Proposed - BHMA A156.3-20~~18~~ xx

AMERICAN NATIONAL STANDARD

FOR

EXIT DEVICES

SPONSOR

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION

Revision A October 11, 2018
Revision B November 13, 2018
Revision C December 18, 2018
Revision D January 30, 2019
Revision E March 19, 2019

-

AMERICAN NATIONAL STANDARD

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether they have approved the Standard or not, from manufacturing, marketing, purchasing, or using products, processed, or procedures not conforming to the Standard. American National Standards are subject to periodic review and users are cautioned to obtain the latest editions.

CAUTION NOTICE: This American National Standard is permitted to be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of publication. Purchasers of American National Standards receive current information on all standards by calling or writing The American National Standards Institute.

Published by
BUILDERS HARDWARE MANUFACTURERS ASSOCIATION, INC.
355 Lexington Avenue, New York, New York, 10017

Printed in the USA

This Standard was developed by the Builders Hardware Manufacturers Association, Inc. It was approved by ANSI under the Canvass Method. BHMA was accredited on 21 March 1983 as a sponsor using the Canvass Method.

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".

TABLE OF CONTENTS

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 Reinforcements are permitted to be used to prevent deformation of the door when the tests (inside/outside operational, preload???) are being applied. Optional brackets may be used to provide clearance for weights and applied loads where hardware makes direct attachment or application impractical. When brackets are used, the grounding points to the door shall be equidistant about the originally identified point of application (see Figure 1 in appendix). Brackets are not intended to redistribute the load or change the direction of application. Use of specific brackets shall be approved by the National Certified Testing Laboratory.

Formatted: Normal
Formatted: Highlight
Formatted: Highlight
Formatted: Highlight
Formatted: Highlight

2.8 **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 ± 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).

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

2.10 **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. The active surface of the actuating bar shall be visually and physically distinct from the rest of the device and the length shall not be less than one-half the width of the door leaf. 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.

3.9 **Exit Device**

3.9.1 **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.

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

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

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

3.12 **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.

3.13 **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.

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

3.15 **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.

3.16 **Rim Exit Device** An exit device with the latching mechanism applied to the face of a door. Shall be either Panic or Fire Exit Hardware.

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

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

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

3.20 **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
Type 29: Glass Door Exit Device – Top Latching

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), rabetted 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 EQUIPMENT AND FIXTURES

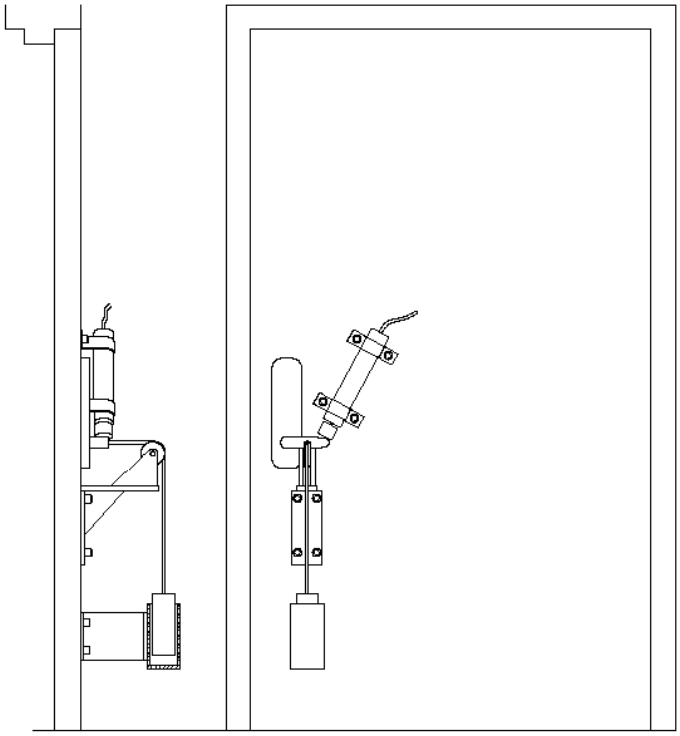
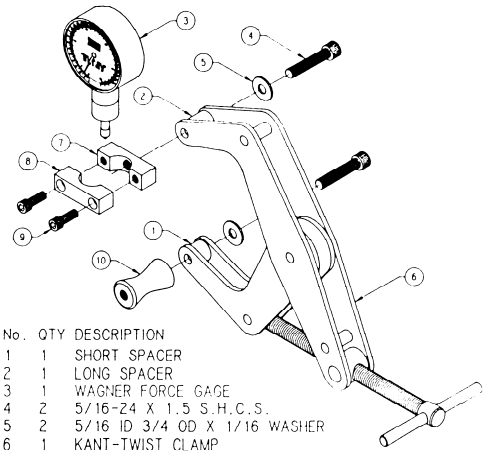


FIGURE 1
Cycle Test For Outside Trim

1. TO A 6" *KANT-TWIST* CLAMP, GRIND OFF BOTH HEADS OF BOTH JAW RIVITS.
2. SPREAD TIPS OF CLAMP APART AND REMOVE JAWS.
3. ATTACH LOWER GAGE HOLDER TO OUTSIDE END OF CLAMP WITH THE .900 LONG SPACER, 5/16 S.H.C.S AND WASHER.
4. ATTACH FINGER PORTION TO THE INSIDE CLAMP ENDS USING THE .565 SHORT SPACER, 5/16 S.H.C.S. AND WASHER.
5. ATTACH *WAGNER* FORCE GAGE WITH UPPER GAGE SUPPORT AND 1/4 S.H.C.S.
6. MACHINE A 45° POINT ON THE GAGE REMOVABLE TIP. (TIP LENGTH MAY VARY BY PRODUCT).



No.	QTY	DESCRIPTION
1	1	SHORT SPACER
2	1	LONG SPACER
3	1	WAGNER FORCE GAGE
4	2	5/16-24 X 1.5 S.H.C.S.
5	2	5/16 ID 3/4 OD X 1/16 WASHER
6	1	KANT-TWIST CLAMP
7	1	LOWER GAGE SUPPORT
8	1	UPPER GAGE SUPPORT
9	2	1/4-20 X .625 S.H.C.S.
10	1	SUPPORT FINGER

