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ELECTRIC LIFTS

PART 1

GENERAL REQUIREMENTS

B.S. 2655 : Part 1 : 1957

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THIS BRITISH STANDARD, having been approved by the Mechanical Engineering Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 27th June, 1957.

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 2500, indexed and cross-indexed for reference, together with an abstract of each standard, will be found in the Institution's Yearbook, price 15s.

This standard makes reference to the following British Standards :

B.S. 7. Rubber-insulated cables and flexible cords for electric power and lighting.
B.S. 31. Steel conduits and fittings for electrical wiring.
B.S. 46. Part 1. Keys and keyways.
B.S. 292. Dimensions of ball bearings and parallel roller bearings.
B.S. 329. Round strand steel wire suspension ropes for lifts and hoists.
B.S. 436. Machine cut gears, A.–Helical and straight spur.
B.S. 462. Bull dog grips for wire ropes for general engineering purposes.
B.S. 463. Sockets for wire ropes for general engineering purposes.
B.S. 464. Thimbles for wire ropes for general engineering purposes.
B.S. 529. Part 2. Steel eyebolts.
B.S. 587. Motor starters and controllers and resistors employed therewith.
B.S. 613. Components for radio-interference suppression devices.
B.S. 621. Wire ropes of special construction for engineering purposes, including cranes, lifts and excavators.

B.S. 643. Capping metal for steel wire ropes.
B.S. 721. Machine cut gears, C.–Worm gearing.
B.S. 727. Characteristics and performance of apparatus for measurement of radio interference.
B.S. 731. Flexible steel conduit and adaptors for the protection of electric cable.
B.S. 774. Under-floor steel ducts for electrical services, with fittings.
B.S. 775. Contactors.
B.S. 800. Limits of radio interference.
B.S. 815. Under-floor non-metallic ducts for electrical services, with fittings.
B.S. 820. Grey cast-iron conduit boxes for electrical wiring.
B.S. 857. Safety glass for land transport.
B.S. 951. Earthing clamps.
B.S. 977. Flexible cables for power and control circuits of electric lifts.
B.S. 1231. P.V.C. cables and cords for switchboard panel wiring.
B.S. 1557. Polythene-insulated cables sheathed with P.V.C. for electric power and lighting up to 250 volts.
B.S. 2004. Polyvinyl chloride insulated cables and flexible cords for electric power and lighting.
B.S. 2059. Straight-sided splines and serrations.

CP 321*. Electrical installations—general.
CP 321.101. Electric wiring systems (for power, lighting and heating circuits) in buildings.
CP 321.102. Installation and maintenance of electrical machines, transformers, rectifiers, capacitors and associated equipment.
CP 407.101. Electric lifts for passengers, goods and service.
CP 1006. General aspects of radio interference suppression.

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.

* Temporarily out of stock, pending revision.

The following B.S.I. references relate to the work on this standard :—
Committee reference MEE/49. Draft for comment CW(MEE) 1814.

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The Mechanical Engineering Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations :—

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Association of Consulting Engineers (Incorporated)
British Chemical Plant Manufacturers' Association
British Compressed Air Society
*British Electrical and Allied Manufacturers' Association
*British Engineers' Association
British Internal Combustion Engine Manufacturers' Association
British Iron and Steel Federation
*British Railways, The British Transport Commission
Central Electricity Authority and Area Boards
Crown Agents for Oversea Governments and Administrations
D.S.I.R.—Mechanical Engineering Research Laboratory
*Engineering Equipment Users' Association
Gas Council
High Commission of India
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*Ministry of Supply
Ministry of Transport and Civil Aviation
*Ministry of Works
The National Physical Laboratory (D.S.I.R.)
Radio Industry Council
War Office

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the Committee entrusted with the preparation of this standard:—

Engineer Surveyors Association
General Post Office
Institution of Electrical Engineers
Institution of Municipal Engineers
London County Council
London Transport Executive, British Transport Commission
National Association of Liftmakers

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BRITISH STANDARD SPECIFICATION FOR

ELECTRIC LIFTS

Part 1. General Requirements

FOREWORD

This British Standard, prepared under the authority of the Mechanical Engineering Industry Standards Committee, is being published in the form in which it was circulated to industry for comment. After consideration of the comments, the committee decided to make no alterations of substance to the draft, and decided that requests for early publication would best be met by issuing the standard forthwith. This is, therefore, being done and the committee will give detailed consideration to the comments received with a view to their being taken into account in any subsequent revision.

