



DASMA
Door & Access Systems
Manufacturers Association
International

GATE OPERATOR & ACCESS CONTROL POINT SYSTEMS DIVISION

TECHNICAL DATA SHEET

#352

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Automatic Vehicular Gate Operating Systems: Guidelines for Specifiers, Designers, Dealers, Installers and End Users

Overview

Automatic vehicular gate operating systems provide convenience and security to the end user. In some applications, gate operators must use high levels of force to move gates. If a system is not properly specified, installed, used, and maintained, serious injuries or death can result to someone in the vicinity of a moving gate. Some situations that can lead to a possibility of serious injuries or death include:

- absence of controlled pedestrian access;
- reaching through a gate to operate the system;
- attempting to climb under, over, or through a gate or the area covered by the travel of the gate;
- children playing on, or in the vicinity of, the gate;
- physical failure of gate supporting hardware, or the absence of physical stops, which may allow a gate to “overtravel” or fall down;
- unsafe gate designs that have large openings, exposed rollers, and/or an absence of necessary entrapment protection devices;
- unsafe installations in which access control devices or pedestrian access areas have been located within reach of the moving gate; and
- untrained individuals attempting to adjust, repair, or perform maintenance on a gate system.

These situations may lead to persons coming in contact with the gate and “pinching” a portion of their body, or even worse, becoming “entrapped” by the gate.

A total system design is the most effective approach to preventing injuries related to automatic vehicular gate operating systems. This design must consider gate system specific application, user population, intended use, and environmental effects. Consideration of the application must include an evaluation of all potential hazards associated with a moving gate in order to incorporate appropriate safety features into every individual gate system. Specific features include such items as an inherent reversing device in the gate operator, edge sensors, photoelectric eyes, enclosed track, vertical guard posts, screen mesh, appropriate clearance of system controls from a moving gate, guarding for exposed rollers, and instructional and precautionary signage.

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This Technical Data Sheet was prepared by the members of DASMA's Operator & Electronics Division Technical Committee. DASMA is a trade association comprising manufacturers of rolling doors, fire doors, grilles, counter shutters, sheet doors, and related products; upward-acting residential and commercial garage doors; operating devices for garage doors and gates, sensing devices, and electronic remote controls for garage doors and gate operators; as well as companies that manufacture or supply either raw materials or significant components used in the manufacture and installation of the Active Members' products.

Gate operators should comply with the most current version of the Underwriters Laboratories standard ANSI/CAN/UL 325, *Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems*. Look for the “mark” of a labeling and listing agency (such as UL, ETL, CSA, etc.) indicating that the operator complies with ANSI/CAN/UL 325 requirements. Model codes, such as the International Building Code, International Residential Code and International Fire Code, require listed operators that bear a label from a listing agency.

With respect to gates, the codes also require compliance to ASTM F2200, *Standard Specification for Automated Vehicular Gate Construction*. Vehicular gates intended for automation should be designed, constructed, and installed in compliance with the ASTM F2200 standard.

Specifiers, designers, dealers, installers, trained gate system technicians, and end users each have specific roles in providing for safe operation of automatic vehicular gate operating systems:

Role of Specifiers and Designers

Specifiers and designers should design an automatic vehicular gate system to

- ❑ Incorporate ANSI/CAN/UL 325 listed equipment;
- ❑ Utilize an operator suited for gate system type, size, frequency of use, location and user population (refer to ANSI/CAN/UL 325 for usage class definitions);
- ❑ Separate pedestrian access from vehicle access;
- ❑ Reduce or eliminate pinch points;
- ❑ Reduce risk of entrapment injuries by minimizing all gaps in the gate and enclosing the area of the travel of the gate;
- ❑ Secure control from unauthorized use;
- ❑ Locate all controls out of reach from the gate;
- ❑ Allow the user full view of the gate when operating;
- ❑ Consider special populations, such as children or the elderly;
- ❑ Conspicuously display all warnings and instructions; and
- ❑ Be consistent with DASMA's [Automatic Gate Opener System Safety Guide](#).

Role of Dealers, Installers and Trained Gate System Technicians

Installers, during the course of the installation proceedings for each job, should

- ❑ Confirm that the gate operator being installed is appropriate for the application;
- ❑ Confirm that the gate is designed and built according to current published industry standards;
- ❑ Confirm that all appropriate features and accessory devices are being incorporated, including both primary and secondary entrapment protection devices;
- ❑ Make sure that the gate works freely before installing the operator;
- ❑ Repair or service worn or damaged gate hardware before installation of the operator;

