UL 5B

STANDARD FOR SAFETY

Strut-Type Channel Raceways and Fittings

UL Standard for Safety for Strut-Type Channel Raceways and Fittings, UL 5B

Second Edition, Dated April 14, 2004

Summary of Topics

This revision of ANSI/UL 5B is being issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.

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 requirements are substantially in accordance with Proposal(s) on this subject dated December 21, 2018.

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UL 5B

Standard for Strut-Type Channel Raceways and Fittings

Prior to the first edition, the requirements for the products covered by this standard were included in the Standard for Surface Metal Raceways and Fittings, UL 5.

First Edition – March, 1997

Second Edition

April 14, 2004

This ANSI/UL Standard for Safety consists of the Second Edition including revisions through February 26, 2019.

The most recent designation of ANSI/UL 5B as a Reaffirmed American National Standard (ANS) occurred on February 26, 2019. 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 strut-type channel raceways and fittings for use only in dry locations and in accordance with the National Electrical Code, NFPA 70.

1.2 Strut-type channel raceways of the following thicknesses are intended to enclose circuits operating at potentials not exceeding 600 volts between conductors:

a) Strut-type channel raceways that are entirely of metal having a channel (base) at least 0.071 inch (1.81 mm) thick and a metal closure strip (cover) at least 0.040 inch (1.02 mm) thick.

b) Strut-type channel raceways consisting of a nonmetallic closure strip (cover) on a metal channel (base) of the thickness indicated in 1.2(a).

1.3 These requirements do not apply to cable trays, wireways, or surface metal or nonmetallic raceways.

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.

2.3 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.

2.4 Installation

2.4.1 The installation of a strut-type channel raceway or fitting, shall be practical and feasible under the conditions likely to be met in practice. The strut-type channel raceway, fittings and any wiring devices or accessories are to be installed as intended and examined with regard to the feasibility of installation, as well as for compliance with the construction, performance, and marking requirements in this standard. Attention is to be given to items that require particular care on the part of the installer.

2.5 Nonmetallic parts

2.5.1 A nonmetallic closure strip (cover) or other non-metallic part shall comply with the applicable requirements in the Standard for Nonmetallic Surface Raceways and Fittings, UL 5A.

2.6 Boxes

2.6.1 Boxes shall comply with the Standard for Metallic Outlet Boxes, UL 514A.

3 Glossary

3.1 For the purposes of this standard, the following definitions apply:

3.2 ACCESSORY – A part that may be added to a strut-type channel raceway system for a special purpose (for example, guards, hangers, retainers).

3.3 BOX, FIXTURE – A box that has been evaluated and determined to be capable of being used as the support of a lighting fixture, lampholder, or other equipment intended for similar installation.

3.4 FITTING – A part used to connect, change direction, or terminate a strut-type channel raceway (for example, a transition adapter, an end cap, a corner, a tee, a joiner, or a box).

3.5 NONMETALLIC – A polymeric part.

3.6 RACEWAY, STRUT-TYPE CHANNEL – A continuous metallic channel for surface or suspension mounting having inturned lips and a metal or nonmetallic closure strip.

3.7 RACEWAY SYSTEM – A system consisting of a strut-type channel raceway, associated fittings and in some instances includes wiring devices and accessories.

3.8 WIRING DEVICE – A part of an electrical system that is intended to carry, provide a means of connection to or control of electrical energy within a raceway system (for example, switches or receptacles).

CONSTRUCTION

4 General

4.1 A strut-type channel raceway system shall be constructed to facilitate compliance with the requirements for the installation of insulated wires and cables as given in the National Electrical Code, ANSI/NFPA 70.

4.2 A component of a strut-type channel raceway system shall comply with the requirements for the construction, performance, and use of that component.

4.3 A strut-type channel raceway shall consist of one or more pieces formed and constructed to make the raceway readily distinguishable from electrical conduit, tubing, and other raceway systems.

4.4 A strut-type channel raceway system shall provide a complete enclosure that protects the wires installed therein against damage. The complete system, when installed as intended, shall comply with the following:

a) There shall not be any openings that exceed 1/16 inch (1.59 mm) in width following installation of the system.

b) A knockout shall completely cover the opening in which it is located, and the clearance between the knockout and the opening shall not be more than 0.030 inch (0.76 mm).

