



SPIRAL VIBRATION DAMPERS FOR AAC, AAAC, ACSR, COPPER, SC/AC & SC/GZ CONDUCTORS



Made from high impact, UV resistant, polyvinyl chloride (PVC), they are non-corrosive and do not abrade the conductor or require engineering calculations for positioning. Vibration dampers are designed to reduce cable vibration at tangent supports and DEAD-END positions. The degree of protection needed on a specific line depends upon a number of factors such as line design, temperature, tension and exposure to the wind flow. Please make PLP aware of any previous vibration problems or concerns in the area.

Part Number	Conductor Diameter Range (mm)	Standard Pack Quantity	Colour Code
SVD0441	4.41-6.34	25	Red
SVD0635	6.35-8.29	25	Blue
SVD0830 (PLP0104)	8.30-11.72	25	Black
SVD1173 (PLP0105)	11.73-14.31	25	Yellow
SVD1432	14.32-19.30	8	Green

SPIRAL VIBRATION DAMPER PLACEMENT GUIDE

Span Length (m)	Standard SVD Quantities
0 - 244	2
245 - 488	4
489 - 732	6
733 - 976	8
977 - 1220	10

- SVDs may be subset together in sets of up to 3 apiece; do not place more than three SVDs together in a subset as this can cause them to bind and reduce their overall effectiveness.
- SVDs have the advantage of being placement independent and may be placed at either end of the span, or on both ends if so desired. However, please note that SVDs are designed to be placed directly on to the conductor or shield wire and not on to rods or attachment hardware. As a general recommendation, place SVDs on the bare conductor or shield wire approximately one hand's width away from suspension rods, dead-end rods, ties, etc.
- Please consult PLP for recommendations when you have:
 - * Flat open Terrain, river or gully crossings
 - * Tensions are greater than 20% UTS
 - * Aerial warning spheres are installed

PROTECTION



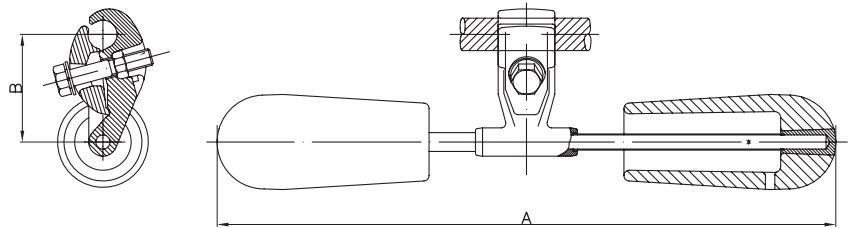
STOCKBRIDGE VIBRATION DAMPER



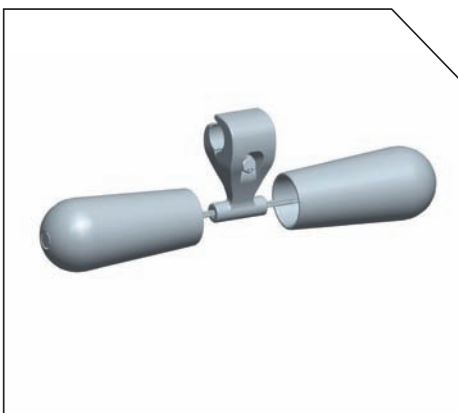
Material: Aluminium + Galvanized Steel

BRITISH STANDARD (BS)

Part Number	Drawing Number	Conductor	A (mm)	B (mm)	Bolt Dia. (mm)
907230-000	DK63001	LYNX-KEZIAH	546	95	Ø16
A40882-000	C-1895594	UPAS	546	95	Ø16
500044-000	DK63004	ZEBRA	546	95	Ø16
559464-000	DK63003	RUBUS	546	95	Ø16
CF6265-000	DK60082	SORBUS	524	95	Ø16
727598-000	DK63000	ARAUCARIA	550	110	Ø16
CG4207-000	C-1984770	REDWOOD	550	110	Ø16
431784-000	DK63002	MATTHEW	550	95	Ø16
CM0993-000	C-2037583	625SQ.MM TAAAC	546	95	Ø16
D15041-000	C-1830114	OPGW KEZI-AH-LUMPI	546	95	Ø16

