Technique for Soldering PL-259 Plugs to Coax

The Fox Cities Amateur Radio Club (FCARC) needs nine jumper cables. These 2 ½ foot cables are used during Field Day to connect rigs, antenna tuners, baluns, etc. This tutorial shows my process for installing PL-259 coax connectors to RG-8 cable.

First, you should prepare to have necessary tools handy. This includes:

- Cable cutters
- DX Engineering's DXE-UT-8213 coax cable cutter
- DX-Engineering's DXE-UT-80P coax plug installation tool
- Pliers to help remove the installation tool when finished
- 25 watt soldering iron
- Solder
- Heat gun
- Volt-ohm meter

Then, you will need suitable parts.

- RG-8 coax cable
- Two PL-259 male coax connectors
- ½" diameter heat shrink tubing
- Key (ie, car/household key) tag
- Cable tie

Cut your jumper cable to desired length.

Then use the DX Engineering coax cable cutter to cleanly strip the cable to exact specifications. Use the 1st cut end to remove everything down to the inner conductor. Twist the jig clockwise until no more outer cable is being cut.

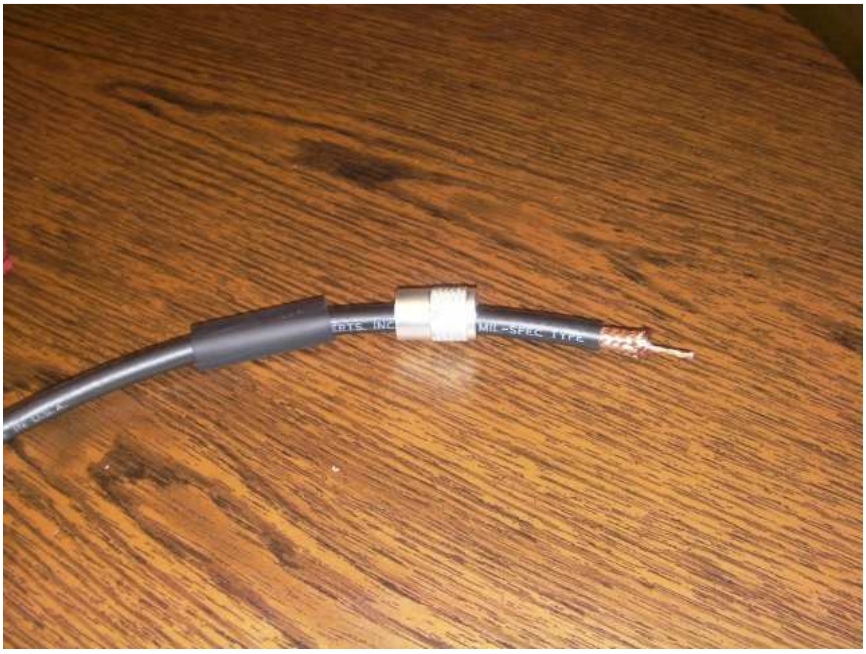
After that, use the other end of the jig to remove just the outer layer so that the braided outer shield is exposed.


MIL-SPEC TYPE DIRECT
1ST
OUT
TYPE
400/RG8/213


RG213/U MIL-SPEC TYPE

Now the most important step! Slide on the heat shrink tube and the coax outer barrel. You may wish to do this before using the 1st & 2nd cut jigs. If you don't, you will start over after completing the next step!

Also, buy high-quality coax plugs. Amphenol make good PL-259 male coax connectors.



Then place the coax plug installation tool over the center core plug and twist inward until the center cable just appears at the tip of the coax plug. This will be tight, so use your pliers to grip the coax plug and then turn the jig counter-clockwise to unfasten from the plug.

Now heat your soldering iron, apply the iron tip to the coax tip for 45 seconds (adjust for higher wattage soldering iron) and then apply solder until it evenly spreads into the tip. Be careful not to get excess solder on the outside of that inner coax tip. I recommend solder with a mixture of 59% lead, 2% antimony and 39% tin. It is likely that your Sn60/Pb40 roll of solder is fine, with the antimony mixture simply 'hidden.'

Next turn the plug sideways to expose one of the outer shield openings.

Solder using the same technique as you did for the inner tip. I solder only one hole to help preserve the dielectric material which separates the center conductor from the outer shield.

When you are finished soldering, let cool. Screw the coax outer barrel over the plug, and slide the heat shrink tube about 1/4" over the bottom of the plug and apply low heat from your heat gun. Apply this heat uniformly around all of the tube until it smoothly shrinks tight over the coax and bottom end of the coax plug.

Somewhere during this final stage you may wish to check your work to ensure no shorts, as well as completed circuits. Use an ohm meter to check the tips and barrels at each end to see that both the center cable and the outer shield will give 0 ohm readings. Then check across tip to barrel to ensure that this is not shorted.

Finally, use an indelible marker to label your finished work, and attach with a cable tie.

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