

ICS 91.190

English version

## Building hardware - Locks and latches - Mechanically operated locks, latches and locking plates - Requirements and test methods

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

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

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

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

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.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

<b>Contents .....</b>	<b>page</b>
<b>Foreword.....</b>	<b>3</b>
<b>1 Scope.....</b>	<b>4</b>
<b>2 Normative references.....</b>	<b>4</b>
<b>3 Terms, definitions, symbols and units.....</b>	<b>4</b>
<b>3.1 Terms and definitions.....</b>	<b>4</b>
<b>3.2 Symbols, units and abbreviated terms .....</b>	<b>6</b>
<b>4 Classification .....</b>	<b>8</b>
<b>4.1 General.....</b>	<b>8</b>
<b>4.2 Classification for mechanically operated locks, latches and locking plates.....</b>	<b>9</b>
<b>5 Requirements .....</b>	<b>13</b>
<b>5.1 General.....</b>	<b>13</b>
<b>5.2 Category of use .....</b>	<b>13</b>
<b>5.3 Durability.....</b>	<b>14</b>
<b>5.4 Door mass and closing force.....</b>	<b>15</b>
<b>5.5 Suitability for use on fire / smoke doors.....</b>	<b>15</b>
<b>5.6 Safety.....</b>	<b>15</b>
<b>5.7 Corrosion resistance and temperature.....</b>	<b>15</b>
<b>5.8 Security .....</b>	<b>15</b>
<b>5.9 Field of door application .....</b>	<b>20</b>
<b>5.10 Type of key operation and locking.....</b>	<b>21</b>
<b>5.11 Type of spindle operation .....</b>	<b>21</b>
<b>5.12 Key identification requirement .....</b>	<b>22</b>
<b>6 Test methods .....</b>	<b>23</b>
<b>6.1 General.....</b>	<b>23</b>
<b>6.2 Category of use .....</b>	<b>25</b>
<b>6.3 Durability.....</b>	<b>26</b>
<b>6.4 Door mass and closing force.....</b>	<b>28</b>
<b>6.5 Suitability for use on fire / smoke doors.....</b>	<b>28</b>
<b>6.6 Safety.....</b>	<b>28</b>
<b>6.7 Corrosion resistance and temperature.....</b>	<b>28</b>
<b>6.8 Security .....</b>	<b>29</b>
<b>6.9 Field of door application .....</b>	<b>32</b>
<b>6.10 Type of key operation and locking.....</b>	<b>32</b>
<b>6.11 Spindle operation .....</b>	<b>33</b>
<b>6.12 Key identification .....</b>	<b>34</b>
<b>7 Marking.....</b>	<b>34</b>
<b>8 Evaluation of conformity .....</b>	<b>34</b>
<b>8.1 Initial type test .....</b>	<b>34</b>
<b>8.2 Factory production control .....</b>	<b>35</b>
<b>8.3 Further testing of samples .....</b>	<b>35</b>
<b>Annex A (normative) Fire resistance requirement.....</b>	<b>36</b>
<b>Annex B (normative) Illustration of test apparatus for locks and latches.....</b>	<b>37</b>
<b>Annex C (normative) Test sampling and sequencing for locks and latches.....</b>	<b>46</b>
<b>Annex D (informative) Field of door application.....</b>	<b>49</b>
<b>Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive (89/106/EEC).....</b>	<b>50</b>
<b>Bibliography .....</b>	<b>55</b>

## 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).

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

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****latching 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.

Table 1 — Symbols

Symbol Test parameter	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 <sup>a</sup>	kN
F10	Door closing force (operating requirement) <sup>b</sup>	N
F11	Door closing force (durability test) <sup>b</sup>	N
L1	Deadbolt projection <sup>c</sup>	mm
L2	Resulting projection <sup>c</sup>	mm
L3	Internal depth of box at locking plate <sup>d</sup>	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
<sup>a</sup>	See Figure B.6.	
<sup>b</sup>	See Figure B.2.	
<sup>c</sup>	See Figure B.4.	
<sup>d</sup>	See Figure B.8.	

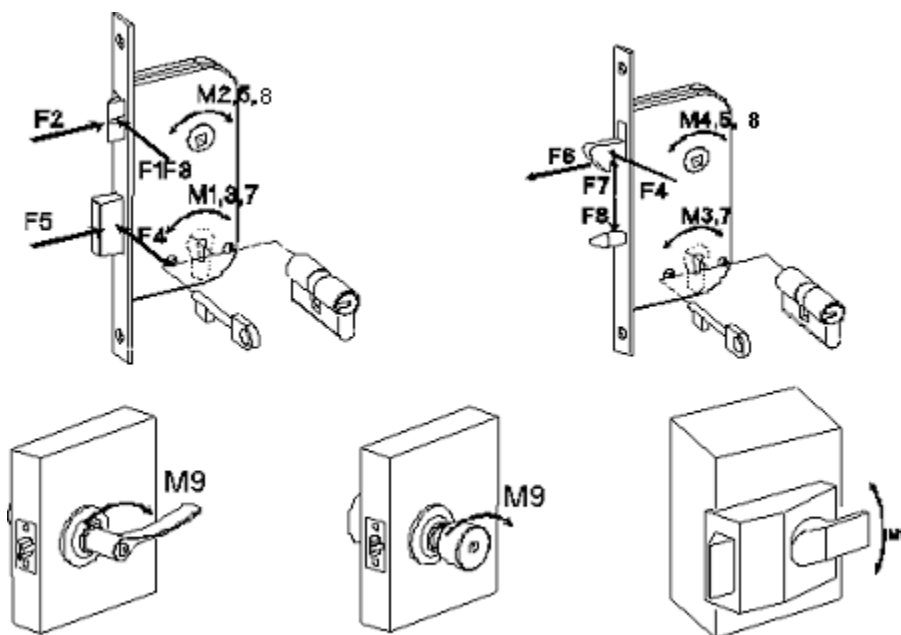


Figure 1 — Application of forces and torques to locks and latches classification

## 4 Classification

### 4.1 General

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)

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;

## EN 12209:2003 (E)

- 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
---	---	---	---	---	---	---	---	---	---	---

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  $-20^{\circ}\text{C}$  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.

#### 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).

5.2.2.2 the torque on the handle to operate the deadbolt shall not exceed  $M4 = 3 \text{ Nm}$  (see Figure 1).

### 5.2.3 Strength of normal latch action and stops

When tested in accordance with 6.2.3, the latch components and travel limit stops shall resist a torque (see  $M5$  in Figure 1) of:

- grade 1: 20 Nm
- grade 2: 40 Nm
- grade 3: 60 Nm

The latch action shall function correctly after this test, fulfilling the requirements of 5.11.1.

### 5.2.4 Torque resistance of Rim lock with lockable handle / knob

When tested in accordance with 6.2.4 the locked handle or knob (where applicable) shall resist a torque of  $M10$ , where  $M10 \text{ (Nm)} = 0,4 \text{ (kN)} \times \text{maximum radius in mm of the handle / knob}$  after which the lock or latch shall function normally.

## 5.3 Durability

### 5.3.1 Durability of latch action

When tested in accordance with 6.3.1, the latch action shall complete the minimum number of cycles at the appropriate load according to the grade selected in 4.2.2.

The latch action shall function correctly after this test fulfilling the requirements 5.4.2 and 5.11.1.

### 5.3.2 Durability of deadbolt mechanism

When tested in accordance with 6.3.2, the deadbolt mechanism shall complete the minimum number of cycles according to the grade selected in Table 4. The deadbolt mechanism shall function correctly after this test fulfilling the requirements 5.2.2.

Table 4 — Durability requirements

Grade	Latch action	Deadbolt manually locking	Deadbolt automatically locking	Snib mechanism
A, F,	50 000	10 000	50 000	10 000
B, G, L, R, W	100 000	25 000	100 000	25 000
C, H, M, S, X	200 000	50 000	200 000	25 000

### 5.3.3 Durability of locking snib mechanism

When tested in accordance with 6.3.3, the locking snib mechanism shall complete the minimum number of cycles specified in Table 4. The mechanism shall operate after the test.

## 5.4 Door mass and closing force

### 5.4.1 Door mass

The dimensions and mass of the test door are described in 4.2.3 and 6.1.

### 5.4.2 Closing force

When tested in accordance with 6.4.2, a closing force of F10, according to 4.2.3 shall be sufficient to enable the latch bolt to correctly engage the locking plate every time.

## 5.5 Suitability for use on fire / smoke doors

Grade 1 products shall conform to the requirements of annex A.

## 5.6 Safety

Not applicable

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.

## 5.7 Corrosion resistance and temperature

### 5.7.1 Corrosion resistance

When tested in accordance with 6.7.1, the torque on key or follower to operate the deadbolt or latch bolt shall not exceed figures for 5.2.2 and 5.11.1 by more than 20 %.

NOTE For the purpose of this standard, the ability to operate after the test is the only criterion; appearance is irrelevant.

### 5.7.2 Operation at extremes of temperature

When tested in accordance with 6.7.2, the torque on the key to operate the deadbolt shall not exceed 2 Nm, neither shall the torque on the follower (where applicable) exceed requirements in 5.11.1, as appropriate, by more than 20 %.

## 5.8 Security

Requirements for classification are shown in Table 5.

### 5.8.1 Torque resistance of knob

#### 5.8.1.1 Torque resistance of knob or lever handle on bored lock and latch sets

When tested in accordance with 6.8.1.1, the locked knob or lever handle shall not force the lock open with a torque of M9 (see Figure 1 and Table 5).

NOTE This requirement is only applicable to grade 1 and 2 as this type of product is not considered suitable for higher security applications.

#### 5.8.1.2 Torque resistance of knob or lever handle on rim night latch

When tested in accordance with 6.8.1.2, the locked knob or lever handle shall not force the lock open with a torque of M10 (Nm) = k (kN) x maximum radius (mm).

### **5.8.2 Requirements for side load**

Field of door application (5.9) shall determine which test method (B.1.a or B.1.b) shall be used and which performance criteria apply.

#### **5.8.2.1 Resistance to side load on deadbolt**

Applicable to grades 1 to 4 and 6.

When tested in accordance with 6.8.2.1, the deadbolt shall resist a side load of F4 (see Figure 1 and Table 5).

#### **5.8.2.2 Resistance to drilling and side load on deadbolt**

Applicable to grades 5 and 7.

When tested in accordance with 6.8.2.2, the deadbolt shall be subjected to drilling for a time  $t$ , and afterwards resist a side load of F4 (see Figure 1 and Table 5).

### **5.8.3 Deadbolt projection**

When measured in accordance with 6.8.3, the deadbolt when fully thrown in the locking direction and detained, shall have a minimum projection, measured from the forend of L1 (see Figure B.4 and Table 5).

### **5.8.4 Requirements for end load on deadbolt**

Field of door application (5.9) shall determine which test method shall be used and which performance criteria apply.

#### **5.8.4.1 Resistance to end load**

Applicable to grades 1 to 4 and 6.

When tested in accordance with 6.8.4.1, the product shall resist an end load of F5. At no time during or after the test shall the bolt projection be less than L2 (see Figure B.4 and Table 5).

Performance criteria C shall apply.

Where the deadbolt is protected by a box locking plate, the end load requirement for grades 3, 4 and 6 shall be 2 kN.

#### **5.8.4.2 Resistance to endload with drilling**

Applicable to grades 5 and 7.

When tested in accordance with 6.8.4.2 the product shall be subjected to drilling for a time  $t$ , and afterwards resist an end load of F5. At no time during or after the test shall the bolt projection be less than L2 (see Figure B.4 and Table 5).

Performance criteria C shall apply.

Where the deadbolt is protected by a box locking plate, the end load requirement for grades 5 and 7 shall be 2 kN.



**5.8.5 Resistance to pulling of hook/claw bolt**

When tested in accordance with 6.8.5, the bolt shall resist a direct pull of F6 (see Figure B.5.a and Table 5).

Performance criteria B shall apply.

