ANSI/BHMA A156.38-2014

AMERICAN NATIONAL STANDARD

FOR

LOW ENERGY POWER OPERATED SLIDING AND FOLDING DOORS

SPONSOR

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION, INC.

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AMERICAN NATIONAL STANDARD

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FOREWORD (This Foreword is not a part of ANSI/BHMA A156.38)

The general classification of builders hardware includes a wide variety of items which are divided into several categories. To recognize this diversity, a sectional classification system has been established. Power Operated Doors is one such section and this Standard is a result of the collective efforts of members of the Builders Hardware Manufacturers Association, Inc. who manufacture this product. The total Product Standards effort is, therefore, a collection of sections, each covering a specific category of items.

Performance tests and, where necessary, dimensional requirements have been established to ensure a degree of safety. There are no restrictions on design except for those dimensional requirements imposed for reasons of safety.

This Standard is not intended to obstruct but rather to encourage the development of improved products, methods and materials. The BHMA recognizes that errors will be found, items will become obsolete, and new products, methods and materials will be developed. With this in mind, the Association plans to update, correct and revise these Standards on a regular basis. It shall also be the responsibility of manufacturers to request such appropriate revisions.

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1. GENERAL

1.1 Requirements in this Standard apply to low energy power operated sliding and folding door systems for pedestrian use, and some small vehicular use. The activation of all doors described in this standard requires a knowing act. Included are provisions intended to reduce the chance of user injury or entrapment.

1.2 Doors that require higher speeds, forces, shorter time delays, and activating sensing devices shall comply with ANSI/BHMA A156.10 for Power Operated Pedestrian Doors and are not covered in A156.38.

1.3 This Standard does not attempt to assess any factors that exist with respect to custom design installations which are not required to meet the requirements of this Standard.

1.4 Unless otherwise specified, all references to time delay, opening speed and forces in this standard, refer to the operator in the power mode as opposed to the manual mode.

1.5 Required dimensions are expressed in US units first and the SI (metric) equivalents given in parentheses are approximate. All values which do not carry specific tolerances or are not marked maximum or minimum shall have the following tolerances: Linear dimensions shall be ± 1/16 in (1.6 mm). Pounds or pound force shall be ± 5%. Angular measurements shall be ± 4 degrees. Voltage measurements shall be ± 5 percent. Temperature measurements shall be ± 4 degrees F (± 2 degrees C).

1.6 Compliance with the requirements of this standard shall be accomplished through factory settings or field adjustments as necessary.

1.7 Operators used on labeled fire door assemblies shall be listed or labeled by a nationally recognized independent testing laboratory, and be subject to a periodic in-plant follow-up service. Consult the authority having jurisdiction for the appropriate fire test requirements.

1.8 Refer to applicable building codes for means of egress clear width requirements, and knowing act device locations.

2. DEFINITIONS

2.1 **Low Energy Power Operated Door** A door with a power mechanism that opens the door upon receipt of a knowing act activating signal, does not generate more kinetic energy than specified in this Standard, and is closed by a power mechanism or by other means.

2.2 **Clear Opening for Automatic Doors**

Single Sliding or Folding Doors - In the fully opened position, the clear opening is measured from the edge of the leading stile to the jamb or jamb stop if present.

Pair of Sliding or Folding Doors - In the fully opened position, the clear opening is measured between the edges of the leading stiles of the two doors.

2.3 **Closing Cycle** Movement of a sliding or folding door from the fully open position to

the fully closed position.

2.4 **Closing Time** The time from the start of a door closing until it is fully closed.

2.5 **Control** A unit containing electrical components for automatic control of door operation.

2.6 **Custom Installations** Where an installation condition exists such that all of the performance criteria of this standard cannot be met.

2.7 **Cycle** The action of an automatic door operator starting with activating through opening and full closing of (a) door(s).

2.8 **Face of Door** The plane of the highest part of the door exposed to view when the door is closed. Does not include hardware or other applied products.

2.9 **Finger Guard** A device applied at the hinge stile of a door or to the hinge jamb adjacent to the door preventing damage to hands or fingers.