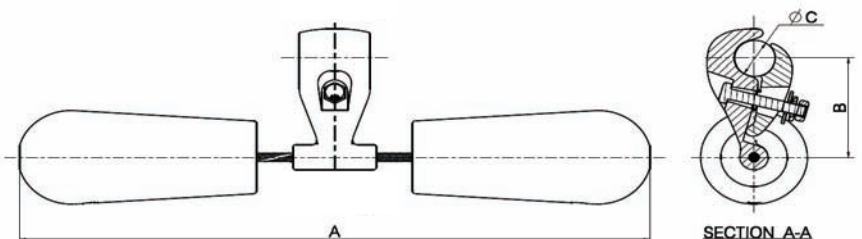


STOCKBRIDGE VIBRATION DAMPER

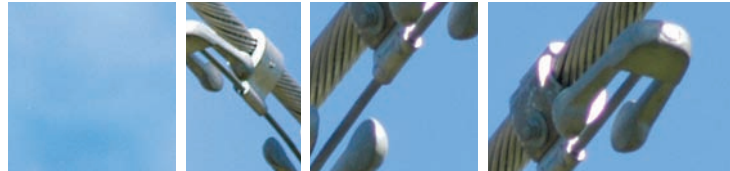


Material: Aluminium + Galvanized Steel

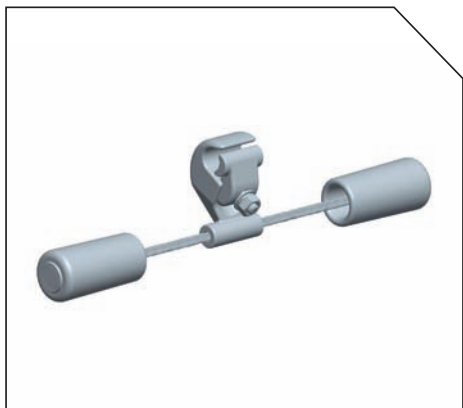
Part Number	Drawing Number	Weight (Pound)	A (mm)	B (mm)	C Conductor (mm)
CA7522-000	A4DD15650T	7	520	95	27.0 - 32.8
CA5869-000	A4DD15539T	7	540	80	21.1 - 31.0
E17131-000	A4DD14270T	9	482	95	32.8-36.8



