

BS 7212:2016



BSI Standards Publication

Code of practice for the safe use of construction hoists

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 74, 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 31 January 2016. It was prepared by Technical Committee MHE/6, *Builder's Hoists*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS 7212:2006, which is withdrawn.

Information about this document

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

- 1) new recommendations with regard to the role of hoist supervisor;
- 2) new recommendations for dealing with temporary works;
- 3) new recommendations for transporting of scaffolding materials in hoists; and
- 4) new recommendations for driverless hoists.

This British Standard was drawn up with the participation of HSE representatives and it will be referred to in the relevant HSE publications.

This British Standard calls for the use of procedures that can be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Presentational conventions

The provisions of 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.

Particular attention is drawn to the following specific regulations:

- a) Health and Safety at Work etc. Act 1974 [1];
- b) Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) [2];
- c) Provision and Use of Work Equipment Regulations 1998 (PUWER) [3];
- d) Supply of Machinery (Safety) Regulations 2008 (as amended) [4];
- e) Work at Height Regulations 2005 (as amended) [5];
- f) Construction Design and Management Regulations 2015 [6].

Details of the Lifting Operations and Lifting Equipment Regulations 1998 [2] and the Provision and Use of Work Equipment Regulations 1998 [3], together with an HSE Approved Code of Practice and HSE Guidance, are given in HSE publications Safe use of lifting equipment [7] and Safe use of work equipment [8].

1 Scope

This British Standard gives recommendations for the installation, maintenance, examination and operation of construction hoists, including hoistway protection, and on the management of these activities. It provides recommendations for the selection, planning, siting, erection, alteration and dismantling of hoists. It also sets out the responsibilities of the various parties involved in all these activities.

This British Standard is applicable to temporarily installed, powered construction hoists, having a carrier, the movement of which is restricted or guided by one or more masts.

NOTE Such hoists are used to transfer persons and/or goods between defined landing levels on sites of engineering and construction. They are not intended for use as temporary working places giving variable height access to specific areas.

This British Standard is not applicable to:

- a) rope driven passenger/goods hoists;
- b) hoists with platforms without sides providing protection conforming to BS EN 12158-1;
- c) inclined and vertical furniture hoists;
- d) concrete skip hoists;
- e) permanently installed lifts and hoists;
- f) mast climbing work platforms;
- g) mobile elevating work platforms;
- h) gin wheels;
- i) chain hoists and unguided wire rope hoists/winches;
- j) runway beams;
- k) suspended cradles;
- l) building maintenance units;
- m) wind turbine and tower crane access lifts;
- n) belt and chain conveyors;
- o) capstan winches;
- p) hoists powered by direct drive internal combustion engines;
- q) formwork hoist and climbing support system.

2 Normative references

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

BS 5975:2008+A1:2011, *Code of practice for temporary works procedures and the permissible stress design of falsework*

BS 7671, *Requirements for electrical installations – IET Wiring Regulations 17th edition*

BS EN 12158-1, *Builders' hoists for goods – Part 1: Hoists with accessible platforms*

BS EN 12158-2, *Builders' hoists for goods – Part 2: Inclined hoists with non-accessible load carrying devices*

BS EN 12159, *Builders hoists for persons and materials with vertically guided cages*

prEN 16719:2014, *Transport platforms*¹⁾

3 Terms and definitions

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

3.1 appointed person: supplier

competent person appointed by the hoist supplier, who is responsible for supplying the hoist

3.2 appointed person: user

competent person appointed by the management of the user organization, who is responsible for liaising with the appointed person (supplier) and the safe use of the hoist

3.3 base frame

part of a hoist that provides support for the mast and elevating assembly

3.4 buffer

resilient stop at the end of the travel of a hoist, comprising a means of arresting the movement of the hoist

NOTE Buffers usually operate by means of fluid dampers or springs.

3.5 competent person

person who has such training, practical skills and theoretical knowledge and such experience of the construction hoist and its equipment as are necessary to carry out specific duties and responsibilities

3.6 demonstrator

competent person trained, and authorized by the appointed person (supplier), to demonstrate the controls and functions of the hoist to trained operators

3.7 driverless hoists

adapted hoist that can be used by multiple operators in a similar way to permanently installed passenger and goods lifts

NOTE 1 The terminology driverless is also known as collective control or a multiple driven hoist and includes a number of additional safety enhancements to a standard hoist.

NOTE 2 Not all types of hoist can be converted to a driverless hoist or even manufactured with this technology.

3.8 drop test

test in which a hoist cage or platform is allowed to free fall in order to check the correct functioning of the overspeed safety device

3.9 erection

installation and alteration of the hoist

3.10 erection load

maximum load permitted on the cage or platform of the hoist during the erection process

¹⁾ This Standard is in preparation with an expected publication date of January 2017.

NOTE 1 The erection load is specified by the hoist manufacturer and is not normally the same as the rated load.

NOTE 2 As specified by the hoist manufacturer. This is normally less than the rated load for the hoist.

