Build a roll-up J-pole

19TH ANNUAL

"Michigan Summer Family Outing"

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Source for this presentation

http://www.knightlites.org/n3go_workshop/index.htm

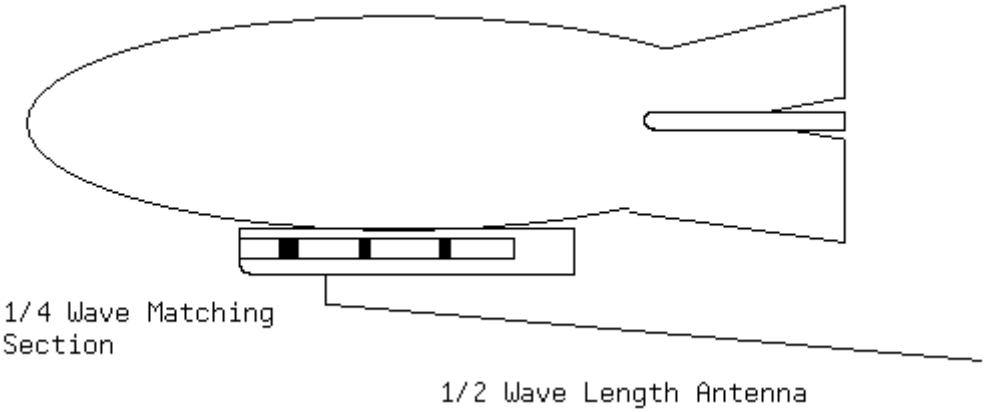
Other information on this project is at http://w8kea.org/club-articles/124-j-pole-antennas

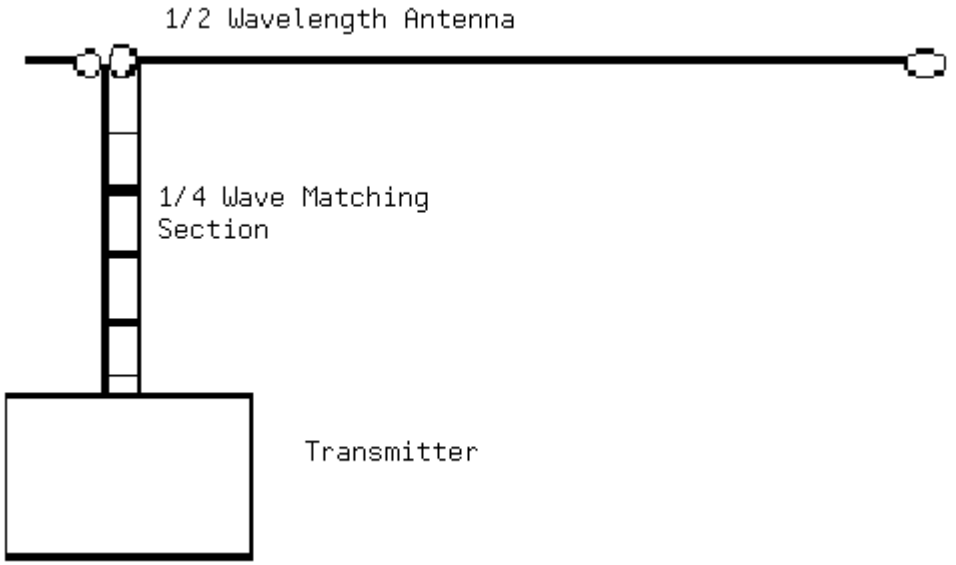
WHERE IT ALL STARTED

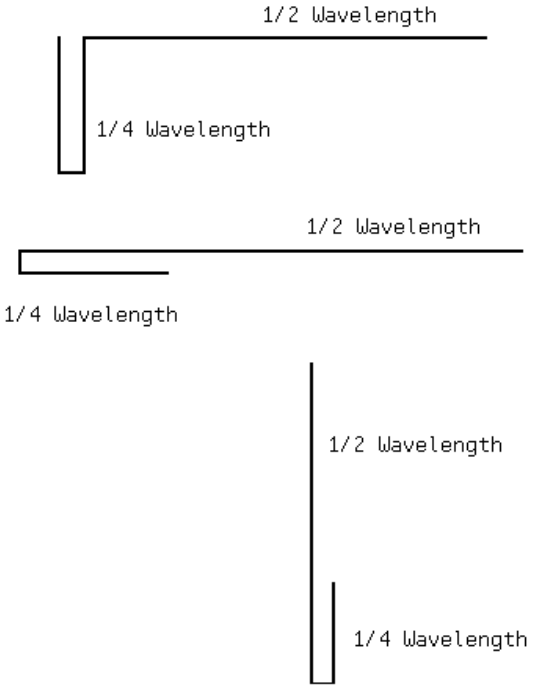
The name "Zepp" harkens to the days of dirigibles, or Zeppelins, which used trailing wire antennas that, by definition, had to be fed at one end which is a high impedance point.

