

**2020**  
**NATIONAL ELECTRICAL CODE®**  
**STYLE MANUAL**

## FOREWORD

August 2020

The *National Electrical Code*® is used nationally and internationally as the basis for safeguarding persons, buildings, and their contents from hazards arising from the use of electricity. It is vitally important that the text be as explicit as possible, and that maximum consistency be achieved in the language used in the text. The *Code* contains those provisions considered necessary for safety and thus is widely used as a basis for legal enforcement in the installation of electrical conductors and equipment in buildings and certain other premises (as detailed in the *Code* itself); this places a major responsibility on those involved in the preparation of document text to use forms of expression that promote uniform interpretation.

The National Electrical Code Correlating Committee has recognized these responsibilities and has issued this manual.

**Preparation and Date of Adoption.** This manual was originally prepared by the Editorial Task Group of the National Electrical Code Committee and adopted by the National Electrical Code Correlating Committee on May 13, 1969. It was amended September 22, 1975, October 11, 1984, October 12, 1989, and May 9, 1994.

In January 1999, the Correlating Committee Task Group on the Usability of the NEC rewrote the manual. It was adopted by the National Electrical Code Correlating Committee on March 19, 1999 and by the Standards Council on April 15, 1999. It was amended March 1, 2001, January 15, 2003, and August 9, 2011, August 2015, and December 2020.

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# NATIONAL ELECTRICAL CODE (NEC®) STYLE MANUAL

## CHAPTER 1 GENERAL

**1.1 Purpose.** The *National Electrical Code (NEC) Style Manual* is prepared under the guidance of the NEC Correlating Committee and is used to advise members of the National Electrical Code Committee and the Technical Committee on Electrical Safety in the Workplace on the required editorial style and arrangement of their respective documents. It is intended to be used as a practical working tool to assist in making the documents as clear, usable, and unambiguous as possible.

**1.2 Scope.** This manual provides editorial and administrative requirements for writing NFPA 70®, *National Electrical Code*, and NFPA 70E®, *Standard for Electrical Safety in the Workplace*®. Except as otherwise specified in this manual, the *National Electrical Code* and the *Standard for Electrical Safety in the Workplace* shall comply with the *Manual of Style for NFPA Technical Committee Documents*. For the purposes of this manual, use of the term *document* or *documents* includes NFPA 70, *National Electrical Code*, and NFPA 70E, *Standard for Electrical Safety in the Workplace*, unless specifically stated otherwise. Additionally, unless specifically stated otherwise, use of the term *technical committee (TC)* includes the NEC code-making panels and the NFPA 70E technical committee.

**1.2.1 Requirements Not Included.** The *NEC Style Manual* does not include many purely editorial and stylistic matters, including, but not limited to, the formatting of tables, and capitalization practices. For information on these editorial guidelines, see the *Manual of Style for NFPA Technical Committee Documents*.

**1.2.2 Format.** These documents are formatted differently from other NFPA standards. Examples of these differences include, but are not limited to, arrangement of the document, its internal numbering system, and use of informational notes. The National Electrical Code Correlating Committee staff liaison shall be responsible for recommending to the correlating committee resolutions of any apparent conflicts or discrepancies between the *Manual of Style for NFPA Technical Committee Documents* and this manual.

**1.3 Regulatory Adoption.** Because these documents are intended to be suitable for adoption as regulatory documents, it is important that they contain clearly stated mandatory requirements in the document text. This should encourage uniform adoption without alterations.

**1.4 Examples.** The examples shown throughout this manual are intended to be representative of the style and arrangement of the text. The actual text used in the example may or may not match the current document text.

## CHAPTER 2 DOCUMENT STRUCTURE AND NUMBERING

**2.1 Subdivisions of the Documents.** Documents shall be organized as follows.

**2.1.1 Introduction.** Article 90 contains the scope, purpose, and administrative provisions.

**2.1.2 Chapters.** Chapters are major subdivisions of the document that cover broad areas and are divided into articles.

**2.1.2.1 *National Electrical Code (NFPA 70).*** Chapters in *NFPA 70, National Electrical Code*, shall be organized as follows:

*Chapter 1 General*

*Article 100 — Definitions*

*Article 110 — Requirements for Electrical Installations*

*Chapter 2 Wiring and Protection Articles 200–299*

*Chapter 3 Wiring Methods and Materials Articles 300–399*

*Chapter 4 Equipment for General Use Articles 400–499*

*Chapter 5 Special Occupancies Articles 500–599*

*Chapter 6 Special Equipment Articles 600–699*

*Chapter 7 Special Conditions Articles 700–799*

*Chapter 8 Communications Systems Articles 800–899*

*Chapter 9 Tables*

**2.1.2.2 *Standard on Electrical Safety in the Workplace (NFPA 70E).*** Chapters in *NFPA 70E, Standard for Electrical Safety in the Workplace*, shall be organized as follows:

*Chapter 1 Safety-Related Work Practices*

*Article 100 — Definitions*

*Articles 105–199*

*Chapter 2 Safety-Related Maintenance Requirements Articles 200–299*

*Chapter 3 Safety Requirements for Special Equipment Articles 300–399*

**2.1.3 Articles.** Articles are chapter subdivisions that cover a specific subject such as grounding and bonding, overcurrent protection, luminaires, and so on. Each article shall have a title. Articles are divided into sections and sometimes into parts.

**2.1.4 Parts.** If an article is sufficiently large, or where necessary to logically group requirements, it shall be permitted to be subdivided into parts that correspond to logical groupings of information. Parts shall have titles and shall be designated by Roman numerals. (*See example.*) Parts typically consist of a number of sections; see 2.4.2.1 for section numbering in articles that are subdivided into parts. Where an article contains multiple parts and includes general installation requirements, such requirements shall be located in the first part titled “Part I. General”. Part titles shall be descriptive and as concise as possible.

Example:

Part I. General  
Part II. Installation  
Part III. Construction Specifications

**2.1.5 Subdividing Sections.** Sections shall be permitted to be subdivided for clarity, with each subdivision representing either a rule or a part of a rule. Up to three levels of subdivisions shall be permitted, and any level shall be permitted to contain a list.

Example:

**Previous**

**230.66 Marking.** Service equipment rated at 1000 volts or less shall be marked to identify it as being suitable for use as service equipment. All service equipment shall be listed or field labeled. Individual meter socket enclosures shall not be considered service equipment but shall be listed and rated for the voltage and ampacity of the service.

*Exception: Meter sockets supplied by and under the exclusive control of an electric utility shall not be required to be listed.*

**Preferred**

**230.66 Marking.**

**(A) General.**

Service equipment rated at 1000 volts or less shall be marked to identify it as being suitable for use as service equipment. All service equipment shall be listed or field evaluated.

**(B) Meter Sockets.**

Meter sockets shall not be considered service equipment but shall be listed and rated for the voltage and current rating of the service.

*Exception: Meter sockets supplied by and under the exclusive control of an electric utility shall not be required to be listed*

**2.1.5.1 List Formats.** Lists are a method of structuring the items necessary to complete a rule. Lists in any subdivision level or exception shall be numbered, and listed items shall be single words, phrases, or sentences. Items in a list shall not contain titles. Multilevel list items shall be arranged alternately in numerical and alphabetical order.

Example:

### Previous

**220.53 Appliance Load — Dwelling Unit(s).** It shall be permissible to apply a demand factor of 75 percent to the nameplate rating load of four or more appliances fastened in place, other than electric ranges, clothes dryers, space-heating equipment, or air-conditioning equipment, that are served by the same feeder or service in a one-family, two-family, or multifamily dwelling.

