

**CommScope ProAx®  
Triaxial Camera Connectors**

Content	Page
<b>INTRODUCTION</b> .....	<b>1</b>
<b>1 GENERAL INFORMATION</b> .....	<b>2</b>
<b>1.1 Standard Tools</b> .....	<b>2</b>
<b>1.2 CommScope ProAx Triaxial Cable Strip Gauge</b> .....	<b>3</b>
<b>1.3 ProAx Triaxial Connector Components</b> .....	<b>4</b>
<b>2 ASSEMBLY PROCEDURE FOR PROAX TRIAXIAL CONNECTOR JACK AND PLUG</b> .....	<b>5</b>
<b>3 REPAIRING U.S. STANDARD CONNECTOR USING GLOBAL REPAIR KIT</b> .....	<b>13</b>
<b>4 CONTACT INFORMATION</b> .....	<b>14</b>

**INTRODUCTION**

This manual provides procedures for installing CommScope ProAx Triaxial Camera Connectors on coaxial cables.

Because assembly of ProAx triaxial connectors differ from the assembly of other triaxial connectors, it is very important that this procedure be closely followed.

**Revision History**

ISSUE	DATE	REASON FOR CHANGE
1	1/2002	Original.
2	7/2004	Add dual dimensions and remove Global references.
3	2/2009	Add US standard front shell.
Rev B	May 2018	Updated to CommScope format.

**Trademark Information**

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## 1 GENERAL INFORMATION

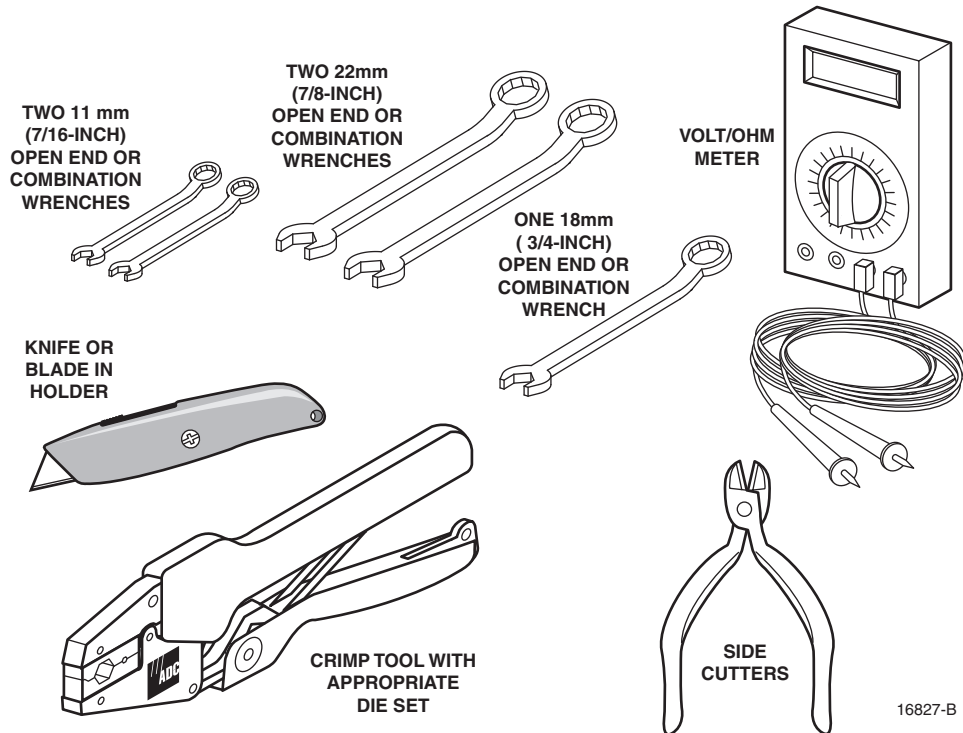
CommScope ProAx Triaxial Camera Connectors may be used to mate any two triax cables together, cables need not be from the same manufacturer. Once a cable is terminated with a back shell it can easily be converted to mate with any other triax connector standard by adding the appropriate front center conductor shell assembly, outer insulator, and front connector body. CommScope offers connector components (front center conductor shell assembly, outer insulator, and front connector body) to match most standard connectors in the industry (Kings, Fischer, Lemo, etc.).

Use this procedure to ensure correct assembly and reliable operation of ProAx triaxial connectors. This connector assembly procedure is intended to be used for assembling all sizes of female ProAx triaxial jacks and all sizes of male ProAx triaxial plugs.

► **Note:** Because assembly of the ProAx triaxial connectors is different than the assembly of other manufacturers' triaxial connectors, please follow this assembly procedure closely.

### 1.1 Standard Tools

ProAx triaxial connectors are assembled using SAE or metric tools. A measuring tape or ruler and pen or marker are used to measure and mark the amount of cable jacket, dielectric, and braid to cut. Tape, such as plastic electrical tape or masking tape is also used to hold the outer braid in place during the assembly procedure. Required tools are shown in [Figure 1](#).

