Switchgear with arc-resistance to further protect your systems.

S&C's economical, reliable metal-enclosed switchgear is also available in arc-resistant models that provide a heightened level of protection from the effects of an internal arc. Arc-resistant models have all of the rugged features of S&C Custom Metal-Enclosed Switchgear, plus additional measures needed to withstand the effects of internal arcing faults.

Two styles are available, a top-flap style suitable for both indoor and outdoor installations in climates warm year-round, and a side-flap style suitable for outdoor installation in climates where ice and snow may be present. See Figure 1.

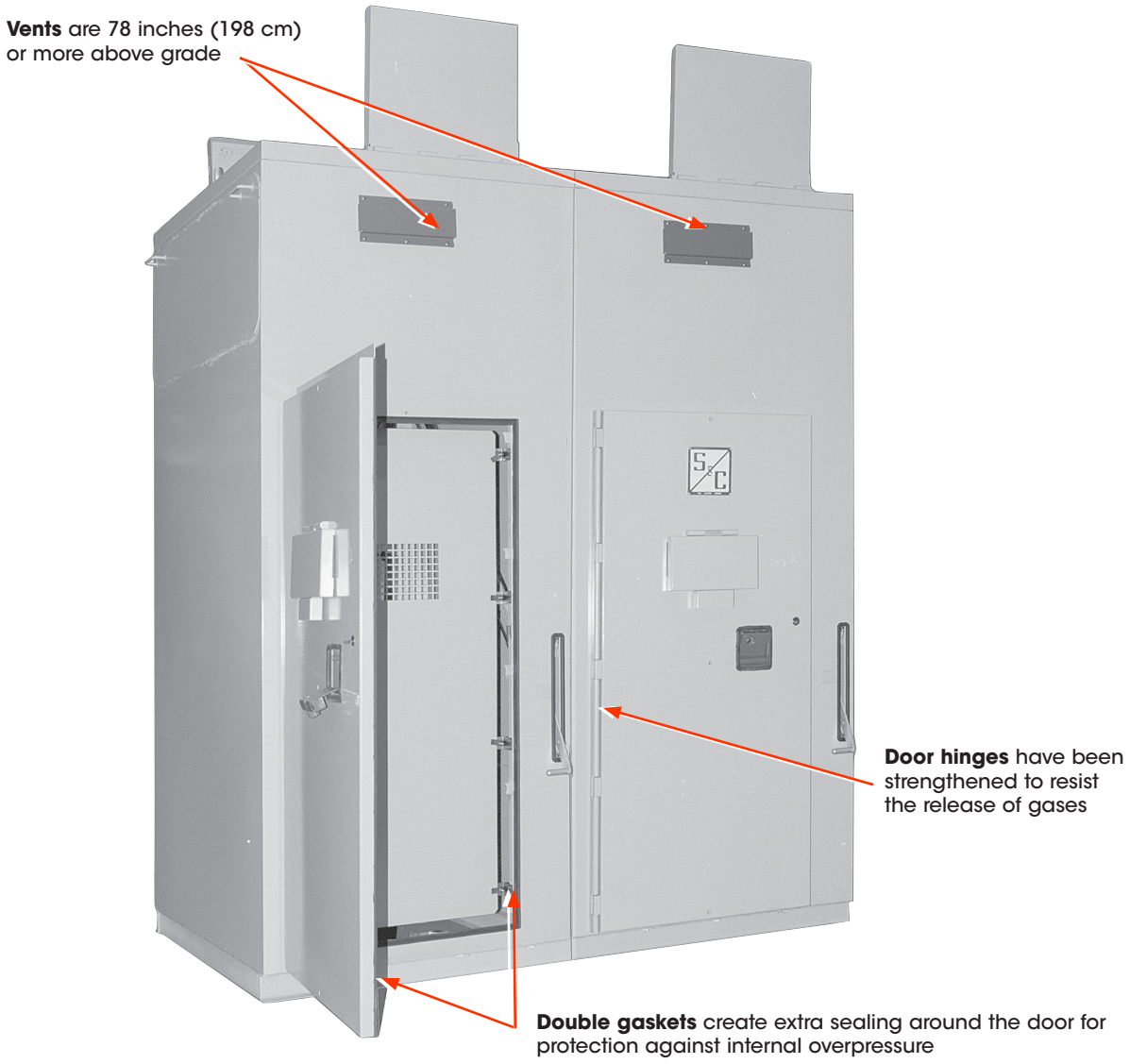


Figure 1. Front view of top-flap style arc-resistant S&C Metal-Enclosed Switchgear rated 25 kV.

