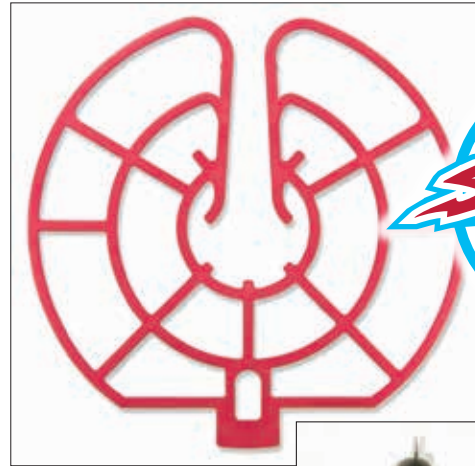


Minimize Animal-Related Outages

Rauckman's ZAPSHIELD™ & ZAPCOVER™ products use patented Rauck-Shock Technology™ engineered polymer to minimize the occurrences of animal-related electric service interruptions.



Animals are second only to weather as causes of outages

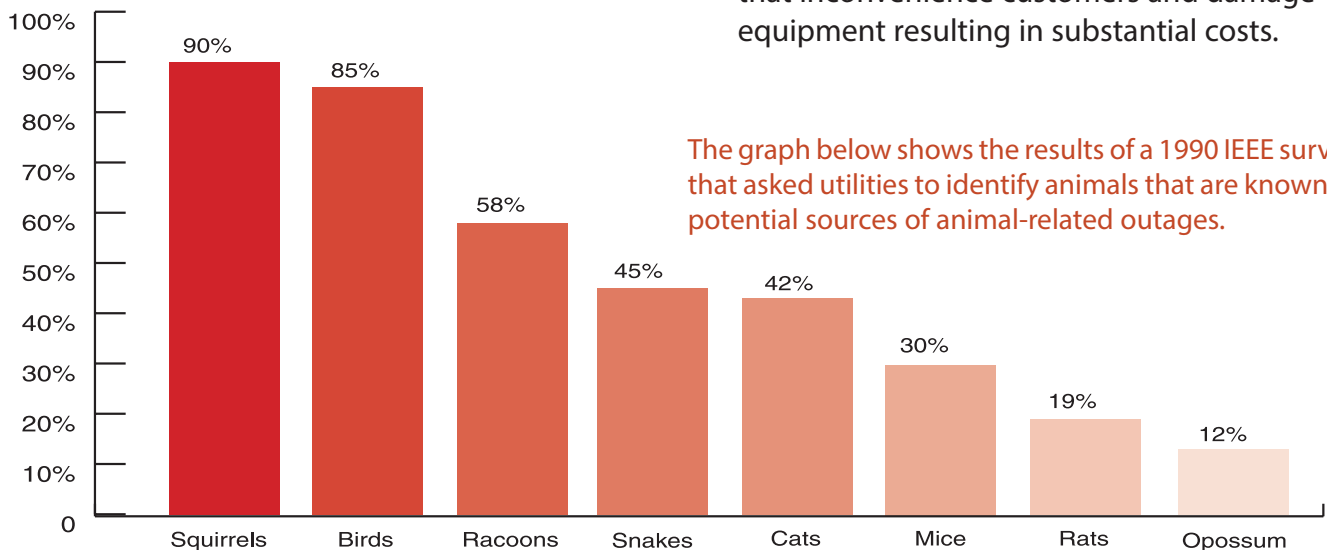


ZAPSHIELD
Model W-1525R



ZAPCOVER
Model R-778

Rauck-Shock polymer picks up a charge from the energized bushing that the product is mounted on and delivers a non-lethal electrostatic discharge when contacted by an animal. This trains the animals through negative response conditioning. After an animal receives a jolt from the ZAP polymer it soon learns to stay away from equipment bushings. This minimizes the animal-caused unplanned outages that inconvenience customers and damage equipment resulting in substantial costs.



The graph below shows the results of a 1990 IEEE survey that asked utilities to identify animals that are known or potential sources of animal-related outages.

Results of 1990 IEEE Utility Survey.

Reference: IEEE Std. 1264-1993. IEEE Guide for Animal Deterrents for Electric Power Supply Substations



Models W-1525R & W-1525G

ZAPSHIELD product is entirely made of Rauck-Shock polymer. It is designed to be installed on electric utilities' distribution & substation equipment bushings of 15 kV and 25 kV.

For other voltages consult factory.



