

Equipment Specifiers Guide



1. EQUIPMENT SPECIFIER.	4
2. SAFETY, PROHIBIT AND LEGAL NOTICES	4
3. THE INITIAL DESIGN STAGE.	4
4. PLANNING.	4
4.1. FLOOR SURFACES.	5
4.2. ENTRANCE LOBBY.	5
4.3. CONGESTION.	5
4.4. SUPERVISION.	5
4.5. SPECIALISED OPERATION.	6
4.6. ELECTRICAL DESIGN.	6
4.7. GLAZING.	6
4.8. ACTIVATION SYSTEMS.	6
4.8.1. AUTOMATIC ACTIVATION.	7
4.8.2. MANUAL ACTIVATION.	7
4.8.3. REMOTE ACTIVATION.	7
4.9. SAFETY DEVICES	8
4.10. SIGNAGE	8
4.11. ADDITIONAL RECOMMENDATIONS	9
5. HAZARDS.	9
5.1. HAZARDS DURING THE OPENING CYCLE.	10
5.2. HAZARDS DURING THE CLOSING CYCLE.	10
6. REGULATIONS THAT MAY APPLY.	10
6.1. THE MACHINERY DIRECTIVE 2006/42/EC	10
6.2. THE SUPPLY OF MACHINERY (SAFETY) REGULATIONS 2008.	11
6.3. HEALTH AND SAFETY AT WORKS ACT 1974 CHAPTER 37.	11
6.4. REGULATORY REFORM (FIRE SAFETY) ORDER 2005.	12
6.5. APPROVED DOCUMENT B, FIRE SAFETY.	12
6.6. APPROVED DOCUMENT M, ACCESS TO AND THE USE OF BUILDINGS.	13
6.7. APPROVED DOCUMENT K4, PROTECTION AGAINST IMPACT WITH GLAZING.	13
6.8. BS EN 17352 POWER OPERATED PEDESTRIAN ENTRANCE CONTROL EQUIPMENT.	14
6.9. EN 17210:2021 ACCESSIBILITY AND USABILITY OF THE BUILD ENVIRONMENT.	14
6.10. BS7036-0-2014 POWER OPERATED PEDESTRIAN DOOR-SETS – SAFETY IN USE.	14
6.11. BS EN16005:2012 CODE OF PRACTICE FOR SAFETY AT POWERED DOORS.	14
6.12. BS EN 1991-1-7:2006+A1:2014 ACTIONS ON STRUCTURES.	14
6.13. BS 6180:2011 CODE OF PRACTICE FOR BARRIERS IN AND ABOUT BUILDINGS.	15
6.14. BS 8300-2:2018 DESIGN OF AN ACCESSIBLE AND INCLUSIVE BUILT ENVIRONMENT.	15
6.15. CPNI	16
6.14.1 REVOLVING DOORS	16

6.14.2	PORTALS	16
6.14.3	SPEED GATES	17
6.16.	EN1627-2021 vs LPS1175	17
6.17.	PAS24 vs LPS1175	18
6.18.	OTHER REGULATIONS	18
7.	INSTALLATION, OPERATION, INSPECTION AND MAINTENANCE.	19
7.1.	FACTORY ACCEPTANCE TEST.	19
7.2.	INSTALLATION	20
7.3.	PRE-SITE COMMISSIONING ACCEPTANCE TEST.	20
7.4.	SITE COMMISSIONING AND ACCEPTANCE TEST (SCAT)	20
7.5.	HANDOVER DOCUMENTS	20
7.5.1	OCCUPIER SAFETY CHECKS	21
7.6.	MAINTENANCE	21
8.	RISK ASSESSMENT.	21
8.1.	RISK REDUCTION PROCESS	21
8.2.	RISK ASSESSMENT CHECK SHEET.	21
9.	REFERENCES.	22
9.1.	ABBREVIATIONS	22
9.2.	DEFINITIONS	22
9.3.	REQUIREMENTS OWNER	23
9.4.	HISTORY	23

1. **Equipment Specifier.**

The purpose of this document is to provide equipment specifiers, importers, distributors, resellers, specifiers, integrators, installers, building owners, occupiers, and duty holder's guidance on standards, acts, regulations, and laws relating to the supply, installation, and operational requirements applicable to pedestrian entrance control products such as turnstiles, speed gates, portals, and security doors.

This document is not intended to be a comprehensive guide, but a guide to some important advice and recommendations that should be considered when planning a pedestrian entrance control installation.

2. **Safety, Prohibit and Legal Notices**

The equipment specifier must make themselves aware of the safety, prohibit and legal notices of the equipment they intend to recommend.

3. **The Initial Design Stage.**

At the design stage, the equipment specifier should seek specialist advice from, and work in close liaison with, the equipment manufacturer or their representative.

It is particularly important for the equipment specifier to establish predicted user characteristics and precise operational requirements such as: -

- The volume of pedestrian traffic at different times of the day.
- The type of pedestrian traffic, such as the elderly, the infirm, disabled persons, parents with pushchairs and young children.
- The level of security required.
- If users are wearing high visibility clothing.

