



AR Products

Solutions for Galloping and Vibration Control

AR®Spacer | Twister

Vibration Control for Lighter-Weight Single Conductors
Supplement to galloping control systems featuring the AR Twister, AR Lightweight or AR Spacer Damper



A vibration control and spacer damper, this solution for lighter-weight transmission lines works in concert with AR antigalloping dampers to control galloping AND maintain separation between phase conductors when the predicted galloping amplitude exceeds the available clearance. The AR Spacer Twister has two articulating clamps at each end of a polymer insulator.

APPLICATIONS

New transmission line designs are combining the features of lighter weight conductors having outer diameters of less than 1.0, on monopole structures with deep mid-span sags relative to span lengths and clearances. When the occasional span requires additional phase separation protection because of line design characteristics, AR Spacer Twisters may be paired with any AR antigalloping damper in a dual damper solution.

In these dual damper solutions, the AR antigalloping damper works to twist the conductor by inertia offset, both statically and dynamically and the Spacer Twister provides a light weight solution for guarding against clashing when the predicted galloping amplitude may exceed the available clearance.

HOW IT WORKS

The AR®Spacer Twister combines the benefits of the twisting action of the AR Clamp with the features of the polymer insulators. Insulators have a good track record for eliminating flashovers during galloping but they do not prevent galloping motion. AR Twisters have a track record for eliminating galloping of the line by forcing the conductor to twist and unload its aerodynamic lift.

Articulating Clamps fitted at the ends of a polymer insulator twist the single conductor when galloping events cause the conductor to move up and down.

Protection from Flashover. The primary purpose of the AR Spacer Twister is to guard against flashover when there is a deficit in phase clearance even after the application of a galloping control solution. The articulating clamps fitted at both ends is how the AR Spacer Twister provides galloping control.

The Spacer|Twister has eliminated breaker operations on treated spans up to 345kV.

PERFORMANCE TESTED

AR®Clamps have been strength tested at Helical Line Products. Slipping tests found clamp strength to exceed 1000 lbs.

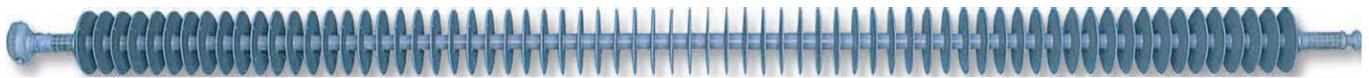
Insulator rods used in the AR Spacer Twister have been tested for compressive strength to establish column-buckling behavior. The tensile test of the 5/8" rod revealed an ultimate load of 35,000 lbs. The rods behave as an elastic column under compression load.

SPECIFICATIONS

Component	Weight	Conductor	Clamp Sizes	Insulator Lengths	Application
AR Clamp	4 lbs.	0.625" - 1.80"	15/16" to 1-7/16"		Single and bundled conductor; horizontal or vertical
Insulator	12 lbs.	0.625"-1.80"		10 ft. – 15 ft.	
Hardware	1 lb.	1..75" flat washers; 5/8–3" bolts, ANCO pin, lock washers			

CONSTRUCTION

Clamps are aluminum castings; insulator is comprised of polymer core with high grade forged steel fittings; hardware is HDG steel. End fittings are tongue-tongue.



NGK-Locke polymer suspension insulator, standard shed, tongue fittings secured to AR Clamps with HDG hardware.



AR Clamps are sized to the conductor and installed over armor rods. The articulating feature lets the clamps rotate through large angles, allowing the conductor to twist. This dynamic motion dumps off aerodynamic lift and reduces galloping motion.

In collaboration with the client’s project engineer, up to 3 models of varying lengths can be customized to accommodate span lengths, phase clearance, sag depths and other unique characteristics of the line.

Note: The AR Spacer Twister is designed for use with Armor Rods. Armor Rod specifications will be included in the recommendations for the galloping control solution together with specifications for the AR Spacer Twister model, number of units and placement on the phases of the transmission line.