



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 September 10, 2025 includes a correction to [5.1](#), and the withdrawal and replacement of ANSI/ISA MC96.1, Temperature-Measurement Thermocouples in [52.7](#)

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

The revised requirements are substantially in accordance with Proposal(s) on this subject dated May 9, 2025.

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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 [A](#) 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- b) Is superseded by a requirement in this standard.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 **GROUNDING** – 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 ft/min (10.7 m/min). 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 shall not exceed 80 ft/min (24 m/min).

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.

9 Shafts, Fillets, Keys, and Splines

9.1 A fillet shall be provided at any point of change in the diameter of the hoist shafts and the sheave shafts to reduce stress concentration in the shafts. Fitted keys, splines, bolts, or machine screws shall be used in all connections subject to torque.

10 Manual Cranks

10.1 A means for manually cranking shall be provided on a manually powered hoist, and may be provided on a power-operated hoist. The means of manual cranking shall be arranged so that it can be operated by one person. See [46.2.1](#).

10.2 Access to the manual crank on a power-operated hoist shall include either:

- a) A means to make the prime mover inoperative while under emergency manual operation or
- b) A warning marking shall be provided as specified in [74.1.1](#).

11 Protection Against Corrosion

11.1 Components of a hoist shall be protected against atmospheric corrosion, if malfunction due to corrosion of such components may result in a risk of injury to persons or impair the operation of the hoist.

Exception: Aluminum, brass, copper, stainless steel, or other metal inherently resistant to corrosion may be used without additional protection.

11.2 Corrosion protection shall be by metallic or nonmetallic coatings, such as galvanizing, sherardizing, plating, or painting.

Exception No. 1: A component in contact with wire rope is not required to be provided with corrosion protection.

Exception No. 2: A component not directly exposed to the environment, and a drive train component, such as a bearing, a gear, pawls, and a shaft, is considered to be provided with corrosion protection by factory-applied lubricants.

11.3 Metal shall not be used in combinations that can cause galvanic action that could reduce the strength of the components.

12 Lubrication

12.1 Each separate enclosure of a hoist shall be provided with a separate means to maintain lubrication of all moving parts requiring lubrication at all times. Self-sealed, self-lubricating, and dry bearings may be employed.

13 Gears

13.1 Gear material shall be one of the following:

- a) Cast or forged alloy steel,
- b) Cast or forged ductile or malleable iron, or
- c) Cast, forged or wrought bronze.

Cast grey iron shall not be used for load-carrying gears.

MANUALLY POWERED HOISTS

14 General

14.1 In addition to the requirements specified in Sections [1](#) – [13](#), a manually powered hoist shall comply with the requirements in this section and Sections [39](#) – [49](#), [73](#), and [74](#), as applicable.

14.2 A winding-drum hoist shall be equipped with a driving pawl and a locking pawl that will automatically engage when the driving pawl is released during operation of the hoist.

14.3 A gripping type hoist shall be constructed so that during use the hoist is engaged on the suspension rope at all times, including travel in both directions.

14.4 A manually-operated hoist shall be provided with a means to prevent rapid handle movement, fast unspooling, or uncontrolled descent.

14.5 A positive cranking force shall be required to raise or lower a manually-operated hoist. See [46.2.1](#).

14.6 A secondary brake supplied with a manually operated hoist shall comply with the requirements in Secondary Brakes, Section [37](#).

ELECTRICALLY POWERED HOISTS

15 General

15.1 In addition to the requirements specified in Sections [1](#) – [13](#), an electrically powered hoist shall comply with the requirements in Sections [16](#) – [32](#), [35](#) – [66](#), and [69](#) – [74](#), as applicable.

15.2 When a battery is used as the primary power supply, a battery charge indicator shall be provided on the hoist.

16 Accessibility of Uninsulated Live Parts, Film-Coated Wire, and Moving Parts

16.1 To reduce the risk of unintentional contact that may involve a risk of electric shock from an uninsulated live part or film-coated wire, or injury to a person from a moving part, an opening in an enclosure shall comply with either (a) or (b).

a) For an opening that has a minor dimension (see [16.5](#)) less than 1 inch (25.4 mm), such a part or wire shall not be contacted by the probe illustrated in [Figure 16.1](#).

b) For an opening that has a minor dimension of 1 inch or more, such a part or wire shall be spaced from the opening as specified in [Table 16.1](#).