The equipment specifier must consult other relevant authorities such as fire, building control and the owner/occupier, as each have a related responsibility in the installation and operation of a pedestrian entrance control system.

4. **Planning.**

The equipment specifier must carefully plan the design and installation location of the equipment, taking account of the following: -

- It should be sited so that it is readily visible and have sufficient space on either side to accommodate the passage of pedestrians approaching and leaving the equipment.
- The clear opening of the walkways should be adequate for the anticipated volume and type of pedestrian traffic.
- Ramped floors up and down to are a potential hazard and should be avoided.
- Operational environment requirements such as exposure to wind, rain, sunlight, heat and cold.

4.1. Floor Surfaces.

To minimize the risk of trapping feet, hands, bodies etc. underneath the equipment obstacles (the bottom edge) should be positioned at and maintain an appropriate clearance from the floor. The floor surfaces over which the equipment obstacles pass should be even and level.

To minimize the risk of tripping or obstruction, all floor-mounted items, e.g., surface mounted bases, control mats and threshold plates, should be suitably tapered or ramped or, where practicable, recessed into a mat well to be flush with the surface of the floor. Flooring should, where practicable, incorporate anti-slip or water clearing capabilities.

4.2. Entrance Lobby.

Section 8.2.5 of the Design of an accessible and inclusive built environment - Lobbies with single leaf doors should be avoided wherever possible. Where they are used, the minimum dimensions of such lobbies should be as shown in Figure 1.

Where double doors are used for a lobby, the length of the lobby should be at least the projection of the door or doors, if swinging into the lobby, plus 1570mm.

The dimensions and shape of a lobby should allow a wheelchair user to be able to move clear of one door swing to push open the next door or reverse their wheelchair to pull it open. A space should also be provided for someone helping a wheelchair user to open a door and push (or pull) their wheelchair through.

4.3. Congestion.

If congestion occurs near a pedestrian entrance control system, pedestrians might be forced into the path of the equipment and could then be at risk of injury. To reduce the risk of congestion in the vicinity of a pedestrian entrance control system, the installation and its immediate area should be designed and arranged to promote safe pedestrian traffic flow. In particular:

- The layout and the area leading to and from the installation should be suitable for the type of pedestrian entrance control system.
- The installation should be suitable for the type and volume of pedestrian traffic.
- There should be no obstructions near the equipment restricting the flow of pedestrian traffic.
- Cross-flowing pedestrian traffic close to the equipment gate should be avoided.
- There should be no distracting notices or displays close to the equipment.
- Any intended direction of traffic-flow should be clearly marked.

4.4. Supervision.

Where appropriate, staff should be trained in the use of the entrance-controlled system to enable them to: -

- Ensure users particularly elderly, the infirm, disabled persons and young children are not exposed to unnecessary risks when using the equipment.
- Help and advise the elderly, infirm, disabled people, and young children.
- To take appropriate action in an emergency.

4.5. Specialised operation.

Entrance control systems can have overriding controls that limit the function to one of the following:

- to remain open.
- to remain closed.
- to operate in one direction only.

Where the normal function of the equipment is overridden of a specialised operation that creates a potential hazard, then it is essential that warning is given to users. Such warnings should preferably be in the form of notices placed on the equipment itself.

Barriers, or notices on stands, should not be used where they could cause an obstruction in case of emergency.

4.6. Electrical design.

The electrical installations should conform to local regulations.

4.7. Glazing.

Toughened glass in accordance with EN 12150-2:2004 and laminated glass in accordance with EN 14449:2005 are suitable glazing materials.

Approved Document K4 states that people with impaired vision should be in no doubt as to the location of glass entrance doors.

Notes

- a. Manifestation on the glass should be fitted at two levels, 850 to 1000mm and 1400 to 1600mm above the floor, contrasting visually with the background seen through the glass (both from the inside and outside) in all lighting conditions.
- b. If the manifestation takes the form of a logo or sign at least 150mm high (repeated if on glass screen), or a decorative feature such as broken lines or continuous banks, at least 50mm high.
- c. Where adjacent to, or forming part of a glazed screen, are clearly differentiated from it by the provision of a high-contrast strip at the top and on both sides.
- d. Where the entrance-controlled system is held open, there must be guarding to prevent the leading edge constituting a hazard.
- e. Edges are considered not to be sharp if grinded with a minimum 1 mm radius or with a chamfer with a minimum of 0,2 mm × 0,2 mm.
- f. Transparent obstacles shall be clearly recognizable, or they shall be identified by e.g., permanent marking, suitable labels or by using coloured materials.

4.8. Activation systems.

Entrance-controlled products can be activated automatically, manually, or remotely, and the selection of the most appropriate system depends on various factors, including the location of the equipment and the circumstances of its intended use.

Specialist technical advice, e.g., manufacturer or supplier, should always be sought in the

selection of activators.

4.8.1. Automatic activation.

Automatic activation, where installed, should ensure wherever possible that a person approaching the equipment does not have to hesitate whilst the equipment is opening. In certain situations, it might be necessary for the user to wait for the equipment to open; the hazard analysis and risk assessment should take this into account.

