Security – Locks

External openings in buildings, such as doors, windows and other barriers can be vulnerable to attack by thieves. Securing such openings with good quality locks can help reduce the potential for theft incidents.

This Loss Prevention Standard provides general guidance on choosing the most appropriate security locks for doors, windows and other barriers, and selecting appropriate installers.

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Security – Locks

Introduction

Choosing the most appropriate security locks can be challenging, particularly given the variety of doors, windows, etc., and locks, all with specific applications.

This Loss Prevention Standard discusses the main security lock types, applicable British and European quality standards and installation considerations.

Lock Types

Locks typically consist of four main parts:

Lock Case

There are three basic forms of lock case as follows:

- **Mortice Lock.** A lock case designed to be fitted within a door or window. Mortice locks with incorporated handle operated latches are known as mortice sash locks.
- **Rim Lock.** A lock case designed to be fitted to the internal surface of a door or window.
- **Padlock.** A lock that is designed to be removable. It has a shackle (lockbolt) that passes through a separate staple/hasp, and the two general types are:
  - ✓ **Open shackle**. Has a shackle that, when placed through the staple, is accessible and could be forced via tooling e.g. bolt cutter, crowbar/jemmy, etc.
  - ✓ **Closed shackle**. The shackle design prevents access and the use of tooling to attack the lock. These locks also feature hardened steel lock cases, or plates, which can hinder an attack by drilling. These locks are traditionally used for applications requiring enhanced security.

Key/Locking Mechanism

The two most common key/locking mechanisms are:

- **Lever Locks.** A lock where the key has a number of stepped notches. When the key is inserted into the lock and turned the notches lift a set of levers within the lock case. When all the levers are correctly raised, the key can turn and operate the lockbolt.
- **Cylinder Locks.** A lock where the key has a number of ridges along its length. When the key is inserted into the cylinder it engages with sprung pins, which when raised turns the cylinder and operates the lockbolt.

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

Lock Bolt Mechanism

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

A 'deadlocking' lockbolt is one that, when it is in the locked position, cannot be pushed back into the lock case. Some doors feature multipoint locks, where three or more points simultaneously operate, along the edge of the door frame when the key is turned in the lock mechanism.

Receiving Recess

For all locks except padlocks, a lock bolt receiving recess will need to be created. For mortice locks this will be a recess in the door frame, or another door if securing double doors.

To protect the edge of this recess from wear, a metal 'flush striking plate' should be fitted, ideally a 'boxed striking plate', i.e., a strike plate with an integral steel box to receive the bolt. This can help protect against forced theft attack.

For rim locks, a suitable surface fixed metal housing receives the lockbolt.

Lock Standards

A number of testing standards are available to assess a lock's ability to withstand common attack methods.

British Standards

BS3621. Of the various UK test standards that can apply to locks, the one most commonly cited by UK insurers over the years has been **BS 3621: Lock Assemblies Operated by Key from Both the Inside and Outside of the Door**.

Locks compliant with this standard are particularly resilient to theft attack and have the following characteristics:

- **Kitemark.** The British Standard Kitemark will be engraved on the lock faceplate (the visible part of the lock on the door edge).
- **Number of Levers.** The faceplate will also state the number of lock levers, e.g., 5 levers.
- **Standard Number.** The BS 3621 standard number will also be engraved when the lock has been tested and is compliant with the standard.

X621 Series. BS 3621 has evolved into a suite of similar standards known as the x621 Series, which relate to single point mortice and cylinder rim locks:

- **BS 3621: Lock Assemblies Operated by Key from Both the Inside and Outside of the Door**.
- **BS 8621: Lock Assemblies Operated by Key from the Outside of the Door and by Handle or Thumb Turn from the Inside of the Door.**
- **BS 10621: Lock Assemblies in Which the Operating Mode can be Switched Between the Normal BS 8621 Operating Mode and a Secure Mode in Which no Egress is Possible**.

And multi-point locks:

- **PAS 3621: Multipoint Locking Assemblies. Keyed Egress. Performance Requirements and Test Methods**.
- **PAS 8621: Multipoint locking assemblies. Keyless egress. Performance requirements and test methods**.
- **PAS 10621:2011Multipoint locking assemblies. Dual mode egress. Performance requirements and test methods.**

The main respective differences in use are as follows:

- 3621 – key lockable from both sides of the door.
- 8621 – key lockable from outside only; emergency escape always being possible from inside without using a key, e.g. by means of a handle/latch/thumb turn, etc.
- 10621 – as 8621, key lockable from the outside. However, if you are 100% sure no personnel remain inside the building in question (be aware of the potential trapping risk), the internal emergency release can be disabled.

Note: Most BS 3621 compliant rim locks have an internal lockable handle, which can be used as a 'daytime latch'. However, this should always be locked to maintain door security, especially if the door has a letter flap or glazing in or adjacent to it. This should help prevent persons outside gaining access to the handle to release it.