This standard applies to the construction and safety of new passenger, goods and service lifts installed where the minimum structural requirements in Appendix B, for passenger and goods lifts, and in Appendix C, for service lifts, are satisfied. The clauses of the specification which apply to service lifts have been separated from those for passenger and goods lifts (Section Two) and appear together in Section Four. It should be noted that this standard has been published in three parts, of which this is Part 1 covering general requirements. The other parts are :—

**Part* 2. ' Single-speed polyphase induction motors for driving lifts ', which gives the special requirements applying to the most commonly used type of lift motor. It should be read in conjunction with B.S. 2613, ' The electrical performance of rotating electrical machinery '.

Part 3. ' Outline dimensions for electrical lifts ', which gives recommended dimensions for lift wells, in relation to lift capacity and platform size, and areas for machine room floors, for six classes of lift.

SPECIFICATION

SECTION ONE : GENERAL

SCOPE

1. This standard applies to electric passenger lifts, goods lifts and service lifts suspended by ropes and employing a guided lift car or platform to be installed in a situation where the structural requirements of Appendices B or C are carried out.

* In course of preparation.

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It does not apply to platform lifts, motor vehicle lifts, amusement devices, skip hoists, conveyors or similar apparatus used for raising, piling or tiering.

DEFINITIONS

2. For the purposes of this British Standard the following definitions shall apply :—

Bottom overtravel. (See Overtravel, bottom.)

Buffer. A device designed to absorb the impact of the lift car or counterweight.

Call indicator. A visual and/or audible device for indicating to the attendant the floors at which landing buttons have been pressed.

Car apron or Landing apron. A protective screen, sometimes attached to the underside of the car platform or lift landing to prevent an object from being trapped between the car platform and landing threshold.

Car enclosure (Car bodywork). The enclosing bodywork of the lift car which comprises the sides and roof, and is built upon the car platform.

Car frame. The supporting frame or sling to which the car platform, safety-gear, guide shoes and suspension ropes are attached.

Car levelling device (Self-levelling device). An automatic device or control designed to move the lift car at a reduced speed within a limited zone towards, and to stop it at, the landing.

Car platform. The structure which forms the floor of the lift car, and which directly supports the load.

Car speed. (See Contract speed.)

Centre opening door. A door which slides horizontally and consists of two or more panels which open from the centre and are usually so interconnected that the panels move simultaneously.

Clearance Top.

a. of lift car. The shortest vertical distance between the car frame and its attachments and the overhead beams or their attachments when the car floor is level with the top landing, i.e. the greatest distance the car floor could travel above the top landing.

b. of counterweight. The shortest distance between the counterweight and its attachments and the overhead beams or their attachments when the car floor is level with the bottom landing, i.e. the greatest distance the counterweight could travel above the position it occupies when the car floor is level with the bottom landing.

Compensating ropes or chains. Ropes or chains suspended from the car frame and/or counterweight to balance the weight, or part of the weight, of the suspension ropes throughout the travel of the lift car.

Contactor. An electromagnetically operated switch for making or breaking a main electric circuit, e.g. a lift motor circuit. (See Relay.)

Contract load. The rated load specified in the contract of purchase of the lift.

Contract speed (Car speed). The mean of the maximum speeds attained by the lift car in the upward and downward directions with contract load in the lift car.

Control.

Automatic control. A method of control in which, by a momentary pressure of a button, the lift car is set in motion and caused to stop automatically at any required lift landing.

Car switch control. A method of control whereby the movement of the lift car is directly under the control of the attendant by means of a handle-operated switch.

Collective control. A generic term for those methods of automatic control in which calls made by the pressing of buttons in the lift car and at lift landings are registered and are answered by the lift car stopping in floor sequence at each lift landing for which calls have been registered, irrespective of the order in which the calls have been made, and until all calls have had attention.