3.11 erection supervisor

competent person, authorized by the appointed person (supplier), who is responsible for the erection, modification and dismantling of hoists and who is on site at all times that such work is taking place

NOTE Also known in the industry as an installation supervisor, a first man or lead erector.

3.12 erector

competent person, authorized by the appointed person (supplier), who carries out the erection, modification and dismantling of hoists under the direction of the erection supervisor

NOTE Also known in the industry as an installer.

3.13 final ultimate limit device/switch (also known as ultimate limit device)

emergency device/switch arranged to stop the hoist automatically, in the event of the cage or platform travelling a predetermined distance beyond a terminal landing

3.14 guides

parts of the mast which provide guiding for the hoist cage or platform

3.15 hoist

guided temporary lifting machine serving landing levels on sites of engineering and construction with a platform, cage or other load carrying device

3.16 hoistway

total space which is travelled by a hoist cage or platform and the load

3.17 in-service

condition of a hoist in which the cage or platform (laden or unladen) is in a position other than at the lowest landing level, or in which the cage or platform is at the lowest landing level and laden

3.18 landing

area in a building or construction intended for loading and unloading the cage or platform of a hoist and to and from which persons can enter and leave the hoist

3.19 load

goods, materials, containers and/or passengers transported by the hoist within the confines of the cage/platform

NOTE The load includes the operator of the hoist.

3.20 mast

structure that supports and guides the hoist cage or platform (and the counterweight when provided) outside the mast structure

3.21 mast tie

anchorage system used to provide lateral restraint to the mast, anchored to the building or other structure

3.22 operator

competent person, authorized by the appointed person (user), who operates the hoist controls for its intended use

NOTE The hoist is operated by a dedicated authorized operator (see Annex A, Table A.1).

3.23 out of service

condition of a hoist in which the cage or platform is at the lowest landing level and unladen with the platform positioned at a designated landing level where it has the most shelter from the wind

NOTE 1 This is normally, but not necessarily, ground level.

NOTE 2 The platform is unladen and isolated to prevent unauthorized use.

3.24 oversail

unsupported portion of the mast above the top tie

3.25 overspeeding

travelling at a speed above the rated speed

3.26 overspeed safety device

mechanical device for stopping, and holding stationary on the guides, the hoist cage or platform in the case of overspeeding

3.27 passenger

person transported by a hoist

NOTE This includes the operator of the hoist.

3.28 rated load

maximum uniformly distributed load a hoist cage or platform has been designed to carry in normal operation

3.29 rated speed

maximum travel speed of the cage or platform at which the hoist has been designed to run for the specified duty

3.30 standoff distance

horizontal distance between the landing side of the gate or barrier and any travelling part of the hoist in normal operation

NOTE This is referred to as safety distance in BS EN 12158-1, BS EN 12159 and prEN 16719:2014²⁾.

3.31 temporary scaffolding transportation system (TSTS)

construction hoist that has been specifically adapted by the hoist supplier for transporting scaffolding materials during scaffolding operations

3.32 terminal stopping device/switch

device/switch, or combination of devices/switches, arranged to bring the hoist cage or platform to rest automatically at or near a terminal landing, independently of the functioning of the operating control device

3.33 user organization

body that procures a hoist and is responsible for its safe use, including operation, checks, inspections, maintenance and thorough examination

²⁾ This Standard is in preparation with an expected publication date of January 2017.

4 Hoist types

Hoists conforming to BS EN 12158-1, BS EN 12158-2 or BS EN 12159, and transport platforms conforming to prEN 16719:2014²⁾ should be used, as applicable.

NOTE For types of hoists, see Annex B.

5 Hazards associated with the use of hoists

COMMENTARY ON Clause 5

The hazards listed in 5.2 and 5.3 are examples only of the hazards that need to be taken into account. There might be other hazards associated with a particular site or hoist configuration that also need to be taken into account.

5.1 Risk assessments

Risk assessments should be carried out to identify the hazards associated with all aspects of hoist erection, modification and dismantling, operation and maintenance (see 5.2 and 5.3).

NOTE Attention is drawn to the Management of Health and Safety at Work Regulations 1999 [9].

When carrying out a risk assessment, account should be taken of hazards addressed in the appropriate standard to which a hoist has been produced (see Clause 4 and Annex B).

