



**STANDARD for
BORED AND PREASSEMBLED LOCKS AND LATCHES**



**SPONSOR
BUILDERS HARDWARE MANUFACTURERS ASSOCIATION, INC.**

**AMERICAN NATIONAL STANDARDS INSTITUTE
Approved November 15, 2022**

AMERICAN NATIONAL STANDARD

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FOREWORD (This Foreword is not a part of ANSI/BHMA A156.2)

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. Locks and Lock Trim 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.

Performance tests and, where it has been necessary, dimensional requirements have been established to insure safety, security and stability to which the public is entitled. Performance criteria for resistance to surreptitious and forceful attack are not fully covered. There are no restrictions on design except for those dimensional requirements imposed for the reasons given above. It is also required that locks fit certain cut-out dimensions.

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 and methods will be developed. With this in mind, the Association will update, correct and revise these Standards on a regular basis. It shall also be the responsibility of manufacturers to request such appropriate revisions.

Bored locks have been described in three grade levels related to performance and security. Choice of grade and specific products are made on the basis of utility, aesthetics, security objectives and end use required.

The BHMA numbers which indicate functions of locks and latches do not identify grade, finish or design and are not intended to be used without necessary supplementary information. Individual manufacturer's catalogs are to be consulted.

Users of this Standard consult applicable local building codes as to requirements affecting the functions of locks used on fire doors and doors within a means of egress. Only functions compatible with the requirements of the applicable building codes are used.

TABLE OF CONTENTS

1. SCOPE.....	5
2. DEFINITIONS	5
3. GENERAL.....	6
4. DIMENSIONAL CHARACTERISTICS.....	7
5. DESCRIPTION AND FUNCTION NUMBERS OF SERIES 2000 PRE-ASSEMBLED LOCKS.....	8
6. DESCRIPTION AND FUNCTION NUMBERS OF SERIES 4000 BORED LOCKS	10
7. GENERAL TEST PARAMETERS.....	14
8. SAMPLE TEST LOCKS.....	ERROR! BOOKMARK NOT DEFINED.
9. OPERATIONAL TESTS.....	17
10 STRENGTH TESTS.....	20
11. CYCLE TEST	23
12. SECURITY TESTS.....	25
13. MATERIAL EVALUATION TESTS.....	28
14 FINISH TESTS.....	ERROR! BOOKMARK NOT DEFINED.
APPENDIX A USERS GUIDE (NOT A PART OF ANSI/BHMA A156.2)	31

1. SCOPE

1.1 This Standard establishes performance requirements for bored and preassembled locks and latches, and includes dimensional criteria, operational tests, strength tests, cycle tests, security tests and material evaluation tests.

1.2 Tests to evaluate decorative and protective finishes for these products are described in ANSI/BHMA A156.18 for Materials and Finishes, and are required to complete certification.

1.3 Tests described in this Standard are performed under laboratory conditions. In actual usage, results vary because of installation, door and frame construction, maintenance and environmental conditions.

1.4 **Grade Qualifications** Manufacturers shall indicate the Grade level of their locks. Locks shall meet all tests for their grade listing. A Grade 1 lock shall meet all Grade 1 criteria, a Grade 2 lock shall meet all Grade 2 criteria, and a Grade 3 lock shall meet all Grade 3 criteria.

2. DEFINITIONS

2.1 **Backset** The distance from the edge of the door measured at the centerline of the door thickness to the centerline of the cylinder or spindle.

2.2 Bolts

2.2.1 **Auxiliary Dead Latch** A plunger which, when actuated, automatically locks a projected latch bolt against return by end pressure.

2.2.2 **Latch Bolt** A lock component having a beveled end which projects from the lock front in its extended position, but is forced back into the lock case by end pressure or drawn back by action of the lock mechanism. When the door is closed, the latch bolt projects into a hole provided in the strike, holding the door in a closed position.

2.2.3 **Dead Locking Latch Bolt** A type latch bolt incorporating a plunger which, when depressed, automatically locks the projected latch bolt against return by end pressure. Also called dead latch.