Exception No. 1: A motor need not comply with these requirements if it complies with the requirements in [16.2](#).

Exception No. 2: The inrunning wire rope need not comply with these requirements at any point where a static guide is provided. If roller guides or tension rollers are used, a fixed shield or static guard shall be provided to prevent access to the pinch area by the probe shown in [Figure 16.2](#).

Exception No. 3: For a winding drum hoist, the inrunning wire rope at the drum need not be guarded when the drum is located in an area not readily accessible to a user in the normal work position. The pinch area shall be located off and below, or a minimum of 7 feet (2.13 m) above, the normal scaffold work area.

Table 16.1
Minimum distance from an opening to a part that may involve a risk of electric shock or injury to persons

Minor dimension of opening, ^a		Minimum distance from opening to part,	
inches	(mm) ^b	inches	(mm) ^b
3/4	19.1	4-1/2	114
1	25.4	6-1/2	165
1-1/4	31.8	7-1/2	190
1-1/2	38.1	12-1/2	318
1-7/8	47.6	15-1/2	394
2-1/8	54.0	17-1/2	444

^a See [16.5](#).

^b Between 3/4 and 2-1/8 inches, interpolation is to be used to determine a value between values specified in the table.

16.2 Regarding a part or wire in an integral enclosure of a motor mentioned in Exception No. 1 to [16.1](#):

a) An opening that has a minor dimension (see [16.5](#)) less than 3/4 inch (19.1 mm) complies with these requirements if:

- 1) A moving part cannot be contacted by the probe illustrated in [Figure 16.2](#);
- 2) Film-coated wire cannot be contacted by the probe illustrated in [Figure 16.3](#);
- 3) In a directly accessible motor (see [16.6](#)), an uninsulated live part cannot be contacted by the probe illustrated in [Figure 16.4](#); and
- 4) In an indirectly accessible motor (see [16.6](#)), an uninsulated live part cannot be contacted by the probe illustrated in [Figure 16.2](#).

b) An opening that has a minor dimension of 3/4 inch or more may be used if a part or wire is spaced from the opening as specified in [Table 16.1](#).

