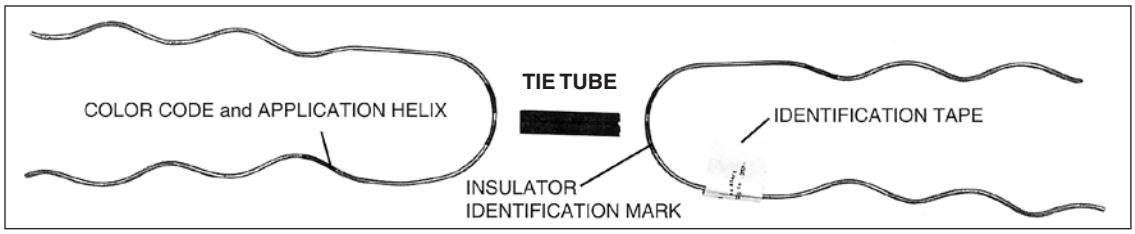
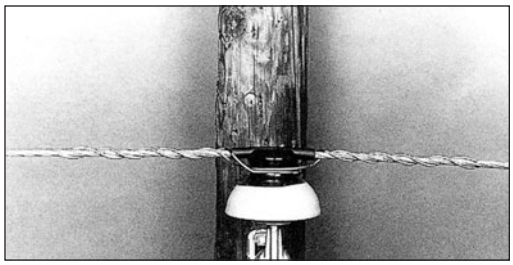
EZ-WRAP® Twin Tie

NOMENCLATURE



Tie Tube: Each tie is furnished with Tie Tube Component. The Tie Tube is detached and applied over the conductor.
Insulator Identification Mark: Identifies the correct insulator(s) head style. Black/yellow are for C and F-neck insulators. Yellow is for F-neck insulators only. Yellow/green for F- and J-neck insulators. Green is for J-neck insulators only.
Color Code and Application Helix: Assists in identification of conductor diameter corresponding to tabular information on the catalog pages and indicates "top" of tie and starting point for leg application.
Identification Tape: Shows catalog number, nominal sizes.



GENERAL RECOMMENDATIONS

INTENDED USE: EZ-WRAP Twin Ties, manufactured of aluminum covered steel, secure conductors in the top groove of interchangeable headstyle insulators.

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

The Twin Tie provides superior abrasion protection for the conductor under all types of motion, including low frequency sway oscillation, high frequency aeolian vibration, and galloping. The pad component surrounds the bare conductor with a resilient cushion where the conductor would come into contact with the insulator.

LOOP DESIGN: The loop of the EZ-WRAP Twin Tie has been designed so multiple insulators with dimensions consistent with ANSI C29 Insulator Standards can be accommodated by a single tie design for most conductors and insulators. One design will accommodate most C-neck to F-neck insulators while another will accommodate most F-neck to J-neck insulators. See note below for exceptions.

Note: Due to large conductor size and C-neck top groove space limitations, all C-neck/F-neck combination EZ-WRAP Twin Ties for conductors above .855" conductor OD can be recommended for F-neck insulators **only**. Refer to the catalog table for F-neck only ties for these large conductors.

In addition, it is recommended that **only** J-neck insulators be used with F-neck/J-neck combination EZ-WRAP Twin Ties for conductors above .855" conductor OD. Refer to catalog tables for J-neck only ties for these large conductors.

Consult PLP for recommendations when the application requires conductors larger than .855" conductor OD and C-neck insulators.

APPLICATION HELIX: Each metal component of the EZ-WRAP Twin Tie has an **Application Helix** formed on one side of the legs which aids application by identifying the "top" of each component and the first leg to install. This **Application Helix** must face "UP" during installation and should be the first leg applied to insure proper fit and service life.

INTERCHANGEABLE HEADSTYLE INSULATOR: To insure proper fit and service life, it is recommended that only insulators with dimensions consistent with ANSI C29 Insulator Standards, corresponding to C-neck, F-neck, and J-neck, be used with EZ-WRAP Twin Ties.

Consult PLP for engineering recommendations for non-interchangeable or other headstyle insulators. A sample of the insulator in question is desirable.

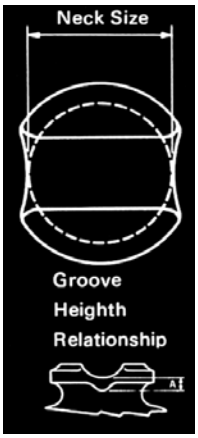
CONDUCTOR SIZE: EZ-WRAP Twin Ties for C and F-neck insulators can accommodate conductor diameters from .245" to 1.240" (F-neck only from .856 to 1.240") depending upon the insulator's top groove radius. EZ-WRAP Twin Ties for F and J-neck insulators can accommodate conductor diameters from .245"-1.240" (J-neck only for .856"/1.240") depending on the insulator's top groove radius.