**5.8.6 Resistance to disengaging of hook/claw bolt**

When tested in accordance with 6.8.6, the bolt shall not force the lock open with a disengaging force of F7 (see Figure B.5.b and Table 5).

Performance criteria B shall apply.

Where the deadbolt is protected by a box locking plate, the end load requirement for grades 3, 4, 5, 6 and 7 shall be 2 kN.

**5.8.7 Resistance to forcing of locating device in sliding door lock**

When tested in accordance with 6.8.7, the locating device(s) shall resist a force of F8 (see Figure B.5.c and Table 5).

Performance criteria A shall apply.

**5.8.8 Resistance to pulling off of knob on bored lock and latch set**

When tested in accordance with 6.8.8, the knobs shall resist a direct pull of F9 (see Figure B.6 and Table 5).

Performance criteria A shall apply.

**5.8.9 Security requirements of the component locking plate**

Requirements 5.8.9.1 to 5.8.9.4 are applicable when testing the locking plate as a component on its own.

**5.8.9.1 Resistance to end load on box protected locking plate**

When tested in accordance with 6.8.9.1, the box protected locking plate shall resist an end load of F5, and shall maintain a minimum internal depth of L3 (see Figure B.8 and Table 5).

Performance criteria A shall apply.

NOTE This requirement can be waived if the associated lock deadbolt resists the appropriate end load for the class.

**5.8.9.2 Resistance to side load on locking plate**

When tested in accordance with 6.8.9.2, the locking plate shall resist a side load of F4 (see Figure B.9 and Table 5).

Performance criteria A shall apply.

**5.8.9.3 Resistance to pulling on locking plate**

When tested in accordance with 6.8.9.3, the locking plate shall resist a pull load of F6 (see Figure B.10 and Table 5).

Performance criteria A shall apply.

**5.8.9.4 Resistance to lifting force on locking plate**

When tested in accordance with 6.8.9.4, the locking plate shall resist an upward force of F8 (see Figure B.10 and Table 5). Performance criteria A shall apply.

Table 5 — Security requirements

Subclause number	Requirement	Test method	Test Param.	Grade of security							Unit
				1	2	3	4	5	6	7	
5.8.1.1	Torque resistance of knob on bored lock and latch sets	6.8.1.1	M9	10	15	-	-	-	-	-	Nm
	Torque resistance of lever handle on bored lock and latch sets			20	30	-	-	-	-	-	Nm
5.8.1.2	Torque resistance of knob or lever handle on Rim nighthatches	6.8.1.2	M10			1	1	1	1	1	kN
5.8.2.1	- side load on deadbolt	6.8.2.1	F4	1	3	5	7	7	10	10	kN
5.8.2.2	- net drilling time for sideload test	6.8.2.2	t	-	-	-	-	3	-	5	min
	- total drilling time for sideload test			-	-	-	-	5	-	10	
5.8.3	Deadbolt projection	6.8.3	L1	10	12	14	20	20	20	20	mm
5.8.4.1	- end load	6.8.4.1	F5	1	2	4 <sup>a</sup>	5 <sup>a</sup>	5 <sup>a</sup>	6 <sup>a</sup>	6 <sup>a</sup>	kN
	- resulting projection		L2	8	10	11	17	17	17	17	mm
5.8.4.2	- net drilling time for endload test	6.8.4.2	t	-	-	-	-	3	-	5	min
	- total drilling time for endload test			-	-	-	-	5	-	10	
5.8.5	Resistance to pulling of hook/claw bolt	6.8.5	F6	1	3	5	7	7	10	10	kN
5.8.6	Resistance to disengaging of hook/claw bolt	6.8.6	F7	1	2	4 <sup>a</sup>	5 <sup>a</sup>	5 <sup>a</sup>	6 <sup>a</sup>	6 <sup>a</sup>	kN
5.8.7	Resistance to forcing of locating devices in sliding door lock	6.8.7	F8	1	3	4	5	5	6	6	kN
5.8.8	Resistance to pulling off of knob on bored lock and latch sets	6.8.8	F9	1	1,5	-	-	-	-	-	kN
5.8.9.1	Resistance to end load on box protected locking plates	6.8.9.1	F5	-	-	4	5	5	6	6	kN
			L3	-	-	13	19	19	19	19	
5.8.9.2	Resistance to side load on locking plate	6.8.9.2	F4	1	3	5	7	7	10	10	kN
5.8.9.3	Resistance to pulling on locking plate	6.8.9.3	F6	1	3	5	7	7	10	10	kN
5.8.9.4	Resistance to lifting force on locking plate	6.8.9.4	F8	1	3	4	5	5	6	6	kN

<sup>a</sup> Where the deadbolt is protected by a box locking plate the end load on deadbolt requirement shall be 2 kN

## **5.9 Field of door application**

### **5.9.1 General**

Requirement limitation for locks having restricted application are described in annex D.

#### **5.9.1.1 Unrestricted application**

Locks with no limitation of intended use.

Grade A, D and G see Table 3.

#### **5.9.1.2 Hinged door application**

Locks described by manufacturers instructions for use only on hinged doors.

Grade B, E, H, J, M, P and R see Table 3.

#### **5.9.1.3 Sliding door application**

Locks described by manufacturers instructions for use only on sliding doors.

Grade C, F, L and N see Table 3.

#### **5.9.1.4 Supported lock application**

The performance of the lock depends on lock dimension and door preparation according to manufacturers instructions. I.e. lockcases as well as forends are supported in test 6.8.2 and 6.8.4

Grade H and P, see Table 3.

#### **5.9.1.5 Application for inwards operated doors**

Locks intended for use only on inwards operated doors according to manufacturers' instruction.

Grade J and R, see Table 3.

#### **5.9.1.6 Application for locks locked from the inside**

Locks designed for egress control authorized by key operation or similar.

Grade K to R, see Table 3.

### **5.9.2 Protection against removal from door**

The product shall be designed in such way that when assessed to 6.9.2 those parts which contribute to its burglar resistance, cannot be removed:

from the outside of the door when door is closed and locked;

from the inside of the door when door is closed and locked, except by special tools, if security is required from the inside.

Applicable for grades A, D and K to R.

## 5.10 Type of key operation and locking

### 5.10.1 Strength of key

When tested in accordance with 6.10.1, the key shall resist a torque of  $M7 = 2,5 \text{ Nm}$  (see Figure 1).

The key shall operate the lock correctly after this test fulfilling the requirements of 5.2.2 and 5.10.3.

### 5.10.2 Deadlocking

#### 5.10.2.1 Manual locking

When tested in accordance with 6.10.2.1 one of the following two conditions shall apply Either, a) it shall not be possible to remove the key from the lock unless the deadbolt is in its unlocked or fully thrown and deadlocked position. Or, b) if the key can be removed in an intermediate position, there shall be an indicator or some other special arrangement to indicate that the lock is not fully secured

#### 5.10.2.2 Manual locking with intermediate locking positions

When tested in accordance with 6.10.2.2 it shall not be possible to remove the key from the lock before the bolt is properly deadlocked.

#### 5.10.2.3 Automatic locking deadbolt

When a lock with an automatically locking deadbolt is tested in accordance with 6.10.2.3, it shall meet the following requirements:

- the deadbolt still has to be released automatically, when the distance between forend and locking plate is up to 5 mm;
- when retracting the deadbolt of a lock by key or handle operation, the deadbolt shall reach its held back position before the latch bolt disengages from the locking plate, when the distance between forend and locking plate is up to 5 mm.

#### 5.10.2.4 Automatic locking latch bolt

When a lock or latch with an automatically locking latch bolt is tested in accordance with 6.10.2.4, it shall meet the following requirements:

- the latch bolt still has to be locked automatically (deadlocking function), when the distance between forend and locking plate is up to 5 mm;
- it shall not be possible to release the dead locking function by manipulation of the elements which are accessible between the forend and the locking plate.

### 5.10.3 Torque to withdraw the latch bolt with key

When tested in accordance with 6.10.3, the torque on the key shall not exceed  $M1 = 1,5 \text{ Nm}$  (see Figure 1).

## 5.11 Type of spindle operation

### 5.11.1 Torque to withdraw the latch bolt

When tested in accordance with 6.11.1, the torque  $M2$  on the follower for operation the latch shall not exceed (see Figure 1):

## **EN 12209:2003 (E)**

- grade 1 : 0,5 Nm;
- grade 2 : 3 Nm;
- grade 3 : 5 Nm;
- grade 4 : in accordance with manufacturers specification.

### **5.11.2 Strength of bolt actions**

When tested in accordance with 6.11.2, the deadbolt components shall resist a torque of 30 Nm and the latch bolt components shall resist a torque of 20 Nm for all grades (see Figure 1).

The lock or latch shall operate correctly after this test fulfilling the requirements of 5.11.1.

### **5.11.3 Minimum follower restoring torque**

When tested in accordance with 6.11.3, the restoring torque on the follower shall be at least M8 as appropriate.

- grade 1 : 0 Nm;
- grade 2 : 0,6 Nm;
- grade 3 : 0,6 Nm;
- grade 4 : 0,6 Nm.

## **5.12 Key identification requirement**

### **5.12.1 Detaining elements**

The minimum number of detaining elements that form part of the deadbolt mechanism (or latch action where there is direct operation by the key) shall be as specified in Table 6.

### **5.12.2 Effective differs**

Assessed in accordance with 6.12.2, locks shall have the minimum number of effective differs that are indicated in Table 6.

### **5.12.3 Differing step heights on key**

Assessed as in 6.12.3, keys shall have the minimum number of different step heights that are indicated in Table 6.

### **5.12.4 Non-interpassing of keys with just one interval differ**

When tested in accordance with 6.12.4, it shall not be possible to open the lock with the next closest key (as defined by the manufacturer's coding system).

### **5.12.5 Coding protection**

Except for grade 1, direct coding on the key is not permitted.

Table 6 — Key identification requirement

Grade	5.12.1 Minimum number of detaining elements	5.12.2 Minimum number of effective differs	5.12.1 Minimum number of differing steps height on key	5.12.2 Non interpassing of keys	5.12.2 Coding protection
0	No requirement				
A	3	100	2	Yes	No
B	5	1 000	3	Yes	Yes
C	5	10 000	3	Yes	Yes
D	6	4 000	3	Yes	Yes
E	6	20 000	3	Yes	Yes
F	7	6 000	4	Yes	Yes
G	7	50 000	4	Yes	Yes
H	8	100 000	4	Yes	Yes

## 6 Test methods

### 6.1 General

Any model of a lock within any one product range having significantly different working components, or working components of significantly different materials shall be considered one type and its performance separately tested.

Failure of any one test within a sequence constitutes failure of that particular test sample. In the case of any one test sample failure the relevant test sequence (see annex C) shall be repeated.

The lock or latch shall be fitted to the test door / apparatus in accordance with the manufacturer's instructions.

NOTE 1 The scope of any particular product range can be determined by the testing authority in discussion with the manufacturer. This can involve examination of the construction of the various products involved and pre-testing of certain attributes in order to determine the most appropriate test samples to represent the product range.

NOTE 2 A mortise lock intended for use together with an emergency exit device (EN 179) or panic exit device (EN 1125) should be tested together as specified by the manufacturer.

Throughout this European Standard, the following tolerances shall apply, unless otherwise stated.

- mass in kilograms or grams (kg or g) :  $\pm 2\%$ ,
- length in millimetres (mm) :  $\pm 2\%$ ,
- force in kilonewtons or newtons (kN or N) :  $\pm 2\%$ ,
- torque in newton metres (Nm) :  $\pm 2\%$ ,
- time in seconds (s) :  $\pm 5\%$ ,
- temperature in degrees Celsius ( $^{\circ}\text{C}$ ) :  $\pm 2\text{ }^{\circ}\text{C}$ .

## EN 12209:2003 (E)

Unless otherwise stated, forces shall be applied and raised to the required level within  $60\text{ s} \pm 10\text{ s}$  and shall be held there for  $60\text{ s} \pm 5\text{ s}$ .