### Preferred

**220.53 Appliance Load — Dwelling Unit(s).**

It shall be permissible to apply a demand factor of 75 percent to the nameplate rating load of four or more appliances rated ¼ hp or greater, or 500 watts or greater, that are fastened in place, and that are served by the same feeder or service in a one-family, two-family, or multifamily dwelling. This demand factor shall not apply to the following:

- (1) Household electric cooking equipment that is fastened in place
- (2) Clothes dryers
- (3) Space heating equipment
- (4) Air-conditioning equipment

**2.1.5.2 Subdivision Titles.** First and second level subdivisions shall have titles. Third level subdivisions shall be permitted to have titles.

**2.1.5.3 References to Subdivisions.** References to subdivisions within a requirement shall include the section number prior to the subdivision.

**2.1.5.4 Subdivision Example.** The following illustrates typical subdivision numbering with lists (see also 2.4):

Example:

Chapter	<b>Wiring and Protection</b>
Article	<b>210 Branch Circuits</b>
Part	<b>Part I. General</b>
Section	<b>210.5 Identification for Branch Circuits.</b>
First level subdivision	<b>(A) Grounded Conductor.</b> The grounded conductor of a branch circuit shall be identified in accordance with 200.6.
First level subdivision	<b>(B) Equipment Grounding Conductor.</b> The equipment grounding conductor shall be identified in accordance with 250.119.
First level subdivision	<b>(C) Identification of Ungrounded Conductors.</b> Ungrounded conductors shall be identified in accordance with 210.5(C)(1) or (C)(2), as applicable.
Second level subdivision	<b>(1) Branch Circuits Supplied from More Than One Nominal Voltage System.</b> Where the premises wiring system has branch circuits supplied from more than one nominal voltage system, each ungrounded conductor of a branch circuit shall be identified by phase or line and system at all termination, connection, and splice points in compliance with 210.5(C)(1)(a) and (C)(1)(b).
Third level subdivision	<i>(a) Means of Identification.</i> The means of identification shall be permitted to be by separate color coding, marking tape, tagging, or other approved means.

Third level subdivision	(b) <i>Posting of Identification Means.</i> The method utilized for conductors originating within each branch-circuit panelboard or similar branch-circuit distribution equipment shall be documented in a manner that is readily available or shall be permanently posted at each branch-circuit panelboard or similar branch-circuit distribution equipment.
Second level subdivision	<b>(2) Branch Circuits Supplied from Direct-Current Systems.</b> Where a branch circuit is supplied from a dc system operating at more than 50 volts, each ungrounded conductor of 4 AWG or larger shall be identified by polarity at all termination, connection, and splice points by marking tape, tagging, or other approved means; each ungrounded conductor of 6 AWG or smaller shall be identified by polarity at all termination, connection, and splice points in compliance with 210.5(C)(2)(a) and (C)(2)(b). The identification methods utilized for conductors originating within each branch circuit panelboard or similar branch-circuit distribution equipment shall be documented in a manner that is readily available or shall be permanently posted at each branch circuit panelboard or similar branch-circuit distribution equipment.
Third level subdivision	(a) <i>Positive Polarity, Sizes 6 AWG or Smaller.</i> Where the positive polarity of a dc system does not serve as the connection point for the grounded conductor, each positive ungrounded conductor shall be identified by one of the following means:
List Item	(1) A continuous red outer finish
List Item	(2) A continuous red stripe durably marked along the conductor's entire length on insulation of a color other than green, white, gray, or black
List Item	(3) Imprinted plus signs (+) or the word POSITIVE or POS durably marked on insulation of a color other than green, white, gray, or black, and repeated at intervals not exceeding 610 mm (24 in.) in accordance with 310.120(B)
Third level subdivision	(b) <i>Negative Polarity, Sizes 6 AWG or Smaller.</i> Where the negative polarity of a dc system does not serve as the connection point for the grounded conductor, each negative ungrounded conductor shall be identified by one of the following means:
List Item	(1) A continuous black outer finish
List Item	(2) A continuous black stripe durably marked along the conductor's entire length on insulation of a color other than green, white, gray, or red

**2.1.6 Informative Annexes.** Annexes shall contain nonmandatory material, such as references, examples, calculations, and tables. Annexes do not form part of the requirements of the document, and a statement to that effect shall appear at the beginning of each annex. Annexes shall have titles and shall be designated by capital letters.

Example:

**Informative Annex C**  
**Conduit, Tubing, and Cable Tray Fill for Conductors and Fixture Wires**  
**of the Same Size**

*This informative annex is not a part of the requirements of this Code but is included for informational purposes only.*

**2.1.6.1 Cross-References Between Different Editions.** Annexes that are used to cross-reference material from one edition of the document to another edition shall remain as an annex for a minimum of two document cycles. NFPA staff shall have the responsibility of updating any cross-reference annex.

**2.2 Content of Document Subdivisions.**

**2.2.1 Scopes.** Each article shall have a scope, which shall be the first section of the article. Where an article has multiple parts, the scope shall be the first section in Part I. The

approval of article scope statements is the responsibility of the National Electrical Code Correlating Committee.

Example:

**Article 230 Service**  
**Part I. General**  
230.1 Scope

**2.2.2 Definitions.** Definitions of terms used in the requirements of the document shall only be located in Article 100. Article 100 shall not be subdivided.

**2.2.2.1 Lists.** Numbered lists shall be permitted in definitions.

**2.2.2.2 Style.** Definitions shall be in alphabetical order and shall not contain the term that is being defined. Definitions shall not contain requirements or recommendations.

**2.2.2.3 Definition Title Structure.** Definitions that have subparts shall be listed alphabetically by the base term, with a comma and then the modifying descriptor.

Example:

**Circuit Breaker, Adjustable.** (Adjustable Circuit Breaker)  
**Circuit Breaker, Inverse Time.** (Inverse Time Circuit Breaker)

**2.2.2.3.1 Defined Term.** To assist in electronic searching, the defined term shall then appear in parentheses as it would be found in the document.

Example:

**Service Conductors, Overhead.** (Overhead Service Conductors)

The overhead conductors between the service point and the first point of connection to the service-entrance conductors at the building or other structure. (CMP-10)

**2.2.2.3.2 Article Number.** For definitions that apply in only one article, the article number in parentheses shall follow the definition.

Example:

**Sign Body.** A portion of a sign that may provide protection from the weather but is not an electrical enclosure. (600) (CMP-18)

**2.2.2.3.3 Code-Making Panel Number.** For the *National Electrical Code*, the code-making panel responsible for the definition shall be identified in parentheses at the end of the definition following any extract or article information.

Example:

**Patient Bed Location.** The location of a patient sleeping bed, or the bed or procedure table of a Category 1 (critical care) space. [99:3.3.135] (517) (CMP-15)

**2.2.2.4 Terms with Multiple Definitions.** If two or more definitions exist for a term, a task group shall be formed to work on the development of a single acceptable definition. If this

cannot be accomplished, another term shall be selected or the term shall be identified in the context of the specific application.

Example:

**Accessible (as applied to equipment).**

Capable of being reached for operation, renewal, and inspection. (CMP-1)

**Accessible (as applied to wiring methods).**

Capable of being removed or exposed without damaging the building structure or finish or not permanently closed in by the structure or finish of the building. (CMP-1)

**2.2.2.5 Synonyms, Similar Terms, or Alternate Terms.** If the defined term has synonyms, similar terms, or alternate terms associated with the main term that all are to be understood as having the same definition, the base term being defined shall be followed by the alternate term in parentheses.

