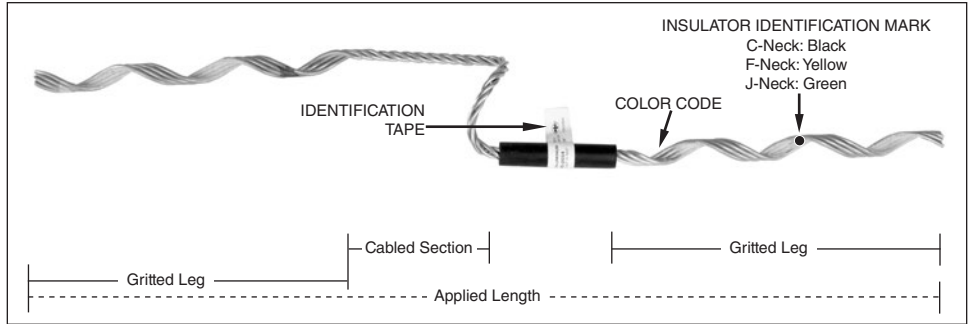




# Alloy Top Tie

## NOMENCLATURE



**Insulator Identification Mark:** Identifies the correct insulator head-style by colors corresponding to information on Catalog Specification pages.

**Color Code:** Assists in identification of conductor diameter and indicates starting point for application, corresponding to tabular information appearing on Catalog pages.

**Applied Length:** Assists in identification of conductor size, corresponding to tabular information appearing on Catalog pages.

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

## GENERAL RECOMMENDATIONS

**INTENDED USE:** Alloy Top Ties secure conductors in the top groove of interchangeable head-style insulators. The Alloy Top Tie is manufactured from an aluminum alloy material which makes it ideal for corrosive environments.

Alloy Top Ties provide an improved method of securing conductor compared to clamp-top insulators or hand ties over Armor Rods.

**VIBRATION DAMPERS:** By using Alloy Top Ties, the vibration fatigue life is maximized to the extent that the original endurance limit of the conductor is not reduced by abrasion on its outside surface. However, on selected lines where experience indicates that prolonged periods of vibration might approach the fatigue life of the conductor, or cause inner wire fretting, it will be necessary to supplement with dampers.

The following are guideline definitions for vibration activity. They should be applied to a Utility's own experience on lines in a given area.

**“Excessive”** Vibration: Areas where abrasion damage has been known to require replacement of both hand tie wire and protective rods, or where fatigue has been found under clamps. Protective rods should be replaced when visual inspection shows approximately half or more of the rod diameter has been abraded.

**“Severe”** Vibration: Areas where abrasion has required replacement of hand tie wire, but damage to protective rods has not progressed to the point where replacement is necessary.

**“Moderate”** Vibration: Areas where replacement of hand tie wire has not been required, and damage is minor.

Alloy Top Ties provide protection on areas of **“severe”** or **“moderate”** vibration. For areas experiencing **“excessive”** vibration, supplemental use of dampers is recommended. Spiral Vibration Damper's single purpose is to prevent the unlimited accumulation of aeolian vibration.

(Continued)

# Alloy Top Tie

## GENERAL RECOMMENDATIONS CONTD.

**INTERCHANGEABLE HEAD-STYLE INSULATOR:** To insure proper fit and service life, it is recommended that only insulators corresponding to C-neck, F-neck, or J-neck be used. These neck-diameter and groove-height dimensions appear on ANSI standards.

Consult the Factory for engineering recommendations on non-interchangeable head-style insulators. A sample of the insulator in question is desirable.

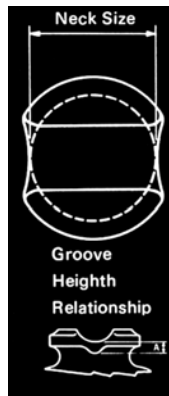
**CONDUCTOR SIZE:** Conductor sizes up to 1.240" O.D. can be accommodated depending on the insulator's top groove radius.

**MECHANICAL STRENGTH:** The Alloy Top Tie is designed to provide longitudinal holding strength in excess of values required by the National Electric Safety Code. The maximum holding strength is usually sufficient to contain the broken conductor to a single span, however, the Alloy Top Tie is designed to relieve the load before severe damage is done to the pole's structural components.

