

CSS Dead End Installation Instruction

Transmission Class

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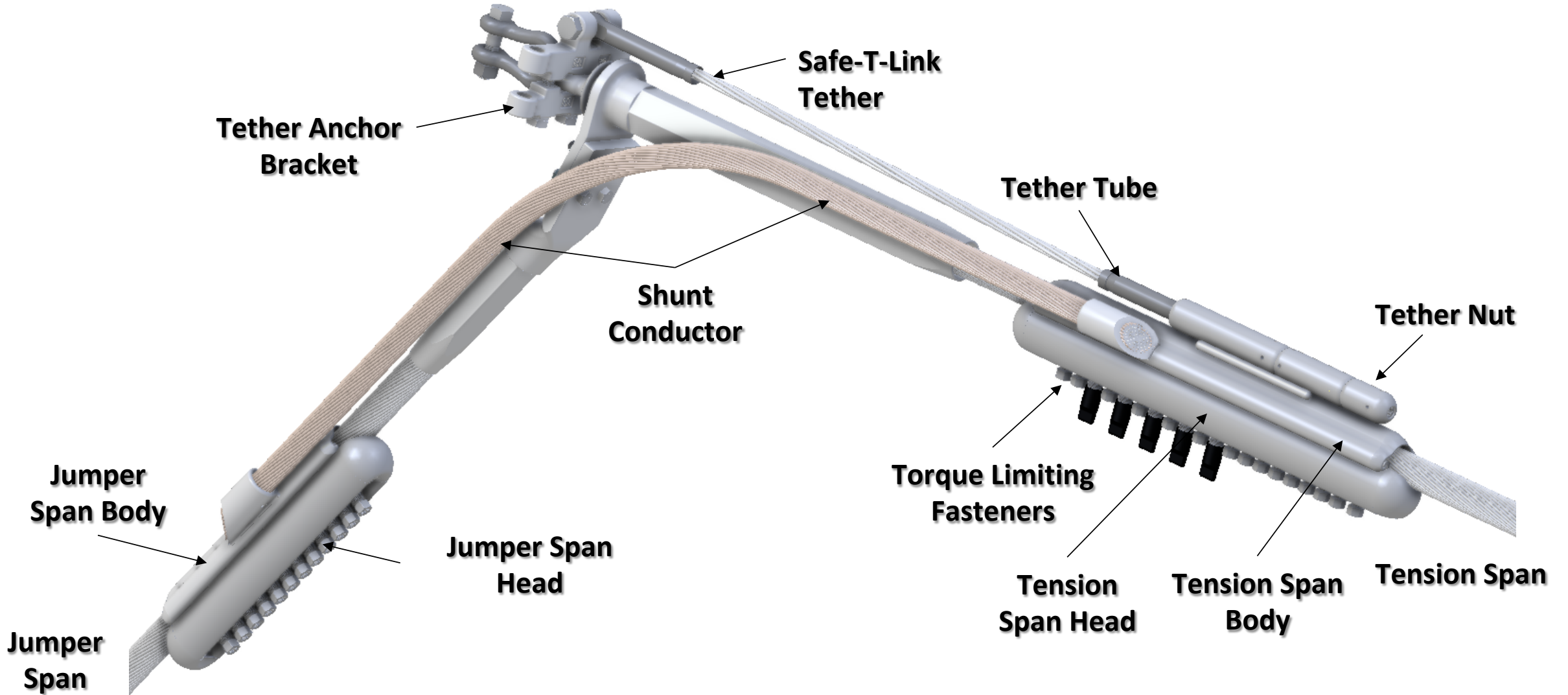
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ClampStar® shunts for Deadends can be readily installed generally in about 20 minutes. However, if this is your first installation, allow 45 minutes for the first installation (TIP: Read thru this entire document before starting the installation).

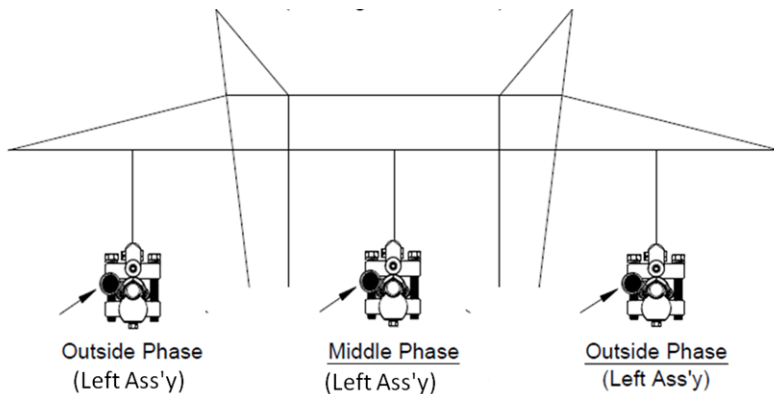
Part Nomenclature



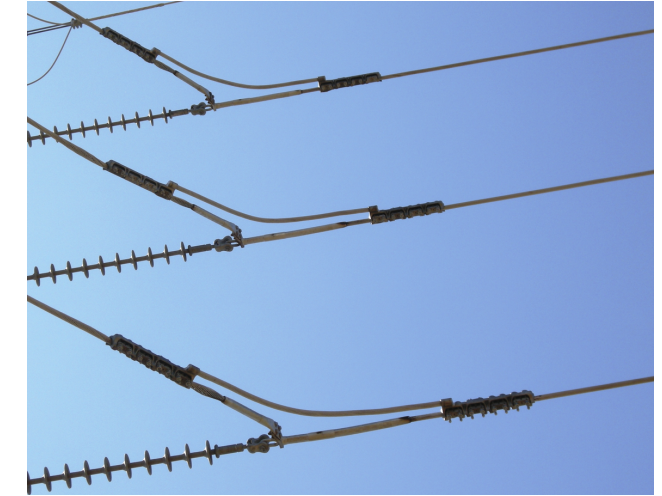
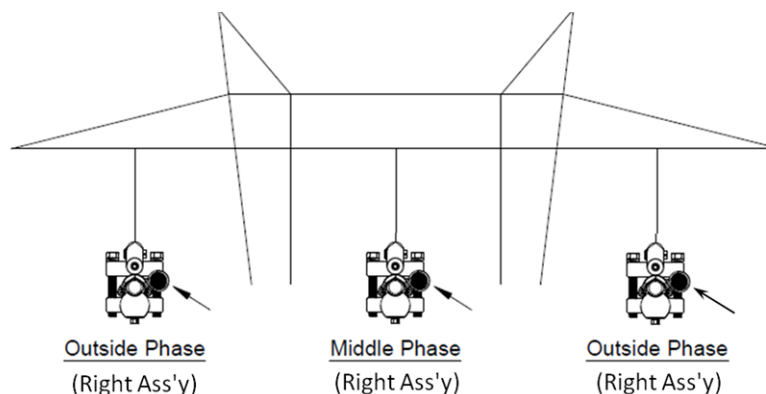
Determine Left / Right Application

The following two illustrations depict recommended ClampStar installation on angled deadend towers as labeled. The *purpose* is to train the “shunt conductor” of the ClampStar to the inside of the angle, such that it does not cross the tension span conductor. In the event the proper version is not available, alternate installations are acceptable provided proper workmanship procedures are employed to “train” the shunt conductor to assure there is no rubbing or clashing between it and other components.

