

UltraSIL[®] polymer-insulated and porcelain loadbreak Type LB open distribution cutout



Description

Eaton has set a standard of excellence for polymer distribution cutouts with its Cooper Power™ series UltraSIL[®] polymer-insulated interchangeable cutouts, now available in a loadbreak version. Our premium UltraSIL polymer-insulated cutout incorporates an industry recognized silicone rubber insulating material with superior hydrophobic qualities. Eaton offers the loadbreak Type LB cutouts in both polymer and porcelain designs, which provide reliable overcurrent protection for primary distribution circuits. Overcurrent protection safeguards an electric system from excessive currents produced by abnormal conditions such as faults, line or equipment overloads, or equipment failures. Polymer and porcelain Type LB cutouts are ruggedly constructed and will provide full-range overcurrent protection from minimum melt of a given fuse link to the maximum nameplate interrupting current rating of the cutout.

Polymer and porcelain loadbreak Type LB cutouts are available in 15.5 kV and 27 kV voltage ratings and with 100 A and 200 A fuse holders.

UltraSIL polymer-insulated and porcelain loadbreak Type LB cutouts have been tested to and meet or exceed all requirements set forth by IEEE Std C37.41™-2008 and IEEE Std C37.42™-2009 standards.

Interchangeability

The UltraSIL polymer-insulated and porcelain loadbreak Type LB cutouts are physically and electrically interchangeable with the Chance[®] Type C polymer and porcelain loadbreak cutouts from Hubbell Power Systems.

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Design features

The backbone of the UltraSIL polymer-insulated loadbreak Type LB cutout is comprised of an E-glass fiberglass rod with crimped-on galvanized steel hanger and end fittings. The crimping process results in a robust design capable of withstanding numerous opening and closing operations and the severe forces present during fault current interruptions. The frame is over molded with the industry leading, track resistant, UltraSIL silicone rubber polymer-housing. Independent laboratory tests have verified the superiority of silicone rubber in terms of resistance to UV degradation, surface tracking/performance in contaminated environments and other important insulating properties. The complete cutout assembly works together as a system and will stand up to years of exposure to environmental extremes.

The porcelain loadbreak Type LB cutout is designed with a solid core, birdproof, one piece porcelain frame with uniform shed configuration. Sulfur cemented studs provide high strength connections.

The fuseholder is constructed of an epoxy impregnated glass filament wound tube over an arc-quenching inner liner material. A large bronze cast pull ring is utilized for ease of installation and re-fusing. The bronze trunnion, with lifting ring having both front and side accessibility, is silver plated for minimum contact resistance. The grooved flipper assembly controls link tension, assures low fault current interruption and prevents link breakage on "close-in."

The loadbreak portion of the cutout consists of a heavy-duty arc reducing load interrupter mounted to the cutout frame. The interrupter together with a spring-loaded contact blade mounted on the fuse holder provides a reliable load interruption and visible break.

The cast bronze lower hinge assembly has deep pockets for the trunnion to pivot to minimize accidental fuse removal. The rugged design with wide opening means easy fuseholder installation and removal. The lower contact assembly utilizes stainless steel backup springs and silver-to-silver contacts to minimize contact resistance and assure excellent continuous contact throughout the life of the cutout. Silver-to-silver top contacts are again used to minimize contact resistance. Type LB cutout design develops high contact pressure to assure excellent contact for operating currents and until fault interruption is completed.

Lubricant is applied to all separable connector interchanges. All hardware is designed to interlock during assembly to assure correct alignment. The rugged design assures smooth operation and long life.

Application

Proper cutout application requires several major system considerations: system operating voltage, insulation level, type of system grounding, maximum available fault current the cutout may be subjected to and anticipated maximum continuous load current.

The polymer and porcelain Type LB cutout voltage rating is the maximum design voltage of the cutout. It can be applied, without restrictions, on any three-phase system that has system line-to-line voltage less than or equal to the cutout rating. Type LB cutouts can also be applied on single-phase or three-phase solidly grounded wye connected circuits. The circuit can have line-to-neutral voltages up to the voltage rating of the cutout as long as the maximum recovery voltage does not exceed the cutout's rating.

The Basic Impulse Insulation Level (BIL) of a cutout should be coordinated with the insulation of other connected apparatus. The interrupting rating of a cutout should be greater than or equal to the maximum available system fault current unless used in conjunction with current-limiting fuses such as the Companion® II backup fuse or the ELF™ full-range fuse. The cutout selected should have a continuous current rating sufficient to handle the expected load. The 100 A rated fuseholder accepts fuse links from a fraction of 1 A to 100 A. The 200 A fuseholder will accept fuse links with ratings above 100 A to 200 A.

When selecting a cutout or fuse, it is important to consider future load growth and other planned system expansion.

