

Weatherproofed Antennas

KD5UJ shows you how to keep the elements out of your elements.

Most amateurs experience recurring problems with their antenna systems. Every summer most of us are pulling our antennas down because they're not working properly. By following the procedure which follows, you can eliminate this yearly ritual.

Where I work, technicians provide communications for the oil industry both on- and offshore. It's not unusual for an antenna system that we put out on an offshore platform to operate successfully for more than three years without requiring *any* maintenance.

These repair/installation instructions assume that you're working on an aluminum antenna that requires assembly, such as a beam or a vertical. (Some of these suggestions will be helpful when working with wire antennas also.) If you're dealing with a new installation, the first thing you need to do is install the connector on the feedline. Since most amateur antennas require UHF connectors and most amateurs use coaxial cable, your installation will make use of PL-259 connectors.

Strip 1-1/8" of outer insulation off the cable (see Fig. 1), being careful not to nick the braid. Tin the braid, but don't overheat it. Overheating will make the insulation bubble out, making soldering to the connector difficult. After it is cool to the touch, use a sharp knife and strip the braid and inner insulation off, leaving approximately 3/8" of braid exposed. Be careful not to nick the center conductor. Tin the center conductor and slide the coupling ring onto the cable. Screw the connector body onto the cable, being careful not to damage the outer insulation.

At this point, trim the center conductor even with the end of the connector body. If your connector body is chrome-plated, use a knife to scrape around each hole to get a smooth solder flow. If it's silver-plated (dull silver), scraping isn't necessary.

Solder the braid to the connector body through the holes on the connector body. (Be sure solder drops through the holes.) After

the connector cools, solder the center conductor to the connector body. Use an ohmmeter on its highest scale (R x 10,000 or higher) to ensure that no continuity exists between the center conductor and the shield.

If you are repairing an existing installation, perform the resistance check on your feedline to determine if replacement is necessary. Make sure both ends of the feedline are disconnected prior to performing the check.

If you're rebuilding an antenna, you will need some 200-grit wet/dry sandpaper to clean off the corrosion. For a good electrical connection take extra care where sections of the antenna connect. Soak all hardware in WD40 and clean it with a wire brush. Replace any pieces that show excessive corrosion.

After cleaning the old antenna, or prior to putting the new one together, you will need to protect it from corrosion (and from icing over, for those living in the winter wonderlands). To do this, saturate the antenna with CRC 2-26 or another similar product and allow it to dry for about an hour prior to assembly. After assembling the antenna, re-spray it liberally with the CRC 2-26.

The next step is by far the most important. This is where most antenna failures occur—

connecting the feedline to the antenna. If you are using UHF connectors (PL-259, SO-239), then you need to get a tube of clear (*not white*) silicone heat-sink compound (Z5 compound). Fill the hole in the female side of the connector with this compound.

Screw on the male side of the connector until it's hand tight. Then use a pair of channel-lock pliers to turn the connector an extra 1/4 turn. Be careful, since you can damage the connector by over-torquing. If you are using N-style connectors, *do not* put silicone in them! They have no free space inside them, so using silicone can cause damage or distortion. Clean any excess silicone off the cable and connector.

After connecting the feedline to the antenna, you will need to waterproof it. Start with a good-quality electrical tape such as Scotch 88T. Tape the connector, overlapping the layers at least 50 percent of the tape thickness, and continue taping down the cable approximately 4-6 inches past the connector.

Next, liberally coat the taped connector with Scotch Kote™—don't use commercial antenna wrap, as it is messy and hard to apply and you can't be sure there are no cracks or air bubbles in it. Allow the Scotch Kote to dry about 10-15 minutes, then re-

tape the connector and again coat it with the Scotch Kote. This substance won't come off, and the better you tape and Scotch Kote your antenna, the longer it will last.

If you're building wire antennas, you should tape and Scotch Kote the point where your feedline connects to the legs of the dipole, vee, or sloper.

