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ANSI/IEEE C37.30a-1975

Supplement

(Reaffirmed 1977)

**American National Standard
Definitions and Requirements for
High-Voltage Air Switches,
Insulators, and Bus Supports**

Sponsor

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Foreword

(This Foreword is not a part of American National Standard Definitions and Requirements for High-Voltage Air Switches, Insulators, and Bus Supports, C37.30-1970.)

This publication is one of a series of six American National Standards on high-voltage air switches, insulators, and bus supports as follows:

American National Standard Definitions and Requirements for High-Voltage Switches, Insulators, and Bus Supports, C37.30-1970

American National Standard Electrical and Mechanical Characteristics of Indoor Apparatus Insulators, C37.31-1962 (R1970)

American National Standard Schedules of Preferred Ratings, Manufacturing Specifications, and Application Guide for High-Voltage Air Switches, Bus Supports, and Switch Accessories, C37.32-1965

American National Standard Rated Control Voltages and Their Ranges for High-Voltage Air Switches, C37.33-1970

American National Standard Test Code for High-Voltage Air Switches, C37.34-1970

American National Standard Guide for the Operation and Maintenance of High-Voltage Disconnecting Switches, C37.35-1962 (R1970)

The purpose of this revision is to bring it up to date and in line with present day requirements. It is coordinated with the other standards of the series. It also completely supersedes IEEE Standard for Air Switches, Insulator Units, and Bus Supports, IEEE No. 22, March 1960.

This standard includes changes over previous standards to deal with temperature limitations for air switches. It is the intent of these changes to recognize the use of new materials in switch construction. The limitations included are to allow each material to be used at the maximum efficiency consistent with safe operating practices and acceptable durability, with minimum maintenance programs.

This standard recognizes that switches have been and may be operated at allowable continuous currents in excess of rated currents when reduced ambient temperatures prevail. A formula is provided for the calculation of the allowable continuous current at any ambient temperature at which the switch can operate without exceeding its temperature limitations.

Outdoor air switches built in accordance with previous American National Standards were allowed a 30°C temperature rise over a maximum ambient of 40°C. In this way, they were allowed to operate at a maximum temperature of 70°C. With a 25°C ambient, these switches could be operated at 1.22 times rated current without exceeding the 70°C maximum temperature.

“Enclosed switches” sometimes referred to as “indoor switches” were permitted to operate at a 30°C rise above a cooling air temperature of 55°C within the enclosure. With a 25°C outside ambient temperature, these switches could also be loaded to 1.22 times rating.

The temperature limitations included in this standard preserve this 1.22 increase in current-carrying capability when ambient temperature is reduced from 40°C to 25°C. It should be noted that the effect of this change is to preserve average load-carrying capability over a range of ambient temperatures from 10°C to 40°C. This load capability is preserved by limiting permissible temperature rise values. For example, silver-to-silver contacts are allowed to operate at a maximum temperature of 105°C in an ambient of 40°C. However, the permissible temperature rise at rated current is not 65°C but is limited to 53°C in order to maintain load capability at reduced ambients. No revision in nameplate data is included, pending development of an application guide based on this principle.

The net effect of these changes is as follows:

(1) To recognize the concept of limitation of maximum operating temperature for each of a variety of materials commonly used in switch construction.

(2) To recognize that switches may be operated at continuous currents higher than the rated current, provided maximum temperature limits are not exceeded.

(3) To provide classes of temperature rise limitations instead of the universal 30°C permissible temperature allowed on switch current-carrying parts in previous standards.

(4) To clarify the distinction between switches designed for indoor service and those for use in an enclosure.

These limitations will provide for new economies in switch construction by allowing materials to be used to their full capability and, at the same time, will preserve the load capability of switches built in accordance with previous standards.

Requirements for interrupter switches used to switch capacitance loads are new and are also coordinated between American National Standards C37.30-1970 and C37.34-1970.

The scope has been changed to make the performance of all design tests described in this standard mandatory.

A new performance test is included to evaluate the current-carrying structure of a switch design.

Suggestions for improvement gained in the use of this standard will be welcome. They should be sent to the American National Standards Institute, 1430 Broadway, New York, N. Y. 10018.

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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