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1. PURPOSE

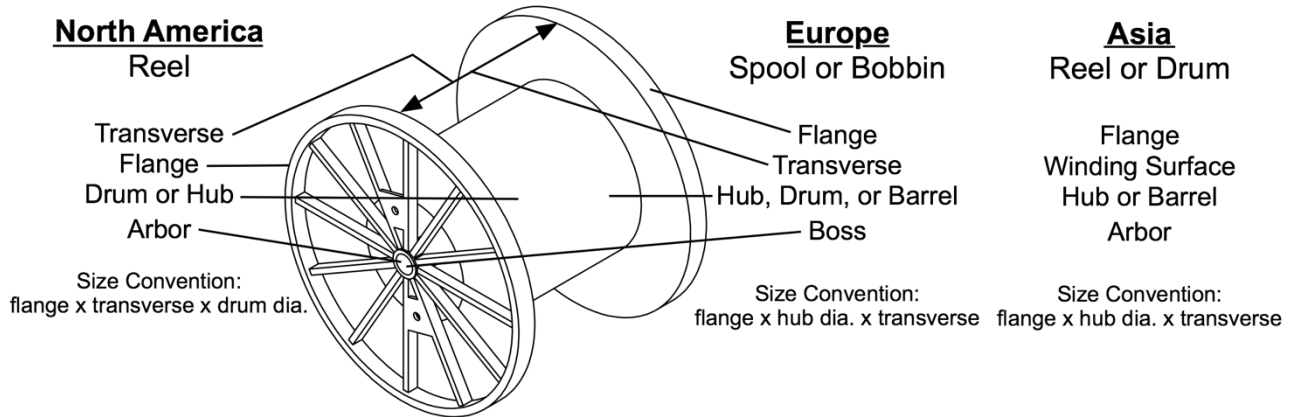
- 1.1. This is Chapter 4 of the ACCC® Conductor Installation Guidelines, covering ACCC® conductor reel handling and storage. The Guidelines consist of nine chapters, each written to stand alone to address specific installation subjects. Taken together, the nine chapters comprise the entire Installation Guidelines:
- 1.1.1. Chapter 1 — General Installation Guidelines
 - 1.1.2. Chapter 2 — Safety
 - 1.1.3. Chapter 3 — Training
 - 1.1.4. Chapter 4 — Reel Handling and Storage
 - 1.1.5. Chapter 5 — Site Considerations and Set-ups
 - 1.1.6. Chapter 6 — Required Equipment
 - 1.1.7. Chapter 7 — Stringing / Pulling
 - 1.1.8. Chapter 8 — Terminations, Sagging, and Suspending
 - 1.1.9. Chapter 9 — Maintenance and Repair
- 1.2. The purpose of the Guidelines is to provide experienced transmission engineers, project managers and planners, field inspectors, utility personnel and linemen with guidelines, and requirements necessary to safely and successfully install the ACCC® overhead conductor and accessories. This document is an overview and guideline covering what to do but not necessarily how to do it. It is not intended to serve as a training manual or act as a substitute for proper training, required personnel skill sets, or industry experience.

2. SCOPE

- 2.1. These guidelines apply to equipment and techniques required to successfully install all sizes of ACCC® conductor.
- 2.2. These guidelines include additional equipment and techniques that are required for Ultra-Low Sag (ULS) ACCC® conductor sizes.

