

Loss Prevention Standard

LPS 1175: Issue 7.3

Requirements and testing procedures for the LPCB approval and listing of intruder resistant building components, strongpoints, security enclosures and free-standing barriers

The purpose of this standard is to evaluate the resistance to unauthorised access offered by various physical security products.

The standard specifies eight grades of security according to the tools and time likely to be used by a criminal. Specifiers can therefore select products/systems that provide levels of security matching their needs.

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PARTICIPATING ORGANISATIONS

This standard was approved by the LPC Fire and Security Board and Expert Group G. The following organisations participated in the preparation of this standard:-

Association of British Insurers
 Association of Building Engineers
 Association of Chief Police Officers
 Association of Insurance Surveyors
 Association for Specialist Fire Protection
 British Automatic Fire Sprinkler Association
 British Security Industry Association
 BT Redcare
 Centre for Protection of National Infrastructure
 Chief Fire Officers Association
 Door & Hardware Federation
 Electrical Contractors Association
 European Fire Sprinkler Network
 FIA
 Health & Safety Executive
 Home Office Scientific Development Branch
 Metronet
 Post Office
 Risk Engineering Data Exchange Group
 Royal and Sun Alliance
 Royal Institution of Chartered Surveyors
 Security Services Group
 TPS Consult

REVISION OF LOSS PREVENTION STANDARDS

Loss Prevention Standards will be revised by issue of revised editions or amendments. Details will be posted on our website at www.redbooklive.com

Technical or other changes which affect the requirements for the approval or certification of the product or service will result in a new issue. Minor or administrative changes (e.g. corrections of spelling and typographical errors, changes to address and copyright details, the addition of notes for clarification etc.) may be made as amendments. (See amendments table on page 30)

The issue number will be given in decimal format with the integer part giving the issue number and the fractional part giving the number of amendments (e.g. Issue 3.2 indicates that the document is at Issue 3 with 2 amendments).

USERS OF LOSS PREVENTION STANDARDS SHOULD ENSURE THAT THEY POSSESS THE LATEST ISSUE AND ALL AMENDMENTS.

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FOREWORD

This standard identifies the evaluation and testing practices undertaken by LPCB for the purposes of approval and listing of products. LPCB listing and approval of products and services is based on evidence acceptable to LPCB:-

- that the product or service meets the standard
- that the manufacturer or service provider has staff, processes and systems in place to ensure that the product or service delivered meets the standard

and on:-

- periodic audits of the manufacturer or service provider including testing as appropriate
- compliance with the contract for LPCB listing and approval including agreement to rectify faults as appropriate

Full details of the LPCB scheme for approval and listing of intruder resistant building components, strongpoints, security enclosures and free-standing barriers to this standard are provided in scheme document SD118.

NOTES

Compliance with this LPS does not of itself confer immunity from legal obligations. Users of LPSs should ensure that they possess the latest issue and all amendments.

LPCB welcomes comments of a technical or editorial nature and these should be addressed to “the Technical Director” at enquiries@breglobal.co.uk.

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Listed products and services appear in the LPCB “List of Approved Products and Services” which may be viewed on our website: www.redbooklive.com or by downloading the LPCB Red Book App from the App Store (for iPhone and iPad), from Google Play (for Android devices) or from the Windows Store (for Windows 8 Phones and Tablets from 2014).

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1 SCOPE

This standard describes tests for classifying the intruder resistance of building components, strongpoints, security enclosures and free-standing barriers. The scope includes the following types of product and system:

ÿ Access covers and hatches	ÿ Secondary glazing systems
ÿ Cladding systems	ÿ Security grilles
ÿ Conservatories	ÿ Security screens
ÿ Containers	ÿ Sheds and tool stores
ÿ Curtain walling systems	ÿ Shutters
ÿ Display cases and cabinets	ÿ Sliding doorsets
ÿ Hinged and pivot doorsets	ÿ Strongpoints
ÿ Fences and gates	ÿ Temporary buildings
ÿ Folding doorsets	ÿ Tool containers
ÿ Garage doorsets	ÿ Turnstiles
ÿ Partitioning systems	ÿ Void protection screens
ÿ Roofing systems	ÿ Windows
ÿ Roof lights and skylights	ÿ Walls

The intruder resistance of the product itself plus any in-situ hardware, such as locks and hinges, and any associated form of locking, such as padlocks, are tested.

The intruder resistance of the complete building component, strongpoint, security enclosure or free-standing barriers, and any associated hardware is classified regardless of design or materials used in their construction.

Where the product comprises an opening element and a frame or retaining guides, the element and its frame or guides are tested as a combination, locked accordingly. Each opening configuration is subject to a separate evaluation.

The adequacy of the installation/fixing method defined by the manufacturer is assessed. However, it is assumed that the substrate onto which the product is fitted provides a resistance to attack at least equivalent to that afforded by the product itself.

The standard does not cover the classification of individual components such as glass, infill materials or locks in their own right, other than as part of the products tested. Classification of the intruder resistance afforded by such components is covered by other Loss Prevention Standards, including:

LPS 1242 - Requirements and testing procedures for the LPCB approval and listing of cylinders for locks

LPS 1270 - Requirements and testing procedures for the LPCB approval and listing of intruder resistant security glazing

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Resistance to electrical manipulation is not tested other than by attack methods possible using the tools defined within this standard. It is therefore recommended that electronic components used to operate the product are also tested and approved to relevant operational and safety standards.

Resistance to thermal shock attack, chemical attack, vehicle impact, explosion and ballistics are outside the scope of this standard, as is durability and other general performance.

The resistances to scaling over and tunnelling under free-standing barriers are also outside the scope of this standard.

Notes:

- i) *For guidance, the security rating system is loosely based upon domestic risks (1 and 2), commercial risks (2, 3 and 4), high security risks (5 and 6) and extremely high security facilities (7 and 8).*
- ii) *The security rating applies to the prime barrier. No provision is made for enhancement of a product by means of a secondary barrier and it is not the intention of this standard to prohibit such an arrangement.*
- iii) *Other LPS and EN standards exist for classification of security products not covered by LPS 1175, e.g. safe storage units, strongrooms, protection devices for personal computers, office furniture, high security locks, thief resistant locks etc.*
- iv) *The performance of building components, strongpoints, security enclosures and free-standing barriers to other characteristics such as fire resistance, acoustics, durability and weathertightness, may be covered by other LPS, BS, EN and ISO standards. Contact LPCB for further information.*

2 DEFINITIONS

2.1 Attack face(s)

The face(s) of a product confronting the person attempting forced entry.