The Alloy Top Tie is designed to permit controlled and limited movement of unbroken conductor, reducing cantilever loading at the base of the insulator or bracket, then restore itself. We refer to this unique feature as "resilience." **TM-169E** covers the mechanical testing of the Alloy Top Tie and is available upon request.

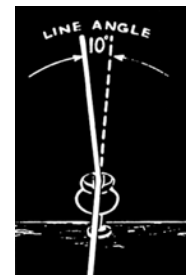
**RADIO INTERFERENCE:** The RIV characteristics of Alloy Top Ties are equivalent to those of a well-made hand tie when originally installed. During service life the precontoured tie assures continued fit, which would have better RIV than a loosened tie wire.

**TAPPING:** Compared to the use of protective rods, placing hot-line clamps directly over the applied legs of Alloy Top Ties cannot be recommended. Tapping over protective rods will remain permissible, however, there are now stirrups available that provide a superior method of making hot-line taps.



## LINE ANGLES – GENERAL GUIDELINES:

On vertically-mounted insulators, Alloy Top Ties can normally accommodate line angles up to 10°. Larger angles may be accommodated when the insulator is mounted at varying degrees of cant from the vertical, depending upon the actual cant of the insulator. Combining Alloy Side Ties with Alloy Top Ties on a single structure can also affect the acceptable line angles for that structure.



A technical report (**TM-197E**) is available which describes these various permissible line angles of Alloy Top Ties as a function of the insulator cant.

In all cases the conductor should rest in the preferred insulator groove, independently of the tie, so the tie is not required to force the conductor to remain in that groove. The largest practical angle a tie can accommodate depends upon limiting factors such as conductor size, tension, span lengths, sag angles, insulator style and orientation, etc. Consult PLP for further guidance on line angle issues not covered in the above test report.

**DOUBLE SUPPORTS:** At double crossarms PREFORMED™ Double-Support Tie can be used to cross major highways and railroads, or turn angles where it is practical to hold the conductor in the top groove during installation.

## 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 Alloy Top Tie before application.
5. Alloy Top Ties are precision devices. To insure proper performance, they should be stored in cartons under cover and handled carefully.