**DEADEND STRUCTURE – BREAK ANGLE TO THE LEFT
(Looking toward tower)**



**DEADEND STRUCTURE – BREAK ANGLE TO THE RIGHT
(Looking toward tower)**



Proper alignment



Misaligned

Required Tools



**T60 Bit (½" Drive)
Tether Nut Adjustment**



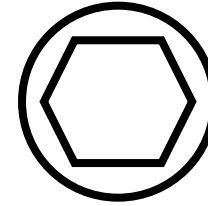
**Wire Brush
Conductor Preparation**



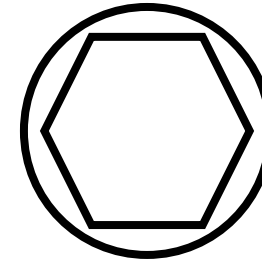
Tape Measure



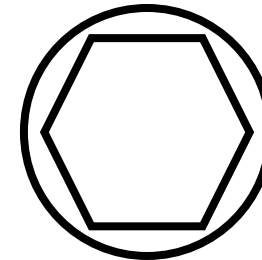
Impact Driver



¾" Socket



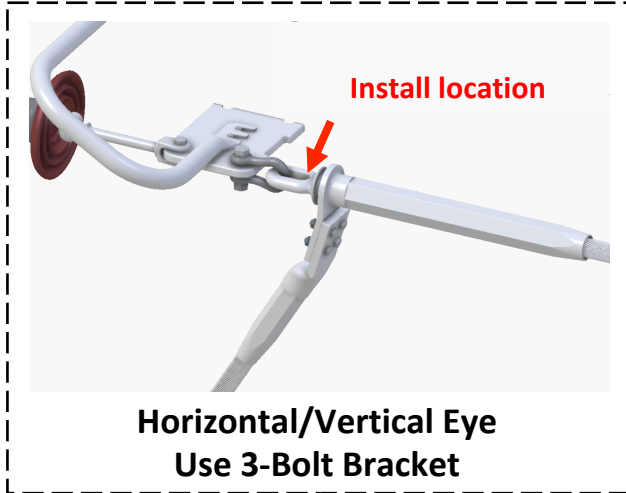
**1 ⅛" Socket
(Clamping Bolts)**



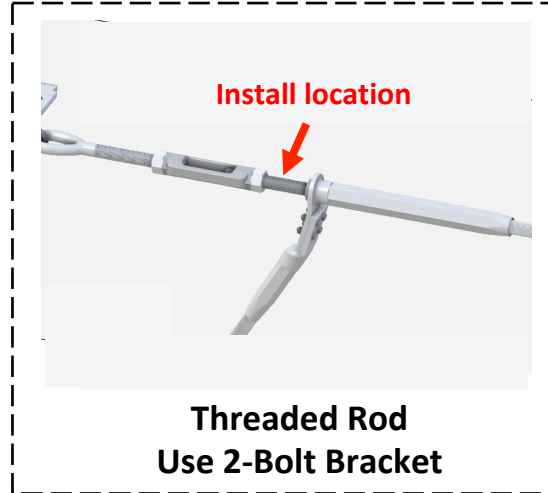
**1 ¼" Socket
(Clamping Bolts &
Clevis Bolts)**

1. Tether Anchor Bracket Configurations

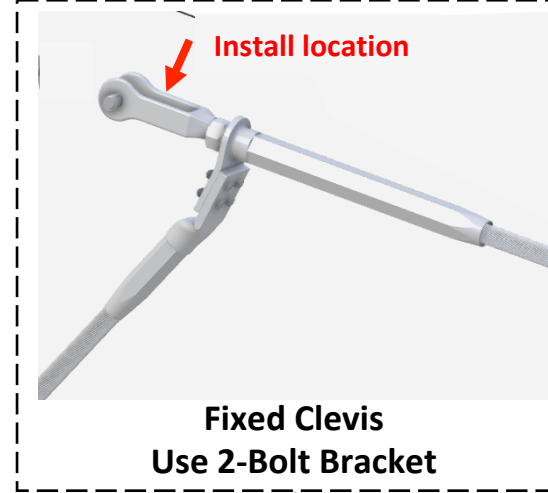
Example 1 (Kit E)



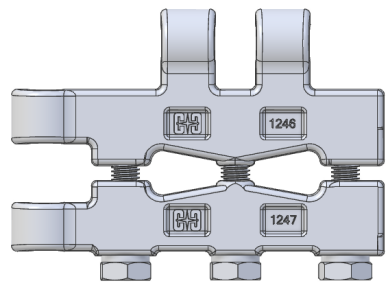
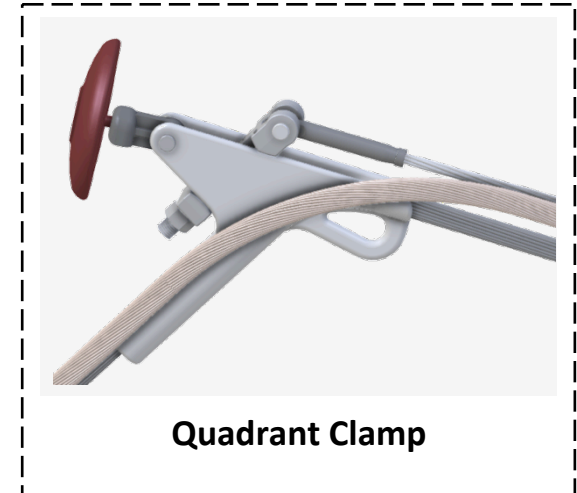
Example 2 (Kit S)



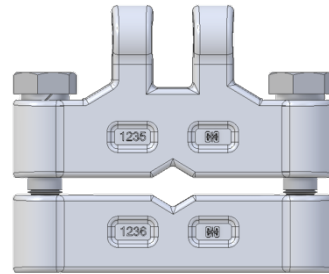
Example 3 (Kit S)



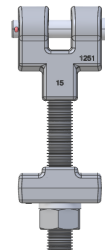
Example 4 (Kit B & C)



