

DIY



Projects you can build on your own

20-meter Fishing Pole Antenna

It's about time we built something for HF, to take advantage of our General class license. This issue's design is the *fishing pole antenna*, a 20-meter 1/4-wave vertical antenna with radials, based on a [YouTube video by Dave Fugleberg](#), WØZF.

Let's start with a parts list:

- ✓ 18-foot telescopic, 10-section, fly fishing pole (mine is 5.4 m from eBay)
- ✓ 3/4" to 1/2" PVC coupling / reducer, slip (as opposed to threaded)
- ✓ SO-239 bulkhead (flanged and solderable) connector
- ✓ 32 feet of ordinary (18 AWG) speaker wire
- ✓ Tin of Altoids® (discard the lozenges)
- ✓ Three 30-foot lengths of paracord
- ✓ Appropriate nuts and bolts (and wire lugs if desired)
- ✓ Two 3/8" plastic grommets
- ✓ Two 8" zip ties
- ✓ Garden hose rubber washer
- ✓ Super Glue®



SO-239 bulkhead

Start by cutting the speaker wire to the correct lengths. For 1/4-wave of 20 meters, I chose 14.175 MHz as my center frequency and used the following formula:

$$234 \div 14.175 \text{ MHz} \times 0.95 = 15.7 \text{ ft} \approx 15 \text{ ft } 8 \text{ in}$$

234 is the conversion from megahertz to feet, and 0.95 is the *velocity factor*, which must be taken into account, since electrical energy travels slower in the wire than electromagnetic energy does in free space by this factor. Cut two identical 15' 9" sections of the speaker twin-conductor wire (an extra inch for a loop), then pull the entire lengths of each twin apart, resulting in four identical-length, single-conductor, insulated wires. Select one of the four to be your *radiator*, and the remaining three to be your *radials*.

Bolt the SO-239 bulkhead to the Altoids tin body (not the lid) as shown. Solder the radiator to the bulkhead center conductor and connect the three radials to the bulkhead flange. Drill a 3/8" hole in each end of the Altoids tin, and insert the plastic grommets in the holes. Feed the radiator through





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20-meter fishing pole antenna

one grommet and the three radials through the other.

Super Glue the rubber hose washer to the inside of the PVC reducer, then allow the glue to dry. Drill three equi-distant holes about 1/2" from the edge of the 3/4" end of the reducer, then tie each of the three paracord sections to each hole in the reducer to act as a guy line.

Feed the radiator wire through the reducer / washer pair, then form a 1/2" loop at the end of the wire by folding the wire back onto itself, using Super Glue to hold the loop in place. Allow the glue to dry.

Pull the telescopic sections out and push them through the reducer / washer hole. If the fishing pole pull string is not looped, form a small loop out of the pull string. Slip the pole loop through the radiator loop, then back over the radiator loop. Fully extend the fishing pole and tighten the sections. Locate the



PVC coupler / reducer

Altoids tin at the proper spot by fully extending the radiator wire along the fishing pole sections. Attach the tin to the pole by drilling four holes in the lid and securing the lid to the pole using two zip ties, with the zip tie ends inside the lid. I chose to attach the bulkhead to the tin body rather than the lid to prevent straining the wires when I opened and closed the tin, even though that motion will be somewhat seldom. (I knew there might be many occasions when I'd need to display the interior wiring for demonstration purposes.)



When you're ready to set up your antenna, stand the entire fishing pole assembly straight up, extend and tie down the three guy lines and extend the three radials as straight and as far out from the antenna as you could get them. Attach the PL-259 connector of your coaxial cable to the SO-239 bulkhead, the other end to your HF transceiver, power up the transceiver, and say your prayers (in thanks, of course.)

Using this antenna, my first contact was with a YL in Iowa who was running a 20-meter net. I want to know about your own adventures, so let me know how it works for you!

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