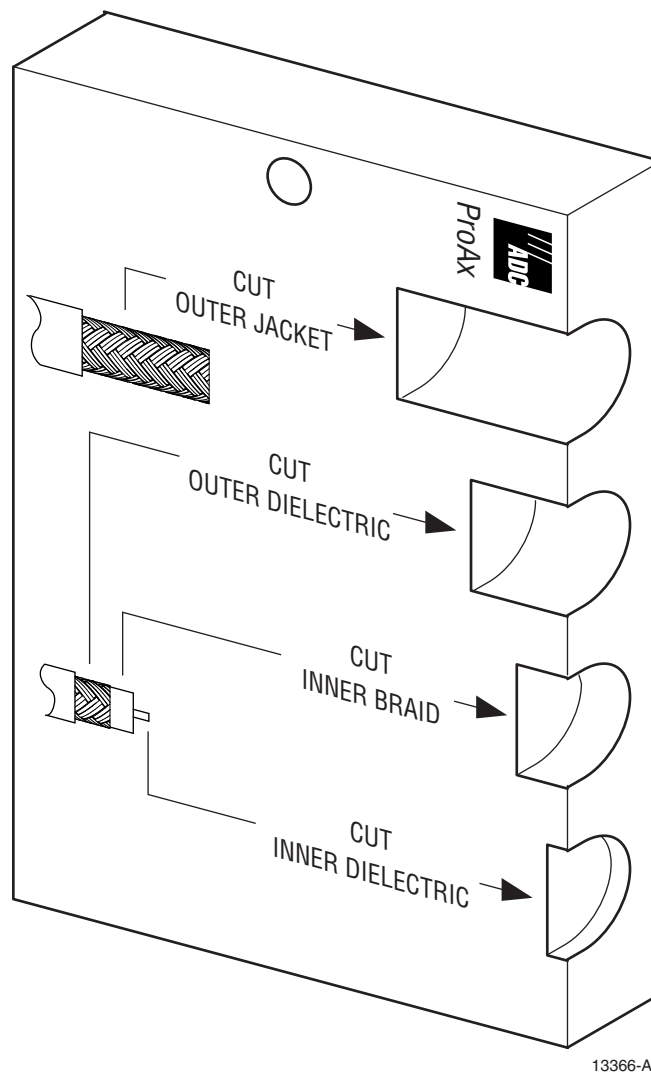


**Figure 1. Standard Tools Used for ProAx Triaxial Connector Assembly**

## 1.2 CommScope ProAx Triaxial Cable Strip Gauge

An optional CommScope ProAx triaxial cable strip gauge may be used to measure and hold the cable when cutting cable jacket, dielectric, and braid. An optional CommScope ProAx triaxial cable strip gauge is shown in [Figure 2](#).

To use the optional CommScope ProAx triaxial cable strip gauge in this connector assembly procedure, insert cable into slot in gauge corresponding to the operation to be performed. Insert cable into the end of the slot against the wall in the slot. Then cut the cable jacket, dielectric, or braid at the edge of the gauge, parallel to gauge edge, all around the cable in the order noted.



**Figure 2. CommScope ProAx Triaxial Cable Strip Gauge**

### 1.3 ProAx Triaxial Connector Components

Each ProAx triaxial connector consists of the individual parts shown in Figure 3. Also shipped with the ProAx triaxial connector is an installation drawing. For additional information refer to installation drawing when assembling the connector.

