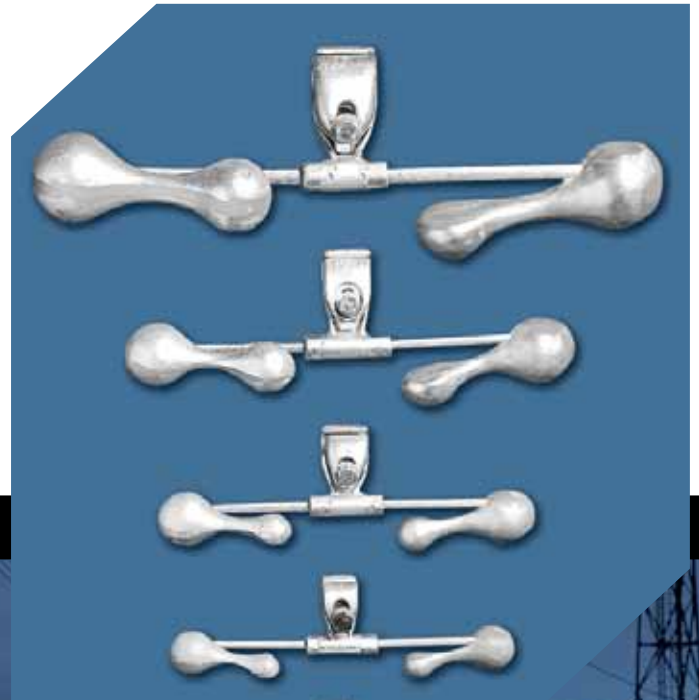





PREFORMED LINE PRODUCTS
The connection you can count on.


DOGBONE® VIBRATION DAMPER



 COMMUNICATIONS

 ENERGY

 SPECIAL INDUSTRIES

 SOLAR

PLP Motion Control Products DOGBONE® Vibration Damper



PLP is the Recognized Leader in Conductor Protection

Much of PLP's business developed from its over 60 years of studying and analyzing the effects of wind-induced conductor motion. It began in 1947 with PREFORMED™ Armor Rods, originally designed to protect power cables from abrasion and fatigue. PLP products are continually tested and evaluated, both in the laboratory and in the field to provide customers with the finest product possible whether in support systems or motion control.

The worldwide group of PLP companies have offered a number of motion control designs over time. Most are unique in design and offer excellent conductor protection for their specific purpose.



Contoured Clamp

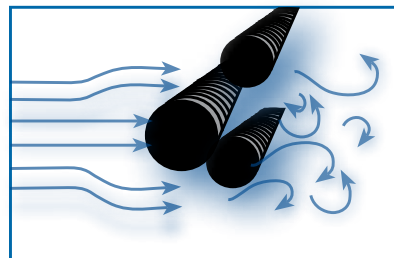
Aeolian Vibration – Its Affect on Conductor

Aeolian vibration is a high frequency, low amplitude motion caused by smooth laminar winds flowing across a cable. When conductors or cables are exposed to this wind type, a phenomenon known as “vortex” shedding occurs. Vortex, or “eddy” shedding as it is also known, creates an alternating pressure imbalance above and below the conductor, inducing it to oscillate up and down at right angles to the direction of air flow. These vibrations take the form of discrete standing waves that can cause support hardware breakdown, conductor fatigue, abrasion, and eventually conductor failure. Although potentially very destructive, these high frequency (>5Hz), low amplitude (<1 cable diameter) standing waves are almost invisible to the naked eye and require special instrumentation to detect their severity.

In terms of the frequencies observed, Aeolian vibration is directly related to the laminar wind velocity and is inversely related to the diameter of the cable. Thus, the higher the wind speed or the smaller diameter of wire, the higher the vibration frequency.



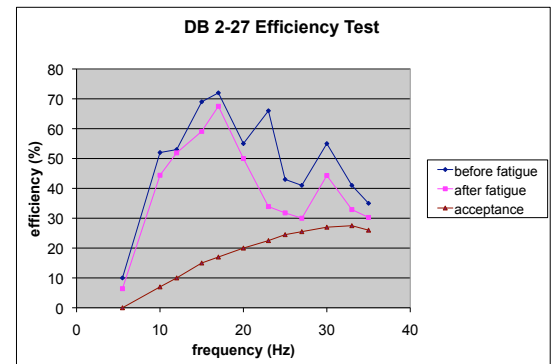
Technical Support - when you need it!



The DOGBONE Vibration Damper Reduces Aeolian Vibration

DOGBONE vibration dampers are designed to eliminate conductor fatigue damage and line maintenance costs by effectively diminishing aeolian vibration. The messenger cable and unique “dog bone” shape of the masses are designed to achieve optimal energy dissipation for minimal clamp movement. The messenger cable and DOGBONE weights are sized to give additional resonant modes and wider effective frequency response. The mechanical impedance of the damper is matched to the conductor to optimize performance. The offset DOGBONE shaped masses introduces a torsional mode of vibration damping not present in conventional Stockbridge type dampers.

