Public Comment No. 1096-NFPA 70-2021 [Global Input]

The Correlating Committee directs the Chair of CMP-11 to assign a task group to review all the definitions under their purview for compliance with the NEC Style Manual and to review definitions identified by the Correlating Committee that may contain correlation issues. The attachment includes a list of those definitions identified that need to be reviewed.

Additional Proposed Changes

File Name	Description	Approved
11_CN_360_Global.pdf	70_CN360	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 360 appeared in the First Draft Report on First Revision No. 7978.

The Correlating Committee directs the Chair of CMP-11 to assign a task group to review all the definitions under their purview for compliance with the NEC Style Manual and to review definitions identified by the Correlating Committee that may contain correlation issues. The attachment includes a list of those definitions identified that need to be reviewed.

Related Item

• First Revision No. 7978

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 09 13:43:35 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7586-NFPA 70-2021

Statement: The term "as applied to" is being removed from all definitions listed within this PC which have an article reference as directed from the CC.

See SR-7588 for changes to "Electronically Protected."

See SR-7587 for changes to "Branch Circuit, Motor (Motor Branch Circuit)."

Correlating Committee Note No. 360-NFPA 70-2021 [Global Input]

Supplemental Information

File Name	Description	Approved
NEC_P11_Definitions_TG_Attachment_CN360.docx		

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Thu May 06 22:41:44 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Chair of CMP-11 to assign a task group to review all the definitions under their purview for compliance with the NEC Style Manual and to review definitions identified by the Correlating Committee that may contain correlation issues. The attachment includes a list of those definitions identified that need to be reviewed.

First Revision No. 7978-NFPA 70-2020 [Global Input]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Correlating Committee Definitions Task Group
CMP-11 - Definitions

CMP-11 Definitions	Correlating Committee Comments
	The Correlating Committee directs the Chair of CMP-11 to assign a task group to review all the definitions under their purview for compliance with the NEC Style Manual and to review definitions identified by the Correlating Committee that may contain correlation issues. The attachment includes a list of those definitions identified that need to be reviewed.
Controller, Motor (Motor Controller). Any switch or device that is normally used to start and stop a motor by making and breaking the motor circuit current. (CMP-11)	Task Group 4 Controller, Motor 2.2.2.4 Multiple Terms
Branch Circuit, Motor. The circuit conductors, including equipment, between the motor branch-circuit short-circuit ground-fault protective device and an individual motor. (CMP-11)	2.2.2.2 Term in Definition 2.2.2.3.1 Searchable Title Suggest: (Motor Branch Circuit)
Branch-Circuit Selection Current (BCSC) (as applied to air-conditioning and refrigerating equipment). The value in amperes to be used instead of the rated-load current in determining the ratings of motor branch-circuit conductors, disconnecting means, controllers, and branch-circuit short- circuit and ground-fault protective devices wherever the running overload protective device permits a sustained current greater than the specified percentage of the rated-load current. The value of branch-circuit selection current will always be equal to or greater than the marked rated- load current. (440) (CMP-11)	2.2.2.3.2 Article Number (as applied to....)
Electronically Protected (as applied to motors). A motor provided with electronic control that is an integral part of the motor and protects the motor against dangerous overheating due to failure of the electronic control, overload, and failure to start. (CMP-11)	Add Article Number 2.2.2.3.2 (as applied to....)
Rated-Load Current (RLC) (as applied to air-conditioning and refrigerating equipment). The current of a hermetic refrigerant motor-compressor resulting when it is operated at the rated load, rated voltage, and rated frequency of the equipment it serves. (440) (CMP-11)	2.2.2.3.2 Article Number (as applied to....)
Safe Zone (as applied to capacitors). Low probability of damage other than a slight swelling of the capacitor case, as identified by the case rupture curve of the capacitor. (460) (CMP-11)	2.2.2.3.2 Article Number (as applied to....)
System Isolation Equipment (as applied to motors). A redundantly monitored, remotely operated contactor-isolating system, packaged to provide the disconnection/isolation function,	2.2.2.3.2 Article Number (as applied to....)

capable of verifiable operation from multiple remote locations by means of lockout switches, each having the capability of being padlocked in the “off” (open) position. (430) (CMP-11)	

Public Comment No. 1397-NFPA 70-2021 [Global Input]

Remove Part III (Over 1000 Volts, Nominal) from Article 460. See attached Word document.

Additional Proposed Changes

File Name	Description	Approved
NFPA_70_Article_460_Draft_PC_.docx	Public Comment to remove Part III from Article 460	

Statement of Problem and Substantiation for Public Comment

This Public Comment is submitted on behalf of a Correlating Committee Long-Range Planning Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, David Temple, Donny Cook, Dean Hunter, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Tim Croushore and Kevin Rogers.

This Public Comment, was developed with the goal of improving usability and providing a platform to increase the focus on requirements associated with Medium or High Voltage.

Reconsider the relocation of requirements for capacitors installed on electrical circuits operating over 1000 volts AC and 1500 volts DC (refer to PI 3728). While the Task Group would like to have seen all material identified in PI 3728 relocated to a new Article 495, it understands that some CMPs are hesitant to make this change. Reviewing actions taken by the various CMPs, and acknowledging that Panel 9, in creating Article 495, saw merit in this approach, the medium voltage Task Group also acknowledges that CMP 11 did not agree. However, the majority of capacitors are utilized in circuits operating over 1000 volts AC for power factor correction of large inductive loads. Article 490 (now Article 495) covers equipment rated over 1000 volts is the correct location for these requirements. This would enhance the user's ability to associate the requirements for over 1000 volt capacitors in one location rather than developing a relational understanding of multiple locations for the requirements that are applicable to the installation. Capacitors installed for over 1000 volt installations can be installed at the individual load, as part of a variable capacitance bank with switching capabilities or at the upstream switchgear for power factor correction. Relocating the requirements for capacitors over 1000 volts would help the user apply the requirements for the capacitors to the same related equipment where the capacitors would likely be installed.

Related Item

• PI 3728 • Global FR-7941

Submitter Information Verification

Submitter Full Name: Robert Osborne
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 12 14:31:56 EDT 2021

Committee: NEC-P11

Committee Statement

Committee Action: Rejected

Resolution: CMP-11 does not agree with moving medium voltage/high voltage (MV/HV) requirements out of Article 460. The requirements should remain in the Article with the equipment they pertain to for readability and useability. When looking for requirements on MV/HV equipment, users will first look for the requirements on the equipment, and then the additional requirements relative to MV/HV.

Global PC to Remove MV Requirements from Article 460

RATIONALE:

This Public Comment is submitted on behalf of a Correlating Committee Long-Range Planning Task Group consisting of Robert Osborne (Chair), Paul Barnhart, Lou Grahor, David Temple, Donny Cook, Dean Hunter, Mike Querry, Roger McDaniel, Dave Burns, Rod Belisle, Tim Croushore and Kevin Rogers.

This Public Comment, was developed with the goal of improving usability and providing a platform to increase the focus on requirements associated with Medium or High Voltage.

Reconsider the relocation of requirements for capacitors installed on electrical circuits operating over 1000 volts AC and 1500 volts DC (refer to PI 3728). While the Task Group would like to have seen all material identified in PI 3728 relocated to a new Article 495, it understands that some CMPs are hesitant to make this change. Reviewing actions taken by the various CMPs, and acknowledging that Panel 9, in creating Article 495, saw merit in this approach, the medium voltage Task Group also acknowledges that CMP 11 did not agree. However, the majority of capacitors are utilized in circuits operating over 1000 volts AC for power factor correction of large inductive loads. Article 490 (now Article 495) covers equipment rated over 1000 volts is the correct location for these requirements. This would enhance the user's ability to associate the requirements for over 1000 volt capacitors in one location rather than developing a relational understanding of multiple locations for the requirements that are applicable to the installation. Capacitors installed for over 1000 volt installations can be installed at the individual load, as part of a variable capacitance bank with switching capabilities or at the upstream switchgear for power factor correction. Relocating the requirements for capacitors over 1000 volts would help the user apply the requirements for the capacitors to the same related equipment where the capacitors would likely be installed.

PROPOSAL:

Article 460 Capacitors
~~**Part I. General.**~~
460.1 Scope.

This article covers the installation of capacitors on electrical circuits rated nominal 1000 Volts ac and under and nominal 1500 Volts dc and under.~~.~~

Surge capacitors or capacitors included as a component part of other apparatus and conforming with the requirements of such apparatus are excluded from these requirements.

460.3 Enclosing and Guarding.
(A) Containing More Than 11 L (3 gal) of Flammable Liquid.

Capacitors containing more than 11 L (3 gal) of flammable liquid shall be enclosed in vaults or outdoor fenced enclosures complying with Article 110, Part III. This limit shall apply to any single unit in an installation of capacitors.

(B) Accidental Contact.

Where capacitors are accessible to unauthorized and unqualified persons, they shall be enclosed, located, or guarded so that persons cannot come into accidental contact or bring conducting materials into

accidental contact with exposed energized parts, terminals, or buses associated with them. However, no additional guarding is required for enclosures accessible only to authorized and qualified persons.

~~**Part II. 1000 Volts, Nominal, and Under**~~

460.6 Discharge of Stored Energy.

Capacitors shall be provided with a means of discharging stored energy.

(A) Time of Discharge.

The residual voltage of a capacitor shall be reduced to 50 volts, nominal, or less within 1 minute after the capacitor is disconnected from the source of supply.

(B) Means of Discharge.

The discharge circuit shall be either permanently connected to the terminals of the capacitor or capacitor bank or provided with automatic means of connecting it to the terminals of the capacitor bank on removal of voltage from the line. Manual means of switching or connecting the discharge circuit shall not be used.

460.8 Conductors.

(A) Ampacity.

The ampacity of capacitor circuit conductors shall not be less than 135 percent of the rated current of the capacitor. The ampacity of conductors that connect a capacitor to the terminals of a motor or to motor circuit conductors shall not be less than one-third the ampacity of the motor circuit conductors and in no case less than 135 percent of the rated current of the capacitor.

(B) Overcurrent Protection.

An overcurrent device shall be provided in each ungrounded conductor for each capacitor bank. The rating or setting of the overcurrent device shall be as low as practicable.

Exception: A separate overcurrent device shall not be required for a capacitor connected on the load side of a motor overload protective device.

(C) Disconnecting Means.

A disconnecting means shall be provided in each ungrounded conductor for each capacitor bank and shall meet the following requirements:

(1) The disconnecting means shall open all ungrounded conductors simultaneously.

(2) The disconnecting means shall be permitted to disconnect the capacitor from the line as a regular operating procedure.

(3) The rating of the disconnecting means shall not be less than 135 percent of the rated current of the capacitor.

Exception: A separate disconnecting means shall not be required where a capacitor is connected on the load side of a motor controller.

460.9 Rating or Setting of Motor Overload Device.

Where a motor installation includes a capacitor connected on the load side of the motor overload device, the rating or setting of the motor overload device shall be based on the improved power factor of the motor circuit.

The effect of the capacitor shall be disregarded in determining the motor circuit conductor rating in accordance with 430.22.

460.10 Grounding.

Capacitor cases shall be connected to the equipment grounding conductor.

Exception: Capacitor cases shall not be connected to the equipment grounding conductor where the capacitor units are supported on a structure designed to operate at other than ground potential.

460.12 Marking.

Each capacitor shall be provided with a nameplate giving the name of the manufacturer, rated voltage, frequency, kilovar or amperes, number of phases, and, if filled with a combustible liquid, the volume of liquid. Where filled with a nonflammable liquid, the nameplate shall so state. The nameplate shall also indicate whether a capacitor has a discharge device inside the case.

~~**Part III. Over 1000 Volts, Nominal**~~

~~**460.24 Switching.**~~

~~**(A) Load Current.**~~

Switches shall be specifically rated for switching of capacitive loads. Capacitor switch operation shall open all ungrounded conductors and the switch shall be capable of the following:

(1) Carrying continuously not less than 135 percent of the rated current of the capacitor installation

(2) Interrupting the maximum continuous load current of each capacitor, capacitor bank, or capacitor installation that will be switched as a unit

(3) Withstanding the maximum inrush current, including contributions from adjacent capacitor installations

(4) Carrying currents due to faults on capacitor side of switch

(B) Isolation.
(1) General.

A means shall be installed to isolate from all sources of voltage each capacitor, capacitor bank, or capacitor installation that will be removed from service as a unit. The isolating means shall provide a visible gap in the electrical circuit adequate for the operating voltage.

(2) Isolating or Disconnecting Switches with No Interrupting Rating.

Isolating or disconnecting switches (with no interrupting rating) shall be interlocked with the load-interrupting device or shall be provided with prominently displayed caution signs in accordance with 490.22 to prevent switching load current.

(C) Additional Requirements for Series Capacitors.

The proper switching sequence shall be ensured by use of one of the following:

(1) Mechanically sequenced isolating and bypass switches

(2) Interlocks

(3) Switching procedure prominently displayed at the switching location

460.25 Overcurrent Protection.
(A) Provided to Detect and Interrupt Fault Current.

A means shall be provided to detect and interrupt fault current likely to cause dangerous pressure within an individual capacitor.

(B) Single Pole or Multipole Devices.

Single-pole or multipole devices shall be permitted for this purpose.

(C) Protected Individually or in Groups.

Capacitors shall be permitted to be protected individually or in groups.

(D) Protective Devices Rated or Adjusted.

Protective devices for capacitors or capacitor equipment shall be rated or adjusted to operate within the limits of the safe zone for individual capacitors.

460.26 Identification.

Each capacitor shall be provided with a permanent nameplate giving the manufacturer's name, rated voltage, frequency, kilovar or amperes, number of phases, and the volume of liquid identified as flammable, if such is the case.

460.27 Grounding.

Capacitor cases shall be connected to the equipment grounding conductor. If the capacitor neutral point is connected to a grounding electrode conductor, the connection shall be made in accordance with Part III of Article 250.

Exception: Capacitor cases shall not be connected to the equipment grounding conductor where the capacitor units are supported on a structure designed to operate at other than ground potential.

460.28 Means for Discharge.
(A) Means to Reduce the Residual Voltage.

A means shall be provided to reduce the residual voltage of a capacitor to 50 volts or less within 5 minutes after the capacitor is disconnected from the source of supply.

~~(B) Connection to Terminals.~~

~~A discharge circuit shall be either permanently connected to the terminals of the capacitor or provided with automatic means of connecting it to the terminals of the capacitor bank after disconnection of the capacitor from the source of supply. The windings of motors, transformers, or other equipment directly connected to capacitors without a switch or overcurrent device interposed shall meet the requirements of 460.28(A).~~

Public Comment No. 975-NFPA 70-2021 [Global Input]

**The Correlating Committee notes that more than one related term is being used for Controller, Motor (Motor Controller). Section 2.2.2.4 of the NEC Style Manual review this issue and a establishes a Task Group with representation from CMPs 11 and 12 to consider one definition for correlation, if applicable. The Correlating Committee assigns the definition of
"Controller, Motor" to CMP-11. Each panel is assigned to revise the definitions under their purview to comply with the NEC Style Manual.**

Additional Proposed Changes

File Name	Description	Approved
12_CN_394_Global.pdf	12 CN394	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 394 appeared in the First Draft Report on First Revision Nos. 9274 and 7978.

The Correlating Committee notes that more than one related term is being used for Controller, Motor (Motor Controller). Section 2.2.2.4 of the NEC Style Manual review this issue and a establishes a Task Group with representation from CMPs 11 and 12 to consider one definition for correlation, if applicable. The Correlating Committee assigns the definition of
"Controller, Motor" to CMP-11. Each panel is assigned to revise the definitions under their purview to comply with the NEC Style Manual.

Related Item

• First Revision No. 9274 • First Revision No. 7978

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 13:32:39 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected

Resolution:	A task group (TG4) chaired by John Kovacik was created and reviewed the issue. The resolution is to change the term assigned to CMP-12 via a public comment.

Correlating Committee Note No. 394-NFPA 70-2021 [Global Input]

Submitter Information Verification

Committee: NEC-P12
Submittal Date: Fri May 07 16:16:56 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee notes that more than one related term is being used for Controller, Motor (Motor Controller). Section 2.2.2.4 of the NEC Style Manual review this issue and a establishes a Task Group with representation from CMPs 11 and 12 to consider one definition for correlation, if applicable. The Correlating Committee assigns the definition of "Controller, Motor" to CMP-11. Each panel is assigned to revise the definitions under their purview to comply with the NEC Style Manual.

First Revision No. 9274-NFPA 70-2021 [Global Input]

First Revision No. 7978-NFPA 70-2020 [Global Input]

Ballot Results

✔ **This item has passed ballot**

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1171-NFPA 70-2021 [Definition: Branch Circuit, Motor.]

Branch Circuit, Motor.

The circuit conductors, including equipment, between the motor branch-circuit short-circuit and ground-fault protective device, and an individual motor. (CMP-11)

Statement of Problem and Substantiation for Public Comment

The definition as proposed is confusing because of the lack of a conjunction between "short-circuit" and "ground-fault. The addition of the comma ahead of "and an individual motor" separates the two items being connected through the circuit conductors. The phrasing "branch-circuit and ground fault" has been in place for literally generations, and its removal at this time is both jarring and not technically or grammatically supportable.

Related Item

• FR 7980

Submitter Information Verification

Submitter Full Name: Frederic Hartwell
Organization: Hartwell Electrical Services, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 10 13:58:56 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7587-NFPA 70-2021

Statement: “And” is added between “short-circuit” and “ground-fault” to add accuracy to the term as requested by PC-1171.

The searchable term “Motor Branch Circuit” is added to the definition for compliance to 2.2.2.3.1 of the style manual as requested by PC-1452 and 1096.

Public Comment No. 1452-NFPA 70-2021 [Definition: Branch Circuit, Motor.]

Branch Circuit, Motor (Motor Branch Circuit) .

The circuit conductors, including equipment, between the motor branch-circuit short-circuit ground-fault protective device and an individual motor. (CMP-11)

Statement of Problem and Substantiation for Public Comment

Clause 2.2.2.3.1 of the 2020 NEC Style Manual requires that when a term consists of a base term followed by a comma and then the modifying descriptor, the defined term shall appear in parentheses following the term. This revision brings the definition for "branch circuit, motor" into compliance with the 2020 NEC Style Manual.

Related Item

• FR 7980

Submitter Information Verification

Submitter Full Name: Seth Carlton
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Fri Aug 13 14:24:47 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7587-NFPA 70-2021

Statement: “And” is added between “short-circuit” and “ground-fault” to add accuracy to the term as requested by PC-1171.

The searchable term “Motor Branch Circuit” is added to the definition for compliance to 2.2.2.3.1 of the style manual as requested by PC-1452 and 1096.

Public Comment No. 1454-NFPA 70-2021 [Definition: Electronically Protected (as applied to motors).]

Electronically Protected (as applied to motors).

A motor provided with electronic control that is an integral part of the motor and protects the motor against dangerous overheating due to failure of the electronic control, overload, and failure to start. (430) (CMP-11)

Statement of Problem and Substantiation for Public Comment

Clause 2.2.2.3.2 of the 2020 NEC Style Manual requires that the Article number be included in parentheses after a defined term when that term only appears in one Article. Since electronically protected only appears in Article 430, "430" should appear at the end of the term.

Related Item

• PI 3141

Submitter Information Verification

Submitter Full Name: Seth Carlton
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Fri Aug 13 14:42:42 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Accepted
Resolution: SR-7588-NFPA 70-2021
Statement: “430” is added to the definition of electronically protected because the term is only found in Article 430. This is for compliance to 2.2.2.3.2 of the style manual.

"(as applied to motors)" was removed as directed by the CC in PC-1096.

Public Comment No. 928-NFPA 70-2021 [Section No. 409.1]

409.1 Scope.

This article covers industrial control panels intended for general use and operating at 1000 volts or less.

Informational Note: See ANSI/UL 508A, *Standard for Industrial Control Panels*, a safety standard for industrial control panels.

Additional Proposed Changes

File Name	Description	Approved
11_CN_14.pdf	70_CN14	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 14 appeared in the First Draft Report on First Revision No. 8051.

The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

Related Item

• First Revision No. 8051

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 09:19:20 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected
Resolution: CMP 11 acknowledges that the scope is under the purview of the correlating committee.

Correlating Committee Note No. 14-NFPA 70-2021 [Section No. 409.1]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 11:55:09 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee advises that article scope statements are the responsibility of the Correlating Committee and the Correlating Committee accepts the Panel action.

First Revision No. 8051-NFPA 70-2020 [Section No. 409.1]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1000-NFPA 70-2021 [Section No. 409.3]

409.3 Other Articles.

In addition to the requirements of this article, industrial control panels that contain branch circuits for specific loads or components, or are for control of specific types of equipment addressed in other articles of this *Code*, shall be constructed and installed in accordance with the applicable requirements from the articles in Table 409.3.

Table 409.3 Other Articles

Equipment/Occupancy	Article	Section
Branch circuits	210	
Luminaires	410	
Motors, motor circuits, and controllers	430	
Air-conditioning and refrigerating equipment	440	
Capacitors		460.8 and 460.9
Hazardous (classified) locations	500, 501, 502, 503, 504, and 505	
Commercial garages; aircraft hangars; motor fuel dispensing facilities; bulk storage plants; spray application, dipping, and coating processes; and inhalation anesthetizing locations	511, 513, 514, 515, 516, and 517 Part IV	
Cranes and hoists	610	
Electrically driven or controlled irrigation machines	675	
Elevators, dumbwaiters, escalators, moving walks, wheelchair lifts, and stairway chair lifts	620	
Industrial machinery	670	
Resistors and reactors	470	
Transformers	450	
Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits	725	

Additional Proposed Changes

File Name	Description	Approved
11_CN_33.pdf	70_CN33	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 33 appeared in the First Draft Report on First Revision No. 8052.

The Correlating Committee directs that Table 409.3 be reviewed for compliance with 4.1.1 and 4.1.4 of the NEC Style Manual. Committees shall always be mindful of the structure of the document as specified in 90.3 when contemplating the inclusion of a reference to other requirements.

Related Item

• First Revision No. 8052

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 15:01:07 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7662-NFPA 70-2021
Statement: Table 409.3 is removed because the information is redundant to the requirements of 90.3. The first sentence of clause 409.3 is revised to delete the reference to Table 409.3.

Correlating Committee Note No. 33-NFPA 70-2021 [Section No. 409.3]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 14:09:03 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that Table 409.3 be reviewed for compliance with 4.1.1 and 4.1.4 of the NEC Style Manual. Committees shall always be mindful of the structure of the document as specified in 90.3 when contemplating the inclusion of a reference to other requirements.

First Revision No. 8052-NFPA 70-2020 [Section No. 409.3]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1393-NFPA 70-2021 [Section No. 409.30]

409.30 Disconnecting Means.

Disconnecting means that supply motor loads shall comply with Part IX of Article 430.

Informational Note: Considerations for testing for the absence of voltage should be made at the time of installation. If test points are insulated or not readily accessible due to the presence of barriers or guards, consider utilizing a permanently mounted absence of voltage tester (AVT). NFPA 70E provides guidance for safely verifying the absence of voltage.