5.2 Erection, alteration and dismantling

When erecting, altering or dismantling hoists, the following should be assessed:

- a) persons carrying out work without the necessary competence;
- b) work at height including rescue;
- c) mechanical handling and lifting;
- d) falling objects, e.g. materials and tools;
- e) failure of supporting structure, e.g. ground, slab, grillage, scaffolding;
- f) instability of the mast due to failure to bolt up the mast sections correctly or due to failure to secure the mast ties correctly to the supporting structure;
- g) loss of stability of the hoist following the removal of the last ties during dismantling;
- h) use of the platform for material storage/transportation;
- i) deterioration of the hoist and associated parts;
- j) unauthorized alterations;
- k) mixing of components from different models of hoist and manufacturers without manufacturers approval;
- l) manual handling of heavy items;
- m) loss of stability of the hoist following failure of the mast, mast ties or fixings;
- n) movement of the drive mechanism and movement of the hoist, which could result in a person becoming trapped;
- o) exposed live electrical conductors;
- p) uncontrolled movement of the carrier due to overloading;

- q) hazards arising from the drilling of mast tie anchorages, e.g. noise, dust, foreign objects, hand/arm vibration;
- r) uncontrolled ascent or descent of the carrier;
- s) unexpected movement of the carrier;
- t) wet and/or uneven surfaces which can cause persons to slip or trip;
- u) environmental hazards such as low lighting levels, extremes of temperature, rain and wind;
- v) hazards arising from failure to follow the manufacturer's instructions.

5.3 Operation and maintenance

The following should be checked to reduce the likelihood of hazards associated with the operation and maintenance of hoists:

- a) persons carrying out work or operating the hoist without the necessary competence;
- b) hazards arising from unauthorized or inappropriate use, or from misuse, of the hoist including use prior to thorough examination and handover;
- c) hazards arising from unauthorized modifications, alterations or additions to the hoist;
- d) hazards arising from overloading of the carrier;
- e) hazards arising from inappropriate loading of the carrier, e.g. eccentric loading, unsecured loading, point loading, loads protruding outside the confines of the carrier;
- f) tools, materials, etc. falling from, or on to, the platform;
- g) moving parts of the hoist which could strike a person or in which they could become trapped or entangled;
- h) moving parts of the hoist which could trap a person between the hoist and a fixed obstruction such as the building or a piece of scaffolding;
- i) the carrier being stuck in a raised position due, e.g. to a power or control circuit failure, which could result in a person being stranded on it;
- j) uncontrolled ascent or descent of the carrier;
- k) exposed live electrical conductors;
- l) hazards arising from failure to operate, maintain or inspect the hoist in accordance with the manufacturer's instructions;
- m) environmental hazards such as low lighting levels, extremes of temperature, rain and wind;
- n) passengers of a hoist and persons carrying out maintenance are at risk of slipping, tripping or falling when on the carrier or at the landings, of falling from a landing on to the hoistway and of falling from the platform during the loading or unloading of goods.

5.4 Hazards associated with the operation of driverless hoists

The operation of driverless hoists should conform to the recommendations in Annex C.

NOTE 1 The use of driverless hoists might give rise to additional hazards to those identified in 5.2 and 5.3.

NOTE 2 Some of the hazards associated with driverless hoists could be addressed by use of a hoist which has been specifically supplied or adapted for use as a driverless hoist as detailed in Annex C.

6 Management of the hoist installation

6.1 General

NOTE The hoist installation comprises all parts of the hoist including the hoist platform or cage, drive mechanisms, safety mechanisms, mast and tie arrangements, landing gates, access to the landings, including hoistway protection at landing interfaces and at levels where there are no landings, and the base enclosure.

The erection, modification and dismantling, thorough examination, operation and maintenance of a hoist installation should be carried out in accordance with Clause 10, Clause 11 and Clause 12.

The hoist installation planning process (see Clause 9) should identify potential hazards (see Clause 5) and set out measures to eliminate or reduce the likelihood of their occurrence.

6.2 Organizational arrangements

COMMENTARY ON 6.2

The user organization, which is the body that procures the hoist for use on the site (see 3.33), has primary responsibility for the management of the erection, modification and dismantling, and for the thorough examination, operation and maintenance, of the hoist.

NOTE 1 The user organization could be the principal contractor on a construction site, the management on an industrial site, or a sub-contractor. Persons not employed by the user organization might also be authorized to use the hoist.

The safe erection, modification and dismantling of hoists should be planned and carried out in co-ordination with a specialist hoist supplier, using their knowledge and experience, alongside the user organization's knowledge of the site and intended use of the hoist.

The two parties should each appoint, in writing, one person, the appointed person (user) and the appointed person (supplier), respectively, who have the responsibilities defined in 3.1 and 3.2.

NOTE 2 It is recognized that the appointed person (user) might need to draw upon the experience, expertise and knowledge of the appointed person (supplier) to assist them in the fulfilment of their responsibilities.

Regular liaison should be maintained between the appointed person (supplier) and the appointed person (user) throughout the project, and especially during the selection and planning of the hoist installation, when detailed site-specific information and preparation of the site is needed. In cases where the hoist is hired through a third party (e.g. a scaffolder) this liaison should be maintained throughout the project.

Records of liaison between the two appointed persons should be made and retained.

NOTE 3 The appointed persons could delegate tasks to other persons where considered appropriate, taking into account the ability, competence and authority of the person concerned.

The appointed persons should check that any tasks delegated to other persons are completed.

