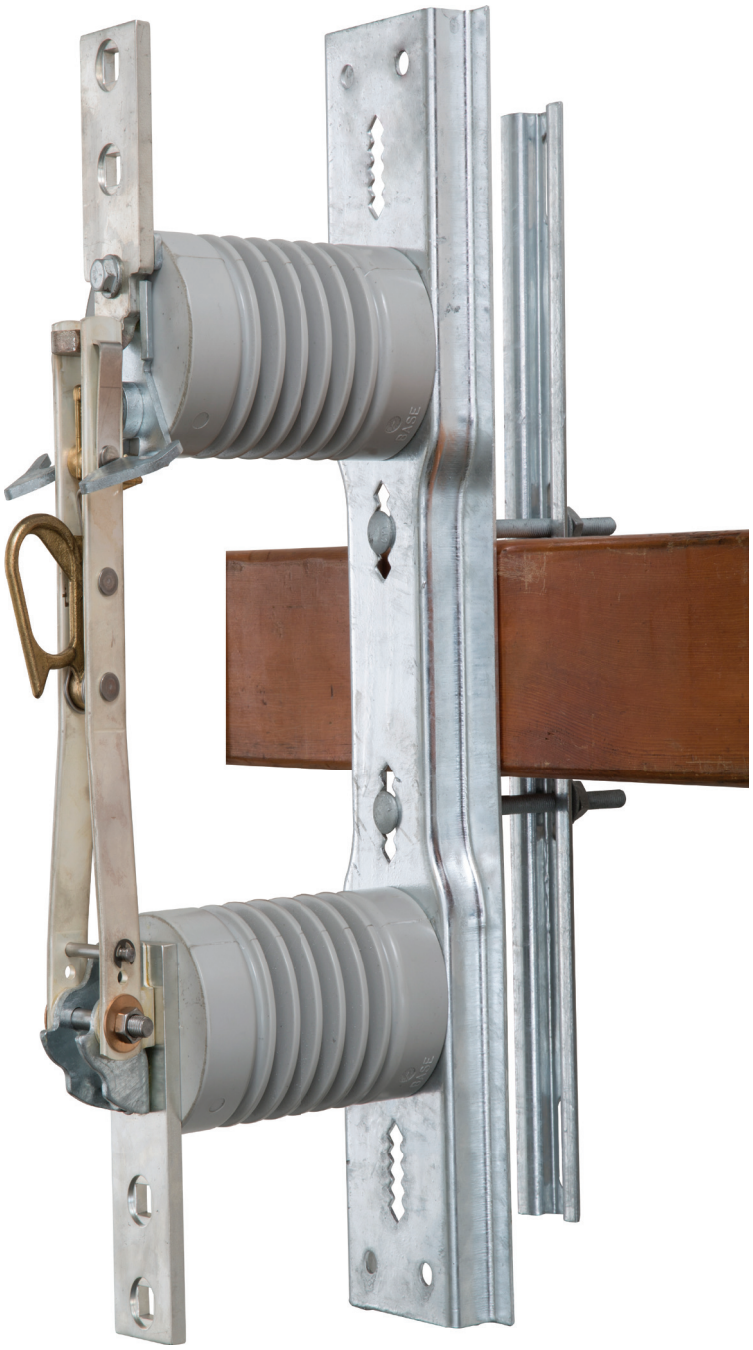


Loadbuster Disconnect® Switches

Outdoor Distribution (14.4 kV through 34.5 kV)

Loadbuster Disconnect Switches, when used with Loadbuster®—The S&C Loadbreak Tool, provide the ultimate in distribution live-switching versatility, economy, and universality.

With these outstanding features:

- Up to 900-ampere continuous ratings, 65,000-ampere peak withstand ratings
- Designed for use with Loadbuster — The S&C Loadbreak Tool; together, they bring single-phase live switching to each sectionalizing point

Application

Loadbuster Disconnect Switches give you the operating flexibility of a system with multipoint interrupter switches, but without the cost associated with having an interrupting unit built into every switch. The dollar savings are big. The Loadbuster tool brings the interrupter to the disconnect switches whenever live switching is needed—but only when needed. You limit your cost to that of one Loadbuster tool for each line truck, spreading an acceptable minimal cost across your entire system.

Together, Loadbuster Disconnect Switches and the Loadbuster tool give you much higher ratings and greater flexibility than other switching methods previously used. Unlike loadbreak cutouts or hookstick-operated interrupter switches, Loadbuster Disconnect Switches, in combination with the Loadbuster tool, can switch up through 900 amperes on overhead distribution systems through 34.5 kV. You can even switch ungrounded transformers at 27 kV or 38 kV.