FIGURE 2
Thumbpiece Test Fixture

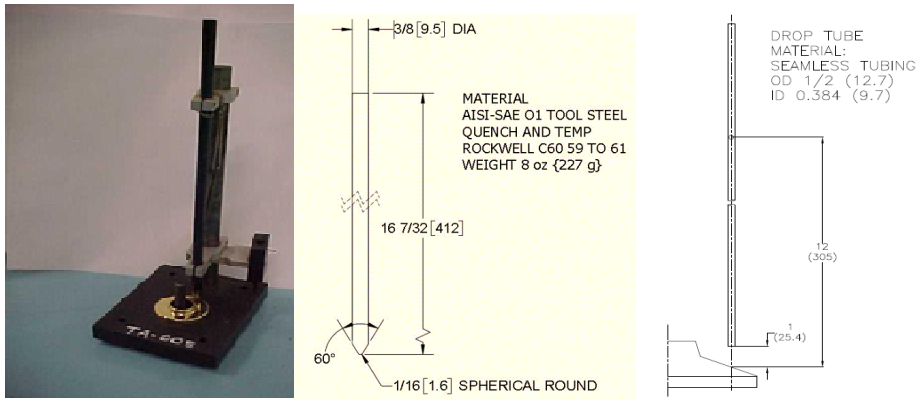


FIGURE 3 Projectile and Drop Tube

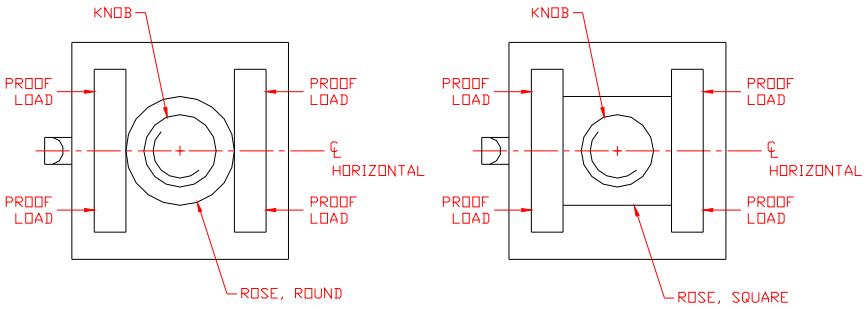


FIGURE 4
Outside Rose Deformation

8. TEST METHODS

8.1 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.

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

8.3 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.

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

8.5 For grade 1, test 9.1.1, 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 9.2 through 9.7 and tests 10.1, 10.4 and 11 shall be conducted with the door closer disconnected.

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

8.7 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.

8.8 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).

8.9 **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.

8.10 **Test Sample Selection Criteria**

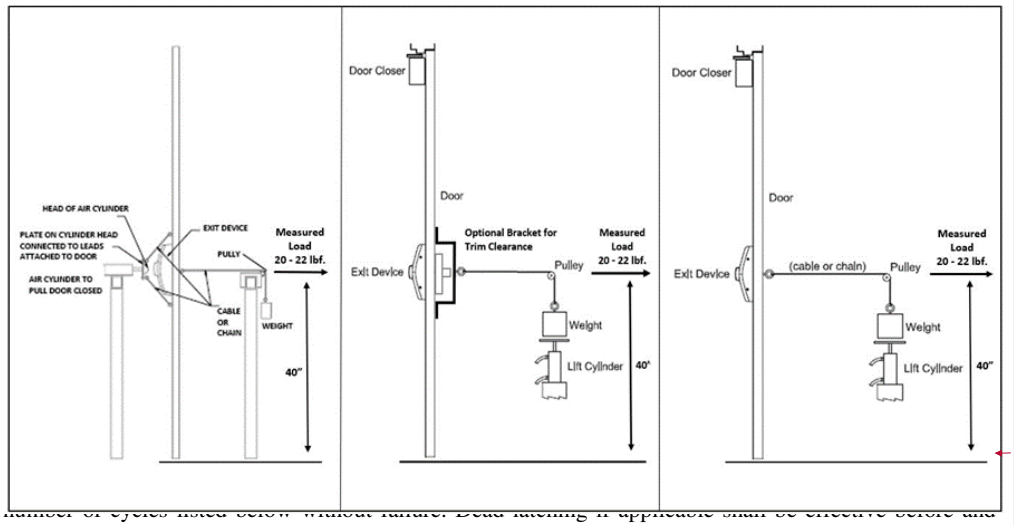
Test	Sequence	Number of Samples
Inside Operational	9.1 through 97 in order and then 9.8 when applicable.	One panic device for all tests
Coordinator and carry-open bar	13.	One coordinator, and one sample carry-open bar when both are to be tested
Automatic Flush Bolts	14	One top bolt and bottom bolt
Outside Operational	10.1 through10.4	One trim sample with one corresponding panic device
Strength	11.1 through 11.6	Each test is permitted to use a different trim with the corresponding panic device or one trim with the corresponding panic device shall be used for all the tests
Material Evaluation	12.1,12.2, and12.3	One sample exposed finished parts for each test
Finish	15.2 through15.5	One specimen of exposed finished parts shall be selected for each finish test and finish being tested.
	15.6	Four specimens of exposed finished parts shall be selected for each finish test and finish being tested.

9. INSIDE OPERATIONAL TESTS

Tests 9.1 through 9.7 shall apply to all types of devices. Failure of any one test constitutes failure of the entire test. Tests shall be preformed in the order shown.

9.1 **Cycle Tests**

9.1.1 - **Cycle Tests (Grade 1)** With the door latched, apply a force to the door, that results in a net 20 to 22 lbf load on the latch(es), approximately 3 in. (76mm) from the latch edge and 40 in. (1020 mm) from the floor in the direction of the door swing until the door is opened. The force shall be applied using weights (see typical methods below). Doors shall be opened by pushing on the actuating bar. The door shall be required to close and latch after each cycle. Exit devices shall complete the number of cycles listed below without failure. Dead latching if applicable shall be effective before and after the cycle test. Suggested methods shown below:



Formatted: Indent: First line: 0.13", Space After: 6 pt

number of cycles listed below without failure. Dead latching if applicable shall be effective before and after the cycle test.

Requirements		
Grade 1	Grade 2	Grade 3
500,000	250,000	100,000

9.2 Exit Tests

9.2.1 With the door latched, the actuating bar shall be depressed by a force not to exceed 15lbf. (67N) until the latch clears the strike. The measurement shall be taken at the center and 1.5 in. (38 mm) from each end on the actuating surface perpendicular to the door in the direction of swing.

Requirements For all measurement points
All Grades 15 lbf max. (67 N)

9.2.2 Using the setup and procedure in 8.2.1, apply a horizontal 250 lbf (1110 N) to the door approximately 3 in. (76 mm) from the latch edge and 40 in. (1020 mm) from the floor in the direction of the door swing. With the door latched, repeat the test in 8.2.1. The actuating bar shall be depressed by a force as listed below and the door swung open.

Requirements For all measurement points
All Grades 50 lbf max. (220 N)

9.2.3 Single Motion to Egress must meet A156.41

9.3 **Outside Pull Tests**

9.3.1 **Exit Device** A force as listed below shall be exerted on the door approximately 3 in. (76 mm) from the latch edge and 40 in. (1020 mm) from the floor in an effort to simulate the door being pulled open. The door shall not open and the exit device shall function after release of the force. Repeat the test in 8.2.1. (check if correct)

9.3.2 **Removable Mullions** Mullions shall be tested on a pair of doors with both leaves closed and with rim devices installed. Both rim devices shall be tested independently as outlined in Outside Pull Test 9.3.1. The doors shall not open and the rim devices shall function after release of the force. Failure of the mullion does not constitute failure of the device. Repeat the test in 8.2.1. (check if correct ref)

Requirements for 9.3 – Value change is a place holder		
Grade 1	Grade 2	Grade 3
600 lbf min. (2669 N)	400 lbf min. (1780 N)	300 lbf min. (1335 N)

9.4 **Inside Pull Test (Grades 1 & 2)** A force as listed below shall be applied at the center of the actuating bar. The force shall be exerted perpendicular to the door in the opposite direction of swing. The device shall function after the force is removed. For devices with actuating bars, which are capable of being locked down, the test shall be repeated with the actuating bar locked down.

Exception: This test is not applicable for devices with activating mechanisms where the pull force cannot be applied simulating exertion with a person's hands.

