



PREFORMED LINE PRODUCTS

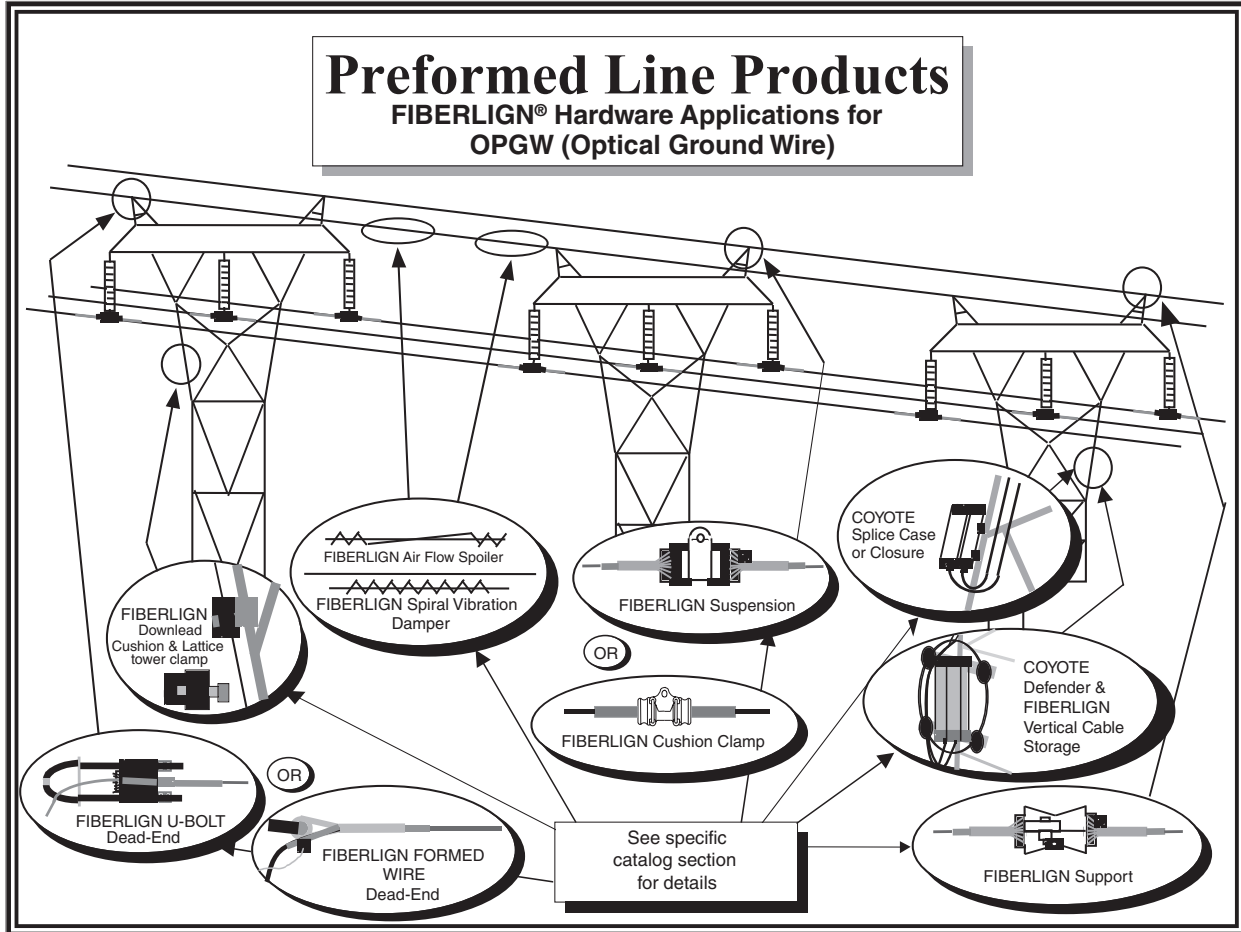
Section 23 – Fiber Optics: FIBERLIGN® Hardware for OPGW

| Table of Contents | Page |
|--|-------|
| Fiber Optic Product Layout for OPGW | 23-2 |
| FIBERLIGN® Dead-end for OPGW | 23-3 |
| FIBERLIGN® Formed Wire Dead-end for OPGW | 23-6 |
| FIBERLIGN® Ground Clamps..... | 23-10 |
| FIBERLIGN® Optical Tension Device (OTD) | 23-11 |
| FIBERLIGN® Suspension for OPGW | 23-12 |
| FIBERLIGN® Cushion Clamp for OPGW | 23-17 |
| FIBERLIGN® Repair Rods for OPGW | 23-20 |



Fiber Optic Products

OPGW Product Layout



Note: Some OPGW hardware accessories can be found in sections 25 and 27.

FIBERLIGN® Dead-end for OPGW

Retaining Rods: Aluminum Covered Steel, with Conductive Grit Applied.

Nuts: Galvanized Steel

U-bolt, Spacer Bar: Galvanized Steel

Housing: Galvanized Iron

Wedges: Aluminum Alloy

Grounding Bolt And Lock Washer: (included but not shown): Galvanized Steel

APPLICATION:

The FIBERLIGN Dead-end is designed to terminate Optical Ground Wire (OPGW) while minimizing any compression stresses that may be transferred to the core or optical elements within. The Retaining Rods act with the Wedge and Housing to distribute the axial and compressive loading over a large area of the OPGW. Standard units have left-hand lay rods.

The FIBERLIGN® Dead-end sketch at the bottom of this page includes reference to the exposed rod length "L_E" or the rod length beyond the housing. This dimension is listed in the catalog table to help with VORTX™ Damper placement.

The slotted Housing design allows for the application of the FIBERLIGN Dead-end at any location on the OPGW.

BONDING: Provisions for electrically bonding the OPGW to the supporting structure or ground lead are an integral part of the Housing. A 1" x 1/2"-13 UNC, 2A galvanized Grounding Bolt and Lock Washer are provided.

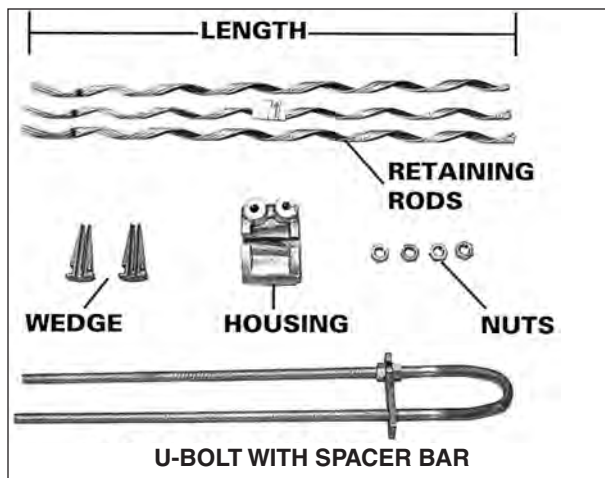
GROUNDING WIRE ASSEMBLY OPTIONS: A 4' ground wire with compression terminal can be provided. This assembly can be connected from the FIBERLIGN Dead-end to the ground lead in your system. Two types of ground materials are offered (copper or aluminum). To include the preferred ground wire assembly in the same carton with the Dead-end, add the appropriate suffix code to the Dead-end catalog number.

ADJUSTMENT: The U-Bolt provides up to 18 inches of take-up to allow for tension adjustment and extra clearance distance without the need for external hardware such as a turnbuckle or extension links.

COMPONENT STRENGTH: The value shown in the table on the following page reflects the strength of the standard housing and U-bolt. Higher strength requirements can be accommodated. Contact PLP® for more information.

HOLDING STRENGTH: Specific holding strengths on an OPGW cable will depend upon that cable's internal construction design and composition of the materials used for the individual strands. The highest holding capabilities exist with cables that use all aluminum clad steel strands in a single layer. Use of multiple layers and/or aluminum alloy strands may reduce holding capabilities. Consult PLP for information regarding holding abilities of the FIBERLIGN OPGW Dead-end for a specific OPGW design.

NOMENCLATURE



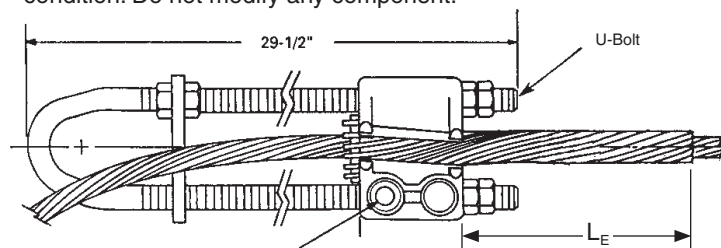
LAY DIRECTION: Left-hand lay is standard. Custom right-hand lay units are available. Contact PLP with cable specifications for further information.

ATTACHMENT FITTINGS: The Dead-end U-bolt component should be applied over pins, sheave wheels, or other fittings that have smooth contours, appropriate diameters and adequate strength for proper fit and support under loading conditions.

- For 5/8" U-bolts used in standard Dead-ends designed for cable diameters less than or equal to .749" diameter - Adequate fitting or pin diameters range from 5/8" to 1-7/8".
- For 3/4" U-bolts used in standard Dead-ends designed for cable diameters greater than .749" diameter cable - Adequate fitting or pin diameters range from 5/8" to 13/16".
- For either U-bolt size connected to a vang or structure plate, the holes in the plate should be chamfered - an example of an acceptable plate is maximum thickness of 1-1/16" (27 mm), Hole diameter 1" (25 mm), Chamfer 1/8" x 450) (3.2 mm x 450), and Installation clearance 1-15/16" (24 mm).

Consult PLP® for installation to other plates or fittings.

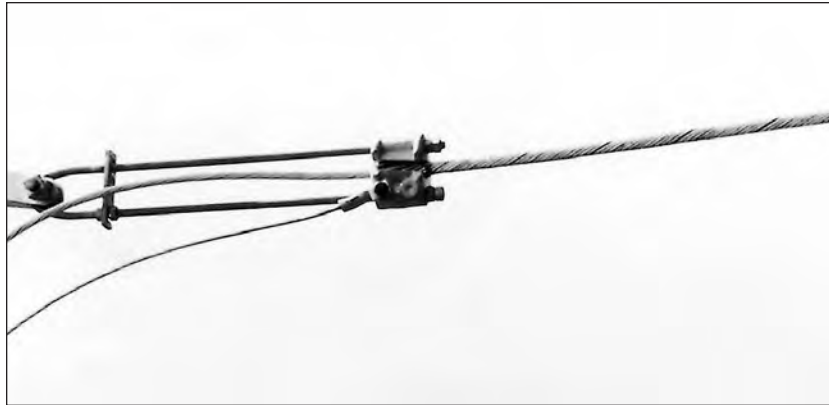
COMPONENT REUSE: The retaining rods and wedges may be reused once for retensioning after initial installation. The hardware components may be reused as desired if in good condition. Do not modify any component.



