

# APPENDIX

## Wiring Diagram



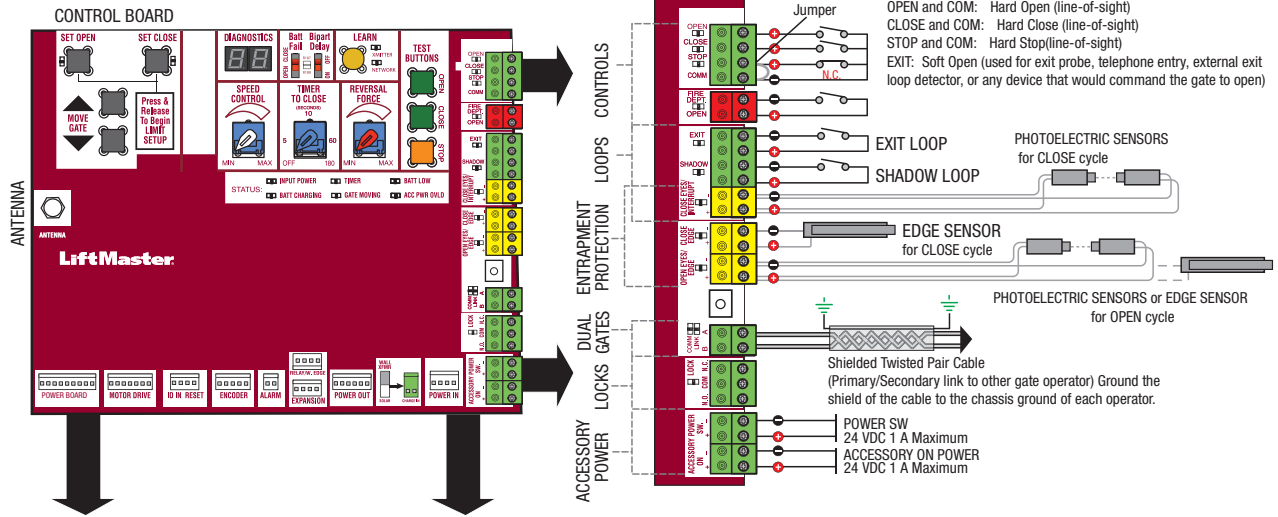
## WARNING

To protect against fire and electrocution:

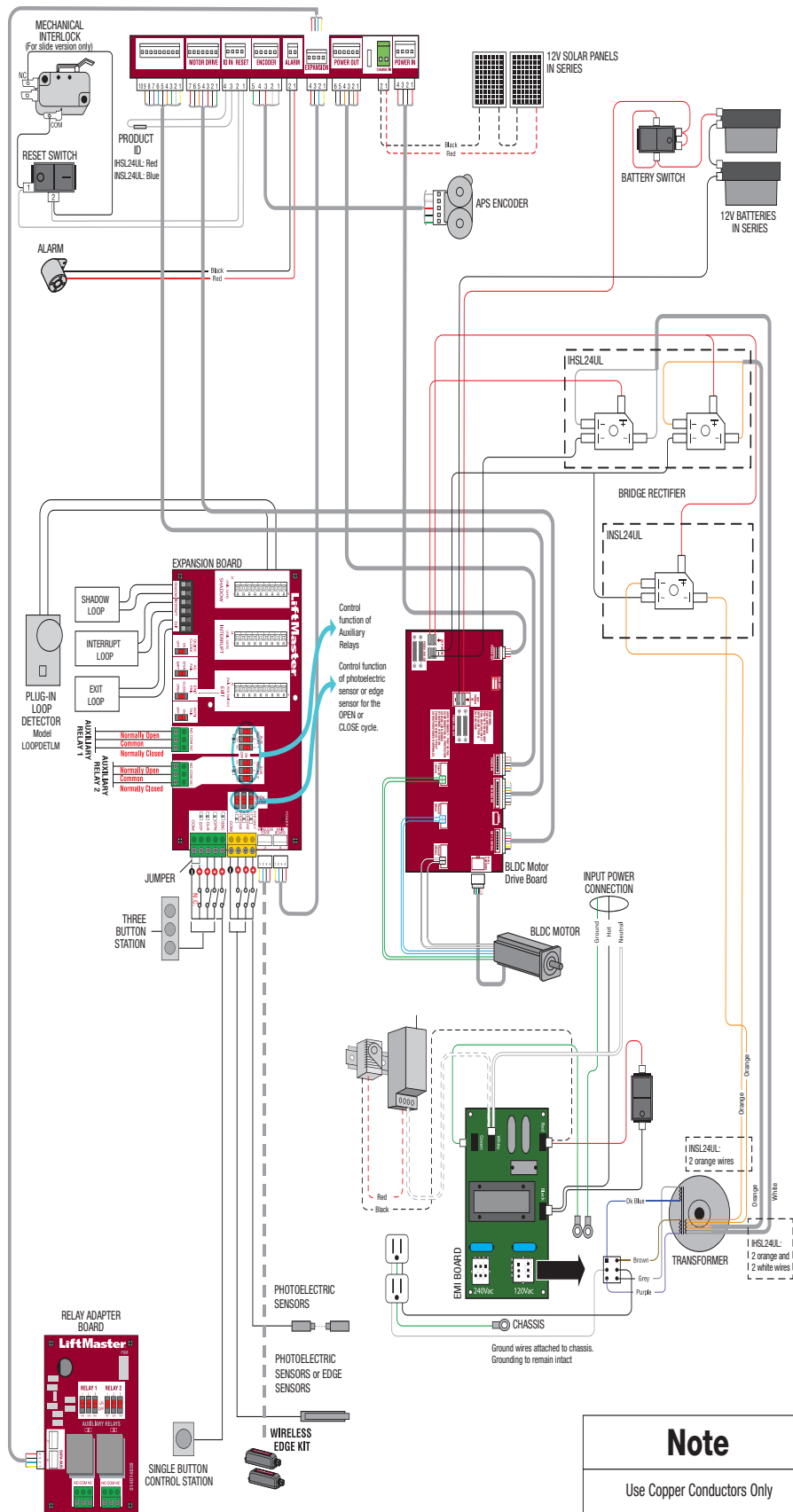
- DISCONNECT power (AC or solar and battery) BEFORE installing or servicing operator.

