UL 1429

STANDARD FOR SAFETY

Pullout Switches

UL Standard for Safety for Pullout Switches, UL 1429

Fourth Edition, Dated April 18, 2000

SUMMARY OF TOPICS

This revision of ANSI/UL 1429 dated December 4, 2020 includes the following changes:

> ***Barriers to address inadvertent contact on line side of service disconnect; Section 18A, Table 49.1 and 49.5.7.***
>
> ***Editorial updates; 9.2, 11.2.1, 11.2.2, 17.2, 20.5, 26.3, and 37.2.***

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

These new and revised requirements are substantially in accordance with Proposal(s) on this subject dated August 28, 2020.

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UL 1429

Standard for Pullout Switches

First Edition – December, 1985
Second Edition – October, 1988
Third Edition – October, 1994

Fourth Edition

April 18, 2000

This ANSI/UL Standard for Safety consists of the Fourth edition including revisions through December 4, 2020.

The most recent designation of ANSI/UL 1429 as an American National Standard (ANSI) occurred on December 4, 2020. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at https://csds.ul.com.

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INTRODUCTION

1 Scope

1.1 These requirements cover non-enclosed and enclosed pullout switches of the detachable type.

1.2 These requirements cover pullout switches rated 600 V or less, 400 A or less, with or without horsepower ratings, and with or without high-available fault current ratings.

1.3 These requirements cover pullout switches mounted in complete enclosure. Such an enclosure may contain meter sockets or neutral assemblies or both.

1.4 These requirements also cover enclosed pullout switches intended for use as service equipment.

1.5 These requirements cover non-enclosed pullout switches for use as mains and branches in panelboards, switchboards, and the like.

1.6 This standard does not cover hinged pullout switches. Such switches are covered in the Standard for Enclosed and Dead-Front Switches, UL 98.

1.7 These requirements do not cover enclosed pullout switches containing more than one independent switch which are covered by the Standard for Panelboards, UL 67.

1.8 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this standard, and that involves a risk of fire or of electric shock or injury to persons shall be evaluated using appropriate additional component and end-product requirements to maintain the level of safety as originally anticipated by the intent of this standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this standard does not comply with this standard. Revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this standard.

2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.

2.2 A component is not required to comply with a specific requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or

b) Is superseded by a requirement in this standard.

2.3 A component shall be used in accordance with its rating established for the intended conditions of use.

2.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

3 Units of Measurement

3.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

4 References

4.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

CONSTRUCTION

5 General

5.1 A pullout switch shall employ materials throughout that are acceptable for the particular use.

5.2 All parts of a pullout switch shall be assembled in place when the switch is shipped from the factory, except as noted in 5.3.

5.3 A pullout switch may have provision for factory or field-installed accessories, such as neutral assemblies, provided that:

a) The pullout switch is for use with or without such assemblies,

b) Each accessory is acceptable for the intended use,

c) Each accessory can be installed without the disassembly of factory-assembled parts and without the use of a special tool unless such a tool and instructions for its use are furnished with each accessory,

d) A barrier that is necessary because spacings would otherwise be less than required, or for any other reason, is securely attached at the factory to either the switch or to the accessory to be installed,

e) The accessory is an essentially complete unit and does not require detailed assembly in the field. An arrangement that requires cutting, splicing of existing wires, or resoldering of connections is not acceptable, and

f) The accessory and switch are marked in accordance with 49.6.1.

5.4 With reference to 5.3, screws for mounting the neutral assembly must be furnished with that assembly but need not be assembled in place.

5.5 A Class CTL pullout switch shall have a size or configuration that, in conjunction with the physical means provided in a Class CTL panelboard, prevents the installation of more switch poles than that number for which the assembly is designed and rated.

5.6 Live parts of the fuse, including the fuse ferrules, shall not be relied upon to perform the switching function of a pullout switch.

6 Enclosure

6.1 General

6.1.1 An overall enclosure shall comply with the Standard for Enclosures for Electrical Equipment, UL 50, except for modifications and additional requirements as specially described in this Standard.

6.1.2 The entire enclosure of a switch intended for surface mounting and the box proper of a switch intended for flush mounting may be formed of sheet steel not less than 0.042 inch (1.07 mm) thick, excluding any coating thickness, if:

a) The length does not exceed 18 inches (457 mm) and the width does not exceed 14 inches (356 mm),

b) No surface of the box proper has an area of more than 252 square inches (1626 cm^2),

c) The depth of the box proper is not more than 5 inches (127 mm), and

d) The thickness of a cover, front, door, trim and the like, provided as part of an enclosure intended for flush mounting is as specified in Table 15.1 of the Standard for Enclosures for Electrical Equipment, UL 50.

