LPCB®

Loss Prevention Standard

LPS 1175: Issue 8.0

Requirements and testing procedures for the LPCB certification 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 physical security products.

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PARTICIPATING ORGANISATIONS

This standard was approved by BRE Global Governing Body. The following organisations participated in the preparation of this standard:-

Association for Specialist Fire Protection (ASFP)
Association of Insurance Surveyors (AIS)
British Automatic Fire Sprinkler Association (BAFSA)
British Property Federation (BPF)
British Security Industry Association
Construction Industry Council (CIC)
Construction Products Association (CPA)
Fire Industry Association (FIA)
Heathrow plc
Home Builders Federation (HBF)
Homes & Communities Agency (HCA)
Institute of Civil Engineers (ICE)
London Fire Brigade (LFB)
Royal Institute of Chartered Surveyors (RICS)
Sustainability + Architecture
Sustainable by Design

Other

Control Risks
Door and Hardware Federation (DHF)
Secured By Design (SBD)
Security Institute
SSG
Water UK

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 36).

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.

FOREWORD

This standard identifies the evaluation and testing practices undertaken by LPCB for the purposes of certification and listing of products. LPCB certification and listing 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 certification and listing including agreement to rectify faults as appropriate.

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

This revision of LPS 1175 has been developed following extensive consultation with stakeholders. The previous single digit performance classifications (i.e. security ratings 1 to 8) has been extended to one formed of two elements that classify performance in terms of:

- Threat level *(first element)* - Letter (A to H) corresponding with the tool kit used to evaluate the product's intruder resistance and number of attackers involved.
- Delay *(second element)* - Numeric value (1, 3, 5, 10, 15 or 20) corresponding with the minimum delay (in minutes) provided by the product when placed in a locked condition.

The scope of classifications available is illustrated in Table 1, as are the classifications which correspond with the single digit classifications used within LPS 1175: Issue 7 (i.e. security ratings 1 to 8).

Although the two-part classifications introduced within this standard cover 48 combinations of threat and delay, it is considered unlikely most specifiers, end users and regulators will require individual products to achieve security ratings contained within the black boxes in Table 1. Instead, they are more likely to achieve an extended delay by deploying a series of products in a layered approach; a strategy that is supported by the classification system introduced within this standard. For example, it is considered a 10 minute delay against a level 'F' threat is more likely to be achieved by deploying two layers formed of products that achieve an 'F5' security rating instead of a single layer formed of products that achieve an 'F10' security rating.

Table 1 Comparison of security rating classifications used in LPS 1175: Issue 7 and Issue 8

		Security Rating Classification							
Delay	20 Minutes	A20	B20	C20	D20	E20	F20	G20	H20 **(SR8)**
	15 Minutes	A15	B15	C15	D15	E15	F15	G15	H15
	10 Minutes	A10	B10	C10	D10 **(SR4)**	E10 **(SR5)**	F10 **(SR6)**	G10 **(SR7)**	H10
	5 Minutes	A5	B5	C5 **(SR3)**	D5	E5	F5	G5	H5
	3 Minutes	A3	B3 **(SR2)**	C3	D3	E3	F3	G3	H3
	1 Minute	A1 **(SR1)**	B1	C1	D1	E1	F1	G1	H1
Tool Kit	LPS 1175: Issue 8	A	B	C	D	E	F	G	H
	LPS 1175: Issue 7	*A*	*B*	*C*	*D*	*D+*	*E*	*F*	*G*

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@bregroup.com.

The BRE Trust, a registered charity, owns BRE and BRE Global. BRE Global and LPCB (part of BRE Global) test, assess, certificate and list products and services within the fire and security sectors. For further information on our services please contact BRE Global, Watford, Herts. WD25 9XX or e-mail to enquiries@bregroup.com.

Listed products and services appear in the LPCB "List of Approved Products and Services" which may be viewed on our website: www.redbooklive.com.

1 SCOPE

This standard describes requirements for testing and classifying the intruder resistance of building components, strongpoints, security enclosures and free-standing barriers in support of issuing LPCB certification. The scope includes the following types of product and system:

- Access covers and hatches
- Barsets
- Cabinets and enclosures
- Cladding systems
- Curtain walling systems
- Display cases
- Hinged and pivot doors
- Fencing systems
- Folding doors
- Garage doors
- Gates
- Grilles and blinds
- Key safes
- Partitioning systems
- Revolving doors and portals
- Roofing systems
- Roof lights and skylights
- Secondary glazing systems
- Security screens
- Sheds and tool stores
- Shutters
- Sliding doors
- Strongpoints
- Temporary buildings
- Turnstiles
- Void protection screens
- Walls
- Windows

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 barrier, 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

LPS 1654 - Requirements and testing procedures for the LPCB approval and listing of padlocks

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 and low commercial risks (tool categories A and B), commercial risks (tool categories C and D), high security risks (tool categories E and F) and extremely high security risks (tool categories G and H).