Requirements for 9.4
Grades 1 & 2 400 lbf min. (1780 N)

9.5 **Push Test (Grades 1 & 2)** With the actuating bar free and the door securely fastened to prevent its swinging open, apply a force as listed below at the center of the actuating bar perpendicular to the door in the direction of swing. If, when a crossbar is depressed, there is clearance between the bar and the door, it shall be a minimum of 1 in. (25 mm). Any gap shall not trap a test rod of 0.375 in. (10 mm) diameter at any position of the bar travel during the operation of the exit device resulting in the failure of the device to operate.

Requirements for 9.5
Grade 1 & 2 400 lbf min. (1780 N)

9.6 **Deadlatching Effectiveness Test (where applicable)** Install the device and strike in accordance with the manufacturer's published installation instructions with 1/8 in. (3.2 mm) added to the strike clearance dimension. Fully close and latch the door. With the device in the latched position, depress the latch. The latch shall not pass the edge of the strike and disengage. Repeat the test by opening and closing the door or by duplicating the action of opening and closing the door and depressing the latch five times. In applications where the latch is not accessible, simulate the strike location and test with the door in the open position. Any one failure constitutes failure of the entire test. (revisit – UL's proposal Nov 13 drawing or wording –shim – item #2 on proposal) (January 30th 2019- Matt Schumann to provide drawing or pic to clarify)

Requirements for 9.6
All Grades 5 cycles without failure

9.7 **Force to Latch Door Test** Apply a force meter to the face of the door at a point 1 in. (25 mm) from the lock edge of the door and on the centerline of the latch (40 in. [1016 mm] from the bottom of the frame in the case of vertical rod devices) when the door is just clear of the latch contacting the lip of the strike. Close the door slowly by pushing the force gauge against the door until the latch fully engages the strike. The maximum measured force to fully latch the door shall not exceed that specified below.

Requirements for 9.7
All Grades 4.5 lbf (20 N) Maximum

9.8 **Surface Vertical Rod or Rod Cover Abuse Test** With the test door secured in the closed position, a force of 110 lbf (500 N) shall be applied to the top or bottom vertical rods or rod covers. The pulling force shall be applied at the midpoint on the longest unsupported length of the top or bottom rod or rod cover in a direction perpendicular to the door face.

Exception: This test is not applicable for rods or rod covers where the pull force cannot be applied simulating exertion with a person's hands.

9.9 After inside operation tests 8.4 through 8.8 are complete, repeat the test in 8.2.1

10. OUTSIDE OPERATIONAL TESTS

10.1 **Torque or Force to Release Latch Test** Gradually apply a torque to the knob, lever, key, or turn or a force to the thumb piece until the latch releases or clears the strike. Where applicable, repeat the test in the opposite direction.

Requirements.				
Key Only	Knobs	Levers	Thumbpieces	Turns
12 lbf-in. (1.4 Nm)	15 lbf-in. (1.7 Nm)	45 lbf-in. (5.0 Nm)	15 lbf (67 N)	22.5 lbf-in. (2.5 Nm)

10.2 **Cylinder Operation Test.** Measure the torque to lock and unlock the trim by key. Repeat the operation five times and average the results. The average torque shall not exceed the limits specified.

Requirements
Maximum Grades 1 & 2 9 lbf-in. (1.0 Nm)

10.3. **Trim Cycle Test** Outside trim cycle requirements and torque or force requirements are specified in the tables below. All trim shall be cycled at a rate not to exceed 30 cycles per minute. Where agreed upon by the manufacturer and lab, the cycle rate may be increased pending verification that all cycling aspects are maintained. Levers shall be operated downward for the total number of required cycles. One cycle consists of the latch(es) being fully released or retracted to clear the strike, and then fully engaged or extended. The door or test panel shall be held in a fixed position during the entire test. If the test is performed on a fixed test panel, simulate the strike location and clearance in accordance with the manufacturers published installation instructions.

Levers shall be subject to the following additional requirements. During the entire cycle test a load shall be applied to the lever 2 inches from the spindle axis. The direction of the load shall be perpendicular to the face of the door or panel and in the direction of opening the door. The magnitude of the load shall be 10 lbf for Grade 1, 5 lbf for Grade 2, and no load for Grade 3. A sketch of one loading arrangement is contained in the Appendix). After completion of cycling perform test 10.1.

Requirements Minimum Cycles			
	Grade 1	Grade 2	Grade 3

Cylinder Only	40,000	20,000	N/A
All Other Trim	500,000	250,000	100,000

Requirements Maximum Torque or Force To Release Latch After Cycling				
Key Only	Knobs	Levers	Thumbpieces	Turns
18 lbf-in. (2 Nm)	18 lbf-in. (2 Nm)	50 lbf-in. (5.7 Nm)	18 lbf (80 N)	27 lbf-in (3 Nm)

10.4 **Preload Door Test** A 50 lbf (222 N) force is applied perpendicular to the door at a point 1 in. (25.4 mm) from the lock edge of the door and on the center line of the bolt. The 50 lbf (222 N) shall load the bolt against the strike in the direction of opening the door and be sustained throughout the test. Gradually apply a torque to the knob, lever, or a force to the thumb piece until the latch releases or clears the strike. Where applicable, repeat the test in the opposite direction. The maximum measured torque to release the latch to clear the strike shall not exceed the maximum specified.

Requirements Maximum All Grades		
Knobs	Levers	Thumbpiece
50 lbf-in. (5.7 Nm)	70 lbf-in. (8 Nm)	50 lbf (180 N)

11. STRENGTH TESTS

Any failure of any sample constitutes a complete failure for this category.

11.1 **Unlocked Outside Knob, Turn or Lever Torque Test** Slowly apply the specified torque to the unlocked outside lever, turn or knob. At the completion of the test, the maximum torque to release the latch shall not exceed the values below. Locks shall operate in all respects including effective dead locking of the latch (8.6). Repeat in the opposite direction if applicable.

Exception: If torque values listed cannot be reached after one full revolution because of security design features and the locked mode has not changed after torque has been applied, the requirements have been met.

Requirements Minimum Unlocked Outside Torque	Grade 1	Grade 2	Grade 3
Knob or Turn	250 lbf-in. (28 Nm)	150 lbf-in. (17 Nm)	120 lbf-in. (14 Nm)
Lever	450 lbf-in. (50 Nm)	225 lbf-in. (25 Nm)	180 lbf-in. (20 Nm)

Requirements Maximum Torque to Release at Completion of Test	Grades 1&2
Knob	18 lbf-in. (2 Nm)
Turn	27 lbf-in. (3 Nm)
Lever	50 lbf-in. (5.7 Nm)

11.2 **Locked Outside Lever, or Knob, or Turn Torque Test** Apply a torque load as described in 9.1 as specified below. After the load is released, the torque to release the latch shall not exceed those specified.

Exception: If torque values listed cannot be reached after one full revolution because of security design features and the locked mode has not changed after torque has been applied, the requirements have been met.

Requirements Minimum Locked Outside Torque	Grade 1	Grade 2	Grade 3

Knob or Turn	300 lbf-in. (34 Nm)	300 lbf-in. (34 Nm)	150 lbf-in. (17 Nm)
Lever	450 lbf-in. (50 Nm)	450 lbf-in. (50 Nm)	230 lbf-in. (26 Nm)

Requirements Maximum Torque to Release at Completion of Test	All Grades
Knob	18 lbf-in. (2 Nm)
Turn	27 lbf-in. (3 Nm)
Lever	50 lbf-in. (5.7 Nm)

11.3 **Outside Lever Pull Test** Apply a load as specified to a lever 2 in. (51 mm) from the axis centerline perpendicular to the surface of the door. After the load is released, the torque to release the latch shall not exceed that specified.

