UL 857

STANDARD FOR SAFETY

Busways

UL Standard for Safety for Busways, UL 857

Thirteenth Edition, Dated March 25, 2009

Summary of Topics

This revision of ANSI/UL 857 dated April 9, 2021 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.

As noted in the Commitment for Amendments statement located on the back side of the title page, UL, CSA, and ANCE are committed to updating this harmonized standard jointly. However, the revision pages dated April 9, 2021 will not be jointly issued by UL, CSA, and ANCE as these revision pages only address UL ANSI approval dates.

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 January 8, 2021.

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CSA Group
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Sixth Edition

Underwriters Laboratories Inc.
UL 857
Thirteenth Edition

Busways

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Commitment for Amendments

This standard is issued jointly by the Association of Standardization and Certification (ANCE), the Canadian Standards Association (operating as "CSA Group"), and Underwriters Laboratories Inc. (UL). Comments or proposals for revisions on any part of the standard may be submitted to ANCE, CSA Group, or UL at anytime. Revisions to this standard will be made only after processing according to the standards development procedures of ANCE, CSA Group, and UL. CSA Group and UL will issue revisions to this standard by means of a new edition or revised or additional pages bearing their date of issue. ANCE will incorporate the same revisions into a new edition of the standard bearing the same date of issue as the CSA Group and UL pages.

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This Standard is subject to review within five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquiries@csagroup. org and include "Proposal for change" in the subject line: Standard designation (number); relevant clause, table, and/or figure number; wording of the proposed change; and rationale for the change.

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This ANSI/UL Standard for Safety consists of the Thirteenth Edition including revisions through April 9, 2021. The most recent designation of ANSI/UL 857 as a Reaffirmed American National Standard (ANS) occurred on April 9, 2021. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface.

The Department of Defense (DoD) has adopted UL 857 on April 20, 1993. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

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Preface

This is the harmonized ANCE, CSA, and UL standard for Busways. It is the third edition of NMX-J-148-ANCE, the sixth edition of CSA C22.2 No. 27, and the thirteenth edition of UL 857. This edition of CSA C22.2 No. 27 supersedes the previous edition published in 2000. This harmonized standard has been jointly revised on December 9, 2011. For this purpose, CSA and UL are issuing revision pages dated December 9, 2011, and ANCE is issuing a new edition dated December 9, 2011.

This harmonized standard was prepared by the Association of Standardization and Certification (ANCE), the Canadian Standards Association (CSA), and Underwriters Laboratories Inc., (UL). The efforts and support of the CANENA Busway Technical Harmonization Committee are gratefully acknowledged.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

The present Mexican Standard was developed by the CT CDI from the Comite de Normalizacion de la Asociacion de Normalizacion y Certificacion, A. C., CONANCE, with the collaboration of the busway manufacturers and users.

This standard was reviewed by the CSA Subcommittee on Busways, under the jurisdiction of the CSA Technical Committee on Industrial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

This standard has been approved by the American National Standards Institute (ANSI) as an American National Standard.

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

Level of harmonization

This standard uses the IEC format but is not based on, nor is it considered equivalent to, an IEC standard.

This standard is published as an equivalent standard for ANCE, CSA, and UL. An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

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Busways

1 Scope

1.1 Scope and object

1.1.1 This Standard applies to service-entrance, feeder, and branch-circuit busways and associated fittings rated at 600 V or less, 6 000 A or less, and intended for use in accordance with the Canadian Electrical Code, Part I (CE Code, Part I), the National Electrical Code (NEC), NFPA 70, and the Mexican Standard for Electrical Installations (Utility), NOM-001-SEDE, (see Annex B, Reference Item No. 1). These requirements do not apply to metal enclosed bus intended for connecting switchgear assemblies for use in prefabricated electric distribution systems.

1.1.2 For the purpose of these requirements, a busway is considered to be a grounded metal enclosure containing factory mounted conductors that are usually copper or aluminum bars, rods, or tubes.