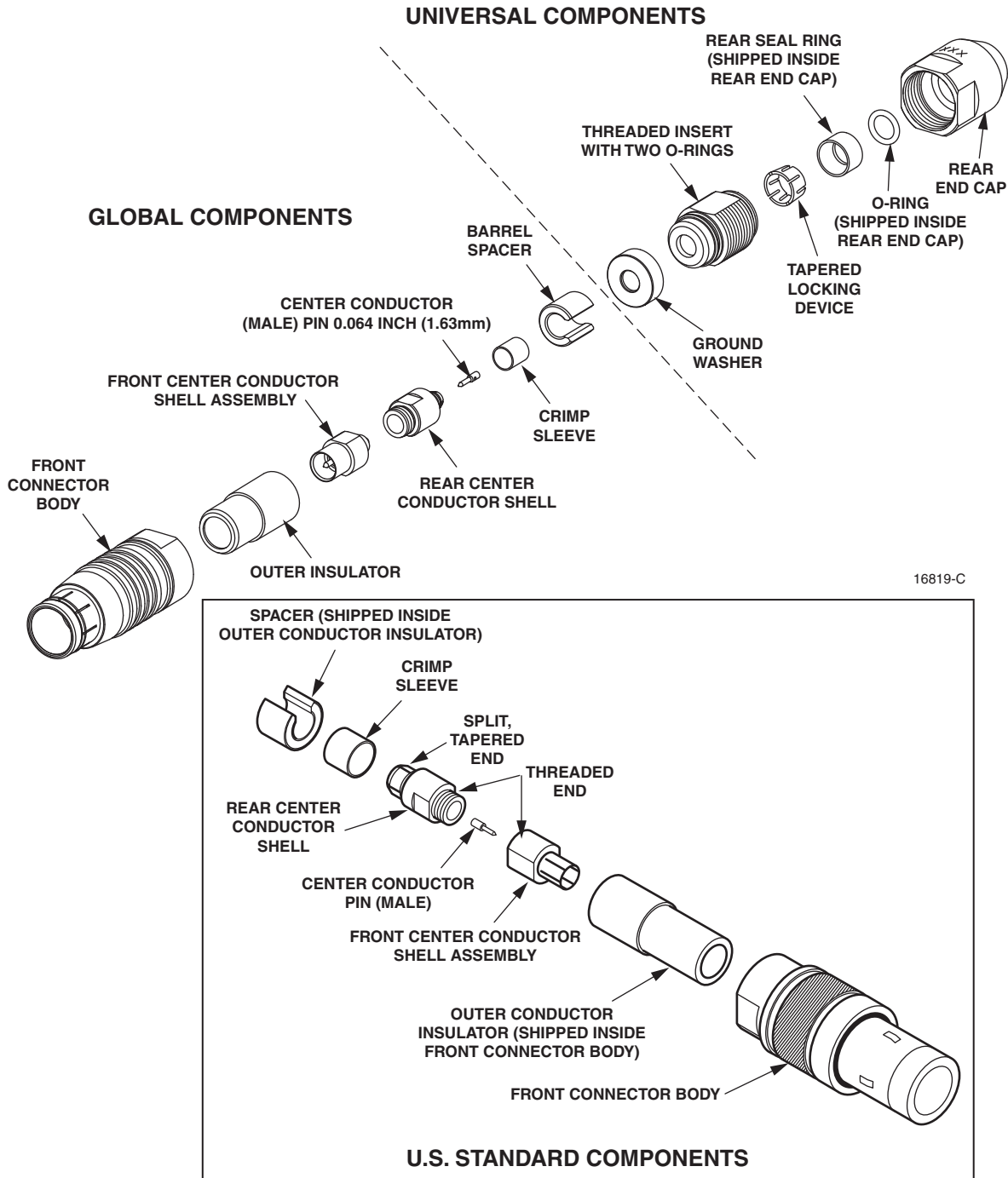


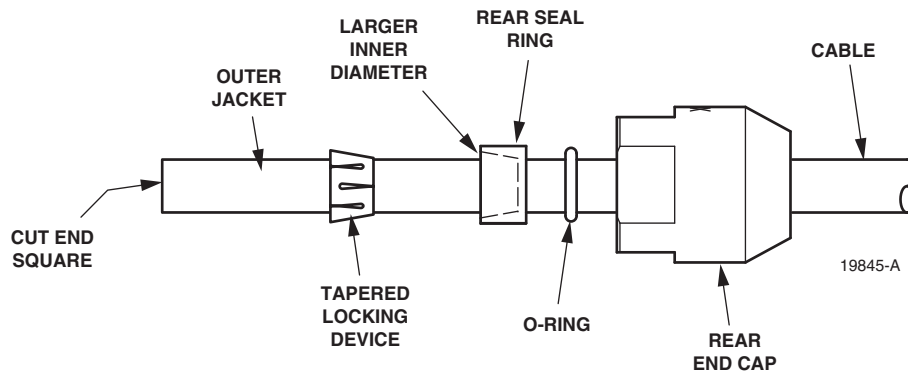
Figure 3. ProAx Triaxial Connector Components, Male Connector Components Shown

Some parts are partially assembled or are placed within other parts for shipping. Before beginning assembly of ProAx triaxial connector, remove all parts from shipping bags and separate all parts. Unscrew rear end cap from front connector body and remove ground washer and outer conductor insulator from inside of the front connector body. Remove O-ring and rear seal ring from inside the rear end cap.

## 2 ASSEMBLY PROCEDURE FOR PROAX TRIAXIAL CONNECTOR JACK AND PLUG

Assemble ProAx triaxial connector onto the corresponding size of triaxial cable by performing the following steps:

1. Using a blade (in holder or knife), cut end of cable off as square to the cable as possible. See [Figure 4](#).
2. Slide rear end cap and o-ring onto cable. Slide rear seal ring over cable outer jacket with larger inner diameter (thinner ring wall) facing towards cut end of the cable. See [Figure 3](#) and [Figure 4](#).
3. Slide tapered locking device onto cable with the larger outside diameter facing cut end of cable. See [Figure 4](#). Tapered locking device is not used when repairing a U.S. Standard connector.

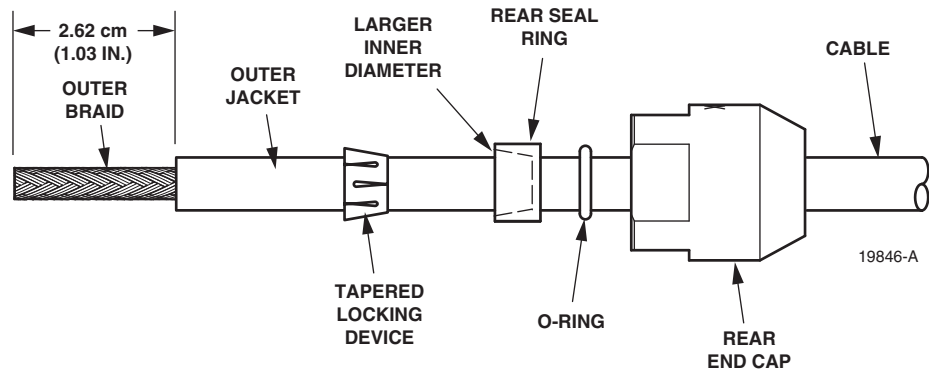


**Figure 4. Rear Seal Ring, O-Ring, and Rear End Cap on Cable**

4. Using a blade, cut a 2.62 cm (1-inch) length of outer jacket from the cable (see dimensions in [Figure 5](#)). Cut off outer jacket only, evenly around entire cable.