Statement of Problem and Substantiation for Public Comment

With insulation and barrier requirements becoming more common, it is increasingly difficult in certain situations to safely test for the absence of voltage with a portable tester. NFPA 70E has recognized both portable testers and permanently mounted absence of voltage testers as acceptable methods for verifying the absence of voltage since 2018. Permanently mounted absence of voltage testers can significantly reduce risk and exposure to electrical hazards when testing for absence of voltage. However, because it is permanently mounted, the tester has to be considered during the installation of the equipment. Adding an informational note that encourages equipment designers and installers to consider how absence of voltage testing will be performed will lead to increased safety of those who operate and maintain the equipment after it is installed, regardless of whether portable or permanently-mounted testers are used. This informational note does not require absence of voltage testers, but only seeks to make people aware that there are multiple methods to accomplish this task and points the user of the standard to NFPA 70E for more information on this topic. If this topic is not considered at the time of installation, it may not be possible to mitigate testing risks later during the life of the equipment.

Related Item

• PI 3934

Submitter Information Verification

Submitter Full Name: Rachel Bugaris
Organization: Panduit Corp
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 12 14:22:25 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected

Resolution: There are multiple ways to address safety with respect to the presence of voltage. The code should not favor a specific method.

Public Comment No. 934-NFPA 70-2021 [Section No. 409.60]

409.60 Bonding.

Multisection industrial control panels shall be bonded together with an equipment bonding conductor or an equivalent equipment grounding bus sized in accordance with Table 250.122. Equipment bonding conductors shall be connected to this equipment grounding bus or to an equipment grounding termination point provided in a single-section industrial control panel.

Additional Proposed Changes

File Name	Description	Approved
11_CN_16.pdf	70_CN16	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 16 appeared in the First Draft Report on First Revision No. 8056.

The Correlating Committee directs that the Panel review FR 8056 for consistent use of terms "grounding" and "bonding", with the tables referenced in Article 250 (refer to the table titles for 250.122 and 250.102(C)(1)). This revision is referred to CMP 5 for comment

Related Item

• First Revision No. 8056

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 09:46:13 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7664-NFPA 70-2021
Statement: The section is revised to clarify requirements for grounding and requirements for bonding of multi-section industrial control panels.

Correlating Committee Note No. 16-NFPA 70-2021 [Section No. 409.60]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:07:14 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that the Panel review FR 8056 for consistent use of terms “grounding” and “bonding”, with the tables referenced in Article 250 (refer to the table titles for 250.122 and 250.102(C)(1)). This revision is referred to CMP 5 for comment.

First Revision No. 8056-NFPA 70-2020 [Section No. 409.60]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1489-NFPA 70-2021 [Section No. 409.70]

~~**409.70** Surge Protection.~~

~~Safety interlock control devices for personnel protection that are subject to damage from surge events shall have surge protection installed in accordance with Part II of Article 242 .~~

Statement of Problem and Substantiation for Public Comment

Delete this proposed new requirement. The language is very subjective and unenforceable. How does an AHJ determine that an industrial control panel incorporates safety interlock control devices for personnel protection. Further, if an AHJ can somehow determine that such devices are provided, how does the AHJ determine that such devices are subject to damage from surge events. It is a leap of faith to expect that both conditions can be verified. There is no mechanism in place to assist the AHJ in making these determinations. Industrial control panels are not provided with any information that would assist them in determining compliance with this requirement. The proposed language will result in some AHJ's requiring surge protection for panels that do not require it in order to avoid noncompliance of a requirement that they cannot interpret and apply properly. This is an unintended consequence and should not exist. Forcing users to install equipment that is not necessary is not the intent of the code. We should not mandate the use of surge protection in industrial control panels. Requirements exist in UL508A for the selection and use of surge protective devices. We should leave it to the discretion of the panel manufacturer when and how to use them.

Related Item

• FR-8053

Submitter Information Verification

Submitter Full Name: John Kovacik
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Sun Aug 15 15:19:52 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected

Resolution: The requirements for surge protection for safety circuits are necessary to provide protection for these circuits, therefore, the panel is keeping the language added at first draft as modified by SR-7680.

Public Comment No. 1579-NFPA 70-2021 [Section No. 409.70]

409.70 Surface Protection.

Safety ~~interlock control devices~~ circuits for personnel protection that are subject to damage from surge events shall have surge protection installed in accordance with Part II of Article 242.

Statement of Problem and Substantiation for Public Comment

NEMA agrees with CMP 11's addition of surge protection into industrial control panels with safety devices installed. The wording of "Safety interlock" formerly corresponded with section 670.6. However, CMP 12 has changed the wording to "safety circuit" to correlate with NFPA 79 (FR 9578) and added a definition for a safety circuit (FR 9518). The proposed change will bring industrial control panels into alignment with these changes.

Related Item

• FR 8053

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 16 14:43:32 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7680-NFPA 70-2021

Statement: Response to PC-1579: "Safety interlock control devices" is changed to "safety circuits" to match the definition of safety circuit in Article 100.

Response to PC-1736: The reference to Article 242 is being removed because it is redundant to the requirements of the code. Additionally, clarification is added with respect to the location of the surge protective device, it must be within or immediately adjacent to the industrial control panel.

CMP-11 requests that the correlating committee remove the "(670)" from the definition for "safety circuit" in accordance with NEC Style Manual section 2.2.2.3.2, as by creating this SR the definition is used in more than one article.

Public Comment No. 1736-NFPA 70-2021 [Section No. 409.70]

409.70 Surge Protection.

Safety interlock control devices for personnel protection that are subject to damage from surge events shall have surge protection installed in accordance with Part II of Article 242.

Additional Proposed Changes

File Name	Description	Approved
11_CN_15.pdf	11 CN15	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 15 appeared in the First Draft Report on First Revision No. 8053

The Correlating Committee directs that FR 8053 be reviewed for compliance with 4.1.1 of the NEC Style Manual. Specifying that “surge protection” is required would result in the application of Article 242, as it is not necessary to repeat requirements in Chapters 1 through 4. This Correlating Committee note is sent to the NFPA 79 Technical Committee for information.

Related Item

• First Revision No. 8053

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 17 15:42:25 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7680-NFPA 70-2021

Statement: Response to PC-1579: “Safety interlock control devices” is changed to “safety circuits” to match the definition of safety circuit in Article 100.

Response to PC-1736: The reference to Article 242 is being removed because it is redundant to the requirements of the code. Additionally, clarification is added with respect to the location of the surge protective device, it must be within or immediately adjacent to the industrial control panel.

CMP-11 requests that the correlating committee remove the “(670)” from the definition for “safety circuit” in accordance with NEC Style Manual section 2.2.2.3.2, as by

creating this SR the definition is used in more than one article.

Correlating Committee Note No. 15-NFPA 70-2021 [New Section after 409.60]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 11:59:17 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that FR 8053 be reviewed for compliance with 4.1.1 of the NEC Style Manual. Specifying that "surge protection" is required would result in the application of Article 242, as it is not necessary to repeat requirements in Chapters 1 through 4. This Correlating Committee note is sent to the NFPA 79 Technical Committee for information.

First Revision No. 8053-NFPA 70-2020 [New Section after 409.60]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1488-NFPA 70-2021 [Section No. 409.110]

409.110 Marking.

An industrial control panel shall be marked with a permanent nameplate attached to the enclosure that is visible after installation and complying with 409.110(A) or (B) and (C)

(A) Panels intended for Industrial Machinery

The nameplate shall be attached to the outside of the enclosure

~~that is of sufficient durability to withstand the environment involved, that is not handwritten, and that is visible after installation.~~

.

(B) All other panels

The nameplate shall be attached to the outside or inside of the door or cover of the enclosure, or on the inside walls of the enclosure.

(C) Nameplate Information.

The nameplate shall include the following information:

(1) Manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product can be identified.

(2) Supply voltage, number of phases, frequency, and full-load current for each incoming supply circuit.

(3) Industrial control panels supplied by more than one electrical source where more than one disconnecting means is required to disconnect all circuits 50-volts or more within the control panel shall be marked to indicate that more than one disconnecting means is required to de-energize the equipment. The location of the means necessary to disconnect all circuits 50-volts or more shall be documented and available.

(4) Short-circuit current rating of the industrial control panel based on one of the following:

(5) Short-circuit current rating of a listed and labeled assembly

(6) Short-circuit current rating established utilizing an approved method

Informational Note: See ANSI/UL 508A, *Standard for Industrial Control Panels*, Supplement SB, for an example of an approved method.

Exception to (4): Short-circuit current rating markings are not required for industrial control panels containing only control circuit components.

(7) If the industrial control panel is intended as service equipment, it shall be marked to identify it as being suitable for use as service equipment.

(8) Electrical wiring diagram or the identification number of a separate electrical wiring diagram or a designation referenced in a separate wiring diagram.

(9) An enclosure type number ~~marked on the industrial control panel enclosure~~ .

Additional Proposed Changes

File Name	Description	Approved

Proposed_Comment_to_409.110.docx	This file contains the proposed revisions in track changes and includes the supporting rationale.

Statement of Problem and Substantiation for Public Comment

The revisions align the marking requirements for the nameplate with those in UL 508A, The Standard For Industrial Control Panels and NFPA 79, The Standard For Industrial Machinery. The requirement for durability to withstand the environment and not being handwritten is considered covered by Section 110.21. These changes also satisfy the directives to the panel in Correlating Committee Note No. 17.

Additional comments;
The following are just a few UL standards that require product nameplates to be "plainly visible" after installation. This does not mean the product nameplate must be on the outside of the enclosure - although clearly it can be. These standards have allowances for the product nameplate to be located on the inside of enclosures provided the nameplate is readily visible by opening an enclosure door or removing an enclosure cover.

- UL 67 - Panelboards
- UL 98 - Enclosed and Dead-Front Switches
- UL 218 - Fire Pump Controllers
- UL 347 Series - Medium Voltage Equipment
- UL 508 and UL 60947 Series - Industrial Control Equipment
- UL 845 - Motor Control Centers
- UL 891 - Switchboards
- UL 977 - Fused Power-Circuit Devices
- UL 1008 Series - Transfer Switch Equipment
- UL 6420 - Safety Isolation Equipment
- UL 61800-5-1 - Adjustable Speed Electrical Power Drive Systems

For products certified to all of these UL standards, the focus is on verification/validation of all product markings to ensure the product nameplate is "plainly visible" after installation during the product evaluation. Until such time as the electrical distribution and control industry can agree to mandate all enclosed equipment product nameplates be provided on the outside of the enclosure through a consensus process, the requirements for industrial control panel nameplates should not be any different.

Related Item

- FR-8058

Submitter Information Verification

Submitter Full Name: John Kovacik
Organization: UL LLC
Street Address:
City:
State:
Zip:
Submittal Date: Sun Aug 15 14:03:08 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7742-NFPA 70-2021

Statement: The FR was modified to include markings that should be identified on the outside of the industrial control panel while allowing some items to be identified on the inside. Identification of certain markings on the outside of the panel can increase safety of persons working on industrial control panels.

Response to PC-1488: It is important to keep the information in 409.110(2) and (3) on the outside of the enclosure for all industrial control panels.

409.110 Marking.

An industrial control panel shall be marked with a permanent nameplate attached to the ~~outside of the~~ enclosure ~~that is of sufficient durability to withstand the environment involved, that is not handwritten, and~~ that is visible after installation and complying with 409.110(A) or (B) and (C).

(A) Panels intended for Industrial Machinery

The nameplate shall be attached to the outside of the enclosure.

(B) All other panels

The nameplate shall be attached to the outside or inside of the door or cover of the enclosure, or on the inside walls of the enclosure.

(C) Nameplate Information.

The nameplate shall include the following information:

1. Manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product can be identified.
2. Supply voltage, number of phases, frequency, and full-load current for each incoming supply circuit.
3. Industrial control panels supplied by more than one electrical source where more than one disconnecting means is required to disconnect all circuits 50-volts or more within the control panel shall be marked to indicate that more than one disconnecting means is required to de-energize the equipment. The location of the means necessary to disconnect all circuits 50-volts or more shall be documented and available.
4. Short-circuit current rating of the industrial control panel based on one of the following:
    1. Short-circuit current rating of a listed and labeled assembly
    2. Short-circuit current rating established utilizing an approved method

    Informational Note: See ANSI/UL 508A, *Standard for Industrial Control Panels*, Supplement SB, for an example of an approved method.

    Exception to (4): Short-circuit current rating markings are not required for industrial control panels containing only control circuit components.

5. If the industrial control panel is intended as service equipment, it shall be marked to identify it as being suitable for use as service equipment.
6. Electrical wiring diagram or the identification number of a separate electrical wiring diagram or a designation referenced in a separate wiring diagram.
7. An enclosure type number ~~marked on the industrial control panel enclosure~~.

Rationale:

The revisions align the marking requirements for the nameplate with those in UL 508A, The Standard For Industrial Control Panels and NFPA 79, The Standard For Industrial Machinery. The requirement for durability to withstand the environment and not being handwritten is considered covered by Section 110.21. These changes also satisfy the directives to the panel in Correlating Committee Note No. 17.

Additional comments;

The following are just a few UL standards that require product nameplates to be "plainly visible" after installation. This does not mean the product nameplate must be on the outside of the enclosure - although clearly it can be. These standards have allowances for the product nameplate to be located on the inside of enclosures provided the nameplate is readily visible by opening an enclosure door or removing an enclosure cover.

- UL 67 - Panelboards
- UL 98 - Enclosed and Dead-Front Switches
- UL 218 - Fire Pump Controllers
- UL 347 Series - Medium Voltage Equipment
- UL 508 and UL 60947 Series - Industrial Control Equipment
- UL 845 - Motor Control Centers
- UL 891 - Switchboards
- UL 977 - Fused Power-Circuit Devices
- UL 1008 Series - Transfer Switch Equipment
- UL 6420 - Safety Isolation Equipment
- UL 61800-5-1 - Adjustable Speed Electrical Power Drive Systems

For products certified to all of these UL standards, the focus is on verification/validation of all product markings to ensure the product nameplate is "plainly visible" after installation during the product evaluation. Until such time as the electrical distribution and control industry can agree to mandate all enclosed equipment product nameplates be provided on the outside of the enclosure through a consensus process, the requirements for industrial control panel nameplates should not be any different.

Public Comment No. 1566-NFPA 70-2021 [Section No. 409.110]

409.110 Marking.

An industrial control panel shall ~~be marked with a permanent nameplate attached to the outside of the enclosure that is~~ have permanent markings that are of sufficient durability to withstand the environment involved, that ~~is~~ are not handwritten, and that ~~is~~ are visible after installation. ~~The nameplate shall include the following information~~ The markings in 409.110(2), (3), (4), and (7) shall be attached to the outside of the enclosure. The markings in 409.110(1), (5), and (6) shall be attached to either the inside or outside of the enclosure. The following markings shall be included :

(1) Manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product can be identified.

(2) Supply voltage, number of phases, frequency, and full-load current for each incoming supply circuit.

(3) Industrial control panels supplied by more than one electrical source where more than one disconnecting means is required to disconnect all circuits 50-volts or more within the control panel shall be marked to indicate that more than one disconnecting means is required to de-energize the equipment. The location of the means necessary to disconnect all circuits 50-volts or more shall be documented and available.

(4) Short-circuit current rating of the industrial control panel based on one of the following:

(5) Short-circuit current rating of a listed and labeled assembly

(6) Short-circuit current rating established utilizing an approved method

Informational Note: See ANSI/UL 508A, *Standard for Industrial Control Panels*, Supplement SB, for an example of an approved method.

Exception to (4): Short-circuit current rating markings are not required for industrial control panels containing only control circuit components.

(7) If the industrial control panel is intended as service equipment, it shall be marked to identify it as being suitable for use as service equipment.

(8) Electrical wiring diagram or the identification number of a separate electrical wiring diagram or a designation referenced in a separate wiring diagram.

(9) An enclosure type number marked on the industrial control panel enclosure.

Statement of Problem and Substantiation for Public Comment

1. The First Revision mischaracterizes all seven markings of section 409.110 as nameplate markings. The following markings are not nameplate markings:

(a) The marking in 409.110(3) is intended to be a safety sign which differs from nameplate markings due to the presence of a signal word, use of colors, and increased font size in accordance with ANSI Z535.4. The text and background of the safety sign is intended to attract attention. This marking is intended to be on the outside of the enclosure but not as part of the panel nameplate. UL 508A currently requires this marking to be placed on the outside of the panel and to be preceded by a signal word such as “WARNING-Risk of Electric Shock”;

(b) The second sentence of 409.110(3) includes a statement to identify the location of all (remote) disconnecting means supplying an industrial control panel. This information is not known by the panel

manufacturer and could not be included on a panel nameplate. This information is specific to the installation and would be documented after the panel has been installed. The First revision would cause confusion of whether this information needs to be on the outside of the panel, or if the current wording, "…documented and available", is sufficient for remote disconnects; and

(c) The marking in 409.110(6) describes an electrical wiring diagram that is typically applied to the inside of the door or located in a print pocket on the inside of the enclosure door. The electrical wiring diagram is not normally included as a part of a panel nameplate.
The proposed changes to the First Revision text removes references to a "nameplate" and simply refers to markings in 409.110.
2. The proposed revision requires all seven markings of section 409.110 to be located on the outside of the industrial control panel. The two stated goals mentioned in the substantiation of the public input were to require critical information to be located on the outside of the panel and to facilitate inspection of the panel without having to open the enclosure. The following markings do not meet these criteria and should not be required to be on the outside of a control panel:

(a) The marking in 409.110(1) for the control panel manufacturers name is not critical information necessary for inspections of the panel. The manufacturer name is not part of the required nameplate marking in section 670.3(A) for industrial machinery.

(b) The second sentence of 409.110(3) includes a statement to identify the location of all disconnecting means and currently indicates the information is documented and available. This information is not known by the panel manufacturer, is unique to the installation site and can only be applied after the panel has been installed. The First Revision would cause confusion of whether this information needs to be on the outside of the panel or if the current wording, "…documented and available", is sufficient;

(c) The marking in 409.110(5) refers to panels that are suitable as service equipment. For panels that are suitable as service equipment but not actually installed at the service entrance, the marking is not necessary on the outside of the enclosure. Section 409.110(5) does not include all the markings necessary for panels that are installed as service equipment. The requirements and markings for an industrial control panel installed as service equipment are covered in Article 230, Parts V, VI and VII, and are not addressed in Article 409. Service equipment markings are not part of the required nameplate marking in section 670.3(A) for industrial machinery; and

(d) Placing the wiring diagram marking in 409.110(6) on the outside of a control panel is not practical due to its size and would make inspections of the wiring connections within the panel more difficult. Having the wiring diagram inside the enclosure door or in a print pocket protects the marking from external effects on its legibility and makes the diagram readily available when inspections of the actual wiring connections are being performed. A diagram number does not provide any critical information for inspection purposes and would still require the document to be accessed within the panel enclosure or at another storage location.

The proposed changes to the First Revision text clarifies that only the markings in 409.110(2),(3),(4) and (7) need to be located on the outside of the industrial control panel and the remaining markings in 409.110(1),(5), and(6) can be located either on the inside or outside of the industrial control panel

Related Item

• FR 8058

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:

State:
Zip:
Submittal Date: Mon Aug 16 14:21:05 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7742-NFPA 70-2021

Statement: The FR was modified to include markings that should be identified on the outside of the industrial control panel while allowing some items to be identified on the inside. Identification of certain markings on the outside of the panel can increase safety of persons working on industrial control panels.

Response to PC-1488: It is important to keep the information in 409.110(2) and (3) on the outside of the enclosure for all industrial control panels.

Public Comment No. 1898-NFPA 70-2021 [Section No. 409.110]

409.110 Marking.

An industrial control panel shall be durably marked by the manufacturer with ~~a permanent nameplate attached to the outside of the enclosure that is of sufficient durability to withstand the environment involved, that is not handwritten, and that is visible after installation. The nameplate shall include the following information~~ the information in items (1) through (7) in such a manner that is visible after installation without disturbing the interior parts or wiring. The markings shall be permitted to be on the outside of the industrial control panel enclosure wall, door, or cover or on an inside wall of the enclosure unless otherwise specified below :

(1) Manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product can be identified.

(2) Supply voltage, number of phases, frequency, and full-load current for each incoming supply circuit.

(3) Industrial control panels supplied by more than one electrical source where more than one disconnecting means is required to disconnect all circuits 50-volts or more within the control panel shall be marked on the outside of the enclosure wall, door, or cover to indicate that more than one disconnecting means is required to de-energize the equipment. The location of the means necessary to disconnect all circuits 50-volts or more shall be documented and available.

(4) Short-circuit current rating of the industrial control panel based on one of the following:

(5) Short-circuit current rating of a listed and labeled assembly

(6) Short-circuit current rating established utilizing an approved method

Informational Note: See ANSI/UL 508A, *Standard for Industrial Control Panels*, Supplement SB, for an example of an approved method.

Exception to (4): Short-circuit current rating markings are not required for industrial control panels containing only control circuit components.

(7) If the industrial control panel is intended as service equipment, it shall be marked to identify it as being suitable for use as service equipment.

(8) Electrical wiring diagram or the identification number of a separate electrical wiring diagram or a designation referenced in a separate wiring diagram.

(9) An enclosure type ~~number marked on the industrial control panel enclosure.~~ in accordance with 110.28.

Statement of Problem and Substantiation for Public Comment

These proposed revisions align the marking requirements for industrial control panels with those defined in ANSI/UL 508A, Industrial Control Panels and are consistent with similar requirements for panelboards in 408.58. The revised text ensures the nameplate information is accessible for installation and maintenance while providing industrial control panel manufacturers with the flexibility to locate marking information in such a way to ensure permanency and legibility. The requirement for items (3) to be on the outside of the enclosure aligns with requirements in UL508A. Item (7) was revised for clarify by referencing the enclosure type marking requirements in 110.28.

The requirements in FR8058 to have all rating information on the outside of industrial control panel enclosures is not consistent with other enclosed industrial control and distribution equipment. For

example: A manufacturer can design and build an enclosed motor starter certified in accordance with UL 508 or UL 60947-4-1 and apply a product nameplate with rating information on the inside of the enclosure. Conversely, an industrial control panel manufacturer who builds the exact same motor starter in accordance with (and certified to) UL 508A would be required to put the product nameplate on the outside of the enclosure. These differences in marking requirements could create confusion for installers, AHJ's, and customers of electrical equipment, with potential unintended consequences.

Related Item

• FR8058

Submitter Information Verification

Submitter Full Name: Jay Tamblingson
Organization: Rockwell Automation
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 14:38:12 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7742-NFPA 70-2021

Statement: The FR was modified to include markings that should be identified on the outside of the industrial control panel while allowing some items to be identified on the inside. Identification of certain markings on the outside of the panel can increase safety of persons working on industrial control panels.

Response to PC-1488: It is important to keep the information in 409.110(2) and (3) on the outside of the enclosure for all industrial control panels.