**3-Bolt Bracket
(Kit E)**

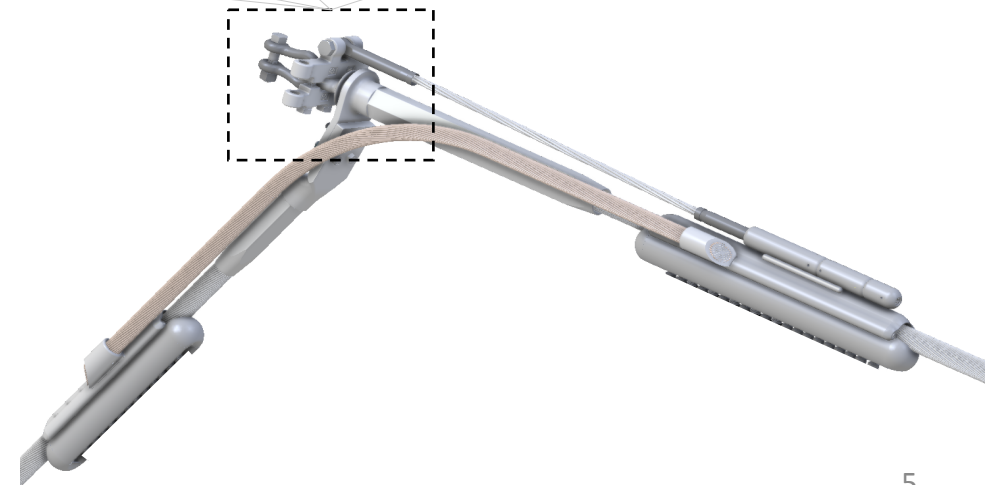


**2-Bolt Bracket
(Kit S)**

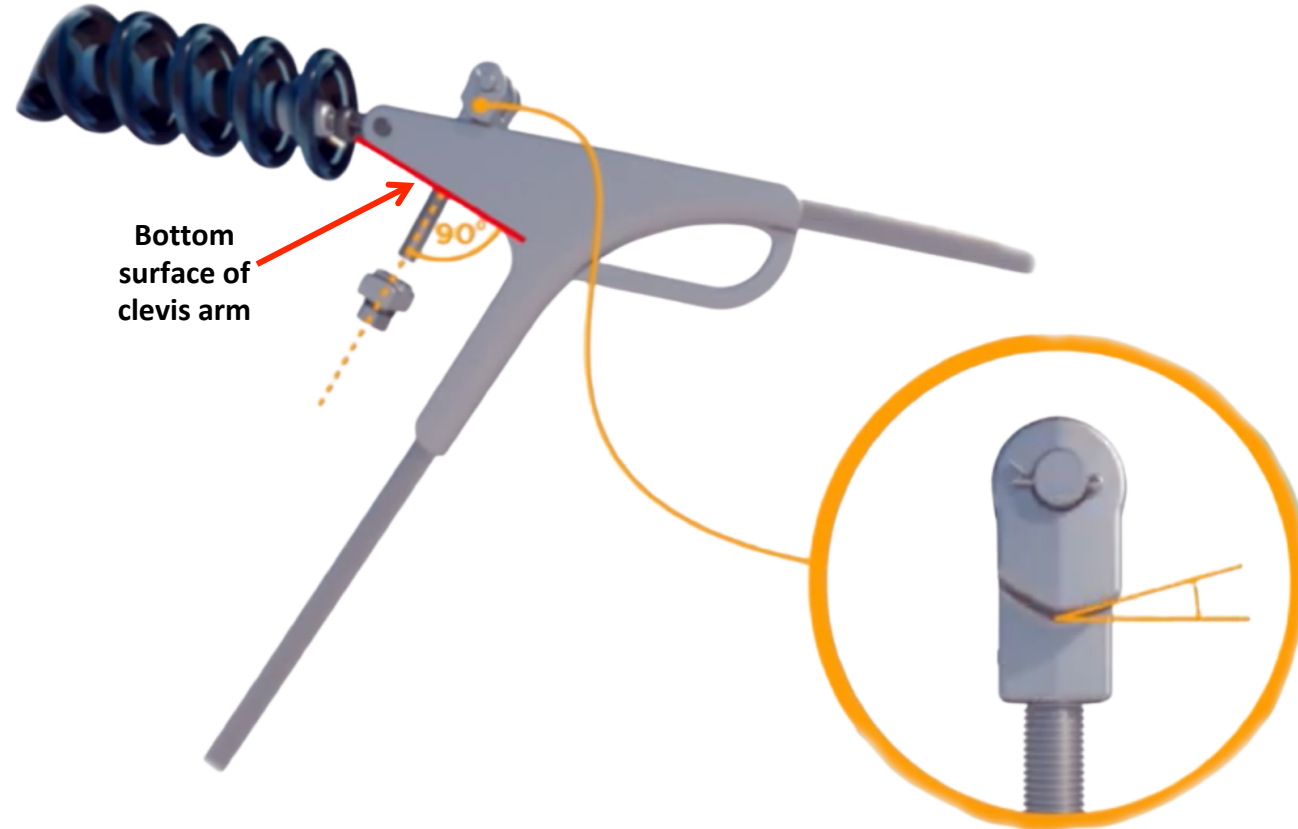
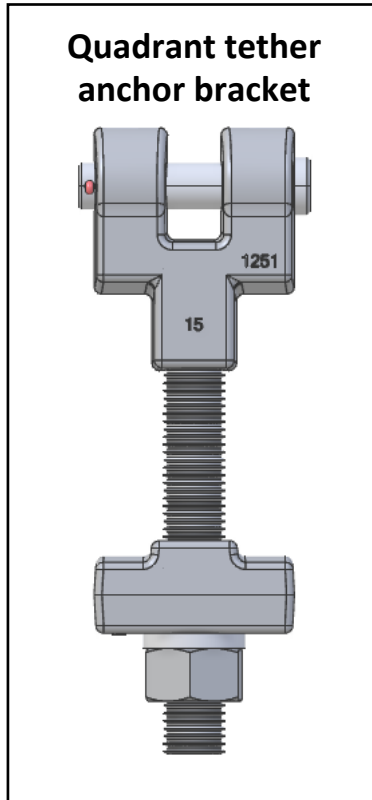


**Quadrant Clamp Bracket
(Kit B & C)**

Install the tether anchor bracket. A 2-bolt, 3-bolt or quadrant clamp tether anchor bracket will be provided depending on the connection configuration(s). Consult Classic Connectors if your connection is not illustrated.



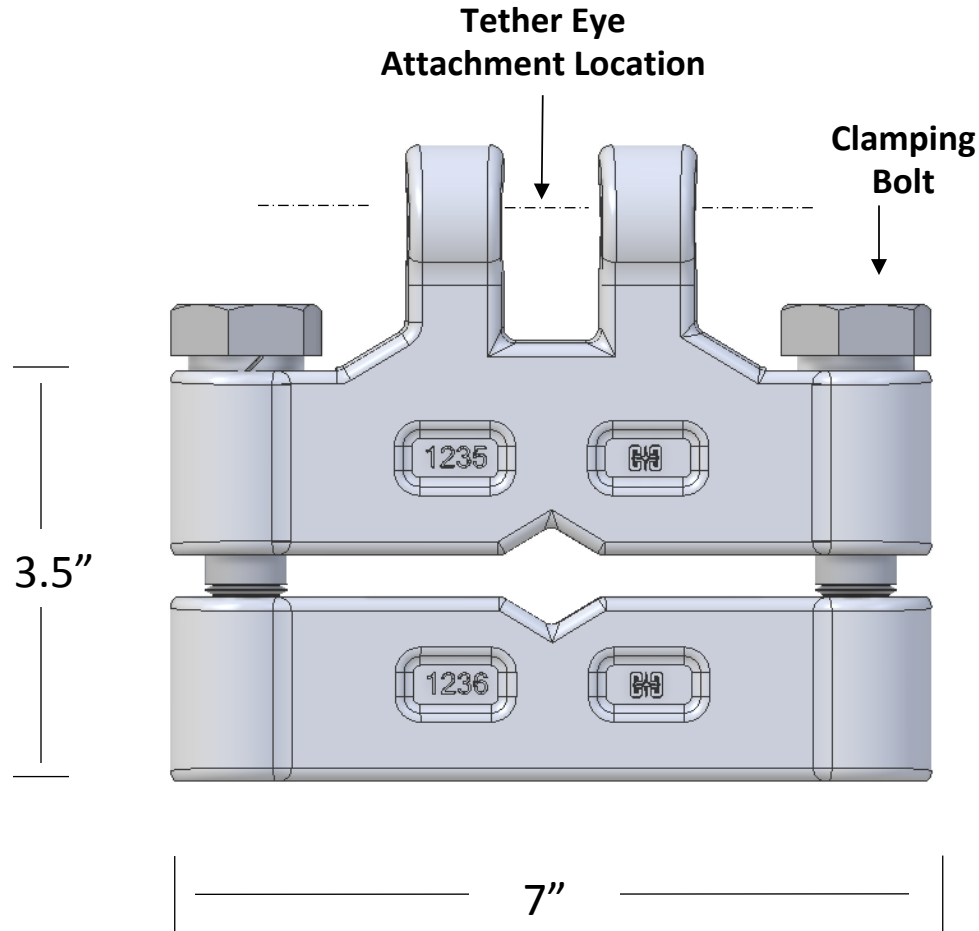
1. Install Tether Anchor Bracket (Quadrant Clamp)



