# Build a Half-Square DX Antenna

*It's about as simple as they come. And it sure works!*

William Van Tilburg KG8AN
5198 West Valley Circle
Portage MI 49002-1932

The half-square antenna is a gain antenna, yet it is one of the easiest, quickest types of antennas to build. This half-square configuration is a DX antenna that on 10m starts picking up signals from about 500 hundred miles out and gets stronger as the signals come from farther away.

The physical size is a full wavelength long, divided into three sections. You have a half-wave section on top, with a quarter wavelength dropped straight down on each end. To figure the length of an antenna you work a simple math problem. The formula is 1,005 divided by the frequency in MHz. This results in an answer for a full wavelength in feet.

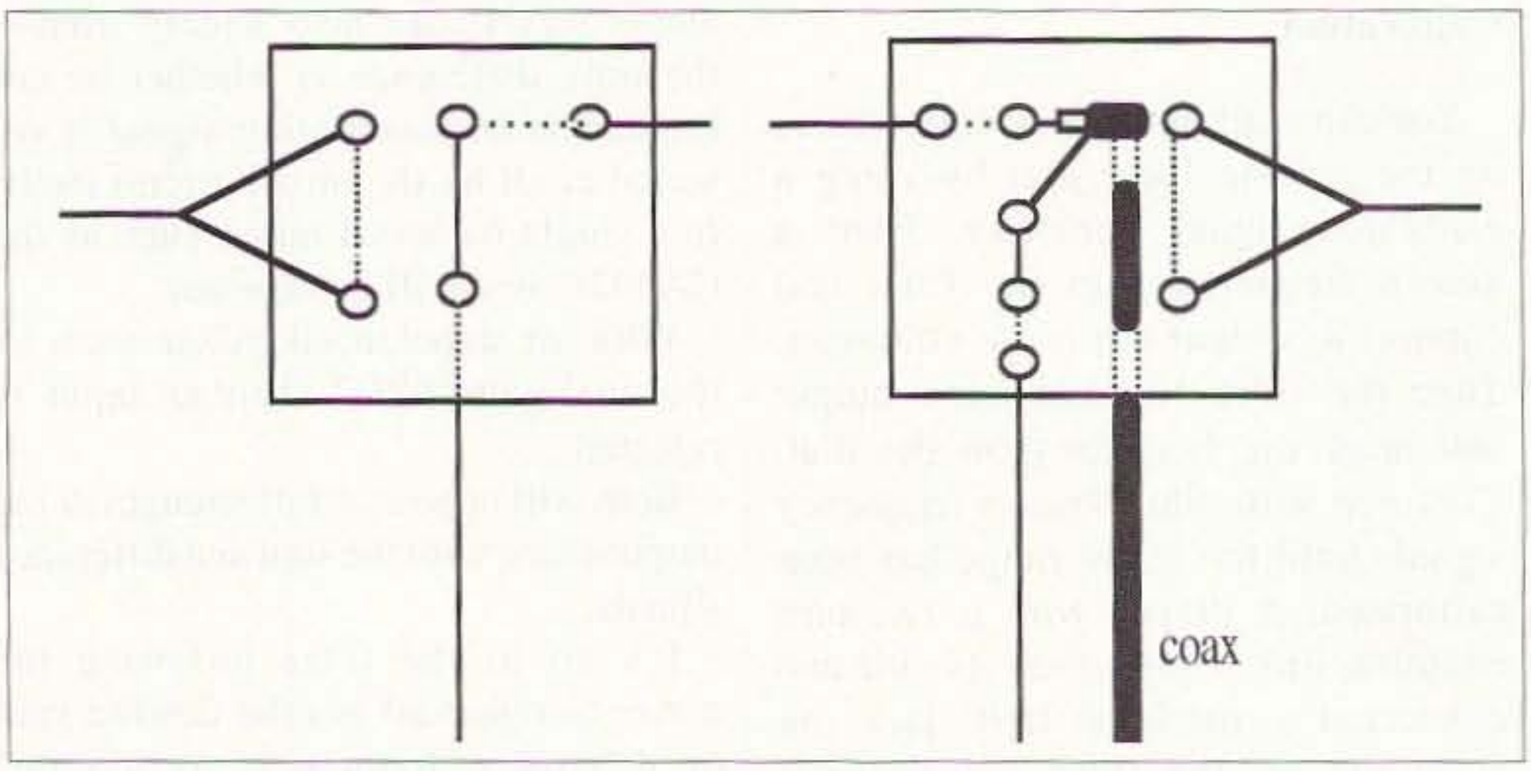


***Fig. 2.*** *Feeding the cable and wire through the pre-drilled holes will lock it in place with nothing but the force of friction.*