Public Comment No. 936-NFPA 70-2021 [Section No. 409.110]

409.110 Marking.

An industrial control panel shall be marked with a permanent nameplate attached to the outside of the enclosure that is of sufficient durability to withstand the environment involved, that is not handwritten, and that is visible after installation. The nameplate shall include the following information:

(1) Manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product can be identified.

(2) Supply voltage, number of phases, frequency, and full-load current for each incoming supply circuit.

(3) Industrial control panels supplied by more than one electrical source where more than one disconnecting means is required to disconnect all circuits 50-volts or more within the control panel shall be marked to indicate that more than one disconnecting means is required to de-energize the equipment. The location of the means necessary to disconnect all circuits 50-volts or more shall be documented and available.

(4) Short-circuit current rating of the industrial control panel based on one of the following:

a. Short-circuit current rating of a listed and labeled assembly

b. Short-circuit current rating established utilizing an approved method

Informational Note: See ANSI/UL 508A, *Standard for Industrial Control Panels*, Supplement SB, for an example of an approved method.

Exception to (4): Short-circuit current rating markings are not required for industrial control panels containing only control circuit components.

(5) If the industrial control panel is intended as service equipment, it shall be marked to identify it as being suitable for use as service equipment.

(6) Electrical wiring diagram or the identification number of a separate electrical wiring diagram or a designation referenced in a separate wiring diagram.

(7) An enclosure type number marked on the industrial control panel enclosure.

Additional Proposed Changes

File Name	Description	Approved
11_CN_17.pdf	70_CN17	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 17 appeared in the First Draft Report on First Revision No. 8058.

The Correlating Committee directs that the wording in the first sentence of 409.11 0 be reviewed for compliance with 3.3.1.2 of the NEC style manual to ensure the text is clear and the rule is short. The Correlating Committee also directs the Panel to remove references to general requirements contained in Chapters 1 through 4 to comply with the NEC Style Manual 4.1.1. Durability of nameplates are addressed in 110.21.

Related Item

• First Revision No. 8058

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 09:49:50 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7742-NFPA 70-2021

Statement: The FR was modified to include markings that should be identified on the outside of the industrial control panel while allowing some items to be identified on the inside. Identification of certain markings on the outside of the panel can increase safety of persons working on industrial control panels.

Response to PC-1488: It is important to keep the information in 409.110(2) and (3) on the outside of the enclosure for all industrial control panels.

Correlating Committee Note No. 17-NFPA 70-2021 [Section No. 409.110]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:09:55 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that the wording in the first sentence of 409.110 be reviewed for compliance with 3.3.1.2 of the NEC style manual to ensure the text is clear and the rule is short. The Correlating Committee also directs the Panel to remove references to general requirements contained in Chapters 1 through 4 to comply with the NEC Style Manual 4.1.1. Durability of nameplates are addressed in 110.21.

First Revision No. 8058-NFPA 70-2020 [Section No. 409.110]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1559-NFPA 70-2021 [New Section after 430.1]

430.3 Reconditioned Motors

The reconditioning of motors shall be in accordance with instructions provided by a motor manufacturer. The motor nameplate shall not be required to be removed. Where a motor is reconditioned it shall be identified as reconditioned and marked in accordance with 110.21(A)(2).

Reconditioned classified (hazardous) motors identified for use in Class I, Division 1 (or Zone 0 or 1) locations shall be listed as reconditioned.

Informational Note No.1: See ANSI/EASA AR100-2020, *Recommended Practice for the Repair of Rotating Electrical Apparatus* , for information pertaining to the rewinding and repair of motors.

Informational Note No 2: Reconditioning of classified (hazardous) motors for use in Class I, Division 1 (or Zone 0 or 1) locations is conducted not only by following the procedures of ANSI/EASA AR100 but by NRTL inspection and verification of compliance with the original motor manufacturer specifications prior to listing as reconditioned.

Statement of Problem and Substantiation for Public Comment

Code-Making Panel 11 needs to reconsider resolved PI 2627 based on FR 8975 created by Code Making Panel 13. The language proposed for a new Section 430.3 adopts similar language to the newly created 445.4 for Reconditioned Generators. Motors and generators are very similar in their construction and maintenance. Requirements for the reconditioning of motors and generators needs to be correlated and harmonized.

It is a normal practice for motors to be repaired and rewound by established refurbishing companies in accordance to a nationally recognized standard (ANSI/EASA AR100). Reconditioned motors are necessary to keep facilities running without long downtimes. Reconditioned motors are also reconditioned by established refurbishing companies in accordance with the same nationally recognized standard (ANSI/EASA AR100). The nameplate information supplied on a motor is required to ensure the proper application and should not be removed unless the original ratings or characteristics are modified. This program has been successfully in place for many years.

Informational Note No. 1 recognizes ANSI/EASA AR100-2020, Recommended Practice for the Repair of Rotating Electrical Apparatus as a widely accepted and established industry practice. It is available for download free of charge at the following link:
https://easa.com/DesktopModules/DnnSharp/SearchBoost/FileDownload.ashx?file=1988&sb-bhvr=1

ANSI/EASA AR100-2020 is the current edition of this standard.
Informational Note No. 2 clarifies that reconditioning of classified (hazardous) motors for use in Class I, Division 1 (or Zone 0 or 1) locations is conducted not only by following the procedures of AR100 but also by NRTL inspection and verification of compliance with the original manufacturer specifications prior to listing as reconditioned.

Related Item

• PI 2627

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 16 14:05:46 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7504-NFPA 70-2021

Statement: PC-938 Response: The language provided creates confusion in how the rebuilt motors should be inspected. There is also concern that whether the motor would be placed into commerce or reused in a facility should not be treated differently.

PC-1559 Response: The SR provides for acceptance of reconditioned motors with guidance utilization of manufacturer's instructions. Information is provided for motors where the manufacturer may no longer be in business. The changes removed redundant requirements.

Public Comment No. 1572-NFPA 70-2021 [Section No. 430.6]

430.6 Ampacity and Motor Rating Determination.

The size of conductors supplying equipment covered by this article shall be selected from the ampacity tables in accordance with 310.15 or shall be calculated in accordance with 310.14(B). Where flexible cord is used, the size of the conductor shall be selected in accordance with 400.5. The required ampacity and motor ratings shall be determined in accordance with 430.6(A), (B), (C), and (D).

(A) General Motor Applications.

For general motor applications, current ratings shall be determined based on 430.6(A)(1) and (A)(2).

(1) Table Values.

Other than for motors built for low speeds (less than 1200 RPM) or high torques, and for multispeed motors, the values given in Table 430.247, Table 430.248, Table 430.249, and Table 430.250 shall be used instead of the actual current rating marked on the motor nameplate to determine the following:

(1) Ampacity of conductors

(2) Ampere ratings of switches

(3) Ampere ratings of branch-circuit short-circuit and ground-fault protection

Where a motor is marked in amperes, but not horsepower, the horsepower rating shall be assumed to be that corresponding to the value given in Table 430.247, Table 430.248, Table 430.249, and Table 430.250, interpolated if necessary.

Exception No. 1: Multispeed motors shall be in accordance with 430.22(B) and 430.52.

Exception No. 2: For equipment that employs a shaded-pole or permanent-split capacitor-type fan or blower motor that is marked with the motor type, the motor full-load current marked on the nameplate of the equipment in which the fan or blower motor is employed shall be used instead of the horsepower rating to determine the ampacity or rating of the disconnecting means, the branch-circuit conductors, the motor controller, the branch-circuit short-circuit and ground-fault protection, and the separate overload protection. This marking on the equipment nameplate shall not be less than the current marked on the fan or blower motor nameplate.

Exception No. 3: For a listed motor-operated appliance that is marked with both motor horsepower and full-load current, the motor full-load current marked on the nameplate of the appliance shall be used instead of the horsepower rating on the appliance nameplate to determine the ampacity or rating of the disconnecting means, the branch-circuit conductors, the motor controller, the branch-circuit short-circuit and ground-fault protection, and any separate overload protection.

(2) Nameplate Values.

The motor nameplate current ratings shall be used to determine the values for the following:

(1) Separate motor overload protection

(2) For motors built for low speeds (less than 1200 RPM), high torques, canned pumps, or multispeed motors, the following:

a. Ampacity of conductors

b. Ampere ratings of switches

c. Ampere ratings of branch-circuit short-circuit and ground-fault protection

d. Ampere ratings of motor controllers

(3) Large motors exceeding the values in Part XIV shall use the nameplate ampacity rating for conductor sizing.

(B) Torque Motors.

For torque motors, the rated current shall be locked-rotor current, and this nameplate current shall be used to determine the ampacity of the branch-circuit conductors covered in 430.22 and 430.24, the ampere rating of the motor overload protection, and the ampere rating of motor branch-circuit short-circuit and ground-fault protection in accordance with 430.52(B).

Informational Note: See 430.83(D) and 430.110 for information on motor controllers and disconnecting means.

(C) Alternating-Current Adjustable Voltage Motors.

For motors used in alternating-current, adjustable voltage, variable torque drive systems, the ampacity of conductors, or ampere ratings of switches, branch-circuit short-circuit and ground-fault protection, and so forth, shall be based on the maximum operating current marked on the motor nameplate or the control nameplate, or both. If the maximum operating current does not appear on the nameplate, the ampacity determination shall be based on 150 percent of the values given in Table 430.249 and Table 430.250.

(D) Valve Actuator Motor Assemblies.

For valve actuator motor assemblies (VAMs), the rated current shall be the nameplate full-load current, and this current shall be used to determine the maximum rating or setting of the motor branch-circuit short-circuit and ground-fault protective device and the ampacity of the conductors.

Statement of Problem and Substantiation for Public Comment

FR 7986 does not address the criteria for selecting motor controllers.

Related Item

• FR 7986

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:

Submittal Date: Mon Aug 16 14:32:51 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected
Resolution: Motor Controller sizing is based on horsepower accomplished via 430.83 and is not needed for section 430.6.

Public Comment No. 982-NFPA 70-2021 [Section No. 430.6]

430.6 Ampacity and Motor Rating Determination.

The size of conductors supplying equipment covered by this article shall be selected from the ampacity tables in accordance with 310.15 or shall be calculated in accordance with 310.14(B). Where flexible cord is used, the size of the conductor shall be selected in accordance with 400.5. The required ampacity and motor ratings shall be determined in accordance with 430.6(A), (B), (C), and (D).

(A) General Motor Applications.

For general motor applications, current ratings shall be determined based on 430.6(A)(1) and (A)(2).

(1) Table Values.

Other than for motors built for low speeds (less than 1200 RPM) or high torques, and for multispeed motors, the values given in Table 430.247, Table 430.248, Table 430.249, and Table 430.250 shall be used instead of the actual current rating marked on the motor nameplate to determine the following:

(1) Ampacity of conductors

(2) Ampere ratings of switches

(3) Ampere ratings of branch-circuit short-circuit and ground-fault protection

Where a motor is marked in amperes, but not horsepower, the horsepower rating shall be assumed to be that corresponding to the value given in Table 430.247, Table 430.248, Table 430.249, and Table 430.250, interpolated if necessary.

Exception No. 1: Multispeed motors shall be in accordance with 430.22(B) and 430.52.

Exception No. 2: For equipment that employs a shaded-pole or permanent-split capacitor-type fan or blower motor that is marked with the motor type, the motor full-load current marked on the nameplate of the equipment in which the fan or blower motor is employed shall be used instead of the horsepower rating to determine the ampacity or rating of the disconnecting means, the branch-circuit conductors, the motor controller, the branch-circuit short-circuit and ground-fault protection, and the separate overload protection. This marking on the equipment nameplate shall not be less than the current marked on the fan or blower motor nameplate.

Exception No. 3: For a listed motor-operated appliance that is marked with both motor horsepower and full-load current, the motor full-load current marked on the nameplate of the appliance shall be used instead of the horsepower rating on the appliance nameplate to determine the ampacity or rating of the disconnecting means, the branch-circuit conductors, the motor controller, the branch-circuit short-circuit and ground-fault protection, and any separate overload protection.

(2) Nameplate Values.

The motor nameplate current ratings shall be used to determine the values for the following:

(1) Separate motor overload protection

(2) For motors built for low speeds (less than 1200 RPM), high torques, canned pumps, or multispeed motors, the following:

a. Ampacity of conductors

b. Ampere ratings of switches

c. Ampere ratings of branch-circuit short-circuit and ground-fault protection

(3) Large motors exceeding the values in Part XIV shall use the nameplate ampacity rating for conductor sizing.

(B) Torque Motors.

For torque motors, the rated current shall be locked-rotor current, and this nameplate current shall be used to determine the ampacity of the branch-circuit conductors covered in 430.22 and 430.24, the ampere rating of the motor overload protection, and the ampere rating of motor branch-circuit short-circuit and ground-fault protection in accordance with 430.52(B).

Informational Note: See 430.83(D) and 430.110 for information on motor controllers and disconnecting means.

(C) Alternating-Current Adjustable Voltage Motors.

For motors used in alternating-current, adjustable voltage, variable torque drive systems, the ampacity of conductors, or ampere ratings of switches, branch-circuit short-circuit and ground-fault protection, and so forth, shall be based on the maximum operating current marked on the motor nameplate or the control nameplate, or both. If the maximum operating current does not appear on the nameplate, the ampacity determination shall be based on 150 percent of the values given in Table 430.249 and Table 430.250.

(D) Valve Actuator Motor Assemblies.

For valve actuator motor assemblies (VAMs), the rated current shall be the nameplate full-load current, and this current shall be used to determine the maximum rating or setting of the motor branch-circuit short-circuit and ground-fault protective device and the ampacity of the conductors.

Additional Proposed Changes

File Name	Description	Approved
11_CN_19.pdf	70_CN19	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 19 appeared in the First Draft Report on First Revision No. 7986.

The Correlating Committee directs the Panel to review Exception Nos. 2 and 3, and consider rewriting in a list format in compliance with 2.1.5.1 of the NEC Style Manual. The Correlating Committee also directs the Panel to revise the text regarding the use of the term "ampere", as "ampere" is a unit of current, and the use of the term "ampacity", as "ampacity" applies only to the current carrying capacity of conductors. Refer to 3.2.5.1 of the NEC Style Manual. The Correlating Committee also directs the Panel to clarify whether Parts V through VIII apply to over 1000 volts nominal.

Related Item

• First Revision No. 7986

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 14:16:51 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7802-NFPA 70-2021
Statement: Changes made in the SR to respond to CC concerns on ampere and readability. Section 430.221 clarifies that Parts V-VII do cover MV applications unless modified or amended by this section.

Correlating Committee Note No. 19-NFPA 70-2021 [Section No. 430.6]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:17:50 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to review Exception Nos. 2 and 3, and consider rewriting in a list format in compliance with 2.1.5.1 of the NEC Style Manual. The Correlating Committee also directs the Panel to revise the text regarding the use of the term “ampere”, as “ampere” is a unit of current, and the use of the term “ampacity”, as “ampacity” applies only to the current carrying capacity of conductors. Refer to 3.2.5.1 of the NEC Style Manual. The Correlating Committee also directs the Panel to clarify whether Parts V through VIII apply to over 1000 volts nominal.

First Revision No. 7986-NFPA 70-2020 [Section No. 430.6]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1843-NFPA 70-2021 [Section No. 430.7(A)]

(A) Usual Motor Applications.

A motor shall be marked with the following information:

(1) Manufacturer's name.

(2) Rated volts and full-load current. For a multispeed motor, full-load current for each speed, except shaded-pole and permanent-split capacitor motors where amperes are required only for maximum speed.

(3) Rated frequency and number of phases if an ac motor.

(4) Rated full-load speed.

(5) Rated temperature rise or the insulation system class and rated ambient temperature.

(6) Time rating. The time rating shall be 5, 15, 30, or 60 minutes, or continuous.

(7) Rated horsepower if ⅛ hp or more. For a multispeed motor rated ⅛ hp or more, rated horsepower for each speed, except shaded-pole and permanent-split capacitor motors rated ⅛ hp or more where rated horsepower is required only for maximum speed. Motors of arc welders are not required to be marked with the horsepower rating.____ Informational Note: Motors for elevators and escalators may be rated in hp or kw.

(8) Code letter or locked-rotor amperes if an alternating-current motor rated ½ hp or more. On polyphase wound-rotor motors, the code letter shall be omitted.

Informational Note No. 1: See 430.7(B).

(9) Design letter for design A, B, C, or D motors.

Informational Note No. 2: See ANSI/NEMA MG 1-2016, *Motors and Generators*, Part 1, Definitions, for information on motor design letter definition.

(10) Secondary volts and full-load current if a wound-rotor induction motor.

(11) Field current and voltage for dc excited synchronous motors.

(12) Winding — straight shunt, stabilized shunt, compound, or series, if a dc motor. Fractional horsepower dc motors 175 mm (7 in.) or less in diameter shall not be required to be marked.

(13) A motor provided with a thermal protector complying with 430.32(A)(2) or (B)(2) shall be marked "thermally protected." Thermally protected motors rated 100 watts or less and complying with 430.32(B)(2) shall be permitted to use the abbreviated marking "T.P."

(14) A motor complying with 430.32(B)(4) shall be marked "impedance protected." Impedance-protected motors rated 100 watts or less and complying with 430.32(B)(4) shall be permitted to use the abbreviated marking "Z.P."

(15) Motors equipped with electrically powered condensation prevention heaters shall be marked with the rated heater voltage, number of phases, and the rated power in watts.

(16) Motors that are electronically protected from overloads in accordance with 430.32(A)(2) and (B)(2) shall be marked "electronically protected" or "E.P."

Statement of Problem and Substantiation for Public Comment

NEII requests that the language in 430.7(A) be modified as shown below. Motors used in elevators and escalators may be sourced globally and used for products for the global market. Some motor manufacturers only provide KW ratings on the data plates.

Related Item

• PI 3020 • FR 8031

Submitter Information Verification

Submitter Full Name: Kevin Brinkman
Organization: National Elevator Industry, In
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 10:46:50 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected

Resolution: The proposed change violates the NEC Style manual section 3.1.3 by adding normative text in an informational note. Specific exceptions for elevators and escalators should be submitted to CMP 12 for Article 620.

Public Comment No. 2115-NFPA 70-2021 [Section No. 430.7(A)]

(A) Usual Motor Applications.

A motor shall be marked with the following information:

(1) Manufacturer's name.

(2) Rated volts and full-load current. For a multispeed motor, full-load current for each speed, except shaded-pole and permanent-split capacitor motors where amperes are required only for maximum speed.

(3) Rated frequency and number of phases if an ac motor.

(4) Rated full-load speed.

(5) Rated temperature rise or the insulation system class and rated ambient temperature.

(6) Time rating. The time rating shall be 5, 15, 30, or 60 minutes, or continuous.

(7) Rated horsepower if ⅛ hp or more. For a multispeed motor rated ⅛ hp or more, rated horsepower for each speed, except shaded-pole and permanent-split capacitor motors rated ⅛ hp or more where rated horsepower is required only for maximum speed. Motors of arc welders are not required to be marked with the horsepower rating. Informative Note: Motors for elevatos and escalators may be rated in hp or kw.

(8) Code letter or locked-rotor amperes if an alternating-current motor rated ½ hp or more. On polyphase wound-rotor motors, the code letter shall be omitted.

Informational Note No. 1: See 430.7(B).

(9) Design letter for design A, B, C, or D motors.

Informational Note No. 2: See ANSI/NEMA MG 1-2016, *Motors and Generators*, Part 1, Definitions, for information on motor design letter definition.

(10) Secondary volts and full-load current if a wound-rotor induction motor.

(11) Field current and voltage for dc excited synchronous motors.

(12) Winding — straight shunt, stabilized shunt, compound, or series, if a dc motor. Fractional horsepower dc motors 175 mm (7 in.) or less in diameter shall not be required to be marked.

(13) A motor provided with a thermal protector complying with 430.32(A)(2) or (B)(2) shall be marked "thermally protected." Thermally protected motors rated 100 watts or less and complying with 430.32(B)(2) shall be permitted to use the abbreviated marking "T.P."

(14) A motor complying with 430.32(B)(4) shall be marked "impedance protected." Impedance-protected motors rated 100 watts or less and complying with 430.32(B)(4) shall be permitted to use the abbreviated marking "Z.P."

(15) Motors equipped with electrically powered condensation prevention heaters shall be marked with the rated heater voltage, number of phases, and the rated power in watts.

(16) Motors that are electronically protected from overloads in accordance with 430.32(A)(2) and (B)(2) shall be marked "electronically protected" or "E.P."

Statement of Problem and Substantiation for Public Comment

TKE request that the language in 430.7(A) be modified as shown in PI 3020. Motors used in elevators and escalators may be sourced globally and used in products for global markets. Some motor manufacturers only provide KW ratings on the data plate.

Related Item

• PI 3020 • FR 8031

Submitter Information Verification

Submitter Full Name: John Henderson
Organization: TK Elevator
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 12:48:32 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected

Resolution: The proposed change violates the NEC Style manual section 3.1.3 by adding normative text in an informational note. Specific exceptions for elevators and escalators should be submitted to CMP 12 for Article 620.

Public Comment No. 983-NFPA 70-2021 [Section No. 430.21]

430.21 General.

Part II specifies ampacities of conductors that are capable of carrying the motor current without overheating under the conditions specified.

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

Informational Note No. 1: See Part XI for motor circuits rated over 1000 volts, nominal.

Chapter 2 and Chapter 3 requirements shall not apply to conductors that form an integral part of equipment, such as motors, motor controllers, motor control centers, or other factory-assembled control equipment.

Informational Note No. 2: See 110.14(C) and 430.9(B) for equipment device terminal requirements.

Additional Proposed Changes

File Name	Description	Approved
11_CN_20.pdf	70_CN20	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 20 appeared in the First Draft Report on First Revision No. 7998.

The Correlating Committee directs that FR 7998 be reviewed for references to entire Chapters and compliance with 4.1.4 of the NEC Style Manual which prohibits references to entire Articles. A reference to an entire Article is not permitted, as the reference is too broad. A reference to an entire Chapter, which comprises multiple Articles, is logically also prohibited.

Related Item

• First Revision No. 7998

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 14:20:54 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7519-NFPA 70-2021

Statement:	PC reviewed per CC direction and changes were made to meet NEC style manual requirements.

Correlating Committee Note No. 20-NFPA 70-2021 [Section No. 430.21]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:20:23 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that FR 7998 be reviewed for references to entire Chapters and compliance with 4.1.4 of the NEC Style Manual which prohibits references to entire Articles. A reference to an entire Article is not permitted, as the reference is too broad. A reference to an entire Chapter, which comprises multiple Articles, is logically also prohibited.

First Revision No. 7998-NFPA 70-2020 [Section No. 430.21]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 104-NFPA 70-2021 [Section No. 430.24]

430.24 Several Motors or a Motor(s) and Other Load(s).

Conductors supplying several motors, or a motor(s) and other load(s), shall have an ampacity not less than the sum of each of the following:

(1) 125 percent of the full-load current rating of the highest rated motor, as determined by 430.6(A)

(2) Sum of the full-load current ratings of all the other motors in the group, as determined by 430.6(A)

(3) 100 percent of the noncontinuous non-motor load

(4) 125 percent of the continuous non-motor load.