Fuseholders and blades

100 A fuseholder

The UltraSIL polymer-insulated and porcelain Type LB cutouts accommodate standard IEEE® and NEMA® universal type fuse links. This fuseholder can handle universal links up to 100 A.

An arc shortening rod can be used to obtain the higher interrupting current ratings. The arc shortening rod is made of silver-plated, high conductivity copper and is mechanically attached to the fuse cap. Removable buttonhead fuse links must be used with arc shortening rods.

The 100 A fuseholder features a spring assist which helps clear the fuseholder under low current operations. It also comes standard with a 9/16" bolt for easy leader installation.

The spring-loaded contact blade assures a positive and reliable load interruption.



Figure 1. 100 A fuseholder.

200 A Fuseholder

This fuseholder can handle universal links above 100 A up to 200 A and is fully rated for 15.5 kV or 27 kV voltage ratings.

The 200 A door comes standard with an arc shortening rod. The arc shortening rod is made of silver-plated, high conductivity copper and is mechanically attached to the fuse cap. Removable buttonhead fuse links must be used with arc shortening rods. The 200 A fuseholder features a spring assist which helps clear the fuseholder under lower current operations. It also comes standard with a 9/16" bolt and captive washer for easy leader installation and capturing.

The spring-loaded contact blade assures a positive and reliable load interruption.

Connectors/brackets

UltraSIL polymer-insulated and porcelain Type LB cutouts include a tin-plated bronze parallel-groove connector as standard. The parallel-groove connector fits a conductor range of #8 solid (.128" diameter) to 250 MCM (.575" diameter). Tin plated bronze eyebolt and large eyebolt connector options are also available. The eyebolt connector fits a conductor range of #8 solid (.128" diameter) to 2/0 stranded (.419" diameter) and the large eyebolt connector fits a conductor range of #6 solid (.162" diameter) to 250 mcm (.575" diameter).

UltraSIL polymer-insulated and porcelain Type LB cutout crossarm mounting includes a heavy-duty NEMA® Type B crossarm mounting bracket to withstand the mechanical forces generated during fault current interruptions when using an expulsion fuse link. An extended crossarm mounting bracket option is also available. Type LB cutouts are also available without crossarm mounting brackets. See Table 3 for all connector and bracket options.



Figure 2. Parallel-groove connector (left) and eyebolt connector (right).



Figure 3. Additional arrester mounting hardware (bagged) included for Options 5 and 6.

Electrical ratings

Electrical insulation ratings for the polymer and porcelain loadbreak Type LB cutouts are shown in Table 1.

All cutouts have been tested in accordance with IEEE Std C37.40™-2003, IEEE Std C37.41™-2008 and IEEE Std C37.42™-2009 standards.

Table 1. 15 and 27 kV Polymer and Porcelain Loadbreak Type LB Interchangeable Cutout Specifications

Base Catalog Number*		Maximum Voltage Rating (kV)	BIL (kV)	Continuous Current (A)	Loadbreak (A)	Interrupting Rating (A rms)		Creep Distance Inches (mm)		Approximate Weight*** lbs. (kg)	
Polymer	Porcelain					Symmetrical	Asymmetrical	Polymer	Porcelain	Polymer	Porcelain
YS4B1	YL4B1	15.5	110	100	300	7,100	10,000	14.2 (362)	8.5 (216)	11.6 (5.3)	17.9 (8.1)
YS4BA**	YL4BA**	15.5	110	100	300	10,600	16,000	14.2 (362)	8.5 (216)	11.7 (5.4)	18.0 (8.2)
YS4B2**	YL4B2**	15.5	110	200	300	8,000	12,000	14.2 (362)	8.5 (216)	12.1 (5.5)	18.4 (8.3)
YS9C1	YL9C1	27	125	100	50	5,300	8,000	22.3 (566)	11.0 (279)	13.6 (6.1)	20.1 (9.0)
YS9CA**	YL9CA**	27	125	100	50	8,000	12,000	22.3 (566)	11.0 (279)	13.7 (6.2)	20.2 (9.1)
YS9C2**	YL9C2**	27	125	200	50	7,100	10,000	22.3 (566)	11.0 (279)	14.1 (6.4)	20.8 (9.4)

* Base catalog number for standard polymer-insulated and porcelain Type LB unit. See Table 3 for optional connectors and brackets.

