

Dual Band Portable J-Pole

2M & 70 CM

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W1IS

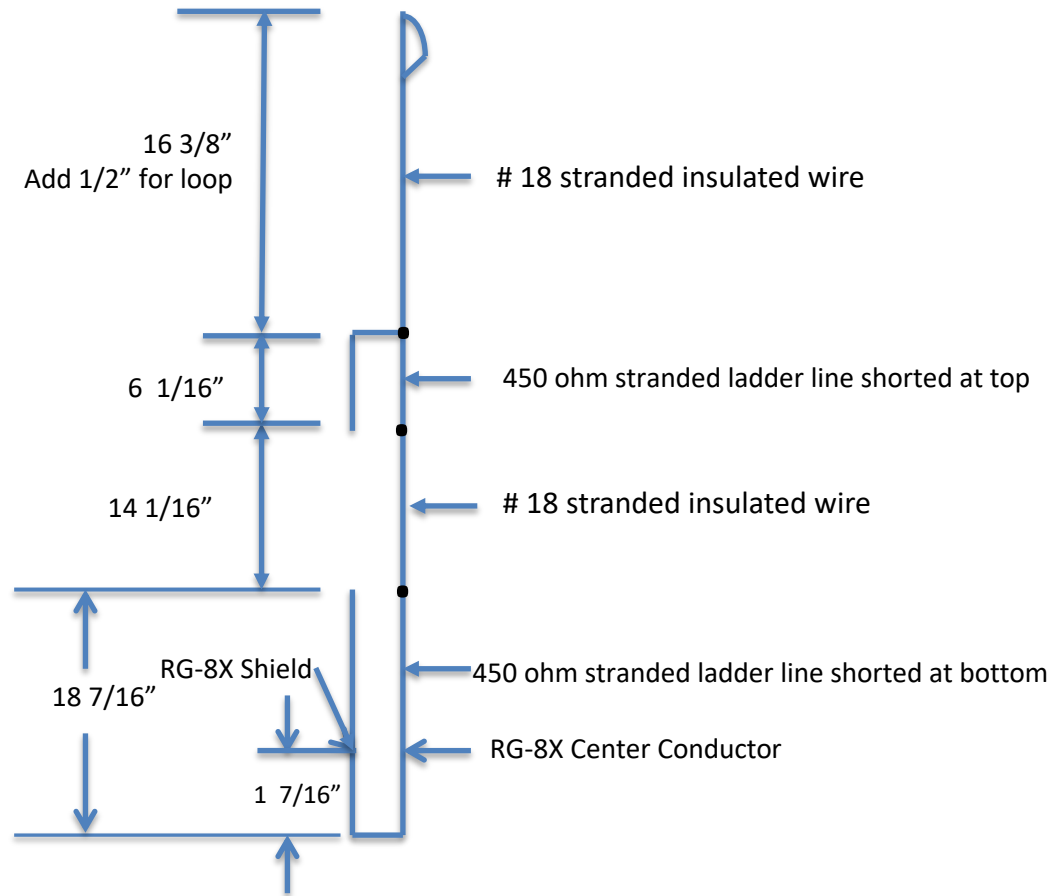
What is it & How does it work?

- Half wave end fed trap dipole
- Get 2 bands because 70 CM band is third harmonic of 2M band
- End fed dipole, impedance = 3K-5K ohms, theoretically infinite
- Quarter wave transmission line shorted on one end reflects opposite impedance at other end = 3K-5K ohms, not infinite when reality steps in!
- Either side $\frac{1}{4}$ wave line open end connected to $\frac{1}{2}$ wavelength is 2M antenna single band J-pole
- $\frac{1}{4}$ wave trap at end of 70 CM $\frac{1}{2}$ wave wire makes it resonant on 2 Bands
 - Length of 70 CM antenna plus length of trap and top section make up the 2M $\frac{1}{2}$ wave end fed dipole.
- Feed point tap on matching section is 50 ohm point to match rig.

