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Firms Notified,  
Comments Processed

LOG OF MEETING

DIRECTORATE FOR ENGINEERING SCIENCES

CPSC/OFFICE OF  
THE SECRETARY

SUBJECT: Gate Operators  
DATE OF MEETING: May 13, 1998

PLACE: 1998 Sheraton Northbrook

LOG ENTRY SOURCE: John Murphy, ESME *JRM* Shore Hotel Northbrook, IL

DATE OF ENTRY: November 5, 1998  
COMMISSION ATTENDERS: John R. Murphy, ESME

NON-COMMISSION ATTENDERS:

- |                     |                                     |
|---------------------|-------------------------------------|
| Buck Buchanan       | B & B Electro-matic                 |
| Charles P. Coggins  | Allstar Manufacturing Company, Inc. |
| Brian DeNault       | Hy-Security                         |
| Robert Dini         | Electronic Entry Systems, Inc.      |
| Tom Hebda           | Tri-Cor International, Inc.         |
| Joe Hetzel          | DASMA                               |
| Bill Hildebrand     | Operator Specialty Co.              |
| Grant Johnson       | FAAC International                  |
| Steven Lanzarone    | John Green Corporation              |
| John Mullen         | The Genie Company                   |
| Belk Null           | NOMMA                               |
| Brent Nichols       | Picasso Gate                        |
| Garry Owens         | Link-Semtex                         |
| Joe Rozgonyi        | EMX Industries Inc.                 |
| Roland Schibli      | Bircher America                     |
| Curtis Still        | Manaras Door and Gate Operators     |
| Jim Taylor          | White & Associates                  |
| Colin Willmott      | Chamberlain Group                   |
| Gerry Yeager        | Moore-o-Matic/Linear Gate System    |
| Naomi Angel         | DASMA                               |
| Roy Bardowell       | Manaras Door and Gate Operators     |
| Samuel Blancy       | Byan Systems, Inc.                  |
| John Clark          | Miller Edge, Inc.                   |
| John Dini           | Electronic Entry Systems, Inc.      |
| Phil Endicott       | Phil's Ornamental Iron              |
| Dave Guthrie        | Allstar Manufacturing Company, Inc. |
| Aarne Haas          | Byan Systems, Inc.                  |
| Frank Hinds         | American Fence Association          |
| Bob Holland         | Allstar Manufacturing Company, Inc. |
| Christopher Johnson | DASMA                               |
| Barbara Kelkoff     | Chamberlain Group                   |
| Ivan Milkovich      | CSA                                 |
| Chuck Mitchell      | GTO Inc.                            |
| Wayne Payne         | GTO Inc.                            |
| Richard Sedivy      | Doorking, Inc.                      |
| Hank Sieradzki      | The Chamberlain Group               |
| Dan Stottlemire     | Moore-o-Matic                       |
| Michelle Talbert    | Consumer                            |
| John Wood           | Apollo Gate Operators               |
| Don Grob (Chairman) | UL                                  |
| Amy Holter          | UL                                  |
| John Hupfauer       | UL                                  |



John Pallanti UL  
Diane Pappas Jordan UL  
Dennis Sullivan UL

**SUMMARY OF MEETING**

The meeting convened at 9:00 AM. The purpose of the meeting was to discuss the UL 325 bulletin dated February 6, 1998, the requirements for gate operators and systems adopted January 16, 1998, and the comments received from manufacturers.

Items discussed included alarm systems used to indicate that an entrapment circuit has failed, a new class of gate operators that are rural and limited in power, requirements for non-contact sensors, requirements for contact sensors, and updating references to ANSI Z535.4-1991. A copy of the agenda is attached.

Manufacturers have provided comments to UL on several requirements of UL 325. A copy of the manufacturers comments is attached. The meeting adjourned at 4:00 PM.

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Subject 325

333 Pfingsten Road  
Northbrook, IL 60062  
April 20, 1998

- TO:
- Buck Buchanan )
  - Charles Coggins )
  - Brian DeNault )
  - Robert Dini )
  - Mike Dodd )
  - Jeffery Engelstein )
  - Thomas Hebda )
  - William Hildebrand )
  - Grant Johnson )
  - Steve Lanzarone )
  - Bearge Miller )
  - John Mullen )
  - John Murphy )
  - Brent Nichols )
  - Stan Osowski )
  - Garry Owens )
  - Tom Pariot )
  - W. Parsadayan )
  - Joe Rozgonyi )
  - Roland Schibli )
  - Jim Tayler )
  - Colin Willmott )
  - Bruce Witter )
  - Gerry Yeager )

Representatives on the  
Ad Hoc Group of UL  
for Gate Operators and Systems

**SUBJECT:** Ad Hoc Group Meeting Agenda

As announced in the Subject 325 letter to the Ad Hoc Group dated March 17, 1998, a meeting of the Ad Hoc Group of UL for Gate Operators and Systems is scheduled for:

**May 13, 1998**  
**Sheraton North Shore Hotel**  
**933 Skokie Blvd.**  
**Northbrook, IL 60062**  
**(847) 498-6500**  
**9:00 AM - 5:00 PM**

A not-for-profit organization  
dedicated to public safety and  
committed to quality service.

**SUMMARY OF TOPICS**

The following topics will be discussed at the meeting:

1. Proposed requirements for audio alarms contained in Subject 325 Bulletin dated February 6, 1998 (copy attached).
2. Addition of Usage Class V covering gate operators for rural limited-power usage.
3. B1 entrapment protection devices that reverse instead of stopping.
4. Clarification that a B1 entrapment protection device shall only function in the direction of travel.
5. Load for gate speed test.
6. Vehicular Gate Demonstration.
7. Updating of the ANSI Z535.4-1991 reference.
8. Manufacturer's comments on the adopted requirements for gate operators.
9. Certification program for installers.
10. Education programs for gate installers and distributors.
11. Addition of requirements for gate constructions.
12. Requirements for visual alarms used as entrapment protection devices.
13. Clarification of the term "immediately" in paragraph 30A.4.15.

Attached is the agenda for the meeting.

Suggestions for additional agenda items are welcome. Written suggestions should be sent to the attention of Amy Holter at UL's Northbrook office, 333 Pfingsten Road, Northbrook, IL 60062, prior to May 1, 1998 so that time can be allotted to discuss additional items.

