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AMERICAN NATIONAL STANDARD
FOR
EXIT DEVICES



SPONSOR
BUILDERS HARDWARE MANUFACTURERS ASSOCIATION

AMERICAN NATIONAL STANDARDS INSTITUTE

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AMERICAN NATIONAL STANDARD

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FOREWORD (This Foreword is not a part of ANSI/BHMA A156.3)

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. Exit devices is one such section and this Standard is the result of the collective efforts of members of the Builders Hardware Manufacturers Association, Inc. who manufacture these products. The total Product Standards effort is therefore, a collection of sections, each covering a specific category of items.

The BHMA recognized 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.

In most cases, products have been described in grade levels related to performance with Grade 1 being the highest rating. Some products described are suitable for use according to conditions and are not graded. Grade classifications indicate levels only within their own product category. Choice of grade and specific product should be made on the basis of utility, aesthetics, security objectives and end use desired.

The BHMA numbers which indicate types and functions of hardware do not identify size, finish, material or design and are not intended to be used without necessary supplementary information.

Users of this Standard are cautioned over the selection of exit devices to be installed on fire doors. Only devices investigated for both fire and panic protection may be used. Labels employed by laboratories listing such devices bear the designation, "Fire Exit Hardware." Other devices, although suitable for many doors within a means of egress, may not be used with fire door assemblies. The fire door must also bear a label containing the phrase, "Fire Door to be equipped with Fire Exit Hardware".

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1. SCOPE

1.1 This standard establishes requirements for exit devices and trim, automatic and self-latching flush bolts, removable mullions, coordinators, and carry-open bars. Performance criteria include cycle, operational, strength, material evaluation, and finish tests. Functions and types are described and numbered.

1.2 Tests described in this standard are performed under laboratory conditions. In actual usage, results vary because of installation, maintenance and environmental conditions.

2. GENERAL

2.1 All products certified to this standard shall be listed or labeled by a Nationally Recognized Testing Laboratory (NRTL) and be subject to periodic examination service.

2.2 Exit devices are available in Grades 1, 2, and 3 with grade 1 being the highest grade. All are suitable for all classes of buildings and are based on the performance tests listed. A Grade 1 exit device shall be furnished with all Grade 1 trim and cylinders, when supplied, in order to retain an overall Grade 1 rating. A Grade 2 exit device shall be furnished with grade 2, or higher, trim and cylinder in order to retain an overall Grade 2 rating; and similarly for Grade 3 rating.

2.3 Door coordinators Type 21A are available in Grade 1 and 2. Door coordinators Type 21B are available in Grade 2. Both Grades are suitable for all classes of buildings and are based on performance tests listed.

2.4 Carry-open bars are available in Grades 1 and 2. Both are suitable for all classes of buildings and are based on the performance test listed. When coordinators are installed with carry-open bars, the Grade of the combination is the lower Grade of either component.

2.5 All exit devices shall meet the requirements and performance tests found in Underwriters Laboratories, Inc. Standard UL305 Panic Hardware – 2012.

2.6 The cycling requirements listed shall not be considered as being in addition to those required by UL305 but comprise the total required.

2.7 **Values** Required values in this Standard are given in US units. The SI (metric) equivalents 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 $\pm 1/16$ in (1.6 mm). Pounds or pound force shall be $\pm 5\%$. Angular measurements shall be ± 4 degrees. Voltage measurements shall be ± 5 percent. Temperature measurements shall be ± 4 degrees F (± 2 degrees C).

2.8 For testing, other mechanisms are permitted to be used in lieu of cylinders providing the test performance is equivalent to that of a cylinder.

2.9 **Reference to ANSI Standards** ANSI Standards are available from the American National Standards Institute, 11 W. 42nd Street, New York, NY 10036 or www.buildershardware.com.

3. DEFINITIONS

3.1 Actuating Bar The activating mechanism of an exit device is located on the egress side of a door and extends at least half the width of the door. The active surface of the actuating bar shall be visually and physically distinct from the rest of the device. Refer to local codes for location and length. Also called cross bar or push pad.

3.2 Automatic Extension Flush Bolt A flush mounted locking device for the inactive leaf of a pair of doors. When the active leaf is opened, the inactive leaf is capable of being pushed open and when it closes, the bolt latches automatically by the closing of the active leaf and is held latched by the closed active leaf.

3.3 Automatic Latching Two Point Bolts A surface or concealed mounted top and bottom locking device for the inactive leaf of a pair of doors. It is manually unlocked to open, but when the leaf is closed, the bolts latch automatically.

3.4 Auxiliary Dead Latch A lock component which, when actuated, automatically locks a projected latch against return by end pressure.

3.5 Coordinator holds open the active leaf of a pair of doors until the inactive leaf has preceded it in the closing cycle.

3.6 Carry-open bar pushes the active door beyond the coordinator hold-open position.

3.7 Dead Bolt A lock component which projects from and is withdrawn into, the lock case by action of the lock mechanism. When the door is closed and the dead bolt thrown, it extends into the strike, locks the door, and does not release with end pressure.

