

Ref No 3018 (v2)

Locks and Lock Standards

Introduction

The range of security locks available to prospective purchasers is very wide. To the non-expert choosing a lock can be daunting, as two locks can look very similar but in fact be very different in terms of their security, quality and general reliability.

This Hardfacts describes basic lock types and related British or European standards with which they may comply.

Lock Types

All locks consist of four main parts, the case, the key/locking mechanism, the lock bolt mechanism and its receiving recess.

The three basic forms of lock case are:-

Mortice Lock - A lock case designed to be fitted within a door or window. Where a handle operated latch is incorporated, such locks are called 'mortice sashlocks'.

Rim Lock - A lock case designed to be fitted on the internal surface of a door or window.

Padlock - A lock designed to be removable and which has a shackle (lockbolt) that passes through a separate staple/hasp.

Two types exist, open shackle and closed shackle padlocks. An open shackle type has a shackle that, when placed through the staple, would allow a bolt cutter to be used, or a jemmy inserted, to attack the shackle. A closed shackle type does not permit such access, and is thus inherently more secure.

Hardened steel lock cases, or plates within it, can hinder an attack by drilling.

Two common key/locking mechanisms are:-

Lever Locks - A lock where the key has a number of stepped notches which, when the key is first turned, engage with a set of levers within the lock case. When all the levers are correctly raised the key can turn fully and operate the lock.

Cylinder Locks - A lock where the key has a number of ridges along its length which, when the key is inserted into the cylinder, engage with sprung pins inside it. When all the pins are correctly raised the key can turn the cylinder to operate the lock.

Increasing the numbers of levers/pins allows for more key variations, thus making it harder for thieves to 'pick' the lock. 5 levers/pins is the usual minimum for a secure lock.

All locks have a lock bolt designed to move out of the lock case and engage in a suitable recess. Use of hardened steels, or inserts within the bolt, can hinder attack by cutting.

A 'deadlocking' lock bolt is one that, when in the locked position or the door is closed, cannot be pushed back into the lock case

Apart from padlocks, a lock bolt recess will be in a frame or another door. To protect the edge of the recess from wear, it should have a metal 'flush striking plate' fitted; but ideally, to hinder attack on the bolt should have a 'boxed striking plate', i.e. one with an integral steel box to receive the bolt.

British Lock Standards

The security of a lock cannot reliably be assessed by simply looking at it, so tests that simulate common attack methods and usage are required. Of the various test standards that can apply to locks, the one most commonly cited by UK insurers is:-

BS 3621 - This test relates to mortice and cylinder rim locks for doors where a key is required for entry or exit. Such locks are most commonly identified by the BSI 'kitemark' marked on the lock face or packaging.

The latest version of BS 3621 matches a security level within BSEN 12209, but with locks also subjected to review for possible weaknesses by an expert UK panel.

Note. Some BS3621 rim locks have an internal handle that can override the key lock. If a letterbox/breakable glass is adjacent, the handle must be locked to maintain security.

Some other UK standards include:-

BS 8621 - A version of BS3621 that applies to locks requiring a key for entry but not for exit. Such locks are intended for use in upper floor flats with a single entry/exit door which is required to have an emergency thumb release on the inside to satisfy BS 5588 - Design, Construction & Use of Residential Buildings.

Note. Don't use such locks without looking at security of adjacent letter boxes & glazing.
PAS 23 - Applies to the build and wear quality of single leaf domestic doorsets, plus a basic test to check that any glazing/security devices cannot be removed from outside.
PAS 24 - Applies to manual attack testing of single leaf domestic doorsets, including locks (but excluding picking/sawing) and hinges. Any glazing must be laminated if the door could be opened from inside without a key, otherwise no requirements for glazing beyond stating that any windows adjacent to the door must meet BS 7950.
BS 7950 - Applies to manual attack testing of hinged/tilt and turn domestic windows and their locks (but excluding picking/sawing). All glazing/security devices must be incapable of being removed from outside. Glazing must be laminated if the window could be opened from inside without a key.

European Lock Standards

Various European lock standards exist, those adopted within the UK being given a BSEN coding. Sometimes called 'CEN' standards they are particularly complicated, with CEN compliant locks having an eleven digit code to indicate various product features, the 7th digit usually indicating the security 'Grade'.

The CEN standards require the code to be shown on the lock packaging, but not the lock itself; and don't usually require testing against lock picking, sawing or an expert review. As a result of these weaknesses, CEN standards are infrequently referred to in the UK, except for padlocks (where there is no comparable British standard) and lock cylinders.

The CEN lock standards are:-

BSEN 12209 - This applies to mechanically operated locks, and locking mechanisms if an integral part of the lock assembly, e.g. a lever lock. If the lock has a removable locking mechanism, e.g. a cylinder lock, the lock requirements refer to BSEN 1303. Security Grades range from 1-7, 7 being the highest.

BSEN 1303 - This applies to mechanically operated lock cylinders. Two separate Grades relating to security are specified, comprising 6 key Grades, 6 being the highest, and 3 attack Grades, 2 being the highest. As a result the CEN code will have two fields for security information, the 7th digit = key Grade and the 8th digit = attack Grade.

BSEN 12051 - This applies to window & door bolts, testing strength and saw resistance, but not locking mechanisms. Security Grades range from 1-5, 5 being the highest.

BSEN 12320 - This applies to padlocks and staples (padbars) of all types, i.e. open and closed

shackle. Security Grades range from 1-6, 6 being the highest.

BSEN 179 & BSEN 1125 - These apply to emergency escape door mechanisms at premises where, respectively, no panic is likely to occur, e.g. a factory/office and those where it might, e.g. a shop or club/pub. Where an external keylock is incorporated, it should be tested to a security level chosen from BS EN 12209 (for external attack only).

Lock Certification Bodies

Claims that a lock has been tested to a particular standard can only be relied upon where the test has been undertaken and 'certified' by a recognised independent test body, e.g. in the UK the BSI, the MLA (Sold Secure scheme) or the BRE (LPCB scheme).

Given the complexity of some standards, the omission of certain security tests from some and the need to consider a lock alongside the intended type of door/window, the MLA and LPCB operate their own security grading & testing schemes. These reflect and build upon relevant British or European standards. The police backed SBD scheme is another good check on overall security, as 'approved' products must be certified as meeting all relevant BS/EN, and other UK, standards.

Key Action Steps

- Use suitably certified locks sourced from competent suppliers/locksmiths.
- Ensure locks are fitted to doors/windows of adequate thickness and condition.
- Seek the advice of any interested insurer.

Sources of Further Information

Other Hardfacts in the Security series.
British Standards Institute (BSI). Tel 020 8996 9000 or visit www.bsi-global.com
Master Locksmiths Association (MLA)/Sold Secure. Tel 01327 262255/264687 or visit www.locksmiths.co.uk / www.soldsecure.com
Loss Prevention Certification Board (LPCB), Tel 01923 664100 or visit www.redbooklive.com
Secured by Design (SBD) Tel 020 7084 8962 or visit www.securedbydesign.com

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