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USACE / NAVFAC / AFCEC / NASA UFGS-33 77 36.00 40 (May 2014)  
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Preparing Activity: NASA Superseding  
UFGS-33 77 36.00 40 (May 2010)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2016

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SECTION TABLE OF CONTENTS

DIVISION 33 - UTILITIES

SECTION 33 77 36.00 40

MEDIUM-VOLTAGE UTILITY FUSES

05/14

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS

PART 2 PRODUCTS

- 2.1 SYSTEM DESCRIPTION
- 2.2 EQUIPMENT STANDARDS
- 2.3 FUSE CUTOUTS

PART 3 EXECUTION

- 3.1 INSTALLATION

-- End of Section Table of Contents --

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### SECTION 33 77 36.00 40

#### MEDIUM-VOLTAGE UTILITY FUSES

05/14

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NOTE: This guide specification covers the requirements for distribution fuse cutouts. Show on drawings current rating, load-break fuses if required, combination lightning arresters and fuse cutouts if required, and mounting details.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable items(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

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## PART 1 GENERAL

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NOTE: If Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS is not included in the project specification, insert applicable requirements therefrom and delete the following paragraph.

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[ Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS applies to work specified in this section.

## ]1.1 REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide

specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 242	(2001; Errata 2003) Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems - Buff Book
IEEE 399	(1997) Brown Book IEEE Recommended Practice for Power Systems Analysis
IEEE C37.40	(2003; Errata 2003; R 2009) Service Conditions & Definitions for High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, & Accessories
IEEE C37.41	(2008; Errata 2009) Standard Design Tests for High-Voltage (>1000 V) Fuses, Fuse and Disconnecting Cutouts, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories Used with These Devices
IEEE C37.42	(2009) Standard Specifications for High-Voltage (> 1000 V) Expulsion-Type Distribution-Class Fuses, Fuse and Disconnecting Cutouts, Fuse Disconnecting Switches, and Fuse Links, and Accessories Used with These Devices
IEEE C37.46	(2010) Standard for High Voltage Expulsion and Current-Limiting Type Power Class Fuses and Fuse Disconnecting Switches
IEEE C37.47	(2011) Standard for High Voltage Current-Limiting Type Distribution Class Fuses and Fuse Disconnecting Switches

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA ICS 3 (2005; R 2010) Medium-Voltage Controllers  
Rated 2001 to 7200 V AC

NEMA ICS 6 (1993; R 2011) Enclosures

NEMA SG 2 (1993) Standard for High-Voltage Fuses

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2014; AMD 1 2013; Errata 1 2013; AMD 2  
2013; Errata 2 2013; AMD 3 2014; Errata  
3-4 2014; AMD 4-6 2014) National  
Electrical Code

1.2 SUBMITTALS

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NOTE: Review Submittal Description (SD) definitions  
in Section 01 33 00 SUBMITTAL PROCEDURES and edit  
the following list to reflect only the submittals  
required for the project.

The Guide Specification technical editors have  
designated those items that require Government  
approval, due to their complexity or criticality,  
with a "G." Generally, other submittal items can be  
reviewed by the Contractor's Quality Control  
System. Only add a "G" to an item, if the submittal  
is sufficiently important or complex in context of  
the project.

For submittals requiring Government approval on Army  
projects, a code of up to three characters within  
the submittal tags may be used following the "G"  
designation to indicate the approving authority.  
Codes for Army projects using the Resident  
Management System (RMS) are: "AE" for  
Architect-Engineer; "DO" for District Office  
(Engineering Division or other organization in the  
District Office); "AO" for Area Office; "RO" for  
Resident Office; and "PO" for Project Office. Codes  
following the "G" typically are not used for Navy,  
Air Force, and NASA projects.

An "S" following a submittal item indicates that the  
submittal is required for the Sustainability  
Notebook to fulfill federally mandated sustainable  
requirements in accordance with Section 01 33 29  
SUSTAINABILITY REPORTING.

Choose the first bracketed item for Navy, Air Force  
and NASA projects, or choose the second bracketed  
item for Army projects.

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Government approval is required for submittals with a "G" designation;

submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Fabrication Drawings[; G[, [\_\_\_\_]]]

Installation Drawings[; G[, [\_\_\_\_]]]

SD-03 Product Data

Distribution Fuse Cutouts[; G[, [\_\_\_\_]]]

SD-07 Certificates

Testing Certificates[; G[, [\_\_\_\_]]]

SD-08 Manufacturer's Instructions

Fuse Cutouts[; G[, [\_\_\_\_]]]

Manufacturer's Installation Instructions[; G[, [\_\_\_\_]]]

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

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**NOTE: Show the following information the drawings:**

**1. Conductor sizes, types, and materials.**

**2. Primary fused cutout; give voltage rating and state fusing (ampere rating) and "K" quick or "T" tardy required for coordination with existing upstream sectionalizing equipment.**

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Submit fabrication drawings for fuse cutouts consisting of fabrication and assembly details to be performed in the factory.

Submit equipment and performance data for distribution fuse cutouts including life, testing certificates verifying conformance to referenced standards, system functional flows, safety features, and mechanical automated details.

2.2 EQUIPMENT STANDARDS

Ensure distribution fuse cutouts conform to the following standards:

a. IEEE C37.40

b. IEEE C37.41

- c. IEEE C37.42
- d. IEEE C37.46
- e. IEEE C37.47
- f. IEEE 242
- g. IEEE 399
- h. NEMA ICS 3
- i. NEMA ICS 6
- j. NEMA SG 2
- k. NFPA 70

## 2.3 FUSE CUTOUTS

Submit manufacturer's instructions for fuse cutouts including special provisions required to install equipment components and system packages. Include special notices detailing impedances, hazards and safety precautions.

Ensure distribution fuse cutouts are self-contained, enclosed, dropout type, or open type when required for higher voltage or interrupting rating. Install loadbreak cutouts only if specifically indicated.

Ensure the interrupting capacity is sufficient to break the maximum system fault current to which the cutout will be subjected. The minimum interrupting capacity is 16,000 amperes root mean square (rms) asymmetric.

Provide heavy-duty or extra-heavy-duty classification cutouts. Ensure cutouts installed on three-phase, 13.2-kilovolt (kV) or 13.8-kV systems are rated at 15-kV. The installation of cutouts rated at 7.8-kV on these systems is not allowed.

Provide fuse links with a continuous rating equal to approximately 150 percent of the full-load line current when used for transformer protection, and approximately [100][110][\_\_\_\_\_] percent of the conductor rated capacity when used for circuit protection. Ensure the 15-kV cutout has a wet withstand, 10-second voltage rating of 37-kV, with a 95-kV basic impulse level (BIL). Provide with a continuous current rating of 100 amperes unless otherwise indicated. Provide fuse disconnects rated not less than 100 amperes, having attachments to permit manual operation of the disconnect under load without external arcing.

Where indicated, combine lightning arresters and fuse cutouts.

## PART 3 EXECUTION

### 3.1 INSTALLATION

Install distribution fuse cutouts in accordance installation drawings with the manufacturer's installation instructions.

-- End of Section --