

ANSI/BHMA A156.5 - 2020
Revision of ANSI/BHMA A156.5-2014



STANDARD
FOR
CYLINDERS AND INPUT DEVICES FOR LOCKS



SPONSOR
BUILDERS HARDWARE MANUFACTURERS ASSOCIATION, INC

AMERICAN NATIONAL STANDARDS INSTITUTE
Approved April 1, 2020

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 he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, 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CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time.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 may receive the 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

Copyright © 2020 by the
Builders Hardware Manufacturers Association, Inc.
www.buildershardware.com

Printed in the USA

The Builders Hardware Manufacturers Association, Inc first published this standard February 1971. It was entitled "Standard 501 BHMA Product Standards Section E, Auxiliary Locks." ANSI approval was secured under the Canvass Method. BHMA was accredited on 21 March 1983 by ANSI as a sponsor using the Canvass Method.

FOREWORD (This Foreword is not a part of ANSI/BHMA A156.5)

This Standard is the result of the collective efforts of members of the Builders Hardware Manufacturers Association, Inc. who manufacture cylinders and input devices for locks.. The total Product Standards effort is a collection of standards , each covering a specific category of items.

Performance tests, and, where necessary, dimensional requirements, have been established to ensure safety, security and stability to which the public is entitled. 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 cutout 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, methods, and materials will be developed. With this in mind, the Association plans to update, correct, and revise these Standards on a regular basis. It shall also be the responsibility of manufacturers to request such appropriate revisions.

In most cases, products have been described in grade levels related to performance and security. Choice of grade and specific product is made on the basis of utility, aesthetics, security objectives and end use desired.

The BHMA numbers, which indicate types of hardware do not identify grade, finish, or design and are not intended to be used without necessary supplementary information. Individual manufacturers' catalogs are 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. Some communities require the use of exterior door locks having a dead bolt with a 1 in. (25.4 mm) projection for the purpose of providing greater security. Only functions compatible with the requirements of the applicable building codes are used.

In 2008, the BHMA subcommittee revising A156.5 amended the standard to recognize the increased application of electrical input products with analogous functions to the traditional mechanical cylinders. At the same time, the auxiliary locking products were removed and placed in a new dedicated standard, A156.36.

TABLE OF CONTENTS

1. SCOPE.....	5
2. DEFINITIONS.....	5
3. GENERAL	7
4. EXPLANATION OF IDENTIFYING NUMBERS	7
5. TEST METHODS AND EQUIPMENT.....	10
6. TESTS FOR MECHANICAL CYLINDERS.....	13
7 REQUIREMENTS FOR ELECTRIFIED INPUT DEVICES.....	18
8. REQUIREMENTS FOR MECHANICAL PUSHBUTTON DEVICES.....	22
APPENDIX.....	Error! Bookmark not defined.22

1. SCOPE

1.1 ANSI/BHMA A156.5 establishes requirements for mechanical cylinders, electrified input devices, and push button mechanisms, which include operational and strength tests.

1.2 Related products are covered in additional BHMA Publications: ANSI/BHMA A156.25 for Electrified Locking Devices, ANSI/BHMA A156.28 for Master Keying Systems, and ANSI/BHMA A156.30 for High Security Cylinders and Input Devices.

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

1.4 The intent of this standard is to provide fair, uniform and repeatable testing of locking cylinders and input devices used in commercially available door hardware. Each testing section of the standard identifies the tools and/or fixtures applicable to that particular test. We recognize that any cylinder can be compromised or destroyed by excessive force or extended time or by the use of custom designed tools or techniques. For cylinders and input devices to be used beyond the scope of this standard, we recommend the guidance of or consultation with an independent physical security specialist.

1.5 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, you should consult a qualified locksmith or other security professional. For applications where pick resistance and other higher security protections are required consider locks meeting UL 437-2013 Key Locks, or ANSI/BHMA A156.30-2019 for High Security Cylinders.

1.6 **Grade Qualifications** Two classifications of tests are described in this Standard, Operational and Security. Manufacturers shall indicate the Grade level. A Grade 1 product shall meet all Grade 1 criteria, a Grade 2 product shall meet all Grade 2 criteria, and a Grade 3 product shall meet all Grade 3 criteria in each classification.

2. DEFINITIONS

2.1 **Bitting** 1. the number(s) which represent(s) the dimensions of the key, 2. the actual cut(s) or combination of a key

2.3 **Cam** 1. a lock or cylinder component which transfers the rotational motion of a key or cylinder plug to the bolt works of a lock, 2. the bolt of a cam lock.

2.4 **Card Readers** Insertion or swipe credit-card readers decode magnetic stripes and smart cards (memory cards and chip cards).

2.5 **Contact Memory Readers** Electrical contact readers decode embedded EEROM chips and “touch memory” modules.

2.6 **Credential** A key, keycard, electronic key fob, PIN (personal identification number), biometric attribute, or other device, used in contact or proximity of the input device to transfer a code required for unlocking the locking device, or communicating with it for other access control purposes.

2.7 **Cylinder** The subassembly of a mechanical lock containing a plug with keyway and a body with movable retainers.