Both styles have successfully passed the rigorous certification testing required by the Canadian standard, EEMAC G14-1 for accessibility type B, access to the front, back, and sides. This standard addresses the effects of internal arcing fault conditions, including overpressure acting on covers, doors, and inspection windows. See Figure 1 on page 1 and Figure 2. It also covers the thermal effects of the arc and verification the arc does not burn through external walls of the enclosure.

The standard does not address all potential hazards of an internal arcing fault. Side-flap style models have also passed certification testing required by IEEE standard C37.20.7-2001, for accessibility type 2, access to the front, back, and sides.

This standard addresses the same points as the EEMAC G14-1. The only difference is the IEEE standard has an arc duration of 0.5 seconds, while the EEMAC standard has an arc duration of 1 second.

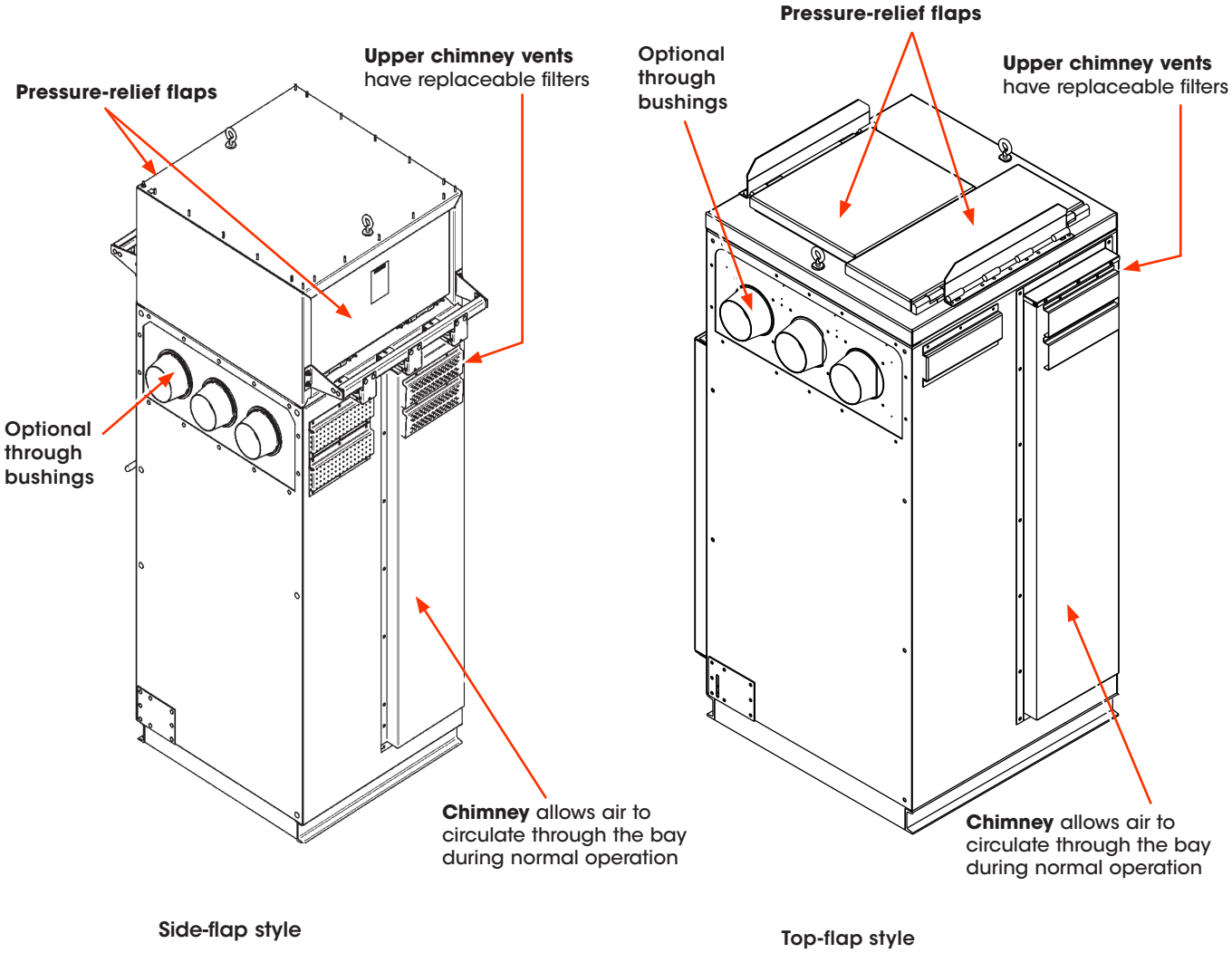


Figure 2. Rear view of arc-resistant S&C Metal-Enclosed Switchgear rated 15 kV, illustrating the rear chimney vent.