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- ❑ Eliminate all gaps in a sliding gate below a 6 foot height that permit a 2 ¼ inch sphere to pass through any location, including the area of the adjacent fence covered when the gate is in the open position;
- ❑ When an existing gate operator is replaced with an operator that is compliant with ANSI/CAN/UL 325, the existing gate shall be upgraded to ASTM F2200 as needed.
- ❑ Install the gate operator according to the manufacturer's installation instructions;
- ❑ Adjust the operator clutch or load-sensing device to the minimum force setting that allows reliable gate operation;
- ❑ Install operator inside fence line (do NOT install operator on public side of fence line);
- ❑ Install a proper electrical ground to a gate operator;
- ❑ Install access controls where users cannot reach through, over, under or around the gate to operate controls;
- ❑ Install controls where user has full view of gate operation;
- ❑ Install a minimum of two (2) warning signs (in accordance with ANSI/CAN/UL 325) in the area of the gate visible by persons located on either side of the gate to warn persons in the area of potential hazards associated with automatic vehicular gate operation;
- ❑ Test all features for proper function before placing the automatic vehicular gate into service;
- ❑ Demonstrate the basic functions and safety features of the gate system to owners/end users/general contractors, including how to turn off power and how to operate the manual disconnect feature;
- ❑ Leave safety instructions, product literature, installation manual, and maintenance manual with end user;
- ❑ Explain to the owners the importance of a service contract that includes a routine re-testing of the entire system, including the entrapment protection devices, and explain the need for the owners to ensure that this testing is performed routinely; and
- ❑ Offer the owner/end user a maintenance contract, or contact them regularly to offer maintenance.

Role of End Users

End users should be made aware that they must

- ❑ Contact a trained gate systems technician to maintain and repair the gate system (**NOTE: END USERS SHOULD NEVER ATTEMPT TO REPAIR THE GATE!**);
- ❑ Retain and utilize the installation and maintenance manual and safety instructions;
- ❑ Routinely check all gate operator functions and gate movement, **especially testing of all safety systems**;
- ❑ Discontinue use if safety systems operate improperly, the gate is damaged, or the gate is difficult to move;
- ❑ NEVER overtighten the operator clutch or load sensing device to compensate for a damaged or stiff operating gate;
- ❑ Prominently display and maintain warning signs on both sides of the gate;
- ❑ Keep all obstructions clear of the vicinity of the path of the gate system;
- ❑ Actively discourage pedestrian use of the vehicular gate operating system;
- ❑ Prevent anyone from playing near any part of the gate system;
- ❑ NEVER allow anyone to climb under, over, or through a gate or the adjacent fence area;
- ❑ NEVER allow children to operate the gate;

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- ❑ Keep portable controls out of the reach of children;
- ❑ NEVER allow anyone to install an operating control within reach of the gate;

- ❑ Never allow anyone to install a horizontal slide gate with exposed rollers or openings large enough to allow a sphere of 2 ¼ inches to pass through any portion of the gate below a 6 foot height, including the area of the adjacent fence covered when the gate is in the open position; and
- ❑ Always be certain that the gate area is clear of pedestrians before operating the gate.

Precautions for Certain Types of Automatic Vehicular Gate Operating Systems

The two most common types of gates are horizontal slide gates and swing gates. Identification of some potential hazards, and recommended solutions, are given below for these types of gates:

HORIZONTAL SLIDE GATE SYSTEMS

- **ENTRAPMENT ZONE HAZARD** – Body parts may become entrapped between a gate and a stationary object when the gate begins to move, which can result in serious injury or death. Pedestrians must stay clear of the gate path and any area where gate motion is close to stationary objects.
- **PINCH POINTS HAZARD** - In open roller gates, hands can get caught between the top of the gate and top rollers, which can result in serious injury. Feet can be injured in the same manner between the bottom of the gate and bottom rollers. Covers to guard these pinch points should be installed.
- **CRUSH HAZARD** – Gates must be equipped with entrapment protection if their motion toward a stationary object, such as a wall or fence, results in a gap less than 16 inches in the direction of travel. Body parts positioned between the gate and a stationary object can result in serious injury or death. If any openings are greater than 2 ¼ inches, screening should be installed on the entire gate from the bottom to a minimum of 6' high above grade (in accordance with the provisions of ASTM F2200 & ANSI/CAN/UL 325) to prevent persons from reaching through and/or passing through the gate. In like manner, screening should also be applied to the adjacent fence area covered by the gate when in the fully open position.

SWING GATE SYSTEMS:

- **ENTRAPMENT ZONE HAZARD** – Gates must be equipped with entrapment protection if their motion toward a stationary object, such as a wall or fence, results in a gap less than 16 inches in the direction of travel. Body parts positioned between the gate and stationary object can result in serious injury or death. Pedestrians must stay clear of the gate path and any area where gate motion is close to stationary objects.
- **PINCH POINTS HAZARD** - The opening mechanism may have arms that can overlap with a scissoring effect, which can result in serious injury. Pedestrians must stay clear of the opening mechanism at all times, particularly when the gate is opening.

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For all gate types, be sure that warning signs are prominently displayed on both sides of the gate and any other place where a potential hazard exists.

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