2.3 Cylinders

2.3.1 **Cylinder** The subassembly of a lock containing a plug with a keyway and cylinder body with tumbler mechanism.

2.3.2 **Cylinder Body** The portion of a cylinder that surrounds the plug and contains the tumbler mechanism.

2.3.3 **Cylinder Plug** A component of the cylinder within the body which is actuated when the correct key is inserted.

2.3.4 **Interchangeable Core Cylinder** A cylinder that is removable from the lock with a designated key without disassembly of the lock.

2.4 **Lever Catch** Also called knob catch. The spring activated retainer which engages the lever in order to maintain its attachment to the lever spindle.

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

2.6 Lock Series

2.6.1 **Preassembled Lock Series 2000** A lock fitting into a notched cutout in a door.

2.6.2 **Bored Lock Series 4000** A lock installed in a round bored opening in the edge and face of a door.

2.7 **Operating Trim** Lock components including levers, knobs, paddles, or handlesets and equivalent components.

2.8 Push Button and Related Terms

2.8.1 **Push Button Code Mechanism** A mechanism used in place of, or in conjunction with a key and cylinder.

2.8.2 **Push Button** A single inside locking device that when depressed, locks the outside operating trim.

2.8.3 **Turn Button** A single inside locking device that when rotated, locks the outside operating trim.

- 2.8.4 **Combination Push Button/Turn Button** A single inside locking device that when depressed, locks the outside operating trim, or when depressed and rotated maintains the locked state.
- 2.9 **Indicator Button** The component of a hotel guest room lock which when activated, indicates on the outside that the room is occupied.
- 2.10 **Spindle** A lock component which transfers operating trim rotation to the lock mechanism.
- 2.11 **Strike** A mortised or surface mounted plate fastened to the door frame into which the bolts project.
- 2.12 **Strike Box** A housing used in back of a strike to enclose the bolt or bolt openings.
- 2.13 **Thumb Piece** A lever projecting from a handle pressed by the thumb to retract a latch bolt.

3. GENERAL

3.1 **Cylinders and Input Devices for Locks** supplied with locks shall meet the performance requirements for the appropriate types and grade level found in the ANSI/BHMA Standard A156.5-2020 for Cylinders and Input Devices for the lock to retain its grade listing. Assemblies take the grade level of the lowest graded component. Suffix D shall be indicated in the certified products directory for locks to be used only with drill resistance cylinders as evaluated in A156.5.

3.2 No lock can provide complete security by itself. Locks may be defeated by forcible or technical means, or evaded by entry elsewhere on the property. No lock can substitute for caution, awareness of your environment, and common sense. Builders hardware is available in multiple performance grades to suit the application. In order to enhance security and reduce risk, consult a qualified locksmith or other security professional. For applications where pick resistance and other higher security protections are required users should consider locks meeting UL 437 or ANSI/BHMA A156.30 for High Security Cylinders.

3.3 **Operating Trim** Where levers are referenced, knobs, paddles, or handlesets are permitted to be used.

3.4 **Trim** Roses, escutcheons, knobs, levers, turns, paddles, cylinder guards shall cover all door preparation openings.

3.5 **Reference to other Standards** Referenced standards are available from www.buildershardware.com, www.ansi.org, www.astm.org, and www.ul.com.

3.6 **Values** Required values in this Standard are given in US units. The SI (metric) equivalents are approximate.

3.7 **Door and Frame Preparation** The lock models described in this standard shall fit the door and frame preparations described in the ANSI/BHMA A156.115 Series. Other configurations are permitted to fit special opening templating requirements. See manufacturers' instructions for details.

3.8 **Building Codes** Certain lock functions described in this standard are not permitted on doors within a means of egress. Consult local authority having jurisdiction. When locks and latches are used in fire door assemblies, they shall have been tested and listed for use in fire doors by a Nationally Recognized Testing Laboratory (NRTL) and shall be under an in-plant follow-up inspection service.

