



## **PREFORMED** LINE PRODUCTS

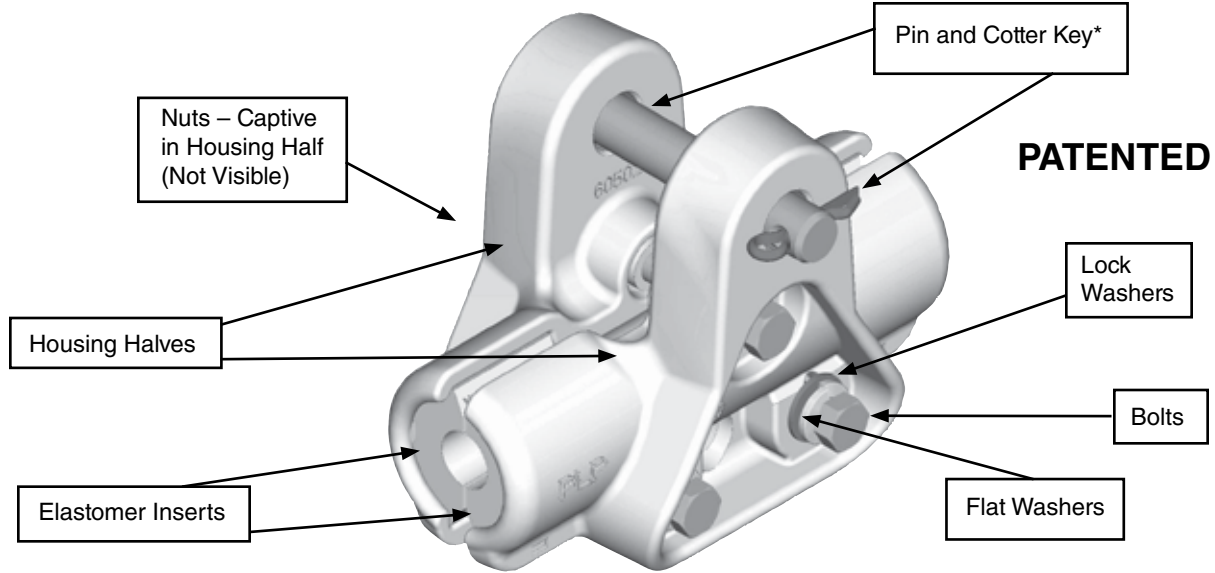
### **Section 1 – Transmission: Suspension & Support**

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# CUSHION-GRIP® Suspension

## NOMENCLATURE



## GENERAL RECOMMENDATIONS

CUSHION-GRIP Suspensions are intended for use on all aluminum based conductors, and are designed to reduce the static and dynamic stresses at the support point so that the conductor is protected against the effects of oscillations. The conductor is cushioned by field proven, integral elastomer inserts, which guard against abrasion, wear, and fatigue.

The level of protection provided by the CUSHION-GRIP Suspension is comparable to a bolted clamp over armor rods. This equates to a reduction in bending strain as high as 50% as compared to bare conductor in a bolted clamp. This reduction in bending strain can be directly related to an increase in overall conductor life. The standard CUSHION-GRIP Suspension is designed for up to 125°C continuous conductor operation (150°C two hour emergency) and the CGS-HT version can be used for applications with continuous conductor operating temperatures up to 200°C (225°C two hour emergency).

### Features and Benefits:

- The CUSHION-GRIP Suspension is shipped assembled with no loose parts. All fasteners are factory installed to eliminate lost hardware in the field.
- Labor Savings – To install the CUSHION-GRIP Suspension simply spread the body halves, place over the conductor, and tighten bolts.

- Integral Cushions – minimize conductor bending stresses at critical entry locations.
- Compatible with standard attachment hardware.
- Designed for EHV applications – corona free in bundled 345 kV applications.
- Easy Hot Stick application – Lower captive fasteners act as hinge to facilitate hot stick application.

**VERTICAL ULTIMATE LOAD.** The vertical ultimate load of the CUSHION-GRIP Suspension is listed in the table on the next page.

**SLIP LOAD.** When initially installed, the CGS Clamp has a slip load that ranges between 10% to 15% of the conductor's rated breaking strength (RBS).

**LINE ANGLE.** The maximum recommended line angle for a CUSHION-GRIP Suspension is 30° as a single suspension and 60° in a double configuration utilizing a yoke plate.

\* Can be supplied with a bolt/nut/cotter in place of the suspension pin and cotter.

**Thermal Rating (Continuous)**  
**Standard 125°C**  
**HT Version 200°C**

# CUSHION-GRIP® Suspension

Catalog Number Range	Conductor Range Inches (mm)		Nominal Conductor Size	Height Inches (mm)	Width Inches (mm)		Length Inches (mm)	Weight Pounds (kg)	Standard Carton Quantity	Vertical Ultimate Load
	Min.	Max.			Min.	Max.				
CGS-1095	0.312 (7.9)	0.608 (15.4)	#2-4/0	4.85 (123 mm)	0.80 (9 mm)	1.20 (30 mm)	6.5 (165)	2.5 (1.1 kg)	10 units	15,000 lbs. (67 kN)
CGS-1096	0.609 (15.5)	0.883 (22.4)	266.8-477	5.30 (135 mm)	3.30 (84 mm)	3.85 (98 mm)	6.85 (169 mm)	4.00 (1.8 kg)	3 units	25,000 lbs. (111 kN)
CGS-1097	0.884 (22.5)	1.196 (30.4)	556.5-954	6.00 (152 mm)	3.30 (84 mm)	3.85 (98 mm)	7.55 (192 mm)	5.5 (2.5 kg)	3 units	
CGS-1098	1.197 (30.4)	1.545 (39.2)	1033.5-1590	6.25 (159 mm)	3.30 (84 mm)	3.85 (98 mm)	8.60 (218 mm)	6.7 (3.0 kg)	3 units	
CGS-1120	1.546 (39.2)	1.569 (39.8)		7.60 (183 mm)	3.90 (99.8 mm)	4.40 (111.8 mm)	9.20 (234 mm)	9.5 (4.3 kg)	3 units	30,000 lbs. (136 kN)
CGS-1121	1.570 (39.8)	1.639 (41.6)	1780; 84/19							
CGS-1122	1.640 (41.7)	1.707 (43.3)								
CGS-1123	1.708 (43.4)	1.77 (45.0)	2156; 84/19 & 72/7							
CGS-1124	1.772 (45.0)	1.833 (46.5)	2312; 76/19							
CGS-1125	1.834 (46.6)	1.892 (48.0)								
CGS-1126	1.893 (48.1)	1.948 (49.5)								
CGS-1127	1.949 (49.5)	2.001 (50.8)								
CGS-1128	2.002 (50.8)	2.052 (52.12)								

NOTES: For high temperature (HT) version add HT to the catalog number (Example - CGS -1110-HT).

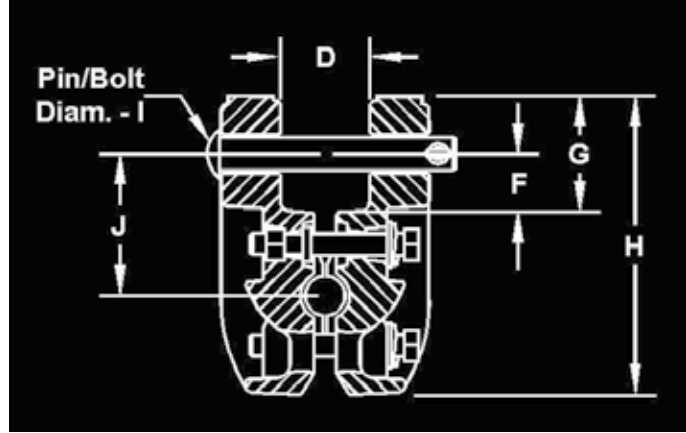
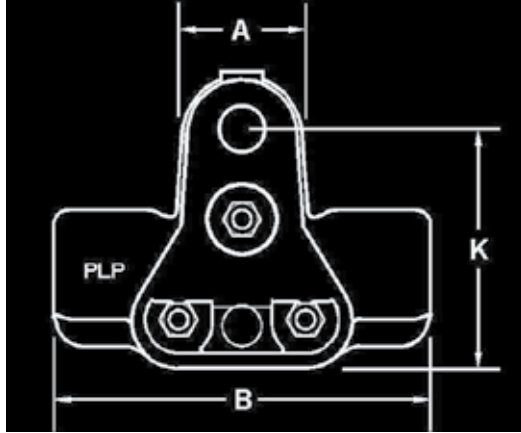
Add CE, YC, or SE to catalog number to include Clevis Eye, Y-Clevis Eye or Socket Eye (Example: CGS1110SE or CGS-1110HTSE).

For bolt, nut & cotter pin in place of pin, add BNK to catalog number (Examples: CGS-1110-BNK, CGS-1110HTBNK).



# CUSHION-GRIP® Suspension

## DIMENSIONAL TABLES

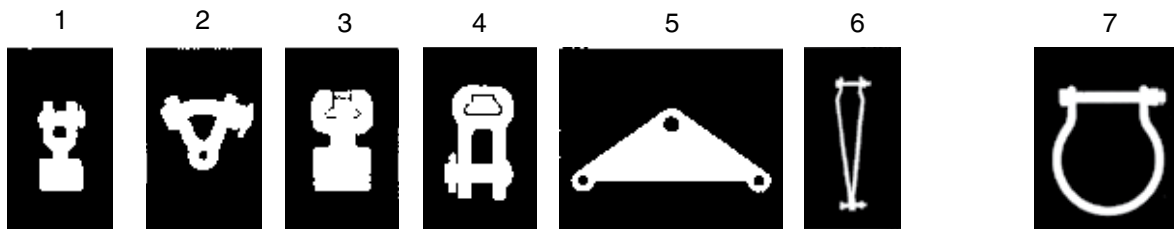


Dimensions – Inches (mm)		Dimensions – Inches (mm)									
		A	B	D		F	G	H	I	J	K
Min.	Max.			Min.	Max.						
0.312 (7.9)	0.608 (15.4)	2.00 (51)	6.5 (165)	0.80 (20.3)	1.20 (30.5)	1.00 (25.4)	2.00 (51)	4.85 (123)	5/8 (15.9)	2.40 (61)	3.85 (98)
0.609 (15.5)	0.883 (22.4)	2.25 (57)	6.85 (174)	1.15 (29.2)	1.70 (43.2)	1.00 (25.4)	2.00 (51)	5.30 (135)	5/8 (15.9)	2.60 (66)	4.30 (109)
0.884 (22.5)	1.196 (30.4)	2.25 (57)	7.55 (192)	1.15 (29.2)	1.70 (43.2)	1.00 (25.4)	2.00 (51)	6.00 (152)	5/8 (15.9)	2.70 (69)	4.95 (126)
1.178 (29.9)	1.545 (39.2)	2.25 (57)	8.60 (218)	1.15 (29.2)	1.70 (43.2)	1.00 (25.4)	2.00 (51)	6.25 (159)	5/8 (15.9)	2.90 (74)	5.20 (132)
1.546 (39.2)	2.052 (52.12)	2.50 (63.5)	9.20 (234)	1.25 (32.8)	1.80 (45.7)	1.25 (32.8)	2.50 (63.5)	7.60 (193)	5/8 (15.9)	3.50 (89)	6.35 (161.3)

See diagram above for CGS dimensions for assistance in choosing the appropriate mating hardware part numbers.

## CGS HARDWARE & FITTINGS

Shown below are the Clevis Eye (1), Y-Clevis Eye (2), Socket Eye (3), Socket Clevis (4), Yoke Plate (5), Vertical Bundle Links (6) and Hold-Down Shackles (7) that can be used in conjunction with the CUSHION-GRIP Suspension.

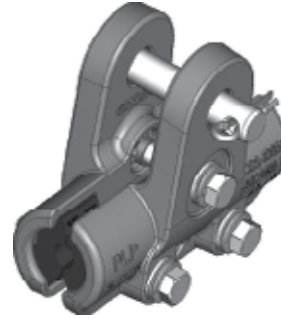


CE-5105 CE-5259 (for CGS-1095)	YC-5209 YC-5206 (for CGS-1095)	SE-5154 SE-5156 (for CGS-1096, 1097, 1098) SE-5152 (for CGS-1095)	SC-5194	YP-5907	VBL-MS-11244 (12") VBL-MS-11302 (18")
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Conductor Range	Hughes Brothers	Hubbell
0.609" – 1.196"	1888.5	88016 – 2000
1.197" – 1.545"	1888.8	88018 – 2000
1.546" – 2.052"	1888.8	N/A

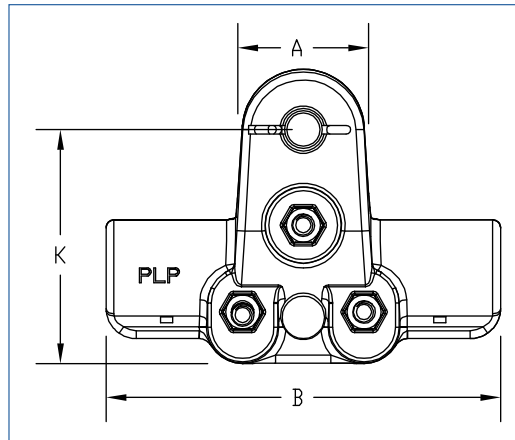
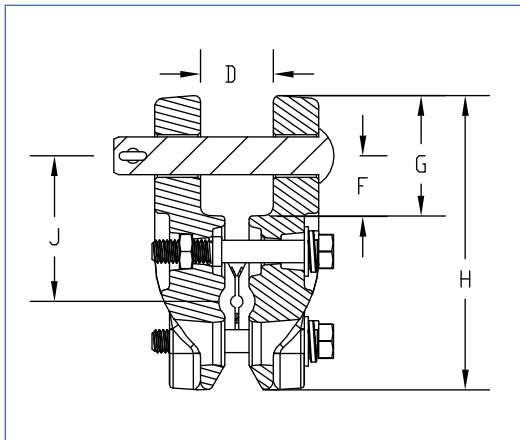
# CUSHION-GRIP® Suspension

For use on:  
Galvanized Steel Strand



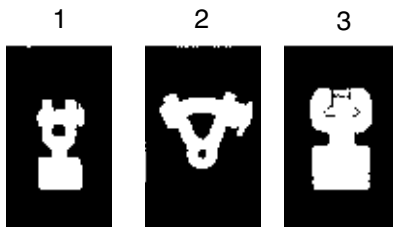
Catalog Number Range	Conductor Range Inches (mm)		Nominal Conductor Sizes	H Height Inches (mm)	D Width Inches (mm)		B Length Inches (mm)	Weight Pounds (Kg)	Standard Carton Quantity	Vertical Ultimate Load
	Min.	Max.			Min.	Max.				
CGS-1095G	.312 (7.9)	.608 (15.5)	5/16"-1/2"	4.62 (117)	.80 (20.3)	1.20 (30.5)	5.5 (140)	5 (2.2)	3	20,000 lbs (84 KN)

## DIMENSIONAL TABLES



Dimensions – Inches (mm)									Material
A	B	D	F	G	H	I	J	K	
2.00 (50.8)	5.48 (139.2)	1.10 (27.94)	0.98 (24.89)	1.98 (50.30)	4.62 (117.34)	.625 (15.87)	2.40 (60.96)	3.62 (91.95)	Ductile Iron

## CGS HARDWARE & FITTINGS



CE-5261

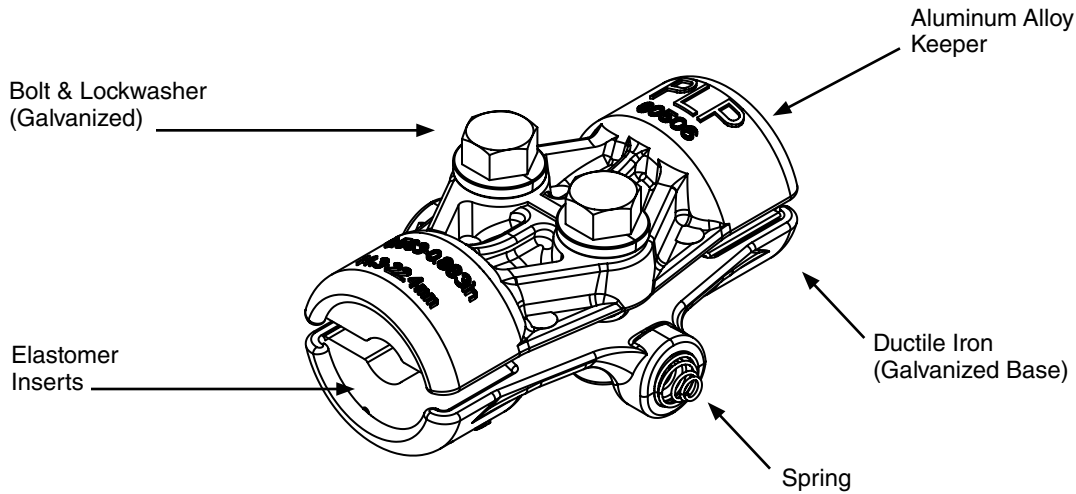
YC-5207

SE-5152



# CUSHION-GRIP® Support

## NOMENCLATURE



## GENERAL RECOMMENDATIONS

The CUSHION-GRIP Support is intended for use on all aluminum based conductors, and is designed to reduce the static and dynamic stresses at the support point, so that the conductor is protected against the effects of oscillations. The conductor is cushioned by field proven, integral elastomer inserts, which guard against abrasion, wear, and fatigue.

The level of protection provided by the CUSHION-GRIP Support is comparable to a bolted clamp over armor rods. This equates to a reduction in bending strain as high as 50% as compared to bare conductor in a bolted clamp. This reduction in bending strain can be directly related to an increase in overall conductor life. The CUSHION-GRIP Support is designed for up to 125°C continuous conductor operation (150°C two hour emergency), and the HT version can be used for applications with continuous conduction operating temperatures up to 200°C (225°C two hour emergency).

**Thermal Rating (Continuous)**  
**Standard 125°C**  
**HT Version 200°C**

### Features and Benefits:

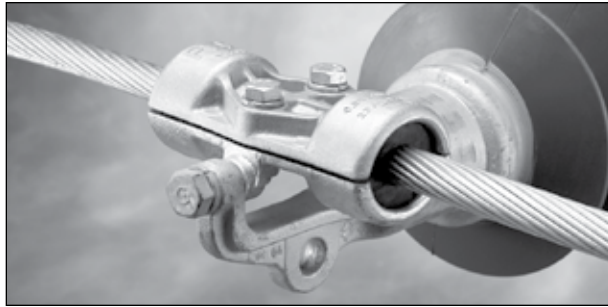
- The CUSHION-GRIP Support is shipped assembled. All fasteners are captivated in the keeper.
- Labor Savings – To install the CUSHION-GRIP Support simply install the base, place the keeper over the conductor, and tighten bolts.
- Integral Cushions – minimize conductor bending stresses at critical entry locations.

**VERTICAL ULTIMATE LOAD.** The CUSHION-GRIP Support will withstand a pulloff load from the trunnion pins of the insulator cap of 5,000 lbs., applied in any direction. This includes the vertical up direction (uplift).

**SLIP LOAD.** When initially installed, the CGS has a slip load that ranges between 10% to 15% of the conductor's rated breaking strength (RBS).

**LINE ANGLE.** The maximum recommended line angle for a CUSHION-GRIP Support is 30°.

# CUSHION-GRIP® Support

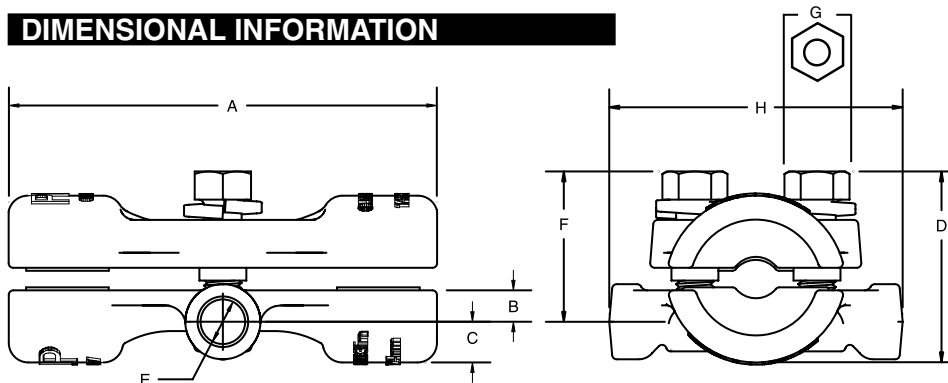


## ORDERING INFORMATION

Catalog Number	Conductor Range (mm)		Nominal Conductor Sizes	Weight/Unit Pounds (Kg)	Standard Carton Quantity
	Min.	Max.			
CGS-2100	.325" (8.3)	.563" (14.3)	#2 to 4/0	1.45 (0.66)	3
CGS-2101	.564" (14.3)	.883" (22.4)	226 Kcmil to 477 Kcmil	2.40 (1.1)	3
CGS-2102	.884" (22.4)	1.196" (30.4)	556 Kcmil to 954 Kcmil	3.50 (1.6)	3
CGS-2103	1.197" (30.4)	1.504" (38.2)	954 Kcmil to 1590 Kcmil	5.00 (2.3)	3

Note: For high temperature (HT) version add "HT" to the catalog number (Example: CGS-2102HT).

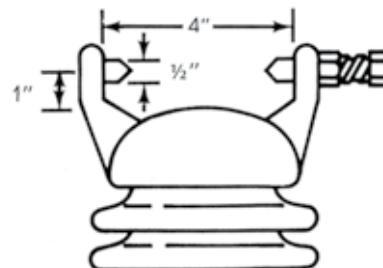
## DIMENSIONAL INFORMATION



Catalog Number	Dimensions (m)							
	A	B	C	D	E	F	G	H
CGS-2100	5	0.35	0.50	1.85	0.595	1.5	9/16	3-7/8
CGS-2101	5.7	0.45	0.55	2.4	0.595	2	3/4	3-7/8
CGS-2102	6.4	0.75	0.55	3	0.595	2	3/4	3-7/8
CGS-2103	6.5	0.75	0.88	3.4	0.595	2.4	3/4	3-7/8

## CLAMP TOP TRUNNION

To insure proper fit and service life, it is recommended that only line post insulators with clamp top trunnion caps that conform to ANSI standards be used. See the illustration on the right for nominal cap dimensions that illustrate ANSI standards that have been established outlining the permissible dimensions and tolerances for trunnion caps. Consult the insulator manufacturer when in doubt about insulator standards.



The above dimensions are approximates for design information. Consult ANSI specification C29.7-1977 for exact dimensions.