2.2 Building component

Either an element of a building façade that prevents unauthorised entry into the building, or an element within the building providing a means of preventing unauthorised access to areas within a building.

Note: Examples include doors, shutters, grilles, windows, void protection screens

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2.3 Intruder resistance

The capacity of building components, strongpoints, security enclosures and free-standing barriers to withstand forced entry and/or removal from the supporting substrate.

2.4 Closed condition

The opening elements of a building component, strongpoint, security enclosure or free-standing barrier are "pulled to" with no engagement of any locking mechanism. The opening elements can be opened from the attack side without a key, force or damage when in this condition. The product therefore has no intruder resistance when in this condition.

2.5 Combined number of effective differs/codes

The sum of the effective differs/codes for each lock fitted to the opening element that is operated with a different code or key of a different differ.

2.6 Useable code

Number of possible codes that can be set, taking into account practical considerations, which ensure the lock can only be operated by entry of the correct code.

2.7 Effective differ

Difference between lock mechanisms of similar designs which, taking into account practical considerations, ensures that each lock can only be operated by its own key.

2.8 Free-standing barrier

Wall, fence, gate, turnstile or other similar barrier, and their associated foundations, designed to prevent entry to a defined area outside a building.

2.9 Latched condition

The opening elements of a building component, strongpoint, security enclosure or free-standing barrier are closed and held shut by automatic latching mechanisms that can be operated from the attack side without a key, force or damage.

This condition also occurs when opening elements are latched or dead-bolted using electronically powered locking devices that are set to "fail unlocked". This is because the opening element may be opened from the attack side without a key, force or damage when the power fails or is removed.

The product does not provide any intruder resistance when in the latched condition.

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2.10 Manual intervention attack test

An attempt at forced entry or removal by a person using tools.

2.11 Minimum locked condition

This locked condition exists if it is not possible to open the opening elements of a building component, strongpoint, security enclosure or free-standing barrier from the attack side without a key, abusive force or damage when:

- The opening elements are closed; and
- Automatic latching/bolting mechanisms* are engaged; and
- Only dead-locking devices fitted to the opening element, which the user can operate from the side of the element that they are on when closing that element, are engaged; and
- There is no visible evidence that the opening elements are not in the optimum locked condition when viewed from the attack side.

2.12 Optimum locked condition

The opening elements of a building component, strongpoint, security enclosure or free-standing barrier are closed, latched and deadlocked using all latches, deadbolts and supplementary locking devices fitted to the opening element. It is not possible to open the opening elements from the attack side without a key, force or damage, or with power removed† from any electronic locking devices fitted to the product.

2.13 Potable water access cover

A special purpose cover designed to inhibit unauthorised access to potable water.

2.14 Security container

A self-contained security enclosure designed to inhibit unauthorised access to, or removal of, defined items of value.

Note: Examples include security cabinets, key cabinets and display cases.

2.15 Security enclosure

An enclosure designed to inhibit unauthorised access to, or removal of, defined items of value

* If the automatic latching device is electronically operated and may be set to "fail unlocked", the minimum locked condition shall be that achieved by the product when the latching device is isolated from the power supply.

† This excludes supplementary power provided by local battery back-up supplied with the product. In such situations the electronic locking devices shall be powered by the battery back-up during the attack test programme.

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2.16 Security rating

Numeric indication of the intruder resistance afforded by a building component, strongpoint, security enclosure or free-standing barrier.

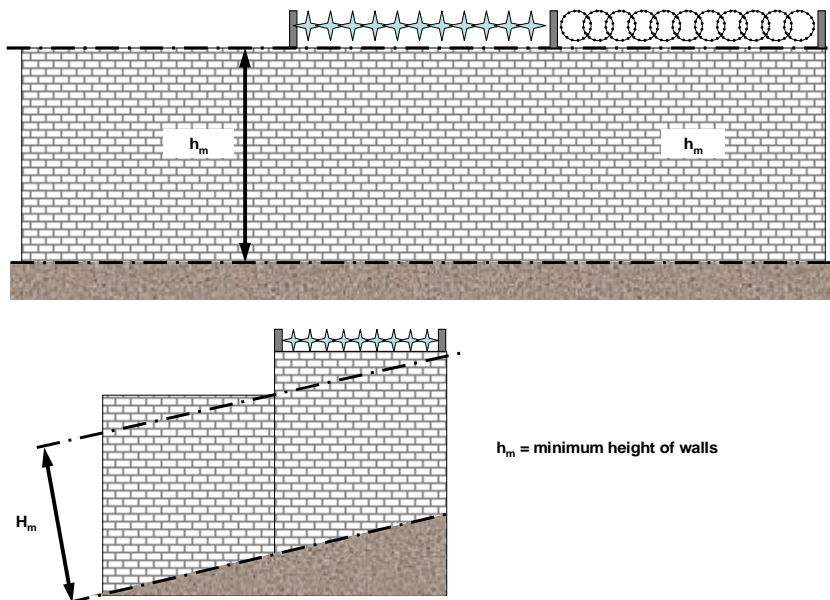
2.17 Strongpoint

A security enclosure built-in to an existing building/structure which may rely on the fabric of the building (e.g. floor, roof, wall or ceiling) to provide protection against entry into the secured area from particular directions.

2.18 Total height of free-standing barrier

The total height of a free-standing barrier is the perpendicular distance between a line level with the tallest point on the supporting ground and a parallel line level with the tallest point on the permanent part of the free-standing barrier (excluding any semi-permanent toppings). This is illustrated in Figures 1 to 3.