When installing the Safe-T-Link tether bracket on a Quadrant Clamp be sure to align the bolt of the bracket perpendicular to the bottom surface of the clevis arms. The top portion of the quadrant clamp should be rotated for the most appropriate fit on the top surface of the bracket.

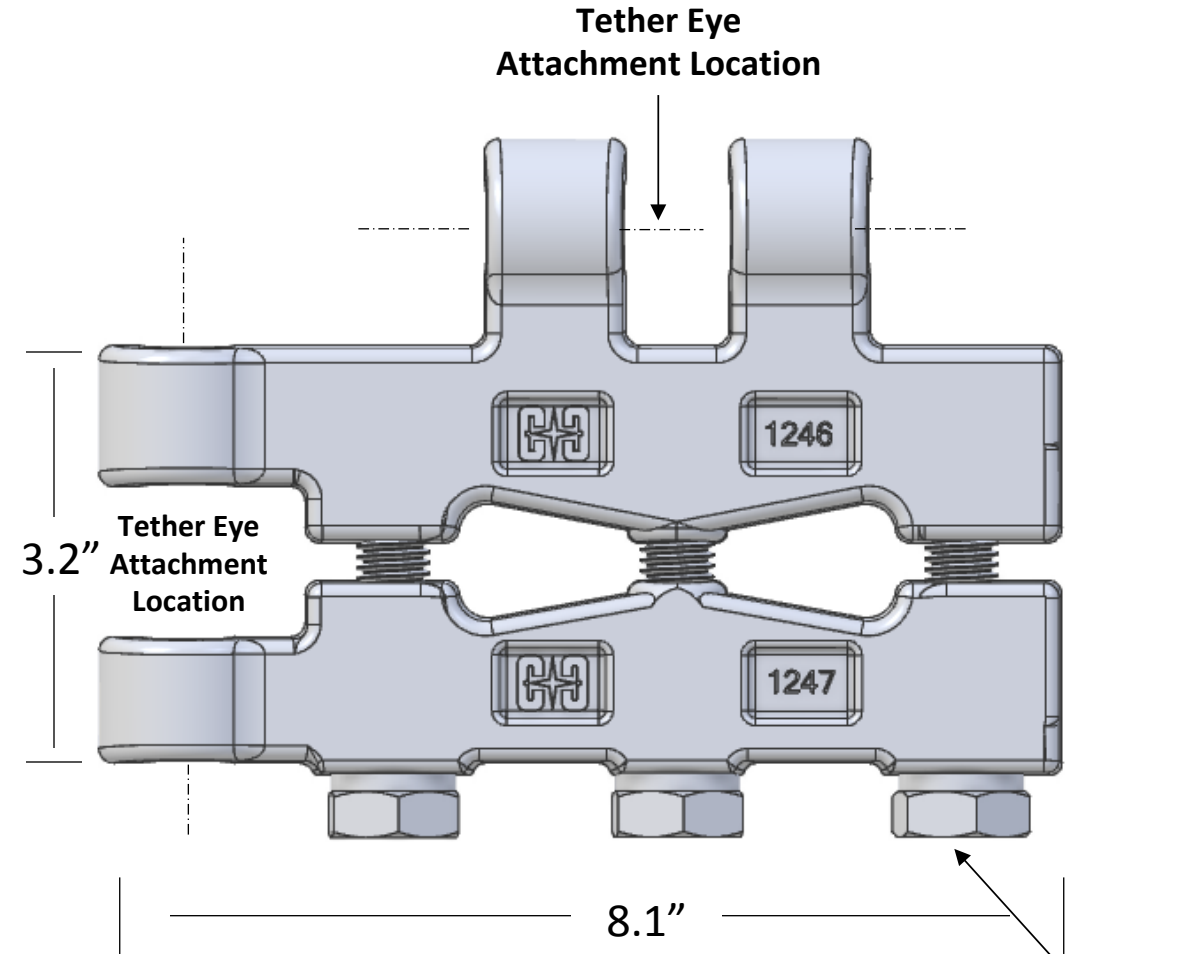
Assemble the bracket using the nut brace and washer and hand tighten the nut ensuring the side profile lines up properly to the quadrant clamp. This step only aligns and fits the bracket. No additional nut tightening is required – the final operation of tightening the tether will tension the bolt as well.