Requirements Minimum		
Grade 1	Grade 2	Grade 3
225 lbf (1000 N)	225 lbf (1000 N)	115 lbf (512 N)
Maximum Torque to Release Latch at Completion of Test: All Grades: 50 lbf-in. (5.7 Nm)		

11.4 **Locked Outside Thumbpiece Test** Apply a load as specified below using the method described for thumb pieces in 7.8. After the load is released, the force to release the latch shall not exceed that specified. Does not apply if test cannot be performed.

Requirements Minimum		
Grade 1	Grade 2	Grade 3
250 lbf (1150 N)	250 lbf (1150 N)	150 lbf (667 N)
Maximum Force to Release at Completion of Test All Grades 18 lbf (80 N)		

11.5 **Axial Load Test** Apply a load as specified to the outside knob, lever, turn or thumb piece grip along the axis of the trim perpendicular to the face of the door to load the latch against the strike. After the load is released, the torque or force to release the latch shall not exceed that specified below.

Requirements Minimum	Grade 1	Grade 2	Grade 3
	400 lbf (1780 N)	400 lbf (1780 N)	300 lbf (1335 N)

Maximum Torque to Release at Completion of Test All Grades	
Knob	18 lbf-in. (2 Nm)
Lever	50 lbf-in. (5.7 Nm)
Thumb piece	18 lbf (80 N)
Turn	27 lbf-in. (3 Nm)

11.6 **Vertical Load Test** Apply a load as specified below vertically downward to the outside knob, lever, or turn perpendicular to the trim axis. Apply the load at the highest point for knobs and for levers 1 in. (25 mm) from the face of the door or escutcheon if present. After the load is released, the torque to release the latch shall not exceed that specified.

Requirements Minimum	Grade 1	Grade 2	Grade 3
	360 lbf (1600 N)	360 lbf (1600 N)	250 lbf (1110 N)

Maximum Torque to Release at Completion of Test All Grades	
Knob	18 lbf-in. (2 Nm)

Lever	50 lbf-in. (5.7 Nm)
Turn	27 lbf-in. (3 Nm)

12 MATERIAL EVALUATION TESTS

Any failure of any sample constitutes a complete failure for this category.

12.1 **Outside Knob or Lever Crush Test** Position a knob or lever in a tensile loading device having a compression capability and apply the compression load specified below. Deformation shall not exceed the value shown relative to the original dimension.

Requirements		
Grade 1	Grade 2	Grade 3
10% at 1000 lbf (4450 N)	25% at 1000 lbf (4450 N)	30% at 1000 lbf (4450 N)

12.2 **Outside Rose and Escutcheon Dent Test** Mount outside trim horizontally to simulate installation on a door. Drop an 8 oz (0.23 Kg) projectile from a height of 12 in. (305 mm) in a drop tube as shown in Figure 3. The drop location shall be at any point along the approximate center between the edges of the rose or escutcheon. The depth of the indentation shall not exceed that specified.

Requirements		
Grade 1	Grade 2	Grade 3
0.075 in. (2 mm)	0.100 in. (2.5 mm)	0.150 in. (3.8 mm)

12.3 **Outside Rose and Escutcheon Deformation Test**. Mount outside trim to simulate installation on a door. Apply a compression load as specified below on the horizontal centerline of the rose or escutcheon assembly. The side bars to apply the compression load shall be 6 in. (152 mm) long. When testing escutcheons, the vertical centerline of the 6 in. (152 mm) long side bars shall be opposite the centerline of the escutcheon. See Figure 5. Deformation shall not exceed 10% for the loads specified.

Requirements		
Grade 1	Grade 2	Grade 3
650 lbf (2900 N)	560 lbf (2500 N)	450 lbf (2000 N)

13. COORDINATOR AND CARRY-OPEN BAR TESTS

13.1 Tests shall be performed using pairs of doors no smaller than described in 8.1. Frames and hardware shall be in accordance with 8.2, 8.4, and 8.5. For tests that include a carry-open bar, an astragal with a minimum of 3/4 in. (19 mm) overlap shall be applied to the pull side of the active leaf. Install the coordinator and carry-open bar in accordance with the manufacturer's published installation instructions.

13.2 **Cycle Test** When cycle testing a coordinator, doors shall be pushed open separately to not less than a 60 degrees open position, then released sequentially so that the active leaf is first to engage the coordinator. When cycle testing a coordinator and carry-open bar combination, the inactive leaf shall be pushed at a speed not to exceed 5 degrees per second and to not less than an open position 20 degrees beyond the point where the carry-open bar breaks contact with the active leaf, then released. For subsequent cycles, the inactive leaf shall be opened at any speed to not less than an open position 20 degrees beyond the point where the carry-open bar breaks contact with the active leaf, then released.

13.3 In all tests, during the closing sequence, the active leaf shall be held open by the coordinator hold open device for a minimum of one (1) second and shall allow the inactive leaf to swing past the active leaf and activate the coordinator release, and the active door shall close against the stop. An opening and closing operation shall constitute one (1) cycle. The coordinator or carry-open bar or both shall complete the specified cycles without failure. Failure of the coordinator to perform any closing sequence constitutes failure of the entire coordinator test. Failure of the carry-open bar to perform any one opening sequence or failure to bypass any one coordinated active leaf constitutes failure of the carry-open bar test. Failure of the coordinator to prevent marring of the door face by wearing through any strike during the cycle test constitutes failure of the entire coordinator and remaining cycles shall be discontinued.

Requirements		
Grade 1	Type 21A Coordinator - 250,000 cycles	Carry-open bar - 250,000 cycles
Grade 2	Type 21A or 21 B Coordinator - 100,000 cycles	Carry-open bar - 100,000 cycles

13.4 **Override Function Test** Type 21A coordinators equipped with override mechanisms shall complete the cycles required in 8.9.2.1. With the device at the factory preset position, or if field set at the midpoint setting, restrain the inactive leaf in an open position. Open the active leaf until the hold open device on the coordinator is fully projected. At the furthest point from the hinges or pivots, push on the active leaf until the override mechanism releases. With the inactive leaf still restrained in the open position, manually open the active leaf a minimum of 60 degrees. Release the active leaf. The active leaf shall remain held in the open position by the coordinator. Perform this test prior to the cycle test, after every 25,000 cycles, and at the completion of the cycle test. Failure of the override mechanism to release or failure of the active leaf to be held open by the coordinator constitutes failure of the function test. Failure of any one of the function tests constitutes failure of the entire coordinator test and any remaining cycles shall be discontinued.

14. AUTOMATIC FLUSH BOLT TESTS

14.1 Tests shall be performed using pairs of doors no smaller than described in 8.1. Frames and hardware shall be in accordance with 8.2, 8.4, and 8.5. A Grade 1 Type 21A Door Coordinator shall be installed. A top and bottom flush bolt, selected as in 6.11.3 or 6.11.4 shall be installed in accordance with the manufacturer's instructions.