6.1.3 The enclosure of a pull-out switch shall enclose completely all current-carrying parts, whether dead or alive, when a detachable pull-out member is closed. A pull-out switch member shall be so constructed that no live part will be exposed to unintentional contact by the operator when the pull-out switch member is in any position. See Operating Mechanism, Section 8.

6.1.4 The enclosure shall include a deadfront shield that will allow access to a switch handle without exposing live parts of the wiring.

6.1.5 A deadfront shall be supported independently of any support that will be provided by units that may be field-installed. The deadfront shall be so constructed that it can be readily installed and removed without the likelihood of contacting an uninsulated live part or injuring the insulation of any insulated live part inside the enclosure.

6.1.6 An enclosed pullout switch marked with a Type 3S enclosure designation in addition to complying with the requirements in UL 50 shall have an operating mechanism, if such is provided, that will support the additional weight of the ice and withstand removal of ice by a hand tool to gain access to the interior of the enclosure. Auxiliary means may be provided to break the ice and to provide for operation of an external mechanism.

6.1.7 An enclosed pullout switch marked with a Type 3S enclosure designation after the Icing Test in UL 50 is considered to be acceptable, if while ice loaded, the external operating mechanism can be operated manually or as intended by one person without damage to the enclosure. If an auxiliary mechanism is provided to break the ice, it shall be used. A separate icing test is to be conducted for each maintained position of each operator.

6.1.8 An enclosed pullout switch marked with a Type 12 or 12K enclosure designation, in addition to complying with the requirements in UL 50, shall have no holes other than for a Type 12 mechanism, or equivalent, that is provided with an oil resistant gasket.

6.1.9 If knockouts are provided in the enclosure of a switch, they may be of any size; but at least two of them (or more when multiple conduits are involved) shall be so located that the installation of bushings will not result in spacings between live parts and bushings of less than the minimum requirements of this standard, when they are reamed to accommodate the size of conduit required for the maximum number of

gauge of rubber-insulated wires necessitated by the switch rating. This requirement is not intended to prohibit the use of enclosed switches connected to other wiring systems described in the National Electrical Code, ANSI/NFPA No. 70.

6.2 Doors and covers

6.2.1 A door shall be provided to cover a fusible detachable pullout member in the case of an enclosed pullout switch. The door shall be hinged, sliding, or similarly attached so as to prevent its being removed inadvertently.

6.2.2 The door over a fusible detachable pullout switch member in an enclosed pullout switch shall comply with requirements for doors, hinges, and latches as given in the Standard for Enclosures for Electrical Equipment, UL 50.

7 Bases – Insulating Material

7.1 A base for the mounting of uninsulated live parts shall be of strong, not easily ignited moisture-resistant insulating material that is acceptable for the particular application. The base shall be so constructed that it will withstand the most severe conditions likely to be met in service.

7.2 A neutral bus bar is considered to be a live part and shall be mounted on a base that complies with 7.1.

Exception: A neutral need not be insulated from dead metal parts when the switch is marked only for use as service equipment. See 49.5.2.

7.3 Insulating material, including barriers between parts of opposite polarity or material that may be subject to the influence of the arc formed by the opening of the switch, shall be acceptable for the particular application.

7.4 Live screw heads or nuts on the underside of a base intended for surface mounting shall be countersunk not less than 1/8 inch (3.2 mm) in the clear, and then covered with a waterproof insulating, sealing compound that will not soften at a temperature 15°C (27°F) higher than the temperature observed at the point where it is used, but not lower than 65°C (149°F) in any case; except that if such parts are staked, upset, or otherwise kept from loosening, they may be insulated from the mounting surface by material other than sealing compound or by the provision of a spacing through air from the mounting surface of not less than 1/2 inch (12.7 mm).

7.5 A lock washer, properly applied, is acceptable as a means of preventing the loosening of a screw or nut as required in 7.4.

7.6 A determination of the softening point of a sealing compound is to be made in accordance with the Test for Softening Point by Ring and Ball Apparatus, ASTM E28.

8 Operating Mechanism

8.1 The operating mechanism shall be constructed in such a manner as to provide the strength and rigidity necessary to perform its intended function. Screws and nuts serving to attach operating parts to crossbars or other movable members shall be staked, upset, or otherwise locked in position to keep them from loosening under the jars of continued use.

