any command the master unit queries for the presence of a "second unit" for a time period of one second. If the master gets no response the operator will operate in a stand alone mode. **NOTE:** For single unit applications, a jumper must be placed between 11 and 12 of the field wiring terminal block. In this mode no further communications will take place during travel. If the master detects the presence of a second unit the master will continue to query the second unit during travel. The second unit will send a response to the master for every query. The second operator will stop if there is a period of one second or more of no communications.

EDGE/PHOTO CLOSE

This switch (S2-4) selects edge or photo sensor for the gate closing protection input.

Close Photo Eye (Reverse): When the controller is configured for photo eyes, the input functions to reverse the gate to the open limit when activated during the close cycle.

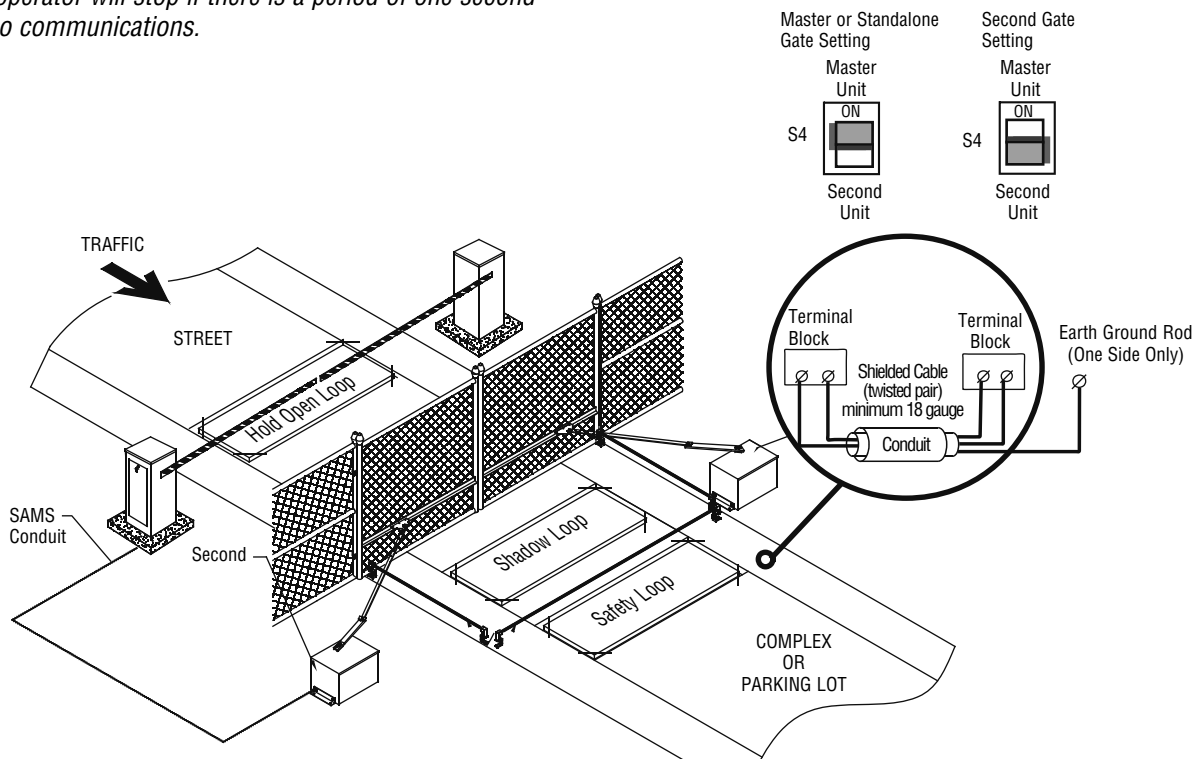
NOTE: Timer-to-Close will reset if enabled.

Close Edge: When the controller is configured for safety edges, the input functions to reverse the gate to the open limit when activated during the close cycle. The entrapment is not cleared at the limit and the Timer-to-Close will be disabled. The Timer-to-Close may be enabled by activating the interrupt loop, soft open or hard open input.



When two operators are connected in dual gate configuration accessories may be connected to either the master or second.