Where two or more motors have the same full-load current, only one of the motor currents shall be considered the highest rated for the above calculations.

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

Exception No. 1: Where one or more of the motors of the group are used for short-time, intermittent, periodic, or varying duty, the ampere rating of such motors to be used in the summation shall be determined in accordance with 430.22(E). For the highest rated motor, the greater of either the ampere rating from 430.22(E) or the largest continuous duty motor full-load current multiplied by 1.25 shall be used in the summation.

Exception No. 2: The ampacity of conductors supplying motor-operated fixed electric space-heating equipment shall comply with 424.4(B).

Exception No. 3: Where the circuitry is interlocked so as to prevent simultaneous operation of selected motors or other loads, the conductor ampacity shall be permitted to be based on the summation of the currents of the motors and other loads to be operated simultaneously that results in the highest total current.

Statement of Problem and Substantiation for Public Comment

Public Input 2150 should have been accepted.
In a group of 7 motors all of the same exact size, which is the highest rated? They are all the same! Does this mean all 7 should be calculated at 125%? Or perhaps it means NONE of them should be calculated at 125% since there no “highest rated” motor? They are all the lowest rated motor too! So, which is it? This needs to be clarified.

Section 440.7 addresses this problem when the motors are compressors by stating-
“Where two or more motors have the same highest rated-load current, only one of them shall be considered as the highest rated (largest) motor.“

This same problem needs to be addressed for motors other than compressors.

Public Input 2150 clarifies this conundrum and should be accepted.

Related Item

• PI 2150

Submitter Information Verification

Submitter Full Name: Russ Leblanc

Organization:	Leblanc Consulting Services
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Fri Jul 02 16:14:21 EDT 2021
Committee:	NEC-P11

Committee Statement

Committee Action:	Rejected
Resolution:	The proposed wording is not needed as the current language in 430.24(1) addresses this public comment. The current wording in 430.24(1) uses the singular term for motor, meaning one motor needs to be sized at 125%.

Public Comment No. 984-NFPA 70-2021 [Section No. 430.42]

430.42 Motors on General-Purpose Branch Circuits.

Overload protection for motors used on general-purpose branch circuits as permitted in Part II of Article 210 shall be provided as specified in 430.42(A), (B), (C), or (D).

(A) Not Over 1 Horsepower.

One or more motors without individual overload protection shall be permitted to be connected to a general-purpose branch circuit only where the installation complies with the limiting conditions specified in 430.32(B), 430.32(D), and 430.53(A)(1) and (A)(2).

(B) Over 1 Horsepower.

Motors of ratings larger than specified in 430.53(A) shall be permitted to be connected to general-purpose branch circuits only where each motor is protected by overload protection selected to protect the motor as specified in 430.32. Both the motor controller and the motor overload device shall be approved for group installation with the short-circuit and ground-fault protective device selected in accordance with 430.53.

(C) Cord-and-Plug-Connected.

Where a motor is connected to a branch circuit by means of an attachment plug and a receptacle or a cord connector, and individual overload protection is omitted in accordance with 430.42(A), the rating of the attachment plug and receptacle or cord connector shall not exceed 15 amperes at 125 volts or 250 volts. Where individual overload protection is required in accordance with 430.42(B) for a motor or motor-operated appliance that is attached to the branch circuit through an attachment plug and a receptacle or a cord connector, the overload device shall be an integral part of the motor or appliance. The rating of the attachment plug and receptacle or the cord connector shall determine the rating of the circuit to which the motor can be connected, in accordance with 210.21(B).

(D) Time Delay.

The branch-circuit short-circuit and ground-fault protective device protecting a circuit to which a motor or motor-operated appliance is connected shall have sufficient time delay to permit the motor to start and accelerate its load.

Additional Proposed Changes

File Name	Description	Approved
11_CN_21.pdf	70_CN21	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 21 appeared in the First Draft Report on First Revision No. 8006.

The Correlating Committee directs that FR 8006 be reviewed for compliance with 4.1.1 and 4.1.3 of the NEC Style Manual. Section 210.3 identifies Article 430 for specific-purpose branch circuits related to motors, and this information does not need to be repeated in 430.42.

Related Item

- First Revision No. 8006

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 14:24:51 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7521-NFPA 70-2021
Statement: PC reviewed per CC direction and changes were made to meet NEC style manual requirements.

Correlating Committee Note No. 21-NFPA 70-2021 [Section No. 430.42]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:29:08 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that FR 8006 be reviewed for compliance with 4.1.1 and 4.1.3 of the NEC Style Manual. Section 210.3 identifies Article 430 for specific-purpose branch circuits related to motors, and this information does not need to be repeated in 430.42.

First Revision No. 8006-NFPA 70-2020 [Section No. 430.42]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 986-NFPA 70-2021 [Section No. 430.51]

430.51 General.

Part IV specifies devices intended to protect the motor branch-circuit conductors, the motor control apparatus, and the motors against overcurrent due to short circuits or ground faults. These rules add to or amend Article 240, Parts I through IX. The devices specified in Part IV do not include the types of devices required by 210.8, 230.95, and 590.6.

Informational Note No. 1: See Informative Annex D, Example D8, for an example of motor branch-circuit short-circuit and ground-fault protection selection.

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

Informational Note No. 2: See Part IX for over 1000 volts, nominal.

Additional Proposed Changes

File Name	Description	Approved
11_CN_22.pdf	70_CN22	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 22 appeared in the First Draft Report on First Revision No. 8008.

The Correlating Committee directs that FR 8008 be reviewed for compliance with 4.1.1 and 4.1.3 of the NEC Style Manual. Section 240.3 identifies Article 430 for specific overcurrent requirements related to motors, and this information does not need to be repeated in 430.51.
The Correlating Committee also directs that FR 8008 be reviewed for references to entire Articles by way of referring to all parts of the article and compliance with 4.1.4 of the NEC Style Manual which prohibits references to entire Articles. A reference to an entire Article is not permitted, as the reference is too broad. A reference to all parts of an Article is considered an entire Article.

Related Item

• First Revision No. 8008

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 14:29:01 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution:	SR-7523-NFPA 70-2021
Statement:	PC reviewed per CC direction and changes were made to meet NEC style manual requirements.

Correlating Committee Note No. 22-NFPA 70-2021 [Section No. 430.51]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:30:57 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that FR 8008 be reviewed for compliance with 4.1.1 and 4.1.3 of the NEC Style Manual. Section 240.3 identifies Article 430 for specific overcurrent requirements related to motors, and this information does not need to be repeated in 430.51.

The Correlating Committee also directs that FR 8008 be reviewed for references to entire Articles by way of referring to all parts of the article and compliance with 4.1.4 of the NEC Style Manual which prohibits references to entire Articles. A reference to an entire Article is not permitted, as the reference is too broad. A reference to all parts of an Article is considered an entire Article.

First Revision No. 8008-NFPA 70-2020 [Section No. 430.51]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 987-NFPA 70-2021 [Section No. 430.52(C)]

(C) Rating or Setting.

(1) In Accordance with Table 430.52(C)(1).

A protective device that has a rating or setting not exceeding the value calculated according to the values given in Table 430.52(C)(1) shall be used.

Table 430.52(C)(1) Maximum Rating or Setting of Motor Branch-Circuit Short-Circuit and Ground-Fault Protective Devices

Type of Motor	Percentage of Full-Load Current			
	Nontime Delay Fuse[1]	Dual Element (Time-Delay) Fuse[1]	Instantaneous Trip Breaker	Inverse Time Breaker[2]
Single-phase motors	300	175	800	250
AC polyphase motors other than wound-rotor	300	175	800	250
Squirrel cage — other than Design B energy-efficient — and Design B premium efficiency	300	175	800	250
Design B energy-efficient and Design B premium efficiency	300	175	1100	250
Synchronous[3]	300	175	800	250
Wound-rotor	150	150	800	150
DC (constant voltage)	150	150	250	150

Note: See 430.54 for certain exceptions to the values specified.

[1]The values in the Nontime Delay Fuse column apply to time-delay Class CC fuses.

[2]The values given in the last column also cover the ratings of nonadjustable inverse time types of circuit breakers that can be modified as in 430.52(C)(1), Exceptions No. 1 and No. 2.

[3]Synchronous motors of the low-torque, low-speed type (usually 450 rpm or lower), such as those used to drive reciprocating compressors, pumps, and so forth, that start unloaded, do not require a fuse rating or circuit-breaker setting in excess of 200 percent of full-load current.

Exception No. 1: Where the values for branch-circuit short-circuit and ground-fault protective devices determined by Table 430.52(C)(1) do not correspond to the standard sizes or ratings of fuses, nonadjustable circuit breakers, thermal protective devices, or possible settings of adjustable circuit breakers, a higher size, rating, or possible setting that does not exceed the next higher standard ampere rating according to 240.6 shall be permitted.

Exception No. 2: Where the rating specified in Table 430.52(C)(1), or the rating modified by Exception No. 1, is not sufficient for the starting current of the motor, the following applies:

(1) The rating of a nontime-delay fuse not exceeding 600 amperes or a time-delay Class CC fuse shall be permitted to be increased but shall in no case exceed 400 percent of the full-load current.

(2) The rating of a time-delay (dual-element) fuse shall be permitted to be increased but shall in no case exceed 225 percent of the full-load current.

(3) The rating of an inverse time circuit breaker shall be permitted to be increased but shall in no case exceed 400 percent for full-load currents of 100 amperes or less or 300 percent for full-load currents greater than 100 amperes.

(4) The rating of a fuse of 601–6000 ampere classification shall be permitted to be increased but shall in no case exceed 300 percent of the full-load current.

Informational Note: See Informative Annex D, Example D8, for an example of motor branch-circuit short-circuit and ground-fault rating and setting and Informational Note

Figure 430.1 for an example location.

(2) Overload Relay Table.

Where maximum branch-circuit short-circuit and ground-fault protective device ratings are shown in the manufacturer's overload relay table for use with a motor controller or are otherwise marked on the equipment, they shall not be exceeded even if higher values are allowed as shown above.

(3) Instantaneous Trip Circuit Breaker.

An instantaneous trip circuit breaker shall be used only if adjustable and if part of a listed combination motor controller having coordinated motor overload and short-circuit and ground-fault protection in each conductor, and the setting is adjusted to no more than the value specified in Table 430.52(C)(1).

Informational Note No. 1: Instantaneous trip circuit breakers are also known as motor-circuit protectors (MCPs).

Informational Note No. 2: For the purpose of this article, instantaneous trip circuit breakers may include a damping means to accommodate a transient motor inrush current without nuisance tripping of the circuit breaker.

Exception No. 1: Where the setting specified in Table 430.52(C)(1) is not sufficient for the starting current of the motor, the setting of an instantaneous trip circuit breaker shall be permitted to be increased but shall in no case exceed 1300 percent of the motor full-load current for other than Design B energy-efficient and Design B premium efficiency motors, and no more than 1700 percent of the motor full-load current for Design B energy-efficient and Design B premium efficiency motors. Trip settings above 800 percent for other than Design B energy-efficient and Design B premium efficiency motors, and above 1100 percent for Design B energy-efficient or Design B premium efficiency motors shall be permitted where the need has been demonstrated by an engineering evaluation. In such cases, it shall not be necessary to first apply an instantaneous-trip circuit breaker at 800 percent or 1100 percent.

Informational Note No. 3: See NEMA MG 1-2016, *Motors and Generators*, Part 12.59 for additional information on the requirements for a motor to be classified "energy efficient".

Exception No. 2: Where the motor full-load current is 8 amperes or less, the setting of the instantaneous-trip circuit breaker with a continuous current rating of 15 amperes or less in a listed combination motor controller that provides coordinated motor branch-circuit overload and short-circuit and ground-fault protection shall be permitted to be increased to the value marked on the motor controller.

(4) Multispeed Motor.

For a multispeed motor, a single short-circuit and ground-fault protective device shall be permitted for two or more windings of the motor if the rating of the protective device does not exceed the above applicable percentage of the nameplate rating of the smallest winding protected.

Exception: For a multispeed motor, a single short-circuit and ground-fault protective device shall be permitted to be used and sized according to the full-load current of the highest current winding, where all of the following conditions are met:

(1) Each winding is equipped with individual overload protection sized according to its full-load current.

(2) The branch-circuit conductors supplying each winding are sized according to the full-load current of the highest full-load current winding.

(3) The motor controller for each winding has a horsepower rating not less than that required for the winding having the highest horsepower rating.

(5) Power Electronic Devices.

Semiconductor fuses intended for the protection of electronic devices shall be permitted in lieu of devices listed in Table 430.52(C)(1) for power electronic devices, associated electromechanical devices (such as bypass contactors and isolation contactors), and conductors in a solid-state motor controller system if the marking for replacement fuses is provided adjacent to the fuses.

(6) Self-Protected Combination Motor Controller.

A listed self-protected combination motor controller shall be permitted in lieu of the devices specified in Table 430.52(C)(1). Adjustable instantaneous-trip settings shall not exceed 1300 percent of the full-load motor current for other than Design B energy-efficient and Design B premium efficiency motors and not more than 1700 percent of the full-load motor current for Design B energy-efficient and Design B premium efficiency motors.

Informational Note: Proper application of self-protected combination motor controllers on 3-phase systems, other than solidly grounded wye, particularly on corner grounded delta systems, considers the self-protected combination motor controllers' individual pole-interrupting capability.

(7) Motor Short-Circuit Protector.

A motor short-circuit protector shall be permitted in lieu of devices listed in Table 430.52(C)(1) if the motor short-circuit protector is part of a listed combination motor controller having coordinated motor overload protection and short-circuit and ground-fault protection in each conductor and it will open the circuit at currents exceeding 1300 percent of the motor full-load current for other than Design B energy-efficient and Design B premium efficiency motors and 1700 percent of the motor full-load current for Design B energy-efficient and Design B premium efficiency motors.

Informational Note: A motor short-circuit protector, as used in this section, is a fused device and is not an instantaneous trip circuit breaker.

Additional Proposed Changes

File Name	Description	Approved
11_CN_23.pdf	70_CN23	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 23 appeared in the First Draft Report on First Revision No. 8009.

The Correlating Committee directs the Panel to rewrite the requirement in the exceptions for usability and clarity, writing requirements as rules, rather than exceptions when possible. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is clear and the rule is short, using list formats when appropriate and 4.1.3 for reference structure.

Related Item

• First Revision No. 8009

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:

Submittal Date: Thu Aug 05 14:35:34 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7526-NFPA 70-2021
Statement: PC reviewed per CC direction and changes were made to meet NEC style manual requirements and improve clarity.

Correlating Committee Note No. 23-NFPA 70-2021 [Section No. 430.52(C)]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:39:09 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to rewrite the requirement in the exceptions for usability and clarity, writing requirements as rules, rather than exceptions when possible. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is clear and the rule is short, using list formats when appropriate and 4.1.3 for reference structure.

First Revision No. 8009-NFPA 70-2020 [Section No. 430.52(C)]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 2034-NFPA 70-2021 [Section No. 430.52(C)(1)]

(1) In Accordance with Table 430.52(C)(1).

A protective device that has a rating or setting not exceeding the value calculated according to the values given in Table 430.52(C)(1) shall be used.

Table 430.52(C)(1) Maximum Rating or Setting of Motor Branch-Circuit Short-Circuit and Ground-Fault Protective Devices

Type of Motor	Percentage of Full-Load Current			
	Nontime Delay Fuse[1]	Dual Element (Time-Delay) Fuse[1]	Instantaneous Trip Breaker	Inverse Time Breaker[2]
Single-phase motors	300	175	800	250
AC polyphase motors other than wound-rotor	300	175	800	250
Squirrel cage — other than Design B energy-efficient — and Design B premium efficiency	300	175	800	250
Design B energy-efficient and Design B premium efficiency	300	175	1100	250
Synchronous[3]	300	175	800	250
Wound-rotor	150	150	800	150
DC (constant voltage)	150	150	250	150

Note: See 430.54 for certain exceptions to the values specified.

[1]The values in the Nontime Delay Fuse column apply to time-delay Class CC fuses.

[2]The values given in the last column also cover the ratings of nonadjustable inverse time types of circuit breakers that can be modified as in 430.52(C)(1), Exceptions No. 1 and No. 2.

[3]Synchronous motors of the low-torque, low-speed type (usually 450 rpm or lower), such as those used to drive reciprocating compressors, pumps, and so forth, that start unloaded, do not require a fuse rating or circuit-breaker setting in excess of 200 percent of full-load current.

Exception No. 1: Where the values for branch-circuit short-circuit and ground-fault protective devices determined by Table 430.52(C)(1) do not correspond to the standard sizes or ratings of fuses, nonadjustable circuit breakers, thermal protective devices, or possible settings of adjustable circuit breakers, a higher size, rating, or possible setting that does not exceed the next higher standard ampere rating according to 240.6 shall be permitted. Where the branch-circuit short-circuit and ground-fault protective device is a nonadjustable circuit breaker and the next higher standard ampere rating according to 240.6 is less than 15 amperes, an ampere rating of 15 amperes shall be permitted.

Exception No. 2: Where the rating specified in Table 430.52(C)(1), or the rating modified by Exception No. 1, is not sufficient for the starting current of the motor, the following applies:

(1) The rating of a nontime-delay fuse not exceeding 600 amperes or a time-delay Class CC fuse shall be permitted to be increased but shall in no case exceed 400 percent of the full-load current.

(2) The rating of a time-delay (dual-element) fuse shall be permitted to be increased but shall in no case exceed 225 percent of the full-load current.

(3) The rating of an inverse time circuit breaker shall be permitted to be increased but shall in no case exceed 400 percent for full-load currents of 100 amperes or less or 300 percent for full-load currents greater than 100 amperes.

(4) The rating of a fuse of 601–6000 ampere classification shall be permitted to be increased but shall in no case exceed 300 percent of the full-load current.

Informational Note: See Informative Annex D, Example D8, for an example of motor branch-circuit short-circuit and ground-fault rating and setting and Informational Note Figure 430.1 for an example location.

Statement of Problem and Substantiation for Public Comment

FR7828 has modified Table 240.6 to include 10 amperes as a new standard size for nonadjustable circuit breakers. 430.52(C)(1) Exception 1 permits increasing the size of the branch-circuit short-circuit and ground-fault protective device to the next higher standard size which currently is 15 amperes. For circuits utilizing small motors, the addition of 10A as a standard size circuit breaker impacts the design of such systems. The proposed text will permit the use of the existing minimum of 15A for nonadjustable circuit breakers in motor circuits.

Related Item

• FR8009 • FR7828

Submitter Information Verification

Submitter Full Name: Jay Tamblingson
Organization: Rockwell Automation
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 08:52:06 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected
Resolution: The addition of the 10A overcurrent device will provide better protection for lower ampacity circuits and this improves safety.

Public Comment No. 990-NFPA 70-2021 [Section No. 430.53]

430.53 Several Motors or Loads on One Branch Circuit.

Two or more motors or one or more motors and other loads shall be permitted to be connected to the same branch circuit under conditions specified in 430.53(D) and in 430.53(A), (B), or (C). The branch-circuit protective device shall be fuses or inverse time circuit breakers.

(A) Not Over 1 Horsepower.

Several motors, each not exceeding 1 hp in rating, shall be permitted on a nominal 120-volt branch circuit protected at not over 20 amperes or a branch circuit of 1000 volts, nominal, or less, protected at not over 15 amperes, if all of the following conditions are met:

(1) The full-load rating of each motor does not exceed 6 amperes.

(2) The rating of the branch-circuit short-circuit and ground-fault protective device marked on any of the motor controllers is not exceeded.

(3) Individual overload protection conforms to 430.32.

(B) If Smallest Rated Motor Protected.

If the branch-circuit short-circuit and ground-fault protective device is selected not to exceed that allowed by 430.52 for the smallest rated motor, two or more motors or one or more motors and other load(s), with each motor having individual overload protection, shall be permitted to be connected to a branch circuit where it can be determined that the branch-circuit short-circuit and ground-fault protective device will not open under the most severe normal conditions of service that might be encountered.

(C) Other Group Installations.

Two or more motors of any rating or one or more motors and other load(s), with each motor having individual overload protection, shall be permitted to be connected to one branch circuit where the motor controller(s) and overload device(s) are (1) installed as a listed factory assembly and the motor branch-circuit short-circuit and ground-fault protective device either is provided as part of the assembly or is specified by a marking on the assembly, or (2) the motor branch-circuit short-circuit and ground-fault protective device, the motor controller(s), and overload device(s) are field-installed as separate assemblies listed for such use and provided with manufacturers' instructions for use with each other, and (3) all of the following conditions are met:

(1) Each motor overload device is either (a) listed for group installation with a specified maximum rating of fuse, inverse time circuit breaker, or both, or (b) selected such that the ampere rating of the motor-branch short-circuit and ground-fault protective device does not exceed that permitted by 430.52 for that individual motor overload device and corresponding motor load.

(2) Each motor controller is either (a) listed for group installation with a specified maximum rating of fuse, circuit breaker, or both, or (b) selected such that the ampere rating of the motor-branch short-circuit and ground-fault protective device does not exceed that permitted by 430.52 for that individual motor controller and corresponding motor load.

(3) Each circuit breaker is listed and is of the inverse time type.

(4) The branch circuit shall be protected by fuses or inverse time circuit breakers having a rating not exceeding that specified in 430.52 for the highest rated motor connected to the branch circuit plus an amount equal to the sum of the full-load current ratings of all other motors and the ratings of other loads connected to the circuit. Where this calculation results in a rating less than the ampacity of the branch-circuit conductors, it shall be permitted to increase the maximum rating of the fuses or circuit breaker to a value not exceeding that permitted by 240.4(B).

(5) The branch-circuit fuses or inverse time circuit breakers are not larger than allowed by 430.40 for the overload relay protecting the smallest rated motor of the group.

(6) Overcurrent protection for loads other than motor loads shall be in accordance with Parts I through VII of Article 240.

Informational Note: See 110.10 for circuit impedance and other characteristics.

(D) Single Motor Taps.

For group installations described above, the conductors of any tap supplying a single motor shall not be required to have an individual branch-circuit short-circuit and ground-fault protective device if they comply with one of the following:

(1) No conductor to the motor shall have an ampacity less than that of the branch-circuit conductors.

(2) No conductor to the motor shall have an ampacity less than one-third of the branch-circuit conductors, with a minimum in accordance with 430.22. The conductors from the point of the tap to the motor overload device shall be not more than 7.5 m (25 ft) long and be protected from physical damage by being enclosed in an approved raceway or by use of other approved means.

(3) Conductors from the point of the tap from the branch circuit to a listed manual motor controller additionally marked “Suitable for Tap Conductor Protection in Group Installations,” or to a branch-circuit protective device, shall be permitted to have an ampacity not less than one-tenth of the rating or setting of the branch-circuit short-circuit and ground-fault protective device. The conductors from the motor controller to the motor shall have an ampacity in accordance with 430.22. The conductors from the point of the tap to the motor controller(s) shall (1) be suitably protected from physical damage and enclosed either by an enclosed motor controller or by a raceway and be not more than 3 m (10 ft) long or (2) have an ampacity not less than that of the branch-circuit conductors.

