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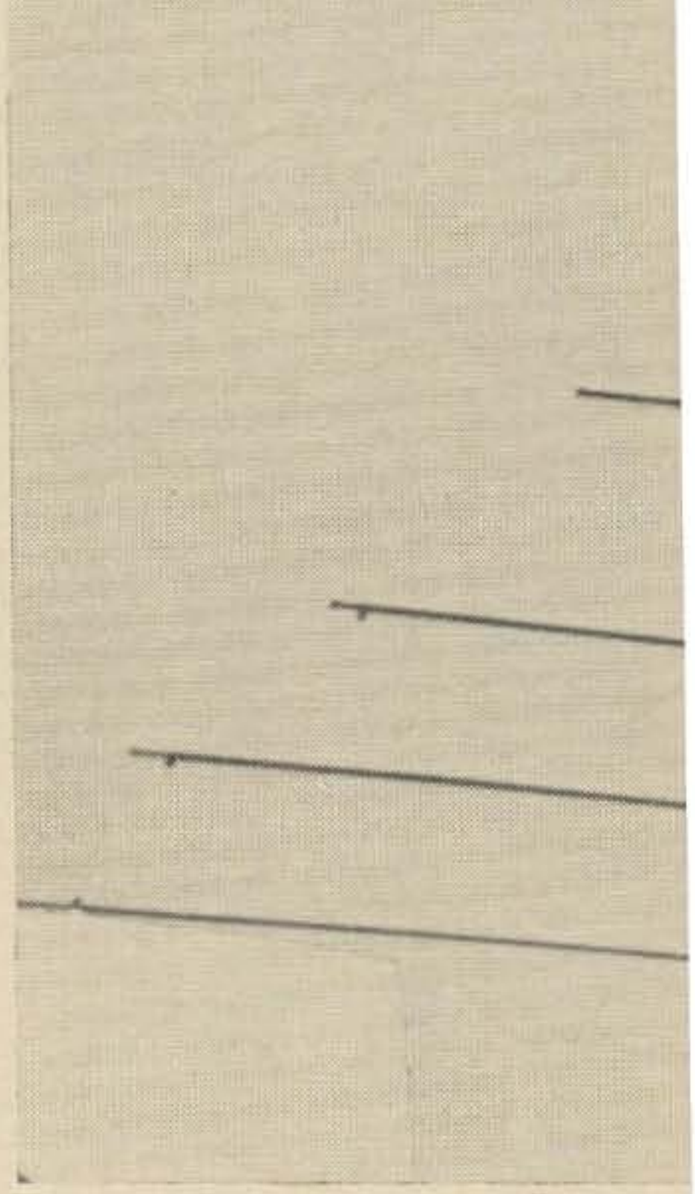
Six for Six



As all hams know, activity on six has been very high since the band was opened to Technicians. Any one who is determined can learn enough to pass a Tech license test in a fairly short time. So now this is the second largest class of licenses and most active Techs are on six. This has caused a lot of QRM on the band; only the best equipment is useful for fighting the other stations, particularly for DX.

This antenna was built for high gain to provide excellent performance on six. It's a wide spaced six element yagi on a 24 foot boom. It's made of aluminum for lightness, low cost and easy construction. The SWR is excellent over the most used part of the band.

Each element is about a half wave long. The exact length can best be found by experimenting. The distance between the elements can also be adjusted for best results, a compromise between gain, side lobes, front-to-back ratio, SWR, etc. The dimensions given worked very well for me and are a good starting point.

Unfortunately, 24 foot aluminum poles for the boom are hard to find. I used two twelve foot 1¼ inch 0.058 wall poles and butted them together with an eight foot 1⅛ inch dowel in the center furnishing strength. A short piece of 1⅜ inch tubing over the joint gives electrical continuity.

The elements are held on with Cesco Large Yagi Clamps. If you can't locate them, you might try improvising from broken TV antennas, etc. I made each element a little short and slid a length of ⅜ inch tubing in each end for accurate adjustment of length.