The Loadbuster Disconnect Switch is a double-duty device: 1) unexcelled as a straight disconnect, and 2) the ultimate device for low-cost, universal live switching.

As a Straight Disconnect Switch

Loadbuster Disconnect Switches, in branch feeder, main feeder, crossarm, and station styles, are specifically designed to meet the high-performance requirements of today's outdoor distribution systems. With their rugged station-type reliability, they accommodate the prevailing heavier loads and higher fault currents. Yet prices are compatible with distribution-system economics.

The Overhead Pole-Top Style Loadbuster Disconnect Switch is designed for outdoor distribution systems, especially for pole-dip applications. This disconnect switch is available in voltage ratings of 14.4 kV, 25 kV, and 34.5 kV and provides a continuous current rating of 900 amperes. The peak withstand rating is 36,000 amperes RMS asymmetrical. This style of disconnect switch is a hybrid—combining the insulator of the Type XS Fuse Cutout and the live parts of the Loadbuster Disconnect Switch.

The Loadbuster Disconnect Switch meets the rigorous requirements conventionally filled by group-operated disconnect switches, hookstick-operated station-type disconnect switches, and conventional interrupter switches. In excellence of concept and construction, the Loadbuster Disconnect Switch has stepped up the standards for hookstick-operated distribution-type disconnect switches.

As a Low-Cost Load-Switching Device

Loadbuster Disconnect Switches, when used with the Loadbuster tool, can:

- Switch load currents up through 900 amperes at distribution voltages up to 34.5 kV
- Break the associated transformer-magnetizing currents, line-charging currents, and cable-charging currents
- Switch *single* capacitor banks typically found on distribution systems within their voltage ratings, as spelled out under "Switching Ratings" on page 3

Loadbuster tool switching helps keep service interruptions to a minimum. There's no need for complex switching procedures involving opening and reclosing of line and feeder breakers to permit dead switching. There's no need for one or more line crews to travel and retravel miles of system. The Loadbuster tool makes every disconnect switch a sectionalizing point. Live switching can be done at the point that minimizes the length of planned outages and where the fewest power consumers will be affected. As a bonus, the Loadbuster tool will switch hook-equipped cutouts and power fuses, too, adding even greater live-switching versatility.

Loadbuster tool operation is simple and positive. The Loadbuster tool's anchor is simply hung on the attachment hook of the Loadbuster Disconnect Switch. Then, the pull-ring is engaged with the Loadbuster tool's pull-ring hook and held fast by the pull-ring latch (see page 5). A firm, steady downward pull opens the disconnect switch and trips the Loadbuster tool, breaking the circuit—there's no external arc and no contact burning.

By solving the disconnect switch problem for your distribution system with Loadbuster Disconnect Switches of station-type quality, you can at negligible extra cost solve the live-switching problem simultaneously . . . with Loadbuster—The S&C Loadbreak tool. In no other way can badly needed live-switching versatility and universality be achieved so simply, practically, and economically.

PERFORMANCE

Switching Ratings

Loadbuster Disconnect Switches are designed for use with the Loadbuster portable loadbreak tool, which has an interrupting rating of 630 amperes nominal, 900 amperes maximum. See Table 1. When used with the Loadbuster tool, the disconnect switches are suitable for these single-phase live-switching duties on single-phase or three-phase circuits of overhead distribution systems through 34.5 kV:

- **Transformer switching**—Transformer load currents up through the continuous current rating of the disconnect switch, as well as transformer-magnetizing currents associated with the applicable loads
- **Line switching**—Load splitting (parallel or loop switching) and load dropping of currents up through the continuous current rating of the disconnect switch; also line dropping (charging currents typical for distribution systems of these voltage ratings)
- **Cable switching**—Load splitting (parallel or loop switching) and load dropping of currents up through the continuous current rating of the disconnect switch; also cable dropping (charging currents typical for distribution systems of these voltage ratings)
- **Capacitor-bank switching**—Switching of single capacitor banks, shown as below:

Table 1. Capacitor Bank Switching Ratings

Loadbuster Tool Catalog Number	Nominal System Voltage, kV, Three-Phase	Maximum Capacitor-Bank Rating, kVac, Three-Phase		
		Solidly or Effectively Grounded System		Ungrounded System
		Single① Banks, Grounded-Wye Connected	Single① Banks, Ungrounded-Wye Connected	Single① Banks, Grounded- or Ungrounded-Wye Connected
5300R3	12–14.4	1800	1800	1800
	16	2400	2400	2400
	20.8–23.9	3000	●	●
	24.9 and 26	3630	●	●
5400R3	20.8–23.9	3000	3000	3000
	24.9 and 26	3630	3630	3630
	27.6	3630	3630	3630
	34.5	4800	●	●

① Loadbuster tools must not be used for switching parallel ("back-to-back") capacitor banks.