Figure 16.2

Probe for moving parts and uninsulated live parts

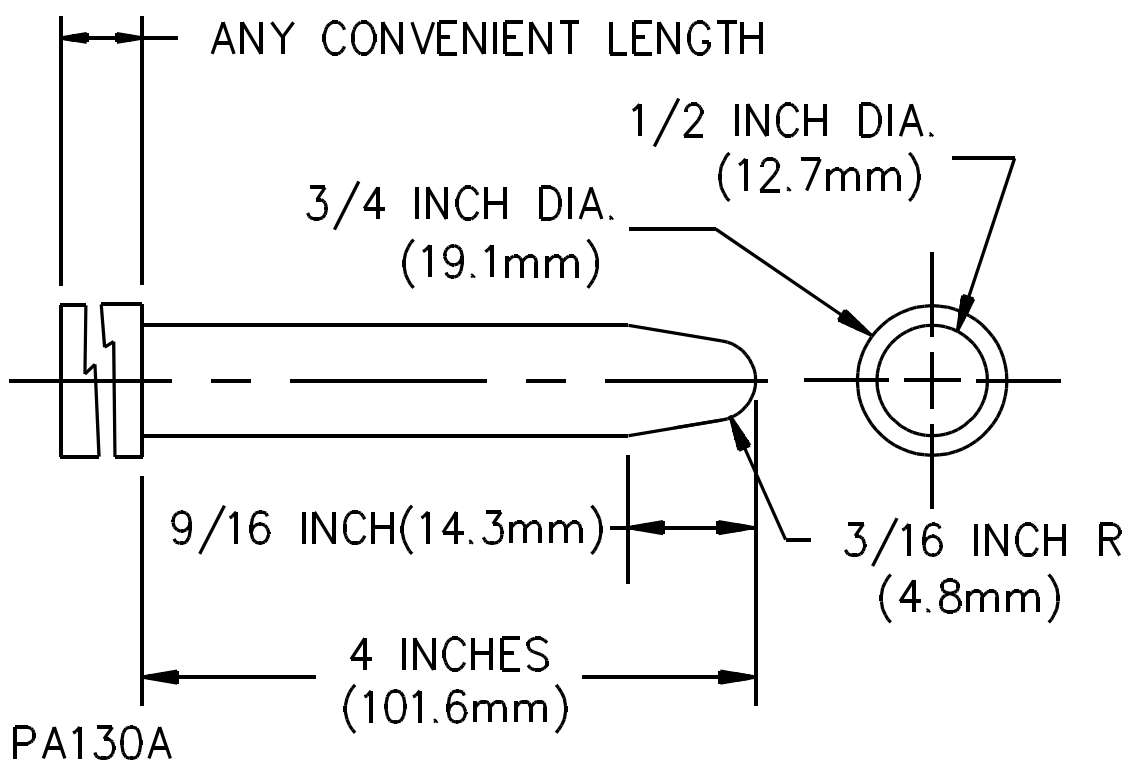


Figure 16.3
Probe for film-coated wire

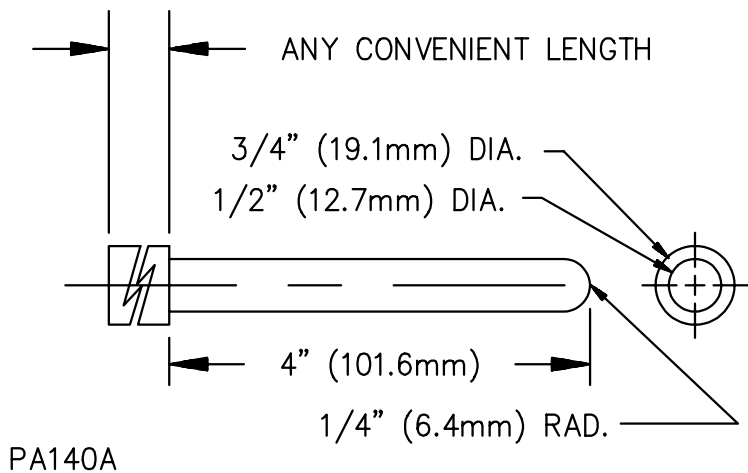
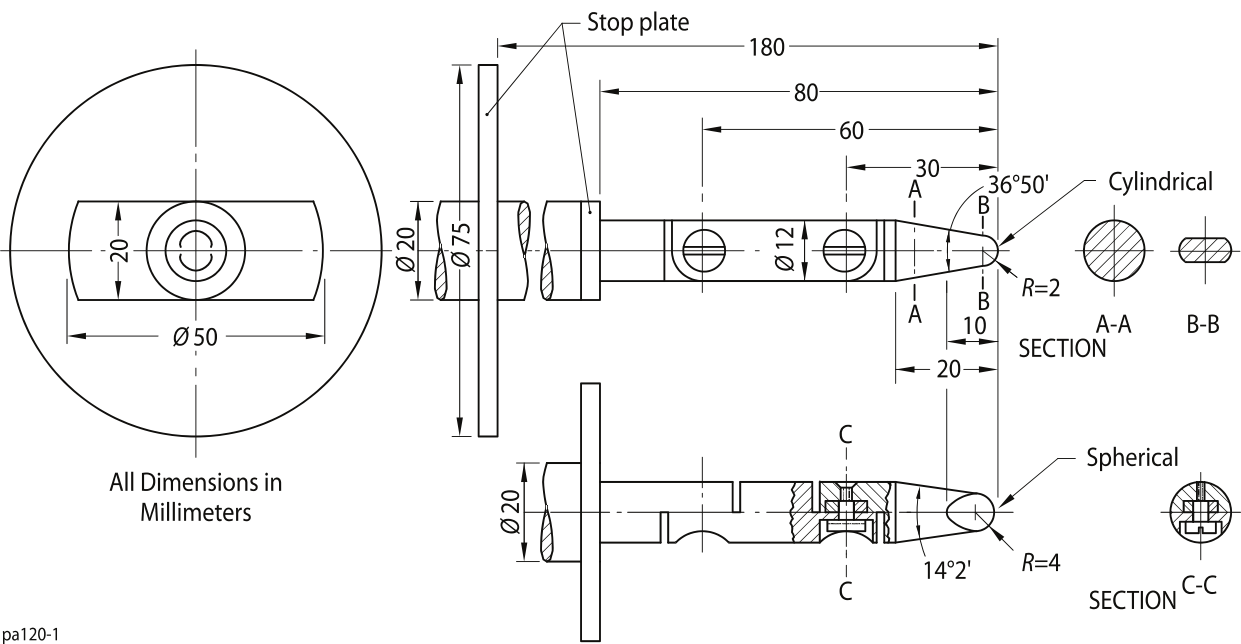