14.2 **Automatic Flush Bolt Cycle Test** Cycling shall consist of pushing the doors open separately or by means of a Grade 1 Carry-Open Bar to not less than a 30 degree open position and then releasing them. During the closing sequence, the active leaf shall be held open for a minimum of one (1) second allowing the inactive leaf to by-pass the active leaf and activate the coordinator release. The opening and closing operation shall constitute one (1) cycle. The top and bottom automatic flush bolts shall complete 250,000 cycles without failure. Failure consists of a condition in which the top or the bottom flush bolt, when the active leaf is closed, does not extend within 1/8 in. (3.2mm) of its full extension at the beginning of the test; failure also consists of a condition in which either the top or bottom flush bolt fails to release fully under the urging of the active door as it is closed or prevents the active door from full closure. The manufacturer or the NRTL are not prohibited from stopping the cycle test periodically as deemed prudent to inspect for failure. If one of the bolts fails during the test, it is not prohibited from being replaced with another sample and the test resumed in an attempt to qualify the bolt which did not fail

14.3 Flush bolts passing their appropriate test shall be listed as Grade 1.

15. FINISH TESTS

Any failure of any test constitutes a complete failure for this category.

15.1 These requirements do not predict the performance life of the finishes in actual use but are used as a quality control method to ensure consistent finish quality. Exposed finished parts shall meet the minimum values given. Coordinators are subjected to salt spray and humidity only. All tests shall be conducted and the results evaluated in accordance with ANSI/BHMA A156.18-2012 for Materials and Finishes. Finish tests are for all grades.

15.2 **Salt Spray Test**

Requirements	
Organic Coatings on architecturally finished components except lock fronts, strikes and coordinators	96 Hours
Organic coatings on lock fronts, strikes, and coordinators	24 Hours
Inorganic coatings or base materials	200 Hours

15.3 **Humidity Test**

Requirements	
Pencil Hardness 2H Adhesion Classification 4 Method B	
Organic Coatings on architecturally finished components except lock fronts, strikes and coordinators	240 Hours
Organic coatings on lock fronts, strikes, and coordinators	48 Hours

15.4 **Hardness Test** Conduct either Pencil Hardness or Taber at the option of the manufacturer

Requirements Applicable for Organic Coatings only	
Pencil Hardness Test	3H
Taber Abrasion Resistance Test	500 cycles

15.5 **Perspiration Test**

Requirements Applicable for organic coatings only	
Minimum All Grades	4 Cycles

15.6 **Ultraviolet Light and Condensation Test**

Requirements. Applicable for organic coatings only
Test cycle 8 hours UV and 4 hours humidity at 50 degrees C for 144 total hours; test to exterior grade using UVA 340 lamps

APPENDIX A (NOT A PART OF ANSI/BHMA A156.3)

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. BHMA sponsors a third party certification program enabling producers to assert conformance to this Standard on the basis of periodic tests conducted regularly at unannounced times. The program is open to all manufacturers whether or not members of BHMA. Specifiers requiring assertions of conformance utilize the Directory of Certified Exit Devices available from BHMA, statements of conformance furnished by individual manufacturers, or test results 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 MULLIONS

A removable mullion may be removed and replaced by removing fasteners or by operating a key cylinder. Fixed mullions are not covered in this standard.

A-5 FUSIBLE FIRE PINS

Are passive mechanisms that typically mount in the edge of a door and is intended to engage with a strike located in either the opposite door leaf or the floor once the thermal activation temperature is achieved. This mechanism is not active in day-to-day operation unless the activation temperature is reached. Once the mechanism has been activated it provides a means of latching between two door leaves or door to floor. This latching, used in place of the normally used exit device bottom bolt and vertical rod, controls the bottom edges of a set of fire doors and assures that the fire doors do not move excessively to the point where they do not provide adequate protection for the opening. Following activation, the mechanism does not retract and is not withdrawn by operation of the lever or push pad provided with the exit device because they are not interconnected and the mechanism is intended to be used only once. Since the design is used with door hardware that meets the requirements of UL Test Standards UL10B and UL10C it must be installed per the manufacturer's instructions.

A-6 BALANCED DOORS ACTUATING BAR

The activating mechanism of a panic device is located on the egress side of a balance door. The active surface of the actuating bar shall be visually and physically distinct from the rest of the device and the length shall not be more than one-half the width of the door leaf measured from the latch side. Also called cross bar or push pad. Refer to to NFPA101 to UL305 for further information.

Formatted: Font: Bold, Highlight

Formatted: SecList, Left

A-7 OPERATIONAL MANUAL REQUIREMENTS

Frequency: Each product shall be tested once every four years.
Test Lab: UL, INTERTEK
One device shall be tested in each of the following listed types and grades that are certified and comprise one test sample lot: Product series shall be as determined by the Laboratory. Each shall generally consist

Formatted: SecList, Left

of products having unique construction design for latch retraction. Variations in construction not affecting latch retraction from the egress side of the door shall not constitute justification for establishing a new product series. Material variations not affecting wear and strength characteristics as determined by the Laboratory shall not constitute justification for establishing a new product series. For inside operational tests, an exit device of the 01 function shall be used for qualification of a product. Any device within any one product having different working components or different materials shall be tested separately. This testing is permitted, at the option of the Licensee, to be coordinated with and be a part of the Laboratory's own in-plant follow-up inspection service. No less than one test sample lot shall be tested annually.
Exit Trim Testing The sample rate for testing trim shall be as determined by the Laboratory based upon a worse case condition approach. Licensees shall submit catalog data and test data to assist the Laboratory in determining operating trim to be selected. If there are any trims or trim combinations the Licensee does not wish to certify, these shall be identified to the Laboratory and the BHMA. All other trims shall be subject to selection for testing by the Laboratory. The sampling rate shall be such that all families of trim types and functions shall be tested within a 4 year cycle.

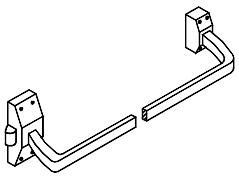
Formatted: Highlight

Formatted: SecList, Left

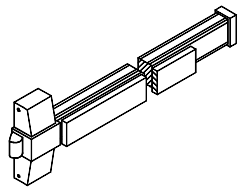
APPENDIX B ILLUSTRATIONS OF EXIT DEVICE TYPES

Note: Actuating Bars shown (cross bar and push pad) are available in all types of devices.

