



SLOVENSKI STANDARD
SIST EN 12209:2004
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Building hardware - Locks and latches - Mechanically operated locks, latches and locking plates - Requirements and test methods

Schlösser und Baubeschläge - Schlösser - Mechanisch betätigte Schlösser und Schließbleche - Anforderungen und Prüfverfahren

Quincaillerie pour le bâtiment - Serrures - Serrures mécaniques et gâches - Exigences et méthodes d'essai

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ICS 91.190

English version

Building hardware - Locks and latches - Mechanically operated
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Prüfverfahren

This European Standard was approved by CEN on 27 June 2003.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 12209:2003) 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of an identical text or by endorsement, at the latest by June 2004, and conflicting national standards shall be withdrawn at the latest by September 2005.

No existing European Standard is superseded.

This European Standard is one of a series of European Standards dedicated to building hardware products.

Complementing this European Standard is a draft European Standard for electromechanically operated locks and locking plates (prEN 14846) and a draft European Standard for mechanically operated multi-point locks (WI 00033250).

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

Annexes A, B and C are normative. Annex D is informative.

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

This document includes a Bibliography.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies requirements and test methods for durability, strength, security, and function of mechanically operated locks and latches and their locking plates for use in doors, window doors and entrance doors in buildings.

Locks, latches and their locking plates used in fire resistant and/or smoke control door assemblies require additional attributes in order to comply with the Essential Requirement "Safety in case of fire" either independently or as a part of a complete assembly. Additional requirements for locks and latches and their locking plates used on fire resistant and/or smoke control door assemblies are specified in annex A.

The following locking devices and associated products are not covered by this European Standard: cylinders for locks, handles, electro-mechanically operated locks and striking plates, multi-point locks and their locking plates, locks for windows, padlocks, locks for safes, furniture locks and prison locks.

NOTE A lock meeting this standard can at the same time be part of an exit device according to EN 179 or EN 1125.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

[SIST EN 12209:2004](#)

EN 1634-1, *Fire resistance tests for door and shutter assemblies - Part 1: Fire doors and shutters.*

[b7c02dec912d/sist-en-12209-2004](#)

EN 1670:1998, *Building hardware — Corrosion resistance — Requirements and test methods.*

ISO 10899, *High-speed steel two-flute twist drills — Technical specifications.*

3 Terms, definitions, symbols and units

3.1 Terms and definitions

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

3.1.1

bolt

movable part of a lock or latch that usually engages a component fixed to a frame, and withdraws into the case

3.1.2

bored latch set

fastener that comprises an integral assembly of door furniture with a tubular latch

3.1.3

bored lock set

fastener that comprises an integral assembly of door furniture with a tubular lock

3.1.4**case**

part of a lock or latch in which the lock mechanism and/or latch action is housed

3.1.5**cylinder**

device, usually separate from but engaging with its associated lock or latch, that contains the parts operated by the key

3.1.6**cylinder lock**

lock in which the lock mechanism is operated by one or more cylinders

3.1.7**deadbolt**

bolt that is operated in both directions by a key, handle and/or thumb turn

3.1.8**detaining element**

part of a movable member which is moved by the key into a pre-determined position in order for the bolt to be able to move into an opening position

3.1.9**differ**

variation between lock mechanism of similar design, achieved by the detaining elements, which allows each lock to be operated only by its own key

3.1.10**effective differ**

difference between lock or key recognition systems of similar design achieved only by the detaining elements which allows each lock or key recognition systems to be operated only by its own key. The number of effective differs is equal to the number of theoretical differs after deduction of the differs suppressed by the manufacturer due to technical constraints

3.1.11**follower**

part of a lock that operates the bolt or bolts when turned by a spindle

3.1.12**forend**

part of a case through which the lock is fixed to the door and through which the latch bolt and/or deadbolt pass

3.1.13**key**

device that is removable and portable and is used to operate the lock or latch

3.1.14**latch**

self engaging fastener which secures a movable component (e.g. door) in a closed position and which can be released by hand

3.1.15**latch action**

arrangement and performance of the constituent parts that operate a latch bolt

3.1.16**latch bolt**

moving part of the latch that engages the locking plate

3.1.17

lock

fastener which secures a movable component in a closed position within an opening and which is operated by a key or other device

3.1.18

locking plate

component, fixed to a frame to engage a bolt, or bolts

NOTE Alternative terms for this are strike plate, keep or staple.