Threaded Hole (1/2-13 UNC, 7/8" deep) to fit class 2A Galvanized Bolt for Grounding Connection.



FIBERLIGN® Dead-end for OPGW



FIBERLIGN Dead-end for OPTICAL GROUND WIRE (OPGW)

Patented

| Catalog Number | Diameter Range | | | | Overall Rod Length (in) | Rods per set | Subset | Color Code | Components Rated Strength (lbs.) | Exposed Rod Length for (L _E) VORTX™ placement | |
|----------------|----------------|-----------|-----------|-----------|-------------------------|--------------|---------|------------|----------------------------------|---|-----|
| | Min. (in) | Max. (in) | Min. (mm) | Max. (mm) | | | | | | in. | mm |
| 280110266 | .358 | .374 | 9.1 | 9.5 | 24 | 9 | 3-3-3 | Blue | 25,000 | 21 | 533 |
| 2801300 | .375 | .391 | 9.5 | 9.9 | 24 | 9 | 3-3-3 | Pink | 25,000 | 21 | 533 |
| 2801301 | .392 | .410 | 10.0 | 10.3 | 24 | 9 | 3-3-3 | Pink | 25,000 | 21 | 533 |
| 2801302 | .411 | .425 | 10.4 | 10.7 | 26 | 10 | 3-3-4 | White | 25,000 | 23 | 584 |
| 2801303 | .426 | .443 | 10.8 | 11.2 | 26 | 10 | 3-3-4 | White | 25,000 | 23 | 584 |
| 2801304 | .444 | .460 | 11.3 | 11.6 | 27 | 10 | 3-3-4 | Brown | 25,000 | 24 | 609 |
| 2801305 | .461 | .477 | 11.7 | 12.0 | 27 | 10 | 3-3-4 | Brown | 25,000 | 24 | 609 |
| 2801306 | .478 | .494 | 12.1 | 12.5 | 29 | 11 | 3-4-4 | Purple | 25,000 | 26 | 660 |
| 2801307 | .495 | .511 | 12.6 | 12.9 | 29 | 11 | 3-4-4 | Purple | 25,000 | 26 | 660 |
| 2801308 | .512 | .528 | 13.0 | 13.3 | 31 | 12 | 3-3-3-3 | Yellow | 25,000 | 28 | 711 |
| 2801309 | .529 | .545 | 13.4 | 13.8 | 31 | 12 | 3-3-3-3 | Yellow | 25,000 | 28 | 711 |
| 2801310 | .546 | .562 | 13.9 | 14.2 | 32 | 12 | 3-3-3-3 | Blue | 25,000 | 29 | 737 |
| 2801311 | .563 | .579 | 14.3 | 14.6 | 32 | 12 | 3-3-3-3 | Blue | 25,000 | 29 | 737 |

See figure on page 23-2

Left-hand lay standard

FIBERLIGN® Dead-end for OPGW

ORDERING INSTRUCTIONS: Select the appropriate FIBERLIGN Dead-end from the catalog table in this section.

Consult PLP® for designs for OPGW diameters, strengths, or lay directions not shown. Also call PLP for availability of all sizes and designs.

ACCESSORIES: Accessories may be included in the same container with the Dead-end by adding the appropriate suffix code.

CAUTION: Determine the appropriate material and size wire necessary to provide adequate grounding for your system before ordering the ground wire assemblies. For proper performance and personal safety be sure to select the proper ground wire before application.

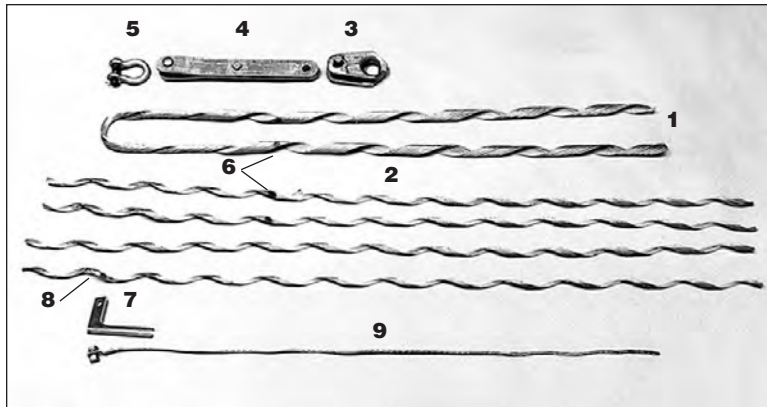
| Catalog Number | Suffix Code | Description |
|----------------|-------------|---|
| 710010016 | G | 4' long (1.2 m) #4(7W) copper ground wire with terminal on one end. |
| 710010294 | GA | 4' (1.2 m) long 4/0 (7W) aluminum ground wire with terminal on one end. |
| 710011205 | GA2 | 5' (1.5 m) long 95 mm ² (7W) aluminum ground wire with terminals at both ends. |

| Catalog Number | Diameter Range | | | | Rod Length (in) | Rods per set | Subset | Color Code | Components Rated Strength (Lbs) | Exposed Rod Length (L _E) for VORTX™ | |
|----------------|----------------|-----------|-----------|-----------|-----------------|--------------|---------|------------|---------------------------------|---|----------------|
| | Min. (in) | Max. (in) | Min. (mm) | Max. (mm) | | | | | | Damper (in) | Placement (mm) |
| 2801312 | .580 | .596 | 14.7 | 15.1 | 34 | 12 | 3-3-3-3 | Orange | 25,000 | 31 | 787 |
| 2801313 | .597 | .613 | 15.2 | 15.5 | 34 | 12 | 3-3-3-3 | Orange | 25,000 | 31 | 787 |
| 2801314 | .614 | .630 | 15.6 | 15.9 | 36 | 11 | 3-4-4 | Red | 25,000 | 33 | 838 |
| 2801315 | .631 | .647 | 16.0 | 16.4 | 36 | 11 | 3-4-4 | Red | 25,000 | 33 | 838 |
| 2801316 | .648 | .664 | 16.5 | 16.9 | 38 | 12 | 3-3-3-3 | Black | 25,000 | 35 | 889 |
| 2801317 | .665 | .681 | 17.0 | 17.2 | 38 | 12 | 3-3-3-3 | Black | 25,000 | 35 | 889 |
| 2801318 | .682 | .698 | 17.3 | 17.7 | 40 | 12 | 3-3-3-3 | Green | 25,000 | 37 | 938 |
| 2801319 | .699 | .715 | 17.8 | 18.0 | 40 | 12 | 3-3-3-3 | Green | 25,000 | 37 | 938 |
| 2801320 | .716 | .732 | 18.1 | 18.5 | 41 | 12 | 3-3-3-3 | Brown | 25,000 | 38 | 965 |
| 2801321 | .733 | .749 | 18.6 | 18.9 | 41 | 12 | 3-3-3-3 | Brown | 25,000 | 38 | 965 |
| 2801322 | .750 | .766 | 19.0 | 19.4 | 59 | 12 | 3-3-3-3 | Purple | 45,000 | 56 | 1422 |
| 2801323 | .767 | .783 | 19.5 | 19.8 | 59 | 12 | 3-3-3-3 | Purple | 45,000 | 56 | 1422 |
| 2801324 | .784 | .800 | 19.9 | 20.2 | 64 | 12 | 3-3-3-3 | Yellow | 45,000 | 61 | 1549 |
| 2801325 | .801 | .817 | 20.3 | 20.7 | 64 | 12 | 3-3-3-3 | Yellow | 45,000 | 61 | 1549 |
| 2801326 | .818 | .834 | 20.8 | 21.1 | 66 | 13 | 3-3-3-4 | Blue | 45,000 | 63 | 1600 |
| 2801327 | .835 | .851 | 21.2 | 21.5 | 66 | 13 | 3-3-3-4 | Blue | 45,000 | 63 | 1600 |
| 2801328 | .852 | .868 | 21.6 | 22.0 | 70 | 12 | 3-3-3-3 | Orange | 45,000 | 67 | 1701 |
| 2801329 | .869 | .885 | 22.1 | 22.4 | 70 | 12 | 3-3-3-3 | Orange | 45,000 | 67 | 1701 |
| 2801330 | .886 | .902 | 22.5 | 22.8 | 72 | 12 | 3-3-3-3 | Red | 45,000 | 69 | 1753 |
| 2801331 | .903 | .919 | 22.9 | 23.2 | 72 | 12 | 3-3-3-3 | Red | 45,000 | 69 | 1753 |
| 2801332 | .920 | .936 | 23.3 | 23.8 | 74 | 13 | 3-3-3-4 | Black | 45,000 | 71 | 1803 |

Left-hand lay standard



FIBERLIGN® Formed Wire Dead-end for OPGW



NOMENCLATURE

- 1. DEAD-END COMPONENT:** Aluminum Covered Steel with Grit Applied
- 2. STRUCTURAL REINFORCING RODS:** Aluminum Covered Steel with Grit
- 3. THIMBLE CLEVIS:** Galvanized Ductile Iron
- 4. EXTENSION LINK (option):** Extension Link & Pin are galvanized steel or galvanized ductile iron. A stainless steel cotter key is provided to capture the pin.
- 5. ANCHOR SHACKLE (option):** Galvanized steel forging.
- 6. COLOR CODE AND CROSSOVER MARKS**
- 7. CURRENT TRANSFER TAB:** High Strength Aluminum Alloy.
- 8. CURRENT TRANSFER TAB LOCATION MARK**
- 9. GROUNDING WIRE ASSEMBLY (option):** Copper or aluminum conductor with aluminum compatible lug

APPLICATION

The FIBERLIGN Formed Wire Dead-end offers an alternate method for Dead-ending OPGW. Unlike the FIBERLIGN® Dead-end “U-Bolt Type” design shown at the beginning of this section, the Formed Wire Dead-end uses two helically shaped formed wire components: an inner layer of Structural Reinforcing Rods and an outer layer Dead-end component. The FIBERLIGN® Formed Wire Dead-end does not provide take-up adjustment.

The formed wire inner and outer layer components are designed to transfer axial tensile loads and distribute radial compressive forces over the surface in contact with the OPGW to minimize effects on the central core and internal optical fibers.

Standard designs offered for left-hand lay single layer strand OPGW are listed in the table in this section. The standard Structural Reinforcing Rod component is right-hand lay and the standard Dead-end Component is left-hand lay.

