

BS 7255:2012



BSI Standards Publication

Code of practice for safe working on lifts

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 60, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 30 September 2012. It was prepared by Technical Committee MHE/4, *Lifts, hoists and escalators*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS 7255:2001, which is withdrawn.

Relationship with other publications

Since the withdrawal of HSE Guidance Note PM 26 [1], BS 7255 can be considered as best practice in the absence of other HSE guidance.

Information about this document

This is a full revision of the standard, and introduces the following principal changes:

- a) updates to accommodate new legislation;
- b) revisions to accommodate new and revised standards published since 2001;
- c) the inclusion of improved safety procedures for working in a lift pit;
- d) the inclusion of information on occasions where there is more than one person working;
- e) information on working on machine-room-less lift installations
- f) the inclusion of recommendations for electrical working.

The standard is supported by the following annexes:

- 1) Annex A describes suggested improvements for the owner for safe working on older lifts;
- 2) Annex B describes car top control stations;
- 3) Annex C shows some typical safety signs;
- 4) Annex D describes electrical working;
- 5) Annex E describes additional procedures for installation, major repair and dismantling;
- 6) Annex F describes situations where there is more than one person working;
- 7) Annex G gives procedures for working in a pit.

Use of this document

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions in this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This British Standard gives recommendations for safe working practices (supported by training) for:

- owners of permanently installed lifts serving defined landing levels;
- persons having effective control of the premises where such lifts are installed;
- persons responsible for, and involved in, the design, installation, thorough examination, inspection, testing, service, maintenance, repair and dismantling of such lifts.

This British Standard gives recommendations for the safety of persons when gaining access to and from the work area on a lift installation and while working there. The recommendations also relate to the safety of others present in the vicinity, whether they are working or not, who could be endangered by the actions of those working on lifts.

NOTE Hazards in work areas might vary, i.e. occupied/unoccupied buildings, premises being refurbished, construction sites and industrial environments.

This British Standard is applicable to persons working on all types of lift, however, not every recommendation is applicable for all types of lift that are covered by British Standards.

For lifts that have been designed and installed in accordance with the Lifts Regulations 1997 [2], the recommendations that might affect product design do not apply.

This British Standard does not cover stair lifts and other lifting appliances such as paternosters, mine lifts, access lifts to workplaces, theatrical lifts, appliances with automatic caging, skips, lifts and hoists for construction sites, ships' hoists, platforms for exploration or drilling at sea, construction and maintenance appliances, although it may be taken as a useful guide.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 921, *Specification rubber mats for electrical purposes*

BS 5655-6:2011, *Lifts and service lifts – Part 6: Code of practice for the selection, installations and location of new lifts*

BS 7375, *Distribution of electricity on construction and demolition sites – Code of practice*

BS 7671:2008+A1:2011, *Requirements for electrical installations – IET Wiring Regulations – Seventeenth Edition*

BS 9999, *Code of practice for fire safety in the design, management and use of buildings*

BS EN 81-80, *Safety rules for the construction and installation of lifts – Existing lifts – Part 80: Rules for the improvement of safety of existing passenger and goods passenger lifts*

BS EN 60204-1:2006+A1:2009, *Safety of machinery – Electrical equipment of machines – Part 1: General requirements*

BS ISO 7010, *Graphical symbols – Safety colours and safety signs – Registered safety signs*

BS ISO 14798, *Lifts (elevators), escalators and moving walks – Risk assessment and reduction methodology*

Other publications

[N1] IET, *Guidance Note 3: Inspection and testing*. Stevenage: IET Publications, 2011. ISBN: 978 1 84919 275 0.

3 Terms and definitions

For the purposes of this British Standard the following terms and definitions apply.

3.1 authorized person

person given authority and responsible for ensuring that specific plant and equipment are safe for the intended work to be undertaken; or a person, authorized to perform work or particular tasks, who has undergone relevant training, is suitably instructed in the particular task and has sufficient knowledge and experience of the relevant plant, to enable them to recognize potential dangers of the plant and adequately manage any identified hazards

3.2 carrier (car)

part of a lift that carries passengers and/or other loads

NOTE The term carrier is now used in the Supply of Machinery (Safety) Regulations 2008 [3].

3.3 CDM coordinator

person who advises and assists the client to coordinate health and safety aspects of a project

NOTE The CDM coordinator is also the duty holder under the Construction (Design and Management) (CDM) Regulations 2007 [4].

