

An American National Standard

IEEE Standard for Three-Phase, Manually Operated Subsurface Load Interrupting Switches for Alternating-Current Systems

Sponsor
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of the
IEEE Power Engineering Society**

Secretariat

**Institute of Electrical and Electronics Engineers
National Electrical Manufacturers Association**

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Foreword

(This Foreword is not a part of ANSI/IEEE C37.71-1984, IEEE Standard for Three-Phase, Manually Operated Subsurface Load-Interrupting Switches for Alternating-Current Systems.)

This standard is the culmination of over 12 years of effort. It has as its precursor the EEI guide for subsurface switches, which was published in 1972. The membership of the committee has changed many times over the period of time that this standard was written. Protocol dictates that only those persons who were members of the committee at the time of its approval have their names printed in the standard. However, many others have made valuable contributions, and the chairman appreciates the work and dedication of all those concerned.

The objective of this standard was to provide guidance in an area and at a time when the related products were in their early stages of development. With the passage of time, however, subsurface switches have reached their full function as a product. This standard will now serve as a benchmark to point the way to others who will have their opportunity to improve upon it.

This standard pertains to a type of apparatus that consists of a number of components. An objective at the time this standard was first proposed was that the dielectric ratings of the entire assembly be no less than the dielectric ratings of the switch portion of the unit. At the time of this writing, the dielectric ratings of the Separable Connector System are somewhat less than the stipulated dielectric ratings of the switch portion. It is the intent of the committee that if future developments produce Separable Connector Systems with enhanced ratings, then the dielectric ratings of the total switch assembly would be increased accordingly. It is not the function of standards to dictate product ratings; however, the committee recommends that appropriate groups consider the enhancement of the dielectric ratings of Separable Connector Systems.

The preparation of ANSI/IEEE C37.71-1984 was the cooperative work of the IEEE Joint Switchgear/Transmission and Distribution Committee Working Group for Pad-Mounted Switches and the ANSI C37 Working Group on Overhead, Pad-Mounted and Submersible Distribution Switches.

The Standards Committee on Power Switchgear, C37, which reviewed and approved this standard, had the following personnel at the time of approval:

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At the time this standard was approved, the Reclosers and Sectionalizers Subcommittee of the IEEE Switchgear Committee had the following membership:

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The NEMA Technical Committee on Automatic Circuit Reclosers which prepared Tables 2 through 4 and approved this standard, had the following membership at the time of approval:

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The C37 Subcommittee on Automatic Circuit Reclosers and Line Sectionalizers, which approved this standard, had the following membership at the time of approval:

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When the IEEE Standards Board approved this standard on June 23, 1983, it had the following membership:

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IEEE Standard for Three-Phase, Manually Operated Subsurface Load Interrupting Switches for Alternating-Current Systems

1. Introduction

1.1 Scope

This standard applies to three-phase, group operated, 60 Hz, subsurface, load interrupting switches with maximum ratings of 600 A and 38 kV, and utilizing separable insulated connectors.

1.2 References

When the following standards referred to in this document are superseded by a revision, the latest revision shall apply.

[1] ANSI C37.85-1972 (R1978), American National Standard Safety Requirements for X-Radiation Limits for AC High-Voltage Power Vacuum Interrupters Used in Power Switchgear.¹

[2] ANSI C57.12.26-1975, American National Standard Requirements for Pad-Mounted Compartmental-Type, Self-Cooled, Three-Phase Distribution Transformers for Use with Separable Insulated High-Voltage Connectors, High-Voltage; 24940 Grd Y/14,400 Volts and Below; 2500 kVa and Smaller.

[3] ANSI/IEEE Std 4-1978, Standard Techniques for High-Voltage Testing.

[4] ANSI/IEEE Std 386-1977, Separable Insulated Connectors for Power Distribution Systems Above 600 V.

[5] ANSI/IEEE Std 454-1973 (R1979), Recommended Practice for the Detection and Measurement of Partial Discharges (Corona) During Dielectric Tests.

[6] ANSI/IEEE C37.09-1979, Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis.

[7] ANSI/IEEE C37.100-1981, IEEE Standard Definitions for Power Switchgear.

¹ANSI Documents are available from the Sales Department, The American National Standards Institute, 1420 Broadway, New York, NY 10018.

2. Definitions

The definitions of terms contained in this standard, or in other standards referred to in this document, are not intended to embrace all the legitimate meanings of the terms. They are applicable only to the subject treated in this standard. For additional definitions see ANSI/IEEE C37.100-1981 [7].²

bus: (as used in this standard). A three-phase junction common to two or more ways.

subsurface switch: A submersible switching assembly suitable for application in a below-grade enclosure that does not allow space for personnel access.

surface operable: A term indicating that the switch and its accessories are operable from above grade.

way: A three-phase circuit entrance to a switching assembly.

switched way: A way connected to the bus through a three-pole, group operated switch.

tapped way: A way solidly connected to the bus.

NOTE — For clarification of definitions, see Fig 1.

3. Service Conditions

3.1 Unusual Service Conditions

Switches conforming to this standard shall be suitable for operation at their nameplate rating when:

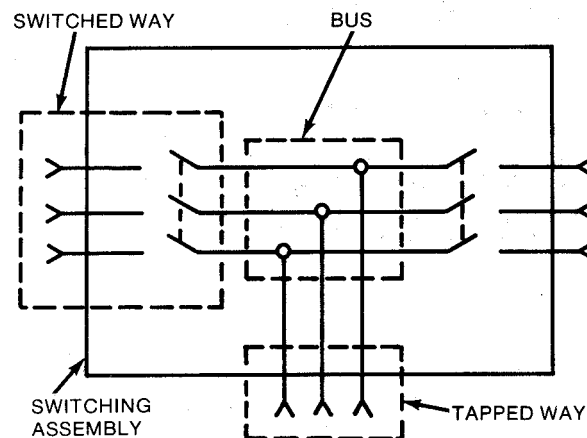


Figure 1— Example Using Definitions from Section 2. (3-Way Switching Assembly Shown)

- 1) The ambient air temperature within the below grade enclosure is not above 50°C or below –20°C.
- 2) The altitude does not exceed 3300 ft (1000 m).
- 3) The switch is installed in a below-grade enclosure subject to occasional flooding to a depth not exceeding 10 ft (3.03 m).

²The numbers in brackets correspond to those of the references in 1.2.