The rated breaking strength of OPGW with multi-layer strand construction may exceed the rated holding strength of a Formed Wire Dead-end. Consult PLP before using this product for multi-layer applications.

Useful dimensions for VORTX™ damper placement are listed in the catalog table and shown in a reference drawing above the catalog table.

FIBERLIGN® Formed Wire Dead-end for OPGW



FIBERLIGN Formed Wire Dead-end Installed

CURRENT TRANSFER TAB: The Current Transfer Tab provides direct electrical bonding between the OPGW and a ground lead. The Structural Reinforcing Rod Layer conveniently applies proper compression to retain the current transfer tab against the OPGW without fasteners. The current transfer tab has a 1/2" diameter bolt hole to accommodate a standard 1/2"-13, UNC bolt for compatible ground lug attachment.

The standard current transfer tab accommodates left-hand lay OPGW and is rated for 80 kA²S to 150 kA²S depending on size of Dead-end unit. Right-hand lay units for special applications are also available. Consult PLP for specifics.

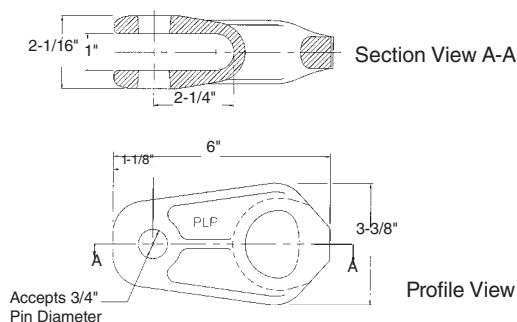
GROUNDING WIRE ASSEMBLY OPTIONS: A 4' long ground wire with compression terminal, 1/2"-13 x 1" long bolt, 1/2"-13 nut, and lockwasher can be provided. Two types of ground wire material are offered (copper or aluminum). To order the ground wire assembly with the Formed Wire Dead-end, add the appropriate suffix code to the catalog number (see catalog table in this section).

COMPONENT STRENGTH: The strength of the thimble clevis, extension link, and anchor shackle are designed to meet or exceed the maximum rated holding strength of 25,000 pounds.

HOLDING STRENGTH: Specific holding strengths on an OPGW cable will depend upon that cable's internal construction design and composition of the materials used for the individual strands. The highest holding capabilities exist with cable that use all aluminum clad steel strands in a single layer. Use of multi-layer and/or aluminum alloy strands may reduce holding capabilities. Consult PLP for information regarding holding abilities of the FIBERLIGN FORMED WIRE Dead-end for a specific OPGW design.

LAY DIRECTION: Left-hand lay is standard. Right-hand lay units for right-hand lay OPGW are available. Contact PLP with cable specifications for further information.

ATTACHMENT FITTINGS: Dimensions of the thimble clevis provided (cat. no. TC-6F) are shown below. These are provided for proper selection of an extension link. PLP offers a 14" extension link as listed in the accessories section following the catalog table.



TC-6F Thimble Clevis

COMPONENT REUSE: Once installed, structural reinforcing rods and Dead-end components may be removed and reinstalled once for repositioning purposes; do not reuse after this initial installation. The hardware components may be reused as long as they are in good condition. Do not modify any components.



FIBERLIGN® Formed Wire Dead-end for OPGW

ORDERING INSTRUCTIONS: Select the appropriate FIBERLIGN Formed Wire Dead-end for OPGW from the following table in this section.

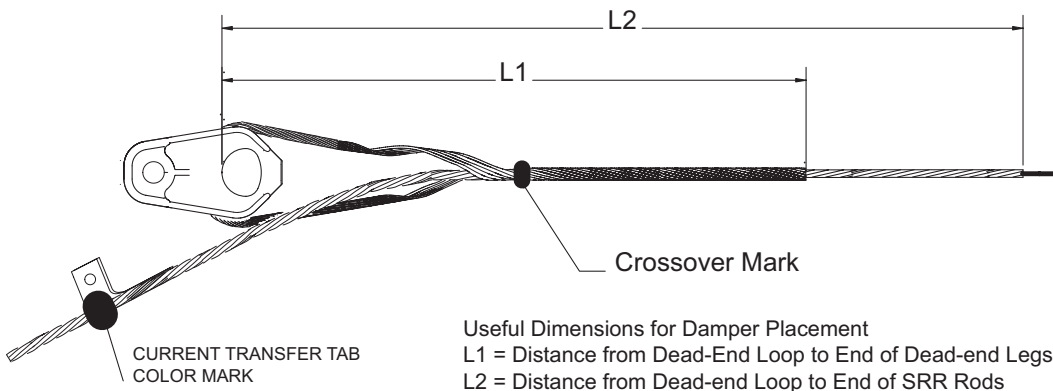
ACCESSORIES: Ground wire assemblies and other hardware accessories may be ordered with the Formed Wire Dead-end by adding the appropriate SUFFIX CODE from the adjacent table. Note: Suffix code C4 is part of standard equipment and is included in the catalog number. The sequence for remaining accessory suffix codes is Extension Link “E2” followed by Anchor Shackle “S2” followed by Ground Wire Assembly “G” or “GA” Example - 2890001C4E2S2G includes a Formed Wire Dead-end with standard thimble clevis (C4), 14” extension link (E2), Anchor Shackle (S2) and copper ground wire assembly (G).

| Suffix Code | Description |
|-------------|--|
| E2 | 14" (356 mm) Extension Link (Catalog no. 00060132), 25,000# |
| S2 | Anchor Shackle (Catalog. no. 72905002), 25,000# |
| G | 4' (1.212 m) long #4 (7W) Copper Ground Wire with terminal on one end. 1/2"-13x1-1/2" long galvanized steel bolt, hex nut and lock washer are included for attachment. (Catalog. no. 710010015). Rated for 35 KA²S. |
| GA | 4' (1.212 m) long 4/0 (7W) Aluminum Ground Wire with terminal on one end. 1/2"-13x1-1/2" long galvanized steel bolt, hex nut and lock washer are included for attachment. (Catalog. no. 710010293). Rated for 80 KA²S. |
| GA² | 5' (1.5 m) long 95 mm² (7w) Aluminum Ground wire with terminals at both ends. |

CAUTION: Determine appropriate material and size wire necessary to provide adequate grounding for your system before ordering the ground wire assemblies. For proper performance and personal safety be sure to select the proper ground wire before application.

| Catalog Number | Diameter Range | | | | Color Code | Rated Holding Strength* (Pounds) | Overall Structural Reinforcing Rod (SRR) Length in. (M) | Useful Dimensions for Vortex™ Damper Placement | | |
|----------------|----------------|-----------|-----------|-----------|------------|----------------------------------|---|--|---|----------------------------------|
| | Min. (in) | Max. (in) | Min. (mm) | Max. (mm) | | | | SRR Rod Diameter in. (mm) | Dead-end Component Length “L1” in. (mm) | Partial SRR Length “L2” in. (mm) |
| 2890020C4 | 0.355 | 0.399 | 9.0 | 10.1 | Blue | 20,000 | 44 (1.12) | .114 (2.9) | 34 (863) | 37.0 (939) |
| 2890001C4 | 0.4 | 0.449 | 10.2 | 11.4 | Blue | 20,000 | 49 (1.24) | .114 (2.9) | 36 (914) | 40.5 (1028) |
| 2890002C4 | 0.45 | 0.504 | 11.5 | 12.8 | Red | 25,000 | 54 (1.37) | .114 (2.9) | 39 (990) | 45.0 (1143) |
| 2890003C4 | 0.505 | 0.555 | 12.9 | 14.1 | Orange | 25,000 | 58 (1.47) | .114 (2.9) | 42 (1066) | 47.5 (1206) |
| 2890004C4 | 0.556 | 0.61 | 14.2 | 15.5 | Black | 25,000 | 63 (1.60) | .128 (3.2) | 45 (1143) | 51.5 (1308) |
| 2890005C4 | 0.611 | 0.68 | 15.6 | 17.2 | Green | 25,000 | 68 (1.73) | .128 (3.2) | 49 (1244) | 56.0 (1422) |
| 2890006C4 | 0.681 | 0.755 | 17.3 | 19.1 | Pink | 25,000 | 85 (2.16) | .144 (3.7) | 64 (1625) | 71.5 (1816) |
| 2890007C4 | 0.756 | 0.83 | 19.2 | 21.1 | Yellow | 25,000 | 91 (2.31) | .144 (3.7) | 68 (1727) | 76.0 (1930) |
| 2890008C4 | 0.831 | 0.925 | 21.2 | 23.5 | Brown | 25,000 | 98 (2.49) | .144 (3.7) | 73 (1854) | 81.5 (2057) |
| 2890009C4 | 0.926 | 1.03 | 23.6 | 26.2 | Purple | 25,000 | 107 (2.72) | .144 (3.7) | 79 (2006) | 89.5 (2273) |

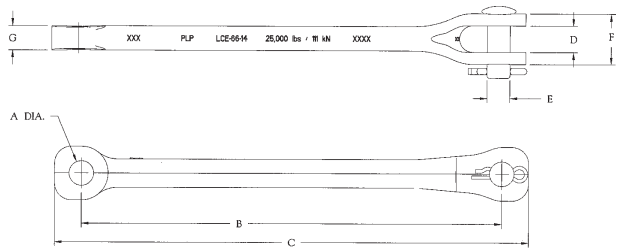
*Based on OPGW with all aluminum clad steel strands in a single layer. Left hand lay standard.



