

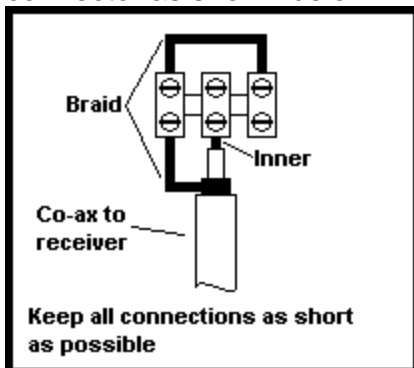
A cheap (free) vertical antenna for any band you like.

You will need

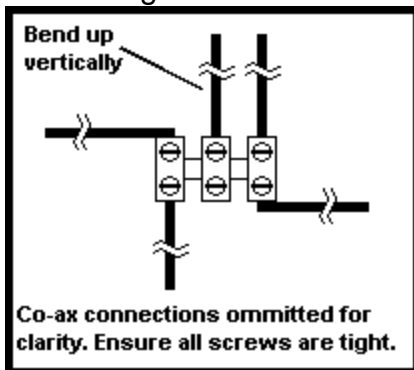
- ?? A "Chocolate block" type electrical connector. One piece with three contacts will be required.
- ?? Un-insulated wire, such as gas-welding rods, stiff copper wire, fence-wire
- ?? Feeder to your rig with the appropriate plug fitted
- ?? Tools - Wire cutters, terminal screwdriver, insulating tape
- ?? A receiver with an S-meter

How to build it

1. Prepare the antenna end of your co-axial cable and fit it to the electrical connector as shown below



2. Cut five lengths of wire 10% longer than the free space 1/4 wave length. One quarter wavelength = $75/f$ metres, where f is in megahertz.
3. Fit the lengths of wire to the connector as shown below



4. Connect the other end of the feeder to the receiver and tune to a strong signal near the centre of the band of interest
5. Hold the base of the upright section of the antenna. While watching the S-meter, run your hand up the antenna until you observe a dip in the S-meter reading. When you are satisfied that you have found the dip, cut the wire off at this point.
6. Measure the upright section and cut the others so that they are the

same length. Measure from the end of the plastic, don't try and judge how far each connector is recessed into the plastic body.

7. Finally, bend the four ground plane sections down at 45°
8. The antenna is finished. VSWR will be about 1.3:1. If high transmit power is to be used, the ends of each section should be filed to a rounded profile.

How (and why) it works

In a quarter-wave antenna, the voltage maximum is at the end. By loading the antenna (by touching it) we reduce the voltage at that point. Obviously the greatest effect on received signal strength will occur if we load the point of maximum voltage on the antenna. Conversely, if we observe the greatest effect on received signal strength at a given point, it follows that that point must be the point of maximum voltage on the antenna, i.e. one-quarter wavelength along the antenna.

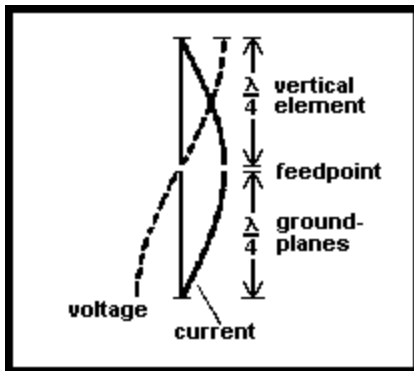


Fig 1.3 Current and voltage in a half-wave antenna. A ground plane antenna such as this is effectively a vertical half-wave dipole.

Bending the radials downwards at a 45° angle alters the impedance of the antenna towards 50 ohms.