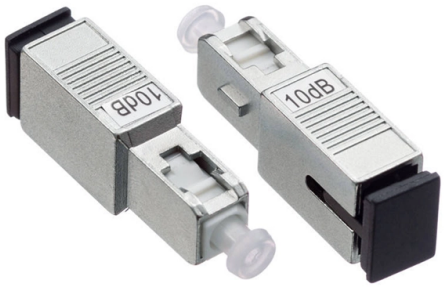
Optical cable vibration damping string



Overview

AVD Series Spiral Vibration Dampers | AFL GlobalAFL's AVD Series Spiral Vibration Dampers are designed to eliminate the damage caused by Aeolian vibration.

Key Takeaways

Vibration damping strings, such as Stockbridge-type and spiral dampers, are used to protect optical cables from wind-induced vibrations and fatigue, extending cable service life.

Purpose of Vibration Dampers

Optical cables installed on overhead lines, including ADSS (All-Dielectric Self-Supporting) and OPGW (Optical Ground Wire), are susceptible to aeolian vibrations caused by wind. These vibrations can lead to fatigue damage, signal loss, and reduced cable lifespan. Vibration dampers are installed to absorb and dissipate vibrational energy, preventing excessive movement and stress on the cable ( ).

Types of Dampers1.

Stockbridge-

Type Dampers

Consist of a messenger cable with two masses at the ends attached to the optical cable via a clamp. Designed to excite multiple resonance modes within the cable's dangerous frequency range, flattening resonance peaks and providing wide frequency energy dissipation. Variants like the 4D Stockbridge damper have four resonant frequencies ranging from 3 Hz to 150 Hz, effectively reducing horizontal vibrations and extending cable life ( ).

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2.

Spiral Vibration Dampers

Feature a helically-formed damping section that interacts with the cable to oppose natural vibration waves. Include a gripping section that gently holds the cable without damaging the fiber or causing optical signal loss. Recommended for spans and tensions where vibration protection is required, particularly for ADSS cables ( ).

Installation Considerations

Dampers must be installed at critical spans where vibration is most likely. Non-slip designs with armor rods or helical clips ensure proper stress distribution and prevent slippage, which could otherwise increase cable damage ( ). The number and placement of dampers should exceed the minimum requirement to ensure safety and effective vibration mitigation.

Materials used include stainless steel, aluminum, and weather-resistant plastics, chosen for durability and corrosion resistance ( ).

Mechanism of Action

Stockbridge dampers dissipate energy through the movement of masses, exciting multiple vibration modes. Spiral dampers dissipate energy by bending the cable strand, causing internal friction between wires. Both types reduce the amplitude of vibrations, protecting the optical fibers and maintaining signal integrity ( ).

Summary

Vibration damping strings are essential for overhead optical cables to prevent wind-induced fatigue and extend service life. Stockbridge-type dampers are effective for multi-frequency energy dissipation, while spiral dampers provide gentle, non-damaging protection for ADSS cables. Proper installation, including the use of armor rods and correct placement, ensures maximum effectiveness and cable longevity ( ).

Article Content

AVD Series Spiral Vibration Dampers | AFL Global

AFL''s AVD Series Spiral Vibration Dampers are designed to eliminate the damage caused by Aeolian vibration and reduce overall vibration on bare All-Dielectric Self-Supporting (ADSS) cables. Made of

Dampers for Stay Cables

Depending on the respective cable parameters, each cable is more or less prone to vibration. Longer cables are more likely to vibrate than short ones. By

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Cable Vibration & Damping Evaluation | DYWIDAG

DYWIDAG offers vibration measurement for tension members to quickly and efficiently determine both cable forces and damping values. A 3-dimensional accelerometer, placed on the cable, registers its

AVD Series Spiral Vibration Dampers

AFL''s AVD Series Spiral Vibration Dampers are designed to eliminate the damage caused by Aeolian vibration and reduce overall vibration on bare All-Dielectric Self-Supporting (ADSS) cables. Made of

Damping in stay cable with damper: Practical universal damping curve ...

Full-scale measurement of cable vibration (cable length of up to 200 m), and damping analysis were presented. This paper includes two main parts which are the development of a

Spiral Vibration Damper for ADSS Cable | AFL Global

Spiral vibration dampers have a helically-formed damping section sized for interplay of damper and cable to provide the action/reaction motion that opposed the natural vibration wave.

Stay cable vibration mitigation: A review

This paper presents a comprehensive review of recent advances in stay cable vibration mitigation, including theoretical modeling of cable damping system and techniques for enhancing

Dampers for fibre optic cable | SAPREM

This damper is especially designed for installation with ADSS fibre optic cables, improving the performance of the conventional stockbridge vibration damper when used with this kind of cables.

Spiral Vibration Dampers for ADSS Cables

Effective spiral vibration dampers to protect ADSS and aerial fiber optic cables from wind-induced fatigue, ensuring long-term reliability.

(PDF) Optical Measurement of Cable and String Vibration

It is demonstrated experimentally, that a force feedback control law based on a collocated force sensor measuring the tension in the cable is feasible and provides active damping in the cable.

Spiral Shockproof Whip ADSS Cable Vibration Dampers

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Spiral Vibration Damper is made of high-strength, antigenic and high-elasticity PVC plastic, easy to be installed on ADSS cables and OPGW cables

Spiral Vibration Damper for ADSS Cable

Spark Fittings offers a range of high-quality solutions tailored specifically for enhancing the performance of ADSS cables through advanced vibration

Optical Measurement of Cable and String Vibration

On the other hand, the optical sensor is used to evaluate the performance of an active tendon control algorithm with guaranteed stability properties. It is demonstrated experimentally, that a force

Experimental and Analytical Investigation of Carbon Fiber Cable ...

For structures deployed in space using cables where vibration damping is critical for structural stability, cable damping is significant to structural performance. To provide a better

Propagation of the Uncertainty in the Dynamic Behavior of OPGW Cables ...

In this sense, projects should contemplate higher requirements for vibration damping employing Stockbridge dampers since the fiber optic cable is more sensitive to the consequences of

ADSS Optical Cable Spiral Protection Strip Helical

Function: Use its anti-vibration part to dampen wind vibration, consume or attenuate the vibration energy generated by the laminar wind during

Spiral vibration dampers uses, features, and specifications

Explore spiral vibration dampers, their key uses, components, and technical specifications that protect and enhance power line performance.

Modeling vibration response and damping of cables and cabled structures ...

In an effort to model the vibration response of cabled structures, the distributed transfer function method is developed to model cables and a simple cabled structure. The model includes

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