** These units include an arc shortening rod and must be used with removable buttonhead fuse links.

*** Includes a standard NEMA® Type B bracket assembly.

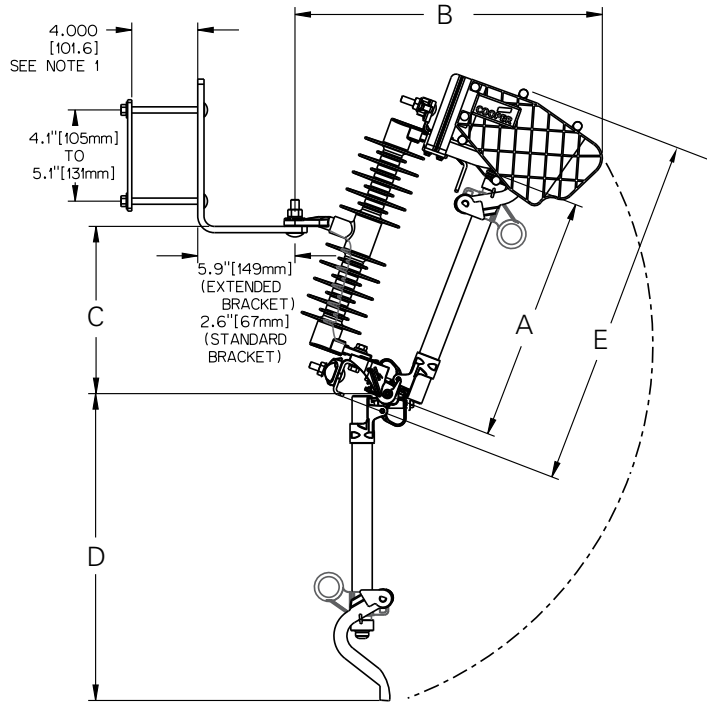


Figure 4. Polymer-insulated Type LB cutout assembly shown. Dimensions apply to both polymer-insulated and porcelain Type LB cutouts.

Table 2. Polymer-Insulated and Porcelain Type LB Cutouts Dimensional Data (refer to Figure 4)

Voltage Rating kV	BIL kV	Dimensions inches (mm)					Creepage Distance inches (mm)	
		A	B	C	D	E	Polymer	Porcelain
15.5	110	11.1 (281)	18.1 (459)	8.5 (216)	15.2 (386)	17.9 (456)	14.2 (362)	8.5 (216)
27	125	14.9 (378)	18.6 (473)	10.1 (257)	18.6 (473)	21.3 (542)	22.3 (566)	17.0 (432)

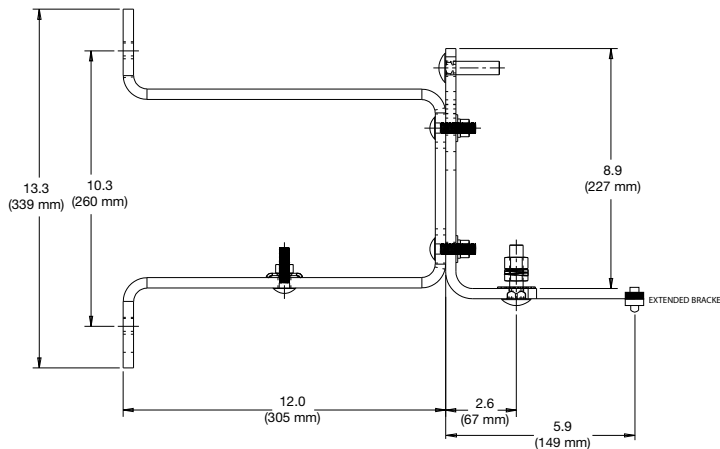


Figure 5. NEMA® "D" pole mounting bracket (Option 8) and extended bracket (Option 4) in Table 3, digit 7.

Ordering information

To order a complete loadbreak Type LB cutout with a fuseholder or disconnect blade choose the appropriate part number from Table below.

To order an individual fuseholder, disconnect blade or the cutout mounting frame, refer to Tables 4 or 5.

Table 3. Polymer-Insulated and Porcelain Type LB Cutout Combination Numbering System