NOTE: Do not run Master/Second communication wiring in the same conduit as the power and control wiring. The Second unit will require a normally close stop circuit for proper system operation. After Master/Second wiring has been completed and the S4 switch programmed, both units must have their power cycled to initiate proper Master/Second communication. The motor learn function must be completed in stand alone mode prior to Master/Second wiring.



TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSES	SOLUTION
Operator fails to run.	No Stop Control.	Check the green LED (D17) on control board. If the green LED is off, check to make sure a stop control has been installed across terminals J1-3 & J1-5 of the control board.
	Fault in the operator. Check the yellow diagnostic LED at the top right of the control board next to the programming dip switches.	If the yellow LED blinks six times there is a master/second unit communication failure. If operator is a single unit make sure there is a jumper across terminals J5-1 & J5-2. If operator is in a dual gate configuration make sure that the communication wiring between the two units is undamaged and complete.
		If the yellow light is solid the board needs to learn the motor. Follow the directions on page 23.
	An accessory is active or malfunctioning. Check the red input status LEDs, D11-D31.	If any red LEDs are on, check the corresponding input. An installed accessory may be wired incorrectly or malfunctioning. Remove the accessory and test the operator.
	Improper J4 Connector Wiring (Master/Second).	Stand-alone Operators: make sure there is a jumper installed across the J4 connector.
		Master/Second Operation: Make sure that the master/second wiring is installed correctly and is intact (not damaged).
	Low or no high voltage power.	Measure the incoming voltage at the unit's on/off switch. It should be within 5% of the operator's rating when running. Make sure that the proper wire gauge was used for the distance between breaker and operator by consulting the wiring specifications section on page 14 of this manual.
	Low or no low voltage power.	Measure the voltage at terminals R1 & R2 in the operator. This voltage should be within 5% of 24 Vac. If the high voltage power is good and the low voltage power is bad, check transformer wiring and replace transformer.
The relays chatter when the operator begins to move.	Low secondary (low voltage) power.	Measure the voltage at terminals R1 & R2 in the operator. This voltage should be within 5% of 24 Vac. If the high voltage power is good and the low voltage power is bad, check to make sure the circuit breaker is not tripped and that the correct primary tap is used on the transformer. If breaker and tap are correct replace the transformer.
The operator runs slow and/or trips the internal overload.	Low primary (high voltage) power.	Measure the incoming line voltage at the unit's on/off switch as well as the meter base or sub panel. Make sure there is not a major change in voltage. The voltage at the operator should be within 5% of the operator's rating when running.
		Check the number of amps currently being drawn from the panel, make sure that the total power being drawn does not exceed the panel's rating.
		Make sure that the proper wire gauge was used for the distance between breaker and operator by consulting the wiring specifications section on page 14 of this manual.
	Problem in the motor.	Perform a visual inspection of the motor. Examine the motor's labels for any distortion or signs of over heating. Replace the motor if it is humming, grinding or making excessive noise. NOTE: Repeated motor problems indicate poor primary power.
Motor runs but gate does not move.	Damaged or improperly tensioned belt/drive chain.	Make sure that the operator's belt/drive chain is intact and tensioned correctly.

