POLIPAR ENERGY SYSTEM Co. Ltd

OPEN CUT OUTS Type SQ

Outdoor Distribution (4.16 kv through 38 kV)

DESCRIPTIVE BULLETIN

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CONSTRUCTION

Ruggedness

The mechanical construction of the Type SQ Cutout is rugged and strong: it is designed to withstand the interruption forces of heavy fault currents and the typically forceful closing-in by linemen.

The upper contact and the hinge are attached to husky steel supports. Both supports and the mounting insert are permanently anchored into cavities in the insulator with inorganic cement, which does not deteriorate or absorb moisture. The cement will not shrink to loosen the inserts nor swell to put stress on the insert cavities of the porcelain. In fact, the cement retains a slight resiliency to absorb part of the shock of the interruption forces.

This cemented construction eliminates the conventional steel bands around the top, bottom, and center of the insulator. Such bands produce mechanical stress concentrations at these three points; their thin insulation coatings are subject to damage due to mishandling on installation and to deterioration with time and weather, and there is an eventual loss of birdproofing and a lessening of the leakage distance.

Superb Current Transfer

The fuse tube is held at the upper contact by a self-aligning spring-loaded detent-type latch. The detent is heavily silver clad and features embossed surfaces for built-in wiping action – resulting in minimum electrical resistance between the upper contact and the silver-clad fuse tube cap.

The heavily silver-clad lower contacts also feature embossed surfaces for built-in wiping action, and are backed up by pre-stressed stainless-steel loading springs for efficient current transfer between the contacts and the silver-clad fuse tube trunnion.

These specially designed high-pressure upper and lower contacts, featuring built-in wiping action, assure superb current transfer – even after the contacts have been exposed to the atmosphere for an extended period of time.

No Fuse-Link Breakage

The Type SQ Cutout has been engineered to prevent fuse-link breakage when the fuse tube is slammed shut. Instead of the conventional method of using the fuse link directly to restrain the toggle, a flipper is used as a lever to restrain the toggle.

During closing, the peak force acting downward on the top of the fuse tube may reach sixty pounds. However, the high reduction ratio of the Type SQ lever system allows the impact to be absorbed before it reaches the fuse link.

This protection of the fuse link from the impact forces of closing does not impair the split-second flip-out of the fuse link when severed by fault current. (Flip-out is caused by the spring-loaded flipper and does not rely on the force of the exhaust or collapse of the toggle.)

Positive Mechanical Action

The Type SQ Cutout features:

- Easy tube insertion;
- Positive alignment when closing;
- Completely reliable dropout, regardless of fault-current level.

To make the fuse tube easy to install under all conditions, wide conspicuous ears on the hinge engage substantial trunnions on the fuse tube. Careful steering or manipulation is not required to hang the tube in the cutout.

Yet this ease of insertion has not compromised the sureness of closing – from any angle and under adverse conditions of light and weather. Trunnion pockets in the ears of the hinge restrain the fuse tube from tilting right or left as it is swung closed. During the closing operation, the fuse tube is steered by the broad guiding surfaces at the hinge. As the tube approaches the upper contact, it is further controlled by Loadbuster attachment hooks, and, at the end of the closing stroke, the fuse tube wipes in and seats positively in the detent-type latch.

To ensure dropout of the fuse tube after circuit interruption – even after long periods of inactivity – the Type SQ Cutout utilizes a high-speed spring-loaded flipper, which in addition to whipping out the severed fuse-link cable, provides an impacting action to aid in the collapse of the toggle system. The upper contact springs also contribute to toggle collapse by pushing the fuse tube down and out into the open position.

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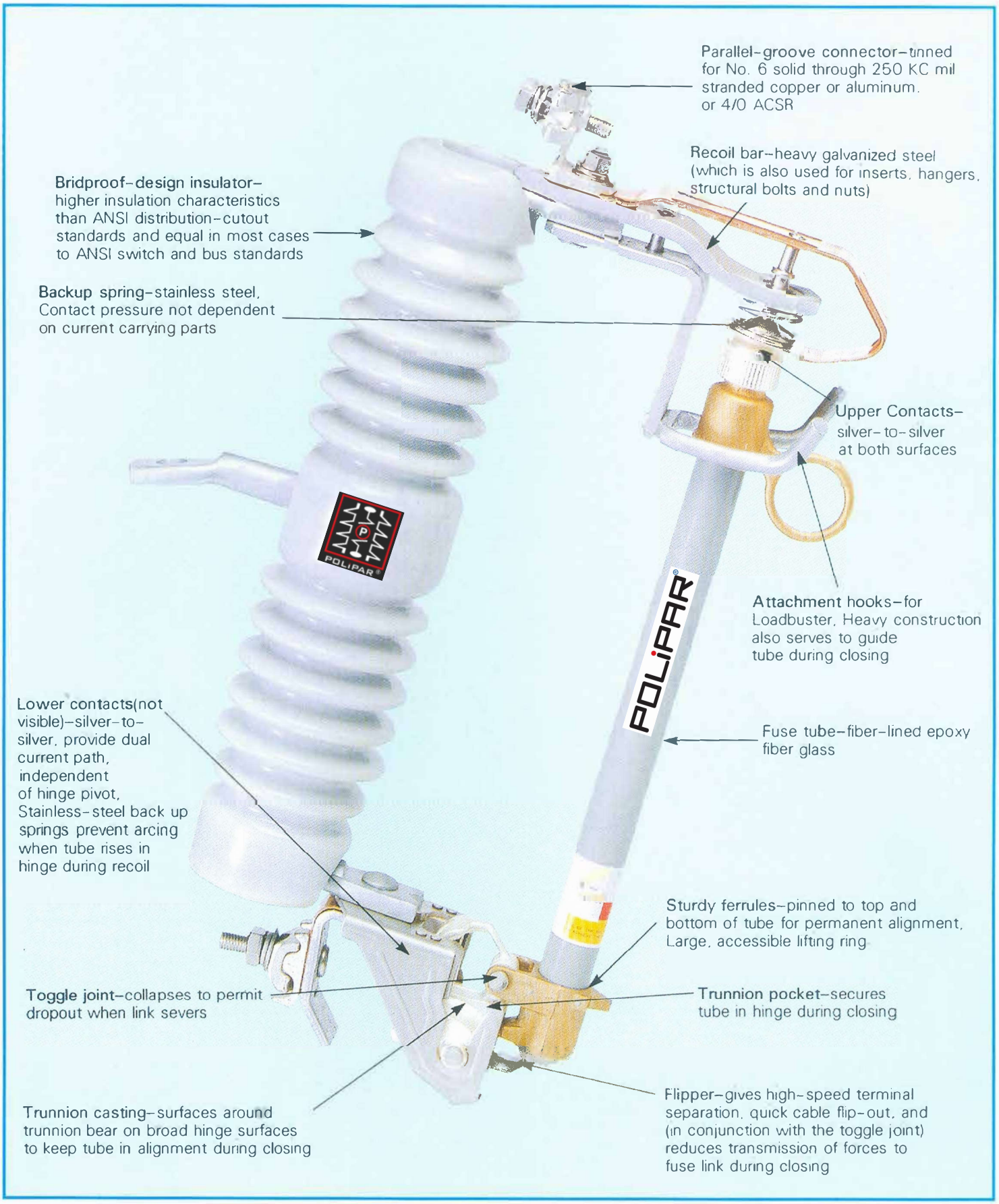