● Loadbuster tools must not be used for switching ungrounded-wye connected banks—or grounded-wye connected banks on ungrounded systems—where maximum system operating voltage exceeds 18 kV for the Loadbuster tool, catalog number 5300R3; or 29 kV for the Loadbuster tool, catalog number 5400R3.

A Note on Single-Pole Switching

In single-pole switching of ungrounded-primary three-phase transformers or banks (or single-phase transformers connected line to line), circuit connections or parameters may, in some cases, produce excessive overvoltages. In particular, for the following applications above 22 kV, single-pole switching by any means—including the Loadbuster tool—should be performed only under the conditions stated in italics:

- Switching unloaded or lightly loaded delta-connected or ungrounded-primary wye-wye connected three-phase transformers or banks (or line-to-line connected single-phase transformers), rated 150 kVA or less three-phase, or 50 kVA or less single-phase—or of any kVA rating when combined with unloaded cables or lines—where maximum system operating voltage exceeds 22 kV (*Single-pole switching should be performed only if each phase is carrying 5% load or more, or if the transformer or bank is temporarily grounded at the primary neutral during switching.)*
- Switching loaded or unloaded ungrounded-primary wye-delta connected three-phase transformers or banks—alone or combined with unloaded cables or lines—where maximum system operating voltage exceeds 22 kV (*Single-pole switching should be performed only if each phase is carrying 5% load or more and if the lighting-load phase is always switched open first (or switched closed last), or if the transformer or bank is temporarily grounded at the primary neutral during switching.)*

Table 2. Insulation Characteristics

Loadbuster Disconnect Switch Style	Catalog Number①	Rating			Leakage Distance, Inches (mm)	Dry Arcing Distance, Inches (mm)	Disconnect Gap, Inches (mm)	Rated Cantilever Strength of Insulator Lbs. (kg)
		kV, Nom.	kV, BIL②	Amperes, RMS, Cont.				
Branch feeder (with bases having carriage-bolt slots)	4942R10	14.4	110	630	13¾ (349)	6 (152)	8 (203)	1200 (544)
	4942R10-E	14.4	110	630	15¾ (400)	6¾ (171)	8 (203)	1200 (544)
	4922R10	14.4	110	630	13¾ (349)	6 (152)	10⅞ (276)	1200 (544)
	4922R10-E	14.4	110	630	15¾ (400)	6¾ (171)	10⅞ (276)	1200 (544)
	4752R10	14.4	110	900	13¾ (349)	6 (152)	7½ (191)	1200 (544)
	4752R10-E	14.4	110	900	15¾ (400)	6¾ (171)	8½ (216)	1200 (544)
	4943R10	25	125	630	17 (432)	7¼ (184)	10⅞ (276)	1000 (454)
	4943R10-E	25	125●	630	26 (660)	10 (254)	10⅞ (276)	1000 (454)
	4733R10	25	125	900	17 (432)	7¼ (184)	10½ (267)	1000 (454)
	4733R10-E	25	125●	900	26 (660)	10 (254)	11½ (292)	1000 (454)
Branch feeder (with smooth-slotted bases)	14702R1	14.4	110	630	13¾ (349)	6 (152)	8 (203)	1200 (544)
	14702R1-E	14.4	110	630	15¾ (400)	6¾ (171)	8 (203)	1200 (544)
	14712R1	14.4	110	630	13¾ (349)	6 (152)	10⅞ (276)	1200 (544)
	14712R1-E	14.4	110	630	15¾ (400)	6¾ (171)	10⅞ (276)	1200 (544)
	14703R1	25	125	630	17 (432)	7¼ (184)	10⅞ (276)	1000 (454)
	14703R1-E	25	125●	630	26 (660)	10 (254)	10⅞ (276)	1000 (454)
Main feeder	4622R1	25	125	630	17 (432)	7¼ (184)	10⅞ (276)	1000 (454)
	4622R1-E	25	125●	630	26 (660)	10 (254)	10⅞ (276)	1000 (454)
	4792R4	25	125	900	17 (432)	7¼ (184)	10½ (267)	1000 (454)
	4792R4-E	25	125●	900	26 (660)	10 (254)	11½ (292)	1000 (454)
Crossarm vertical	4873R2	34.5	150	900	24 (610)	10½ (267)	14 (356)	2000 (907)
Crossarm inverted	4893R2	34.5	150	900	24 (610)	10½ (267)	14 (356)	2000 (907)
Station vertical	14722R1	14.4	110	630	15¾ (400)	7¼ (184)	10 (254)	2000 (907)
	14722R1-E	14.4	110	630	16⅞ (429)	10 (254)	10 (254)	2000 (907)
	14822R1	14.4	110	900	15¾ (400)	7¼ (184)	10 (254)	2000 (907)
	14822R1-E	14.4	110	900	16⅞ (429)	10 (254)	10 (254)	2000 (907)
	14723R1	25/34.5	150	630	24 (610)	10½ (267)	10 (254)	2000 (907)
	14723R1-E■	25/34.5	150	630	26¼ (667)	14 (356)	10 (254)	2000 (907)
	14823R1	25/34.5	150	900	24 (610)	10½ (267)	14 (356)	2000 (907)
	14823R1-E■	25/34.5	150	900	26¼ (667)	14 (356)	14 (356)	2000 (907)
	14824R1	34.5	200	900	37 (940)	14½ (368)	14 (356)	2000 (907)
	14824R1-E	34.5	200	900	37⅜ (949)	18 (457)	14 (356)	2000 (907)
Station inverted	4632R1	14.4	110	630	15¾ (400)	7¼ (184)	10 (254)	2000 (907)
	4632R1-E	14.4	110	630	16⅞ (429)	10 (254)	10 (254)	2000 (907)
	4782R4	14.4	110	900	15¾ (400)	7¼ (184)	10 (254)	2000 (907)
	4782R4-E	14.4	110	900	16⅞ (429)	10 (254)	10 (254)	2000 (907)
	4903R1	25/34.5	150	630	24 (610)	10½ (267)	10 (254)	2000 (907)
	4903R1-E■	25/34.5	150	630	26¼ (667)	14 (356)	10 (254)	2000 (907)
	4783R1	25/34.5	150	900	24 (610)	10½ (267)	14 (356)	2000 (907)
	4783R1-E■	25/34.5	150	900	26¼ (667)	14 (356)	14 (356)	2000 (907)
	4784R1	34.5	200	900	37 (940)	14½ (368)	14 (356)	2000 (907)
	4784R1-E	34.5	200	900	37⅜ (949)	18 (457)	14 (356)	2000 (907)
Overhead pole-top	18932R1	14.4	110	630/900▲	11 (279)	8½ (216)	8 (203)	—
	18933R1	25	150	630/900▲	17 (432)	10½ (267)	11 (279)	—
	18934R1	34.5	170◆	630/900▲	26 (660)	10½ (267)	11 (279)	—
	18934R1-P	14.4	110	630/900▲	26½ (673)	8½ (216)	8 (203)	—
	18933R1-P	25	150	630/900▲	37½ (953)	10½ (267)	11 (279)	—
	18934R1-P	34.5	170	630/900▲	37½ (953)	10½ (267)	11 (279)	—