3.9 **Tolerances** 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). Weight or force shall be $\pm 2\%$. Angles shall be ± 2 degrees. Where only minus tolerances are given, the dimensions are permitted to be exceeded at the option of the manufacturers.

4. DIMENSIONAL CHARACTERISTICS

4.1 **Door Preparation** The specifications for the door thickness for these products are defined in the ANSI/BHMA A156.115 series standards. Typical thicknesses are 1 3/8 in. and 1 3/4 in. (35 mm and 44 mm); consult hardware manufacturer for other sizes.

4.2 Latch bolts

4.2.1 Series 2000 Preassembled Locks and Latches are only available in Grade 1 and only with dead locking latch bolts.

4.2.2 Series 4000 Locks and Latches are available in Grades 1, 2 and 3

4.2.3 Latch bolt projection: minus 1/16 in. (1.6 mm) tolerance.

Grades 1 & 2: 1/2 in. (12.7mm) Latch Bolts and Dead Locking Latch Bolts

Grade 3: 1/2 in. (12.7mm) Dead Locking Latch Bolts

Grade 3: 3/8 in. (10 mm) Latch Bolts

4.2.4 Additional latch bolt projections exceeding those required are available. Consult individual manufacturers' catalogs.

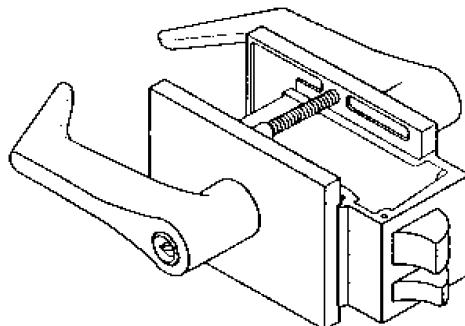
4.3 **Backset:** ± 1/64 in. (0.4 mm) 2 3/8 in. or 2 3/4 in. (60 mm or 70 mm)

Other backsets are permitted to be used providing the performance and security are equivalent.

4.4 **Knob Major Diameter** 1 13/16 in. (46 mm) minimum

5. DESCRIPTION AND FUNCTION NUMBERS OF SERIES 2000 PRE-ASSEMBLED LOCKS AND LATCHES

Typical Preassembled Lock



5.1 In the following lock descriptions, the functions are described using lever trim for brevity and clarity. It is acceptable to use models with knobs, paddles, or handlesets wherever levers are referenced. Where keys or cylinders are referenced, pushbutton code mechanisms are permitted. Some functions may be available with electrical operation in place of mechanical operation. The basic function shall remain the same as described.

5.2 **Function Number Tests.** See Chart 1 in appendix for summary of tests by function.

5.3 Function Descriptions

F36 Passage or Closet Latch Set. Latch bolt operated by lever from either side at all times.

F37 Privacy, Bedroom or Bath Lock. Latch bolt operated by lever from either side. Outside lever is locked by push button inside, and unlocked by emergency release outside, operating inside lever or closing door.

F38 Patio or Privacy Lock. Dead locking latch bolt operated by lever from either side. Outside lever is locked by push button inside and unlocked by operating inside lever or closing door. Do not use on doors in rooms that have no other entrance.

F39 Communicating Lock. Dead locking latch bolt operated by lever from either side. Turn button, in either lever, locks or unlocks opposite lever. Do not use on doors in rooms that have no other entrance.

F40 Entrance or Store Room Lock. Dead locking latch bolt is operated by lever from either side except when outside lever is locked by turn button in inside lever. When outside lever is locked, latch bolt is retracted by key from outside or by operating inside lever. Turn button shall be manually rotated to unlock outside lever. At the option of the individual manufacturer, operating the key in the outside lever shall permit the latch bolt to be retracted by operating the outside lever, providing the key cannot be removed in the unlocked position.