NOTE(s)

1. Unnecessary activations could present additional hazards.
2. Examples of automatic activation devices include motion sensors, presence sensors, photo electric devices and control mats.

4.8.2. Manual activation.

Manual activation is the physical action which opens an entrance-controlled product. This could be a card reader, push button, push pad or by means of other mechanical switching devices.

Manual activation could also be initiated by pushing an obstacle to start motion. Activators should be positioned so they do not create additional hazards, i.e., not positioned in the swept area of the equipment.

When manual activators are used, they should be clearly marked and identifiable so that users are aware of their function.

For vulnerable users who need alternative access, additional operating signage should be provided where appropriate.

4.8.3. Remote activation.

Remote activation to open or close an entrance-controlled product should only be used when operation of the equipment is not anticipated to result in a hazardous situation. The equipment should be arranged to open and close at an appropriate speed and should include safety measures to minimize any risks identified in the risk assessment, especially when the remote command is initiated automatically or without the initiator being in direct vision of the equipment.

NOTE(s)

1. Examples of remote activation devices include desk top push buttons, push pads, elbow switches, key switches, and access control devices.

4.9. Safety devices

It is essential that appropriate safety devices and safety measures are chosen. The specifier should, therefore, ensure that a full hazard analysis and risk assessment is undertaken to confirm that the final installation is safe for its predicted use.

If the hazard analysis and risk assessment indicate that risks cannot be reduced to an acceptable level using safety devices and safety measures, and a residual risk remains for certain sectors of the population, then additional suitable safety measures should be provided.

A wide range of safety devices are available to take account of the diverse circumstances in which entrance-controlled products are used, and to ensure that each installation is suitable and safe. Safety devices should be monitored by the control system and should select a predetermined safe mode if a fault is detected.

When any contact with the user is unacceptable (high risk) because a significant proportion of the users are elderly, infirm, disabled, or young children, additional protective devices should be provided.

There are various types of presence-sensing safety devices which may be fitted in various positions on entrance-controlled products. These devices include active infra-red, capacitive, ultrasonic, or photo-electric types.

4.10. Signage

Approved Document K4 gives guidance on impact with glazing. It states that people with impaired vision should be in no doubt as to the location of glass entrance doors, especially when they are within a glazed screen.

As such glazing panels should be fitted with manifestation at two levels, 850 to 1000mm and 1400 to 1600mm above the floor, contrasting visually with the background seen through the glass (both from the inside and outside) in all lighting conditions.

Other safety and user instruction signage should be considered such as: -

Direction and operations signage can also be used: -

- **No entry sign** - This sign should be used to indicate to users that entry from the side of approach is prohibited.
- **Keep clear sign** - This sign should be used to instruct and inform users to keep away from the space through which a powered gate swing.
- **Direction of travel sign** - This sign should be used to indicate to users the direction of travel through the gate.
- **Emergency breakout sign** - This sign should be used on doors which have an emergency breakout facility.
- **Automatic door sign** - This sign should be used to indicate that the gate is activated automatically and thus give users advance warning of operation.
- **Disabled person sign** - This sign should be used on gates or gate activation switches that are specifically intended for use by disabled people.

Floor signage can also be used such as: -

- Badge behind the line.
- Stand here.
- Keep clear.
- No entry or No exit

NOTE(s)

- Responsibility for the continued display and maintenance of such signage lies with the building owner/occupier.

4.11. Additional recommendations

If entrance-controlled products are proposed for installation on an escape route and are intended as means of escape doors, then where practicable the equipment should either be capable of manual breakout in the direction of escape or be arranged to fail safely in the open position in the event of mains power failure.

If neither of these recommendations can be achieved, or if they conflict with the advice of the relevant fire and building control authorities, then entrance-controlled products might not be appropriate for means of escape.

In such cases, suitable alternative installations should be provided, such as outward opening hinged doors, of an appropriate width and fastened in accordance with BS 9999, provided immediately adjacent to the equipment.

NOTE(s)

1. Attention is drawn to the Building Regulations 2010 [2], the Building (Scotland) Regulations 2004 [3], the Building Regulations (Northern Ireland) 2012 [4] and the Building Regulations (Isle of Man) Order 2003 [5], in respect of requirements for means of escape. In particular, Scotland has additional requirements for automatic and revolving door-sets considered for use on escape routes and fire exits. Current technical guidance is given in Scottish Building Standards Technical Handbook, Section 2 (non-domestic edition) [6].

5. Hazards.

Entrance-controlled products have potential hazards in the following areas:

- During the opening cycle – users can be struck, drawn in, trapped or walk into the door.
- during the closing cycle – users can be struck, drawn in, trapped or walk into the door.
- tripping hazards.
- congestion.
- Other hazards due, for example, to lack of supervision.

Particular attention is drawn to the potentially increased risk that can arise when the equipment is specified for two-way traffic operation due to the potential of the equipment obstacle opening towards the user. When any contact with the user is unacceptable (high risk) because a significant proportion of the users are elderly, infirm, disabled, or young children, additional protective devices are needed.

