

APPENDIX

Wiring Diagram

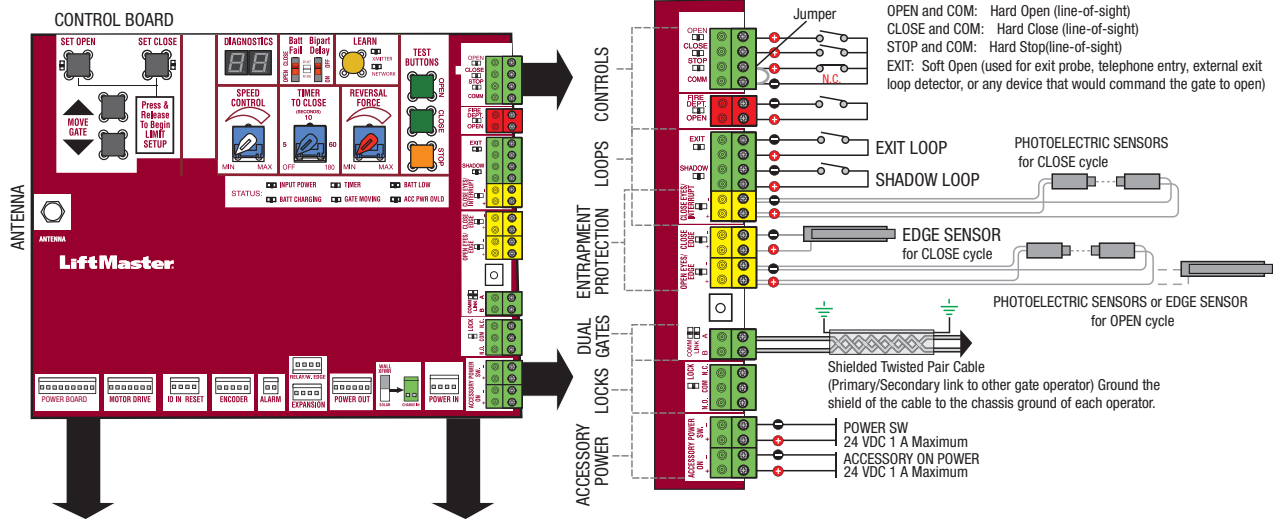
WARNING

To protect against fire and electrocution:

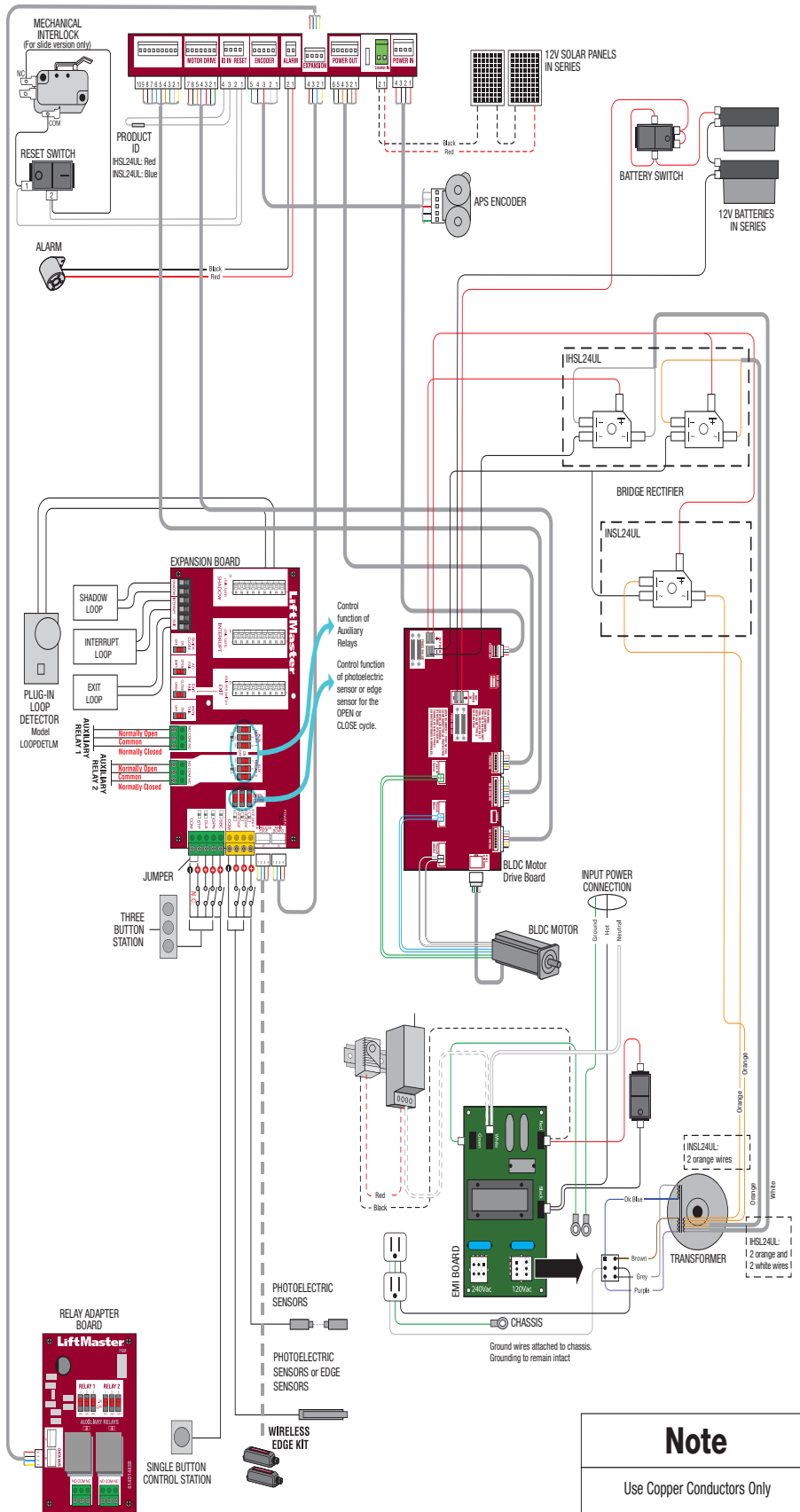
- DISCONNECT power (AC or solar and battery) BEFORE installing or servicing operator.