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 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 standards. Contact BRE Global 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 specific areas within that building.

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

2.3 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.

2.4 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.

2.5 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.

2.6 Effective height of free-standing barrier *(h_e)*

The effective height of a free-standing barrier is the shortest distance between any point on the top of the permanent part of the free-standing barrier (excluding any toppings) and the surface of the supporting ground when measured in the plane of the barrier. This is illustrated in Figures 1 to 3.

2.7 Free-standing barrier

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

Figure 1 Effective height of free-standing barriers - walls

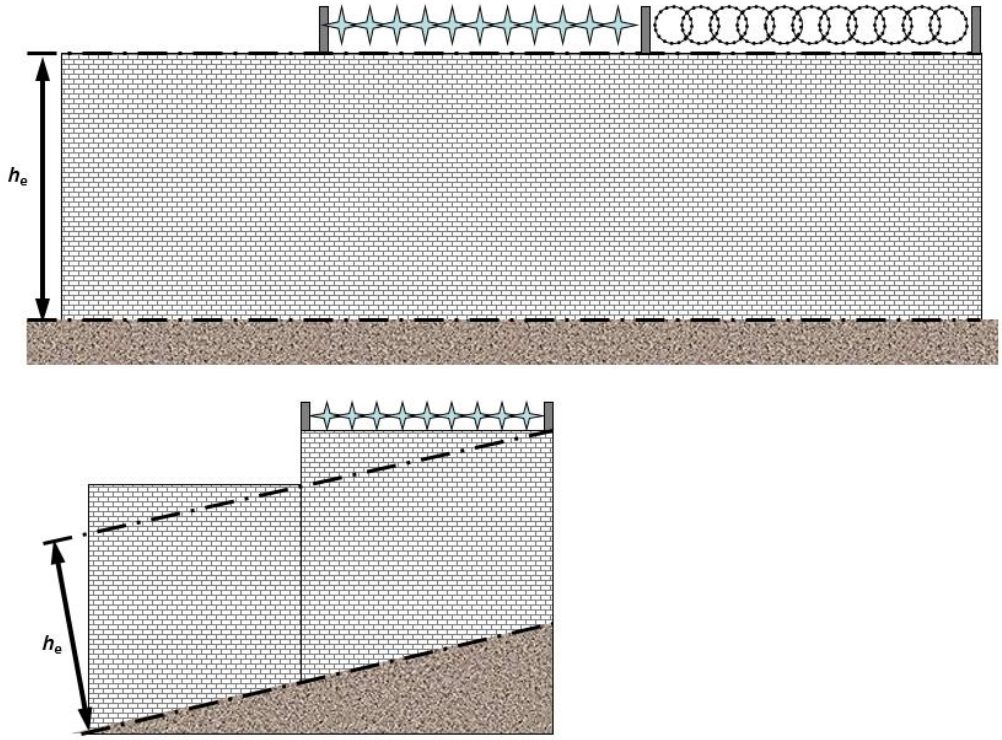


Figure 2 Effective height of free-standing barriers - mesh and panel fencing

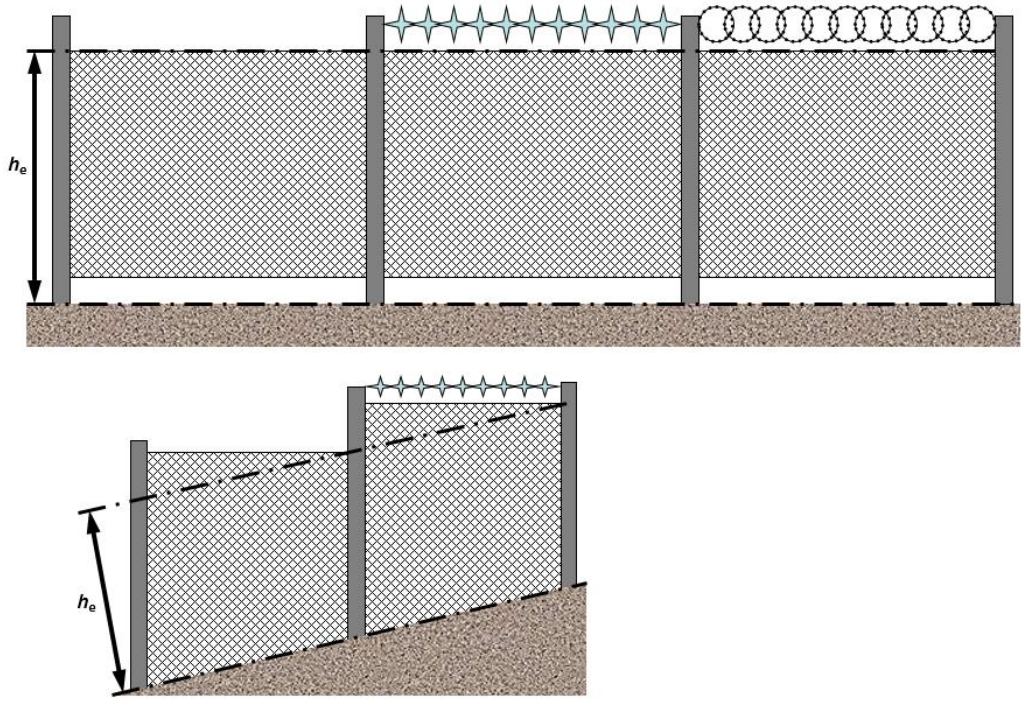
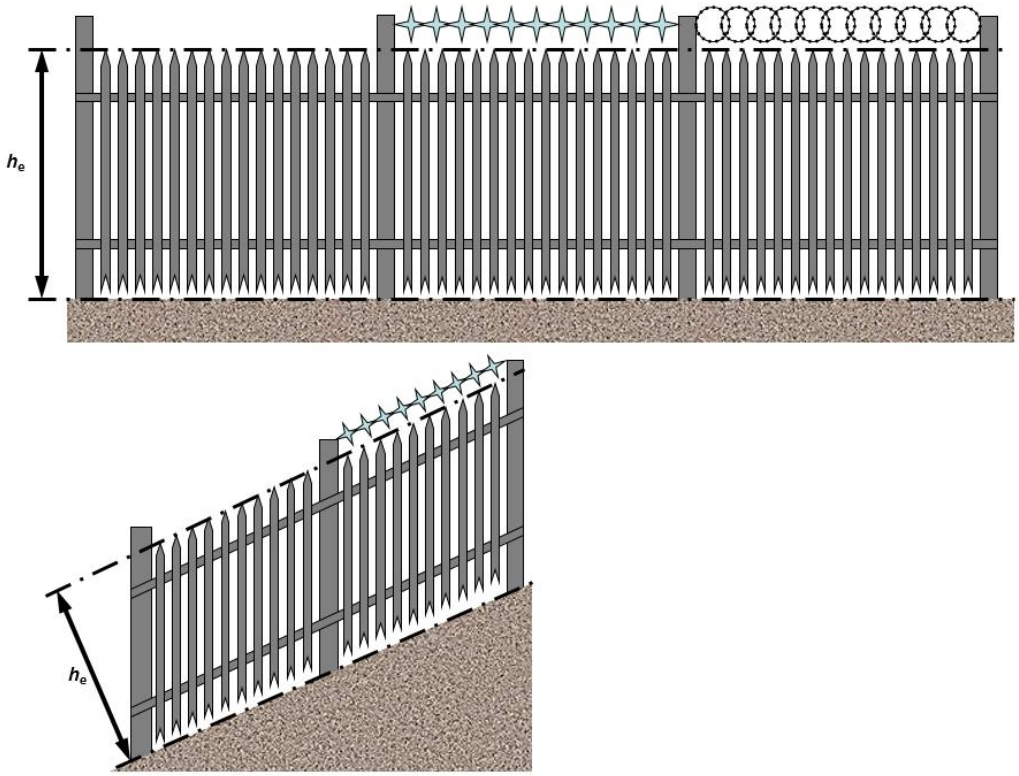


Figure 3 Effective height of free-standing barriers - palisade fencing



2.8 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.

2.9 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.

2.10 Manual intervention attack test

An attempt at forced entry or removal by either a single operative (security ratings relating to tool categories A to E) or a pair of operatives (security ratings relating to tool categories F to H) using tools selected from the corresponding tool category.

Note: A number of individual manual intervention attack tests may be conducted in order to determine a product's intruder resistance.

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 Operative

Person attempting to either force entry into/through the product or remove the product from the supporting substrate during an individual attack test. The maximum number of operatives permitted to attempt to damage the product during an individual manual intervention attack test is defined in Table 6.

2.13 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.

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* 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.

2.14 Potable water access cover

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

2.15 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.

2.16 Security enclosure

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

2.17 Security rating

Performance classification indicating the intruder resistance afforded by a building component, strongpoint, security enclosure or free-standing barrier.

2.18 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.