FIBERLIGN® Formed Wire Dead-end for OPGW

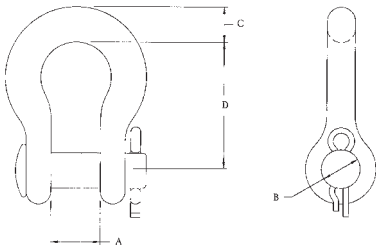
FIBERLIGN Formed Wire Dead-end Accessories

Extension Link with Pin and Cotter Key
suffix code **E2**, catalog number **LCE-66-14**



| A (Dia.) In. (mm) | B In. (mm) | C In. (mm) | D In. (mm) | E In. (mm) | F In. (mm) | G In. (mm) | Ultimate Tensile Strength (lbs.) |
|----------------------|---------------|----------------------|---------------|---------------|-------------------|----------------------|-------------------------------------|
| 13/16 (20.6) | 14 (356) | 16-1/2 max. (419) | 7/8 (22.2) | 3/4 (19.1) | 1-43/64 (42.5) | 51/64 max. (20.2) | 25,000 |

Anchor Shackle
suffix code **S2**,
catalog number **AS-5L**

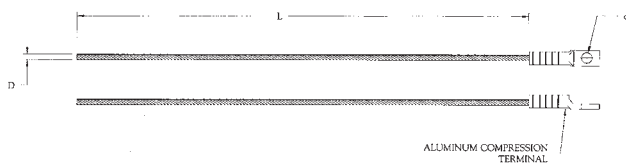


| A Max. Width of Opening Inches (mm) | B Max. Pin Diameter Inches (mm) | C Shackle Thickness Inches (mm) | D Inches (mm) | Ultimate Strength (kN) |
|--|---------------------------------------|---------------------------------------|------------------|------------------------------|
| 7/8" (22.2) | 5/8" (15.9) | 1/2" (12.7) | 2-23/32 (69.1) | 25,000 (111) |

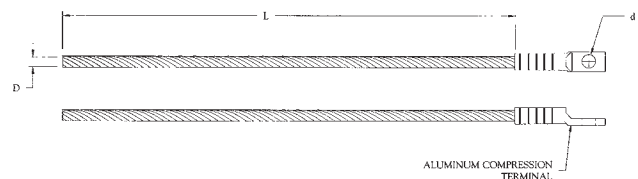
Grounding Wire Assemblies

| Catalog Number | Suffix Code | Dimensions Inches | | | | Conductor | | Attachment Ground Bolt Size (supplied w/nut and lock washer) |
|----------------|-------------|-------------------|------------------|-----------------|-----------------|-----------|-------------------------|--|
| | | L Length | D Conductor Dia. | d Lug Hole Dia. | e Lug Hole Dia. | Material | Type | |
| 710010015 | G | 48 (1.2 m) | .232 (6 mm) | 9/16 (14 mm) | — | Copper | #4 (7W) | 1/2"-13 x 1-1/2" long |
| 710010293 | GA | 48 (1.2 m) | .522 (13 mm) | 9/16 (14 mm) | — | Aluminum | 4/0 (7W) | 1/2"-13 x 1-1/2" long |
| 710011205 | GA2 | 60 (1.5 m) | .495 (12.5) | 17/32 (13.5 mm) | 11/16 (17.5 mm) | Aluminum | 95 mm ² (7W) | M12 x 30 mm long M16 x 38 mm long |
| 710012417 | — | 60 (1.5 m) | .528 (13.4) | 17/32 (13.5 mm) | 53/64 (21 mm) | Aluminum | 4/0 (19W) | M18 x 40 mm long |

Copper

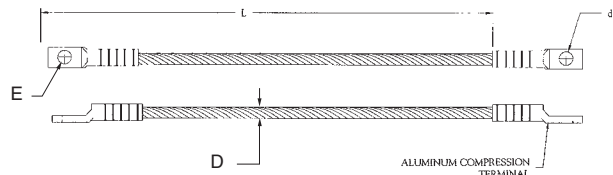
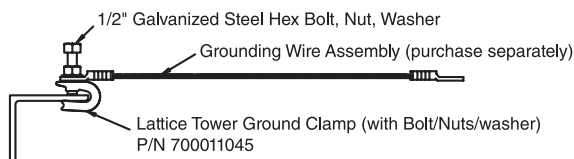


Aluminum



LIGHT DUTY LATTICE TOWER CLAMP

Catalog No. 700011045

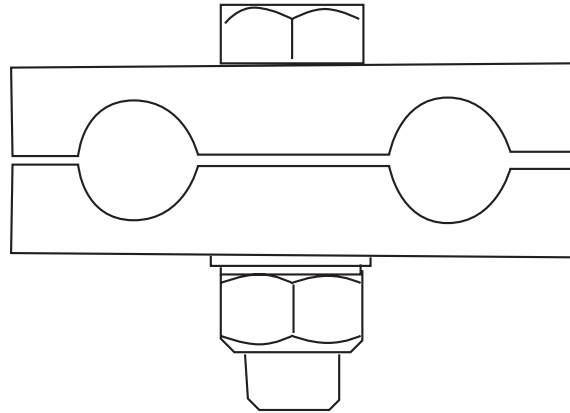




FIBERLIGN® Ground Clamps

GENERAL RECOMMENDATIONS

- Designed For OPGW cable
- Installation torque: 25 ft.-lbs.
- Groove contains oxide inhibitor
- Aluminum alloy material
- 2 Grooves



| Groove A: | | |
|---------------|-------------|---------------|
| OPGW Diameter | Range mm | Inches |
| A | 8.3 – 9.3 | 0.328 – 0.372 |
| B | 9.4 – 10.6 | 0.373 – 0.418 |
| C | 10.7 – 11.8 | 0.419 – 0.464 |
| D | 11.9 – 12.9 | 0.465 – 0.510 |
| E | 13.0 – 14.1 | 0.511 – 0.557 |
| F | 14.2 – 15.2 | 0.558 – 0.600 |
| H | 15.3 – 16.5 | 0.601 – 0.646 |
| I | 16.6 – 17.5 | 0.647 – 0.690 |
| J | 17.6 – 18.3 | 0.691 – 0.720 |
| K | 18.4 – 19.0 | 0.721 – 0.750 |
| L | 19.1 – 20.2 | 0.751 – 0.796 |

| Groove B: | | |
|-------------|-------------|-------------|
| Ground Wire | Range mm | Inches |
| 1 | 3.9 – 5.1 | .155 – .203 |
| 2 | 5.2 – 9.8 | .204 – .385 |
| 3 | 9.9 – 10.6 | .386 – .418 |
| 4 | 10.7 – 11.8 | .419 – .464 |
| 5 | 11.9 – 13.0 | .465 – .512 |
| 6 | 13.1 – 14.1 | .513 – .557 |
| 7 | 14.2 – 15.2 | .558 – .600 |
| 8 | 15.3 – 16.4 | .601 – .646 |
| 9 | 16.5 – 17.5 | .647 – .690 |

Ordering Guidelines

GC – XX

Groove A Diameter _____

Groove B Ground Wire _____

FIBERLIGN® Optical Tension Device (OTD)

For OPGW Fiber Cable

Material

Body: High strength aluminum alloy

Bolts: High strength forged steel

Bail: High strength steel

The Optical Tension Device is designed for pulling OPGW fiber cable to final sag tension. Once the final sag has been achieved, a permanent type dead-end device should be installed promptly, followed by the removal of the tensioning device. This device should not be subjected to sag tension for an extended time period and it should never be utilized as a permanent dead-end device.

When installing the unit, partially tighten successive eye bolts in the following torque sequence:

First Sequence to 20 ft/lbs.

Second Sequence to 30 ft/lbs.

Final Torque to 40 ft/lbs.

OPGW Cable Range

8.890 – 20.820 mm

0.350 – 0.820 inches

Load Rating

50% of the rated cable breaking strength or 5000 lbs. (22.4 kN) whichever is less.

Safety Tips

- Check for cracks and chipped areas along the cable groove and eyebolt areas. Do not reuse if any of these conditions exist
- Eyebolts should be kept clean and lubricated
- Conductor grooves should be clean and dry

After six months use and prior to each job, all Optical Tension Devices should be subjected to a pull test equal to its rated strength. If any damage is found the device should be disposed of or sent to PLP for possible rework and re-qualification.



Ordering Guidelines OTD – X – XXX

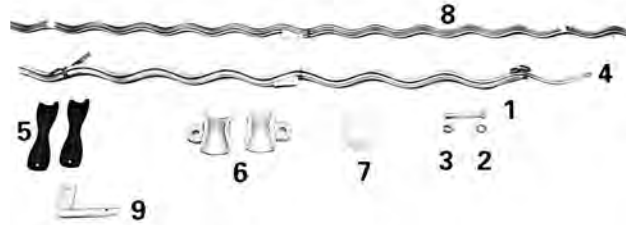
OPGW Supplier _____
 A – Alcoa - Fujikura
 B – Brugg
 C – Siemens
 P – Prysmian
 S – SFPOC
 O – Other

Cable Diameter _____
 (in inches)



FIBERLIGN® Suspension for OPGW

NOMENCLATURE



- | | |
|----------------|---|
| 1. Bolt | 6. Housing |
| 2. Lock washer | 7. Strap |
| 3. Lock nut | 8. Structural Reinforcing Rods |
| 4. Outer Rods | 9. Current Transfer Tab (for OPGW only) |
| 5. Insert | |



Single FIBERLIGN Suspension for Optical Ground Wire (OPGW)

Bolt, Washer, Lock Nut: Galvanized Steel.

Strap: High-strength Aluminum Alloy.

Insert: An elastomer specifically formulated for resistance to ozone attack, weathering, extreme high and low temperature variations, and compression set. An Aluminum Alloy reinforcement is molded into the elastomer.

Housing: High-strength aluminum alloy casting

Structural reinforcing rods and outer rods: High-strength Aluminum Alloy.

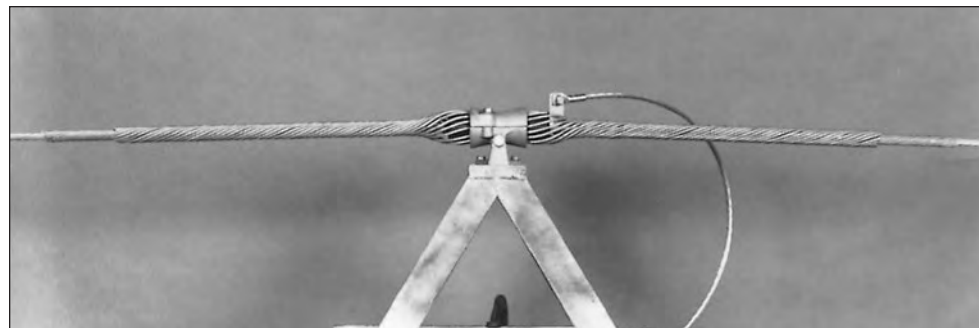
Current Transfer Tab: (Supplied for OPGW Applications only) High Strength Aluminum Alloy.

APPLICATION

The FIBERLIGN Suspension provides superior cable and fiber protection at the support point. The combination of Structural Reinforcing Rods, Outer Rods, boltless housing and resilient inserts reduces compression, clamping, and bending stresses on cable. Negative weather related cable motion, such as aeolian vibration, galloping, and wind sway are also minimized.

The FIBERLIGN Suspension is specially designed for supporting all installations of Optical Ground Wire (OPGW). Due to different performance requirements and cable characteristics OPGW and ADSS cables require different design FIBERLIGN Suspension Units.

For trunnion or bracket mounting, a FIBERLIGN Trunnion Support for OPGW is available. This unit has a housing designed to fit a trunnion cap or bracket with dimensions consistent with those specified in ANSI C29.7-1986, Class 57. Consult PLP® for specific information.