Earlier Attempts

- Articles published use RG-174 Trap & Feedline
 - Velocity Factor, $VF=.734$
 - RG-174 Q is too low to be effective
 - At end of lossy feed line everything looks like a match
- Higher Q RG-8X, $VF=.82$, works but difficult to tune (KC1JXL using onr)
- Solid core 450 ohm ladder line – a bit better
 - Higher Q than RG-8X
 - Velocity Factor, $VF=.91$
- Stranded wire 450 ladder line, $VF=.95$
 - Even higher Q
 - Wider BW
 - Easier to tune

2M & 70 CM J-Pole

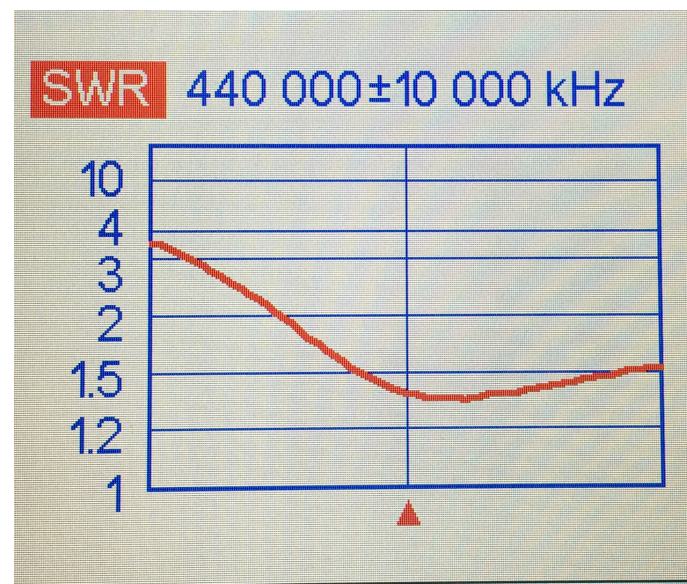
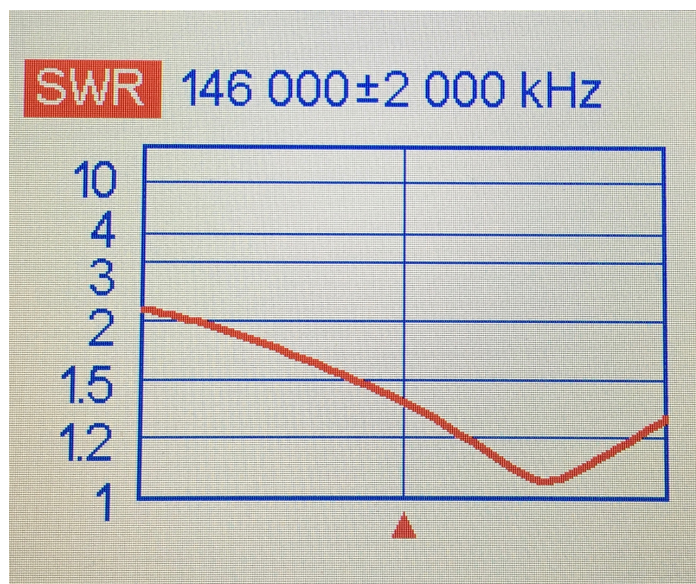


450 Ladder Line with Stranded Wire

Construction

- Dimension sensitive - at UHF 1/16" is big
- Build 2M $\frac{1}{4}$ matching section (GDO 145 MHz, w/o coax)
- Attach 70 CM $\frac{1}{2}$ wave wire, measure SWR & adjust length
- Attach 70 CM $\frac{1}{4}$ wave trap & check SWR
- Attach top wire, adjust SWR cross checking with both bands.

How well does it work?



All parameters	
144 600 kHz	SWR: 1.9
RL: 10.4 dB	Z: 28.5 Ω
R: 27.6 Ω	X: 7.4 Ω
L: 8.1 nH	
RII: 29.5 Ω	XII: 110.2 Ω
LII: 121.4 nH	

All parameters	
440 000 kHz	SWR: 1.36
RL: 16.3 dB	Z: 67.7 Ω
R: 67.6 Ω	X: 3.6 Ω
L: 1.3 nH	
RII: 67.8 Ω	XII: 1259.1 Ω
LII: 455.7 nH	

All parameters	
450 000 kHz	SWR: 1.5
RL: 13.4 dB	Z: 73.5 Ω
R: 72.2 Ω	X: 13.9 Ω
L: 4.9 nH	
RII: 74.8 Ω	XII: 389.8 Ω
LII: 137.9 nH	