2.19 Total test time (t_t)

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

- working time;
- rest time of the operative(s) 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 Useable code

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

2.21 Working time (t_w)

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

Note: Working time may also be referred to as resistance time. It indicates the delay provided by a product when subjected to a manual intervention attack.

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 accurately 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 design of any areas of local protection and reinforcement.
   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:

   v) Type and location of all hardware.
   vi) Size and location of all local protection and reinforcement.
   vii) Type, size and 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 the materials' thickness and full details of any special processes/finishes applied to those materials, e.g. hardening and galvanising.

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 a '+' cylinder manipulation classification is sought in accordance with clause 5.2, either meet:

- The general vulnerability assessment requirements for cylinders defined within Annex A of BS 3621:2017 *Lock assemblies operated by key from both the inside and outside of the door*; 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 louvre 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 incorporate a unique reference and issue description.

3.2 Specimens to be supplied for testing

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

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 BRE Global. 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 resistant to 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) BRE Global 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 a product's performance. It is therefore not automatically possible to attribute a security rating achieved by a prototype test sample to subsequent series production.

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. If 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.

Note: Table 2 provides an indication of minimum fixing sizes and potentially 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.

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 a padlock, or other removable locking components/hardware, the padlock/hardware shall be treated as an integral component of the product to be classified.

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.

Table 2 Typical minimum fixing sizes for secure installation of barriers into reveals formed from the typical substrates noted

Security Rating	*Generic Substrate*	*Minimum Fixing Size*
A1 (SR1)	*Structural timber or steelwork, blockwork, or brickwork/concrete blockwork*	*M6/No. 12*
B3 (SR2)	*Structural timber or steelwork, blockwork, or brickwork/concrete blockwork*	*M8*
C5 (SR3)	*Brickwork/concrete blockwork, or structural steelwork*	*M10*
D10 (SR4)	*Reinforced brickwork/ blockwork, reinforced concrete or structural steelwork*	*M12*
E10 (SR5)	*Reinforced concrete or structural steelwork*	*M12*
F10 (SR6)	*Reinforced concrete or structural steelwork*	*M16*
G10 (SR7)	*Reinforced concrete or structural steelwork*	*M16*
H20 (SR8)	*Reinforced concrete or structural steelwork*	*M20*

Notes:

i) The suitability of the generic substrates and fixings listed depend on the size of the product, the degree to which the product inhibits access to the fixings and the edge of the supporting substrate, and the properties of that substrate.

ii) The quantity / type / location / pitch of fixings, their accessibility and anchorage method may compensate for a reduced fixing diameter or dictate the need for fixings with an increased diameter.

iii) 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.

iv) Exposed fixings that can be accessed from the attack side may be exploited as part of the manual attack tests.

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 3 for the security ratings achieved by the product in those locked conditions.

Table 3 Combined minimum effective differs/usable codes of locking mechanisms fitted to opening elements

Security Ratings	Minimum Number of Effective Differs/Usable Codes	*"Equivalent" Lock/Hardware Standard and Class**
At_w	1 000	*BS 3621 and BS 8621*
Bt_w	5 000	*LPS 1214*
Ct_w	30 000	*BS EN 1303 class 4*
Dt_w	30 000	*BS EN 1303 class 4*
Et_w	100 000	*BS EN 1303 class 6 and BS EN 1300 class B*
Ft_w	100 000	*BS EN 1303 class 6 and BS EN 1300 class B*
Gt_w	1 000 000	*BS EN 1300 class C*
Ht_w	1 000 000	*BS EN 1300 class C*
**Note: 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.*		

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 3621:2017; 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:

a) 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 manufacturer's instructions and viewed from any attitude.

b) All vent openings shall be fitted with mesh screens that have holes no greater than 425 micron.

c) All vents shall be baffled to prevent direct access.

d) 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 manufacturer's instructions and viewed from any attitude.

e) Failure or breakage of one or more hinges 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.

f) 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 effective height (h_e) of free-standing barriers, excluding toppings, shall be as defined in Table 4.

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

The instructions shall also define how to achieve the minimum gap between:

i) The bottom of the free-standing barrier and supporting ground, if appropriate to that style of free-standing barrier; and

ii) The end of the free-standing barrier and adjacent barriers that form the perimeter of the protected area, if appropriate to that style of free-standing barrier.

Table 4 Minimum effective height (h_e) of free-standing barriers

Security Rating (#t_w)[1]	Height (m)		Toppings[3]
	Minimum effective height (h_e)[2]	Minimum height above ground level up to which the barrier shall provide optimum penetration resistance (h_o)[2]	
#1	1.8	1.8	No
#3	2.0	2.0	
#5	2.4	2.25	
#10	2.8	2.25	Yes
#15	4.0	2.25	
#20	5.0	2.25	

Notes: 1 '#' indicates the tool category (A to H).