Figure 16.4
IEC articulate probe



16.3 The probes mentioned in [16.1](#) and [16.2](#) and illustrated in [Figure 16.1](#) – [Figure 16.4](#) shall be applied to any depth that the opening will permit; and shall be rotated or angled before, during, and after insertion through the opening to any position that is necessary to examine the enclosure. The probes illustrated in [Figure 16.1](#) and [Figure 16.4](#) shall be applied in any possible configuration, and if necessary, the configuration shall be changed after insertion through the opening.

16.4 The probes mentioned in [16.3](#) and [16.5](#) shall be used as measuring instruments to evaluate the accessibility provided by an opening, and not as instruments to evaluate the strength of a material; they shall be applied with the minimum force necessary to determine accessibility.

16.5 With reference to the requirements in [16.1](#) and [16.2](#), the minor dimension of an opening is the diameter of the largest cylindrical probe having a hemispherical tip that can be inserted through the opening.

16.6 With reference to the requirements in [16.2](#), an indirectly accessible motor is a motor that is:

- a) Accessible only by opening or removing a part of the outer enclosure, such as a guard or panel, that can be opened or removed without using a tool or
- b) Located at such a height or is otherwise guarded or enclosed so that it is unlikely to be contacted.

A directly accessible motor is a motor that can be contacted without opening or removing any part or that is located so as to be accessible to contact.

16.7 During the examination of a hoist to determine compliance with the requirements in [16.1](#) or [16.2](#), a part of the enclosure that may be opened or removed by the user without using a tool (for example, to attach an accessory or to make an operating adjustment) is to be opened or removed.

16.8 With reference to the requirements in [16.1](#) and [16.2](#), insulated brush caps are not required to be additionally enclosed.

17 Protection of Service Personnel

17.1 An uninsulated live part of a hoist involving a risk of electric shock shall be located or enclosed so that protection from unintentional contact will be provided while lamps or fuses are changed, or during other intended operations.

17.2 Live parts shall be arranged and enclosure covers located without presenting a risk of electric shock to persons while removing and replacing a cover during servicing indicated in the operating instructions.

17.3 An electrical component that may require examination, adjustment, servicing, or maintenance while energized shall be located and mounted with respect to other components and to grounded metal parts so that it is accessible without subjecting the serviceperson to a risk of electric shock. Access to a component for servicing shall not be impeded in the direction of access by another component or wiring.

17.4 Protection against risk of electric shock may be obtained by:

- a) Placement of live parts so they are recessed at least 1/8 inch (3.2 mm) from the plane of the front of the fixed portion of the enclosure;
- b) Placement of devices mounted at the face of a wiring compartment so that they are at least 1/8 inch from the front edge of the wiring compartment; or
- c) Incorporation of projections or guards to effect a construction equivalent to the 1/8-inch recess.

18 Electrical Component Enclosures

18.1 General

18.1.1 An electrical enclosure or enclosure part shall have the necessary strength and rigidity to resist, under conditions of anticipated service, total or partial collapse which may result in:

- a) The reduction of spacings, or the loosening or displacement of parts; and
- b) Other defects that alone or in combination can result in a risk of fire or electric shock.

18.1.2 The construction of enclosures for individual electrical components, outer enclosures, and combinations of the two is to be considered in determining compliance with the requirement in [18.1.1](#).

18.1.3 If necessary, an enclosure shall be reinforced or formed to reduce the risk of damage during handling in shipment, installation, and use.

