



Gate Operators

An open and shut case for safety

An ever increasing number of commercial and residential facilities are installing motorized gates and barriers to enhance physical security. Like any outdoor installation of motorized equipment, there are electrical safety considerations that need to be addressed. In addition the very nature of motor driven electrical gates and barriers presents unique personal injury hazards. It is important for code authorities and installers to understand how these systems are to be selected, configured and installed to provide safe, code compliant installations.



In the late 1990s the US Consumer Product Safety Commission (CPSC) documented a number of deaths and injuries attributed to entrapment accidents involving automatically operated gates. This included a number of tragic incidents involving children playing on automatic gates that did not include sensing devices or reversing mechanisms to prevent the entrapment .

To address these hazards, CPSC worked with UL and other stakeholders to develop product safety requirements to reduce these risks, which were incorporated in the March 2000 edition of the UL 325, the Standard for Safety for Door, Drapery, Gate, Louver, and Window Operators and Systems.

UL 325 standard for safety

Gate operators are investigated in accordance with requirements in UL 325, which covers gates that are intended to control vehicular entrance and/or egress. Vehicular gates may be

swinging or sliding type. Barrier arm operators are also considered a form of gate that controls a cantilever type device (or system), consisting of a mechanical arm or barrier that moves in a vertical arc, intended for vehicular traffic flow at entrances or exits to areas such as parking garages, lots or toll areas.

Vehicular gate operators are required to have provisions for, or be supplied with, at least one independent primary and one independent secondary means to protect against entrapment. Entrapment protection is not required for barrier arm operators that are not intended to move closer than two feet from a rigid object, provided they do not have pinch points between moving parts.

UL 325 includes specific requirements for vehicular gate operators based on their intended usage, as defined by one of the following four classifications:



Gate Operators (continued)

- CLASS I – Those intended for use in a home of one-to four single family dwelling, or a garage or parking area associated therewith.
- CLASS II – Those 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 – Those intended for use in an industrial location or building such as a factory or loading dock area or other locations not intended to service the general public.
- CLASS IV – Those 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.

The types of required primary and secondary entrapment protection vary, depending on the gate classification, and its intended movement. This protection can include the following methods, among other protection criteria:

- Inherent entrapment protection system that stops and reverses the gate within 2 seconds.
- A non-contact photoelectric sensor or the equivalent that stops or reverses the gate within 2 seconds.
- A contact sensor (edge device or the equivalent) that stops and reverses the gate within 2 seconds.
- An inherent adjustable clutch or pressure relief device that, upon sensing an obstruction in any direction, will stop the gate and not result in a closing force more than 10 percent higher than the initial setting required to stop the gate, which cannot exceed 40 lbf.
- An actuating device requiring continuous pressure to maintain opening or closing motion of the gate. Upon removal of pressure, movement of the gate must cease.
- An audio alarm.

UL certifications

Gate operators are certified (Listed) under the Door, Drapery, Gate, Louver, and Window Operators and Systems product category (FDDR) found in the Online Certifications Directory at www.ul.com/database. This category covers electrical and pneumatic door and gate systems, and door, drapery, gate, louver, window and turnstile operators, together with controls and accessories for use with such operators, and similar devices.

They are also marked to specify all intended use Classes, along with their maximum rated closing force.

Certified vehicular gate operators include a UL Listing Mark, the word LISTED and “Gate Operator” or other appropriate product name as shown in the individual Listings. They are also marked to specify all intended Classes of applications, along with their maximum rated closing force.

Installation considerations

Installers and code authorities need to be aware that the ultimate safety of the system is dependent upon proper installation. Particular attention needs to be given to the following:

1. Code authorities should be consulted prior to installation.
2. Verifying that the gate operator Class is appropriate for the intended installation.
3. Installation should be performed by a qualified installer using the manufacturer’s instructions.
4. Special care should be exercised during installation to ensure that recommended safety devices, such as photoelectric sensors or reversing-edge switches, are properly installed.