2 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.

3 Free-standing barriers of security ratings $t_w \geq 10$ shall incorporate a topping.

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 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 working time (t_w) when using tools selected from the tool category associated with the target security rating, as defined in Table 6. Exploratory tests may be made as necessary to enable the test team to determine which attack methods are most likely to be effective.

Performance requirements for each security rating are defined in Table 6.

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

Products/systems that do not have a defined attack face, or one that is easily distinguishable by installers using the installation instructions provided, shall be tested from each side and attributed the lowest security rating achieved during those tests.

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 certification unless promptly corrected.

4.2 Manual intervention attack tests

Undertake a series of manual intervention attack tests on the product using tools selected from the tool category associated with the applicant's anticipated security rating (as defined in Table 6), with a view to passing the appropriate test block(s) defined in Clause 4.3 through the product and/or removing the product from the supporting substrate.

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

The security rating shall be determined in the minimum and optimum locked conditions using tools selected from a single common tool category associated with the applicant's anticipated security rating, as defined in Table 6. In order for the product's intruder resistance to be classified in accordance with LPS 1175, the product must achieve the attack resistance requirements of at least security rating #1 in both locked conditions, where '#' is a common tool category.

All aspects of the product shall withstand attack from the attack side such that data demonstrates all aspects of the product provide the minimum resistance to attack defined for that security rating. With the exception of free-standing barriers, this shall be achieved irrespective of height constraints.

The entire area of a free-standing barrier up to at least h_o (Table 4) shall provide resistance to penetration consistent with that of the optimum security rating sought. Meanwhile, the remaining area of the barrier excluding toppings, i.e. between h_o and h_e, shall provide penetration resistance at least commensurate with the requirements of security rating A1.

If the entire free-standing barrier does not achieve the optimum intruder resistance, the documents supplied with the barrier system shall define the height (h_o) to which the barrier achieves the optimum intruder resistance together with the minimum security rating achieved by the area of the barrier between heights h_o and h_e.

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 product 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. a key safe or 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) 125 mm (-0 mm/+2 mm) diameter circular test block, 150 mm (-0 mm/+2 mm) long.
ii) An item representative of that which the product is designed to protect.

The product shall be deemed to have failed to achieve the desired security rating if any of the following occur during any attack test:

i) the relevant test blocks defined above can be passed through the product (in the case of a doorset or other two-dimensional barrier) or into the product (in the case of an enclosure); or
ii) an item, of defined dimensions, representative of that which the product is designed to protect can be removed from it; or
iii) the product (in the case of a security container) can be removed from the supporting structure/substrate 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 a 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 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(s).

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.

Prior to conducting each individual attack test, the test operative(s) shall select the tools they wish to include within their tool kit for that test from the tool category associated with the applicant's anticipated security rating, as defined in Table 6.

The mass of each tool used to conduct the manual intervention attack tests shall be recorded to the nearest 0.001 kg.

The total mass of the tools selected for an individual attack test by each operative shall not exceed the limit specified in Table 6.

During individual attack tests involving two test operatives, the tools selected by each test operative are pooled into one tool kit and are available to both attackers to use during that individual attack test.

A new tool kit may be selected for each individual attack test.

Each individual attack test shall continue until either:

- the objective is achieved; or
- the working time (t_w) exceeds that defined in Table 5 for the target security rating; or
- the total test duration (t_t) exceeds that defined in Table 5 for the target security rating; or
- the team leader decides the attack is ineffective for classification purposes.

Table 5 Maximum test duration (t_t) permitted for individual attack tests

Security Rating (#t_w)	Maximum Working Time - t_w *(minutes)*	Maximum Test Duration - t_t *(minutes)*
#1	1	10
#3	3	15
#5	5	20
#10	10	30
#15	15	45
#20	20	60
Note: '#' indicates the tool category (A to H).		

Additional attack tests shall be conducted, as necessary, to demonstrate all aspects of the product offer resistance to attack from the defined attack side(s) commensurate with the minimum resistance to attack defined for that security rating in Table 6.

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; plus
- one or more test operatives whose prime function is to carry out the testing work on the specimen as directed by the team leader.

The team leader and test operative(s) may switch roles during a test programme. However, the number of individuals fulfilling the role of a test operative during any one individual attack test shall not exceed that defined in Table 6.

Note: At the client's discretion, more than the number of test operatives prescribed in Table 6 may be used during an individual attack test providing the maximum number of test operatives attacking the product at any one time does not exceed that that defined in Table 6.