Figure 1 Minimum height of free-standing barriers - walls



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Figure 2 Minimum height of free-standing barriers - mesh and panel fencing

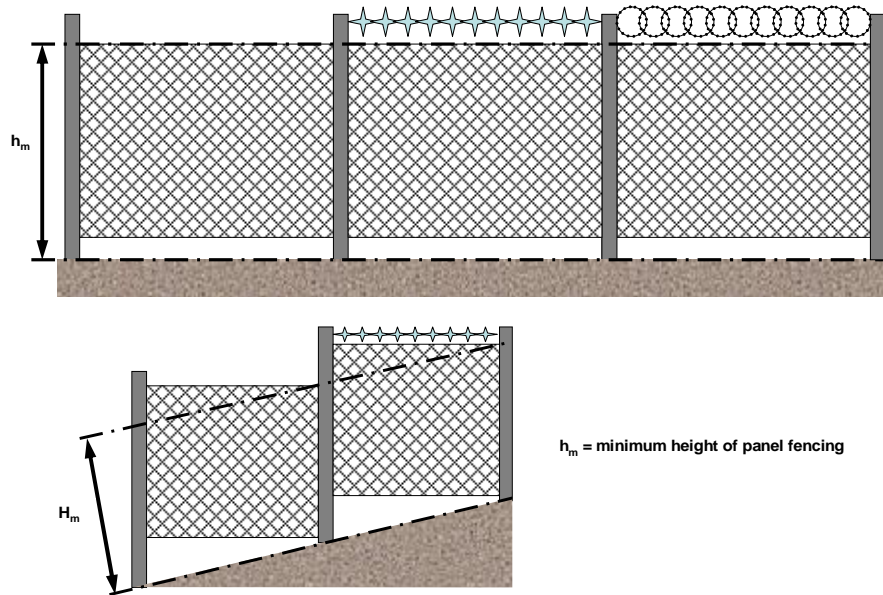
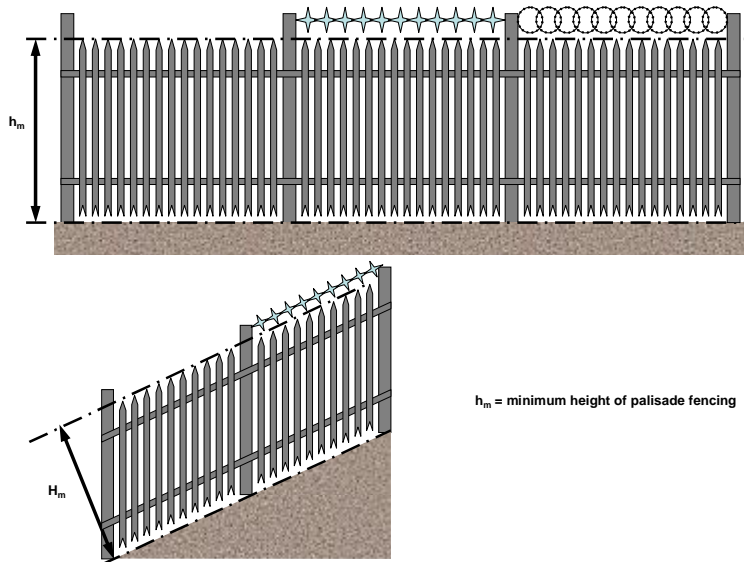


Figure 3 Minimum height of free-standing barriers - palisade fencing



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2.19 Total test time

The maximum duration of an individual manual intervention attack test. It is the accrued sum of the:

- working time;
- rest time of an operative for well-being and safety reasons;
- time taken to change tools or exchange defective expendable tool elements; and
- Inspection time called by the project leader.

2.20 Working time (resistance time)

The time of an individual manual intervention attack test in which a tool or tools is used to attempt to create a change in the test specimen.

The working time excludes:

- rest time of an operative for well-being and safety reasons;
- time to change tools or exchange defective expendable tool elements; and
- inspection time called by the project leader.

3 REQUIREMENTS

3.1 Documentation required from client

The applicant shall provide comprehensive information about the product for consideration prior to examination and testing. This shall define the construction of the product over the range to be covered by the evaluation, together with any associated hardware and optional features/accessories. It shall include:

- a) Details of the applicant and, if different, the manufacturer of the product(s)/systems(s), including:
 - i) Name of manufacturer.
 - ii) Place of manufacture.
 - iii) Year of manufacture.
 - iv) Relationship of applicant to manufacturer.
 - v) Company responsible for design and quality assurance.
- b) Drawings of the product including:
 - i) Cross sections.
 - ii) General assembly.
 - iii) The location and design of any local areas of special protection.
 - iv) Details of any other element relevant to physical security.

The drawings must clearly indicate how the construction varies over the scope of sizes and options to be covered by the evaluation. This includes:

- i) Locations of all hardware, protection and local reinforcement.

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- ii) Type/locations of all welds and mechanical fasteners used to assemble the product.
- c) A description of the materials used to construct the product if not shown on the drawings. This shall include material thicknesses and full details of any special finishes/processes applied, e.g. hardening.
- d) Details of any materials or device(s) fitted to, or incorporated within, the product that may harm those testing/using/attacking the product together with associated material safety data sheets.
- e) Manufacturer's specification sheets defining the hardware used on the product, including locks, strike plates, hinges and dog bolts.
- f) Evidence that any lock cylinders accessible from the attack side of products, for which the applicant seeks a '+' cylinder manipulation classification in accordance with clause 5.2, either meet:
 - The requirements for cylinders defined within Annex A of BS 3621: 2007 *Thief resistant lock assembly – key egress*; or
 - The requirements of manipulation resistance class '1' defined in LPS 1242: Issue 2 *Requirements and testing procedures for the LPCB approval and listing of cylinders for locks*.

Notes: This requirement does not apply to cylinders operated by electromechanical keys or non-mechanical devices (e.g. radiofrequency identification devices (RFID)) for which the correct electronic code must also be provided to operate the cylinder.
- g) Manufacturer's specification sheets/drawings defining any optional features/accessories (e.g. vision panels or louver panels). These shall also define how and where they will be fitted to the product.
- h) Instructions and specification for secure installation, use and maintenance.
- i) Whether the product or hardware are prototypes or in series production.
- j) The face(s) of the product designed to resist attack.
- k) The applicant's security rating expectation.

All documents shall be dated and given a reference number and issue description.

