UL 1323

STANDARD FOR SAFETY

Scaffold Hoists

UL Standard for Safety for Scaffold Hoists, UL 1323

Fourth Edition, Dated April 5, 2007

Summary of Topics

This revision to ANSI/UL 1323 dated January 4, 2023 includes State of Battery Charger Indicator; 3.5, 5.4 and 15.2.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated September 30, 2022 and November 25, 2022.

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UL 1323

Standard for Scaffold Hoists

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Fourth Edition

April 5, 2007

This ANSI/UL Standard for Safety consists of the Fourth Edition including revisions through January 4, 2023.

The most recent designation of ANSI/UL 1323 as an American National Standard (ANSI) occurred on January 4, 2023. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at https://csds.ul.com.

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INTRODUCTION

1 Scope

1.1 These requirements cover manual and power-operated type portable hoists intended for use with scaffolds suspended by wire ropes.

1.2 This standard covers electrically powered hoists rated 1000 volts or less to be employed in nonhazardous environmental locations in accordance with the National Electrical Code, ANSI/NFPA 70.

2 General

2.1 Components

2.1.1 Except as indicated in 2.1.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix for a list of standards covering components used in the products covered by this standard.

2.1.2 A component is not required to comply with a specific requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or

b) Is superseded by a requirement in this standard.

2.1.3 A component shall be used in accordance with its rating established for the intended conditions of use.

2.1.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

2.2 Units of measurement

2.2.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

2.2.2 Unless otherwise indicated, all voltage and current values mentioned in this standard are root-mean-square (rms).

2.3 Undated references

2.3.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

3 Glossary

3.1 For the purpose of this standard the following definitions apply.

3.1.2 BONDED (BONDING) – The permanent joining of metallic parts to form an electrically conductive path that provides electrical continuity and the capacity to conduct any current likely to be imposed without a risk of electric shock, fire, or injury to persons.

3.2 ANGLE, FLEET – The angle at which the wire rope exits the winding drum, as measured between the rope before it passes through the rope guide and a line that is perpendicular to the drum axis, tangent to the drum surface, and passing through the center of the rope guide.

3.2.2 BONDING JUMPER – A conductor, including a strap or similar part, that is used to provide the required electrical conductivity between metal parts required to be electrically connected.

3.3 BRAKE, PRIMARY – A brake, automatically applied, that stops the hoist and its rated load under intended operating conditions, when power to the prime mover is interrupted or discontinued.

3.4 BRAKE, SECONDARY – A brake intended to automatically arrest the descent of the hoist and its suspended load when there is an overspeed condition.

3.5 CIRCUITS, ELECTRICAL:

a) High-Voltage – A circuit with a potential of not more than 1000 volts having circuit characteristics greater than those of a low-voltage power-limited circuit.

b) Low-Voltage – A circuit with a potential of not more than 30 volts AC rms, 42.4 volts AC peak or 60 volts DC, and supplied by:

1) A battery;

2) An NEC Class 2 transformer; or

3) A combination of transformer and fixed impedance that, as a unit, complies with all of the performance requirements for a Class 2 transformer.

3.6 CONTROLLED DESCENT DEVICE – A device intended to allow controlled nonpowered descent of a normally power-operated hoist.

3.7 DRUM, TRACTION – A type of drum that does not accumulate the suspension rope, but ascends or descends the rope as a result of friction between the rope and the drum.

3.8 DRUM, TRANSFER – A drum used to transfer the suspension wire rope from one groove to another groove on the traction drum of a traction hoist.

3.9 DRUM, WINDING – A drum that accumulates the suspension rope in one or more layers.

3.10 ELECTRIC SHOCK – A risk of electric shock is considered to exist at any exposed part if the available open-circuit potential is more than 42.4 volts peak, 30 volts rms, and the available current through a 1500-ohm resistor is more than 5 milliamperes.

3.10.1 GROUND – A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth or to some conducting body that serves in place of the earth.

3.10.2 GROUNDED – Connected to earth or to some conducting body that serves in place of earth.

3.10.3 GROUNDING CONDUCTOR – An equipment or circuit conductor that is intentionally connected between that electrical circuit or equipment and the earth or to some conducting body that serves in place of the earth.

3.11 HOIST, ELECTRICALLY POWERED – A hoist in which the prime mover is powered by electricity.

3.12 HOIST, MANUALLY POWERED – A hoist in which the hoisting power is derived directly from the operator.

3.13 HOIST, PNEUMATICALLY POWERED – A hoist in which the prime mover is powered by compressed gases.

3.14 HOIST, POWER-OPERATED – Either an electrically powered hoist or a pneumatically powered hoist.

3.15 PRIME MOVER – The source of power for the hoist, exclusive of any speed reducer.

3.16 RATED WORKING LOAD – The manufacturer's specified maximum load to be lifted by the hoist. The maximum load includes the weight of all workers, materials, and all dead loads lifted by the hoist. Dead loads include the weight of:

a) The hoist;

b) Wire rope (winding drum and tail line);

c) Platform and platform supports;

d) Guard rails;

e) Building ties;

f) Rollers, stand offs, and wire winder;

g) Electrical cords or air supply hoses; and

h) Other related equipment as applicable that may be included on a stage or otherwise lifted by a hoist.