3.1.19

locking snib

device, usually in the form of a small lever or knob, which can be operated to prevent the bolt from being thrown or withdrawn, or to change the function of a lock or latch

3.1.20

lock mechanism

constituent parts of a lock that operate the deadbolt and, where required, provide the differs

3.1.21

multi-point lock

lock comprising more than one locking point between door leaf and frame, inter-linked and centrally controlled

3.2 Symbols, units and abbreviated terms

For the purposes of this European Standard, the following symbols shown in Table 1 and Figure 1 shall apply.

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Table 1 — Symbols

Symbol	Definition	Unit
F1	Lateral force on latch bolt (strength test)	kN
F2	Return force of latch bolt	N
F3	Lateral force on latch bolt and locking plate (durability test)	N
F4	Lateral force on deadbolt and locking plate	kN
F5	End load on deadbolt or locking plate	kN
F6	Pull force on hook/claw bolt or locking plate	kN
F7	Disengaging force on hook/claw bolt	kN
F8	Force on locating device or lifting force on locking plate	kN
F9	Pull force on knobs ^a	kN
F10	Door closing force (operating requirement) ^b	N
F11	Door closing force (durability test) ^b	N
L1	Deadbolt projection ^c	mm
L2	Resulting projection ^c	mm
L3	Internal depth of box at locking plate ^d	mm
M1	Torque to withdraw the latch bolt with key	Nm
M2	Torque to withdraw the latch bolt with handle, spring handle or knob	Nm
M3	Torque to operate the deadbolt with key	Nm
M4	Torque to operate the deadbolt with handle	Nm
M5	Forcing torque on the follower	Nm
M7	Torque on key	Nm
M8	Restoring torque	Nm
M9	Forcing torque on knobs or lever handles	Nm
M10	Torque resistance of Rim lock with lockable handle / knob	Nm
N1	Number of detaining elements	-
N2	Number of effective differs	-
N3	Number of step heights on key	-
T	Temperature	°C
t	Drill – time	min
^a	See Figure B.6.	
^b	See Figure B.2.	
^c	See Figure B.4.	
^d	See Figure B.8.	

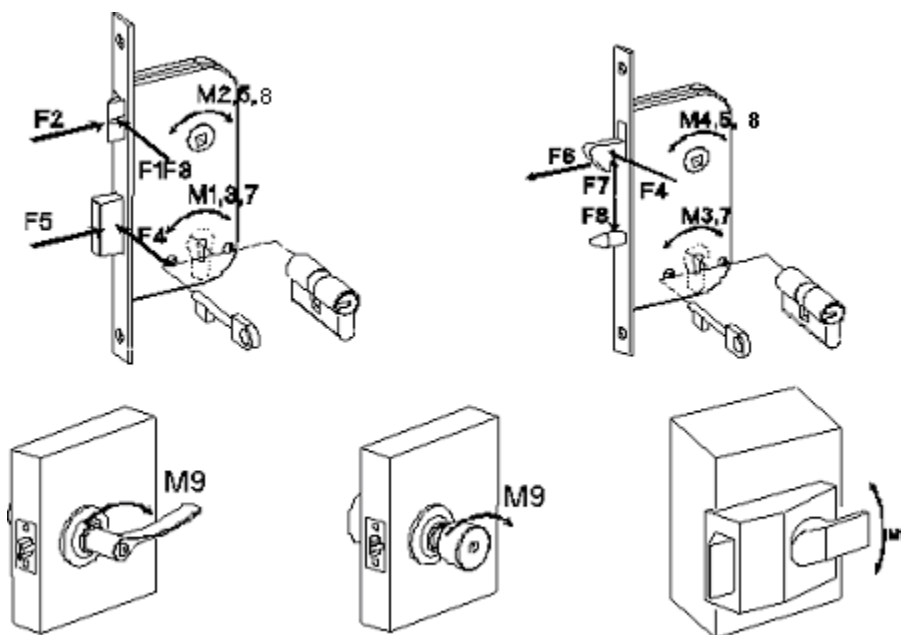


Figure 1 — Application of forces and torques to locks and latches classification

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4 Classification

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4.1 General <https://standards.iteh.ai/catalog/standards/sist/9bc13152-a357-4ace-b33b-b7c02dee912d/sist-en-12209-2004>

4.1.1 For the purpose of this European Standard, mechanically operated locks and latches shall be classified according to the eleven character classification system described in 4.2.1 to 4.2.11.

