Antennas... They're Flexible!

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How to Convert the Cushcraft A3 to a 12 / 17 Meter Yagi
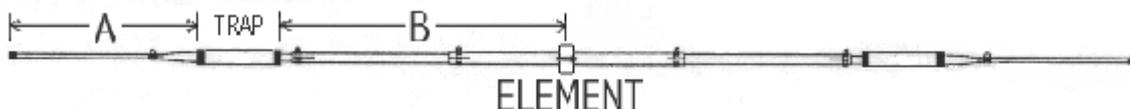
By: John Agrelius, K7HG

Contrary to what some people might say, the Cushcraft A3 can be modified to work as a 12 / 17 meter beam. I did it and it wasn't that difficult. I used the 15 meter traps from the A3 and reduced the spacing between the traps to increase the capacitance. The increased capacitance got the antenna resonant on 12 meters because the traps can work as part trap and part loading coil. Next, I adjusted the tips of the elements and got the antenna resonant on 17 meters. So, all it took was a little work to get the element lengths right and that was it.

The VSWR is 1.4:1 on 12 meters and 1.1:1 on 17 meters. On 17 meters, I can pick up more than 3 S-Units when I turn the beam into the signal, so it obviously has a decent Front-to-Back ratio. I also compared it to a 17 meter inverted vee at the same height (about 50 feet away) and it was always at least one S-Unit better. That doesn't sound like much but when you add in the Front-to-Back performance, it makes a big difference. As an example, I was listening to an Alaskan station with the inverted vee and heard some terrible QRM from the East coast but when I switched to the beam and pointed it North I couldn't even hear the East coast stations. On 12 meters, I didn't have a 'reference dipole' to compare it to but it did exhibit similar Front-to-Back characteristics, so I'd bet there's also some gain there.

I'm sure this conversion would work with other Tri-Banders, too. Just start with the dimensions I used and keep any changes you make proportional and it should work fine. So, if you've got an old Cushcraft A3 lying around, this would be a good weekend project.

Element Spacing is the same as the Cushcraft A3.. Element Lengths are in the table below:

Element Lengths for 12 / 17 Meter Yagi		
Director	**Driven Element**	**Reflector**
A = 16.5 Inches	A = 17.5 Inches	A = 20.0 Inches
B = 80.0 Inches	B = 89.5 Inches	B = 98.0 Inches

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