

1. General

- 1.1 The fuse cutout shall conform to the following specification.
- 1.2 The fuse cutout shall consist of a mounting, a fuse tube or disconnect blade, connectors, and optionally, a mounting bracket. The distribution fuse link used in the fuse cutout is not covered by this specification.
- 1.3 The ratings of the fuse cutout shall be as designated below. (Select values from one of the rows shown in the table below.)

kV
 Nominal _____
 Maximum _____
 BIL _____

Amperes, RMS
 Continuous _____
 Interrupting, Asymmetrical _____
 Leakage Distance to Ground _____

kV			Amperes, RMS			Leakage Distance to Ground, (Inches mm)	Fuse Tube or Disconnect Blade
Nom.	Max	BIL	Cont.	Interr., Asym.			
				60 Hz	50 Hz		
14.4	15	110	100	10 000 12 000▲	8 000 9 600▲	8½ (216)	Fuse Tube
25	27	125	100	8 000	6 400	11 (279)	Fuse Tube
25	27	150	100	8 000	6 400	17 (432)	Fuse Tube
14.4	15	110	100	16 000	12 800	8½ (216)	Fuse Tube
25	27	125	100	12 000 16 000▲	9 600 12 800▲	11 (279)	Fuse Tube
25	27	150	100	12 000 16 000▲	9 600 12 800▲	17 (432)	Fuse Tube
25	27	150◆	100	12 000	9 600	26 (660)■	Fuse Tube
14.4	15	110	200	12 000	9 600	8½ (216)	Fuse Tube
25	27	125	200	10 000	8 000	11 (279)	Fuse Tube
25	27	150	200	10 000	8 000	17 (432)	Fuse Tube
14.4	15	110	300	-	-	8½ (216)	Disconnect
25	27	125	300	-	-	11 (279)	Disconnect
25	27	150	300	-	-	17 (432)	Disconnect
25	27	150◆	300	-	-	26 (660)■	Disconnect

▲ One-shot rating, based on replacement of cutout tube only.
 ◆ Meets 170-kV BIL rating requirement of IEC Publication 282-2 with porcelain insulator only.
 ■ Leakage distance to ground is 26 inches (660 mm) for porcelain insulator, 30 inches (762 mm) for polymer insulator.



1.4 Mounting brackets and connectors, as designated below, shall be optionally available. (Select from the table below.)

Item		
Extended Mounting Bracket, for crossarm, pole, or wall mounting of overhead—pole-top style cutouts		
NEMA Type “B” Mounting Bracket, for crossarm mounting of overhead—pole-top style cutouts		
Item	Accommodating Connectors	
	Quantity	Size and Material
Parallel-Groove Connectors	Two	No. 6 solid through No. 2 stranded copper or aluminum in one groove; No. 2 solid through 250 kc mil stranded copper or aluminum or 4/0 ACSR in the other groove
Eye-Bolt Connectors	One	No. 8 solid through 250 kc mil stranded copper or aluminum, or 4/0 ACSR

1.5 Certification of Ratings

- (a) The manufacturer of the fuse cutout shall be solely responsible for the performance of the complete cutout as rated.
- (b) The manufacturer shall furnish, upon request, certification of ratings of the cutout.

1.6 Compliance with Standards and Codes

The fuse cutout shall conform to or exceed all applicable requirements of the following standards and codes:

- (a) ANSI/IEEE C37.41-2000 (IEEE Standard Design Tests for High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories).
- (b) ANSI C37.42-1996 (Distribution Cutouts and Fuse Links—Specifications).
- (c) IEC 60282-2-1997 (High Voltage Fuses—Part 2: Expulsion Fuses).

1.7 Factory Assembly and Adjustment

The cutout shall be completely assembled and adjusted at the factory.

2. Construction

2.1 Mounting

- (a) Insulator—Porcelain
 - (1) The insulator shall be constructed of a single piece of porcelain, free of chips or blemishes.
 - (2) There shall be no steel bands around the insulator. (Such bands cause mechanical stress concentrations and may subject the insulator to damage over time.)
 - (3) All openings in the insulator shall be completely potted with an inorganic sulfur cement that does not deteriorate or absorb moisture over time. No voids or

foreign objects which can contaminate the sulfur cement shall be present.

- (4) All exposed areas of the sulfur cement shall be coated with an enamel-based paint to minimize the ingress of water.
- (5) The insulator shall be labeled with the appropriate BIL rating.

Insulator—Polymer

- (1) The insulator shall be constructed of a high-strength fiberglass-reinforced polyester (FRP) core with composite-polymer silicone insulation molded over.
- (2) The inserts shall be one piece, having attachment hole for the live parts and mounting bracket, molded into the FRP core. Two-piece and crimped inserts shall not be accepted.