18.1.4 Access to the interior of electrical enclosures shall require the use of tools.

18.1.5 Electrical enclosures shall comply with the Rain Test, Section [59](#).

18.2 Nonmetallic enclosures

18.2.1 Among the factors that shall be taken into consideration when evaluating the acceptability of a nonmetallic enclosure are:

- a) Mechanical strength,
- b) Resistance to impact,
- c) Moisture-absorptive properties,
- d) Combustibility, and
- e) Resistance to distortion at temperatures to which the material may be subjected.

Under conditions of normal or abnormal use, the material shall not display a loss of these properties beyond the minimum level of safety as a result of aging. A nonmetallic enclosure is also to be evaluated on the basis of the effect of exposure to water and ultraviolet light.

18.2.2 The mechanical strength of a nonmetallic enclosure or enclosure part shall be at least equivalent to that of a sheet-metal enclosure of the minimum thickness specified in [Table 18.1](#).

Table 18.1
Thickness of sheet metal for enclosures – carbon steel or stainless steel

Without supporting frame ^a				With supporting frame or equivalent reinforcing ^a				Minimum thickness			
Maximum width, ^b		Maximum length, ^c		Maximum width, ^b		Maximum length,		Uncoated,		Metal coated,	
inches	(cm)	inches	(cm)	inches	(cm)	inches	(cm)	inch	(mm)	inch	(mm)
4.0	10.2	Not limited		6.25	15.9	Not limited		0.020 ^d	0.51	0.023 ^d	0.58
4.75	12.1		5.75	14.6	6.75		17.1				
6.0	15.2	Not limited		9.5	24.1	Not limited		0.026 ^d	0.66	0.029 ^d	0.74
7.0	17.8		8.75	22.2	10.0		25.4				
8.0	20.3	Not limited		12.0	30.5	Not limited		0.032	0.81	0.034	0.86
9.0	22.9		11.5	29.2	13.0		33.0				
12.5	31.8	Not limited		19.5	49.5	Not limited		0.042	1.07	0.045	1.14
14.0	35.6		18.0	45.7	21.0		53.3				
18.0	45.7	Not limited		27.0	68.6	Not limited		0.053	1.35	0.056	1.42
20.0	50.8		25.0	63.5	29.0		73.7				
22.0	55.9	Not limited		33.0	83.8	Not limited		0.060	1.52	0.063	1.60
25.0	63.5		31.0	78.7	35.0		88.9				
25.0	63.5	Not limited		39.0	99.1	Not limited		0.067	1.07	0.070	1.78
29.0	73.7		36.0	91.4	41.0		104.1				
33.0	83.8	Not limited		51.0	129.5	Not limited		0.080	2.03	0.084	2.13
38.0	96.5		47.0	119.4	54.0		137.2				
42.0	106.7	Not limited		64.0	162.6	Not limited		0.093	2.36	0.097	2.46
47.0	119.4		59.0	149.9	68.0		172.7				
52.0	132.1	Not limited		80.0	203.2	Not limited		0.108	2.74	0.111	2.82
60.0	152.4		74.0	188.0	84.0		213.4				
63.0	160.0	Not limited		97.0	246.4	Not limited		0.123	3.12	0.126	3.20
73.0	185.4		90.0	228.6	103.0		261.6				

^a See 18.3.1.4.

^b The width is the smaller dimension of a rectangular piece of sheet metal that is part of an enclosure. Adjacent surfaces of an enclosure may have supports in common and be made of a single sheet.

^c Not limited applies only if the edge of the surface is flanged at least 1/2 inch (12.7 mm) or fastened to adjacent surfaces not normally removed in use.

^d Sheet steel for an enclosure intended for outdoor use – raintight or rainproof – shall not be less than 0.034 inch (0.86 mm) thick if zinc coated and not less than 0.032 inch (0.81 mm) thick if uncoated.

18.2.3 If the dimensional stability of a nonmetallic material is intended to maintain the continuity of the grounding system, an investigation shall be conducted to determine the effect of aging on the material. The result shall show that aging has a minimal effect on the material and poses no risk of fire, electric shock, or injury to persons.

18.3 Metallic enclosures

18.3.1 General

18.3.1.1 These requirements do not cover the effects of corrosion that might be caused by exposure to the earth or other corrosive agents.