(4) Conductors from the point of the tap from the branch circuit to a listed manual motor controller additionally marked “Suitable for Tap Conductor Protection in Group Installations,” or to a branch-circuit protective device, shall be permitted to have an ampacity not less than one-third of the branch-circuit conductors. The conductors from the motor controller to the motor shall have an ampacity in accordance with 430.22. The conductors from the point of the tap to the motor controller(s) shall (1) be suitably protected from physical damage and enclosed either by an enclosed motor controller or by a raceway and be not more than 7.5 m (25 ft) long or (2) have an ampacity not less than that of the branch-circuit conductors.

Additional Proposed Changes

File Name	Description	Approved
11_CN_24.pdf	70_CN24	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 24 appeared in the First Draft Report on First Revision No. 8012.

The Correlating Committee directs that FR 8012 be reviewed regarding list item 430.53(C)(6) when referencing article parts for compliance with 4.1.1 and 4.1.3 of the NEC Style Manual. Article 240, covered by 90.3, applies and it is not necessary to include a reference to that article. Additionally, the Correlating Committee directs that the Panel rewrite the requirements in (B), (C), (0)(3) and(D)(4) for usability and clarity and formatting of list items. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is clear and the rule is short, using list formats when appropriate.

Related Item

• First Revision No. 8012

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:

City:
State:
Zip:
Submittal Date: Thu Aug 05 14:38:12 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7805-NFPA 70-2021
Statement: PC reviewed per CC direction and changes were made to meet NEC style manual requirements and requirements to expand exceptions in list form. References to parts of article 240 were kept to provide clarity.

Correlating Committee Note No. 24-NFPA 70-2021 [Section No. 430.53]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:42:35 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that FR 8012 be reviewed regarding list item 430.53(C)(6) when referencing article parts for compliance with 4.1.1 and 4.1.3 of the NEC Style Manual. Article 240, covered by 90.3, applies and it is not necessary to include a reference to that article.

Additionally, the Correlating Committee directs that the Panel rewrite the requirements in (B), (C), (D)(3) and(D)(4) for usability and clarity and formatting of list items. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is clear and the rule is short, using list formats when appropriate.

First Revision No. 8012-NFPA 70-2020 [Section No. 430.53]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 991-NFPA 70-2021 [Section No. 430.62(A)]

(A) Specific Load.

A feeder supplying a specific fixed motor load(s) and consisting of conductor sizes in accordance with 430.24 shall be provided with a protective device having a rating or setting not greater than the largest rating or setting of the branch-circuit short-circuit and ground-fault protective device for any motor supplied by the feeder [based on the maximum permitted value for the specific type of protective device in accordance with 430.52, or 440.22(A) for hermetic refrigerant motor-compressors], plus the sum of the full-load currents of the other motors of the group.

Where the same rating or setting of the branch-circuit short-circuit and ground-fault protective device is used on two or more of the branch circuits supplied by the feeder, one of the protective devices shall be considered the largest for the above calculations.

Exception No. 1: Where one or more instantaneous-trip circuit breakers or motor short-circuit protectors are used for motor branch-circuit short-circuit and ground-fault protection as permitted in 430.52(C), the procedure provided above for determining the maximum rating of the feeder protective device shall apply with the following provision: For the purpose of the calculation, each instantaneous-trip circuit breaker or motor short-circuit protector shall be assumed to have a rating not exceeding the maximum percentage of motor full-load current permitted by Table 430.52(C)(1) for the type of feeder protective device employed.

Exception No. 2: Where the feeder overcurrent protective device also provides overcurrent protection for a motor control center, the provisions of 430.94 shall apply.

Informational Note: See Informative Annex D, Example D8, for an example of motor feeder circuit short-circuit and ground-fault protection rating and setting.

Additional Proposed Changes

File Name	Description	Approved
11_CN_25.pdf	70_CN25	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 25 appeared in the First Draft Report on First Revision No. 8014.

The Correlating Committee directs the Panel to review Exception No. 1 for clarity and usability, and applicability to the rule to which it applies.

Related Item

• First Revision No. 8014

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:

Submittal Date: Thu Aug 05 14:40:40 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7533-NFPA 70-2021
Statement: PC reviewed per CC direction and changes were made to improve clarity and readability.

Correlating Committee Note No. 25-NFPA 70-2021 [Section No. 430.62(A)]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:44:37 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to review Exception No. 1 for clarity and usability, and applicability to the rule to which it applies.

First Revision No. 8014-NFPA 70-2020 [Section No. 430.62(A)]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1222-NFPA 70-2021 [Section No. 430.83(F)]

(F) Short-Circuit Current Rating.

A motor controller's short circuit current rating shall not be ~~installed where~~ less than the available fault current ~~exceeds~~ of the ~~motor controller's short-~~ circuit ~~current rating~~ .

Informational Note: The short-circuit current rating might be marked on the device or might be a rating for a tested combination specified in the motor controller's technical manual or instruction sheet.

Statement of Problem and Substantiation for Public Comment

It is thought that this revision would be better for a rule in the NEC. The text of the draft says "shall not be installed where," when of course in most cases the reality is that a different motor controller having the correct rating would be installed, not that a motor controller won't be installed.

Related Item

• First Revision No. 8034-NFPA 70-2020 [Section No. 430.83]

Submitter Information Verification

Submitter Full Name: Josh Weaver
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 10 21:27:00 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected
Resolution: The proposed change does not improve clarity or readability.

Public Comment No. 1875-NFPA 70-2021 [Section No. 430.97(C)]

(C) Minimum Wire-Bending Space.

The minimum wire-bending space at the motor control center terminals and minimum gutter space shall be in accordance with 312.6~~(B)~~ .

Statement of Problem and Substantiation for Public Comment

The limitation to (6)(B) distances, the most robust of the two options (A) or (B), is likely not to have been intended. If a simple right-angle turn is all that would be normally required based on the applicable geometry, then the lesser 312.6(A) spacing should be allowable.

Related Item

• FR-8036

Submitter Information Verification

Submitter Full Name: Frederic Hartwell
Organization: Hartwell Electrical Services, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 13:19:50 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Accepted
Resolution: SR-7536-NFPA 70-2021
Statement: Removal of the limitation of 312.6 (B) to 312.6 will improve usability of this section.

Public Comment No. 1400-NFPA 70-2021 [Section No. 430.97(E)]

(E) Barriers.

Barriers shall be placed in all service-entrance motor control centers to isolate service busbars and terminals from the remainder of the motor control center.

Table 430.97(D) Minimum Spacing Between Bare Metal Parts

Nominal Voltage	Opposite Polarity Where Mounted on the Same Surface		Opposite Polarity Where Held Free in Air		Live Parts to Ground	
	mm	in.	mm	in.	mm	in.
Not over 125 volts, nominal	19.1	¾	12.7	½	12.7	½
Not over 250 volts, nominal	31.8	1¼	19.1	¾	12.7	½
Not over 600 volts, nominal	50.8	2	25.4	1	25.4	1

Informational Note: Considerations for testing for the absence of voltage should be made at the time of installation. If test points are insulated or not readily accessible due to the presence of barriers or guards, consider utilizing a permanently mounted absence of voltage tester (AVT). NFPA 70E provides guidance for safely verifying the absence of voltage.

Statement of Problem and Substantiation for Public Comment

With insulation and barrier requirements becoming more common, it is increasingly difficult in certain situations to safely test for the absence of voltage with a portable tester. NFPA 70E has recognized both portable testers and permanently mounted absence of voltage testers as acceptable methods for verifying the absence of voltage since 2018. Permanently mounted absence of voltage testers can significantly reduce risk and exposure to electrical hazards when testing for absence of voltage. However, because it is permanently mounted, the tester has to be considered during the installation of the equipment. Adding an informational note that encourages equipment designers and installers to consider how absence of voltage testing will be performed will lead to increased safety of those who operate and maintain the equipment after it is installed, regardless of whether portable or permanently-mounted testers are used. This informational note does not require absence of voltage testers, but only seeks to make people aware that there are multiple methods to accomplish this task and points the user of the standard to NFPA 70E for more information on this topic. If this topic is not considered at the time of installation, it may not be possible to mitigate testing risks later during the life of the equipment.

Related Item

• PI-3941

Submitter Information Verification

Submitter Full Name: Rachel Bugaris
Organization: Panduit Corp
Street Address:

City:
State:
Zip:
Submittal Date: Thu Aug 12 14:37:48 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected

Resolution: There are multiple ways to address safety with respect to the presence of voltage. The code should not favor a specific method.

Public Comment No. 1257-NFPA 70-2021 [Section No. 430.99]

430.99 Available Fault Current.

The available fault current at the motor control center and the date the available fault current calculation was performed shall be documented and made available to those authorized to inspect, install, or maintain the installation. A motor control center shall not be installed where the available fault current exceeds the motor control center's short-circuit current rating.

Statement of Problem and Substantiation for Public Comment

PI 393 and FR-8034 added a requirement that a motor controller shall not be installed where the available fault current exceeds the motor controller's short-circuit current rating. This public comment proposes similar language for motor control centers. Motor control centers are often located near the service entrance equipment where the available fault current can be high. Assuring the motor control center SCCR is adequate for the available fault current enhances safety.

Related Item

• Public Input No. 393 • FR-8034

Submitter Information Verification

Submitter Full Name: Daniel Neeser
Organization: Eaton's Bussmann Division
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 11 13:59:28 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but held

Resolution: The PC provides new material for the motor control center section that has not had full public review.

Public Comment No. 996-NFPA 70-2021 [Section No. 430.110]

430.110 Ampere Rating and Interrupting Capacity.

(A) General.

The disconnecting means for motor circuits rated 1000 volts, nominal, or less shall have an ampere rating not less than 115 percent of the full-load current rating of the motor.

Exception: A listed unfused motor-circuit switch having a horsepower rating not less than the motor horsepower shall be permitted to have an ampere rating less than 115 percent of the full-load current rating of the motor.

(B) For Torque Motors.

Disconnecting means for a torque motor shall have an ampere rating of at least 115 percent of the motor nameplate current.

(C) For Combination Loads.

Where two or more motors are used together or where one or more motors are used in combination with other loads, such as resistance heaters, and where the combined load can be simultaneous on a single disconnecting means, the ampere and horsepower ratings of the combined load shall be determined in accordance with 430.110(C)(1) through (C)(3).

(1) Horsepower Rating.

The rating of the disconnecting means shall be determined from the sum of all currents, including resistance loads, at the full-load condition and also at the locked-rotor condition. The combined full-load current and the combined locked-rotor current so obtained shall be considered as a single motor for the purpose of this requirement.

The full-load current equivalent to the horsepower rating of each motor shall be selected from Table 430.247, Table 430.248, Table 430.249, or Table 430.250. These full-load currents shall be added to the rating in amperes of other loads to obtain an equivalent full-load current for the combined load.

The locked-rotor current equivalent to the horsepower rating of each motor shall be selected from Table 430.251(A) or Table 430.251(B). The locked-rotor currents shall be added to the rating in amperes of other loads to obtain an equivalent locked-rotor current for the combined load. Where two or more motors or other loads cannot be started simultaneously, the largest sum of locked-rotor currents of a motor or group of motors that can be started simultaneously and the full-load currents of other concurrent loads shall be permitted to be used to determine the equivalent locked-rotor current for the simultaneous combined loads. In cases where different current ratings are obtained when applying these tables, the largest value obtained shall be used.

Exception No. 1: The locked-rotor current equivalent to the horsepower rating of each polyphase motor with design letter A shall be the motor's marked value of locked-rotor amperes.

Exception No. 2: Where part of the concurrent load is resistance load, and where the disconnecting means is a switch rated in horsepower and amperes, the switch used shall be permitted to have a horsepower rating that is not less than the combined load of the motor(s) if the ampere rating of the switch is not less than the locked-rotor current of the motor(s) plus the resistance load.

(2) Ampere Rating.

The ampere rating of the disconnecting means shall not be less than 115 percent of the sum of all currents at the full-load condition determined in accordance with 430.110(C)(1).

Exception: A listed nonfused motor-circuit switch having a horsepower rating equal to or greater than the equivalent horsepower of the combined loads, determined in accordance with 430.110(C)(1), shall be permitted to have an ampere rating less than 115 percent of the sum of all currents at the full-load condition.

(3) Small Motors.

For small motors not covered by Table 430.247, Table 430.248, Table 430.249, or Table 430.250, the locked-rotor current shall be assumed to be six times the full-load current.

Additional Proposed Changes

File Name	Description	Approved
11_CN_26.pdf	70_CN26	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 26 appeared in the First Draft Report on First Revision No. 8039.

The Correlating Committee directs the Panel to review the text regarding the use of the term "ampere", as "ampere" is a unit of current.

Related Item

• First Revision No. 8039

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 14:48:25 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7538-NFPA 70-2021
Statement: Updates included to address CC concerns on use of ampacity vs current. Changes made to better address Design A motor LRC calculations.

Correlating Committee Note No. 26-NFPA 70-2021 [Sections 430.110, 430.111]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:46:47 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to review the text regarding the use of the term “ampere”, as “ampere” is a unit of current.

First Revision No. 8039-NFPA 70-2020 [Sections 430.110, 430.111]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1582-NFPA 70-2021 [Section No. 430.110(C)(1)]

(1) Horsepower Rating.

The rating of the disconnecting means shall be determined from the sum of all currents, including resistance loads, at the full-load condition and also at the locked-rotor condition. The combined full-load current and the combined locked-rotor current so obtained shall be considered as a single motor for the purpose of this requirement.

The full-load current equivalent to the horsepower rating of each motor shall be selected from Table 430.247, Table 430.248, Table 430.249, or Table 430.250. These full-load currents shall be added to the rating in amperes of other loads to obtain an equivalent full-load current for the combined load.

The locked-rotor current equivalent to the horsepower rating of each motor shall be selected from Table 430.251(A) or Table 430.251(B). The locked-rotor currents shall be added to the rating in amperes of other loads to obtain an equivalent locked-rotor current for the combined load. Where two or more motors or other loads cannot be started simultaneously, the largest sum of locked-rotor currents of a motor or group of motors that can be started simultaneously and the full-load currents of other concurrent loads shall be permitted to be used to determine the equivalent locked-rotor current for the simultaneous combined loads. In cases where different current ratings are obtained when applying these tables, the largest value obtained shall be used.

Exception No. 1: The locked-rotor current equivalent to the horsepower rating of each polyphase motor with design letter A shall be one of the following:

(1) if available, the motor's marked value of locked-rotor amperes.

(2) in the absence of a marked value of locked-rotor amperes for the motor, the value calculated from the following formula:

$$\text{Locked Rotor Amperes} = \left(\frac{\text{kva}}{\text{hp}}\right) \times \frac{(1000 \times \text{Motor's marked value of rated horsepower})}{(\text{Motor's marked value of rated volts}) \times (3)}$$ * **see attachment for full details**

Where kVa/hp - the maximum value of the range of kilovolt-amperes per horsepower with locked rotor in table 430.7(B) associated with the motor's marked locked-rotor indicating code letter.

Informational Note: The formula in Exception No.1 is obtained by solving for locked-rotor amperes in the formula for "kilovolt-amperes per horsepower with lockded rotor" which is

$$\frac{\text{kva}}{\text{hp}} = \frac{(3) \times (\text{Motor's marked value of rated volts}) \times (\text{locked rotor amperes})}{(1000 \times \text{Motor's marked value of rated horsepower})}$$

The numerator of this equation for kilovolt-amperes per horsepower is the apparent power input to a three-phase motor with locked rotor in units of volt-amperes. The factor of 1000 VA/kVA in the denominator converts this value to units of kilovolt-amperes and (marked value of rated horsepower) in the denominator converts this to kilovolt-amperes per horsepower. Note that "motor's marked value of rated volts" is a line-to-line value and "locked-rotor amperes" is a line value as opposed to a phase value.

Exception No. 2: Where part of the concurrent load is resistance load, and where the disconnecting means is a switch rated in horsepower and amperes, the switch used shall be permitted to have a horsepower rating that is not less than the combined load of the motor(s) if the ampere rating of the switch is not less than the locked-rotor current of the motor(s) plus the resistance load.

Additional Proposed Changes

File Name	Description	Approved
430.110_C_1_1mg-CMP11.pdf	430.110(C)(1) - details for clarification of formula	

Statement of Problem and Substantiation for Public Comment

This comment corresponds to Public Input 3099 but with the following differences:
Exception No. 1 has been separated into two options for compliance
577.35 in the numerator of the equation in 430.110.(C) has changed to (1000 / √3)
An informational note has been added to address concerns recorded in the Panel statement
As the footnote for Table 430.251(B) states, Design A motors are not limited by any code or standard to a maximum value of locked-rotor current. Typically, Design A motors have a value of locked-rotor current that is significantly higher than their Design B, C, and D counterparts. 430.110(C) presently does not address how to determine the locked-rotor current equivalent to the horsepower rating for Design A motors that are a part of combination loads and this omission could result in the selection of undersized disconnecting means. While the locked-rotor current of Design A motors is not limited by any code or standard, it is limited by the manufacturer-selected value of locked-rotor amperes or code letter that appears on the motor's markings as required by 430.7(A)(8). It is proposed to utilize in 430.110(C)(1) this marking to determine the locked-rotor current equivalent to the horsepower rating for Design A motors that are a part of combination loads. The origin of the proposed formula in 430.110(C)(1) is explained in the proposed informational note.
Style note: The equations, as with the remainder of proposed Exception No. 1, represent proposed new text however these are without underlining since Word Equation Editor leaves the appearance of an underlined equation as having strikethrough format.

Related Item

• PI 3099

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 16 14:49:55 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7538-NFPA 70-2021
Statement: Updates included to address CC concerns on use of ampacity vs current. Changes made to better address Design A motor LRC calculations.

FORM FOR COMMENT ON NFPA REPORT ON PROPOSALS
All Comments Must Be Received by 5:00 pm EST/EDST on the Published Comment Closing Date

For further information on the standards-making process, please contact the Codes and Standards Administration at 617-984-7249 or visit www.nfpa.org/codes.

For technical assistance, please call NFPA at 1-800-344-3555.

FOR OFFICE USE ONLY

Log #:

Date Rec'd:

Please indicate in which format you wish to receive your ROP/ROC ☐ **electronic** ☐ **paper** ☐ **download**
(Note: If choosing the download option, you must view the ROP/ROC from our website; no copy will be sent to you.)

Date **Name** Megan Hayes **Tel. No.**

Company National Electrical Manufacturers Association (NEMA) **Email**

Street Address 1300 North 17th Street, Suite 900 **City** Rosslyn **State** VA **Zip** 22209

******If you wish to receive a hard copy, a street address MUST be provided. Deliveries cannot be made to PO boxes.***

Please indicate organization represented (if any)

1. (a) NFPA Document Title National Electrical Code **NFPA No. & Year** 70 / 2023

(b) Section/Paragraph 430.110(C)(1)

2. Comment on Proposal No. (from ROP): PI 3099

3. Comment Recommends (check one): ☐ new text ☒ revised text ☐ deleted text

4. Comment (include proposed new or revised wording, or identification of wording to be deleted): [Note: Proposed text should be in legislative format; i.e., use underscore to denote wording to be inserted (inserted wording) and strike-through to denote wording to be deleted (~~deleted wording~~).]

430.110(C)(1) Horsepower Rating. The rating of the disconnecting means shall be determined from the sum of all currents, including resistance loads, at the full-load condition and also at the locked-rotor condition. The combined full-load current and the combined locked-rotor current so obtained shall be considered as a single motor for the purpose of this requirement as follows.

The full-load current equivalent to the horsepower rating of each motor shall be selected from Table 430.247, Table 430.248, Table 430.249, or Table 430.250. These full-load currents shall be added to the rating in amperes of other loads to obtain an equivalent full-load current for the combined load.

The locked-rotor current equivalent to the horsepower rating of each motor shall be selected from Table 430.251(A) or Table 430.251(B). The locked-rotor currents shall be added to the rating in amperes of other loads to obtain an equivalent locked-rotor current for the combined load. Where two or more motors or other loads cannot be started simultaneously, the largest sum of locked-rotor currents of a motor or group of motors that can be started simultaneously and the full-load currents of other concurrent loads shall be permitted to be used to determine the equivalent locked-rotor current for the simultaneous combined loads. In cases where different current ratings are obtained when applying these tables, the largest value obtained shall be used.

Exception No. 1: The locked-rotor current equivalent to the horsepower rating of each polyphase motor with design letter A shall be one of the following:

(1) if available, the motor's marked value of locked-rotor amperes

(2) in the absence of a marked value of locked-rotor amperes for the motor, the value calculated from the following formula:

$$Locked\ Rotor\ Amperes = \left(\frac{kVA}{hp}\right) X \frac{(1000\ x\ Motor's\ marked\ value\ of\ rated\ horsepower)}{(Motor's\ marked\ value\ of\ rated\ volts)\ x\ (\sqrt{3})}$$

Where kVA/hp = *the maximum value of the range of kilovolt-amperes per horsepower with locked rotor in Table 430.7(B) associated with the motor's marked locked-rotor indicating code letter*

Informational Note: The formula in Exception No. 1 is obtained by solving for locked-rotor amperes in the formula for "kilovolt-amperes per horsepower with locked rotor" which is:

$$\frac{kVA}{hp} = \frac{(\sqrt{3})\ \text{x (Motor's marked value of rated volts) x (locked rotor amperes)}}{(1000\ \text{x Motor's marked value of rated horsepower})}$$

The numerator of this equation for kilovolt-amperes per horsepower is the apparent power input to a three-phase motor with locked rotor in units of volt-amperes. The factor of 1000 VA/kVA in the denominator converts this value to units of kilovolt-amperes and (marked value of rated horsepower) in the denominator converts this to kilovolt-amperes per horsepower. Note that "motor's marked value of rated volts" is a line-to-line value and "locked-rotor amperes" is a line value as opposed to a phase value.

Exception No. 2: When part of the concurrent load is resistance load, and where the disconnecting means is a switch rated in horsepower and amperes, the switch used shall be permitted to have a horsepower rating that is not less than the combined load of the motor(s), if the ampere rating of the switch is not less than the locked-rotor current of the motor(s) plus the resistance load.

5. Statement of Problem and Substantiation for Comment: (Note: State the problem that would be resolved by your recommendation; give the specific reason for your Comment, including copies of tests, research papers, fire experience, etc. If more than 200 words, it may be abstracted for publication.)