3.4 competent person

person, suitably trained and qualified by knowledge and practical experience, and provided with the necessary instructions, to enable the required work to be carried out safely

3.5 construction site (CDM)

any place where construction work is being carried out or to which the workers have access, but does not include a workplace within it that is set aside for purposes other than construction work

3.6 contractor

person (including a client, principal contractor, lift contractor) who carries out or manages construction work

NOTE The contractor is also the duty holder under the CDM Regulations 2007 [4].

3.7 isolator switch

switch that isolates the electrical supply to a lift on all “live” conductors

NOTE On some installations the electrical supplies to some of the following may not be disconnected by turning off the isolator switch:

- a) car lighting or ventilation (if any);
- b) socket outlet on the car roof;
- c) lighting in the machinery space and any pulley room;
- d) socket outlet(s) in the machinery space and any pulley room;

- e) *lighting in the well;*
- f) *socket outlet in the pit;*
- g) *alarm and communication device;*
- h) *group interconnections;*
- i) *supply to any emergency electrical operation equipment.*

3.8 lift

permanent lifting equipment, comprising a guided carrier, serving defined landing levels and designed for the transportation of persons and/or goods irrespective of speed

NOTE 1 This definition is not in line with the Supply of Machinery (Safety) Regulations 2008 [3] or Lift Regulations 1997 [2] definition of lifts but is relevant to this British Standard.

NOTE 2 See Clause 1 for lifts that are not covered by this British Standard.

3.9 lift contractor

party that is contracted to supply, install, modernize, repair, service, or dismantle a lift

3.10 lift entrance

complete landing door assembly, together with its surround

3.11 lift landing

space at the entrance to a lift at any defined level to permit the manoeuvring, boarding and alighting of persons and/or goods

3.12 lift machine

unit, including the motor, which drives and stops a lift

3.13 lift maintenance

tasks involving the inspection, cleaning, lubrications, minor adjustment and small repair works not covered by the CDM Regulations 2007 [4]

3.14 lock-off device

device to prevent unauthorized reconnection of electrical energy

NOTE This is often a padlock that prevents movement of the operating handle of the isolator switch.

3.15 machinery space

space(s) inside or outside of the well where the machinery, as a whole or in parts, is placed

3.16 multiple installation

number of lifts installed in separate or common wells and/or sharing a common machinery space

3.17 observation lift

lift that provides a panoramic outlook

NOTE The well for such a lift can be partially enclosed.

3.18 owner

legal entity having right of possession of a lift and responsibility for its safe working

NOTE The owner is usually the landlord or proprietor of the building in which a lift is situated. The person having responsibility for the lift on a day-to-day basis is likely to be the building occupier.

3.19 passenger

person transported within the car

3.20 permit to work

authority in writing that includes details of:

- a) work to be undertaken;
- b) procedures involved;
- c) precautions needed;
- d) emergency procedures to be in place;
- e) persons to undertake the work;
- f) timescale of the work to be undertaken;
- g) restrictions on the workplace or equipment

3.21 pit

part of a well situated below the lowest landing served by a car

3.22 positive drive lift

lift (includes hydraulic and drum drive) suspended by chains or ropes and driven by means other than friction

3.23 pulley room

room, not containing a lift machine, in which pulleys are located

NOTE This room can also contain other equipment, such as the overspeed governor(s) and electrical equipment associated with a lift.

3.24 rated load

load which the equipment has been designed to carry

3.25 risk assessment

comprehensive estimation of the probability and the degree of possible injury or damage to health or property, in order to identify appropriate mitigating measures

3.26 safe system of work

formal procedure, resulting from a risk assessment, which specifies safe methods of work to ensure that relevant hazards to the task being undertaken are eliminated and the remaining risks are minimized

3.27 user

person making use of the services of a lift installation

NOTE A user is not necessarily the same as a passenger.

3.28 well

space in which the car, the counterweight or the balancing weight travels

NOTE This space is normally bounded by the bottom of the pit, the walls and the ceiling of the well.

3.29 workplace

premises or part of premises where work is carried out

NOTE 1 This can include:

- a) any place that is accessible to those at the workplace;
- b) any means of access to/from the workplace, e.g. staircase, corridor.

NOTE 2 A workplace is usually non-domestic, although the term can refer equally to domestic premises.