The product under test shall be mounted on a suitable test apparatus as described in annex B.

The number of test samples required for testing to this European Standard and the test sequences, are shown in annex C.

The test apparatus shall be rigid enough to avoid influencing test measurements. Illustrations in annex B show typical examples of lock/test-rig construction or design.

The following performance criteria shall be used:

### **Performance criteria “A”:**

During the application and holding time of a force or torque, the product and/or its components shall be allowed to deflect an amount consistent with local tolerances/clearances, without any plastic deformation outside the tolerances taking place. The product shall remain fully functional both during and after the test.

### **Performance criteria “B”:**

During the application and holding of a force or torque, the product and/or its components shall be allowed to deflect an amount consistent with local tolerances/clearances, but with some plastic deformation taking place, providing that the security function is not significantly compromised, either during or after the test. The product does not need to be operable after the test.

All products shall be tested in accordance with the manufacturer's instructions for use.

### **Performance criteria “C”**

During the application and holding of a force or torque, the product and/or its components shall be allowed to deflect an amount consistent with local tolerances/clearances, but with some plastic deformation taking place, providing that the security function is not significantly compromised, either during or after the test. Additionally, it shall not be possible to manipulate the locked bolt to an unlocked position, during or after the test, using any tool other than the correct key with a maximum torque of 5 Nm. The product does not need to be operable after the test.

### **Test door**

The test door leaf shall be 2 100 mm high and 1 100 mm wide. It shall have means of attaching weights to enable the appropriate door mass to be achieved. The test door and its frame shall have sufficient rigidity such that any distortion perpendicular to the plane of the test door, taking place during the test sequence shall be no more than 5 mm at any position.

NOTE 1 The components can be cleaned and lubricated without dismantling the lock at the start of the test and after each 5 000 cycles, according to manufacturer's instructions.

NOTE 2 Illustrations in annex B show typical examples of lock/test-rig construction or design.

#### **6.1.1 Dangerous substances**

The manufacturer's statement concerning dangerous substances shall confirm compliance with 5.1.1.



### 6.1.2 Return force of latch bolt

The lock or latch shall be held in a vice or similar fixture with the forend vertical. Using a suitable force gauge operating in the same plane of movement as the latch bolt, the latch bolt shall be depressed fully with the force gauge, then allowed to extend until the leading edge of the bolt head is  $2 \text{ mm} \pm 0,5 \text{ mm}$  from the face of the forend, at which point the return force on the latch bolt shall not be less than F2.

## 6.2 Category of use

### 6.2.1 Resistance to side load on latch bolt

The lock or the latch shall be mounted as shown in Figure B.1a) or B.1b) using metal thread screws of equivalent strength to the fixing means supplied/recommended by the manufacturer.

The choice to use either B.1a) or B.1b) method for mounting should be determined by the manufacturer.

A force F1 shall be applied to the securing face of the latch bolt,  $3 \text{ mm} \pm 0,2 \text{ mm}$  from the forend.

Force applied by a tool according to Figure B.1c).

The latch action shall not be affected as a result of this test.

### 6.2.2 Torque to operate deadbolt

The lock or latch shall be held in a vice or similar fixture with the forend vertical.

Using a suitable torque gauge, a key, cylinder or a cylinder dummy and adaptor(s), the deadbolt shall be operated through the full range of movement, during which, the torque shall not exceed:

- M3 via keyhole, or cylinder follower
- M4 via follower (when applicable).

### 6.2.3 Strength of normal latch action and stops

The lock or latch shall be held in a vice, or similar fixture. A torque M5 shall then be applied without shock to the follower, using a suitable torque gauge and adapter(s), in both clockwise and anticlockwise directions, the torque to be applied gradually in a time of  $5 \text{ s} \pm 2 \text{ s}$ .

### 6.2.4 Torque resistance of Rim lock with lockable handle / knob

The lock or latch shall be mounted as for 6.1.2 and the torque M10 applied, without shock, to the locked handle / knob.

## **6.3 Durability**

### **6.3.1 Durability of latch action**

#### **6.3.1.1 Durability of latch action without force applied**

Applicable for grade A, B and C.

The lock or latch and its correct locking plate shall be mounted on a test door and frame according to 6.4.1 with a gap of  $3\text{ mm} \pm 1\text{ mm}$ , together with a representative set of lever handle furniture as shown in Figure B.2.

Each complete test cycle shall be as follows:

- a) rotate lever handle to fully withdraw latch bolt with a maximum torque according to 5.11.1
- b) open door a distance of  $200 \pm 5\text{ mm}$ ;
- c) allow handle to return to 'at rest' position;
- d) allow door to close under influence of Force  $F_{11} = 7\text{ N}$ , causing the latch bolt to strike and fully engage in the locking plate. If  $7\text{ N}$  is insufficient to close the door and engage the latch bolt in the locking plate, a new  $F_{11}$  shall then be determined by measuring the force required and increasing the new force  $F_{11}$  by  $20\%$ , up to a maximum of  $50\text{ N}$  for the durability test, causing the latch bolt to strike and fully engage in the locking plate.

NOTE This test can be omitted if the latch action is subjected to the same number of cycles (or more) in 6.3.1.2.

Operation speed shall be 10 cycles per min maximum.

#### **6.3.1.2 Durability of latch action with force applied**

Applicable for grades F, G, H, L, M, R, S, W, X.

The lock or latch and its correct locking plate shall be mounted as for test 6.3.1.1. In addition there shall be provision for applying a side load  $F_3$ , as shown in Figure B.2.

Each complete test cycle shall consist of the following:

- a) apply force  $F_3$ , to the test door, in the opening direction;
- b) rotate lever handle to fully withdraw latch bolt with a torque according to 5.11.1
- c) open door a distance of  $200\text{ mm} \pm 5\text{ mm}$ ;
- d) allow handle to return to 'at rest' position;
- e) remove force  $F_3$ ;
- f) allow door to close under influence of Force  $F_{11} = 7\text{ N}$ , causing the latch bolt to strike and fully engage in the locking plate. If  $7\text{ N}$  is insufficient to close the door and engage the latch bolt in the locking plate, a new  $F_{11}$  shall then be determined by measuring the force required and increasing the new force  $F_{11}$  by  $20\%$  up to a maximum of  $50\text{ N}$  for the durability test, causing the latch bolt to strike and fully engage in the locking plate.

Operation speed shall be 10 cycles per minute maximum.

### 6.3.2 Durability of deadbolt mechanism

The lock shall be mounted with its forend vertical. The test apparatus shall be capable of key rotation, and of inserting and withdrawing the key from the lock. Where it is possible to determine which is the outward facing side of the lock, the key shall be inserted from this side.

Each complete test cycle shall be as follows:

- a) insert key into lock;
- b) rotate key sufficiently to fully throw and detain deadbolt;
- c) withdraw the key from lock;
- d) re-insert key into lock, and rotate to fully withdraw deadbolt;
- e) withdraw key from lock.

Where the bolt is in the form of a sprung bolt that can only be withdrawn by the key, the above test cycle shall be modified as follows:

- f) insert key into lock;
- g) rotate key sufficiently to fully withdraw spring bolt;
- h) rotate key in reverse direction, allowing bolt to return to 'at rest' position;
- i) withdraw key from lock.

This test shall be conducted with one key only.

For operating the bolt (s) a maximum torque of 1,5 Nm is allowed.

If the key operates both deadbolt(s) and latchbolt(s) the test cycle shall include the complete bolt throwing action.

In the withdrawn position, the key may remain in the key guide, providing that it is not in contact with the detaining elements (levers, pins, etc.).

Where the lock is designed to be used in conjunction with a cylinder, the test apparatus shall be required only to fully throw and withdraw the deadbolt (or fully withdraw/release the latch bolt, where this provides the security), operating the bolt of the lock via a simulated cylinder without taking the "cylinder key" in and out.

Operation speed shall be up to 15 cycles per minute. Each cycle should be within 2 s to 4 s.

### 6.3.3 Durability of locking snib mechanism

The lock or latch shall be mounted on a suitable fixture providing either a sliding or partial rotary action depending upon the design of the snib mechanism. One test cycle shall consist of moving the snib from unlocked to locked position and back to unlocked.

Operation speed shall be up to 60 cycles per min.

## **6.4 Door mass and closing force**

### **6.4.1 Door mass**

Door mass on test door according to 4.2.3.

### **6.4.2 Closing force**

The lock or latch and its correct locking plate as defined by the manufacturer shall be fitted to a test door and frame as shown in Figure B.2.

The latch and the locking plate shall be cleaned before each test.

The distance between the lock and the locking plate shall be  $3 \text{ mm} \pm 1 \text{ mm}$ . The door shall be opened so that the latch bolt is in contact with the locking plate and allowed to close under influence of F10. The test shall be conducted three times, during which the latch bolt shall correctly engage the locking plate every time.

## **6.5 Suitability for use on fire / smoke doors**

See annex A.

## **6.6 Safety**

Not applicable.

## **6.7 Corrosion resistance and temperature**

### **6.7.1 Corrosion resistance**

The lock or latch, shall be mounted in a fixture similar to a door application and subjected to a neutral salt spray test, as detailed in 5.6 of EN 1670:1998, to determine their ability to operate after environmental exposure, the duration of the test being dependent on the grading number as follows:

- grade A: 24 h;
- grade B and grade E: 48 h;
- grade C and grade F: 96 h;
- grade D and grade G: 240 h.

Only 5.1 and 5.6 in EN 1670:1998 are required to meet the requirements of this standard.

The lock, or latch, shall be operated once every 24 h during the test.

Immediately following the neutral salt spray test, and cleaning of the lock, the lock or latch, shall be subjected to the tests specified in 6.2.2 and 6.11.1. The lock, or latch, shall be operated 20 times. The opening force shall be measured and recorded during the final three cycles.

## 6.7.2 Operation at extremes of temperature

The lock shall be stabilised before test by subjecting it to constant temperature of  $20\text{ °C} \pm 5\text{ °C}$  and a relative humidity of  $60\% \pm 5\%$  for a period of at least 1 h. The key shall be kept separately at normal room temperature during the tests. The locks shall be heated / cooled at the minimum rate of  $10\text{ °C} \pm 10\%$  per hour until the required temperature of  $+ 80\text{ °C}$  or  $- 20\text{ °C}$  is reached. Test temperature shall be maintained for minimum 2 h and at the end of this time each lock shall be operated as described below:

- by its correct key to fully throw and withdraw the deadbolt;
- through its follower to operate the latch bolt, ensuring that it extends to its fully thrown position;
- where applicable, any anti-thrust slide shall be manually operated to ensure its freedom of operation.

Operating torques are to be recorded, in the interval of the last 20 min of the stabilising time.

## 6.8 Security

### 6.8.1 Torque resistance of knob

#### 6.8.1.1 Torque resistance of knob or lever handle on bored lock and latch sets

The lock or latch set shall be mounted on a suitable fixture and, by means of a suitable adapter, a torque M9 applied to the locked knob, in both directions without forcing the lock open.

#### 6.8.1.2 Torque resistance of knob or lever handle on rim night latch

The lock or latch set shall be mounted on a suitable fixture and, by means of a suitable adapter, a torque M10 applied to the locked knob or handle, in both directions without forcing the lock open.

$$M10\text{ (Nm)} = k\text{ (kN)} \times \text{maximum radius in mm}$$

### 6.8.2 Resistance to side load

#### 6.8.2.1 Resistance to side load on deadbolt

The lock or latch shall be mounted in a test apparatus as shown in Figure B.1 and a side load F4 applied by using a tool according to Figure B.1c) to the deadbolt at a distance of 3 mm from the forend and be held for a period of  $60\text{ s}^{+10}_0$  s.

Where the application allows, load shall be applied to the deadbolt from both sides, tested on separate locks.