(Continued)

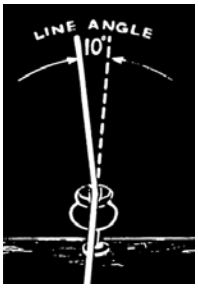
EZ-WRAP® Twin Tie

GENERAL RECOMMENDATIONS CONTD.

In order for the tie to fit properly there must be enough room in the insulator's top groove. The minimum insulator top groove radius required for a particular EZ-WRAP Twin Tie and conductor diameter is shown on the catalog pages above the catalog numbers. Consult the insulator manufacturer or PLP when in doubt about proper insulator top groove radius.



LINE ANGLES–GENERAL GUIDELINES: On vertically mounted insulators, EZ-WRAP Twin 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 Side Ties with EZ-WRAP Twin Ties on a single structure can also affect the acceptable line angles for that structure.



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.

MECHANICAL STRENGTH: The EZ-WRAP Twin Tie is designed to provide longitudinal holding strength in excess of values required by the National Electric Safety Code. The holding strength is usually sufficient to contain the broken conductor to a single span. **TR-729E** covers the mechanical testing of the EZ-WRAP Twin Tie and is available upon request.

VIBRATION DAMPERS: By using EZ-WRAP Twin Ties with the tube, the possibility of abrasion or fatigue during conductor movement is minimized. However, for lines with excessive **aeolian vibration,** the use of vibration dampers such as **Spiral Vibration Dampers** (SVD) may be required. Typically two SVDs per span on distribution construction (less than 800' spans) will reduce aeolian vibration to acceptable levels.

In addition, **conductor galloping** can produce extreme stress and damage to support points regardless of the tie device. Consequently, the use of galloping dampers such as the **Air Flow Spoiler** (AFS) is recommended where galloping has occurred or is expected.

Consult PLP for engineering recommendations for application of either the SVD or AFS.

RADIO INTERFERENCE: The RIV characteristics of EZ-WRAP Twin 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: Tapping over the applied legs of the EZ-WRAP Twin Tie is not recommended.

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.

APPLICATION-INSPECTION: The EZ-WRAP Twin Tie is non-rotational and can be installed when pole or conductor clearance is critical. Application Procedures are available.

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 EZ-WRAP Twin Tie before application.
5. EZ-WRAP Twin Ties are precision devices. To insure proper performance, they should be stored in cartons under cover and handled carefully.

EZ-WRAP® Twin Tie

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

C-Neck & F-Neck Interchangeable Headstyle Insulators

ANSI 55-2 Pin
ANSI 55-3 Pin
ANSI 55-4 Pin
ANSI 55-5 Pin
ANSI 57-1 Post
ANSI 57-2 Post
ANSI 57-3 Post

2-1/4" & 2-7/8" Neck Diameter

Catalog Number	Diameter Range (Inches) Min.	Max.	Nominal Conductor Size	Units Per Carton	Wt./Lbs. Per Carton	Applied Length (Inches)	Insulator Identification Mark	Color Code
9/16" R. GROOVE (See Note 2)								
TTCF-102	.245	.277	#4, 6/1, 7/1 #4, 7W Alum. Alloy	50	15	21	Black/Yellow	Orange
TTCF-103	.278	.315	#3, 7W Alum. Alloy #2, 7W All Alum.	50	16	22	Black/Yellow	Purple
TTCF-104	.316	.357	#2, 6/1, 7/1 #2, 7W Alum. Alloy #1, 6/1	50	16	23	Black/Yellow	Red
TTCF-105	.358	.405	1/0, 7W All Alum. 1/0, 6/1 1/0, 7W Alum. Alloy	50	17	25	Black/Yellow	Yellow
TTCF-106	.406	.459	2/0, 7W All Alum. 2/0, 6/1 2/0, 7W Alum. Alloy	50	18	26	Black/Yellow	Blue
TTCF-107	.460	.520	3/0, 7W All Alum. 3/0, 6/1 3/0, 7W Alum. Alloy	50	18	27	Black/Yellow	Orange
TTCF-108	.521	.588	4/0, 7W All Alum. 4/0, 6/1 4/0, 7W Alum. Alloy	50	19	28	Black/Yellow	Red
TTCF-109	.589	.665	266.8, 37W All Alum. 266.8, 18/1	50	19	29	Black/Yellow	Purple
9/16" R. GROOVE (See Note 2)								
TTCF-110	.666	.755	336.4, 19W All Alum. 336.4, 18/1 397.5, 19W All Alum.	50	20	31	Black/Yellow	Brown
TTCF-111	.756	.858	477, 19W, 37W All Alum. 477, 18/1, 24/7, 26/7	50	26	32	Black/Yellow	Red
5/8" R. GROOVE (See Note 2)								
TTF-112*	.859	.968	556.5, 26/7 636, 18/1 700, 37W, 61W All Alum.	50	28	35	Yellow	Blue
3/4" R. GROOVE (See Note 2)								
TTF-113*	.969	1.096	795, 37W All Alum. 795, 61W All Alum. 715.5, 24/7 795, 54/7	50	37	37	Yellow	Green
TTF-114*	1.097	1.240	954, 36/1, 54/7 1033.5, 37W, 61W All Alum.	50	39	39	Yellow	Yellow