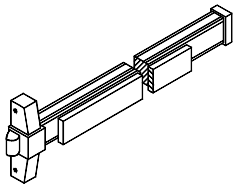
Type 1
Rim Devices



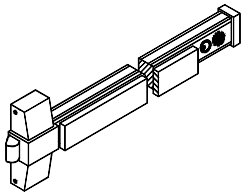
Crossbar



Push Pad

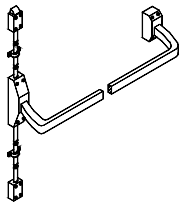


Push Pad (Narrow Stile)

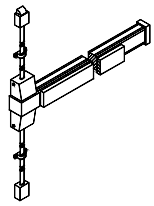


Push Pad (with Alarm)

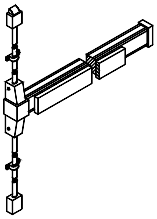
Type 2
Surface Vertical Rod Exit
Device



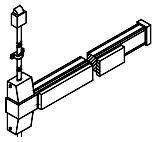
Cross Bar



Push Pad

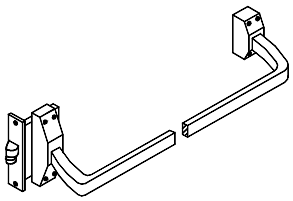


Push Pad (Narrow Stile)

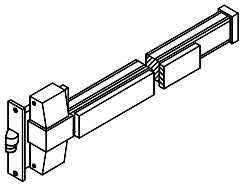


Push Pad (LBR)

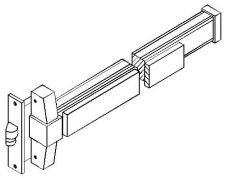
Type 3
Mortise Exit Device



Crossbar

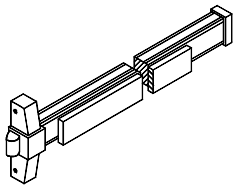


Push Pad

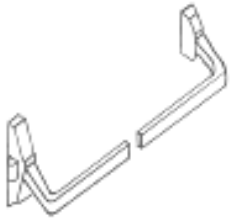


Push Pad (Narrow Stile)

Type 4
Narrow Stile Rim Exit Device

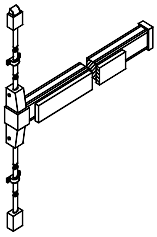


Push Pad (Narrow Stile)

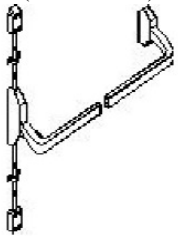


Cross Bar (Narrow Stile)

Type 5
Narrow Stile Surface Vertical
Rod Exit Device

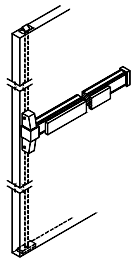


Push Pad (Narrow Stile)

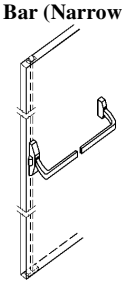


Cross Bar (Narrow Stile)

Type 6
Narrow Stile Concealed
Vertical Rod Exit Device



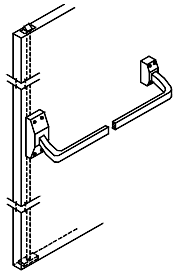
Push Pad (Narrow Stile)



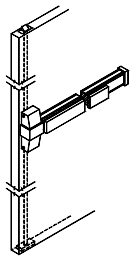
Cross Bar (Narrow Stile)

Type 7
Wood Door Concealed Vertical Rod Exit Device

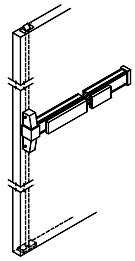
Type 8
Metal Door Concealed Vertical Rod Exit Device



Cross Bar

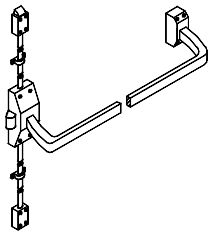


Push Pad

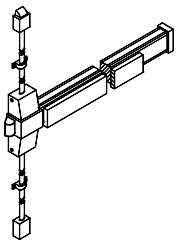


Push Pad (Narrow Stile)

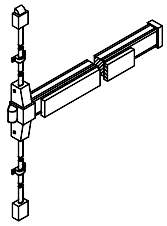
Type 9
Multi-point Combination Rim and Surface Vertical Rod Exit Device



Cross Bar

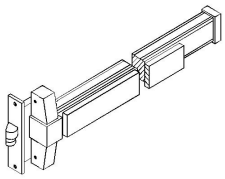


Push Pad



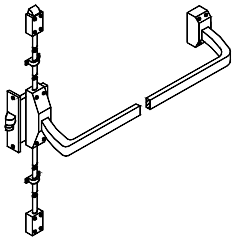
Push Pad (Narrow Stile)

Type 10
Narrow Stile Mortise Exit Device

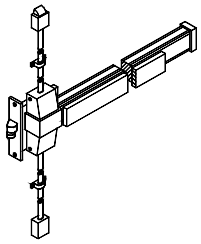


Push Pad (Narrow Stile)

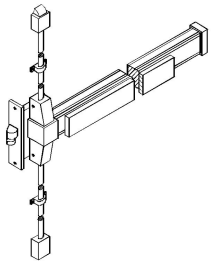
Type 11
Multi-point Combination Mortise and Surface Vertical Rod Exit Device



Cross Bar

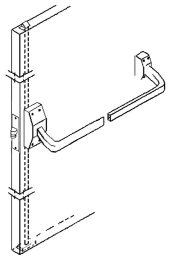


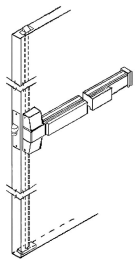
Push Pad



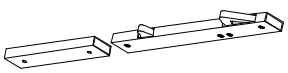
Push Pad (Narrow Stile)

Type 12
Multi-point Combination Mortise and Concealed Vertical Rod Exit Devices

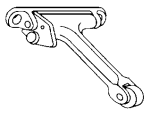




Type 21A
Door Coordinator with Override Feature

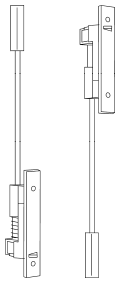


Type 21B
Door Coordinator without
Override Feature



Type 22
Removable Mullion

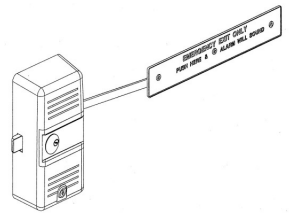
Type 23
Concealed Automatic Latching
Two Point Bolts



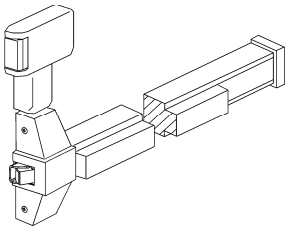
Type 24
Surface Automatic Latching
Two Point Bolts

Type 25
Automatic Extension Flush Bolt
Set

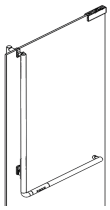
Type 26
Rim Paddle



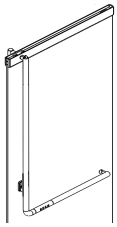
Type 28: Rim Exit Device
Incorporating a Dead Bolt