To ensure a correct installation of the hoist the user organization should carry out the following:

- a) nomination of the appointed person (user) (see 6.3);
- b) identification of the user organization's requirements including hoist type,

rated load, height of travel, number of landings, types of load, length of time for which the installation is required and frequency of use (see Clause 8);

- c) identification of temporary works requirements (see 8.14), any necessary approvals and monitoring of completion;
- d) identification of the methods and equipment to be used for loading and unloading the goods/passengers (see 11.3);
- e) identification of the hoist location (see 9.5);
- f) specification of the appropriate hoist and selection of a suitable hoist supplier (see Clause 8);
- g) identification of the organizations using the hoist (see 8.7);
- h) identification of the persons who are operating the hoist (see Clause 7);
- i) identification of the training needs of the operators and provision of any necessary training (see Clause 7);
- j) nomination of the appointed person (supplier) (see 6.4);
- k) site surveys (see 9.4);
- l) planning of the installation including pre-erection activities (see Clause 9);
- m) erection of the hoist (see Clause 10);
- n) thorough examination of the hoist (including testing as appropriate) before it is put into use for the first time (see 12.1);
- o) hand-over of the hoist to the user organization, familiarization of the trained operator(s) and supply of information for safe use of the hoist (see 11.2);
- p) day-to-day management of the hoist operation including pre-use checks and emergency procedures (see 11.3);
- q) maintenance, inspection and in-service thorough examinations (see 11.9 and 12.3);
- r) record keeping and retention (see 12.7);
- s) possible modifications to the installation, or changes of use (see 10.3);
- t) planning for dismantling and removal (see 10.4);
- u) review of the dismantling and removal planning procedures (see 10.4);
- v) dismantling of the hoist and removal from site (see 10.4);
- w) arrange for investigation and communication of any dangerous occurrences or accidents during use.

These activities should form the basis of the responsibilities of the appointed persons as described in 6.3 and 6.4.

Safe systems of work should be established and followed in accordance with 6.5.

6.3 Responsibilities of the appointed person (user)

The appointed person (user) should act on behalf of the user organization and should be responsible for the management of the operation of the hoist or hoists.

NOTE 1 This appointment does not remove any legal responsibility from the management of the user organization but enables them to use this person's expertise to better fulfil their responsibilities.

The appointed person (user) could have other duties and need not be an employee of the user organization but should have training, theoretical knowledge and experience in accordance with Table A.1.

The appointed person (user) should, as a minimum, carry out the following:

- a) identify the user organization's requirements, including hoist type, rated load, height of travel, number of landings, types of load, length of time for which the installation is required and frequency of use;
- b) identification of temporary works requirements (see 8.14), any necessary approvals and monitoring of completion;
- c) identify how the hoist is to be operated, i.e. dedicated operator or driverless;

NOTE 2 Additional requirements for driverless operation are given in Annex C.

- d) identify the methods to be used for loading and unloading the goods/passengers, including any temporary storage at landings;
- e) identify the hoist location;
- f) ensure that site surveys are carried out;
- g) specify the appropriate hoist and select a suitable hoist supplier;
- h) ensure that the supplier nominates the appointed person (supplier);
- i) in collaboration with the appointed person (supplier), draw up a safe system of work for the operation, inspection, thorough examination and maintenance of the hoist (see 6.5);
- j) understand the safe systems of work, method statements and lift plans, and be responsible for making sure that these are implemented (see 6.5);
- k) identify the organizations using the hoist;
- l) identify the persons operating the hoist;
- m) identify the training needs of the operators and arrange for the provision of any necessary training;
- n) plan the hoist installation including pre-erection activities; ensure that planning is carried out for delivery, erection, modification and dismantling of the hoist and its removal from the site;
- o) ensure that pre-erection activities are undertaken in a timely manner (including base preparation, delivery and unloading of the hoist, provision of power, provision of safe access and any necessary exclusion zones);
- p) arrange for thorough examination (including testing as appropriate) to be carried out before the hoist is put into use for the first time on that site and after any subsequent alterations, selecting a competent organization/person to undertake this task;
- q) ensure that the hand-over to the user organization, demonstration to the trained operator(s) and supply of information for safe use is carried out by the supplier (see 11.2);
- r) carry out day-to-day management of the hoist operation including pre-use checks and emergency procedures;
- s) arrange for maintenance, inspection and in-service thorough examinations of the hoist installation and ensure the competence of those undertaking these tasks;
- t) arrange for reporting and rectification of defects;
- u) manage any modifications of the hoist installation or changes of use;

- v) review the dismantling and removal plan with the appointed person (supplier).

Regular liaison should be maintained between the appointed person (user) and the appointed person (supplier) throughout the project, and especially during the selection and planning of the hoist installation, when detailed site-specific information and preparation of the site is needed. In cases where the hoist is hired through a third party (e.g. a scaffolder), this liaison should be maintained throughout the project.

Records of liaison between the two appointed persons should be made and retained.

6.4 Responsibilities of the appointed person (supplier)

The appointed person (supplier) should act on behalf of the hoist supplier and should be responsible for the hoist specification (as agreed with the user), the planning and execution of the delivery, erection, modification, dismantling, removal and maintenance of the hoist.