#### 6.8.2.2 Resistance to drilling and side load on deadbolt

The lock or latch, with deadbolt thrown, shall be mounted according to manufacturers' instructions in a suitable test apparatus for use with a drilling machine as shown in Figure B.3. The drilling machine shall have a power of 500 W to 700 W and a speed of 500 r/min to 800 r/min. A high-speed steel drill to ISO 10899 or equivalent shall be used, having a maximum diameter of 5 mm. A force of  $300\text{ N} \pm 25\text{ N}$  shall be applied without shock, axially to the drill. A maximum of three drills may be used for each test. No coolant or lubrication shall be applied to the drill during the test. Drilling shall continue for the appropriate maximum net drilling time within the total time allowed for each test. As much as possible of the security bolt shall be drilled away adjacent to the forend, in the net time allowed. The lock or latch shall then be mounted in another test apparatus as shown in Figure B.1

and a side load F4, with a tool according to Figure B.1c) applied to the drilled side of the bolt at a distance of 3 mm from the forend and be held for a period of  $60 \text{ s }^{+10}_0$  s.

Locks shall be tested from both sides (on separate locks) unless indicated otherwise in 5.9

### **6.8.3 Deadbolt projection**

Measured perpendicular to the forend on the unloaded deadbolt.

### **6.8.4 Resistance to end load on deadbolt**

#### **6.8.4.1 Resistance to end load**

The product shall be mounted in a test apparatus, as shown in Figure B.4 or as defined by the manufacturer, see 5.9, in which the projection of the deadbolt can be measured. An end load F5 shall be applied to the locked deadbolt for a period of  $60 \text{ s }^{+10}_0$  s and the resulting projection be noted.

If the lock is intended for use with a cylinder, a suitable cylinder or dummy cylinder shall be fitted for the test.

#### **6.8.4.2 Resistance to end load with drilling**

The product, including any manufacturer specified accessories, shall be mounted in a 44 mm thick wooden block, which is mounted in a test apparatus suitable for use with a drilling machine as shown in Figure B.3. The drilling machine shall have a power of 500 W to 700 W and a speed of 500 r/min to 800 r/min. A high-speed steel drill to ISO 10899 or equivalent shall be used, having a maximum diameter of 5 mm. A force of  $300 \text{ N} \pm 25 \text{ N}$  shall be applied axially to the drill.

A maximum of three drills may be used for each test. No coolant or lubrication shall be applied to the drill during the test. Drilling shall continue for the appropriate maximum net drilling time within the total time allowed for each test, including time taken to operate the deadbolt, as follows: within the allowed total test time, it shall not be possible to operate the deadbolt driving element of the lock to the opening position by means of a suitable tool using a maximum torque of 5 Nm.

Drilling shall be directed towards any elements in the lock in an attempt to drill them away and allow the deadbolt to be withdrawn and/or towards the vulnerable fixing elements in an attempt to remove them and allow the lock to be separated from the block.

The product and its accessories shall then be mounted in a test apparatus, as shown in Figure B.5 or as defined by the manufacturer, see 5.9, in which the projection of the deadbolt can be measured. An end load F5 shall be applied to the locked deadbolt for a period of  $60 \text{ s }^{+10}_0$  s and the resulting projection be noted.

If the lock is intended for use with a cylinder, a suitable cylinder or dummy cylinder shall be fitted for the test.

### **6.8.5 Resistance to pulling of hook/claw bolt**

The lock or latch shall be mounted in a suitable fixture as shown in Figure B.5, using metal thread screws of equivalent strength to the fixings supplied/recommended by the manufacturer, and a tensile force F6 applied to the forend for a period of  $60 \text{ s }^{+10}_0$  s.

**6.8.6 Resistance to disengaging of hook/claw bolt**

The lock or latch shall be mounted as for test 6.8.5 and a force F7 applied 3 mm from the forend in the unlocking direction of the bolt as shown in Figure B.5.b, for a period of  $60 \text{ s}^{+10}_0$  s. It is not necessary for the lock to be operable by key after the test.

NOTE Where the bolt is protected by a box locking plate, the disengaging force requirement for grade 3, 4, 5, 6 and 7 should be 2 kN.

**6.8.7 Resistance to forcing of locating device in sliding door locks**

The lock shall be mounted as for test 6.8.5 and a force F8 applied 3 mm from the forend in the locking direction of the bolt as shown in Figure B.5c), for a period of  $60 \text{ s}^{+10}_0$  s.

**6.8.8 Resistance to pulling off of knob on bored lock and latch set**

The bored lock or latch set shall be mounted in a suitable fixture as shown in Figure B.6 and an axial force F9 applied to the knob for a period of  $60 \text{ s}^{+10}_0$  s.

**6.8.9 Test for security requirements for the locking plate****6.8.9.1 Resistance to end load on box protected locking plate**

The locking plate shall be mounted in a test apparatus in which the internal depth of L3 can be measured as shown in Figure B.8 and an end load F5 applied to the box in the direction opposite to the locking direction of the deadbolt/hooks bolt for a period of  $60 \text{ s}^{+10}_0$  s.

Apply F5 with a surface of 5 mm x 20 mm.

Minimum internal depth of L3 (with load applied) shall be noted.

**6.8.9.2 Resistance to side load on locking plate**

The locking plate shall be mounted in a suitable test apparatus using metal thread screws of equivalent strength to the fixings supplied/recommended by the manufacturer as shown in Figure B.9 or as defined by the manufacturer, see 5.9 and a side load F4 applied to the bolt aperture for a period of  $60 \text{ s}^{+10}_0$  s, using a tool which represents the deadbolt of an appropriate lock or latch.

**6.8.9.3 Resistance to pulling on locking plate**

The locking plate shall be mounted in a suitable test apparatus using metal thread screws of equivalent strength to the fixings supplied/recommended by the manufacturer as shown in Figure B.10 and a pull load F6 applied to the bolt aperture for a period of  $60 \text{ s}^{+10}_0$  s, using a tool representing the hook/claw bolt of an appropriate lock.

**6.8.9.4 Resistance to lifting force on locking plate**

The locking plate shall be mounted as for test 6.8.9.3 and a lifting force F8 applied to the locating device aperture in the locking plate for a period of  $60 \text{ s}^{+10}_0$  s, as shown in Figure B.10.

## 6.9 Field of door application

### 6.9.1 General

For appropriate requirements and tests see annex D.

### 6.9.2 Protection against removal from door

Inspect all fixings to assess whether they are concealed and inaccessible when the door is closed. With the use of any of the tools for the screwheads listed in Figure B.7, attempt to remove any fixings that are exposed.

## 6.10 Type of key operation and locking

### 6.10.1 Strength of key

The lock or latch shall be mounted as for test 6.11.2. A torque M7 shall then be applied, without shock to a correctly inserted correct key, in the bolt throwing direction. The torque is to be applied gradually in a time of  $5 \text{ s} \pm 2 \text{ s}$ . This test is not applicable to keys for cylinders according to EN 1303.

### 6.10.2 Deadlocking

#### 6.10.2.1 Manual locking

The deadbolt shall be operated from the fully unlocked to fully thrown and deadlocked position with a live end load on the deadbolt of 15 N.

Indicators for deadlocking the bolt shall be tested, simulating that the deadbolt has not reached its deadlocked position and the key has been removed.

The effectiveness of deadlocking shall be determined by an appropriate test.

#### 6.10.2.2 Manual locking with intermediate locking positions

The deadbolt shall be operated from the fully unlocked position to each key removable position with a live end load on the deadbolt of 15 N ensuring that the deadbolt is deadlocked in each position.

#### 6.10.2.3 Automatically locking deadbolt

The lock and its locking plate shall be installed on the test door according to the manufacturer's instruction but with a gap of 5 mm between forend and locking plate.

With the test door open at  $5^\circ$ , apply a closing force of 50 N at right angles to the face of the test door, at a position of 1 000 mm from the centre line of the hinges of the test door and at between 800 mm and 1 200 mm from the bottom of the test door to re-engage the lock in the secured position.

Verify that the deadbolt has reached its fully thrown and deadlocked position.

Retract simultaneously the latch bolt and the deadbolt by key operation and verify that the deadbolt has reached its fully withdrawn position before the latch bolt disengages from the locking plate.

If the lock allows to retract simultaneously the latch bolt and the deadbolt by handle or knob operation, then repeat this test using the handle or knob.

NOTE The fully withdrawn position of the deadbolt is the one out of which it will need to be released again.



These tests shall be conducted three times.

#### **6.10.2.4 Automatically locking latch bolt**

The lock or latch and its locking plate shall be installed on the test door according to the manufacturer's instruction but with a gap of 5 mm between forend and locking plate.

With the test door open at 5°, apply a closing force of 50 N at right angles to the face of the test door, at a position of 1 000 mm from the centre line of the hinges of the test door and at between 800 mm and 1 200 mm from the bottom of the test door to re-engage the lock or latch in the secured position.

Verify that the latch bolt has reached its fully thrown and deadlocked position and is blocked against being disengaged from the locking plate.

Verify also that the deadlocking function cannot be released by manipulating the position of any element responsible for the deadlocking function. The manipulation may only be tried by using a screwdriver or a pair of tweezers and is restricted to the accessible gap between forend and locking plate.

These tests shall be conducted three times.

#### **6.10.3 Torque to withdraw the latch bolt with key**

Using a suitable torque gauge and adaptor(s), the latch bolt shall be withdrawn until the leading edge of the bolt head is flush with the forend, during which movement, the torque shall not exceed:

— M1 via key, or via the cylinder follower.

### **6.11 Spindle operation**

#### **6.11.1 Torque to withdraw latch bolt with handle**

Using a suitable torque gauge and adaptor(s), the latch bolt shall be withdrawn until the leading edge of the bolt head is flush with the forend  $0 + 1$  mm, during which movement, the torque M2 shall be measured.

#### **6.11.2 Strength of bolt actions**

The deadbolt mechanism : The lock shall be mounted in a suitable test apparatus with means for preventing the deadbolt from moving more than  $3 \text{ mm} \pm 1 \text{ mm}$  from its withdrawn position. The torque shall then be applied, without shock to the follower in the bolt throwing direction. The torque is to be applied gradually, in a time of  $5 \text{ s} \pm 2 \text{ s}$ . The lock shall operate correctly after this test fulfilling the requirements of 5.2.2.

The latch bolt action: The lock or latch shall be mounted in a suitable test apparatus with means for preventing the latch bolt from moving more than  $3 \text{ mm} \pm 1 \text{ mm}$  from its fully thrown position. The torque shall then be applied, without shock to the follower in the bolt withdrawing direction. The torque is to be applied gradually, in a time of  $5 \text{ s} \pm 2 \text{ s}$ . The lock shall operate correctly after this test fulfilling the requirements of 5.11.1.

#### **6.11.3 Minimum follower restoring torque**

Using a suitable torque gauge and adapter(s), the latch bolt shall be withdrawn via the follower and allowed to return under its own spring force until the follower is within 5° of its back stop position, at which point the torque exerted by the spring force shall be measured and recorded.

## **6.12 Key identification**

### **6.12.1 Detaining elements**

Visual check only.

NOTE Not applicable for cylinder locks.

### **6.12.2 Effective differs**

The number of effective differs shall be assessed with reference to the manufacturer's differs charts and/or to supporting documentation demonstrating the principle of calculation.

NOTE Not applicable to cylinder locks.

### **6.12.3 Differing step heights on key**

The differing step heights on keys shall be assessed with reference to the manufacturer's differs charts and/or to supporting documentation demonstrating the principle of calculation.

NOTE Not applicable to cylinder locks.

### **6.12.4 Non-interpassing of keys with just one interval differ**

Attempts shall be made to operate locks for all grades, with the next closest keys (i.e. those differing from the correct key by one interval up or down in any one step position), as specified by the manufacture using an applied torque on the key bow of 2,5 Nm, to establish whether interpassing can occur. For locks in class E, F, G and H, this test shall be conducted after durability test 6.3.2.

NOTE Not applicable to cylinder locks.

### **6.12.5 Coding protection**

Check in accordance with 5.12.5, based on manufacturer's information.