This comment corresponds to Public Input 3099 but with the following differences:

- Exception No. 1 has been separated into two options for compliance
- 577.35 in the numerator of the equation in 430.110.(C) has changed to $(1000 / \sqrt{3})$
- An informational note has been added to address concerns recorded in the Panel statement

As the footnote for Table 430.251(B) states, Design A motors are not limited by any code or standard to a maximum value of locked-rotor current. Typically, Design A motors have a value of locked-rotor current that is significantly higher than their Design B, C, and D counterparts. 430.110(C) presently does not address how to determine the locked-rotor current equivalent to the horsepower rating for Design A motors that are a part of combination loads and this omission could result in the selection of undersized disconnecting means. While the locked-rotor current of Design A motors is not limited by any code or standard, it is limited by the manufacturer-selected value of locked-rotor amperes or code letter that appears on the motor's markings as required by 430.7(A)(8). It is proposed to utilize in 430.110(C)(1) this marking to determine the locked-rotor current equivalent to the horsepower rating for Design A motors that are a part of combination loads. The origin of the proposed formula in 430.110(C)(1) is explained in the proposed informational note.

Style note: The equations, as with the remainder of proposed Exception No. 1, represent proposed new text however these are without underlining since Word Equation Editor leaves the appearance of an underlined equation as having strikethrough format.

6. Copyright Assignment

(a) ☒ I am the author of the text or other material (such as illustrations, graphs) proposed in the Comment.

(b) ☐ Some or all of the text or other material proposed in this Comment was not authored by me. Its source is as follows: (please identify which material and provide complete information on its source)

I hereby grant and assign to the NFPA all and full rights in copyright in this Comment and understand that I acquire no rights in any publication of NFPA in which this Comment in this or another similar or analogous form is used. Except to the extent that I do not have authority to make an assignment in materials that I have identified in (b) above, I hereby warrant that I am the author of this Comment and that I have full power and authority to enter into this assignment.

Signature (Required)

PLEASE USE SEPARATE FORM FOR EACH COMMENT

Mail to: Secretary, Standards Council · National Fire Protection Association
1 Batterymarch Park · Quincy, MA 02169-7471 OR
Fax to: (617) 770-3500 OR Email to: proposals_comments@nfpa.org

Public Comment No. 993-NFPA 70-2021 [Section No. 430.120]

430.120 General.

The installation provisions of Part I through Part IX are applicable unless modified or supplemented by Part X.

Power conversion equipment used in adjustable-speed drive systems with input ratings of 1000 volts or lower and output ratings of over 1000 volts, or vice versa, shall comply with Part X for circuits rated 1000 volts or lower and with Part XI for circuits rated over 1000 volts.

Additional Proposed Changes

File Name	Description	Approved
11_CN_27.pdf	70_CN27	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 27 appeared in the First Draft Report on First Revision No. 8122.

The Correlating Committee directs that the Panel rewrite the requirement for usability and clarity, and the use of the phrase "provisions of', "vice versa", and the reference to Part XI for output conductors. Refer to 3.3.2.1 of the NEC Style Manual to ensure the text is clear and the rule is short, using list formats when appropriate.

Related Item

• First Revision No. 8122

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 14:44:48 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7544-NFPA 70-2021
Statement: PC reviewed per CC direction and changes made to improve clarity and meet NEC style manual requirements.

Correlating Committee Note No. 27-NFPA 70-2021 [Section No. 430.120]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:49:10 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that the Panel rewrite the requirement for usability and clarity, and the use of the phrase “provisions of”, “vice versa”, and the reference to Part XI for output conductors. Refer to 3.3.2.1 of the NEC Style Manual to ensure the text is clear and the rule is short, using list formats when appropriate.

First Revision No. 8122-NFPA 70-2020 [Section No. 430.120]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 997-NFPA 70-2021 [Sections 430.122(A), 430.122(B)]

Sections 430.122(A), 430.122(B)

(A) Branch/Feeder Circuit Conductors.

Circuit conductors supplying power conversion equipment included as part of an adjustable-speed drive system shall have an ampacity not less than 125 percent of the rated input current to the power conversion equipment.

Informational Note: Power conversion equipment can have multiple power ratings and corresponding input currents.

(B) Output Conductors.

The conductors between the power conversion equipment and the motor shall have an ampacity equal to or larger than 125 percent of the motor full-load current as determined by 430.6(A) or (B).

Exception: If the power conversion equipment is listed and marked as "Suitable for Output Motor Conductor Protection," the conductor between the power conversion equipment and the motor shall have an ampacity equal to or greater than the larger of the following:

(1) 125 percent of the motor full-load current as determined by 430.6(A) or (B)

(2) The ampacity of the minimum conductor size marked on the power conversion equipment

Informational Note No. 1: See 430.130 and 430.131 for branch circuit protection requirements. The minimum ampacity required of output conductors is often different than that of the conductors supplying the power conversion equipment.

Informational Note No. 2: Circuit conductors on the output of an adjustable-speed drive system are susceptible to breakdown under certain conditions due to the characteristics of the output waveform of the drive. Factors affecting the conductors include, but are not limited to, the output voltage, frequency, and current; the length of the conductors; the spacing between the conductors; and the dielectric strength of the conductor insulation. Methods to mitigate breakdown include consideration of one or more of these factors.

Additional Proposed Changes

File Name	Description	Approved
11_CN_28.pdf	70_CN28	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 28 appeared in the First Draft Report on First Revision No. 8124.

The Correlating Committee directs the Panel to clarify the Panel statement regarding relocating the Informational Note from (A) to (B). The note still appears under (A).

Related Item

• First Revision No. 8124

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC

Organization:	NEC Correlating Committee
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Thu Aug 05 14:50:50 EDT 2021
Committee:	NEC-P11

Committee Statement

Committee Action:	Rejected
Resolution:	The information note 2 was moved from A to B. Information note 1 was not relocated.

Correlating Committee Note No. 28-NFPA 70-2021 [Sections 430.122(A), 430.122(B)]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:51:06 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to clarify the Panel statement regarding relocating the Informational Note from (A) to (B). The note still appears under (A).

First Revision No. 8124-NFPA 70-2020 [Sections 430.122(A), 430.122(B)]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1699-NFPA 70-2021 [Section No. 430.122(B)]

(B) Output Conductors.

The conductors between the power conversion equipment and the motor shall have an ampacity equal to or larger than 125 percent of the motor full-load current as determined by 430.6(A) or (B).

Exception: If the power conversion equipment is listed and marked as "Suitable for Output Motor Conductor Protection," the conductor between the power conversion equipment and the motor shall have an ampacity equal to or greater than the larger of the following:

(1) 125 percent of the motor full-load current as determined by 430.6(A) or (B)

(2) The ampacity of the minimum conductor size marked on the power conversion equipment

Informational Note No. 1: See 430.130 and 430.131 for branch circuit protection requirements. The minimum ampacity required of output conductors is often different than that of the conductors supplying the power conversion equipment.

Informational Note No. 2: Circuit conductors ~~on~~ (e.g., thermoplastic) connected to the output of an adjustable-speed drive system are susceptible to breakdown due to arcing (i.e., corona discharge) occurring under certain conditions due to the characteristics of the output waveform of the drive. Factors affecting the conductors include, but are not limited to, the output voltage, frequency, and current; the length of the conductors; the spacing between the conductors; and the dielectric strength of the conductor insulation. Methods to mitigate breakdown include consideration of one or more of these factors.

Statement of Problem and Substantiation for Public Comment

The proposed language brings NEC guidance for VFD output wiring more in line with the language recently adopted in NFPA 79, 2021 Edition section A.12.1.1 regarding circuit conductors on power conversion equipment. It also serves to provide more detailed information regarding the type of insulation most susceptible to failure, as well as the contributing causes of failures.

Related Item

• No. 2543-NFPA 70-2020

Submitter Information Verification

Submitter Full Name: William Dorow
Organization: Lutze Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 17 12:55:17 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Rejected

Action:	
Resolution:	The PC did not provide technical reasoning as to why the change would improve this section.

Public Comment No. 1093-NFPA 70-2021 [Section No. 430.205]

430.205 Size of Conductors.

The ampacities of conductors supplying equipment rated over 1000 volts, nominal, shall be determined in accordance with 315.60 and 430.205(A) and (B).

(A) General.

Conductors supplying motors shall have an ampacity not less than the current at which the motor overload protective device(s) is selected to trip.

(B) Adjustable-Speed Drive Systems.

For an adjustable-speed drive system, the ampacity of the conductors supplying the power conversion equipment shall have an ampacity not less than 125 percent of the rated input current to the power conversion equipment.

Additional Proposed Changes

File Name	Description	Approved
11_CN_29.pdf	70_CN29	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 29 appeared in the First Draft Report on First Revision No. 8045.

The Correlating Committee directs that the wording in the title for 430.205(A) be reviewed for clarity and ease of applying the requirement.
The Correlating Committee also directs the Panel to review FR 8045 in relation to 430.122(A) for clarity and understanding in all sections regarding sizing equipment 125 percent above 1,000 volts and correlate with 245.21(A)(4).
The Correlating Committee also directs the Panel to clarify and correlate 430.205(A) selecting motor conductor sizing in relation to the general requirement in 430.6(A)(1) (which refer to Table values in 430.249 and 430.250), requirements to apply engineering supervision in 315.60, and the Table headings for Tables 430.249 and 430.250, which specify voltages of 600 V nominal or less. The Correlating Committee directs the Panel to review PI 100, which also identifies correlation issues with these Tables.

Related Item

• First Revision No. 8045

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 09 13:28:57 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-7555-NFPA 70-2021
Statement:	Changes made to improve clarity of this section. Also changes made to titles on SR-7559 in Tables 430.249 and 430.250 to include 2300V motors made improve correlation.

Correlating Committee Note No. 29-NFPA 70-2021 [Section No. 430.224]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:54:56 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that the wording in the title for 430.205(A) be reviewed for clarity and ease of applying the requirement.

The Correlating Committee also directs the Panel to review FR 8045 in relation to 430.122(A) for clarity and understanding in all sections regarding sizing equipment 125 percent above 1,000 volts and correlate with 245.21(A)(4).

The Correlating Committee also directs the Panel to clarify and correlate 430.205(A) selecting motor conductor sizing in relation to the general requirement in 430.6(A)(1) (which refer to Table values in 430.249 and 430.250), requirements to apply engineering supervision in 315.60, and the Table headings for Tables 430.249 and 430.250, which specify voltages of 600 V nominal or less. The Correlating Committee directs the Panel to review PI 100, which also identifies correlation issues with these Tables.

First Revision No. 8045-NFPA 70-2020 [Section No. 430.224]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1094-NFPA 70-2021 [Section No. 430.208]

430.208 Disconnecting Means.

The motor controller disconnecting means shall be a switch or circuit breaker having a voltage rating not less than that of the circuit involved, and shall be lockable in accordance with 110.25. The disconnecting means shall have an ampere rating of not less than 115 percent of the full-load current rating of the motor. For adjustable-speed drive systems, the disconnecting means shall have an ampere rating not less than 115 percent of the rated input current of the power conversion equipment.

Additional Proposed Changes

File Name	Description	Approved
11_CN_30.pdf	70_CN30	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 30 appeared in the First Draft Report on First Revision No. 8047.

The Correlating Committee directs the Panel to review FR 8047 and clarify the 115 percent rule for equipment rated over 1000 volts nominal and correlate with other sections of the code, specifically 245.21 (A)(4). The Correlating Committee also directs the Panel to review the text regarding the use of the term "ampere", as "ampere" is a unit of current.

Related Item

• First Revision No. 8047

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 09 13:34:28 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7569-NFPA 70-2021
Statement: The cc comments on ampere vs current ratings are addressed. The change of FLC sizing percentage is not changed based on technical review.

Correlating Committee Note No. 30-NFPA 70-2021 [Section No. 430.227]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 12:59:46 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to review FR 8047 and clarify the 115 percent rule for equipment rated over 1000 volts nominal and correlate with other sections of the code, specifically 245.21(A)(4). The Correlating Committee also directs the Panel to review the text regarding the use of the term “ampere”, as “ampere” is a unit of current.

First Revision No. 8047-NFPA 70-2020 [Section No. 430.227]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1575-NFPA 70-2021 [Section No. 430.208]

430.208 Disconnecting Means.

The motor controller disconnecting means shall be a switch or circuit breaker having a voltage rating not less than that of the circuit involved, and shall be lockable in accordance with 110.25. The disconnecting means shall have an ampere rating of not less than ~~115~~ 100 percent of the full-load current rating of the motor. For adjustable-speed drive systems, the disconnecting means shall have an ampere rating not less than ~~115 percent~~ 100 percent of the rated input current of the power conversion equipment.

Statement of Problem and Substantiation for Public Comment

Medium voltage disconnecting means for motor controllers and adjustable speed drives are already rated at 100%. It is not necessary to rate these to 115% of the full-load current rating of the motor

Related Item

• FR 8047

Submitter Information Verification

Submitter Full Name: Megan Hayes
Organization: Nema
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 16 14:38:38 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7565-NFPA 70-2021

Statement: Medium voltage disconnecting means for motor controllers and adjustable speed drives are already rated at 100%. It is not necessary to rate these to 115% of the full-load current rating of the motor.

Note: SR-7569 also modifies this section.

Public Comment No. 1886-NFPA 70-2021 [Section No. 430.208]

430.208 Disconnecting Means.

The motor controller disconnecting means shall be a switch or circuit breaker having a voltage rating not less than that of the circuit involved, and shall be lockable in accordance with 110.25. The disconnecting means shall have an ampere rating of not less than 115 percent of the full-load current rating of the motor. For adjustable-speed drive systems, the disconnecting means shall have an ampere rating not less than 115 percent of the rated input current of the power conversion equipment.

Statement of Problem and Substantiation for Public Comment

This comment is in response to the Correlating Committee Note 30. The 115% rule is indeed correlated with other parts of the Code, such as 430.110(A). The rules presented in the FR are not inconsistent with 490.21(A)(4), to the extent they would apply. The word "ampere" correctly correlates with the relevant equipment ratings; it is not being used where another word, such as ampacity, should be used.

Related Item

• CC Note 30

Submitter Information Verification

Submitter Full Name: Frederic Hartwell
Organization: Hartwell Electrical Services, Inc.
Street Address:
City:
State:
Zip:
Submittal Date: Wed Aug 18 13:40:13 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected
Resolution: The requested action would be in conflict with actions taken on PC-1094 and 1575, see SR-7569.

Public Comment No. 998-NFPA 70-2021 [Section No. 430.241]

430.241 General.

Part XIII specifies the grounding of exposed non–current-carrying metal parts, likely to become energized, of motor and motor controller frames to prevent a voltage above ground in the event of accidental contact between energized parts and frames. Insulation, isolation, or guarding are suitable alternatives to grounding of motors under certain conditions.

Additional Proposed Changes

File Name	Description	Approved
11_CN_31.pdf	70_CN31	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 31 appeared in the First Draft Report on First Revision No. 8049.

The Correlating Committee directs the Panel to review the phrase "voltage above ground" for consistency with the defined term for "voltage to ground".

Related Item

• First Revision No. 8049

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 14:56:15 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7570-NFPA 70-2021
Statement: Changes made to improve clarity and utilize defined term of Voltage to Ground.

Correlating Committee Note No. 31-NFPA 70-2021 [Section No. 430.241]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 13:06:52 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to review the phrase “voltage above ground” for consistency with the defined term for “voltage to ground”.

First Revision No. 8049-NFPA 70-2020 [Section No. 430.241]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 999-NFPA 70-2021 [Section No. 440.3]

440.3 Other Articles.

(A) Motors.

See Table 440.3. These provisions are in addition to, or amendatory of, other articles in this *Code*, which apply except as modified in this article.

(B) Air-Conditioning and Refrigerating Equipment That Does Not Incorporate a Hermetic Refrigerant Motor-Compressor.

See Table 440.3. This equipment includes devices that employ refrigeration compressors driven by conventional motors, furnaces with air-conditioning evaporator coils installed fan-coil units, remote forced-air cooled condensers, remote commercial refrigerators, and so forth.

(C) Room Air Conditioners, Household Refrigerators, and Freezers; Drinking Water Coolers; and Beverage Dispensers.

See Table 440.3(D). This equipment shall be considered appliances and the rules of the applicable article shall apply unless modified in this article.

(D) Other Applicable Articles.

Hermetic refrigerant motor-compressors, circuits, controllers, and equipment shall also comply with the applicable provisions of Table 440.3(D).

Table 440.3(D) Other Articles

Equipment/Occupancy	Article	Section
Capacitors		460.9
Commercial garages; aircraft hangars; motor fuel dispensing facilities; bulk storage plants; spray application, dipping, and coating processes; and inhalation anesthetizing locations	511, 513, 514, 515, 516, and 517 Part IV	
Hazardous (classified) locations	500–503, 505, and 506	
Motion picture and television studios and similar locations	530	
Resistors and reactors	470	

Additional Proposed Changes

File Name	Description	Approved
11_CN_32.pdf	70_CN32	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 32 appeared in the First Draft Report on First Revision No. 8059.

The Correlating Committee directs that FR 8059 be reviewed for compliance with 4.1.1 and 4.1.4 of the NEC Style Manual. Table 440.3(0) repeats requirements addressed by other Articles.

Related Item

• First Revision No. 8059

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 14:58:52 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7600-NFPA 70-2021
Statement: Table 440.3(D) is not necessary because it is redundant to Article 90. Further, without reference to Table 440.3(D) the rest of 440.3 is not necessary.

PC-134 &135 are rejected as this SR deletes 440.3.

Correlating Committee Note No. 32-NFPA 70-2021 [Section No. 440.3]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 13:57:24 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that FR 8059 be reviewed for compliance with 4.1.1 and 4.1.4 of the NEC Style Manual. Table 440.3(D) repeats requirements addressed by other Articles.

First Revision No. 8059-NFPA 70-2020 [Section No. 440.3]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 134-NFPA 70-2021 [Section No. 440.3(A)]

(A) Motors.

~~See Table 440.3. These~~ These provisions are in addition to, or amendatory of, other articles in this *Code*, which apply except as modified in this article.

Statement of Problem and Substantiation for Public Comment

There is no Table 440.3, how can we "see" it?

Related Item

• FR-8059

Submitter Information Verification

Submitter Full Name: Don Ganiere
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 06 12:53:06 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7600-NFPA 70-2021

Statement: Table 440.3(D) is not necessary because it is redundant to Article 90. Further, without reference to Table 440.3(D) the rest of 440.3 is not necessary.

PC-134 &135 are rejected as this SR deletes 440.3.

Public Comment No. 135-NFPA 70-2021 [Section No. 440.3(C)]

(C) Room Air Conditioners, Household Refrigerators, and Freezers; Drinking Water Coolers; and Beverage Dispensers.

~~See~~ ~~Table 440.3(D)~~ ~~. This~~ This equipment shall be considered appliances and the rules of the applicable article shall apply unless modified in this article.

Statement of Problem and Substantiation for Public Comment

Table 440.3(D) does not reference Article 422 so why are we being sent to Table 440.3(D) for equipment that is to be considered as appliances?

Related Item

• FR-8059

Submitter Information Verification

Submitter Full Name: Don Ganiere
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 06 12:54:34 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7600-NFPA 70-2021

Statement: Table 440.3(D) is not necessary because it is redundant to Article 90. Further, without reference to Table 440.3(D) the rest of 440.3 is not necessary.

PC-134 &135 are rejected as this SR deletes 440.3.

Public Comment No. 1001-NFPA 70-2021 [Section No. 440.11]

440.11 General.

Part II is intended to require disconnecting means capable of disconnecting air-conditioning and refrigerating equipment, including motor-compressors and controllers, from the circuit conductors. Where disconnecting means are readily accessible to unqualified persons, any enclosure door or hinged cover that exposes live parts when open shall be locked or require a tool to open.

Additional Proposed Changes

File Name	Description	Approved
11_CN_34.pdf	70_CN34	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 34 appeared in the First Draft Report on First Revision No. 8063.

The Correlating Committee directs that the first revision to 440.11 be rewritten to comply with 3.2.1 and 3.3.4 of the NEC Style Manual, with respect to the use of the phrase "shall be locked", and consider "shall be capable of being locked", or equivalent, and the phrase "where disconnecting means" and consider "if the disconnecting means". The Correlating Committee refers FR 8063 to CMP's 4 and 9 for information.

Related Item

• First Revision No. 8063

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 15:03:29 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7604-NFPA 70-2021

Statement: Response to 216: The first sentence of 440.11 is revised to make this clause enforceable per 3.2.1 of the style manual, and the term “shall” is added in accordance with 90.5(A). The term “live” is changed to “energized” to be consistent with other language in the code such as the definitions for “enclosed” and “enclosure”.

Response to PC-1001, 1476 & 1636: “Where” is changed to “if” to improve clarity

per 3.3.4 of the style manual. “Locked” is changed to “shall be capable of being locked” to make the requirement enforceable in accordance with 3.2.1 of the style manual. Other revisions (rearranging the last sentence, adding “disconnecting means enclosure”, and adding commas) are made for clarity and readability.

Correlating Committee Note No. 34-NFPA 70-2021 [Section No. 440.11]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 14:14:30 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that the first revision to 440.11 be rewritten to comply with 3.2.1 and 3.3.4 of the NEC Style Manual, with respect to the use of the phrase “shall be locked”, and consider "shall be capable of being locked", or equivalent, and the phrase "where disconnecting means" and consider "if the disconnecting means". The Correlating Committee refers FR 8063 to CMP’s 4 and 9 for information.

First Revision No. 8063-NFPA 70-2020 [Section No. 440.11]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 136-NFPA 70-2021 [Section No. 440.11]

440.11 General.

Part II is intended to require disconnecting means capable of disconnecting air-conditioning and refrigerating equipment, including motor-compressors and controllers, from the circuit conductors. ~~Where disconnecting means are readily accessible to unqualified persons, any enclosure door or hinged cover that exposes live parts when open shall be locked or require a tool to open.~~

Statement of Problem and Substantiation for Public Comment

This is not needed here as the subject matter is found in new section 404.30. The rules in 404 are general and apply to disconnects installed for equipment within the scope of Article 440. If the panel feels the rule must remain, the language should consistent with that in 404.30 to avoid possible confusion.

Related Item

• FR-7861 • FR-8063

Submitter Information Verification

Submitter Full Name: Don Ganiere
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Tue Jul 06 13:13:57 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected

Resolution: There are other mechanisms that can be used for disconnecting means other than those in Article 404. The language used in Article 404.30 may be appropriate for switch mechanisms but may not be applicable to other mechanisms.

Public Comment No. 1403-NFPA 70-2021 [Section No. 440.11]

440.11 General.

Part II is intended to require disconnecting means capable of disconnecting air-conditioning and refrigerating equipment, including motor-compressors and controllers, from the circuit conductors. Where disconnecting means are readily accessible to unqualified persons, any enclosure door or hinged cover that exposes live parts when open shall be locked or require a tool to open.