4.5 The interior surface of the strut-type channel raceway system shall have a smooth finish that is free from projections, sharp edges, burrs, fins, and other faults likely to damage wires when installed as intended.

4.6 The strut-type channel raceway shall have provisions for mounting as follows:

a) Surface mounted – Securement to the mounting surface by means of external retention straps at intervals not exceeding 10 feet (3.05 m) and within 3 feet (0.9 m) of a fitting.

b) Suspension mounted – Suspension from the mounting surface by means of external hangers, threaded rods, or chains, or by means determined to be the equivalent, at intervals not exceeding 10 feet (3.05 m).

4.7 For strut-type channel raceways using conductors larger than No. 6 AWG (13.30 mm^2), the Short Circuit Test, Section 16, shall be performed on conductors in the raceway to determine whether the cover is secure.

4.8 Provision shall be made for securing the closure strip (cover) to the channel (base) of a two-piece strut-type channel raceway at intervals of not more than 4 feet (1.2 m). A closure strip (cover) that is held in place by continuous grooves, flanges, or similar construction, shall securely fix the closure strip in place. (See 4.9.)

4.9 The closure strip (cover) of a strut-type channel raceway or fitting shall be constructed so that the use of a tool (such as the prying action of a screwdriver) or two simultaneous deliberate actions are necessary for their removal for gaining access to internal areas of the raceway after installation.

5 Fittings

5.1 A fitting provided with means for the support of a fixture shall have strength and rigidity for the purpose as evaluated by means of the tests described in the Fixture Support Test, Section 10. A nipple intended only for the connection of a lampholder or the like is not to be considered means for the support of a fixture.

5.2 A fitting shall be secured to the raceway channel (base) by a positive securement means such as screws, rivets, or clamps.

Exception: A fitting may be secured by other than a positive securement means if it complies with the Fault Current Test, Section 15.

6 Wiring Devices

6.1 A receptacle shall be mounted by a positive means such as at least two screws or rivets.

Exception: When a snap-fit or other non-positive securement means is used it shall comply with the Receptacle Secureness Test, Section 11.

6.2 A receptacle shall comply with all of the applicable requirements in the Standard for Attachment Plugs and Receptacles, UL 498. A flush switch shall comply with all of the applicable requirements in the Standard for General-Use Snap Switches, UL 20.

7 Grounding and Bonding

7.1 Electrical continuity shall be provided between all metal parts of the strut-type channel raceway system when the parts are installed in the intended manner. See the Electrical Resistance Test, Section 14.

7.2 Each connection between adjacent raceway sections and between raceway sections and fittings of a strut-type channel raceway system shall not rely upon snap or friction fit alone for electrical continuity. A means of positive securement shall be provided.

Exception: It is not prohibited that a metal closure strip (cover) of a strut-type channel raceway or fitting rely upon a snap fit to achieve electrical continuity to the metal base. A receptacle mounted on a metal cover shall not rely upon the cover's snap fit for grounding continuity.

7.3 A strut-type channel raceway system shall be provided with means for grounding. This shall be provided at all points or with fittings intended for connection to a metallic wiring system.

7.4 A strut-type channel raceway system intended for connection to a nonmetallic wiring system shall have a tapped hole adjacent to each wire entry point intended for use with a No. 10-32 or larger grounding screw. At least two full threads shall be provided in metal into which screws are to be threaded.

Exception No. 1: A strut-type channel raceway base or fitting need not have a tapped hole if it is provided with a fastening means such as a wire attached by a connector, clip, or other means that has been evaluated and determined to be suitable. When a self-threading or factory-assembled screw is provided instead of a tapped hole, it shall be identified for the purpose of securing the grounding conductor. A fastening means need not be provided when fastening methods are referenced in the instructions.

Exception No. 2: A strut-type channel raceway base or fitting need not have a tapped hole if the installation instructions indicate that the strut-type channel raceway or fitting is to be field tapped, grounded and bonded. See17.3.

7.5 A grounding screw provided in the strut-type channel raceway base or fitting shall:

a) Be No. 10 or larger;

b) Have a green-colored head that is slotted or hexagonal, or both; and

c) Be plated steel, stainless steel, copper, or copper alloy.

A sheet metal screw shall not be used as a grounding screw.