Example:

**Attachment Plug (Plug Cap) (Plug).** A device that, by insertion in a receptacle, establishes a connection between the conductors of the attached flexible cord and the conductors connected permanently to the receptacle. (CMP-18)

**2.2.2.6 Definitions in Informative Annexes.** Definitions contained in annexes shall be used only in the context of that annex.

## 2.3 Tables and Figures.

**2.3.1 Mandatory.** Tables and figures, including any accompanying notes, represent mandatory requirements, unless specifically noted as in 2.3.2. Tables and figures shall be referenced in the text and shall be designated by the section number in which they are referenced. Each table shall have a title and each figure shall have a caption. Titles and captions shall be as brief as possible, consistent, and clear.

Example:

**220.42 General Lighting.** The demand factors specified in Table 220.42 shall apply to that portion of the total branch circuit load calculated for general illumination. They shall not be applied in determining the number of branch circuits for general illumination.

**Table 220.42 Lighting Load Demand Factors**

**2.3.2 Nonmandatory.** When the document is adopted into law, graphics in the text of the document become mandatory. If a technical committee wishes to use a table or figure to illustrate only a typical situation, not a mandatory requirement, that table or figure shall be identified as an informational note or be placed in an annex. Each table shall have a title and each figure shall have a caption.

**2.4 Numbering Practices.** The following two practices are intended to improve document usability by preventing the continual renumbering of articles and sections from one edition to the next.

**2.4.1 Parallel Numbering Within Similar Articles.** To the extent possible, technical committees are encouraged to use the same section numbers (and part numbers, where applicable) for the same purposes within articles covering similar subjects.

Example:

A typical family of articles might be organized as follows:

**Article 330 Metal-Clad Cable: Type MC**

<b>Part I.</b>	<b>General</b>
330.1	Scope.
330.6	Listing Requirements.
<b>Part II.</b>	<b>Installation</b>
330.10	Uses Permitted.
330.12	Uses Not Permitted.
<b>Part III.</b>	<b>Construction Specifications</b>
330.104	Conductors.
330.112	Insulation.

**2.4.2 Nonconsecutive Numbering.** Articles and sections in the documents are, in general, numbered consecutively. However, gaps or unused numbers are sometimes left for future articles and sections. Assigning numbers to new articles is the responsibility of the National Electrical Code Correlating Committee, advised by the NFPA staff editor. Assigning numbers to new sections within articles is the responsibility of technical committees, advised by the NFPA staff editor.

**2.4.2.1 Parts.** If an article is subdivided into parts, it is recommended that the section numbering within each part start with the next decade as a minimum to allow for future growth. New or significantly reorganized articles shall follow this numbering convention. Where an article has multiple parts, Part I shall be titled “General”.

Example:

**Article 422 Appliances**

<b>Part I.</b>	<b>General</b> 422.1–422.6
<b>Part II.</b>	<b>Installation</b> 422.10–422.23
<b>Part III.</b>	<b>Disconnecting Means</b> 422.30–422.35
<b>Part IV.</b>	<b>Construction Specifications</b> 422.40–422.48

**2.4.3 Numbering Informational Notes.** If there are two or more informational notes in a definition, section, or subdivision, consecutive numbering of the informational notes shall only occur in that definition, section, or subdivision.

Example:

**430.31 General.** Part III specifies overload devices intended to protect motors, motor-control apparatus, and motor branch-circuit conductors against excessive heating due to motor overloads and failure to start.

Informational Note No. 1: See Informative Annex D, Example D8.

Informational Note No. 2: See Article 100, for the definition of *Overload*.

These provisions shall not require overload protection where a power loss would cause a hazard, such as in the case of fire pumps.

Informational Note No. 3: See 695.7 for protection of fire pump supply conductor.

Part III shall not apply to motor circuits rated over 1000 volts, nominal.

Informational Note No. 4: See Part XI for over 1000 volts, nominal.

**2.4.4 Exceptions.** See 2.6.2 for the numbering of exceptions in the documents.

**2.5 General References to Other Articles.** If a listing is made of references to other articles under the section title “Other Articles,” the listing shall be in table format and shall comply with 2.3.

**2.6 Exceptions.**

**2.6.1 Placement and Order.** Exceptions shall immediately follow the main rule to which they apply. If exceptions are made to items such as within a numbered list or specific subdivision, the exception shall clearly indicate the items to which the exception applies. Exceptions containing the mandatory terms *shall* or *shall not* are to be listed first in the sequence. Permissive exceptions containing *shall be permitted* are to follow any mandatory exceptions and be listed in their order of importance as determined by the technical committee.

**2.6.2 Numbering.** If there are two or more consecutive exceptions, each shall be numbered.

## CHAPTER 3 EDITORIAL GUIDELINES

### 3.1 Mandatory Rules, Permissive Rules, and Explanatory Information.

**3.1.1 Mandatory Rules.** *Shall, shall not, and shall not be* indicate mandatory rules. Terms such as *is to be, shall be not, and must*, whose meanings are less clear, shall not be used. The terms *may* or *can* shall not be used in mandatory rules.

**3.1.2 Permissive Rules.** *Shall be permitted* and *it shall be permissible* indicate allowed optional or alternate methods. (Note that these are still mandatory language and constitute rules.) The term *may* shall only be used where it recognizes a discretionary judgment on the part of an authority having jurisdiction or in an informational note.

Example:

The authority having jurisdiction may waive specific requirements in the *Code* or permit alternate methods.

**3.1.3 Informational Notes.** Informational notes contain explanatory information and shall be located directly after the rule they apply to. Informational notes shall only be used where necessary to support or improve usability of the associated requirement. Informational notes shall not be written in mandatory language and shall not contain requirements, make interpretations, or make recommendations. If an Informational note is needed to explain the text of the document, consideration should be given to rewriting the text of the document to make the rule clear.

**3.1.3.1 Structure.** Informational notes that reference a requirement or another standard shall be structured with the referenced requirement or standard identified first followed by the explanatory text.

Examples:

Informational Note: See UL 817, *Cord Sets and Power-Supply Cords*, and UL 62, *Flexible Cords and Cables*, for information on flexible cords and cables.

Informational Note: See Article 100 for the definition of *General-Use Switch*.

Informational Note: See ANSI/NEMA WD 6–2016, *Wiring Devices — Dimensional Specifications*, for receptacle configurations.

**3.1.4 Exceptions.** Exceptions to rules shall be used sparingly. If used, exceptions shall convey alternatives or differences to a basic rule. It is the responsibility of the technical committee to determine whether the principle can be expressed most effectively as a separate positive code rule or as an exception to a rule.

**3.1.4.1 Language.** Exceptions shall be permitted to use the terms *shall, shall not, or shall be permitted* depending on whether they specify a mandatory requirement that is (1) different from the rule, or (2) diametrically opposite to the rule, or (3) whether they permit, but do not require, a variance from the main rule. Exceptions shall be written in complete sentences.

**3.1.4.2 Excessive Numbers of Exceptions.** If the number of exceptions to a specific rule becomes excessive, the technical committee should consider a revision of the basic rule or a rearrangement of the section to better convey the objectives.

## 3.2 Word Choices.

**3.2.1 Unenforceable Terms.** The documents shall not contain references or requirements that are unenforceable or vague. The terms contained in Table 3.2.1 shall be reviewed in context, and, if the resulting requirement is unenforceable or vague, the term shall not be used.