3.30 work platform

designated area, moving or fixed, for carrying out work tasks

4 Safety management: responsibilities of owners

COMMENTARY ON Clause 4

Not every lift is identical, modern or similarly positioned; nor are all machinery spaces of identical size or shape, nor segregated, illuminated or located within similar environments.

Clause 5 gives recommendations to persons responsible for, and involved in, the design, installation, thorough examination, inspection, testing, service, maintenance, repair or dismantling of lifts.

4.1 General

The recommendations given throughout Clause 4 should be applied by owners of lifts and by persons having effective control of the premises in which lifts are installed.

NOTE 1 Attention is drawn to the *Lifting Operations and Lifting Equipment Regulations (LOLER) 1998 [5]* for duty holders.

Owners of lifts that were built before 1 July 1999 should follow the advice given in BS EN 81-80.

NOTE 2 Annex A and Annex B give details of suggested improvements to older lift installations in addition to those given in BS EN 81-80.

Hazards relating to moving and rotating machinery, electrical equipment, falls from height, etc., which are similar to those experienced in other industrial workplaces, should be identified in a risk assessment in accordance with 4.15.

4.2 Training and competence

All persons, who might be working on a lift or related equipment (within a well, pit, machinery space or pulley room) or carrying out risk assessments, should possess demonstrable competence in basic lift safety and procedures or be under relevant supervision.

NOTE 1 Relevant supervision may be provided by any person who possesses demonstrable competence in basic lift safety and procedures.

NOTE 2 A suitable level of certified competence is the qualification NVQ EOR/202 "Working safely in an engineering environment – Basic lift safety", although other suitable certified achievements exist.

Clear written instructions relating to site emergency and first aid procedures should be issued, by those responsible for the site namely the owner or principal contractor, to employees, visitors, contractors and other authorized persons. Any specific regulations that apply to the premises should also be included in these instructions. If the instructions are complex and/or specific risks exist, they should be supplemented by a specific "site safety awareness" training regime and safe system(s) of work.

Specific training should be provided to all persons who are authorized to carry out the safe release of trapped passengers. Such persons should be made aware that this training is limited to safe release activities only and that this does not authorize them to carry out any additional activities. Training should cover the release procedure and also possible complications that might arise during a release, e.g. failure of the procedure to cause movement of the lift car.

NOTE 3 The full range of competencies contained within NVQ EOR/202 might not be required for persons carrying out the safe release of trapped passengers. Procedures recommended for the safe release of trapped passengers are given in 4.20 and 5.20.

The competency of all trained persons should be assessed and documented annually. Documentation should list the competencies achieved relating to the type of equipment upon which the training was carried out.

Information and instructions should be given to all occupants of the premises who could be affected whenever any works are carried out on lifts, indicating any relevant effects on their working environment or their health and safety.

All employees within the premises should be made aware of the meaning of all signs displayed in public lift areas or when lifts are being worked on.

The ultimate responsibility for safety signs should rest with the owner, although in some cases it may be delegated (see 5.7).

NOTE 4 There are two categories of signage that might be encountered by employees in a building: those displayed where employees occupy tenant areas, and those displayed where employees enter restricted areas under supervision (see Annex C). Examples of the first category are:

- *lift out of service (see Figure C.1);*
- *rated load plate in the car (see BS EN 81-1:1998+A3, 15.2.1 and BS EN 81-2:1998+A3, 15.2.1);*
- *machinery space access notices (see BS EN 81-1:1998+A3, 15.4.1 and BS EN 81-2:1998+A3, 15.4.1 and Figures C.2 and C.3).*

Examples of the second category are:

- *reduced headroom (see Figure C.4);*
- *no car safety gear (see Figure C.5);*
- *reduced pit depth and position restraint before working (see Figures C.7 and C.10);*
- *descending counterweight (see Figure C.8).*

4.3 Responsibility for work

The owner should ensure that any work carried out on lifts is performed only by authorized persons.

NOTE Attention is drawn to the Workplace (Health, Safety and Welfare) Regulations 1992 [6].

A person should be appointed by the owner or the site person in charge of the works to be responsible for, at least, the following aspects:

- a) familiarization with the relevant parts of any safety assessment undertaken by the contractor;
- b) familiarization with the work site from commencement of the work, including the effect the work is likely to have on other persons in the area;
- c) directing and managing the work safely;

- d) ensuring that the work site is handed back to the owner in a safe condition on completion of the work.