7.6 Only a plated steel or stainless steel grounding screw shall be provided in an aluminum strut-type channel raceway or fitting. A grounding screw shall engage at least two full threads and shall be used in conjunction with upturned lugs, a cupped washer, or other method that is capable of retaining a No. 10 AWG (5.3 mm^2) conductor under the head of the screw.

7.7 With regard to the requirements in 7.5, a grounding wire provided in lieu of a grounding screw shall be sized in accordance with the maximum size of wire for which the strut-type channel raceway is intended to be used, but shall be a minimum of either solid copper not smaller than No. 14 AWG (2.1 mm^2) or solid aluminum not smaller than No. 12 AWG (3.3 mm^2), and shall be 5 – 6 inches (127 – 152 mm) long.

7.8 One end of a grounding wire shall be secured to the raceway or fitting by welding; by means of a copper, copper alloy, or stainless-steel rivet if the wire is of copper; or by means of an aluminum or stainless-steel rivet if the wire is of aluminum. If insulated, the insulation shall be rated for 600 volts and the color of the surface of the insulation shall be green, with or without one or more yellow stripes.

8 Specific Materials and Dimensional Limits

8.1 The channel (base) of a raceway or fitting shall be of metal at least 0.071 inch (1.8 mm) thick. The closure strip shall be of metal at least 0.040 inch (1.02 mm) thick or shall be of nonmetallic material.

Exception: The thickness of an outlet or fixture box shall comply with the Standard for Metallic Outlet Boxes, UL 514A.

8.2 Inside and outside surfaces of each length of an iron or steel channel, closure strip, or fitting shall be cleaned of all scale and rust, and shall be in a condition that enables the protective coating to adhere firmly and have a smooth surface.

8.3 The thickness of the finished product is to be measured with a round-nose machinist's micrometer calibrated to read directly to at least 0.001 inch or 0.01 mm. Measurements are to be made at five different locations on each specimen examined.

9 Corrosion Protection

9.1 General

9.1.1 Strut-type channel raceway and fittings, unless of material inherently resistant to ordinary atmospheric corrosion, shall be protected on all inside and outside surfaces, but not necessarily on cut edges, by zinc as indicated in 9.2.1 and 9.2.2; or by nonmetallic material consisting of a system of organic protective coatings that the results of an investigation demonstrate as providing protection at least equivalent to that afforded by a zinc coating (see 9.3.1). The investigation shall include tests in which the protective value of a nonmetallic coating is compared with that of the standard G60 zinc coating on mill-galvanized steel sheets or coils as mentioned in the Exception to 9.2.2 when exposed to at least the following agents:

a) Salt spray;

b) Mixtures of moist air, carbon dioxide (CO_2), and sulphur dioxide (SO_2);

c) Mixtures of moist air and hydrogen sulphide (H_2S); and

d) Carbon-arc or Xenon-arc radiation and water spray.

9.2 Zinc coating

9.2.1 A zinc coating as mentioned in 9.1.1 shall be in a form that:

a) Covers completely,

b) Adheres firmly at all points,

c) Is smooth and free from blisters and other defects that can lessen the protective value,

d) Is in metal-to-metal contact with the ferrous metal, and

e) Is evenly distributed on each surface of the finished strut-type channel raceway or fitting part.

9.2.2 On each surface, the average test-point thickness of the zinc coating shall be at least 0.00041 inch (10.0 micrometers) and the minimum thickness at any test point of the zinc coating shall be at least 0.00034 inch (8.6 micrometers). The method of determining the thickness of the zinc coating shall be by any method. However, if the results of any measurement do not meet the specified minimum thickness, the thickness of the coating shall be established in accordance with the Thickness of Zinc Coating Test, Section 13.

Exception: Zinc coating on the broad faces of a part that is formed from hot-dip-mill-galvanized steel sheet or coil does not require investigation when both of the following apply for the unformed sheet or coil:

a) The sheet or coil is to come from the steel mill with either of the standard surface markings "G60" or "A60" or with a proprietary coating identification (large coils that are not surface marked shall have "G60" or "A60" or the proprietary coating identification marked on the mill certificate) indicating that the zinc coating either:

1) Is designated G60 or A60 in conformance with Table I of the American Society for Testing and Materials Standard Specification for the Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvanealed) by the Hot-Dip Process, ASTM A653/A653M-94, or

2) Is equivalent to a standard G60 or A60 coating.

b) Not less than 40 percent of the zinc is to be on any one side of the sheet or coil based on the minimum single-spot-test check-limit total for both sides of the sheet or coil of 0.50 oz/ft or 152 g/m specified in ASTM A653/A653M. Any method of determining the weight of zinc coating per unit area (the sum of the weights of coating on both sides of the sheet or coil) shall be used. However, when the results of any measurement do not meet the specified minimum requirement, the weight of coating shall be established in accordance with the standard method or standard alternative method for galvanized sheets (coils included) described in the American Society for Testing and Materials Standard Test Method for Weight [Mass] of Coating on Iron or Steel Articles with Zinc or Zinc-Alloy Coatings, ASTM A90/A90M.