3.17 SHEAVE, DEFLECTION – A sheave used for small directional changes or deflections of the wire rope.

3.18 SHEAVE, DIRECTIONAL – A sheave used to transfer or change the direction of the wire rope.

3.19 SHEAVE, TRACTION – A single-wrap sheave that does not accumulate the suspension rope, but ascends or descends the rope as a result of friction between the rope and the sheave.

3.20 SPEED REDUCER – A device used to reduce the output speed of the prime mover to the desired speed of the hoist.

3.21 SUSPENSION SCAFFOLD – An assembly for supporting workmen and materials by means of wire ropes from an overhead suspension system and arranged and operated to allow raising or lowering to a desired work position.

4 Installation and Operating Instructions

4.1 A hoist shall be supplied with complete operation and maintenance instructions. A copy of the instructions shall be used as a guide in the examination and test of the hoist.

4.2 The instructions shall include the directions and information considered by the manufacturer or private labeler to be necessary for intended installation, maintenance, operation, and use of the hoist.

4.3 The operating instructions shall also include the type designation, the AWG size, the voltage rating, battery ampere-hour capacity for batteries and the maximum length of each type of power-supply cord for use with the hoist.

4.4 The instructions shall indicate how the motor protector is to be reset if a manually reset protector is employed.

4.5 A complete or an abbreviated form of the instructions shall be attached to each hoist. See Markings, All Hoists, Section 72.

4.6 The abbreviated form of instructions shall include:

a) A brief summary of how to operate the hoist,

b) Information on reeving of the wire rope,

c) Instructions for periodic testing of emergency equipment and daily inspection of the wire rope, and

d) Reference to the operator's manual for detailed instructions, and

e) A product marked in accordance with 74.2.8 shall have the statement "For Indoor Use Only" or the equivalent appearing in the instruction manual.

CONSTRUCTION

ALL HOISTS

5 General

5.1 The maximum rated speed at which an unguided suspended scaffold may be moved in a vertical direction shall not exceed 35 feet (10.7 m) per minute. The maximum rated speed at which a suspended scaffold that is guided by pretensioned wire ropes or fixed rails in an enclosed space or hoistway may be moved in the vertical direction shall not exceed 70 feet (21.4 m) per minute, whereby the maximum wire rope speed of a scaffold hoist itself shall not exceed 73 feet (22.3 m) per minute.

5.2 A traction hoist shall not use tail-line counterweights or other externally applied tensioning to develop the frictional forces required to raise and lower the hoist and its rated working load.

5.3 The electrical features of a control box assembly shall be evaluated to the requirements of the Standard for Industrial Control Equipment, UL 508 or the Standard for Adjustable Speed Electrical Power Drive Systems – Part 5-1: Safety Requirements – Electrical, Thermal, and Energy, UL 61800-5-1. This may include, but is not limited to, AC inverters, DC converters, DC drives, contact blocks, phase control relays, pendant controls and their interconnection.

5.4 When a battery is used as the primary power supply, the battery shall comply with one of the following:

a) Standard for Batteries for Use in Stationary and Motive Auxiliary Power Applications, UL 1973, when the battery is stationary, or

b) Standard for Batteries for Use In Light Electric Vehicle (LEV) Applications, UL 2271, when the battery is mobile.

6 Wire Ropes

6.1 A wire rope shall have a diameter of not less than:

a) 1/4 inch (6.4 mm) for a manually-operated hoist or

b) 5/16 inch (7.9 mm) for a power-operated hoist.

For strength and wear-resistance requirements, see the Wire-Rope Test, Section 45.

7 Drums and Sheaves

7.1 General

7.1.1 A drum in a hoist shall be for use with a suspension wire rope having a diameter of not less than that specified in 6.1.

7.2 Winding drums

7.2.1 The minimum pitch diameter of a multiple-wrap winding drum shall not be less than ten times the diameter of the wire rope used.

Exception: For a manually-operated hoist, the minimum pitch diameter of a multiple-wrap winding drum may be less than ten times the diameter of the wire rope used, but shall not be less than eight times the diameter of the wire rope used.

7.2.2 A winding drum shall be provided with a positive means for attaching the wire rope. The attachment shall comply with the requirement specified in 45.3.

7.2.3 To provide level winding of the wire rope, a winding drum on a powered hoist shall be constructed so that during operation, the suspension wire will wrap without cross-wrapping, improper spooling, or loss of winding.

7.3 Traction drums and traction sheaves

7.3.1 The pitch diameter of a traction drum or traction sheave shall not be less than 18 times the diameter of the wire rope.

7.4 Deflection sheaves

7.4.1 A deflection sheave or roller shall have a minimum pitch diameter of three times the diameter of the wire rope, and shall only be used for wire directional changes of less than 10 degrees.

7.5 Transfer drums and directional sheaves

7.5.1 A transfer drum or directional sheave shall have a minimum pitch diameter of ten times the diameter of the wire rope.

8 Speed Reducers

8.1 A hoist shall have a speed reducer or an equivalent device to obtain a mechanical advantage. The speed reducer or other device shall be of the positive type, such as a worm and gear, spur gears, or bevel gears, and shall not depend on frictional forces for its operation.