5.1. Hazards during the opening cycle.

Provision should be made to deter people from occupying the swept area of the equipment. If a residual risk remains after the appropriate safety measures have been selected, appropriate signage should be fitted to draw the user's attention to the risk, e.g., "Automatic door", "Keep clear", "No entry", "Direction of travel".

NOTE

1. BS EN 16005:2012 covers the following safety provisions:

- Safety distances.
- Speed limitation.
- Protective devices.
- Guards (finger protection).
- Barriers.
- Low energy movement.
- Mats conforming to BS EN 1760-1.

5.2. Hazards during the closing cycle.

Provision should be made using one of the following means to prevent the equipment from closing on users during the closing cycle:

- a) Speed limitation.
- b) Protective devices.
- c) Guards (finger protection).
- d) Barriers.
- e) Low energy movement.
- f) Mats conforming to BS EN 1760-1.

6. Regulations that may apply.

The following standards, acts, regulations, standards, and laws are not intended to be a comprehensive guide, but a guide to some important requirements regarding installations of pedestrian entrance control turnstiles, gates, and portals. They are provided on a without "prejudice" basis to aid equipment specifier fulfil their obligations under the legislation affecting installations such as these.

6.1. The Machinery Directive 2006/42/EC

The Machinery Directive 2006/42/EC regulates the placing on the market, and the putting into service, of machinery in the European Economic Area (EEA).

Attention is drawn to: -

Article 5, Placing on the market and putting into service.

Before placing machinery on the market and/or putting it into service, the manufacturer, or his authorised representative shall:

- ensure that it satisfies the relevant essential health and safety requirements set out in Annex I.
- ensure that the technical file referred to in Annex VII, part A is available.
- provide the necessary information, such as instructions.

- Carry out the appropriate procedures for assessing conformity in accordance with Article 12.
- draw up the EC declaration of conformity in accordance with Annex II, part 1, Section A and ensure that it accompanies the machinery.
- affix the CE marking in accordance with Article 16.

6.2. The Supply of Machinery (Safety) Regulations 2008.

The purpose of the legislation is to ensure safe machinery is placed on the market or put into service by requiring manufacturers to show how their machinery meet the 'essential health and safety requirements'.

Attention is drawn to: -

PART 3 section 7, The general prohibitions, and obligations.

1. No responsible person shall place machinery on the market or put it into service unless it is safe.
2. Before machinery is placed on the market or put into service, the responsible person must:
 -
 - ensure that the essential health and safety requirements are satisfied in respect of it.
 - ensure that the technical file is compiled and made available.
 - provide the information necessary to operate it safely, such as instructions.
 - follow, as appropriate: -
 - (i) the conformity assessment procedure.
 - (ii) one of the conformity assessment procedures prescribed by regulation 11; or
 - (iii) one of the conformity assessment procedures prescribed by regulation 12.
 - draw up the EC declaration of conformity, and ensure that: -
 - (i) a copy of it accompanies the machinery; and
 - (ii) the original is retained; and
 - a. affix the CE marking to the machinery: -
 - b. visibly, legibly, and indelibly.
3. A responsible person must carry out, or procure the carrying out of, all the necessary research and tests on components, fittings, or the completed machinery to determine whether, by its design and construction, it is capable of being assembled and put into service safely.

6.3. Health and Safety at Works Act 1974 Chapter 37.

Attention is drawn to: -

Section 6 describes the general duties of manufacturers etc. with regards to articles use at work.

1. It is the responsibility of any person who designs, manufactures, imports, or supplies any article for use at work: -
 - (a) To ensure, so far as is reasonably practicable, that the article is designed and constructed to be always safe and without risks to health when it is being set, used, cleaned or maintained by a person at work.
 - (b) to carry out or arrange for the carrying out of any necessary research with a view to the discovery and, so far as is reasonably practicable, the elimination or minimisation of any risks to health or safety to which the design or article may give rise.

2. It is the responsibility of any person who erects or installs any article for use at work in any premises where that article is to be used by persons at work: -
 - (a) To ensure (so far as is reasonably practicable), that nothing about the way in which it is erected or installed makes it unsafe or a risk to health when properly used.
3. Where a person designs, manufactures, imports, or supplies an article for or to another the responsibility that the article will be safe and without risks to health when properly used, shall have the effect of relieving the first-mentioned person from this duty.
4. For the purposes of this section an article or substance is not to be regarded as properly used where it is used without regard to any relevant information or advice relating to its use which has been made available by a person by whom it was designed, manufactured, imported, or supplied.

6.4. Regulatory Reform (Fire safety) Order 2005.

Attention is drawn to: -

1. Responsibility for complying with the fire safety order rests with the 'responsible person'. In a workplace, this is the employer and any other person who may have control of any part of the premises, e.g., the occupier or owner. In all other premises the person or people in control of the premises will be responsible.
2. If there is more than one responsible person in any type of premises, all must take all reasonable steps to work with each other.
3. Responsible person(s) will have to carry out a fire risk assessment which must focus on safety in case of fire of all 'relevant persons'. It should pay particular attention to those at special risk, such as the disabled and those with special needs.
4. The fire risk assessment will help identify the risks that can be removed or reduced and to decide the nature and extent of the general fire precautions needed to take to protect people against the fire risks that remain.
5. Integrated risk management has shifted the focus in planning to put people first, looking at the risks arising from all fires and other emergency incidents, and at the options for reducing and managing them.