2.10 **Folding Door** A pivoted swing panel hinged to a passive panel, the other end of which is captured in a guide, thus allowing it to slide as both panels swing into a V shape (the fold).

2.11 **Knowing Act** Consciously initiating the powered opening of a door.

2.12 **Latch Check** The checking or slowing down of the speed of closing a door before being fully closed. (Also called Close Check.)

[**Slide to Open** needed per Ben Calhoun]

3. REQUIREMENTS FOR LOW ENERGY POWER OPERATED SLIDING DOORS

3.1 **Activation** The activation shall be by a knowing act.

3.2 **Opening Time** Door(s) shall be adjusted to open at a speed of 12 inches per second maximum, from fully closed to fully open.

3.3 **Time Delay** When powered open, the door shall remain at the fully open position for not less than 5 seconds before starting the closing cycle.

3.4 **Closing Speed** Door(s) shall be adjusted to close at a speed of 6 inches per second maximum per leaf, from fully open to latch check.

3.5 **Latch check** shall occur at no less than 2 inches from fully closed.

3.6 **Opening and Closing Force** The force required to prevent a stopped door from opening or closing shall not exceed 15 lbf (67 N).

3.7 **Signage** See Section 6 for signage.

4. REQUIREMENTS FOR LOW ENERGY POWER OPERATED FOLDING DOORS

4.1 **Activation** The activation shall be by a knowing act.

[from A156.19 for consideration] When a separate switch is used it shall meet the following requirements:
Be installed in a location within view of the automatic door.
Have an installation height of a minimum of 34 in. and a maximum of 48 in., or as specified by the local building codes.
Shall remain accessible from the swing side when the door is opened, and shall not be located in a position where the user would be in the path of the moving door.
[does not address the distant located switch rule…]

4.2 **Opening Time** Doors shall open from closed to back check, or 80 degrees measured at the FS panel (Figure 1), whichever occurs first, in 3 seconds or longer. Total opening time to 90 degrees shall be 4.5 seconds minimum.

4.3 **Time Delay** When powered open, the door shall remain at the fully open position for not less than 5 seconds before starting the closing cycle.

4.4 **Closing Speed** Door(s) shall be adjusted to close at a speed of 6 inches per second maximum per FX leaf (Figure 1), from fully open to latch check.

4.5 **Latch check** shall occur at no less than 2 inches from fully closed per FX leaf (Figure 1).

4.6 **Opening and Closing Force** The force required to prevent a stopped door from opening or closing shall not exceed 15 lbf (67 N).

4.7 **Clearance** The opening at hinge side of a center pivoted folding door shall be: a) Less than ¼ in. wide with the door in any position, or b) At least ¾ in. wide with the door in any position. A door that does not comply with the above is acceptable if provided with a **finger guard**.

4.8 **Signage** See Section 6 for signage.

5. CYCLE TESTS

5.1 Low Energy sliding and folding doors shall be cycle tested for 300,000 cycles.

5.2 Use the widest and heaviest test specimen recommended for use by the manufacturer. Narrower or lighter doors of the same configurations shall then be considered to meet the cycle test requirements.

5.3 At the conclusion of the cycle test, the doors shall operate in accordance with requirements of Sections 3 and 4, and the actual opening and closing time shall be within -10 % to +20 % of their respective values at the commencement of the test.

6. SIGNAGE

6.1 Doors shall be equipped with signage visible from either side of the door, instructing the user as to the operation and function of the door. The signs shall be mounted 50" +/- 12" (1270 mm +/- 305 mm) from the floor to the center line of the sign. The letters shall be 5/8 inch (16 mm) high minimum.

6.2 Consistent with section 2.2.1 of ANSI Z535.4 - 2002 the "signage and warnings" guidelines of A156.38 are based on recognized, industry-specific standards that pre-date the adoption of Z535.4 and are not replaced by the standards set forth therein.