## **7 Marking**

The following information shall be quoted in the labelling, packaging or literature:

- a) manufacturer's name or trademark or other means of positive identification;
- b) clear product identification;
- c) classification according to clause 4 of this European Standard;
- d) number and year of this European Standard.

## **8 Evaluation of conformity**

### **8.1 Initial type test**

Samples, representative of the series, selected in accordance with annex C, shall be subjected to the full sequence of tests described in clause 6, and where relevant, to annex A.

If necessary, (for example, after component changes or redesigns likely to affect the product performance) this initial type test shall be repeated.

## **8.2 Factory production control**

### **8.2.1 Documentation**

**8.2.1.1** The manufacturer of a lock or latch to this European Standard shall document, operate and maintain an adequate factory production control system to enable the achievement of the required product characteristics and the effective operation of the production control system to be checked.

**8.2.1.2** The manufacturer shall draw up and keep up-to-date documents defining the factory production control, which he applies. The manufacturer's documentation and procedures shall be appropriate to the product and the manufacturing process. The factory production control system shall achieve an appropriate level of confidence in the conformity of the product. This involves:

- a) the preparation of documented procedures and instructions relating to factory production control operations;
- b) the effective implementation of these procedures and instructions;
- c) the recording of these procedures and their results;
- d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-conformity and, if necessary, revise the factory production control to rectify the cause of non-conformity.

### **8.2.2 Unit checks during manufacture**

The manufacturer shall conduct the following unit checks during manufacture:

- a) check that the components meet the specifications;
- b) check the operation of the various mechanisms;
- c) check the marking.

### **8.2.3 Treatment of non-conforming parts**

The manufacturer shall treat non-conforming products as follows:

- a) isolate and identify non-conforming parts;
- b) undertake the necessary corrective actions;
- c) repeat tests as appropriate to prove that the product meets the specifications.

## **8.3 Further testing of samples**

At intervals of not more than six months, samples taken from finished product stock, selected in accordance with annex C, and representative of the series, shall be subjected to the full sequence of tests described in clause 6.

## **Annex A** **(normative)**

### **Fire resistance requirement**

Products representative of their type shall have been subjected to a successful fire test from both sides, according to EN 1634-1, to prove the effect of the product on the fire resistance of the complete door assembly. It is not necessary for the product to be operable after such a fire test.

NOTE A wider field of application will be obtained by subjecting the product to a test in accordance with another part of prEN 1634, currently prepared by CEN/TC 127 (prEN 1634-2, Fire testing of door and shutter assemblies - Part 2: Small scale testing of items of door hardware). Until prEN 1634-2 for fire testing is applicable, existing national regulations for fire testing can be used.

Where there is a latching function it shall comply with the requirements of 5.1.2, and there shall be no means of inhibiting the latching function, other than by a key controlled deadbolt.

## Annex B (normative)

### Illustration of test apparatus for locks and latches

Illustrations show typical examples of lock test-rig construction or design.

Where specifically stated in manufacturer's instructions for the product, alternative materials, additional support, etc as appropriate, may be used.

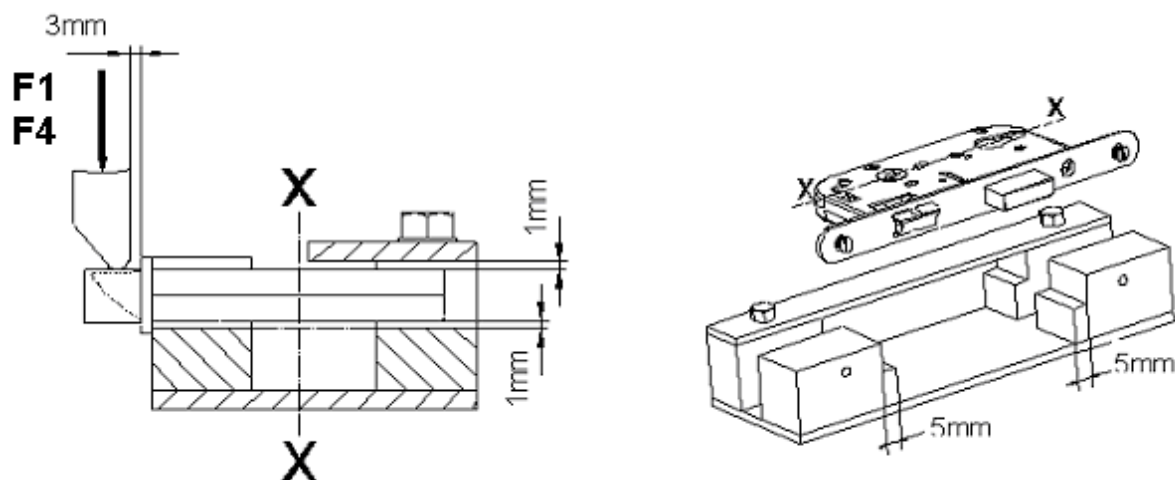
NOTE 1 Test fixtures are shown in principle only.

The distance between door and frame should be  $3 \text{ mm} \pm 1 \text{ mm}$ .

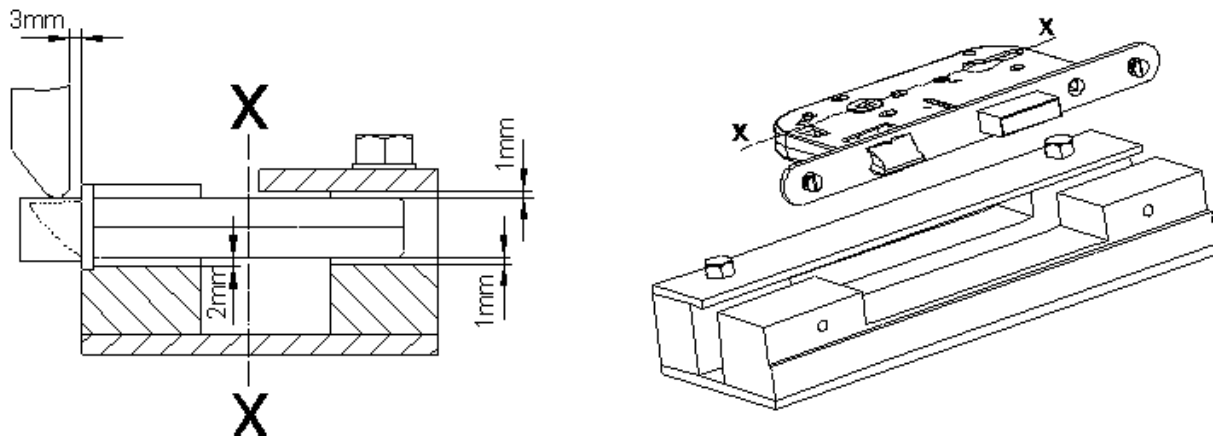
The minimum thickness of the test block shall be  $44 \text{ mm} \pm 1 \text{ mm}$ .

NOTE 2 If the lock case width requires a thicker test block the thickness should be calculated with the formula:

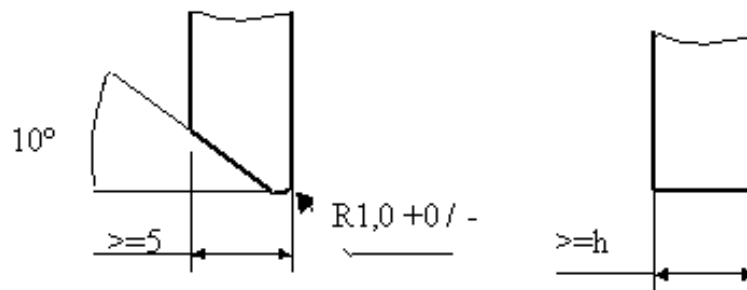
$B = 2,5 \times b$  Where 'b' = the thickness of the lockcase, and 'B' = the thickness of the test block.



a) Forend not supported in the fixture



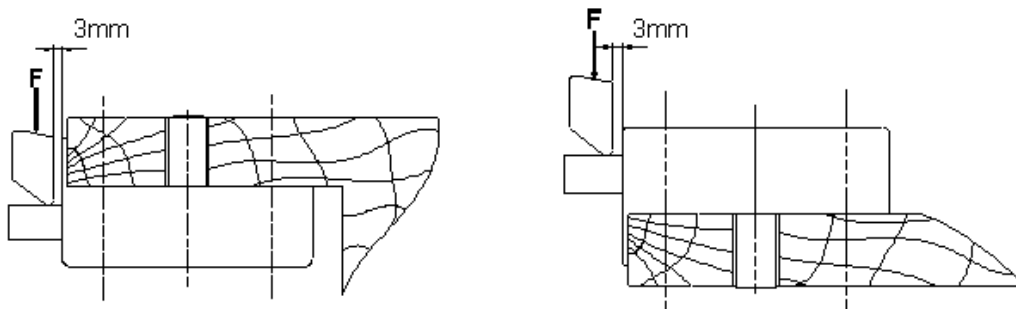
b) Forend supported in the fixture



**Key**

h Height of deadbolt

c) Shape of tool



d) Testing of rim locks

Figure B.1 — Sideload on latch bolt and deadbolt resistance test

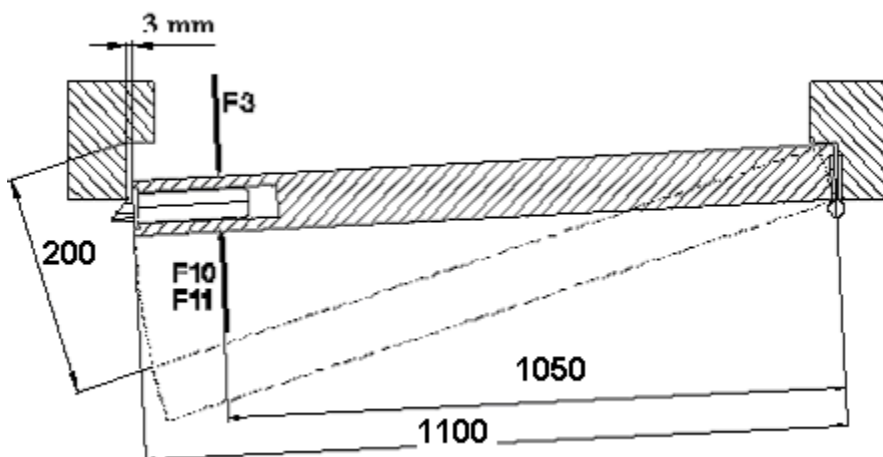


Figure B.2 — Durability of latch action and durability of latch action with load applied test and closing force test