9.2.3 An annealed zinc coating (G60 or its proprietary equivalent included, A60 or its proprietary equivalent excluded) on steel sheet or coil that is bent, extruded, rolled, or otherwise formed after annealing is to be considered damaged if flaking or cracking of the zinc coating is visible under 25-power magnification at the outside radius of the formed area and therefore does not comply with the requirements unless it is additionally nonmetallic-coated in the formed area. Steel sheet or coil that has an annealed zinc coating and is sheared, cut, or punched to result in a hole or a straight or other edge without also being formed at the edge or hole is not required to have protection added at the edge of the hole but, if the metal is formed at the edge or hole and the examination under magnification reveals damage to the zinc, added protection is to cover the damaged area.

9.3 Nonmetallic coating

9.3.1 A nonmetallic protective coating, applied before or after forming of the metal, shall:

a) Cover completely,

b) Adhere firmly at all points,

c) Be smooth and free from blisters and other defects that can lessen the protective value, and

d) Be evenly distributed on each coated surface of the finished strut-type channel raceway or fitting part.

PERFORMANCE

10 Fixture Support Test

10.1 A fitting or box identified for fixture support shall withstand, without pulling apart, a direct pull force equal to four times the manufacturer's recommended maximum load to be supported by the fitting or box, when tested in accordance with 10.2. The manufacturer's recommended maximum load to be supported by the fitting or box shall not exceed 50 lbf (223 N).

10.2 The fitting or box is to be mounted as intended for service, and a direct pull is to be applied to a rigid steel bracket attached to the fixture-support studs on the fitting or box. A weight that equals 4 times the maximum load recommended by the manufacturer is to be suspended from the bracket at a point midway between the fixture-support studs for a period of 5 minutes.

11 Receptacle Secureness Test

11.1 A receptacle that is secured in place by a snap-fit or any means other than screws, rivets, or equivalent positive securement means shall be tested as described in 11.2 – 11.3. The receptacle shall remain fully secured.

11.2 The attachment plug of a power-supply cord is to be inserted into the receptacle and made mechanically secure. A weight exerting 50 lbf (222 N) is to be attached to the opposite end of the power-supply cord. The receptacle is to be attached in the intended manner to a length of strut-type channel raceway. With the raceway in the horizontal position (receptacle face directed towards the ground) and the weight initially resting on a horizontal surface, the raceway is to be gradually raised vertically until the weight is supported by the receptacle. The weight is to be supported for 60 seconds.

11.3 The test in 11.2 is then to be repeated with the strut-type channel raceway tilted so that a line perpendicular to the face of the receptacle makes an angle of 30 degrees with the vertical cord. The direction of the tilt relative to the receptacle is to be the direction most likely to cause separation.

12 Security of Knockout Test

12.1 A 10 lbf (44.5 N) force is to be applied to a knockout for 60 seconds by means of a 1/4 inch (6.4 mm) diameter mandrel with a flat end. The force is to be applied with the mandrel's flat end in a direction perpendicular to the plane of the knockout and at the point most likely to cause movement. The knockout shall remain in place and the clearance between the knockout and the opening shall not be more than 0.030 inch (0.76 mm) when measured 60 minutes after the force has been removed.

12.2 A knockout shall be capable of being removed without leaving sharp edges and without damage to the part from which the knockout was removed.

12.3 For multiple-stage knockouts there shall not be any displacement of a larger stage when any smaller stage is removed as described in 12.2.

