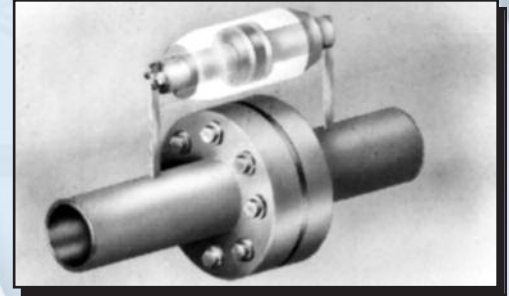


**PRODUCT INFORMATION: Surge-Seal®**

Product: Surge-Seal® Lightning/Surge Protector

End Users: Electrical Utilities
Pipeline Operators



Background: All power/electrical surges caused by lightning, AC fault or switching surge currents are reflected or refracted due to the change in surge impedance at isolating assemblies (*i.e. Flange or Monolithic Isolating Joints*), which can cause spark over at the isolating fitting. In addition, this phenomenon develops hazardous transient overvoltages.

The Rustrol® **Surge-Seal®** Protectors are specifically designed to utilize the non-linear characteristics of metal oxide ceramics to limit the structure (*i.e. pipeline*) with respect to utilities ground potential to within 50% of the withstand voltage of the isolating assemblies.

Applications: **Surge-Seal®** Protectors are used for:

- Mitigation of hazardous transient voltages across: cable sheath joint insulators, pipeline plastic jackets, sheath jacket insulations, sheath sectionalizing insulators.
 - Mitigation of circulating AC currents and induced AC voltages on electrically isolated pipelines, cables, and other structures exposed to electrical surges.
 - Cross-bonding of single conductor, self-contained cable systems; this is accomplished with regained confidence, due to the superior protection of the Rustrol® **Surge-Seal®** as installed between each cable cross-bonding lead and utility ground. The useful life of self-contained cable systems is greatly extended.
 - Prevention of damage to flange-type isolators, that isolate pipe-type power cables from SF6 compressed gas insulation (CGI) systems at terminal stations, in the event of an AC fault on the CGI system.
-

Advantages: **Safety:** The potential dangers of sparkover and shattering are avoided by the superior solid state construction and the modest energy absorption requirements of the uniquely developed **Surge-Seal®**.

Versatility: The **Surge-Seal®** Protector can be designed and selected to suit the specific electrical requirements of most applications.

Flexibility: The **Surge-Seal®** Protector can be installed to suit the End-Users' requirements; safely buried, installed in a chamber or mounted above ground at the isolating assembly.

Credibility: "The transient behaviour of a cross-bonded 230 kV cable circuit and a 115 kV cable circuit was investigated with the Electro-Magnetic Transients Program (EMTP) and good agreement with field test data was obtained".

Ref. Canadian Electrical Association, CEA 072-T223

Surge-Seal® Protector

Device Ratings & Characteristics

Model Number	Minimum Ratings (85°C)				Characteristics (25°C)				
	Continuous		Transient		Varistor Voltage @1mA DC Test Current			Maximum Clamping Voltage V _c ° (8/20μs)	Typical Capacitance
	RMS Voltage	DC Voltage	Energy (10/1000μs)	Peak Current (8/20μs)					
	V _{m(ac)}	V _{m(dc)}	W _{tm}	I _{tm}	Min.	V _N (dc)	Max.	V _c	f=1 MHz
Volts	Volts	Joules	Amps	Volts	Volts	Volts	Volts	Picofarads	
RV - 130	130	175	450	50000	184	200	228	345	20000
RV - 150	150	200	530	50000	212	240	268	405	16000
RV - 250	250	330	880	50000	354	390	429	620	10000
RV - 275	275	369	950	50000	389	430	473	680	9000
RV - 320	320	420	1100	50000	462	510	539	760	7500
RV - 420	420	560	1500	70000	610	680	748	1060	6000
RV - 480	480	640	1600	70000	670	750	825	1160	5500
RV - 510	510	675	1800	70000	735	820	910	1300	5000
RV - 575	575	730	2100	70000	805	910	1000	1420	4500
RV - 660	660	850	2300	70000	940	1050	1160	1640	4000
RV - 750	750	970	2600	70000	1080	1200	1320	1880	3500
RV - 880	880	1150	3200	70000	1290	1500	1650	2340	2700
RV - 1100	1100	1400	3200	70000	1620	1800	2060	2940	2200
RV - 1400	1400	1750	5000	70000	2020	2200	2550	3600	1800
RV - 1700	1700	2150	6000	70000	2500	2700	3030	4300	1500
RV - 2000	2000	2500	7500	70000	2970	3300	3630	5200	1200
RV - 2400	2400	3000	8600	70000	3510	3900	4290	6200	1000
RV - 2800	2800	3500	10000	70000	4230	4700	5170	7400	800

Interprovincial Corrosion Control Company Limited
Burlington, Ontario, Canada

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Surge Seal Brochure, Revision 5, Aug. 24, 2018

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DISCLAIMER: The information contained herein may not be suitable for every situation, the "End-User" acknowledges that every location is subject to unique electrical exposure. ICC shall not be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages. Any use thereof is at the End-User's independent discretion.