

Rotate the Bobtail Curtain

*How do you rotate one hundred feet of wire antenna?
It's simple: Just flip the switch.*

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Back in 1980 I wrote an article for 73 about the "Bobtailed Bobtail Curtain," using only two elements of the array.* It is worth noting that since then I have discovered that the

* "The 20-Meter Double Bobtail," May, 1980, p. 44.

inventor of the Bobtail had originally used only two elements, but when no one paid any attention to it, he added a third element to make it seem more interesting, and immediately it became more popular. The extra element does not add a great deal to the effectiveness of the array and the extra space it requires is not worth the extra results if you are short of space.

For some years I have

used the antenna firing N/S to work Antarctica. I have made over 10,000 contacts there and have spent more than 25,000 hours running phone patches for the folks there. I can get a 5/9 report barefoot and break into a pileup anytime. Now, however, I have discontinued this operation after fifteen years and would like to use my Bobtail to fire E/W to work a couple of friends in Arizona and New Mexico.

I cannot rearrange the array to fire broadside E/W both because of space limitations and because I would have to fire through the house next door. I have used the array on ten meters for E/W endfire and also knew that I could do the same on 20 meters by increasing the spacing from half wave to full wave. In my 1980 article I mentioned this, but also said that it could not be rotated easily by any simple method. Now I have thought of a way to do it.

At first I thought it would be necessary to make two separate antennas, each with a voltage-feed unit of

coil and capacitor, and put a quarter-wave delay between them. I could then fire E/W but could not easily switch from broadside N/S to E/W. Now, however, I realize that while I cannot change the actual spacing, I could change the delay electrically so that I would have an endfire pattern, from pattern #1 (Fig. 1, left) to pattern #2, (Fig. 1, center) very easily and instantly. The drawings will show how this is done. In the original way of increasing the physical spacing, I would get pattern #3 (Fig. 1, right), as I had done before. This was not what I really wanted.

The horizontal wire runs through some tree branches, so I used insulated wire. No problem was encountered. The ladder line or other spaced pair of wires will be suspended horizontally so that the end and switch B come just outside my radio-room window where I can easily reach it. Or, the addition of a half-wave multiple of line at B will make it possible to move the switch to anywhere you want it.

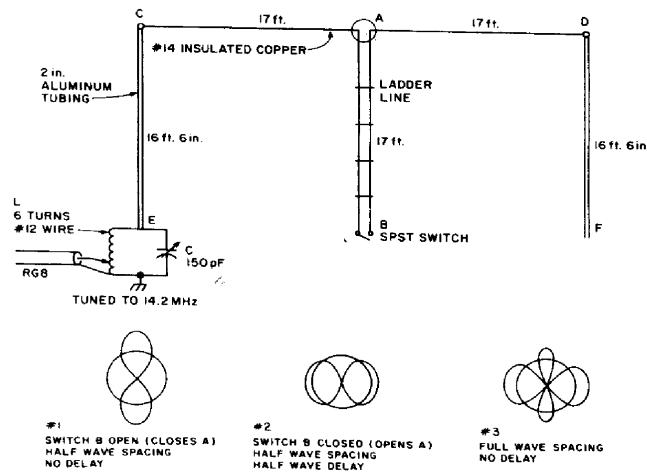


Fig. 1. Switching diagram.

When switch B is closed it will cause an electrical delay of a half wave, since A is open. The half wave is from A to B and back to A. The pattern is #2—endfire.

When B is open it presents a short to position A, as is the rule with quarter-wave lines. This makes pattern #1 half-wave spacing with no delay and is a broadside pattern N/S. If desired, the quarter-wave line can be dropped straight down to a stake or pulled off to one side where switch B can be mounted on a fence or tree.

A, E, and F are high-voltage points. B, C, and D are high-current points. The insulation requirements at B are very low, but the supports at E and F must be insulated well. The insulator at A must be a good one with adequate insulation and separation.

The dimensions given are for 14.2 MHz. The length of the verticals is $234/f$, and the

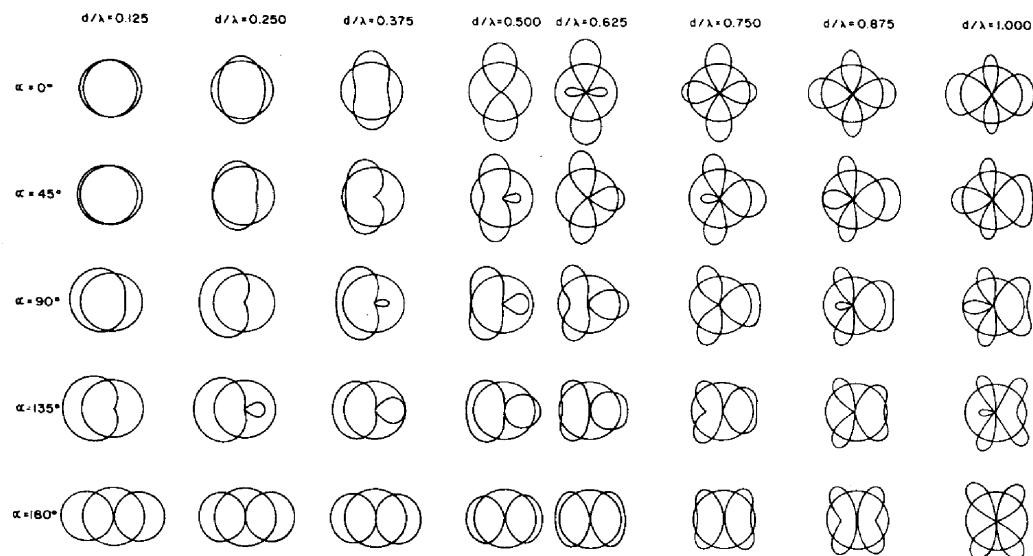


Fig. 2. Horizontal radiation patterns for an array of two antennas fed with equal magnitude currents.

antenna separation is calculated as $246/f$, where f is the frequency in MHz. The first is the antenna figure and the second is the free-space figure.

Tuning is the same as described in the original article

in 73, or as the Bobtail is normally tuned. Adjust L and C and the tap on the RG-8 for lowest swr. Tune for the center of the band, as it is not critical. Switching will not require a change in tuning. ■

This is the final antenna article—of many written for 73—by W8HXR, who died November 25, 1984. A ham for 65 years, he authored *The Magic of Ham Radio* (a 73 publication, 1980), a non-technical book to guide the beginner as well as to reminisce with old-timers.