Directional collective control. A form of collective control having UP and DOWN buttons at the intermediate lift landing by which the landings calls can be registered for the particular direction in which it is desired to travel. The calls are answered by the stopping of the lift car at the required landings when travelling in the appropriate direction or, in the event of one call only having been registered, by the lift car starting and travelling to the corresponding landing. In the event of calls being registered for both directions of travel the lift car will answer all calls in floor sequence for one direction, and then reverse to answer registered calls for the other direction.

Signal control. A method of control in which, although the lift car is started by an attendant, the stops are determined and registered by the pressure of buttons at the lift landings, or by pressure of other buttons in the lift car. With a battery of lifts the signals made by the pressure of UP-DOWN landing buttons are answered by the first available lift car travelling in the appropriate direction.

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Dual collective control. (Collective control with or without attendant). A form of control applied to a directional collective controlled lift and so arranged that the lift may be operated either by the passengers, or by an attendant. When the lift is on attendant operation, the direction of travel may be controlled by the attendant and landing calls can, if desired, be by-passed.

Control equipment. Those components of a lift by means of which motion, direction of travel, speed and stopping are controlled.

Controller. A device or group of devices comprising the principal components of the control equipment.

Counterweight. A weight, or series of weights, to counter-balance the weight of the lift car and part of the contract load.

Door or gate closer. A device which closes a door or gate.

Door- or gate-lock. A mechanical device for locking a car or landing door or gate, the unlocking of which is controlled by the position of the lift car.

Door or gate operator. A power operated device for opening and closing a door or closing a gate.

Door or gate switch. (Door or gate contact.) A switch operated by the movement of a door or gate.

Electromechanical brake. A brake consisting of friction shoe(s) applied to a brake drum or disc by means of springs or weights and electrically released.

Electromechanical door- or gate-lock. A combination in one unit of a door or gate switch with a door- or gate-lock.

Final limit switch. An emergency switch arranged to stop the lift in event of excessive overtravel.

Floor selector. A mechanism forming part of the control equipment of some automatic lifts by which the lift car is automatically stopped at the required floors.

Governor. An automatic device which brings the lift car and/or counterweight to rest by operating the safety gear in the event of the speed in a downward direction exceeding a predetermined limit.

Guides. The members used to guide the movement of the lift car or counterweight.

Guide bracket. A member which is attached to the building or structure and to which the guides are attached.

Guide shoe. An attachment to the car frame and counterweight by which the car frame and counterweight are guided.

Headroom. The vertical distance from the floor level of the top lift landing to the underside of the floor, steelwork or other obstruction over the lift well.

Headroom, total. The vertical distance from the floor level of the top lift landing to the top of the machinery space over the lift well.

Intermediate floor switch (Direction switch). A component of the floor selecting control equipment mounted in the lift well and operated by the movement of the lift car, to stop the lift car at the required floor.

Landing button. A pushbutton operated switch fitted at a lift landing.

Landing door or gate. The hinged or sliding portion of a lift well enclosure controlling access to the lift car at a lift landing.

Lift. An appliance designed to transport persons or goods between two or more levels in a vertical direction by means of a guided lift car or platform.

Goods lift—a lift designed primarily for the transport of goods, but which may carry a lift attendant or other persons.

Passenger lift—a lift designed for the transport of passengers.

Platform lift—a lift for transporting goods, with a platform which has insufficient bodywork for the attachment of a door or gate.

Service lift. A lift with a car which moves in guides in a substantially vertical direction. The floor area of the car does not exceed 9 sq. ft, the compartment height does not exceed 4 ft, and the capacity does not exceed 5 cwt. The lift is used exclusively for carrying goods.

Lift car. The load carrying unit complete with its platform, enclosing bodywork, or frame and attachments.

Lift landing. That part of a floor, structure, or building where the loading and unloading of the lift car takes place.

Lift pit. The space in the lift well below the level of the lowest landing served.

Lift well. An enclosed space in which a lift is designed to operate, including the lift pit and space for top clearance.

Lift well enclosure (Lift enclosure). Any structure which separates the lift well from its surroundings.

Lift machine. (Winding machine.) A generic term for that part of an electric lift comprising the motor(s), a reduction gear (if any), brake(s) and winding drum or sheave by which the lift car is raised or lowered.

Drum drive machine. A lift machine in which the suspension ropes are fastened to and wind on a drum.

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