① Catalog Number Suffix "-E" signifies model is furnished with Cypoxy™ Insulators. Catalog number *without* suffix "-E" signifies model is furnished with porcelain insulators.

② Verified by impulse tests with disconnect switch blade closed or open and base grounded, and with disconnect switch blade open and base ungrounded. Meets IEEE Standard C37.34-4.2-1994 and IEC 62271-102.

● These disconnect switches equipped with Cypoxy Insulators meet requirements for 150-kV BIL rating.

■ For application on 25-kV systems only.

▲ S&C rating for ambient temperatures through 40°C (104°F) with a minimum wind velocity of 1.4 miles per hour. The IEEE rating for this disconnect switch is 630 amperes continuous.

◆ S&C's tested value for a disconnect with a porcelain insulator. Rating per IEEE: 150 kV.

OPERATION

With Loadbuster–The S&C Loadbreak Tool

The Loadbuster tool is first attached to a universal pole at least six feet long. It is then positioned across the front of the Loadbuster Disconnect Switch with the tool's anchor hung on the attachment hook on the far side of the disconnect switch. The pull-ring of the disconnect switch blade is engaged with the Loadbuster tool's pull-ring hook and held fast with the tool's pull-ring latch. As the universal pole is pulled downward with a firm, steady stroke, and as the Loadbuster tool is extended to its maximum length, the disconnect switch is opened and the current is diverted through the tool—at the same time the tool's internal operating spring is charged.

At a predetermined point in the Loadbuster tool's opening stroke, its internal trigger trips, the charged operating spring is released, the internal contacts are separated, and the circuit is *positively* interrupted. The only sound is that of the Loadbuster tool tripping.

Circuit interruption is independent of the speed at which the Loadbuster tool is operated. All that is required is a smooth operating stroke … without hesitation, without jerking … until the tool is extended to its maximum length. The resetting latch retains the tool in the **Open** position for removal from the disconnect switch—and until released to reset the Loadbuster tool for its next operation.