NOTE 1 This appointment does not remove legal responsibility from the management of the hoist supplier but enables them to use this person's expertise to better fulfil their responsibilities.

The appointed person could have other duties and need not be an employee of the hoist supplier but should have such training, theoretical knowledge and experience in accordance with Table A.1.

The appointed person (supplier) should, as a minimum, carry out the following, in consultation with the appointed person (user):

- a) identify the user organization's requirements including hoist type, rated load, height of travel, number of landings, types of load, length of time for which the installation is required, frequency of use;
- b) identification of temporary works requirements (see 8.14), any necessary approvals and monitoring of completion;
- c) identify how the hoist is to be operated, i.e. dedicated operator or driverless;

NOTE 2 Additional requirements for driverless operation are given in Annex C.

- d) identify the methods to be used for loading and unloading the goods/passengers (see 11.5);
- e) identify the hoist location;
- f) specify the appropriate hoist;
- g) identify the organizations using the hoist;
- h) identify the persons operating the hoist;
- i) discuss with the appointed person (user) the training needs of the operators and arrange training as requested;
- j) carry out site surveys;
- k) supply all necessary technical information to the appointed person (user), e.g. tie forces, foundation loads, power requirements;
- l) plan the installation of the hoist including pre-erection activities;
- m) plan the delivery, erection, modification and dismantling of the hoist and its removal from the site;
- n) in collaboration with the appointed person (user), draw up a safe system of work for the delivery, erection, modification, dismantling and removal of the hoist (see 6.5);

- o) work with the appointed person (user) to ensure that the pre-erection activities are undertaken in a timely manner (including base preparation, delivery and unloading of the hoist, provision of power, safe access and any necessary exclusion zones are in place);
- p) establish from the appointed person (user) who is to conduct the thorough examination (including testing as appropriate) before the hoist is put into use for the first time;
- q) ensure that the hand-over to the user organization is carried out, including the supply of information for safe use, including inspection and maintenance requirements, and that demonstration to trained operator(s) is made available;
- r) supply information to the appointed person (user) on emergency procedures, including manual lowering of passenger hoists to the next available landing;
- s) inform the appointed person (user) of their duty to ensure that maintenance, inspection and in-service thorough examination of the hoist installation is carried out (see Clause 11 and Clause 12);
- t) establish from the appointed person (user) who is to carry out maintenance, inspection and in-service thorough examination of the hoist installation;
- u) establish from the appointed person (user) the requirements for any modifications of the hoist installation or changes of use of the hoist;
- v) review the plans for dismantling and removal, and conduct a site survey before the start of dismantling.

Regular liaison should be maintained between the appointed person (supplier) and the appointed person (user) at all times, and especially during the selection and planning of the hoist installation, when detailed site-specific information and preparation of the site is needed. Even in cases where the hoist is hired through a third party (e.g. a scaffolder) this liaison should be maintained throughout the project.

Records of liaison between the two appointed persons should be made and retained.

6.5 Safe systems of work and method statements

Both the appointed person (user) and the appointed person (supplier) should co-operate in the establishment of the safe systems of work to be followed in the erection.

NOTE 1 Attention is drawn to the Health and Safety at Work etc. Act 1974 [1], with regard to the establishment of a safe system of work.

NOTE 2 Safe systems of work can be established for an individual hoist or for a group of hoists. The safe systems of work could also include contributions from interested parties, including the providers of scaffolding, lifting equipment, means of access, foundations and power.

Any contributions from interested parties should be collated by the appointed person (supplier) and the appointed person (user) to produce the safe systems of work, and should be recorded in a series of documented method statements and in-service lift plans.

The following should be documented in the safe systems of work, as applicable:

- a) method statements for the delivery, unloading, erection, modification, dismantling, loading and collection, and operation and maintenance, of the hoist installation;

- b) procedures for ensuring that the supporting structure can accommodate the tie and foundation loads;
- c) procedures for ensuring that the landing interfaces and hoistway protection are suitably designed, constructed and maintained;
- d) procedures for ensuring that the hoist erectors have been trained and assessed for competence;
- e) procedures for ensuring that the hoist is serviceable;
- f) procedures for ensuring that the hoist operators have been assessed for competence, and provided with familiarization or training as appropriate for the hoist type supplied, including emergency lowering;
- g) a schedule of loads that might be transported in the hoist and any special control measures required;
- h) plans for loading and unloading goods/passengers to and from the hoist, including any additional material handling equipment required;
- i) plans for temporary storage of goods adjacent to landings and at ground level;
- j) plans for the security of loads during transportation;
- k) procedures for rescuing persons trapped in the hoist at height;
- l) procedures for the inspection and maintenance of the hoist or hoists in accordance with the supplier's instructions;
- m) procedures for provision of adequate supervision of the hoist delivery, unloading, erection, modification, operation, dismantling, loading and removal by properly trained, competent and authorized personnel;
- n) procedures to prevent unauthorized operation of hoists at all times;
- o) procedures for ensuring the safety of all persons not involved in hoist operation;
- p) arrangements for the monitoring of wind speed, placing the hoist cage/platform in the designated out-of-service position and ensuring that the hoist is correctly isolated;
- q) procedures for ensuring that appropriate information is communicated to all parties concerned;
- r) procedures for ensuring that a thorough examination of the hoist is carried out before first use and after any subsequent alterations;
- s) procedures for ensuring that all necessary instructions, manuals, thorough examination reports, other relevant documents, and warning and information signs are provided;
- t) procedures for hand-over of the hoist to the appointed person (user);
- u) procedures for ensuring that all personnel involved have been made aware of their statutory duties;
- v) procedures for ensuring that third parties are excluded from the working area, and for reducing the likelihood of falling objects;
- w) procedures for ensuring that personnel involved in any way with the hoist are not under the influence of alcohol or drugs;
- x) procedures for ensuring that personnel involved in any way with the hoist are able to understand the information provided.