Different test operatives may be used for each individual attack test.

The test team shall wear appropriate personal protective equipment.

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.

Unless otherwise specified, all defining attributes; such as dimensions (including handles, heads and jaws), power, and weight (excluding guards or other safety features); are the maximum permitted.

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

Tool Category A

Type	Maximum dimension / power / weight	Quantity‡
Adhesive tape (reel)	75 mm wide	1
Cable cutter	200 mm long	1
Cargo strap (selection)	25 mm wide strap with cam buckle	1§
Electric cable (Single core)	1.2 mm diameter wire / 1 m long	1
Engineers hooks (selection)	-	1§
Firefighter's key	-	1
Fishing line *(e.g. polypropylene multi fibre)*	Reel	1
Fishing hooks (selection)	-	1§
Flexible plastic coupon	-	1
Glass cutter	-	1
Hexagon wrenches (selection)	200 mm long	1§
Knife	125 mm long x 3 mm thick blade	1
Lever (including nail pullers, prybars and utility bars)	300 mm long / 0.7 kg	1
Pliers (selection, including self-gripping and cutting)	200 mm long	1§
Punches (selection, including flat and pointed tipped)	200 mm long	1§
Rope (selection, non-metallic)	20 mm diameter	1§

‡ Maximum number of individual tools a test operative may select during each individual attack test (security ratings At_w to Et_w only).

§ Although a range of different types, sizes and/or shapes may be selected by a test operative, only the maximum quantity of individual units of a single type, size and shape may be included within a tool kit for any one test.

Type	Maximum dimension / power / weight	Quantity‡
Screwdriver	6.5 mm diameter / square x 200 mm long	1
Scriber (selection)	200 mm long	1§
Socket/screwdriver set (selection)	150 mm long ratchet arm	1§
Spanners (selection)	150 mm long	1§
Traction screws**	5.5 mm diameter x 60 mm long	2§
Tweezers (selection)	-	1
Universal key	-	1
Wire (selection)	3 mm diameter	1
WD40	400 ml	1
Wood/plastic wedges (selection)	200 mm long x 50 mm wide	6

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:

Type	Maximum dimension / power / weight	Quantity‡
Battery	3.6 V	1
Bolt cutter	350 mm long	1
Claw hammer	350 mm long / 1 kg	1
Drill bit (HSS / HSCO / Masonry)	6 mm diameter jobber	1
Drill/driver	3.6 V (complete with drill bit adaptor)	1
Electric cable (Single core)	2.1 mm diameter wire / 1 m long	1
Junior hacksaw	-	1
Junior hacksaw blades (HSS)	-	2
Metal plate shears	200 mm long	1
Multiple slip joint pliers	250 mm long	1
Pipe wrench	250 mm long	1
Pliers (selection, including self-gripping)	250 mm long	1§
Ratchet strap (selection)	25 mm wide strap with 200 mm long ratchet mechanism††	1§
Screwdriver	7 mm diameter/square x 250 mm long	1
Screwdriver	14 mm diameter/square x 400 mm long	1
Socket set (selection)	250 mm long ratchet arm	1§

** Otherwise known as ‘self-tapping’ screws or ‘self-drilling’ screws. The selection available may include 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.

†† Measured with the mechanism in the closed position.

Type	Maximum dimension / power / weight	Quantity‡
Tube	50 mm outer diameter with 4 mm wall thickness x 300 mm long	1

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

Tool Category C

Tool category A and B plus:

Type	Maximum dimension / power / weight	Quantity‡
Axe	350 mm long / 1.5 kg	1
Battery	12 V	1
Bolt cutter	400 mm long	1
Brick bolster	250 mm long x 75 mm wide blade	1
Cold chisel	250 mm long x 28 mm wide blade	2
Crowbar	700 mm long / 2.5 kg	1
Drill‡‡	12 V	1
Drill bit (HSS / HSCO / Masonry)	10 mm diameter jobber	1
Fluorocarbon based freeze spray	400 ml	1
Gas torch (Butane / Propane)	175 g	1
Hacksaw	-	1
Hacksaw blades (HSS / bimetal)	-	2§
Hammer *(3lb / 1.36 kg nominal head weight)*	300 mm long / 1.8 kg	1
Pad saw	-	1
Pad saw blades (HSS / bimetal)	-	2§
Scissor jack	1500 kg capacity, 100 mm minimum retracted, 200 mm stroke	1
Wood chisel	250 mm long x 25 mm wide blade	1§

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

‡‡ Only the rotary setting shall be used on the 12 V drill when used as a Category C tool. The hammer/percussion setting may be used when the tool is used as a Category D tool.