And resetting the Loadbuster tool is easy, too. Merely release the resetting latch and depress the Loadbuster tool's telescoping tube until the orange band on the tube disappears. Extend the tube about three inches to check for spring tension and let it snap back. It's that simple.

For detailed information about Loadbuster–The S&C Loadbreak Tool, see S&C Descriptive Bulletin 811-30.

1. Attach:

Reach across the front of the disconnect switch and attach the Loadbuster tool's anchor to the attachment hook on the far side of the disconnect switch. Then, engage its pull-ring with the Loadbuster tool's pull-ring hook. The tool's pull-ring latch prevents inadvertent disengagement of the disconnect switch pull-ring and the tool's pull-ring hook.

2. Pull:

A firm, steady downward pull on the Loadbuster tool—to its maximum extended length—opens the disconnect switch in the normal manner as the current is diverted through the tool. At a predetermined point in the opening stroke, the Loadbuster tool trips, breaking the circuit positively.

3. Remove:

The Loadbuster tool is disengaged by first removing its anchor from the disconnect switch attachment hook. Then, with the blade in the fully open position, the tool is removed from the pull-ring with a simple "roll-off" motion.

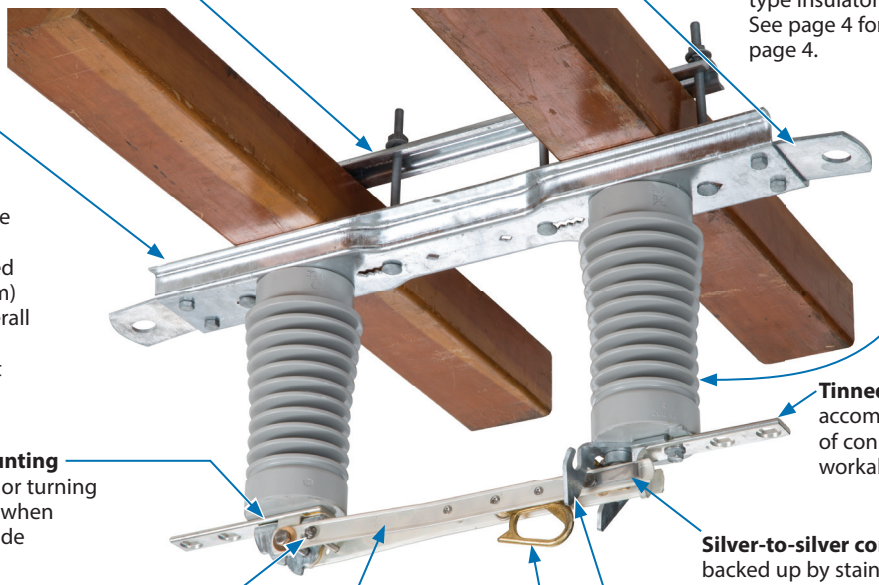
CONSTRUCTION

Branch-Feeder Style — 630 Amperes Continuous

Optional backup member, suitable for single- or double-crossarm mounting. Furnished with either two or four mounting bolts, flat washers, lockwashers, and nuts

Dead-ending option. Base has holes in each end for attachment of dead-ending bracket

Superior insulation characteristics. Offered with a choice of Cypoxy™ Insulators● or porcelain distribution-type insulators (2¼-inch bolt circle). See page 4 for values. See Table 2 on page 4.



Husky, galvanized formed base, available with carriage-bolt slots (shown) or smooth slots accommodating machine bolts. Rigid construction won't distort when bolted down. Five-inch (127-mm) width contributes to overall stability of disconnect. Large flanged area won't gouge crossarms

Tinned terminal pads accommodate a wide selection of connector arrangements workable with hotline tools

Two-bolt insulator mounting ensures against slipping or turning of live parts, particularly when closing blade from the side

Silver-to-silver contacts backed up by stainless steel loading springs■

Blade stop pin, factory-set for 160° opening, can be readily field-repositioned to provide for 90° opening (use only for vertical mounting position)

Galvanized steel attachment hooks for the Loadbuster tool, also serve as blade guide

Double-member, hard-drawn, round-edged copper blades, formed for extra rigidity. Broad-based hinge attachment contributes to overall stability of disconnect switch and ensures positive contact engagement, even when disconnect switch is closed from the side

Positive latch and pryout operate freely from all angles

Catalog number 4943R10-ED1W (shown mounted in the inverted position on double crossarms) rated 25 kV nominal, 27 kV maximum, 125 kV BIL, 630 amperes continuous, 65,000 amperes peak withstand. Catalog number suffix "-E" signifies the inclusion of Cypoxy Insulators instead of distribution-type porcelain insulators. Suffix "-D1" signifies the inclusion of a backup member with two ⅜ – 16 × 7½-inch galvanized steel carriage bolts, flat washers, lockwashers, and nuts. Suffix "-W" signifies the inclusion of dead-ending brackets with mounting hardware.