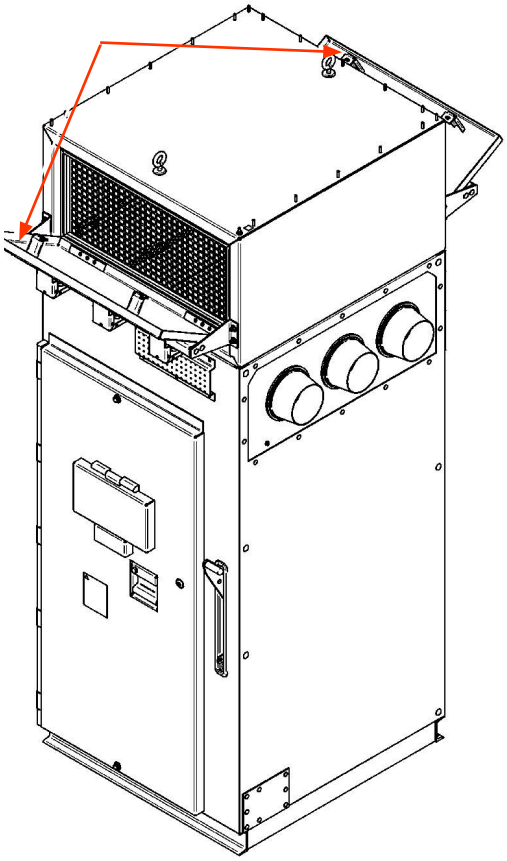
In accordance with the EEMAC standard and the IEEE standard, the switchgear tested was a fully functional unit not previously subjected to arcing and was fully equipped. The mounting arrangements closely approximated those in normal service.

An arc was initiated at the point producing the highest stress under conditions simulating a realistic service situation. Black cotton cloth indicators were used to verify the ability of the enclosure to constrain release of hot gases around its perimeter. See Figure 3.

The enclosure was able to resist the resultant overpressure. The arc did not burn any holes in the exterior walls, and none of the cotton indicators ignited. Doors, covers, and inspection windows remained on the enclosure.

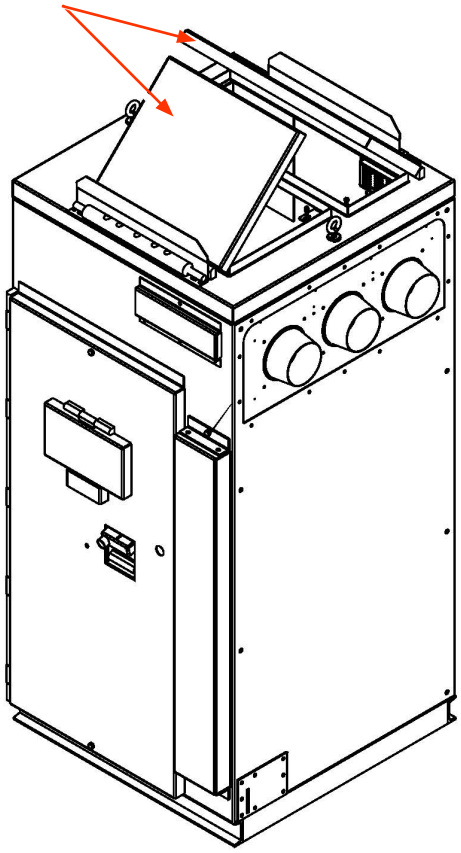
The duration of arcing was one second. The highest peak current was 99 kA, and the average symmetrical current was 41 kA over the duration of the test. The test, therefore, verified that the switchgear is resistant to burn-through and overpressure through 40 kA symmetrical.

Hinged pressure-relief flaps relieve overpressure. The flaps will open fully in approximately 8 milliseconds



Side-flap style

Hinged pressure-relief flaps on the roof relieve overpressure. The flaps will open fully in approximately 8 milliseconds.

