



GUIDELINIE ECB•S R10

Additional requirements for burglar resistant products within the scope of EN 1627 according to guideline ECB•S C10 with electromechanical locks, striking plates or security plates as well as mechatronic cylinders

1. Scope and objective

The Guideline defines the requirements of European Certification Body (ECB) GmbH for attacks on electromechanical locks, striking plates, security plates and mechatronic cylinders that are not covered by EN 1627. Only testing in electrical powerless condition is intended (see Chapter 1 "Scope").

Contents based on the respective requirements of ÖNORM B 5338 and ÖNORM B 5351.

2. Definitions

- 2.1 Electromechanical lock: Device using electrically operated means to effect or enable locking and/or unlocking.
- 2.2 Electromechanical strike (or electrical door opener): Building component which is fixed to the frame and uses electrically operated means to effect or enable locking and/or unlocking.
- 2.3 Mechatronic cylinder (MC): Device with an integrated or a remote electronic system, which is to be used with a lock for the purpose of operating the lock and/or detaining elements after verifying the authorisation of an electronic key, and which can be replaced by a mechanical cylinder conforming to EN 1303 without replacing any door furniture.

3. Normative references

EN 1627, Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Requirements and classification

EN 1303, Building hardware – Cylinders for locks – Requirements and test methods

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

EN 14846, Building hardware – Locks and latches – Electromechanically operated locks and striking plates - Requirements and test methods

EN 15684, Building hardware – Mechatronic cylinders – Requirements and test methods

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

DIN 18250, Schlösser – Einsteckschlösser für Feuer- und Rauchschutztüren

EN 12209, Building hardware – Mechanically operated locks and locking plates – Requirements and test methods

4. Requirements

Electromechanical locks and striking plates shall conform to EN 14846. Allocation to the respective resistance class (RC) is contained in Table 1 of this Guideline.

Mechatronic cylinders shall conform to EN 15684. Allocation to the respective resistance class (RC) is contained in Table 2 of this Guideline.

- 4.1 Electromechanical locks and electromechanical strikes shall be designed and built according to the de-energised circuit principle (de-energised locking). Power failure shall not cause release of the component from the attack side. In particular, for large objects (with control technology or linked with alarm systems, e.g.) the use of monitored cables is recommended.

The connecting cables, existing terminal boxes and the releasing unit (electronic component which allows access) shall be installed in the secured area (see Figures 1a and 1b). During the manual test according to EN 1630 (in the respective resistance class), it shall not be possible to bare these components in such a way that manipulation (e.g., removal of the insulation of the cables and fixing of terminals) is possible. A special risk exists for wirings to key switches transferring analogue signals which directly enable release.

Wirings which transfer encoded signals do not require mechanical protection. It shall, however, be ensured that the signal sequences cannot be spied out and be used for manipulations. Proof of that shall, e.g., be given in the form of a confirmation and technical explanation of the manufacturer (assessment according to EN 1630).

The release of burglar resistant building parts with electromechanical components may only take place after completion of the manual test according to EN 1630, except for the replacement of a mechanical cylinder by a mechatronic cylinder.

4.2 Cylinders

For mechatronic cylinders with a projection of more than 3 mm (e.g., of the cylinder plug or the actuating element), a pull test (protection against cylinder/cylinder plug extraction) as well as an anti-twist test (resistance against attacks by twisting off) as well as, if necessary, an anti-drill test (resistance against drilling) shall be carried out. The anti-drill test may be omitted if the drill protection is completely maintained after the pull test and the anti-twist test.

If a security plate for mechatronic cylinders is designed and built as a round profile cylinder or round cylinder, any necessary cylinder bridge duct shall be positioned in the security plate at the protected side (not accessible for attacks).

Later changes of tested security plates for round profile cylinders or round cylinders are not allowed without supplementary strength and anti-drill tests according to EN 1906.

4.3 Electromechanical security plates

They shall be tested according to EN 1906 for mechanical security as well as for locking security, protection against manipulation and the mechatronic system similar to EN 15684.

4.4 Connection to the access control system

The decision about authorised access shall not be taken in parts of the system which are accessible to the attacker. Direct access to the circuit of the electrical locking from the attack side shall be prevented. The protective effect against electrical manipulation shall satisfy the relevant class according to EN 14846. If a mechatronic cylinder according to EN 15684 is used, the decision about authorised access shall not be taken in parts of the system which are accessible to the attacker unless there is a secure (encrypted) data connection to the locking element.

Note: The requirements and the protection level of the access control system shall be matched with the object that shall be protected and its specific protection level.

4.5 Connection of a key switch at the attack side

A key switch shall be equipped with a cylinder according to EN 1627 Table 2 or a mechatronic cylinder according to Table 2 of this Guideline.