8.2 The accessibility of a live part with respect to unintentional contact as mentioned in 6.1.3 is to be determined with reference to any actual operating condition and with the pull-out member tilted at any

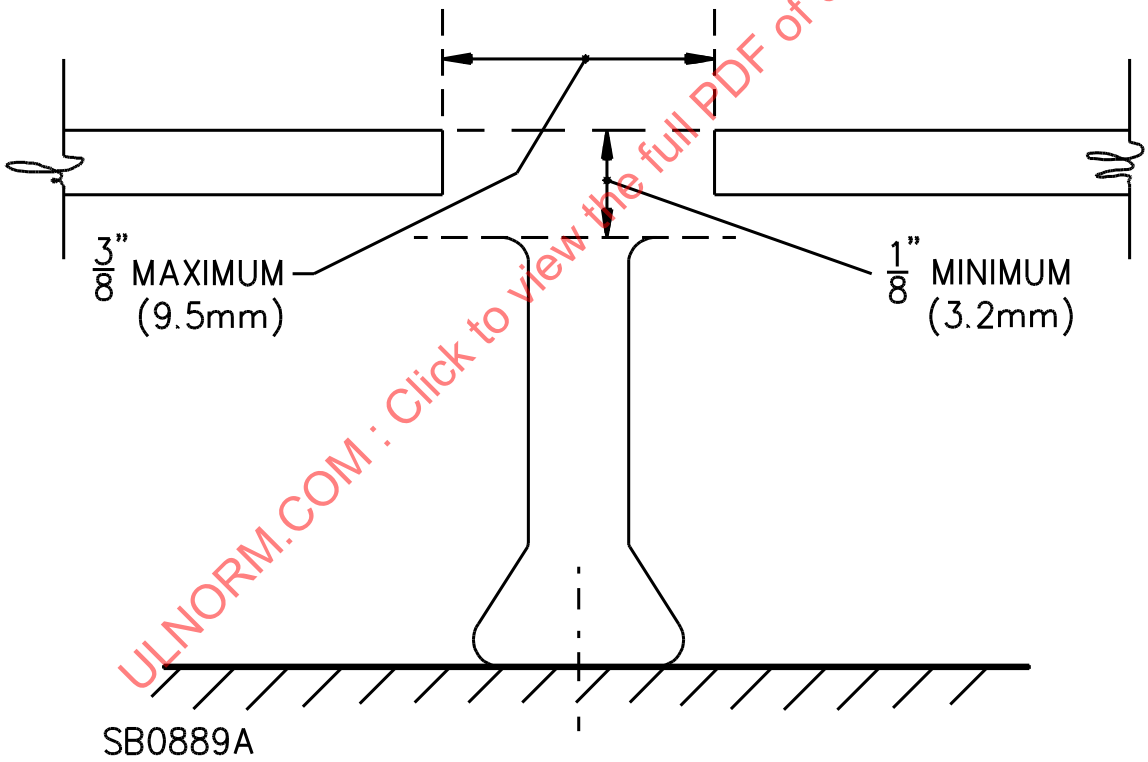
angle at which it can be inserted. If the protection of a live part against unintentional contact is accomplished by means of a shield, barrier, or the like that may be moved or deflected under pressure so as to affect either the width of the opening or the recessing of the live part, the dimensions specified are to be investigated with the expected pressure applied.

8.3 A live part is not considered to be exposed to unintentional contact if it is recessed or set back 1/8 inch (3.2 mm) or more from the plane of an opening having at least one dimension not greater than 3/8 inch (9.5 mm), as shown in Figure 8.1. An opening, the smallest dimension of which is more than 3/8 inch (9.5 mm) but not more than 11/16 inch (17.5 mm), is acceptable if the live part is recessed no less than twice the difference between such opening dimension and 5/32 inch (4.0 mm).

8.4 There shall be no interference between the recessed ends of the recessed female contact and the male blade of a removable member that will stop insertion of blades of the removable member at any angle of approach permitted by the construction.

Figure 8.1

Recessing of live parts



8.5 In a fusible pullout switch which has a fuse mounting means as an integral part of the detachable pullout switch member, the member shall not be insertable in a holder for a detachable pullout switch member of the same manufacturer that has a lower current rating. Detachable pullout switch members shall not be interchangeable with members intended to accept a different class of fuse.

Exception No. 1: A Class H fuseholder may also accept a Class K or a Class R fuse.

Exception No. 2: Detachable pullout switch members may be interchangeable with members intended to accept different classes of fuses if,

a) Interchangeability is limited to fuses having the same ampere rating, voltage rating, and short circuit rating, and

b) The pullout switches have been short-circuit tested for the maximum value of I^2t and I_p of any of the fuses to be used.

8.6 In a non-fusible pullout switch, a detachable pullout switch member shall not be insertable in a holder for a detachable pullout switch member of the same manufacturer that has a higher current rating.

8.7 With respect to Figure 8.2, the dimensions specified in 8.3 apply also to live parts on a pullout member under any conditions of contact between the blades on the pullout member and the stationary switch contacts.

Exception: The blades or other current-carrying parts may be recessed or set back less than 1/8 inch (3.2 mm) if their exposure while live is not more than 1/8 inch.