Dead End Brackets



2-Bolt Bracket

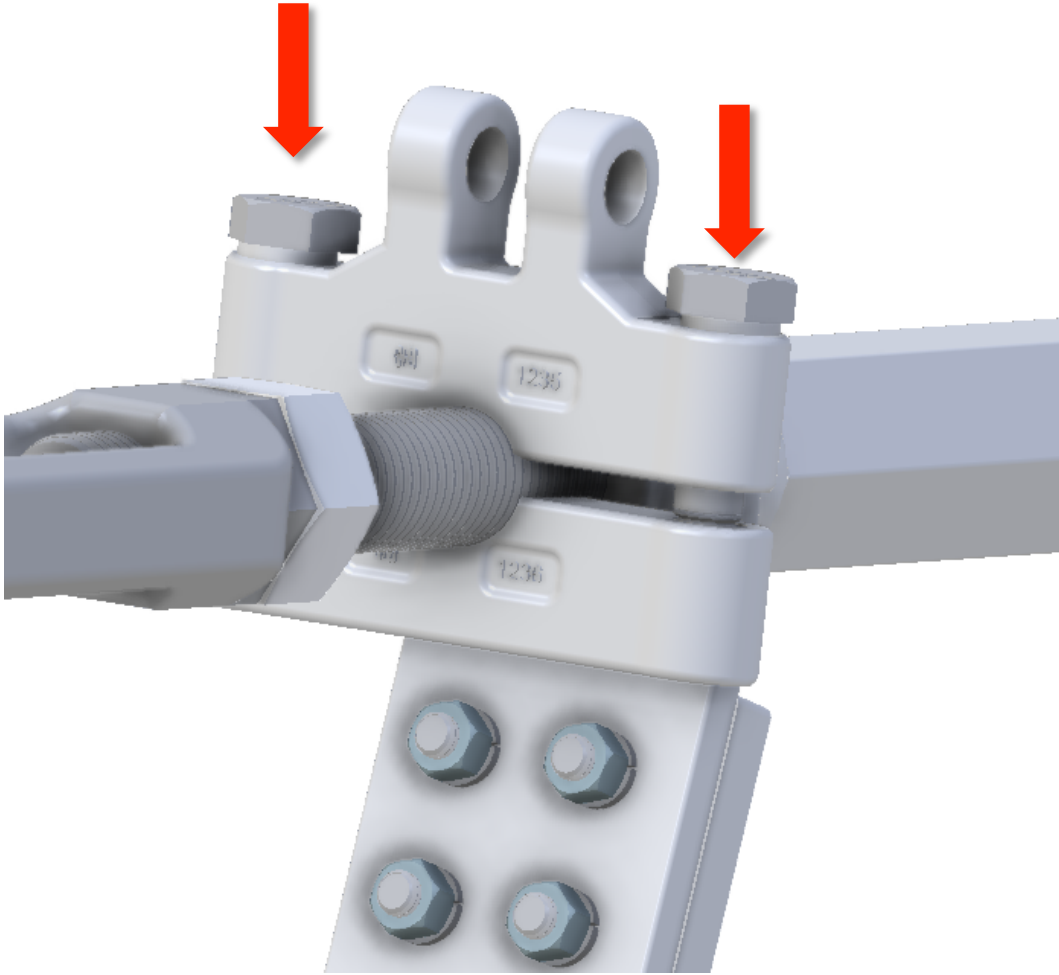
½" – 1 ¼" Rod



3-Bolt Bracket

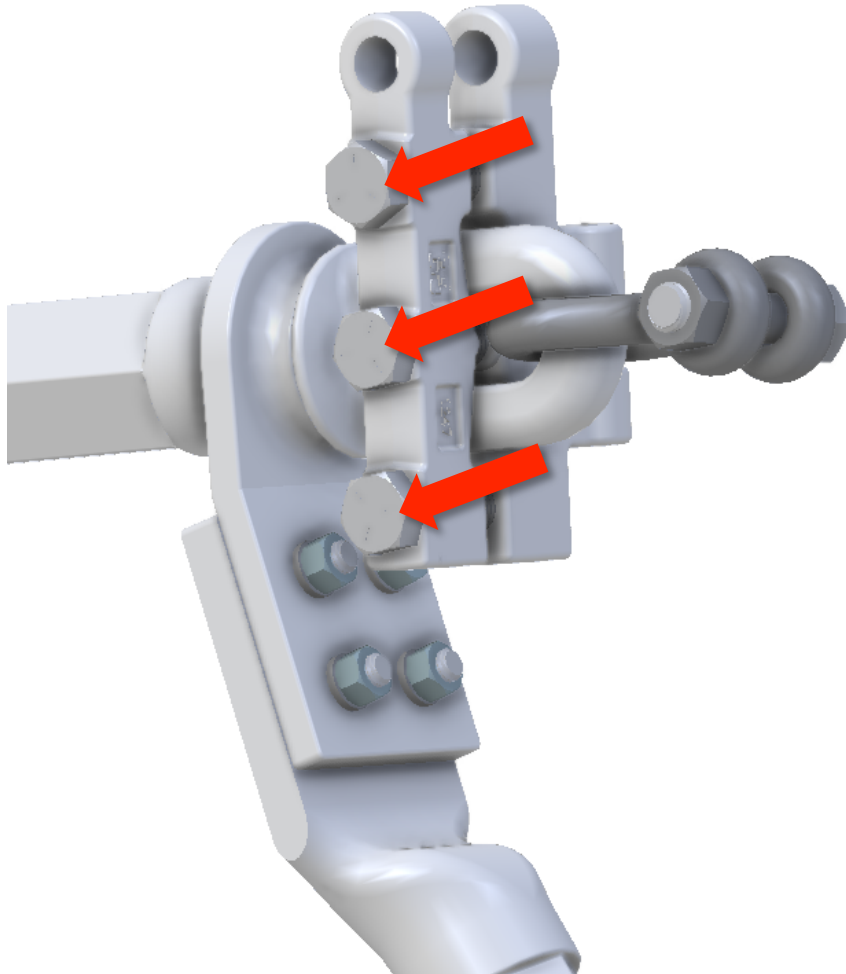
H9300 – H9800

1. Install Tether Anchor Bracket (2-Bolt)



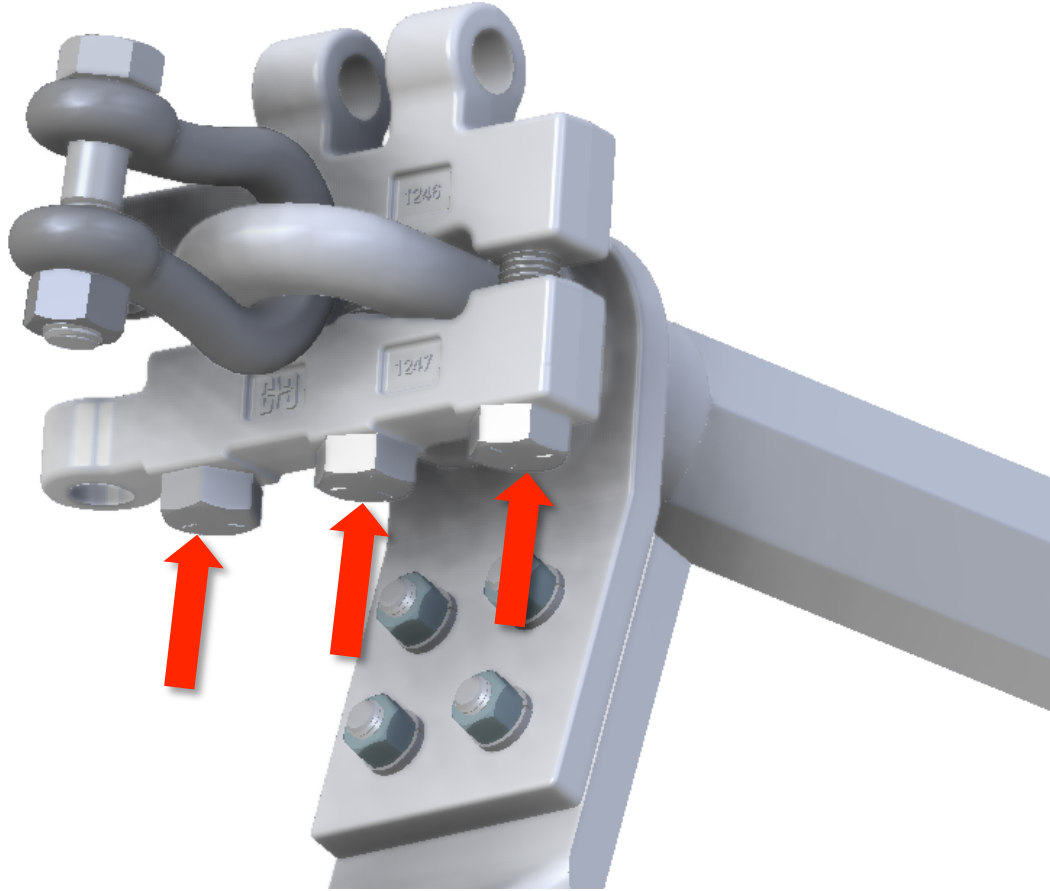
Tighten clamping bolts to minimum 55 lbf/ft.
Alternate tightening sequence to achieve evenly
distributed clamp-load

1. Install Tether Anchor Bracket (3-Bolt) Vertical Orientation



Tighten clamping bolts to minimum 55 lbf/ft.
Tighten center bolt first and alternate
tightening sequence to achieve evenly
distributed clamp-load

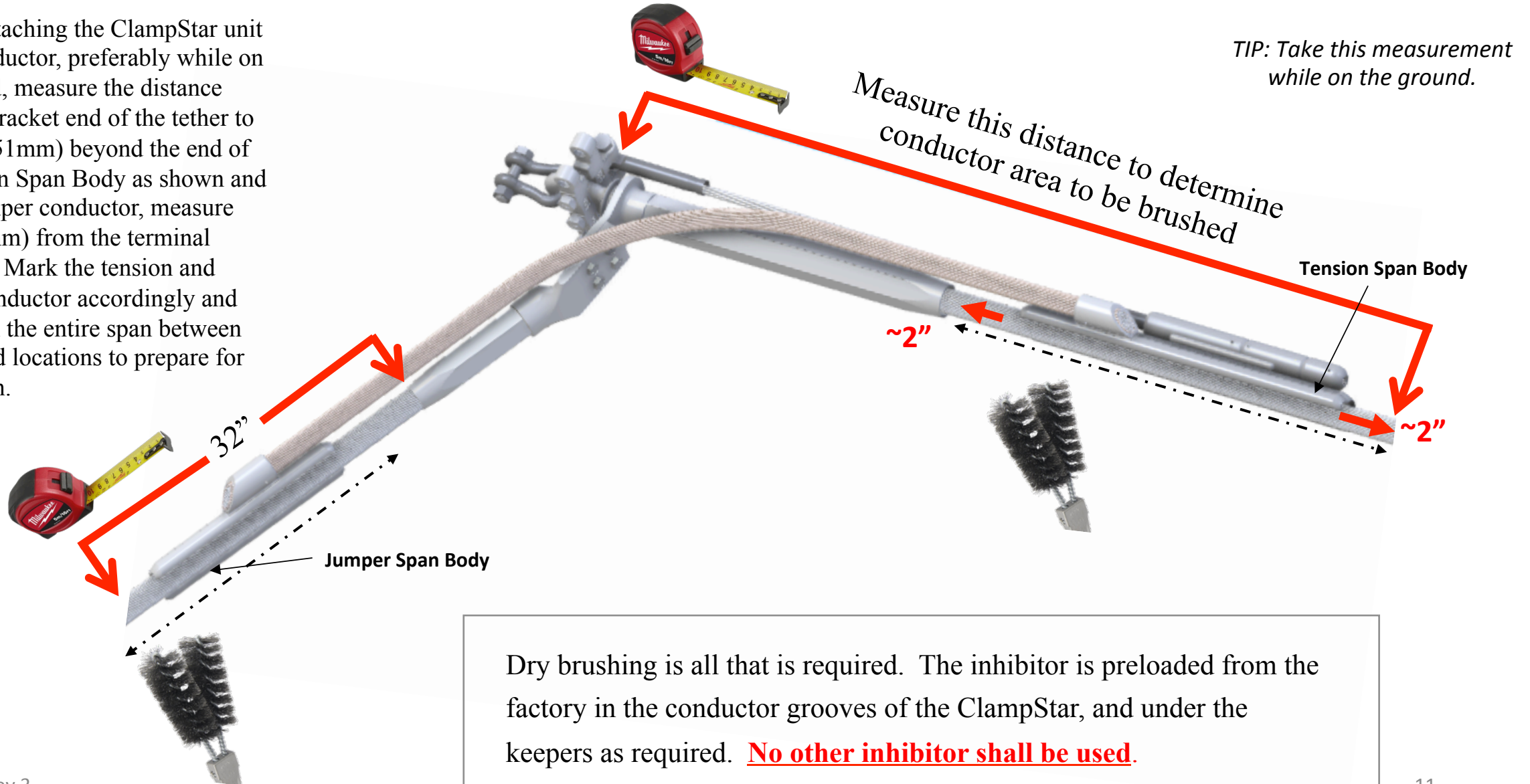
1. Install Tether Anchor Bracket (3-Bolt) Horizontal Orientation



Tighten clamping bolts to minimum 55 lbf/ft. Tighten center bolt first and alternate tightening sequence to achieve evenly distributed clamp-load