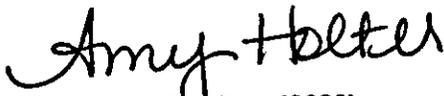
Your membership on this group is on an individual basis. Thus, if you are unable to attend the meeting and wish to propose sending a substitute, or you want to bring another person who can contribute substantially to the discussion, you are requested to contact us for permission to do so. Such a request should be made as early as possible prior to the meeting. This practice is necessary and desirable to ensure the size and effectiveness of the group.

**Hotel Accommodations**

For your convenience, rooms have been reserved at the Sheraton North Shore Hotel for May 12, 1998. Rooms have not been guaranteed; therefore, should you elect the use of these accommodations, it is suggested that you contact the Sheraton North Shore Hotel to confirm your reservations by May 1, 1998. The rate for these rooms is \$94.00. Please mention that you will be attending the UL meeting when confirming your reservations.

Please complete the attached attendance form and return it no later than May 4, 1998.

UNDERWRITERS LABORATORIES INC.



AMY HOLTER (Ext. 42023)  
Engineer  
Standards Department

REVIEWED BY:



JOHN PALLANTI (Ext. 42913)  
Associate Managing Engineer  
Engineering Services 415D

SR:DES

0325MTAN.A03

**APPENDIX A**

**AGENDA FOR THE MEETING OF THE  
AD HOC GROUP OF UL  
FOR GATE OPERATORS AND SYSTEMS**

1. Introduction
2. Purpose and Responsibility of a UL Ad Hoc Committee
3. Review of the Agenda
4. Topics 1 through 5
5. Lunch (12:00 – 1:00)
6. Vehicular Gate Demonstration (Topic 6)
7. Topics 7 through 13
8. Adjournment

PROPOSED REQUIREMENTS ARE OF A TENTATIVE AND EARLY NATURE AND ARE FOR REVIEW AND COMMENT ONLY. CURRENT REQUIREMENTS ARE TO BE USED TO JUDGE A PRODUCT UNTIL THESE REQUIREMENTS ARE PUBLISHED IN FINAL FORM.

## APPENDIX B

### AGENDA TOPICS

For your convenience in review, proposed additions to existing requirements are shown underlined and proposed deletions are shown ~~lined-out~~. Proposed new requirements are identified by (NEW).

## 1. AUDIO ALARMS

UL would like to discuss the proposals for audio alarms contained in Subject 325 Bulletin, dated February 6, 1998 and comments received on the proposals. See Appendix C for a copy of the bulletin. See Appendix D for the comments.

## 2. ADDITION OF USAGE CLASS V COVERING GATE OPERATORS FOR RURAL LIMITED-POWER USAGE.

### RATIONALE

Presently, UL 325 has four Usage Classes defined for vehicular gate operators. Manufacturers have suggested that the four Usage Classes do not cover all present usages. The manufacturers have requested a new Usage Class that would cover gate operators having limited power and used in rural locations. UL proposes to add Usage Class V for this application.

### IMPACT

The proposals, if adopted, would not require a review, retest, or modification of presently Listed gate operators covered by the Standard.

### PROPOSALS

(NEW)

✓ 3.18A RURAL LIMITED-POWER USAGE VEHICULAR GATE OPERATOR – CLASS V – A linear actuated, post mounted, vehicular swing-gate operator (or system) Intended for use in a rural location, such as a farm, ranch, or other location not intended for access by the general public, and intended to be powered only by a low-voltage power source such as a battery.

3.18A effective (date of publication)

**Table 30A.1  
Protection against entrapment**

Usage class	Gate operator category			
	Horizontal slide, vertical slide, and vertical pivot		Swing and vertical barrier (arm)	
	Primary type <sup>a</sup>	Secondary type <sup>a</sup>	Primary type <sup>a</sup>	Secondary type <sup>a</sup>
Vehicular I and II	A1	B1, B2, or D	A1, or C1	A2, B1, B2, C2, or D
Vehicular III	A2, B1, or B2	A2, B1, B2, D, or E	A2, B1, B2, or C2	A2, B1, B2, C2, D, or E
Vehicular IV	A2, B1, B2, or D	A2, B1, B2, D, or E	A2, B1, B2, C2, or D	A2, B1, B2, C2, D, or E
Vehicular V	-	-	A2	-

Note - The same type of device shall not be utilized for both the primary and the secondary entrapment protection means. One device can be used to cover both the open and closed directions, but is not required to do so. A combination of one B1 for one direction and one B2 in the other direction can be utilized as one device to meet the requirements of either the primary or secondary entrapment protection means.

<sup>a</sup> Entrapment protection types:

Type A1 - Inherent entrapment sensing system with an audio alarm. See 30A.1.2.

Type A2 - Inherent entrapment sensing system without an audio alarm. See 30A.1.3.

Type B1 - Provision for connection of, or provided with, a non-contact sensor (photoelectric sensor or the equivalent). See 30A.1.4, 30A.1.5, 30A.1.6, 30A.1.7, and 30A.1.8.

Type B2 - Provision for connection of, or provided with, a contact sensor (edge device or the equivalent). See 30A.1.6 and 30A.1.9 - 30A.1.11.

Type C1 - Inherent adjustable clutch or pressure relief device with audio alarm. See 30A.1.12.

Type C2 - Inherent adjustable clutch or pressure relief device without an audio alarm. See 30A.1.13.

Type D - Provision for connection of, or provided with, an actuating device requiring continuous pressure to maintain opening or closing motion of the gate. See 30A.1.14 and 30A.1.15.

Type E - An inherent audio alarm. See 30A.1.16, 30A.1.17, and 30A.1.18.

Revised Table 30A.1 effective July 16, 1999

30A.1.1 A vehicular gate operator or vehicular barrier (arm) operator shall have provisions for, or be provided with, at least one primary and one secondary means as specified in Table 30A.1 to protect against entrapment.

✓ Exception No. 1: An operator for a vehicular barrier (arm) that does not move toward a rigid object closer than 2 feet (610 mm), and does not have a pinch point between moving parts need not be provided with means to protect against entrapment.

✓ Exception No. 2: A Class V vehicular gate operator complying with the following conditions is not required to be provided with or have provisions for a secondary means of protection against entrapment:

a) the maximum power of the motor shall not exceed 1/15 hp or 50 W.

b) the maximum gate weight rating or load of the operator shall not exceed 350 pounds (see 51.8.4).

c) the gate operator shall monitor for the correct operation of the primary entrapment protection device at least once during each open and close cycle.

d) In the event a fault condition occurs which precludes the sensing of an obstruction, the operator shall function as required by 30A.1.14 and 30A.1.15 or shall immediately cease operating, and

e) software performing a monitoring function shall comply with the applicable requirements in the Standard for Safety Related Software, UL 1998. Monitoring for the correct operation of an entrapment device or circuit is to be distinguished from an entrapment device itself.

