



# THE GUND COMPANY

MANUFACTURERS & FABRICATORS OF ENGINEERED MATERIAL SOLUTIONS

Los Angeles Milwaukee Dallas St. Louis Cedar Lake Canada Mexico China

## Standoff Insulator

### Applications Considerations

Standoff insulators are UL recognized as panelboard and switchboard accessories according to the requirements in UL 891 Annex G. Annex G of UL 891 allows for switchboard sections and current transformer compartments to achieve a high Short-Circuit Current Rating (SCCR) without having to test. The advantage for the switchboard manufacturer is that they can have numerous, custom bus bar configurations without having to test each one to get up to a 100kA SCCR. It also allows the manufacturer to use a wide variety of standoff insulators provided they comply with the brace and support requirements of UL 891 Annex G. The manufacturer may also substitute standoff insulators without having to perform any SCCR testing provided they are UL recognized to meet the requirements in UL 891 Annex G.

To achieve the SCCR's shown in table G3.1 below, customers need to follow the bus bar construction requirements in UL891 Annex G. For the support requirements of the bus bars, customers can use standoff insulators recognized to UL891 Annex G.

TABLE G3.1															
Max. RMS sym. short-circuit current	Min. ampere rating	Max. ampere rating	Max. voltage rating (single or three phase)	Min. bus bar width		Max. bus bar width		Bus Bars EE or FF	Number of Phases	Minimum Distance Between Opposite Polarity Bus Bars				Maximum Distance Between Supports or Fraction Thereof	
				in.	(mm)	in.	(mm)			Closest Point		Center to Center			
amps	amps	amps	volts	in.	(mm)	in.	(mm)			in.	(mm)	in.	(mm)	in.	(mm)
100,000	800	4,000	480	4	102	7	178	EE	3	1	25.4	5	127	21	533
									1	2	50.8	6	152		
100,000	800	4,000	480	4	102	7	178	FF	3	4	102	6	152	13	330
									1	5	127	7	178		
65,000	800	4,000	480	4	102	7	178	EE	3	1	25.4	5	127	21	533
									1	2	50.8	6	152		
50,000	800	4,000	480	2	51	4	102	EE	3	1-1/2	38.1	3-1/2	88.9	14	356
									1	2	50.8	6	152		
50,000	800	4,000	480	2	51	4	102	FF	3	4	102	6	152	21	533
									1	5	127	7	178		
42,000	200	1,500	480	2	51	4	102	EE	1,3	5	127	9	229	21	533

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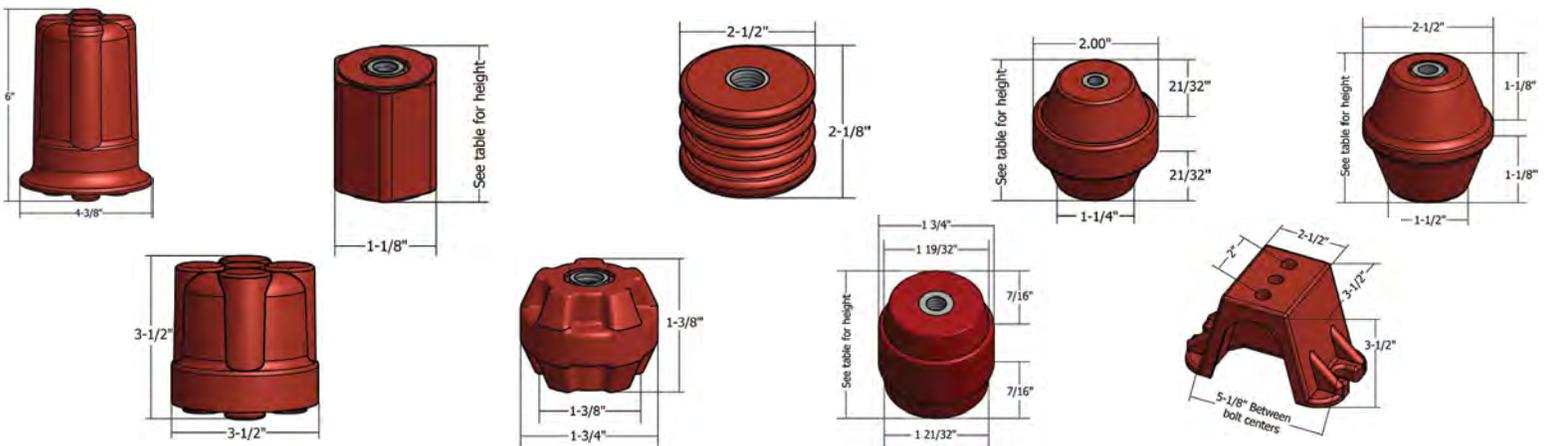
Section G4 covers the required performance of the standoff insulators. The standard is written to protect bus bar system from mechanical failures during short-circuit events, so standoff insulators are required to meet minimum tensile strength and minimum cantilever strength requirements. Standoffs need to withstand a minimum tensile force of 1850 lbs and a minimum cantilever force of 675 lbs.

By establishing minimum mechanical strength characteristics and minimum spacing requirements, the UL 891 standard is written to ensure that bus bars and supports are able to withstand the high mechanical stresses during a short-circuit. Standoff insulators UL recognized to meet the requirements of UL 891 Annex G under UL Category Code QEUY2 have been tested to meet the minimum tensile and cantilever force. Therefore, substitution of standoffs that comply with the brace and support requirements of UL 891 Annex G would be allowable without having to perform SCCR testing provided the spacings remained the same.



The attachment of the support of bus bars is covered in Annex G Section 3.3. The bolts used to secure the bus bar to a standoff insulator must be 3/8-16 steel or larger and torqued to 20 pound-feet. Standoff insulators that have inserts smaller than 3/8-16 may be used for support of live parts, but the assembly would have to be tested to achieve the high SCCR ratings. Any substitution of those standoffs insulators would likely require a new SCCR test.

The Gund Company offers a wide variety of standoff insulators UL recognized to UL 891 Annex G. The standoff insulators can be used in accordance with the requirements in UL 891 Annex G to achieve high short-circuit current ratings without having to perform tests. For more information on our product offering see our data sheet.



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