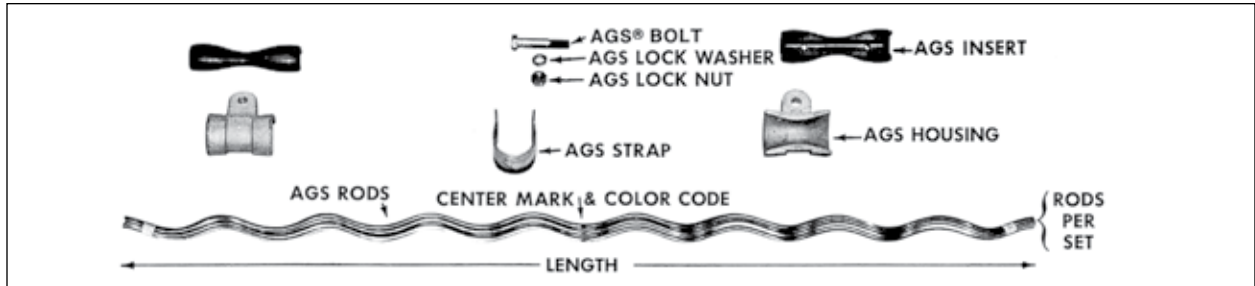




# ARMOR-GRIP® Suspension

## NOMENCLATURE

	Thermal Rating	
	Continuous	2-Hour Emergency
Standard	200°C	225°C
High Temperature	250°C	250°C



**AGS® Bolt, Washer, Lock Nut:** Galvanized Steel.

**AGS Strap:** Galvanized Steel for conductor dia. range .272"-.500".  
High-Strength Aluminum Alloy for conductor dia. range .482"-2.233".

**AGS 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.



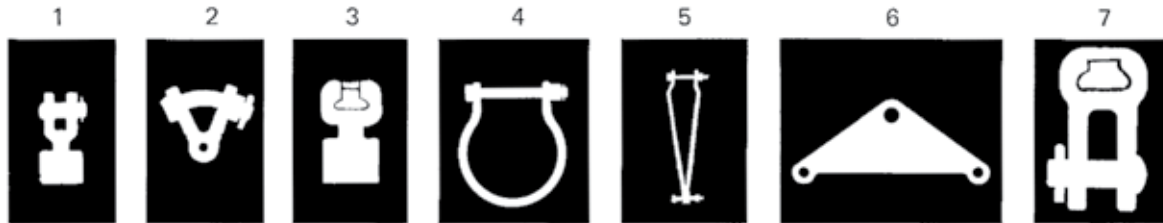
**AGS Housing:** Galvanized Steel Stamping – for cable dia. range .272"-.500".  
High-Strength Aluminum Alloy Casting for conductor dia. range .482"-2.233".

**AGS Rods:** Aluminum Clad Steel for ACSR diameter .304"-.481".  
Aluminum Alloy for ACSR diameter .482"-2.233".  
Aluminum Clad Steel for Alumoweld Strand diameter .272"-.500".  
Galvanized Steel for Galvanized Steel Strand, diameter .272"-.500".  
Standard Armor Rods have dimensions which are different from AGS Rods and cannot be substituted.

**Ball End Rod:** Rod has a Ball End for non-EHV application. PARROT-BILL® ends are supplied for EHV application. (345kv and above).

## AGS HARDWARE and FITTINGS

Shown below is the Clevis Eye (1), Y Clevis Eye (2), Socket Eye (3), Hold-Down Weight Shackle (4), Vertical Bundling



## GENERAL RECOMMENDATIONS

Link Assembly (5), Yoke Plate (6), and Socket Clevis (7). ARMOR-GRIP Suspension is intended for use on aluminum based conductors, Alumoweld and galvanized steel strands. It is designed to reduce the static and dynamic stresses at the support point, so that the conductor or strand is protected

against the effects of oscillations. It also protects the conductor in the support against impulse and power flash-over.

ARMOR-GRIP Suspension is recommended as being superior to armor-clamp combinations, for protecting conductors from bending stress, compression stress and abrasion.

(Continued)



# ARMOR-GRIP® Suspension

## GENERAL RECOMMENDATIONS CONTD.

**VERTICAL ULTIMATE STRENGTH.** Refer to dimensional tables in this section.

**SLIP LOAD.** When initially installed, the AGS® Unit has a slip load of approximately 20% of the conductor RBS and approximately 10% of the EHS strands RBS during unbalanced load conditions, but significantly higher loads can be expected after the unit has been in service for a period of time.

**THERMAL RATING.** Two versions of the ARMOR-GRIP Suspension are available. The standard version is designed for up to 200°C continuous temperature, and the high temperature version (HT), which can withstand a continuous conductor temperature of 250°C.

**LINE ANGLE.** The maximum recommended line angle for a single support AGS Unit is 30°. For angles between 30° and 60°, the ARMOR-GRIP Suspension: Double is recommended. Refer to pages 1-18 thru 1-24 for catalog numbers.

## DESIGN MODIFICATIONS

### ARMOR-GRIP Suspension: PARROT-BILL® Ends

To meet the corona onset and RIV requirements for most extra-high-voltage applications (345 KV and above), PARROT BILL Ends are to be used instead of the standard ball-end rods. Consult the Factory for an engineering recommendation.



### ARMOR-GRIP Suspension: for Line Repair

For repair of fatigue-damaged conductors, a specially designed ARMOR-GRIP Suspension can be applied over PREFORMED™ Armor Rods to extend the life of the conductor. Wrench-formed rods must be removed when conductor fatigue occurs under them; a splice is then applied to the fatigued area and the AGS Unit is applied over the splice. When considering the use of this product, consult the Factory for an engineering recommendation.



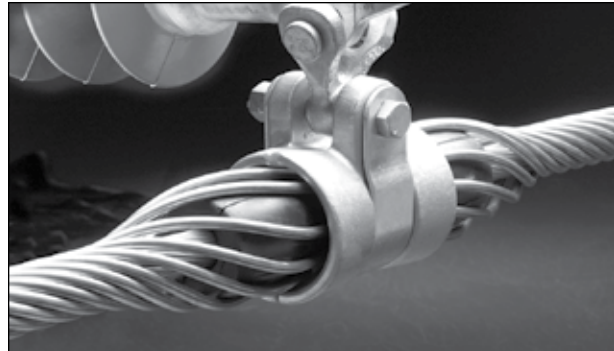
## SAFETY CONSIDERATIONS

1. This product is intended for a single (one-time) use and for the specified application. However, all components, **except the rod**, may be reused if in good condition. **CAUTION: DO NOT MODIFY OR REUSE THE RODS UNDER ANY CIRCUMSTANCES.**
2. This product is intended for use by trained craftspeople only. This product **SHOULD NOT BE USED** by anyone who is not familiar with and trained in the use of it.
3. When working in the area of energized lines with this product, **EXTRA CARE** should be taken to prevent accidental electrical contact.
4. For **PROPER PERFORMANCE AND PERSONAL SAFETY** be sure to select the proper size ARMOR-GRIP Suspension before application.
5. ARMOR-GRIP Suspensions are precision devices. To insure proper performance, they should be stored in cartons under cover and handled carefully.



# ARMOR-GRIP® Suspension

**For use on:**  
**ACSR, All-Aluminum, Aluminum Alloy,**  
**AWAC®, Compacted All-Aluminum,**  
**Compacted ACSR, ACSS, ACSS/TW**



Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	AGS® Rods			AGS Hardware Sets Per Carton	AGS Rods & Hardware Wt./Lbs. Per Carton	Color Code	
	Min.	Max.		Length (Inches)	Rod Diameter (Inches)	Rods Per Set				Sets Per Carton
AGS-5156	.304	.315	#4, 3/4AWAC	26	.102	10	24	24	55	Brown
AGS-5157	.316	.327	#2, 6/1	26	.102	11	24	24	56	Red
AGS-5158	.328	.342	#4, 2/5AWAC	26	.102	11	24	24	57	Orange
AGS-5159	.343	.355	#3, 3/4AWAC	26	.102	11	24	24	58	Black
AGS-5160	.356	.374	#1, 5/2AWAC	26	.102	12	24	24	59	Green
AGS-5161	.375	.389	#3, 2/5AWAC	26	.102	12	24	24	59	Purple
AGS-5162	.390	.404	1/0, 6/1	36	.128	11	24	24	79	Yellow
AGS-5163	.405	.418	1/0, 5/2AWAC	36	.128	11	24	24	79	Brown
AGS-5164	.419	.434	#1, 3/4AWAC	36	.128	11	24	24	79	Green
AGS-5165	.435	.450	2/0, 6/1	36	.128	11	24	24	79	Blue
AGS-5166	.451	.470	2/0, 5/2AWAC	36	.128	12	24	24	83	White
AGS-5167	.471	.481	110.8, 12/7	36	.128	12	24	24	83	Green
AGS-5155	.482	.499	#1, 2/5AWAC	40	.167	10	18	18	44	Red
AGS-5100	.500	.512	3/0, 6/1	40	.167	10	18	18	44	Blue
AGS-5101	.513	.530	4/0, 7W All-Alum.	41	.167	11	18	18	47	Green
AGS-5102	.531	.542	159, 12/7AWAC	41	.167	11	18	18	47	Yellow
AGS-5103	.543	.555	2/0, 3/4AWAC	44	.182	10	18	18	53	Black
AGS-5104	.556	.573	4/0, 6/1	44	.182	11	18	18	55	White
AGS-5105	.574	.594	266.8, 7-19W All-Alum.	45	.182	11	18	18	56	Brown
AGS-5106	.595	.606	266.8, 18/1AWAC	46	.182	11	18	18	53	Orange
AGS-5107	.607	.619	266.8, 18/1	46	.182	11	18	18	56	Purple
AGS-5108	.620	.645	266.8, 26/7	50	.182	12	18	18	61	Red
AGS-5109	.646	.673	336.4, 17-37W All-Alum.	54	.204	11	15	15	60	Blue
AGS-5110	.674	.690	300, 26/7	54	.204	11	15	15	61	Green
AGS-5111	.691	.710	300, 30/7	54	.204	12	15	15	64	Yellow
AGS-5112	.711	.731	336.4, 26/7	55	.204	12	15	15	65	Black
AGS-5113	.732	.750	336.4, 30/7	56	.204	12	15	15	66	White
AGS-5114	.751	.768	397.5, 26/7AWAC	60	.250	10	12	12	68	Brown
AGS-5115	.769	.795	397.5, 26/7	60	.250	11	12	12	68	Orange
AGS-5116	.796	.824	477, 18/1	61	.250	11	12	12	73	Purple
AGS-5117	.825	.845	477, 26/7AWAC	64	.250	11	12	12	76	Red
AGS-5118	.846	.870	477, 26/7	64	.250	11	12	12	76	Blue
AGS-5119	.871	.893	600, 37W All-Alum.	65	.250	12	12	12	81	Green
AGS-5120	.894	.907	500, 30/7	65	.250	12	12	12	82	Green
AGS-5121	.908	.920	556.5, 24/7	66	.250	12	12	9	81	Yellow
AGS-5122	.921	.937	556.5, 26/7	66	.250	12	9	9	81	Black
AGS-5123	.938	.962	605, 24/7	67	.250	12	9	9	81	White

**Note:** Add HT to catalog number for High Temperature Version (Ex.: AGS-5123HT).

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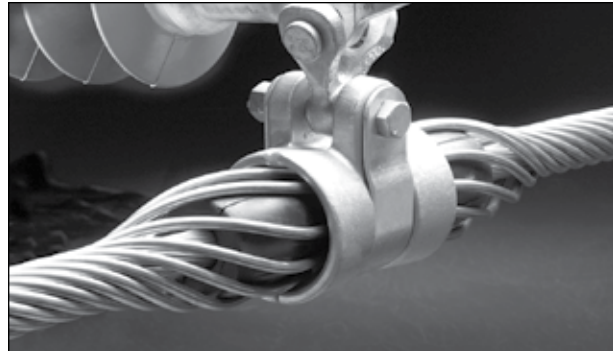
Right-hand lay standard

**EXPLANATORY NOTES:**

- (1) Nominal Conductor Size indicates one of various conductors within each range.
- (2) Reference general dimensional information for physical dimensions other than length.
- (3) Standard ARMOR-GRIP Suspension does not include AGS® FITTINGS, i.e., AGS Socket Eye, AGS Clevis Eye or AGS Y-Clevis Eye. See tables following AGS Catalog information for catalog numbers and dimensions of AGS FITTINGS.
- (4) AWAC is a registered trademark of the Copperweld Co.

# ARMOR-GRIP® Suspension

**For use on:**  
**ACSR, All-Aluminum, Aluminum Alloy,**  
**AWAC® Compacted All-Aluminum**  
**Compacted ACSR, ACSS, ACSS/TW**



Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	AGS® Rods				AGS Hardware Sets Per Carton	AGS Rods & Hardware Wt./Lbs. Per Carton	Color Code
	Min.	Max.		Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Sets Per Carton			
AGS-5124	.963	.986	636, 24/7	68	.250	13	9	9	87	Brown
AGS-5125	.987	1.005	636, 26/7	69	.250	13	9	9	87	Orange
AGS-5126	1.006	1.022	636, 30/19	80	.310	11	6	6	73	Purple
AGS-5127	1.023	1.040	795, 37-61W All-Alum.	82	.310	11	6	6	75	Red
AGS-5128	1.041	1.074	715.5, 26/7	82	.310	11	6	6	75	Blue
AGS-5129	1.075	1.090	874.5, 37W	82	.310	12	6	6	78	Green
AGS-5130	1.091	1.118	795, 26/7	82	.310	12	6	6	78	Yellow
AGS-5131	1.119	1.136	954, 37W All-Alum.	82	.310	12	6	6	78	Black
AGS-5132	1.137	1.152	795, 30/19	82	.310	12	6	6	78	White
AGS-5133	1.153	1.175	954, 45/7	82	.310	12	6	6	79	Brown
AGS-5134	1.176	1.208	954, 54/7	82	.310	12	6	6	79	Orange
AGS-5135	1.209	1.226	1113, 61W	88	.365	11	3	3	55	Purple
AGS-5136	1.227	1.259	1192.5, 61W All-Alum.	88	.365	11	3	3	55	Red
AGS-5137	1.260	1.286	1113, 48/7	88	.365	12	3	3	58	Blue
AGS-5138	1.287	1.314	1272, 61W	88	.365	12	3	3	58	Green
AGS-5139	1.315	1.355	1272, 45/7	88	.365	12	3	3	58	Yellow
AGS-5140	1.356	1.394	1272, 54/19	88	.365	12	3	3	60	Black
AGS-5141	1.395	1.416	1351.5, 54/19 AWAC	88	.365	13	3	3	61	White
AGS-5142	1.417	1.442	1510.5, 61W	88	.365	13	3	3	62	Brown
AGS-5143	1.443	1.477	1431, 54/19	88	.365	13	3	3	64	Orange
AGS-5144	1.478	1.516	1590, 45/7	88	.365	13	3	3	64	Purple
AGS-5145	1.517	1.557	1590, 54/19	88	.365	13	3	3	64	Red
AGS-5146	1.558	1.579	1780, 72/7	100	.365	14	3	3	78	Blue
AGS-5147	1.580	1.612	1780, 84/19	100	.365	14	3	3	78	Green
AGS-5148	1.613	1.650	2000, 91W	100	.365	14	3	3	79	Yellow
AGS-5149	1.651	1.688	2000, 72/7	100	.365	15	3	3	83	Black
AGS-5150	1.689	1.711	2000, 84/19	100	.365	15	3	3	83	White
AGS-5151	1.712	1.752	2129, 84/19	100	.365	15	3	3	83	Brown
AGS-5152	1.753	1.790	2156, 84/19	100	.365	15	3	3	83	Orange
AGS-5153	1.791	1.828	2300, 84/19	100	.365	15	3	3	83	Purple
AGS-5168	1.829	1.882	2515MCM76/19	100	.365	16	3	3	85	Red
AGS-5177	2.193	2.233		100	.365	18	3	3	88	Red

**Note:** Add HT to catalog number for High Temperature Version (Ex.: AGS-5177HT).

Right-hand lay standard

#### EXPLANATORY NOTES:

- (1) Nominal Conductor Size indicates one of various conductors within each range.
- (2) Reference general dimensional information for physical dimensions other than length.
- (3) Standard ARMOR-GRIP Suspension does not include AGS® FITTINGS, i.e., AGS Socket Eye, AGS Clevis Eye or AGS Y-Clevis Eye. See tables following AGS Catalog information for catalog numbers, prices and dimensions of AGS FITTINGS.
- (4) AWAC is a registered trademark of the Copperweld Co.



# ARMOR-GRIP® Suspension (EHV)

**With PARROT-BILL® End Rods for Extra High Voltage (EHV), 345 KV and above**

**For use on:  
ACSR, All-Aluminum, Aluminum Alloy,  
AWAC® Compacted All-Aluminum  
Compacted ACSR, ACSS, ACSS/TW**



Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	AGS® Rods				AGS Hardware Sets Per Carton	AGS Rods & Hardware Wt./Lbs. Per Carton	Color Code
	Min.	Max.		Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Sets Per Carton			
AGS-5500	.908	.920	556.5, 24/7	66	.250	12	12	9	81	Yellow
AGS-5501	.921	.937	556.5, 26/7	66	.250	12	9	9	81	Black
AGS-5502	.938	.962	605, 24/7	67	.250	12	9	9	81	White
AGS-5503	.963	.986	636, 24/7	68	.250	13	9	9	87	Brown
AGS-5504	.987	1.005	636, 26/7	69	.250	13	9	9	87	Orange
AGS-5505	1.006	1.022	636, 30/19	80	.310	11	6	6	73	Purple
AGS-5506	1.023	1.040	795, 37-61W All-Alum.	82	.310	11	6	6	75	Red
AGS-5507	1.041	1.074	715.5, 26/7	82	.310	11	6	6	75	Blue
AGS-5508	1.075	1.090	874.5, 37W	82	.310	12	6	6	78	Green
AGS-5509	1.091	1.118	795, 26/7	82	.310	12	6	6	78	Yellow
AGS-5510	1.119	1.136	954, 37W All-Alum.	82	.310	12	6	6	78	Black
AGS-5511	1.137	1.152	795, 30/19	82	.310	12	6	6	78	White
AGS-5512	1.153	1.175	954, 45/7	82	.310	12	6	6	79	Brown
AGS-5513	1.176	1.208	954, 54/7	82	.310	12	6	6	79	Orange
AGS-5514	1.209	1.226	1113, 61W	88	.365	11	3	3	55	Purple
AGS-5515	1.227	1.259	1192.5, 61W All-Alum.	88	.365	11	3	3	55	Red
AGS-5516	1.260	1.286	1113, 48/7	88	.365	12	3	3	58	Blue
AGS-5517	1.287	1.314	1272, 61W	88	.365	12	3	3	58	Green
AGS-5518	1.315	1.355	1272, 45/7	88	.365	12	3	3	58	Yellow
AGS-5519	1.356	1.394	1272, 54/19	88	.365	12	3	3	60	Black
AGS-5520	1.395	1.416	1351.5, 54/19 AWAC	88	.365	13	3	3	61	White
AGS-5521	1.417	1.442	1510.5, 61W	88	.365	13	3	3	62	Brown
AGS-5522	1.443	1.477	1431, 54/19	88	.365	13	3	3	64	Orange
AGS-5523	1.478	1.516	1590, 45/7	88	.365	13	3	3	64	Purple
AGS-5524	1.517	1.557	1590, 54/19	88	.365	13	3	3	64	Red
AGS-5525	1.558	1.579	1780, 72/7	100	.365	14	3	3	78	Blue
AGS-5526	1.580	1.612	1780, 84/19	100	.365	14	3	3	78	Green
AGS-5527	1.613	1.650	2000, 91W	100	.365	14	3	3	79	Yellow
AGS-5528	1.651	1.688	2000, 72/7	100	.365	15	3	3	83	Black
AGS-5529	1.689	1.711	2000, 84/19	100	.365	15	3	3	83	White
AGS-5530	1.712	1.752	2129, 84/19	100	.365	15	3	3	83	Brown
AGS-5531	1.753	1.790	2156, 84/19	100	.365	15	3	3	83	Orange
AGS-5532	1.791	1.828	2300, 84/19	100	.365	15	3	3	83	Purple

**Note:** Add HT to catalog number for High Temperature Version (Ex.: AGS-5532HT).

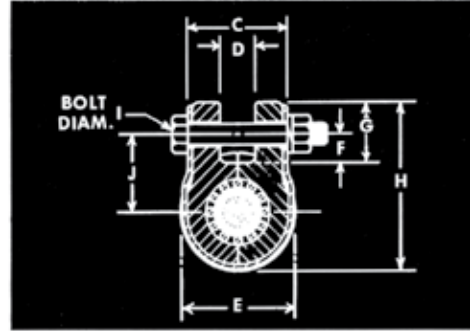
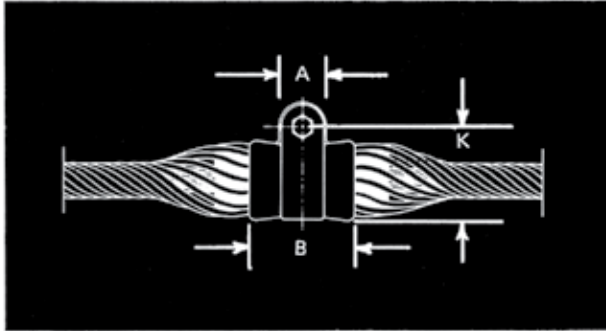
Right-hand lay standard

**EXPLANATORY NOTES:**

- (1) Nominal Conductor Size indicates one of various conductors within each range.
- (2) Reference general dimensional information for physical dimensions other than length.
- (3) Standard ARMOR-GRIP Suspension does not include AGS® FITTINGS, i.e., AGS Socket Eye, AGS Clevis Eye or AGS Y-Clevis Eye. See tables following AGS Catalog information for catalog numbers and dimensions of AGS FITTINGS.
- (4) AWAC is a registered trademark of the Copperweld Co.

