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df]Ya b_]!'NU hYj Y]b'dfYg_i gbYa YrcXY

Building Hardware - Locks and latches - Multipoint locks and their locking plates -
Requirements and test methods

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English Version

Building Hardware - Locks and latches - Multipoint locks and their locking plates - Requirements and test methods

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Foreword

This document (prEN 15685:2007) 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 document is currently submitted to the CEN Enquiry.

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, B, C or D, which is an integral part of this document.

No existing European Standard is superseded.

This European standard is one of a series of European standards dedicated to building hardware products.

Complementing this standard is a standard for mechanically operated locks and latches (EN 12209), and a draft for electromechanically operated locks and locking plates (prEN 14846)

Normative and informative annexes to this standard are indicated in the contents list.

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.

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Introduction

Experiences relating to security and environmental conditions encountered in residential, commercial and public buildings have indicated a need to provide, in some applications, additional locking points to locks installed on doors, window doors and entrance doors.

These additional locking points are designed to ensure sufficient performance, weather tightness and/or attack resistance of doors.

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1 Scope

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

This standard covers systems comprising more than one locking point or anti-separation point or clenching point between door leaf and frame, interlinked and centrally controlled and /or operated.

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

This European Standard covers multipoint locks which are either manufactured and placed on the market in their entirety by one producer or assembled from sub-assemblies produced by more than one producer and subsequently placed on the market as a kit in a single transaction.

This standard specifies only the dimensions and properties required for security and for the assessment of smoke door suitability.

This standard does not specify any particular design or installation.

The suitability of an electrically operated multipoint lock is determined by additional performance tests specified in WI 33062

This European standard does not specify single point locks or their locking plates which are specified by EN 12209.

This European standard is not applicable to cylinders, handles, locks for windows, padlocks, locks for safes, furniture locks or prison locks.

This standard specifies Multipoint locks and locking systems intended for use in different environmental and security conditions, thus necessitating different grades.

2 Normative references

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

EN 1634-1, *Fire testing of door and shutter assemblies — Part 1: Method of test for fire resistance of fire doors and shutters*

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

ISO 10899: 1996, *High-speed steel two-flute drills — Technical specifications*

3 Terms, definitions, symbols and abbreviations

3.1 Terms and definitions

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

3.1.1

anti-separation point

an arrangement of components to prevent the separation of a door leaf from its frame or adjacent door leaf in the plane of the door

3.1.2

bolt

movable part of a lock that usually engages a component fixed to a frame, and withdraws into a lockcase

3.1.3

centrally controlled

having operation of all of its locking and/or clenching and/or anti-separation points, affected, enabled or prevented from a single lockcase

3.1.4

clenching point

an arrangement of components to draw together a door and its frame in the door closing direction to reduce distortion of the door and/or compress seal.(not necessarily a locking point)

3.1.5

cylinder

device, usually separate from, but engaging with, its associated lock, operated by a 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 at least in one direction by a key, handle and/or thumb turn

3.1.8

follower

part of a lock that operates the bolts and/or clenching and/or anti-separation points when turned by a spindle

3.1.9

forend

part of a mortise lockcase by which the lock is fixed to the door

3.1.10

interlinked

connected for the purpose of operation

3.1.11

key

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

3.1.12

latch action

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

3.1.13**latch bolt**

spring-loaded bolt that automatically engages a locking plate to keep the door in its closed position

3.1.14**lock**

fastener which secures a door leaf in its closed position and which is operated by a key or other device

3.1.15**lockcase**

part of a lock in which the lock mechanism is housed

3.1.16**locking plate**

a component, which is normally fixed to a door frame to engage at least a bolt or an anti-separation point or a clenching point

3.1.17**locking point**

an arrangement of components interacting between a bolt and locking plate for security purpose

NOTE Bolts separated by less than 150 mm in the same plane, between the closest points on their adjacent surfaces in the plane of the forend in locked position, constitute one locking point only. Bolts operating in different planes are separate locking points

3.1.18**lock mechanism**

constituent parts of a lock that operate at least a bolt or an anti-separation point or a clenching point and, where required, provide the differs

3.1.19**mortice lock**

lock for fixing in a mortice, usually in the closing edge of a door leaf

3.1.20**multipoint lock**

lock comprising at least two locking points or two anti-separation points or two clenching points, interlinked and centrally controlled

3.1.21**rim lock**

lock for fixing on the surface of a door leaf

3.2 Symbols, units and abbreviations

For the purposes of this European Standard, the following symbols shown in Table 1.

