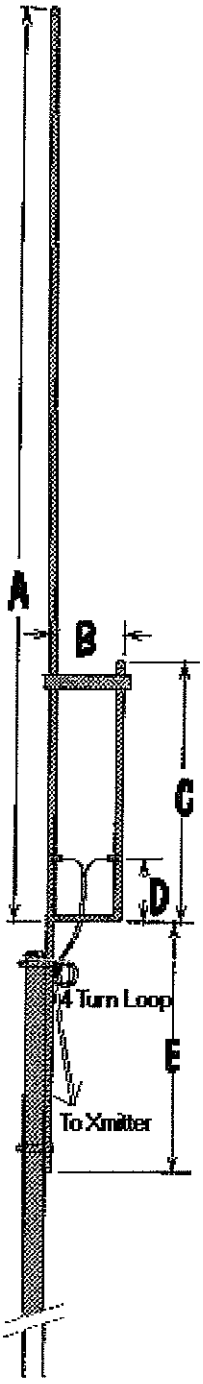
J-Pole Antenna Plans



The J-Pole antenna is fundamentally an end-fed 1/2-wavelength antenna that uses a 1/4-wavelength long transformer section to supply the very high feed voltage. It is an ideal end-mounted, single-mast antenna. For 3-meters (FM broadcast band) it is probably the antenna that is the best solution for many micro power radio stations. It is cheap and easy to build, very sturdy, simple to tune up, and performes quite well for 3-meter transmissions.

The Antenna shown is made from 1/2" copper tubing and it is soldered togeather with plumbing tees, elbows, and nipples. The spacer under "B" is 3/4" plastic pipe cut to hold and re-enforce the two copper pipes. The coax (RG-8 or Equivilant) is affixed to the pipe as shown with movable copper clamps. The fully constructed antenna is then clamped to a grounded metal pole.

Section A, the antenna radiator is 3/4-wavelength long, so its dimension is found from:

Section A = (8838/(frequency in MHz)) inches

... and the quarter wavelength matching section length from:

Section C = (2952/frequency in MHz)) inches

It may wise to cut Section A longer by an inch or two to allow you some leeway when it is time to tune it. The distance D is around 5 inches between the bottom of Section C to the copper clamp that is attached to the outside braid of the coax. The distance B (and corrisponding section B) is 3 3/4 inches. It is wise to cut section E to at least 3 feet if not longer.

After cutting all the sections solder togeather using a propane torch and affixing the PVC pipe spacer. Attach to a grounded metal pole at its permanent home and attach the movable copper clamps that have the RG-8 coax already attached (and 4 turn loop of coax affexed to top antenna mount.) Connect to a transmitter operating at your calculated frequency with an SWR meter attached and take an SWR reading. If SWR is not desirable move the copper clamp that is attached to the center wire of the coax up or down and re-take the SWR reading. If the SWR cannot be lowered to the desired reading you may have to cut or lengthen the 3/4-wavelength radiator. Shortening the antenna will rade the resonate frequency. It is possible to get a 1:1 reading with this antenna.

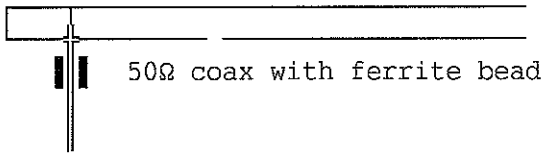
[The design for this antenna was taken from the **Practical Antenna Handbook** by Joseph J. Carr and from a design for the FM broadcast band by G. Forrest Cook WB0RIO.]

Last Updated October 31, 1995.

For frequency 434.00 MHz,

tap	stub	radiator		
0.90	13.77	32.02	cm	tot:45,79

ribbon (not foam) 300Ω twinlead, vf= 0.8 (usual value)



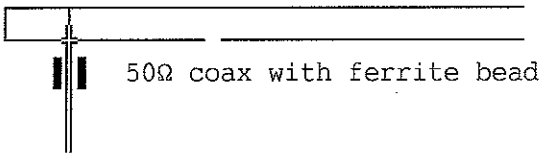
50Ω coax with ferrite bead or choke at feedpoint

<tap> > < ⅛" gap
<---stub----><---radiator------->

For frequency 145.00 MHz,

tap	stub	radiator		
2.70	41.21	95.83	cm	tot:137,04

ribbon (not foam) 300Ω twinlead, vf= 0.8 (usual value)



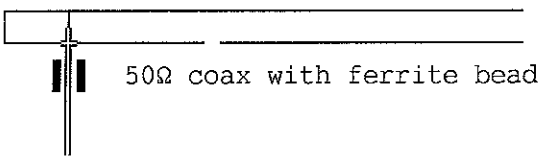
50Ω coax with ferrite bead or choke at feedpoint

<tap> > < ⅛" gap
<---stub----><---radiator------->

For frequency 50.50 MHz,

tap	stub	radiator		
7.76	118.33	275.15	cm	tot:393,48

ribbon (not foam) 300Ω twinlead, vf= 0.8 (usual value)



50Ω coax with ferrite bead or choke at feedpoint

<tap> > < ⅛" gap
<---stub----><---radiator------->

Antennen "tunes" ved å flytte "GAP" opp og ned.
"GAP"'s mål er ikke kritisk.

Lag derfor GAP 10% høyere en beskrevet, og klipp nedover til minste SWR.
Du ender oftest opp med rundt 5% høyere opp.