The owner should liaise with the lift contractor or other persons authorized to carry out work on a lift installation in order to understand the risks that could arise as a result of the work and agree the necessary control measures.

4.4 Liaison

The owner should nominate a representative to summon emergency assistance if required, and to give advice on special precautions or procedures required for works being undertaken within the premises.

The owner, together with the site person in charge of the works, should determine whether any special precautions or procedures need to be taken.

NOTE Such precautions might become necessary due to environmental factors, e.g. where children are present in the vicinity.

The site person in charge of the works on the lift(s) should establish contact with the owner's site representative. The owner's site representative should be informed before work is started or any lift(s) taken out of service.

4.5 Personal protective equipment

A risk assessment (see 4.15) should be carried out to identify the need for any appropriate type(s) of personal protective equipment and/or clothing, before such equipment and/or clothing is issued.

The owner should ensure that appropriate personal protective equipment (see 5.5) and/or clothing is provided to ensure the health and safety of persons working on lifts who might be exposed to harmful processes or substances encountered within the premises.

4.6 Electrical supplies and equipment

The owner should give the lift contractor access to the electrical supplies.

The owner should ensure that existing permanent electrical supplies, conductors and their terminations (which might give rise to danger) are safe and:

- a) of the appropriate rating;
- b) insulated;
- c) tested at regular intervals;

NOTE 1 See IET Guidance Note 3 [N1] and BS 7671:2008+A1, Chapter 62.

- d) have been installed in accordance with the edition of the IEE Wiring Regulations/BS 7671 that were current at the time of installation or modification.

The frequency of inspection and testing of the electrical installation should be determined taking into account the type of installation, its location and the frequency and quality of maintenance.

Where tests are made the owner should be provided with a test certificate detailing the condition of the supply.

NOTE 2 Typically tests are carried out by a competent person working to BS 7671 and IET Guidance Note 3 [N1], where the certification requirements are defined.

The owner should ensure that a risk assessment is carried out regularly on all electrical equipment associated with a lift installation in accordance with IET Guidance Note 3 [N1], to ensure that all precautions have been taken to eliminate or minimize the risks to the health of all persons working on such equipment.

NOTE 3 Attention is drawn to the Electricity at Work Regulations 1989 [7] and Memorandum of guidance on the Electricity at Work Regulations 1989 [8].

The isolating switch of the lift should be appropriately fused so as to avoid the need for lift personnel to enter electrical switch rooms. This switch should have the function to be locked off/tagged off.

The owner should notify the lift contractor before they make any modifications to the electrical supply, e.g. voltage reduction systems.

All exposed conductive parts should be guarded against inadvertent contact.

Work should not be carried out on or near to live electrical equipment ("live working") unless working in this way is unavoidable, see Annex D. Such work applies to the electrical supplies provided by the owner and to equipment provided as part of the lift installation. In such instances, work should be carried out only by a competent and trained person, implementing a safe system of work that has been established by a risk assessment.

4.7 Removal of lift from service

The owner should display a safety sign where a lift is removed from service to warn others that the lift is out of service (see Figure C.1).

4.8 Housekeeping

The owner, in conjunction with the lift contractor, should establish procedures for:

- a) the avoidance of build-up of waste materials in wells;
- b) the control and disposal of waste and other items and substances that are potentially injurious to health and safety.

NOTE Attention is drawn to the Control of Asbestos at Work Regulations 2012 [9] (see 4.14) and the Control of Substances Hazardous to Health Regulations 2002 [10]. Examples of potentially hazardous items and substances include hypodermic needles, human waste and radioactive materials.

4.9 Health and safety file

COMMENTARY ON 4.9

Attention is drawn to the CDM Regulations 2007 [4] where construction work, including dismantling, is undertaken and exceeds a defined period of time or involves the employment of a number of persons. In relation to lifts, these regulations are likely to apply to the installation of new lifts into new or existing buildings and to the modernization of such equipment.

Not all work is notifiable to the Health and Safety Executive, e.g. it does not normally apply to maintenance tasks or small repairs (e.g. motor replacement) that do not involve alterations to the structure or equipment attached to it, assuming the work does not exceed the requirements for notifiable work. It can apply to major maintenance tasks such as re-roping of a large lift but such work would not normally be notifiable work. It also applies to modernization work such as new controller or car, but is not normally notifiable unless it exceeds the defined time. It always applies to the dismantling or removal of old lifts and installation of a new lift into an existing or new building.