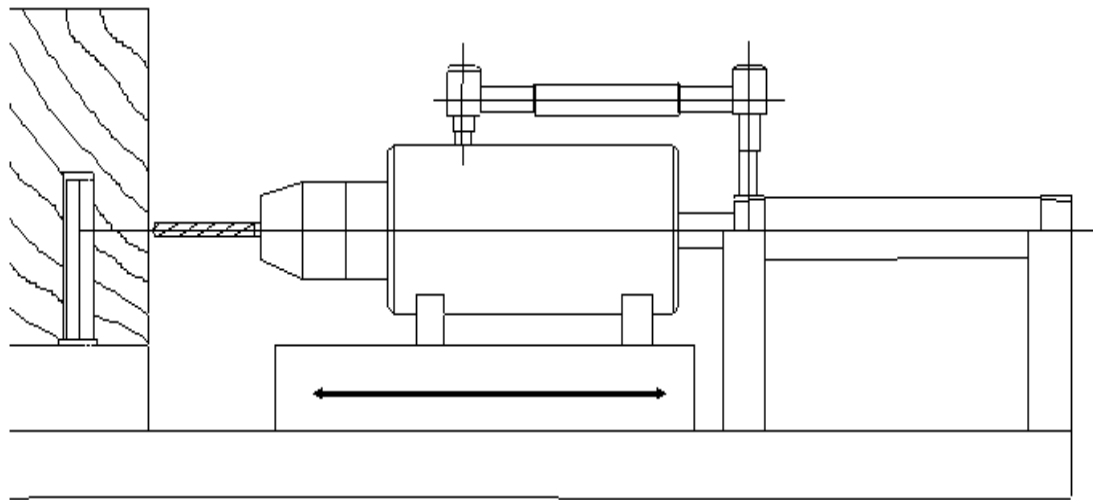
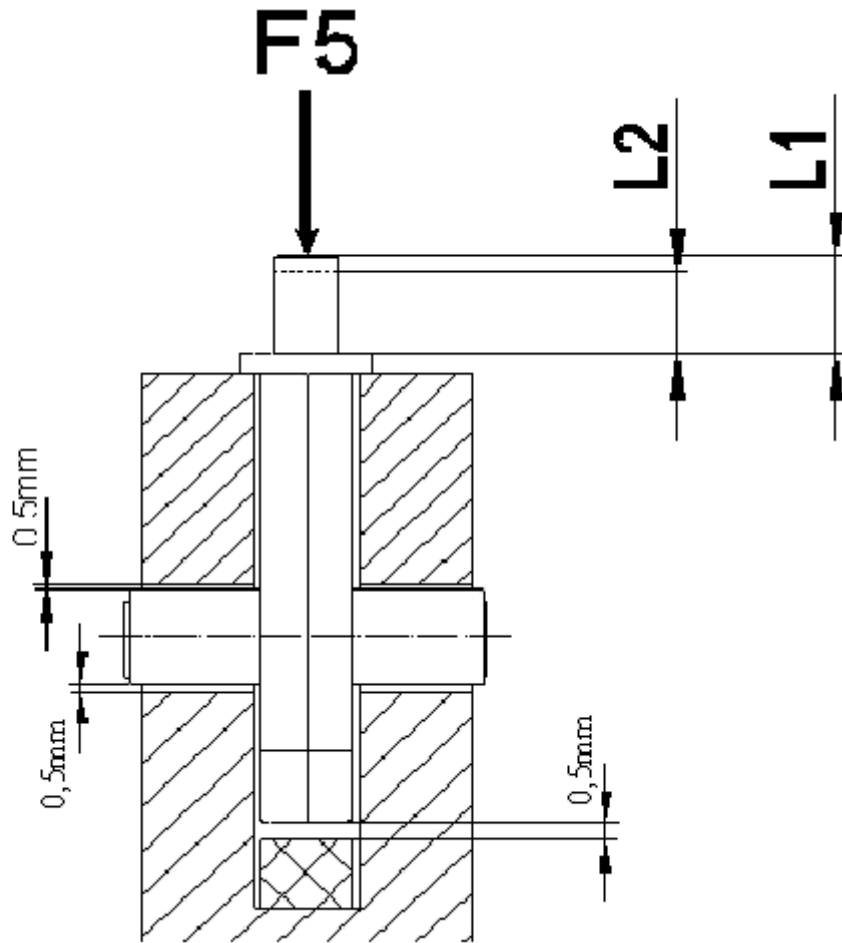


Figure B.3 — Resistance to drilling and side load, and resistance to drilling and end load test

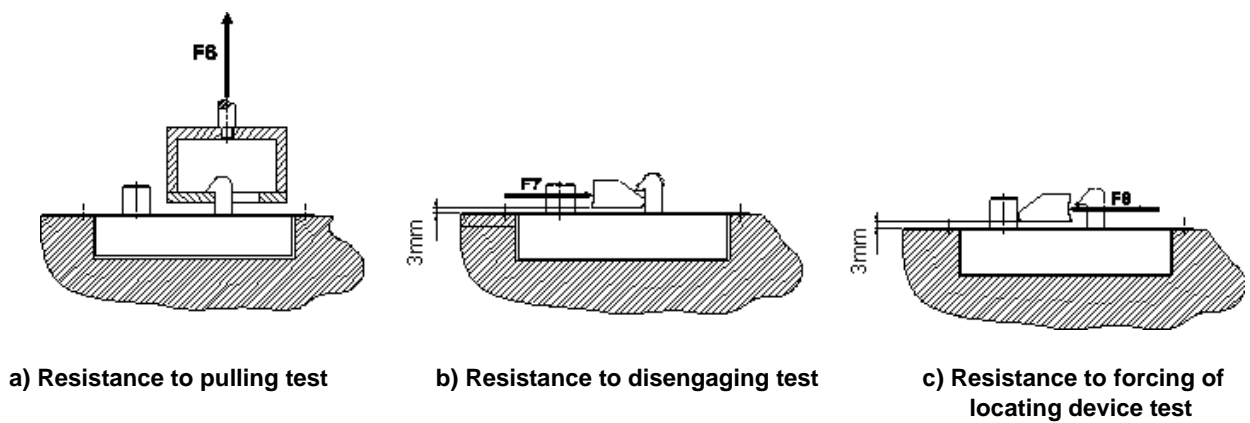




**Key**

A Support of the lockcase if specified by the manufacturers instructions.