6.5. Approved document B, Fire Safety.

The Approved Documents are intended to provide guidance for some of the more common building situations. However, there may well be alternative ways of achieving compliance with the requirements. Thus, there is no obligation to adopt any solution contained in an Approved Document if you prefer to meet the relevant requirement in some other way.

Attention is drawn to: -

Widths of escape routes and exits and how they are calculated are detailed in Section 2. Table 2.3 states: -

Maximum number of people	Minimum width (1)(2)(3)
60	750(4)
110	850
220	1050
More than 220	5mm per/person (5)
Notes:	

1. See appendix D for methods of measurement.
2. Width may need to increase to meet guidance in Approved Document M.
3. Width less than 1050mm should not be interpolated.
4. Widths less than 1050mm should not be interpolated.
5. May be reduced to 530mm for gangways between fixed storage racking, other than in public areas of shops and commercial Purpose Group 4 buildings.
6. 5mm/person does not apply to an opening serving fewer than 220 persons.

IMPORTANT NOTE(S)

1. As additional backup should the fire alarm not open the equipment or if the evacuation was not fire related it is recommended to fit a breakglass fitted in the vicinity of the entrance-controlled system.
2. It is NOT recommended to use: -
 - A fire alarm relay in the equipment's power supply, or
 - The use of the passage authorisation signals via the access control system.

6.6. **Approved document M, Access to and the use of buildings.**

Although Approved Document M is not intended to include entrance-controlled products, the guidance given may be helpful for such installations.

Table 2 of Document M states that for new buildings (worst case, existing buildings are less) the clear door width must be: -

- Straight on approach = 800mm.
 - At right angles to an access route of 1500 = 800mm.
 - At right angles to an access route of 1200 = 825mm.
- External doors = 1000mm.

Section 2.21 Powered entrance doors will satisfy requirements of M1 or M2 if

- Any manual controls are located 750 and 1000mm above the floor level, are set back 1400mm from the leading edge of the door when fully open.

NOTE(s)

- BS 8300-2:2018 Design of an accessible and inclusive built environment states a wide aisle entrance-controlled product, with a minimum 1000mm clear opening width, should be installed.

6.7. **Approved document K4, Protection against impact with glazing.**

Approved Document K4 gives guidance on impact with glazing. It states that people with impaired vision should be in no doubt as to the location of glass entrance doors, especially when they are within a glazed screen.

Notes

- a. Manifestation on the glass should be fitted at two levels, 850 to 1000mm and 1400 to 1600mm above the floor, contrasting visually with the background seen through the glass (both from the inside and outside) in all lighting conditions.

- b. If the manifestation takes the form of a logo or sign at least 150mm high (repeated if on glass screen), or a decorative feature such as broken lines or continuous bands, at least 50mm high.
- c. Where adjacent to, or forming part of a glazed screen, are clearly differentiated from it by the provision of a high-contrast strip at the top and on both sides.
- d. Where entrance-controlled products are held open, there must be guarding to prevent the leading edge constituting a hazard.

6.8. BS EN 17352 Power operated pedestrian entrance control equipment.

This document specifies requirements and test methods for power operated pedestrian entrance control equipment such as turnstiles, swing lanes and retractable lanes. Such products can be operated electro-mechanically or electro-hydraulically. They are usually used to allow authorized persons to switch from one zone to another zone one at the time.

Attention is drawn to: -

Section 4 - List of significant hazards.

Section 5 - Safety requirements and/or protective/risk reduction measures.

Section 7 - Information for use.

Bibliography - EN 16005, Power operated pedestrian doorsets - Safety in use - Requirements and test methods.

6.9. EN 17210:2021 Accessibility and usability of the built environment.

This document describes basic, minimum functional requirements and recommendations for an accessible and usable built environment, following "Design for All"/"Universal Design" principles which will facilitate equitable and safe use for a wide range of users, including persons with disabilities.

These functional accessibility and usability requirements and recommendations are relevant to the design, construction, refurbishment or adaptation, and maintenance of built environments including outdoor pedestrian and urban areas.

6.10. BS7036-0-2014 Power operated pedestrian door-sets – Safety in use.

Although BS7036-0:2014 is not intended to include these types of entrance-controlled products, the guidance given may be helpful for such installations.

6.11. BS EN16005:2012 Code of practice for safety at powered doors.

Although BS EN16005:2012 is not intended to include these types of entrance-controlled products, the guidance given may be helpful for such installations. The Bibliography in BS EN 17352 refers to this standard.

6.12. BS EN 1991-1-7:2006+A1:2014 Actions on structures.

BS EN 1991-1-7:2006+A1:2014 covers accidental actions. It provides dead and minimum recommended imposed floor loads for use in designing buildings. It applies to:

- a) New buildings and new structures.
- b) Alterations and additions to existing buildings and existing structures.
- c) Existing construction on change of use.