For continued protection against fire:

- Replace ONLY with fuse of same type and rating.





# APPENDIX



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## Diagnostic Codes Table

Some codes are saved in the code history and some are not. If a code is not saved it will briefly appear on the display as it occurs, then disappear.

|  |                   |   |                  |   |               |  |                                |   |                                |
|--|-------------------|---|------------------|---|---------------|--|--------------------------------|---|--------------------------------|
|  | LiftMaster System |  | Installed System |  | Informational |  | External Entrapment Protection |  | Inherent Entrapment Protection |
|--|-------------------|---|------------------|---|---------------|--|--------------------------------|---|--------------------------------|

| Code | Meaning  | Solution   | Saved |
|------|--|--|-------|
| 31   | Control board has experienced an internal failure.                             | Disconnect all power, wait 15 seconds, then reconnect power (reboot). If issue continues, replace control board.   | NO    |
| 34   | Absolute Position Encoder error, not getting position information from encoder | Check APE assembly and wiring connections. Replace the APE assembly if necessary.  | YES   |
| 35   | Max-run-time exceeded error  | Check for an obstruction, then reprogram the limits.   | YES   |
| 36   | Product ID error   | Was the control board just replaced? If so, erase limits, enter limit setup mode and set limits. If not, disconnect all power, wait 15 seconds, then reconnect power before changing product ID harness.   | YES   |
| 37   | Product ID failure   | Unplug product ID harness then plug back in. Disconnect all power, wait 15 seconds, then reconnect power before replacing product ID harness.  | YES   |
| 38   | Hard stop limit (Arm 1)  | Limit may be set too tightly against a non-resilient hard stop (re-adjust limit). Operator may be at end of travel (re-adjust mounting).   | NO    |
| 40   | Battery overvoltage  | Too much voltage on the battery. Check harness.  | YES   |
| 41   | Battery overcurrent  | Possible short of the battery charge harness. Check harness. Make sure you do NOT have a 12V battery on a 24V system.  | YES   |
| 42   | No battery at boot up  | Check battery connections and installation. Replace batteries if depleted to less than 20V on a 24V system. Make sure there is NOT a single 12V battery on a 24V system.   | YES   |
| 43   | Exit loop error  | Failure or missing loop (SHORT or OPEN - LiftMaster Plug-in Loop Detector only). Check loop wiring throughout connection. May be a short in the loop, or an open connection in the loop.   | YES   |
| 44   | Shadow loop error  |  |       |
| 45   | Interrupt loop error   |  |       |
| 46   | Wireless edge battery low  | Replace batteries in wireless edge.  | YES   |
| 47   | Motor Drive Fault  | Check motor drive connections. Disconnect all power, wait 15 seconds, then reconnect power (reboot). If issue persists, replace motor drive board.   | YES   |
| 48   | Hall Sensor Fault  | Check motor and motor drive connections. Disconnect all power, wait 15 seconds, then reconnect power (reboot). If issue persists, replace motor.   | YES   |
| 49   | Motor Drive Communications Fault   | Verify drive board power and connection to control board. Disconnect all power, wait 15 seconds, then reconnect power (reboot). If issue continues, replace motor drive  | YES   |
| 50   | Gate overspeed detected  | Make sure the gate is installed on a level surface and not on an excessive grade.  | YES   |
| 53   | Brownout occurred  | AC/DC board supply dipped below allowable level. Review power supply and wiring. If rebooting, ensure enough time for discharge of power to force a fresh boot.  | YES   |
| 54   | Wireless second operator communication error                                   | Check the second operator for power. If OFF, restore power and try to run the system. If powered, deactivate the wireless feature and then re-learn the second operator.   | YES   |
| 59   | Configuration error with Motor, Drive Board, or ID Resistor                    | Check connections between motor, motor drive, and control board. Confirm correct part has been replaced, disconnect all power, wait 15 seconds, then reconnect power (reboot). If issue persists, remove and replace latest part that was changed. | YES   |
| 60   | Minimum number of monitored entrapment protection devices not installed.       | Review monitored entrapment protection device connections. See page 12 for minimum requirements.   | NO    |