**Figure B.4 — End load test and deadbolt projection**



**Figure B.5 — Resistance test on hook/claw bolt locks**

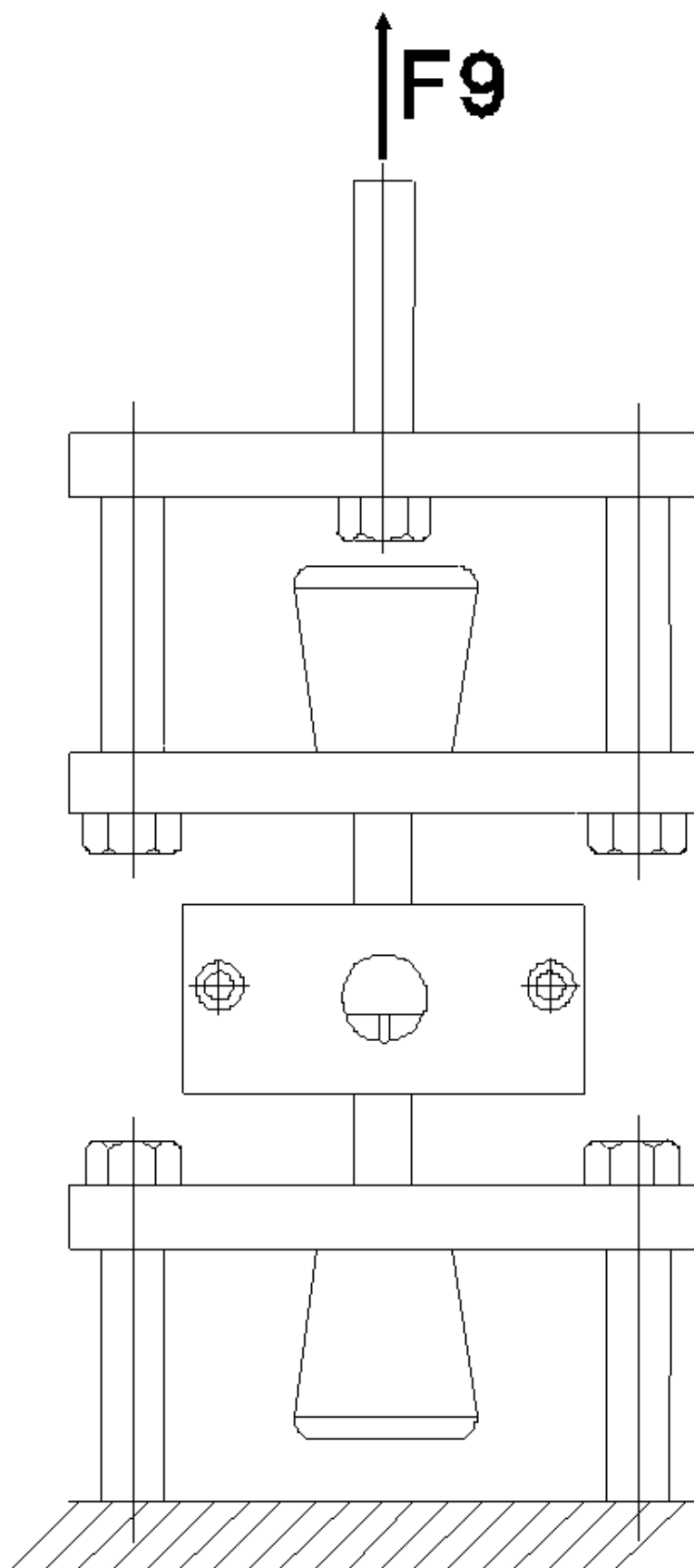


Figure B.6 — Resistance to pulling test

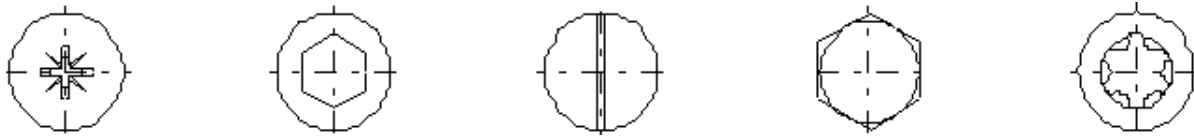


Figure B.7 — Heads of conventional screws to suit standard tools

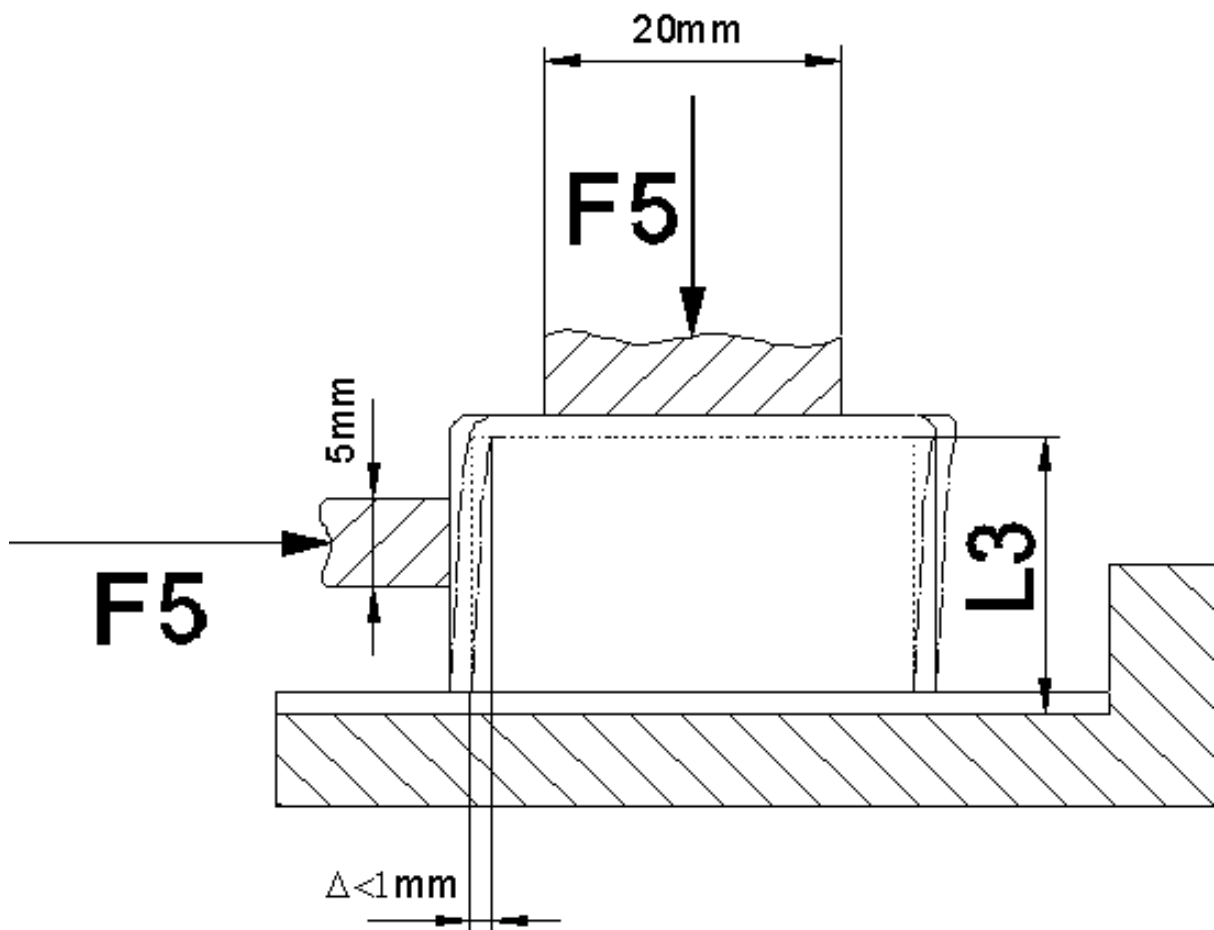


Figure B.8 — End load on box test

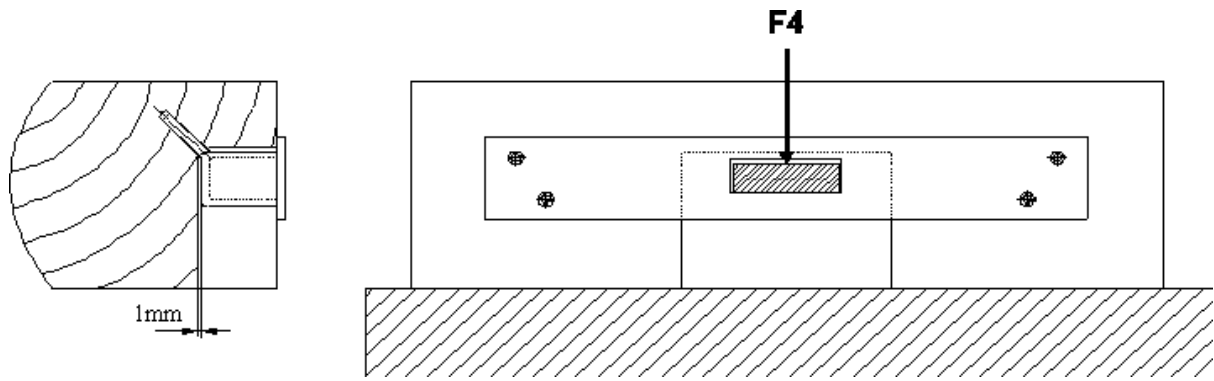


Figure B.9 — Side load test on locking plate

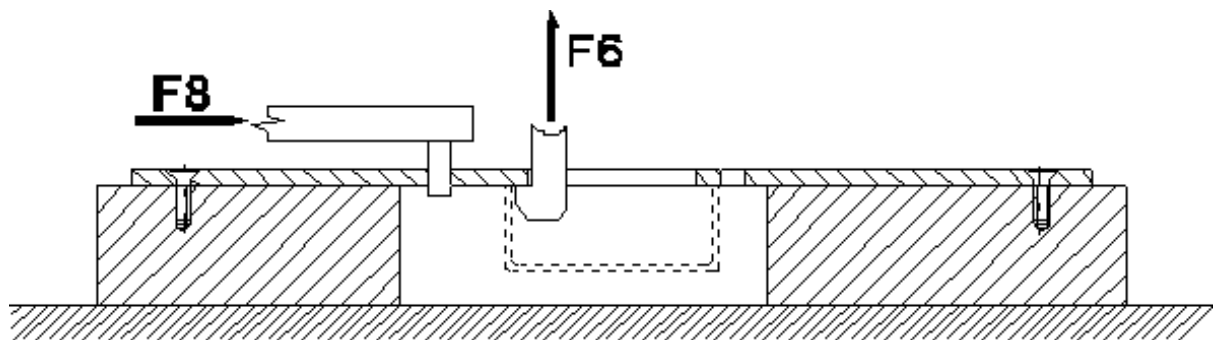


Figure B.10 — Pull and lifting load test

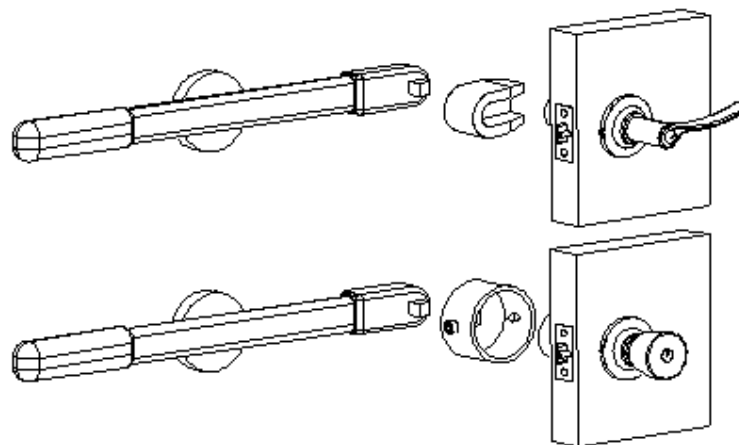


Figure B.11 — Torque on lockable handle or knob

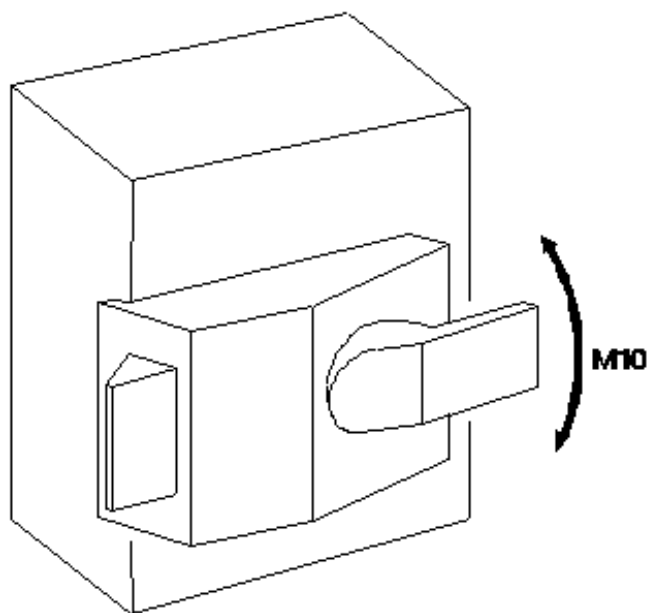


Figure B.12 — Torque on lockable handle or knob for rim night latch

## **Annex C** (normative)

### **Test sampling and sequencing for locks and latches**

#### **C.1 Visual check on documentation**

- 6.1.1 Dangerous substances
- 6.4.1 Door mass
- 6.5 Suitability for use on fire / smoke doors
- 6.6 Safety
- 6.12.1 Detaining elements
- 6.12.2 Effective differs
- 6.12.3 Differing step heights on key
- 6.12.4 Non-interpassing of keys with just one interval differ. Based on manufacturer's code calculation method
- 6.12.5 Coding protection

#### **C.2 Test sequence for locks, latches and locking plates**

Manufacturer and test laboratory shall determine the minimum number of test samples and test sequence needed to verify all applicable requirements.

If there is more than one test performed on each sample, the test sequence shall ensure that previous tests do not have influence on following tests in agreed sequence.

All tests excluding visual checks or check on key shall be performed on two samples.

As an example for locks and latches, between six and twelve test samples, depending on type, can be subjected to a sequence of tests as shown in Table C.1.

As an example for locking plates, between four and six test samples, depending on application, shall be subjected to a sequence of tests as shown in Table C.2.

Table C.1 — Test sampling and sequencing for locks and latches

Test	Tests for all locks (where applicable)			Additional tests for			
				Locks with latch follower (where applicable)	Locks with hook / claw bolts	Bored locks	Corrosion require- ments
	Sample A and H	Sample B and J	Sample C and K	Sample D and L	Sample E and M	Sample F and N	Sample G
1	6.7.2 Operation at extremes of temperature	6.9.2 Protection against removal from door	6.10.2.1 Manual locking	6.1.2 Return force of latch bolt	6.8.5 Resistance to pulling of hook /claw bolt	6.8.1.1 Torque resistance of knob or lever handle on bored lock and latch	6.7.1 Corrosion resistance
2	6.3.2 <sup>a</sup> Durability of deadbolt mechanism	6.2.2 Torque to operate deadbolt	6.10.2.2 Manual locking with intermediate locking positions	6.10.3 Torque to withdraw the latch bolt with key	6.8.6 Resistance to disengaging of hook/claw bolt	6.8.8 Resistance to pulling off of knob on bored lock and latch set	
3	6.12.4 <sup>a</sup> Non-inter passing of keys with just one interval differ	6.2.4 Torque resistance of Rim lock with lockable handle /knob	6.10.2.3 Automatically locking deadbolt	6.11.1 Torque to withdraw latch bolt with handle	6.8.7 Resistance to forcing of locating device in sliding door locks	6.11.3 Minimum follower restoring torque	
4	6.8.2.1 Resistance to side load on deadbolt	6.8.1.2 Torque resistance of knob or lever handle on rim night latch	6.10.2.4 Automatically locking latch bolt	6.4.2 Closing force			
5	6.8.2.2 Resistance to drilling and side load on deadbolt	6.10.1 Strength of key	6.8.3 Deadbolt projection	6.3.1.1 Durability of latch action without force applied			
6			6.2.3 Strength of normal latch action and stops	6.3.1.2 Durability of latch action with force applied			
7			6.8.4.1 Resistance to end load	6.3.3 Durability of locking snib mechanism			
8			6.8.4.2 Resistance to End load with drilling	6.2.1 Resistance to side load on latch bolt			
9				6.11.2 a) Strength of bolt actions. The deadbolt mechanism			
10				6.11.2 b) Strength of bolt actions . The latch bolt action			

<sup>a</sup> 6.12.4 before 6.3.2 for locks in grade 1 to 3.

Table C.2 — Test sampling and sequencing for locking plates

Test	Tests for all locking plates (where applicable)		Additional tests for	
			Box protected Locking plates	Locking plates used in conjunction with locks fitted to sliding doors
	Sample A and D	Sample B and E	Sample C and F	Sample G
1	6.8.9.2 Resistance to side load on locking plate	6.8.9.3 Resistance to pulling on locking plate.	6.8.9.1 Resistance to end load on box protected locking plate	6.8.9.4 Resistance to lifting force on locking plate
2	6.9.2 Protection against removal from door	6.9.2 Protection against removal from door	6.9.2 Protection against removal from door	6.9.2 Protection against removal from door



## Annex D (informative)

### Field of door application

Class	Type	Application 1	Application 2	Application 3	5.1.1	5.1.2	5.2.1	5.2.2	5.2.3	5.2.4	5.3.1	5.3.2	5.3.3	5.4.1	5.4.2	5.5	5.6	5.7.1	5.7.2	5.8.1.1	5.8.2.1	5.8.2.2	5.8.3	5.8.4.1	5.8.4.2	5.8.5	5.8.6	5.8.7	5.8.8	5.8.9.1	5.8.9.2	5.8.9.3	5.8.9.4	5.9.2	5.10.1	5.10.2	5.11.1	5.11.2	5.11.3	5.12.1	5.12.2	5.12.3	5.12.4	5.12.5					
					Dangerous substances	Return force of latch bolt	Resistance to side load on latch bolts	Torque to operate deadbolt	Strength of normal latch action and stops	Torque resistance of RIM lock with lockable handle / knob	Durability of latch action	Durability of deadbolt mechanism	Durability of locking snib mechanism	Door mass	Closing force	Fire resistance	Safety in use	Corrosion resistance	Operation at extremes of temperature	Torque resistance of knob or lever handle on bored lock and latch sets	Resistance to side load on deadbolt	Resistance to drilling and side load on deadbolt	Deadbolt projection	Resistance to end load on deadbolt	Resistance to drilling and end load on deadbolt	Resistance to pulling of hook/claw bolt	Resistance to disengaging of hook/claw bolt	Resistance to forcing of locating device in sliding door lock	Resistance to pulling off of knob on bored lock and latch set	Resistance to end load on box protected locking plate	Resistance to side load on locking plate	Resistance to pulling on locking plate	Resistance to lifting force on locking plate	Protection against removal from door	Strength of key	Deadlocking	Torque to withdraw latch bolt	Strength of bolt actions	Minimum follower restoring torque	Detaining elements	Effective differs	Differing step heights on key	Non-interpassing of keys with just one interval differ	Coding protection					
A	Mortice	Independent of application								NA										NA																													
B	Mortice	Hinged door								NA										NA					NA		NA	NA																					
C	Mortice	Sliding door					NA			NA										NA																													
D	RIM	Independent of application								NA										NA																													
E	RIM	Hinged door								NA										NA								NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
F	RIM	Sliding door					NA			NA										NA								NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
G	Bored lock	Independent of application																			NA																												
H	Mortice	Hinged door	Supported							NA										NA							NA	NA	NA																				
J	RIM	Hinged door	Inwards							NA										NA							NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
K	Mortice	Hinged door		Locked from inside						NA										NA							NA	NA	NA																				
L	Mortice	Sliding door		Locked from inside			NA			NA										NA								NA	NA																				
M	RIM	Hinged door		Locked from inside						NA										NA							NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N	RIM	Sliding door		Locked from inside			NA			NA										NA								NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
P	Mortice	Hinged door	Supported	Locked from inside						NA										NA							NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
R	RIM	Hinged door	Inwards	Locked from inside						NA										NA		NA					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

## Annex ZA (informative)

### Clauses of this European Standard addressing the provisions of the EU Construction Products Directive (89/106/EEC)

#### ZA.1 General

This European Standard has been prepared under mandate M/101 “ Doors, windows, shutters, gates and related building hardware” given to CEN by the European Commission and the European Free Trade Association.