Figure 1 and/or annex B shall apply.

Table 1 — Symbols

Symbol	Definition	Unit	Figure	Test	Table	Criteria
F1	Side load on latch bolt	kN	1 B1A,B	6.2.1	5	
F2	Return force of latch bolt	N	1	6.1.2		
F3	Side load on latch bolt (durability test)	N	1 B2	6.3.1.2		
F4	Side load on locking point	kN	1 B1A,B B??	6.8.2.1 6.8.8.2	7	A B C
F5	End force on locking point	kN	1 B7	6.8.4.1 6.8.8.1	7	A C
F6	Tensile force on anti-separation device	kN	1 B8	6.13.1	9	A B
F7	Disengaging force on anti-separation device	kN	1 B8	6.13.3	9	B
F8	Shear force on locating device	kN	1 B8	??		
F9	Door closing force (operating requirement)	N	B2	6.4.2		
F10	Door closing force (durability test)	N	B2	6.3.1.1		
F11	Clenching force	N	(B2)			
L1	Minimum bolt projection	mm		6.8.3	7	
L2	Minimum bolt resulting projection	mm		6.8.4.1	7	
L3	Engagement of anti-separation point	mm		6.8.8.1	7	
L4	Resulting engagement of anti-separation point	mm				
M1	Maximum torque to operate the unloaded latch bolt/locking points/anti separation point with key	Nm	1	6.2.2	5	
M2	Maximum torque to operate the unloaded latch bolt/locking points anti separation point with handle/follower,	Nm	1	6.2.2	5	
M3	Maximum torque to operate the clenching point with key	Nm	1	6.2.2	5	
M4	Maximum torque to operate the clenching with handle	Nm	1	6.2.2	5	
M5	Forcing torque on follower (abuse)	Nm	1	6.2.3	5	
M6	Forcing torque on follower (locking) [locked condition ??]	Nm	1			
M7	Torque on key	Nm	1			
M8	Minimum restoring torque	Nm	1			
M10	Torque on lockable follower	Nm		6.2.4	5	
M11	Torque on lockable follower (Security) [is missing in Figure1]	Nm		6.8.1	7	
N1	Minimum number of detaining elements				8	
T	Temperature	°C				
t 1	Drilling time total	min		6.8.2.2 6.8.4.2	7	
t 2	Total drilling time on each locking point	min				