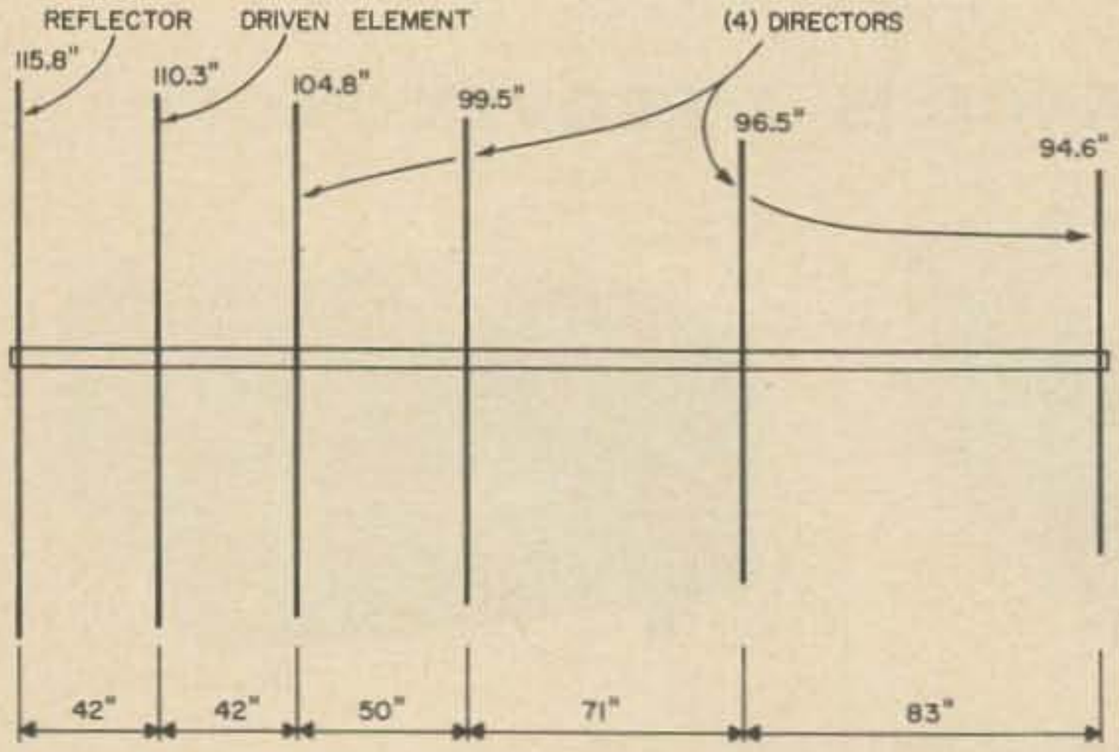
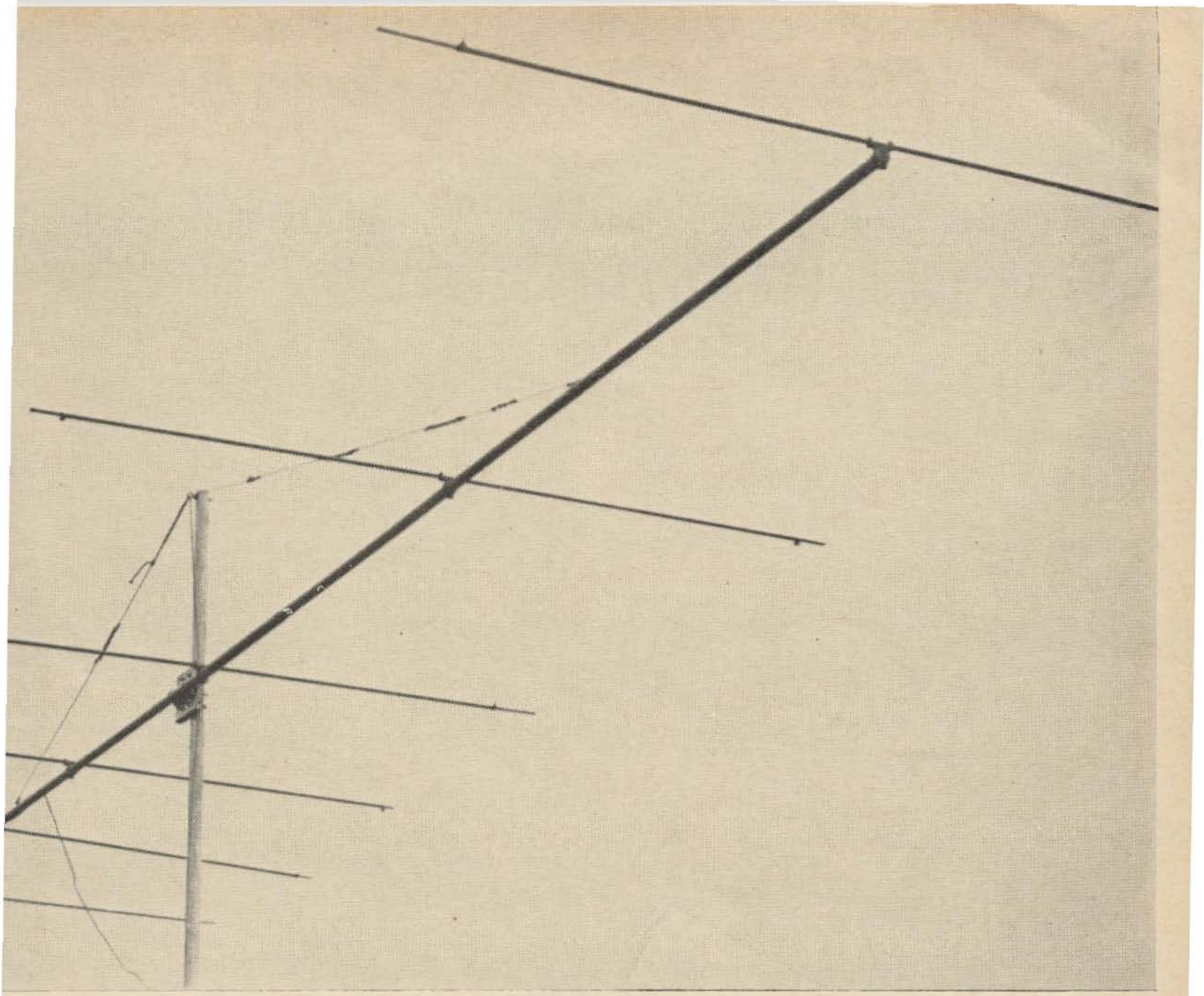


Fig. 1. Dimensions of the six element yagi.