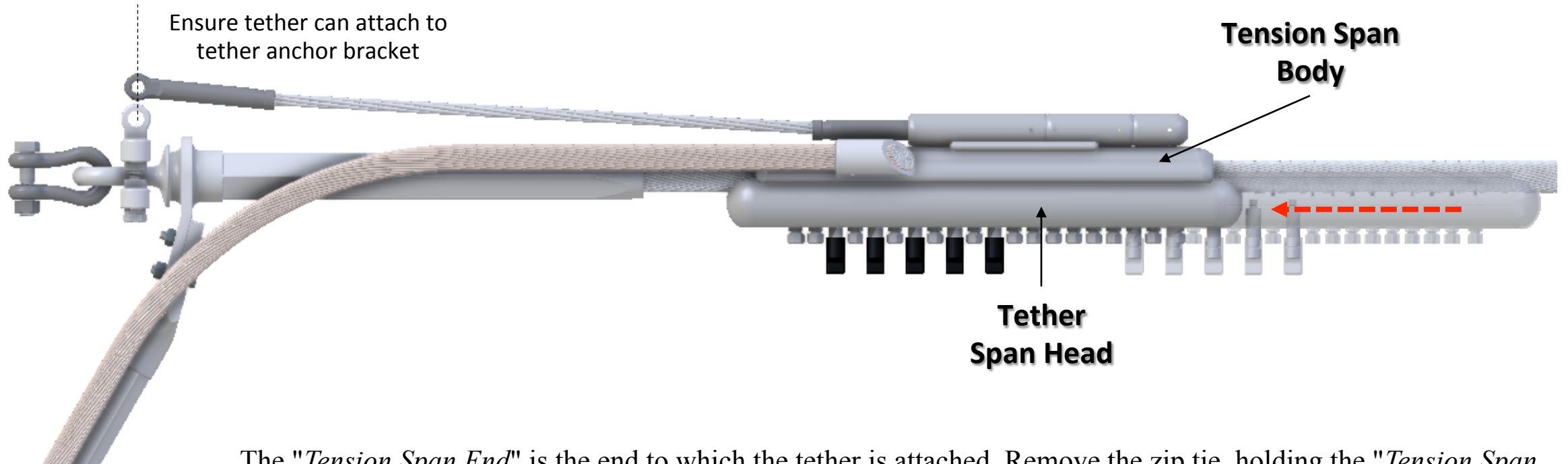
2. Conductor Preparation

Prior to attaching the ClampStar unit to the conductor, preferably while on the ground, measure the distance from the bracket end of the tether to 2 inches (51mm) beyond the end of the Tension Span Body as shown and on the jumper conductor, measure 32" (813mm) from the terminal connector. Mark the tension and jumper conductor accordingly and wire brush the entire span between the marked locations to prepare for installation.



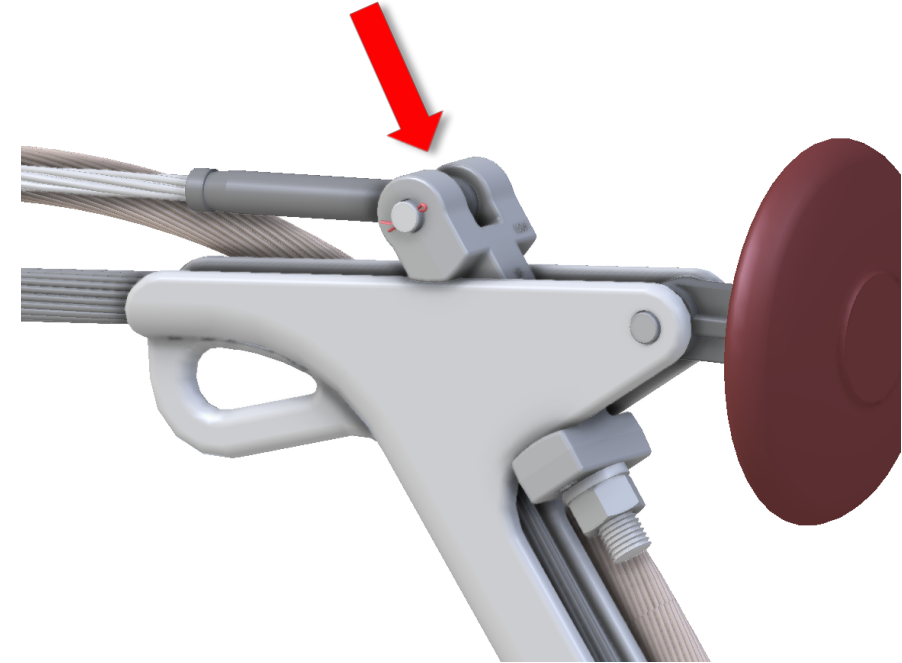
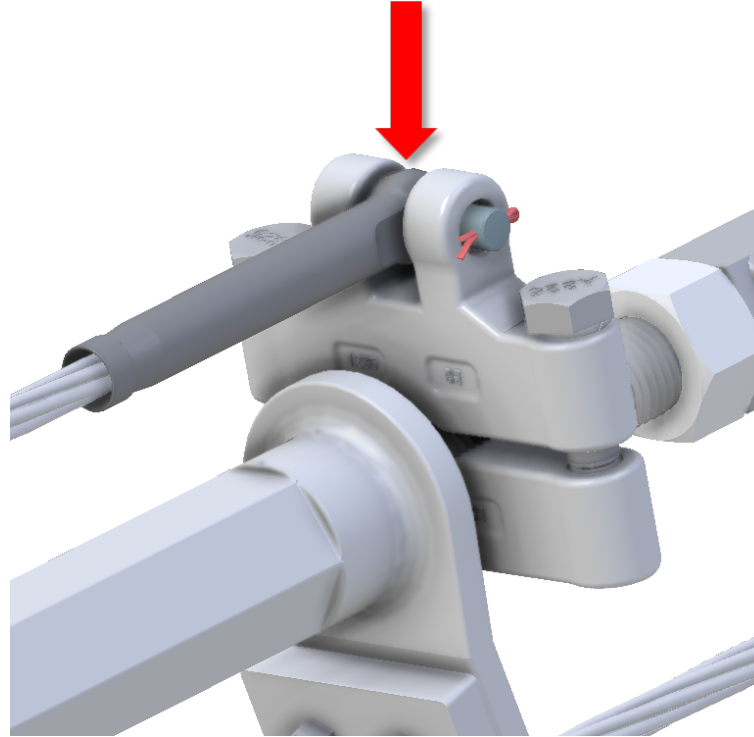
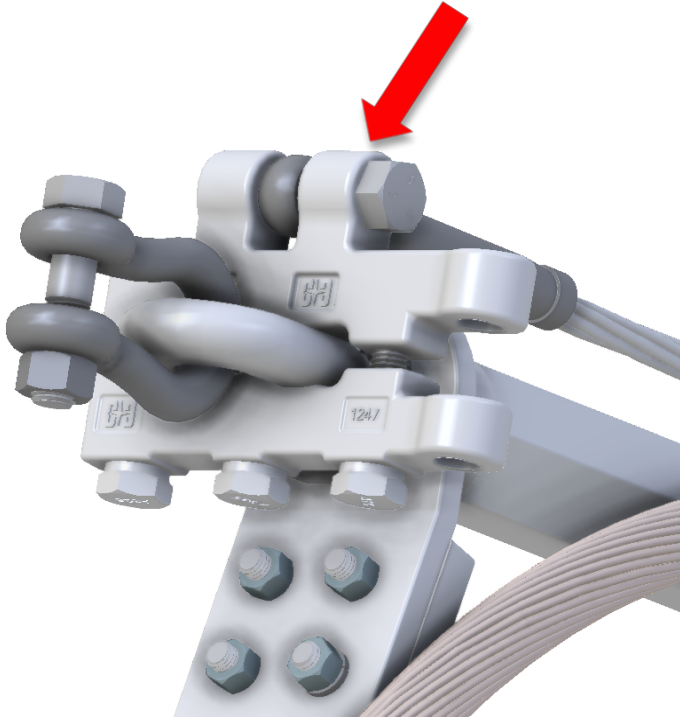
Dry brushing is all that is required. The inhibitor is preloaded from the factory in the conductor grooves of the ClampStar, and under the keepers as required. **No other inhibitor shall be used.**

3. Install Tension Head



The "*Tension Span End*" is the end to which the tether is attached. Remove the zip tie, holding the "*Tension Span Head*" to the "*Tension Span Body*" and slide the head out of the body. Place the "*Tension Span Body*" on the tension span conductor approximately where the tether will align with the bracket. At the same time, place the jumper span ClampStar body in its approximate location on the jumper loop conductor. Slide the "*Tension Span Head*", which will only start in one direction, into the "*Tension Span Body*" until it contacts the mechanical stops, *see illustrations*. Tighten 1 or 2 "*Torque Limiting Fasteners*" hand tight, or slightly more, to temporarily hold the head against the stops in the body, to prevent the head from sliding out.

