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The 80 Meter Coax L

—compact design really works

There have been many articles written about do-it-yourself antennas for just about every purpose imaginable—multi-band, longwires, verticals, big ones, small ones, and on and on, but all of these antenna articles have this in common: You must have certain hardware items available and some electronics expertise to put them together. The antenna I am about to describe to you is simple, small (for cramped spaces), and very efficient. The best part about this antenna is the fact that all you need to build it is some solder, a soldering iron, #14 copper wire, some common hand tools, and a roll of coaxial cable.

I am not an electronics engineer by any stretch of the imagination and I don't fully understand how this antenna works, but I can honestly say that it does work and works very well. I am presently in West Germany with the US Air Force, and I have worked stations all along the east coast and in central USA, and, of course, all around Europe. I received consistent 5/6 and 5/7 reports from all contacts.

Construction and initial testing were conducted while I was stationed in Oklahoma, knowing that when I arrived in Germany, with its narrow, crowded streets and houses touching each other, I would not be able to put up a full-sized 80 meter dipole. This antenna is basically a quarter-wave shorted stub of RG-58 (or other common coax) fed out of phase against earth ground with the outer braid of the coax acting as the radiating portion of the antenna. Better results can be obtained by using a counterpoise or a radial system consisting of one or more radials laid along the ground. If a matchbox is available, this antenna, as described, will work well on 80 and 40 meters without pruning the antenna. It also can be used on other bands by making the length of the coax ¼ wavelength for the band desired. If no matchbox is available, quite a bit of cut-and-try work is required. However, when you reach optimum resonance using this method, the antenna will show an swr of about 1:1 across the entire 80 meter band from 3500 to 4000 kHz.

Well, so much for the background history and specifications, and on to the construction and ways to get it in the air.

Construction is started by simply cutting a quarter wavelength of coax (approximately 63 feet) and stripping one end back one inch. Short the braid and center conductor together, attach a three-foot piece of copper wire (#14) to the braid and center conductor connection, and solder. The #14 wire will be used to tune the antenna. Strip the other end of the coax back one inch also and maintain the separation between the braid and center conductor.

When you reach this point, it is time to prepare the feedline. The length of the feedline is not critical and can be made to meet individual requirements. Strip the feedline (opposite the transmitter connector) back one inch and maintain the separation between the center conductor and braid.

Now it's time to connect the feedline to the antenna. This is achieved by connecting the braid of the feedline to the center conductor of the antenna and the center conductor of the feedline to the braid of the antenna. Next, drive a ground rod into good old Mother Earth and attach 1 or 2 radials (¼ wavelength of #14 copper wire each) to the ground rod, leaving the remaining portion of each radial stretched out across the ground. Now, connect the feedline braid and antenna center conductor to the grounding system and solder and tape all connections. The antenna itself can be erected in many ways, depending on available space, as depicted in the illustrations. Select the method that best suits your individual requirements and erect the antenna. It should be noted that the vertical and horizontal distances are not critical, but the connection between the feedline and antenna always should be kept at ground level. After

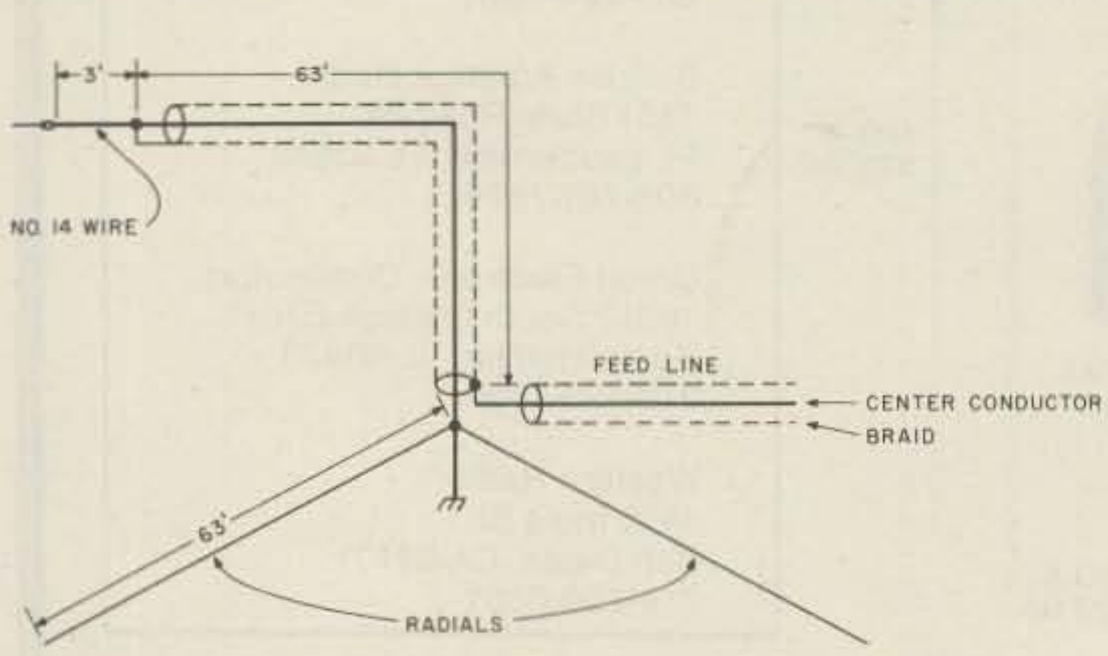

Fig. 1. The 80 meter coax inverted L.