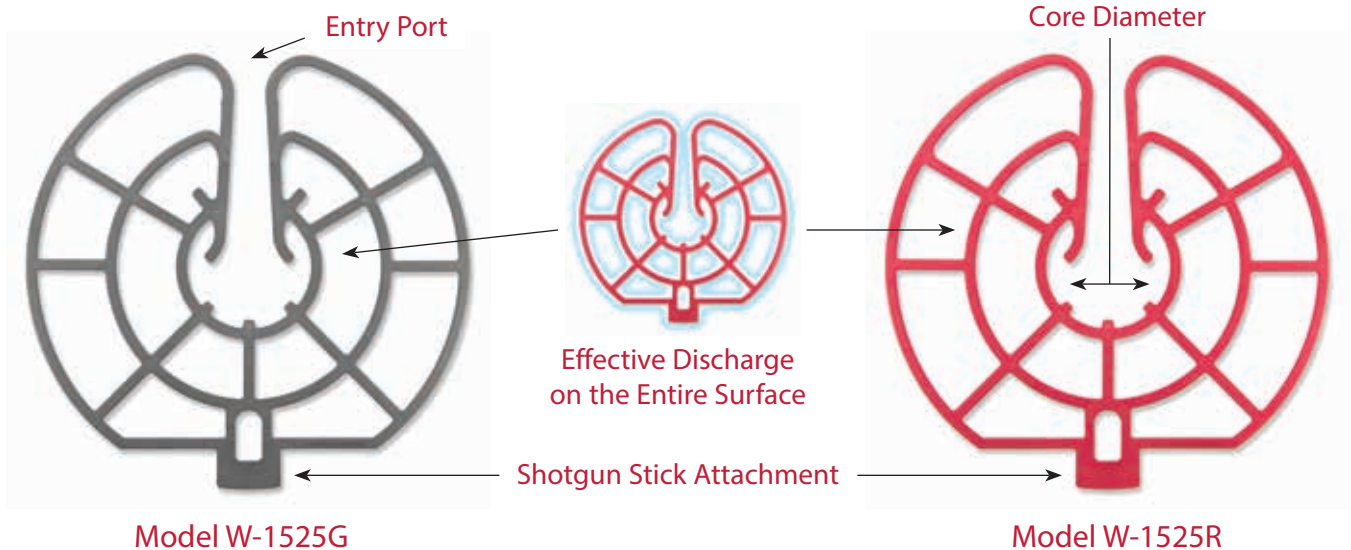
Model W-1525R ZAPshield on a Distribution Transformer



ZAPSHIELD can be installed using an All-Angle Pliers or a Shotgun Stick

Installation of ZAPSHIELD is quite simple and has the following features / benefits:

- » Can be installed hot and does not require an outage.
- » Use right out of the box, no hardware or assembly is required.
- » Requires only one shotgun style hotstick or all-angle pliers and universal hotstick.
- » Long life using engineered polymer technology for UV protection, track & flame resistance.



Model W-1525G

Model W-1525R

Catalog No.	Description	Overall Diameter *	Core Diameter Range (inches) *		Color	Quantity per Box
			Min.	Max.		
W-1525R	ZAPSHIELD Distribution, 10", Red	10.25 inch	1	2.75	Red	25
W-1525G	ZAPSHIELD Distribution, 10", Gray	10.25 inch	1	2.75	Gray	25

* Other Sizes are Available, Consult Factory

Models R-778 & R-778TC

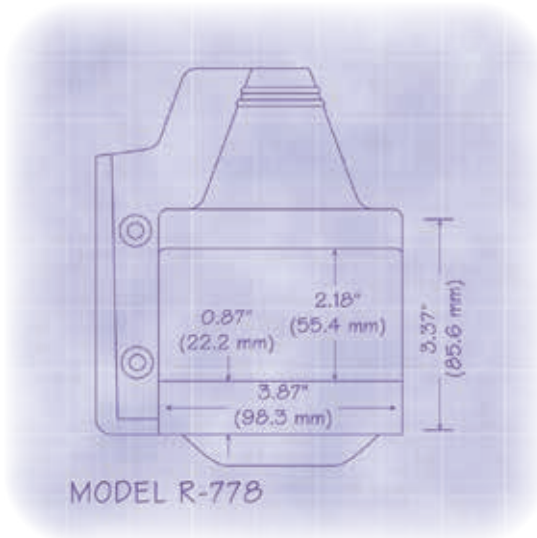


The **ZAPCOVER** is similar to other Rauckman Outage Protection covers in form and fit but is equipped with 2 Rauck-Shock polymer panels. The ZAPcover may be installed on distribution & substation equipment bushings of 15 kV and 25 kV. For other voltages consult factory.

For other voltages consult factory.



Model R-778 ZAPCOVER & Stinger Cover Combination

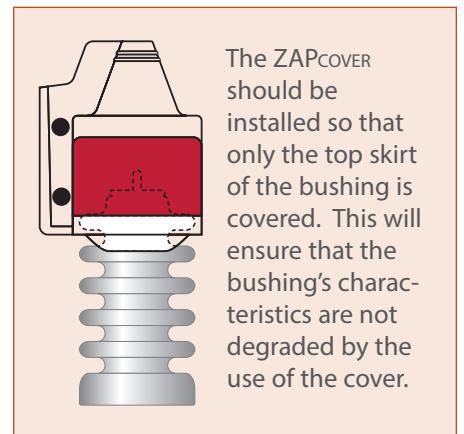


ZAPCOVER is made from a silicone enriched elastomer formulated specifically for the extreme requirements of the electric utility industry. Using a two-step injection molding process the red Zap panels share a molecular bond with the grey bushing cover. Button closures are UV stabilized. Kits that contain ZAPcovers and 18" long, 3/8", 5/8" or 3/4" diameter stinger covers are also available.