The CDM Regulations 2007 [4] place responsibilities on owners, designers and contractors. In addition, they place responsibilities on the client to appoint a suitably qualified principal contractor and CDM coordinator, who gathers the relevant information from all of the contractors and draws up a health and safety file for the works that is passed to the client on completion of all works. The typical contents of the file are given in 5.9.

The client should ensure that potential contractors for any new work are given view of any existing safety file prior to bidding or commencement of any work.

NOTE 1 Attention is drawn to the CDM Regulations 2007, Regulation 17(1) [4], which requires the client to provide the CDM coordinator with health and safety information relating to the project. Such information needs to include the location of hidden services in relation to the lift and any substances used in the construction of the lift well liable to give rise to a hazard, etc.

Following the initial installation or major modernization of a lift, the health and safety file should be made available to all persons who subsequently work on the lift(s).

For safety, the owner should provide a copy of the maintenance instructions to the lift maintenance contractor or any other contractor prior to the commencement of any work on the lift. Where the owner does not hold a copy of the maintenance instructions, they should obtain a copy from the original installer, where possible.

NOTE 2 The original installer is obliged by the Lift Regulations 1997 [2] and Supply of Machinery (Safety) Regulations 2008 [3] to retain a copy of such information for a minimum of 10 years.

4.10 Effects on the occupants

Potential disruption, e.g. dust, noise, access restrictions, etc., to the occupants of the premises from the lift work should be assessed and minimized.

4.11 Access to tools, equipment and materials

Arrangements should be made between the owner and the lift contractor for:

- a) safe access to all tools, equipment and materials at workplaces;
- b) the provision of suitable and clearly identified storage space for tools, equipment, materials and any portable access equipment;
- c) the provision of alternative access routes as might become necessary during the works being undertaken.

NOTE These are some elements of the provision of safe systems of work.

4.12 Permits to work

There should be a safe system of work (see 3.26) for all those undertaking tasks within designated workplaces.

A safe system of work should include the provision of lock-off/tag-on devices on all electrical isolator switches.

Where appropriate, the lift contractor should obtain a permit to work from the owner (see 5.11). After the owner has issued the permit to work no further permits should be issued unless discussed with the lift contractor.

4.13 Installation, major repair and dismantling

Where installation, major repair or dismantling is taking place, the procedures given in Annex E should be followed.

NOTE The procedures given in Annex E are specific to the activities associated with installation, major repair and dismantling. They are additions not alternatives to the procedures detailed throughout Clause 4.

4.14 Asbestos

The owner of a building should hold a register of asbestos that might be present on the premises. Visiting tradespersons should be advised of the location, etc., of asbestos so they can plan their work accordingly.

NOTE Attention is drawn to the Control of Asbestos at Work Regulations 2012 [9].

4.15 General safety measures and risk assessment

The owner should carry out a risk assessment to ensure that all workplaces are safe to accommodate:

- the work activity being undertaken;
- all lift contractors together with their work equipment.

The owner should provide a safe means of access to and egress from all workplaces, including for suitable access equipment if necessary.

NOTE 1 This includes the provision of access to all workplaces that are free from obstacles, tripping hazards and projections. It also includes the provision of a safe means of access through potentially hazardous areas and the provision of adequate lighting, both inside and outside the lift well for access to and egress from workplaces.

Emergency lighting and, where necessary, temporary electrical supplies should be provided for all workplaces.

NOTE 2 BS 5266-1 gives recommendations for emergency lighting.

The owner should ensure that authorized persons can easily gain entry to a workplace.

Access to machinery spaces should be restricted to authorized persons or persons under the supervision of authorized persons.

The owner should provide safety signs for persons accessing machinery spaces to follow (see Figure C.2).

The owner and the lift contractor should undertake risk assessments to establish safety measures that ensure the safety of persons engaged in work and persons using the premises and lifts. Risk assessments on lifts should be carried out in accordance with BS ISO 14798 ¹⁾.

NOTE 3 Risk assessments require periodic review as improvements in technology and/or materials could reduce the element of risk beyond that achieved by any existing arrangements.

The safety measures identified by risk assessment should be implemented wherever practicable. All measures should be undertaken that could improve the safety of those persons engaged in the works or using the lifts, including any recommendations issued by the manufacturers, the maintenance company or competent persons.