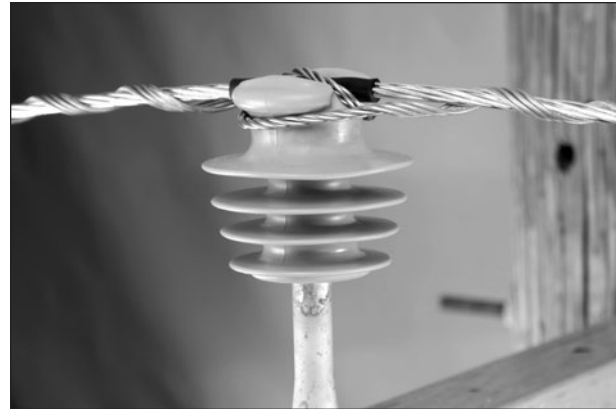


# Alloy Top Tie

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

**C-Neck Interchangeable**  
**Headstyle Insulators**

**ANSI 55-2 Pin**  
**ANSI 55-3 Pin**      **2-1/4" Neck Diameter**



| Catalog Number                      | Diameter Range (Inches) |       | Nominal Conductor Size                                      | Units      | Wt./Lbs. | Applied Length (Inches) | Insulator Identification Mark | Color Code |
|-------------------------------------|-------------------------|-------|---|------------|----------|-------------------------|-------------------------------|------------|
|                                     | Min.                    | Max.  |   | Per Carton |          |                         |                               |            |
| <b>9/16" R. GROOVE (See Note 2)</b> |                         |       |   |            |          |                         |                               |            |
| ALC-1102                            | .245                    | .277  | #4, 6/1, 7/1 – #4, 7W Alum. Alloy                           | 100        | 18       | 26                      | Black                         | Orange     |
| ALC-1103                            | .278                    | .315  | #3, 7W Alum. Alloy – #2, 7W All Alum.                       | 100        | 18       | 26                      | Black                         | Purple     |
| ALC-1104                            | .316                    | .357  | #2, 6/1, 7/1 – #2, 7W Alum. Alloy #1, 6/1                   | 100        | 19       | 28                      | Black                         | Red        |
| ALC-1105                            | .358                    | .405  | 1/0, 7W All Alum. 1/0, 6/1 1/0, 7W Alum. Alloy              | 100        | 20       | 30                      | Black                         | Yellow     |
| ALC-1106                            | .406                    | .459  | 2/0, 7W All Alum. 2/0, 6/1 2/0, 7W Alum. Alloy              | 50         | 17       | 25                      | Black                         | Blue       |
| ALC-1107                            | .460                    | .520  | 3/0, 7W All Alum. 3/0, 6/1 3/0, 7W Alum. Alloy              | 50         | 17       | 25                      | Black                         | Orange     |
| ALC-1108                            | .521                    | .588  | 4/0, 7W All Alum. 4/0, 6/1 4/0, 7W Alum. Alloy              | 50         | 18       | 28                      | Black                         | Red        |
| ALC-1109                            | .589                    | .665  | 266.8, 37W All Alum. 266.8, 18/1                            | 50         | 18       | 30                      | Black                         | Purple     |
| ALC-1110                            | .666                    | .755  | 336.4, 19W All Alum. 336.4, 18/1 397.5, 19W All Alum.       | 50         | 19       | 31                      | Black                         | Brown      |
| ALC-1111                            | .756                    | .858  | 477, 19W, 37W All Alum. 477, 18/1, 24/7, 26/7               | 50         | 19       | 32                      | Black                         | Red        |
| <b>5/8" R. GROOVE (See Note 2)</b>  |                         |       |   |            |          |                         |                               |            |
| ALC-1112                            | .859                    | .968  | 556.5, 26/7 636, 18/1 700, 37W, 61W All Alum.               | 50         | 20       | 34                      | Black                         | Blue       |
| <b>3/4" R. GROOVE (See Note 2)</b>  |                         |       |   |            |          |                         |                               |            |
| ALC-1113                            | .969                    | 1.096 | 795, 37W All Alum. 795, 61W All Alum. 715.5, 24/7 795, 54/7 | 50         | 21       | 37                      | Black                         | Green      |
| ALC-1114                            | 1.097                   | 1.240 | 954, 36/1, 54/7 1033.5, 37W, 61W All Alum.                  | 50         | 22       | 40                      | Black                         | Yellow     |

Right-hand lay standard

**EXPLANATORY NOTES:**

- (1) Nominal Conductor size indicates one of various conductors within each range.
- (2) For the succeeding conductors ranges, the insulator's top groove radius should be at least as large as shown above.
- (3) AWAC is a registered trademark of the Copperweld Co.

# Alloy Top Tie

For use on:

ACSR, Compacted ACSR,  
Aluminum Alloy, All-Aluminum,  
AWAC® Compacted All-Aluminum

