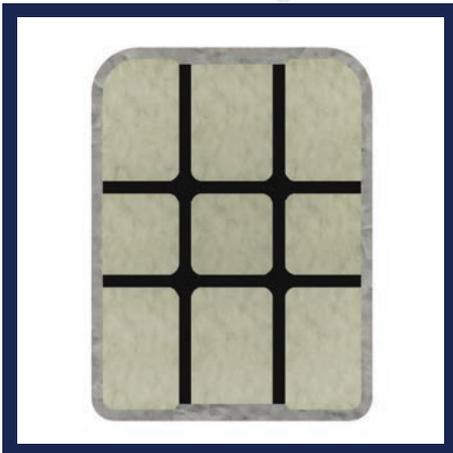
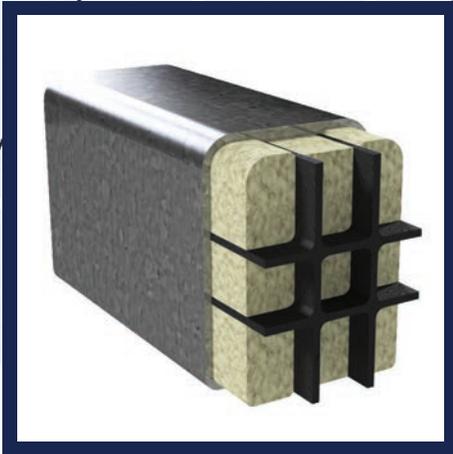


NEW CROSSARM INNOVATION

SHAKESPEARE MATRIX™ INSERT

Improved torque performance and
unprecedented crush resistance for
insulator angle turns and field drilling.



HIGHLIGHTS

- Enhances crossarm structural integrity for long-life performance
- Allows for easy field drilling along full length
- Supports base of insulator pins and post-type insulators
- Minimize risk of lineman overtightening hardware
- Can be custom configured to customer specifications
- Now standard in S-Series crossarms - consult factory for other profiles
- Patent pending solution is cost competitive

CONTINUOUS IMPROVEMENT

The Matrix™ Insert is an example of Shakespeare continuous improvement. These photos are of Shakespeare crossarms and poles that have been installed in excess of 20 years. The new Matrix™ design adds an extra level of structural integrity to an existing proven product.



TEST RESULTS

SHAKESPEARE S-SERIES CROSSARM	Torque Maximum (ft./lbs.)	Torque Initial Sound (ft./lbs.)	J-Type Pin Cantilever Load (lbs.)	COMMENTS
WITH INSERT	130	120	1080	No damage or deformation in the pin or torque test
W/O INSERT	25	20	700	Some surface deformation in pin and torque test

ADDITIONAL COMMENTS

- As a comparison, a standard vehicle torque recommendation for wheel lug nut is 80-120 ft. lbs..
- The Shakespeare crossarms with Matrix™ inserts performed much better with the standard hardware that is supplied with crossarm pins and did not require the addition of oversize washers.



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