

3M™ Aluminum Conductor Composite Reinforced Accessories and Installation

3M ACCR Accessories

As with conventional conductors, a variety of accessories is needed for the successful operation of 3M ACCR. These accessories, while similar to conventional ACSR accessories, differ in that they are designed for use with the different core material and for minimizing the effects of the higher operating temperatures. However, the equipment and installation process is similar to those required for conventional ACSR conductor.

3M, in partnership with industry-recognized accessory suppliers, undertook a thorough series of tests on a variety of accessories. Terminations (also called dead-ends) and joints (also called mid-span splices or full-tension splices/joints) are commercially available from 3M or directly from Preformed Line Products, which provides helical-rod hardware, and from ACA Conductor Accessories, which provides compression hardware. All hardware is rated for high-temperature operation.

3M also provides experienced personnel to train installers and to oversee the installation process.

Compression-Type Hardware

The compression-type hardware from ACA uses a modified two-part approach. One part grips the core, and then an outer sleeve grips the aluminum strands, as shown in Figure 1. This approach is similar to the approach used with ACSS, although modified to prevent deformation, notching, or bending of the core wires. The gripping method ensures the core remains straight to evenly load the wires, and also ensures that the outer aluminum strands suffer no lag in loading relative to the core.



Figure 1: ACA Compression-Type Hardware

Helical Rod-Type Hardware

Helical rod-type hardware has been developed by PLP for use with 3M ACCR at high operating temperatures (see Figure 2). It employs a helical rod design, which places minimal compression loading on the conductor. A multi-layer design maximizes both the holding strength and heat dissipation, and has the advantage of easy installation.

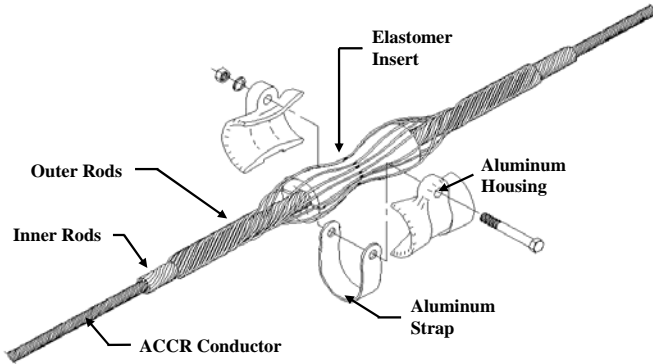


Figure 2: PLP Helical Rod-Type Hardware

PLP also provides the suspension assemblies for 3M ACCR. These accessories are based on field-proven ARMOR-GRIP® Suspensions. The multi-layer design maximizes the mechanical protection and heat dissipation, while minimizing heat transfer to mating hardware and insulators.

A cushioned insert provides protection against wind and ice loads. The helical rods also provide local stiffening to the conductor, which reduces the bending strains on the conductor.

Installation of 3M ACCR

Because 3M ACCR is a standard construction, installation of 3M ACCR is similar to conventional conductors (see Figure 3 for a photo of accessory installation). 3M will employ our years of experience and knowledge of the technology to provide an efficient, economic, and safe installation.

3M provides all the accessories necessary for the installation (dead-ends, suspensions, come-along, compression dies, inhibitor compound, and vibration dampers), unless you prefer to order them from PLP or ACA directly. In that case, 3M will assist AEP in determining and specifying the appropriate accessories for the installation. 3M will also provide roller array sheaves that will be available for the duration of the installation where necessary.



Figure 3: ACCR Larger Outer Sleeve, which Is Similar to Conventional Conductor Accessories