**Table 3.2.1 Possibly Unenforceable and Vague Terms**

Acceptable	Adequate	Adjacent
Appreciable	Appropriate	Approximate(ly)
Available	Avoid(ed)	Can
Care	Consider(ed)(ation)	Could
Designed for the purpose	Desirable	Easy(ily)
Equivalent(ly)	Familiar	Feasible
Few	Frequent(ly)	Firmly
Generally	Good	Lightly
Likely	Legible(y)	Many
May	Maybe	Metallic(ally)
Might	Most(ly)	Near(ly)
Neat(ly)	Normal(ly)	Note
Periodic(ally)	Practical(ly)	Practices
Prefer(red)	Proper(ly)	Ready(ily)
Reasonable(y)	Safe(ly)(ty)	Satisfactory
Secure(ly)	Several	Significant
Similar	Substantial(ly)	Sufficient(ly)
Suitable	Usual(ly)	Workmanlike

Example of unenforceable or vague terms:

**Correct:** Conduit shall be supported at intervals not exceeding 3 m (10 ft).

**Incorrect:** Conduit shall be adequately supported at *periodic* intervals.

**3.2.2 Expressing Maximum and Minimum Limits.** Maximum and minimum limits shall be expressed with the types of wording shown in the following examples:

Examples:

Shall not exceed 300 volts to ground . . .

Shall have a clearance of not less than 5 cm (2 in) . . .

Shall be supported at intervals not exceeding 1.5 m (5 ft) . . .

**3.2.3 Acronyms and Uncommon Abbreviations.** All acronyms and any abbreviations that are not in common use shall be spelled out with the abbreviation following in parentheses for the first use of the term in the body of each article. Each subsequent use of the term in the article shall be permitted to be the acronym or abbreviation

only. Use of only the acronym or abbreviation for terms defined in Article 100 shall be permitted in subsequent uses throughout the document.

Examples:

#### **Article 100**

##### **Ground-Fault Circuit Interrupter (GFCI).**

A device intended for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a ground-fault current exceeds the values established for a Class A device. (CMP-2)

#### **Article 210**

**210.8 GFCI Protection for Personnel.** GFCI protection for personnel shall be provided as required in 210.8(A) through (F). The GFCI shall be installed in a readily accessible location.

**705.13 Power Control Systems (PCS).** A PCS shall be listed and evaluated to control the output of one or more power production sources, energy storage systems (ESS), and other equipment. The PCS shall limit current and loading on the busbars and conductors supplied by the PCS.

**3.2.4 Standard Terms.** Standard terms have been established through accepted use or by definition and are to be used in preference to similar terms that do not have such recognition. Annex A provides guidance for syntax, spelling, punctuation, and usage of many standard technical terms.

### **3.2.5 Consistent Application of Terms.**

**3.2.5.1 Ampacity.** The term *ampacity*, as defined in Article 100, applies to the current-carrying capacity of conductors only. Therefore, this term shall be used in this sense, but only in this sense. (The ampacity of a 14 AWG copper conductor with 60°C insulation is 15.) On the other hand, switches, motors, and similar equipment are not rated in ampacities. Instead, they have current ratings, voltage ratings, horsepower ratings, and so on. Such equipment, therefore, shall not be specified or referred to in “ampacity” values.

**3.2.5.2 Authority Having Jurisdiction (AHJ).** The term used to indicate any kind of inspection authority, enforcement authority, or the like, shall be the AHJ. The use of this term will result in standardization, and it is in keeping with the term used in all other NFPA standards. This term is fully developed and explained in Paragraph 3.3.6.1 of the *NFPA Regulations Governing the Development of NFPA Standards*.

**3.2.5.3 Nationally Recognized Testing Laboratory.** Use of the terms “Nationally Recognized Testing Laboratory” or “NRTL” shall be avoided. The definition of *listed* in Article 100 provides the details necessary for application in the document. The Nationally Recognized Testing Laboratory program, also known as NRTL, is an OSHA program for the accreditation of laboratories that test products for the workplace and is not to be applied generally in the document. The preferred term to use is “Qualified Electrical Testing Laboratory.”

**3.2.5.4 Requirements for Guarding.** Requirements for guarding shall be stated in as complete a manner as possible and in as nearly standardized form as can be reasonably achieved. For example, the two terms *protected against contact with live parts* and *protected against accidental contact with live parts* do not mean the same thing. It may be necessary for qualified persons to have access to live parts, or it may be desirable to provide varying degrees

of protection, depending on the location. Among other things, this distinction could affect the type of ventilation louvers or drains that would be acceptable for some types of equipment. The intent of the type and degree of protection should be clear.

### **3.2.5.5 Requirements for Protection Against Physical Damage.**

If *protection against physical damage* is to be one of the requirements, this can be standardized by the use of this terminology instead of using the phrase *provided with mechanical protection* to mean the same thing. In many cases, one or two acceptable methods of providing the intended protection can be stated as examples for better understanding without restricting the rule to a specification-type requirement. There have been some cases, such as in the instance of grounding electrode conductors, where the means provided by the installer for protection against physical damage has impaired the electrical function of the conductor or equipment. This can be largely avoided by an explanatory note if the intent cannot be otherwise made sufficiently clear.

**3.2.5.6 Voltage.** The term *voltage* is well understood and shall be used in preference to other terms such as *potential*. Because *voltage* is expressed in volts, a requirement should be written to avoid repetition of this term if it is possible to do so without losing clarity.

Example:

**Correct:** A circuit supplying the primary of an isolating transformer shall not exceed 300 volts between conductors.

**Incorrect:** The voltage of a circuit supplying the primary of an isolating transformer shall not exceed 300 volts between conductors.

**3.2.6 Formulas and Equations.** Formulas and equations shall be expressed in standard mathematical symbols.

### **3.2.7 Units of Measurement.**

**3.2.7.1 Measurement System of Preference.** Metric units of measurement are in accordance with the modernized metric system known as the International System of Units (SI).

**3.2.7.2 Dual System of Units.** The SI units shall appear first, and the inch-pound units shall immediately follow in parenthesis. In tables the SI and inch-pound units shall appear in separate columns.

**3.2.7.3 Trade Sizes.** Where the actual measured size of a product is not the same as the nominal size, trade size designators shall be used rather than dimensions. Trade practices shall be followed in all cases.

**3.2.7.4 Extracted Material.** Where material is extracted from another standard, the context of the original material shall not be compromised or violated. Any editing of the extracted text shall be confined to making the style consistent with that of the *documents*.

**3.2.7.5 Industry Practice.** Where industry practice is to express units in inch-pound units, the inclusion of SI units shall not be required.

**3.2.7.6 Safety.** Where hard conversion to SI would have a negative impact on safety, the soft conversion shall be used.

**3.2.7.7 Approximate Conversion.** The conversion from inch-pound units to SI units shall be permitted to be an approximate conversion.

**3.2.7.8 Standard Conversions.** See Annex B for information on standard conversions.

**3.2.7.9 Units.** For dimensions less than 1 m, the SI unit shall be expressed as mm. For dimensions from 1 m to less than 1 km, the SI units shall be expressed in m. For dimensions of 1 km or greater, the SI units shall be expressed as km.

**3.3 Writing Style.** These guidelines shall be followed to help produce clear, unambiguous language.

### **3.3.1 General Guidelines.**

**3.3.1.1** Write in present tense; do not write in future tense.

Example:

**Correct:** No conductor shall be used in such a manner that its operating temperature exceeds that designated for the type of insulated conductor involved.