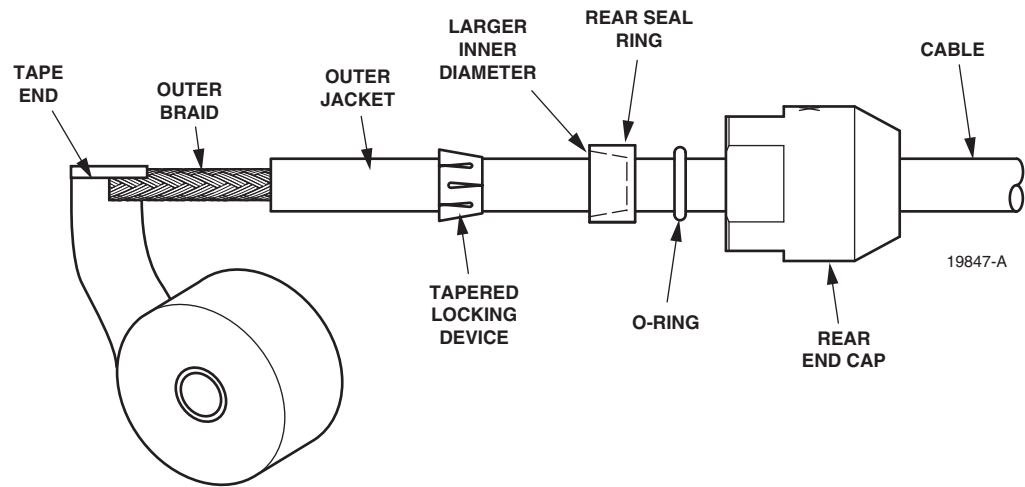
If using the CommScope triaxial cable strip gauge, place end of cable into slot labeled, CUT OUTER JACKET. Push the end of cable against the end of the slot. Cut the outer jacket only, evenly around entire cable, at the edge of the gauge (parallel to the gauge edge).

► **Note:** To prevent outer braid from being cut or nicked, do not cut deeper than outer jackets.



**Figure 5. Outer Jacket Cut Dimensions**

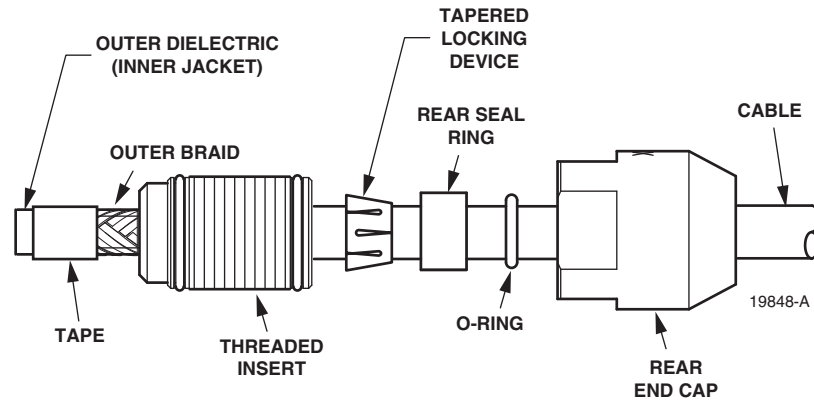
5. After removing outer jacket, wrap tape around outer braid (shield) to prevent braid from fraying and breaking. See [Figure 6](#).



**Figure 6. Tape Braid to Prevent Fraying and Breaking**

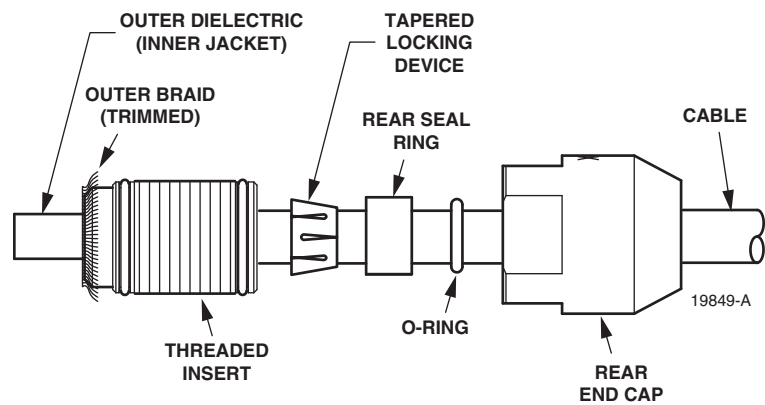
6. Slide threaded insert (see [Figure 3](#)) over tape and outer braid. Push the end of threaded insert against outer dielectric (inner jacket and insulation) until it is seated. See [Figure 7](#).

► **Note: Do not tighten any parts that are on the cable at this time.** This is done later in this procedure.