The **ZAPCOVER**, unlike traditional covers, has the following characteristics essential for flawless performance:

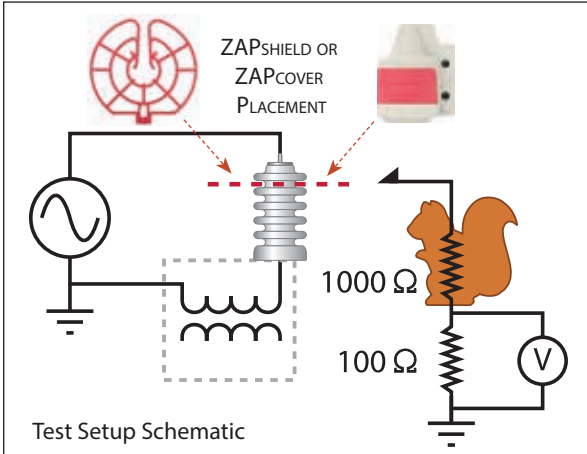
- » Higher Ultra-Violet (UV) stability including Hindered Amine Light Stabilization (HALS)
- » Superior Electrical Properties by using a track-resistant high dielectric material that remains stable even in the most severe environments
- » Flame Retardant properties certified to the V-0 criteria of Underwriters' Laboratory Standard of UL-94
- » The Zap panels have the same base polymer as the grey cover, but also contain special materials that provide the Rauck-Shock technology.



Catalog No.	Description	Quantity per Box
R-778	ZAPCOVER Only	24 pcs.
R-778CK38	ZAPCOVER Kit w/ 18" of 3/8" Dia. Stinger Cover	24 pcs.
R-778CK58	ZAPCOVER Kit w/ 18" of 5/8" Dia. Stinger Cover	24 pcs.
R-778CK34	ZAPCOVER Kit w/ 18" of 3/4" Dia. Stinger Cover	24 pcs.



THEORY

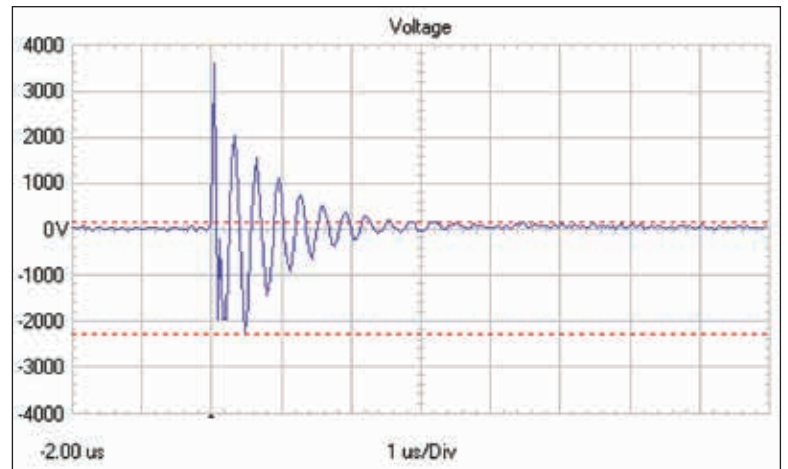


The **ZAPSHIELD** and **ZAPCOVER** are active animal deterrent devices that rely upon the electric field that is present on energized overhead lines. There does not need to be any load current for either of the two to operate. While in the proximity of the electric field the ZAP material stores an electrostatic charge. Once contacted by an animal the charge is dissipated through the animal. The animal is scared away and learns not to climb on equipment fitted with a **ZAPSHIELD** or **ZAPCOVER**.

The test setup shown uses a 1,000 Ohm resistor to represent the impedance of the squirrel or other small animal. The electrostatic discharge waveform can be captured using a storage type oscilloscope connected to a measurement resistor.

The waveform to the right shows that the peak voltage across the animal is as high as 3,600 volts, but is dissipated to a negligible level in approximately 2 micro-seconds. This waveform should be recognized by students of circuit analysis as a classic decaying waveform whose rate of decay is defined by an RC (resistive and capacitive) time constant.

Test Results 7,200 Volt Source



APPLICATION

No material is consumed with each Zap – so a **ZAPSHIELD** or a **ZAPCOVER** will never "wear-out". Once the electric field is removed by de-energizing the circuit the ZAP material is not capable of "holding" a residual charge.



Care should be taken when installing or a **ZAPCOVER** as the red panels should be treated as conductive.



Care should be taken when installing or removing a **ZAPSHIELD** as these devices should be treated as conductive.

The **ZAPSHIELD** and **ZAPCOVER** are covered by one or more of the following patents:

6,878,883 7,075,015 7,276,665 7,309,837 7,679,000

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