# ARMOR-GRIP® Suspension

## DIMENSIONAL TABLES



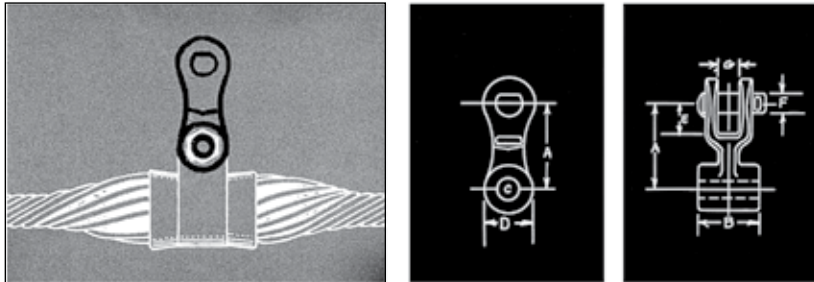
Conductor Range (Inches)		Dimension (Inches)											Vertical Ultimate Strength (Pounds)
Min.	Max.	A	B	C	D	E	F	G	H	I	J	K	
.304	.389	1-3/4	2-1/4	1-1/4	11/16	2-1/16	1-5/32	2-1/32	4-3/32	5/8	2-1/32	3-7/32	15,000
.390	.481	1-3/4	2-1/2	1-5/16	11/16	2-1/4	1-3/32	1-31/32	4-3/32	5/8	2-3/32	3-7/32	15,000
.482	.542	1-5/8	3	2-3/32	21/32	2-13/32	1	1-13/16	4	5/8	1-31/32	3-3/16	10,000
.543	.645	1-3/4	3-1/2	2-5/32	23/32	2-5/8	1-1/32	1-29/32	4-3/16	5/8	1-15/16	3-1/4	10,000
.646	.750	1-3/4	3-3/4	2-1/4	3/4	2-13/16	1	1-7/8	4-7/16	5/8	2-5/32	3-9/16	15,000
.751	.907	2	4-17/32	2-11/16	7/8	3-5/16	1	2	4-3/4	5/8	2-11/32	4	20,000
.908	1.005	2	5	2-15/16	7/8	3-11/16	1	2	5-3/8	5/8	2-17/32	4-3/8	20,000
1.006	1.208	2-1/4	5-1/2	3-1/2	1-3/16	4-5/32	1	2-1/8	5-29/32	5/8	2-45/64	4-25/32	25,000
1.209	1.355	2-1/4	6	3-5/8	1-1/4	4-13/16	1-1/4	2-3/8	6-11/16	3/4	3-5/32	5-9/16	25,000
1.356	1.557	2-1/4	6-1/2	4-1/8	1-3/8	5-1/16	1-1/8	2-1/4	6-5/8	3/4	2-31/32	5-1/2	25,000
1.558	1.882	2-1/2	7	4-11/16	2-1/4	5-19/32	1-1/8	2-3/8	7-1/4	3/4	3-3/16	6	25,000
1.883	2.233	2-1/2	7-1/2	5-7/32	2-13/32	6-1/16	1-3/16	2-7/16	7-25/32	3/4	3-1/2	6-17/32	30,000 (2)

**EXPLANATORY NOTE:**

- (1) AGS® Rod length and diameter for individual sizes can be taken from the catalog number tables.
- (2) CE-5106 and YC-5211 are rated at 25,000 lbs. vertical ultimate strength.

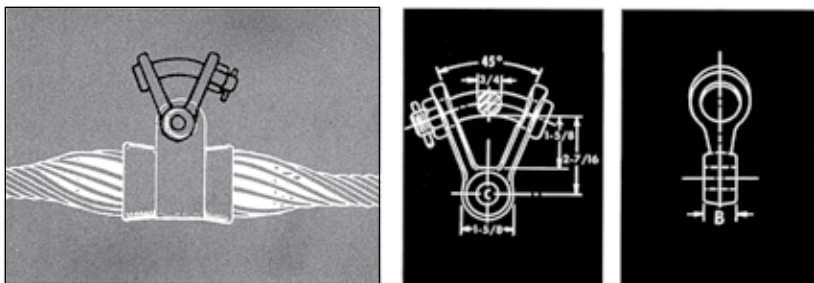
# ARMOR-GRIP® Suspension: Fittings

## AGS CLEVIS EYE\*



Catalog Number	Conductor Dia. Range (Inches)		General Dimensions							Vertical Ultimate Strength (Pounds)	Wt. Per 100 Units (Pounds)
	Min.	Max.	A In.	B In.	C In.	D In.	E In.	F In.	G In.		
CE-5259	.272	.750	3-1/8	1/2	11/16	1-1/2	1-1/2	5/8	13/16	15,000	104
CE-5261	.751	1.005	3-1/8	3/4	11/16	1-1/2	1-1/2	5/8	13/16	20,000	104
CE-5105	1.006	1.557	3-1/8	1-1/16	13/16	1-1/2	1-1/2	5/8	13/16	25,000	178
CE-5106	1.558	2.233	3-1/8	2-1/8	13/16	1-1/2	1-1/2	5/8	13/16	25,000	178

## AGS Y CLEVIS EYE\*



Catalog Number	Conductor Dia. Range (Inches)		General Dimensions		Vertical Ultimate Strength (Pounds)
	Min.	Max.	B In.	C In.	
YC-5206	.272	.750	5/8	11/16	15,000
YC-5207	.751	1.005	3/4	11/16	20,000
YC-5209	1.006	1.557	1-1/16	13/16	25,000
YC-5211	1.558	2.233	2-1/8	13/16	25,000

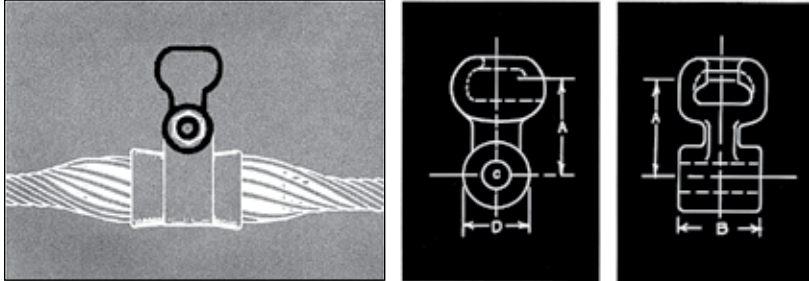
**EXPLANATORY NOTE:**

\*When ordered, AGS® FITTINGS will be packed separately from the standard ARMOR-GRIP® Suspension.



# ARMOR-GRIP® Suspension: Fittings

## AGS SOCKET EYE\*



Catalog Number	Conductor Dia. Range		General Dimensions				Vertical Ultimate Strength (Pounds)	Wt. Per 100 Units Pounds
	Min	Max	A In	B In	C In	D In		
SE-5150	.272	.750	2-5/16	1/2	11/16	1-1/2	15,000	165
SE-5152	.751	1.005	2-5/16	3/4	11/16	1-1/2	25,000	165
SE-5154	1.006	1.557	2-5/16	1-1/16	13/16	1-1/2	25,000	178
SE-5155	1.558	2.233	2-5/16	2-1/8	13/16	1-1/2	30,000	178

**EXPLANATORY NOTE:**

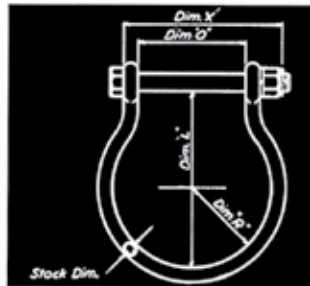
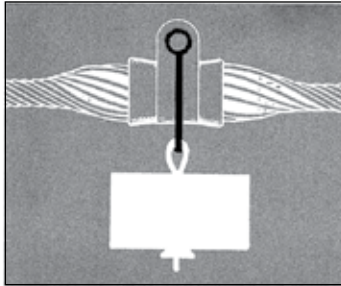
\*When ordered, AGS® FITTINGS will be packed separately from the standard ARMOR-GRIP® Suspension.





# ARMOR-GRIP® Suspension: Hardware

## Hold Down Weight Shackles\*



ARMOR-GRIP Suspension Conductor Diameter Range (Inches)	Hughes Brothers Stock No. †	Bolt Diameter (In.)	Stock Dim. (In.)	Dim. "X" (In.)	Dim. "O" (In.)	Dim. "L" (In.)	Dim. "R" (In.)	Maximum Hold Down Weight (Lbs.)
** .304- .500	1888.1	5/8	1/2	3-5/8	1-5/8	4	1-1/2	300
.482- .750	1888.2	5/8	1/2	4-3/8	2-3/8	4-7/8	1-7/8	300
.751- .907	1888.3	5/8	1/2	4-3/4	2-3/4	5-3/8	2-3/8	300
.908-1.005	1888.4	5/8	1/2	5-1/8	3-1/8	5-1/2	2-1/2	300
1.006-1.208	1888.5	5/8	1/2	5-3/4	3-3/4	6-1/8	2-3/4	300
1.209-1.355	1888.6	3/4	5/8	6	3-3/4	6-1/4	3	800
1.356-1.557	1888.7	3/4	5/8	6-1/2	4-1/4	6-1/2	3	800
1.558-1.828	1888.8	3/4	5/8	7-1/8	4-7/8	7-1/4	3-1/4	800

† Each assembly consists of a shackle body and hex-head bolt, lockwasher, nut, and Cotter Key.  
 \* SPECIAL PRODUCT sold by Hughes Brothers, Inc., Seward, Nebraska—See following page.  
 \*\* For use only with AGS Units installed on strand.

### Hughes Brothers, Inc.

#### ORDERING INSTRUCTIONS

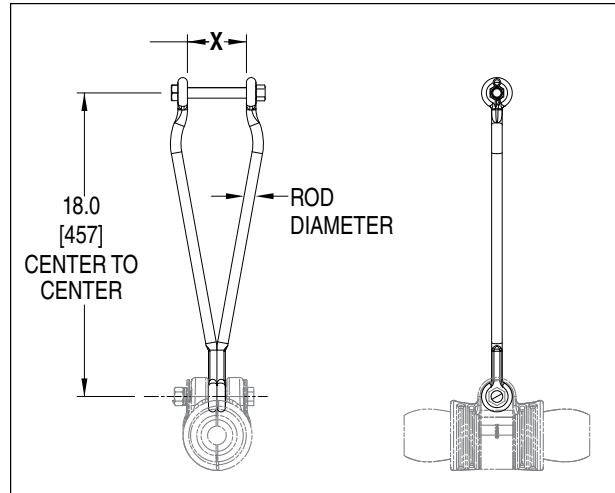
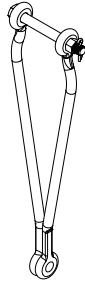
For: Hold-Down Weight Shackles

Order directly from: **Hughes Brothers, Inc.**  
 210 North 13th Street  
 P.O. Box 191  
 Seward, Nebraska 68424  
 Telephone: (402) 643-2991

Price and delivery information available from Hughes Brothers, Inc., upon request.

# ARMOR-GRIP® Suspension: Hardware

## Vertical Bundling Link for AGS



**X** = This dimension is sized appropriately for the corresponding AGS unit. Dimensions of the AGS unit can be found on page 1-12.

Catalog Number	AGS Range inches (mm)	Rod Diameter inches (mm)	Bolt Diameter inches (mm)	Center to Center inches (mm)	Rated Strength (per Sub-Conductor)
VBL-04	.751-.907 (19.0-23.0)	5/8 (15.8)	5/8 (15.8)	18 (457)	20,000#
VBL-05	.908-1.005 (23.0-25.5)	5/8 (15.8)	5/8 (15.8)	18 (457)	20,000#
VBL-06	1.006-1.208 (25.5-30.6)	5/8 (15.8)	5/8 (15.8)	18 (457)	25,000#
VBL-07	1.209-1.355 (30.6-34.4)	3/4 (19.0)	3/4 (19.0)	18 (457)	30,000#
VBL-08	1.356-1.557 (34.4-39.54)	3/4 (19.0)	3/4 (19.0)	18 (457)	30,000#
VBL-09	1.558-1.882 (39.54-47.80)	3/4 (19.0)	3/4 (19.0)	18 (457)	30,000#
VBL-10	1.883-2.233 (47.80-56.71)	3/4 (19.0)	3/4 (19.0)	18 (457)	30,000#

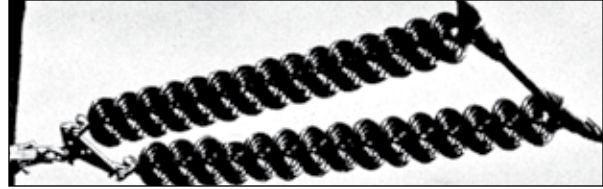
Also available in 12" vertical spacing. Add -12 to catalog number (example: VBL-06-12).  
Each assembly consists of two links, one bolt for top AGS, one lock washer and one locknut.



# ARMOR-GRIP® Suspension: Double

For Line Angles Between 30° and 60°

For use on:  
**ACSR, All-Aluminum, Aluminum Alloy,  
 AWAC® Compacted All-Aluminum  
 Compacted ACSR, ACSS, ACSS/TW**



Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	AGS® Rods				AGS Hardware Sets Per Carton	AGS Rods & Hardware Wt./Lbs. Per Carton	Color Code
	Min.	Max.		Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Sets Per Carton			
AGS-5888	.304	.315	#4, 3/4 AWAC	38	.102	10	24	48	102	Brown
AGS-5889	.316	.327	#2, 6/1	38	.102	11	24	48	104	Red
AGS-5890	.328	.342	#4, 2/5 AWAC	38	.102	11	24	48	106	Orange
AGS-5891	.343	.355	#3, 3/4 AWAC	38	.102	11	24	48	106	Black
AGS-5892	.356	.374	#1, 5/2 AWAC	38	.102	12	24	48	108	Green
AGS-5893	.375	.389	#3, 2/5 AWAC	38	.102	12	24	48	108	Purple
AGS-5894	.390	.404	1/0, 6/1	48	.128	11	24	48	135	Yellow
AGS-5895	.405	.418	1/0, 5/2 AWAC	48	.128	11	24	48	135	Brown
AGS-5896	.419	.434	#1, 3/4 AWAC	48	.128	11	24	48	135	Green
AGS-5897	.435	.450	2/0, 6/1	48	.128	11	24	48	135	Blue
AGS-5898	.451	.470	2/0, 5/2 AWAC	48	.128	12	24	48	141	White
AGS-5899	.471	.481	110.8, 12/7	48	.128	12	24	48	141	Green
AGS-5800	.482	.499	#1, 2/5 AWAC	53	.167	10	18	36	76	Red
AGS-5801	.500	.512	3/0, 6/1	53	.167	10	18	36	76	Blue
AGS-5802	.513	.530	4/0, 7W All-Alum.	53	.167	11	18	36	78	Green
AGS-5803	.531	.542	159, 12/7 AWAC	53	.167	11	18	36	78	Yellow
AGS-5804	.543	.555	2/0, 3/4 AWAC	58	.182	10	18	36	89	Black
AGS-5805	.556	.573	4/0, 6/1	58	.182	11	18	36	92	White
AGS-5806	.574	.594	266.8, 7-19W All-Alum.	58	.182	11	18	36	92	Brown
AGS-5807	.595	.606	266.8, 18/1 AWAC	58	.182	11	18	36	92	Orange
AGS-5808	.607	.619	266.8, 18/1	58	.182	11	18	36	92	Purple
AGS-5809	.620	.645	266.8, 26/7	66	.182	12	18	36	92	Red
AGS-5810	.646	.673	336.4, 19W All-Alum.	72	.204	11	15	30	98	Blue
AGS-5811	.674	.690	300, 26/7	72	.204	11	15	30	100	Green
AGS-5812	.691	.710	336.4, 26/7 AWAC	72	.204	12	15	30	105	Yellow
AGS-5813	.711	.731	336.4, 26/7	72	.204	12	15	30	105	Black
AGS-5814	.732	.750	336.4, 30/7	72	.204	12	15	30	105	White
AGS-5815	.751	.768	397.5, 26/7 AWAC	78	.250	10	12	24	110	Brown
AGS-5816	.769	.795	397.5, 26/7	78	.250	11	12	24	110	Orange
AGS-5817	.796	.824	397.5, 30/7	78	.250	11	12	24	114	Purple
AGS-5818	.825	.845	477, 26/7 AWAC	82	.250	11	12	24	119	Red
AGS-5819	.846	.870	477, 26/7	82	.250	11	12	24	119	Blue
AGS-5820	.871	.893	477, 30/7	82	.250	12	12	24	126	Green
AGS-5821	.894	.907	500, 30/7	82	.250	12	12	24	126	Green

**Note:** Add HT to catalog number for High Temperature Version (Ex.: AGS-5821HT).

(Continued on next page)

Right-hand lay standard  
 EXPLANATORY NOTES:

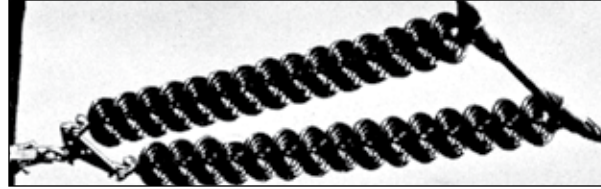
- (1) Nominal Conductor Size indicates one of various conductors within each range.
- (2) Reference general dimensional information for physical dimensions other than length.
- (3) ARMOR-GRIP Suspension: Double does not include AGS® FITTINGS, i.e., AGS Socket Eye, AGS Clevis Eye or AGS Y-Clevis Eye. See tables preceding AGS Catalog Information for catalog numbers, prices and dimensions of AGS FITTINGS. Two fittings are required for each ARMOR-GRIP Suspension: Double.
- (4) AWAC is a registered trademark of the Copperweld Co.

# ARMOR-GRIP® Suspension: Double

## For Line Angles Between 30° and 60°

For use on:

ACSR, All-Aluminum, Aluminum Alloy,  
AWAC® Compacted All-Aluminum  
Compacted ACSR, ACSS, ACSS/TW



Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	AGS® Rods				AGS Hardware Sets Per Carton	AGS Rods & Hardware Wt./Lbs. Per Carton	Color Code
	Min.	Max.		Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Sets Per Carton			
AGS-5822	.908	.920	556.5, 24/7	90	.250	12	9	18	133	Yellow
AGS-5823	.921	.937	556.5, 26/7	90	.250	12	9	18	110	Black
AGS-5824	.938	.962	556.5, 30/7	90	.250	12	9	18	110	White
AGS-5825	.963	.986	605, 26/7	90	.250	13	9	18	115	Brown
AGS-5826	.987	1.005	605, 30/19	90	.250	13	9	18	115	Orange
AGS-5827	1.006	1.022	636, 30/19	108	.310	11	6	12	117	Purple
AGS-5828	1.023	1.040	715.5, 24/7	108	.310	11	6	12	117	Red
AGS-5829	1.041	1.074	715.5, 26/7	108	.310	11	6	12	117	Blue
AGS-5830	1.075	1.090	715.5, 30/19	108	.310	12	6	12	122	Green
AGS-5831	1.091	1.118	795, 26/7	108	.310	12	6	12	122	Yellow
AGS-5832	1.119	1.136	900, 45/7	108	.310	12	6	12	123	Black
AGS-5833	1.137	1.152	795, 30/19	108	.310	12	6	12	123	White
AGS-5834	1.153	1.175	900, 54/7	108	.310	12	6	12	123	Brown
AGS-5835	1.176	1.208	954, 54/7	108	.310	12	6	12	123	Orange
AGS-5836	1.209	1.226	1033.5, 45/7	117	.365	11	3	6	86	Purple
AGS-5837	1.227	1.259	1033.5, 54/7	117	.365	11	3	6	86	Red
AGS-5838	1.260	1.286	1113, 48/7	117	.365	12	3	6	90	Blue
AGS-5839	1.287	1.314	1113, 54/19	117	.365	12	3	6	90	Green
AGS-5840	1.315	1.355	1192.5, 54/19	117	.365	12	3	6	90	Yellow
AGS-5841	1.356	1.394	1272, 54/19	120	.365	12	3	6	96	Black
AGS-5842	1.395	1.416	1351.5, 48/7	120	.365	13	3	6	100	White
AGS-5843	1.417	1.442	1351.5, 54/19	120	.365	13	3	6	100	Brown
AGS-5844	1.443	1.477	1431, 48/7	120	.365	13	3	6	100	Orange
AGS-5845	1.478	1.516	1510.5, 54/19	120	.365	13	3	6	100	Purple
AGS-5846	1.517	1.557	1590, 54/19	120	.365	13	3	6	100	Red
AGS-5847	1.558	1.579	1780, 72/7	137	.365	14	3	6	125	Blue
AGS-5848	1.580	1.612	1780, 84/19	137	.365	14	3	6	125	Green
AGS-5849	1.613	1.650	2000, 91W	137	.365	14	3	6	126	Yellow
AGS-5850	1.651	1.688	2000, 72/7	137	.365	15	3	6	131	Black
AGS-5851	1.689	1.711	2000, 84/19	137	.365	15	3	6	131	White
AGS-5852	1.712	1.752	2129, 84/19	137	.365	15	3	6	131	Brown
AGS-5853	1.753	1.790	2156, 84/19	137	.365	15	3	6	131	Orange
AGS-5854	1.791	1.828	2300, 84/19	137	.365	15	3	6	131	Purple

**Note:** Add HT to catalog number for High Temperature Version (Ex.: AGS-5854HT).

Right-hand lay standard

#### EXPLANATORY NOTES:

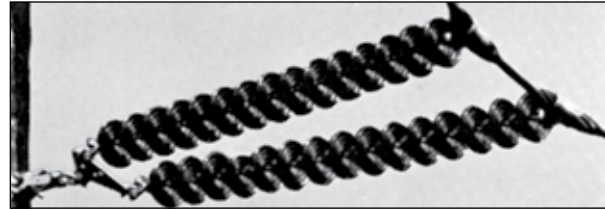
- (1) Nominal Conductor Size indicates one of various conductors within each range.
- (2) Reference general dimensional information for physical dimensions other than length.
- (3) ARMOR-GRIP Suspension: Double does not include AGS® FITTINGS, i.e., AGS Socket Eye, AGS Clevis Eye or AGS Y-Clevis Eye. See tables preceding AGS Catalog Information for catalog numbers, prices and dimensions of AGS FITTINGS. Two fittings are required for each ARMOR-GRIP Suspension: Double.
- (4) AWAC is a registered trademark of the Copperweld Co.