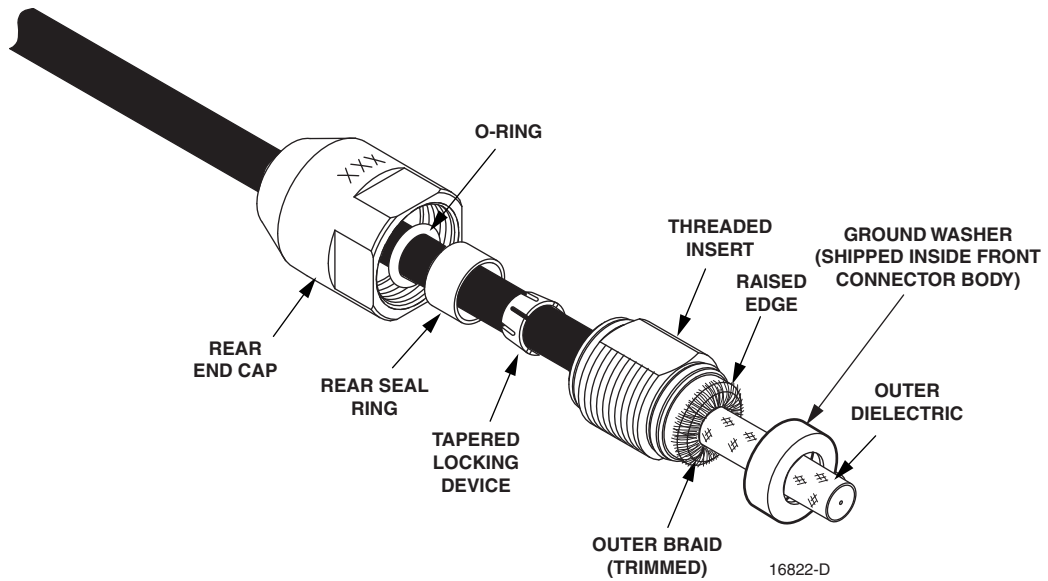
**Figure 7. Threaded Insert Installation**

7. Remove tape from cable end. Pull back outer braid and comb it out over threaded insert (see [Figure 8](#)).



**Figure 8. Outer Braid Trimmed**

8. Slide ground washer (see [Figure 3](#)) over cable and push it against the braid and over threaded insert (pushing the braid over the threaded insert). See [Figure 9](#).
9. Using a side cutters, trim excess braid so that braid extends just beyond the lip (raised edge next to O-ring) of the threaded insert. See [Figure 8](#) and [Figure 9](#).

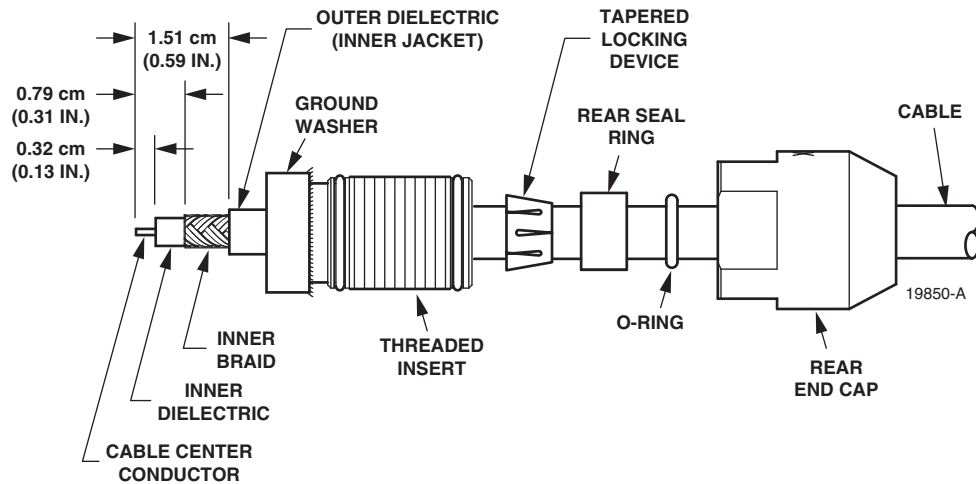


**Figure 9. Cable with Outer Braid Over Threaded Insert, After Trimming**

10. Using a blade, remove outer dielectric (inner jacket and insulation) so that the length from the end of cable to the end of the outer dielectric is 1.51 cm (0.59-inch). See dimensions in [Figure 10](#). Cut outer dielectric only, evenly around entire cable.

If using the CommScope ProAx triaxial cable gauge, place end of the cable into slot labeled, CUT OUTER DIELECTRIC. Push end of cable against the end of the slot. Cut outer dielectric only, evenly around entire cable, at the edge of the gauge.

► **Note:** Be careful to not cut or nick the inner braid.



**Figure 10. Inner Braid, and Inner Dielectric Cut Dimensions**



11. Using a blade, remove inner braid so that the length from the end of cable to the end of inner braid is 0.79 cm (0.31-inch). See dimensions in [Figure 10](#). Evenly cut inner braid only, around entire cable.

If using the CommScope ProAx triaxial cable gauge, place end of cable into slot labeled, CUT INNER BRAID. Push end of cable against the end of the slot. Cut inner braid only, evenly around entire cable, at the edge of the gauge.

► **Note:** Be careful to not cut or nick the inner dielectric under the braid.

12. Using a blade, remove inner dielectric so that the length from the end of cable to the end of inner dielectric is 0.32 cm (0.13-inch) See dimensions in [Figure 10](#). Evenly cut inner dielectric only, around entire cable.