**Let's try a sample**

First, let's go for the 10m phone section. The middle of the band I want will be 28.4 MHz, where the Novices/Techs can operate. That's 1,005 ÷ 28.4 = 35.387 feet of wire to start our antenna. That's 35' 4.5". You will need an extra three inches to allow for a small tie loop at the bottom end of the quarter-wave down legs. Each active quarter-wavelength is going to be 8.846 feet long (8' 10") so double the wire back to find the center and mark it with a piece of electrical tape. Next, you need to measure 8.846 feet out from our tape marker toward the ends. The down legs will also measure 8.846 feet, plus the one and a half inches for the tie loop.

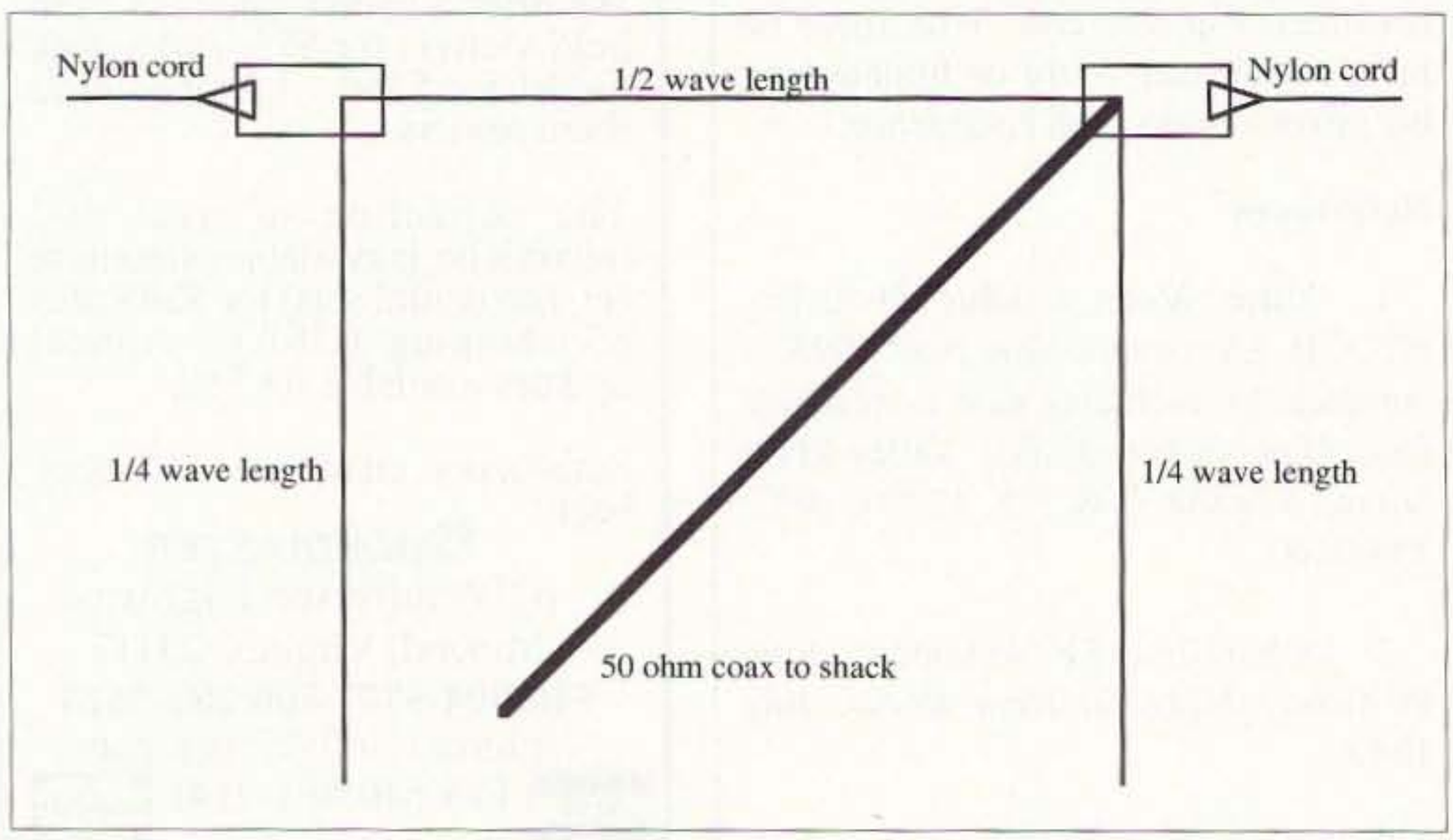


***Fig. 1.*** *The whole half-square antenna complete with insulators made from broken lawn chairs.*

I have found that a broken white plastic lawn chair can be cut up to make very good antenna insulators. Cut rectangles 1.5 inches by 2.5 inches and drill holes as shown in Figs. **1** and **2.** I use a covered wire about #16 gauge, which helps keep down snow static. String the half-wave section in one hole, over and through the second hole, and down through the third hole towards the ground. On the other end, cut the wire at the corner of the top and down leg. Feed the wire across two holes to lock it in place. The other quarter-wave wire is fed up from the vertical through the holes in the plastic to lock it in place as seen in the diagram.

Next, we need to feed the RG-58

through two holes to lock it in place; secure the center connector to the top horizontal section and then connect the braid or shield to the down leg as seen in **Fig. 2**. Next, string the nylon antenna support cord through the end holes to support it between trees, towers, or buildings. The connections of all wires need to be soldered and then taped for weatherproofing.

You need to keep the coax end of your antenna toward the transmitter and at right angles if possible from the top wire. Now pull your antenna up as high off the ground as you can get it.

The height of your antenna off the ground will affect its tuning. Remember, the higher the frequency, the shorter the wire will be. Shorten the wire top section and the legs to make the resonant frequency of the antenna higher. Make your adjustments about 1/2 to 3/4 inches at a time. If you change one leg by 1/2 inch, the top section will have to change by one inch. Make any required adjustments to find the center frequency and it's ready to transmit. Tie a loosely dangling retainer cord to each of the down leg loops to keep it from blowing over the top wire.