A wide spaced antenna such as this one has a fairly high feed impedance—at least compared to close spaced beams. There are a number of different matching systems that you can use. I used the Infinite Impedance Antenna Match which was described by W6NAT in the March 1963 issue of 73. It's very simple.

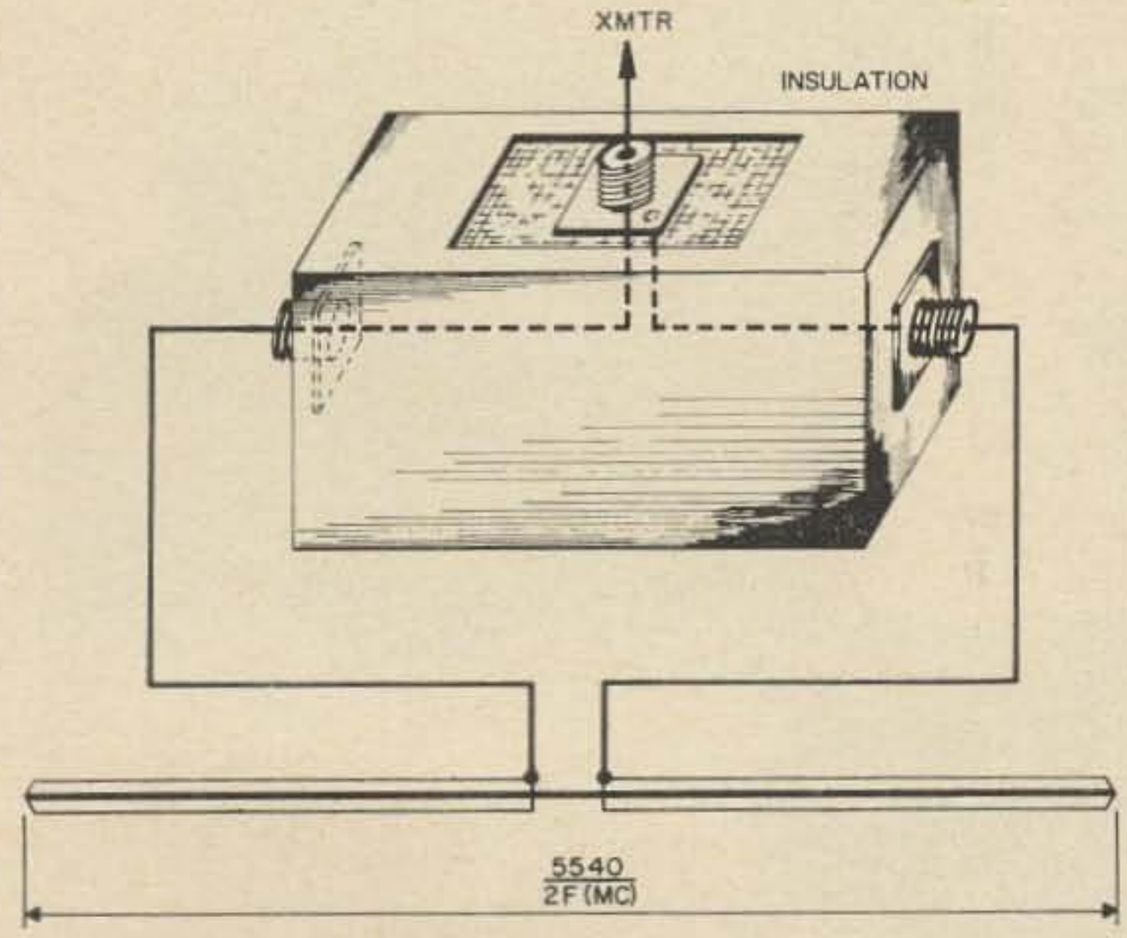


Fig. 2. Matching system.

Take a quarter wave length of RG-58/U. Find its center. Remove one inch of insulation at the center. Carefully cut the shield apart, but leave the insulation and center conductor intact. Gather the pieces of shield together and connect a coax connector to them with the center connector going to one side and the outside to the other. Tape the joint. Now short each end of the quarterwave and tape. This quarterwave dipole goes inside the driven element, which is cut in half and insulated from the boom with a piece of plastic. Notice that there is no direct connection to the driven element.

Mount the antenna at its center of balance with a home-brew wooden mast mount or with a Cesco mount. I added two wire supports from above the antenna to the boom to prevent sag. Break these cables with egg insulators to prevent unwanted resonances messing up the pattern of the beam.

Adjust the element lengths for minimum SWR and you're ready to go. I'm sure that you'll be pleased with the excellent results and long life of this antenna.

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