Revised 30A.1.1 effective July 16, 1999

51.8.4 Instructions regarding intended installation of the gate operator shall be provided as part of the installation instructions or as a separate document. The instructions shall specify how the force and load are to be determined upon installation. The following instructions or the equivalent shall be provided:

a) Install the gate operator only if:

- 1) The operator is appropriate for the construction of the gate and the usage Class of the gate,
- 2) All openings are guarded or screened to prevent access by arms or legs through openings anywhere in the gate,
- 3) All exposed pinch points are eliminated or guarded, and
- 4) Guarding is provided for exposed rollers.

b) The operator is intended for installation only on gates used for vehicles. Pedestrians must be provided with a separate access opening.

Exception: This item is not required for Class V vehicular gate operators.

*which item*

✓ c) The gate must be installed in a location so that sufficient clearance is provided between the gate and adjacent structures when opening and closing to reduce the risk of entrapment. Swinging gates should not open into public access areas.

✓ d) The gate must be properly installed and work freely in both directions prior to the installation of the gate operator. Do not over-tighten the operator clutch or pressure relief valve to compensate for a damaged gate.

e) For gate operators utilizing Type D protection:

- ✓ 1) The gate operator controls must be placed so that the user has full view of the gate area when the gate is moving,
- ✓ 2) The placard as required by 62A.1.6 shall be placed adjacent to the controls,
- ✓ 3) An automatic closing device (such as a timer, loop sensor, or the like) shall not be employed, and
- ✓ 4) No other activation device should be connected.

- f) Controls must be far enough from the gate so that the user is prevented from coming in contact with the gate while operating the controls. Outdoor or easily accessible controls should have a security feature to prevent unauthorized use.
- g) All warning signs and placards must be installed where visible in the area of the gate.
- h) For gate operators utilizing a non-contact sensor in accordance with 30A.1.1:
- 1) See instructions on the placement of non-contact sensors for each Type of application,
  - 2) Care shall be exercised to reduce the likelihood of nuisance tripping, such as when a vehicle, such trips the sensor while the gate is still moving, and
  - 3) One or more non-contact sensors shall be located where the likelihood of entrapment or obstruction exists, such as the perimeter reachable by a moving gate or barrier.
- i) For a gate operator utilizing a contact sensor in accordance with 30A.1.1:
- ✓ 1) One or more contact sensors shall be located at the leading edge and horizontally across the bottom edge of a vehicular swing gate.
  - ✓ 2) One or more contact sensors shall be located at the leading edge, trailing edge, and postmounted both inside and outside of a vehicular horizontal slide gate.
  - ✓ 3) One or more contact sensors shall be located at the bottom edge of a vehicular vertical slide gate.
  - ✓ 4) One or more contact sensors shall be located at the pinch point of a vehicular vertical pivot gate.
  - ✓ 5) A handwired contact sensor shall be located and its wiring arranged so that the communication between the sensor and the gate operator is not subjected to mechanical damage.
  - ✓ 6) A wireless contact sensor such as 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 or natural landscaping and the like. A wireless contact sensor shall function under the intended end-use conditions.

51.8.5 Instruction regarding intended operation of the gate operator shall be provided as part of the user instructions or as a separate document. The following instructions or the equivalent shall be provided:

#### IMPORTANT SAFETY INSTRUCTIONS

WARNING - To reduce the risk of 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.

Exception: This item is not required for Class V vehicular gate operators. *which item*

8. SAVE THESE INSTRUCTIONS.

Revised 51.8.5 effective July 16, 1999

53.4.6 The message panel specified in 53.4.3 shall include the following text or an equivalent wording:

- a) Possible risk and consequence statement - "Moving Gate Can Cause Serious Injury or Death."
- b) Avoidance statements:
  - 1) "Operate Gate Only When Gate Area is in Sight, Free of People, and Clear of Obstructions."
  - 2) "Do Not Allow Children to Operate Gate or Play in Gate Area."

3) "This Entrance is for Vehicles Only. Pedestrians Must Use Separate Entrance."

Exception: This item is not required for Class V vehicular gate operators.

4) "Read Owner's Manual and Safety Instructions."

5) For gate operators using Type D entrapment protection: "An Automatic Closing Device (such as a Timer, Loop Sensor, or the like) Shall Not be Employed."

Revised 53.4.6 effective July 16, 1999

### 3. B1 ENTRAPMENT PROTECTION DEVICES THAT REVERSES UPON SENSING AN OBSTRUCTION

#### RATIONALE

UL has been asked to revise the requirements to cover a Type B1 entrapment protection provision that reverses instead of stopping upon sensing an obstruction. Since a non-contact sensor does not require physical contact to detect an obstruction, it would not increase the risk of entrapment in either mode of operation – stopping or reversing.

#### IMPACT

The proposed requirement, if adopted, would not require a review, retest, or modification of presently Listed and Recognized gate operators covered by the Standard.

#### PROPOSAL

30A.1.4 A gate operator utilizing entrapment protection designated Type B1 in Table 30A.1 by having provision for connection of, or providing with the operator, a non-contact sensor (photoelectric sensor or equivalent) to comply with 30A.1.1 shall, when the sensor is actuated:

a) Stop or reverse the gate within a maximum of 2 seconds of sensing an obstruction in both the opening and closing directions,

b) Stop the gate upon sensing a second obstruction in the opposite direction.

b<sub>2</sub>) Result in a gate at rest remaining at rest unless a Type D device is ~~activated~~ actuated, and

e<sub>1</sub>) When the sensor is no longer ~~activated~~ actuated, the operator will return to normal operation.

Revised 30A.1.4 effective July 16, 1999

#### 4. CLARIFICATION FOR A B1 ENTRAPMENT PROTECTION DEVICE

##### RATIONALE

UL has received comments requesting clarification that contact sensors need only function in the direction of travel. This would be intended to reduce the risk of entrapment from the gate reversing on an object when the entrapment protection device is actuated in the direction opposite of travel. Therefore, UL proposes to add paragraph 30A.1.3A to state that a contact sensor need only function in the direction of travel.