PROTECTION

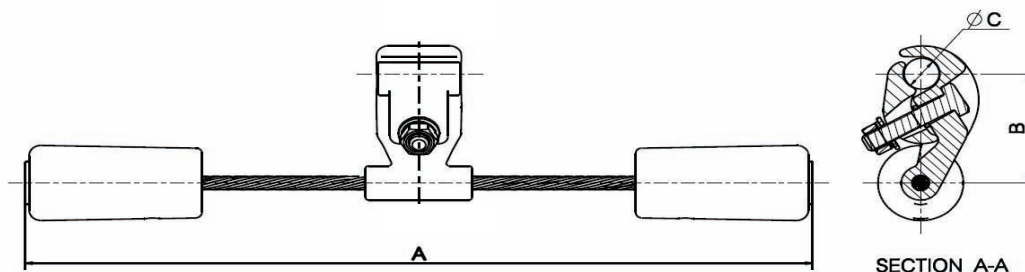


STOCKBRIDGE VIBRATION DAMPER



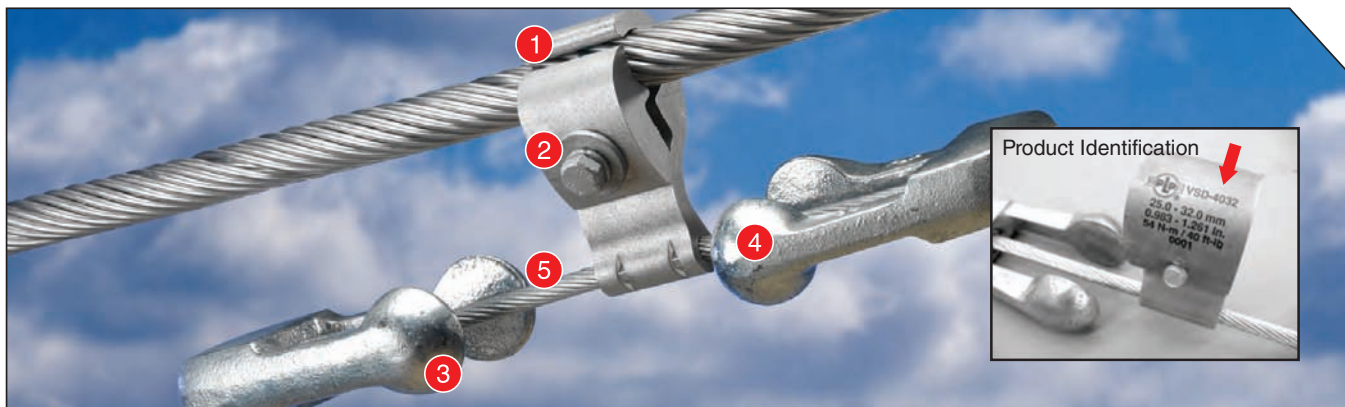
Material: Aluminium + Galvanized Steel

Part Number	Drawing Number	Weight (Pound)	A (mm)	B (mm)	C Conductor (mm)
E65148-000	A4DD15518T	1.5	412	53	7.5 - 10.0
177760-000	A4DD3601T	1.5	405	52	7.6 - 11.94
363548-000	A4DD15519T	1.5	412	53	10.1 - 12.0
CG8506-000	A4DD15520T	1.5	427	60	12.1 - 15.0
308446-000	A4DD07486T	1.5	405	64	15.0 - 19.5
A56175-000	A4DD15495T	1.5	425	60	15.1 - 18.0
608514-000	A4DD16741T	1.5	425	65	18.1 - 21.0
F65768-000	A4DD15511T	1.5	425	65	18.1 - 21.0
CM2143-000	A4DD16613T	2	455	56	12.0 - 15.0
CF2233-000	A4DD15524T	2	440	60	15.1 - 18.0
C56861-000	A4DD11529T	2	420	82.5	18.0 - 25.0
110606-000	A4DD15522T	2	440	65	18.1 - 21.0
A78181-000	A4DD15521T	2	455	65	21.1 - 24.0
442262-000	A4DD1030T	5	511	82.5	17.8 - 24.6
CA2418-000	A4DD15525T	5	546	80	24.1 - 27.0
A72877-000	A4DD12101T	5	511	95	27.0 - 32.8
729724-000	A3DD4670T	6	460	82.5	17.8 - 24.6
568494-000	A4DD07640T	6	511	82.5	24.6 - 28.9
A62626-000	A4DD12821T	6	460	82.5	24.6 - 28.9





VORTX™ VIBRATION DAMPER: GENERAL RECOMMENDATIONS



1. Clamp & Keeper: The Clamp has an extruded hook shaped profile to hang onto the cable or conductor while tightening the keeper. Together, the aluminum keeper and clamp capture the conductor to hold the damper assembly firmly onto the conductor or cable. Product identification, installation torque, and lot number are permanently etched on the clamp.

2. Bolt, Washer, and Lock Washer: The bolt, washer, and lock washer are used to fasten the keeper to the clamp and secure the entire damper assembly to the cable or conductor. The materials used are galvanized steel. An optional break-away bolt version is available.

3. Large Damper Weight: The VORTX damper design shown above has two weight sizes – this provides up to 4 resonant response frequencies (two for the large weight and two for the small weight) for more effective protection. The weight is a galvanized ductile iron casting.

4. Small Damper Weight: The small weight provides damping at higher frequencies. The weight is a galvanized ductile iron casting.

5. Messenger: The messenger is made of formed hard steel wires that are galvanized for corrosion resistance.

INTENDED USE:

VORTX Dampers respond to wind induced line vibration that is characterized by high frequency, low amplitude motion a.k.a. aeolian vibration. The VORTX damper with Large and Small weights can achieve greater power dissipation and frequency response performance than “symmetrical weight” Stockbridge damper designs. Wider frequency coverage translates into better protection as energy is more effectively dissipated over the entire range of conductor/cable frequencies.

APPLICATION:

VORTX Dampers can be clamped directly onto most aluminum based conductors including ACSR, AAC, AAAC and ACAR. PLP® Protector Rods should be considered for applications on aluminum conductors with relatively soft outer aluminum strand construction such as ACSS. Protector rods are designed to reduce direct clamping stress on cable vulnerable to surface or core damage – this includes fiber optic cable designs such as ADSS and OPGW.