NOTE 4 Attention is drawn to the Management of Health and Safety at Work Regulations 1999, Regulation 3 (i) [11] and LOLER 1998 [5].

All works should be planned in advance in order to eliminate or reduce to a controllable level the risks to those persons undertaking the works and all persons who might be affected by them.

The owner should plan the works, where appropriate, to coincide with the "shut-down" period of hazardous processes or for when public areas are less busy or closed.

Details of any changes to the risks that can be encountered during the progress of the works, and which become apparent from subsequent risk assessments, should be recorded in the health and safety file and made known to the responsible person.

¹⁾ At time of publication, BS ISO 14798 is being considered for adoption at the European level.

Lift pits and lift areas, in general, are not confined spaces within the meaning of the Confined Space Regulations 1997 [12], but there are exceptions, e.g. where a lift is located within a facility dealing with hazardous chemical, gases, etc.; and in such cases a suitable and sufficient risk assessment should be carried out to determine if special provisions are required.

4.16 Well-being of persons working alone

Where a risk assessment identifies specific hazards (e.g. in the absence of a car top control station) a person should not work alone (see Annex F). In such cases the person should be accompanied by another person who has received appropriate instruction and training.

NOTE 1 This is an element of the provision of a safe system of work (see 3.26).

The owner should ensure that the following procedures are adopted.

- a) Before commencing work, the person should register their presence with the owner's site representative.
- b) Suitable arrangements should be made to confirm the continued well-being of the person periodically.
- c) Suitable arrangements should be made to organize assistance in the event of an emergency.
- d) The specific arrangements and frequency for confirming a person's continued well-being should be described in the relevant safe working procedure and should be acted upon.

NOTE 2 These procedures are particularly important if a person is working alone in unoccupied premises.

4.17 Working within the well

4.17.1 General

Control measures should be taken when work is being carried out in the well, for example, re-roping, replacement of trailing flexes, etc., and where full height division screens are not provided between lifts in a common well.

NOTE 1 This may include taking adjacent lift(s) out of service.

Where practicable, counterweight screens, reaching to a height of not less than 2.5 m above the pit floor, should be provided to reduce hazards created by descending counterweights. Where the space between the counterweight and the car does not permit the fitting of a screen, a suitable warning sign should be provided (see Figure C.8).

Counterweight screens should not be provided at the midpoint of travel owing to the increased risk of collision between a person on the car roof and the screen.

For all work activities carried out by authorized persons within the well, at least the recommended average levels of lighting (50 lux 1 m above the car top) in accordance with BS EN 81-1 and BS EN 81-2 should be provided.

NOTE 2 Other lighting to enable work activities to be carried out might be provided by the lift contractor.

Temporary lighting within a well should be at either:

- a voltage not exceeding 110 V in an occupied building, derived from a supply with centre-tapped earth (see BS 7375); or 230 V, protected by residual current devices (RCDs);
- a voltage not exceeding 110 V on a construction site, derived from a supply with centre-tapped earth (see BS 7375).

Temporary lighting within a well should be protected against damage.

The owner should display permanent safety signs in clearly visible positions where a risk exists, including:

- a) where access is via an inspection door or trap (see Figure C.3);
- b) where headroom is less than that specified in BS EN 81-1:1998+A3, 5.7 and BS EN 81-2:1998+A3, 5.7 (see Figure C.4);
- c) where the car roof is unsuitable for carrying persons (see Figure C.6);
- d) where no car safety gear is provided (see Figure C.5);
- e) where a reduced pit depth is less than that specified in BS EN 81-1: 1998+A3, 5.7 or BS EN 81-2+A3, 5.7 (see Figure C.7);
- f) where, in the pit, there is potential danger from a descending counterweight (see Figure C.8);
- g) where a risk of falling exists (see Figure C.9);
- h) where a restraint is needed (applicable to positive drive and hydraulic lifts only) (see Figure C.10).

The owner should ensure that all persons working within a well are made aware of all relevant safety signs.

4.17.2 Working on the car top

On lift installations that do not have any safety gear or other means to prevent free fall, and where access to the car top is necessary, a device that prevents free fall of the car should be installed for the duration of the task to be undertaken.