The box of the key switch shall have a secure alarm monitoring system against unauthorised opening (e.g., by means of a photo cell) and drilling (e.g., alarm wiring). The alarm signal blocks unlocking for a period of X (e.g. twice the resistance time, however, at least for 15 minutes) via the control of the component. Such blocking can be stopped from a secured place at any time.

Alternatively, the box, its installation as well as the surrounding wall may be tested according to EN 1630 and shall satisfy the requirements of the respective resistance class. The connecting cable, existing terminal boxes and the releasing unit shall be designed and built as required in section 4.1.

4.6 Connection of a wireless remote control at the attack side

The respective locking variation may only be derivable from a marking at the authorising medium (e.g. wireless remote control) by the manufacturer. The transfer of data (the radio signal sent) shall be encrypted. The radio signal shall change with any further activation (so-called "rolling code"). Opening by use of the spied-out radio signal shall be prevented for a period of at least 15 minutes (in resistance class 6, for at least 20 minutes).

The releasing unit shall be positioned in the secured area.

Table 1 – Criteria for electromechanically operated locks and striking plates

Classification		Resistance class					
		RC 1	RC 2	RC 3	RC 4	RC 5	RC 6
1	Category of use	2	2	2	2	2	2
2	Durability and load on latchbolt	L	L	L	L	L	L
3	Door mass and closing force	4	4	4	5	5	5
4	Suitability for use on fire/smoke doors	0	0	0	0	0	0
5	Safety	0	0	0	0	0	0
6	Corrosion resistance, temperature and humidity	G	G	G	G	G	G
7	Security - drill resistance	3	4	4	5	7	7
8	Security – electrical function	0	0	0	1	1	1
9	Security – electrical manipulation	2	2	2	3	3	3

meaning (**according to EN 14846**):

Digit:

Class:

- | | | | |
|---|--|---|--|
| 1 | Category of use | 2 | for use by people with some incentive to exercise care but where there is some chance of misuse, e.g. office doors |
| 2 | Durability and load on latchbolt | L | 100.000 test cycles – 25 N load on latchbolt |
| 3 | Door mass and closing force | 4 | up to 100 kg – 25 N maximum closing force |
| | | 5 | up to 200 kg – 25 N maximum closing force |
| 4 | Suitability for use on fire/smoke doors | 0 | not intended for use on smoke/fire door assemblies |
| 5 | Safety | 0 | no safety requirement |
| 6 | Corrosion resistance, temperature and humidity | G | moderate resistance -10 °C to +55 °C, humidity level 1 |

Security:

- | | | | |
|---|--|---|---|
| 7 | Security - drill resistance (EN 12209 shall apply) | 3 | medium security without drill protection |
| | | 4 | high security without drill protection |
| | | 5 | high security with drill protection |
| | | 7 | ultra-high security with drill protection |
| 8 | Security – electrical function | 0 | no requirement |
| | | 1 | status indication |
| 9 | Security – electrical manipulation | 2 | <ul style="list-style-type: none"> - voltage drop protection - protection against cutting of cables - resistance to electromagnetic manipulation - resistance to electrostatic discharge, EN 61000-4-2 - resistance to electrostatic manipulation, EN 61000-4-2 |
| | | 3 | <ul style="list-style-type: none"> - voltage drop protection - Protection against cutting of cables - Protection against the effects of wire manipulation - Resistance to electromagnetic manipulation - Resistance to electrostatic discharge, EN 61000-4-2 - Resistance to electrostatic manipulation, EN 61000-4-2 |

Table 2 – Criteria for mechatronic cylinders (MC)

Classification		Resistance class					
		RC 1	RC 2	RC 3	RC 4	RC 5	RC 6
1	Category of use	1	1	1	1	1	1
2	Durability	5	5	5	5	5	5
3	Fire/smoke resistance	0	0	0	0	0	0
4	Environmental resistance	2	2	2	2	2	2
5	Mechanical key related security	A	A	A	A	A	A
6	Electronic key related security	E	E	E	F	F	F
7	System management	0	0	0	0	0	0
8	Attack resistance	1	1	1	2	2	2

meaning (**according to EN 15684**):

<u>Digit:</u>	<u>Class:</u>	
1 Category of use	1	according to the requirements of EN 15684 section 4.2
2 Durability	5	50 000 test cycles
3 Fire/smoke resistance	0	not approved for use on fire/smoke door assemblies
4 Environmental resistance	2	for MC and for MC-key according to EN 15684 section 4.5
5 Mechanical key related security	A	no grade in EN 1303:2005
6 Electronic key related security	E	minimum number of electronic code variations (different keys) = 100,000,000; communication must be protected
	F	minimum number of electronic code variations (different keys) = 1,100,000,000; communication must be protected
7 System management	0	no requirement
8 Attack resistance	1	according to Table 9 of EN 15684 section 4.8
	2	according to Table 9 of EN 15684 section 4.8

With mechatronic cylinders according to Table 2, contactless data transmission shall be encrypted. It is recommended using a "hobbing / rolling code".