Locking plates intended to be sold separately from the lock or latch may be coded accordingly using the same classification system but with grades only in those categories that are relevant to locking plates.

4.1.2 All locks regardless of classification shall fulfil 5.1.1 and 5.1.2.

4.2 Classification for mechanically operated locks, latches and locking plates

Table 2 — Classification

1	2	3	4	5	6	7	8	9	10	11
Category of use	Durability and load on latch bolt	Door mass and closing force	Suitability for use on fire / smoke doors	Safety	Corrosion resistance and temperature	Security and drill resistance	Field of door application	Type of key operation and locking	Type of spindle operation	Key identification

4.2.1 Category of use (first digit)

Three grades are identified in accordance with requirements stated in 5.2.1 to 5.2.4.

- grade 1: for use by people with a high incentive to exercise care and with a small chance of misuse, e.g. residential doors.
- grade 2: for use by people with some incentive to exercise care but where there is some chance of misuse, e.g. office doors.
- grade 3 : for use by the public where there is little incentive to exercise care and where there is a high chance of misuse, e.g. doors in public buildings.

4.2.2 Durability (second digit) (standards.iteh.ai)

Twelve grades of durability and load on latch bolt are identified.

- grade A: 50 000 test cycles; no load on latch bolt;
- grade B: 100 000 test cycles; no load on latch bolt;
- grade C: 200 000 test cycles; no load on latch bolt;
- grade F: 50 000 test cycles; 10 N load on latch bolt;
- grade G: 100 000 test cycles; 10 N load on latch bolt;
- grade H: 200 000 test cycles; 10 N load on latch bolt;
- grade L: 100 000 test cycles; 25 N load on latch bolt;
- grade M: 200 000 test cycles; 25 N load on latch bolt;
- grade R: 100 000 test cycles; 50 N load on latch bolt;
- grade S: 200 000 test cycles; 50 N load on latch bolt;
- grade W: 100 000 test cycles; 120 N load on latch bolt;

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- grade X: 200 000 test cycles; 120 N load on latch bolt.

NOTE The above information relates to latch action only. Corresponding durability requirements based on number of cycles, apply to the dead bolt and snib mechanisms as shown in Table 4.

4.2.3 Door mass and closing force (third digit)

Nine grades of door mass and closing force are identified.

- grade 1: up to 100 kg door mass; 50 N maximum closing force;
- grade 2: up to 200 kg door mass; 50 N maximum closing force;
- grade 3: above 200 kg door mass or specified by the manufacturer; 50 N maximum closing force;
- grade 4: up to 100 kg door mass; 25 N maximum closing force;
- grade 5: up to 200 kg door mass; 25 N maximum closing force;
- grade 6: above 200 kg door mass or specified by the manufacturer; 25 N maximum closing force;
- grade 7: up to 100 kg door mass; 15 N maximum closing force;
- grade 8: up to 200 kg door mass; 15 N maximum closing force;
- grade 9: above 200 kg door mass or specified by the manufacturer; 15 N maximum closing force.

4.2.4 Suitability for use on fire/smoke doors (fourth digit)

Two grades of suitability for use on fire/smoke doors are identified.

- grade 0: not approved for use on fire/smoke resisting door assemblies;
- grade 1: suitable for use on fire/smoke resisting door assemblies, subject to satisfactory assessment of the contribution of the lock or latch to the fire resistance of specified fire/smoke resisting door assemblies. Such assessment is beyond the scope of this European Standard.

Annex A indicates additional requirements for locks and latches to this grade.

4.2.5 Safety (fifth digit)

Only one grade of safety is identified.

- grade 0: no safety requirement.

NOTE See EN 179 and EN 1125 for locks, latches and locking plates that are part of exit devices for use on emergency or panic exit doors.

4.2.6 Corrosion resistance and temperature (sixth digit)

Eight grades of corrosion resistance and temperature requirement are identified.

- grade 0: no defined corrosion resistance; no temperature requirement;

- grade A: low corrosion resistance; no temperature requirement;
- grade B: moderate corrosion resistance; no temperature requirement;
- grade C: high corrosion resistance; no temperature requirement;
- grade D: very high corrosion resistance; no temperature requirement;
- grade E: moderate corrosion resistance; temperature requirement: from –20 °C to +80 °C;
- grade F: high corrosion resistance; temperature requirement: from –20 °C to +80 °C;
- grade G: very high corrosion resistance; temperature requirement: from –20 °C to +80 °C.