**Incorrect:** No conductor shall be used in such a manner that its operating temperature will exceed that designated for the type of insulated conductor involved.

**3.3.1.2** Use simple declarative sentence structure and keep sentences short. Writing rules in long sentences full of commas, dependent clauses, and parenthetical expressions often creates confusion and misunderstanding. The requirement can be written in two or more short sentences, expressed using a list or table, or both.

Example:

**Correct:**

**(A) Occupancy Limitation.** In dwelling units and guest rooms or guest suites of hotels, motels, and similar occupancies, the voltage shall not exceed 120 volts, nominal, between conductors that supply the terminals of the following:

- (1) Luminaires
- (2) Cord-and-plug-connected loads 1440 volt-amperes, nominal, or less than ¼ hp

**(B) 120 Volts Between Conductors.** Circuits not exceeding 120 volts, nominal, between conductors shall be permitted to supply the following:

- (1) The terminals of lampholders applied within their voltage ratings
- (2) Auxiliary equipment of electric-discharge lamps

**Incorrect:**

**(A) Occupancy Limitation.** In dwelling units and guest rooms or guest suites of hotels, motels, and similar occupancies, the voltage shall not exceed 120 volts, nominal, between conductors that supply the terminals of luminaires and cord-and-plug-connected loads 1440 volt-amperes, nominal, or less than ¼ hp.

**(B) 120 Volts Between Conductors.** Circuits not exceeding 120 volts, nominal, between conductors shall be permitted to supply the terminals of lampholders applied within their voltage ratings and auxiliary equipment of electrical-discharge lamps.

**3.3.1.3** Use common words and avoid overly complex terminology (see 3.3.4).

**3.3.1.4** Use positive language, rather than negative, wherever possible.

Example:

**Correct:** Boxes used in wet locations shall be listed for wet locations.

**Incorrect:** Ordinary electrical boxes shall not be used in wet locations.

**3.3.1.5** If possible, avoid using dependent clauses, parenthetical phrases, and unclear inverted word order.

**3.3.2 Lists and Tables.** If possible, use lists or tables to present requirements, rather than long text descriptions.

**3.3.3 Plural.** Unless referring to a single item of equipment, references to electrical components and parts shall be plural rather than singular. This results in greater consistency and makes it clear that the requirement refers to *all* components or parts of a given type or class.

Examples:

**Correct**

Luminaires  
Receptacles  
Switches and circuit breakers  
Outlet boxes and enclosures  
Installations shall...

**Incorrect**

a luminaire  
a receptacle  
a switch or circuit breaker  
an outlet box or enclosure  
an installation shall...

**3.3.4 Word Clarity.** Words and terms used in the documents shall be specific and clear in meaning, and shall avoid jargon, trade terminology, industry-specific terms, or colloquial language that is difficult to understand. Language shall be brief, clear, and emphatic. The following are examples of old-fashioned expressions and word uses that shall not be permitted:

*Above* or *below* (referring to text) — avoid using to describe the location of text.

Example:

**Correct:** ...shall be in accordance with 250.21(A)(3)(a), (A)(3)(b), and (A)(3)(c).

**Incorrect:** ...shall be in accordance with (a), (b), and (c) below.

*And such, and the like* — it is preferable to rearrange the sentence to use *such as* followed by examples.

*As allowed* — Use *allowed* instead.

*Herein* — Usually this word can be dropped without affecting clarity. Otherwise say “in this section” or whatever else is actually meant by *herein*.

*If* — Use to indicate a condition.

*Provided that* — Use *if* instead.

*Thereof* — Rewrite sentence to say *of* or *of them*.

*Utilize* — Use *use* instead.

*When* — Use to express time.

*Where* — Use to convey a location or a situation. Not to be used to express time.

**3.3.5 Parallel Construction.** Parallel construction means stating similar requirements in similar ways for greater consistency. This helps makes the document clear for users. Lack of consistency often creates confusion, causing users to ask: *Does this difference in wording represent a different requirement? Or is it simply two different ways of trying to say the same thing?* There are several kinds of parallel construction:

**3.3.5.1 Organization and Numbering.** See 2.4.1.

**3.3.5.2 Sections.** Different sections, within the same article, that reflect similar or closely related subjects, should have similar structures.

**3.3.5.3 Lists.** All items in a list should be parallel (that is, singular or plural, written in the same verb tense, using phrases or sentences but not a mix).

## CHAPTER 4 REFERENCES AND EXTRACTS

### 4.1 References to Other Rules Within the Documents.

**4.1.1 In the *National Electrical Code (NFPA 70)*.** General requirements contained in Chapters 1 through 4 shall not be repeated in other articles of the document. Committees shall always be mindful of the structure of the document as specified in 90.3 when contemplating the inclusion of a reference to another requirement. The use of redundant references shall be avoided. Only include references to other requirements with the document.

**4.1.2 In Other Documents.** General requirements contained in Chapter 1 shall not be repeated in other articles of the document. Committees shall always be mindful of the structure of the document as specified in 90.3 when contemplating the inclusion of a reference to another requirement. The use of redundant references shall be avoided. Only include references to other requirements within the document.

**4.1.3 Reference Structure.** If used, references from documents covered by this manual shall include only the section number being referenced. The word *section*, shall not be used unless the reference is used at the beginning of a sentence. References shall indicate the subject of the rules being referenced; the subject shall follow the number. Requirements shall be referenced directly by using the phrase *in accordance with*. The phrase *in accordance with the provisions of* should not be used where referencing a requirement.

Explanatory references shall be in informational notes and shall be structured as shown, using the word “See” followed by the reference and an explanation of the reference.

Example:

Informational Note: See [250.118](#) for acceptable grounding means.

Informational Note: See NFPA 101-2018, *Life Safety Code*, Section 7.8, for information on illumination of means of egress.

Informational Note: See Article 100 for the definition of *Overload*.

**4.1.4 References to a Part Within an Article.** Except for Article 100, references shall not be made to an entire article. References to parts within articles shall be permitted.

Example:

If a switch or circuit breaker serves as the disconnecting means, it shall be within sight from the motor controller and shall comply with Part IX of Article 430.

**4.2 References to Other Standards.** References to other standards shall not be contained in mandatory requirements. References to standards shall be permitted in informational notes.

**4.2.1 Informative Annex A.** Annex A shall contain two parts.

**4.2.1.1 Part I.** Part I shall contain the relevant product safety standard(s) for conductors and equipment that have an associated listing (certification) requirement in the document. The annex entry shall identify the document section requiring the listed (certified) product and the number and title of the related product safety standard. The edition dates are not mandatory.

**4.2.1.2 Part II.** If conductors and equipment do not have an associated listing (certification) requirement in the document, a technical committee may include the relevant product safety standard(s) as additional information in Part II of Annex A. Each informational annex entry shall identify the relevant document section and the number and title of the related product safety standard. The edition dates are not mandatory.

### 4.3 Extracted Material.

**4.3.1 Extracted Material from an NFPA Document.** Extracting provides an advantage over multiple references to requirements contained within other NFPA documents. Extracting has the disadvantage of creating a situation where the text of the source document and the user document are not identical due to different revision cycles.

**4.3.2 Extract Requirements.** To extract material from another NFPA document, the requirements in 4.3.2.1 through 4.3.2.3 shall be met.