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

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

1.2 Reference publications

1.2.1 Products covered by this standard shall comply with the reference installation codes and standards as appropriate for the country where the product is to be used. When the product is intended for use in more than one country, the product shall comply with the installation codes and standards for all countries where it is intended to be used. See Annex B for a list of reference publications.

1.2.2 For undated references to standards, such reference shall be considered to refer to the latest edition and all revisions to that edition up to the time when this standard was approved. For dated references to standards, such reference shall be considered to refer to the dated edition and all revisions published to that edition up to the time when this standard was approved.

1.2.3 In Canada, general requirements are as indicated in Reference Item No. 21, Annex B and Grounding and Bonding requirements are as indicated in Reference Item No. 22, Annex B.

1.3 Components

1.3.1 Except as indicated in Clause 1.3.2, a component of a product covered by this Standard shall comply with the requirements for that component. See Annex A for a list of Standards covering components generally used in the products covered by this Standard. A component shall comply with the ANCE, or the Canadian Standards Association, or the Underwriters Laboratories Inc. standards, as appropriate, for the country where the product is to be used.

1.3.2 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.

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

1.3.4 Specific components that are incomplete in construction features or restricted in performance capabilities 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 for which they have been investigated.

1.4 Fittings

1.4.1 A trolley (busway fitting) shall comply with the clauses of this Standard listed in Annex D, Table D.1.

1.4.2 A fitting shall comply with the clauses listed in Annex D, Table D.2.

1.4.3 An outdoor fitting shall comply with the clauses listed in Annex D, Table D.2 and Table D.3.

1.5 Short-run busway

1.5.1 Short-run busway need only comply with those requirements specifically stating their application to short-run busway.

1.6 Insulating materials

1.6.1 Insulating material, other than wire insulation, tape, thermoplastic tubing, or continuous bus bar insulation, relied upon for over-surface spacing shall be resistant to arc-tracking under wet contaminated surface conditions and shall be:

a) A ceramic-type material or

b) A material having a Comparative Tracking Index (CTI) no less than 175 as determined in accordance with Reference Item No. 15, Annex B.

1.6.2 Insulating tape used in an outdoor ventilated busway shall be marked "Weather Resistant" under the conditions described in Reference Item No. 14, Annex B.

1.6.3 Requirements stated throughout this Standard for fittings apply to tap boxes, feed boxes, plug-in devices, and similar fittings; but do not apply to busway elbows, tees, and crosses.

2 Definitions

2.1 General

Reserved for future use.

2.2 Constructional units of assemblies

Reserved for future use.

2.3 External design of assemblies

2.3.1 Open-type assembly

Reserved for future use.

2.3.2 Dead-front assembly

Reserved for future use.

2.3.3 Enclosed assembly

Reserved for future use.

2.3.4 Busbar trunking system (busways)

2.3.4.1 Short-run busways

2.3.4.1.1 Short-run busways are unventilated busways intended:

a) Primarily to feed switchboards;

b) To have no intermediate taps (except for transformer stubs); and

c) For a maximum horizontal run of 9.14 m (30 ft) or a maximum vertical run of 3.05 m (10 ft).

2.3.4.1.2 Short-run busways include only straight lengths, elbows, fittings, and transformer taps (not necessarily end of run). A short-run busway is intended for horizontal runs, but one leg of any elbow may be installed in a vertical position.

2.3.4.2 Trolley busway

2.3.4.2.1 A trolley busway has provision for continuous contact with a trolley by means of a slot in the enclosure. Because the slot must accommodate a moveable trolley, the acceptable degree of exposure of uninsulated live parts in a trolley busway is necessarily larger than in a busway of another type.

2.3.4.3 Continuous plug-in busway

2.3.4.3.1 In Canada and Mexico, a continuous plug-in busway is rated at 400 A or less, has no exposed bus bars, and is intended for general use, including installation within the reach of persons. In the United States, a continuous plug-in busway is rated at 225 A or less.

2.3.4.4 Lighting plug-in busway

2.3.4.4.1 A lighting plug-in busway is rated at 50 A or less and is intended to provide:

a) Means for the support of luminaires [fluorescent, incandescent, or high-intensity discharge (HID)] and

b) Means by which the fixtures may be plugged into the power supply.

