

**Building hardware - Mechatronic cylinders -  
Requirements and test methods**

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## EESTI STANDARDI EESSÕNA

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See Eesti standard EVS-EN 15684:2012 sisaldab Euroopa standardi EN 15684:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 15684:2012 consists of the English text of the European standard EN 15684:2012.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
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English Version

**Building hardware - Mechatronic cylinders - Requirements and  
test methods**

Quincaillerie pour le bâtiment - Cylindres mécatroniques -  
Exigences et méthodes d'essai

Schlösser und Baubeschläge - Mechatronische  
Schließzylinder - Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 23 September 2012.

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## Foreword

This document (EN 15684:2012) has been prepared by Technical Committee CEN/TC 33 “Doors, windows, shutters, building hardware and curtain walling”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2013, and conflicting national standards shall be withdrawn at the latest by April 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

Mechanical cylinders have been used to provide security and control of locks. Increasing demand for higher security, flexibility of master key systems, flow control, copy control of keys, etc. have made it desirable to incorporate additional functions to such mechanical cylinders, and new technologies have made it possible to develop electronically controlled cylinders.

Mechanical performance of the mechatronic cylinder are based on EN 1303:2005.

Mechatronic Cylinder can technically be described in three main designs:

- a cylinder with both electrically and mechanically operated locking parts;
- a cylinder with electrically operated locking part and a key for mechanically rotating the plug;
- a cylinder with electrically operated locking part and with manual operated opening/closing function.

Increasingly such Mechatronic Cylinders (MCs) form a part of the security system of a building and may involve the use of electrical locking and controlling elements.

The performance tests incorporated in this European Standard are considered to be reproducible and as such will provide a consistent and objective assessment of the performance of these devices throughout CEN Member States.

It is assumed that mechatronic cylinders will conform to the legal regulations i.e. of the Electromagnetic Compatibility (**EMC**) - **Directive** 2004/108/EG, The Low Voltage (LV) - Directive 2006/95/EG, Radio & Telecommunications Terminal Equipment (**R&TTE**) - **Directive** 1999/5/EC and other relevant directives concerning electronic apparatus.

On occasions there may be a need for additional functions within the design of the cylinder. Purchasers should satisfy themselves that the products are suitable for their intended use. This is particularly important when the operation of such additional functions is safety-related. Accordingly, this European Standard includes assessment of such features when they are included in the cylinder design.

## 1 Scope

This European Standard specifies requirements for performance and testing of Mechatronic Cylinders and their keys and/or electronic keys.

It applies to cylinders for such locks designed to be normally used in buildings. It also applies to cylinders for use with other hardware products such as exit devices, door operators, etc. or monitoring facilities and alarm systems.

It establishes categories of use based on performance tests and grades of security based on design requirements and on performance tests that simulate attack.

This European Standard includes assessment of additional features when they are included in the cylinder design.

This European Standard does not cover any other element of a security system, other than those directly involved in the control of a cylinder.

The suitability of cylinders for use on fire or smoke-door assemblies is determined by fire performance tests conducted in addition to the performance testing specified by this European Standard; see Annex A.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 636:2003, *Plywood — Specifications*

EN 1303:2005, *Building hardware — Cylinders for locks — Requirements and test methods*

EN 1634-1, *Fire resistance and smoke control tests for door, shutter and openable window assemblies and elements of building hardware — Part 1: Fire resistance tests for doors, shutters and openable windows*

EN 1634-2, *Fire resistance and smoke control tests for door, shutter and openable window assemblies and elements of building hardware — Part 2: Fire resistance characterisation test for elements of building hardware*

EN 1634-3, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware — Part 3: Smoke control test for door and shutter assemblies*

EN 1670:2007, *Building hardware — Corrosion resistance — Requirements and test methods*

EN 1906, *Building hardware — Lever handles and knob furniture — Requirements and test methods*

EN 60068-2-1, *Environmental testing — Part 2-1: Tests — Test A: Cold (IEC 60068-2-1)*

EN 60068-2-2, *Environmental testing — Part 2-2: Tests — Test B: Dry heat (IEC 60068-2-2)*

EN 60068-2-6:2008, *Environmental testing — Part 2-6: Tests — Test Fc: Vibration (sinusoidal) (IEC 60068-2-6:2007)*

EN 60068-2-29:1993, *Environmental testing — Part 2: Tests — Test Eb and guidance: Bump (IEC 60068-2-29:1987)*



EN 60068-2-30:2005, *Environmental testing — Part 2-30: Tests — Test Db: Damp heat, cyclic (12 h + 12 h cycle) (IEC 60068-2-30:2005)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 61000-4-2, *Electromagnetic compatibility (EMC) — Part 4-2: Testing and measurement techniques — Electrostatic discharge immunity test (IEC 61000-4-2)*

EN ISO 10666:1999, *Drilling screws with tapping screw thread — Mechanical and functional properties (ISO 10666:1999)*

EN ISO 15480, *Hexagon washer head drilling screws with tapping screw thread (ISO 15480)*

EN ISO 15481, *Cross recessed pan head drilling screws with tapping screw thread (ISO 15481)*

EN ISO 15482, *Cross recessed countersunk head drilling screws with tapping screw thread (ISO 15482)*

EN ISO 15483, *Cross recessed raised countersunk head drilling screws with tapping screw thread (ISO 15483)*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### **audit trail capability**

degree of functionality intended to provide a record of mechatronic cylinder and/or its electronic key events that will identify the individual credential used to operate the mechatronic cylinder

#### 3.2

##### **attack**

unauthorised attempt to open a mechatronic cylinder by various techniques (destructive and or non-destructive techniques)

#### 3.3

##### **cam**

component of the cylinder to provide the movement necessary to effect locking

#### 3.4

##### **cylinder**

device, usually distinct from its associated lock or latch, operated by a key

#### 3.5

##### **effective differ**

difference between cylinders of similar design, achieved only by the movable detainer, which enables each cylinder to be operated only by its own key

Note 1 to entry: The number of effective differs is equal to the number of theoretical differs after deduction of the differs excluded by the manufacturer due to technical constraints and those differs excluded in accordance with the restraints of 4.8.4

#### 3.6

##### **electronic dummy key**

electronic key which cannot electronically operate the mechatronic cylinder

Note 1 to entry: If applicable the electronic dummy key has the right mechanical code.