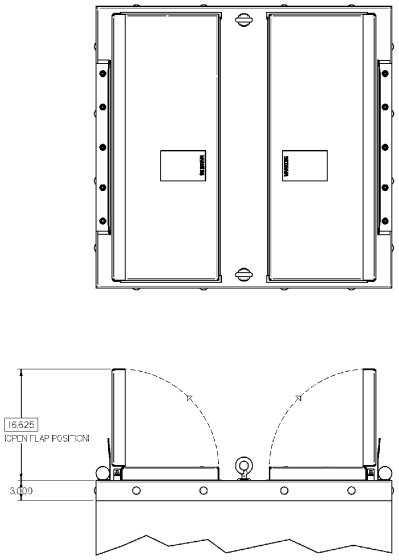


Top-flap style

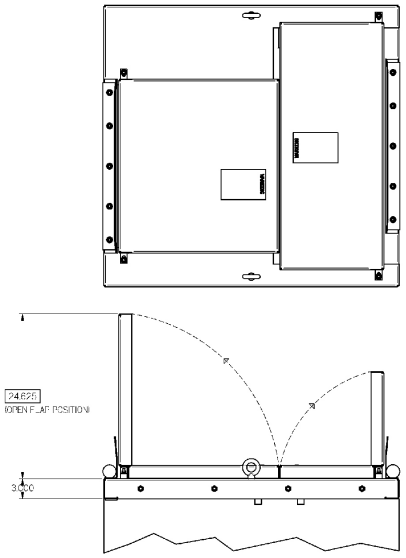
Figure 3. Front view of arc-resistant S&C Metal-Enclosed Switchgear, illustrating the pressure-relief flaps. The lightweight aluminum pressure-relief flaps open quickly to relieve overpressure but have the tensile strength of 14-gauge steel.

The table below lists ratings and dimensions of arc-resistant switchgear. The bays retain the same footprints as the standard models of 15-kV, 25-kV, and 34.5-kV S&C Custom Metal-Enclosed Switchgear. But the chimney for the lower vent increases the overall depth of all models by five inches, including the door. This is not taken into account in the chart below. See the chart below for heights on the top-flap style and the side-flap style.

Please note that the arc-resistant models of S&C Custom Metal-Enclosed Switchgear are designed to meet the enclosure security requirements for Category B per ANSI C37.20.3, with access restricted to qualified personnel. Also note that if the switchgear is to be installed indoors, the user must provide a means of exhausting hot gases outside of the building.



If this configuration is chosen, add 17 inches (43 cm) to the minimum height listed in the table below.



If this configuration is chosen, add 25 inches (64 cm) to the minimum height listed in the table below.

Figure 4. Two configurations are available for the top-flap style. These diagrams show the size and location of the flaps at rest and in the Open position. For additional information, contact the local S&C Sales Office.

Table 1. Ratings and Overall Dimensions of Available Arc-Resistant Switchgear Bays①②③

Nominal Rating, kV	Short Circuit, kA Sym.	Top-Flap Style Minimum Height, Inches	Side-Flap Style Minimum Height, Inches	Dimensions	Manual Bay, in inches (cm)	Power-Operated Bay, in inches (cm)	Metering Bay, in inches (cm)
4.16–13.8	40	Compact bay, 93 Universal bay, 123	Compact bay, 114 Universal bay, 144	Footprint	42 (107) W × 44 (112) D	44 (112) W × 44 (112) D	44 (112) W × 44 (112) D
				Overall	42 (107) W × 49 (124) D	44 (112) W × 49 (124) D	44 (112) W × 49 (124) D
25	20	129	150	Footprint	52 (132) W × 59 (150) D	52 (132) W × 59 (150) D	52 (132) W × 59 (150) D
				Overall	52 (132) W × 64 (163) D	52 (132) W × 64 (163) D	52 (132) W × 64 (163) D
34.5	20	133	154	Footprint	60 (152) W × 63 (160) D	65 (165) W × 63 (160) D	65 (165) W × 63 (160) D
				Overall	60 (152) W × 68 (173) D	65 (165) W × 68 (173) D	65 (165) W × 68 (173) D

① Dimensions are the same for indoor and outdoor switchgear.

② For top-flap style, a minimum of 4 feet (122 cm) of unobstructed clearance is required above the gear.

③ For side-flap style, a minimum of 4 feet (122 cm) of unobstructed clearance is required for both the front and the rear sides.