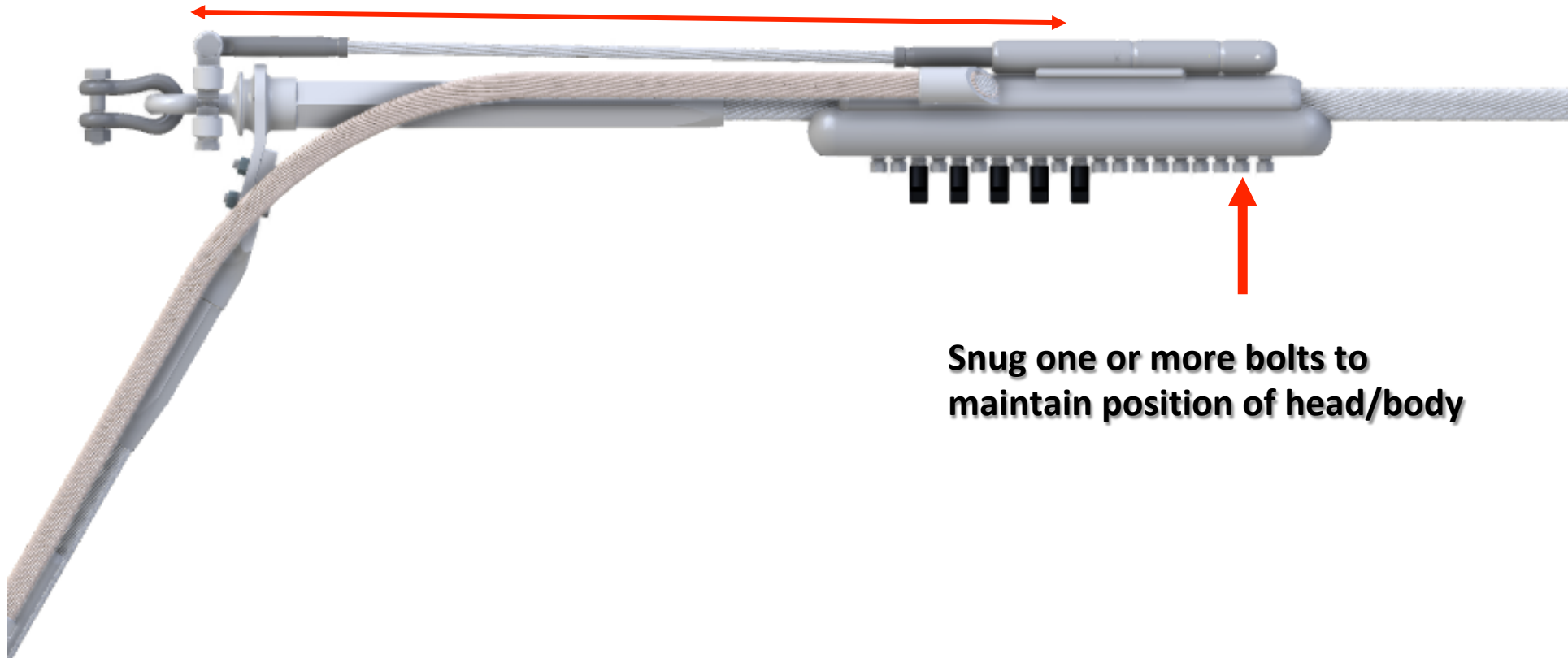
4. Attach Tether To The Bracket



Attach the tether to the tether anchor bracket keeping the tether taut. The quadrant tether anchor bracket may shift slightly as tether is tightened

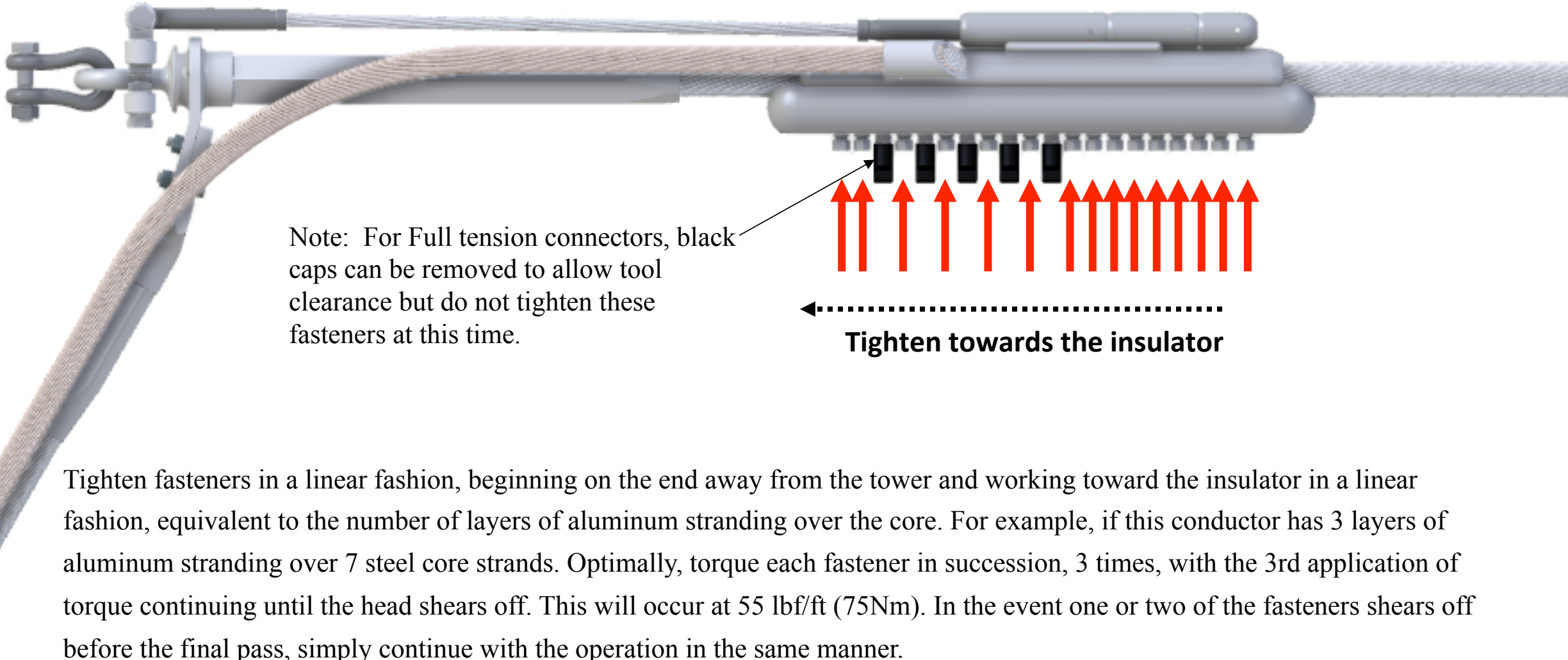
5. Slide Tension Span Body Until Tether is Taut

Prior to tightening any fasteners, **loosen any temporarily tightened bolts and** be sure the Tension Span Body is slid away from the deadend until the tether is moderately taut.



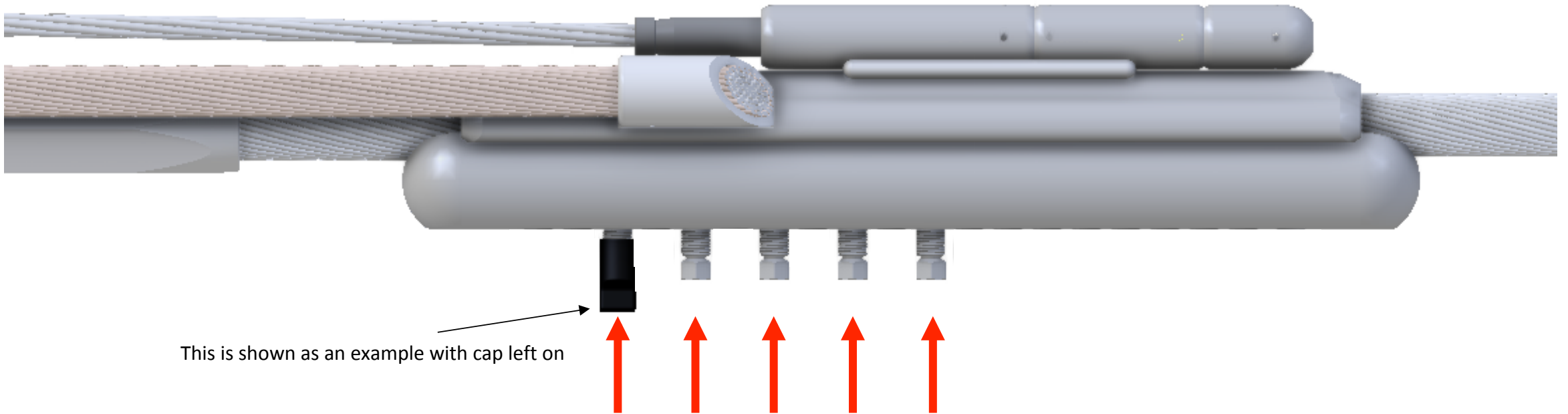
Snug one or more bolts to
maintain position of head/body

6. Tighten Fasteners



Tighten fasteners in a linear fashion, beginning on the end away from the tower and working toward the insulator in a linear fashion, equivalent to the number of layers of aluminum stranding over the core. For example, if this conductor has 3 layers of aluminum stranding over 7 steel core strands. Optimally, torque each fastener in succession, 3 times, with the 3rd application of torque continuing until the head shears off. This will occur at 55 lbf/ft (75Nm). In the event one or two of the fasteners shears off before the final pass, simply continue with the operation in the same manner.