Type 29: Glass Door Exit Device – Top Latching



Direct Glass Mount



Stile Mount

APPENDIX C ~~**TEST FIXTURES**~~

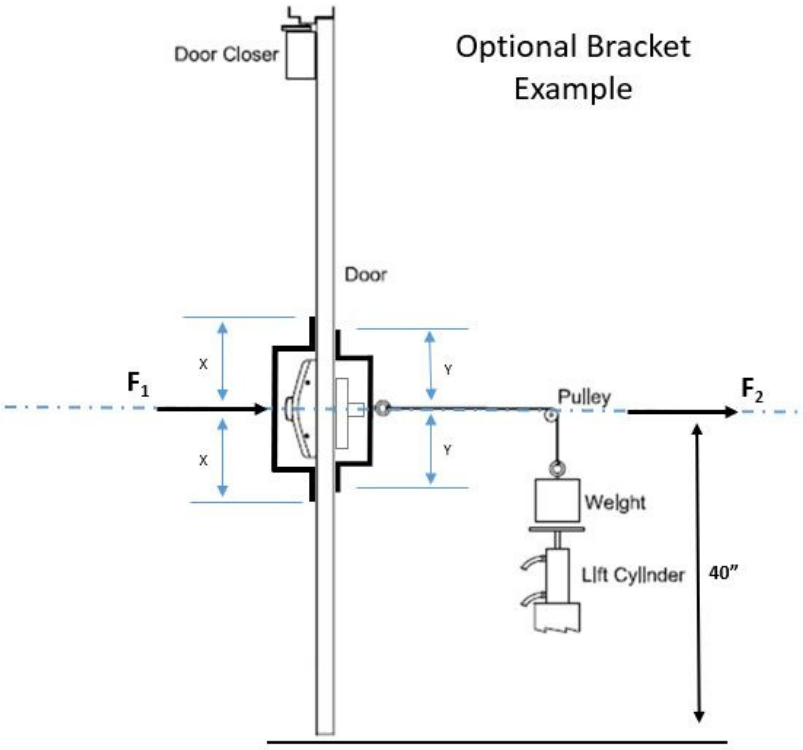
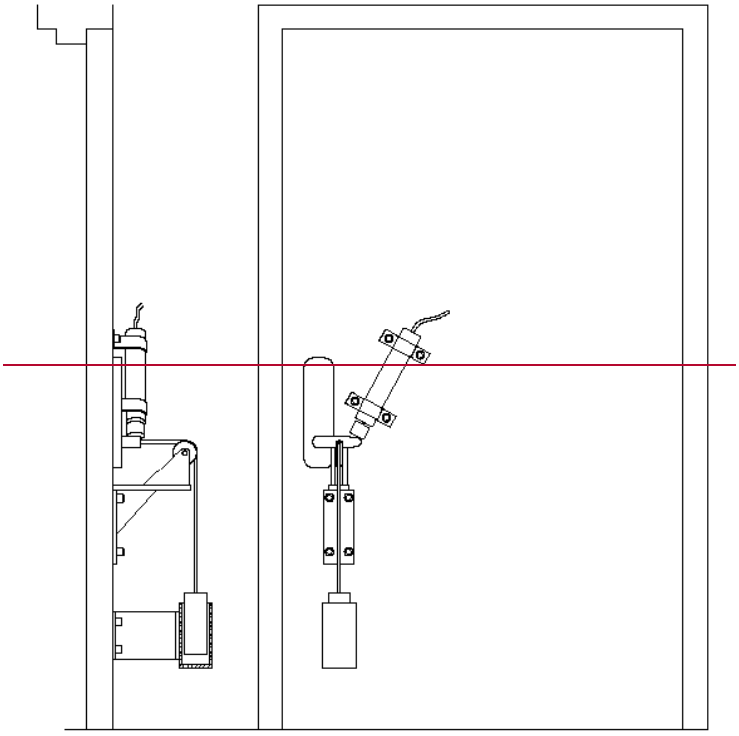


FIGURE 1

Formatted: Strikethrough

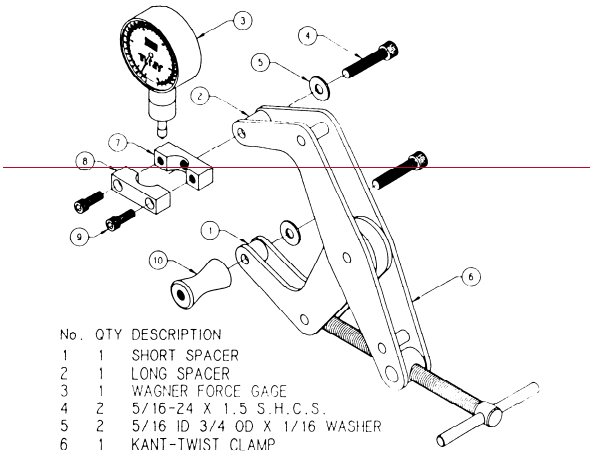
Formatted: Font: Bold

Formatted: Centered



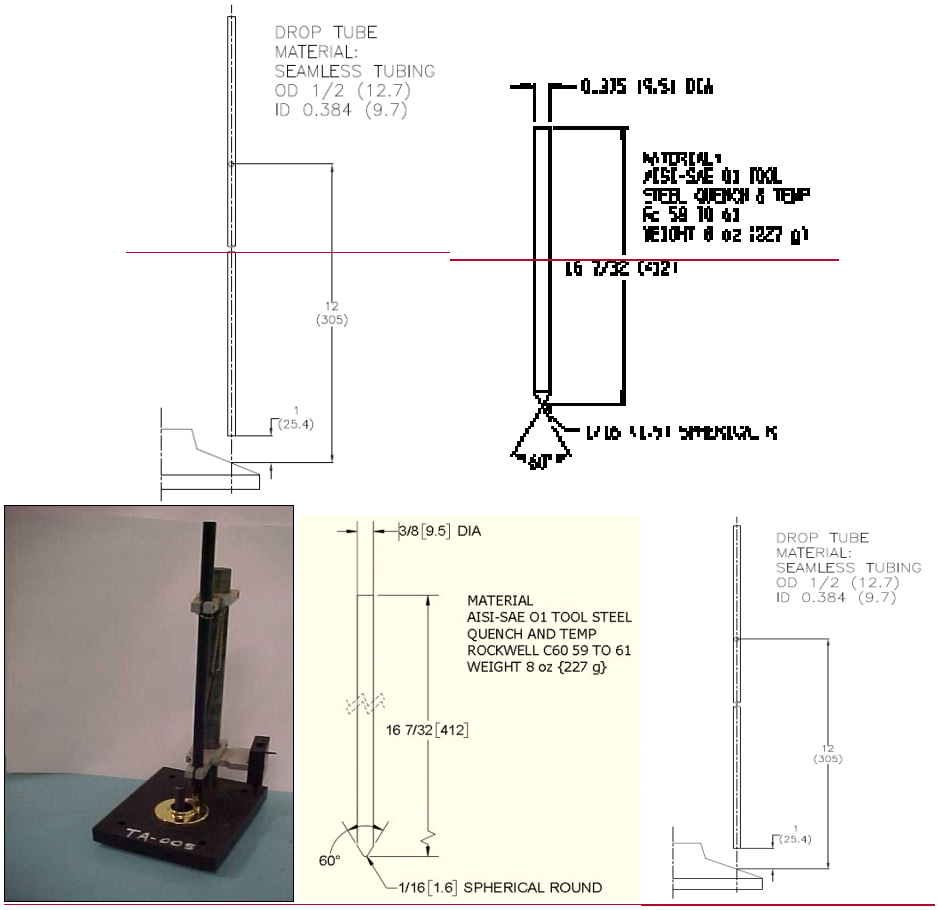
~~**FIGURE 1**~~
~~**Cycle Test For Outside Trim**~~

1. TO A 6" *KANT-TWIST* CLAMP. GRIND OFF BOTH HEADS OF BOTH JAW RIVITS.
2. SPREAD TIPS OF CLAMP APART AND REMOVE JAWS.
3. ATTACH LOWER GAGE HOLDER TO OUTSIDE END OF CLAMP WITH THE .900 LONG SPACER, 5/16 S.H.C.S AND WASHER.
4. ATTACH FINGER PORTION TO THE INSIDE CLAMP ENDS USING THE .565 SHORT SPACER, 5/16 S.H.C.S. AND WASHER.
5. ATTACH *WAGNER* FORCE GAGE WITH UPPER GAGE SUPPORT AND 1/4 S.H.C.S.
6. MACHINE A 45° POINT ON THE GAGE REMOVABLE TIP. (TIP LENGTH MAY VARY BY PRODUCT).