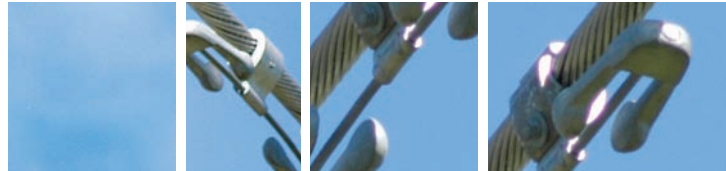
CONDUCTOR/CABLE SIZE:

Generally as conductors and cables increase in size they tend to vibrate at lower frequencies. The VORTX Damper is more effective for larger size conductors while the Spiral Vibration Dampers (SVD) are generally more effective for the smaller diameter cables that can vibrate at much higher frequencies. The following table provides a general recommendation for VORTX dampers and Spiral Vibration Damper's based on conductor or cable size (see table on next page):

The degree of protection required on a specific line depends upon a number of factors such as line design, local climate, tension, exposure to wind flow, and line vibration history in the area. With assistance from your local PLP Sales Representative, the necessary information can be assembled for review and followed up with detailed PLP recommendations for your system.

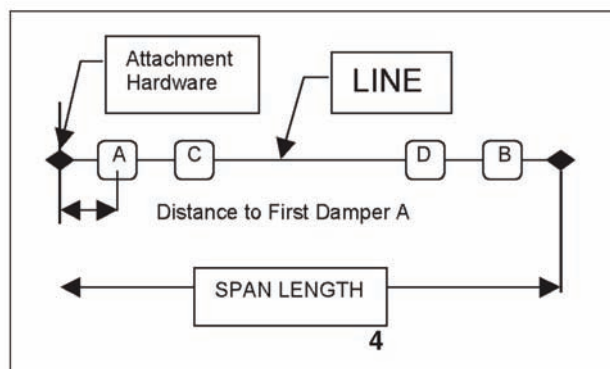
Thermal Rating (Continuous) 125°C
250°C when applied over Protector Rods

PROTECTION



VORTX™ VIBRATION DAMPER: GENERAL RECOMMENDATIONS

Application	Outer Diameter	Recommended Damper Product
Conductor OHSW and OPGW	Up to 0.75" (19 mm)	SVD
	over 0.75" (19 mm)	VORTX
ADSS	up to 1.25" (32 mm)	SVD
	over 1.25" (32 mm)	VORTX



DAMPERS PER SPAN:

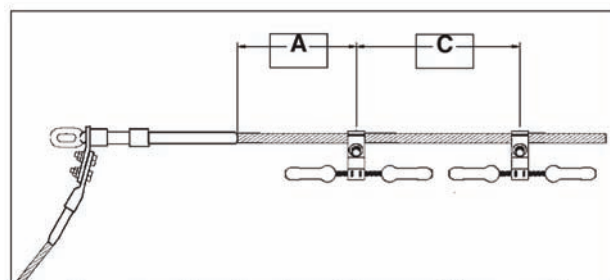
The recommended number of dampers per span depends on the amount of wind energy exposure and the conductor/cable characteristics. Self-Damping is a conductor or cable characteristic attributed to component material and construction. For example, the individual metal strands that make up a conductor can move relative to one-another and dissipate energy (much the same way as the messenger does in the damper). Increasing line tension, however, will decrease self-dampening as the individual strands begin to lock together. Single Dampers are capable of a predetermined amount of energy dissipation that can protect spans approximately 300 meters (1000 feet) long or more considering self dampening. Longer spans may require more than one damper.

DAMPER PLACEMENT:

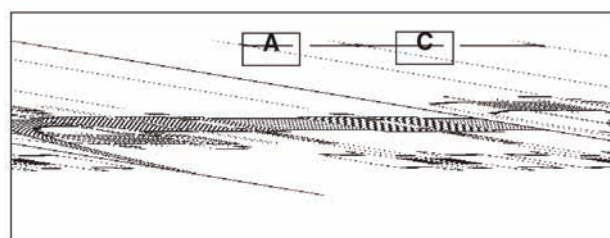
VORTX dampers have specific performance characteristics that require strategic placement on the line to counter potential damage to the line system. Placement information shall be provided to assure that the damper will bring effective protection. Placement information refers to locations A, B, C, and D for the first four dampers as measured from the respective hardware. Longer spans that require additional protection may require dampers placed MID-SPAN. In many cases extremely long spans extend over rivers, and require additional protection due to high laminar wind speeds.