Note: In Canada the rating of the plug-in lighting busway is limited to values below 50 A by lighting branch circuit overcurrent protection requirements of the CEC, Part I.

2.4 Structural parts of assemblies

Reserved for future use.

2.5 Conditions of installation of assemblies

Reserved for future use.

2.6 Protective measures with regard to electric shock

Reserved for future use.

2.7 Gangways within an assembly

Reserved for future use.

2.8 Electronic functions

Reserved for future use.

2.9 Insulation co-ordination

Reserved for future use.

2.10 Short-circuit currents

Reserved for future use.

3 Classification of assemblies

Reserved for future use.

4 Electrical characteristics of assemblies

4.1 General

A busway or fitting shall be rated in amperes, volts, and in short-circuit current. A short-run busway shall be rated in accordance with Clause 7.5.2.2.1.

The ampere and voltage rating of an elbow, cross, or tee shall be identical with that of the busway with which it is intended for use.

A busway fitting incorporating a current-interrupting device shall be rated in accordance with the requirements for such an interrupting device.

A busway fitting that may be used for housing a circuit breaker of any of several different ratings may carry a voltage rating and a current rating equal to the maximum of such different ratings if the enclosure is marked in accordance with Clause 5.2.10.

4.2 Rated voltages

4.2.1 The voltage rating for a busway or fitting shall be 600 V or less.

4.3 Rated current (of a circuit of an assembly)

4.3.1 A busway may have a single- or a dual-current rating, exclusive of a second rating to indicate a reduced ampacity of a neutral. A single-current rating is a rating that applies to the busway when it is mounted in any position, unless the busway is marked in accordance with Clause 5.2.17.6. If a busway has a certain ampere rating when mounted in any position and, in addition, is rated for a higher ampere

rating when mounted in one particular position, both the lower and higher ampere values may be included as a dual-current rating, provided the busway is marked in accordance with Clause 5.2.10.

4.3.2 If a busway is for use on direct current only, the rating shall include such information.

4.3.3 If the ampacity of a neutral bus bar is less than that of the other bus bars, the rating shall include such information.

4.4 Rated short-time withstand current (I_{cw}) (of a circuit of an assembly)

Reserved for future use.

4.5 Rated peak withstand current (I_{pk}) (of a circuit of an assembly)

Reserved for future use.

4.6 Rated conditional short-circuit current (I_{cc}) (of a circuit of an assembly)

4.6.1 The short-circuit current rating of a busway or fitting shall be one or more of the values shown in Table 1.

Table 1
Short-circuit current ratings

RMS symmetrical or DC amperes		
5 000	25 000	75 000
7 500	30 000	85 000
10 000	35 000	100 000
14 000	42 000	125 000
18 000	50 000	150 000
22 000	65 000	200 000

4.7 Rated fused short-circuit current (I_{cf}) (of a circuit of an assembly)

Reserved for future use.

4.8 Rated diversity factor

Reserved for future use.

4.9 Rated frequency

Reserved for future use.

5 Information to be given regarding the assembly

5.1 General

A required marking shall be molded, die-stamped, paint-stenciled, stamped, or etched metal that is permanently secured or indelibly applied lettering on a label secured by adhesive or glue. Ordinary usage, including likely exposure to weather and other ambient conditions, handling, storage, and the like, of the

equipment shall be considered in the determination of the acceptability of the application. The need for exposure tests on forms of marking other than labels shall be individually investigated. After being subjected to the tests specified in Table 2, the sample shall rest, dry, or cool as applicable for the period of time specified for the test involved. Subsequently, the labels shall show no separation from the test surface except at the corners or edges. The total area of separation of the corners or edges shall not exceed 10 percent of the label area. The marking shall be legible.

For the purpose of the aging test conducted as part of the exposure conditions required in Reference Item No. 18, Annex B, rated surface temperatures shall be as specified in Table 3.

Other temperatures than those specified in Table 3 may be used for the purposes of the aging test if it can be demonstrated that the temperature will not be exceeded in service.