CEN Standards

Various European (CEN) lock standards exist, with those adopted within the UK being given a **BS EN** prefix.

These EN Standards are particularly complicated, with compliant locks having an 11-digit code to indicate various product features, although only the 7th digit in the sequence is usually used to indicate the security grade. These standards do not require testing against lock picking, sawing or an expert review, and as such are infrequently referred to in the United Kingdom, other than padlocks, where there is no comparable British Standard.

Additional Standards

- **BS EN 12209: Building hardware. Mechanically operated locks and locking plates. Requirements and test methods**.
  - ✓ This is a UK version of a European Standard for door locks. Numerous different combinations (Grades) of lock case/lock mechanism and key security are available. This also includes related testing for attack resistance, force, durability, fire and safety.
  - ✓ Locks to this standard may not be accepted by Insurers in the United Kingdom, unless also approved to BS3621/PAS3621 and displaying the British Standard kitemark.
- **BS EN 15685**: **Building hardware. Requirements and test methods. Multipoint locks, latches and locking plates. Characteristics and test methods**.
  - ✓ This standard covers multipoint locks their locking plates focussing on reliability, durability, and security.
  - ✓ Complements BS EN 12209, which covers single-point locks.
- **BS EN 1303: Building hardware. Cylinders for locks. Requirements and test methods**.
  - ✓ This is a UK version of a European Standard for cylinder locks. Various security levels against attack and for key security are available.
  - ✓ To achieve the x621 Series the cylinder lock must achieve a Key Security Grade 5 and Attack Grade 2.

- **Technical Specification TS 007 – Enhanced Security Performance Requirements for Replacement Cylinders and/or Associated Security Hardware**.
  - ✓ This is a UK Standard developed by the security industry in conjunction with the British Standards Institute to recognise and protect against the risk of 'snapping attacks' on door lock cylinders. Snapping attacks relate to a form of criminal attack whereby a protruding cylinder is gripped by a wrench, or similar tool and twisted until it snaps in its narrow middle section.
    - TS 007 cylinders with a 3 Star rating can resist such attacks.
    - A 1 Star cylinder needs to be matched with a 2 Star surrounding door handle to give an overall 3 Star level of protection.

  Note: The Sold Secure organisation, owned and operated by the Master Locksmiths Association, have a similar test standard for stand-alone cylinders called SS312 – Diamond rating. Refer to your Property Insurer and Broker for guidance on suitability.
- **TS 008 – Enhanced Security and General Requirements for Letter Plate Assemblies and Slide Through Boxes.**
  - ✓ This is a UK Standard for testing letter flaps for resistance to external access/manipulation of internal door lock mechanisms.
- **PAS 24: Enhanced Security Performance Requirements for Doorsets and Windows in the UK. Doorsets and Windows Intended to Offer a Level of Security Suitable for Dwellings and Other Buildings Exposed to Comparable Risk**.
  - ✓ This Product Assessment Specification applies to testing methods for door sets and windows, composite, sliding and bi-folding doors, parallel opening windows including locks (but excluding picking/sawing) and hinges.
  - ✓ If the door/window can be opened from inside, without a key, any:
    - Glazing must be laminated.
    - Letter/post flap must be able to prevent external manipulation of the internal door lock release.
- **BS 8607: Mechanically Operated Push Button Locksets. Requirements and Test Methods**.
  - ✓ This is a UK Standard for mechanically operated push button locksets.
  - ✓ A Grade 4 rating is intended to be comparable to a x621/BS 3621 Series lock.
- **BS EN 12320: Building hardware. Padlocks and padlock fittings. Requirements and test methods**.
  - ✓ This standard reflects a European Standard for padlocks and staples (pad bars) of all types.
  - ✓ Security Grades range from 1-6, with 6 being the highest.
- **BS EN 179: Emergency Exit Hardware** and **BS EN 1125: Building hardware. Panic exit devices operated by a horizontal bar, for use on escape routes. Requirements and test methods.**
  - ✓ These standards are UK versions of European Standards for emergency escape door mechanisms at premises:
    - Where no panic is likely to occur, e.g. a factory/office or where panic might occur, e.g. a shop or club/pub.
    - Where an external key lock is incorporated, it should be tested to a security level chosen from BS EN 12209 (for external attack only).

Lock Certification

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. As an example, in the UK typically by the British Standards Institute (Kitemark scheme) or the Building Research Establishment (LPCB scheme).

The police initiative Secured by Design (SBD) scheme is another good check on overall security, as 'approved' products must be certified as meeting all relevant BS/EN or other relevant UK Standards.

