

# DIY

*Worthwhile projects you can build on your own*



## Simple 20-meter Dipole Antenna

Let's take things down to a simple (and inexpensive) level, and build perhaps the most basic HF antenna you can make: a halfwave dipole, this time for 20 meters. The ironic part to this, however, is that the halfwave dipole is also perhaps *one of the most effective antennas you can DIY easily*. In fact, if you think about it, many good antennas are actually dipoles in one form or another. The drawback is that it's a one-band-man. Like before, let's start with a parts list:



*SO-239 bulkhead*

- ✓ Two 1-1/4" PVC slip (not threaded) caps and PVC glue
- ✓ 3" long 1-1/4" PVC tubing
- ✓ Four 8" zip ties
- ✓ One SO-239 bulkhead (flanged and solderable) connector
- ✓ Four #6 screws (about 3/4"), nuts, and lock washers
- ✓ Three 3/16" or #10 eyebolts (about 2") and nuts
- ✓ 33 feet of stranded 14 AWG wire (THHN insulation is good)
- ✓ Two PVC (or dogbone) insulators (1/2" X 2" PVC)

Drill a 3/16" hole in the center of one of the PVC caps, then install one of the eyebolts and its nut in the hole. Apply a *smear of PVC glue* to the inside of the clean, bolted cap, then insert the clean PVC tubing and allow to dry. Drill two more 3/16" holes in the sides of the same bolted cap, on opposite sides from each other, about the middle of the cap (not the tube) sides. Install the remaining eyebolts and nuts in the newly drilled holes. Drill two 3/16" holes in the PVC *tubing* below the side eyebolts, about 1/4" below the cap edge.



*PVC insulator*

In the center of the other PVC cap, drill a 10 mm hole. Place the SO-239 bulkhead on the hole to locate where the smaller flange holes should be drilled, then drill the four #6 (about 9/64") holes. Cut the wire in half and thread one of the wires through one of the side eyebolts, its nearest 3/16" tube hole into the tube, then through the large hole in the loose cap. Thread the other wire through the other side eyebolt, its nearest 3/16" tube hole into the tube, then again through the large cap hole. (BTW, using 12 AWG instead will lower your loss and increase your bandwidth.)

Strip and solder the end of one wire appearing through the large cap hole onto the center conductor of the bulkhead, then connect the other (using a crimped lug, for example) to one of the four bulkhead screws. Bolt the bulkhead onto the cap, then glue the cap to the tube. Drill a 3/16" hole in the cap right next to the bulkhead, for a rainwater drain. Zip tie a loop in each wire around its eyebolt about an inch from the eyebolt as a strain-relief. Measure the wire 15 feet 8 inches from the eyebolt to its PVC insulator on each leg, and wrap the remainder on itself.



*The completed 20-meter dipole*

Thread the end of each wire through the insulator, and zip tie the wire back around itself, but do not cut it, so that you can tune it if needed. Your 20-meter dipole is now ready to use.