3. DEFINITIONS

- 3.1. ACCC® is a registered trademark of CTC Global, and is defined as Aluminum Conductor Composite Core, stranded with Aluminum 1350-O (where O stands for fully annealed) or Aluminum 1350-O Z-wire trapezoidal wire.
- 3.2. Terminology differs around the world when referring to the parts of a reel:



4. ASSOCIATED DOCUMENTS

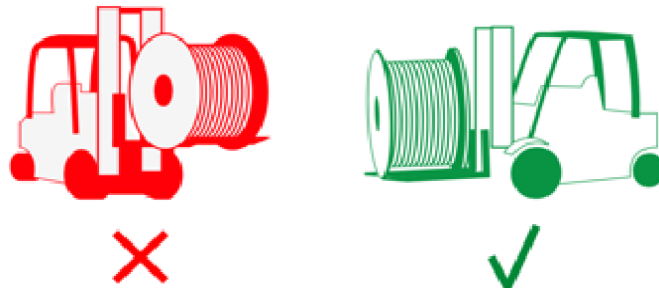
- 4.1. IEEE Standard 524™ Guide to the Installation of Overhead Transmission Line Conductors.
- 4.2. OSHA Electric Power Generation, Transmission, and Distribution Standards 1910.269 and 1926.950 or ISO 29.240.20 or local country equivalents.
- 4.3. The remaining Chapters of the Installation Guidelines
- 4.4. ACCC® Product Specification WI-750-023
- 4.5. ACCC® Conductor Reel Specification F-750-032
- 4.6. NEMA WC26-2008 Binational Wire and Cable Packaging Standard

5. NEW CONDUCTOR REELS

- 5.1. ACCC® conductors are shipped on industry standard reels with added packaging that safeguards the conductor during transit, storage, and at the point of installation. The conductor reels must be verified by the conductor manufacturer against the specification in Appendix A. The conductor is inspected during all stages of fabrication; packaging is inspected prior to shipment, and only properly packaged material is delivered to the carrier.
- 5.2. The conductor is packaged with a protective covering over the top layer of conductor to prevent damage during shipping and handling.
- 5.3. New conductor reels should be inspected and verified against the above requirements.
- 5.4. New conductor reels are marked with manufacturer's name and location, date of manufacture, and a reel identification number that provides manufacturing traceability. This information should be recorded as the reels are installed.

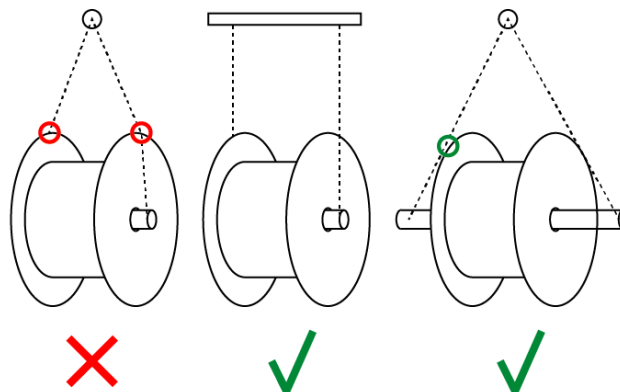
6. CONDUCTOR REEL HANDLING

- 6.1. Reels should be properly controlled during the loading, unloading and staging processes.
- 6.2. Proper equipment must be available to hoist and handle conductor reels. Cranes or other equipment of adequate capacity must be used to avoid damage and safety hazards.
- 6.3. Reels may be handled with forklift equipment of adequate capacity. It is important that reels of ACCC® conductor are not lifted by placing the forks of the forklift under the drum area of the reel, which would allow the forks to come in direct contact with the conductor or its wrapping material. Slings, winch lines, nylon straps or any other types of lifting devices shall never be placed around the conductor to lift the reel. The ACCC® conductor will be damaged if such devices are used.



- 6.4. Reels are constructed so that they must be supported either by the reel flanges from below or on an axle (mandrel) through the arbor hole. When an axle through the arbor hole is used to lift reels, a spreader bar must be employed to prevent damage to the reel flanges, or conductor, or both, by inward force on the reel flange.

A spreader bar with slings or chains rigged vertically to each end of an adequately sized axle through the arbor hole is the preferred method of hoisting. If a spreader bar is not available at least 3 – 4 meter (15') steel or nylon slings or lifting chains must be used to prevent damage to the top of the reel flange



- 6.5. Returnable metal reels may be supported by a singletree arrangement that clamps to the flange and is lifted from above.
- 6.6. Reels may be placed on flat ground or floor. Always chock the reel flanges (never chock under the conductor itself or its protective lagging) to prevent rolling.