The range of DOGBONE vibration dampers results from extensive experience and research in the field of conductor vibration control. The DOGBONE damper concept is based on the known and proven principles of the Stockbridge damper but embodies improvements which increase both power dissipation and range of frequency response beyond those of standard Stockbridge types. The performance of the DOGBONE vibration damper has been further improved using the latest CIGRE and IEEE recommended methods including I.S.W.R. Power Dissipation and Mechanical Impedance Testing.



PLP Motion Control Products

DOGBONE® Vibration Damper

Features

- The messenger cable – The 19 strand messenger cable provides greater energy dissipation at small amplitudes of flexure. Consequently, as the DOGBONE vibration damper has improved efficiency at low amplitudes of conductor vibration, the possibility of high amplitude vibration is reduced. 19 strand messenger also improves fatigue performance.
- The damper attachment clamp – It provides adequate slip strength without imposing excessive clamping pressure on the conductor. The DOGBONE damper clamp design incorporating an aluminum shear head bolt, not only fulfills the above requirements but offers the additional benefits of uniformity of installation, compatibility of materials and inspection of installed dampers from ground level. The shear head bolt is an option that allows the customer to avoid over tightening the damper clamp on a conductor or fiber optic cable. To minimize R.I.V. and corona discharge, the DOGBONE vibration damper clamp incorporates generous bending radii and a recessed keeper to shield the bolt head.
- The DOGBONE masses – In order to achieve maximum energy dissipation, it is desirable to introduce as many resonant modes of vibration in the damper as possible. The offset DOGBONE shaped weight introduces a torsional mode of

vibration which combines with the normal bending modes to produce additional coupled modes of vibration.

Damper Installation

DOGBONE clamp assembly is range taking and is capable of being installed by hand or using live line installation techniques without the need to disassemble the clamp. Application instructions are supplied with each order which include the recommended installation procedure and bolt torque.

Technical Support & Product Recommendations

PLP is known worldwide for quality technical support. PLP's field representatives can help determine the cause and effects of wind-induced motion and help find a solution to this problem.

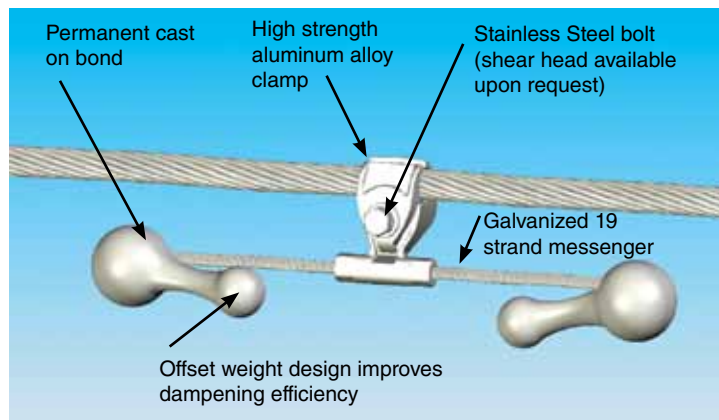
In cases where DOGBONE Vibration dampers are requested, PLP can provide the proper size, quantity, and optimal placement locations to best reduce Aeolian vibration. For some damper installations (such as cables incorporating fiber optics), dampers should be installed over a set of protective factory formed rods. PLP Protector Rods are offered for this purpose and combine structural reinforcement with a relatively short length.



PLP Laboratory



DOGBONE Testing





To correctly find the proper DOGBONE® Damper for your application, follow the key below.

DOGBONE DAMPER
Catalog Number Selection:

Product Code

"DB" – DOGBONE Damper.

DB2 - 27 SH

Weight Combination

(05, 1, 2, etc.):
 Weight selection based on
 cable diameter.

Shear Head Bolt Option:

Include an "SH" to order damper with
 break-away Shear-Head bolt.

Clamp Code

(06, 09, 12, 15, 18, 21, 27, 30, 34, etc.)
 Clamp Selection based on cable diameter.



Catalog Number	Range		Overall Length		Clamp, Keeper and Bolts Weight		Weight per Mass	
	inches	mm	inches	mm	lb	kg	lb	kg
DB05-06	0.250 - 0.370	6.35 - 9.40	14.2	362	0.41	0.2	1.1	0.5
DB05-09	0.371 - 0.490	9.42 - 12.45	14.2	362	0.44	0.2	1.1	0.5
DB05-12	0.491 - 0.600	12.47 - 15.24	14.7	375	0.44	0.2	1.1	0.5
DB05-15	0.601 - 0.710	15.27 - 18.03	14.7	375	0.44	0.2	1.1	0.5
DB1-15	0.601 - 0.710	15.26 - 18.03	16.4	417	0.44	0.2	2.2	1.0
DB1-18	0.711 - 0.860	18.06 - 21.84	16.4	417	0.66	0.3	2.2	1.0
DB1-21	0.861 - 0.950	21.87 - 24.13	16.4	417	0.88	0.4	2.2	1.0
DB2-27	1.091 - 1.210	27.71 - 30.73	18.8	478	1.32	0.6	4.4	2.0
DB2-30	1.211 - 1.330	30.75 - 33.78	18.8	478	1.32	0.6	4.4	2.0
DB2-34	1.331 - 1.486	33.81 - 37.74	18.8	478	1.54	0.7	4.4	2.0



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