After mounting or remounting your antenna, you should be able to sit back and enjoy your antenna system. The only maintenance I would suggest, for those whose installations permit, would be to liberally spray the antenna with CRC 2-26 approximately every six months. This will ensure protection from corrosion and help maintain electrical continuity between the sections. ■

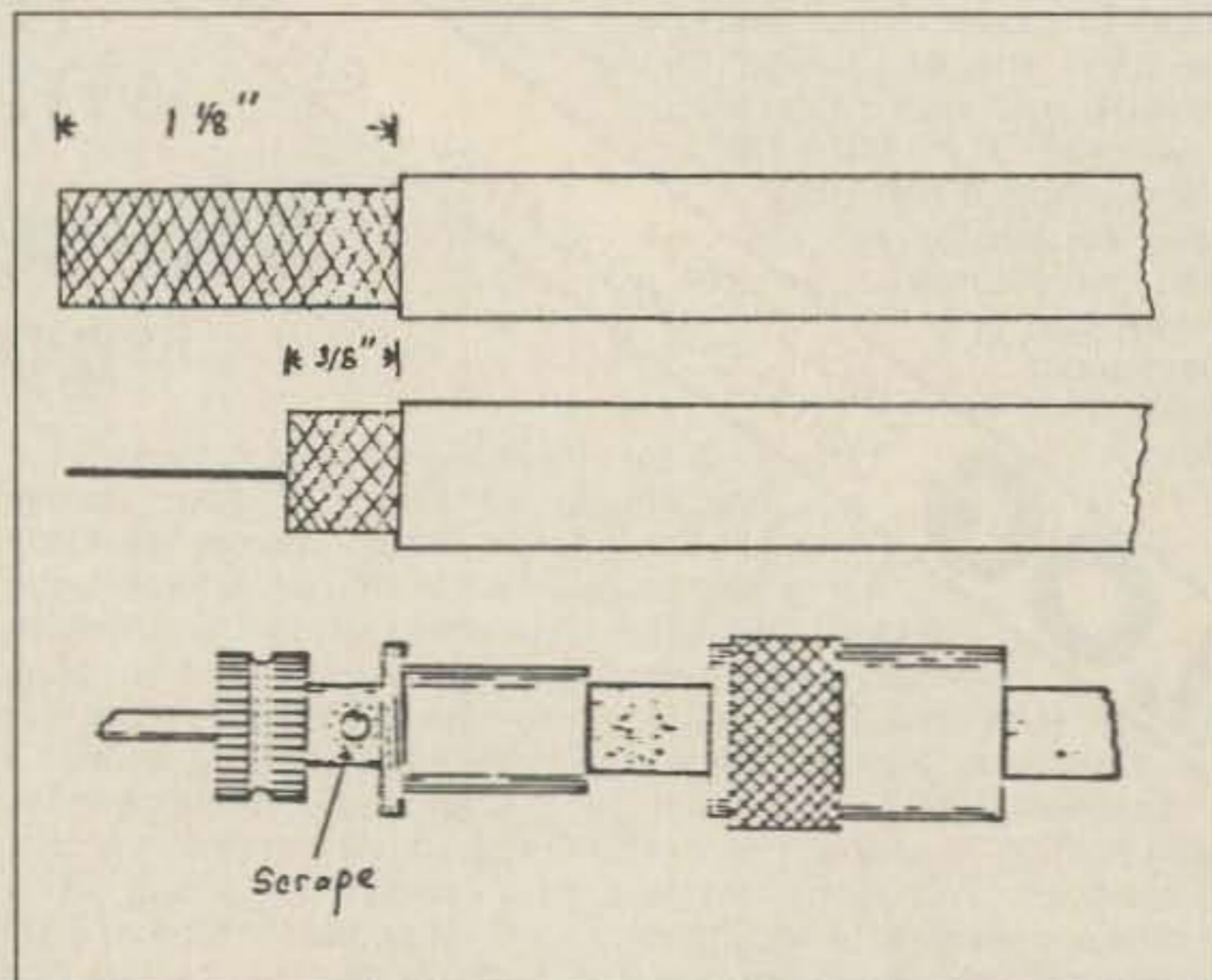


Fig. 1. Installation of a PL-259 connector.