A quarter wave matching section translates the high impedance to a low impedance..

A J-POLE antenna is a modified Zepp antenna.







The J-Pole

Is an end-fed halfwave dipole and performs as all halfwave dipoles.

Uses balanced transmission line elements to obtain a match.

Can be fed by coaxial cable without a balun in many applications.

Has a matching stub short at virtual ground potential, but only when fed with a balun.

Is not unreasonably sensitive to dimensional tolerances.

Is easy to build, tune and replicate.

300 ohms is the optimal impedance transmission line for J-pole matching networks.

The J-pole's matching "network" is electrically longer than a quarter Wavelength.

The velocity factor is the most critical transmission line parameter to consider in the design of the J-pole matching elements and published values of velocity factor are not reliable for all brands and varieties of parallel transmission lines for any given impedance value.

The velocity factor of the transmission line as well as that of the dipole element of the J-pole is reduced when installed in PVC or other material having a dielectric constant other than that of air.

Let's Build a J-Pole Antenna

Dimensions:

A=32.73 or 32 3/4 inches

B=15.41 or 15 7/16 inches

C=1.95 or 1 15/16 inches

OVERALL 50.1 or 50 1/8 inches

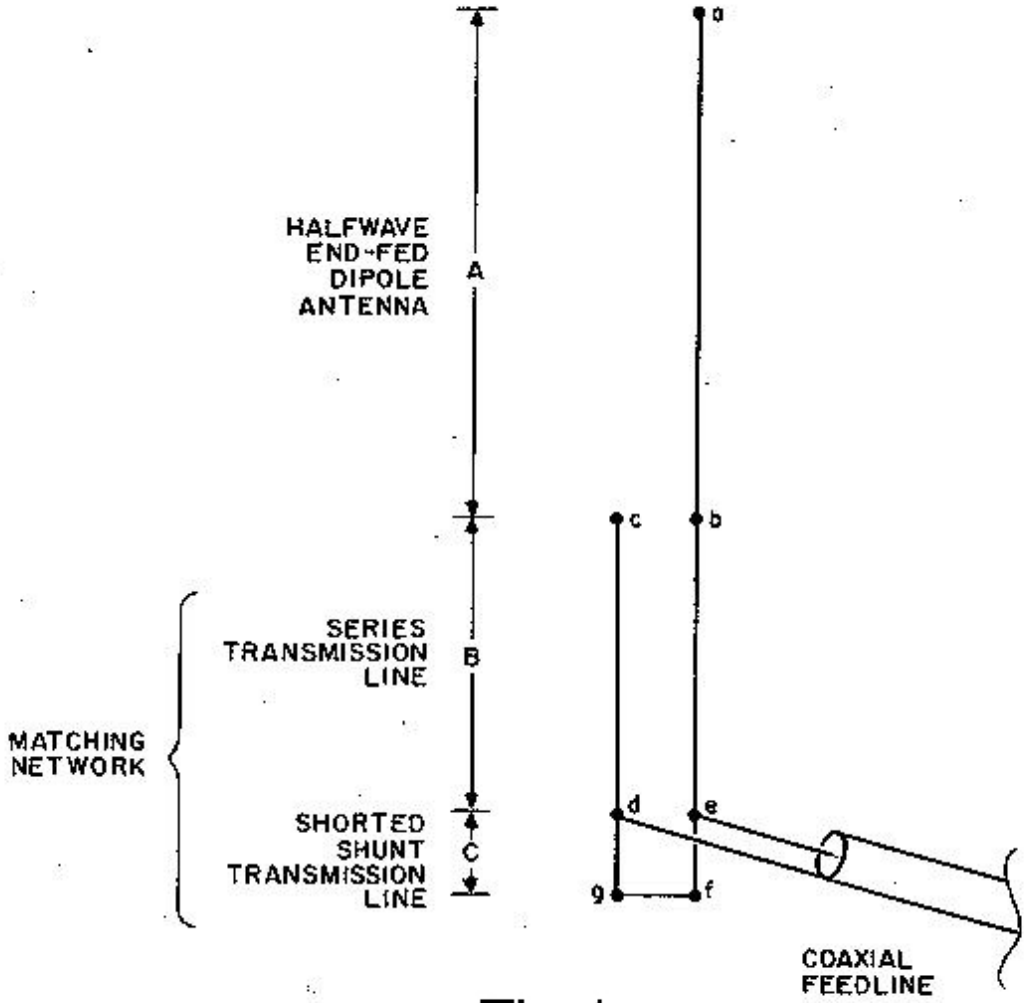
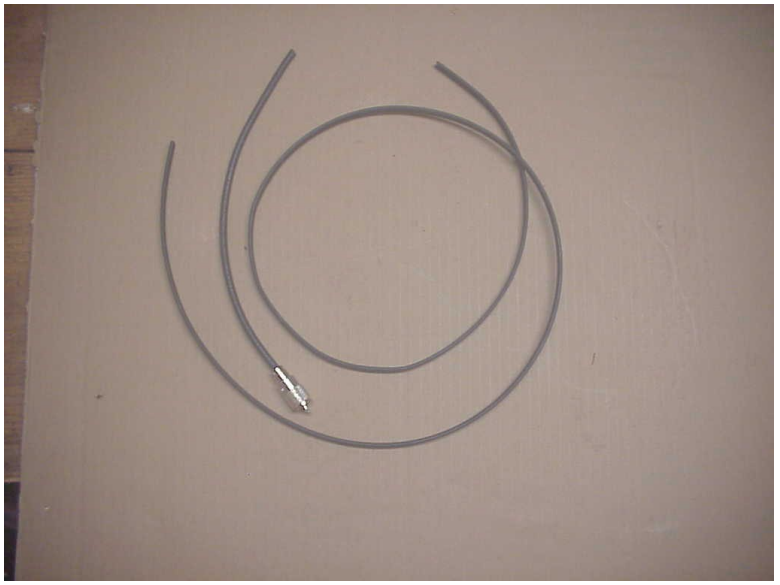
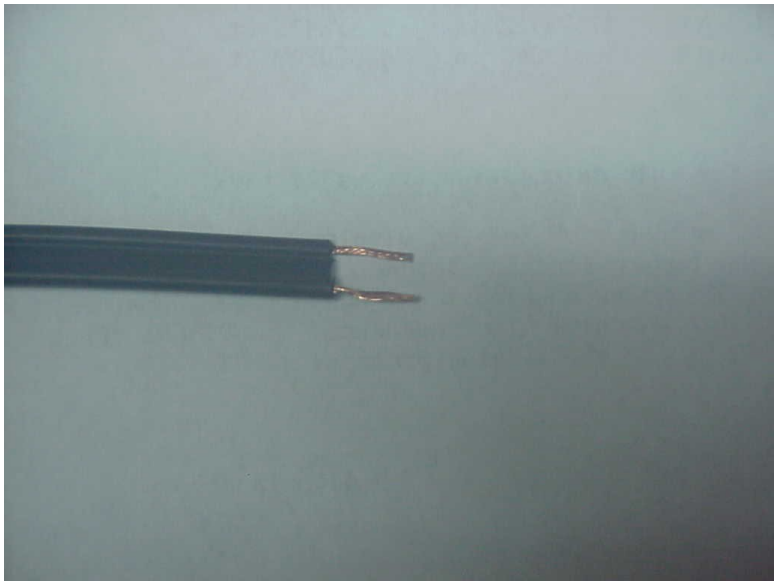