The maximum radiation is broadside, so an antenna strung north and south will do best to the east and west. I use this type of antenna at home on 10m, and also during Field Day on 20 from Kalamazoo County, Michigan.

Some of the half-square advantages are about 4 dB gain, a low radiation angle, good noise-canceling characteristics, both vertical and horizontal polarization, and low cost.

I've talked all over the world with this antenna, so be sure to let me (and Wayne) know how it does for you!

*Editor's note: You can greatly simplify the trimming of the antenna if you cut it a little long to start, then find where it resonates (minimum SWR). Now you can make a simple ratio of the antenna length divided by the resonant frequency equaling the desired length divided by the desired frequency. This way, it takes just one trim session and you're in business without all that half inch at a time from each part of the antenna. For example, if you come out 8" too long, just cut 2" from each quarter-wave section—4" from the horizontal section and 2" from each vertical leg.* 73

## NEVER SAY DIE

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Describe his offense briefly, and if you have a tape recording so I can join you in your condemnation, that won't hurt.

Perhaps the potential for public exposure and humiliation will help make our hobby more fun for us.

But, while we've an interest in cleaning up our bands by exposing the bad apples, we also should have a medium for rewarding the hams who are helping to make the hobby better. So I'll get busy on both Good Apple and Bad Apple Nomination Certificates. If you know any hams who have contributed positively to the hobby, please don't wait until they're silent keys to nominate them for the Good Apple Certificate.

If you are an artist or cartoonist (or know one), how about a couple of illustrations for the certificates? I need a really disgustingly bad apple drawing, and a good apple.

Now let's see what we can do to reward the good guys and humiliate the bad guys. And if you run into K3ZO on the air, please tell him "Turnips from Wayne."

### The Code Again

A note from reader Boucton in France mentioned that France has decided to end all CW maritime transmissions as being obsolete. It is expected that the other European countries will follow suit. That pretty much leaves the use of Morse to a small group of aging amateurs. How quaint.

In a similar vein there was a mention in *The Old Timer's Bulletin* that radio pioneer Lee DeForest had always had an interest in amateur radio, but could never build up his code speed enough to get a license.

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