# ARMOR-GRIP® Suspension: Double (EHV)

**With PARROT-BILL® End Rods  
for Extra High Voltage (EHV), 345 KV and above**

**For use on:  
ACSR, All-Aluminum, Aluminum Alloy,  
AWAC® Compacted All-Aluminum  
Compacted ACSR, ACSS, ACSS/TW**



Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	AGS® Rods				AGS Hardware Sets Per Carton	AGS Rods & Hardware Wt./Lbs. Per Carton	Color Code
	Min.	Max.		Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Sets Per Carton			
AGS-5855	.908	.920	556.5, 24/7	90	.250	12	9	18	133	Yellow
AGS-5856	.921	.937	556.5, 26/7	90	.250	12	9	18	110	Black
AGS-5857	.938	.962	556.5, 30/7	90	.250	12	9	18	110	White
AGS-5858	.963	.986	605, 26/7	90	.250	13	9	18	115	Brown
AGS-5859	.987	1.005	605, 30/19	90	.250	13	9	18	115	Orange
AGS-5860	1.006	1.022	636, 30/19	108	.310	11	6	12	117	Purple
AGS-5861	1.023	1.040	715.5, 24/7	108	.310	11	6	12	117	Red
AGS-5862	1.041	1.074	715.5, 26/7	108	.310	11	6	12	117	Blue
AGS-5863	1.075	1.090	715.5, 30/19	108	.310	12	6	12	122	Green
AGS-5864	1.091	1.118	795, 26/7	108	.310	12	6	12	122	Yellow
AGS-5865	1.119	1.136	900, 45/7	108	.310	12	6	12	123	Black
AGS-5866	1.137	1.152	795, 30/19	108	.310	12	6	12	123	White
AGS-5867	1.153	1.175	900, 54/7	108	.310	12	6	12	123	Brown
AGS-5868	1.176	1.208	954, 54/7	108	.310	12	6	12	123	Orange
AGS-5869	1.209	1.226	1033.5, 45/7	117	.365	11	3	6	86	Purple
AGS-5870	1.227	1.259	1033.5, 54/7	117	.365	11	3	6	86	Red
AGS-5871	1.260	1.286	1113, 48/7	117	.365	12	3	6	90	Blue
AGS-5872	1.287	1.314	1113, 54/19	117	.365	12	3	6	90	Green
AGS-5873	1.315	1.355	1192.5, 54/19	117	.365	12	3	6	90	Yellow
AGS-5874	1.356	1.394	1272, 54/19	120	.365	12	3	6	96	Black
AGS-5875	1.395	1.416	1351.5, 48/7	120	.365	13	3	6	100	White
AGS-5876	1.417	1.442	1351.5, 54/19	120	.365	13	3	6	100	Brown
AGS-5877	1.443	1.477	1431, 48/7	120	.365	13	3	6	100	Orange
AGS-5878	1.478	1.516	1510.5, 54/19	120	.365	13	3	6	100	Purple
AGS-5879	1.517	1.557	1590, 54/19	120	.365	13	3	6	100	Red
AGS-5880	1.558	1.579	1780, 72/7	137	.365	14	3	6	125	Blue
AGS-5881	1.580	1.612	1780, 84/19	137	.365	14	3	6	125	Green
AGS-5882	1.613	1.650	2000, 91W	137	.365	14	3	6	126	Yellow
AGS-5883	1.651	1.688	2000, 72/7	137	.365	15	3	6	131	Black
AGS-5884	1.689	1.711	2000, 84/19	137	.365	15	3	6	131	White
AGS-5885	1.712	1.752	2129, 84/19	137	.365	15	3	6	131	Brown
AGS-5886	1.753	1.790	2156, 84/19	137	.365	15	3	6	131	Orange
AGS-5887	1.791	1.828	2300, 84/19	137	.365	15	3	6	131	Purple

**Note:** Add HT to catalog number for High Temperature Version (Ex.: AGS-5887HT).

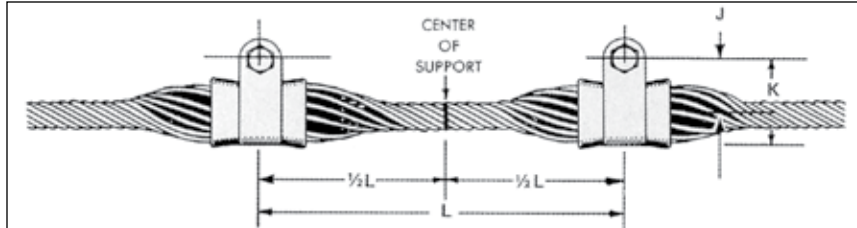
Right-hand lay standard

**EXPLANATORY NOTES:**

- (1) Nominal Conductor Size indicates one of various conductors within each range.
- (2) Reference general dimensional information for physical dimensions other than length.
- (3) Standard ARMOR-GRIP Suspension does not include AGS® FITTINGS, i.e., AGS Socket Eye, AGS Clevis Eye or AGS Y-Clevis Eye. See tables preceding this AGS Catalog information for catalog numbers and dimensions of AGS FITTINGS.
- (4) AWAC is a registered trademark of the Copperweld Co.

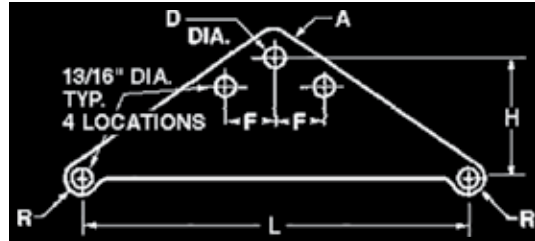
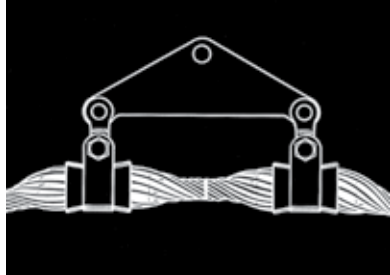
# ARMOR-GRIP® Suspension

## DIMENSIONAL TABLES



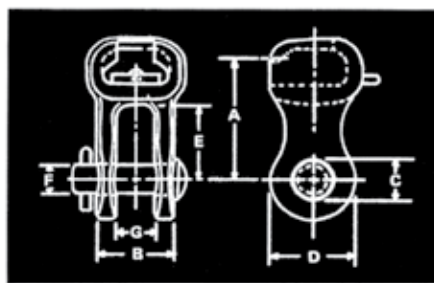
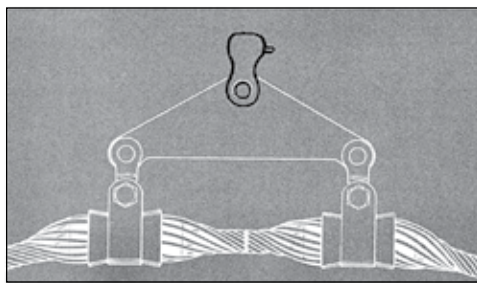
Conductor Range (In.)		Dimensions in Inches			Vertical Ultimate Strength (Pounds)
Min.	Max.	J	K	L	
.304	.389	2-1/32	3-7/32	12	30,000
.390	.481	2-3/32	3-7/32	12	30,000
.482	.542	1-31/32	3-3/16	12	20,000
.543	.619	1-15/16	3-1/4	12	20,000
.620	.645	1-15/16	3-1/4	18	20,000
.646	.750	2-5/32	3-9/16	18	30,000
.751	.907	2-11/32	4	18	40,000
.908	1.005	2-17/32	4-3/8	22	40,000
1.006	1.208	2-45/64	4-25/32	26	50,000
1.209	1.355	3-5/32	5-9/16	29	50,000
1.356	1.557	2-31/32	5-1/2	32	50,000
1.558	1.882	3-3/16	6	37	50,000
1.883	2.233	3-1/2	6-17/32	42	60,000

## AGS Yoke Plate



Catalog Number	Dimensions in Inches						Plate Thickness (Inches)	Ultimate Strength (Pounds)
	L	H	D	R	A	F		
YP-5907	12	4	13/16	13/16	1	NONE	1/2	30,000
YP-5908	18	6-1/4	1	15/16	1-1/4	3-1/2	5/8	40,000
YP-5909	22	7-1/4	1	15/16	1-1/4	4-3/16	5/8	40,000
YP-5910	26	8-1/2	1	15/16	1-1/4	4-15/16	3/4	50,000
YP-5911	29	9-1/2	1	15/16	1-1/4	5-1/2	3/4	50,000
YP-5912	32	10-1/2	1	15/16	1-1/4	6-1/8	3/4	50,000
YP-5913	37	11-3/4	1	15/16	1-1/4	7-1/16	3/4	50,000

## AGS Socket Clevis

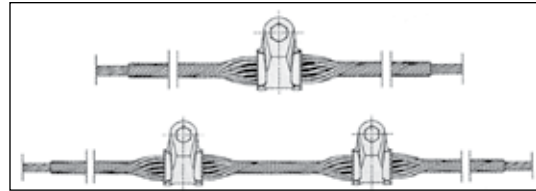


Catalog Number	General Dimensions							Ultimate Strength (Pounds)	For Use with Specific Strength Insulators (Pounds)
	A In.	B In.	C In.	D In.	E In.	F In.	G In.		
SC-5194	2-5/8	1-9/16	11/16	1-3/4	1-5/8	5/8	13/16	30,000	15,000 thru 30,000
SC-5329	3-1/4	-	-	2-3/16	2-1/16	7/8	1-1/8	50,000	36,000 thru 50,000



# ARMOR-GRIP® Suspension

For use on:  
Galvanized Steel Strand



Catalog Number	Strand Size	Diameter Range (Inches)		AGS® Rods				AGS Hardware Sets Per Carton	AGS Rods & Hardware Wt./Lbs. Per Carton	Color Code
		Min.	Max.	Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Sets Per Carton			
AGS-7097 AGS-7797	9/32", 7W	.272	.283	26(S) 38(D)	.119	8	24 24	24 24(3)	63 113	Blue
AGS-7098 AGS-7798	-	.284	.294	26(S) 38(D)	.119	9	24 24	24 24(3)	63 113	Red
AGS-7099 AGS-7799	-	.295	.303	26(S) 38(D)	.119	9	24 24	24 24(3)	63 113	Brown
AGS-7100 AGS-7800	5/16", 7W EHS	.304	.315	26(S) 38(D)	.119	9	24 24	24(3)	63 113	Black
AGS-7101 AGS-7801	5/16", 7W Utility	.316	.327	26(S) 38(D)	.119	9	24 24	24(3)	63 113	Green
AGS-7102 AGS-7802	-	.328	.342	26(S) 38(D)	.119	10	24 24	24(3)	66 118	Purple
AGS-7103 AGS-7803	-	.343	.355	26(S) 38(D)	.119	10	24 24	24(3)	66 118	Brown
AGS-7104 AGS-7804	3/8", 7W EHS	.356	.374	26(S) 38(D)	.119	10	24 24	24(3)	66 119	Orange
AGS-7105 AGS-7805	-	.375	.389	26(S) 38(D)	.119	10	24 24	24(3)	66 119	Blue
AGS-7106 AGS-7806	-	.390	.404	36(S) 48(D)	.138	10	24 24	24(3)	88 148	Red
AGS-7107 AGS-7807	-	.405	.418	36(S) 48(D)	.138	10	24 24	24(3)	88 148	Brown
AGS-7108 AGS-7808	-	.419	.434	36(S) 48(D)	.138	11	24 24	24(3)	92 154	Black
AGS-7109 AGS-7809	7/16", 7W EHS	.435	.450	36(S) 48(D)	.138	11	24 24	24(3)	92 154	Green
AGS-7110 AGS-7810	-	.451	.470	36(S) 48(D)	.138	11	24 24	24(3)	94 156	Purple
AGS-7111 AGS-7811	-	.471	.481	36(S) 48(D)	.138	11	24 24	24(3)	94 156	Brown
AGS-7112 AGS-7812	1/2", 7W-19W	.482	.500	45(S) 57(D)	.138	12	24 24	24(3)	103 160	Blue

Left Hand Lay Standard

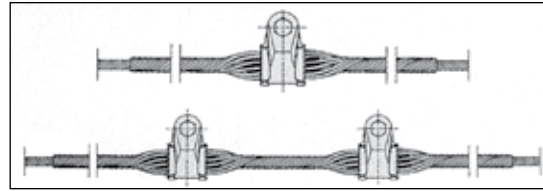
#### EXPLANATORY NOTES:

- (1) Caution – **Nominal** strand diameter may be different than **actual** strand diameter. Use actual strand diameter to select Cat. Nos. Strand Size indicates one of various strands within each range.
- (2) "S" – Single support to be used on line angles between 0° and 30°. "D" – Double support to be used on line angles between 30° and 60°.
- (3) For double support, two cartons of hardware are required for each carton of rods.



# ARMOR-GRIP® Suspension

**For use on:  
Aluminum Clad Steel**



Catalog Number	Strand Size	Diameter Range (Inches)		AGS® Rods				AGS Hardware Sets Per Carton	AGS Rods & Hardware Wt./Lbs. Per Carton	Color Code
		Min.	Max.	Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Sets Per Carton			
AGS-8097 AGS-8797	3 #8, 8M 9/32", 7W	.272	.283	26(S) 38(D)	.114	9	24 24	24 24(3)	57 106	Blue
AGS-8098 AGS-8798	-	.284	.294	26(S) 38(D)	.114	9	24 24	24 24(3)	57 106	Red
AGS-8099 AGS-8799	-	.295	.303	26(S) 38(D)	.114	9	24 24	24 24(3)	57 106	Black
AGS-8100 AGS-8800	3 #7, 7 #10 10M	.304	.315	26(S) 38(D)	.114	9	24 24	24 24(3)	57 106	Brown
AGS-8101 AGS-8801	5/16", 3W, 7W	.316	.327	26(S) 38(D)	.114	10	24 24	24 24(3)	59 108	Purple
AGS-8102 AGS-8802	-	.328	.342	26(S) 38(D)	.114	10	24 24	24 24(3)	60 110	Green
AGS-8103 AGS-8803	3 #6, 7 #9 12.5M	.343	.355	26(S) 38(D)	.114	10	24 24	24 24(3)	60 110	Black
AGS-8104 AGS-8804	14M 3/8"	.356	.374	26(S) 38(D)	.114	10	24 24	24 24(3)	60 111	Brown
AGS-8105 AGS-8805	7 #8, 16M	.375	.389	26(S) 38(D)	.114	11	24 24	24 24(3)	62 113	Red
AGS-8106 AGS-8806	3 #5	.390	.404	36(S) 48(D)	.144	10	24 24	24 24(3)	84 142	Blue
AGS-8107 AGS-8807	18M	.405	.418	36(S) 48(D)	.144	10	24 24	24 24(3)	84 142	Orange
AGS-8108 AGS-8808	7 #7	.419	.434	36(S) 48(D)	.144	10	24 24	24 24(3)	84 142	Brown
AGS-8109 AGS-8809	20M	.435	.450	36(S) 48(D)	.144	10	24 24	24 24(3)	84 142	Purple
AGS-8110 AGS-8810	-	.451	.470	36(S) 48(D)	.144	11	24 24	24 24(3)	89 150	Green
AGS-8111 AGS-8811	-	.471	.481	36(S) 48(D)	.144	11	24 24	24 24(3)	89 150	Black
AGS-8112 AGS-8812	7 #6	.482	.500	45(S) 57(D)	.144	11	24 24	24 24(3)	95 149	Blue

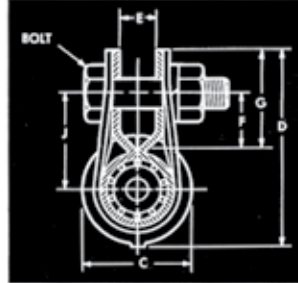
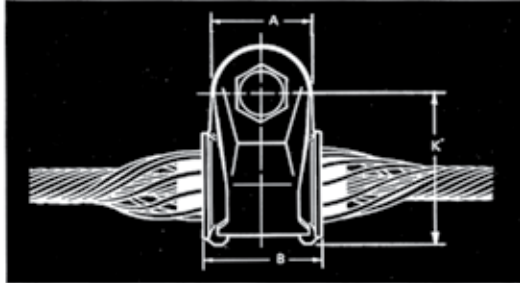
Left-hand lay standard

**EXPLANATORY NOTES:**

- (1) Strand size indicates one of various strands within each range.
- (2) "S" – Single support to be used on line angles between 0° and 30°. "D" – Double support to be used on line angles between 30° and 60°.
- (3) For double support, two cartons of hardware are required for each carton of rods.

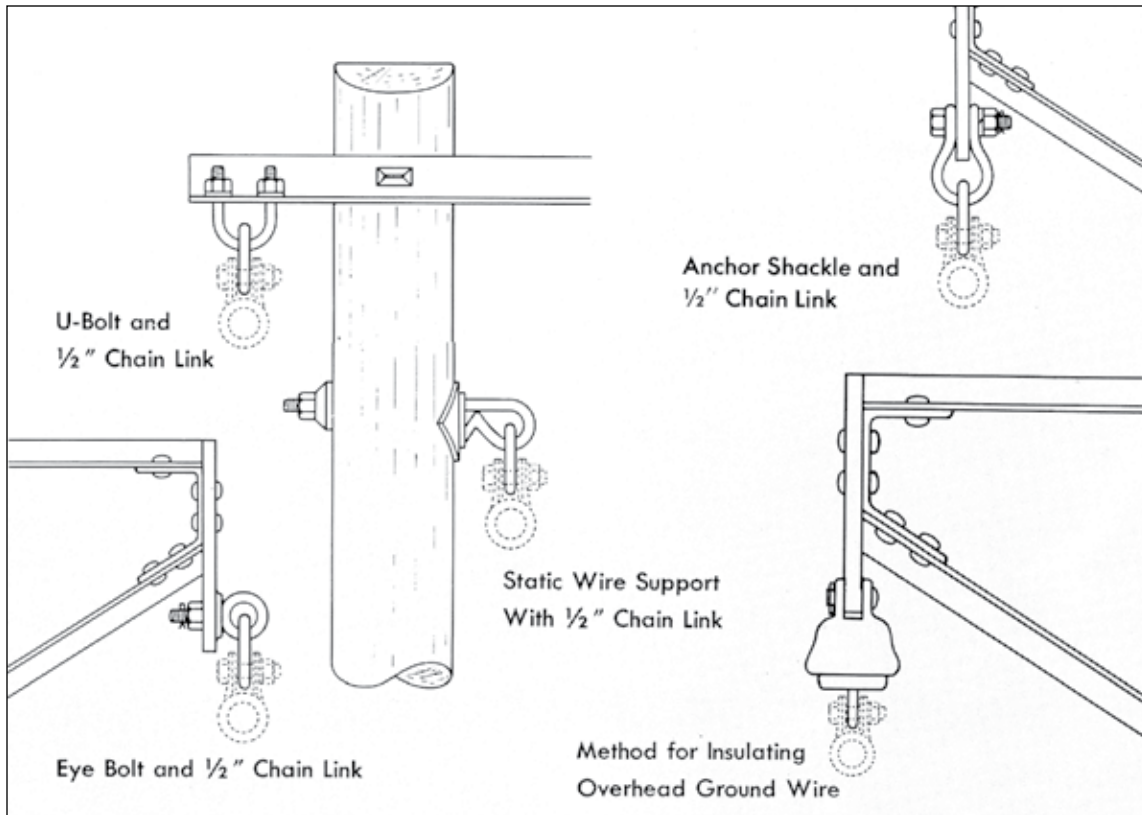
# ARMOR-GRIP® Suspension

## DIMENSIONAL TABLES



Strand Range		Dimensions in Inches										Vertical Ultimate Strength (Pounds)
Min. (In.)	Max. (In.)	A	B	C	D	E	F	G	J	K	Bolt	
.272	.389	1-3/4	2-1/4	2-1/16	4-3/32	11/16	1-5/32	2-1/32	2-1/32	3-7/32	5/8 x 2-1/2	15,000
.390	.500	1-3/4	2-1/2	2-1/4	4-3/32	11/16	1-3/32	1-31/32	2-3/32	3-7/32	5/8 x 2-1/2	15,000

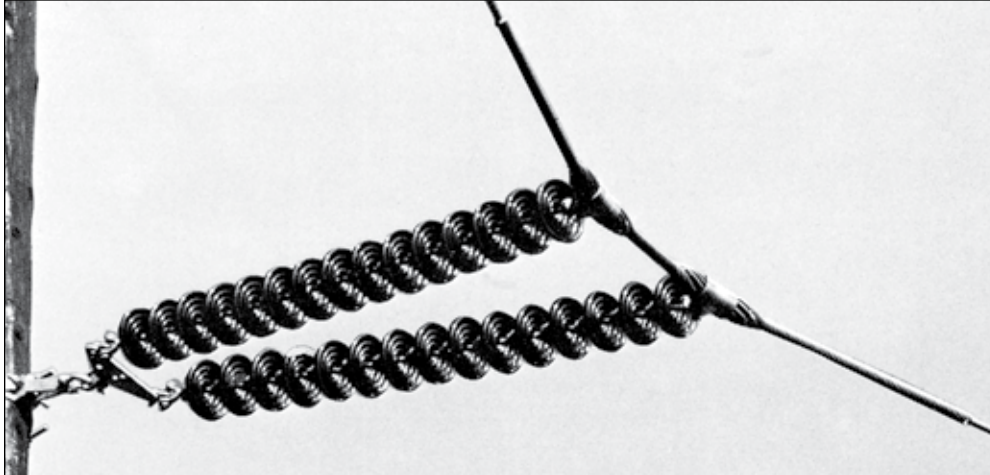
## SUGGESTED SUSPENSION HARDWARE





# ARMOR-GRIP® Suspension

## DESIGN MODIFICATIONS

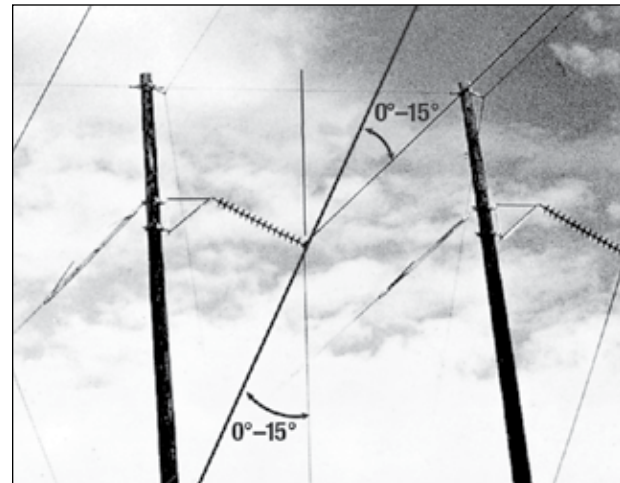
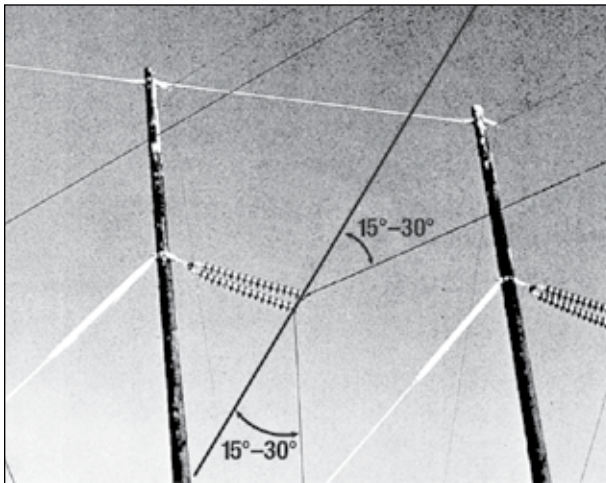


For line angles between 30° and 60°, use the double support arrangement with the insulator strings connected directly to the ARMOR-GRIP Suspension.

Shown is a close-up picture of the 30°- 60° double support arrangement.

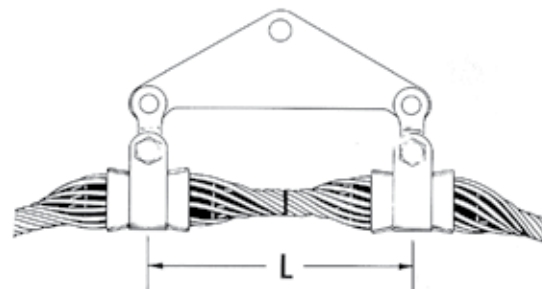
Shown below is the ARMOR-GRIP Suspension: Double as used for line angles between 30° and 60°.

Shown below is the ARMOR-GRIP Suspension: Single as used for line angles between 0° and 30°.