● Cypoxy Insulators are S&C's nontracking, self-scouring, nonweathering cycloaliphatic epoxy resin system. There's never a compromise of insulation integrity with these field-proven insulators.

■ The high, 65,000-ampere, peak withstand ratings of Loadbuster Disconnect Switches are made possible by the silver-to-silver contacts at the attachment hook end. Contacts won't weld, burn, or pit on over-currents. Loadbuster Disconnect Switches will carry rated load, opening and closing without difficulty, even after long exposure of contacts to atmospheric contamination.

Branch-Feeder Style — 900 Amperes Continuous

Superior insulation characteristics. Offered with a choice of Cypoxy Insulators● or porcelain distribution-type insulators (2¼-inch bolt circle). See page 4 for values

Tinned terminal pads accommodate a wide selection of connector arrangements workable with hot-line tools

Silver-to-silver contacts, backed up by stainless-steel loading springs■

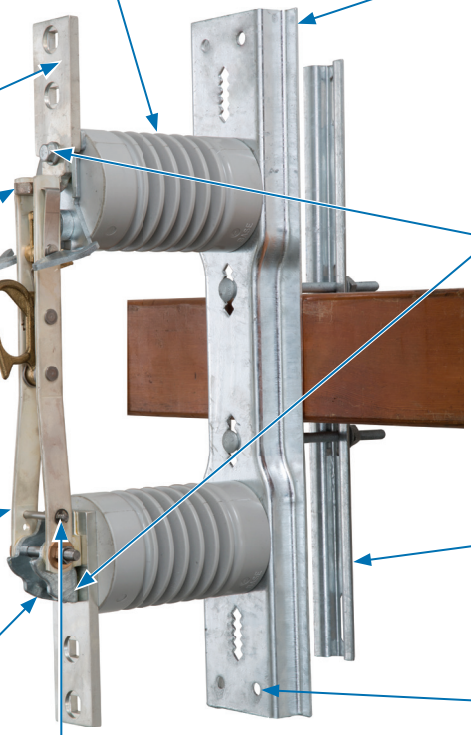
Galvanized steel attachment hooks for the Loadbuster tool, also serve as blade guide

Positive latch and pryout operate freely from all angles

Double-member, hard-drawn, round-edged copper blades, formed for extra rigidity, ensure positive engagement with stationary tongue contact during closing, even when disconnect switch is closed from the side

Silver-to-silver contacts, backed up by phosphor-bronze Belleville springs

Blade stop pin permits adjustment of blade travel to 90° or 160°



Husky, galvanized formed base includes carriage-bolt slots. Rigid construction won't distort when bolted down. Five-inch (127-mm) width contributes to overall stability of disconnect switch. Large flanged area won't gouge crossarms

Two-bolt insulator mounting ensures against slipping or turning of live parts, particularly when closing blade from the side

Optional backup member, suitable for single- or double-crossarm mounting. Furnished with either two or four mounting bolts, flat washers, lockwashers, and nuts

Dead-ending option. Base has holes in each end for attachment of dead-ending bracket

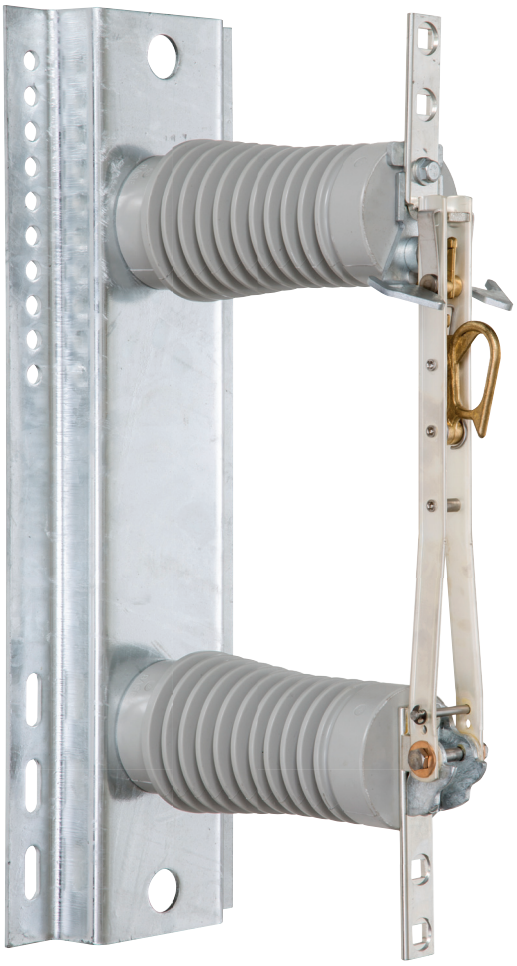
Catalog number 4752R10-ED1 (shown mounted in the vertical position on a single crossarm) rated 14.4 kV nominal, 15.5 kV maximum, 110 kV BIL, 900 amperes continuous, 65,000 amperes peak withstand. Catalog number suffix "-E" signifies the inclusion of Cypoxy Insulators instead of distribution-type porcelain insulators. Suffix "-D1" signifies the inclusion of a backup member with two ⅜ – 16×7½-inch galvanized steel carriage bolts, flat washers, lockwashers, and nuts.