## APPENDIX

| Code | Meaning   | Solution  | Saved |
|------|---|---|-------|
| 61   | CLOSE EYE/INTERRUPT held  | Check wired input on control board; check for alignment or obstruction; squeeze and release the edge and verify main board edge LED changes; check for eye alignment or obstruction.  | YES   |
| 62   | CLOSE EDGE held   |   |       |
| 63   | OPEN EYE/EDGE held  |   |       |
| 64   | CLOSE EYE/INTERRUPT held  | Check wired input on expansion board; check for alignment or obstruction; squeeze and release the edge and verify main board edge LED changes; check for eye alignment or obstruction.  | YES   |
| 65   | CLOSE EYE/EDGE held   |   |       |
| 66   | OPEN EYE/EDGE held  |   |       |
| 67   | Wireless edge triggered extended time   | Check wired input for wiring issue or obstruction; squeeze and release the edge and verify main board edge LED changes  | YES   |
| 68   | Wireless edge loss of monitoring  | Check wireless edge inputs.   | YES   |
| 69   | Wireless edge triggered   | IF an obstruction occurred, no action required. If an obstruction did NOT occur, check inputs and wiring.   | NO    |
| 70   | CLOSE EYE/INTERRUPT triggered, causing reversal, preventing close, or resetting TTC | IF an obstruction occurred, no action required. If an obstruction did NOT occur, check alignment, inputs, and wiring on control board   | NO    |
| 71   | CLOSE EDGE triggered, causing reversal, preventing close, or canceling TTC          |   |       |
| 72   | OPEN EYE/EDGE triggered, causing reversal or preventing opening                     |   |       |
| 73   | CLOSE EYE/INTERRUPT triggered, causing reversal, preventing close, or resetting TTC | IF an obstruction occurred, no action required. If an obstruction did NOT occur, check alignment, inputs, and wiring on expansion board.  | NO    |
| 74   | CLOSE EYE/EDGE triggered, causing reversal and preventing close or canceling TTC    |   |       |
| 75   | OPEN EYE/EDGE triggered, causing reversal or preventing opening                     |   |       |
| 80   | Close input (EYE/EDGE) communication fault from other operator                      | Check inputs and communication method between operators, either wired bus or radio. Ensure operator is powered. May have to erase the wireless communication and reprogram the two operators.                                   | YES   |
| 81   | Open input (EYE/EDGE) communication fault from other operator                       |   |       |
| 82   | Close input (EYE/EDGE) communication fault (expansion board)                        | Check the connections between the control board and the expansion board.  | YES   |
| 83   | Open input (EYE/EDGE) communication fault (expansion board)                         |   |       |
| 84   | Non-monitored device detected on the wireless safety system                         | Non-monitored contact closure devices are not supported. Make sure connected devices are monitored. Check edges for proper orientation and resistive end cap connection.  | YES   |
| 90   | Low Voltage Input to Motor Drive Fault  | Verify incoming power meets voltage requirement of operator. Verify battery voltage is above 20V. Disconnect all power, wait 15 seconds, then reconnect power (reboot). If issue persists, replace power supply.                | YES   |
| 91   | Force reversal  | Check for obstruction. If no obstruction, check that the mechanical assembly is engaged and free to move. See <i>Adjust the Limits, Speed, and Force</i> page 21.   | YES   |
| 93   | RPM / STALL reversal  | Check for obstruction. If no obstruction, check the operator wiring and that the mechanical assembly is engaged and free to move. Replace APE assembly.   | YES   |
| 95   | Motor start failure   | Operator attempted to run, no response from motor drive assembly. Check connector and harness. Check for other error codes and resolve those first. If connected properly and still not working, test motor and/or motor drive. | YES   |
| 96   | Motor Drive Board Fault   | Check connections to motor drive board. Power cycle and retry. Replace motor drive board if issue persists.   | YES   |
| 99   | Normal operation  | No action required  | YES   |