*** These sizes are recommended for use with F-neck insulators only due to C-neck insulator top groove space limitations.**

Right-hand lay standard

EXPLANATORY NOTES:

(1) "Nominal Conductor Size" indicates one or more of various conductors within each range.
(2) For the succeeding 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.

EZ-WRAP® Twin Tie

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

F-Neck & J-Neck Interchangeable Headstyle Insulators

ANSI 55-4 Pin
ANSI 55-5 Pin **2-7/8" & 3-1/2"**
ANSI 57-1 Pin **Neck Diameter**
ANSI 57-2 Pin
ANSI 57-3 Pin
ANSI 55-6 Single Skirt Pin
ANSI 55-7 Single Skirt Pin
ANSI 56-1 Double Skirt Pin

Catalog Number	Diameter Range (Inches) Min.	Max.	Nominal Conductor Size	Units Per Carton	Wt./Lbs. Per Carton	Applied Length (Inches)	Insulator Identification Mark	Color Code
9/16" R. GROOVE (See Note 2)								
TTFJ-202	.245	.277	#4, 6/1, 7/1 #4, 7W Alum. Alloy	50	16	23	Yellow/Green	Orange
TTFJ-203	.278	.315	#3, 7W Alum. Alloy #2, 7W All Alum.	50	17	24	Yellow/Green	Purple
TTFJ-204	.316	.357	#2, 6/1, 7/1 #2, 7W Alum. Alloy #1, 6/1	50	17	25	Yellow/Green	Red
TTFJ-205	.358	.405	1/0, 7W All Alum. 1/0, 6/1 1/0, 7W Alum. Alloy	50	18	27	Yellow/Green	Yellow
TTFJ-206	.406	.459	2/0, 7W All Alum. 2/0, 6/1 2/0, 7W Alum. Alloy	50	19	28	Yellow/Green	Blue
TTFJ-207	.460	.520	3/0, 7W All Alum. 3/0, 6/1 3/0, 7W Alum. Alloy	50	19	29	Yellow/Green	Orange
TTFJ-208	.521	.588	4/0, 7W All Alum. 4/0, 6/1 4/0, 7W Alum. Alloy	50	20	30	Yellow/Green	Red
TTFJ-209	.589	.665	266.8, 37W All Alum. 266.8, 18/1	50	20	31	Yellow/Green	Purple
9/16" R. GROOVE (See Note 2)								
TTFJ-210	.666	.755	336.4, 19W All Alum. 336.4, 18/1 397.5, 19W All Alum.	50	21	33	Yellow/Green	Brown
TTFJ-211	.756	.858	477, 19W, 37W All Alum. 477, 18/1, 24/7, 26/7	50	28	34	Yellow/Green	Red
5/8" R. GROOVE (See Note 2)								
TTJ-212*	.859	.968	556.5, 26/7, 636, 18/1 700, 37W, 61W All Alum.	50	30	37	Green	Blue
3/4" R. GROOVE (See Note 2)								
TTJ-213*	.969	1.096	795, 37W All Alum. 795, 61W All Alum. 715.5, 24/7 795, 54/7	50	39	39	Green	Green
TTJ-214*	1.097	1.240	954, 36/1 1033.5, 37W, 61W All Alum. 954, 54/7	50	41	41	Green	Yellow

*** These sizes are recommended for use with J-neck insulators only. For F-neck insulator applications use F-neck catalog numbers on page 12-19.**

Right-hand lay standard

EXPLANATORY NOTES:

(1) "Nominal Conductor Size" indicates one or more of various conductors within each range.
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