● Cypoxy Insulators are S&C's nontracking, self-scouring, nonweathering cycloaliphatic epoxy resin system. There's never a compromise of insulation integrity with these field-proven insulators.

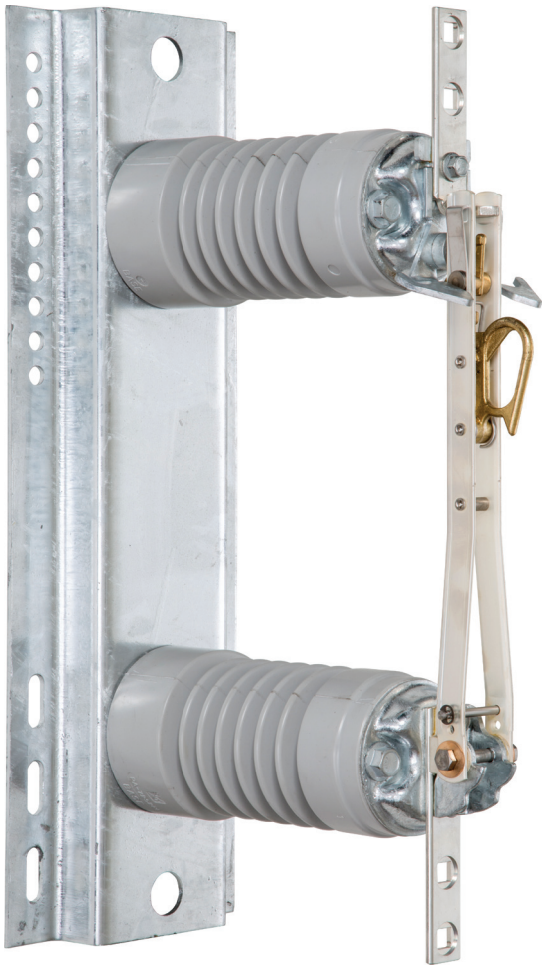
■ The high, 65,000-ampere, peak withstand ratings of Loadbuster Disconnect Switches are made possible by the silver-to-silver contacts at the attachment-hook end. Contacts won't weld, burn, or pit on overcurrents. Loadbuster Disconnect Switches will carry rated load, opening and closing without difficulty, even after long exposure of contacts to atmospheric contamination.

Main-Feeder and Station Styles — 630 and 900 Amperes Continuous

Main-Feeder and Station-Style Disconnect Switches are available in 630-ampere and 900-ampere ratings. Live-part features are the same as described on pages 6 and 7 as applicable for the equivalent continuous-current-rated Branch-Feeder Style Disconnect Switch. The Main-Feeder Style Disconnect Switch is available with a choice of Cypoxy Insulators or distribution-type porcelain insulators. Station-Style Disconnect Switches are available with a choice of Cypoxy or porcelain standard-strength station post insulators.



Main-Feeder Style. Catalog number 4622R1-E rated 25 kV nominal, 27 kV maximum, 125 kV BIL, 630 amperes continuous, 65,000 amperes peak withstand. Catalog number suffix "-E" signifies the inclusion of Cypoxy Insulators instead of distribution-type porcelain insulators.