4.2.7 Security and drill resistance (seventh digit)

Seven grades of security and drill resistance are identified in Table 5.

- grade 1: Minimum security and no drill resistance;
- grade 2: Low security and no drill resistance;
- grade 3: Medium security and no drill resistance;
- grade 4: High security and no drill resistance;
- grade 5: High security with drill resistance;
- grade 6: Very high security and no drill resistance;
- grade 7: Very high security with drill resistance.

4.2.8 Field of door application (eighth digit)

15 grades of door application are identified in Table 3.

Table 3 — Field of door application

Grade	Type	Application 1	Application 2	Application 3
A	Mortice	Unrestricted application		
B	Mortice	Hinged door		
C	Mortice	Sliding door		
D	Rim	Unrestricted application		
E	Rim	Hinged door		
F	Rim	Sliding door		
G	Bored lock	Unrestricted application		
H	Mortice	Hinged door	Supported	
J	Rim	Hinged door	Inwards	
K	Mortice	Hinged door		Locked from inside
L	Mortice	Sliding door		Locked from inside
M	Rim	Hinged door		Locked from inside
N	Rim	Sliding door		Locked from inside
P	Mortice	Hinged door	Supported	Locked from inside
R	Rim	Hinged door	Inwards	Locked from inside

4.2.9 Type of key operation and locking (ninth digit)

Nine grades of type of key operation and locking are identified.

- grade 0: Not applicable;
- grade A: cylinder lock or latch ; manually locking;
- grade B: cylinder lock or latch; automatically locking;
- grade C: cylinder lock or latch; manually locking with intermediate locking;
- grade D: lever lock or latch; manually locking;
- grade E: lever lock or latch; automatically locking;
- grade F: lever lock or latch; manually locking with intermediate locking;
- grade G: lock or latch without key operation; manually locking;
- grade H: lock without key operation; automatically locking;

4.2.10 Type of spindle operation (tenth digit)

Five grades of spindle operation are identified.

- grade 0: lock or latch without follower
- grade 1: lock or latch for knob or sprung lever handle operation;
- grade 2: lock or latch for unsprung lever handle operation;
- grade 3: lock or latch for heavy duty unsprung lever handle operation;
- grade 4: lock or latch for heavy duty unsprung lever handle operation specified by the manufacturer.

4.2.11 Key identification requirement (eleventh digit)

Nine grades are identified from 0 to H.

- grade 0: No requirements;
- grade A: Minimum three detaining elements;
- grade B: Minimum five detaining elements;
- grade C: Minimum five detaining elements, extended number of effective differs;
- grade D: Minimum six detaining elements;
- grade E: Minimum six detaining elements, extended number of effective differs;

- grade F: Minimum seven detaining elements;
- grade G: Minimum seven detaining g elements, extended number of effective differs;
- grade H: Minimum eight detaining elements, extended number of effective differs.

4.2.12 Example for classification of locks, latches and their locking plates

2	H	5	1	0	E	5	A	F	2	C
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This indicates a mechanically operated lock and locking plate for use in an application where people have an incentive to exercise care, able to withstand a durability of 200,000 cycles with a 10 N load on the latch bolt, on a door with a mass of up to 200 kg and a maximum closing force of 25 N, suitable for use on a fire/smoke resisting door assembly, no safety requirement, moderate corrosion resistance in temperatures ranging from -20°C to $+80^{\circ}\text{C}$, with high security and drill resistance for use in any mortice application, with a manual locking lever lock or latch, unsprung lever handle operation, a minimum of five deadlocking elements and an extended number of effective differs.

5 Requirements

5.1 General

5.1.1 Dangerous substances

Materials in products shall not release any dangerous substances in excess of the maximum levels specified in any relevant European Standard for the material and in any national regulations in the member state of destination.

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5.1.2 Return force of latch bolt

When tested in accordance with 6.1.2, the return force of the latch bolt shall not be less than $F_2 = 2,5 \text{ N}$ (see Figure 1).

5.2 Category of use

5.2.1 Resistance to side load on latch bolt.

When tested in accordance with 6.2.1, the lock or latch shall resist a side load of F_1 (see Figure 1).

- grade 1: 2 kN
- grade 2 3 kN
- grade 3: 3 kN

5.2.2 Torque to operate deadbolt

When tested in accordance with 6.2.2:

5.2.2.1 the torque on the key to operate the deadbolt shall not exceed $M_3 = 1,5 \text{ Nm}$ (see Figure 1).