NOTE 3 This might require information to be supplied in more than one language.

NOTE 4 These procedures could form part of the principal contractor's site health and safety plan. Attention is drawn to the Construction (Design and Management) Regulations 2015 [6].

7 Personnel and training

7.1 General

Persons associated with the erection, alteration and dismantling, and the operation, inspection, thorough examination and maintenance of hoists should include:

- a) appointed person (user);
- b) appointed person (supplier);
- c) hoist supervisor;
- d) erection supervisor;
- e) erector;
- f) demonstrator;
- g) operator (dedicated);
- h) operator (driverless hoist);
- i) maintenance personnel;
- j) competent person carrying out thorough examination.

7.2 Selection of personnel

All persons who are selected to carry out the erection, alteration and dismantling, and the operation, inspection, thorough examination and maintenance of hoists should be trained and competent to carry out all their duties and responsibilities in accordance with Table A.1.

Records of their training and experience should be consulted to assist in this selection, see also 7.3.

Persons responsible for selection should ensure that all personnel are aware of their duties.

NOTE 1 One person could carry out multiple job functions, with the exception of combining the roles of the two appointed persons, and the erection supervisor carrying out a thorough examination of a hoist they have erected/ altered/ dismantled (see Clause 11).

NOTE 2 Attention is drawn to the Management of Health and Safety at Work Regulations 1999 [9].

7.3 Training and competence

All persons associated with the provision and use of hoists should be trained and competent to carry out their duties and responsibilities (see Table A.1).

NOTE 1 The training of personnel can be formal or informal depending on circumstances. Formal training is a structured approach involving a teaching body, informal training is on-the-job training, learning from a mentor as in an apprenticeship.

NOTE 2 Some competencies can be demonstrated by either National Vocational Qualification (NVQ) [or Scottish Vocational Qualification (SVQ)] assessments or, in the case of hoist operators, by the Construction Plant Competence Scheme (CPCS) run by the Construction Industry Training Board and endorsed by the HSE. Other formal training and assessment schemes can also be used. In-company training and assessment may be carried out when there are no alternative external assessments available.

Training should be followed by supervised, on-the-job practice in specific roles and responsibilities.

Once attained, competencies should be reviewed and further training and assessment provided, where necessary, to reflect changes in practices and products.

The individual employer should be responsible for determining the training needs of persons, and for making the necessary arrangements for training and supervised practice.

NOTE 3 In the case of self-employed persons, the responsibility rests with themselves.

Training and supervised practice should be recorded by the employer. If a training provider issues a certificate stating competencies achieved by a trainee, their employer should retain a copy.

All installation personnel working on site should undertake asbestos awareness training.

7.4 Person carrying out daily or pre-use checks

Only a competent, trained person, authorized by the appointed person (user) to inspect the hoist should carry out daily or pre-use checks (see 11.6).

NOTE A hoist operator could perform this task provided that they meet these criteria.

7.5 Person carrying out weekly inspections

Only a competent, trained person, authorized by the appointed person (user) to inspect the hoist should carry out weekly inspections (see 11.7).

NOTE A hoist operator could perform this task but would require additional training over and above that required for pre-use checks.

7.6 Maintenance personnel

Maintenance inspections and activities should only be carried out by those who possess knowledge and expertise of the particular hoist and have been assessed as competent to carry out the work (see Table A.1).

NOTE Maintenance is usually carried out by a service engineer employed by the owner of the hoist.

7.7 Person carrying out thorough examinations

A competent person should carry out thorough examinations (see Table A.1).

The competent person should be sufficiently independent and impartial to allow objective decisions to be made.

NOTE The competent person does not have to be from an external source. If the hoist supplier or the user organization have the necessary competence within their own organization they are permitted to use it.

However, if the competent person is appointed from within, the user organization should ensure that the competent person has the authority and independence to ensure that examinations are carried out correctly and that the recommendations arising from them are carried out.