13 Thickness of Zinc Coating Test

13.1 Specimens prepared from finished zinc-coated channel, closure strips or fittings not covered by the Exception to 9.2.2 shall exhibit thicknesses of zinc on any surface, excluding edges, that are not less than indicated in 9.2.2 when tested by any applicable method. However, in case of question, the thickness of coating shall be established in accordance with the test described in 13.2 – 13.10. The method in 13.2 – 13.10 is essentially the same as the procedure described in the Standard Guide for Measurement of Electrodeposited Metallic Coating Thicknesses by the Dropping Test, ASTM B 555.

13.2 The solution to be used for this test is to be made using distilled water and is to contain 200 grams mass per liter of the American Chemical Society (ACS) reagent grade of chromic acid (CrO_3) and 50 grams mass per liter of the ACS reagent grade of concentrated sulfuric acid (H_2SO_4). The latter is equivalent to 27 milliliters per liter of the ACS reagent grade of concentrated sulfuric acid having a specific gravity of 1.84 and containing 96 percent of H_2SO_4.

13.3 The test solution is to be contained in a glass vessel such as a separatory funnel with the outlet equipped with a stopcock and a capillary tube having an inside bore of approximately 0.025 inch (0.64 mm) and a length of 5.5 inches (140 mm). The lower end of the capillary tube is to be tapered to form a tip from which the drops are about 0.025 ml each. To preserve an effectively constant level, a small glass tube is to be inserted in the top of the funnel through a rubber stopper and its position is to be adjusted so that, while the stopcock is open, the rate of drip is 100 ±5 drops per minute. When needed, an additional stopcock shall be used in place of the glass tube to control the rate of drip.

13.4 The specimens and the test solution are to be at room temperature. That temperature is to be noted and recorded. The test is to be conducted at an ambient temperature of 70 – 90°F (21.1 – 32.2°C).

13.5 Each specimen is to be cleaned before testing. Any grease, lacquer, paint, and other nonmetallic materials on the zinc are to be removed completely by means of organic solvents. The specimens are then to be rinsed in water and dried. The specimens are not to be touched by the hands or anything else that can contaminate or damage the surfaces.

13.6 The specimen to be tested is to be supported 0.7 – 1.0 inch (17.8 – 25.4 mm) below the orifice, so that the drops of solution strike the point to be tested and run off quickly. The surface to be tested is to be inclined about 45 degrees from the horizontal.

13.7 The stopcock is to be opened and the time in seconds is to be measured until the solution dissolves the zinc coating, exposing the underlying metal. The end point is the first appearance of the underlying metal, which is recognizable by the change in color at that point.

13.8 Each strut-type channel raceway or fitting part is to be subjected to test at three or more points, excluding all edges, on the inside surface and at an equal number of points on the outside surface, at places at which the zinc is the thinnest. In the case of a part fabricated of steel sheet or coil that is coated with zinc before forming, the external corners that are subjected to the greatest deformation are likely to have the thinnest zinc coating on the outside surfaces of the corners. In the case of a cast part or a steel sheet or coil part to which the zinc is applied by any method after the part is cast or formed, it may be necessary to make a preliminary test in many or all areas of an extra sample to determine where the zinc is thinnest.

13.9 The thickness of zinc is to be calculated for each test point by means of whichever of the following formulas is applicable:

$$T_{in} = 10^{-5} \times S \times F$$

$$T_{\mu m} = 0.254 \times S \times F$$

in which:

T_{in} is the thickness of the zinc coating at the test point in inches,

S is the time in seconds for the solution to expose the metal underlying the zinc at the test point,

F is the factor from Table 13.1 for the temperature at which the test was made, and

$T_{\mu m}$ is the thickness of the zinc coating at the test point in micrometers.

13.10 The zinc coating does not comply with the requirements when:

a) For any single test point the calculation results in a thickness of zinc less than 0.00034 inch (8.6 micrometers),

b) The average of the thicknesses calculated for all of the test points on the inside surface results in a thickness less than 0.00041 inch (10 micrometers), or

c) The average of the thicknesses calculated for all of the test points on the outside surface results in a thickness less than 0.00041 inch (10 micrometers).