Fig 1

Let's Build a J-Pole Antenna



300 Ohm ladder line at least 50 1/8 inches long and a coax feed line



Measure down 1 15/16 inches from the first window in the ladder line

Strip the wire at this point and solder a jumper wire and trim

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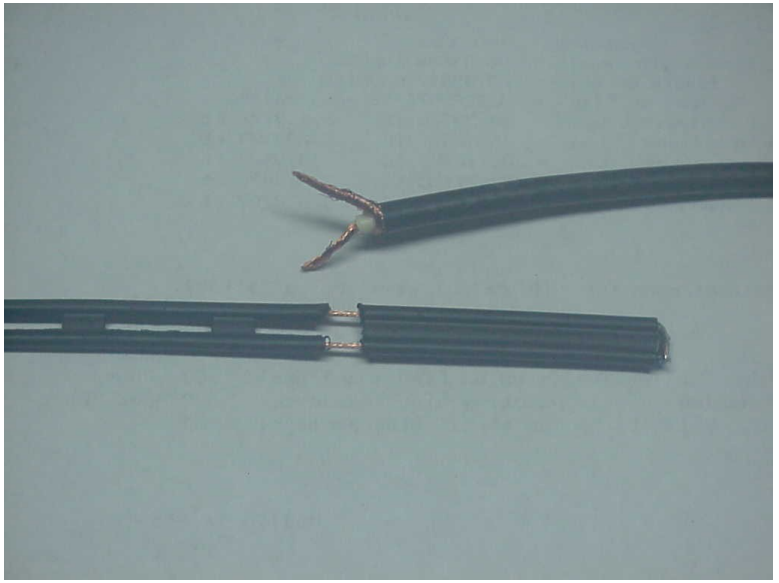

Remove the insulation at the bottom of the first window in the ladder line.

Strip the insulation and bare the wires on the coax feed line

Solder the coax feed line to the ladder line

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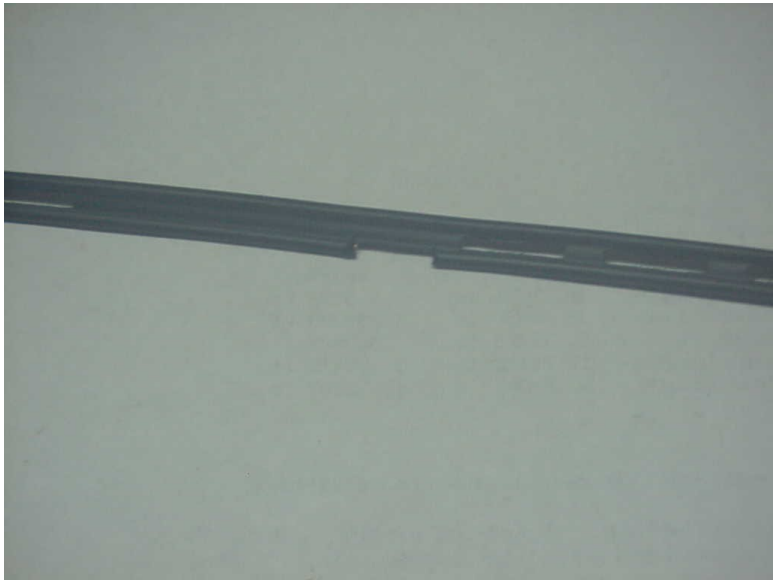
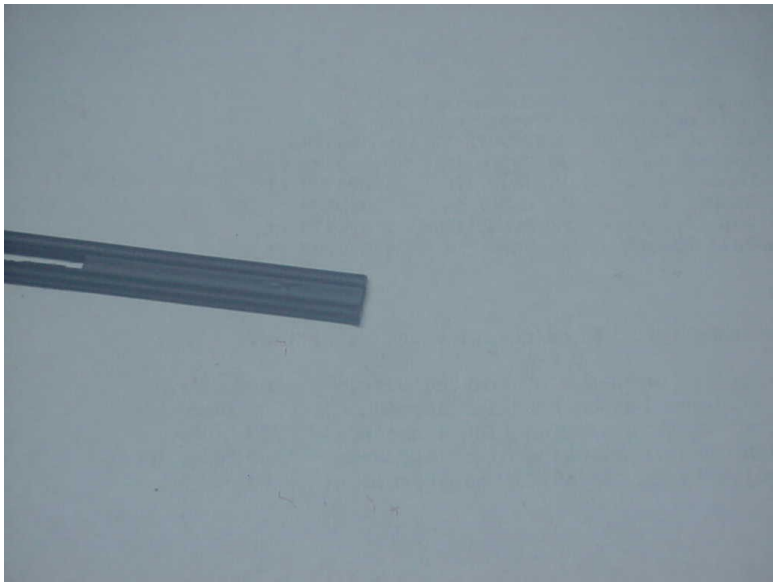


Measure 15 7/16 inches up from the point where the coax attaches to the ladder line

Cut a 1 inch notch in the ground side of the ladder line with the notch away from bottom of the ladder line leaving the matching section 15 7/16 inches long



Measure 32 3/4 inches from the bottom side of the notch and cut the ladder line off

This is half wave dipole