Informational Note: Considerations for testing for the absence of voltage should be made at the time of installation. If test points are insulated or not readily accessible due to the presence of barriers or guards, consider utilizing a permanently mounted absence of voltage tester (AVT). NFPA 70E provides guidance for safely verifying the absence of voltage. _

Statement of Problem and Substantiation for Public Comment

With insulation and barrier requirements becoming more common, it is increasingly difficult in certain situations to safely test for the absence of voltage with a portable tester. NFPA 70E has recognized both portable testers and permanently mounted absence of voltage testers as acceptable methods for verifying the absence of voltage since 2018. Permanently mounted absence of voltage testers can significantly reduce risk and exposure to electrical hazards when testing for absence of voltage. However, because it is permanently mounted, the tester has to be considered during the installation of the equipment. Adding an informational note that encourages equipment designers and installers to consider how absence of voltage testing will be performed will lead to increased safety of those who operate and maintain the equipment after it is installed, regardless of whether portable or permanently-mounted testers are used. This informational note does not require absence of voltage testers, but only seeks to make people aware that there are multiple methods to accomplish this task and points the user of the standard to NFPA 70E for more information on this topic. If this topic is not considered at the time of installation, it may not be possible to mitigate testing risks later during the life of the equipment.

Related Item

• PI 3912

Submitter Information Verification

Submitter Full Name: Rachel Bugaris
Organization: Panduit Corp
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 12 14:48:27 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected

Resolution:	There are multiple ways to address safety with respect to the presence of voltage. The code should not favor a specific method.

Public Comment No. 1476-NFPA 70-2021 [Section No. 440.11]

440.11 General.

Part II is intended to require disconnecting means capable of disconnecting air-conditioning and refrigerating equipment, including motor-compressors and controllers, from the circuit conductors. Where disconnecting means are readily accessible to unqualified persons, any enclosure door or hinged cover that exposes live parts when open shall be ~~locked or~~ capable of being locked or require a tool to open.

Statement of Problem and Substantiation for Public Comment

The problem with the NEC requiring this disconnect to be locked is that it begins to become more of an operations and maintenance standard. In most cases, it won't be the electrician installing the lock. It will be the facility or home owner having the responsibility to place and maintain it. It might be better to require a lockable disconnect.

Related Item

• Public Input No. 4071-NFPA 70-2020 [Section No. 440.11]

Submitter Information Verification

Submitter Full Name: Josh Weaver
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Fri Aug 13 20:52:14 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7604-NFPA 70-2021

Statement: Response to 216: The first sentence of 440.11 is revised to make this clause enforceable per 3.2.1 of the style manual, and the term “shall” is added in accordance with 90.5(A). The term “live” is changed to “energized” to be consistent with other language in the code such as the definitions for “enclosed” and “enclosure”.

Response to PC-1001, 1476 & 1636: “Where” is changed to “if” to improve clarity per 3.3.4 of the style manual. “Locked” is changed to “shall be capable of being locked” to make the requirement enforceable in accordance with 3.2.1 of the style manual. Other revisions (rearranging the last sentence, adding “disconnecting means enclosure”, and adding commas) are made for clarity and readability.

Public Comment No. 1636-NFPA 70-2021 [Section No. 440.11]

440.11 General.

~~Part II is intended to require disconnecting means capable of disconnecting air-conditioning and refrigerating equipment, including motor-compressors and controllers, from the circuit conductors.~~

Where disconnecting means are readily accessible to unqualified persons, any enclosure door or hinged cover that exposes live parts when open shall be locked or require a tool to open.

Statement of Problem and Substantiation for Public Comment

This language is not enforceable. If the CMP wishes it to be retained it should be an informational note.

Related Item

• PI 512

Submitter Information Verification

Submitter Full Name: Ryan Jackson
Organization: Ryan Jackson
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 16 18:46:05 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7604-NFPA 70-2021

Statement: Response to 216: The first sentence of 440.11 is revised to make this clause enforceable per 3.2.1 of the style manual, and the term “shall” is added in accordance with 90.5(A). The term “live” is changed to “energized” to be consistent with other language in the code such as the definitions for “enclosed” and “enclosure”.

Response to PC-1001, 1476 & 1636: “Where” is changed to “if” to improve clarity per 3.3.4 of the style manual. “Locked” is changed to “shall be capable of being locked” to make the requirement enforceable in accordance with 3.2.1 of the style manual. Other revisions (rearranging the last sentence, adding “disconnecting means enclosure”, and adding commas) are made for clarity and readability.

Public Comment No. 216-NFPA 70-2021 [Section No. 440.11]

440.11 General.

~~Part II is intended to require disconnecting means~~ Disconnecting means shall be capable of disconnecting air-conditioning and refrigerating equipment, including motor-compressors and controllers, from the circuit conductors. Where disconnecting means are readily accessible to unqualified persons, any enclosure door or hinged cover that exposes ~~live parts~~ energized parts when open shall be locked or require a tool to open.

Statement of Problem and Substantiation for Public Comment

In favor of the continued support of this revision and the addition of the safety requirement that has been added in this FR. This comment is seeking to include the addition and removal of language above.
Remove the intent of this section and move it to mandatory language or actions. The language "intended" could be viewed as vague or unenforceable per 3.2.1 of the NEC Style manual. If all of Part II is to require the disconnecting means capable of disconnecting this equipment, then it should be mandatory by using the term "shall" per 90.5(A) and 3.1.1 (NEC Style manual) and add the language "shall be" in the first sentence. Also as it is currently written it reads like a Scope rather than a requirement so removing the language "Part II is" should also be deleted as it is unnecessary.
Remove the language "live" and exchange it with "energized" as this is more appropriate language. Definitions like "Enclosed" and "Enclosure" use "energized parts" within the definition rather than "live" parts. To maintain consistency with the NEC and 70E "energized" should be used.
Where – Use to convey a location or a situation. If – Use to indicate a condition. As this requirement is written, the language "Where" is more appropriate than changing it to "If"? Seems that this is about the location more than a condition.
Continue to require a lock to be used or a tool to be used to open the enclosure, rather than just capable of, as this provides a higher level of safety after installation. This mirrors other required language in the NEC that drives safety. Examples 690.13(A), 690.15(A), 705.20(5), 625.42, 450.43(C).

Related Item

• FR-8063 • CC Note No. 34

Submitter Information Verification

Submitter Full Name: Darryl Hill
Organization: Wichita Electrical JATC/IBEW 271
Street Address:
City:
State:
Zip:
Submittal Date: Mon Jul 12 16:00:14 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7604-NFPA 70-2021

Statement: Response to 216: The first sentence of 440.11 is revised to make this clause enforceable per 3.2.1 of the style manual, and the term “shall” is added in accordance with 90.5(A). The term “live” is changed to “energized” to be consistent with other language in the code such as the definitions for “enclosed” and “enclosure”.

Response to PC-1001, 1476 & 1636: “Where” is changed to “if” to improve clarity per 3.3.4 of the style manual. “Locked” is changed to “shall be capable of being locked” to make the requirement enforceable in accordance with 3.2.1 of the style manual. Other revisions (rearranging the last sentence, adding “disconnecting means enclosure”, and adding commas) are made for clarity and readability.

Public Comment No. 2189-NFPA 70-2021 [Section No. 440.14]

440.14 Location.

Disconnecting means shall be located within sight from, and readily accessible from, the air-conditioning or refrigerating equipment. The disconnecting means shall be permitted to be installed on or within the air-conditioning or refrigerating equipment. Disconnecting means shall meet the working space requirements of 110.26(A).

The disconnecting means shall not be located on panels that are designed to allow access to the air-conditioning or refrigeration equipment or where it obscures the equipment nameplate(s).

Exception No. 1: Where the disconnecting means provided in accordance with 430.102(A) is lockable in accordance with 110.25 and the refrigerating or air-conditioning equipment is essential to an industrial process in a facility with written safety procedures, and where the conditions of maintenance and supervision ensure that only qualified persons service the equipment, a disconnecting means within sight from the equipment shall not be required.

Exception No. 2: Where an attachment plug and receptacle serve as the disconnecting means in accordance with 440.13, their location shall be accessible but shall not be required to be readily accessible.

Informational Note: See Parts VII and IX of Article 430 for additional requirements.

Statement of Problem and Substantiation for Public Comment

This public comment is submitted to further oppose the requirement for, or informational note for, an absence of voltage tester, as per public input 3912. These testers have their limits in usefulness or on their impact on safety. They are not a substitute for qualified people.

I do not believe the statements given in the public input that created this constitute substantiation. We should be using the NEC to drive safety, not sales of products. This is one of multiple ways to test for absence of voltage, thus it shouldn't have its own informational note to elevate it above others. A public input to require or to discuss these devices was submitted for many articles, and in most other cases, rejected.

Here's why I don't believe there is substantiation given in the public input:
Example 1:
The author mentions some instances of improper manufacture of disconnects that lead to incidents. Such a thing is possible with these relatively new devices as well.

Example 2:
The author mentions some instances of improper manufacture of disconnects that lead to incidents. Such a thing is possible with these relatively new devices as well.

Example 3:
The author mentions more issues with manufacturing and/or installation. This time, toggle or drum switches. In this case it's not clear if these were toggle switches controlling utilization loads or a contactor. If the latter, it goes to illustrate how an improper install of a multi-component system (including one with absence of voltage testers) can lead to a hazardous situation. Again, no evidence that these components can't be faultily manufactured or applied just like the case of these drum/toggle switches.

1. Report ID: 0728900
From the information in the public input, it can not be determined that if the disconnect (normally not located on the equipment) had been off, locked out, and verified de-energized with one of these

absence of voltage testers, that the employee would not have been able to be injured by contact with the capacitor.

2. Report ID: 0420600
Again like above here, no evidence is given in the public input that the capacitor would have been discharged, had the absence of voltage tester been on the disconnect. Many times, it wouldn't have been. It could be downstream of the disconnect with the tester and on the load side of a contactor, such that the absence of voltage tester wouldn't have seen it. In both this and the case above, the narrative in the report doesn't support even an idea that had the employee locked out the disconnect and tested it (with or without the absence of voltage tester), that the hazard caused by the capacitor wouldn't have presented itself.

3. Report ID: 0316300
In this case, an employee had a possibly untrained helper shut off a breaker. Report doesn't say if said breaker is at the equipment or in a panelboard (which might be seperate from the purview of this article). Regardless, the employee failed to verify a de-energized condition. The narrative that had the tester device been present, the unqualified person would have known what it meant and would have told the other worker may be incorrect. These devices are only helpful to qualified persons.

4. Report ID: 0452110
From the text given in the public input, we can not determine that an absence of voltage tester would have mitigated this tragedy. It involved an unlabeled breaker, and an assumption someone shouldn't have made. The absense of voltage tester can present the same hazards if improperly applied or maintained. Furthermore, even if the absense of voltage tester had been properly installed at the panelboard, it would still be hazardous to rely on it meaning a wire in the junction box is safe to work on for the same reason. Someone relying on one of these devices located in a breaker panel to clearly indicate that a wire in a multi circuit junction box far from it is de-energized would be hazardous for a number of reasons. If anything, this would be a cautionary tale of the dangers of over-applying these devices.

5. Report ID 0522300
This one doesn't indicate at all that an absence of voltage tester would have prevented this incident. It seems there was no regard for shutting off the equipment at all. The device only works if someone cares to shut the equipment off.

6. Report ID 0729700
Again, another tragedy caused by improper workmanship and improper work practices. From the text of the report in this public input, we see nothing to conclude that had one of these been installed, that the wiring that was associated with another circuit would have been detected.

These devices don't replace qualified people – in most cases they only indicate what part of a piece of equipment are de-energized, and thus they are only useful to qualified persons. They could create greater hazards to unqualified persons.

These devices are only accurate if installed on the correct location of a circuit. In some industrial facilities, there may be stickers indicating the one line throughout the switch gear. These facilities take great care to document and properly install their equipment. In these facilities, one might be able to trust that one of these is properly installed, and usable to a qualified person. In other facilities, these devices may be improperly interpreted as to what points of a circuit are deenergizd when they indicate a de-energized position. Thus, these devices have their limits and risks.

These devices may be best used by facility owners who have the confidence in the work they did to install and maintain them, in order to allow their employees to rely on them. Installing them on every piece of equipment may not help safety due to both possible improper install, neglect, improper interpretation of what they indicate. The idea that these will improve safety across the board would have to be routed in an idea that they are a replacement for qualified people, when they aren't.

These very useful devices will continue to have a positive impact on the industry. Requiring them everywhere, and putting notes about them in the NEC may not promote safety, however, for the reasons stated above.

Related Item

• Public Input No. 3912-NFPA 70-2020 [New Section after 440.14]

Submitter Information Verification

Submitter Full Name: Josh Weaver
Organization: [Not Specified]
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 19 16:10:48 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected

Resolution: The public comment is not in accordance with 4.4.4.3(c) of the Regulations Governing the Development of NFPA Standards.

Public Comment No. 1002-NFPA 70-2021 [Section No. 440.22(A)]

(A) Rating or Setting for Individual Motor-Compressor.

The motor-compressor branch-circuit short-circuit and ground-fault protective device shall be capable of carrying the starting current of the motor. A protective device having a rating or setting not exceeding 175 percent of the motor-compressor rated-load current or branch-circuit selection current, whichever is greater, shall be permitted.

Exception No. 1: Where the values for branch-circuit short-circuit and ground-fault protection in accordance with 440.22(A) do not correspond to the standard sizes or ratings of fuses, nonadjustable circuit breakers, thermal protective devices, or possible settings of adjustable circuit breakers, a higher size, rating, or possible setting that does not exceed the next higher standard ampere rating shall be permitted.

Exception No. 2: Where the values for branch-circuit short-circuit and ground-fault protection in accordance with 440.22(A) or the rating modified by Exception No. 1 is not sufficient for the starting current of the motor, the rating or setting shall be permitted to be increased but shall not exceed 225 percent of the motor rated-load current or branch-circuit selection current, whichever is greater.

Exception No. 3: The rating of the branch-circuit short-circuit and ground-fault protective device shall not be required to be less than 15 amperes.

Additional Proposed Changes

File Name	Description	Approved
11_CN_35.pdf	70_CN35	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 35 appeared in the First Draft Report on First Revision No. 8081.

The Correlating Committee directs that the Panel rewrite Exception No. 1 for usability, clarity, and enforceability, with respect to the statement "possible settings of adjustable circuit breakers" and replace the word "possible" with a different term. The Correlating Committee also directs the Panel to revise Exceptions No. 1 and 2 to remove the term "where" and replace with "if' to comply with 3.3.4 of the NEC Style Manual.

Related Item

• First Revision No. 8081

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 15:05:45 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-7605-NFPA 70-2021
Statement:	The first sentence of 440.11 is revised to make this clause enforceable per 3.2.1 of the style manual, and the term “shall” is added in accordance with 90.5(A). The term “live” is changed to “energized” to be consistent with other language in the code such as the definitions for “enclosed” and “enclosure”.

Correlating Committee Note No. 35-NFPA 70-2021 [Section No. 440.22(A)]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 14:22:15 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that the Panel rewrite Exception No. 1 for usability, clarity, and enforceability, with respect to the statement “possible settings of adjustable circuit breakers” and replace the word "possible" with a different term. The Correlating Committee also directs the Panel to revise Exceptions No. 1 and 2 to remove the term "where" and replace with "if" to comply with 3.3.4 of the NEC Style Manual.

First Revision No. 8081-NFPA 70-2020 [Section No. 440.22(A)]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1003-NFPA 70-2021 [Section No. 440.34]

440.34 Combination Load.

Conductors supplying a motor-compressor load in addition to other load(s) as calculated from branch-circuit, feeder, and service load calculations and applicable articles shall have an ampacity sufficient for the other load(s) plus the required ampacity for the motor-compressor load determined in accordance with 440.33 or, for a single motor-compressor, in accordance with 440.32.

Exception: Where the circuitry is interlocked so as to prevent simultaneous operation of the motor-compressor(s) and all other loads connected, the conductor size shall be determined from the largest size required for the motor-compressor(s) and other loads to be operated at a given time.

Additional Proposed Changes

File Name	Description	Approved
11_CN_36.pdf	70_CN36	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 36 appeared in the First Draft Report on First Revision No. 8084.

The Correlating Committee directs that the Panel rewrite the requirement for usability and clarity. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is clear and the rule is short, using list formats when appropriate and 4.1.3 for reference structure.

Related Item

• First Revision No. 8084

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 15:08:29 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7607-NFPA 70-2021
Statement: The requirements are re-written to improve usability and to be more clear per 3.3.1.2 of the style manual.

Correlating Committee Note No. 36-NFPA 70-2021 [Section No. 440.34]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 14:39:36 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that the Panel rewrite the requirement for usability and clarity. Refer to 3.3.1.2 of the NEC Style Manual to ensure the text is clear and the rule is short, using list formats when appropriate and 4.1.3 for reference structure.

First Revision No. 8084-NFPA 70-2020 [Section No. 440.34]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1004-NFPA 70-2021 [Section No. 440.54]

440.54 Motor-Compressors and Equipment on 15- or 20-Ampere Branch Circuits — Not Cord- and Attachment-Plug-Connected.

Overload protection for motor-compressors and equipment used on 15- or 20-ampere 120-volt, or 15-ampere 208- or 240-volt single-phase branch circuits as permitted elsewhere in this *Code* shall be permitted in accordance with 440.54(A) and 440.54(B).

(A) Overload Protection.

The motor-compressor shall be provided with overload protection selected as specified in 440.52(A). Both the controller and motor overload protective device shall be identified for installation with the short-circuit and ground-fault protective device for the branch circuit to which the equipment is connected.

(B) Time Delay.

The short-circuit and ground-fault protective device protecting the branch circuit shall have sufficient time delay to permit the motor-compressor and other motors to start and accelerate their loads.

Additional Proposed Changes

File Name	Description	Approved
11_CN_37.pdf	70_CN37	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 37 appeared in the First Draft Report on First Revision No. 8085.

The Correlating Committee directs the Panel to clarify where in the Code overload protection is specified for these applications, and identify those requirements, rather than stating as "elsewhere in this code", or consider if the Section is necessary, based on application of 90.3.

Related Item

• First Revision No. 8085

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 15:10:57 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Rejected but see related SR

Action:	
Resolution:	SR-7610-NFPA 70-2021
Statement:	The statement “as permitted elsewhere in this Code” is removed because it is not critical to the requirement of this clause.

Correlating Committee Note No. 37-NFPA 70-2021 [Section No. 440.54 [Excluding any Sub-Sections]]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 14:41:01 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to clarify where in the Code overload protection is specified for these applications, and identify those requirements, rather than stating as “elsewhere in this code”, or consider if the Section is necessary, based on application of 90.3.

First Revision No. 8085-NFPA 70-2020 [Section No. 440.54 [Excluding any Sub-Sections]]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1005-NFPA 70-2021 [Section No. 440.55]

440.55 Cord- and Attachment-Plug-Connected Motor-Compressors and Equipment on 15- or 20-Ampere Branch Circuits.

Overload protection for motor-compressors and equipment that are cord- and attachment-plug-connected and used on 15- or 20-ampere 120-volt, or 15-ampere 208- or 240-volt, single-phase branch circuits as permitted elsewhere in this *Code* shall be permitted in accordance with 440.55(A), (B), and (C).

(A) Overload Protection.

The motor-compressor shall be provided with overload protection as specified in 440.52(A). Both the controller and the motor overload protective device shall be identified for installation with the short-circuit and ground-fault protective device for the branch circuit to which the equipment is connected.

(B) Attachment Plug and Receptacle or Cord Connector Rating.

The rating of the attachment plug and receptacle or cord connector shall not exceed 20 amperes at 125 volts or 15 amperes at 250 volts.

(C) Time Delay.

The short-circuit and ground-fault protective device protecting the branch circuit shall have sufficient time delay to permit the motor-compressor and other motors to start and accelerate their loads.

Additional Proposed Changes

File Name	Description	Approved
11_CN_38.pdf	70_CN38	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 38 appeared in the First Draft Report on First Revision No. 8086.

The Correlating Committee directs the Panel to clarify where in the Code overload protection is specified for these applications, and identify those requirements, rather than stating as "elsewhere in this code", or consider if the Section is necessary, based on application of 90.3.

Related Item

• First Revision No. 8086

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 15:13:57 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-7611-NFPA 70-2021
Statement:	The statement “as permitted elsewhere in this Code” is removed because it is not critical to the requirement of this clause.

Correlating Committee Note No. 38-NFPA 70-2021 [Section No. 440.55 [Excluding any Sub-Sections]]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 14:42:19 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to clarify where in the Code overload protection is specified for these applications, and identify those requirements, rather than stating as “elsewhere in this code”, or consider if the Section is necessary, based on application of 90.3.

First Revision No. 8086-NFPA 70-2020 [Section No. 440.55 [Excluding any Sub-Sections]]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1006-NFPA 70-2021 [Section No. 460.24(A)]

(A) Load Current.

Switches shall be specifically rated for switching of capacitive loads. Capacitor switch operation shall open all ungrounded conductors and the switch shall be capable of the following:

(1) Carrying continuously not less than 135 percent of the rated current of the capacitor installation

(2) Interrupting the maximum continuous load current of each capacitor, capacitor bank, or capacitor installation that will be switched as a unit

(3) Withstanding the maximum inrush current, including contributions from adjacent capacitor installations

(4) Carrying currents due to faults on capacitor side of switch

Additional Proposed Changes

File Name	Description	Approved
11_CN_41.pdf	70_CN41	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 41 appeared in the First Draft Report on First Revision No. 8111.

The Correlating Committee directs the Panel to consider the need of the term "specifically" for capacitor switching.

Related Item

• First Revision No. 8111

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 15:20:48 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7598-NFPA 70-2021

Statement:	The term “specifically” is removed because it is not necessary in the context of the clause.

Correlating Committee Note No. 41-NFPA 70-2021 [Section No. 460.24(A)]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 14:52:30 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs the Panel to consider the need of the term “specifically” for capacitor switching.

First Revision No. 8111-NFPA 70-2020 [Section No. 460.24(A)]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1737-NFPA 70-2021 [Section No. 470.5]

470.5 Reconditioning of Equipment.

Reconditioning of resistors shall not be permitted. Reconditioning of reactors shall be in accordance with the manufacturer's instructions or industry consensus standards.

Additional Proposed Changes

File Name	Description	Approved
11_CN_254.pdf	11 CN254	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 254 appeared in the First Draft Report on First Revision No. 8136

The Correlating Committee directs CMP 11 to review the requirements for reconditioning correlation, clarity, usability and standardized format. The sentence " Reconditioning of resistors shall not be permitted" should be revised to simpler language such as "Resistors shall not be reconditioned". The panel should also consider deleting the second sentence as it contains requirements that are covered by Article 110, refer to FR 8663.

Related Item

• First Revision No. 8136

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 17 15:46:04 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7591-NFPA 70-2021

Statement: The first sentence is simplified for readability. The second sentence is not deleted or revised as the requirements are not fully covered by FR 8663, Article 110.20.

“Reconditioned Equipment” in Article 470. Combine and move 470.5 and 470.21 were combined into a single clause under Part I General (470.2) as requested by Global PC-896. Then renumber remaining clauses in accordance with 2.4.2.1 of the style manual.

Correlating Committee Note No. 254-NFPA 70-2021 [New Section after 470.4]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Thu May 06 09:40:36 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs CMP 11 to review the requirements for reconditioning correlation, clarity, usability and standardized format. The sentence " Reconditioning of resistors shall not be permitted" should be revised to simpler language such as "Resistors shall not be reconditioned". The panel should also consider deleting the second sentence as it contains requirements that are covered by Article 110, refer to FR 8663.