## ALTERNATE METHOD—Double Support—Single String—with Yoke Plate

A single string of insulators and yoke plate may be used as an alternate method for suspending the ARMOR-GRIP Suspension: Double. The yoke plate must have the proper "L" dimension. Please refer to previous Fitting and Hardware tables to obtain dimensional information and catalog numbers of available yoke plates.

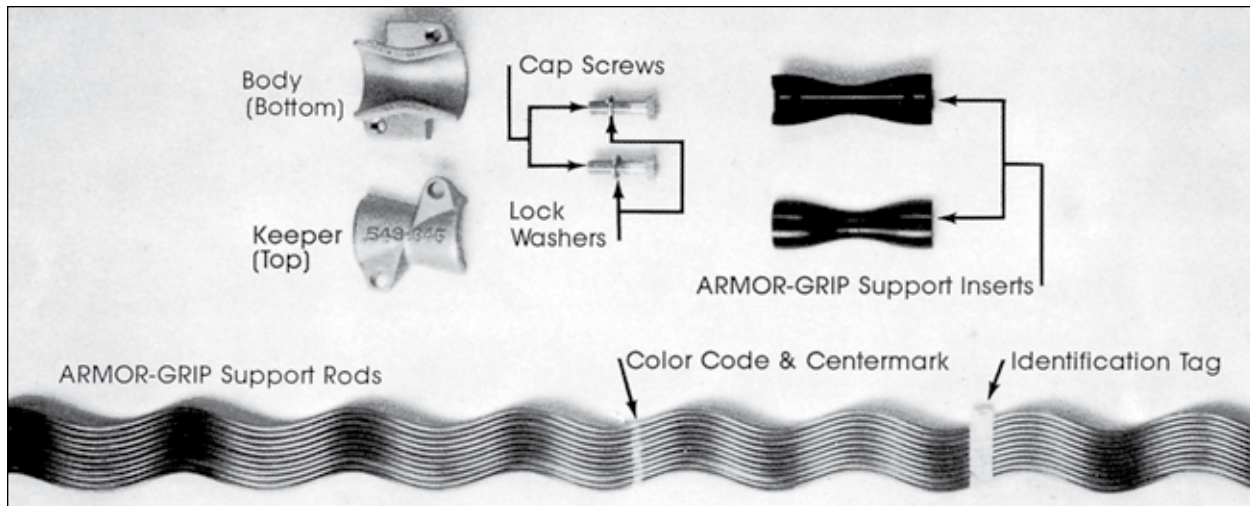




# ARMOR-GRIP® Support

## NOMENCLATURE

Thermal Rating (Continuous) 200°C



**ARMOR-GRIP Support Keeper:** Aluminum alloy casting. Comprises the top half of the ARMOR-GRIP Support housing unit. The conductor range is cast on the outside of the Keeper.

**ARMOR-GRIP Support Body:** Ductile iron casting. Comprises the bottom half of the ARMOR-GRIP Support housing unit. The conductor range is cast into the inside of the body.

**ARMOR-GRIP Cap Screws and Lock Washers:** Galvanized steel.

**ARMOR-GRIP Support Inserts:** 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.

The conductor range is molded into the inside of each insert.



**ARMOR-GRIP Support Rods:** Aluminum covered steel for aluminum based conductor diameter range .390" to .481". Aluminum alloy for aluminum based conductor diameter range .482" to 1.828". Standard rod ends are supplied for sub-EHV applications and Parrot Bill® rod ends are supplied for EHV applications.

**Color Code:** Identifies conductor diameter range.

**Center Mark:** Identifies starting location and center of rods during installation.

**Identification Tag:** Identifies rod material, conductor type and diameter range.

**Special Note about Conductor Range:** Each ARMOR-GRIP Support housing unit has a wide conductor range and is an overlapping design that incorporates several different pairs of inserts and sets of rods. Each pair of inserts has a narrow conductor range and will accommodate a few different sets of rods. Each set of rods has a very narrow conductor range and is designed for use only on the size conductor listed on the ID tag.

## GENERAL RECOMMENDATIONS

ARMOR-GRIP Support, intended for use on aluminum based conductors with a diameter range of .390" to 1.828", is designed to be used with clamp-top horizontal and vertical line post insulators.

The ARMOR-GRIP Support is designed to reduce static and dynamic stress at the support point, so that the conductor is better able to withstand the effects of vibration than with armor-clamp attachments. It also helps protect the conductor in the support area against flashover.

While ARMOR-GRIP Support provides improved protection against vibration fatigue of the conductor, on some lines

vibration may be so severe that the use of vibration dampers may be necessary. Utilities that have experienced vibration or expect to should consider adding dampers. Consult PLP for general guidelines and recommendations concerning vibration and dampers.

**Unbalanced Loading.** The ARMOR-GRIP Support will withstand an unbalanced load of approximately 10 to 20% of the conductor RBS before initial slip occurs. Slightly higher unbalanced loads will be obtained after the unit has been in service for a period of time.



# ARMOR-GRIP® Support

**Mechanical Strength.** The ARMOR-GRIP Support will withstand a pulloff load from the trunnion pins of the insulator cap of 5,000 lbs. applied in any direction. This includes the vertical up direction so that the unit will withstand an uplift load. Since the bore of the unit is symmetrical throughout the entire 360° range, a radial conductor load may be applied safely in any direction.

**Line Angles.** A maximum line angle of 30° may be turned using a single ARMOR-GRIP Support, and a maximum of 60° using a Double-Support unit.

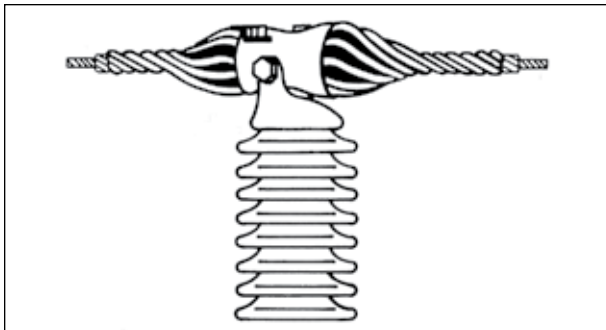
**ARMOR-GRIP Support: Double.** A special ARMOR-GRIP Support is available for applications utilizing a double support. The minimum distance between the double support points is listed on the next page. Contact PLP® for an engineering recommendation and additional information when considering use of the Double-Support unit.

**Loading Consideration.** In the work of line design, it should be considered that the cantilever strength of the insulator may be the governing factor, rather than the strength rating of the ARMOR-GRIP Support for unbalanced loading, mechanical strength, and turning angles.

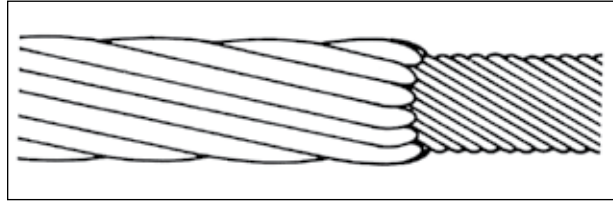
**Unusual Line Conditions.** The ARMOR-GRIP Support may be rotated vertically on the trunnion pins a maximum of 15° before the bottom of the unit interferes with the insulator cap. This should be considered for those terrain conditions, such as a steep side hill, which might result in the unit being installed at an angle from the horizontal.

## DESIGN MODIFICATIONS

**1. ARMOR-GRIP Support for line repair.** For repair of fatigue damaged conductors, a specially designed ARMOR-GRIP Support can be applied over PREFORMED™ type armor rods to extend the life of the conductor. Wrench formed rods must be removed when conductor fatigue occurs under them. A splice is then applied to the fatigued area and the ARMOR-GRIP Support is applied over the splice. This type of application requires special consideration and PLP should be consulted for a technical evaluation.



**2. EHV Applications.** To meet the corona onset and RIV requirements for most extra high voltage applications, Parrot Bill® ends are to be used instead of standard rods. Consult PLP for EHV engineering recommendations.



## INSTALLATION GUIDELINES

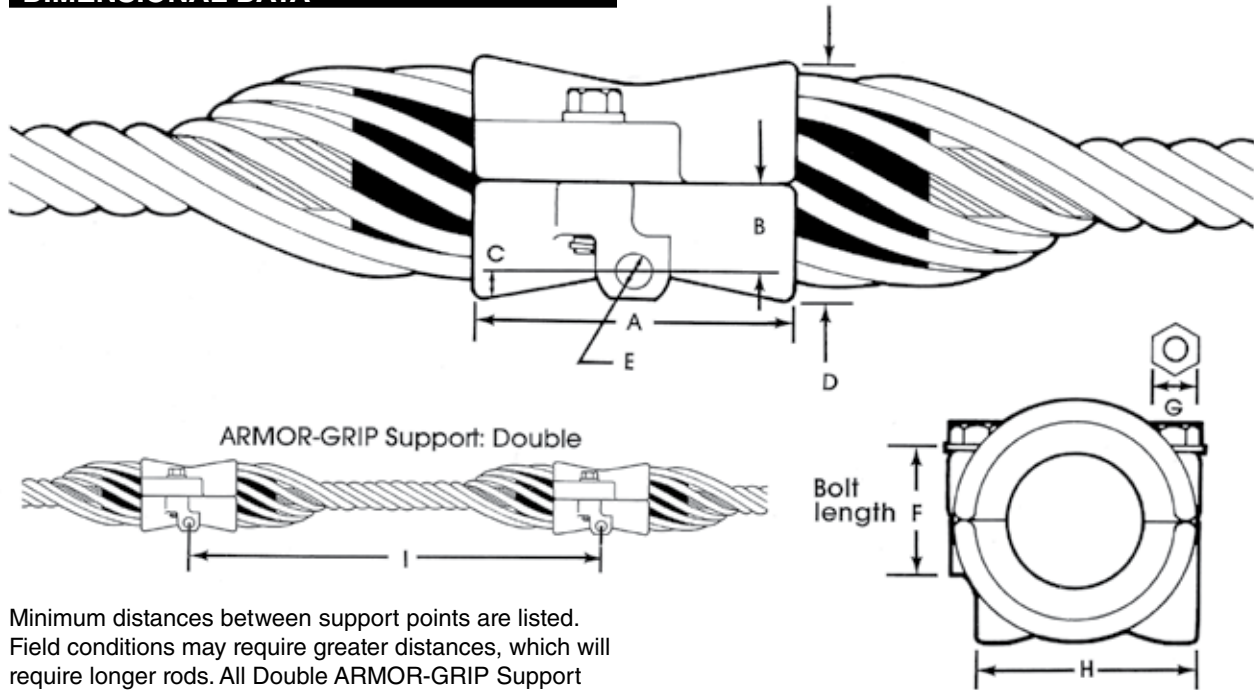
- 1. Conductor compatibility.** ARMOR-GRIP Support should be used only on the size and type of conductor for which they are designed. ARMOR-GRIP Support is designed for right-hand lay conductor. Consult PLP when using types and/or sizes of conductor not mentioned on the catalog pages.
- During installation of the ARMOR-GRIP Support keeper to the body, the cap screw should be tightened **only** until the lockwasher is flat. A relatively low torque value of approximately **10 to 15 foot** pounds is sufficient to flatten the washer. The inherent gripping of the rods provides the majority of the unbalanced holding strength of the unit. **Further tightening may damage the keeper of the body.**
- Consult the ARMOR-GRIP Support Application Procedure for additional information regarding the correct installation of ARMOR-GRIP Support.
- ARMOR-GRIP Support rods are **not** interchangeable with either standard armor rods or ARMOR-GRIP Suspension rods.

## SAFETY CONSIDERATIONS

- This product is intended for a single (one-time) use and for the specified application. However, all components, except for the rods, may be reused if in good condition. **CAUTION: DO NOT MODIFY OR REUSE THE RODS UNDER ANY CIRCUMSTANCES.**
- This product is intended for use by trained craftspeople only. This product **SHOULD NOT BE USED** by anyone who is not familiar with and trained in the use of it.
- When working in the area of energized lines with this product, **EXTRA CARE** should be taken to prevent accidental electrical contact.
- For **PROPER PERFORMANCE AND PERSONAL SAFETY** be sure to select the proper size ARMOR-GRIP Support before application.
- ARMOR-GRIP Supports are precision devices. To insure proper performance, they should be stored in cartons under cover and handled carefully.

# ARMOR-GRIP® Support

## DIMENSIONAL DATA

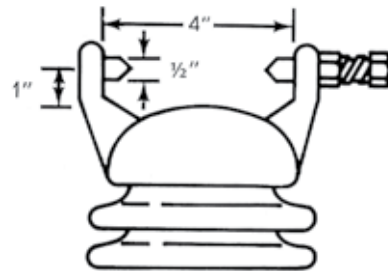


Minimum distances between support points are listed. Field conditions may require greater distances, which will require longer rods. All Double ARMOR-GRIP Support applications are supplied and engineered on a special order basis to insure proper rod length and performance.

Conductor Ranges (Inches)	Dimensions in Inches								
	A	B	C	D	E	F	G	H	I
.390-.481	2-17/32	5/8	49/64	1-61/64	19/32	2	3/4	3-7/8	12
.482-.542	3	5/8	1	2-3/8	19/32	2	3/4	3-7/8	12
.543-.619	3-1/8	13/32	7/8	2-17/32	19/32	2	3/4	3-7/8	12
.620-.645	3-1/8	13/32	7/8	2-17/32	19/32	2	3/4	3-7/8	18
.646-.750	3-3/4	5/8	53/64	2-3/4	19/32	2	3/4	3-7/8	18
.751-.907	4-1/2	3/4	27/32	3-13/64	19/32	2-1/4	3/4	3-7/8	18
.908-1.005	5	1-1/8	21/32	3-19/32	19/32	2-1/4	3/4	3-7/8	22
1.006-1.208	5-1/2	1-5/16	13/16	4-3/16	19/32	2-1/4	3/4	3-7/8	26
1.209-1.355	6	1-1/2	13/16	4-5/8	19/32	2-1/4	3/4	3-7/8	29
1.356-1.557	6-1/2	1-5/8	29/32	5-7/64	19/32	2-1/4	3/4	3-7/8	32
1.558-1.828	7	1-15/16	49/64	5-13/32	19/32	2-1/4	3/4	3-7/8	37

## CLAMP TOP TRUNNION

To insure proper fit and service life, it is recommended that only line post insulators with clamp top trunnion caps that conform to ANSI standards be used. See the illustration on the right for nominal cap dimensions that illustrate ANSI standards that have been established outlining the permissible dimensions and tolerances for trunnion caps. Consult the insulator manufacturer when in doubt about insulator standards.



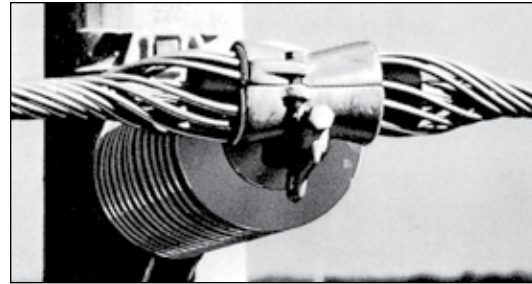
The above dimensions are approximates for design information. Consult ANSI specification C29.7-1977 for exact dimensions.





# ARMOR-GRIP® Support

**For use on:**  
**ACSR, All-Aluminum, Aluminum Alloy,**  
**AWAC® Compacted All-Aluminum**  
**Compacted ACSR, ACSS (AW & TW) for**  
**Continuous Operating Temperatures**  
**up to 200° C**



Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	AGS® Rods				AGS Hardware Sets Per Carton	AGS Rods & Hardware Wt./Lbs. Per Carton	Color Code
	Min.	Max.		Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Sets Per Carton			
AGS-5265	.390	.404	1/0, 6/1	36	.128	11	24	24	70	Yellow
AGS-5266	.405	.418	1/0, 5/1 AWAC	36	.128	11	24	24	70	Brown
AGS-5267	.419	.434	#1, 3/4 AWAC	36	.128	11	24	24	70	Green
AGS-5268	.435	.450	2/0, 6/1	36	.128	11	24	24	70	Blue
AGS-5269	.451	.470	2/0, 5/2 AWAC	36	.128	12	24	24	72	White
AGS-5270	.471	.481	110.8, 12/7	36	.128	12	24	24	72	Green
AGS-5255	.482	.499	#1, 2/5 AWAC	30	.167	10	18	18	40	Red
AGS-5200	.500	.512	3/0, 6/1	30	.167	10	18	18	40	Blue
AGS-5201	.513	.530	4/0, 7W All-Alum.	30	.167	11	18	18	41	Green
AGS-5202	.531	.542	1/0, 2/5, AWAC	30	.167	11	18	18	41	Yellow
AGS-5203	.543	.555	2/0, 3/4, AWAC	34	.182	10	18	18	53	Black
AGS-5204	.556	.573	4/0, 6/1	34	.182	11	18	18	54	White
AGS-5205	.574	.594	266.8, 7-19W All-Alum.	34	.182	11	18	18	54	Brown
AGS-5206	.595	.606	266.8, 18/1 AWAC	34	.182	11	18	18	55	Orange
AGS-5207	.607	.619	266.8, 18/1	34	.182	11	18	18	55	Purple
AGS-5208	.620	.645	266.8, 26/7	38	.182	12	18	18	58	Red
AGS-5209	.646	.673	336.4, 19-37W All-Alum.	41	.204	11	15	15	61	Blue
AGS-5210	.674	.690	300, 26/7	41	.204	11	15	15	61	Green
AGS-5211	.691	.710	300, 30/7	41	.204	12	15	15	63	Yellow
AGS-5212	.711	.731	366.4, 26/7	41	.204	12	15	15	63	Black
AGS-5213	.732	.750	336.4, 30/7	41	.204	12	15	15	63	White
AGS-5214	.751	.768	397.5, 26/7 AWAC	45	.250	10	12	12	65	Brown
AGS-5215	.769	.795	397.5, 26/7	45	.250	11	12	12	68	Orange
AGS-5216	.796	.824	477, 18/1	45	.250	11	12	12	68	Purple
AGS-5217	.825	.845	477, 26/7 AWAC	48	.250	11	12	12	70	Red
AGS-5218	.846	.870	477, 26/7	48	.250	11	12	12	70	Blue
AGS-5219	.871	.893	600, 37W All-Alum.	48	.250	12	12	12	73	Green
AGS-5220	.894	.907	500, 30/7	48	.250	12	12	12	73	Green
AGS-5221	.908	.920	556.5, 24/7	53	.250	12	9	9	66	Yellow
AGS-5222	.921	.937	556.5, 26/7	53	.250	12	9	9	66	Black
AGS-5223	.938	.962	605, 24/7	53	.250	12	9	9	66	White
AGS-5224	.963	.986	636, 24/7	53	.250	13	9	9	68	Brown
AGS-5225	.987	1.005	636, 26/7	53	.250	13	9	9	68	Orange
AGS-5226	1.006	1.022	636, 30/19	62	.310	11	6	6	64	Purple
AGS-5227	1.023	1.040	795, 37-61W All-Alum.	62	.310	11	6	6	64	Red
AGS-5228	1.041	1.074	715.5, 26/7	62	.310	11	6	6	64	Blue

Right-hand lay standard

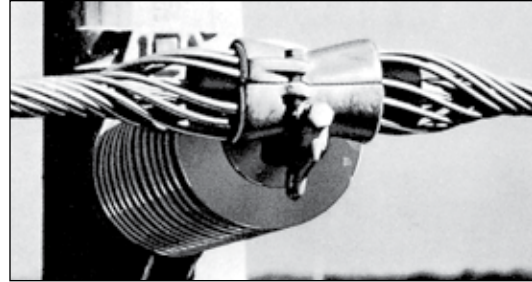
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**EXPLANATORY NOTES:**

- (1) Nominal Conductor Size indicates one of various conductors within each range.
- (2) Reference general dimensional information for physical dimensions other than length.
- (3) AGS weights listed are approximate and include packaging.
- (4) An ARMOR-GRIP Support unit is comprised of a set of rods with a matched hardware assembly. The rods and assemblies are packaged in separate but corresponding cartons.
- (5) AWAC is a registered trademark of the Copperweld Co.

# ARMOR-GRIP® Support

**For use on:**  
**ACSR, All-Aluminum, Aluminum Alloy,**  
**AWAC® Compacted All-Aluminum**  
**Compacted ACSR, ACSS (AW & TW) for**  
**Continuous Operating Temperatures**  
**up to 200° C**



Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	AGS® Rods				AGS Hardware Sets Per Carton	AGS Rods & Hardware Wt./Lbs. Per Carton	Color Code
	Min.	Max.		Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Sets Per Carton			
AGS-5229	1.075	1.090	874.5, 37W All-Alum.	62	.310	12	6	6	67	Green
AGS-5230	1.091	1.118	795, 26/7	62	.310	12	6	6	67	Yellow
AGS-5231	1.119	1.136	954, 37W All-Alum.	62	.310	12	6	6	67	Black
AGS-5232	1.137	1.152	795, 30/19	62	.310	12	6	6	67	White
AGS-5233	1.153	1.175	954, 45/7	62	.310	12	6	6	67	Brown
AGS-5234	1.176	1.208	954, 54/7	62	.310	12	6	6	67	Orange
AGS-5235	1.209	1.226	1113, 61W All-Alum.	71	.365	11	3	3	47	Purple
AGS-5236	1.227	1.259	1192.5, 61W All-Alum.	71	.365	11	3	3	47	Red
AGS-5237	1.260	1.286	1113, 48/7	71	.365	12	3	3	49	Blue
AGS-5238	1.287	1.314	1272, 61W All-Alum.	71	.365	12	3	3	49	Green
AGS-5239	1.315	1.355	1272, 45/7	71	.365	12	3	3	49	Yellow
AGS-5240	1.356	1.394	1272, 54/19	78	.365	12	3	3	51	Black
AGS-5241	1.395	1.416	1351.5, 54/19 AWAC	78	.365	13	3	3	54	White
AGS-5242	1.417	1.442	1510.5, 61W All-Alum	78	.365	13	3	3	54	Brown
AGS-5243	1.443	1.477	1431, 54/19	78	.365	13	3	3	54	Orange
AGS-5244	1.478	1.516	1590, 45/7	78	.365	13	3	3	54	Purple
AGS-5245	1.517	1.557	1590, 54/19	78	.365	13	3	3	54	Red
AGS-5246	1.558	1.579	1780, 72/7	90	.365	14	3	3	61	Blue
AGS-5247	1.580	1.612	1780, 84/19	90	.365	14	3	3	61	Green
AGS-5248	1.613	1.650	2000, 91W All-Alum.	90	.365	14	3	3	61	Yellow
AGS-5249	1.651	1.688	2000, 72/7	90	.365	15	3	3	64	Black
AGS-5250	1.689	1.711	2000, 84/19	90	.365	15	3	3	64	White
AGS-5251	1.712	1.752	2129, 84/19	90	.365	15	3	3	64	Brown
AGS-5252	1.753	1.790	2156, 84/19	90	.365	15	3	3	64	Orange
AGS-5253	1.791	1.828	2300, 84/19	90	.365	15	3	3	64	Purple

Right-hand lay standard

**EXPLANATORY NOTES:**

- (1) Nominal Conductor Size indicates one of various conductors within each range.
- (2) Reference general dimensional information for physical dimensions other than length.
- (3) AGS weights listed are approximate and include packaging.
- (4) An ARMOR-GRIP Support unit is comprised of a set of rods with a matched hardware assembly. The rods and assemblies are packaged in separate but corresponding cartons.
- (5) AWAC is a registered trademark of the Copperweld Co.