F-Neck Interchangeable  
Headstyle Insulators

ANSI 55-4 Pin

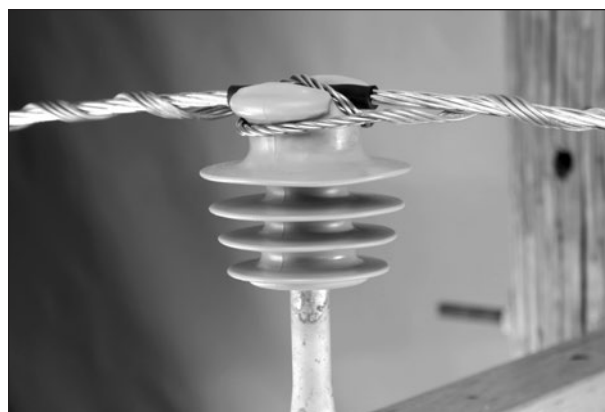
ANSI 55-5 Pin

ANSI 57-1 Pin

ANSI 57-2 Pin

ANSI 57-3 Pin

2-7/8" Neck Diameter



| Catalog Number                      | Diameter Range (Inches) |       | Nominal Conductor Size                                      | Units Per Carton | Wt./ Lbs. | Applied Length (Inches) | Insulator Identification Mark | Color Code |
|-------------------------------------|-------------------------|-------|---|------------------|-----------|-------------------------|-------------------------------|------------|
|                                     | Min.                    | Max.  |   |                  |           |                         |                               |            |
| <b>9/16" R. GROOVE (See Note 2)</b> |                         |       |   |                  |           |                         |                               |            |
| ALF-1202                            | .245                    | .277  | #4, 6/1, 7/1 #4, 7W Alum. Alloy                             | 100              | 19        | 27                      | Yellow                        | Orange     |
| ALF-1203                            | .278                    | .315  | #3, 7W Alum. Alloy #2, 7W All Alum.                         | 100              | 20        | 29                      | Yellow                        | Purple     |
| ALF-1204                            | .316                    | .357  | #2, 6/1, 7/1 #2, 7W Alum. Alloy #1, 6/1                     | 100              | 20        | 31                      | Yellow                        | Red        |
| ALF-1205                            | .358                    | .405  | 1/0, 7W All Alum. 1/0, 6/1 1/0, 7W Alum. Alloy              | 100              | 21        | 32                      | Yellow                        | Yellow     |
| ALF-1206                            | .406                    | .459  | 2/0, 7W All Alum. 2/0, 6/1 2/0, 7W Alum. Alloy              | 50               | 18        | 26                      | Yellow                        | Blue       |
| ALF-1207                            | .460                    | .520  | 3/0, 7W All Alum. 3/0, 6/1 3/0, 7W Alum. Alloy              | 50               | 18        | 27                      | Yellow                        | Orange     |
| ALF-1208                            | .521                    | .588  | 4/0, 7W All Alum. 4/0, 6/1 4/0, 7W Alum. Alloy              | 50               | 19        | 29                      | Yellow                        | Red        |
| ALF-1209                            | .589                    | .665  | 266.8, 37W All Alum. 266.8, 18/1                            | 50               | 19        | 32                      | Yellow                        | Purple     |
| ALF-1210                            | .666                    | .755  | 336.4, 19W All Alum. 336.4, 18/1 397.5, 19W All Alum.       | 50               | 20        | 32                      | Yellow                        | Brown      |
| ALF-1211                            | .756                    | .858  | 477, 19W, 37W All Alum. 477, 18/1, 24/7, 26/7               | 50               | 20        | 33                      | Yellow                        | Red        |
| <b>5/8" R. GROOVE (See Note 2)</b>  |                         |       |   |                  |           |                         |                               |            |
| ALF-1212                            | .859                    | .968  | 556.5, 26/7 636, 18/1 700, 37W, 61W All Alum.               | 50               | 21        | 35                      | Yellow                        | Blue       |
| <b>3/4" R. GROOVE (See Note 2)</b>  |                         |       |   |                  |           |                         |                               |            |
| ALF-1213                            | .969                    | 1.096 | 795, 37W All Alum. 795, 61W All Alum. 715.5, 24/7 795, 54/7 | 50               | 22        | 38                      | Yellow                        | Green      |
| ALF-1214                            | 1.097                   | 1.240 | 954, 36/1 1033.5, 37W, 61W All Alum. 954, 54/7              | 50               | 23        | 41                      | Yellow                        | Yellow     |

Right-hand lay standard

**EXPLANATORY NOTES:**

- (1) Nominal Conductor size indicates one of various conductors within each range.
- (2) For the succeeding conductors ranges, the insulator's top groove radius should be at least as large as shown above.
- (3) AWAC is a registered trademark of the Copperweld Co.

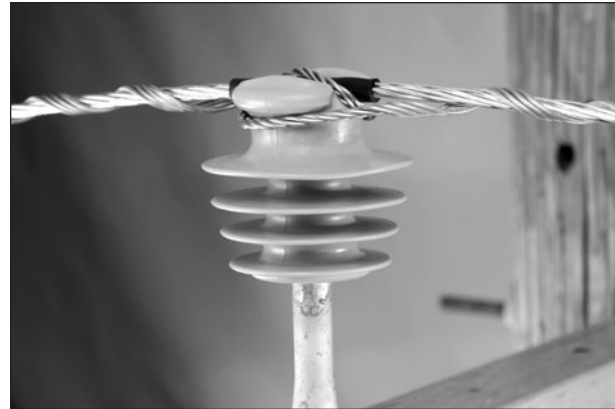


# Alloy Top Tie

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

**J-Neck Interchangeable Headstyle Insulators**

**ANSI 55-6**  
**Single Skirt Pin**  
**ANSI 55-7**  
**Single Skirt Pin      3-1/2" Neck Diameter**  
**ANSI 56-1**  
**Double Skirt Pin**