TROUBLESHOOTING continued

SYMPTOM	POSSIBLE CAUSES	SOLUTION
Master or Second operator is not functioning properly.	Failure to cycle power after setup.	The power to each unit must be cycled in order to initiate proper master/second communication if the operators were previously in stand-alone mode.
	The communication wiring may be damaged or improperly wired for dual gate operation.	Make sure that the communication wire that is used is twisted pair and not run in the same conduit with any power wiring. Failure to do so will result in interference across the master/second communication line.
	The master or second unit is not programmed correctly.	Review program settings pages 25-26 and check both the master and second for proper programming.
Operator runs but then stops and reverses direction.	Entrapment (Force Pot) incorrectly set.	This pot must be set so that the gate will run smoothly normally and reverse when encountering an obstruction. See page 23.
	Gate is binding or not running smoothly.	Disconnect the gate from the operator and swing the gate open and close by hand at normal operating speed. Make sure that the gate swings smoothly and does not bind. If the gate is hard to move or binds repair the gate.
	Observe red LEDs D29 and D31.	Both LEDs will indicate the activation of entrapment protection devices on terminals J1-9 & J1-10 on the control board. Remove the devices and retest. If the operator now runs without fault, check those accessories as well as their wiring.
	The Hall Effect Sensor is not aligned/adjusted correctly.	Make sure that the sensor is adjusted so that it is within 20 thousandths of an inch or as close to the magnets located on the gearbox pulley as possible without coming into contact with them or the pulley.
		Replace the sensor if it is adjusted correctly but continues to fail.
The operator opens immediately upon power up and does not close.	Check the red input status LEDs, D11-D31, for indication of an active or malfunctioning accessory.	If any red LEDs are on, check the corresponding input. An installed accessory may be wired incorrectly or malfunctioning. Remove the accessory and test the operator.
Programming changes do not effect the gate.	Check the save switch on switch S1-1.	If the switch S1-1 is in the on position any subsequent programming changes will not affect the gate. To make programming changes, switch S1-1 off, make desired changes, and then switch S1-1 on.
Open photo eye reverses gate closed when activated during opening.	Open obstruction input is programmed incorrectly.	The open obstruction input has been programmed to function with gate edges not photo eyes. Refer to page 26 and reprogram the obstruction inputs for correct operation.
Gate does not activate the timer to close after the close photo eye is broken.	Close obstruction input is programmed incorrectly.	The close obstruction input has been programmed to function with gate edges not photo eyes. Refer to page 26 and reprogram the obstruction inputs to match the accessories that are installed on the operator.
Radio controls will close gate from the open limit.	Radio terminals R1-4 are factory configured for residential (Open and Close) radio function.	Configure terminals R1-4 for residential radio function by performing the following modifications: <ol style="list-style-type: none"> 1. Locate and disconnect the end of the wire running to terminal J1-1 from R4. 2. Connect the end of wire removed from J1-1 to J1-6. Refer to page 34.

MAINTENANCE

IMPORTANT SAFETY INSTRUCTIONS

WARNING

To reduce the risk of SEVERE INJURY or DEATH:

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

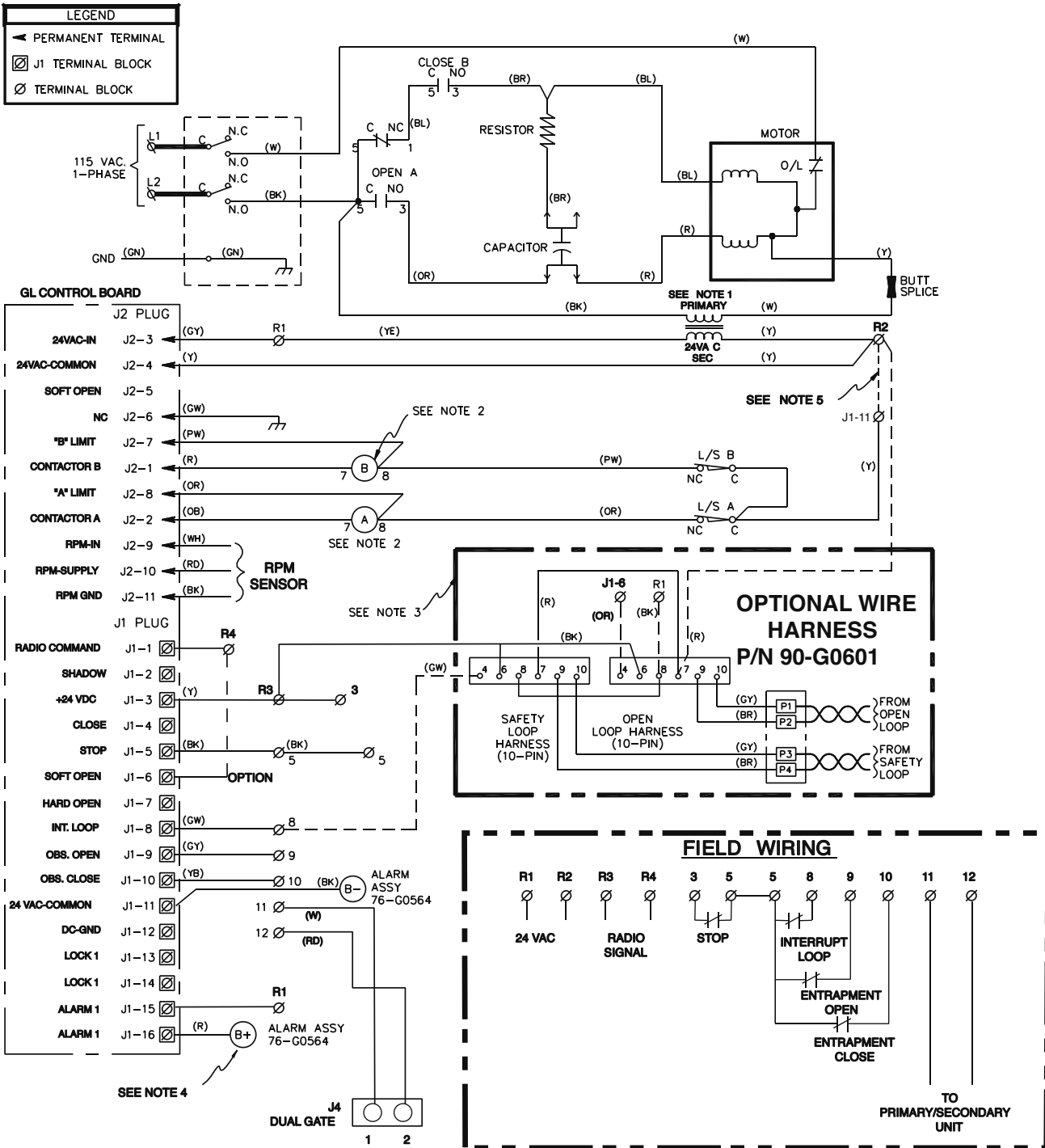
CHECK AT LEAST ONCE EVERY

DESCRIPTION	TASK	3 MONTHS	6 MONTHS	12 MONTHS
RPM Sensor (Hall Effect)	Check for proper adjustment	X		X
External Entrapment Protection Systems	Check for proper operation	X		X
Gate Caution Signs	Make sure they are present	X		X
Manual Disconnect	Check and operate		X	X
Drive Chain	Check for excessive slack and lubricate		X	X
Sprockets and Pulleys	Check for excessive slack and lubricate		X	X
Gate	Inspect for wear or damage		X	X
Accessories	Check all for proper operation		X	X
Electrical	Inspect all wire connections		X	X
Frame Bolts	Check for tightness		X	X
Total Unit	Inspect for wear or damage		X	X

NOTES

1. Severe or high cycle usage will require more frequent maintenance checks.
2. Inspection and service should always be performed anytime a malfunction is observed or suspected.
3. Limit switches may have to be reset after any major drive chain adjustments.
4. If lubricating chain, use only a proper chain lube spray or a lightweight motor oil. Never use grease or silicone spray.
5. When servicing, please do some "house cleaning" of the operator and the area around the operator. Pick up any debris in the area. Clean the operator as needed.
6. 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 operators rating.

SINGLE PHASE WIRING DIAGRAM



NOTES:

- 1) TRANSFORMER PRIMARY VOLTAGE SAME AS OPERATOR LINE VOLTAGE 24V SECONDARY 15VA.
- 2) TERMINAL DESIGNATIONS SHOWN FOR 115V ONLY.
- 3) OPTIONAL WIRE HARNESS.
- 4) (B+) AND (B-) ARE 100dB SAFETY ALARMS.
- 5) CONNECTED INTERNALLY ON GL PC BOARD

CHAMBERLAIN

LiftMaster
PROFESSIONAL

845 Larch Avenue, Elmhurst, IL 60125

APPLICATIONS:

CONTROL WIRING TYPE - GL

FIELD WIRING & ADJUSTMENTS

MODEL TYPES: SW420

HORSEPOWER: 1/3

VOLTAGE/PHASE: 115V & 230V - 1 PHASE ONLY

DRAWING NUMBER:

G1977

REV:

C

REPAIR PARTS

Refer to the parts lists below for replacement parts available for your operator. If optional modifications and/or accessories are included with your operator, certain components may be added or removed from these lists. Individual components of each kit may

not be available. Please consult a parts and service representative regarding availability of individual components. Refer to page 36 for all repair part ordering information.