This standard also provides recommendations for vertical loading on parapets, barriers, and balustrades.

6.13. BS 6180:2011 Code of practice for barriers in and about buildings.

BS 6180:2011 gives the recommendations and guidance for the construction of barriers in and around buildings. The standard applies to temporary and permanent barriers designed to protect people from hazards or restrict access. It outlines requirements for protective, crash and crush barriers as well.

6.14. BS 8300-2:2018 Design of an accessible and inclusive built environment.

BS 8300 gives the recommendations for the design of new buildings and their approaches to meet the needs of disabled people. It applies to access routes to and around all buildings, and entrances to and interiors of new buildings.

The recommendations given in this standard also apply for assessing the accessibility and usability of existing buildings and, where practicable, as a basis for their improvement. The extent to which the recommendations apply to listed and historic buildings is determined on a case-by-case basis.

It states turnstiles and security pass gates should only be used where their use can be supervised. Where turnstiles and security barriers are necessary, bi-parting, or folding type installations should be provided.

Where turnstiles and security barriers or other similar forms of access control, e.g., those with rotating arms, are used, a wide aisle gate or complementary side-hung gate, with a minimum 1000 mm clear opening width, should be installed.

Some important sections: -

- 8.2.3 details on power-operated doors.
- 8.2.4 details on revolving doors.
- 8.3.1 details the effective clear width through a doorway.
- 8.3.4 details the visual contrast on doors and walls.
- 8.3.6 details glazed doors manifestation.
- 8.5.1 details the activation points for door entry systems.
- 20 details requirements for various types of buildings.
- Annex A (informative) management and maintenance
- Annex C (informative) Slip potential characteristics of treads, ramps surfaces and floor finishes.

Compliance with a British Standard cannot confer immunity from legal obligations. Particular attention is drawn to the following legislation:

- Equality Act 2010 [2].
- Building Regulations 2010 and subsequent amendments [3].
- Building (Amendment) (Wales) Regulations 2014 [4]
- Building (Scotland) Regulations 2004 and subsequent amendments [5];

- Building Regulations (Northern Ireland) 2012 and subsequent amendments [6];
- Regulatory Reform (Fire Safety) Order 2005 [7];
- Fire Safety (Scotland) Regulations 2006 [8];
- Fire Safety Regulations (Northern Ireland) 2010 [9].
- Attention is also drawn to Article 9 in the UN Convention on the Rights of Persons with Disabilities, which states that appropriate measures should be taken to ensure that disabled people have access on an equal basis with others to the physical environment, transportation, information, and communications, and to enable them to live independently and participate fully in all aspects of life.

NOTE(s)

1. Access to buildings. This standard refers to egress in the event of fire or other emergency, but the main recommendations for means of escape are given in BS 9999.
2. Detailed guidance on designing schools for disabled children and children with special educational needs is available in Building Bulletin 102

6.15. CPNI

Centre for the Protection of National Infrastructure is the UK Government's National Technical Authority for Physical and Personnel Protective Security. <https://www.cpni.gov.uk/>

CPNI states that its standards be used in conjunction with any British, European or International Standards that are applicable to the installation of the product under test.

CPNI has not evaluate every variant of commercial products or systems as defined within its scope of documents however, CPNI have identified key features which may delay the progress of a Marauding Terrorist Attack (MTA).

CPNI has developed a Marauding Terrorist Attack Standard (MTAS) which focuses on the delay a barrier can afford against the attacks stated above.

6.14.1 Revolving doors

CPNI found that the following design features offer greater resistance to entry:

- four-wings have the capacity to offer greater resistance to marauding attacks.
- laminated glazing within the rotor wings and curved walls offer greater resistance to marauding attacks. The thickness of the laminated glass should be a minimum 10 mm with a PVB interlayer.
- Glazed wings should incorporate 5mm/0.76mm/5mm laminated glass.
- Glazed walls should incorporate of 5mm/1.52mm/5mm laminated glass.

6.14.2 Portals

Offer a significant delay since their design means that an attacker must effectively defeat two barriers. They are typically constructed using laminated glass, which maintains a barrier even when shot.

Portals often require personnel to enter a code before entering. In the event a marauding terrorist attack this may leave people exposed. Designs that allow a person to enter

quickly (for example, using an authentication token) before completing the authentication process in safety behind one of the portal's doors offer greater protection against attacks with bladed weapons.

6.14.3 Speed gates

CPNI found that the following design features offer greater resistance to entry: -

- Leaves at least 1.8m high above floor level.
- Gaps between the floor and the bottom of the leaves no greater than 220mm.
- Sloping plinths (where people would typically swipe passes) that cannot easily be used as a step to climb over the barriers.
- Fixed panels of a similar height to the leaves fitted to the top of the plinths so that attackers cannot easily pass between the sets of leaves.
- Using laminated glazing or polycarbonate to form the leaves if the speed gates are to incorporate transparent leaves.