##### IMPACT

The proposed requirements, if adopted, would not require a review, retest, and modification of presently Listed and Recognized gate operators covered by the Standard.

##### PROPOSAL

###### (NEW)

30A.1.9A With reference to 30A.1.9, a contact sensor is only required to sense obstructions in the gate's direction of travel.

Added 30A.1.9A effective July 16, 1999

#### 5. LOAD FOR GATE SPEED TEST

Manufacturers have suggest that using no load for the test in paragraph 30A.1.19 is not representative of DC devices, for example, that vary in speed with variations in the load. Presently, UL requires that this test be performed under a no load condition. UL would like to discuss requiring the test be conducted at a specified percentage of rated load and what percentage should be specified.

#### 6. VEHICULAR GATE DEMONSTRATION

Manufacturers have indicated that it would be beneficial for the Ad Hoc Group to see different working gate configurations that are covered by UL 325 to better understand the unique features of each configuration. Manufacturers have volunteered to bring example gates to be used for this purpose. The demonstration will cover primary entrapment sensors, secondary entrapment sensors, secondary entrapment contact and non-contact sensors, and entrapment zones.

#### 7. UPDATING OF THE ANSI Z535.4-1991 REFERENCE

It has been brought to the attention of UL that a new edition of the Standard for Product Safety Signs and Labels, ANSI Z535.4 is presently being developed. Manufacturers have suggested that UL update references in UL 325 from ANSI Z535.4-1991 to ANSI Z535.4-1998. UL would like to discuss if there are any changes in the new edition that would effect UL 325.

#### 8. GENERAL COMMENTS ON THE REQUIREMENTS FOR GATE OPERATORS

UL would like to discuss the comments received on the present requirements and the advisability of developing corresponding proposals. See Appendix E for comments.

## 9. CERTIFICATION PROGRAM FOR INSTALLERS

At the June 4, 1996 Ad Hoc Group meeting, the possibility of UL developing a certification program for gate installers and gate installations was discussed. As a result of the discussion, UL indicated that it would expand the current installation instructions, and work in conjunction with existing industry organizations to develop a set of installation guidelines. Since the meeting, UL has expanded the installation instruction section of the Standard. UL would now like to further discuss developing a certification program for installers.

## 10. EDUCATION PROGRAMS FOR GATE INSTALLERS AND DISTRIBUTORS

At the June 4, 1996 Ad Hoc Group meeting, representatives of industry suggested that educational programs might be developed by the industry groups for presentation at trade shows. UL would like to follow up on this concept to find out what has been done by the industry.

## 11. REQUIREMENTS FOR GATES

At the June 4, 1996 Ad Hoc Group meeting, representatives of industry indicated that it might be beneficial for UL to List gates. Several organizations were mentioned as having or developing standards for gate constructions. UL has reviewed the Standard Specifications for Residential Chain Link Fence Gates, ASTM F654-91, the Standard Specification for Industrial and Commercial Horizontal Slide Gates, ASTM F1184-94, and the Standard Specification for Industrial and Commercial Swing Gates, ASTM F900-94. UL would like to continue the discussion to determine the need to develop requirements for gates.

## 12. VISUAL ALARMS

Initially, UL determined that a visual alarm is a valid option for Type E entrapment protection provision. At the June 4, 1996 Ad Hoc group meeting, representatives of industry suggested that specific construction and performance requirements needed to be developed for visual alarms if they were to be used as entrapment protection devices. In UL's Subject 325 bulletin dated November 21, 1997, UL did not include proposed requirements for visual alarms as UL determined that more time was needed to develop comprehensive performance and construction requirements. UL would like to continue the discussion to see if there is still an interest in visual alarms and discuss any suggested performance and construction requirements.

## 13. CLARIFICATION OF THE TERM "IMMEDIATELY" IN PARAGRAPH 30A.1.15

Manufacturers have suggested that the term "immediately" in paragraph 30A.1.15 is too ambiguous. UL would like to discuss what constitutes a realistic time for a gate to stop upon removal of pressure from a Type D entrapment protection device.

**APPENDIX C**

**SUBJECT 325 BULLETIN  
DATED FEBRUARY 6, 1998  
ATTACHED**

Subject 325

333 Pfingsten Road  
Northbrook, IL 60062  
February 6, 1998

**TO:** Industry Representatives on the Industry Advisory Conference of UL for Electric Door and Gate Operators,  
Consumer Advisory Council of Underwriters Laboratories Inc.,  
Electrical Council of Underwriters Laboratories Inc.,  
Subscribers to UL's Standards Service for Door, Drapery, Gate, Louver, and Window Operators and Systems

**SUBJECT:** Request for Comments on Proposed Requirements for the Fourth Edition of the Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems, UL 325; PROPOSED EFFECTIVE DATE

#### SUMMARY OF TOPICS

This bulletin proposes the following changes in requirements:

Clarification of requirements for audio alarms for gate operators.

**COMMENTS DUE: March 6, 1998**

Attached as Appendix A for your review and comment are proposed requirements for UL 325. Questions regarding interpretation of requirements should be directed to the responsible UL Staff. Please see Appendix B of this bulletin regarding designated responsibility for the subject product categories.

Please note that proposed requirements are of a tentative and early nature and are for review and comment only. Current requirements are to be used to judge a product until these requirements are published in final form.

#### PROPOSED EFFECTIVE DATE

The proposed requirements will necessitate a review and possible retest of currently Listed and Recognized products. Therefore, UL proposes that the new requirements become effective July 16, 1999, to correspond with the effective date of Section 30A. This is intended to provide manufacturers with sufficient time to submit modified products for investigation and to implement the necessary changes in production. Please note that this also includes the time that will be needed by UL to conduct a review of the modified product.

**REQUEST FOR COMMENTS ON PROPOSALS**

Please provide the following:

1. Your comments concerning the proposed requirements; and
2. Your comments concerning the proposed effective date, should the proposals be adopted.

Written comments should be sent to the attention of Amy Holter at UL's Northbrook office, 333 Pfingsten Road, Northbrook, IL 60062-2096. Comments may be sent by mail or faxed to (847) 509-6217. Please reference all correspondence to Subject 325.

All comments should be sent by March 6, 1998.

Unless specifically requested to do so, UL will not acknowledge comments indicating concurrence with these proposals.