(b) Loadbuster® Attachment Hooks

- (1) There must be attachment hooks at the upper (jaw) end of the fuse cutout, over which Loadbuster's anchor can be hooked; and a pull ring on the fuse tube which can be readily engaged with Loadbuster's pull-ring hook and held fast by the pull-ring latch.
- (2) The fuse cutout must be capable of easy, positive manipulation with Loadbuster from all practical angles and directions, while maintaining the minimum mechanical and electrical requirements specified by the manufacturer of the loadbreak tool.
- (3) The fuse cutout must mechanically coordinate with Loadbuster's operating sequence such that (a) engagement of Loadbuster will not cause or allow the fuse tube to drop open prematurely and (b) the attachment hooks will keep Loadbuster positively anchored until tripping occurs, while (c) permitting easy removal of Loadbuster whether the opening stroke has been completed or whether, for any reason, the fuse cutout has been reclosed after partial (incomplete) opening.
- (4) The Loadbuster attachment hooks shall be constructed of galvanized steel, not less than 3/8" in diameter. The ends of the hooks shall be rounded off or trimmed to effect easy attachment of Loadbuster and to prevent damage to the carton during shipment.
- (5) The Loadbuster attachment hooks shall be resistance-welded to the upper contact assembly. (Spot welding, which can produce localized rust and weaken the hooks, shall not be acceptable.)

(c) Sleet Shield

- (1) The sleet shield shall protect the upper contacts against direct exposure to sleet, snow, and ice.
- (2) The sleet shield shall be robust enough to prevent the upper contact from flexing during high-current interruptions.

(d) Upper Contact Assembly

- (1) The current transfer strap shall consist of a single piece of copper. A secondary shunt, which will increase the number of current transfer points and possible hot spots, shall not be acceptable.
- (2) The upper contact assembly shall include a firm spring that applies a constant pressure of between 25 and 50 pounds to the fuse-tube cap, thus minimizing the possibility of arcing.
- (3) The required pull-out force for the fuse tube shall be between 30 and 40 pounds, applied perpendicular to the axis of the fuse tube.
- (4) The detent-type latch shall have silver-clad embossed surfaces that produce a built-in wiping action on opening and closing.
- (5) The upper contact shall be coated with Sanchem Incorporated No-Ox-Id "A" lubricant (or equivalent).

(e) Hinge and Lower Contact Assembly

- (1) The lower contacts shall be silver-clad and have an embossed feature for built-in wiping action by the fuse-tube trunnion during closing.
- (2) The lower contacts shall utilize stainless-steel backup springs to prevent arcing that may occur as the fuse tube rises slightly in the hinge during operation.
- (3) The hinge and lower contact assembly shall be permanently labeled with the manufacturer's name.
- (4) The lower contacts shall be coated with Sanchem Incorporated No-Ox-Id "A" lubricant (or equivalent).

2.2 Fuse Tube Assembly

(a) Fuse Tube

- (1) The arc-extinguishing liner of the fuse tube shall consist of a *non*-bone-fiber (or horn-fiber) material with the following properties:
 - (i) Less than 0.5% moisture absorption by weight per ASTM D570 Long-Term Immersion Test Method (Clause 6.4).
 - (ii) No (0.0%) swelling of the inner diameter of the fuse tube after being subjected to a 3-week water-submersion test.
- (2) The lower end of the fuse tube shall be counter-bored to promote efficient expulsion of exhaust gases during high-magnitude operations.
- (3) The fuse tube shall be coated with a UV-resistant polyethylene enamel to a thickness of 0.002-0.005, +/- 0.001 inches. The surface of the fuse tube shall be smooth, hard, and durable. The standard color shall be ASA61 Gray.
- (4) The fuse tube shall be labeled with the nominal and maximum voltage ratings, the continuous-current rating, and the asymmetrical interrupting current rating of the fuse cutout.

(b) Fuse-Tube Cap

- (1) The fuse-tube cap shall have four large flats to ensure convenient tightening with a wrench. (The cap shall not be knurled to encourage simple hand tightening, which can result in a high-resistance joint and overheating.)
- (2) The fuse-tube cap shall be silver plated.

(c) Upper Ferrule

- (1) The upper ferrule of the fuse tube shall include a heavy pull ring that cannot be easily bent by a hookstick during normal handling.
- (2) The ferrule shall be attached with two through-pins. (Push pins are less secure and shall not be acceptable.)

(d) Lower Ferrule

The lower ferrule of the fuse tube shall be attached with a single through-pin. (Push pins are less secure and shall not be acceptable.)

(e) Fuse-Tube Trunnion and Flipper Spring

- (1) The flipper shall extend far enough over the end of the fuse tube to center the fuse-link cable in the fuse-tube bore.
- (2) The portion of the flipper extending over the end of the fuse tube shall be no wider than 9/16" to minimize the reflection of gases expelled during operation. The flipper shall be curved radially (3/16" radius typical) to minimize damage to the fuse-link cable.
- (3) Drop-out of the fuse tube shall be effected solely by the spring-loaded flipper and collapsible trunnion assembly, and not by the force of the exhaust during operation.
- (4) The flipper shall include a backstop to guard against finger injury if the flipper is inadvertently released during fuse link installation.
- (5) The flipper spring shall be constructed of stainless steel.
- (6) The flipper spring shall subject the fuse link to a force of not less than four pounds, and not more than ten pounds.

(f) Cable-Clamping Bolt

The cable-clamping bolt shall have a 9/16" hex-head bolt with 13/16" diameter shoulder under the bolt head.

3. Packaging

3.1 The cutout carton shall adequately protect the cutout against damage during shipping.

3.2 The supplier shall be capable of imprinting user bar codes, stock numbers, etc. to the ends of the carton.