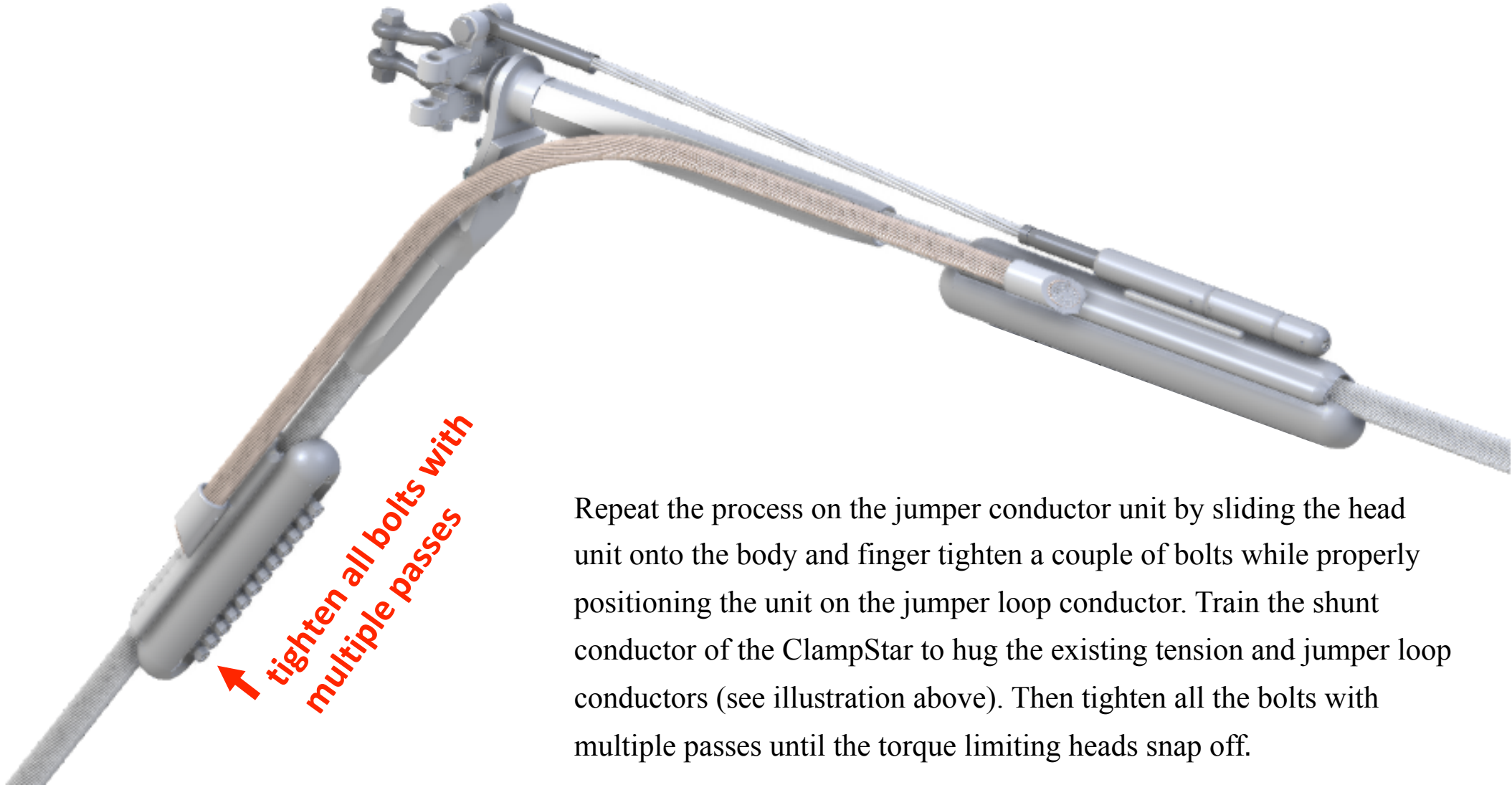
7. Tighten Full Tension Fasteners



This is shown as an example with cap left on

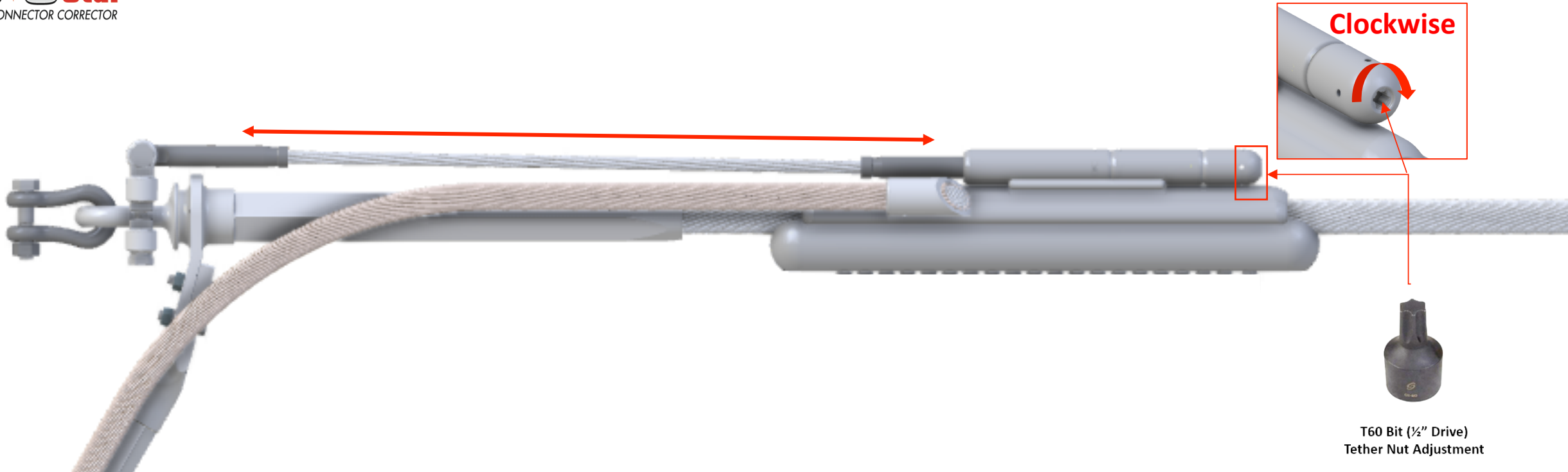
Remove black caps, and in a single pass, tighten each fastener completely until head shears off

8. Install Jumper Loop Head



Repeat the process on the jumper conductor unit by sliding the head unit onto the body and finger tighten a couple of bolts while properly positioning the unit on the jumper loop conductor. Train the shunt conductor of the ClampStar to hug the existing tension and jumper loop conductors (see illustration above). Then tighten all the bolts with multiple passes until the torque limiting heads snap off.

9. Adjust the Tension on the Safe-T-Link Tether



The Safe-T-Link Tether serves as a backup mechanical connection. It is not intended to be used to pull up sag in the conductor, but rather to only be tightened so it is snug, with no slack. In this manner, the original hardware cannot slip or elongate prior to overcoming the mechanical integrity of the tether. This will not require much torque on the adjustment nut. 15-25 lbf/ft (20-30Nm) torque is sufficient. Simply tighten until the tether is straight and under some obvious tension without noticeably altering the alignment of the dead end from its original position. 15 lbf/ft of torque on the "*Tether* Nut" will result in 2000 lbs of tension on the Tether which is sufficient. If a power driver is used on this operation, it will require a very light trigger finger. The Tether Nut can be tightened with hand tools with the T-60 Bit or using a power driver –**do not overtighten**.