Complete Electrical Panel Replacement Kits

To order a complete electrical box replacement kit, add a K- prefix to the model number of your operator. For example:

SW420-33-11 (Operator) = K73SW420-33-11 (Electrical Box Kit)

Motor Kits

To order a motor replacement kit, add a K prefix to the number of your motor and remove the second dash (-). For example:

20-5752-33 (Motor Number) = K20-575233 (Motor Kit)

INDIVIDUAL PARTS

ITEM	PART#	DESCRIPTION	QTY
1	74-18465	Housing Assembly	1
2	10-18462	Front Cover	1
3	10-G0326	Switch Box Cover	1
4	23-3001	DPST On/Off Switch	1
5		Conduit Box	1
6	65RSWD	Pad Mount Kit	1
7	65RSWP	Pedestal Mount Kit	1
8	76-G0564	Alarm Assembly	1
9	G802754	U-Bolt Nut	2

ARM ASSEMBLY KIT (K75-18362)

ITEM	DESCRIPTION	QTY
A1	Arm (and Arm Extension)	1
A2	Arm Extension (and Arm)	1
A3	Arm Stop	1
A4	Arm Hub	1
A5	Gate Bracket	1
A6	Keyed 1" ID 1-1/4 1/8" FG	1
A7	Flanged Bushing	3
A8	Clevis Pin	1
A9	Latch Pin	1
A10	Hex Head Bolt 3/8-16x1"	1
A11	Hex Head Bolt 3/8-16x1-1/4"	2
A12	Hair Spring Cotter	1