**UNDERWRITERS LABORATORIES INC.**

**REVIEWED BY:**

**AMY K. HOLTER (Ext. 42023)**  
Engineer  
Standards Department

**JOHN A. PALLANTI (Ext. 42913)**  
Associate Managing Engineer  
Engineering Services 415D

SR:DES

0325BULL.A02

PROPOSED REQUIREMENTS ARE OF A TENTATIVE AND EARLY NATURE AND ARE FOR REVIEW AND COMMENT ONLY. CURRENT REQUIREMENTS ARE TO BE USED TO JUDGE A PRODUCT UNTIL THESE REQUIREMENTS ARE PUBLISHED IN FINAL FORM.

## APPENDIX A

### PROPOSED REQUIREMENTS AND PROPOSED EFFECTIVE DATE FOR THE FOURTH EDITION OF THE STANDARD FOR DOOR, DRAPERY, GATE, LOUVER, AND WINDOW OPERATORS AND SYSTEMS, UL 325

For your convenience in review, proposed additions to existing requirements are shown underlined and proposed deletions are shown ~~lined-out~~. Proposed new requirements are identified by (NEW).

**RATIONALE**

UL has received comments requesting further clarification of the audio alarm requirements for gate operators. UL proposes to add paragraph 30A.1.1A to clarify that gate operators for Vehicular Classes I and II are required to be provided with an audio alarm but the alarm is required to function only when both the primary and secondary protection devices do not function. As a consequence of the added requirements, Types A and C no longer need to be subdivided. Therefore, UL proposes to combine Types A1 and A2 into Type A, and C1 and C2 into Type C.

Also the requirements that become effective July 16, 1999 require an audio alarm for Types A and C entrapment protection provisions be distinguishable from a Type E entrapment protection device. To clarify the distinguishing criteria, UL proposes to add paragraph 30A.1.1C and revise paragraph 30A.1.18.

**IMPACT**

The proposed requirements, if adopted, would require a review, retest, and modification of presently Listed and Recognized gate operators covered by the Standard.

PROPOSALS

Table 30A.1  
Protection against entrapment

Usage class	Gate operator category			
	Horizontal slide, vertical slide, and vertical pivot		Swing and vertical barrier (arm)	
	Primary type <sup>a</sup>	Secondary type <sup>a</sup>	Primary type <sup>a</sup>	Secondary type <sup>a</sup>
Vehicular I and II	A4	B1, B2, or D	A4, or C4	A2, B1, B2, C2, or D
Vehicular III	A2, B1, or B2	A2, B1, B2, D, or E	A2, B1, B2, or C2	A2, B1, B2, C2, D, or E
Vehicular IV	A2, B1, B2, or D	A2, B1, B2, D, or E	A2, B1, B2, C2, or D	A2, B1, B2, C2, D, or E

Note - The same type of device shall not be utilized for both the primary and the secondary entrapment protection means. One device can be used to cover both the open and closed directions, but is not required to do so. A combination of one B1 for one direction and one B2 in the other direction can be utilized as one device to meet the requirements of either the primary or secondary entrapment protection means.

<sup>a</sup> Entrapment protection types:

Type A4 - Inherent entrapment sensing system with an audio alarm. See 30A.1.2.

~~Type A2 - Inherent entrapment sensing system without an audio alarm. See 30A.1.3.~~

Type B1 - Provision for connection of, or provided with, a non-contact sensor (photoelectric sensor or the equivalent). See 30A.1.4, 30A.1.5, 30A.1.6, 30A.1.7, and 30A.1.8.

Type B2 - Provision for connection of, or provided with, a contact sensor (edge device or the equivalent). See 30A.1.6 and 30A.1.9 - 30A.1.11.

Type C4 - Inherent adjustable clutch or pressure relief device with audio alarm. See 30A.1.12.

~~Type C2 - Inherent adjustable clutch or pressure relief device without an audio alarm. See 30A.1.13.~~

Type D - Provision for connection of, or provided with, an actuating device requiring continuous pressure to maintain opening or closing motion of the gate. See 30A.1.14 and 30A.1.15.

Type E - An inherent audio alarm. See 30A.1.16, 30A.1.17, and 30A.1.18

Revised Table 30A.1 effective July 16, 1999

(NEW)

30A.1.1A A vehicular gate operator or vehicular barrier (arm) operator for Classes I and II, shall be provided with an audio alarm complying with 30A.1.1B and 30A.1.1C. The alarm shall function upon the first occurrence of both the primary and secondary entrapment protection devices not functioning when an obstruction is present. A gate operator that monitors for the functioning of both the primary and secondary entrapment protection devices and sounds the alarm if one device does not function when an obstruction is present is also acceptable. The alarm shall function until the manual input as specified in paragraph 30A.1.2(c) or 30A.1.12(b) has been entered. An audio alarm is not required for Classes III and IV.

Added 30A.1.1A effective July 16, 1999

*Alarm smaller manufacturer 9/11  
waive on 9/11 requirements longer effective  
date 18 months, 13 months*

(NEW)

30A.1.1B An audio alarm specified in 30A.1.1A shall comply with the applicable requirements in All Devices, Section 32, and Audio Alarms, Section 34A.

Added 30A.1.1B effective July 16, 1999

(NEW)

30A.1.1C The audio alarm signal for the alarm specified in 30A.1.1A shall be generated by devices such as bells, horns, sirens, or buzzers. The signal shall have a frequency range of 700 to 2800 Hz, either a cycle of the sound level pulsations of 4 to 5 per second or one continuous tone, a sound level at least 100 dB 1 foot (305 mm) in any direction from the device, and not vary more than  $\pm 8$  dB over the voltage range of operation.