For continued protection against fire:

- Replace ONLY with fuse of same type and rating.



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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
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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		YES
45	Interrupt loop error		YES
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

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

UL 325 Standard				Result (Circle)	Comments:	Figures (On Back)
Component:						
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.

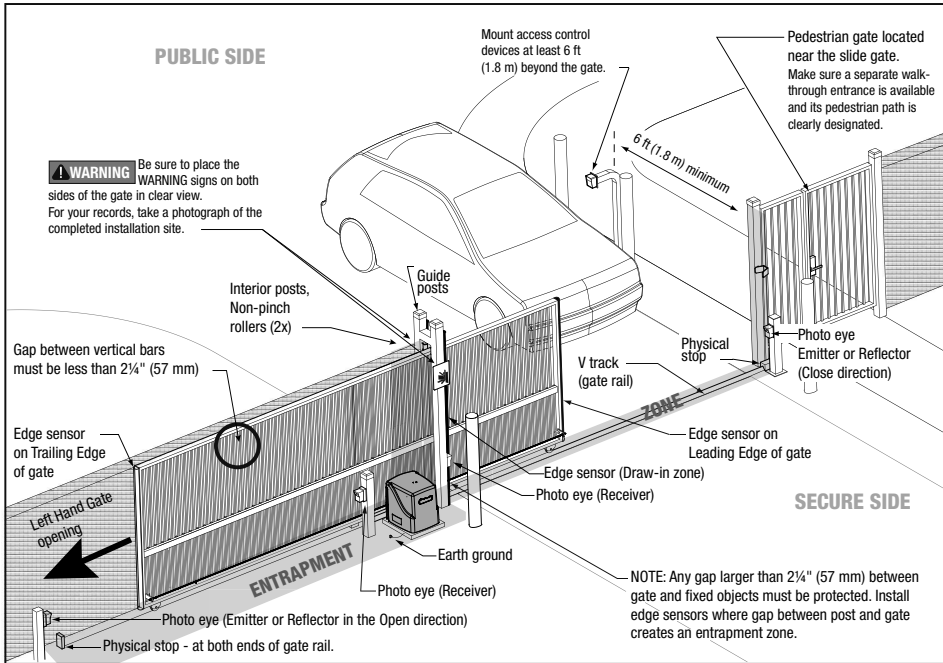
- Only install the operator on gates used for vehicular traffic.
- A separate pedestrian entry/exit must be clearly visible to promote pedestrian usage and located so pedestrians do not come in contact with the vehicular gate while it is moving.
- Install two independent† entrapment protection devices 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† entrapment protection devices.