Table 2
Label test criteria

Enclosure type	Inside the enclosure	Outside the enclosure
Indoor	A	A
Outdoor	B	C

NOTES

1 Applies to nonmetallic labels and labels secured by adhesive.

2 The requirement and qualification tests from Reference Item 18, Annex B, are as follows:

a) Exposure conditions for labels intended only for indoor dry locations.

b) Exposure conditions for labels for use indoors where exposed to high humidity or occasional exposure to water.

c) Exposure conditions for labels intended for both indoor or outdoor use where exposed to high humidity or occasionally exposed to water.

Table 3
Rated surface temperatures

Temperature type	Indoor use, °C	Outdoor use, °C
High	60	80
Low	0	minus 35

A cautionary marking shall be located on a part:

a) That would require tools for removal or

b) That cannot be removed without impairing the operation of the product.

***Advisory Note**: In Canada, there are two official languages, English and French. Annex E provides French translations of the markings specified in this standard. Markings required by this standard will in some cases have to be provided in other languages to conform with the language requirements of the country where the product is to be used.*

5.2 Nameplates

5.2.1 Each length of a short-run busway and each fitting shall be marked with the manufacturer's name or trademark, the electrical ratings (rated voltage and current), and the number of poles, and may also be

marked for outdoor use. The short-circuit current rating markings shall be in accordance with Clauses 5.2.13 and 5.2.15.

5.2.2 Each length of busway and each fitting, elbow, or tee shall be legibly and permanently marked, where readily visible after installation, with:

a) The manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product can be identified;

b) The electrical ratings (rated voltage, current, and short circuit current); and

c) The number of poles (bus bars not at the same potential during normal use).

5.2.3 Each fitting, such as a switch or circuit breaker, shall be legibly and permanently marked, where readily visible after installation, with:

a) The manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product can be identified;

b) The catalog number, identification number, or the equivalent; and

c) The electrical ratings (rated voltage, current, and short-circuit current).

5.2.3.1 Fittings incorporating luminaires and evaluated for use on lighting busways and/or continuous plug-in busways shall additionally be marked to indicate the busway(s) with which the fitting is intended to be used.

5.2.4 The markings specified in Clauses 5.2.2 and 5.2.3 shall be on a nonremovable part and shall be readily visible after the busway system has been installed in the intended manner.

5.2.4.1 For fittings incorporating luminaries and evaluated for use on lighting busways and/or continuous plug-in busways, the markings specified in Clauses 5.2.2, 5.2.3, and 5.2.3.1 shall be visible during the installation of the fitting.

5.2.5 If a manufacturer produces or assembles busways and fittings at more than one factory, each finished length of busway and each finished fitting shall have a distinctive marking, which may be in code, by which it can be identified as the product of a particular factory.

5.2.6 A busway intended for use with a trolley shall be marked: "Trolley busway."

5.2.7 A lighting busway shall be marked with the words: "Lighting busway."

5.2.8 A continuous plug-in busway shall be marked with the words: "Continuous plug-in busway."

5.2.9 If a busway fitting has provision for one or more watthour meters, the current rating of the meter position shall be marked on the fitting. If the meter position is rated for continuous duty, the marking shall be: "____A Continuous (or equivalent)." If the meter position is rated for a maximum rating, the marking shall be: "____A (or equivalent) (____Amp Continuous (or equivalent))," in which case the maximum amperes shall be no more than 125 percent of the continuous-duty amperes.

5.2.10 A busway fitting containing a circuit breaker marked with a maximum rating as described in Electrical characteristics of assemblies, General, Clause 4.1, shall also be marked with instructions for determining the rating of the breaker actually installed therein, unless the breaker rating equals the maximum rating.

5.2.11 A busway having a dual-current rating, other than a dual rating resulting from a reduced neutral capacity as described in Clause 4.3.1, shall be marked, in association with the larger rating, with instructions concerning the position in which the busway must be mounted for such rating.

5.2.12 A busway shall be marked with the ampere rating of the overcurrent protective device to be used on the line side of the busway if the cross-sectional area of the ground bus or enclosure material is sized in accordance with Table 13.