All competent persons should be assessed on appointment, again within their first 12 months, and at regular intervals (not exceeding four years) thereafter.

Assessment should form part of any training.

8 Selection of hoists and related site considerations

8.1 General recommendations

Selection of the hoist is a central part of the planning process (see Clause 9) and should take account of the entirety of the planned hoist usage.

Speed, capacity, size and the number of hoists needed should be determined in the selection process.

NOTE The choice of an inappropriate hoist could provide significant delays to the construction programme.

The appointed person (user) should select the hoist in co-operation with potential hoist suppliers who should be consulted for guidance (see 6.3).

When selecting the hoist the following should be determined:

- a) hoist type: passenger/goods, goods only or transport platform (see Clause 4 and Annex B);
- b) mode of operating: dedicated operator or driverless;
- c) mode of use: change of mode during period on site, including the specialized transportation of scaffolding materials (see 8.16);
- d) duration: the length of time that the hoist is on site (see 8.3);
- e) drive type: rack and pinion or rope (see 8.4);
- f) power supply requirements: to run the hoist and to supply peak starting currents, and the availability of a suitable power supply (see 8.5);
- g) capacity: the maximum number of passengers and/or mass and size of load to be carried on the hoist at any one time (see 8.6);
- h) duty: the quantity of goods and/or persons to be moved and the required cycle times (see 8.7);
- i) configuration: both the configuration of the hoist itself and its intended site position and orientation (see 8.7);
- j) travel: top landing height and speed of travel (see 8.8);
- k) access to the hoist at the base: the required access positions to and from the hoist at ground level (see 8.9);
- l) landing levels: the required entry points on to the scaffold or structure (see 8.10);
- m) ties: the number and location of the ties required to restrain the mast(s), the loads imposed and the ability of the structure to support them (see 8.11);
- n) site constraints: restrictions imposed on the type of hoist selected by site constraints, including location, available area for erection, modification and dismantling, size and type of payload, available tie positions and suitability of the supporting structure (see 8.12);

- o) siting of the hoist (see 8.13);
- p) temporary works: any requirements (see 8.14);
- q) work programme: time required for all activities (see 8.15);
- r) hoist type.

NOTE Descriptions of hoist types are given in Annex B.

8.2 Mode of operating

For driverless/dedicated operator, see Annex C.

8.3 Duration

The length of time that the hoist is on site should be determined when deciding upon the correct hoist.

NOTE If a hoist is going to be in place for a long time it might be worthwhile putting in a high capacity unit that can move passengers or materials significantly faster than a smaller hoist which would be more economical to install but would have a restricted carrying capacity and operating speed.

Potential changes of use for the hoist during the time on site should also be taken into account.

8.4 Drive type

Passenger/goods hoists and transport platforms should have rack and pinion drives.

NOTE Goods-only hoists can be rack and pinion or rope drives. Rope drives are typically used for smaller goods-only hoists.

8.5 Power supply requirements and electrical installation

Hoists should have a stable power supply.

NOTE 1 For a hoist to operate correctly the power supply required at start-up could be significantly larger than that required once the hoist is travelling.

Generators can be used in place of the mains supply, but should be capable of supplying the potentially high starting current of the hoist.

NOTE 2 An unsuitable power supply could result in problems operating the hoist, with potential power problems on other parts of the site.

NOTE 3 Small hoists usually require a single phase supply and larger hoists a 3-phase supply.

To avoid problems with voltage drop, the distance between the isolator and the hoist should be determined when selecting the conductor size of the connecting power cable.

NOTE 4 Attention is drawn to BS 7671.

NOTE 5 The provision of the power supply is the responsibility of the user organization.

The user organization should confirm that the electrical supply conforms to the required specification. Once the selected hoist has been installed and connected to the site power supply, the insulation resistance and continuity of the protective bonding circuit of the supply should be tested (see 12.5.13.2).

8.6 Capacity

The capacity of the hoist should be based upon the weights and geometry of the loads to be lifted.

A hoist should be selected such that the combined mass of the intended payload, any mechanical handling equipment, e.g. pallet trucks, passengers and the persons involved in loading or unloading the cage or platform, does not exceed the overall rated load or permissible point loads.

If a hoist is required to take heavy point loads, or loads that cannot be evenly distributed, the hoist supplier should be consulted.

NOTE 1 The rated load quoted for a hoist is for an evenly distributed load.

NOTE 2 A large area platform which is sized to carry bulky but light goods could be overloaded if there is a possibility that it might be filled entirely with passengers or with a combination of passengers and goods.

An overload limiting and indicating device should be fitted to all hoists to reduce the likelihood of overloading the hoist.

NOTE 3 Overloading of low capacity swivel hoists could occur when a fully laden platform is being loaded/unloaded at height, due to the weight of the person(s) moving onto the platform.

If the hoist is to be used to transport items that cannot be fitted within the confines of the cage or platform, e.g. scaffold tubes, this should be determined when selecting the hoist and should be agreed with the hoist supplier who might be able to make suitable suggestions/alternatives. A safe system of work should be developed in these circumstances.