Added 30A.1.1C effective July 16, 1999

30A.1.2 A gate operator installed in accordance with the manufacturer's instructions utilizing entrapment protection designated Type A4 in Table 30A.1 to comply with 30A.1.1 shall upon sensing an obstruction in both the opening and closing directions:

- a) Stop and initiate the reversal of the gate within a maximum of 2 seconds. The gate operator shall reverse the gate a minimum of 2 inches (50.8 mm),
- b) Stop the gate upon sensing a second obstruction in the opposite direction, and
- c) Require a renewed, intended input (via wired or wireless remote or integral control, a loop sensor, a card reader, or the like) prior to enabling any automatic actuation devices such as a timer or any other maintained input that was present when the reversing function occurred, and
- ~~d) Provide an audible signal indicating activation of the entrapment protection device. The signal shall function until the manual input as specified in (c) has been entered. Such a signal shall be distinguishable from the signal generated by a Type E entrapment protection provision.~~

Revised 30A.1.2 effective July 16, 1999

~~30A.1.3 A gate operator installed in accordance with the manufacturer's instructions utilizing entrapment protection designated Type A2 in Table 30A.1 to comply with 30A.1.1 shall upon sensing an obstruction in both the opening and closing directions:~~

- ~~a) Stop and initiate the reversal of the gate within a maximum of 2 seconds. The gate operator shall reverse the gate a minimum of 2 inches (50.8 mm),~~
- ~~b) Stop the gate upon sensing a second obstruction in the opposite direction, and~~
- ~~c) Require a renewed, intended input (via wired or wireless remote or integral control, a loop sensor, a card reader, or the like) prior to enabling any automatic actuation devices such as a timer or any other maintained input that was present when the reversing function occurred.~~

30A.1.3 deleted (date of publication)

30A.1.12 A swing-gate operator utilizing entrapment protection designated Type C4 in Table 30A.1 to comply with 30A.1.1 shall, upon sensing an obstruction in both the opening and closing directions:

a) After 100,000 cycles of operation under rated load, not result in a force of more than 10 percent higher than the initial setting to stop the gate. If adjustable, the initial setting is to be at the setting for maximum force,

b) Require a renewed, intended input (via wired or wireless remote or integral control, a loop sensor, a card reader, or the like) prior to enabling of any automatic actuation devices such as a timer or any other maintained input that was present when the reversing function occurred, and

~~c) Provide an audible signal indicating activation of the entrapment protection device. The signal shall function until manual input as specified in (b) has been entered. Such a signal shall be distinguishable from the signal generated by a Type E entrapment protection provision.~~

\* ~~cd)~~ Be readily accessible for inspection and repair and not readily rendered inoperative.

Revised 30A.1.12 effective July 16, 1999

~~30A.1.13 A swing-gate operator utilizing entrapment protection designated Type C2 in Table 30A.1 to comply with 30A.1.1 shall, upon sensing an obstruction in both the opening and closing direction:~~

~~a) After 100,000 cycles of operation under rated load, not result in a force of more than 10 percent higher than the initial setting to stop the gate. If adjustable, the initial setting is to be at the setting for maximum force,~~

~~b) Require a renewed, intended input (via wired or wireless remote or integral control, a loop sensor, a card reader, or the like) prior to enabling of any automatic actuation devices such as a timer or any other maintained input that was present when the reversing function occurred, and~~

~~c) Be readily accessible for inspection and repair and not readily rendered inoperative.~~

30A.1.13 deleted (date of publication)

30A.1.17 An audio alarm for a Type E device shall comply with 30A.1.18 and the applicable requirements in All Devices, Section 32, and Audio Alarms, Section 34A.

Revised 30A.1.17 effective July 16, 1999

30A.1.18 ~~An~~ The audio alarm signal ~~used to comply with 30A.1.17 for a Type E device~~ shall be generated by devices such as bells, horns, sirens, or buzzers. The signal shall have a frequency range of 700 to 2800 Hz, a cycle of the sound level pulsations of 1 to 2 per second, a sound level at least 100 dB 1 foot (305 mm) in any direction from the device, and not vary more than  $\pm 8$  dB over the voltage range of operation. When the audio alarm is not provided with the operator, instructions specifying this criteria shall be provided with the operator.

Revised 30A.1.18 effective July 16, 1999

**30A.1.22 Entrapment protection (Types A1, A2, B1, B2, C1, and C2)**

Revised 30A.1.22 effective July 16, 1999

**30A.1.22.1** When Types A1, A2, B2, C1, or C2 entrapment protection devices are used as the primary or secondary entrapment protection provisions, a gate operator shall, upon contact with the obstruction specified in 30A.1.22.3 – 30A.1.22.5:

- a) For Types A1, A2, or B2 provisions, initiate reversal of the moving gate within 2 seconds. The gate operator shall reverse the gate a minimum of 2 inches (50.8 mm) unless a control is actuated or an entrapment circuit senses an obstruction to stop the gate during its reversal, or
- b) For Type C1 or C2 provisions, not open or close the gate with a force greater than 40 pounds (177.9 N), at the maximum setting if adjustable, at the leading edge of the gate, except for the first 10° of any initiation or a 2 second maximum.

A gate operator shall be tested in accordance with all applicable requirements specified in 30A.1.22.3 – 30A.1.22.5 for all types of gates with which the gate operator is intended to be used. Each entrapment protection provision shall be tested separately and independently with the other entrapment protection provisions defeated.

Revised 30A.1.22.1 effective July 16, 1999

**APPENDIX B****DESIGNATED RESPONSIBILITY FOR UL  
PRODUCT CATEGORIES**

**FDDR — DOOR, DRAPERY, GATE, LOUVER, AND WINDOW OPERATORS AND SYSTEMS**  
**FDDR2 — DOOR, DRAPERY, GATE, LOUVER, AND WINDOW OPERATORS  
AND SYSTEMS — COMPONENTS**

The individuals shown in the following table are involved with the investigation of products covered under the subject categories. The Primary Designated Engineer (shown in UPPERCASE letters) coordinates the establishment and uniform interpretation of UL requirements applicable to the product categories. The Designated Engineers (shown in lowercase letters) work with the Primary Designated Engineer to interpret requirements and maintain standards.

Should you have questions regarding the interpretation of the requirements proposed in this bulletin or any adopted requirements that affect your product, you are encouraged to contact the individual at the office to which you normally submit your products.

The Industry Advisory Conference (IAC) Chairman for the subject categories is Don Grob at UL's Northbrook office. The IAC Chairman oversees the significant interpretations made by the Primary Designated Engineer and arbitrates any differences regarding interpretation of UL requirements.

<b>CCN</b>	<b>Office/Subsidiary</b>	<b>Responsible Engineer</b>	<b>Extension</b>
<b>FDDR, FDDR2</b>	<b>Melville</b>	<b>Darrin Conlon</b>	<b>22872</b>
	<b>Northbrook</b>	<b>JOHN PALLANTI</b>	<b>42913</b>
	<b>RTP</b>	<b>Ashok Patel</b>	<b>11660</b>
	<b>Santa Clara</b>	<b>Jeff Hom</b>	<b>32690</b>

**APPENDIX D**

**COMMENTS RECEIVED TO THE  
SUBJECT 325 BULLETIN  
DATED FEBRUARY 6, 1998  
ATTACHED**

1) Paragraph 30A.1.1A – This paragraph states that the audio alarm will sound upon the first occurrence of both the primary and secondary devices *not functioning when an obstruction is present*. This in effect is now calling for a third entrapment protection device which must monitor the first and second device, and also monitor the gate to determine if an entrapment has occurred. The feasibility and practicality of triple redundancy in a gate operator is questionable, and the time line constraint we are working under, leaves the engineering, development, and testing of such a device highly improbable. In addition, the economical impact of developing such a device will most probably force some of the smaller manufacturers from the industry.