Tool Category D

Tool category A, B and C plus:

Type	Maximum dimension / power / weight	Quantity‡
"A-tool" lock puller	500 mm long	1
Battery	12 V	2§§
Bolt cutters	500 mm long	1
Drill bits (HSS / HSCO / Masonry / Tungsten Carbide)	10 mm diameter jobber	5
Felling/fire axe *(7 lb / 3.18 kg nominal head weight)*	900 mm long / 4.5 kg	1
General purpose saw	750 mm long	1
Grinder	12 V	1
Grinder discs	100 mm diameter	3
Hole saw	50 mm diameter	1
Hooligan bar	760 mm long / 5 kg	1
Jigsaw	12 V	1
Jigsaw blades (HSS / HSCO / Carbide)	-	3
"K-tool" lock remover	-	1
Plate shears	300 mm long	1
Sledgehammer *(7 lb / 3.18 kg nominal head weight)*	900 mm long / 4.5 kg	1
Steel wedges	150 mm long x 50 mm wide	10
Tube	75 mm outer diameter with 6 mm wall thickness x 500 mm long	1

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

Tool Category E

Tool category A, B and C plus:

Type	Maximum dimension / power / weight	Quantity‡
"A-tool" lock puller	500 mm long	1
Battery	18 V	2***
Bolt cutters	500 mm long	1
Circular saw	18 V	1
Circular saw blades	200 mm diameter	3
Drill (rotary and hammer action)	18 V	1
Drill bits (HSS / HSCO / Masonry / Tungsten Carbide)	13 mm diameter jobber	5

§§ Maximum number of batteries that may be used with each 12 V battery powered tool.
*** Maximum number of batteries that may be used with each 18 V battery powered tool.

Type	Maximum dimension / power / weight	Quantity‡
Felling/fire axe *(7 lb / 3.18 kg nominal head weight)*	900 mm long / 4.5 kg	1
General purpose saw	750 mm long	1
Grinder (cordless)	18 V	1
Grinder discs	125 mm diameter	3
Hole saw	50 mm diameter	1
Hooligan bar	760 mm long / 5 kg	1
Jigsaw	18 V	1
Jigsaw blades (HSS / HSCO / Carbide)	-	3
"K-tool" lock remover	-	1
Plate shears	300 mm long	1
Reciprocating saw	18 V	1
Reciprocating saw blades (HSS / HSCO / Bimetal / Carbide)	Standard series	3
Sledgehammer *(7 lb / 3.18 kg nominal head weight)*	900 mm long / 4.5 kg	1
Steel wedges (selection)	150 mm long	6
Tube	75 mm outer diameter with 6 mm wall thickness x 500 mm long	1

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

Tool Category F

Tool category A, B, C and E plus:

Type	Maximum dimension / power / weight
Battery	36 V
Chisel bits (SDS-Plus)	300 mm long
Circular saw	36 V
Circular saw blades	200 mm diameter
Disc grinder	36 V
Drill (rotary, hammer action and/or SDS)	36 V
Drill bits (HSS / HSCO / Masonry Tungsten Carbide)	13 mm diameter jobber and long series
Drill bits (SDS-Plus)	300 mm long
Drill bits (step drill / cone cutter)	30 mm diameter
Drill bits (tile / glass)	10 mm
Drill saw	6 mm diameter
"Glasmaster" saw	-
Grinder discs	125 mm diameter
Hole saw	>50 mm diameter
Jigsaw	36 V
Maul - wood splitting *(8 lb /*	1200 mm long / 5 kg

Type	Maximum dimension / power / weight
3.63 kg nominal head weight)	
Pick axe *(5 lb / 2.27 kg nominal head weight)*	1200 mm long / 4 kg
Pinch bar	1500 mm long
Reciprocating saw	36 V
Reciprocating saw blades (HSS / HSCO / Carbide)	310 mm long
Sledgehammer *(10 lb / 4.54 kg nominal head weight)*	1200 mm long / 6 kg
Steel wedges	300 mm long
Tube	75 mm diameter x 1000 mm long
Wood boring spade bits (selection)	40 mm

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

Tool Category G

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

Type	Maximum dimension / power / weight
Battery	54 V
Chisel bits (SDS-Plus)	600 mm long
Chainsaw (2-stroke)	3 kW with full fuel tank / 400 mm bar length / single chain
Circular saw	54 V
Disc grinder	54 V
Drill (rotary, hammer action and/or SDS-Plus)	54 V
Drill bits (HSS / HSCO / Masonry / Tungsten Carbide / SDS-Plus)	20 mm diameter / 600 mm long
Enforcer	450 mm long / 12 kg
Grinder (2-stroke)	3.7 kW with full fuel tank
Grinder discs	300 mm diameter
Hooligan bar	910 mm long
Reciprocating saw	54 V
Trolley jack	4 tonne
Tube	75 mm diameter x 1500 mm long