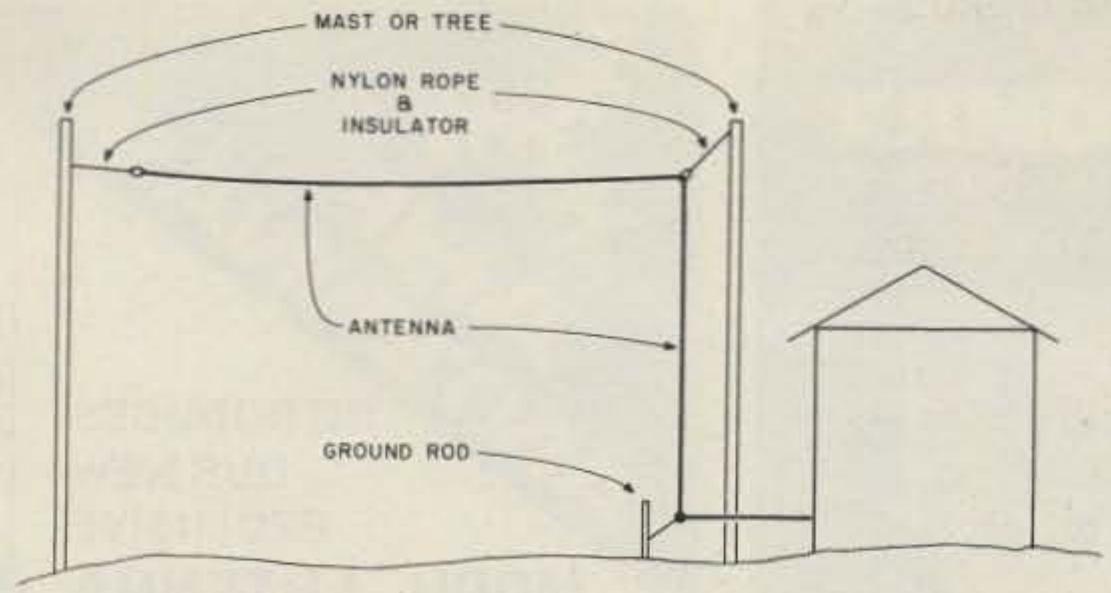

Fig. 2. Hanging method A—inverted L. This method requires only 33′ of yard space. The antenna is raised to a vertical height of 30′, using a tree or mast to secure the antenna to, and then out horizontally a distance of 33′. This method also provides vertical and horizontal polarization.

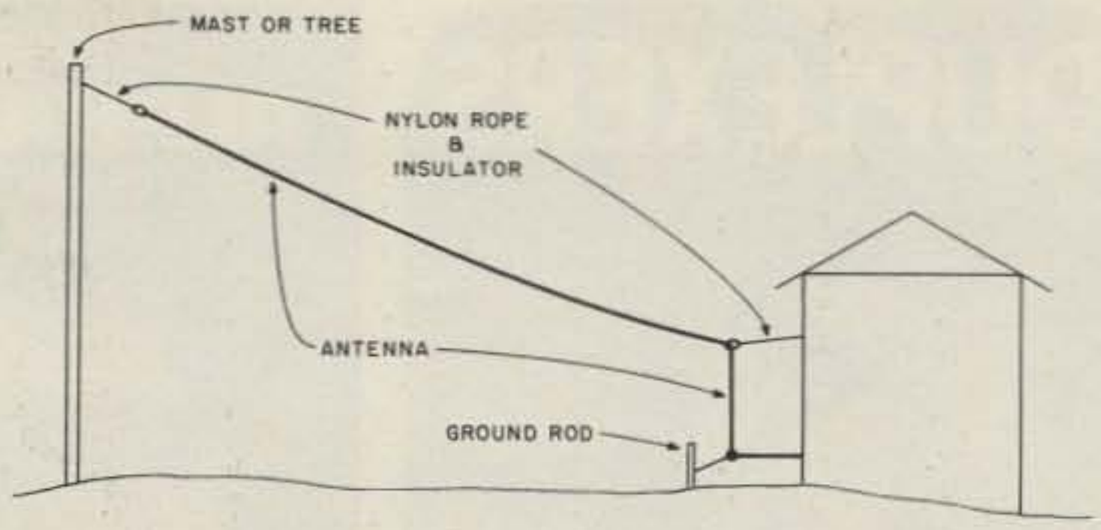

Fig. 3. Hanging method B—sloper. This method requires about 60′ of yard space, but can be used if a tree or mast near the house cannot be utilized.

the antenna has been erected, connect the feedline to the transmitter through the swr bridge.

Start out testing the antenna with low power and remain on low power throughout the testing and tuning stage. You may start with an swr as high as 2.5:1, but don't despair. This is when the tuning starts. Tuning is accomplished by trimming the #14 wire at the end of the antenna. Cut a 6-inch piece of the #14 wire from the end of the antenna and then check the swr again. If the swr has dropped, but not enough, cut off another 6-inch piece of wire, check the swr again, and repeat this process until the swr is satisfactory. If you continue to trim the #14 wire to a point where there is no more wire to trim and the swr is still too high, you must start cutting off 6-inch pieces of the antenna itself. Be sure that the braid and center conductor of the antenna are reconnected each time this is done, before the swr check is made. If, on the other hand, the swr went up after the first piece of wire was cut off, you must add #14 wire to the end of the antenna in 6-inch pieces until the swr is satisfactory. A lot of time could be saved in this process if a friend could cut and prune the antenna while you remain in the shack to conduct the swr checks, shouting instructions to him.

As I said before, this antenna is very simple, small, and efficient, and an excellent one especially for the Novice because of the low cost and ease of construction. ■

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