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Revision of ANSI/BHMA A156.19-1997

AMERICAN NATIONAL STANDARD

FOR

POWER ASSIST AND LOW ENERGY POWER OPERATED DOORS

SPONSOR

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION, INC.

AMERICAN NATIONAL STANDARDS INSTITUTE, INC.
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AMERICAN NATIONAL STANDARD

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FOREWORD (This Foreword is not a part of ANSI/BHMA A156.19)

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.

To find products that are third-party certified to this standard and other ANSI/BHMA standards please visit www.buildershardware.com.

The Builders Hardware Manufacturers Association (BHMA) Certification Program was developed as a means for producers of builders hardware to indicate compliance with American National Standards sponsored by BHMA. Participating manufacturers certify compliance with thestandards based on a continuing program of passing the prescribed tests. Third party testing is performed by a Nationally Recognized Test Laboratory. The program is open to all manufacturers of builders hardware whether or not they are members of BHMA.

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1. GENERAL

1.1 **Scope** Requirements in this Standard apply to power assist doors, low energy power operated doors or low energy power open doors for pedestrian use, and some small vehicular use and not provided for in ANSI/BHMA A156.10 for Power Operated Pedestrian Doors. Included are provisions intended to reduce the chance of user injury or entrapment.

1.1.1 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.

1.2 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 %. Temperature measurements shall be ± 4 degrees F (±2 degrees C).

1.3 Definitions of terms used but not found in this Standard are in ANSI/BHMA A156.10 for Power Operated Pedestrian Doors, available at www.buildershardwre.com and the American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036.

1.4 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 **Use on Fire Doors**. A door closer 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.

2. DEFINITIONS

2.1 **Low Energy Power Operated Door:** A door with (a) power mechanism(s) that opens and closes the door upon receipt of an actuating signal and does not generate more kinetic energy than specified in this Standard.

2.2 **Low Energy Power Open Door:** A door with (a) power mechanism(s) that opens the door upon receipt of an actuating signal and does not generate more kinetic energy on opening than specified in this Standard, and which is closed by other means.

2.3 **Power Assist Door:** A door with a power mechanism that reduces the opening resistance of a self closing door.

2.4 **Small Vehicular:** Carts used to transport people or objects.

3. REQUIREMENTS FOR SWINGING POWER ASSIST DOORS

3.1 Power assist doors shall operate only by the force of pushing or pulling the door.

3.2 An activating mechanism is permitted to be used to put the door in the power assist mode.

3.3 If the opening force on the door is released, the door shall come to a stop and either immediately begin to close or begin to close after a predetermined time.

3.4 Doors shall be field adjusted to close from 90 degrees to 10 degrees in not less than 3 seconds or longer as required in Table I.

3.5 Doors shall be field adjusted to close from 10 degrees to fully closed in not less than 1.5 seconds.

3.6 The force required to prevent a door from closing shall not exceed a 15 lbf (67 N) applied 1 in (25 mm) from the latch edge of the door at any point in the closing cycle.

3.7 In the event of power failure to the operator, doors shall open with a manual force not to exceed a 15 lbf (67 N) to release a latch, if equipped with a latch, a 30 lbf (133 N) to set the door in motion, and a 15 lbf (67 N) to fully open the door. The forces shall be applied at 1" (25 mm) from the latch edge of the door.

4. REQUIREMENTS FOR LOW ENERGY SWINGING POWER OPERATED DOORS OR LOW ENERGY SWINGING POWER OPEN DOORS

4.1 Opening Time

4.1.1 Doors shall be field adjusted so that opening time to back check or 80 degrees, which ever occurs first, shall be 3 seconds or longer as required in Table 1. Backcheck shall not occur before 60 degrees opening.

4.1.2 Total opening time to fully open shall be as in Table II.

4.2 Closing Time

4.2.1 Doors shall be field adjusted to close from 90 degrees to 10 degrees in 3 seconds or longer as required in Table I.

4.2.2 Doors shall be field adjusted to close from 10 degrees to fully closed in not less than 1.5 seconds.

4.3 The door shall be field adjusted to remain fully open for not less than 5 seconds.

4.4 The force required to prevent a stopped door from opening or closing shall not exceed a 15 lbf (67 N) applied 1 in (25 mm) from the latch edge of the door at any point in the opening or closing cycle.

4.5 The kinetic energy of a door in motion shall not exceed 1.25 lbf-ft (1.69 Nm). Table I provides speed settings for various widths and weights of doors for obtaining results complying with this paragraph.