**4.3.2.1 Reason.** There shall be a specific technical reason for the extract.

**4.3.2.2 Context.** A section or paragraph being extracted from another document shall represent a complete thought and shall be entirely extracted. The context of the original material shall not be compromised or violated. Any editing of the extracted text shall be confined to making the style consistent with that of the *NEC Style Manual* and then only with the concurrence of the committee having primary jurisdiction. Such concurrence shall be obtained through the staff liaison for the source document.

**4.3.2.3 Identification.** If used, the number, title, and edition of the NFPA document from which extracted material is taken shall appear as the first informational note following the scope section. The document number and paragraph from which the extracted material is taken shall appear in brackets at the end of the section in which the extracted material is used.

Example:

#### **Article 514 Motor Fuel Dispensing Facilities**

##### **524.1 Scope.**

This article shall apply to motor fuel dispensing facilities, marine/motor fuel dispensing facilities, motor fuel dispensing facilities located inside buildings, and fleet vehicle motor fuel dispensing facilities.

**Informational Note No. 1:** Text that is followed by a reference in brackets has been extracted from NFPA 30A-2018, *Code for Motor Fuel Dispensing Facilities and Repair Garages*. Only editorial changes were made to the extracted text to make it consistent with this *Code*.

**514.11(B) Attended Self-Service Motor Fuel Dispensing Facilities.** At attended motor fuel dispensing facilities, the devices or disconnects shall be readily accessible to the attendant.  
[30A:6.7.1]

## Annex A Standard Terms and Units of Measurement

### Standard Terms

The following list provides guidance for syntax, spelling, punctuation, and usage for many of the standard terms used in the documents. Many words are listed with an abbreviation to indicate usage. For example, adjective = a, noun = n, and verb = v.

#### A

abovegrade (a)  
aboveground (a)  
acknowledgment (no *e*)  
adapter  
adjustable-speed (a)  
affect (v) = to influence; effect (n) = result  
air conditioner (n)  
air-condition (v)  
air-conditioning (a)  
airflow (a,n)  
airtight (a)  
airspace (a)  
air-handling (a)  
alternating current (n) (abbrev. ac)  
alternating-current (a) (abbrev. ac)  
American Wire Gage (abbrev. AWG)  
ampacity  
ampere (see units of measurement)  
20-ampere-rated receptacle  
and/or (try to avoid)  
apparatus (singular and plural)  
approved  
arc fault (n)  
arc-fault (a)  
arrester (not *arrestor*)  
at least (avoid; use *not less than* to indicate minimum dimension) autoignition  
authority having jurisdiction (abbrev. AHJ)  
automatic-reset (a)

#### B

backfeed  
backfill (n,v)  
backup (a,n)  
back-wiring spaces  
belowgrade (a)  
belowground (a)  
bipolar  
braid-covered (a)  
branch circuit (n)  
branch-circuit (a)  
branch-circuit ground-circuit  
branch-circuit overcurrent device  
buildup (n)  
build up (v)  
busbar  
buses  
busing

## C

cable tray  
cablebus  
capacitors  
ceiling-suspended (paddle) fan  
circuit-grounding connection  
circuit-interrupting device  
circuit-protective device  
circular mil (a)  
Class I location  
Class I, Division 2, location  
clean-up (n)  
cleanup (v)  
closed-circuit (a)  
*Code* (initial cap and italic when referring to the *NEC*)  
cold-storage warehouse  
combination-load equipment  
common-return (a)  
communications system, utilities, equipment, and so on (not *communication*)  
concrete-encased electrode  
conductive-film heating elements  
continuous current rating  
control boards  
control circuit (a)  
constant-current systems  
copper (Cu)  
copper-clad (a)  
cord- and plug-connected appliances  
corner-grounded delta systems  
corrosion-resistant (a)  
counter space  
counter-mounted (a)  
countertop  
crawl space  
cross members  
cross-connect arrays  
cross section (n)  
cross-sectional (a)  
cubic inches (in.) (see units of measurement)  
current-carrying (a)  
current-limiting (a)  
cut off (v)  
cutoff (a,n)  
cutouts (n)

## D

data (singular and plural, use with plural verb)  
dead-front switchboards  
de-energize  
deicing  
delta [use symbol ( $\Delta$ ) in equations]  
delta-connected (a)  
delta corner grounded  
derating  
Design B motor  
dipole (a)  
direct buried (n)  
direct-buried (a)  
direct current (n) (abbrev. Dc)  
direct-current (a) (abbrev. dc)

disconnecting means (not disconnection means)  
dripproof  
drywall  
dual-element fuses  
ducts (as in air-handling ducts, not for use with raceways)  
ductwork  
dust-ignitionproof (a)  
dustproof (a)  
dusttight (a)

## **E**

effect (n) = result; affect (v) = to influence  
e.g. (avoid using, use instead *for example*)  
electric/electrical (use to be determined by staff)  
electrical (as applied to requirements, standards, codes)  
electric-discharge lighting  
energized (electrically connected to a source of voltage)  
engine-generator set  
ensure (not *insure*)  
equipment (singular and plural) equipment grounding  
conductor  
etc. (try to avoid, use *and so on*, *and so forth*, or *such as*)  
Exception No. 1 (when referring to specific exception)  
Exception Nos. 1 and 2 (more than one exception)  
exception (general, lowercase if used alone)  
explosionproof  
extra-hard usage

## **F**

faceplate (n)  
face-up position  
fault-interrupting device  
fault-current forces  
fiberglass reinforced  
field connection box  
field-installed (a)  
fire alarm circuit  
fire-extinguishing equipment  
fire-resistant construction  
fireproof  
firestopped  
fixed, electric space-heating equipment  
fixed-load (a)  
fixed stage equipment  
flame retardant (n)  
flame-retardant (a)  
flat-top raceways  
fluxes  
foamed-in-place material  
forced-air system  
full-load current  
full-load rating  
full-voltage resistor  
fuseholder

## G

gal (plural), 3-gal (a)  
gas-air (a)gauge, not gage  
general-purpose (a)  
general-use (a)  
gray buses  
grain-drying systems  
grid-connected systems  
grille  
ground-fault circuit interrupter (n) (abbrev. GFCI)  
ground-fault circuit-interrupter (a) (abbrev. GFCI)  
ground-fault (a)  
ground fault (n)  
ground-fault protective device  
grounding electrode conductor  
guarding  
guest rooms

## H

hand-carried (n)  
hand-held (a)  
hand-supported (a)  
handhole (n)  
handlamp (n)  
hazardous (classified) location  
headroom (n)  
heat-generating equipment  
heat-resistant (a)  
heavy-duty (a)  
hertz (rather than cycles per second) (see units of measurement)  
high-heat type  
high-impedance grounded neutral system  
high-leg (a)  
high-pressure (a)  
high-tension (a)  
higher-rated (a)  
horsepower (see units of measurement)  
hour (do not abbreviate)

## I

i.e. (avoid using, use *that is*)  
if (indicates condition -- can usually be used instead of *provided, provided that, or where*)  
igniter  
ignitable (not *ignitable*)  
impedance  
impedance grounded neutral system  
in-between (a,n)  
indexes (not *indices*)  
informational note (lower case when used alone in text)  
inrush current  
instantaneous-trip (a)  
internal-combustion-driven (a)

## K

knob-and-tube wiring

## L

lampholder  
lead-sheathed (a)

less-flammable transformers  
let-through (n)  
light-emitting diode (abbrev. LED)  
likely (use instead of *liable*)  
likely to become energized -- failure of insulation on  
line-to-ground fault current  
line-to-neutral loads  
liquidtight (a)  
live parts (electric conductors, buses, terminals, or components that are uninsulated or exposed and shock hazard exists)  
load-interrupter (a)  
load-side (a)  
locked-rotor (a,n)  
locknut (n)  
long-time rating  
low-power-factor (a)  
low-voltage (a)  
lower-rated (a)