Trunnion mount FIBERLIGN Support for OPGW

FIBERLIGN® Suspension for OPGW

Double FIBERLIGN Suspension for Optical Ground Wire (OPGW)

The Current Transfer Tab provides direct electrical bonding between OPGW and a ground lead. The current transfer tab eliminates current transfer through components of the suspension unit. The standard current transfer tab accommodates left-hand lay OPGW. Right-hand lay and larger units for special applications are also available. Consult PLP for specifics.

The current transfer tab is not required or supplied for ADSS applications.

GROUNDING WIRE ASSEMBLY OPTIONS: A 4' ground wire with compression terminal can be provided. This assembly can be connected from the FIBERLIGN Suspension to the ground lead in your system. Two types of ground wire materials are offered (copper or aluminum). To include the preferred ground wire assembly in the same carton with the current transfer tab, add the appropriate suffix code to the suspension catalog number (see table on next page).

ULTIMATE VERTICAL STRENGTH & HOUSING & FITTING DIMENSIONS: Refer to dimensional table in this section.

LAY DIRECTION: Left-hand lay is standard although FIBERLIGN Suspension or Support units for OPGW may be used on right-hand lay OPGW at reduced slip loads, or custom ordered right-hand lay units are available.

SLIP LOAD: When initially installed, the FIBERLIGN Suspension has a slip load of approximately 10-20% of a standard OPGW rated strength, but significantly higher loads can be expected after the unit has been in service for a period of time.



LINE ANGLES: The maximum recommended line angle for a single FIBERLIGN Suspension is 30°. For OPGW line angles between 30° and 60°, the FIBERLIGN Suspension: Double is recommended, although double Dead-ending is another option. Double units for ADSS cable are available on custom order although double Dead-ends are also an option.

FITTINGS: An appropriate fitting such as a Y-clevis or clevis eye may be required to attach the Suspension unit to the structure or other hardware. These fittings must match the dimensions of the suspension housing. (See dimensional tables on next page)

FITTING SUFFIX CODES: To include the Y-clevis and clevis-eye fittings in the same carton with the suspensions, add the appropriate suffix code to the suspension catalog number (see table on next page).

COMPONENT REUSE: Once installed, do not reuse the rod components. The hardware components may be reused as desired as long as they are in good condition. Do not modify any components.



FIBERLIGN® Suspension for OPGW

Single and Double FIBERLIGN Suspensions for OPGW

ORDERING INSTRUCTIONS: Select the appropriate FIBERLIGN Suspension for OPGW from the following table. Consult PLP® for trunnion or bracket type mounting OPGW applications and for the availability of all sizes and designs.

ACCESSORIES AND FITTINGS: Ground wire assemblies and fittings may be included in the same container with the suspension by adding the appropriate SUFFIX CODE from the adjacent table. **Note:** the suffix sequence is grounding wire first and fittings second. Example - 4300100GYC includes a 4300100 single suspension with copper ground wire assembly (G) and Y-clevis eye (YC).

| Suffix Code | Description |
|-------------|--|
| G | 4' (1.2 m) long #4 (7W) Copper with terminal on one end. Catalog #710010015 |
| GA | 4' (1.2 m) long 4/0 (7W) Aluminum conductor with terminal on one end. Catalog #710010293 |
| GA2 | 5' (1.5 m) long 95 mm ² (7w) Aluminum Ground wire with terminals at both ends |

CAUTION: Determine appropriate material and size wire necessary to provide adequate grounding for your system before ordering the ground wire assemblies. For proper performance and personal safety be sure to select the proper ground wire before application.

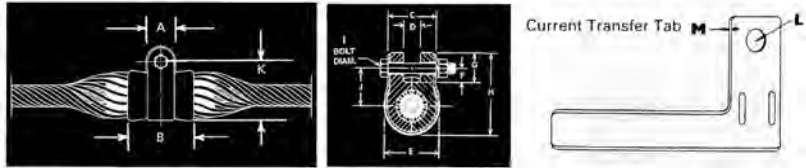
| | |
|-------------|---|
| S2 | Anchor Shackle (Catalog no 72905002), 25,000# |
| YC | One (1) Y-clevis to fit selected suspension. Single suspension applications. |
| CE | One (1) clevis-eye to fit selected suspension. Single suspension applications. |
| CEYP | Two (2) clevis-eyes with yoke plate to fit selected suspension. Double suspension applications. |

| Catalog Number | | Diameter Range | | | | Structural Reinforcement Rods | | | | | Outer Rods | | | | |
|----------------|---------|----------------|-----------|-----------|-----------|-------------------------------|--------------------|---------------|--------------|------------|--------------------|--------------------|---------------|--------------|------------|
| Single | Double | Min. (in) | Max. (in) | Min. (mm) | Max. (mm) | Single Length (in) | Double Length (in) | Rod Dia. (in) | Rods per set | Color Code | Single Length (in) | Double Length (in) | Rod Dia. (in) | Rods per set | Color Code |
| 4300100 | 4300200 | .354 | .381 | 8.9 | 9.6 | 66 | 84 | .146 | 9 | Blue | 42 | 60 | .204 | 11 | Blue |
| 4300101 | 4300201 | .382 | .398 | 9.7 | 10.1 | 66 | 84 | .146 | 9 | Green | 42 | 60 | .204 | 11 | Green |
| 4300102 | 4300202 | .399 | .418 | 10.2 | 10.6 | 66 | 84 | .146 | 10 | Yellow | 42 | 60 | .204 | 11 | Yellow |
| 4300103 | 4300203 | .419 | .439 | 10.7 | 11.1 | 67 | 84 | .146 | 10 | Black | 42 | 60 | .204 | 11 | Black |
| 4300104 | 4300204 | .440 | .458 | 11.2 | 11.6 | 68 | 84 | .146 | 11 | White | 43 | 61 | .204 | 11 | White |
| 4300105 | 4300205 | .459 | .461 | 11.7 | 11.7 | 72 | 90 | .167 | 10 | Purple | 46 | 64 | .250 | 10 | Orange |
| 4300106 | 4300206 | .462 | .476 | 11.8 | 12.0 | 72 | 90 | .167 | 10 | Purple | 46 | 64 | .250 | 10 | Purple |
| 4300107 | 4300207 | .477 | .503 | 12.1 | 12.7 | 73 | 90 | .146 | 11 | Orange | 46 | 64 | .250 | 10 | Orange |
| 4300108 | 4300208 | .504 | .511 | 12.8 | 12.9 | 76 | 90 | .146 | 12 | Red | 46 | 64 | .250 | 10 | Purple |
| 4300109 | 4300209 | .512 | .536 | 13.0 | 13.6 | 76 | 94 | .167 | 11 | Blue | 49 | 67 | .250 | 11 | Blue |
| 4300110 | 4300210 | .537 | .559 | 13.7 | 14.1 | 77 | 94 | .167 | 11 | Green | 49 | 67 | .250 | 11 | Green |
| 4300111 | 4300211 | .560 | .565 | 14.2 | 14.3 | 77 | 94 | .167 | 11 | Green | 49 | 67 | .250 | 11 | Green |
| 4300112 | 4300212 | .566 | .573 | 14.4 | 14.5 | 79 | 102 | .182 | 11 | Black | 54 | 76 | .250 | 12 | Black |
| 4300113 | 4300213 | .574 | .598 | 14.6 | 15.1 | 79 | 102 | .182 | 11 | Black | 54 | 76 | .250 | 12 | White |
| 4300114 | 4300214 | .599 | .625 | 15.2 | 15.8 | 81 | 102 | .182 | 11 | Brown | 54 | 76 | .250 | 12 | Brown |
| 4300116 | 4300216 | .626 | .632 | 15.9 | 16.0 | 94 | 120 | .204 | 11 | Red | 63 | 89 | .310 | 11 | Red |
| 4300117 | 4300217 | .633 | .666 | 16.1 | 16.9 | 94 | 120 | .204 | 11 | Red | 63 | 89 | .310 | 11 | Blue |
| 4300118 | 4300218 | .667 | .682 | 17.0 | 17.3 | 94 | 120 | .204 | 11 | Yellow | 63 | 89 | .310 | 11 | Green |
| 4300119 | 4300219 | .683 | .710 | 17.4 | 18.0 | 94 | 120 | .204 | 11 | Yellow | 63 | 89 | .310 | 11 | Yellow |
| 4300120 | 4300220 | .711 | .728 | 18.1 | 18.4 | 94 | 120 | .204 | 12 | White | 63 | 89 | .310 | 12 | Black |
| 4300121 | 4300221 | .729 | .744 | 18.5 | 18.8 | 94 | 120 | .204 | 12 | White | 63 | 89 | .310 | 12 | White |
| 4300122 | 4300222 | .745 | .750 | 18.9 | 18.9 | 94 | 120 | .204 | 12 | White | 63 | 89 | .310 | 12 | White |
| 4300123 | 4300223 | .751 | .786 | 19.0 | 19.9 | 94 | 120 | .204 | 12 | Brown | 63 | 89 | .310 | 12 | Brown |
| 4300124 | 4300224 | .787 | .814 | 20.0 | 20.6 | 100 | 129 | .250 | 11 | Green | 72 | 101 | .365 | 11 | Green |
| 4300125 | 4300225 | .815 | .845 | 20.7 | 21.4 | 100 | 129 | .250 | 11 | Yellow | 72 | 101 | .365 | 11 | Yellow |
| 4300126 | 4300226 | .846 | .855 | 21.5 | 21.6 | 100 | 129 | .250 | 11 | Blue | 72 | 101 | .365 | 12 | Blue |
| 4300127 | 4300227 | .856 | .894 | 21.7 | 22.6 | 100 | 132 | .250 | 12 | Black | 80 | 112 | .365 | 12 | Black |
| 4300128 | 4300228 | .895 | .907 | 22.7 | 22.9 | 100 | 132 | .250 | 12 | White | 80 | 112 | .365 | 12 | White |
| 4300129 | 4300229 | .908 | .916 | 23.0 | 23.2 | 100 | 132 | .250 | 12 | Purple | 80 | 112 | .365 | 12 | Purple |
| 4300153 | 4300253 | .917 | .929 | 23.3 | 23.5 | 100 | 132 | .250 | 12 | Brown | 80 | 112 | .365 | 12 | Brown |
| 4300154 | 4300254 | .930 | .942 | 23.6 | 23.9 | 100 | 132 | .250 | 12 | Red | 80 | 112 | .365 | 12 | Red |
| 4300155 | 4300255 | .943 | .977 | 24.0 | 24.7 | 100 | 132 | .250 | 13 | Orange | 80 | 112 | .365 | 13 | Orange |