6.16. EN1627-2021 vs LPS1175

EN1627 specifies the requirements and classification systems for burglar resistant characteristics of pedestrian doorsets, windows, curtain walling, grilles, and shutters.

Loss Prevention Standard, or 'LPS', 1175 is one of the many standards published by BRE (Building Research Establishment) Global through the LPCB (Loss Prevention Certification Board).

EN1627 is a European standard and is structured on a level-based categorisation like LPS1175, Issue 8. EN1627 ratings go from RC1 to RC6, and attack times and attack tools increase with the levels, LPS1175 rating are SR1 to SR8.

Security Rating	Tool Category	Max attack time [min]	Max total attack duration [min]
SR1	A	1	10
SR2	B	3	15
SR3	C	5	20
SR4	D	10	30
SR5	D+	10	30
SR5	E	10	30
SR7	F	10	30
SR8	G	20	60

Security Rating	Tool Category	Resistance Time	Total Test Time
RC1	A1	n/a	n/a
RC2	A2	3 mins	15 mins
RC3	A3	5 mins	20 mins
RC4	A4	10 mins	30 mins
RC5	A5	15 mins	40 mins
RC6	A6	20 mins	50 mins

The main difference is that EN1627 levels are mainly aimed at protecting against criminals using stealth to gain access, rather than the more determined types of attacks covered by LPS1175.

There are also key differences in the tool kits used in the two standards:

- EN1627 doesn't include some common tools, such as claw hammers, 18V drills and reciprocating saws.
- LPS1175 also includes more powerful equipment such as petrol-driven grinders used.

6.17. PAS24 vs LPS1175

PAS 24 is a publicly available specification that details test methods and acceptance criteria for security door sets and windows. Unlike LPS1175, PAS 24 is only aimed at covering products that are designed to protect against stealth-based forced entry attacks such as those used by opportunistic burglars or other intruders who do not wish to generate sustained levels of noise.

When comparing the two, LPS 1175 covers a far larger range of products, including fencing, covers and enclosures to name just a few. PAS 24 is limited in that it only covers door sets and windows intended for dwellings and other buildings exposed to comparable risk.

When it comes to testing for PAS 24, it is a minimum standard, so products either pass or fail instead of following the grading system used by LPS 1175. An overarching strength of LPCB as a performance standard is that it gives manufacturers scope to innovate.

There is no design blueprint, for example, for an LPCB SR4 high-security door; certification is about meeting the time threshold of the performance test, leaving designers with licence to tailor and differentiate products to add value and provide the individual functionality required by different sectors.

6.18. Other regulations

The following is a list of other standards, acts, regulations, and laws that must be considered by the equipment specifier:

Design regulations.

- EN12150-2:2004 Glass in buildings - thermally toughened soda lime silicate safety glass - Part 2: Evaluation of conformity/Product standard.
- EN 14449:2005, Glass in building - Laminated glass and laminated safety glass - Evaluation of conformity/Product standard.
- EN 60335-2-103:2015, Household and similar electrical appliances - Safety - Part 2-103: Requirements for drives for gates, doors, and windows (IEC 60335-2-103:2006, modified + A1:2010, modified)
- EN 60529:1991), Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)
- EN 60664-1:2007, Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements, and tests (IEC 60664-1:2007)
- EN ISO 12100:2010, Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)

- EN ISO 13849-1:2015, Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2015)
- EN ISO 13857:2019, Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)
- EN ISO 14120:2015, Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120:2015)
- EN13637:2015 Building hardware - electrically controlled exit systems for use on escape routes - Requirements and test methods
- The Electromagnetic Compatibility Regulations 2016.
- EN ISO 12100:2010 Safety of Machinery – General principles for design - Risk assessment and risk reduction
- BS EN IEC 62061:2021. Safety of machinery. Functional safety-related control Systems
- EN349:1993+A:2008 Safety of machinery - Minimum gaps to avoid crushing of parts of the human body.
- EN60204-1:2006+A1:2009 Safety of machinery. Electrical equipment of machines. General requirements.
- BS EN IEC 61000-3-2:2019+A1:2021 Electromagnetic compatibility (EMC). Parts 3-2: Limits.
- The Producer Responsibility Obligations (Packaging Waste) Regulations 2020
- The Waste Electrical and Electronic Equipment Regulations 2013.

Installation regulations.

- BS 9999:2017 Code of practice for fire safety in the design, management, and use of buildings.
- BS 7671:2018+A1:2022. Requirements for Electrical Installations. IET Wiring Regulations.
- BS EN12600:2002. Glass in buildings.
- Control of Noise at Work Regulations 2005.
- Construction (Design and Management) Regulations 2015.
- Electricity at Work Regulations 1989.
- Provision and use of Work Equipment Regulations 1998.
- The Management of Health and Safety at Work (Amendment) Regulations 2006.
- The Workplace (Health, Safety and Welfare) Regulations 1992.

7. Installation, Operation, Inspection and Maintenance.

To achieve a trouble-free installation and provide a long working life of any entrance controlled system the following installation process should be performed.

- Factory Acceptance Test
- Installation
- Pre-site commission and acceptance test
- Site commission and acceptance test.
- Handover documentation.
- Maintenance.