On lift installations that do not have any safety gear or other means to prevent free fall, the owner should ensure that a safety sign is displayed in a prominent position on the top of the car (see Figure C.5).

NOTE Persons working on lifts can be exposed to risk of falling from height. The Work at Height Regulations 2005 [13] require a specific assessment to be made, recorded and retained for such risks.

Where a space exists into which a person could fall (see BS EN 81-1:1998+A3, 8.13 and BS EN 81-2:1998+A3, 8.13), the precautions below should be taken in order of preference:

- a) a vertical screen;
- b) a horizontal extension of the car top;
- c) the provision of balustrades on the car top;
- d) a safe system of work, which might involve the use of appropriate personal fall protection system, e.g. work restraint.

The use of a fall arrest system can be unsatisfactory and should be avoided.

A particular safe system of work should be employed only where a), b) and c) cannot be accommodated.

The owner should ensure that, where there is a risk of a person working on the car top becoming trapped and where no means are provided for escape via either the car or the well, an alarm or voice communication system is installed. This system should be of at least the same specification as that provided in the car and should be connected to a lift rescue service (see BS EN 81-28). The lift rescue service is not the public emergency service and auto dialling systems should not be programmed with the emergency service "999" number.

Where a car roof is not sufficient to support a person, a sign should be displayed (see Figure C.6). Where it is not possible to strengthen the roof, a safe system of work should be developed from a risk assessment.

4.17.3 Working in the pit

COMMENTARY ON 4.17.3

Persons who might need to enter and work in lift pits can possess varying degrees of training and knowledge. Lift industry trained personnel, include those listed in 5.2.2 to 5.2.5 and other persons, who are not trained lift personnel, include those listed in 5.2.6.

Attention is drawn to the Workplace (Health, Safety and Welfare) Regulations 1992 [6].

Procedures for working in the pit should be carried out in accordance with Annex G.

A stopping device conforming to BS EN 81-1:1998+A3, 14.2.2 and 15.7 and BS EN 81-2:1998+A3, 14.2.2 and 15.7 should be provided to enable trained lift industry personnel to gain safe access to a pit. This stopping device should be accessible on opening the door(s) to the pit. Any existing stopping device of the toggle type should be replaced, owing to the high risk of accidental operation.

Trained lift industry personnel should only enter and work in a pit in accordance with 5.17.3.

Any person, who is not trained lift personnel, should not enter or work in a pit unless:

- a) they are under the supervision of trained lift personnel at all times;
- b) trained lift personnel have secured the lift against movement in either direction, both electrically and mechanically.

NOTE 1 Securing the lift would typically include landing the weights and tripping the car safety gear. The main brake does not always prevent all movement even with power off.

Where option b) is taken, trained lift personnel do not need to remain in attendance unless requested to do so, but should be informed when the work is complete so that the lift can be safely returned to service by the lift contractor.

Where a permanent means of access to the pit cannot be provided, a suitable, portable means of access, in the form of a ladder that can be secured in an accessible position when placed in the pit, should be made available. This ladder, when not in use, should be stored and locked in a position as close to the pit as practicable and in an accessible position. A sign should indicate the location of where the ladder is stored.

In areas likely to be subject to vandalism, this sign should be located within the lift well and be visible when the door giving access to the pit is opened.

Where ladders are installed in pit areas, they should not reduce the safety clearances or the refuge spaces for persons in the pit area when either stored or deployed. It should be possible to deploy the ladder from a safe position before entering the pit.

Where the refuge space below a car is less than that specified in BS EN 81-1 or BS EN 81-2 (see Figure C.7), a mechanical restraint should be provided by the owner together with a safety sign (see Figure C.10). The mechanical restraint should be used to create a space between the underside of the car and the bottom of the well before working.

NOTE 2 This does not apply where a lift is built to BS EN 81-21 or lifts subject to specific Notified Body approvals.

Where a restraint is not permanently fitted, it should be stored in a safe location in the pit or stored and locked in a position as close to the pit as practicable. The storage location should be identified by a sign.

Provision should be made to allow visual inspection of the counterweight, associated switches and over-travel.

NOTE 3 A suitable provision for the visual inspection of a counterweight might be the provision of a mesh screen or a gap below the screen of not more than 300 mm.

When more than one lift is installed within a common well, division screens rising from the pit floor to a height of at least 2.5 m above the lowest landing sill should be provided to prevent persons passing from one well to another.