5.2.13 A busway or fitting shall be marked with the following:

a) The phrase: "Short circuit current rating," and the short-circuit current rating in dc or rms symmetrical amperes as noted in Table 1. A busway fitting that has no external load circuit leaving the enclosure, such as a ground detector or the like, need not be marked with a short-circuit rating.

b) The maximum voltage rating for each short circuit current rating.

c) A phrase indicating that the short-circuit rating is limited to the lowest short-circuit rating of any busway or fitting installed (the phrase is not required if all such busways and fittings that are intended for installation have identical short-circuit current ratings).

d) In the case of a busway fitting containing a circuit breaker, a phrase indicating that a replacement shall be of the same manufacturer, type designation, short-circuit rating, and ampere rating, where applicable.

e) In the case of a busway fitting containing fuseholders rated over 10 000 A, a phrase: "Use Class (G, J, L, RK1, RK5, or T) fuses." The marking need not mention the class of fuse if the short-circuit rating of the busway is 10 000 rms symmetrical amperes or less.

f) Instructions for lashing, securing, or bracing of field-installed conductors in the case of a busway or fitting having provision for cable connections unless instructions for lashing, securing, or bracing field installed conductors are not necessary if the short-circuit test represented the worst case of unsupported conductors.

5.2.14 If the short-circuit current rating of a busway is dependent upon the use of a specific overcurrent device ahead of the busway, the busway shall be marked: "When protected by ____ ampere maximum Class ____ fuse or Type ____ circuit breaker rated not more than ____ amperes this busway is rated for use on a circuit capable of delivering not more than ____ RMS symmetrical amperes ____ volts maximum." The second blank space shall be filled with the fuse designation (G, J, L, RK1, RK5, or T). The third blank space shall be filled with the name of the circuit breaker manufacturer and the type designation. The value of amperes shall correspond to the symmetrical values given in Table 1.

5.2.15 If there is more than one short-circuit rating, all such ratings shall appear together. The markings shall be an integral part of the manufacturer's marking that contains the manufacturer's name or trademark and the electrical rating, unless it is an integral part of other appropriate marking of the busway or fitting.

5.2.16 Each length of busway and each fitting intended for outdoor use shall be plainly marked to indicate that fact and, if drain holes are provided, shall be marked: "Install with drain holes down," or with other wording to clearly indicate the mounting position necessary to provide adequate drainage.

5.2.17 Mounting or hanging information

5.2.17.1 The short-run busway marking specified in Clause 5.2.1 shall include the statement: "Total connected length not to exceed 9.14 m (30 ft)." The leg of a short-run elbow intended for installation in a vertical position shall be marked: "This leg may be installed as part of a straight vertical run not more than 3.05 m (10 ft) long." The marking shall include instructions to space mounting supports at intervals of no more than 1.52 m (5 ft).

5.2.17.2 Each length of busway intended for use in a vertical run shall be plainly marked to indicate that fact.

5.2.17.3 The intended mounting position of each length of busway shall be plainly marked on a busway that is not rated for both edgewise and flatwise mounting in a horizontal run.

5.2.17.4 The unsuitability for mounting in one or more of the positions shall be marked because of the inadequacy of enclosure strength, lack of ampacity, or other deficiency when mounted in that position.

5.2.17.5 Each length of either horizontal or vertical busway that is intended to be supported at intervals of more than 1.52 m (5 ft) shall be plainly marked to indicate the maximum support interval with which the busway can be used. If the support interval for vertical mounting exceeds the support interval for horizontal mounting, the marking shall clearly indicate that the higher support interval applies only when the busway is mounted vertically.

5.2.17.6 A busway having a single current rating shall be marked to indicate the intended mounting position, unless the busway has been investigated and determined acceptable for such rating when mounted in any position.

5.2.17.7 If a marking regarding the mounting or support of busway is required, that marking shall appear on or immediately adjacent to the nameplate that bears the marking required in Clause 5.2.17.6.