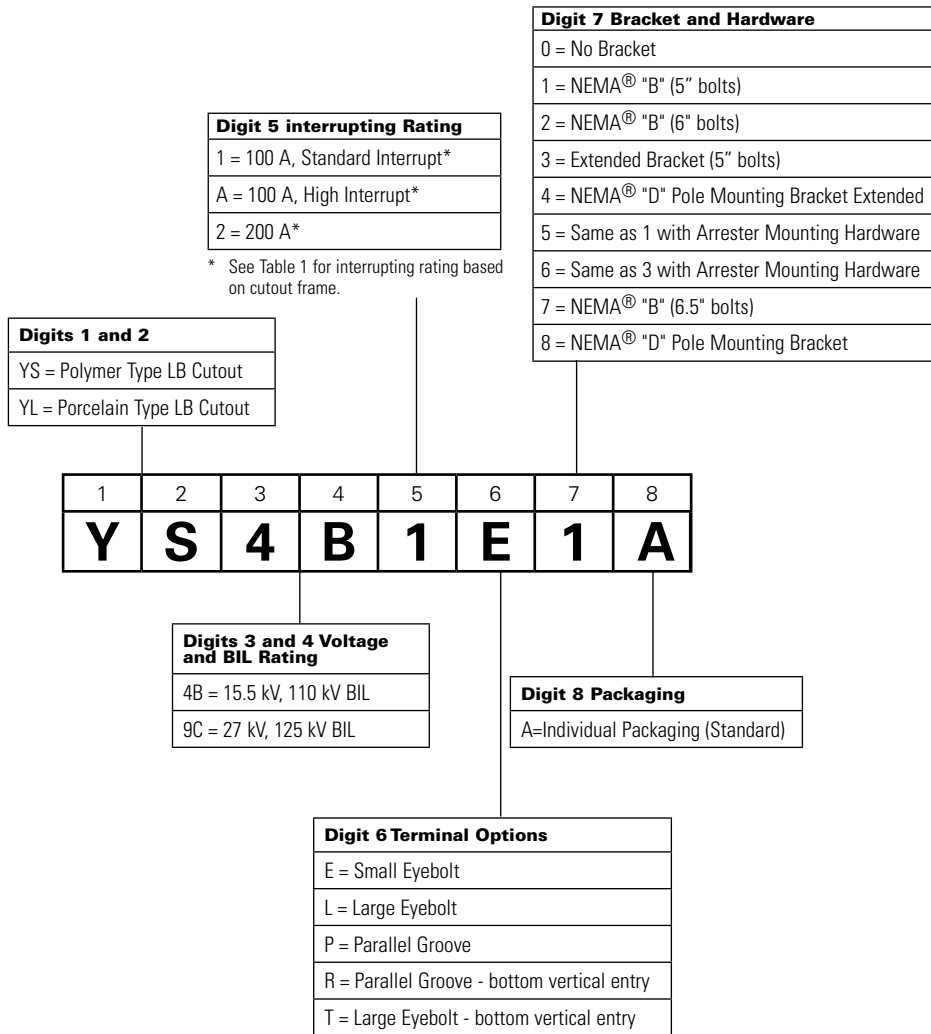


Table 4. Polymer-Insulated and Porcelain Type LB Fuseholders, Disconnect Blades, and Replacement Caps

Catalog Number	Maximum Design Voltage kV	Continuous Current A-rms	Interrupting Rating A-rms Asym	Approximate Fuseholder Length Inches (mm)	Approximate Weight lbs. (kg)	Replacement Caps
For 15.5 kV, 110 kV BIL Cutouts						
YLDB100A		100	10,000		1.9 (.86)	LDB100CAP
YLDBA00A†	15.5	100	16,000	11.32 (288)	2.0 (.91)	LDBA00CAP
YLDB200B†		200	12,000		2.4 (1.1)	LDB20BCAP
For 27 kV, 125 kV BIL Cutouts						
YLDC100A		100	8,000		2.1 (.95)	LDB100CAP
YLDCA00A†	27	100	12,000	14.74 (374)	2.2 (1.0)	LDCA00CAP
YLDC200B†		200	10,000		2.6 (1.2)	LDC20BCAP
For 27 kV, 150 kV BIL Cutouts						
YLDC100A		100	8,000		2.1 (.95)	LDB100CAP
YLDCA00A†	27	100	12,000	14.74 (374)	2.2 (1.0)	LDCA00CAP
YLDC200B†		200	10,000		2.6 (1.2)	LDC20BCAP

† These fuseholders include an arc shortening rod and must be used with removable buttonhead fuse links.

Table 5. Polymer-Insulated and Porcelain Type LB Open Cutout Mounting Frames Only (Without Fuseholder or Disconnect Blade)

Base Catalog Number* Type LB Cutout		Maximum Design Voltage (kV)	BIL (kV)	Creepage Distance Inches (mm)		Approximate Weight lbs. (kg)	
Polymer	Porcelain			Polymer	Porcelain	Polymer	Porcelain
YS4B0	YL4B0	15.5	110	14.2 (362)	8.5 (216)	6.6 (3.0)	12.6 (5.7)
YS9C0	YL9C0	27	125	22.3 (566)	11.0 (279)	10.3 (4.71)	20.45 (9.3)

* See Table 3 for optional connectors and brackets.

Additional information

Refer to the following reference literature for more information:

MN132007EN UltraSIL Polymer-Insulated and Porcelain Types L and LB Open Distribution Cutout Installation Instructions

CA132008EN Edison® Links Catalog

CA132031EN Kearney™ Fuse Links Catalog

PA132010EN, Break Load Without Special Tools with the Type LB Loadbreak Cutout

Contact your Eaton representative for further information.

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