Where there is a risk of a person working in the pit becoming trapped, the owner should install an alarm or voice communication system. This system should be of at least the same specification as that provided in the car and should be connected to a lift rescue service (see BS EN 81-28). The lift rescue service is not the public emergency service and auto dialling systems should not be programmed with the emergency service "999" number.

Where a door other than a landing door is provided for access to the pit, which gives access to a hazardous zone, the owner should ensure that it is electrically interlocked with the lift, an appropriate warning notice is displayed (see Figure C.3) and suitable barriers are in place (see 5.17 and 5.18) before any work commences.

4.18 Landing entrances

4.18.1 General

COMMENTARY ON 4.18.1

Persons engaged in the maintenance and the examination of lifts, or in effecting the emergency release of passengers, might need to open a landing door while the car is not at that landing, e.g. in order to gain access to the pit or to the roof of the car.

Whenever a landing door is unlocked, or open with the car not stationary or at the level of that landing, there is a foreseeable possibility that persons at that landing might be at risk.

Potential hazards and risks at landings include:

- a) persons falling down the well from the landing;*
- b) persons gaining access to the car when it is not at the level of the landing or gaining access to parts of the car or well that are not normally accessible;*
- c) persons coming into contact with moving parts of a lift.*

These hazards might endanger any persons in the vicinity of the landing entrance, e.g. occupants of the building and members of the general public, including children, the elderly, the infirm or disabled persons.

On older installations, where a landing door unlocking device is not provided, one should be fitted at each floor.

All protective barriers should incorporate relevant safety signs in accordance with BS ISO 7010.

Where a fall hazard and/or falling objects exist, or where other persons might be in the vicinity, effective precautions should be provided to protect an open landing entrance (see E.2). For construction sites, these precautions could, as a minimum, take the form of one of the following:

- a) a fixed barrier, which comprises a guard rail at least 950 mm high with a mid-rail and a toe-board that is fixed across the landing entrance threshold. Any gaps should not exceed 470 mm;

- b) a fixed solid full height hoarding.

In addition to the above requirements, additional precautions should be taken to prevent objects falling into the well, where this hazard has been identified:

- 1) when carrying out minor repairs, maintenance and adjustments (and where the existing landing doors are in position), this should take the form of a portable barrier similar to that shown in Figure 1 that can be secured to prevent easy removal or collapse (see 5.17);
- 2) when carrying out major repairs and modernizations, this should take the form of a fixed solid full height hoarding together with a fixed barrier, which comprises a guard rail at least 950 mm high with a mid-rail and a toe-board that is fixed across the landing entrance threshold. Any gaps should not exceed 470 mm.

NOTE 1 It might be necessary to provide an unattended barrier extending to the full height of the entrance when it is foreseeable that persons might climb over a barrier, e.g. vandals or children playing.

NOTE 2 Built-in arrangements for locating and fixing barriers at landing entrances are not normally provided on lift installations, and aesthetic considerations could cause difficulties when special provisions for the fixing of barriers are requested. Several designs of easily portable barriers have been produced that can be fixed quite rigidly at landing entrances of lifts with sliding doors open, without any structural alterations being necessary. Such barriers could be stored at strategic locations so as to be readily available to personnel when required.

Where a landing door has been removed, and if the carrier is to be moved under power, the following conditions should be applied:

- the carrier should be moved at inspection speed;
- hold to run controls should be operated from a safe position;
- a line of sight with the carrier should be established;
- an audible and visual warning should operate automatically;
- a full height enclosure with an access door should be provided;
- the access door should be lockable and should be able to be opened without a key from inside the enclosure.

NOTE 3 See E.3.2 where the fire integrity of an existing building needs to be maintained.

NOTE 4 On multiple lift installations, each lift may be uniquely identified at every landing entrance. This identification is the same as the identification within the machinery space (see 4.19). This ensures that persons working on lifts can easily establish the correct relationship between a specific machine and its corresponding well and associated equipment.

4.18.2 Temporary lighting

Depending on the type of building, temporary lighting at a landing entrance should be either:

- a) for an occupied building: at a voltage of not more than 110 V derived from a supply with centre-tapped earth in accordance with BS 7375 or 230 V protected by RCDs; or
- b) for a construction site: at a voltage of not more than 110 V derived from a supply with centre-tapped earth in accordance with BS 7375.

Temporary lighting on landings should be protected against damage.