Left-hand lay standard

FIBERLIGN® Suspension Housing Dimensions & Fittings

FIBERLIGN Suspension – Dimensional Tables



| OPGW or ADSS Cable Diameter Range Inches (mm) | | Dimensions Inches (mm) | | | | | | | | | | | | | Ultimate Vertical Strength (Lbs.) |
|---|--------------|------------------------|-----------------|-----------------|---------------|-----------------|--------------|--------------|-----------------|-------------|----------------|-----------------|-------------|------------|-----------------------------------|
| Min. | Max. | A | B | C | D | E | F | G | H | I Bolt Dia. | J | K | L | M | |
| .354 (9) | .458 (11.6) | 1-3/4 (44.5) | 3-3/4 (95.3) | 2-1/4 (57.2) | 3/4 (19.1) | 2-3/16 (55.6) | 1 (25.4) | 1-7/8 (47.6) | 4-7/16 (112.7) | 5/8 (15.9) | 2-5/32 (54.8) | 3-9/16 (90.5) | 9/16 (14.3) | .090 (2.3) | 15,000 |
| .459 (11.7) | .565 (14.3) | 2 (50.8) | 4-17/32 (115.1) | 2-11/16 (68.3) | 7/8 (22.2) | 3-5/16 (84.1) | 1 (25.4) | 2 (50.8) | 5 (127) | 5/8 (15.9) | 2-11/32 (59.5) | 4 (101.6) | 9/16 (14.3) | .090 (2.3) | 20,000 |
| .566 (14.4) | .625 (15.8) | 2 (50.8) | 5 (127) | 2-15/16 (74.6) | 7/8 (22.2) | 3-11/16 (93.7) | 1 (25.4) | 2 (50.8) | 5-3/8 (136.5) | 5/8 (15.9) | 2-17/32 (64.3) | 4-3/8 (111.1) | 9/16 (14.3) | .090 (2.3) | 20,000 |
| .626 (15.9) | .786 (19.9) | 2-1/4 (57.2) | 5-1/2 (139.7) | 3-1/2 (88.9) | 1-3/16 (30.2) | 4-5/32 (105.6) | 1 (25.4) | 2-1/8 (54) | 5-29/32 (150) | 5/8 (15.9) | 2-45/64 (68.7) | 4-25/32 (121.4) | 9/16 (14.3) | .090 (2.3) | 25,000 |
| .787 (20) | .977 (24.8) | 2-1/4 (57.2) | 6 (152.4) | 3-5/8 (92.1) | 1-1/4 (31.8) | 4-13/16 (122.2) | 1-1/4 (31.8) | 2-3/8 (60.3) | 6-11/16 (169.9) | 3/4 (19.1) | 3-5/32 (80.2) | 5-9/16 (141.3) | 9/16 (14.3) | .090 (2.3) | 25,000 |
| .978 (24.9) | 1.016 (25.8) | 2-1/4 (57.2) | 6-1/2 (165.1) | 4-1/8 (104.8) | 1-3/8 (34.9) | 5-1/16 (128.6) | 1-1/8 (28.6) | 2-1/4 (57.2) | 6-5/8 (168.3) | 3/4 (19.1) | 2-21/32 (67.5) | 5-1/2 (139.7) | N/A | N/A | 25,000 |
| 1.017 (25.9) | 1.057 (26.8) | 2-1/4 (57.2) | 6-1/2 (165.1) | 4-1/8 (104.8) | 1-3/8 (34.9) | 5-1/16 (128.6) | 1-1/8 (28.6) | 2-1/4 (57.2) | 6-5/8 (168.3) | 3/4 (19.1) | 2-21/32 (67.5) | 5-1/2 (139.7) | N/A | N/A | 25,000 |
| 1.058 (26.9) | 1.079 (27.4) | 2-1/2 (63.5) | 7 (177.8) | 4-11/16 (119.1) | 2-1/4 (57.2) | 5-19/32 (142.1) | 1-1/8 (28.6) | 2-3/8 (60.3) | 7-1/4 (184.2) | 3/4 (19.1) | 3-3/16 (81) | 6 (152.4) | N/A | N/A | 25,000 |
| 1.08 (27.5) | 1.112 (28.2) | 2-1/2 (63.5) | 7 (177.8) | 4-11/16 (119.1) | 2-1/4 (57.2) | 5-19/32 (142.1) | 1-1/8 (28.6) | 2-3/8 (60.3) | 7-1/4 (184.2) | 3/4 (19.1) | 3-3/16 (81) | 6 (152.4) | N/A | N/A | 25,000 |
| 1.113 (28.3) | 1.149 (29.2) | 2-1/2 (63.5) | 7 (177.8) | 4-11/16 (119.1) | 2-1/4 (57.2) | 5-19/32 (142.1) | 1-1/8 (28.6) | 2-3/8 (60.3) | 7-1/4 (184.2) | 3/4 (19.1) | 3-3/16 (81) | 6 (152.4) | N/A | N/A | 25,000 |
| 1.15 (29.3) | 1.19 (30.2) | 2-1/2 (63.5) | 7 (177.8) | 4-11/16 (119.1) | 2-1/4 (57.2) | 5-19/32 (142.1) | 1-1/8 (28.6) | 2-3/8 (60.3) | 7-1/4 (184.2) | 3/4 (19.1) | 3-3/16 (81) | 6 (152.4) | N/A | N/A | 25,000 |

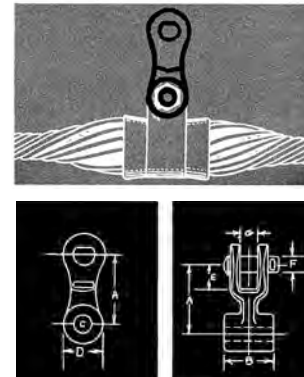
Fittings

The dimensions of a fitting must correspond to some of the dimensions of the housing of the FIBERLIGN Suspension unit in order to provide proper fit. To select the proper size fitting, identify the outside diameter of the OPGW or ADSS cable and select the appropriate fitting from these tables.

DO NOT use the tables in the ARMOR-GRIP® Suspension section of this catalog.

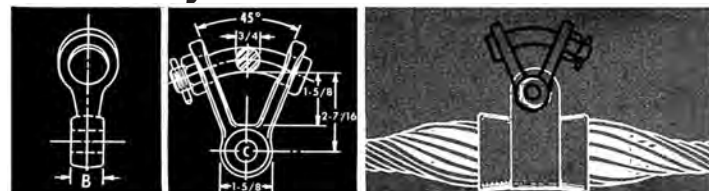
Clevis Eye

| Catalog Number | OPGW or ADSS Cable Diameter Range | | General Dimensions | | | | | | | Ultimate Vertical Strength (Lbs.) |
|----------------|-----------------------------------|----------------|--------------------|-------------|--------------|--------------|--------------|------------|--------------|-----------------------------------|
| | Min.-Max. (in) | Min.-Max. (mm) | A in (mm) | B in (mm) | C in (mm) | D in (mm) | E in (mm) | F in (mm) | G in (mm) | |
| CE-5259 | .354-.458 | 9-11.6 | 3-1/8 (79.4) | 1/2 (12.7) | 11/16 (17.5) | 1-1/2 (38.1) | 1-1/2 (38.1) | 5/8 (15.9) | 13/16 (20.6) | 15,000 |
| CE-5261 | .459-.625 | 11.7-15.9 | 3-1/8 (79.4) | 3/4 (19.1) | 11/16 (17.5) | 1-1/2 (38.1) | 1-1/2 (38.1) | 5/8 (15.9) | 13/16 (20.6) | 20,000 |
| CE-5105 | .626-1.057 | 16.0-26.8 | 3-1/8 (79.4) | 1-1/16 (27) | 13/16 (20.6) | 1-1/2 (38.1) | 1-1/2 (38.1) | 5/8 (15.9) | 13/16 (20.6) | 25,000 |
| CE-5106 | 1.058-1.208 | 26.9-30.7 | 3-1/8 (79.4) | 2-1/8 (54) | 13/16 (20.6) | 1-1/2 (38.1) | 1-1/2 (38.1) | 5/8 (15.9) | 13/16 (20.6) | 25,000 |



Y-Clevis Eye

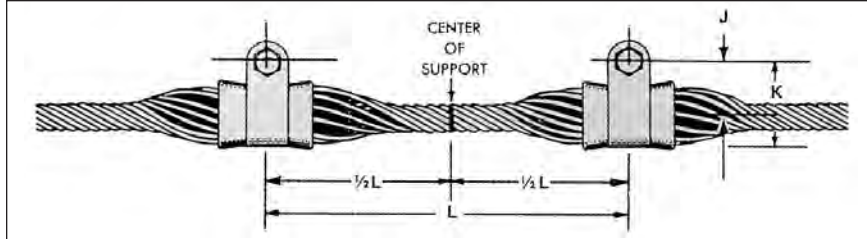
| Catalog Number | OPGW or ADSS Cable Diameter Range | | General Dimensions | | Ultimate Vertical Strength (lbs.) |
|----------------|-----------------------------------|----------------|--------------------|--------------|-----------------------------------|
| | Min.-Max. (in) | Min.-Max. (mm) | B in (mm) | C in (mm) | |
| YC-5206 | .354-.458 | 9.0-11.6 | 5/8 (15.9) | 11/16 (17.5) | 15,000 |
| YC-5207 | .459-.625 | 11.7-15.9 | 3/4 (19.1) | 11/16 (17.5) | 20,000 |
| YC-5209 | .626-1.057 | 16.0-26.8 | 1-1/16 (27) | 13/16 (20.6) | 25,000 |
| YC-5211 | 1.058-1.208 | 26.9-30.7 | 2-1/8 (54) | 13/16 (20.6) | 25,000 |