2.8 Cylinder Body The portion of a cylinder that surrounds the plug and contains the tumbler mechanism. The cylinder body is sometimes called a cylinder shell.

2.9 Cylinder Guard That portion that surrounds the otherwise exposed portion of a cylinder to protect the cylinder from wrenching, cutting, pulling or prying.

2.10 Cylinder Housing The portion of a mechanical lock that surrounds and retains the cylinder body. It is often part of a lock itself.

2.11 Cylinder Plug A component of the cylinder within the body, which is actuated when the correct key is used.

2.12 Electrified Input Devices The electrified locks equivalent to a cylinder for reading a credential and transmitting the “key code” to the controlling device. Examples include card readers, keypads, contact memory key readers, radio frequency (proximity) readers, optical readers, and biometric readers.

2.13 Input Devices electrified input devices and push button mechanism.

2.14 Interchangeable Core (IC) A cylinder that is removed from the lock with a designated key.

2.15 Interchangeable Core (IC) Mortise Cylinder The combination of a mortise IC housing, integrated with a corresponding interchangeable core cylinder.

2.16 Interchangeable Core (IC) Rim Cylinder The combination of a rim cylinder IC housing, integrated with a corresponding interchangeable core cylinder.

2.17 Key A properly combined device specifically intended to operate a corresponding cylinder.

2.18 Keypads Membrane or switch input readers decode digital pin codes mechanically entered.

2.19 Keyway The slot or hole in a cylinder plug within which a key is fully inserted to operate the cylinder.

2.20 Mechanical Pushbutton Mechanism Decodes the input and releases a control shaft to activate the lock drive mechanism.

2.21 Mortise Cylinder A threaded cylinder, regularly supplied with a cam to actuate the lock mechanism.

2.22 Movable Detainer Part of the mechanism of the cylinder which first should be moved by the key into a predetermined position before the key or plug can release. Examples include components known as pins, side bars, discs, and the like.

2.23 Optical Readers Single or bi-directional readers employing optical sensors for decoding visible credentials (bar codes and diagrams) or infrared serial transmissions.

2.24 Push Button Mechanism A mechanical coding device used in place of a key and cylinder.

2.25 Radio Frequency Readers Single or bi-directional readers employing antennas for decoding contactless RFID tags and proximity badges.

2.26 Recessed Cylinder A cylinder where the cylinder head is flush with, or recessed below, the outside surface of the trim to protect the cylinder from wrenching, cutting, pulling or prying.

2.27 Rim Cylinder A cylinder typically used with surface applied locks and attached with a back plate and machine screws. It has a tailpiece to actuate the lock mechanism.

2.28 Tailpiece A bar projecting from the back of a rim, bored lock cylinder or a push button mechanism engaging the lock mechanism and when rotated by the key or turn either locks or unlocks the lock.

2.29 **Turn** The component that projects or retracts a dead bolt or latch bolt by turning. Sometimes called a turn piece or thumb turn.

3. GENERAL

3.1 **Tolerances** Where only minus tolerances are given, the dimensions are permitted to be exceeded at the option of the manufacturers.

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

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

3.4 **All mechanical cylinders** shall have five or more movable retainers to qualify for this standard. Modifications of these requirements to provide greater security are permitted.

3.5 **Where manipulation of the lock with a screwdriver** is required, a maximum of five minutes testing time shall be allowed. The screwdriver shall be a commercially available type with a blade not exceeding 6 in. (150 mm) in length or 10 in. (250 mm) overall length. It is not intended that the screwdriver be used to attack the lock mount or fixture or cause further damage to the lock.

4. EXPLANATION OF IDENTIFYING NUMBERS

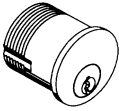
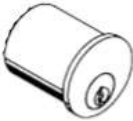
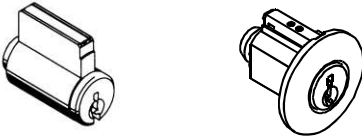
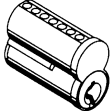
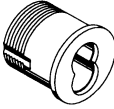
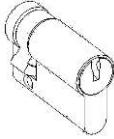
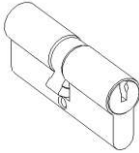
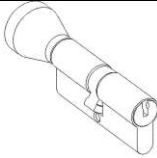
4.1 First letter denotes BHMA Product section E.

4.2 First numeral indicates general material used

Numeral	Description	Numeral	Description
0	Optional material	5	Stainless steel, 300 series
1	Cast, forged or extruded brass or bronze	6	Malleable iron
2	Wrought brass or bronze	7	Cast iron
3	Cast, forged or extruded aluminum	8	Wrought steel
4	Wrought aluminum	9	Zinc alloys

4.3 Second numeral identifies the type of product: 9 – Cylinders and Input Devices

4.4 Third and fourth numerals identify the function of the products. Note: these are arbitrary numbers assigned so that each type number shall be different per the following table:

Cylinder Type		Function Number
Mortise Cylinder		21
Rim Cylinder		22
Bored Lock Cylinders		23
Interchangeable Core (IC) Cylinder		24
Mortise IC Housing		25
Rim IC Housing		26
Single Cylinder European Profile		27
Double Cylinder European Profile		28
Single Cylinder European Profile with Thumbturn		29