NOTE 4 For further information on the transportation of scaffold material see CPA publication – Good Practice Guide on Transporting Scaffolding in Construction Hoists (Including Transport Platforms) CHIG 0501 [11].

8.7 Configuration and duty

The organization(s) using the hoist should be identified during the planning process.

The size and weight of the goods and number of passengers that are to be moved and the space available within the cage and on platforms should be determined when deciding how many hoists need to be installed and whether they should be single, twin or multiple units.

The position and orientation of the cage or platform should be determined on the basis of the site layout, taking account of any changes envisaged during the time the hoist is on site.

8.8 Travel

NOTE 1 In some instances it might not be possible to erect a hoist to the final top landing height when it is first installed. Most hoists can be extended later in the construction programme.

If a hoist requires extension during the construction programme, the number of extensions needed and the oversail to be left after each extension should be determined when the hoist is selected. Each installation stage should then be checked for stability and loadings.

NOTE 2 The combined effect of travel speed, number of stops and height can influence the productivity of the hoist.

8.9 Access to the hoist at the base

When selecting a hoist the following should be determined:

- a) whether means of access and egress is needed at both ends of the cage or platform, at the sides of the cage or platform, or both;
- b) whether mechanical handling equipment is to be used;

- c) whether a ramp or pit should be provided for access to the cage or platform;
- d) whether there is a sufficient loading and unloading area adjacent to the cage or platform;
- e) whether there are adjacent hoists;
- f) whether there is segregation of pedestrian, vehicle and working areas.

8.10 Landing levels

There should be sufficient space on each landing to load and unload items to and from the hoist cage or platform.

NOTE 1 This is particularly important when long and/or bulky materials are to be transported.

The hoist and type of landing gate should be chosen for their suitability for the scaffold or other landing interface provided and the type of materials to be transported.

NOTE 2 This is particularly important when loose materials are being transported.

The thresholds and landings should be able to withstand the loads imposed on them.

NOTE 3 This is particularly important where a pallet truck or other mechanical handling equipment is used, as significant point loads can be transferred to the landing.

Where a landing transfers load on to the hoist structure, the weight of the load should be restricted to avoid overloading.

The likelihood of falling materials, overloading and congestion on landings should be determined when storing materials on landings.

8.11 Ties

When selecting a hoist the requirements for tying to the supporting structure should be determined in accordance with the manufacturer's instructions.

NOTE 1 Supporting structures differ in the tie spacing and tie loads that they can accommodate.

NOTE 2 The magnitude of the tie loads is dependent on the hoist type and on the configuration of the ties, i.e. the vertical distance between the ties, and the way in which they are offset from, and connected to, the supporting structure.

8.12 Site constraints

The following site constraints should be taken into account when selecting a hoist:

- a) any limitations on the area available for the hoist, in terms of both ground area and tie locations, e.g. interface with cladding, facade shape;
- b) any limitation of access to the site and to the intended location of the hoist, e.g. if the hoist is to be placed in a lift well or in a courtyard where crane access is difficult;
- c) any limitation of access to the site for hoist removal;

NOTE Failure to consider this point might increase the difficulty and time required to remove the hoist.

- d) any limitations on the size and weight of component parts;
- e) any ground conditions that could limit the foundation load;
- f) location of hazards such as power lines and railway tracks;

- g) changes to the site during progress of the work;
- h) other work which might take place during the period when the hoist installation is on site;
- i) the need to protect members of the public;
- j) limitations on working hours and noise levels;
- k) environmental factors, including wind, rain, ice, snow and light levels.

8.13 Siting of the hoist

The siting of the hoist should be determined at the earliest opportunity in the planning stages of the work to allow integration of the hoist into the logistics plan for the overall site work programme (see 8.15) and should allow for:

- a) access routes to be provided for both personnel and materials (see Clause 9); and
- b) temporary works, plant or equipment in the vicinity of the hoist to ensure safe running clearances.

8.14 Temporary works

Where necessary, temporary works should be carried out to enable a hoist to be installed.

NOTE Temporary works could include:

- a) support for the hoist base;
- b) access for delivery of the hoist to its intended location;
- c) tie connection points to the supporting structure;
- d) access to the tie connection points;
- e) landings, run-offs and hoistway protection.

8.15 Work programme

The work programme should allow time to carry out the following:

- a) procurement, configuration and preparation of the hoist by the supplier;
- b) preparation and review of documentation including risk assessment, method statements, installation/removal and in-service lift plans that document the safe system of work to be followed;
- c) base preparation and completion to accept design loads;
- d) site specific inductions;
- e) erection of the hoist;
- f) completion of hoistway protection, run-offs, landings, edge protection and any base ramp, which should be completed before the hoist installation is offered for thorough examination;
- g) thorough examinations and testing;
- h) operator training;
- i) hand-over including demonstration;
- j) daily pre-use checks;
- k) weekly inspections;
- l) maintenance;
- m) any modifications;