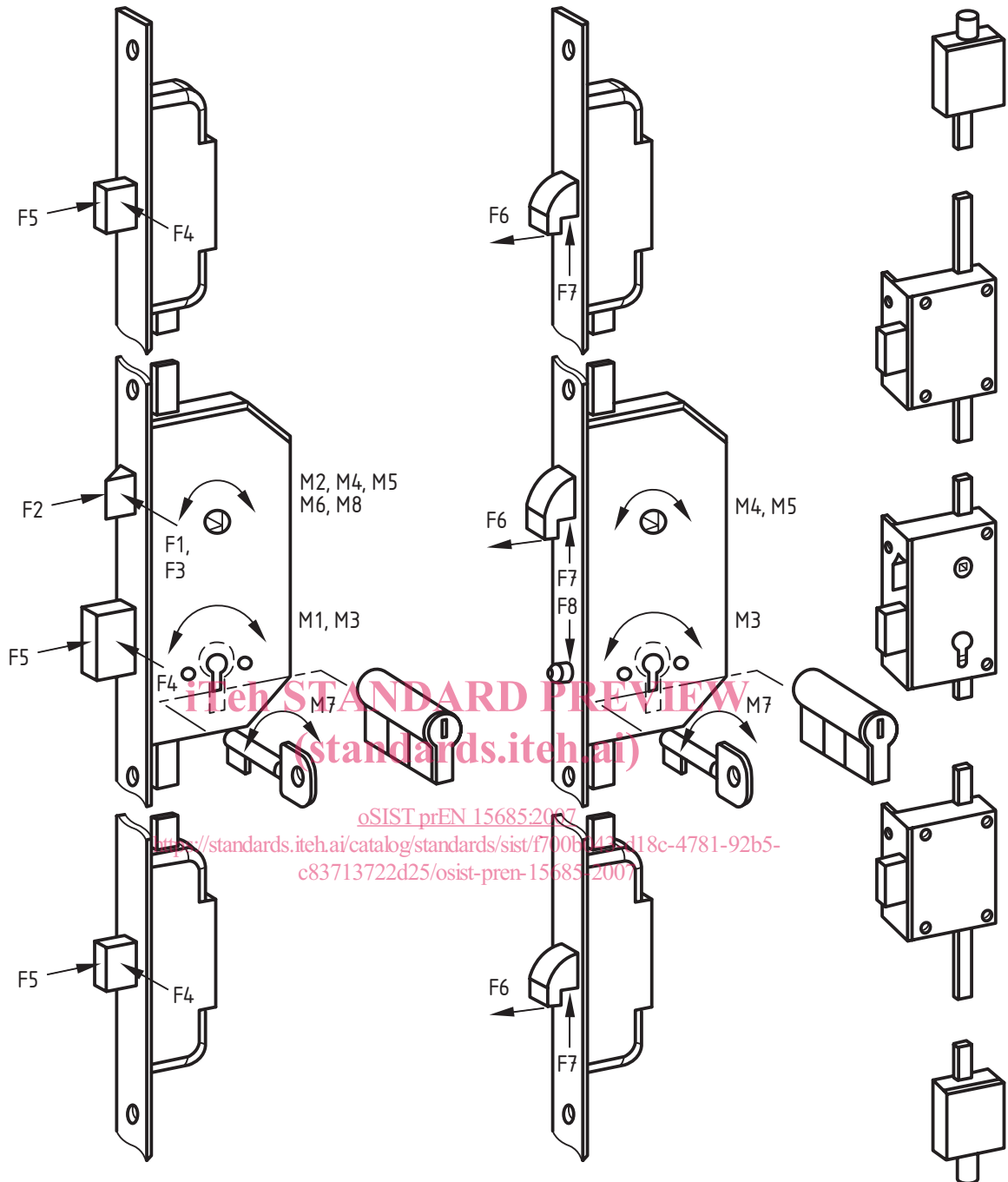


Figure 1 — Definition of forces, torques

4 Classification

4.1 General

4.1.1 For the purpose of this European Standard, mechanically operated multipoint locks and their locking plates shall be classified in accordance with the thirteen character classification system described in 4.2.1 to 4.2.13.

Locking plates intended to be sold separately from the lock may be coded in accordance with 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 conform to 5.1.1 and where applicable 5.1.2.

4.2 Classification for mechanically operated multipoint locks and locking plates

Table 2 — Classification

1	2	3	4	5	6	7	8	9	10	11	12	13
Category of use	Durability	Door mass and closing force	Suitability for use on fire / smoke doors	Safety	Corrosion resistance and temperature	Security	Field of door application	Type of key operation and locking	Type of spindle operation	Key identification of lever locks	Anti-separation	Clenching

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4.2.1 Category of use (first digit)

Three grades are identified in accordance with 5.2:

- 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 in accordance 5.3.

- 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;
- 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 locking point(s), anti-separation point(s), clenching point(s) and snib mechanisms as shown in Table 6.

4.2.3 Door mass and closing force (third digit)

Nine grades of door mass and closing force are identified in accordance with 5.4:

- 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 as 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 as 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 as specified by the manufacturer; 15 N maximum closing force.

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

Not intended for use on smoke / fire door assemblies	0
Suitable for use on smoke door assemblies - based solely on the requirements of the relevant product standard	A
Suitable for use on smoke and fire door assemblies -	
- with a classification time of: 15 minutes	B
- with a minimum classification time of: 30 minutes	C
- with a minimum classification time of: 60 minutes	D
- with a minimum classification time of: 90 minutes	E
- with a classification time of: 120 minutes or greater	F