2) Requiring multiple secondary entrapment protection devices to be monitored would be a disincentive to providing anything beyond the minimum protection required by the standard.

The proposed requirement to "monitor" the functioning of the primary entrapment protection (inherent reversal) is an added and unjustified burden beyond the current testing and functioning required in the standard. In most instances the current standard calls for the motor control to *not* allow movement if certain conditions exist. The word "monitor" alone without further clarification also leaves it up to the judgment of a UL Engineer her or his interpretation of the word, and hence and testing that he or she may deem appropriate. Contrary to other requirements in the standard there are no testing procedures specified.

3) In the early part of an industry conference telephone discussion about this proposal, several possible interpretations of 30A.1.1A were proposed. This means that UL's intent, in this bulletin, was not conveyed in a way that was all understandable to the industry. The most common interpretation seemed to be that UL now wanted to add an additional external device, or pair of devices, that would be redundant, and perform a supervisory function to the primary and secondary entrapment sensors. Of course, the purpose for such an additional level of redundancy would be very hard to justify, and would represent a massive burden to the industry.

4) (We) believe that the intent of new paragraph 30A.1.1A appears to require a third device to monitor the other two devices (primary and secondary entrapment protection). (We) recognize this third device as an additional requirement beyond the January 16, 1998 UL Subject 325 document. Overall, (we) concluded that the above referenced proposed requirements, if adopted, are cumbersome, difficult to achieve, and will add unnecessary additional costs to affected products.

5) Both the "new rules" and the "proposed changes" have significant flaws in them. Addressing the Feb. 6, 1998 "proposal", beepers are out except in an obstruction mode; however, what are you asking the alarm to do? It appears from 30A.1.1A that you are asking for two devices to not function before an alarm is sounded. Are these 2 devices supposed to be monitored? Is this the intent? If the devices do not function and no obstruction is present, the alarm will go off regardless of an obstruction; or, if one device is not working and an obstruction occurs will the alarm go off? The wording is confusing and under normal operations these devices are not functioning anyway.

6) The alarm will be an additional, redundant requirement for Class I and II operators that already have primary and secondary protections (with their particular requirements.) This will be an unjustified burden to Class I and II gate operator manufacturers.

This alarm requirement precludes a manufacturer from including an existing alarm which warns of impending and in progress operator.

The alarm may prevent a person who is truly hurt from being heard, perhaps resulting in further injury.

The alarm requirement adversely effects those manufacturers who construct their machines to function on low voltage (battery operated units).

7) The best function for an audio entrapment alarm was defined (in a letter sent) to UL, dated December 19, 1997. An audio alarm configured as (the letter) suggested could serve to indicate potential entrapment if it was to activate only upon a 2<sup>nd</sup> subsequent entrapment sensor signal that occurred while the operator was responding to the first sensor activation. Our position in this is that the triggering of an entrapment sensor does not mean there is entrapment, if the gate successfully reverses, therefore there should be no alarm at this time. If UL is concerned about a fault causing a failure of the operator to reverse, as they seem to be in the February 6<sup>th</sup> proposal, the functions described in 30A.1.2 and 30A.1.9 could be improved with only a small change. A statement that any 2<sup>nd</sup> subsequent activation of either the inherent or gate edge entrapment sensors, prior to an operating being reset, or attaining full travel in either direction of travel will result in the operator stopping and activating the audio entrapment alarm. This change would create some degree of protection both for entrapment as a result of the gate being unable to reverse, or entrapment because the gate did not reverse. The audio alarm would only activate when there were two sequential events, which would greatly reduce nuisance alarms. I hope that this is the change that UL had intended in their February 6<sup>th</sup> proposal. DASMA and others have previously stated that the industry believes that the audio alarm is of very limited value, because we have evolved into a society where alarms are so common place that they are simply ignored as another nuisance of the modern day. If UL insists on the inclusion of the audio alarm, a cutoff time must be defined or the industry will find itself in violation of nuisance noise statues. This comment has been made before, and it must be addressed adequately.

8) The logic of using an audible alarm as it is written in (paragraph 30A.1.1A), and as it is required in 30A.1.2(d) of the adopted standard is flawed. As stated in 30A.1.2(d) of the standard, an audible signal must be activated upon the activation of the entrapment protection device. In effect, if the entrapment protection device is activated, the gate operator has successfully sensed the potential entrapment and has reversed the gate. Why is the standard requiring an alarm at this point? A second activation of the entrapment protection device, after the first activation has reversed the gate, is a better indications that an entrapment has occurred, and it is at this point that an alarm (if required) should be activated. What happened to the (December 19, 1997) proposal and discussion on this very topic? (see comment 7) What was the response from your IAC when this subject was discussed? I find it very hard to believe that the industry will accept such flawed logic.

9) Whatever the purpose of the audio alarm, I do support the simplification of A1 and A2 definitions into only one requirement. The clutch device however, should not be required to have an audio alarm because adding an electric trigger to a clutch essentially converts it into a type A device. If UL insists on clutches having alarm outputs, manufacturers simply will not employ clutches in their designs, which will result in the loss of a potentially valuable entrapment protection option.

10) 30A.1.12 does not mention the word clutch but it is referenced in the 30A.1 chart as such. 30A.1.12 fundamentally eliminates clutches by requiring a sensor on the clutch. This does not make sense. If this requirement stands, the added cost required to have a clutch comply makes it non-competitive and redundant. Clutches are a fail-safe device as they provide a mechanical means of protection. As one company that has provided clutches for years because they provide a fail-safe mode, we regret this posture. With this proposed change, the 30A.1 chart might as well be simplified to include all gate operators in one category, as C2 is eliminated and C1 has been rendered useless.