Installer Accreditation

Security lock installers should be members of a recognised accreditation scheme, in the United Kingdom this includes:

- **Master Locksmiths Association (MLA) Certification**. The MLA are the leading trade association for UK Locksmiths, providing an accreditation service and vetting member companies, including criminal record checks, work inspections/quality, proof of competency, training courses etc.

Insurer's Minimum Security Standards

When insurance is sought against theft, its provision may be conditional upon premises having a certain level of physical security, often termed Minimum Security Standard or Minimum Security Condition. Minimum Security Standards tend to concentrate on the fitting and use of common locks on typical doors and windows and may vary according to your insurer and based on the:

- Nature of the insurance policy.
- Type of property and its construction.
- Occupancy of the building and its contents.
- Geographic area.
- Values exposed.
- Loss history.

The RISCAuthority, the UK Insurers technical advice body, has published a useful guide on the subject of minimum security standards at homes - S24 Physical security for homes: Guidance for occupiers.

Checklist

A generic **Security - Locks Checklist** is presented in Appendix 1 which can be tailored to your own organisation.

Specialist Partner Solutions

Aviva Risk Management Solutions can offer access to a wide range of risk management products and services at preferential rates via our network of Specialist Partners.

For more information please visit: Aviva Risk Management Solutions – Specialist Partners

Sources and Useful Links

- BS 3621: Lock Assemblies Operated by Key from Both the Inside and Outside of the Door
- BS EN 12209: Building hardware. Mechanically operated locks and locking plates. Requirements and test methods
- BS EN BS EN 15685: Building hardware. Requirements and test methods. Multipoint locks, latches and locking plates. Characteristics and test methods
- BS EN 1303: Building hardware. Cylinders for locks. Requirements and test methods
- PAS 24: Enhanced security performance requirements for doorsets and windows in the UK. Doorsets and windows intended to offer a level of security suitable for dwellings and other buildings exposed to comparable risk
- BS 8607: Mechanically operated push button locksets. Requirements and test methods
- BS EN 179: Building hardware. Emergency exit devices operated by a lever handle or push pad, for use on escape routes. Requirements and test methods
- BS EN 1125: Building hardware. Panic exit devices operated by a horizontal bar, for use on escape routes. Requirements and test methods

Note: Whilst UK standards and legislation are referenced in this document, other international standards and legislation should be referenced where applicable.

Additional Information

Relevant Aviva Loss Prevention Standards include:

- **Security - Doors, Windows and Other Barriers**
- **Security - Glazing**
- **Intruder Alarms - European Standards**
- **Intruder and Hold Up Alarms - General Guidance**
- **Video Surveillance Systems - Introduction**

To find out more, please visit Aviva Risk Management Solutions **or speak to one of our advisors.**

Email us at riskadvice@aviva.com or call 0345 366 6666.*

*The cost of calls to 03 prefixed numbers are charged at national call rates (charges may vary dependent on your network provider) and are usually included in inclusive minute plans from landlines and mobiles. For our joint protection telephone calls may be recorded and/or monitored.

Appendix 1 – Security – Locks Checklist

Location	
Date	
Completed by (name and signature)	

	General	Y/N	Comments
1.	Has a risk assessment been undertaken of the current physical security at your premises, including the following: • Local history of security related events? • Nature of contents/occupancy, especially close to each opening and its attractiveness to theft? • Accessibility of the area for criminals? • Provision of anything that could improve access to upper levels of the building/roof? • Strength and nature of the building construction in comparison to any doors/windows and securing mechanisms? • The nature of any other electronic security measures or human presence on site?		
2.	Has independent crime prevention advice been sought from: • The police? • A security consultant? • Your insurer?		
3.	Have you checked whether your insurer has applied a Minimum Security Standard/Condition? • If applied, do your existing locks and wider security arrangements comply with the Minimum Security Standard/Condition? • If not do you have formal insurer agreement for any alternative arrangements? ✓ Are these clearly described? ✓ Are these audited against?		

	General Cont'd	Y/N	Comments
4.	• Has a full review/audit been undertaken of current locks used at your premises? • Including any outbuildings? • Are you aware of the devices installed, their age and the design standard they were installed to? Are they: ✓ Of a suitable type? ✓ Correctly fitted to or within, a door/window constructed of suitable material and or appropriate thickness?		
5.	Have you sourced locks and security devices that have the relevant certification from competent locksmiths, e.g. a member of the Master Locksmiths Association (MLA)?		
6.	Have or will the locks be installed by an accredited locksmith?		
7.	• Are all your locks on an inspection and maintenance schedule? • If any issues are raised are remedial measures expedited and treated as a priority?		
8.	Are improvements to glazing and door frames required in addition to the fitting of security locks?		
9.	Are security arrangements and the basis for the risk assessment reviewed following any security issues, local incidents, intrusions or losses? **Note:** If not, you are likely to be at more risk of a repeat incident.		
10.	Additional Comments:		

Please Note

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