Table 13.1
Temperature factor F for use in zinc thickness calculations

Temperature, °F	Temperature, (°C)	Temperature factor, F
70	21.1	0.980
71	21.7	0.990
72	22.2	1.000
73	22.8	1.010
74	23.3	1.015
75	23.9	1.025
76	24.4	1.033
77	25.0	1.042
78	25.6	1.050
79	26.1	1.060
80	26.7	1.070
81	27.2	1.080
82	27.8	1.085
83	28.3	1.095
84	28.9	1.100
85	29.4	1.110
86	30.0	1.120
87	30.6	1.130
88	31.1	1.141
89	31.7	1.150
90	32.2	1.160

14 Electrical Resistance Test

14.1 Measured on individual pieces

14.1.1 The electrical resistance per unit length of a complete (closure strip in place) individual section of strut-type channel raceway and of each complete (closure strip in place) joiner or other fitting shall not be greater than indicated in Table 14.1.

Table 14.1
Maximum resistance of individual sections and fittings

Material	Resistance,	
	Ohms/foot	Ohms/meter
Steel	0.0035	0.0115
Aluminum	0.00060	0.0020

14.2 Measured across joints

14.2.1 The electrical resistance of the connection between adjacent sections of strut-type channel raceway, the connection between the cover and base of a metal raceway or fitting, and the connection between a raceway section and any metal fitting, internal or external to the raceway, shall not exceed 0.005 ohm.

14.2.2 The strut-type channel raceway and fittings are to be installed in the intended manner and a direct current of 30 A is to be passed between adjacent sections of raceway, between the raceway or fitting channel (base) and metal closure strip (cover), and between raceway and fittings. The resulting voltage drop is to be measured between points (file marks) on two adjacent strut-type channel raceway sections 1/16 inch (2 mm) from the connection or between similar points on the connection of a strut-type channel raceway section and an end fitting. In the case of a fitting of the feed-through type, the resulting voltage drop is to be measured between points on the two adjacent strut-type channel raceway sections 1/16 inch (2 mm) from the connection. The resistance in any case is to be calculated by dividing the measured voltage drop by the current passing through the strut-type channel raceway.

15 Fault Current Test

15.1 A fitting that relies upon a means of securement other than an acceptable positive means to provide electrical continuity to an adjacent raceway section shall comply with 15.2 after being subjected to the conditioning and test specified in 15.3 – 15.6. Three 6-inch (150-mm) specimens of the raceway assembly (cover and base) and a fitting or the part of the fitting that forms the joint being evaluated are to be tested. The test specimens are not to be mounted while being tested in accordance with 15.3.

15.2 After application of the test current, the equipment-ground path provided by the metal raceway system shall not open and there shall not be any openings that exceed 1/16-inch (1.59-mm) in width. The electrical resistance across the joint shall not exceed 0.005 ohm when measured in accordance with the Electrical Resistance Test, Section 14.

15.3 Each assembled specimen, in turn, is to be hung freely by one end while a load of 50 lb (22.7 kg) is suspended from the other end such that the load is in the direction most prone to cause separation of the joint. The load is to be applied until movement at the joint ceases. The load shall not be applied for less than 1 minute. The joint shall remain secure after the test and the electrical resistance across the joint shall not exceed 0.005 ohm during the test, when measured in accordance with the Electrical Resistance Test, Section 14.

15.4 The raceway system shall carry the current specified in Table 15.1 for the time specified in that table for the largest size of wire for which the system is intended.

Table 15.1
Short-time test currents

Maximum conductor size, AWG	Maximum conductor size, (mm^2)	Time, seconds	Test current, amperes (ac)
14	2.1	4	300
12	3.3	4	470
10	5.3	4	750
8	8.4	4	1180
6	13.3	6	1530
4	21.2	6	2450
3	26.7	6	3100
2	33.6	6	3900
1	42.4	6	4900
1/0	53.5	9	5050
2/0	67.4	9	6400
3/0	85.0	9	8030
4/0	107.0	9	10,100
250 MCM	127.0	9	12,000

15.5 A solid copper bus bar is to be connected to each end of each test specimen. The end of each of the bus bars not connected to the raceway is to be connected to two 36 inch (914 mm) lengths of No. 3/0 AWG (85.0 mm^2) copper conductors in parallel. The ends of the copper bus bars at which the connection to the raceway is to be made are to be connected together. The free ends of each pair of copper conductors are to be connected together and then each of the two parallel pairs is to be connected to each side of a supply circuit. This supply is to be adjusted to deliver the test current. Without disturbing this adjustment the supply is to be turned off and the bus bars are to be separated.

15.6 The bus bars are then to be attached to the test specimen. The specimen is to be mounted as intended by the manufacturer. After mounting, the supply is to be energized and the test current is to be passed through the specimen.