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3.2 Specimens to be supplied for testing

The following shall be observed subsequent to the acceptance of an application for approval:

- a) The applicant shall supply an agreed number of specimens.
- b) The number of specimens to be supplied for test is dependent upon the test schedule specified for the product type/security rating expectation, size range design variations and alternative hardware. All specimens shall be complete with any associated hardware supplied or fitted. Additional specimens of hardware may be required for separate tests.
- c) The size of specimens selected for testing shall be at the discretion of the test laboratory. The normal size of the product and intended application shall be taken into account. Where the product is offered in a range of sizes, specimens of sizes likely to be least effective against attack shall be chosen to ensure the test results are representative of the complete range.
- d) The test specimens shall incorporate optional features/accessories that could decrease the intruder resistance provided by the product. Optional features/accessories that could increase the intruder resistance provided by the product (e.g. time delay locks) shall be removed or made inoperable during the test programme.
- e) All specimens shall be supplied complete with specified fixings for secure installation and installed by the manufacturer or their nominated representative.
- f) The specimens shall be fixed to rigid substrates simulating the weakest methods of installation described within the associated installation instructions supplied with the product. For example, doorset specimens shall be installed with maximum gaps between sample and supporting test frame and the minimum packing/fixings recommended within the instructions.
- g) The laboratory may request additional components or elements of products for testing purposes.
- h) If a prototype product or associated hardware/accessories is supplied for testing, then classification cannot be provided until the drawings for subsequent series production have been examined and confirmed that they accord with the tested prototype or that any changes will not reduce the security rating.

Note: Changes to production methods (e.g. machining to casting) or designs between prototype and final production stages may affect the products' performance. Therefore, it is not automatically possible to attribute security ratings achieved by prototype test samples to subsequent series production.

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- i) When the product incorporates advances or changes in technology, then additional sample pieces, parts or sections can be requested for evaluation prior to the supply of the agreed specimens.

3.3 Design requirements

3.3.1 User instructions

Operating and maintenance instructions shall be provided with the product. These shall include instructions in respect of the locks and hardware fitted to the product (including any battery back-up for electronic locking components required to achieve the advertised security rating), and instructions for installing/anchoring the product.

Note: Suppliers have a duty of care to ensure that those fitting and/or using the products know how that product should be fitted and used to achieve the performance attributed to that product. The instructions submitted for evaluation must reflect those supplied with the product and must cover all aspects of installation and use that may affect the security provided by the product when installed.

3.3.1.1 Installation methods

The installation methods defined for the product shall include limitations and recommendations for compatible structural opening materials / design and anchorage where applicable. Where allowances are made for gaps between frame elements and supporting substrates, those allowances shall be defined on the drawings/instructions provided together with instructions relating to how the gaps are to be packed out and the minimum finish to be applied in order to achieve the desired security rating.

Table 1 provides an indication of minimum fixing sizes and acceptable structural opening materials for secure installation of barriers into the reveals of structural openings.

Free-standing products and security enclosures shall have a means of anchorage compatible with the designated security rating.

The walls, and if applicable, the ceiling of a built-in strongpoint shall have a resistance compatible with the security rating of the opening element.

- Notes:*
- i) *The number / type of fixing, attack accessibility and anchorage method may compensate for a reduced fixing diameter or dictate the need for fixings with an increased diameter.*
 - ii) *It is recommended that all fixings and security features on products primarily intended for use in commercial properties are, as far as is reasonably possible and where applicable, tamper resistant on the non-attack side to prevent surreptitious interference of the designed level of security by an attacker's accomplice.*

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iii) *Any exposed fixings that can be accessed from the attack side may be exploited as part of the manual attack tests.*

Table 1 Typical compatible substrates and minimum fixing sizes for secure installation of barriers into the reveal

Security rating	Acceptable structural opening	Minimum size of fixing
1	Timber Blockwork Brickwork/concrete blockwork	M6/No. 12
2	Timber (hardwood) Blockwork Brickwork/concrete blockwork Steelwork	M6/No. 12
3	Brickwork/concrete blockwork Steelwork	M8
4	Reinforced brickwork/ blockwork Reinforced concrete Steelwork	M10
5	Reinforced concrete Steelwork	M10
6	Reinforced concrete Steelwork	M10
7	Reinforced concrete Steelwork	M12
8	Reinforced concrete Steelwork	M12

3.3.2 Locking

3.3.2.1 Locking logic

The locking logic shall be reviewed in order to determine the product's minimum and optimum locked conditions.

3.3.2.2 Padlocks and other removable locking components/hardware

If the product is secured using an exposed padlock, or other removable locking components/hardware, the padlock/hardware shall be treated as an integral component of the product to be classified.

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3.3.2.3 Electronic locking devices

If the product is secured using electronic locking device(s), e.g. locks operated by key pads, swipe card readers or biometric reader, the device(s) and any associated access control system, shall be reviewed to identify whether they may be susceptible to attack when installed in accordance with the manufacturer's instructions. Where components of the electronic locking device(s) and associated access control system(s) are likely to be accessible from the attack face using the tools and time defined for the security rating, those elements shall be treated as part of the product to be classified.

3.3.2.4 Minimum effective differs/codes

If the locking mechanism(s) can be operated from the attack side then the combined number of effective differs/codes offered by the locking mechanism(s) used to achieve each locked condition offered by the product shall be no less than those specified in Table 2 for the security ratings achieved by the product in those locked conditions.

Table 2 Combined minimum effective differs/usable codes of locking mechanisms fitted to opening elements

Security rating	Minimum number of effective differs/usable codes	"Equivalent" lock/hardware standard and class*
1	1 000	BS 3621 and BS 8621
2	5 000	LPS 1214
3	30 000	BS EN 1303 class 4
4	30 000	BS EN 1303 class 4
5	100 000	BS EN 1303 class 6 and BS EN 1300 class B
6	100 000	BS EN 1303 class 6 and BS EN 1300 class B
7	1 000 000	BS EN 1300 class C
8	1 000 000	BS EN 1300 class C
*Note: This column is included for indication purposes only. While locks meeting these lock standards will meet the minimum differ requirements of LPS 1175, they do not necessarily offer resistance to manual attack commensurate with the requirements of LPS 1175.		

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3.3.2.5 Lock cylinders

Lock cylinders that are directly accessible from the attack side of products, for which the applicant seeks a '+' cylinder manipulation classification, shall meet:

- The requirements for cylinders defined within Annex A of BS 3621: 2007 *Thief resistant lock assembly – key egress*; or
- The requirements of manipulation resistance class '1' defined in LPS 1242: Issue 2 *Requirements and testing procedures for the LPCB approval and listing of cylinders for locks*.

Note: This requirement does not apply to cylinders operated by electromechanical keys or non-mechanical devices (e.g. radiofrequency identification devices (RFID)) for which the correct electronic code must also be provided to operate the cylinder.