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

Tool Category H

Tool category A, B, C, E, F and G plus:

Type	Maximum dimension / power / weight
Arcair	240 V / 80 psi oxygen supply
Arcair rods (selection)	1200 mm
Concrete chainsaw (2-stroke)	5 kW with full fuel tank / 350 mm bar length / single chain / 15 kg
Grinder (2-stroke)	5 kW with full fuel tank / 15 kg
Grinder discs	400 mm diameter
Diamond core drill bit	125 mm diameter
Enforcer	600 mm long / 18 kg
Hydraulic head and toe jack ("Rabbit tool")	15 kg / 5 tonne (S.W.L) output / 180 mm spread
Oxyacetylene cutting kit	250 l/min oxygen consumption†††
Rescue chainsaw (2-stroke)	4.5 kW with full fuel tank / 510 mm bar length / single chain
Ring saw (2-stroke)	5 kW with full fuel tank
Ring saw blades	400 mm diameter

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.

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

5 CLASSIFICATION AND DESIGNATION

5.1 Security rating

Products are attributed a security rating representing the tool category and number of operatives (intruders) the product resisted and the delay achieved (working time) once the product meets all the requirements defined in Sections 3 and 4. The range of possible security ratings and requirements for each is summarised in Table 6.

Table 6 Security rating requirements for each manual intervention attack test

		Security Rating Classification							
Maximum Working Time - t_w (minutes)	20	A20	B20	C20	D20	E20	F20	G20	H20 (SR8)
	15	A15	B15	C15	D15	E15	F15	G15	H15
	10	A10	B10	C10	D10 (SR4)	E10 (SR5)	F10 (SR6)	G10 (SR7)	H10
	5	A5	B5	C5 (SR3)	D5	E5	F5	G5	H5
	3	A3	B3 (SR2)	C3	D3	E3	F3	G3	H3
	1	A1 (SR1)	B1	C1	D1	E1	F1	G1	H1
Tool Category		A	B	C	D	E	F	G	H
Maximum Number of Test Operatives (Clause 4.4.2.1)		1	1	1	1	1	2	2	2
Maximum Total Mass of Tools Per Test Operative (kg)		2.5	5	10	20	25	25	25	25

5.2 Cylinder manipulation rating

A '+' may be placed after 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 3621:2017 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.

The security rating achieved by a product shall NOT be marked on the product’s attack face or be visible from the attack side when any opening element (e.g. a door leaf) is in the closed position.

7 PUBLICATIONS REFERRED TO

BS 3621:2017	Lock assemblies operated by key from both the inside and outside of the door
BS 8621:2017	Lock assemblies operated by key from the outside of the door and by handle or thumb turn from the inside of the door
BS EN 1300:2013	Secure storage units. Classification for high security locks according to their resistance to unauthorized opening
BS EN 1303:2015	Building hardware. Cylinders for locks. Requirements and test methods
BS EN ISO/IEC 17025:2017	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	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
LPS 1654	Requirements and testing procedures for the LPCB approval and listing of padlocks
SD118	LPCB scheme document – Intruder resistant building components, strongpoints, security enclosures and Free-standing barriers

For references that do not include a date or revision status, please refer to the latest published version.

Amendments Issued Since Publication

DOCUMENT NO.	AMENDMENT DETAILS	SIGNATURE	DATE
LPS 1175-7.0	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	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	1. Word 'not' removed from clause 3.2h) to avoid a double-negative. 2. Layout amended.	RF	March 2014

DOCUMENT NO.	AMENDMENT DETAILS	SIGNATURE	DATE
LPS 1175-7.3	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 LPS 2081 while LPS 1175 allows use of non ‘stealth’ techniques.	RF	Sept 2015
LPS 1175-8.0	1. Introduction of two-part performance classification system to address a more diverse range of threat scenarios. 2. Introduction of an electrical wire, fireman’s key, cargo strap and universal key in tool category A. 3. Hand drill in tool category B replaced by a 3.6 V drill, plus a ratchet strap and electrical wire added. 4. Tool categories D+ to G re-labelled E to H. 5. Mains powered tools in tool categories E to G replaced by portable tools (in particular battery powered and petrol driven tools). 6. Introduction of a number of additional tools in tool categories E to G. 7. Introduction of a second attacker during tests relating to attack tests involving tools selected from tool categories F to H. 8. Limit placed on the weight of tools each test operative may select for an attack test. 9. References to other standards updated.	RF	Feb 2018