4.6 In the event of power failure to the operator, doors shall open with a manual force not to exceed a 15 lbf (67 N) to release a latch, if equipped with a latch, a 30 lbf (133 N) to set the door in motion, and a 15 lbf (67 N) to fully open the door. The forces shall be applied at 1" (25 mm) from the latch edge of the door.

5. CYCLE TESTS

5.1 Low Energy Power Operated, Low Energy Power Open, and Power Assist 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 Use the requirements in Table 1 to determine opening and closing speeds. Open the door to a 90 ± 5 degree open position and close the door to the 0 + 2 degree closed position using appropriate equipment. One opening and closing constitutes one cycle. In the case of Power Assist doors, use an actuator exerting an equivalent force equal to a 15 lbf (67 N) measured at 1 in (25 mm) from the latch edge of the door applied in the opening direction and allow the closing device furnished to close the door.

5.4 At the conclusion of the cycle test, the doors shall operate in accordance with requirements of Table 1 and the actual opening and closing time shall be within ± 10 % of their respective values at the commencement of the test.

Table I

Minimum Opening Time to Backcheck or 80 degrees, which ever occurs first, and the Minimum Closing Time from 90 degrees to Latch Check or 10 degrees .

"D" Door Leaf Width - Inches (mm)	"W" Door Weight in Pounds (kg)				
	100 (45.4)	125 (56.7)	150 (68.0)	175 (79.4)	200 (90.7)
*30 (762)	3.0	3.0	3.0	3.0	3.5
36 (914)	3.0	3.5	3.5	4.0	4.0
42 (1067)	3.5	4.0	4.0	4.5	4.5
48 (1219)	4.0	4.5	4.5	5.0	5.5

Matrix values are in seconds

* Check applicable Building Codes for clear width requirements in Means of Egress.

Doors of other weights and widths can be calculated using the formula:

$T = D\sqrt{W}/133$ in US Units $\quad T = D\sqrt{W}/2260$ in SI (metric) units

Where: T = Time, seconds

D = Door width, inches (mm)

W = Door weight, lbs. (kg)

The values for "T" time have been rounded up to the nearest half second. These values are based on a kinetic energy of 1.25 lbf-ft.

Table II

Total Opening Time to Full Open Position

Backcheck at 60 degrees	Backcheck at 70 degrees	Backcheck at 80 degrees
Table I plus 2 seconds	Table I plus 1.5 seconds	Table I plus 1 second

Note: To determine maximum times from close to full open, the operator shall be adjusted as shown in the chart. Backcheck occurring at a point between positions in Table II shall use the lowest setting. For example, if the backcheck occurs at 75 degrees, the full open shall be the time shown in Table I plus 1.5 seconds.

6. SIGNS

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

6.2 Power Assist Doors

6.2.1 When a separate wall switch is used to initiate the operation of the door operator, the doors shall be provided with signs on both sides of the door with the message "EASY OPEN DOOR - ACTIVATE SWITCH THEN OPEN DOOR". The lettering shall be white and the background shall be blue.

6.2.2 When door motion is used to initiate the operation of the door operator, the doors shall be provided with the messages "EASY OPEN DOOR - PUSH TO OPERATE" on the push side of the door and "EASY OPEN DOOR - PULL TO OPERATE" on the pull side of the door. The lettering shall be white and the background shall be blue.

6.2.3 When remote or sensor devices are used to initiate the operation of the door operators, both sides of the door shall have signs with the message "EASY OPEN DOOR - POWER ASSISTED'. The lettering shall be white and the background shall be blue.

6.3 **Low Energy Doors** All low energy doors shall be marked with a sign, 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 and with minimum 5/8"(16mm) tall black lettering on a yellow background. Additional information may be included.

Figure 1

6.3.1 When a separate wall switch is used to initiate the operation of the door operator, the doors shall be provided with signs on both sides of the door with the message "ACTIVATE SWITCH TO OPERATE". The lettering shall be white and the background shall be blue.

6.3.2 When door motion is used to initiate the operation of the door operator, the doors shall be provided with the message "PUSH TO OPERATE" on the push side of the door and "PULL TO OPERATE" on the pull side of the door. The lettering shall be white and the background shall be blue.

APPENDIX A (not a part of ANSI/BHMA A156.19)

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 titles, Low Energy, and Power Assist, 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. For applications requiring higher speeds and forces and associated sensing devices; consult ANSI/BHMA A156.10 Power Operated Doors.