First Revision No. 8136-NFPA 70-2020 [New Section after 470.4]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 1739-NFPA 70-2021 [Section No. 470.21]

470.21 Reconditioning of Equipment.

Reconditioning of resistors shall not be permitted. Reconditioning of reactors shall be in accordance with the manufacturer's instructions or industry consensus standards.

Additional Proposed Changes

File Name	Description	Approved
11_CN_255.pdf	11 CN255	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 255 appeared in the First Draft Report on First Revision No. 8138

The Correlating Committee directs CMP 11 to review the requirements for reconditioning correlation, clarity, usability and standardized format. The sentence " Reconditioning of resistors shall not be permitted" should be revised to simpler language such as "Resistors shall not be reconditioned". The panel should also consider deleting the second sentence as it contains requirements that are covered by Article 110, refer to FR 8663.

Related Item

- First Revision No. 8138

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Tue Aug 17 15:51:00 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7591-NFPA 70-2021
Statement: The first sentence is simplified for readability. The second sentence is not deleted or revised as the requirements are not fully covered by FR 8663, Article 110.20.

“Reconditioned Equipment” in Article 470. Combine and move 470.5 and 470.21 were combined into a single clause under Part I General (470.2) as requested by Global PC-896. Then renumber remaining clauses in accordance with 2.4.2.1 of the style manual.

Correlating Committee Note No. 255-NFPA 70-2021 [New Section after 470.20]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Thu May 06 09:43:31 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs CMP 11 to review the requirements for reconditioning correlation, clarity, usability and standardized format. The sentence " Reconditioning of resistors shall not be permitted" should be revised to simpler language such as "Resistors shall not be reconditioned". The panel should also consider deleting the second sentence as it contains requirements that are covered by Article 110, refer to FR 8663.

First Revision No. 8138-NFPA 70-2020 [New Section after 470.20]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 938-NFPA 70-2021 [New Part after I.]

TITLE OF NEW CONTENT

Type your content here ... **430.3 Reconditioned Motors**

Additional Proposed Changes

File Name	Description	Approved
EASA_Public_Comment_430.3_tb_210805.docx	Follow-up to PI 2627	

Statement of Problem and Substantiation for Public Comment

Code-Making Panel 11 needs to reconsider PI 2627 based on FR 8975 created by Code Making Panel 13. The language proposed for a new Section 430.3 adopts similar language to the newly created 445.4 for Reconditioned Generators. Motors and generators are very similar in their construction and maintenance. Requirements for the reconditioning of motors and generators needs to be correlated and harmonized.

It is a normal practice for motors to be repaired and rewound by established refurbishing companies in accordance to a nationally recognized standard (ANSI/EASA AR100). Reconditioned motors are necessary to keep facilities running without long downtimes. Reconditioned motors are also reconditioned by established refurbishing companies in accordance to the same nationally recognized standard (ANSI/EASA AR100). The nameplate information supplied on a motor is required to ensure the proper application and should not be removed unless the original ratings or characteristics are modified. This program has been successfully in place for many years.

Informational Note No. 1 recognizes ANSI/EASA AR100-2020, Recommended Practice for the Repair of Rotating Electrical Apparatus as a widely accepted and established industry practice. It is available for download free of charge at the following link:
https://easa.com/DesktopModules/DnnSharp/SearchBoost/FileDownload.ashx?file=1988&sb-bhvr=1

ANSI/EASA AR100-2020 is the current edition of this standard.
Informational Note No. 2 clarifies that reconditioning of classified (hazardous) motors for use in Class I, Division 1 (or Zone 0 or 1) locations is conducted not only by following the procedures of AR100 but also by NRTL inspection and verification of compliance with the original manufacturer specifications prior to listing as reconditioned.

Related Item

• PI 2627

Submitter Information Verification

Submitter Full Name: Thomas Bishop
Organization: Electrical Apparatus Service Association (EASA)
Affiliation: Electricaal Apparatus Service Association (EASA)
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 10:14:38 EDT 2021

Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-7504-NFPA 70-2021

Statement: PC-938 Response: The language provided creates confusion in how the rebuilt motors should be inspected. There is also concern that whether the motor would be placed into commerce or reused in a facility should not be treated differently.

PC-1559 Response: The SR provides for acceptance of reconditioned motors with guidance utilization of manufacturer's instructions. Information is provided for motors where the manufacturer may no longer be in business. The changes removed redundant requirements.

FORM FOR COMMENT ON NFPA REPORT ON PROPOSALS
All Comments Must Be Received by 5:00 pm EST/EDST on the Published Comment Closing Date

For further information on the standards-making process, please contact the Codes and Standards Administration at 617-984-7249 or visit www.nfpa.org/codes.

For technical assistance, please call NFPA at 1-800-344-3555.

FOR OFFICE USE ONLY

Log #:

Date Rec'd:

Please indicate in which format you wish to receive your ROP/ROC ☐ **electronic** ☐ **paper** ☐ **download**
(Note: If choosing the download option, you must view the ROP/ROC from our website; no copy will be sent to you.)

Date August 5, 2021 **Name** Thomas Bishop **Tel. No.**

Company Electrical Apparatus Service Association (EASA) **Email**

Street Address 1331 Baur Blvd **City** St. Louis **State** MO **Zip** 63132

******If you wish to receive a hard copy, a street address MUST be provided. Deliveries cannot be made to PO boxes.***

Please indicate organization represented (if any)

1. (a) NFPA Document Title National Electrical Code **NFPA No. & Year** 70 & 2023

(b) Section/Paragraph 430.3

2. Comment on Proposal No. (from ROP): PI 2627

3. Comment Recommends (check one): ☒ new text ☒ revised text ☐ deleted text

4. Comment (include proposed new or revised wording, or identification of wording to be deleted): [Note: Proposed text should be in legislative format; i.e., use underscore to denote wording to be inserted (inserted wording) and strike-through to denote wording to be deleted (~~deleted wording~~).]

430.3 Reconditioned Motors.
The reconditioning and marking of motors shall be performed in accordance with instructions provided by a motor manufacturer and/or in accordance with a nationally recognized standard. Motors are reconditioned when they are rebuilt or serviced and then placed in commerce. Motors are not considered reconditioned when they are ~~repaired or rewound~~ rebuilt or serviced in accordance with a nationally recognized standard and not placed in commerce.

Exception: Classified (Hazardous) Motors identified for use in Class I, Division 1 (or Zone 0 or 1) locations shall not be reconditioned. Classified Motors Class I, Division 1 (Zone 0 or 1) shall be permitted to repaired or rewound in accordance with instructions provided by a motor manufacturer and in accordance with a nationally recognized standard.

Informational Note: For information pertaining to the reconditioning, repair and rewinding of motors see ANSI/EASA AR100-2020, Recommended Practice for the Repair of Rotating Electrical Apparatus.

5. Statement of Problem and Substantiation for Comment: (Note: State the problem that would be resolved by your recommendation; give the specific reason for your Comment, including copies of tests, research papers, fire experience, etc. If more than 200 words, it may be abstracted for publication.)

Code-Making Panel 11 needs to reconsider PI 2627 based on FR 8975 created by Code Making Panel 13. The language proposed for a new Section 430.3 adopts similar language to the newly created 445.4 for Reconditioned Generators. Motors and generators are very similar in their construction and maintenance. Requirements for the reconditioning of motors and generators needs to be correlated and harmonized.

It is a normal practice for motors to be repaired and rewound by established refurbishing companies in accordance to a nationally recognized standard (ANSI/EASA AR100). Reconditioned motors are necessary to keep facilities running without long downtimes. Reconditioned motors are also reconditioned by established refurbishing companies in accordance to the same nationally recognized standard (ANSI/EASA AR100). The nameplate information supplied on a motor is required to ensure the proper application and should not be removed unless the original ratings or characteristics are modified. This program has been successfully in place for many years.

Informational Note No. 1 recognizes ANSI/EASA AR100-2020, *Recommended Practice for the Repair of Rotating*

Electrical Apparatus as a widely accepted and established industry practice. It is available for download free of charge at the following link:

https://easa.com/DesktopModules/DnnSharp/SearchBoost/FileDownload.ashx?file=1988&sb-bhvr=1

ANSI/EASA AR100-2020 is the current edition of this standard.

Informational Note No. 2 clarifies that reconditioning of classified (hazardous) motors for use in Class I, Division 1 (or Zone 0 or 1) locations is conducted not only by following the procedures of AR100 but also by NRTL inspection and verification of compliance with the original manufacturer specifications prior to listing as reconditioned.

6. Copyright Assignment

(a) ☒ I am the author of the text or other material (such as illustrations, graphs) proposed in the Comment.

(b) ☐ Some or all of the text or other material proposed in this Comment was not authored by me. Its source is as follows: (please identify which material and provide complete information on its source)

I hereby grant and assign to the NFPA all and full rights in copyright in this Comment and understand that I acquire no rights in any publication of NFPA in which this Comment in this or another similar or analogous form is used. Except to the extent that I do not have authority to make an assignment in materials that I have identified in (b) above, I hereby warrant that I am the author of this Comment and that I have full power and authority to enter into this assignment.

Signature (Required)

PLEASE USE SEPARATE FORM FOR EACH COMMENT

Mail to: Secretary, Standards Council · National Fire Protection Association
1 Batterymarch Park · Quincy, MA 02169-7471 OR
Fax to: (617) 770-3500 OR Email to: proposals_comments@nfpa.org

8/20/2021

Public Comment No. 1095-NFPA 70-2021 [Part I.]

Part I. General.

Additional Proposed Changes

File Name	Description	Approved
11_CN_39.pdf	70_CN39	

Statement of Problem and Substantiation for Public Comment

The following CC Note No. 39 appeared in the First Draft Report on First Revision No. 8132.

The Correlating Committee directs that the text "and under" be reviewed. Consider using "or less" for consistency with other code sections.

Related Item

• First Revision No. 8132

Submitter Information Verification

Submitter Full Name: CC on NEC-AAC
Organization: NEC Correlating Committee
Street Address:
City:
State:
Zip:
Submittal Date: Mon Aug 09 13:39:43 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-7596-NFPA 70-2021
Statement: The term “and under” is changed to “or less” for consistency with other parts of the code.

Correlating Committee Note No. 39-NFPA 70-2021 [Part I.]

Submitter Information Verification

Committee: NEC-P11
Submittal Date: Mon May 03 14:44:31 EDT 2021

Committee Statement

Committee Statement: The Correlating Committee directs that the text “and under” be reviewed. Consider using "or less" for consistency with other code sections.

First Revision No. 8132-NFPA 70-2020 [Part I.]

Ballot Results

This item has passed ballot

12 Eligible Voters
0 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Affirmative All

Ayer, Lawrence S.
Gallo, Ernest J.
Hickman, Palmer L.
Holub, Richard A.
Hunter, Dean C.
Johnston, Michael J.
Kendall, David H.
Kovacik, John R.
Manche, Alan
McDaniel, Roger D.
Porter, Christine T.
Williams, David A.

Public Comment No. 925-NFPA 70-2021 [Part XIV.]

Part XIV. Tables

Table 430.247 Full-Load Current in Amperes, Direct-Current Motors

The following values of full-load currents* are for motors running at base speed.

Horsepower	Armature Voltage Rating*					
	90 Volts	120 Volts	180 Volts	240 Volts	500 Volts	550 Volts
¼	4.0	3.1	2.0	1.6	—	—
⅓	5.2	4.1	2.6	2.0	—	—
½	6.8	5.4	3.4	2.7	—	—
¾	9.6	7.6	4.8	3.8	—	—
1	12.2	9.5	6.1	4.7	—	—
1½	—	13.2	8.3	6.6	—	—
2	—	17	10.8	8.5	—	—
3	—	25	16	12.2	—	—
5	—	40	27	20	—	—
7½	—	58	—	29	13.6	12.2
10	—	76	—	38	18	16
15	—	—	—	55	27	24
20	—	—	—	72	34	31
25	—	—	—	89	43	38
30	—	—	—	106	51	46
40	—	—	—	140	67	61
50	—	—	—	173	83	75
60	—	—	—	206	99	90
75	—	—	—	255	123	111
100	—	—	—	341	164	148
125	—	—	—	425	205	185
150	—	—	—	506	246	222
200	—	—	—	675	330	294

*These are average dc quantities.

Table 430.248 Full-Load Currents in Amperes, Single-Phase Alternating-Current Motors

The following values of full-load currents are for motors running at usual speeds and motors with normal torque characteristics. The voltages listed are rated motor voltages. The currents listed shall be permitted for system voltage ranges of 110 to 120 and 220 to 240 volts.

Horsepower	115 Volts	200 Volts	208 Volts	230 Volts
⅙	4.4	2.5	2.4	2.2
¼	5.8	3.3	3.2	2.9
⅓	7.2	4.1	4.0	3.6
½	9.8	5.6	5.4	4.9
¾	13.8	7.9	7.6	6.9
1	16	9.2	8.8	8.0
1½	20	11.5	11.0	10
2	24	13.8	13.2	12

Horsepower	115 Volts	200 Volts	208 Volts	230 Volts
3	34	19.6	18.7	17
5	56	32.2	30.8	28
7½	80	46.0	44.0	40
10	100	57.5	55.0	50

Table 430.249 Full-Load Current, Two-Phase Alternating-Current Motors (4-Wire)

The following values of full-load current are for motors running at speeds usual for belted motors and motors with normal torque characteristics. Current in the common conductor of a 2-phase, 3-wire system will be 1.41 times the value given. The voltages listed are rated motor voltages. The currents listed shall be permitted for system voltage ranges of 110 to 120, 220 to 240, 440 to 480, and 550 to 600 volts.

Horsepower	Induction-Type Squirrel Cage and Wound Rotor (Amperes)				
	115 Volts	230 Volts	460 Volts	575 Volts	2300 Volts
½	4.0	2.0	1.0	0.8	—
¾	4.8	2.4	1.2	1.0	—
1	6.4	3.2	1.6	1.3	—
1½	9.0	4.5	2.3	1.8	—
2	11.8	5.9	3.0	2.4	—
3	—	8.3	4.2	3.3	—
5	—	13.2	6.6	5.3	—
7½	—	19	9.0	8.0	—
10	—	24	12	10	—
15	—	36	18	14	—
20	—	47	23	19	—
25	—	59	29	24	—
30	—	69	35	28	—
40	—	90	45	36	—
50	—	113	56	45	—
60	—	133	67	53	14
75	—	166	83	66	18
100	—	218	109	87	23
125	—	270	135	108	28
150	—	312	156	125	32
200	—	416	208	167	43

Table 430.250 Full-Load Current, Three-Phase Alternating-Current Motors

The following values of full-load currents are typical for motors running at speeds usual for belted motors and motors with normal torque characteristics. The voltages listed are rated motor voltages. The currents listed shall be permitted for system voltage ranges of 110 to 120, 220 to 240, 440 to 480, and 550 to 600 volts.

Horsepower	Induction-Type Squirrel Cage and Wound Rotor (Amperes)

	115 Volts	200 Volts	208 Volts	230 Volts	460 Volts	575 Volts	2300 Volts	230
½	4.4	2.5	2.4	2.2	1.1	0.9	—	
¾	6.4	3.7	3.5	3.2	1.6	1.3	—	
1	8.4	4.8	4.6	4.2	2.1	1.7	—	
1½	12.0	6.9	6.6	6.0	3.0	2.4	—	
2	13.6	7.8	7.5	6.8	3.4	2.7	—	
3	—	11.0	10.6	9.6	4.8	3.9	—	
5	—	17.5	16.7	15.2	7.6	6.1	—	
7½	—	25.3	24.2	22	11	9	—	
10	—	32.2	30.8	28	14	11	—	
15	—	48.3	46.2	42	21	17	—	
20	—	62.1	59.4	54	27	22	—	
25	—	78.2	74.8	68	34	27	—	53
30	—	92	88	80	40	32	—	63
40	—	120	114	104	52	41	—	83
50	—	150	143	130	65	52	—	104
60	—	177	169	154	77	62	16	123
75	—	221	211	192	96	77	20	155
100	—	285	273	248	124	99	26	202
125	—	359	343	312	156	125	31	253
150	—	414	396	360	180	144	37	302
200		552	528	480	240	192	49	400
250	—	—	—	—	302	242	60	
300	—	—	—	—	361	289	72	
350	—	—	—	—	414	336	83	
400	—	—	—	—	477	382	95	
450	—	—	—	—	515	412	103	
500	—	—	—	—	590	472	118	

*For 90 and 80 percent power factor, the figures shall be multiplied by 1.1 and 1.25, respectively.

Table 430.251(A) Conversion Table of Single-Phase Locked-Rotor Currents for Selection of Disconnecting Means and Controllers as Determined from Horsepower and Voltage Rating

For use only with 430.110, 440.12, 440.41, and 455.8(C).

Rated Horsepower	Maximum Locked-Rotor Current in Amperes, Single Phase		
	115 Volts	208 Volts	230 Volts
½	58.8	32.5	29.4
¾	82.8	45.8	41.4
1	96	53	48
1½	120	66	60
2	144	80	72
3	204	113	102
5	336	186	168
7½	480	265	240

Rated Horsepower	Maximum Locked-Rotor Current in Amperes, Single Phase		
	115 Volts	208 Volts	230 Volts
10	1000	332	300

Table 430.251(B) Conversion Table of Polyphase Design B, C, and D Maximum Locked-Rotor Currents for Selection of Disconnecting Means and Controllers as Determined from Horsepower and Voltage Rating and Design Letter

For use only with 430.110, 440.12, 440.41, and 455.8(C).

Rated Horsepower	Maximum Motor Locked-Rotor Current in Amperes, Two- and Three-Phase, Design B, C, and D*					
	115 Volts	200 Volts	208 Volts	230 Volts	460 Volts	575 Volts
	B, C, D	B, C, D	B, C, D	B, C, D	B, C, D	B, C, D
½	40	23	22.1	20	10	8
¾	50	28.8	27.6	25	12.5	10
1	60	34.5	33	30	15	12
1½	80	46	44	40	20	16
2	100	57.5	55	50	25	20
3	—	73.6	71	64	32	25.6
5	—	105.8	102	92	46	36.8
7½	—	146	140	127	63.5	50.8
10	—	186.3	179	162	81	64.8
15	—	267	257	232	116	93
20	—	334	321	290	145	116
25	—	420	404	365	183	146
30	—	500	481	435	218	174
40	—	667	641	580	290	232
50	—	834	802	725	363	290
60	—	1001	962	870	435	348
75	—	1248	1200	1085	543	434
100	—	1668	1603	1450	725	580
125	—	2087	2007	1815	908	726
150	—	2496	2400	2170	1085	868
200	—	3335	3207	2900	1450	1160
250	—	—	—	—	1825	1460
300	—	—	—	—	2200	1760
350	—	—	—	—	2550	2040
400	—	—	—	—	2900	2320
450	—	—	—	—	3250	2600
500	—	—	—	—	3625	2900

*Design A motors are not limited to a maximum starting current or locked rotor current.

Additional Proposed Changes

File Name	Description	Approved

Table_430_251_B_REVISED.docx	This is a modified version of table 430.251(B), updating the values of LRA to correspond to the latest revision of NEMA MG 1-2018

Statement of Problem and Substantiation for Public Comment

This table is used in 4 specific locations (as indicated in the table) to select the disconnecting means. NEMA MG1 changed in 2018, increasing the locked-rotor current limits on some of these motors. Folks that select the disconnecting means based on the table values here may not have the correct disconnecting means and it may be a safety problem if the disconnecting means can't interrupt the locked rotor current available on the motor.

Related Item

• PI-100

Submitter Information Verification

Submitter Full Name: Robert McElveen
Organization: ABB Motors and Mechanical
Street Address:
City:
State:
Zip:
Submittal Date: Thu Aug 05 08:54:37 EDT 2021
Committee: NEC-P11

Committee Statement

Committee Action: Rejected

Resolution: Changing of locked-rotor current (LRC) would make all existing products listed with horsepower ratings to be required to be retested and all products installed in the field may not be able to protect motors with higher LRC's where the customer expectation is that they would. A new motor type is needed for higher LRC's.

Table 430.251(B) Conversion Table of Polyphase Design B, C, and D Maximum Locked-Rotor Currents for Selection of Disconnecting Means and Controllers as Determined from Horsepower and Voltage Rating and Design Letter

For use only with 430.110, 440.12, 440.41, and 455.8(C)

Maximum Motor Locked-Rotor Current in Amperes, Two- and Three-Phase, Design B, C, and D*						
Rated Horsepower	**115 Volts**	**200 Volts**	**208 Volts**	**230 Volts**	**460 Volts**	**575 Volts**
	B, C, D	**B, C, D**	**B, C, D**	**B, C, D**	**B, C, D**	**B, C, D**
½	40.040	23.023	22.122.1	20.020	10.010	8.08
¾	52.650	30.228.8	29.127.6	26.325	13.212.5	10.510
1	62.660	36.034.5	34.633	31.330	15.715	12.512
1 ½	80.080	46.046	44.244	40.040	20.020	16.016
2	100.0100	57.557.5	55.355	50.050	25.025	20.020	
3	128.6--	73.973.5	71.171	64.364	32.232	25.725.6
5	200.0--	115.0105.8	110.6102	100.092	50.046	40.036.8
7 ½	262.0--	150.7146	144.9140	131.0127	65.563.5	52.450.8
10	350.0--	201.3186.3	193.5179	175.0162	87.581	70.064.8
15	472.0--	271.4267	261.0257	236.0232	118.0116	94.493
20	630.0--	362.3334	348.3321	315.0290	157.5145	126.0116
25	788.0--	453.1420	435.7404	394.0365	197.0183	157.6146
30	946.0--	544.0500	523.0481	473.0435	236.5218	189.2174
40	1262.0--	725.7667	697.7641	631.0580	315.5290	252.4232
50	1578.0--	907.4834	872.5802	789.0725	394.5363	315.6290
60	1894.0--	1089.11001	1047.2962	947.0870	473.5435	378.8348
75	2368.0--	1361.61248	1309.21200	1184.01085	592.0543	473.6434
100	3156.0--	1814.71668	1744.91603	1578.01450	789.0725	631.2580
125	3946.0--	2269.02087	2181.72007	1973.01815	986.5908	789.2726
150	4736.0--	2723.22496	2618.52400	2368.02170	1184.01085	947.2868
200	6314.0--	3630.63335	3490.93207	3157.02900	1578.51450	1262.81160
250	7894.0--	4539.1--	4364.5--	3947.0--	1973.51825	1578.81460
300	9472.0--	5446.4--	5236.9--	4736.0--	2368.02200	1894.41760
350	11052.0--	6354.9--	6110.5--	5526.0--	2763.02550	2210.42040
400	12630.0--	7262.3--	6982.9--	6315.0--	3157.52900	2526.02320
450	14210.0--	8170.8--	7856.5--	7105.0--	3552.53250	2842.02600
500	15788.0--	9078.1--	8728.9--	7894.0--	3947.03625	3157.62900

* Design A motors are not limited to a maximum starting current or locked rotor current.

Formatted Table