# THERMOLIGN® Suspension



**Thermal Rating  
(Continuous) 250°C**

## GENERAL RECOMMENDATIONS

The THERMOLIGN Suspension is specifically designed for applications on aluminum based high temperature conductors that will be operated at continuous temperatures **ABOVE 200° C**, and features:

- Multi-layer design for maximum mechanical performance and maximum heat dissipation.
- Minimal heat transferred to mating hardware and insulators.
- Cushioned insert surrounding conductor for superior protection of sensitive conductor components against wind and ice induced dynamic loads.
- Available with PARROT-BILL® Rod ends for EHV (345 KV and above) applications.

## GENERAL SPECIFICATIONS

Vertical Strength: 25,000# (111kN) unless otherwise noted.

Slip Load: Approximately 20% of the conductor RBS initially (expected to increase after time in service).

Line Angle: Maximum of 30° for single suspension up to 60° for double suspension with yoke plate.

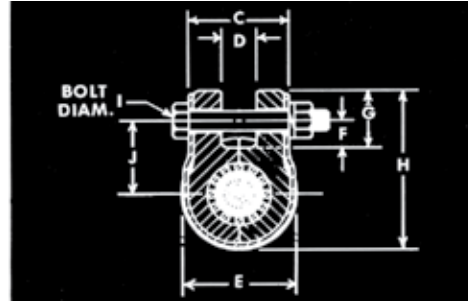
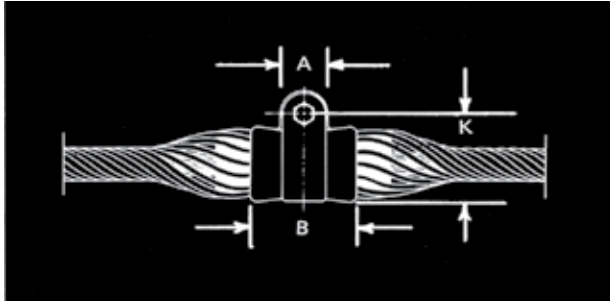
**NOTE:**

- Add EHV to Catalog Number for PARROT-BILL Rod Ends.
- Example: TLS-0100-EHV
- Add CE to Catalog Number to include a Clevis Eye
- Add YC to Catalog Number to include a Y Clevis Eye
- Add SE to Catalog Numbers to include a Socket Eye

Catalog Number		Diameter Range				Nominal	Length (overall)				Color Code	
Single	Double	Min. (in)	Max. (in)	Min. (mm)	Max. (mm)	Cond (kcmil)	Sgl (in)	Dbl (in)	Sgl (m)	Dbl (m)	Inner	Outer
TLS-0093	TLS-0293	0.574	0.590	14.6	15.0	207	98	120	2.49	3.05	Yellow	Green
TLS-0094	TLS-0294	0.619	0.636	15.7	16.2	257	98	120	2.49	3.05	Black	Black
TLS-0092	TLS-0292	0.637	0.673	16.2	17.1	267	100	120	2.54	3.05	Red	Brown
TLS-0095	TLS-0295	0.674	0.708	17.1	18.0	300	98	125	2.49	3.18	Orange	Orange
TLS-0096	TLS-0296	0.709	0.726	18.0	18.4	336.4	100	129	2.54	3.28	Green	Purple
TLS-0097	TLS-0297	0.727	0.759	18.5	19.3	336.4	100	129	2.54	3.28	Pink	Red
TLS-0098	TLS-0298	0.760	0.786	19.3	20.0	397.5	100	129	2.54	3.28	White	Blue
TLS-0099	TLS-0299	0.787	0.814	20.0	20.7	397.5, 477	100	129	2.54	3.28	Purple	Green
TLS-0100	TLS-0300	0.815	0.855	20.7	21.7	477	100	129	2.54	3.28	Red	Yellow
TLS-0101	TLS-0301	0.856	0.894	21.7	22.7	477, 556	100	132	2.54	3.35	Blue	Black
TLS-0102	TLS-0302	0.895	0.916	22.7	23.3	556	100	132	2.54	3.35	Black	White
TLS-0103	TLS-0303	0.917	0.942	23.3	23.9	556	100	132	2.54	3.35	Orange	Brown
TLS-0104	TLS-0304	0.943	0.977	23.9	24.8	605, 636	100	132	2.54	3.35	Green	Orange
TLS-0105	TLS-0305	0.978	1.016	24.8	25.8	636	100	132	2.54	3.35	Pink	Purple
TLS-0106	TLS-0306	1.017	1.057	25.8	26.8	636, 715	100	132	2.54	3.35	Purple	Red
TLS-0107	TLS-0307	1.058	1.079	26.8	27.4	715	112	149	2.84	3.78	White	Blue
TLS-0108	TLS-0308	1.080	1.112	27.4	28.2	795	112	149	2.84	3.78	White	Green
TLS-0109	TLS-0309	1.113	1.150	28.2	29.2	795, 954	112	149	2.84	3.78	Yellow	Yellow
TLS-0110	TLS-0310	1.151	1.188	29.2	30.2	954	112	149	2.84	3.78	Yellow	Black
TLS-0111	TLS-0311	1.189	1.208	30.2	30.7	954	112	149	2.84	3.78	Yellow	White
TLS-0112	TLS-0312	1.209	1.262	30.7	32.1	1033.5	125	154	3.18	3.91	Brown	Red
TLS-0113	TLS-0313	1.263	1.308	32.1	33.2	1113, 1192.5	125	154	3.18	3.91	Brown	Blue
TLS-0114	TLS-0314	1.309	1.338	33.2	34.0	1192.5	125	154	3.18	3.91	Red	Green
TLS-0115	TLS-0315	1.339	1.368	34.0	34.7	1272	125	154	3.18	3.91	Red	Yellow
TLS-0116	TLS-0316	1.369	1.409	34.7	35.7	1272, 1351.5	125	154	3.18	3.91	Blue	Black
TLS-0117	TLS-0317	1.410	1.449	35.7	36.8	1351.5, 1431	125	154	3.18	3.91	Black	White
TLS-0118	TLS-0318	1.450	1.490	36.8	37.9	1431, 1510.5	125	154	3.18	3.91	Orange	Brown
TLS-0119	TLS-0319	1.491	1.530	37.9	38.9	1510.5, 1590	125	154	3.18	3.91	Green	Orange
TLS-0120	TLS-0320	1.531	1.572	38.9	39.9	1590	125	154	3.18	3.91	Pink	Purple

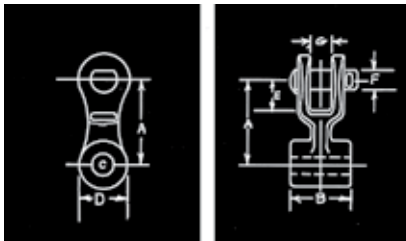
# THERMOLIGN® Suspension

## DIMENSIONAL TABLES



Catalog Number Range	Conductor Range (Inches)	Dimension (Inches)													Vertical Ultimate Strength (Pounds)
		Min.	Max.	A	B	C	D	E	F	G	H	I	J	K	
TLS-0092	TLS-0095	0.574	0.691	2-1/4	5-1/2	3-1/2	1-3/16	4-5/32	1	2-1/8	5-29/32	5/8	2-45/64	4-25/32	25,000
TLS-0096	TLS-0100	0.709	0.855	2-1/4	6	3-5/8	1-1/4	4-13/16	1-1/4	2-3/8	6-11/16	3/4	3-5/32	5-9/16	25,000
TLS-0101	TLS-0106	0.856	1.057	2-1/4	6-1/2	4-1/8	1-3/8	5-1/16	1-1/8	2-1/4	6-5/8	3/4	2-31/32	5-1/2	25,000
TLS-0107	TLS-0112	1.058	1.262	2-1/2	7	4-11/16	2-1/4	5-19/32	1-1/8	2-3/8	7-1/4	3/4	3-3/16	6	25,000
TLS-0113	TLS-0120	1.263	1.613	2-1/2	7-1/2	5-7/32	2-13/32	6-1/16	1-3/16	2-7/16	7-25/32	3/4	3-1/2	6-17/32	30,000 (1)

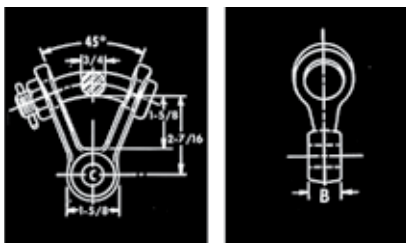
## CLEVIS EYE



Catalog Number	Diameter Range (mm)	Dimensions (mm)						
		A	B	C	D	E	F	G
CE-5105	.574" - 1.057" (14.6 - 26.8)	3-1/8" (79)	1-1/16" (27)	13/16" (21)	1-1/2" (38)	1-1/2" (38)	5/8" (16)	13/16" (21)
CE-5106	1.058" - 1.572" (26.8 - 39.9)	3-1/8" (79)	2-1/8" (54)	13/16" (21)	1-1/2" (38)	1-1/2" (38)	5/8" (16)	13/16" (21)

Vertical Ultimate Strength - 25,000 lbs.

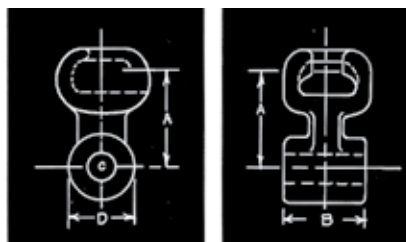
## Y CLEVIS EYE



Catalog Number	Diameter Range (mm)	Dimensions (mm)	
		B	C
YC-5209	.574" - 1.057" (14.6 - 26.8)	1-1/16 (27)	13/16 (21)
YC-5211	1.058 - 1.572 (26.8 - 39.9)	2-1/8 (54)	13/16 (21)

Vertical Ultimate Strength - 25,000 lbs.

## SOCKET EYE

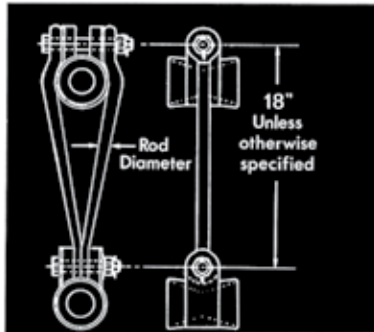
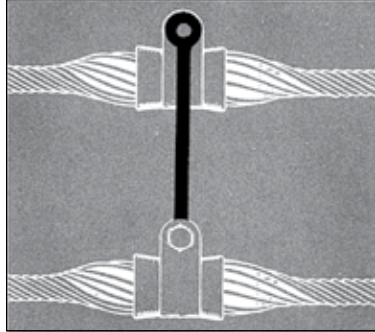


Catalog Number	Diameter Range (mm)	Dimensions (mm)				Vertical Ultimate Strength
		A	B	C	D	
SE-5154	.574" - 1.057" (14.6 - 26.8)	2-5/16" (59)	1-1/6" (27)	13/16" (21)	1-1/2" (38)	25,000 lbs
SE-5155	1.058" - 1.572" (26.8 - 39.9)	2-5/16" (59)	2-1/8" (54)	13/16" (21)	1-1/2" (38)	30,000 lbs



# THERMOLIGN® Suspension

## Vertical Bundling Link Assembly

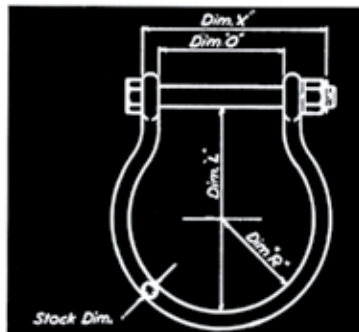
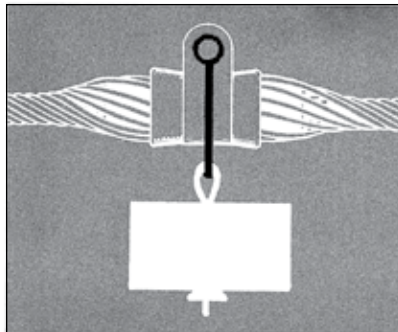


ULTIMATE RATED STRENGTH 25,000\*

Thermolign Suspension Conductor Diameter Range (Inches)	Hughes Brothers Catalog Number †	Rod Diameter (Inches)	Bolt Diameter (Inches)	Center to Center of Eyes (Inches)
0.709 - 0.855	VBL-07	3/4	3/4	18
0.856 - 1.057	VBL-08	3/4	3/4	18
1.058 - 1.262	VBL-09	3/4	3/4	18
1.263 - 1.613	VBL-10	3/4	3/4	18

† Each assembly consists of two links and one hex bolt for top suspension with lockwasher and lock nut. Center to center of eyes indicates vertical distance between conductors and will be 18" unless otherwise specified. Add a -12" to the catalog number for 12" spacing (example: VBL-08-12).

## Hold Down Weight Shackles\*



Thermolign Suspension Conductor Diameter Range (Inches)	Hughes Brothers Stock No. †	Bolt Diameter (Inches)	Stock Dim. (Inches)	Dim. "X" (Inches)	Dim. "O" (Inches)	Dim. "Y" (Inches)	Dim. "Z" (Inches)	Maximum Hold Down Weight (Lbs.)
0.709 - 0.855	1888.6	3/4	5/8	6	3-3/4	6-1/4	3	800
0.856 - 1.057	1888.7	3/4	5/8	6-1/2	4-1/4	6-1/2	3	800
1.058 - 1.262	1888.8	3/4	5/8	7-1/8	4-7/8	7-1/4	3-1/4	800

† Each assembly consists of a shackle body and hex-head bolt, lockwasher, nut, and Cotter Key.

\* SPECIAL PRODUCT sold by Hughes Brothers, Inc., Seward, Nebraska (See page 1-37).

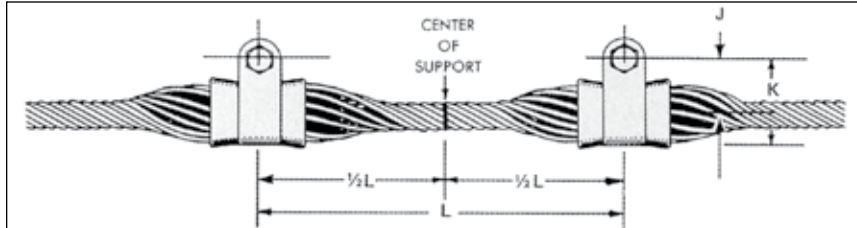
\*\* For use only with AGS Units installed on strand.

**EXPLANATORY NOTE:**

(1) CE-5106 and YC-5211 are rated at 25,000 lbs. vertical ultimate strength.

# THERMOLIGN® Suspension: Double

## DIMENSIONAL TABLES



Catalog Number Range	Conductor Range (In.)		Dimensions (In.)			Vertical Ultimate Strength (Pounds)
	Min.	Max.	J	K	L	
TLS-0293 – TLS-0295	0.574	0.708	2-45/64	4-25/32	26	50,000
TLS-0296 – TLS-0300	0.709	0.855	3-5/32	5-9/16	29	50,000
TLS-0301 – TLS-0306	0.856	1.057	2-31/32	5-1/2	32	50,000
TLS-0307 – TLS 0312	1.058	1.262	3-3/16	6	37	50,000
TLS-0313 – TLS-0320	1.263	1.572	3-1/2	6-17/32	42	60,000

### EXPLANATORY NOTES:

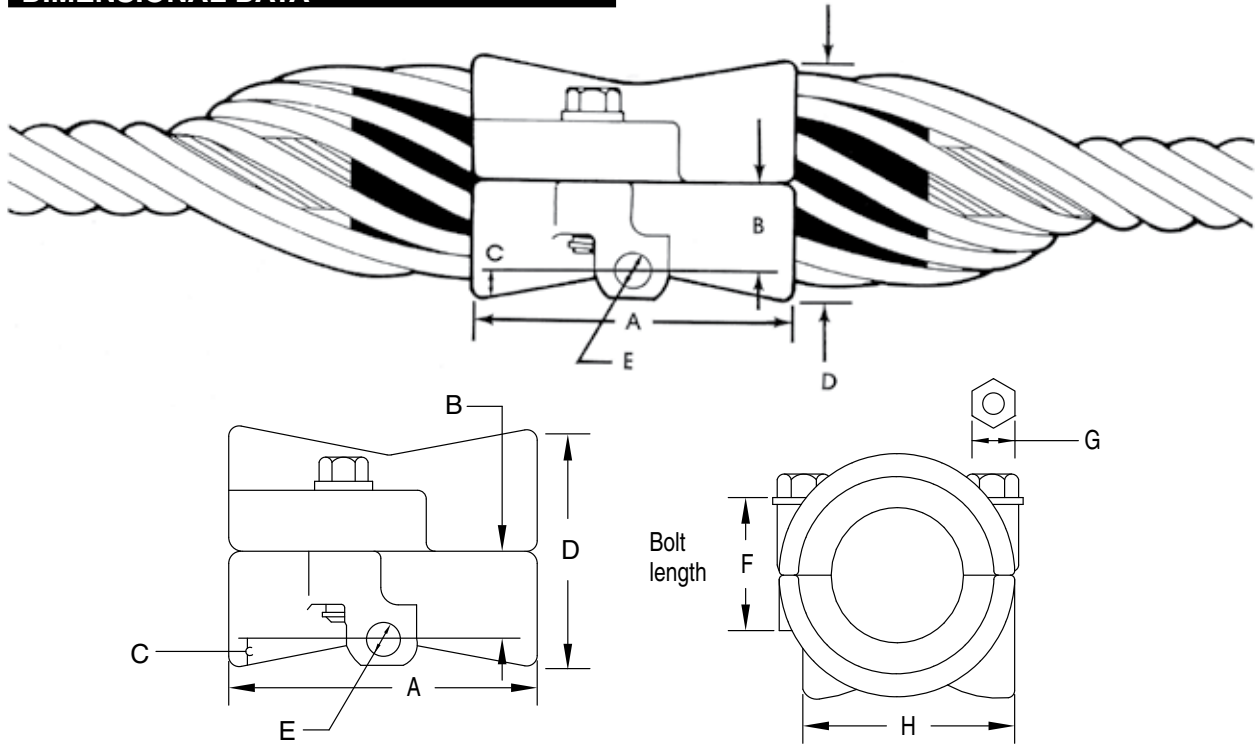
- (1) THERMOLIGN® Rod Length and diameter for individual sizes can be taken from catalog number table.
- (2) Additional dimensional information of the THERMOLIGN Housing is tabulated on Dimensional Tables preceding the THERMOLIGN Suspension: Double section.





# THERMOLIGN® Support

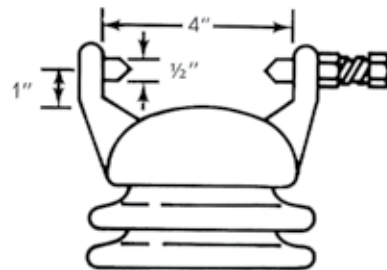
## DIMENSIONAL DATA



Conductor Ranges (Inches)	Dimensions in Inches							
	A	B	C	D	E	F	G	H
.637-.708	5-1/2	1-5/16	13/16	4-3/16	19/32	2-1/4	3/4	3-7/8
.709-.855	6	1-1/2	13/16	4-5/8	19/32	2-1/4	3/4	3-7/8
.856-1.057	6-1/2	1-5/8	29/32	5-7/64	19/32	2-1/4	3/4	3-7/8
1.058-1.208	7	1-15/16	49/64	5-13/32	19/32	2-1/4	3/4	3-7/8

## CLAMP TOP TRUNNION

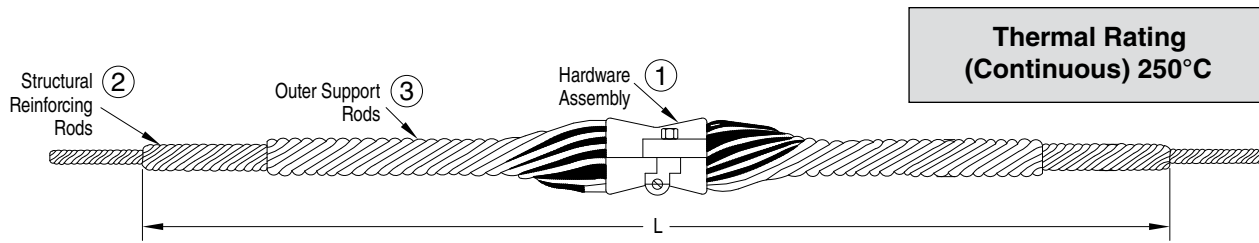
To insure proper fit and service life, it is recommended that only line post insulators with clamp top trunnion caps that conform to ANSI standards be used. See the illustration on the right for nominal cap dimensions that illustrate ANSI standards that have been established outlining the permissible dimensions and tolerances for trunnion caps. Consult the insulator manufacturer when in doubt about insulator standards.



The above dimensions are approximates for design information. Consult ANSI specification C29.7-1977 for exact dimensions.



# THERMOLIGN® Support



## GENERAL RECOMMENDATIONS

The THERMOLIGN Support is specifically designed for trunion applications on aluminum based high temperature conductors that will be operated at continuous temperatures **ABOVE 200°C**, and features:

- Multi-layer design for maximum mechanical performance and maximum heat dissipation.
- Minimal heat transferred to mating hardware and insulators.
- Cushioned insert surrounding conductor for superior protection of sensitive conductor components against wind and ice induced dynamic loads.

## GENERAL SPECIFICATIONS

Vertical Strength: 5,000# (22kN) in any direction.

Slip Load: Approximately 20% of the conductor RBS.

Line Angle: Maximum of 30° for single support.