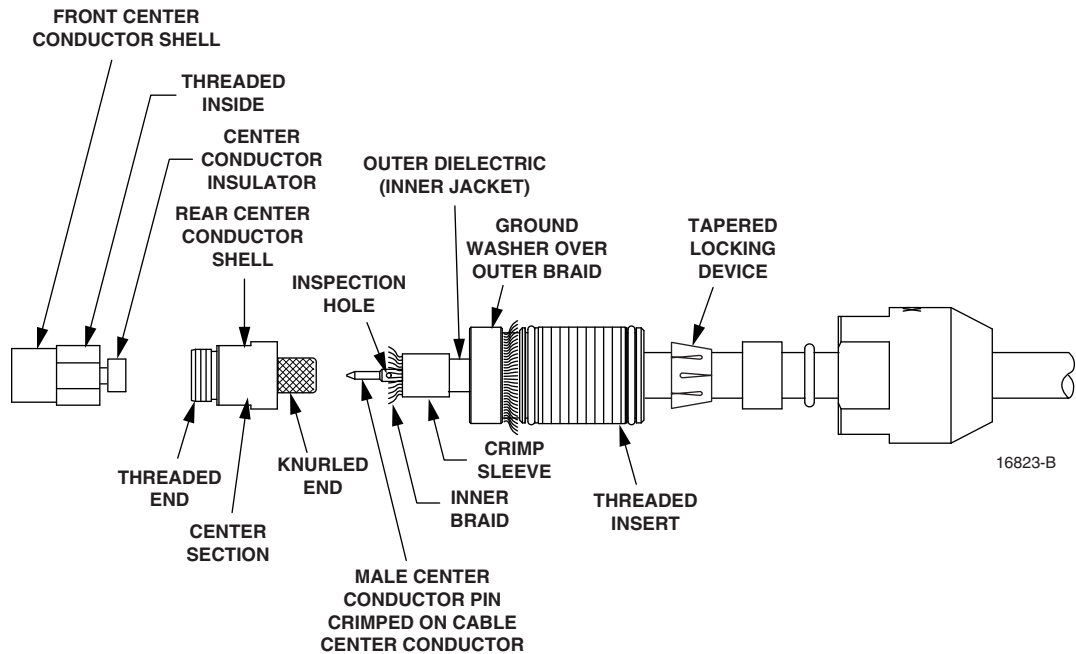
If using the CommScope triaxial cable gauge, place end of cable into slot labeled, CUT INNER DIELECTRIC. Push end of cable against the end of the slot. Evenly cut inner dielectric only, around entire cable, at the edge of the gauge.

► **Note:** Be careful to not cut or nick the center conductor under the inner dielectric.

13. Slide a center conductor pin (see [Figure 3](#)) over the center conductor of cable, against inner dielectric. See [Figure 11](#).

► **Note:** Be sure that center conductor pin is fully seated against inner dielectric and that cable center conductor is visible through inspection hole in the center pin (see [Figure 11](#)).

**Note:** If using stranded center conductor cable make certain all of the strands are inserted inside the center conductor pin. Do not trim away any that are on the outside, if necessary twist the stranded conductor together before sliding it into the center conductor pin.



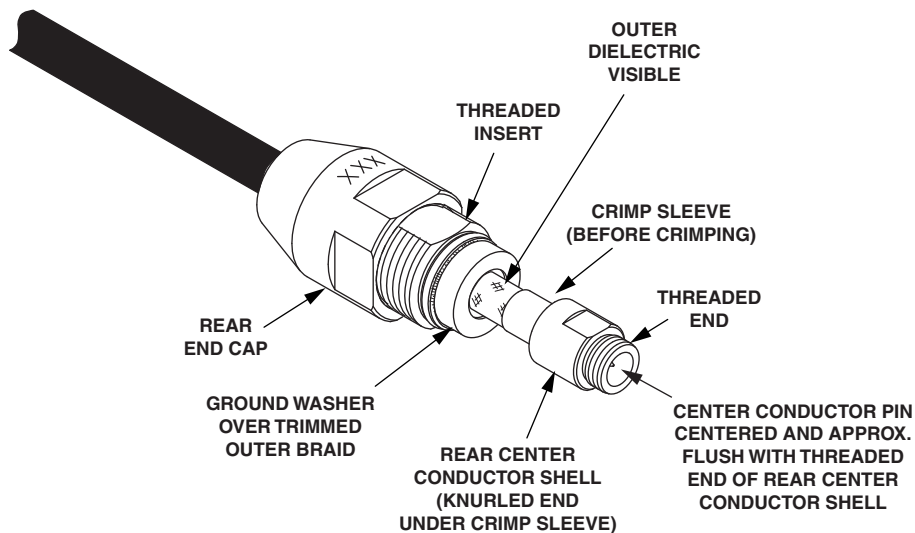
**Figure 11. Ground Washer Over Outer Braid, Center Conductor Pin Crimped on Cable Center Conductor**

14. Using the 1.73 mm (0.068 in.) center pin die in crimp tool, align and crimp center conductor pin onto the cable center conductor. One side of for right handed people the other side is for left handed people. This connection may also be made using solder.
15. Slide a crimp sleeve (see [Figure 3](#)) over inner braid and outer dielectric, up against the ground washer. See [Figure 11](#).
16. Loosen and spread out inner braid.
17. Slide knurled end of rear center conductor shell inside crimp sleeve (pushing inner braid inward between rear center conductor shell and crimp sleeve), twisting the rear center conductor shell as it is inserted.