3.3.3 Potable water access covers

The following are specific design requirements applicable to potable water access covers:

- i) All vents on potable water access covers shall be obscured from direct line of sight when the access cover is installed in accordance with the manufacturers' instructions and viewed from any attitude.
- ii) All vent openings shall be fitted with mesh screens that have holes no greater than 425 micron.
- iii) All vents shall be baffled to prevent direct access.
- iv) When the cover is closed and locked, all hinges and fixings shall be obscured from direct line of sight when the access cover is installed in accordance with the manufacturers' instructions and viewed from any attitude.
- v) Failure or breakage of any hinge shall not permit the removal or separation of the cover when in the closed and locked mode such that bodily access can be achieved as determined by the test block specified in Clause 4.3.
- vi) Any proximity switches or other accessories fitted to the cover shall not be fitted in any way which may undermine the intruder resistance provided by the access covers.

3.3.4 Free-standing barriers

The minimum total height of free-standing barriers, excluding toppings, shall be as defined in Table 3.

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Table 3 Minimum height of free-standing barriers

Security rating	Height (m)		Toppings ²
	Minimum overall barrier height above ground level (excl. semi-permanent toppings) ¹	Minimum height above ground level to which barrier shall provide optimum penetration resistance (m) ¹	
1	1.8	1.8	7
2	2.0	2.0	
3	2.4	2.25	
4	2.8	2.25	3
5	4.0	2.25	
6	5.0	2.25	
7	6.0	2.25	
8	7.0	2.25	

Notes: 1 Although climbing resistance is outside the scope of this standard, it is recommended that in order to achieve optimum resistance to entry by climbing, the barrier is not installed adjacent to any items/structures that reduce resistance to scaling by reducing the effective minimum height of the barrier.

2 Free standing barriers of security ratings 4 and above shall incorporate toppings.

Free-standing barriers of security ratings 2 and above may provide more than one level of intruder resistance. At minimum, the area of the barrier defined in Table 3 must provide resistance to creation of an aperture through which the elliptical test block defined in clause 4.3 can pass, using the tools and times defined in Table 4 appropriate to the optimum security rating sought. The remaining area of the barrier above that level must provide resistance to creation of such a sized aperture at least commensurate with the requirements of Security Rating 1.

If the entire barrier does not achieve the optimum intruder resistance, then the documents supplied with the barrier system shall define what areas provide each level of intruder resistance and the security ratings achieved by those areas.

The installation instructions shall describe how to achieve the minimum height of the barrier, and to ensure the optimum intruder resistance is achieved up to the height defined, for different topography/ground conditions.

The instructions shall also define how to achieve the minimum gap between the bottom of the free-standing barrier and supporting ground, if appropriate to that style of free-standing barrier.

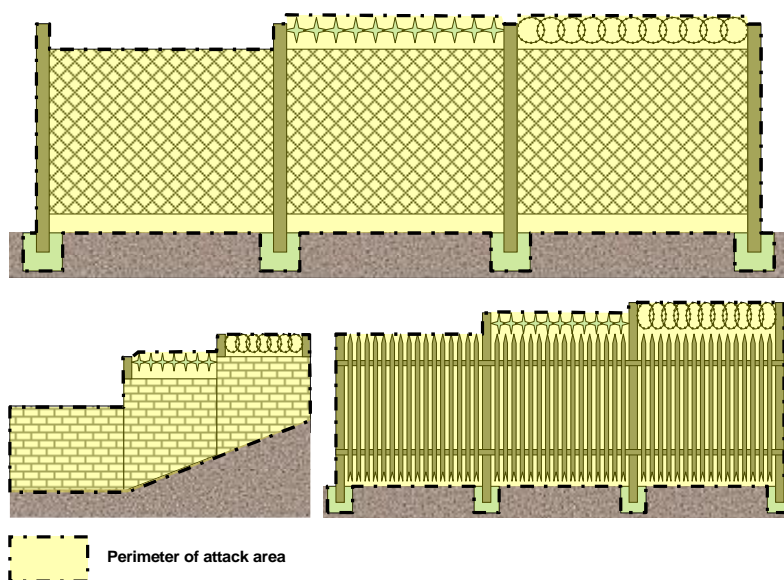
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Free-standing barriers that do not have a defined attack face, or one that is easily distinguishable by installers using the installation instructions provided, shall be attack tested in both directions and attributed the lowest security rating achieved during those attack tests.

Unless specified by the applicant at the time of test, semi-permanent toppings shall not be treated as part of the barrier that is tested and rated.

Where semi-permanent toppings are specified as being part of the barrier to be classified, such toppings shall be defined by the manufacturer and shall be treated as part of the product to be security rated. Such toppings shall form part of the specimen tested and the area of the barrier to be penetrated during the attack tests shall incorporate those toppings, as illustrated in Figure 4.

Figure 4 Perimeter of attack area on free-standing barriers with defined toppings

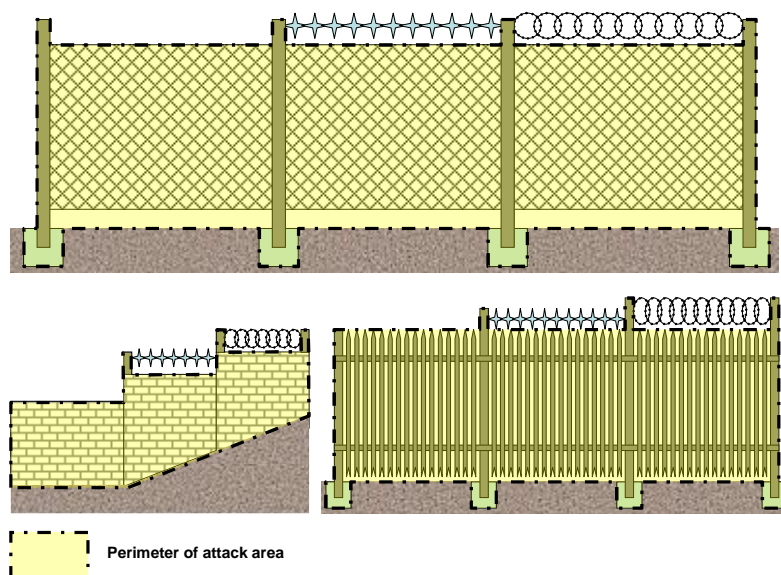


Where there is the provision for toppings on a free-standing barrier but those toppings are not specified by the manufacturer, the toppings shall not form part of the specimen tested nor shall it be included within the area of the barrier to be penetrated during the attack tests, as illustrated in Figure 5. However, any provision for fitting supplementary toppings to the free-standing barrier shall be reviewed to ensure they do not undermine the security rating achieved by the free-standing barrier.