**NOTE:** Add EHV to Catalog Number for 345kV application (Example: TLS-0210EHV)

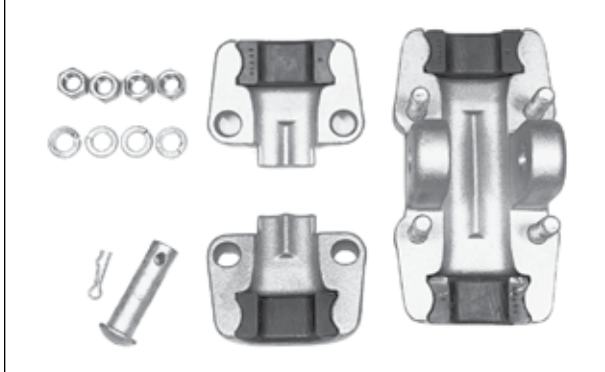
Catalog Number	Diameter Range				Nominal Cond (kcmil)	Length (in) (overall)	Color Code	
	Min. (in)	Max. (in)	Min. (mm)	Max. (mm)			Inner	Outer
TLS-0194	0.637	0.637	16.2	17.1	257	98 (2.5m)	Black	Black
TLS-0195	0.674	0.708	17.1	18.0	300	98 (2.5m)	Orange	Orange
TLS-0196	0.709	0.726	18.0	18.4	336.4	100 (2.5m)	Green	Purple
TLS-0197	0.727	0.759	18.5	19.3	336.4	100 (2.5m)	Pink	Red
TLS-0198	0.760	0.786	19.3	20.0	397.5	100 (2.5m)	White	Blue
TLS-0199	0.787	0.814	20.0	20.7	477	100 (2.5m)	Purple	Green
TLS-0200	0.815	0.855	20.7	21.7	477	100 (2.5m)	Red	Yellow
TLS-0201	0.856	0.894	21.7	22.7	556	100 (2.5m)	Blue	Black
TLS-0202	0.895	0.916	22.7	23.3	556	100 (2.5m)	Black	White
TLS-0203	0.917	0.942	23.3	23.9	556	100 (2.5m)	Orange	Brown
TLS-0204	0.943	0.977	23.9	24.8	636	100 (2.5m)	Green	Orange
TLS-0205	0.978	1.016	24.8	25.8	636	100 (2.5m)	Pink	Purple
TLS-0206	1.017	1.057	25.8	26.8	636	100 (2.5m)	Purple	Red
TLS-0207	1.058	1.079	26.8	27.4	715	112 (2.8m)	White	Blue
TLS-0208	1.080	1.112	27.4	28.2	795	112 (2.8m)	White	Green
TLS-0209	1.113	1.150	28.2	29.2	954	112 (2.8m)	Yellow	Yellow
TLS-0210	1.151	1.188	29.2	30.2	954	112 (2.8m)	Yellow	Black
TLS-0211	1.189	1.208	30.2	30.7	954	112 (2.8m)	Yellow	White
TLS-0212	1.209	1.262	30.7	32.1	1033.5	125 (3.2m)	Brown	Red



# CUSHION-GRIP® T2 Suspension for T2 Conductor

## NOMENCLATURE

Thermal Rating (Continuous) 125°C



**CUSHION-GRIP T2 Suspension Keepers:** High-strength Aluminum Alloy Casting

**CUSHION-GRIP T2 Suspension Body:** High-strength Aluminum Alloy Casting

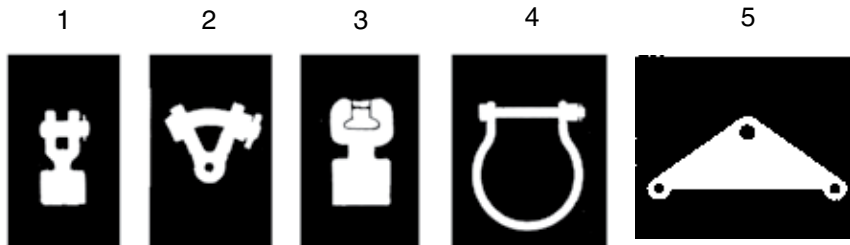
**U-bolts:** Galvanized Steel

**Nuts and Lock Washers:** Galvanized Steel

**Pin and Cotter Key:** Galvanized Steel

## HARDWARE and FITTINGS

Shown below are the Clevis Eye (1), Y Clevis Eye (2), Socket Eye (3), Hold-Down Weight Shackle (4), Yoke Plate (5) that are available for the CUSHION-GRIP T2 Suspension.



## GENERAL RECOMMENDATIONS

CUSHION-GRIP T2 Suspension is intended for use on T2 conductor. It is designed to protect the conductor from bending stress, compression stress, and abrasion. Utilizing a concept from the ARMOR-GRIP® product line, an elastomer insert was developed for the CUSHION-GRIP T2 Suspension to guard against abrasion, wear, and fatigue. The elastomer inserts have been found to reduce static bending strain at the clamp by as much as 50 percent. In addition, the CUSHION-GRIP T2 Suspension features parallel grooves in both the keeper and base units to protect the T2 conductor from deformation and abrasion.

CUSHION-GRIP T2 Suspension is an extremely effective device for suspending T2 conductor and resulting in an increased life of the conductor.

**VERTICAL ULTIMATE STRENGTH.** Refer to dimensional tables in this section.

**LINE ANGLE.** The maximum recommended line angle for a CUSHION-GRIP Clamp is 30°. As a single suspension and 60° in a double configuration utilizing a Yoke Plate.

Patent Pending

# CUSHION-GRIP® T2 Suspension for T2 Conductor

**For use on:**  
**ACSR, Compacted ACSR,**  
**Aluminum Alloy**  
**All-Aluminum, AWAC®**  
**Compacted All-Aluminum**



Catalog Number	Conductor Range	Optional Fittings			Ultimate Vertical Strength
		Clevis Eye	Y Clevis Eye	Socket Eye	
CCT2-0003	2x0.250-2x0.447	CE-5261	YC-5207	SE-5152	10,000#
CCT2-0004	2x0.448-2x0.642	CE-5261	YC-5207	SE-5152	15,000#
CCT2-0005	2x0.721-2x0.858	CE-5105	YC-5209	SE-5154	20,000#
CCT2-0006	2x0.859-2x1.108	CE-5106	YC-5211	SE-5155	25,000#
CCT2-0007	2x1.109-2x1.259	CE-5106	YC-5211	SE-5155	30,000#

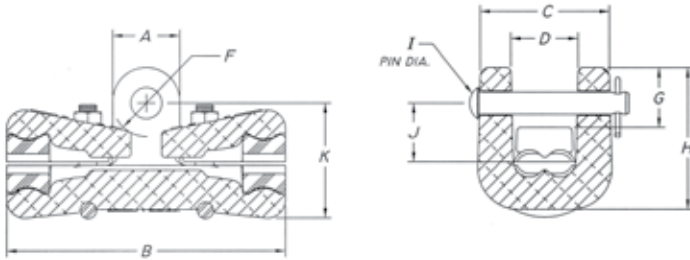
## SAFETY CONSIDERATIONS

1. This product is intended for a single (one-time) use and for the specified application. However, the hardware components may be reused if in good condition.
2. This product is intended for use by trained craftspeople only. This product **SHOULD NOT BE USED** by anyone who is not familiar with and trained in the use of it.
3. When working in the area of energized lines with this product, **EXTRA CARE** should be taken to prevent accidental electrical contact.
4. For **PROPER PERFORMANCE AND PERSONAL SAFETY** be sure to select the proper size CUSHION-GRIP Clamp before application.
5. CUSHION-GRIP T2 Suspension are precision devices. To insure proper performance, they should be stored in cartons under cover and handled carefully.



# CUSHION-GRIP<sup>®</sup> T2 Suspension for T2 Conductor

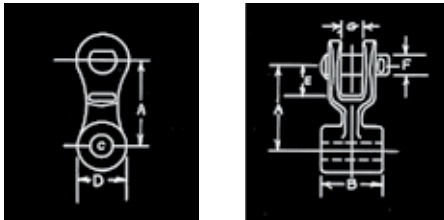
## DIMENSIONAL TABLES



Catalog Number	Conductor Range In.	A In.	B In.	C In.	D In.	F In.	G In.	H In.	Clevis Pin (Dia) I In.	J In.	K In.	Weight Lbs.	Ultimate Vertical Strength Lbs.
CCT2-0003	2x0.250-2x0.447	1.60	6.00	2.50	1.40	1.00	1.60	3.00	5/8	1.45	2.10	2.2	10,000
CCT2-0004	2x0.448-2x0.642	1.75	7.00	3.50	1.40	0.80	1.65	3.75	5/8	1.60	2.80	5.1	15,000
CCT2-0005	2x0.721-2x0.858	1.85	7.75	4.25	1.80	0.95	1.90	4.25	5/8	1.65	3.30	6.5	20,000
CCT2-0006	2x0.859-2x1.108	2.25	8.00	4.25	2.25	0.95	2.10	4.50	5/8	1.70	3.25	6.7	25,000
CCT2-0007	2x1.109-2x1.259	2.50	9.04	5.26	2.65	1.25	2.25	5.48	3/4	2.25	4.23	10.5	30,000

## CUSHION-GRIP CLAMP FITTINGS

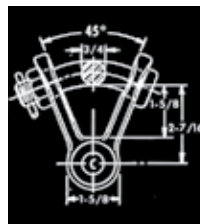
### Clevis Eye\*



Catalog Number	General Dimensions							Vertical Ultimate Strength Lbs.	Wt. Per 100 Units Lbs.
	A In.	B In.	C In.	D In.	E In.	F In.	G In.		
CE-5259	3-1/8	1/2	11/16	1-1/2	1-1/2	5/8	13/16	15,000	104
CE-5261	3-1/8	3/4	11/16	1-1/2	1-1/2	5/8	13/16	20,000	104
CE-5105	3-1/8	1-1/16	13/16	1-1/2	1-1/2	5/8	13/16	25,000	178
CE-5106	3-1/8	2-1/8	13/16	1-1/2	1-1/2	5/8	13/16	25,000	178

### Y Clevis Eye\*

Catalog Number	General Dimensions		Vertical Ultimate Strength Lbs.
	B In.	C In.	
YC-5206	5/8	11/16	15,000
YC-5207	3/4	11/16	20,000
YC-5209	1-1/16	13/16	25,000
YC-5211	2-1/8	13/16	25,000

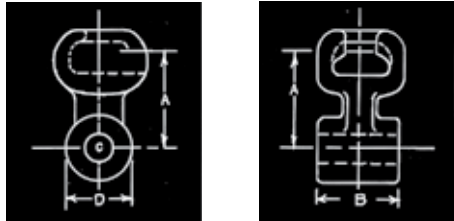


\*Standard CCT2 Suspension does not include CCT2 fittings i.e., Clevis Eye, Y-Clevis and Socket Eye. See tables following AGS catalog information for catalog numbers and dimensions of AGS fittings.

# CUSHION-GRIP® T2 Suspension for T2 Conductor

## FITTINGS

### Socket Eye\*

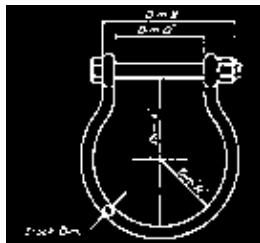


Catalog Number	General Dimensions				Vertical Ultimate Strength Lbs.	Wt. Per 100 Units Lbs.
	A In.	B In.	C In.	D In.		
SE-5150	2-5/16	1/2	11/16	1-1/2	15,000	165
SE-5152	2-5/16	3/4	11/16	1-1/2	25,000	165
SE-5154	2-5/16	1-1/16	13/16	1-1/2	25,000	178
SE-5155	2-5/16	2-1/8	13/16	1-1/2	25,000	178

**EXPLANATORY NOTE:**

\*When ordered, FITTINGS will be packed separately from the standard CUSHION-GRIP Clamp.

### Hold Down Weight Shackles\*



CUSHION-GRIP Clamp Catalog Number	Hughes Brothers Stock No.	Bolt Diameter (In.)	Stock Dim. (In.)	Dim. "X" (In.)	Dim. "O" (In.)	Dim. "L" (In.)	Dim. "R" (In.)	Maximum Hold Down Weight (Lbs.)
CCT2-0003	1888.3	5/8	1/2	4-3/4	2-3/4	5-3/8	2-3/8	300
CCT2-0003	1888.4	5/8	1/2	5-1/8	3-1/8	5-1/2	2-1/2	300
CCT2-0004	1888.5	5/8	1/2	5-3/4	3-3/4	6-1/8	2-3/4	300
CCT2-0005	1888.7	3/4	5/8	6-1/2	4-1/4	6-1/2	3	800
CCT2-0006	1888.8	3/4	5/8	7-1/8	4-7/8	7-1/4	3-1/4	800

† Each assembly consists of a shackle body and hex-head bolt, lockwasher, nut, and Cotter Key.

\* SPECIAL PRODUCT sold by Hughes Brothers, Inc., Seward, Nebraska—see below.

Contact Hughes Brothers, Inc. for a hold down weight shackle for catalog number CCT2-0005 (this clamp requires a 5/8" bolt).

## Hughes Brothers, Inc.

### ORDERING INSTRUCTIONS

For Hold-Down Weight Shackles, order directly from:

**Hughes Brothers, Inc.**  
 210 North 13th Street  
 P.O. Box 191  
 Seward, Nebraska 68424  
 Telephone: (402) 643-2991

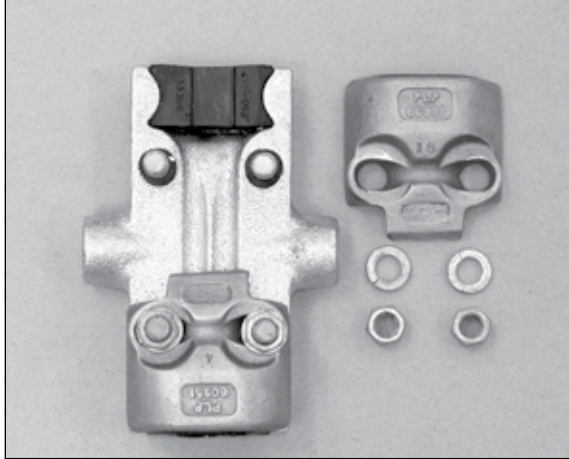
Price and delivery information available from Hughes Brothers, Inc., upon request.



# CUSHION-GRIP® T2 Support for T2 Conductor

## NOMENCLATURE

Thermal Rating (Continuous) 125°C



**CUSHION-GRIP T2 Support Keepers:** High-strength Aluminum Alloy Casting

**CUSHION-GRIP T2 Support Body:** Galvanized Ductal Iron Casting

**U-bolts:** Galvanized Steel

**Nuts and Lock Washers:** Galvanized Steel

## GENERAL RECOMMENDATIONS

The CUSHION-GRIP T2 Support is intended for use on aluminum based twisted pair conductors. (T2 Conductors) The clamp is designed to reduce the static and dynamic stresses at the support point, so the conductor is protected against the effects of oscillations. The conductor is cushioned by field proven, captive elastomer inserts, which guard against abrasion, wear and fatigue.

The level of protection provided by the CUSHION-GRIP T2 Support is comparable to a bolted clamp over armor rods. This equates to a reduction in bending strain as high as 50% as compared to bare conductor in a bolted clamp. This reduction in bending strain can be directly related to an increase in overall conductor life. The CUSHION-GRIP T2 Support is designed for up to 125°C continuous conductor operation (150°C two hour emergency).

### Features and Benefits:

- The CUSHION-GRIP T2 Support is shipped assembled. U-bolts are captivated in the base.
- Labor savings – to install the CUSHION-GRIP T2 Support simply install the base, place the keepers over the conductor, and install the washers, nuts then tighten.
- Integral Cushions – minimize conductor bending stresses at critical entry locations.

### Mechanical Strength:

The CUSHION-GRIP T2 Support will withstand a pulloff load from the trunnion pins of the insulator cap of 5,000 lbs., applied in any direction. This includes the vertical up direction (uplift).

### Slip load:

When initially installed the CUSHION-GRIP T2 Support has a slip load that ranges between 10% to 15% of the conductor's rated breaking strength (RBS).

### Line Angle:

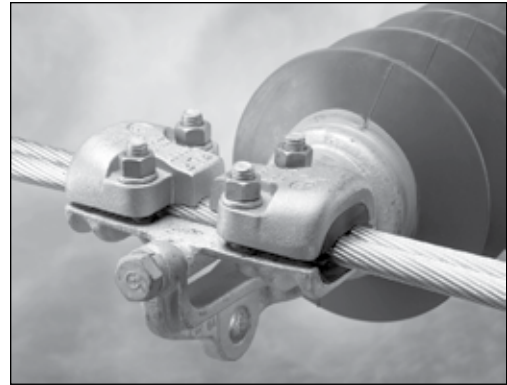
The maximum recommended line angle for a CUSHION-GRIP T2 Support is 30° as a single support and 60° in a double support configuration.



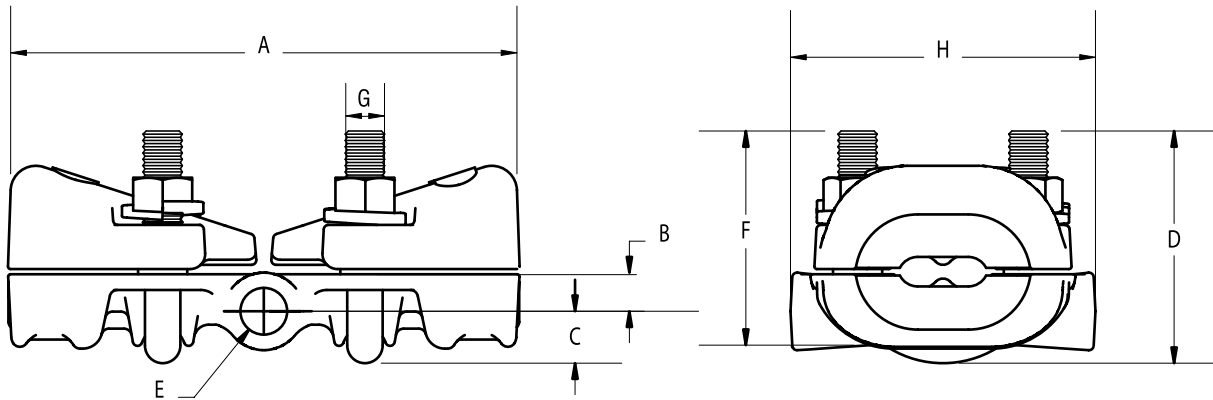
# CUSHION-GRIP® T2 Support for T2 Conductor

## ORDERING INFORMATION

Catalog Number	Conductor Range Inches (mm)		Nominal Conductor Sizes Max	Weight/Unit Pounds (Kg)	Standard Carton Quantity
	Min	Max			
CCT2-0103	2 x 0.250 (2 x 6.4)	2 x 0.447 (2 x 11.4)	2 x #4 to 2 x 2/0	2.85 (1.3)	12
CCT2-0104	2 x 0.477 (2 x 11.4)	2 x 0.642 (2 x 16.3)	2 x 2/0 to 2 x 266.8 kcmil	4.75 (2.2)	12
CCT2-0106	2 x 0.721 (2 x 18.3)	2 x .858 (2 x 21.8)	2 x 336 to 2 x 477 kcmil	7.30 (3.3)	12
CCT2-0105	2 x 0.859 (2 x 21.8)	2 x 1.108 (2 x 28.1)	2 x 477 to 2 x 795 kcmil	7.60 (3.5)	12



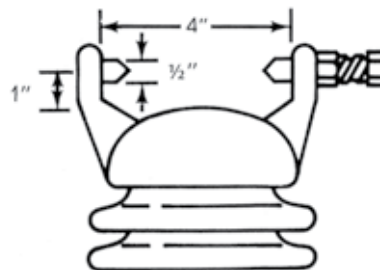
## DIMENSIONAL INFORMATION



Catalog Number	Dimensions Inches							
	A	B	C	D	E	F	G	H
CCT2-0103	5-1/2	3/8	1/2	2-3/8	0.595	2-1/4	9/16	3-7/8
CCT2-0104	6-1/2	1/2	3/4	3	0.595	2-3/4	3/4	3-7/8
CCT2-0106	7-1/4	7/8	3/4	3-5/8	0.595	3-1/2	1/2	3-7/8
CCT2-0105	7-1/2	7/8	1	3-5/8	0.595	3-1/2	3/4	3-7/8

## CLAMP FOR TRUNNION

To insure proper fit and service life, it is recommended that only line post insulators with clamp top trunnion caps that conform to ANSI standards be used. See the illustration on the right for nominal cap dimensions that illustrate ANSI standards that have been established outlining the permissible dimensions and tolerances for trunnion caps. Consult the insulator manufacturer when in doubt about insulator standards.

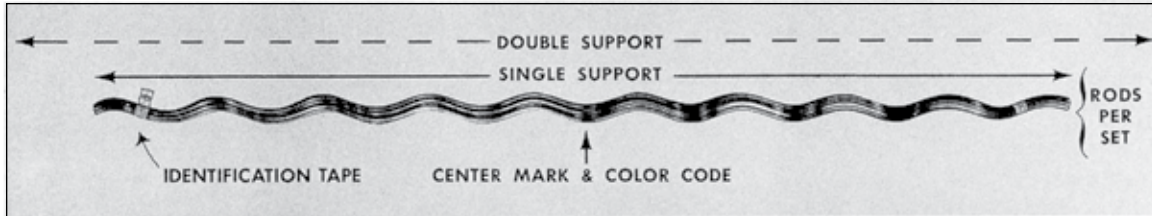


The above dimensions are approximates for design information. Consult ANSI specification C29.7-1977 for exact dimensions.



# Armor Rods

## NOMENCLATURE



**Single Support and Double Support Length:** Identified by “S” and “D” appearing in the length column on the catalog page. Should the maximum distance between tied supports exceed 12 inches on double crossarm construction, consult PLP.

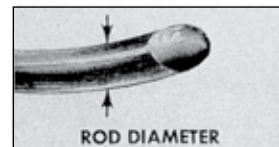
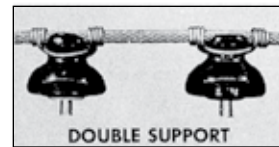
**Rod Diameter:** Added to conductor O.D., assists in arriving at applied overall diameter.

**Rods Per Set:** Indicate the proper number of rods for each application.

**Center Mark:** Establishes recommended alignment of rods during application.

**Color Code and Length:** Assist in identification of conductor size, corresponding to tabular information appearing on catalog page.

**Identification Tape:** Shows catalog number, nominal sizes.



**Thermal Rating (Continuous)**  
**Within a high temperature**  
**Suspension Clamp 250°C**  
**ACSS Repair 250°C**  
**ACSR Repair 125°C**

*ARMOR-GRIP® Suspension* is recommended as being superior to armor-clamp combinations in providing protection from bending stress, compression stress and abrasion.

**ARMOR RODS RESTORATIVE-REPAIR.** Armor Rods may be used to restore full conductance and strength to ACSR and aluminum conductors where damage does not exceed approximately 50 percent of the outer strand layer. Consult Factory for repair capability of specific strandings.

## GENERAL RECOMMENDATIONS

**PROTECTION.** PREFORMED™ Armor Rods are intended to protect against bending, compression, abrasion, arc-over, and to provide repair. The degree of protection needed on a specific line depends upon a number of factors such as line design, temperature, tension, exposure to wind flow, and vibration history on similar construction in the same area. As a general guide, the following recommendations may be adopted to the specific conditions.

*Armor Rods* are recommended as minimum protection for clamp-type supports or suspensions.

*Line Guards* are recommended as minimum protection for hand-tied spans.

The use of supplementary damping devices, such as Spiral Vibration Dampers, should be considered when conductor vibration is present or expected.

**PLP® Factory Formed Ties** are recommended as being superior to armor-hand tie combinations in providing protection from abrasion, and equivalent in providing protection from vibration fatigue.