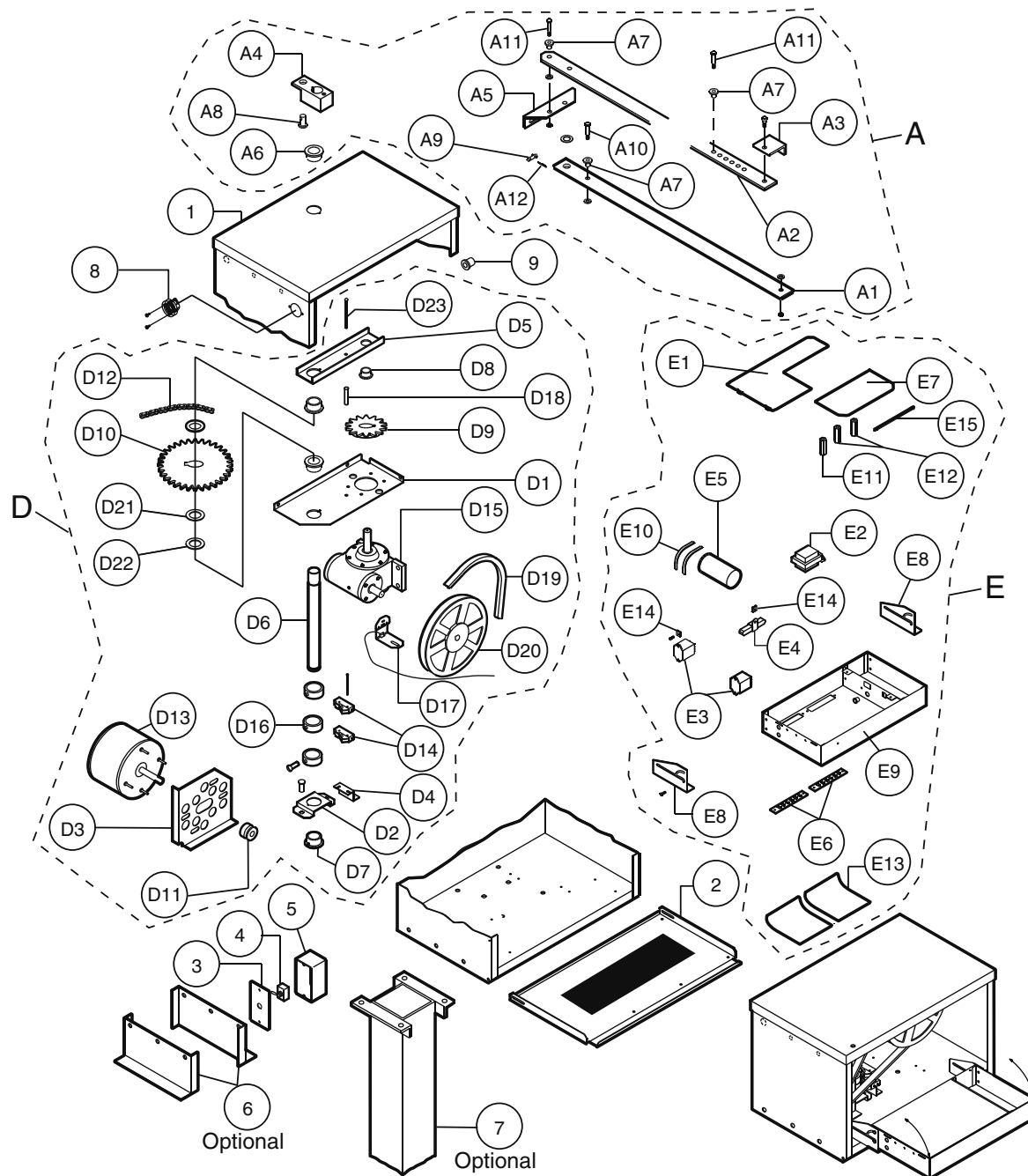
ELECTRICAL PANEL ASSEMBLY KIT

ITEM	DESCRIPTION	QTY
E1	Control Box Cover	1
E2	Transformer 115V	1
E3	Relay 24 Vac	3
E4	Resistor With Mounting Bracket	1
E5	Capacitor for 115V	1
	Capacitor for 230V	1
E6	Terminal Strip	1
E7	Control Board, GL	1
E8	Hinge Bracket	2
E9	Control Box	1
E10	Tie Wrap 14"	2
E11	Aluminum Standoff	1
E12	Nylon Standoff	2
E13	Terminal Strip Insulator	2
E14	Tinnerman Nut	5
E15	Plastic Card Guide 6"	1

DRIVE ASSEMBLY KIT (K75-18363)

ITEM	DESCRIPTION	QTY
D1	Reducer Bracket	1
D2	Bearing Bracket	1
D3	Motor Plate	1
D4	Switch Plate	1
D5	Stiffener Plate	1
D6	Drive Shaft	1
D7	Keyed 1" ID 1-1/4" 1/8" Bushing	3
D8	Flange Bearing 5/8" Bore	1
D9	Sprocket, 40B11	1
D10	Sprocket, 40B32	1
D11	Motor Pulley	1
D12	Chain #40 Pitch 47	1
D13	Motor, 115V, 1/3 HP	1
D14	Limit Switch N.C. SPST	2
D15	Reducer 30:1	1
D16	Limit Collar	1
D17	Hall Effect Assembly	1
D18	Roll Pin	2
D19	Belt	1
D20	Molded Pulley	1
D21	Spacer	1
D22	Washer	7
D23	Phillips Screw 10-32x2-1/2"	1