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Note: Toppings that are not tested and rated as part of the free-standing barrier may not offer resistance to penetration equivalent to that achieved by the free-standing barrier and may even undermine the security rating achieved by the free-standing barrier. Care should therefore be taken to ensure the compatibility of toppings and the fixing methods to be employed and to ensure that their use does not invalidate any security rating attributed to the free-standing barrier.

Figure 5 Perimeter of attack area on free-standing barriers where toppings are not defined



3.3.5 Security containers

If the un-laden weight of the security container is less than 1000 kg, the container shall incorporate a means by which it is to be anchored to defined substrates. The anchorage system shall be treated as part of the product to be classified, and shall offer resistance to attack consistent with the security rating achieved by the security container.

4 TESTING

4.1 Test requirements

4.1.1 General

The overall objective is to confirm the security rating of the product/system by conducting a series of manual intervention attack tests designed to identify the

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minimum resistance to attack provided by the product/system when it is in the optimum and/or minimum locked conditions.

The attack methods used by the test team shall be those most likely, in the opinion of the test team, to result in the lowest resistance values. Exploratory tests may be made as necessary to enable to test team to determine the most effective attack methods.

Performance requirements for each security rating are defined in Table 4.

The security rating shall only be confirmed when all the requirements for the anticipated security rating are met.

4.1.2 Data

All information and drawings supplied shall be reviewed to ensure suitability for test and certification purposes.

Provision of a suitable lock(s) on all opening elements through which the test blocks defined in Clause 4.3 may be passed shall be verified and the design / attachment of the lock(s) reviewed to identify possible weakness that may be exploited during testing.

The instructions and recommendations for secure installation shall be reviewed in order to assess potential weaknesses for test purposes and to ensure that where applicable the strength of the structural opening materials are consistent with the security rating of a building component or access cover.

4.1.3 Conformity between specimen and documentation

The test specimen(s) shall be visually examined for conformity with the details supplied by the applicant prior to testing.

Note: A lack of conformity identified at this stage or during testing may prevent the issue of a test report and subsequent approval / certification unless promptly corrected.

4.2 Manual intervention attack tests

Undertake a series of manual intervention attack tests on the product using tools from the tool category appropriate to the applicant's anticipated security rating (as defined in Table 4), with a view to passing the appropriate test blocks specified in Clause 4.3 through the product and/or removing the product from the supporting substrate.

The working time (resistance time) shall be recorded in order to determine whether the product is capable of meeting the desired security rating.

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The security rating is determined in the minimum and optimum locked conditions. The product must meet the attack resistance requirements of at least security rating 1 in both locked conditions in order to be classified to LPS 1175.

All aspects of the product shall withstand attack from the attack side, irrespective of height constraints, such that data demonstrates all aspects of the product provide the minimum resistance to attack defined for that security rating.

Glazing and other infill materials shall be treated as an integral part of the product and attack tested accordingly. All hardware shall also be treated as an integral part of the product and attack tested accordingly.

Any exposed fixings that can be reached from the attack side may be exploited as part of the manual intervention attack tests.

4.3 Test block

The test block used to determine whether a person could pass through the barrier shall have an elliptical cross section 400 mm (-0 mm/+3 mm) major axis by 225 mm (- 0 mm/+3 mm) minor axis and be at least 300 mm long.

If the product is not designed to prevent a person passing completely through the product (e.g. display case), or is of a smaller cross-sectional area than the above test block, either of the following test blocks shall be used to determine the product's resistance to forced entry:

- i) Circular test block 150 mm (-0 mm/+2 mm) long by 125 mm (-0 mm/+2 mm) diameter.
- ii) An item representative of that which the enclosure is designed to protect.

Enclosures shall be deemed to have failed to achieve the desired security rating if during any attack test:

- i) The relevant test blocks defined above can be passed into the enclosure.
- ii) An item, of defined dimensions, representative of that which the enclosure is designed to protect can be removed from the enclosure.
- iii) The enclosure can be removed within the specified time using the tools defined for that classification, and its un-laden mass is less than 1000 kg.

The test block used to determine the products security rating shall be recorded within the test report.

4.4 Testing methods

4.4.1 General

General laboratory procedures, confidential handling of specimens, event record requirements and presentation of the test report shall be in accordance with the

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requirements specified in BS EN ISO/IEC 17025 (General Requirements for the competence of testing and calibration laboratories).

4.4.2 Manual intervention attack test procedures

Mount the product in accordance with the manufacturer's installation instructions with the attack side confronting the test operative.

Secure all opening elements in the minimum or optimum locked condition, as appropriate.

Complete a full series of attack tests on the product using tools of the appropriate category relative to the security rating expectation.

Continue each individual attack test until either:

- the objective is achieved; or
- the maximum test duration is exceeded; or
- the team leader decides that the attack is ineffective for classification purposes.

Undertake additional attack tests as necessary to demonstrate all aspects of the product offer resistance to attack from the defined attack side(s), irrespective of height constraints, commensurate with the minimum resistance to attack defined for that security rating in Table 4.

Attack tests shall only be aimed at areas or features which, in the opinion of the team leader, have not been weakened by previous tests. Where necessary, the manufacturer shall provide additional samples so that the laboratory can complete any necessary additional tests on those areas or features.

The timing device used to measure test duration shall remain activated during each individual attack test. The resolution of this device shall be at least 1 second. The timing devices(s) used to record working time shall have a resolution of at least 0.01 second. At the conclusion of the test the working time shall be rounded to the next full second.

4.4.2.1 Manual intervention attack test team

The test team shall comprise a team leader whose function is to direct, time, compile an event record and control the testing work on a product specimen and a test operative whose prime function is to carry out the testing work on the specimen as directed by the team leader.

The team leader may substitute himself for the test operative at any time during testing, the operative assuming the role of time keeper whilst maintaining the event record.

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A different test operative may be used for different styles of attack but only one operative (other than the team leader) shall partake in any individual test.

4.4.2.2 Manual intervention attack test facility

The apparatus for testing building components shall consist of a rigid frame suitable for mounting the building component in its normal attitude with fixings specified by the manufacturer. The frame shall prevent excessive movement of the specimen during testing.

Free-standing strongpoints and security enclosures shall be mounted on substrates representative of those referred to within the installation instructions and using the normal anchorage provided with the product. The configuration and supporting substrate shall be noted within the test report.