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PERFORMANCE

60–Hertz Short-Circuit Interrupting Ratings– Per ANSI C37.41–1981

OVERHEAD-POLE-TOP STYLES- Both Three-Phase and Single-phase Application ②

System Voltage, kV ↓	Short-Circuit Interrupting Rating, Amperes, Rms, Asymmetrical③ and Symmetrical④ (One-Shot rating, where applicable, shown in Parentheses)													
Continuous Rating →	100 AMPERES												200Amp.	
Style ⑥ →	E⑤	U①	E⑤	E⑤	U①	U①	U①	U①	U①	U①	U①	U①	H①	H①
Voltage Rating-kV, Nom →	14.4	14.4	25	25	25	25	25	25	25	25	27/34.5	27/34.5	25	25
Voltage Rating-kV, Max →	15	15	27	27	27	27	27	27	27	27	36	36	27	27
Voltage Rating-kV, BIL →	95	95	125	125	125	125	125	150	150	150†	150†	200	125	150
Leakage distance to ground, minimum, Inches★ →	$8_{1/2}$	$8_{1/2}$	11	13	11	11	13	$17_{1/2}$	19	26	26▲	39/52/65	11	19
Catalog number →	80420	80443	80421	80421-S	80442-H	80442	80442-T	80442-G	80442-S	80445-H	80445	80445TR 05/08/10	80432	80432-S
4.16 thru 14.4	**10000** (12000)*	**16000** (20000)*	**8000**	**8000**	**10000** (12000)*	**12000** (16000)*	**12000** (16000)*	**12000** (16000)*	**12000** (16000)*	**12000** (16000)*	—	—	**8000**	**8000**
	7100 (8000)*	10600 (13,400)*	5600	5600	7100 (8000)*	8000 (10600)*	8000 (10600)*	8000 (10600)*	8000 (10600)*	8000 (10600)*			5600	5600
16.5 thru 24.9	—	—	**8000**	**8000**	**10000** (12000)*	**12000** (16000)*	**12000** (16000)*	**12000** (16000)*	**12000** (16000)*	**12000**	—	—	**8000**	**8000**
			5600	5600	7100 (8000)*	8000 (10600)*	8000 (10600)*	8000 (10600)*	8000 (10600)*	8000			5600	5600
26.4 • thru 38•	—	—	—	—	—	—	—	—	—	—	**12000** 8000	**12000** 8000	—	—

① User removable buttonhead fuse links only

② Asymmetrical and symmetrical ratings are given for each catalog number in each applicable system-voltage range. In each case, the asymmetrical rating is given first(in bold-face type) and the symmetrical rating second(in light-face type). Ratings in parentheses are the associated one-short ratings(see Note *).

③ Nominal asymmetrical ratings are based on total available short-circuit current of the circuit including the DC component, in accordance with ANSI standards.

④ Symmetrical ratings assigned are based on available symmetrical short-circuit current at locations where X/R ration is equal to 8 (for Cutout Catalog Numbers 80420-H) or 12(for all other overhead - pole-top style cutouts). ANSI Standard C37.41a-1978 specifies these X/R ratio, as applicable, depending on cutout voltage rating and interrupting current rating.

⑤ Uses either nonremovable or removable buttonhead fuse links.

⑥ E-Extra heavy duty, U-ultra heavy duty, H-heavy duty

• Applicable for protection of single-phase-to-neutral circuits(lines or transformers) only, where the leakage distance to ground meets user's requirements.

∗ One-short rating, based on replacement of cutouts tube only

▲ Applicable for protection of single-phase-to-neutral circuits(lines or transformers) only, and grounded-wye connected capacitor banks in solidly-grounded-neutral(multigrounded-neutral) systems.

† Meets 170-kV BIL, rating requirement of IEC Publication 282-2

★ Surfix "R" at the end of catalog umbers have loger leakage distance to ground

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