11) Paragraph 30A.1.1C – In defining the specifications for an audio alarm, there is no time limit regarding how long this alarm will remain functioning in the absence of a manual input as specified in 30A.1.2(d) and 30A.1.12(b). Has anyone at UL done any research regarding noise abatement statues or manufacturers of gate operators be in violation of these or any other city codes regarding noise abatement that may be on the books?

12) From the first submittal of Jan. 16, 30A.1.2 requires that the gate be reversed upon obstruction a minimum of 2 inches within a maximum of 2 seconds. A current sensor cannot be in the circuit at start up because of the current required to set the gate in motion. The sensor is out of the circuit about 2 seconds, therefore during the first 2 feet of travel there is not current sensing taking place. When a current sensor activates and recognizes an obstruction it now stops and backs up a minimum of 2 inches. Please consider what happens to gates operated in cold climates with ice and snow? With all of this, what has happened to the victim? Would a clutch have helped the victim? What about a reach through? Unfortunately people do reach through gates usually to try to activate the gate. This happens because the installer does not follow directions and places the opening device too close to the gate, not because the operator has failed. Who is liable?

**APPENDIX E**

**GENERAL COMMENTS RECEIVED  
IN REGARDS TO UL 325  
ATTACHED**

*Industrial Door Op*

1) "In section b) of (paragraph 30.1) we propose the addition of a non-contact sensor (photoelectric sensor or the equivalent). We believe that a non-contact sensor is very important entrapment protection device and should be included in the industrial door operators. This non-contact sensor should be monitored for proper operation and should comply with the requirements in Sections 32 and Sections 33." *good*

2) Summary of manufacturer's comment: UL needs to define the word "Entrapment". Though out the Standard Entrapment sensor is defined as "an automatic sensor which senses entrapment of a solid object..." This is not specific enough. A suggestion for a definition is as follows: "Entrapment - a person trapped for more than 2 seconds in a dangerous position between a moving gate and a wall, or post, or pilaster, or column, or fence panel." *Definition: only applies to gate operators*

*Summary 9218* "Proposed Definition, Entrapment detection device. 'Entrapment detection devices (both primary and secondary) must detect people and stop and, in some cases, reverse the gate when people are trapped in a dangerous position by a gate within a maximum of 2 seconds. Entrapment does not include people or obstacles being stuck by moving gates alone. People and obstacles can be struck by moving automatic gates and not be in an Entrapment position.'"

"Secondary Entrapment detection device - an inherent or external device which either senses a human in the entrapment zone or warns a person of a moving gate with an audio alarm or requires a human supervised operation of the gate. Secondary Entrapment detection devices include A. inherent entrapment sensing system, B1 provision for connection of, or provided with, a non-contact sensor, B2 provision for connection of, or provided with, a contact sensor, C an inherent adjustable clutch or pressure relief device, D. an actuating device requiring continuous pressure to maintain opening or closing motion of the gate, and E. an inherent audio alarm. See Table 30A.1 for exact specifications for each gate operator category."

*lect  
just  
entire* "Terminology must agree though out the document. The words SENSOR, and PROTECTION are used interchangeably within the document. PROTECTION is the wrong term and should be removed. All should read SENSOR. Table 30A.1 title reads "Protection against Entrapment". Table 30A.1 should read "Entrapment Sensor Classes". ..."

Summary of manufacturer's comment: UL needs to define the purpose of the audio alarm. The manufacturers can advise UL as to the best way to attain the desired results. As the Standard reads now, the requirements will cause too many false alarms which will be ignored. The proposed requirements are impossible to test and does not increase safety.

Summary of manufacturer's comment: Due to the combination of paragraphs 30A.1.6, 30A.1.15, and 30A.1.14, manufacturers are not clear on the usage of portable controls. Provisions for a type D connection must be supplied if a type B1 or B2 are to be used for a secondary entrapment device. If a type D device is used as a secondary entrapment protection device, then the operator shall be constructed so that a portable control will not operate the gate. It has been suggested that paragraph 30A.1.6 be changed to read "...the operator shall function in the open direction only." This change would mean a fault condition would require the end user to receive service before the gate would close again.

3) Summary of manufacturer's comment: When people use hydraulic gate operators they normally use a loop detector for safety and a shadow loop to close the gate the instant the vehicle passes through the gate. The main application of these gates is for security. The new entrapment protection requirements are compromising this security.

4) Summary of manufacturer's comment: Manual operation by a handle or key in Class I should be removed from the requirements. This instead should be the personal choice of the homeowner. Requiring the manual release key or handle to be attached to an operator removes a level of security. Thieves can hop the fence and release the gate.

5) Summary of manufacturer's comment: During review of the photoelectric sensor normal operator test 33.1 and 33.1A manufacturers have found that a retro-reflective photoelectric sensor used for the purpose of type B1 entrapment protection can be defeated by covering the retro-reflective sensor with a small cardboard box. The photoelectric beam transmitted from the sensor is reflected from the cardboard box back to the receiver and in effect it simulates normal operation. This sensor can also malfunction in the same manner if someone unintentionally stands 3 to 12 inches in front of the sensor. It has been recommended to change the 33.1 and 33.1A tests to include a short distance test of 1 inch increments up to one foot.

6) Summary of manufacturer's comment: UL presently requires screening to be put on gates for safety, which is necessary for slide gates but does not increase the safety on swing gates.

OK 7) "51.8.4 a) 2) ' All openings are guarded or screened to prevent access by arms or legs through openings anywhere in the gate.' This sentence should be eliminated at this time. This quick sentence effectively regulates gate manufacturers. This issue should be discussed and debated with N.O.M.M.A. (National Ornamental and Miscellaneous Metals Association).... It is a complex issue that should not be reduced to one sentence. The government mandated gate manufacturing standard in Italy is 15 pages long. How can (UL) reduce it to one sentence? Each type of gate is different. Yes, horizontal slide gates should be manufactured to prevent arms and legs from passing through, but swing gates are different risk as are pivot gates. Do not regulate this industry with one sentence."

Summary of manufacturer's comment: It may not be practical to require screening on swing gates. By adding a screen to a swing gate, the wind resistance of the gate is dramatically increased. An installer will be required to set the gate pressure to open on a windy day, thereby lessening the primary entrapment protection on a calm day. A suggestion is to set a maximum distance between pickets or objects in a gate of 4 inches in the horizontal direction instead of requiring screening.

8) "Slide gates and swing gates should be separate categories and treated separately."

9) "Speed restrictions on the end travel of a swing gate should be established and possibly even length restrictions of swing gates."