Free standing barriers shall be mounted on substrates representative of those on which the device is to be fitted in normal use, and using foundations/fixing methods defined in the product instructions. The configuration and local ground conditions shall be noted within the test report.

The apparatus shall also comprise attack tools of the appropriate category as specified in clause 4.4.2.3.

4.4.2.3 Manual intervention attack test tools

The tool manifest for the manual intervention attack tests and ascribed tool category is described below.

All dimensions are the maximum permitted unless otherwise specified.

No alterations shall be made to the tools other than those required to maintain the tools in good working order. Likewise, tool safety devices such as guards, fuses and other current limiting features and/or maximum speed controls, shall not be removed or altered.

The test team and anyone else present during the tests shall wear appropriate personal protective equipment.

TOOL CATEGORY A

Adhesive tape
 1 Cable cutter - 150 mm long
 Fishing line (e.g. polypropylene multi fibre)
 Flexible plastic coupon
 1 Glass cutter
 Hexagon wrenches - selection 120 mm long
 Hooks
 1 Knife - blade 125 mm long x 3 mm thick

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1 Lever (including nail pullers, prybars and utility bars) - 0.7 kg/300 mm long
 Pliers (including self-gripping and cutting) - selection 200 mm long
 Punches
 Rope
 1 Screwdriver - 6.5 mm diameter/square x 150 mm long
 1 Scriber
 Socket/screwdriver set -150 mm long ratchet arm
 Spanners - selection 150 mm long
 Traction screws (*otherwise known as 'self-tapping' screws or 'self-drilling' screws*) - selection 5.5 mm diameter x 60 mm long (carbon steel, single and twin start versions with choice of two varieties of thread/tip: deep thread and gimlet point; and self-tapping thread with drill point)
 Tweezers
 Wire
 WD40
 Wood/plastic wedges

Note: The tools of this category are selected in order to simulate an opportunist attack by bodily physical force and using easily concealed tools.

TOOL CATEGORY B

Tool category A plus:

1 Bolt cutter - 350 mm long
 1 Claw hammer - 350 mm long/0.7kg
 1 Drill bit (6 mm diameter jobber - HSS / HSCO / Carbide)
 1 Hand drill - 400 mm long/1.5kg
 1 Junior hacksaw plus 2 HSS blades
 1 Metal plate shears - 200 mm long
 1 Multiple slip joint pliers - 250 mm long
 1 Pipe wrench - 250 mm long
 Pliers (including self-gripping) - selection 250 mm long
 1 Screwdriver - 7 mm diameter/square x 250 mm long
 1 Screwdriver - 14 mm diameter/square x 400 mm long
 Socket/screwdriver set - 250 mm long ratchet arm
 1 Tube - 38 mm diameter x 300 mm long

Note: This tool category provides a more determined opportunist attack by bodily physical force and tools with a higher mechanical advantage.

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TOOL CATEGORY C

Tool category A and B plus:

- 1 Axe - 350 mm long/1.5 kg
- 1 Bolt cutter - 400 mm long
- Brick bolsters - 250 mm long x 75 mm wide blade
- Cold chisels - 250 mm long x 25 mm wide blade
- 1 Crowbar - 700 mm long/2.5 kg
- 1 Drill (cordless with rotary action only) - 7.2 V d.c*
- 1 Drill bit (10 mm diameter jobber - HSS / HSCO / Carbide)
- Fluorocarbon based freeze spray - 400 ml
- 1 Gas torch (Butane / Propane)
- 1 Hacksaw plus 2 HSS blades
- 1 Hammer - 400 mm long/1.5 kg
- 1 Pad saw plus 2 HSS blades
- 1 Scissor jack - 1500 kg capacity, 100 mm minimum retracted, 200 mm stroke
- Wood chisels - 250 mm long x 25 mm wide blade

** Complete with a spare power pack.*

Note: The tool category is for deliberate forced entry of well-protected premises using bodily physical force and a wide selection of attack options.

TOOL CATEGORY D

Tool category A, B and C plus:

- 1 "A-tool" lock puller - 500 mm long
- 1 Bolt cutters - 500 mm long
- 1 Disc grinder (cordless)* - 12 V d.c with 3 cutting discs
- 1 Drill (cordless with rotary action only) - 12 V d.c*
- 5 Drill bits (13 mm diameter jobber - HSS / HSCO / Carbide)
- 1 Felling/fire axe - 850 mm long/3 kg
- 1 General purpose saw - 750 mm long
- 1 Hole saw - 50 mm diameter
- 1 Hooligan bar - 760 mm long
- 1 Jigsaw (cordless) - 12 V d.c with 3 HSS / HSCO / Carbide blades*
- 1 "K-tool" lock remover
- 1 Plate shears - 300 mm long
- 1 Sledgehammer - 900 mm long/3 kg
- Steel wedges - 150 mm long
- 1 Tube - 75 mm diameter x 500 mm long

** Complete with one spare power pack.*

Note: This tool category is for experienced attempts at forced entry.

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TOOL CATEGORY D+

Tool category A, B and C plus:

- 1 "A-tool" lock puller - 500 mm long
- 1 Bolt cutters - 500 mm long
- 1 Circular saw (cordless) - 18V d.c/200mm diameter with 3 blades
- 1 Disc grinder (cordless)* - 18 V d.c with 3 cutting discs
- 1 Drill (cordless with rotary action only) - 18 V d.c*
- 5 Drill bits (13 mm diameter jobber - HSS / HSCO / Carbide)
- 1 Felling/fire axe - 850 mm long/3 kg
- 1 General purpose saw
- 1 Hole saw - 50 mm diameter
- 1 Hooligan bar - 760 mm long
- 1 Jigsaw (cordless) - 18 V d.c with 3 HSS / HSCO / Carbide blades*
- 1 "K-tool" lock remover
- 1 Plate shears - 300 mm long
- 1 Reciprocating saw - 18 V d.c with 3 HSS / HSCO / Carbide blades*
- 1 Sledgehammer - 900 mm long/3 kg
- Steel wedges - 150 mm long
- 1 Tube - 75 mm diameter x 500 mm long

* Complete with one spare power pack.

Note: This tool category is for experienced attempts at forced entry.