The general placement sequence is typical for spans with tangent hardware at both ends. Unlike tangent hardware, Dead-ends are not symmetric about the point of attachment on the structure. Thus it is difficult to determine the most effective placement location for single dampers.

If dampers must be placed at Dead-end hardware, the sequence requires dampers at A and C (or B and D) i.e. two dampers for single damper placement as shown below:



Compression Dead-end Damper Placement



FIBERLIGN® Dead-end Damper Placement

PERFORMANCE QUALIFICATION:

VORTX Dampers meet the requirements of International Standard IEC 61897. This standard includes levels of acceptable performance for Forced Response, Fatigue, Weight Pull-off, Messenger Pull-out, Damper Efficiency, Corrosion Resistance, Bolt Torque, Clamp Slip, and Corona. Response curves and test reports can be provided upon request.

PROTECTION



VORTX™ VIBRATION DAMPER



Note: Outlined rows below represent dampers that in most cases are directly applied to ACSR, ACAR, ACCR, and AAAC conductors without armor or other protective rods.

Verify the appropriate weight code for the specific conductor in the catalog table entitled "Weight Combination for Conductor and Shield Wire Sizes" or otherwise contact PLP technical support.

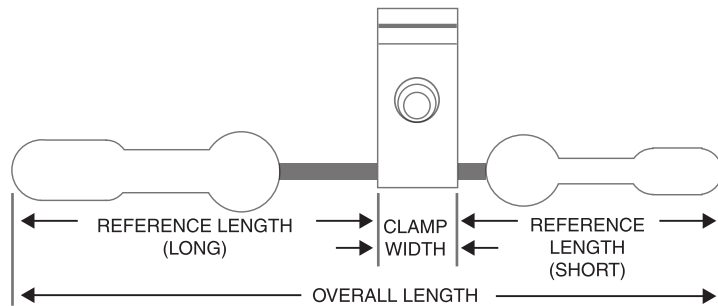
VSD - 40 32 B

"VSD" – Vortex (Stockbridge) Damper

Weight Combination (20, 25, 35, 40, 50)
Weight selection is based on appropriate impedance for respective conductor or cable.

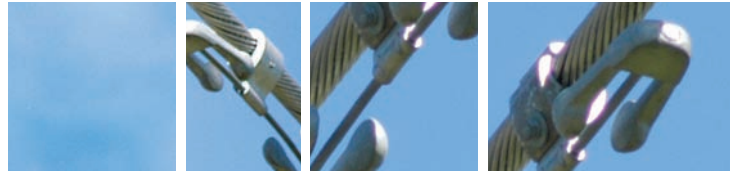
Clamp Code (16, 20, 25, 32, 40, 50, 61)
The clamp code represents the top end of the clamp range or maximum accepted cable diameter in millimeters.

Include only for optional design with break-away bolt.