5.2.18 Service equipment information

5.2.18.1 A busway fitting that is intended for use as service equipment and that complies with Clause 7.1.1.31 shall be marked "Suitable for use as service equipment."

5.2.18.2 The marking shall be an integral part of the manufacturer's marking containing the manufacturer's name or trademark and the electrical rating, unless it is an integral part of another required marking of the fitting.

5.2.18.3 The marking shall be plainly visible after installation without requiring the opening of a door or cover, or the removal of a dead front or trim.

Other markings:

a) Shall not be located within 3.2 mm (1/8 in) of the marking described in Clause 5.2.18.1 and markings within 12.7 mm (1/2 in) of such marking shall be of less height or

b) Shall be in contrasting color or located in a distinctively separated area.

5.2.18.4 The characters in the markings shall be no less than 2.4 mm (3/32 in) high.

5.2.18.5 If a busway fitting is marked "Suitable only for use as service equipment," each service disconnecting means shall be marked "Service disconnect." The service disconnect marking identifying the service disconnecting switches or circuit breakers shall appear on or adjacent to the switch or circuit breaker handles.

5.2.18.6 If a busway fitting is marked "Suitable for use as service equipment," the service disconnect marking shall be provided in the form of pressure-sensitive markings in an envelope, or on a card, with instructions to apply near the disconnect handles if the equipment is used as service equipment.

5.2.19 Miscellaneous information

5.2.19.1 If a busway or fitting includes a transverse barrier or divider, as covered in Clause 7.1.1.8, there shall be a marking on the outside of the busway or fitting to indicate this fact.

5.2.19.2 A plug-in circuit breaker housing shipped separately from the circuit breaker or the neutral, as described in Clause 7.1.1.39, shall be marked:

a) To indicate the neutral, the circuit breaker, or both, for which it is intended. If the circuit breaker is omitted, the marking shall give the name of the manufacturer of the circuit breaker, the type or catalog designation of the breaker, and the number of poles.

b) With its maximum voltage and ampere rating and shall make reference to the rating of the circuit breaker that will be installed in it; for example, the fitting may be marked "See ampere rating on breaker handle." The marking, including the ampere rating of the breaker, may be located on the inside of a door or cover, provided that the door may be opened or the cover removed, regardless of the position of the breaker handle.

5.2.19.3 If, in accordance with Clause 7.1.1.39, a neutral assembly is shipped from the factory separately from the plug-in switch with which it is intended to be used:

a) The neutral assembly shall be marked with its own catalog number or the equivalent and with the name or trademark of the manufacturer and

b) The switch shall be marked with the catalog number or the equivalent for the neutral assembly and with an indication of the voltage ratings for which the neutral assembly must be used.

5.2.19.4 The on and off positions of the mechanism of a switching take-off device fitting shall be externally marked.

5.2.19.5 If a circuit breaker handle or a simple extension of that handle has an additional or intermediate position that it takes upon automatic tripping, that position and the resetting instructions for the breaker shall be described in the marking. Marking to indicate the tripped position shall not be required in the case of a separate, external operating handle, other than a simple handle extension, that is not part of the circuit breaker. Such a handle may remain in the on position.

5.2.19.6 A busway fitting containing a circuit breaker or a fused disconnect switch shall be marked "Line" and "Load" unless investigated for reverse line and load connection. The line and load markings may be located on a wiring diagram attached to the inside of the enclosure if the diagram indicates clearly the proper connections.

5.2.19.7 A nonswitched plug-in device that has not been found by test to comply with the requirements in Clauses 8.2.8.1 – 8.2.8.3 shall be marked "Do not remove under load."

5.2.20 Wire, wire connectors, and wire torque information

5.2.20.1 If a pressure terminal connector is not provided on the equipment as shipped, the equipment shall be marked stating which pressure terminal connector or component terminal assembly is rated for use with the equipment. The terminal assembly package shall carry an identifying marking, wire size, and the manufacturer's name or trademark.

5.2.20.2 Wire connectors of the type mentioned in the marking may be installed on the equipment at the factory with instructions, if necessary, to effect proper connection of the conductors.