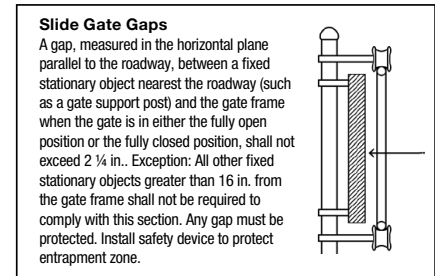
- A slide gate operator will only operate with a minimum of two independent monitored entrapment protection devices installed in each direction, two in the open direction and two in the closed direction†.
- A swing gate operator will only operate with a minimum of two independent monitored entrapment 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†.

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

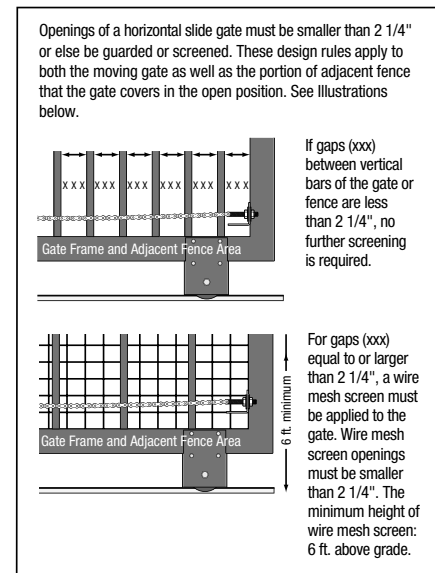
SLIDE GATE SITE LAYOUT GUIDELINES **FIGURE 1**



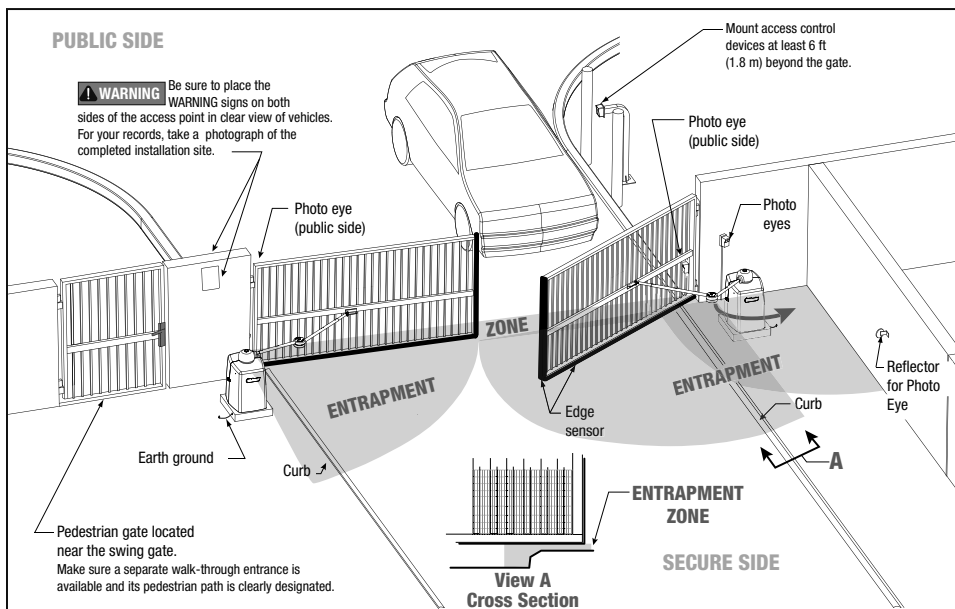
SLIDE GATE SPACING GUIDELINES **FIGURE 2**



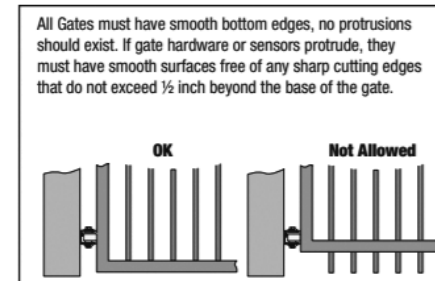
SLIDE GATE OPENINGS GUIDELINES **FIGURE 3**



SWING GATE SITE LAYOUT GUIDELINES **FIGURE 4**



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



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 for more information.

Contact Information

LiftMaster.com

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