3.8 Dogging A feature used to retain the latch(s) in the released position, and holds the actuating bar in the depressed position. Activation is usually accomplished by hex key or cylinder. Mechanical dogging is not available on Fire Exit Hardware.

3.11 Exit Device

3.11.1 Panic Hardware A door latching assembly incorporating an actuating member usually called an actuating bar which releases the latching or locking mechanisms upon the application of force in the direction of exit travel.

3.11.2 Fire Exit Hardware Panic Hardware which additionally provides fire protection when used as part of a fire door assembly.

3.12 Latch A device used to hold a door closed and requiring movement of an element before the door is released for opening.

3.13 Lock Front A plate fastened to the edge of a door through which the bolt(s) pass.

3.14 Mortise Exit Device An exit device with the lock mechanism installed into a mortise provided in the edge of a door. Can be either Panic or Fire Exit Hardware.

3.15 Multi-point Exit Device An exit device, with a minimum of two latching or locking points. A multi-point exit device shall contain any combination of vertical or horizontal latching points or exit device types. Shall be either Panic or Fire Exit Hardware.

3.16 Outside Trim Trim is composed of both operating and non-operating decorative elements.

3.17 Removable Mullion A vertical member in an opening for a pair of doors permitting each door to latch independently. The removable mullion is not prohibited from being removed to temporarily gain a larger clear opening width and replaced to restore the original door hardware operation.

3.18 Rim Exit Device An exit device with the latching mechanism applied to the face of a door.

either Panic or Fire Exit Hardware.

3.19 Strike A mortised or surface mounted plate fastened to the door frame into which the bolts project.

3.20 Turn The component that projects or releases a bolt or latch by turning. Sometimes called a turnpiece.

3.21 Unlatch To unfasten, disengage or retract a latch by movement of an element to release the door for opening.

3.22 Vertical Rod Exit Device An exit device with top, bottom or both, latching mechanisms, applied to the face of the door or concealed inside the door connected by rods to the actuating mechanism. Shall be either Panic or Fire Exit Hardware.

4. TYPES

Type 1:	Rim Exit Device
Type 2:	Surface Vertical Rod Exit Device
Type 3:	Mortise Exit Device
Type 4:	Narrow Stile Rim Exit Device
Type 5:	Narrow Stile Surface Vertical Rod Exit Device
Type 6:	Narrow Stile Concealed Vertical Rod Exit Device
Type 7:	Wood Door Concealed Vertical Rod Exit Device
Type 8:	Metal Door Concealed Vertical Rod Exit Device
Type 9:	Multi-point Combination Rim and Surface Vertical Rod Exit Device
Type 10:	Narrow Stile Mortise Exit Device
Type 11:	Multi-point Combination Mortise and Surface Vertical Rod Exit Device
Type 12:	Multi-point Combination Mortise and Concealed Vertical Rod Exit Devices
Type 21A:	Door Coordinator with Override Feature
Type 21B:	Door Coordinator without Override Feature
Type 22:	Removable Mullion
Type 23:	Concealed Automatic Latching Two Point Bolts
Type 24:	Surface Automatic Latching Two Point Bolts
Type 25:	Automatic Extension Flush Bolt Set
Type 26:	Rim Paddle Device
Type 28:	Rim Exit Device incorporating a Dead Bolt

Types 1 through 12 are not prohibited from including a deadbolt in addition to, or in place of a latch by specifying suffix “D”.

Types 2, 5, 6, 7, 8, 9, 11, 12 are not prohibited from including designs which are furnished without the bottom rod, commonly referred to as “less bottom rod”, and specified by the suffix “LBR”.

See Appendix for illustrations of exit device types.

5. FUNCTIONS

5.1 In all functions, latchbolts and deadbolts, or deadbolts or latchbolts alone are released by depressing the actuating bar. Labeled Fire Exit Hardware shall comply with applicable building codes. All functions are not available in all types of exit devices. Some functions are available with electrical or pneumatic operations in addition to mechanical operation. The basic function shall remain the same as described. Consult manufacturer's catalog.

5.2 Outside Trim Function Descriptions

- 01: Exit only, no trim or blank escutcheon.
- 02: Entrance by trim when actuating bar is locked down.
- 03: Entrance by trim when latch is released by key. Key removable only when locked



- 04: Entrance by trim when latch is released by key or set in a retracted position by key.
- 05: Entrance by thumb piece. Key locks or unlocks thumb piece.
- 06: Entrance by thumb piece only when released by key. Key removable only when locked.
- 07: Entrance by thumb piece. Inside or outside key locks or unlocks thumb piece. Outside key releases latch.
- 08: Entrance by knob or lever. Key locks or unlocks knob or lever.
- 09: Entrance by knob or lever only when released by key. Key removable only when locked.
- 10: Entrance by knob or lever. Inside or outside key locks or unlocks knob or lever. Outside key releases latch.
- 11: Entrance by control turnpiece. Key locks or unlocks control.
- 12: Entrance by control turnpiece only when released by turning key. Key removable only when locked.
- 13: Entrance by key or combination lock.
- 14: Entrance by trim when latch is released by knob, lever,. Always active, no cylinder.
- 15: Entrance by trim when latch is released by thumb piece. Thumb piece always active, no cylinder.
- 16: Entrance by trim when latch is released by control turnpiece. Turnpiece always active, no cylinder.
- 17: Entrance by control turnpiece. Inside or outside key locks or unlocks turnpiece. Outside key releases latch.