| Catalog Number                      | Diameter Range (Inches) |       | Nominal Conductor Size                                      | Units      | Wt./Lbs. | Applied Length (Inches) | Insulator Identification Mark | Color Code |
|-------------------------------------|-------------------------|-------|---|------------|----------|-------------------------|-------------------------------|------------|
|                                     | Min.                    | Max.  |   | Per Carton |          |                         |                               |            |
| <b>9/16" R. GROOVE (See Note 2)</b> |                         |       |   |            |          |                         |                               |            |
| ALJ-1302                            | .245                    | .277  | #4, 6/1, 7/1 #4, 7W Alum. Alloy                             | 100        | 25       | 28                      | Green                         | Orange     |
| ALJ-1303                            | .278                    | .315  | #3, 7W Alum. Alloy #2, 7W All Alum.                         | 100        | 27       | 30                      | Green                         | Purple     |
| ALJ-1304                            | .316                    | .357  | #2, 6/1, 7/1 #2, 7W Alum. Alloy #1, 6/1                     | 100        | 29       | 32                      | Green                         | Red        |
| ALJ-1305                            | .358                    | .405  | 1/0, 7W All Alum. 1/0, 6/1, 1/0, 7W Alum. Alloy             | 100        | 31       | 33                      | Green                         | Yellow     |
| ALJ-1306                            | .406                    | .459  | 2/0, 7W All Alum. 2/0, 6/1, 2/0, 7W Alum. Alloy             | 50         | 20       | 27                      | Green                         | Blue       |
| ALJ-1307                            | .460                    | .520  | 3/0, 7W All Alum. 3/0, 6/1, 3/0, 7W Alum. Alloy             | 50         | 21       | 28                      | Green                         | Orange     |
| ALJ-1308                            | .521                    | .588  | 4/0, 7W All Alum. 4/0, 6/1, 4/0, 7W Alum. Alloy             | 50         | 22       | 30                      | Green                         | Red        |
| ALJ-1309                            | .589                    | .665  | 266.8, 37W All Alum. 266.8, 18/1                            | 50         | 22       | 33                      | Green                         | Purple     |
| ALJ-1310                            | .666                    | .755  | 336.4, 19W All Alum. 336.4, 18/1 397.5, 19W All Alum.       | 50         | 23       | 33                      | Green                         | Brown      |
| ALJ-1311                            | .756                    | .858  | 477, 19W, 37W All Alum. 477, 18/1, 24/7, 26/7               | 50         | 27       | 34                      | Green                         | Red        |
| <b>5/8" R. GROOVE (See Note 2)</b>  |                         |       |   |            |          |                         |                               |            |
| ALJ-1312                            | .859                    | .968  | 556.5, 26/7 636, 18/1 700, 37W, 61W All Alum.               | 50         | 27       | 36                      | Green                         | Blue       |
| <b>3/4" R. GROOVE (See Note 2)</b>  |                         |       |   |            |          |                         |                               |            |
| ALJ-1313                            | .969                    | 1.096 | 795, 37W All Alum. 795, 61W All Alum. 715.5, 24/7 795, 54/7 | 50         | 30       | 39                      | Green                         | Green      |
| ALJ-1314                            | 1.097                   | 1.240 | 954, 36/1 954, 54/7 1033.5, 37W, 61W All Alum.              | 50         | 31       | 42                      | Green                         | Yellow     |

Right-hand lay standard

**EXPLANATORY NOTES:**

- (1) Nominal Conductor size indicates one of various conductors within each range.
- (2) For the succeeding conductors ranges, the insulator's top groove radius should be at least as large as shown above.
- (3) AWAC is a registered trademark of the Copperweld Co.