Figure 1 – Doors with electromechanically operated locks and connection to access control systems
 Reference: ÖNORM B 5338:2011, page 7

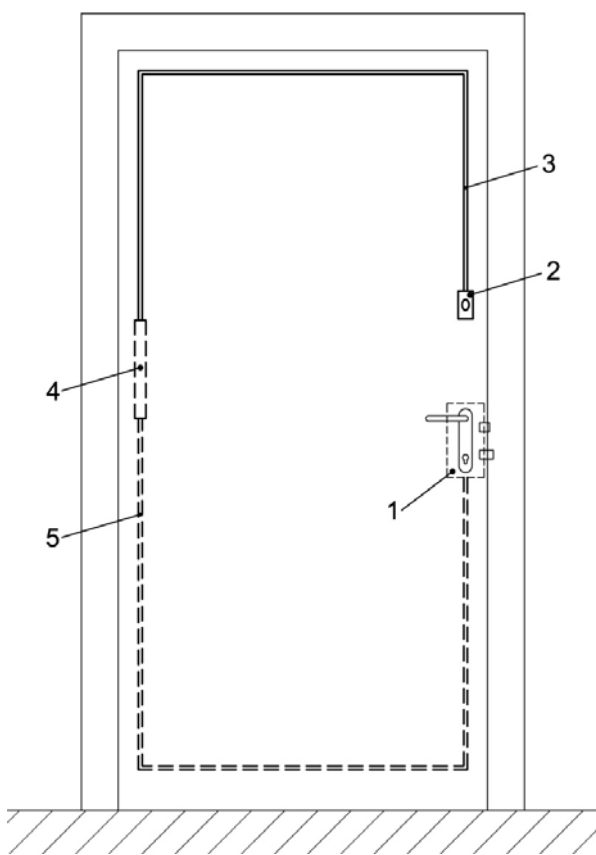


Figure 1a – Door with releasing unit in the door leaf
 (Example)

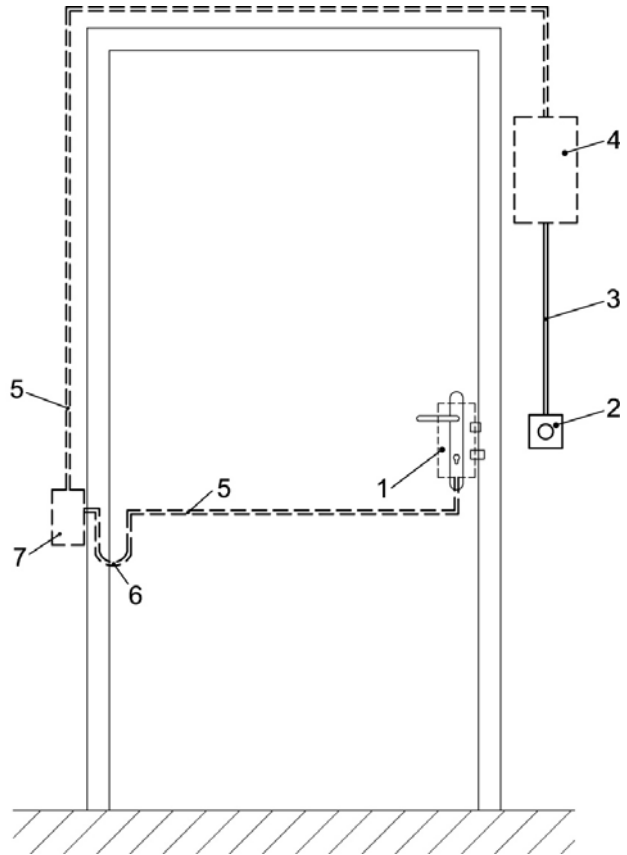


Figure 1b – Door with separate releasing unit
 (Example)

Meaning:

- 1 Electromechanically operated lock
- 2 Interrogation unit for authorising medium
- 3 Signal wiring with encrypted signal to the releasing unit
- 4 Releasing unit
- 5 Connecting cable, in RC 4 and higher monitored
- 6 Cable access points for connecting cables
- 7 Terminal box

The component parts 4 to 7 shall be installed in the secured area. It shall not be possible to reach them with tools.