ILLUSTRATED PARTS

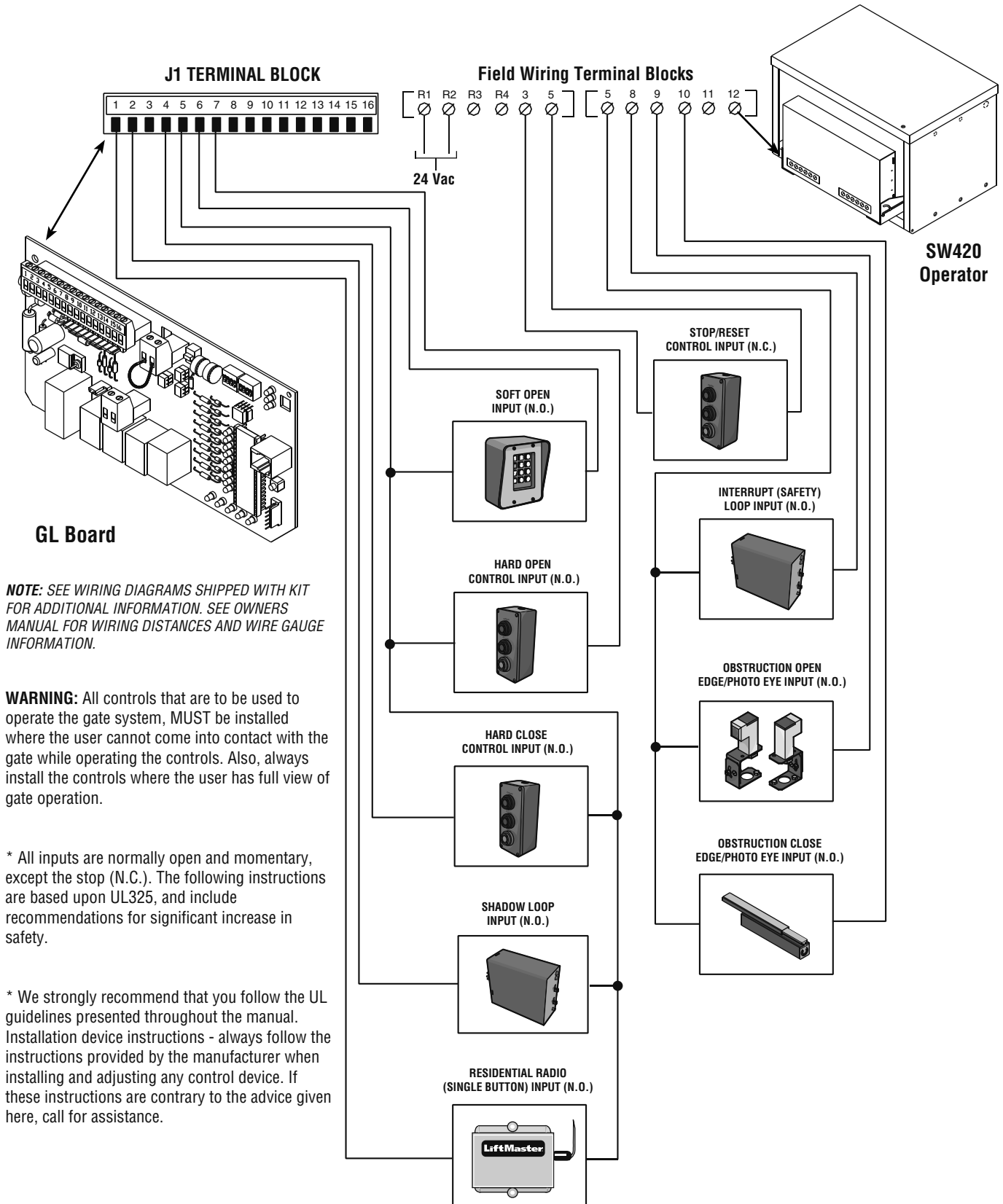


SAFETY ACCESSORIES FOR SECONDARY ENTRAPMENT PROTECTION

The following devices are acceptable for Safety Accessories for secondary entrapment protection.

PHOTOELECTRIC CONTROLS		
MODEL	DESCRIPTION	VOLTAGE
AOMRON	Photocell/Electric Eye - 30' (9 m) Maximum Range	+24Vac/dc
SENSING EDGES		
MODEL	DESCRIPTION	
G65MG0204	Miller MG020 2-wire electric edge for gates. Sensitized on three sides. Requires mounting channel (4' [1.2 m] long).	
G65MG0205	Miller MG020 2-wire electric edge for gates. Sensitized on three sides. Requires mounting channel (5' [1.5 m] long).	
G65ME12C5	Mounting Channel - 5' (1.5 m) long	
G65MGR205	Miller MGR20 2-wire electric edge in 5' (1.5 m) lengths for 2" (5 cm) round post.	
G65MGS205	Miller MGR20 2-wire electric edge in 5' (1.5 m) lengths for 2" (5 cm) square post.	

CONTROL CONNECTION DIAGRAMS



OPERATOR NOTES

[illegible]

WARRANTY POLICY

LIFTMASTER® TWO YEAR LIMITED WARRANTY

The Chamberlain Group, Inc. warrants to the final 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 two years 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 TWO YEAR LIMITED WARRANTY PERIOD SET FORTH ABOVE, 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 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.

HOW TO ORDER REPAIR PARTS

OUR LARGE SERVICE ORGANIZATION
SPANS AMERICA

FOR INSTALLATION AND SERVICE INFORMATION
CALL OUR TOLL FREE NUMBER:

1-800-528-2806

www.liftmaster.com

**WHEN ORDERING REPAIR PARTS
PLEASE SUPPLY THE FOLLOWING INFORMATION:**

PART NUMBER DESCRIPTION MODEL NUMBER

ADDRESS ORDER TO:

THE CHAMBERLAIN GROUP, INC.
Technical Support Group
6050 S. Country Club Road
Tucson, AZ 85706