## M

make-or-break (a)  
manhole  
maximum  
meatpacking (a,n)  
messenger-supported (a)  
metal (instead of metallic)  
metal-clad (a)  
metal-enclosed switchgear (n)  
metal-sheathed (a)  
metal-shield connectors (n)  
mineral-insulated (a)  
minimum  
minute (do not abbreviate)  
mixer-amplifier (n)  
motor control (a)  
motor-circuit switch (n)  
motor-compressors (n) motor-driven (a)  
motor-generator (a)  
motor-generator set (abbrev. MG set)  
motor-starting currents  
multibuilding  
multiconductor (instead of multiple-conductor or multi-conductor)  
multimedia  
multioutlet  
multiphase  
multipole

## N

nameplate  
nameplate rating load  
*NEC*® (always italic, with registered trademark on first reference)  
network-powered (a)  
No. 20 gauge sheet metal  
non-current-carrying (a)  
non-grounding-type (a)  
non-power-limited (a)  
nonaccessible  
noncontinuous  
noncurrent  
nondwelling unit (a)

nonexplosionproof  
nonflexible noninductive  
noninterchangeability  
nonmetallic  
nonmetallic-sheathed (a)  
nonshielded cable  
nontime  
not over (instead of *not more than*)  
not exceeding (instead of *not more than*)  
not less than

## O

off-premises source  
oil-break (a)  
oil-filled reactors  
on-premises source  
open-conductor supports  
open-resistance (a)  
optical fiber (a)  
other than a dwelling unit (avoid, use *nondwelling*)  
overcurrent device  
overcurrent protective device  
overtemperature (n)  
over-temperature (a)  
overvoltage (n)

## P

panelboard  
parallel (instead of multiple conductors)  
part-winding start induction  
pendant  
phase-to-phase (a)  
photovoltaic  
plug-in units  
pole-mounted (a)  
positive-pressure ventilation  
power conversion system (abbrev. PCS)  
power factor (abbrev. PF)  
power-conditioning unit (abbrev. PCU)  
power-limited (a)  
power-supply cord  
practicable (means feasible)  
practical (means useful)  
pre-amplifier  
pressure terminal connectors  
pressure splicing connectors  
protection against physical damage (state conditions)  
protector  
PVC-coated (a)

## R

raceway  
re-fused (a)  
rectifier-derived dc system  
remote-control (a)  
resistance temperature device (abbrev. RTD)  
resistor  
revolutions per minute (abbrev. rpm)

road show (a,n)  
root-mean-square (a)  
runoff (n)

## S

screw shell  
screw shell devices  
second (referring to time; do not abbreviate)  
secondary-circuit fault protection  
secondary-to-primary (a)  
semiconducting (a)  
service-disconnect enclosure  
service disconnecting means  
service-drop conductors s  
service-entrance conductors  
service-lateral conductors  
service-supplied ac (a)  
set screw type (a)  
set screw (n)  
sheet metal (a)  
short circuit (n)  
short-circuit and ground-fault protective device  
short-circuit current ratings  
short-time duty  
shunt-trip sidelight  
side-wiring spaces  
silicon controlled rectifier (abbrev. SCR)  
single-conductor cable  
single-phase (not 1-phase, but 2-phase, 3-phase, etc.)  
single-pole (a)  
skin-effect heating  
small-appliance branch circuit  
solid-state (a)  
space-heating equipment  
specific-purpose (a)  
stage-lighting (a)  
stage set lighting  
steady-state current  
steel-frame (a)  
storage battery charging equipment  
strain-relief (a)  
strut-type (a)  
sunlight-resistant (a)  
sunroom  
supply-side equipment  
surface metal raceway  
surge arrester (n)  
surge-arrester (a)  
surge-protective capacitors  
switchboards

## T

tamper-resistant (a)  
temperature-rated (a)  
tenpenny nail  
that (use where phrase is directly related to statement; do not set off with comma)  
through (instead of *thru* or *from* and *to*)  
time-current characteristics

time-delay fuse  
toward (not towards)  
trip-type (a)  
turnbuckle (n)  
Type MI cable

## U

under-carpet (a)  
upon (overused, try to avoid; *on* usually correct)

## V

voltage  
voltage-drop (a)  
volt (see units of measurement)  
voltmeter

## W

wall switch-controlled (a)  
weatherproof  
wet-pit (n)  
when (condition of time)  
where (location or situation)  
which (additional information in a phrase; set off with commas)  
3-wire (a)  
wire-bending space  
workmanlike (avoid, unenforceable)  
workplace  
workspace  
wye circuit (n)  
wye-connected (a)

## X

X-ray (not X-Ray)

## Units of Measurement

In the text, all units of measure, when accompanied by a number value, will be styled as follows:

feet (foot)	ft
meter	m
inch	in.
centimeter	cm
millimeter	mm
square feet	ft <sup>2</sup>
square meter	m <sup>2</sup>
square inch	in. <sup>2</sup>
square centimeter	cm <sup>2</sup>
square millimeter	mm <sup>2</sup>
cubic feet per minute	ft <sup>3</sup> /min
pounds	lb
kilograms	kg
degrees Celsius	°C
degrees Fahrenheit	°F
degree (angle)	degrees
percent	percent
thousand circular mils	kcmil
horsepower	hp (spelled out in heads)
hertz	Hz
kilovolt	kV
kilowatt	kW
kilovolt-amperes	kVA
kilovolt-amperes reactive	kVAr
volt	volt [abbreviate volt (V) when used with a number to mean rating]
ampere	ampere
watt	watt
volt-ampere	volt-ampere (spell out in heads)
megavoltampere	MVA
milliampere	mA
millivolt	mV
millivoltampere	mVA
milliwatt	mW
micrometer	m
microjoule	mJ
joule	J
kilojoule	kJ
gallon	gal

### Display text (tables, figure callouts, equations, and examples)

Units of measure are abbreviated as follows in display text. Exception: If units are used without a number preceding in a table title or table column head, units should be spelled out.

kilovolt	kV
kilowatt	kW
volt	V
ampere	A
volt-ampere	VA
kilovolt-ampere	kVA
percent	%
thousand circular mils	kcmil
degrees Celsius	°C
degrees Fahrenheit	°F

### Hyphenation

Hyphenate all units of measurement when used as adjectives before a noun, except when multiple units of measurement are used in the same phrase.