VORTX DAMPER DETAILS FOR CONDUCTOR AND SHIELD WIRE APPLICATIONS

Part Number	Clamp Range (Inches)		Clamp Range (mm)		Overall Length		Reference Length (long)		Clamp Width		Bolt Size	Install Torque		Assembled Weight	
	Min	Max	Min	Max	in	mm	in	mm	in	mm		mm	Ft-lb	N-m	lb
VSD-2016	0.483	0.612	12.3	15.5	14.6	370	6.9	175	1.630	41.4	M10 X 50	30	41	3.6	1.6
VSD-2020	0.612	0.786	15.5	20.0	14.9	379	6.9	175	2.000	50.8	M10 X 50	30	41	3.9	1.8
VSD-2025	0.786	0.983	20.0	25.0	14.9	379	6.9	175	2.000	50.8	M10 X 50	30	41	4	1.8
VSD-2032	0.983	1.261	25.0	32.0	15.1	384	6.9	175	2.200	55.9	M12 X 70	40	54	4.4	2
VSD-2040	1.261	1.579	32.0	40.1	15.3	389	6.9	175	2.380	60.5	M12 X 70	40	54	4.6	2.1
VSD-2050	1.579	1.970	40.1	50.0	15.4	392	6.9	175	2.500	63.5	M12 X 70	40	54	4.9	2.2
VSD-2520	0.612	0.786	15.5	20.0	12.7	322	6.4	161	2.000	50.8	M10 X 50	30	41	4.9	2.2
VSD-2525	0.786	0.983	20.0	25.0	12.7	322	6.4	161	2.000	50.8	M10 X 50	30	41	5	2.3
VSD-2532	0.983	1.261	25.0	32.0	12.9	327	6.4	161	2.200	55.9	M12 X 70	40	54	5.4	2.5
VSD-2540	1.261	1.579	32.0	40.1	13.1	332	6.4	161	2.380	60.5	M12 X 70	40	54	5.7	2.6
VSD-3525	0.786	0.983	20.0	25.0	14.7	374	7.0	179	2.000	50.8	M10 X 50	30	41	7.3	3.3
VSD-3532	0.983	1.261	25.0	32.0	14.9	379	7.0	179	2.200	55.9	M12 X 70	40	54	7.7	3.5
VSD-3540	1.261	1.579	32.0	40.1	15.1	384	7.0	179	2.380	60.5	M12 X 70	40	54	7.9	3.6
VSD-3550	1.579	1.970	40.1	50.0	15.2	387	7.0	179	2.500	63.5	M12 X 70	40	54	8.2	3.7
VSD-4032	0.983	1.261	25.0	32.0	20.3	515	10.5	267	2.200	55.9	M12 X 70	40	54	10.8	4.9
VSD-4040	1.261	1.579	32.0	40.1	20.4	519	10.5	267	2.380	60.5	M12 X 70	40	54	11.1	5
VSD-4050	1.579	1.970	40.1	50.0	20.6	523	10.5	267	2.500	63.5	M12 X 70	40	54	11.4	5.2
VSD-4061	1.970	2.403	50.0	61.0	21.1	535	10.5	267	3.000	76.2	M12 X 75	40	54	12.1	5.5
VSD-5040	1.261	1.579	32.0	40.1	23.9	606	12.1	307	2.380	60.5	M12 X 75	40	54	11.5	5.2
VSD-5050	1.579	1.970	40.1	50.0	24.0	609	12.1	307	2.500	63.5	M12 X 75	40	54	11.8	5.3
VSD-5061	1.970	2.403	50.0	61.0	24.5	622	12.1	307	3.000	76.2	M12 X 75	40	54	12.5	5.7



VORTX™ VIBRATION DAMPER

Weight Combination for Conductor and Shield Wire Sizes

Weight Combination Code Number*	ACSR, AAC, AAAC and ACAR Range				Galvanized Steel and Alumoweld Range			
	inches		mm		inches		mm	
	Min	Max	Min	Max	Min	Max	Min	Max
20	0.473	0.720	12.0	18.2	.401	.486	10.2	12.3
25	0.721	0.857	18.3	21.7	.487	.650	12.4	16.5
35	0.858	0.983	21.8	24.9				
40	0.984	1.335	25.0	33.9				
50	1.261	1.762	32.1	44.7				

*Final selection for weight combination at merging ranges are determined from conductor type and tension. Contact PLP Technical Support for final recommendation.

Weight Combination for OPGW

Weight Combination Code Number*	inches		mm	
	Min	Max	Min	Max
20	0.465	0.720	11.8	18.2
25	0.612	1.260	15.5	32.0
35	0.721	1.260	18.3	32.0

*Final selection for weight combination at merging ranges are determined from conductor type and tension. Contact PLP Technical Support for final recommendation.

Bolt Size and Torque Information

Weight Combination Code Number*	Clamp Range				Bolt Thread Size	Wrench Size		Torque	
	mm		inches			mm	in	N-m	Ft-Lb
	Min	Max	Min	Max					
16	12.3	15.5	.483	.612	M10	17	11/16	41	30
20	15.5	20.0	.612	.786	M10	17	11/16	41	30
25	20.0	25.0	.786	.983	M10	17	11/16	41	30
32	25.0	32.0	.983	1.261	M12	19	3/4	54	40
40	32.0	40.1	1.261	1.579	M12	19	3/4	54	40
50	40.1	50.0	1.579	1.970	M12	19	3/4	54	40
61	50.0	61.0	1.970	2.403	M12	19	3/4	54	40