# Swing and Slide Gate Operator UL 325 and ASTM F2200 Site Planning Safety Checklist

Please Print

Name:

Phone:

Address:

City/State/ZIP:

Email:

Satisfactory

Needs Repair/Replacement

## Gate Safety Check — Simple steps to quickly determine if an End User's gate operator is safe.

| UL 325 Standard   |                 |           |                   |
|---|-----------------|-----------|-------------------|
| Component:  | Result (Circle) | Comments: | Figures (On Back) |
| 1. Gate Operator is approved to current UL 325 standards (check operator label)                                     | Pass / Fail     |           |                   |
| 2. Proper gate warning signs attached to both sides of gate area  | Pass / Fail     |           | 1,4               |
| 3. All entrapment zones protected by 2 safety devices/obstruction tested  |                 |           | 1,4               |
| Close Side (circle two) Photo Eye Reversing Edge Inherent Reverse   | Pass / Fail     |           |                   |
| Open Side (circle two) Photo Eye Reversing Edge Inherent Reverse  | Pass / Fail     |           |                   |
| Other Entrapment Zones  | Pass / Fail     |           |                   |
| *Entrapment Zone: The location where a person can be caught or held in a position that increases the risk of injury |                 |           |                   |

Gate Construction Evaluation: Gate Constructed with Safety in mind. ASTM F2200 Standards are followed

| Component:  | Result (Circle) | Comments: | Figures (On Back) |
|---|-----------------|-----------|-------------------|
| All Gates   |                 |           |                   |
| Gates have smooth bottom edges, no protrusions exceed 1/2" beyond base of gate  | Pass / Fail     |           | 5                 |
| All access controls at least 6 ft. from gate  | Pass / Fail     |           | 1,4               |
| Barbed tape (razor wire) at least 8 ft. above grade   | Pass / Fail     |           |                   |
| Barbed wire at least 6 ft. above grade  | Pass / Fail     |           |                   |
| Separate pedestrian gate – out of reach of a moving gate – vehicular gate is for automotive traffic only                            | Pass / Fail     |           | 1,4               |
| Gate does not move on its own if disconnected from operator   | Pass / Fail     |           |                   |
| Gates prevented from falling over if disconnected from supporting hardware  | Pass / Fail     |           |                   |
| SWING   |                 |           |                   |
| Distance from pivot point to column edge is less than 4 in. or external entrapment protection is provided                           | Pass / Fail     |           | 4                 |
| Distance from open gate to wall, column, or other fixed object is greater than 16 in. or external entrapment protection is provided | Pass / Fail     |           | 4                 |
| SLIDE   |                 |           |                   |
| Roller covers on weight bearing exposed rollers 8 ft., or less, above grade   | Pass / Fail     |           | 1                 |
| Meshing installed up to 6 ft. above grade if pickets spaced equal to or greater than 2 1/4 in. apart                                | Pass / Fail     |           | 3                 |
| Gap between gate and fence post less than 2 1/4 in. & gap protected with safety device  | Pass / Fail     |           | 2                 |
| Positive stops at both fully open and fully closed positions  | Pass / Fail     |           | 1                 |
| Receiver guides recessed behind receiver post for receiver guides less than 8 ft.   | Pass / Fail     |           |                   |
| Other:  | Pass / Fail     |           |                   |

Please Print

First & Last Name of Dealer:

First & Last Name of Installer:

Name of Dealership:

Phone:

Dealership Address (Street Address/City/State/Zip):

Dealer Signature:

Installer Signature:

Customer Signature:

# GETTING STARTED WITH SWING AND SLIDE GATE OPERATORS.

Always design, install and maintain safe gate access systems in accordance with UL 325 & ASTM F2200 standards.