- 6.7. At no time shall a loaded reel be laid on its side either during handling, loading, unloading or storage.

7. CONDUCTOR and CONDUCTOR REEL STORAGE

- 7.1. If the conductor is to be stored for an extended period of time before use, the reel shall be kept off of the ground and otherwise protected from possible damage. Only all-steel reels, should be used for long-term or outdoor storage. Wood reels or steel spoke reels with wooden flanges and center drum should never be used for long-term, outdoor, or damp conditions storage. ACCC® should never be submerged or allowed to remain wet during storage. ACCC® core can absorb moisture. This does not affect the tensile strength of the core and has no effect on installed conductor, but it can increase the allowable bending diameter which may subject the conductor core to increased risk during installation.



X



X

- 7.2. Identification tags and other markings should be retained on all packages until the conductor is to be used. Identification tags should be protected from weather to retain information.
- 7.3. The reels are delivered from the factory with a protective wrapping which could include

wood lagging and/or fiber board held down with steel bands over the outermost layer of conductor. The outermost protective covering should be left on the reels if stored for an extended period of time.



7.4. Storage Temperatures:

7.4.1. Maximum storage temperature: +55°C (131°F)

7.4.2. Minimum storage temperature: -40°C (-40°F)

8. TEN INSTALLATION DON'TS**8.1. DON'T OVER-BEND!**

8.1.1. Don't allow the conductor to contact surfaces that present sharp angles or small diameters.

8.2. ONE Tensioner DON'T

8.2.1. Don't let ACCC® run hard on the end roller of the fairlead. Always use an interim sheave to feed the conductor into the middle of the tensioner fairlead opening. A multiple-roller "banana" fairlead is highly recommended.

8.3. TWO Payout Reel DON'TS

8.3.1. Don't allow the conductor to bounce or jump up and down between the payout reel and the tensioner. When the conductor is jumping or bouncing, the core can be damaged.

8.3.2. Don't use a payout reel with insufficient brakes. Poorly maintained or undersized brakes will cause jumping and bouncing of the conductor between the payout reel and the tensioner. The payout reel brakes should allow the tensioner to draw new conductor from the reel smoothly and evenly.

8.4. THREE Handling and Equipment DON'TS

8.4.1. Don't use grips that aren't designed for installing ACCC®. Use Klein "Chicago" long jaw grips or equal, designed for the size conductor being installed. Never use pocketbook grips!

8.4.2. Don't allow the conductor tail or the deadend to fall or droop unsupported while handling the conductor. If the tail is not controlled, it will damage the core at the back of the grip.

8.4.3. Don't hoist the conductor in any manner which causes a sharp bend in the conductor.

8.5. TWO Pulling / Stringing DON'TS

8.5.1. Don't install any ACCC® with under-diameter sheaves on the first and last structure or any angles that are over 30 degrees.

8.5.2. Don't pull in conductor using old conductor if it is rusty. Don't use old conductor with splices or broken strands for pulling. Always cut splices and any damaged areas out and replace with Kellum grips before using old conductor for pulling. When in doubt, pull in a pilot line using the old conductor and pull in ACCC® using the pilot line. Always use a pilot line for long spans and river crossings.

8.6. ONE Termination DON'T

8.6.1. Don't allow a sharp bend where the conductor exits the termination hardware. Hoisting conductor or deadend without paying attention to this area can damage the core at that point.

REVISION HISTORY

| REV. | CHANGE REQUEST # | DATE |
|-------------|--|-------------|
| A | 121515-1 | 15 Dec 2015 |
| B | 3.1 Corrected "1350-0" to "1350-O" Deleted Appendix A Changed copyright footer to 2017 | 7 July 2017 |