F41 Entry Lock. Dead locking latch bolt operated by lever from either side except when outside lever is locked by push button in inside lever. When outside lever is locked, operating key from outside or operating inside lever retracts latch bolt and releases push button. Closing door does not release push button.

F42 Classroom Lock. Dead locking latch bolt operated by lever from either side except when outside lever is locked from outside by key. When outside lever is locked, latch bolt is retracted by key from outside or operating inside lever.

F43 Holdback Lock. Dead locking latch bolt operated by lever from either side except when outside lever is locked from outside by key. Latch bolt is locked in a retracted position by key. When outside lever is locked, latch bolt is retracted by key from outside or by operating inside lever , unless latch bolt has been locked in a retracted position.

F44 Store Room or Closet Lock. Dead locking latch bolt operated by key from outside or by operating inside lever. Outside lever is always fixed. At the option of the individual manufacturer, operating the key in the outside lever shall permit the latch bolt to be retracted by operating the outside lever, providing the key cannot be removed in the unlocked position.

F45 Apartment, Exit or Public Toilet Lock. Dead locking latch bolt operated by lever from either side except when outside lever is locked by key from inside. When outside lever is locked, latch bolt is retracted by key from outside or by operating inside lever .

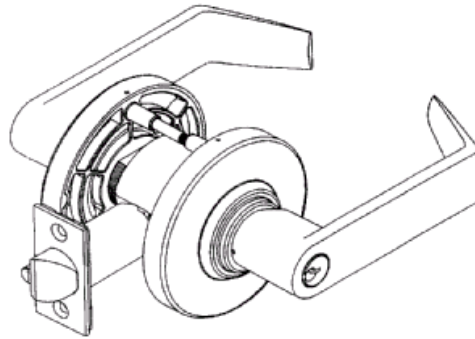
F46 Store Door Lock. Dead locking latch bolt operated by lever from either side except when both levers are locked by key from either side.

F47 Store Door Lock. Latch bolt operated by lever from either side. Dead bolt operated by key from either side.

F48 Hotel Guest Room, Club House, Dormitory or Apartment Entrance Lock. Dead locking latch bolt operated by lever from inside at all times. Outside lever always fixed. Latch bolt operated by key from outside except when push button inside is depressed, thus shutting out all keys except the emergency key. Depressing push button operates visual indicator in face of cylinder showing the room is occupied. Operating inside lever, or closing door releases indicator and shut out feature except when shut out is activated by a special procedure which shuts out all keys except emergency keys. At the option of the individual manufacturer, operating the key in the outside lever shall permit the latch bolt to be retracted by operating the outside lever, providing the key cannot be removed in the unlocked position.

6. DESCRIPTION AND FUNCTION NUMBERS OF SERIES 4000 BORED LOCKS AND LATCHES

Typical Bored Lock



6.1 In the following bored lock descriptions, the functions are described using lever trim for brevity and clarity. Models with knobs, paddles, thumbpieces, or turnpieces, offered by some manufacturers for certain functions are also permitted. Where keys or cylinders are referenced, other input devices are permitted. See ANSI/BHMA A156.5 for Cylinders and Input Devices. Some functions may be available with electrical operation in place of mechanical operation. See ANSI/BHMA A156.25 for Electrified Locking Devices. The basic function shall remain the same as described.

6.2 The latch bolt and its related working parts shall be contained in a factory assembled unit which shall connect with at least one of the lever or knob assemblies or retractor assembly. The unit passing through the cross bore of the door shall be firmly clamped or fastened to the door by the roses or rose subassemblies. Lock sets shall permit centering of assemblies at installation on doors within the thickness range given.

6.3 Bored lock fronts shall be fixed or adjustable beveled to 1/8 in. (3.2 mm) in 2 in. (51 mm). Flat fronts available if specified.

6.4 **Function Number Tests** See Chart 1 in appendix for summary of tests by function.

6.5 Function Descriptions

F75 Grades 1, 2 and 3. Passage or Closet Latch. Latch bolt operated by lever, from either side at all times.