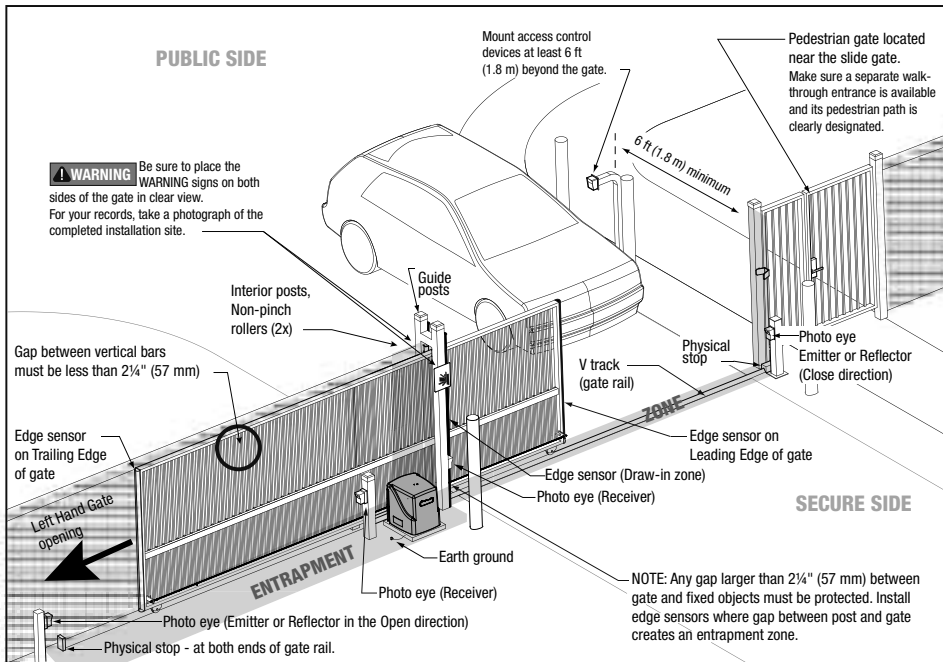
- Only install the operator on gates used for vehicular traffic.
- A separate pedestrian entry/exit must be clearly visible to promote pedestrian usage and located so pedestrians do not come in contact with the vehicular gate while it is moving.
- Install two independent<sup>†</sup> entrapment protection devices protecting each entrapment zone.
- Pickets of a slide gate must be designed or screened to prevent persons from reaching through, or passing through a gate.
- Every Installation is unique. It is the responsibility of the installer to ensure all

entrapment zones are protected with a minimum of two independent<sup>†</sup> entrapment protection devices.

- A slide gate operator will only operate with a minimum of two independent monitored entrapment protection devices installed in each direction, two in the open direction and two in the closed direction<sup>†</sup>.
- A swing gate operator will only operate with a minimum of two independent monitored entrapment protection devices installed in either the open or closed direction. If no entrapment zone exists in the other direction, only one means of entrapment protection is required in that direction<sup>†</sup>.

<sup>†</sup>Independent the same type of device shall not be utilized for both entrapment protection devices.

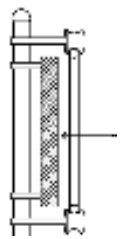
SLIDE GATE SITE LAYOUT GUIDELINES **FIGURE 1**



SLIDE GATE SPACING GUIDELINES **FIGURE 2**

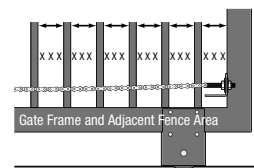
## Slide Gate Gaps

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 in. Exception: All other fixed stationary objects greater than 16 in. from the gate frame shall not be required to comply with this section. Any gap must be protected. Install safety device to protect entrapment zone.

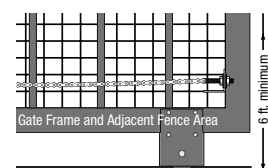


SLIDE GATE OPENINGS GUIDELINES **FIGURE 3**

Openings of a horizontal slide gate must be smaller than 2 1/4" or else be guarded or screened. These design rules apply to both the moving gate as well as the portion of adjacent fence that the gate covers in the open position. See Illustrations below.