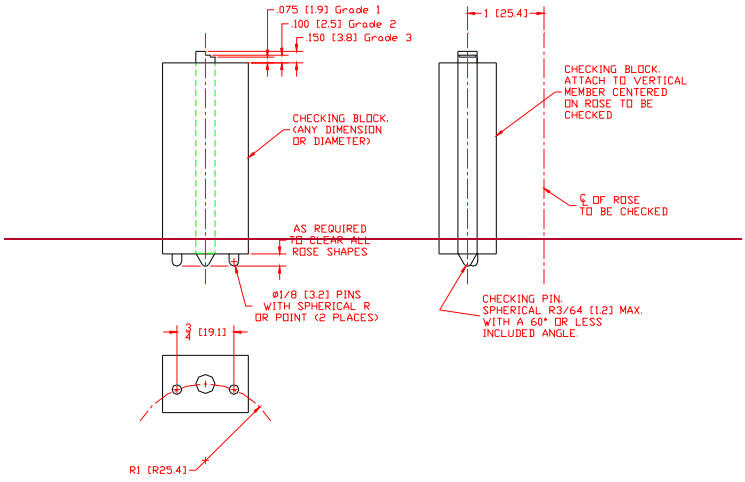
No.	QTY	DESCRIPTION
1	1	SHORT SPACER
2	1	LONG SPACER
3	1	WAGNER FORCE GAGE
4	2	5/16-24 X 1.5 S.H.C.S.
5	2	5/16 ID 3/4 OD X 1/16 WASHER
6	1	KANT-TWIST CLAMP
7	1	LOWER GAGE SUPPORT
8	1	UPPER GAGE SUPPORT
9	2	1/4-20 X .625 S.H.C.S.
10	1	SUPPORT FINGER

~~FIGURE 2~~
~~Thumbpiece Test Fixture~~



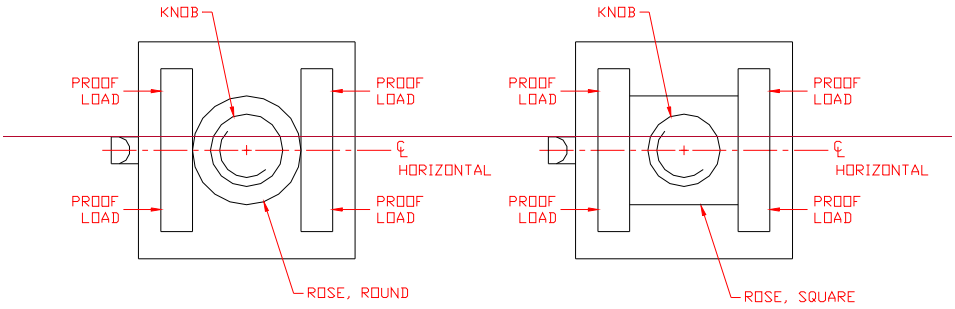
~~FIGURE 3 Projectile and Drop Tube~~

Formatted: TOA Heading, Centered, Tab stops: 3.75", Centered



~~FIGURE 4~~
~~Dent Depth Measuring Device~~

~~Rose dent measuring equipment: Two spherical pins contact the rose at a point on the same radius as the drop test projectile. The machined steps of the checking pin indicate pass or fail without giving exact radius. A dial indicator at the top of the checking pin is used where the exact reading is required.~~



~~FIGURE 5~~
~~Outside Rose Deformation~~

PARKING LOT

~~**1. UL proposal on adding definition for balanced door – Nov 13**~~

~~2.1.5 The actuating bar, also called the push pad or cross bar, shall extend across not less than one half of the width of the door leaf. Refer to local codes for location and length of activating bar. Balanced doors with panic hardware shall have push-pad type panics, and the pad shall not extend more than one-half the width of the door measured from the latch side. Refer to local codes for location and length of activating bar or pads. Is there any difference in testing using balanced doors?~~

2. ASSA ABLOY (Moved here waiting on further proposals – do not break apart (qualifications/ Security test) – to date) Nov 13.

2.x Grade Qualifications (Place Holder for further discussion – one grade instead of two has been suggested) Two classifications of Grades are described in this Standard. Manufacturers shall indicate separately, for both an Operational Grade and a Security Grade level of mortise locks and latches. The minimum acceptable grade level for Operational and Security grades shall be a grade 3.

- Operational Grades shall meet the requirements of Sections 8, 9, ….
- Security Grades shall meet the requirements of Section XX.

XX. SECURITY TESTS (11.8)

XX.0 **Failure Criteria** Failure consists of any damage to the lock mechanism, deadbolt, latchbolt, strike or fastener component that allows the door to be opened at the appropriate test level. The exit device shall not be operated from the inside during the tests.

XX.1 **Outside Pull Tests**

A force as listed below shall be exerted on the door approximately 3 in. (76 mm) from the latch edge and 40 in. (1020 mm) from the floor in an effort to simulate the door being pulled open. The door shall not open.

Requirements

Grade 1	Grade 2	Grade 3
1500 lbf min. (6672 N)	1000 lbf min. (4448 N)	500 lbf min. (2224 N)

Requirements – Proposal from Ernie Mitchell 3-19-19: Possible break out by type or number of latch bolts

Grade 1	Grade 2	Grade 3
1200 lbf min. (6672 N)	800lbf min. (4448 N)	400 lbf min. (2224 N)

~~**3. dormakaba (proposal on adding Operation Manual requirements to Standard) December 18th, 2018**~~

~~Sections/Tables/Figures Proposed for Revision (e.g. Section 1.2 or 1.2.2.):~~
~~APPENDIX A~~
~~Revise as follows:~~

~~Add:~~
~~Exit Devices, ANSI/BHMA A156.3~~
~~Frequency: Each product shall be tested once every four years.~~
~~Test Lab: UL, INTERTEK~~
~~One device shall be tested in each of the following listed types and grades that are certified and comprise one test sample lot: Product series shall be as determined by the Laboratory. Each shall generally consist of products having unique construction design for latch retraction. Variations in construction not affecting latch retraction from the egress side of the door shall not constitute justification for establishing a new product series. Material variations not affecting wear and strength characteristics as determined by the Laboratory shall not constitute justification for establishing a new product series. For inside operational tests, an exit device of the 01 function shall be used for qualification of a product. Any device within any one product having different working components or different materials shall be tested separately. This testing is permitted, at the option of the Licensee, to be coordinated with and be a part of the Laboratory's own in-plant follow-up inspection service. No less than one test sample lot shall be tested annually.~~
~~Exit Trim Testing. The sample rate for testing trim shall be as determined by the Laboratory based upon a worse case condition approach. Licensees shall submit catalog data and test data to assist the Laboratory in determining operating trim to be selected. If there are any trims or trim combinations the Licensee does not wish to certify, these shall be identified to the Laboratory and the BHMA. All other trims shall be subject to selection for testing by the Laboratory. The sampling rate shall be such that all families of trim types and functions shall be tested within a 4 year cycle.~~
~~Reason/ Supporting Information:~~
~~This will provide the person using this standard with listing requirements.~~

Formatted: Left, Tab stops: -0.88", Left + 0", Left