F76A Grade 1 and 2. Privacy, Bedroom or Bath Lock. Latch bolt operated by lever from either side. Outside lever is locked by push button or other locking device inside and unlocked by emergency release outside, operating inside lever or closing door.

F76B Grades 2 and 3. Privacy, Bedroom or Bath Lock. Latch bolt operated by lever from either side except when outside lever is locked by locking device inside. Locking device shall automatically release when inside lever is operated or be in unlocked position before inside lever is operated. Emergency release on outside shall permit outside lever to operate latch bolt.

F77A Grade 1 and 2. Patio or Privacy Lock. Dead locking latch bolt operated by lever from either side. Outside lever is locked by push button or other locking device inside and unlocked by operating inside lever or closing door. Do not use on doors in rooms that have no other entrance.

F77B Grades 2 and 3. Patio and Privacy Lock. Dead locking latch bolt operated by lever from either side except when outside lever is locked by locking device inside. Locking device shall automatically release when inside lever is operated or be in the unlocked position before the lever is operated. Do not use on doors in rooms that have no other entrance.

F78 Grades 1 and 2. Communicating Lock. Dead locking latch bolt operated by lever from either side. Turn button or locking device on either side locks or unlocks opposite lever. Do not use on doors in rooms that have no other entrance.

F79 Grades 1 and 2. Communicating Lock. Dead locking latch bolt operated from inside by lever and from outside by thumb turn. Turning button or operating locking device in inside lever locks both lever and thumb turn. Turn button or other locking device does not release unless manually restored to unlocked position.

F80 Grades 1 and 2. Communicating Lock. Dead locking latch bolt operated by lever from either side. Turning key in either lever locks or unlocks its own lever independently. Do not use on doors in rooms that have no other entrance.

F81 Grades 1, 2 and 3. Entry Lock. Dead locking latch bolt operated by lever from either side except when outside lever is locked by turn button or other locking device inside. When outside lever is locked, latch bolt is operated by key in outside lever or by operating inside lever. Turn button or other locking device shall be manually operated to unlock outside lever. At the option of the individual manufacturer, operating the key in the outside lever shall permit the latch bolt to be retracted by operating the outside lever, providing the key cannot be removed in the unlocked position.

F82A Grade 1 and 2. Entry Lock. Dead locking latch bolt operated by lever from either side except when outside lever is locked by push button or other locking device on inside. When outside lever is locked, operating key in outside lever or operating inside lever unlocks push button or other locking device and retracts latch bolt. Closing door does not release push button or other locking device.

F82B Grades 2 and 3. Entry Lock. Dead locking latch bolt operated by lever from either side except when outside lever is locked by locking device on inside. When outside lever is locked, operating key in outside lever unlocks locking device. Locking device shall automatically release when inside lever is operated or be in the unlocked position before inside lever is operated.

F83 Grades 1, 2 and 3. Exit Lock. Dead locking latch bolt operated by lever from either side except when outside lever is locked by turn button or other locking device in inside. Turn button or other locking device shall be manually operated to unlock outside lever. Inside lever always operates latch bolt.

F84 Grades 1 and 2. Classroom Lock. Dead locking latch bolt operated by lever from either side except when outside lever is locked from outside by key. At the option of the individual manufacturer, operating the key in the lever shall permit the latch bolt to be retracted. When outside lever is locked, latch bolt is operated by inside lever.

F85 Grade 1. Holdback Lock. Dead locking latch bolt operated by lever from either side except when outside lever is locked from outside by key. Latch bolt is locked in a retracted position by key. When outside lever is locked, latch bolt is retracted by key from outside or by operating inside lever unless latch bolt has been locked in a retracted position.

F86 Grades 1, 2 and 3. Store Room or Closet Lock. Dead locking latch bolt operated by key in outside lever, or by operating inside lever. Outside lever is always inoperable. At the option of the individual manufacturer, operating the key in the outside lever shall permit the latch bolt to be retracted by operating the outside lever, providing the key cannot be removed in the unlocked position.