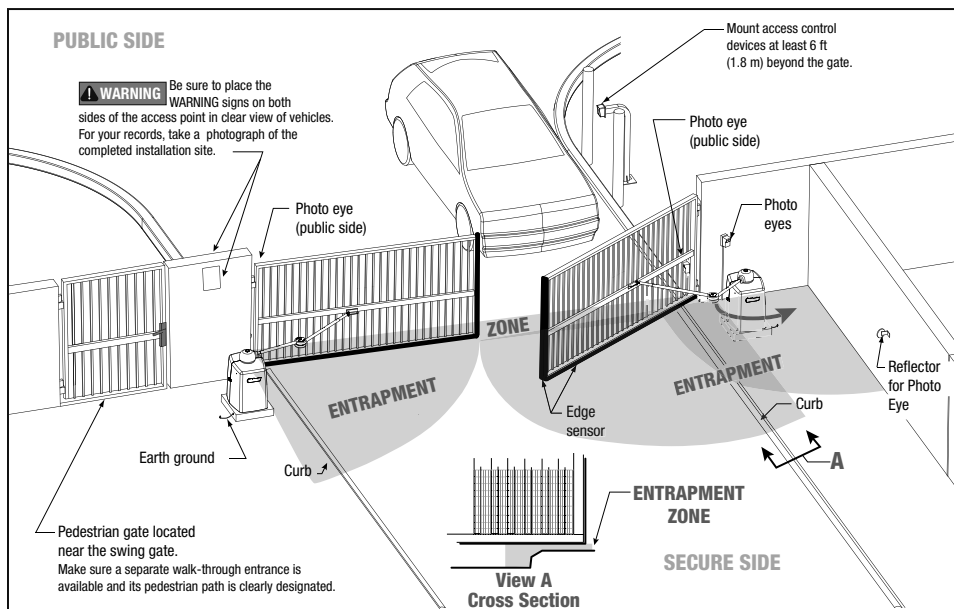


If gaps (xxx) between vertical bars of the gate or fence are less than 2 1/4", no further screening is required.



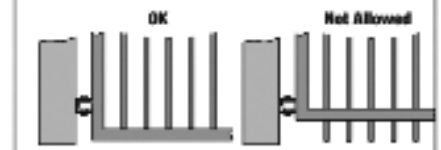
For gaps (xxx) equal to or larger than 2 1/4", a wire mesh screen must be applied to the gate. Wire mesh screen openings must be smaller than 2 1/4". The minimum height of wire mesh screen: 6 ft. above grade.

SWING GATE SITE LAYOUT GUIDELINES **FIGURE 4**



Base of Swing and Slide Gate **FIGURE 5**

All Gates must have smooth bottom edges, no protrusions should exist. If gate hardware or sensors protrude, they must have smooth surfaces free of any sharp cutting edges that do not exceed 75 inch beyond the base of the gate.



## Definitions

**Entrapment:** The condition when a person is caught or held in a position that increases the risk of injury.

**Slide Gate Entrapment Zones:** An entrapment zone exists if at any point during travel, the gap between the moving gate and fixed counter opposing edges or surfaces is less than 406 mm (16") in a location up to 1.8 m (6ft.) above grade.

**\*\*Swing Gate Entrapment Zones:** Locations between a moving gate or moving, exposed operator components and a counter opposing edge or surface where entrapment is possible up to 1.8m (6 ft) above grade. Such locations occur if during any point in travel:  
a) The gap between the bottom of a moving gate and the ground is greater than 101.6mm (4 in) and less than 406mm (16 in); or  
b) The distance between the center line of the pivot and the end of the wall, pillar, or column to which it is mounted when in the open or closed position exceeds 101.6mm (4 in). Any other gap between a moving gate and fixed counter opposing edges or surfaces or other fixed objects is less than 406 mm (16 in) (examples are walls, curbs, berms, or other immovable objects).

The above examples are two of many installation possibilities and are for illustration purposes only. See device and operator manuals for complete instruction. Visit [DASMA.com](http://DASMA.com) for more information.

**LiftMaster®**



## **Contact Information**

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LiftMaster Partner Portal:

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LiftMaster Training Academy:

**LiftMasterTraining.com**

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