Example: a 5.5-kW, 240-volt dryer  
a 2 in. x 2 in. x 2 in. box

### Numbers

0.1 (use place-holding number before decimal)  
0 through 2000 (use *through* to express range)  
1000 (no comma in 4-digit numbers)  
10,000  
2 ½ (use case fraction)  
first (not 1st)

**Annex B**

**Conversion Reference Table**

U.S. Customary Unit	Existing SI Unit	Proposed SI Unit	Equivalent U.S. Unit
<b>1/32 in.</b>		<b>0.8 mm</b>	<b>0.031 in.</b>
<b>0.06 in.</b>	<b>1.52 mm</b>	<b>1.5 mm</b>	<b>0.059 in.</b>
<b>0.0625 in.</b>	<b>1.59 mm</b>	<b>1.59 mm</b>	<b>0.063 in.</b>
<b>1/16 in.</b>		<b>1.6 mm</b>	<b>0.063 in.</b>
<b>0.090 in.</b>	<b>2.29 mm</b>	<b>2.3 mm</b>	<b>0.091 in.</b>
<b>1/8 in.</b>	<b>3.18 mm</b>	<b>3 mm</b>	<b>0.118 in.</b>
<b>1/4 in.</b>	<b>6.35 mm</b>	<b>6 mm</b>	<b>0.24 in.</b>
<b>0.375 in.</b>	<b>9.52 mm</b>	<b>9.5 mm</b>	<b>0.374 in.</b>
<b>3/8 in.</b>		<b>10 mm</b>	<b>0.394 in.</b>
<b>1/2 in.</b>	<b>12.7 mm</b>	<b>13 mm</b>	<b>0.51 in.</b>
<b>5/8 in.</b>	<b>15.87 mm</b>	<b>16 mm</b>	<b>0.63 in.</b>
<b>3/4 in.</b>	<b>19 mm</b>	<b>19 mm</b>	<b>0.75 in.</b>
<b>15/16 in.</b>	<b>23.8 mm</b>	<b>24 mm</b>	<b>0.945 in.</b>
<b>1 in.</b>	<b>25.4 mm</b>	<b>25 mm</b>	<b>0.98 in.</b>
<b>1 1/4 in.</b>	<b>31.8 mm</b>	<b>32 mm</b>	<b>1.26 in.</b>
<b>1 1/2 in.</b>	<b>38 mm</b>	<b>38 mm</b>	<b>1.50 in.</b>
<b>1 3/4 in.</b>	<b>44.5 mm</b>	<b>45 mm</b>	<b>1.77 in.</b>
<b>1 7/8 in.</b>		<b>48 mm</b>	<b>1.89 in.</b>
<b>2 in.</b>	<b>50.8 mm</b>	<b>50 mm</b>	<b>1.97 in.</b>
<b>2 1/8 in.</b>		<b>54 mm</b>	<b>2.13 in.</b>
<b>2 1/4 in.</b>		<b>57 mm</b>	<b>2.24 in.</b>
<b>2 3/8 in.</b>		<b>60 mm</b>	<b>2.36 in.</b>
<b>2 1/2 in.</b>	<b>64 mm</b>	<b>65 mm</b>	<b>2.56 in.</b>
<b>3 in.</b>	<b>76 mm</b>	<b>75 mm</b>	<b>2.95 in.</b>
<b>3 1/2 in.</b>		<b>90 mm</b>	<b>3.54 in.</b>
<b>3 3/4 in.</b>		<b>95 mm</b>	<b>3.74 in.</b>
<b>4 in.</b>	<b>102 mm</b>	<b>100 mm</b>	<b>3.94 in.</b>
<b>4 1/2 in.</b>		<b>115 mm</b>	<b>4.53 in.</b>
<b>4 11/16 in.</b>		<b>120 mm</b>	<b>4.72 in.</b>
<b>5 in.</b>		<b>125 mm</b>	<b>4.92 in.</b>
<b>5 1/2 in.</b>		<b>140 mm</b>	<b>5.51 in.</b>
<b>6 in.</b>	<b>152 mm</b>	<b>150 mm</b>	<b>5.91 in.</b>
<b>6 1/2 in.</b>		<b>165 mm</b>	<b>6.5 in.</b>
<b>7 in.</b>		<b>175 mm</b>	<b>6.89 in.</b>
<b>7 1/2 in.</b>		<b>190 mm</b>	<b>7.48</b>
<b>8 in.</b>	<b>203 mm</b>	<b>200 mm</b>	<b>7.87 in.</b>
<b>8 1/2 in.</b>		<b>215 mm</b>	<b>8.46 in.</b>
<b>9 in.</b>	<b>229 mm</b>	<b>225 mm</b>	<b>8.86 in.</b>
<b>10 in.</b>		<b>250 mm</b>	<b>9.84 in.</b>
<b>11 1/2 in.</b>		<b>290 mm</b>	<b>11.42 in.</b>
<b>12 in.</b>	<b>305 mm</b>	<b>300 mm</b>	<b>11.81 in.</b>

13 in.		325 mm	12.8 in.
14 in.		350 mm	13.78 in.
15 in.	381 mm	375 mm	14.76 in.
16 in.	406 mm	400 mm	15.75 in.
17 in.		425 mm	16.73 in.
18 in.	457 mm	450 mm	17.72 in.
19 in.		475 mm	18.7 in.
20 in.		500 mm	19.69 in.
22 in.	557 mm	550 mm	21.65 in.
24 in.	610 mm	600 mm	23.62 in.
26 in.	659 mm	650 mm	25.59 in.
27 in.		675 mm	26.57 in.
30 in.	762 mm	750 mm	29.53 in.
36 in.	914 mm	900 mm	35.73 in.
38 in.		950 mm	37.40 in.
40 in.	1.02 m	1.0 m	39.37 in.
42 in.	1.07 m	1.0 m	39.37 in.
44 in.		1.1 m	43.30 in.
54 in.		1.4 m	55.12 in.
96 in.	2.44 m	2.5 m	98.43 in.
1 ft	305 mm	300 mm	0.98 ft
2 ft	610 mm	600 mm	1.97 ft
2 ½ ft	762 mm	750 mm	2.46 ft
3 ft	914 mm	900 mm	2.95 ft
3.5 ft	1.07 m	1.0 m	3.28 ft
4 ft	1.22 m	1.2 m	3.94 ft
4 ½ ft	1.37 m	1.4 m	4.59 ft
5 ft	1.52 m	1.5 m	4.92 ft
5 ½ ft	1.68 m	1.7 m	5.58 ft
6 ft	1.83 m	1.8 m	5.91 ft
6 ft 6 in.		2.0 m	6.56 ft
6 ½ ft	1.98 m	2.0 m	6.56 ft
6 ft 7 in.	2.0 m	2.0 m	6.56 ft
7 ft	2.13 m	2.1 m	6.89 ft
7 ft 6 in.	2.29 m	2.3 m	7.55 ft
8 ft	2.44 m	2.5 m	8.20 ft
9 ft	2.74 m	2.7 m	8.858 ft
10 ft	3.05 m	3.0 m	9.84 ft
12 ft	3.66 m	3.7 m	12.14 ft
14 ft	4.27 m	4.3 m	14.11 ft
15 ft	4.57 m	4.5 m	15.09 ft
16 ft	4.88 m	4.9 m	16.08 ft
17 ft	5.2 m	5.2 m	17.06 ft
18 ft	5.49 m	5.5 m	18.05 ft
20 ft	6.1 m	6.0 m	19.69 ft
21 ft	6.4 m	6.4 m	20.997 ft

22 ft	6.7 m	6.7 m	21.98 ft
25 ft	7.62 m	7.5 m	24.61 ft
27 ft	8.23 m	8.0 m	26.25 ft
30 ft	9.14 m	9.0 m	29.53 ft
35 ft	10.67 m	11 m	36.09 ft
40 ft	12.2 m	12 m	39.37 ft
50 ft	15.2 m	15 m	49.22 ft
60 ft		18 m	59.06 ft
70 ft		21 m	68.9 ft
75 ft	23 m	23 m	75.46 ft
80 ft	24.4 m	25 m	82 ft
100 ft	30.5 m	30 m	98.43 ft
135 ft		41 m	134.48 ft
140 ft	42.7 m	42 m	137.76 ft
150 ft		45 m	147.65 ft
200 ft	61 m	60 m	196.86 ft
1000 ft	305 m	300 m	984.3 ft

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