7.1. Factory Acceptance Test.

A factory acceptance test (F.A.T) should be performed prior to installation to conform the

equipment meets the end users operational and functional requirements.

The F.A.T should be witnessed by the client and/or end user to confirm the equipment meets their requirements before it installed. It is the inspector's responsibility to review the test report and match against acceptance criteria indicated in the end users operational and functional requirements.

7.2. Installation

The installation and bringing into use any entrance-controlled products should be carried out by a competent person or professional installation technician. All safety functions and systems should be verified and recorded in the building logbook.

NOTE(s)

1. It is advisable that a copy of the verification tests and settings are retained by the competent person or professional installer for future reference.

7.3. Pre-Site Commissioning Acceptance Test.

A pre-site commissioning and acceptance test should be carried out by the installation technician.

7.4. Site Commissioning and Acceptance Test (SCAT)

A SCAT should be performed to demonstrate operational readiness of a entrance controlled system and is used as part of a quality management system.

Commissioning is a systematic quality process that ensures all components of the entrance-controlled system functions according to the documented design and end users operational needs.

As entrance-controlled systems and operational requirements become increasingly sophisticated and precise, it is becoming increasingly important that the design intent for equipment and its control are clearly defined, and their installation and operation verified.

7.5. Handover Documents

Operating instructions including routine maintenance instructions shall be provided to the final user after installation. The instruction must at least include: -

- a. Correct method of operating the gates.
- b. Operating conditions: e.g., operating hours per day, automatic/manual operation, indication of the operating mode(s).
- c. Explanation of the warning signs of the gate.
- d. Information about the safe use of the manual emergency and/or manual release.
- e. Range of intended environmental conditions (e.g., temperature, relative humidity, electromagnetic fields and when applicable warning against use in windy conditions).
- f. Restrictions on use.
- g. Details of safety functions, list, and location of protective devices.
- h. Information on prohibited use such as dashing though an open gate.

Routine maintenance instructions must: -

- a. Highlight that to ensure safe operation, long term reliability and working efficiency, a entrance controlled system must be regularly maintained according to the manufacture's specification.
- b. Detail frequency of maintenance to be carried out.
- c. Give simple instruction that can be undertaken by the owner without specific competence.
- d. Highlight all maintenance that must be carried out by a professional.
- e. Inform the owner about the importance of recording and keeping maintenance records.

7.5.1 Occupier safety checks

To ensure continued safe operation of the equipment, the equipment, the installation, and its environment should be subjected to systematic operational checks as often as is appropriate to the type of installation and its traffic flow, as detailed in the building logbook. The test results should be recorded and retained by the building occupier for at least 5 years.

NOTE(s)

- The building occupier is deemed to be the person responsible for the day-to-day use of the entrance-controlled products.

7.6. Maintenance

Entrance controlled equipment **MUST** be maintained and inspected by a competent person in accordance with the manufacturer's specification.

8. Risk Assessment.

Although BS7036-0:2014 is not intended to include these types of entrance-controlled products, the guidance given may be helpful for such installations.

8.1. Risk reduction process

Although BS7036-0:2014 is not intended to include these types of entrance-controlled products, the guidance given may be helpful for such installations.

8.2. Risk assessment check sheet.

WIP

9. References.

9.1. Abbreviations

The following abbreviations are created:

- a. within this document.
- b. from published sources.

Abbreviation	Description	Source
FFL	Finished Floor Level	a
FAT	Factory Acceptance Test	a
SCAT	Site Commission and Acceptance Test	a

9.2. Definitions

The following topic specific definitions are created:

- a. within this document.
- b. from published sources.

Term	Definition	Source
Equipment specifier	Means importers, distributors, reseller, specifiers, integrators, installer's, building owners, occupiers, and duty holder's	a
Pedestrian entrance control products.	Means manual and powered turnstiles, gates, security portals and doors.	a
Obstacle	Element creating the obstruction to passage.	a
Safety	Protection of users when using the equipment.	a
manufacturer	In relation to machinery directive: - (a) a person who designs or manufactures that machinery or partly completed machinery: - (i) with a view to its being placed on the market under that person's own name or trademark; or (ii) for that person's own use in an EEA state; or (b) if there is no such person, the person who places that machinery or partly completed machinery on the market or puts it into service.	b
authorised representative	Means a person established in an EEA state who has received a written mandate from the manufacturer to perform, on the manufacturer's behalf, all or part of the obligations and formalities imposed on manufacturers (either as "manufacturers" or "responsible persons") by these Regulations or otherwise in connection with the Directive;	b

responsible person	<p>In relation to machinery directive: - means, in relation to machinery or partly completed machinery—</p> <p>(a) the manufacturer of that machinery or partly completed machinery; or</p> <p>(b) the manufacturer's authorised representative;</p>	b
--------------------	--	---

9.3. Requirements owner

Paragraph Number	Owner
All	Andy Brown

9.4. History

Editions	Date	Changes	Author
00	20/02/2023	General update of all standards, acts, regulations, and laws	AB