6. AUXILIARY ITEMS

6.1 Door Coordinator and Carry-open Bar

6.1.1 A door coordinator is used for pairs of doors opening in the same direction and having an overlapping astragal(s), rabbetted meeting edges, or other devices where a prescribed sequence of closing is required.

6.1.2 Carry-open bars shall be provided except when automatic or self-latching flush bolts are used on the inactive leaf of a pair of doors thereby preventing the inactive leaf from being opened first.

6.1.3 Type 21A coordinator mechanisms shall have an internal override device to protect the active leaf of a pair of doors and its hinges or pivots from damage as a result of an abrupt or forced closing. The load to override is shall be pre-set at the factory, or adjusted or set in the field to compensate for various installation conditions. After an override, the mechanism shall automatically reset to normal operation the next time the active leaf is opened a minimum of 60 degrees.

6.1.4 Marring of the doors by the coordinator or the carry-open bar shall be prevented.

6.1.5 Coordinators and carry-open bars shall be cycle tested. Coordinators with override mechanisms shall be function tested before, during, and after the cycle test. A coordinator shall be tested independently or in combination with a carry-open bar.

6.1.6 Coordinators and carry-open bars used in fire door assemblies shall have been tested and listed or labeled for use in fire doors by a nationally recognized independent testing laboratory and shall be under an in-plant periodic inspection service.

6.2 **Type 22: Removable Mullion** The width, not including strikes, shall not exceed 2 1/2 in. (64 mm) and height shall be suitable for fitting at site. Fire rated removable mullions and fire exit hardware are listed or labeled.

6.3 Automatic-Latching Two-Point Bolts

6.3.1 **Types 23 or 24: Surface or Concealed Automatic-Latching Two-Point Bolts** Bolts shall consist of a manual operating means to release top or top and bottom bolts simultaneously. A latch retractor mechanism shall hold bolts retracted when the door is open and a release shall permit automatic latching when the door closes. Material and operational qualities shall be equal to the standards for exit

devices.

6.3.2 **Type 25: Automatic Extension Flush Bolt Set** Closing the inactive leaf and then the active leaf of a pair of doors shall activate a top or top and bottom bolt, thus locking the inactive leaf. These bolts shall automatically unlatch upon opening the active leaf. Face plate size shall fit applicable ANSI Standard A115 and A115-W requirements.

6.3.3 Bolts for labeled fire doors shall conform to all requirements listed for their Type.

7. TEST METHODS

7.1 For inside operational tests, the tests shall be performed on 3 ft by 7 ft x 1 3/4 in. nominal (915 x 2134 x 45 mm) minimum doors of wood or metal with metal frames. The doors and frames shall be rigid enough to hold firmly and to withstand the tests outlined. Provision shall be made for mounting appropriate measuring devices. A combined calibration and reading accuracy within 5% shall be required for values indicated for all applicable tests.

7.2 Reinforcements are permitted to be used to prevent deformation of the door when the tests are being applied.

7.3 Tests are permitted to be conducted on single doors except for the Removable Mullion Test, and the Door Coordinator, Carry -Open Bar Tests, and Automatic Flush Bolts.

7.4 Doors shall be hung on Grade 1 hinges or pivots.

7.5 For grade 1, test 8.1.1, shall be conducted with or without a door closer. For grades 2 and 3, test 8.1.2, a door closer shall be applied. When a door closer is used, it shall be adjusted to an 8 lbf (36N) maximum closing force as measured perpendicular to the face of the door at a point 30 in (762 mm) from the pivot center of the door. Tests 8.2 through 8.7 and tests 9.1, 9.4 and 10 shall be conducted with the door closer disconnected.

7.6 All hardware shall be installed in accordance with manufacturer's standard installation instruction.

7.7 Outside operational and strength tests are permitted to be conducted on fixed or hinged panels 18 in. (457 mm) high minimum. Tests for vertical rod devices shall be conducted on panels or doors nominal 7 ft (2134 mm) minimum.

7.8 For thumb pieces, apply the force at a point 1/4 in. (6.4 mm) from the end of the thumb piece until the latch releases or clears the strike. Use a scissors type clamp and center punch the thumb piece to receive a pointed rod connected to the load gauge (see Figure 2).

7.9 **Dead Bolts** For the purpose of this standard, where a latch is referenced, dead bolts or dead bolts and latches shall be tested as applicable for the particular product.

7.10 Test Sample Selection Criteria

Test	Sequence	Number of Samples
Inside Operational	8.1 through 8.7 in order and then 8.8 when applicable.	One panic device for all tests
Coordinator and carry-open bar	12.	One coordinator, and one sample carry-open bar when both are to be tested
Automatic Flush Bolts	13	One top bolt and bottom bolt
Outside Operational	9.1 through 9.4	One trim sample with one corresponding panic device