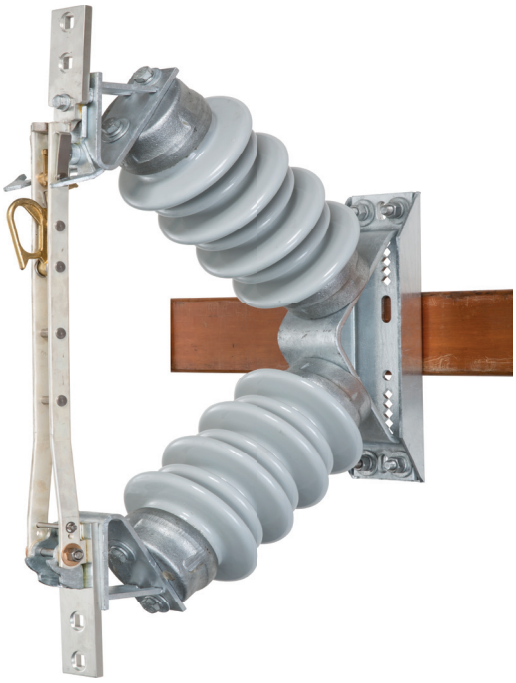


Station-Vertical Style. Catalog number 14722R1-E rated 14.4 kV nominal, 15.5 kV maximum, 110 kV BIL, 630 amperes continuous, 65,000 amperes peak withstand. Catalog number suffix "-E" signifies the inclusion of Cypoxy Station Post Insulators instead of porcelain station post insulators.

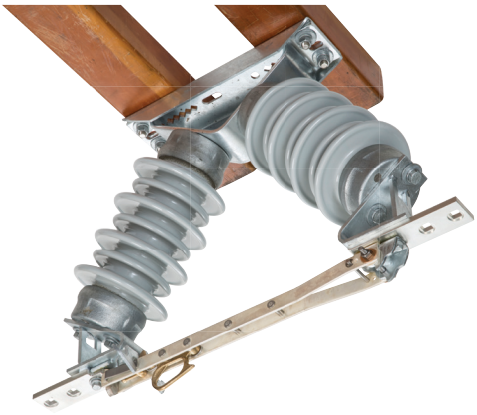
Crossarm and Overhead Pole-Top Styles — 900 Amperes Continuous

Live-part features of the Crossarm-Style Disconnect Switches are the same as described on page 7 for the 900-ampere rated Branch-Feeder Style Disconnect Switches. Crossarm-Style Disconnect Switches are suitable for mounting on single or double crossarms, directly to wood poles, or to structures.

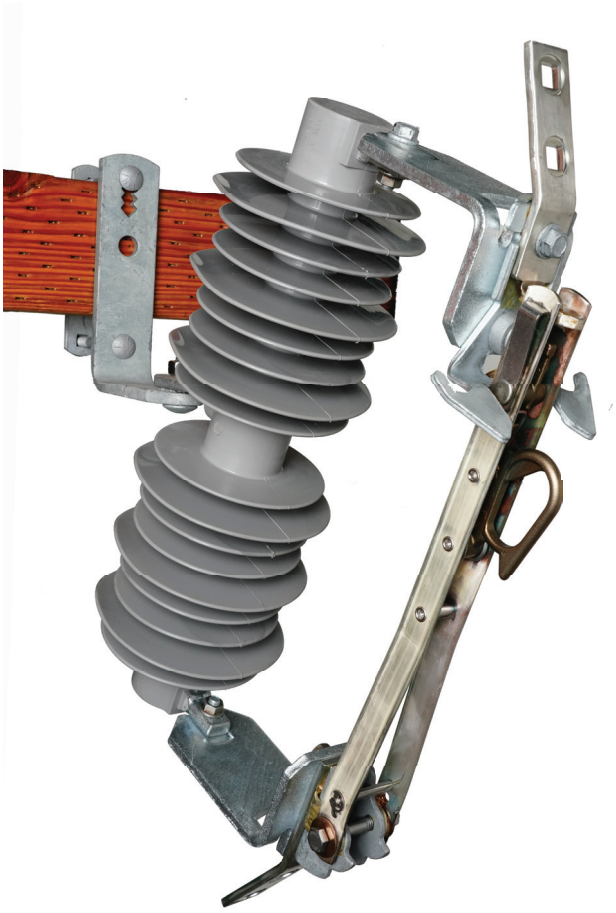
Crossarm-Style Disconnect Switches are supplied with porcelain station post insulators. The Overhead Pole-Top Style Disconnect Switch is especially designed for pole-dip applications. This style of disconnect switch combines the insulator of the Type XS Fuse Cutout and the live parts of a Loadbuster Disconnect Switch.



Crossarm-Vertical Style. Catalog number 4873R2 rated 34.5 kV nominal, 38 kV maximum, 150 kV BIL,900 amperes continuous, 65,000 amperes peak withstand.



Crossarm-Inverted Style. Catalog number 4893R2 rated 34.5 kV nominal, 38 kV maximum, 150 kV BIL, 900 amperes continuous, 65,000 amperes peak withstand.



Overhead Pole-Top Style. Catalog number 18933R1-P rated 25 kV nominal, 27 kV maximum,150 kV BIL, 630/900 amperes continuous● 65,000 amperes peak withstand.

● S&C rating for ambient temperatures through 40°C (104°F) with a minimum wind velocity of 1.4 miles per hour. The IEEE rating for this disconnect switch is 630 amperes continuous.