6.3 All low energy doors shall be marked with signage visible from both sides of the door, with the words "AUTOMATIC CAUTION DOOR" (See Figure 1). The sign shall be a minimum of 6 inches (152 mm) in diameter with black lettering on a yellow background. Additional information may be included. Additionally one or both of the following knowing act signs shall be applied:

Figure 1

6.4 When a **Knowing Act Switch** is used to initiate the operation of the door operator, the doors shall be provided with signs on each side of the door where the switch is located, with the message "ACTIVATE SWITCH TO OPERATE". The lettering shall be white and the background shall be blue.

6.5 When slide-to-open is used to initiate the operation of the door operator, the doors shall be provided with the message "SLIDE TO OPERATE" on the both sides. The lettering shall be white and the background shall be blue.

6.6 Sliding doors that slide alongside an adjacent sidelite or wall shall be equipped with a sign that instructs users to stand clear of the sliding door travel path. The letters shall be 1 in. high minimum on contrasting background and located at 36 to 60 inches from the floor.

6.7 For folding doors, each FX panel is required to have signs. For sliding doors, each lead panel is required to have signs.

APPENDIX (NOT A PART OF ANSI/BHMA A156.38)

A-1 CONFORMANCE CRITERIA

Certification that products offered meet the requirements of this Standard and conform to individual manufacturer's drawings, specifications, standards and quality assurance practices are available and in some circumstances are required. Buyer requirements determine the need for proof of conformance such as first article inspection, test laboratory reports or listings. Specifiers requiring assertions of conformance utilize statements of conformance by individual manufacturers, or test reports acceptable to the buyer.

A-2 PRESERVATION, PACKAGING, AND PACKING

Unless other arrangements between buyer and seller are made, preservation, packaging and packing shall be sufficient to protect containers and their contents under normal shipping and handling conditions from the source of supply to the destination point.

A-3 MARKING

Unless other arrangements between buyer and seller are made, marking shall be in accordance with the individual manufacturer's standard practice.

A-4 APPLICATION

As described by the title, Low Energy, this Standard applies to products designed to open and close slowly with minimal kinetic energy. Their primary application is to provide increased accessibility through doorways.

A-5 KNOWING ACT SWITCHES

- The switch should be located a maximum distance of 12 feet from the center of the door, remain accessible when the door is opened, and shall not be located in a position where the user would be in the path of the moving door.
- It is generally preferable for the switch to be located within one to five feet from the door. If located more than 12 feet from the center of the door, an additional time delay beyond the five second minimum is recommended. The additional time delay should be a minimum of one second for each additional foot of distance.
- The switch should be installed a minimum of 34 in. (864mm) and a maximum of 48 in. (1219mm) from the floor, or as specified by the local building code.
- The switch should be mounted so the user can see the door when activating.
- Acceptable switching methods include: wall or jamb-mounted contact switches such as push plates; fixed non-contact switches that have a detection range no greater than 12 inches (305mm) (to ensure a knowing act is utilized to activate the door); the action of manual opening (pulling) a door; and controlled access devices such as keypads, card readers, and keyswitches.
- Consult A117.1 and other applicable building codes for additional information regarding accessibility requirements for the door and area around the door.

A-6 RECOMMENDED MAINTENANCE AND INSPECTION

The manufacturer should provide an owner’s manual with the sale of each operator to explain how the owner should perform regular safety checks.

Low Energy doors require periodic maintenance and inspection to ensure compliance with this standard. It is strongly recommended that they are inspected at the time of installation, and at a minimum annually thereafter, by an AAADM certified inspector. It is also recommended that the doors are maintained on a regular basis by a qualified professional per the manufacturer’s instructions. Compliance to current standards at the time of service

is encouraged.

A-7 RECOMMENDED PRACTICES AND OTHER INFORMATION

The following comments are provided for guidance in Custom Installations recognizing there will be certain installations that require deviation from the Standard requirements. It is important, when exceptions are absolutely necessary, to obtain guidance from qualified experts.

A-8 SENSORS

In special applications where safety sensors or secondary activation sensors are used on a low energy door, refer to ANSI/BHMA A156.10 for guidance on sensor performance criteria for the type of sensor selected.

FIGURE 1

Terminology for Folding Door Panels