FIBERLIGN® Suspension Housing Dimensions & Fittings

FIBERLIGN Suspension: Double Dimensional Tables



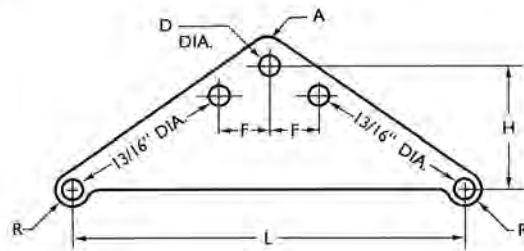
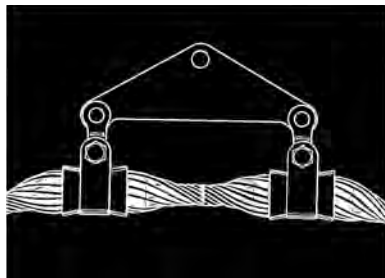
| OPGW or ADSS Cable Diameter Range | | Dimensions | | | Ultimate Vertical Strength (Lbs.) |
|-----------------------------------|----------------|----------------|-----------------|------------|-----------------------------------|
| Min.-Max. (in) | Min.-Max. (mm) | J in. (mm) | K in. (mm) | L in. (cm) | |
| .354-.458 | 9.0-11.6 | 2-5/32 (54.8) | 3-9/16 (90.4) | 18 (45.7) | 30,000 |
| .459-.565 | 11.7-14.4 | 2-11/32 (59.5) | 4 (101.6) | 18 (45.7) | 40,000 |
| .566-.625 | 14.5-15.9 | 2-17/32 (64.3) | 4-3/8 (111.1) | 22 (55.9) | 40,000 |
| .626-.786 | 16.0-20.0 | 2-45/64 (68.7) | 4-25/32 (121.4) | 26 (66.0) | 50,000 |
| .787-.855 | 20.1-21.7 | 3-5/32 (80.2) | 5-9/16 (141.3) | 29 (73.7) | 50,000 |
| .856-1.057 | 21.8-26.8 | 2-31/32 (75.4) | 5-1/2 (139.7) | 32 (81.3) | 50,000 |
| 1.058-1.208 | 26.9-30.7 | 3-3/16 (81.0) | 6 (152.4) | 37 (94.0) | 50,000 |

Fittings

The "L" dimension of a Yoke Plate must match the "L" dimension between the two housings of the Double Suspension unit. Identify the outside diameter of the OPGW or ADSS cable and select the proper "L" dimension and Yoke Plate from these tables. DO NOT use the tables in the ARMOR-GRIP® Suspension section of this catalog.

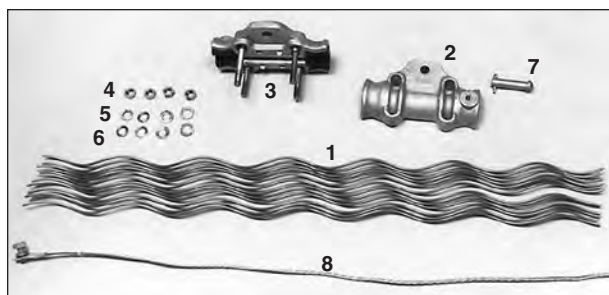
A Fitting, such as a Clevis Eye, is required between each Suspension housing and the Yoke Plate. Refer to the tables on page 23-15 for proper fitting selection. Another fitting may be required between the Yoke Plate and structure.

Yoke Plate



| Catalog Number | OPGW or ADSS Cable Diameter Range | | Dimensions | | | | | | Plate Thickness in. (mm) |
|----------------|-----------------------------------|----------------|------------|---------------|------------|--------------|-------------------|----------------|--------------------------|
| | Min.-Max. (in) | Min.-Max. (mm) | L in. (cm) | H in. (cm) | D in. (mm) | R in. (mm) | Radius A in. (mm) | F in. (cm) | |
| YP-5908 | .354-.565 | 9.0-14.4 | 18 (45.7) | 6-1/4 (15.9) | 1 (25.4) | 15/16 (23.8) | 1-1/4 (31.8) | 3-1/2 (8.9) | 5/8 (15.9) |
| YP-5909 | .566-.625 | 14.5-15.9 | 22 (55.9) | 7-1/4 (18.4) | 1 (25.4) | 15/16 (23.8) | 1-1/4 (31.8) | 4-3/16 (10.6) | 5/8 (15.9) |
| YP-5910 | .626-.786 | 16.0-20.0 | 26 (66.0) | 8-1/2 (21.6) | 1 (25.4) | 15/16 (23.8) | 1-1/4 (31.8) | 4-15/16 (12.5) | 3/4 (19.1) |
| YP-5911 | .787-.855 | 20.1-21.7 | 29 (73.7) | 9-1/2 (24.1) | 1 (25.4) | 15/16 (23.8) | 1-1/4 (31.8) | 5-1/2 (14.0) | 3/4 (19.1) |
| YP-5912 | .856-1.057 | 21.8-26.8 | 32 (81.3) | 10-1/2 (26.7) | 1 (25.4) | 15/16 (23.8) | 1-1/4 (31.8) | 6-1/8 (15.6) | 3/4 (19.1) |
| YP-5913 | 1.058-1.208 | 26.9-30.7 | 37 (94.0) | 11-3/4 (29.8) | 1 (25.4) | 15/16 (23.8) | 1-1/4 (31.8) | 7-1/16 (17.9) | 3/4 (19.1) |

FIBERLIGN® Cushion Clamp for OPGW



FIBERLIGN Cushion Clamp installed

NOMENCLATURE

- Structural Reinforcing Rods:** High strength aluminum alloy.
- Cushion Clamp (keeper half):** An aluminum alloy clamp half with two factory installed elastomer cushion inserts and a 1/2"-13 female threaded boss for ground wire attachment. A galvanized 1/2"-13 x 3/4" long grounding bolt and lock washer are provided.
- Cushion Clamp (U-bolt half):** An aluminum alloy clamp half with two factory installed elastomer cushion inserts and two captured 1/2"-13 galvanized steel U-bolts.
- 1/2"-13 Hex Nuts (4):** Galvanized steel.
- Lock Washers (4):** Galvanized steel.
- Flat Washers (4):** Galvanized steel.
- Pin and Cotter Key:** Pin is galvanized steel and Cotter Key is stainless steel.
- Grounding Wire Assembly (ordered separately)**

APPLICATION

The FIBERLIGN Cushion Clamp provides excellent protection to OPGW at support points. The combination of the Structural Reinforcing Rods and the elastomer inserts at the ends of the clamp body halves reduces bending stresses on the OPGW during aeolian vibration or galloping activity.

Bonding:

Provisions for electrically bonding the OPGW to the supporting structure or ground lead are an integral part of the keeper half. The 1/2"-13 x 3/4" long bolt and lock washer are provided with the keeper half for lug terminal attachment.

Grounding Wire Assembly Options:

A 4' ground wire with compression terminal can be provided. Two types of ground wire material are offered (copper or aluminum). The Ground Wire assemblies may be ordered with the Cushion Clamp by adding the appropriate suffix code (see next page).

Ultimate Vertical Strength & Dimensions:

The ultimate vertical strength of the Cushion Clamp body is 20,000 pounds (89 kN). See the table on page 23-16 for dimension of body and associated fittings.

Lay Direction:

The Cushion Clamp can accommodate either left-hand lay or right-hand lay OPGW.

Slip Load:

The Cushion Clamp has a slip load of approximately 10-20% of the OPGW rated strength.

Line Angles:

The maximum recommended line angle for a single FIBERLIGN Cushion Clamp is 30°. For OPGW line angles between 30° and 60°, the Cushion Clamp double is available, although double Dead-ending is another option.

Fittings:

An appropriate fitting such as a Y-Clevis, Clevis-Eye, or Anchor Shackle may be required to attach the Cushion Clamp to the structure or other hardware. To include these fittings, add the appropriate suffix code to the catalog number (see next page).

Component Reuse:

Once installed, do not reuse the Structural Reinforcing Rods. The hardware components may be reused as long as they are in good condition. Do not modify any components.



FIBERLIGN® Cushion Clamp for OPGW

Single and Double FIBERLIGN Cushion Clamp for OPGW

ORDERING INSTRUCTIONS: Select the appropriate FIBERLIGN Cushion Clamp for OPGW from the following table.

ACCESSORIES AND FITTINGS: Ground wire assemblies and fittings may be ordered with the Cushion Clamp by adding the appropriate SUFFIX CODE from the adjacent table. Note: the suffix sequence is ground wire first and fittings second. Example - 4700100GYC includes a 4700100 Single Cushion Clamp with copper ground wire assembly (G) and Y-Clevis (YC).

| Suffix Code | Description |
|-------------|---|
| G | 4' (1) long #4 (7W) Copper Ground Wire with terminal on one end. Catalog No. 710010016 |
| GA | 4' (1) long 4/0 (7W) Aluminum Ground Wire with terminal on one end. Catalog No. 710010294 |
| GA2 | 5' (1.5) long 95 mm ² (7W) Aluminum Ground Wire with terminals at both ends |

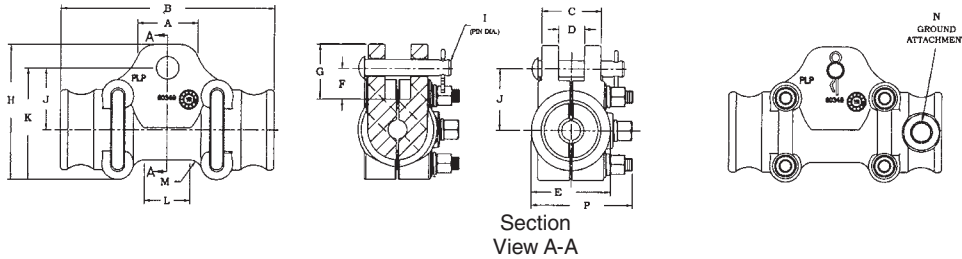
CAUTION: Determine appropriate material and size wire necessary to provide adequate grounding for your system before ordering the ground wire assemblies. For proper performance and personal safety be sure to select the proper ground wire before application.