Ensure that inner braid is evenly distributed between rear center conductor shell and crimp sleeve. Make certain that crimp sleeve is against raised center section of conductor shell.

Adjust position of rear center conductor shell and crimp sleeve on cable so that center conductor pin is approximately flush with the threaded end of rear center conductor shell and is centered in conductor shell. See [Figure 12](#).

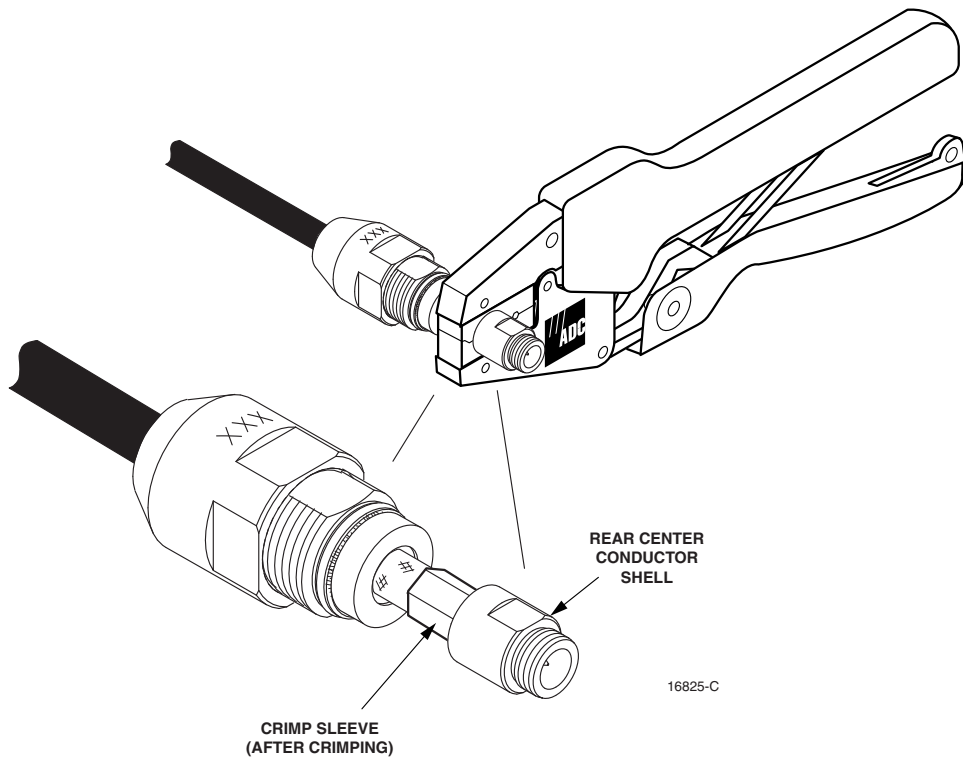
Verify that outer dielectric is visible between crimp sleeve and ground washer (see [Figure 11](#) and [Figure 12](#)).



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**Figure 12. Rear Center Conductor Shell and Crimp Sleeve Assembled with Outer Dielectric Visible**