The clauses of this European Standard, shown in this annex meet the requirements of the mandate given under the EU Construction Products Directive (89/106/EEC). Compliance with these clauses confers a presumption of fitness of locks and latches covered by this Annex for their intended use.

**WARNING:** Other requirements and other EU Directives, not affecting the fitness for intended use, can be applicable to locks and latches falling within the scope of this European Standard.

NOTE 1 In addition to any specific clauses relating to dangerous substances contained in this standard, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements also need to be complied with, when and where they apply.

NOTE 2 An informative database of European and national provisions on dangerous substances is available at the Construction web-site on EUROPA (CREATE, accessed through <http://europa.eu.int/comm/enterprise/construction/internal/hygiene.htm>).

**Table ZA.1 — Scope and clauses of this standard applying to the essential characteristics**

<b>Product:</b>	Mechanical locks and latches and their locking plates, as covered by the scope of this standard.		
<b>Intended use:</b>	When used with an appropriate door closing device on fire and/or smoke control doors on escape routes, to fulfil the self-closing requirement of such doors, and thereafter to ensure that the door remains shut.		
<b>Requirement/characteristic</b>	<b>Requirement clauses in this European Standard</b>	<b>Mandated levels and/or classes</b>	<b>Notes (expression of performance)</b>
Self-closing ability	5.4.2 5.1.2	None	Pass/fail criteria for closing force from a standing start
Durability of self-closing action	5.3.1	None	Pass/fail criteria for: - Durability: - Number of test cycles
Ability to maintain door in closed position, and not contribute to the spread of fire	5.5	None	Minimum performance requirement based on fire tests
Control of dangerous substances	5.1.1	None	See clause ZA 3.

**ZA.2 Procedure for the attestation of conformity of mechanical locks and latches**

Mechanical locks and latches for the intended uses listed shall follow the system of attestation of conformity shown in Table ZA.2, in accordance with the Decision of the Commission (1999/93/EC) and annex III of Mandate 101.

**Table ZA.2 — System of attestation of conformity**

<b>Product</b>	<b>Intended use</b>	<b>Levels or classes</b>	<b>System of attestation of conformity</b>
Building hardware related to doors and gates	On fire and/or smoke control doors	—	1
System 1: See CDP, annex III, point 2 (i), without audit testing of samples.			

The attestation of conformity shall be based on the evaluation of conformity procedure resulting from the application of those clauses of this European Standard indicated in Table ZA.3.

Table ZA.3 — Assignment of evaluation of conformity tasks

Tasks		Content of the task	Clauses to apply
a) Tasks for the manufacturer	Factory production control (FPC)	Parameters related to the characteristics of Table ZA.1	8.2
	Further testing of samples taken at factory	The characteristics of Table ZA.1	8.3
	Initial type testing	Dangerous substances	8.1
b) Tasks for the certification body	Initial type testing	All characteristics of Table ZA.1 except dangerous substances	8.1
	Initial inspection of factory and FPC	Parameters related to the characteristics of Table ZA.1	8.2
	Continuous surveillance, assessment and approval of FPC	Parameters related to the characteristics of Table ZA.1	8.2

For products intended to be placed in markets of those Member State where there are no legal requirements for certain characteristics listed in Table ZA.1, the producer is not required to determine performance, and may declare “no performance determined” for such characteristics in the information accompanying the CE marking requirements in clause ZA.3. The “no performance required” (NPD) option may not be used where the characteristic is subject to threshold level.

Where compliance with the system of attestation is achieved, the certification body shall draw up a certificate of conformity (EC Certificate of conformity) with the information indicated below. This EC Certificate of conformity entitles the manufacturer to affix the CE marking, as described in clause ZA.3.

The EC Certificate of conformity shall contain the following information:

- name, address and identification number of the certification body;
- name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;
- description of the product (type, identification, use, etc) and a copy of the information accompanying the CE marking;
- provisions to which the product conforms (e.g. annex ZA of EN 12209);
- particular conditions applicable to the use of the product;
- the certificate’s number;
- conditions and period of validity of the certificate, where applicable;
- name of, and position held by, the person empowered to sign the certificate.

In addition, for each product covered by an EC Certificate of conformity, the manufacturer or his agent established in the EEA shall draw up a declaration of conformity (EC Declaration of conformity) including the following information:

- name and address of the manufacturer, or his authorised representative established in the EEA;
- number of the attached EC Certificate of conformity;
- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer, or of his authorised representative;

Both documents shall be presented in the official language (or languages) of the Member State of the EU in which the product is to be used.

### **ZA.3 CE marking**

The CE conformity marking symbol consists exclusively of the letters “CE” in accordance with Directive 93/68/EC.

NOTE The manufacturer, or his authorised representative established in the EEA, is responsible for affixing of the CE marking symbol.

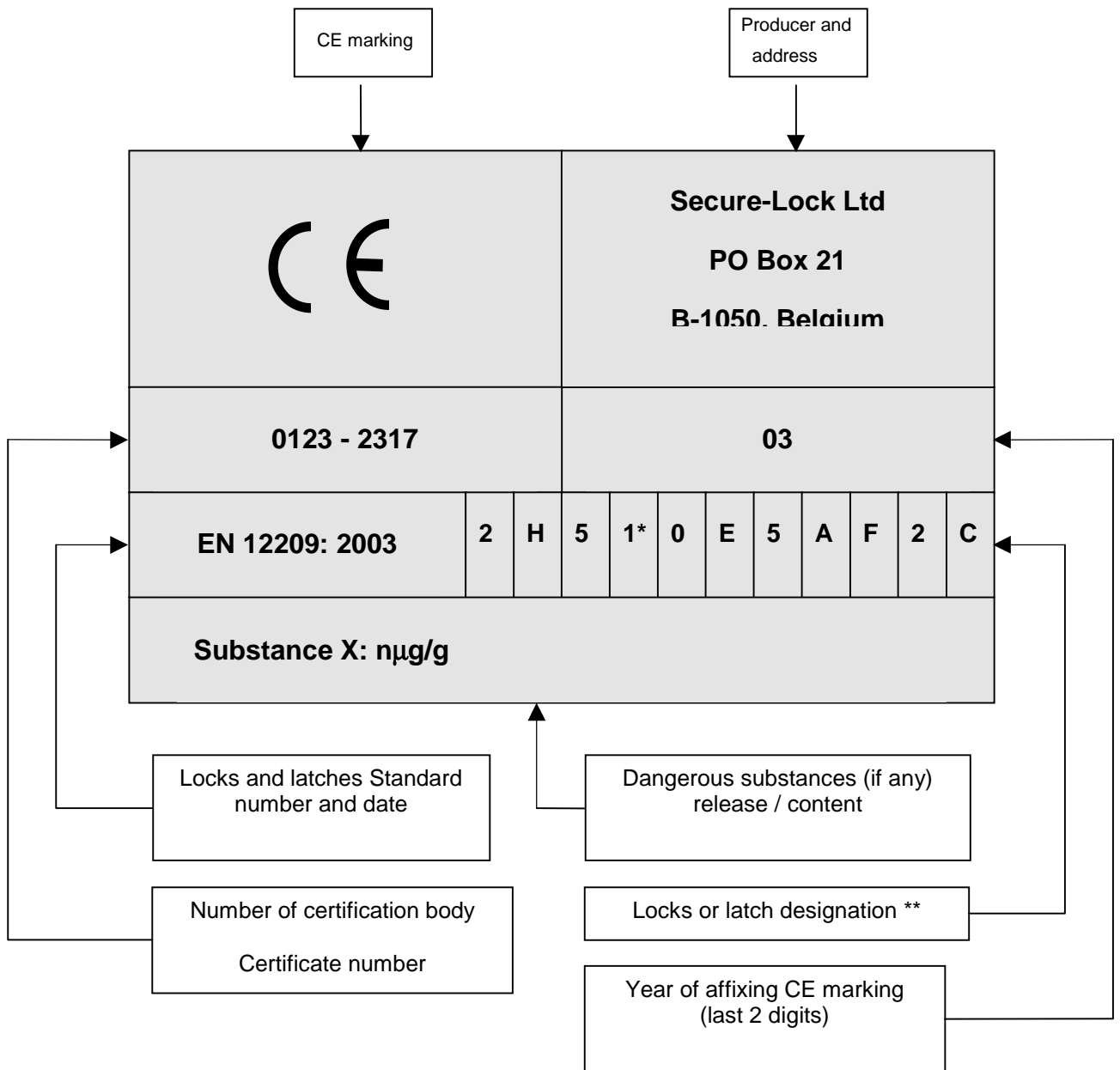
The CE marking symbol shall be accompanied by the following information:

- a) identification number of the certification body;
- b) the name or identifying mark of the producer;
- c) registered address of the producer;
- d) the last two digits of the year in which the marking was applied;
- e) the number of the EC certificate of conformity;
- f) reference to this European Standard (EN 12209);
- g) the designation and performance of the lock or latch according to clauses 4.2.1 to 4.2.11 where referenced in Table ZA.1

The CE marking symbol and items a) to g) above shall accompany the product and shall be included with the installation instructions. An example of CE marking is given in Figure ZA.1.

Additionally, at least the CE marking symbol and item a) of all of this information shall be affixed to the lock/latch and optionally on its packaging.

Figure ZA.1 — Example of CE marking for a lock or latch



\* The manufacturer will state the precise field of application for fire/smoke door use according to annex A

\*\* All or some of the digits may be substituted by "NPD" in the designation of the products intended to be placed in markets where there are no legal requirements for that particular characteristic, unless subject to a threshold value.

In addition to any specific information relating to dangerous substances shown above, the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE European legislation without national derogations need not be mentioned.

## Bibliography

- [1] EN 1303, *Building hardware — Cylinders for locks — Requirements and test methods.*
- [2] EN 179, *Building hardware - Emergency exit devices operated by a lever handle or push pad - Requirements and test methods.*
- [3] EN 1125, *Building hardware - Panic exit devices operated by a horizontal bar - Requirements and test methods.*
- [4] prEN 14846, *Building hardware — Locks and latches — Electromechanically operated locks and striking plates — Requirements and test methods.*
- [5] WI 0033250, *Building hardware — Locks and latches — Multi-point locks — Requirements and test methods.*
- [6] EN 12519, *Windows and pedestrian doors — Terminology.*