| | |
|------|---|
| S2 | Anchor Shackle (Catalog no 72905002), 25,000# |
| YC | One (1) Y-clevis to fit selected suspension. Single suspension. |
| CE | One (1) clevis-eye to fit selected suspension. Single suspension. |
| CEYP | Two (2) clevis-eyes with yoke plate to fit selected suspension. Double suspension. |
| GA2 | 5' (1.5) long 95 mm ² (7W) Aluminum Ground wire with terminals at both ends. |

| Catalog Number | | Diameter Range | | | | Structural Reinforcing Rods | | | | Color Code |
|----------------|---------|----------------|-----------|-----------|-----------|-----------------------------|---------------|----------|--------------|------------|
| Single | Double | Min. (in) | Max. (in) | Min. (mm) | Max. (mm) | Single Length | Double Length | Rod Dia. | Rods per Set | |
| 4700100 | 4700200 | 0.376 | 0.387 | 9.6 | 9.8 | 31 | 60 | 0.204 | 7 | Orange |
| 4700101 | 4700201 | 0.388 | 0.429 | 9.9 | 10.9 | 32 | 61 | 0.182 | 8 | Red |
| 4700102 | 4700202 | 0.430 | 0.459 | 11.0 | 11.6 | 33 | 62 | 0.167 | 9 | Black |
| 4700103 | 4700203 | 0.460 | 0.482 | 11.7 | 12.2 | 34 | 63 | 0.154 | 10 | Green |
| 4700104 | 4700204 | 0.483 | 0.507 | 12.3 | 12.8 | 35 | 64 | 0.182 | 10 | Yellow |
| 4700105 | 4700205 | 0.508 | 0.537 | 12.9 | 13.6 | 36 | 65 | 0.167 | 11 | Purple |
| 4700106 | 4700206 | 0.538 | 0.563 | 13.7 | 14.3 | 37 | 66 | 0.154 | 12 | Pink |
| 4700107 | 4700207 | 0.564 | 0.585 | 14.4 | 14.8 | 39 | 68 | 0.182 | 11 | Brown |
| 4700108 | 4700208 | 0.586 | 0.615 | 14.9 | 15.6 | 40 | 69 | 0.167 | 12 | Blue |
| 4700109 | 4700209 | 0.616 | 0.641 | 15.7 | 16.3 | 41 | 70 | 0.154 | 13 | Orange |
| 4700110 | 4700210 | 0.642 | 0.664 | 16.4 | 16.8 | 44 | 73 | 0.182 | 12 | Red |
| 4700111 | 4700211 | 0.665 | 0.694 | 16.9 | 17.6 | 45 | 74 | 0.167 | 13 | Black |
| 4700112 | 4700212 | 0.695 | 0.720 | 17.7 | 18.3 | 46 | 75 | 0.154 | 15 | Green |
| 4700113 | 4700213 | 0.721 | 0.742 | 18.4 | 18.8 | 48 | 77 | 0.182 | 13 | Yellow |
| 4700114 | 4700214 | 0.743 | 0.772 | 18.9 | 19.6 | 50 | 79 | 0.167 | 14 | Purple |
| 4700115 | 4700215 | 0.773 | 0.798 | 19.7 | 20.2 | 51 | 80 | 0.154 | 15 | Pink |
| 4700116 | 4700216 | 0.799 | 0.822 | 20.3 | 20.8 | 52 | 81 | 0.182 | 14 | Brown |
| 4700117 | 4700217 | 0.823 | 0.855 | 20.9 | 21.7 | 54 | 83 | 0.167 | 16 | Blue |
| 4700118 | 4700218 | 0.856 | 0.885 | 21.8 | 22.4 | 55 | 84 | 0.146 | 19 | Orange |
| 4700119 | 4700219 | 0.886 | 0.911 | 22.5 | 23.1 | 56 | 85 | 0.167 | 16 | Red |
| 4700120 | 4700220 | 0.912 | 0.941 | 23.2 | 23.9 | 57 | 86 | 0.154 | 19 | Black |
| 4700121 | 4700221 | 0.942 | 0.975 | 24.0 | 24.7 | 58 | 87 | 0.146 | 20 | Green |
| 4700122 | 4700222 | 0.976 | 1.005 | 24.8 | 25.5 | 60 | 89 | 0.167 | 18 | Yellow |
| 4700123 | 4700223 | 1.006 | 1.034 | 25.6 | 26.3 | 61 | 90 | 0.154 | 20 | Purple |

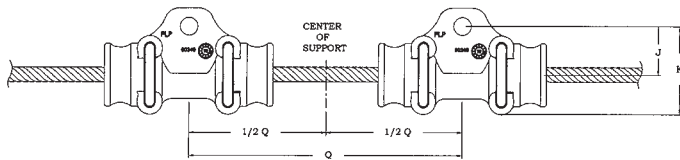
FIBERLIGN® Cushion Clamp for OPGW

FIBERLIGN Cushion Clamp Dimensions



| Dimensions Inches (mm) | | | | | | | | | | | | | | | Ultimate Vertical Strength (Single) lbs. |
|------------------------|-----------------|----------------|--------------|---------------|---------------|--------------|---------------|------------|----------------|----------------|----------------|--------------|------------|-----------------|--|
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | P | |
| 2-23/64 (59.9) | 8-11/32 (211.9) | 2-11/32 (59.5) | 59/64 (23.4) | 3-7/64 (79.0) | 1-5/32 (29.4) | 2-1/8 (54.0) | 5-1/4 (133.4) | 5/8 (15.9) | 2-11/32 (59.5) | 3-41/64 (92.5) | 1-25/32 (45.2) | 31/64 (12.3) | 1/2-13 UNC | 3-15/16 (100.0) | 20,000 |

FIBERLIGN Cushion Clamp: Double

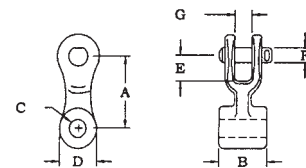


| Dimension Q Inches (cm) | Ultimate Vertical Strength (Double) lbs. |
|-------------------------|--|
| 22 (55.9) | 40,000 |

Fittings & Yoke Plate

Clevis Eye

| Catalog Number | Dimensions Inches (mm) | | | | | | | Ultimate Vertical Strength (lbs.) |
|----------------|------------------------|------------|--------------|--------------|--------------|------------|--------------|-----------------------------------|
| | A | B | C | D | E | F | G | |
| CE-5261 | 3-1/8 (79.4) | 3/4 (19.1) | 11/16 (17.5) | 1-1/2 (38.1) | 1-1/2 (38.1) | 5/8 (15.9) | 13/16 (20.6) | 20,000 |

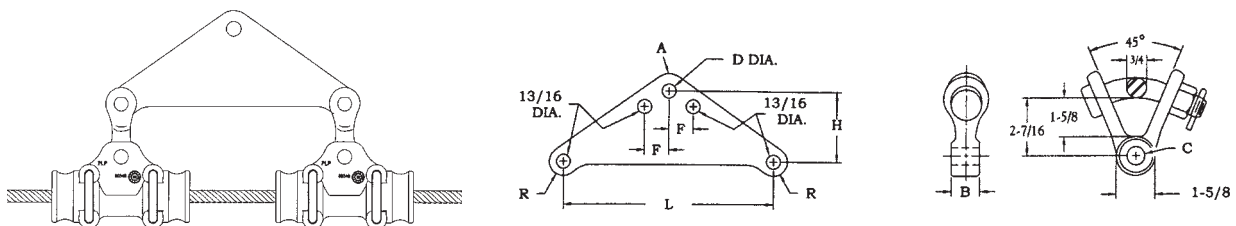


Yoke Plate

| Catalog Number | Dimensions Inches (cm) | | | | | | Plate Thickness |
|----------------|------------------------|--------------|----------|--------------|--------------|---------------|-----------------|
| | L | H | D | R | Radius A | F | |
| YP-5909 | 22 (55.9) | 7-1/4 (18.4) | 1 (25.4) | 15/16 (23.8) | 1-1/4 (31.8) | 4-3/16 (10.6) | 5/8 (15.9 mm) |

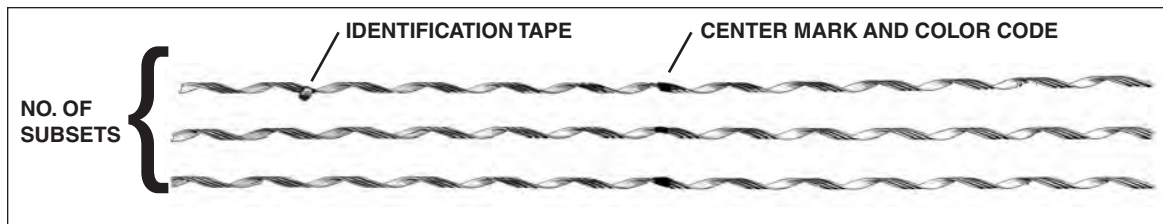
Y-Clevis Eye

| Catalog Number | Dimensions Inches (mm) | | Ultimate Vertical Strength (lbs.) |
|----------------|------------------------|--------------|-----------------------------------|
| | B | C | |
| YC-5207 | 3/4 (19.1) | 11/16 (17.5) | 20,000 |





FIBERLIGN® Repair Rods for OPGW



NOMENCLATURE

Subsets: Individual aluminum clad steel rods assembled into groups. The bore is coated with conductive grit.

Center Mark: Establishes recommended alignment of rods during application.

Color code: Provides identification for application of OPGW size that corresponds to the information appearing in the table below.

Identification Tape: Shows catalog number, nominal sizes.

The extent of mechanical damage that the product can repair for single layer OPGW is up to 50% of the cable rated strength. The 50% rating is established by PLP® based on repair rod performance. Contact the OPGW cable manufacturer to verify the extent of damage that the specific cable design can survive without jeopardizing the performance of the fiber optic elements. If the cable manufacturer limits the repair level to lower than 50%, limit the use of the repair rod to the lower level for that specific cable. Consult PLP for further details.

Lay direction of the Repair Rods should be the same as the outer strands of the OPGW. Left-hand lay is standard, consult PLP for right-hand lay designs.

GENERAL RECOMMENDATIONS

FIBERLIGN Repair Rods are designed as a single-component, outer layer assembly for use on OPGW and are intended for repair of the outer mechanical strand members on an OPGW cable. **This is not an optical repair product.**

These OPGW Repair Rods are not designed or tested as splices for use on all-metal overhead shield wire and are not intended for that application.

Restorative-Repair: These Repair Rods will provide varying levels of mechanical and electrical repair depending upon the specific construction, stranding and material of the OPGW.



| Repair Rods | | | | | |
|----------------|-----------------------|---------------------|------------|--------|------|
| Catalog Number | Diameter Range (inch) | Diameter Range (mm) | Color Code | Length | |
| | | | | in | M |
| 3600100 | .354-.385 | 8.9-9.7 | Red | 45 | 1.14 |
| 3600101 | .386-.422 | 9.8-10.7 | Black | 48 | 1.22 |
| 3600102 | .423-.460 | 10.8-11.6 | Orange | 50 | 1.27 |
| 3600103 | .461-.505 | 11.7-12.8 | Green | 54 | 1.37 |
| 3600104 | .506-.550 | 12.9-13.9 | Blue | 61 | 1.55 |
| 3600105 | .551-.602 | 14.0-15.2 | Yellow | 65 | 1.65 |
| 3600106 | .603-.660 | 15.3-16.7 | Brown | 70 | 1.78 |
| 3600107 | .661-.719 | 16.8-18.2 | Purple | 74 | 1.88 |
| 3600108 | .720-.785 | 18.3-19.9 | Pink | 80 | 2.03 |
| 3600109 | .786-.850 | 20.0-21.5 | Red | 86 | 2.18 |
| 3600110 | .851-.933 | 21.6-23.6 | Black | 94 | 2.39 |
| 3600111 | .934-1.020 | 23.7-25.9 | Orange | 102 | 2.59 |

Left-hand lay standard