TOOL CATEGORY E

Tool category A, B, C and D+ plus:

- 1 Circular saw - 1100 W/200 mm diameter with 3 blades
- 1 Disc grinder - 1100 W/125 mm diameter with 3 cutting discs
- 1 Drill (with rotary / hammer action) - 750 W
- 5 Drill bits (13 mm diameter jobber and long series - HSS / HSCO / Carbide)
- 1 "Glasmaster" saw
- 1 Hole saw - >50 mm diameter
- 1 Pinch bar - 1500 mm long
- 1 Reciprocating saw - 750 W with 3 HSS / HSCO / Carbide blades
- 1 Sledgehammer - 900 mm long/6 kg
- 1 Tube - 75 mm diameter x 1000 mm long
- 2 Wood boring spade bits

Note: This tool category provides a professional means of attempting forced entry into higher value storage areas generally after penetrating the facade.

Although the tool category incorporates mains powered tools, this serves to cover those risks where the criminal may use tools of powers greater than those permitted in tool kit D, including battery powered, petrol driven and mains powered up to that possible with the tools specified in this tool kit.

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TOOL CATEGORY F

Tool category A, B, C, D+ and E plus:

- 1 Circular saw - 2100 W/300 mm diameter with 3 blades
- 1 Disc grinder - 2300 W/250 mm diameter with 3 cutting discs
- 1 Drill (with rotary / hammer action) - 2000 W
- 5 Drill bits (20 mm diameter - HSS / HSCO/ Carbide)
- 1 Enforcer - 450 mm long/12kg
- 1 Hooligan bar - 910 mm long
- 1 Oxyacetylene "Saffire Portapak" cutting kit - 50l/min oxygen consumption*
- 1 Reciprocating saw - 2000 W with 3 blades
- 1 Tube - 75 mm diameter x 1500 mm long

**Measured at standard ambient temperature and pressure, purity <99.0%.*

Note: This tool category is an enhancement of category E.

Although the tool category incorporates mains powered tools, this serves to cover those risks where the criminal may use tools of powers greater than those permitted in tool kit D, including battery powered, petrol driven and mains powered up to that possible with the tools specified in this tool kit.

TOOL CATEGORY G

Tool category A, B, C, D+, E and F plus:

- 1 Breaker - 1900 W / 15 kg plus up to 3 bits
- 1 Concrete chainsaw (2-stroke) - 15kg / 300 mm maximum cut depth
- 1 Cut-off ("Stihl") saw - 5kW / 450 mm diameter / 15 kg with three blades
- 1 Diamond core drill bit - 125 mm diameter
- 1 Enforcer - 600 mm long/15kg
- 1 Hydraulic head and toe jack ("Rabbit tool") - 15kg/ 5 tonne (S.W.L) output/180 mm spread
- 1 Oxyacetylene cutting kit - 250l/min oxygen consumption*
- 1 Pneumatic impact tool (self-contained with one spare air cartridge) - 600 blows per minute/ 48.263301052 kPa pressure

**Measured at standard ambient temperature and pressure, purity <99.0%.*

Note: This tool category provides extreme means of attempting forced entry into higher value storage areas before resorting to the use of vehicles, firearms or explosives.

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5 CLASSIFICATION AND DESIGNATION

5.1 Security rating

Products are attributed a security rating as detailed in Table 4 when the product meets all the requirements defined in Sections 3 and 4.

Table 4 Security rating requirements for each manual intervention attack test

Security rating classification	Tool category	Maximum working time (minutes)	Maximum test duration (minutes)
1	A	1	10
2	B	3	15
3	C	5	20
4	D	10	30
5	D+	10	30
6	E	10	30
7	F	10	30
8	G	20	60

5.2 Cylinder manipulation rating

A '+' may be placed adjacent to the product's security rating if the product meets the requirements of clause 3.3.2.5.

Note: The '+' rating signifies the mechanical cylinders fitted to the product offer resistance to the manipulation methods defined within Annex A of BS 3621: 2007 and LPS 1242: Issue 2.

6 MARKING

All specimens submitted for test shall be marked with the manufacturer/ supplier's name or trademark, product type designation and either a batch number or date of manufacture. The sample shall also be marked to indicate the attack face.

7 PUBLICATIONS REFERRED TO

BS 3621: 2007	Thief resistant lock assemblies - key egress
BS 6206: 1981 (<i>Incorporating Amendments Nos. 1, 2, 3, 4 and 5</i>)	Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings
BS 8621: 2007	Thief resistant lock assemblies. Keyless egress

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BS EN 1300: 2004	Secure storage units. Classification for high security locks according to their resistance to unauthorized opening
BS EN 1303: 2005	Building hardware. Cylinders for locks. Requirements and test methods
BS EN ISO/IEC 17025: 2005	General requirements for the competence of testing and calibration laboratories
LPS 1214	Specification for testing and classifying physical protection devices for personal computers and similar equipment
LPS 1242: Issue 2	Requirements and testing procedures for the LPCB approval and listing of cylinders for locks
LPS 1270	Requirements and testing procedures for the LPCB approval and listing of security glazing resistant to manual attack
SD118	LPCB scheme document – Intruder resistant building components, strongpoints, security enclosures and free standing barriers

For undated references please refer to the latest published issue.

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Amendments Issued Since Publication

DOCUMENT NO.	AMENDMENT DETAILS	SIGNATURE	DATE
LPS 1175-7.0	<ol style="list-style-type: none"> 1. Definition of minimum and optimum locked conditions expanded to more accurately define those locked conditions. 2. Optional 'cylinder manipulation classification' added to indicate whether the locking fitted to the product meets the requirements of either Annex A of BS 3621: 2007 or the requirements of manipulation resistance class '1' defined in LPS 1242: Issue 2. 3. Requirements for free-standing barriers amended to allow them to achieve multiple ratings over their entire height while ensuring the optimum security rating advertised is achieved over a minimum area. 4. Additional tools incorporated within tool categories A, B and C. 		
LPS 1175-7.1	<ol style="list-style-type: none"> 1. New front cover 2. Title added to header 3. Notes amended on Page 3 4. Repagination 5. Update to copyright information 	DC	Jan. 2014
LPS 1175-7.2	<ol style="list-style-type: none"> 1. Word 'not' removed from clause 3.2h) to avoid a double-negative. 2. Layout amended. 	RF	March 2014
LPS 1175-7.3	<ol style="list-style-type: none"> 1. Reference to "by stealth using minimal tools" in the notes relating to tool category A replaced by "using easily concealed tools". Stealth attacks are covered in LPS2081 while LPS1175 allows use of none 'stealth' techniques. 	RF	Sept 2015