18. Using the larger die in crimp tool, crimp around the crimp sleeve See [Figure 13](#).

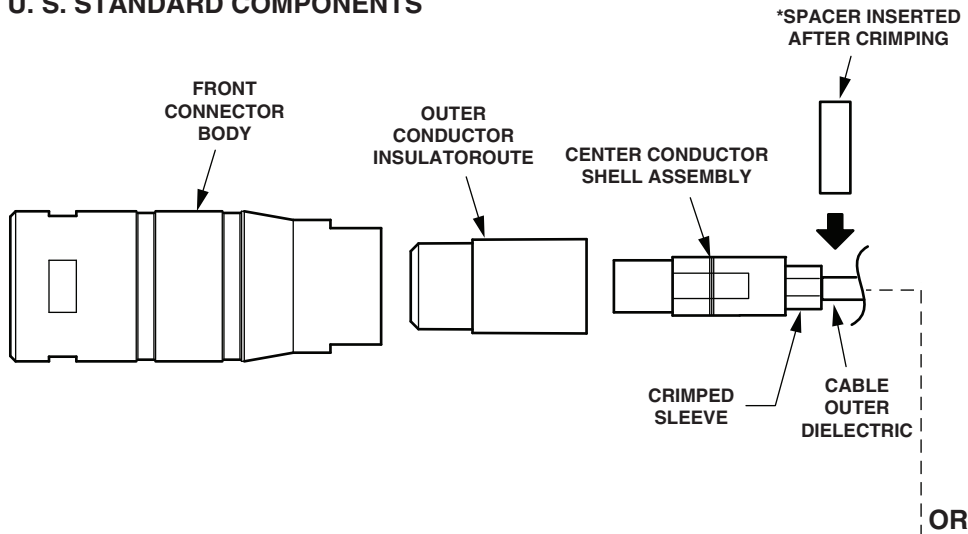


**Figure 13. Crimping the Crimp Sleeve on the Inner Braid**

19. Screw front center conductor shell into rear center conductor shell. See [Figure 11](#).
20. Using two 11 mm (7/16-inch) open end wrenches, tighten front and rear center conductor shell assembly. **Hold the rear shell stationary and turn the front shell.**
  - ▶ **Note:** Be sure that center conductor pin is centered in rear center conductor shell assembly.
21. Insert a spacer (approximately 13 mm/1/2-inch wide) over crimp sleeve (after crimping), between ground washer and center conductor shell assembly. See [Figure 13](#).
22. Slide outer conductor insulator (see [Figure 3](#)) over center conductor shell assembly. See [Figure 14](#). Ensure that outer conductor insulator seats against ground washer. If necessary, move threaded insert and ground washer towards the outer conductor insulator.
  - ▶ **Note:** If necessary, trim excess outer braid that extends beyond outer diameter of ground washer as shown in [Figure 14](#).
23. Slide front connector body over outer conductor insulator and ground washer, and screw onto threaded insert.
 

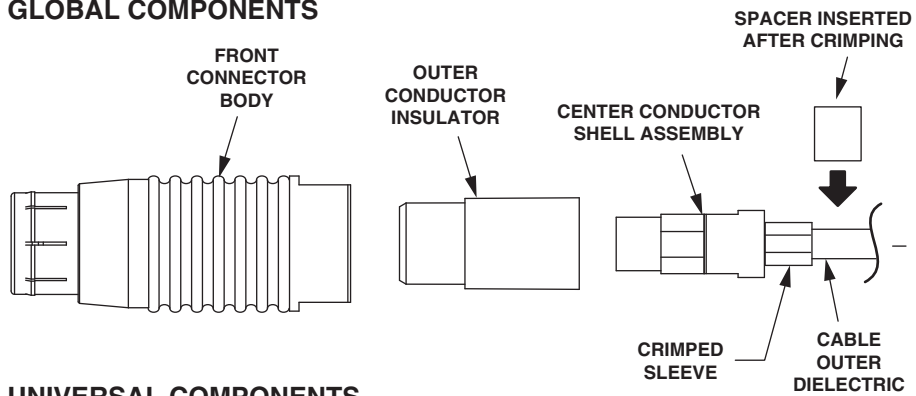
Using a 22 mm (7/8-inch) open end wrench on the front connector body and an 18 mm (3/4-inch) open end wrench, tighten front connector body and threaded insert. Hold rear assembly (threaded insert) stationary and turn front connector body.
24. Screw rear end cap with o-ring, rear seal ring, and tapered locking device over the threaded insert.

**U. S. STANDARD COMPONENTS**

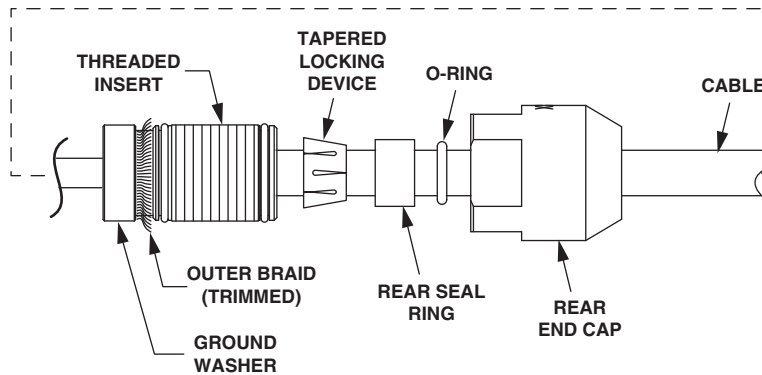


OR

**GLOBAL COMPONENTS**



**UNIVERSAL COMPONENTS**



\*NOTE: SPACER (APPROXIMATELY 1/8 INCH WIDE, SHOWN), USED WITH CONNECTOR FOR 1/2-INCH "C" CABLE, FITS OVER THE OUTER DIELECTRIC, BETWEEN GROUND WASHER AND CRIMP SLEEVE. SPACER (APPROXIMATELY 1/2 INCH WIDE, SHOWN IN FIGURE 3), USED WITH CONNECTORS FOR OTHER SIZE CABLES, FITS OVER CRIMP SLEEVE (AFTER CRIMPING), BETWEEN GROUND WASHER AND REAR CENTER CONDUCTOR SHELL.

16826-C

**Figure 14. Connector Assembly, Showing Spacer and Outer Conductor Insulator Location**

25. Using two 22 mm (7/8-inch) open end wrenches tighten rear end cap, threaded insert, and front body connector. Hold front assembly stationary and turn rear end cap.  
  
▶ **Note:** Tighten rear end cap until the two assemblies are fully seated together.
26. Using an ohmmeter, measure between each braid and measure between each braid and the center conductor for infinite resistance, assuring no short circuits between any conductors. Measure end to end continuity (low resistance) on all three conductors.

### 3 REPAIRING U.S. STANDARD CONNECTOR USING GLOBAL REPAIR KIT

Global connector center conductor repair kits are now used to repair both Global and U.S. standard center conductors. When repairing a U.S. standard connector the *Tapered Locking Device*, see [Figure 14](#) is not used. Follow the [Assembly Procedure for PROAX Triaxial Connector Jack and Plug on page 5](#) to complete the center conductor repair.

## 4 CONTACT INFORMATION

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