For standard catalog numbers damage should be located at the “point of support” or within the “midspan area”. For damage 6” to 36” (152 to 914 mm) from the support point contact PLP for recommendations.

**NOTE:** When Armor Rods are used to repair damaged aluminum-based conductors, the following application steps are required for optimum **electrical** repair:

**Step 1:** Thoroughly wire-brush damaged conductor for the full length of the Armor Rods to be applied.

**Step 2:** Apply a gritted inhibitor to the full length of this area before applying the Armor Rods.

**TAPPING.** Tapping over applied aluminum *Armor Rods* is permissible. Where it is known that tapping clamps will be installed over *Armor Rods*, it is recommended that the conductor be thoroughly wire brushed clean, then an inhibitor be applied.

**APPLICATION-INSPECTION.** After application of the correct number of rods per set, a slight gap between rods should be present. Consult the General Information Section for detailed explanation.

# Armor Rods

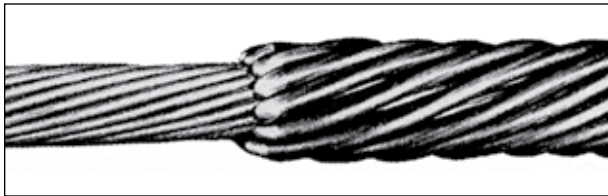
## GENERAL RECOMMENDATIONS CONTD.

Apply no more than one-half the number of rods per set at a time on smaller sizes. On conductors 4/0 and larger, do not attempt to apply more than 4 rods at a time. The alignment of the ends of the rods should be maintained within 2 inches for voltages of 230 KV and lower.

**MATERIAL SELECTION.** For copper or Copperweld® conductor, Copperweld® or Phosphor Bronze, Armor Rods are recommended when electrical requirements such as tapping or repair are not involved.

## DESIGN MODIFICATION

### Armor Rods: PARROT-BILL® Ends



To meet the corona onset and RIV requirements for most extra-high-voltage applications, PARROT-BILL® Ends are to be used instead of the standard ball-end rods. Consult the Factory for an engineering recommendation.

## O.D. CALCULATIONS

Applied overall diameter computed as follows:

The rod diameter can be obtained from the catalog page tables. Conductor/Strand O.D. can be found in the Conductor Chart, General Information Section.

Rod Diam.,	.167" x 2 =	.334"
Conductor Diam.	+	.398"
Total Applied O.D.		.732"

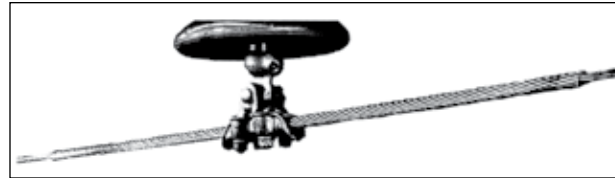
## SAFETY CONSIDERATIONS

1. This product is intended for a single (one-time) use and for the specified application. CAUTION: DO NOT REUSE OR MODIFY THIS PRODUCT UNDER ANY CIRCUMSTANCES.
2. This product is intended for use by trained craftspeople only. This product SHOULD NOT BE USED by anyone who is not familiar with and trained in the use of it.
3. When working in the area of energized lines with this product, EXTRA CARE should be taken to prevent accidental electrical contact.
4. For PROPER PERFORMANCE AND PERSONAL SAFETY be sure to select the proper size PREFORMED™ Armor Rods before application.
5. PREFORMED Armor Rods are precision devices. To insure proper performance, they should be stored in cartons under cover and handled carefully.



# Armor Rods: Aluminum

**For use on:**  
**ACSR, Compacted ACSR,**  
**Aluminum Alloy All-Aluminum,**  
**AWAC® Compacted All-Aluminum,**  
**ACAR, ACSS (AW & TW)**



Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	Units	Wt/Lbs	Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Color Code
	Min.	Max.		Per Carton					
AR-0106 AR-0306	.194	.207	#6, 7W Alum. Alloy #6, 6/1	100 100	35 45	40(S) 52(D)	.121	7	Blue
AR-0107 AR-0307	.208	.219	#4, 7W, Comp.	100 100	35 45	40(S) 52(D)	.121	7	Black
AR-0108 AR-0308	.220	.228	#5, 3-7W Alum. Alloy #5, 6/1	100 100	40 51	40(S) 52(D)	.121	8	White
AR-0109 AR-0309	.229	.243	#4, 7W All-Alum. #4, 6/1-7/1 Comp.	100 100	40 51	40(S) 52(D)	.121	8	Brown
AR-0110 AR-0310	.244	.259	#4, 6/1, 7/1 #4, 7W, Alum. Alloy	50 50	25 32	40(S) 52(D)	.146	7	Orange
AR-0111 AR-0311	.260	.273	#3, 7W All-Alum. #2, 7W Comp.	50 50	26 34	42(S) 54(D)	.146	7	Green
AR-0112 AR-0312	.274	.289	#3, 7W, Alum. Alloy	50 50	30 38	42(S) 54(D)	.146	8	Yellow
AR-0113 AR-0313	.290	.308	#2, 7W All-Alum. #2, 6/1 Comp.	50 50	30 38	42(S) 54(D)	.146	8	Purple
AR-0114 AR-0314	.309	.326	#2, 6/1, 7/1 #2, 7W Alum. Alloy	50 50	32 40	44(S) 56(D)	.136	9	Red
AR-0115 AR-0315	.327	.346	#1, 7W All-Alum. #1/0, 7W-19W Comp.	50 50	38 46	46(S) 58(D)	.146	9	Blue
AR-0116 AR-0316	.347	.366	#1, 6/1 #1, 7W Alum. Alloy	50 50	40 49	48(S) 60(D)	.146	9	Green
AR-0117 AR-0317	.367	.389	1/0, 7W All-Alum. 2/0, 7W Comp.	50 50	45 55	50(S) 62(D)	.146	10	Black
AR-0118 AR-0318	.390	.413	1/0, 6/1 1/0, 7W Alum. Alloy	50 50	55 67	52(S) 64(D)	.167	9	Yellow
AR-0119 AR-0319	.414	.436	2/0, 7W-19W All-Alum. 3/0, 7W Comp.	50 50	48 58	52(S) 64(D)	.146	10	Brown
AR-0120 AR-0320	.437	.463	2/0, 6/1 3/0, 6/1 Comp.	50 50	64 76	54(S) 66(D)	.167	10	Blue
AR-0121 AR-0321	.464	.490	3/0, 7W-19W All Alum.	50 50	64 76	54(S) 66(D)	.167	10	Green
AR-0122 AR-0322	.491	.521	3/0, 6/1 3/0, 7W Alum. Alloy 4/0, 6/1 Comp.	25 25	37 46	56(S) 68(D)	.167	11	Orange
AR-0123 AR-0323	.522	.551	4/0, 7W-19W All-Alum.	25 25	38 46	58(S) 70(D)	.167	11	Black

Right-hand lay standard

(Continued on next page)

**EXPLANATORY NOTES:**

- (1) Nominal Conductor size indicates one of various conductors within each range.
- (2) Single Support Length (S) and Double Support Length (D) are described on the first page of the Armor Rod section.
- (3) Reference O.D. Calculations for: APPLIED O.D. Calculations.
- (4) AWAC is a registered trademark of the Copperweld Co.

# Armor Rods: Aluminum

Catalog Number	EHV Armor Rod Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	Units	Wt/Lbs	Length (Inches)	Rod Diameter Inches	Rods Per Set	Color Code
		Min	Max		Per Carton					
AR-0124 AR-0324		.552	.585	4/0, 6/1	25 25	46 55	60(S) 72(D)	.182	11	Red
AR-0125 AR-0325		.586	.606	266.8 kcmil, 19W	25 25	52 61	62(S) 74(D)	.182	12	Black
AR-0126 AR-0326		.607	.630	266.8 kcmil, 18/1	25 25	54 63	64(S) 76(D)	.182	12	Purple
AR-0127 AR-0327		.631	.655	266.8 kcmil, 26/7	25 25	54 63	64(S) 76(D)	.182	12	Yellow
AR-0128 AR-0328		.656	.679	336.4 kcmil, 19W	18 18	43 51	66(S) 78(D)	.182	13	Brown
AR-0129 AR-0329		.680	.703	300 kcmil, 26/7	18 18	52 60	68(S) 80(D)	.204	12	Blue
AR-0130 AR-0342		.704	.740	336.4 kcmil, 26/7	18 18	54 64	72(S) 84(D)	.204	12	Green
AR-0131		.741	.782	397.5 kcmil, 18/1	18	59	72	.204	13	Orange
AR-0132		.783	.814	397.5 kcmil, 26/7	15	66	76	.250	11	Purple
AR-0133		.815	.845	636 kcmil, 19W Comp.	15	66	76	.250	11	Red
AR-0134		.846	.907	477 kcmil, 26/7	15	74	78	.250	12	Blue
AR-0135		.908	.929	636 kcmil, 37W	12	66	80	.250	13	Green
AR-0136		.930	.976	605 kcmil, 26/7	12	72	88	.250	13	White
AR-0137	AR-0500	.977	1.016	636 kcmil, 26/7	9	50	92	.310	11	Yellow
AR-0138	AR-0501	1.017	1.035	795 kcmil, 37-61W	6	55	94	.310	12	Brown
AR-0139	AR-0502	1.036	1.064	715.5 kcmil, 26/7	6	56	96	.310	12	Blue
AR-0140	AR-0503	1.065	1.098	795 kcmil, 24/7	6	56	96	.310	12	Green
AR-0141	AR-0504	1.099	1.139	795 kcmil, 26/7	6	62	100	.310	12	Orange
AR-0142	AR-0505	1.140	1.161	954 kcmil, 36/1	6	63	100	.310	13	Purple
AR-0143	AR-0506	1.162	1.208	954 kcmil, 45/7 954 kcmil, 54/7 1033.5 kcmil, 37-61W	6	69	100	.310	13	Red
AR-0144	AR-0507	1.209	1.269	1113 kcmil, 45/7	6	81	100	.365	12	Black
AR-0145	AR-0508	1.270	1.327	1192.5 kcmil, 45/7	6	81	100	.365	12	White
AR-0146	AR-0509	1.328	1.390	1272 kcmil, 45/7	3	45	100	.365	13	Yellow
AR-0147	AR-0510	1.391	1.440	1431 kcmil, 45/7	3	54	100	.436	11	Brown
AR-0163	AR-0511	1.441	1.508	1590 kcmil, 45/7	3	58	100	.436	12	Blue
AR-0164	AR-0512	1.509	1.578	1590 kcmil, 54/19	3	58	100	.436	12	Green
AR-0165	AR-0513	1.579	1.651	1780 kcmil, 84/19	3	60	100	.436	13	Orange
AR-0166	AR-0514	1.652	1.728	2000 kcmil, 9/W	3	60	100	.436	13	Purple
AR-0167	AR-0516	1.729	1.809	2156 kcmil, 84/19	3	64	100	.436	14	Red
AR-0168	AR-0517	1.810	1.898	2500 kcmil, 91W	3	64	100	.436	14	Black
AR-0169	AR-0518	1.899	1.991		3	68	100	.436	15	White
AR-0170	AR-0519	1.992	2.090	3500 kcmil, 127W	3	68	100	.436	15	Yellow
AR-0171	AR-0520	2.091	2.193	3500 kcmil, 127W	3	80	100	.468	15	Brown

Right-hand lay standard

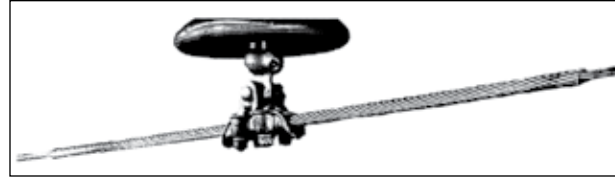
#### EXPLANATORY NOTES:

- (1) Nominal Conductor size indicates one of various conductors within each range.
- (2) Single Support Length (S) and Double Support Length (D) are described on the first page of the Armor Rod section.
- (3) Reference O.D. Calculations for: APPLIED O.D. Calculations.
- (4) AWAC is a registered trademark of the Copperweld Co.



# Armor Rods: ALUMINUM-CLAD STEEL

**For use on:  
Aluminum-Clad Steel Strands**



Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	Units	Wt/Lbs	Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Color Code
	Min.	Max.		Per Carton					
AR-2113 AR-2313	.169"	.178"	3#12 AW	50	32	40(S) 52(D)	.102	7	Orange
AR-2116 AR-2316	.196"	.207"	3#11 AW	50	32	40(S) 52(D)	.102	7	Black
AR-2118 AR-2318	.218"	.225"	3#10 AW 4-M AW	50	36	40(S) 52(D)	.102	8	Green
AR-2120 AR-2320	.237"	.249"	1/4", 7#12AW 6-M, AW, 3#9 AW	50	40	40(S) 52(D)	.102	9	Yellow
AR-2122 AR-2322	.264"	.277"	9/32", 7#11 AW 8-M, AW, 3#8 AW	25	28	42(S) 54(D)	.114	9	Blue
AR-2124 AR-2324	.296"	.314"	5/16", 7#10 AW 10-M, AW, 3#7 AW	25	30	46(S) 58(D)	.114	9	Black
AR-2126 AR-2326	.334"	.352"	11/32", 7#9 AW 12.5-M, AW, 3#6 AW	25	35	50(S) 62(D)	.114	10	Yellow
AR-2128 AR-2328	.373"	.392"	3/8", 7#8 AW 16-M, AW, 3#5 AW	25	44	50(S) 62(D)	.128	10	Orange
AR-2130 AR-2330	.409"	.425"	18-M AW	25	51	54(S) 66(D)	.128	11	Black
AR-2131 AR-2331	.426"	.450"	7/16" AW 7#7 AW 20M, AW	25	58	56(S) 68(D)	.128	12	Green
AR-2133 AR-2333	.477"	.504"	1/2" AW 7#6 AW	20	54	56(S) 68(D)	.144	11	Blue
AR-2135 AR-2335	.535"	.565"	9/16" AW 7#5 AW	10	40	60(S) 72(D)	.162	12	Yellow
AR-2137 AR-2337	.593"	.625"	5/8" AW 7#4 AW	10	46	60(S) 72(D)	.183	11	Black

Left-hand lay standard

**EXPLANATORY NOTES:**

- (1) Nominal Conductor size indicates one of various conductors within each range.
- (2) Single Support Length (S) and Double Support Length (D) are described on the first page of the Armor Rod section.
- (3) Reference O.D. Calculations for: APPLIED O.D. Calculations.



# Armor Rods: Copperweld®

**For use on:**  
**Copperweld Strand, Copper**  
**Copperweld®/Copper Composite**

Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	Units	Wt/Lbs	Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Color Code
	Min.	Max.		Per Carton					
AR-5100 AR-5300	.160	.168	#6 Solid Cu	50	35	38(S) 50(D)	.102	7	Green
AR-5101 AR-5301	.169	.178	3 #12 Cu	50	37	40(S) 52(D)	.102	7	Red
AR-5102 AR-5302	.179	.188	#5 Solid Cu	50	37	40(S) 52(D)	.102	7	Black
AR-5104 AR-5304	.196	.207	3 #11 Cw 8A Cw/Cu	50	56	40(S) 52(D)	.102	7	Gray
AR-5106 AR-5306	.218	.225	3 #10 Cw	50	44	40(S) 52(D)	.102	8	Red
AR-5107 AR-5307	.226	.236	6A Cw/Cu #4, 7W Cu	50	44	40(S) 52(D)	.102	8	Black
AR-5108 AR-5308	.237	.249	6M Cu 7 #12 Cw	50	49	42(S) 54(D)	.102	9	Blue
AR-5109 AR-5309	.250	.263	#3, 7W Cu 6M Cw 3W	50	50	42(S) 54(D)	.102	9	Gray
AR-5110 AR-5310	.264	.277	8M, Cw 7 #11 Cw	50	57	42(S) 54(D)	.102	9	Green
AR-5111 AR-5311	.278	.295	#2, 7W Cu 4A Cw/Cu	50	56	42(S) 54(D)	.102	10	Red
AR-5112 AR-5312	.296	.314	10M Cw 7 #10 Cw	25	35	44(S) 56(D)	.114	9	Black
AR-5113 AR-5313	.315	.333	#1, 7W-19W Cu	25	44	46(S) 58(D)	.128	9	Blue
AR-5114 AR-5314	.334	.352	12.5M Cw 7 #9 Cw	25	46	48(S) 60(D)	.128	9	Gray
AR-5115 AR-5315	.353	.372	14M Cw 2A Cw/Cu	25	54	50(S) 62(D)	.128	10	Green
AR-5116 AR-5316	.373	.392	7#8 Cw 16M Cw, 3 #5 Cw	25	62	52(S) 64(D)	.144	9	Red
AR-5118 AR-5318	.409	.425	18M Cw 2/0, 7W-19W Cu	15	44	54(S) 66(D)	.144	10	Blue
AR-5119 AR-5319	.426	.450	7 #7 Cw 20M Cw	15	55	54(S) 66(D)	.162	10	Gray
AR-5120 AR-5320	.451	.476	1/0 K, Cw/Cu 3/0, 7W-19W Cu	15	57	56(S) 68(D)	.162	10	Green
AR-5121 AR-5321	.477	.504	7 #6Cw 3/0, 12W Cu	15	62	56(S) 68(D)	.162	11	Red
AR-5122 AR-5322	.505	.534	19 #10 Cw 25M Cw	15	64	58(S) 70(D)	.162	11	Black
AR-5123 AR-5323	.535	.565	7 #5 Cw 4/0, 12W Cu	10	48	58(S) 70(D)	.162	12	Blue
AR-5124 AR-5324	.566	.592	19 #9 Cw 250M, 19-37W	10	49	60(S) 72(D)	.162	12	Gray
AR-5125 AR-5325	.593	.625	7 #4 Cw 250M, 12W Cu	10	53	60(S) 72(D)	.162	13	Green

Left-hand lay standard

#### EXPLANATORY NOTES:

- (1) Nominal Conductor size indicates one of various conductors within each range.
- (2) Single Support Length (S) and Double Support Length (D) are described on the first page of the Armor Rod section.
- (3) Reference O.D. Calculations for: APPLIED O.D. Calculations.
- (4) Copperweld is a registered trademark of the Copperweld Co.



# Armor Rods: Phosphor Bronze

**For use on:**  
**Copper**  
**Copperweld®/Copper Composite**

Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	Units	Wt/lbs	Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Color Code
	Min.	Max.		Per Carton					
ARB-1103 ARB-1303	.160	.168	#6, Solid Cu	75 75	54 70	38(S) 50(D)	.099	7	Green
ARB-1104 ARB-1304	.169	.178	9 1/2 D Cw/Cu	75 75	56 72	40(S) 52(D)	.099	7	Red
ARB-1105 ARB-1305	.179	.188	#6, 7W Cu 8C, Cw/Cu	75 75	56 72	40(S) 52(D)	.099	7	Black
ARB-1107 ARB-1307	.196	.207	#8A Cw/Cu #4, Solid Cu	50 50	44 56	40(S) 52(D)	.099	8	Gray
ARB-1109 ARB-1309	.218	.225	#8D Cw/Cu #7A Cw/Cu	50 50	44 56	40(S) 52(D)	.099	8	Red
ARB-1110 ARB-1310	.226	.236	#6A Cw/Cu #4, 7W Cu	50 50	44 56	40(S) 52(D)	.099	8	Black
ARB-1111 ARB-1311	.237	.249	#7D Cw/Cu	50 50	52 65	42(S) 54(D)	.099	9	Blue
ARB-1112 ARB-1312	.250	.263	#3, 7W Cu #2 Solid Cu	50 50	52 65	42(S) 54(D)	.099	9	Gray
ARB-1113 ARB-1313	.264	.277	#6D Cw/Cu	50 50	52 65	42(S) 54(D)	.099	9	Green
ARB-1114 ARB-1314	.278	.295	#4A Cw/Cu #2, 7W Cu	50 50	56 72	42(S) 54(D)	.099	10	Red
ARB-1115 ARB-1315	.296	.314	#2F Cw/Cu #5D, Cw/Cu	50 50	68 86	44(S) 56(D)	.111	9	Black

Left-hand lay standard

**EXPLANATORY NOTES:**

- (1) Nominal Conductor size indicates one of various conductors within each range.
- (2) Single Support Length (S) and Double Support Length (D) are described on the first page of the Armor Rod section.
- (3) Reference O.D. Calculations section, for: APPLIED O.D. Calculations.
- (4) Refer to General Recommendations for material selection.
- (5) Copperweld is a registered trademark of the Copperweld Co.

# Armor Rods: Galvanized Steel

**For use on:  
Steel Reinforced Copper Conductors with  
Right-Hand Lay**

Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	Units	Wt/lbs	Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Color Code
	Min.	Max.		Per Carton					
AR-1154 AR-1354	.244	.259	6/1 #4-7/1	50 50	38 48	40 (S) 52 (D)	.070	12	Orange
AR-1158 AR-1358	.309	.326	6/1 #2-7/1	50 50	60 75	44 (S) 56 (D)	.086	12	Red
AR-1160 AR-1360	.347	.373	#1-6/1	50 50	70 88	48 (S) 60 (D)	.086	13	Black
AR-1162 AR-1362	.390	.413	1/0-6/1	25 25	50 62	52 (S) 64 (D)	.100	13	Yellow
AR-1164 AR-1364	.437	.463	2/0-6/1	25 25	70 84	54 (S) 66 (D)	.119	12	Blue
AR-1166 AR-1366	.491	.521	3/0-6/1	20 20	62 75	56 (S) 68 (D)	.119	13	Orange
AR-1168 AR-1368	.552	.585	4/0-6/1	15 15	66 80	60 (S) 72 (D)	.138	13	Red

**Right-hand lay standard**

**For use on:  
Galvanized Steel Strand  
with Left-Hand Lay**

Catalog Number	Diameter Range (Inches)		Nominal Conductor Size	Units	Wt/lbs	Length (Inches)	Rod Diameter (Inches)	Rods Per Set	Color Code
	Min.	Max.		Per Carton					
AR-1123	.229	.243	1/4-7W	50	37	40	.086	10	Black
AR-1124	.244	.259	1/4-3W	50	37	40	.086	10	Yellow
AR-1128	.309	.326	5/16-3W 5/16-7W HS, & EHS	50	60	44	.100	11	Black
AR-1130	.347	.373	3W 3/8-7W	50	70	48	.100	12	Orange
AR-1133	.414	.436	7/16-7W	20	52	52	.119	12	Green
AR-3139	.491	.521	1/2-7W 19W	20	62	56	.138	12	Blue

**Left-hand lay standard**

*EXPLANATORY NOTES:*

- (1) Nominal Conductor size indicates one of various conductors within each range.
- (2) Single Support Length (S) and Double Support Length (D) are described on the first page of the Armor Rod section.
- (3) Galvanized Steel Armor Rods may be suitable for application on materials other than Galvanized Steel. Consult the Factory for specific information.

