

CQ REVIEWS:

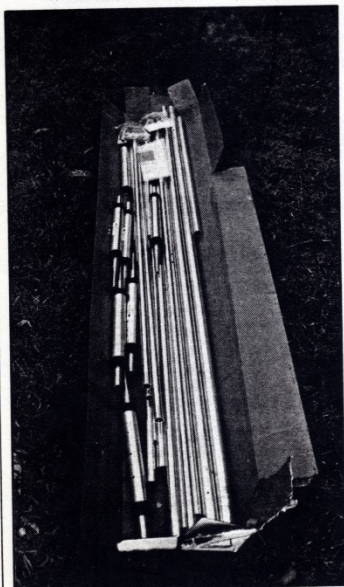
The Cushcraft A3WS 12 and 17 Meter Beam

BY LEW McCOY*, W1ICP

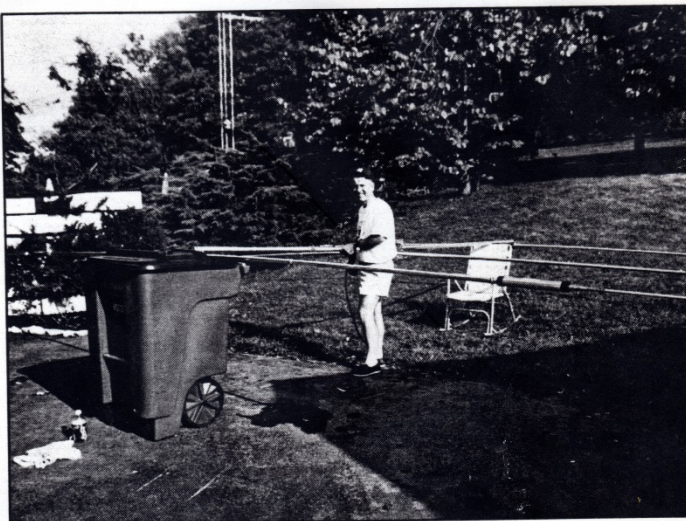
With the coming of the two new WARC bands, 12 and 17 meters, activity has increased to the extent that you should start thinking of a beam antenna. A beam offers gain, directivity, selectivity in the form of unwanted signal rejection, etc. Cushcraft has come up with the A3WS beam, an excellent dual-band, three-element trap beam for both bands, and I must say that performance is outstanding. We checked the beam against two rotatable dipoles, and in all cases the signals on the beam were at least one to two S units better. Front to back and front to side were also very good.

The boom length is 14 feet, with the

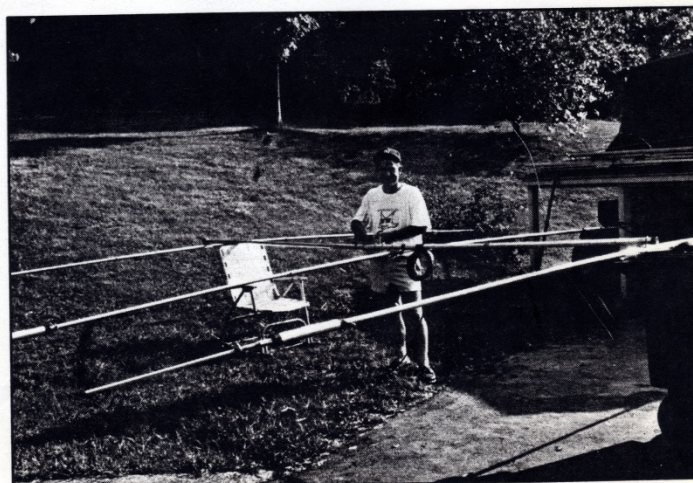
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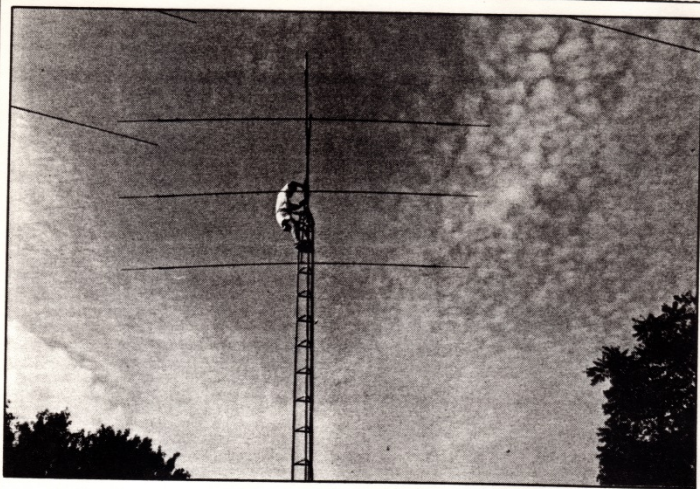
This is what the Cushcraft A3WS looks like as it is shipped and before assembly. There are two traps in each element.



The world's greatest antenna assembly range. Prime tools include a garbage can, a lawn chair, and a screwdriver, plus the chief engineer, WB4FLB.



Another view of the construction. Note the RF choke made up of coax at the feed point.



Gary at the top of the 60 footer putting the final touches in place. I observed and gave encouragement (from the ground).

longest element (the reflector) being 25 feet 1 inch. This gives a turning radius of slightly over 14 feet. The two-band beam is a lightweight, coming in at 22.5 pounds. Total wind surface area is 4 feet. Cushcraft rates the forward gain at 8.0 dBd with a front-to-back ratio of 25 dB typical. I have no method of checking the gain, but on front to back, assuming an S unit is 6 dB (and my receiver checks out at that

figure), I can verify that I reached front-to-back figures even in excess of Cushcraft's ratings on some signals. Checking with a line-of-sight local, the front to back was four S units difference.

The actual frequency-range ratings are 18.068-18.168 and 24.890-24.990 MHz. The manufacturer rates the SWR on both bands at 1.2 to 1 maximum across the bands. I found the beam to be

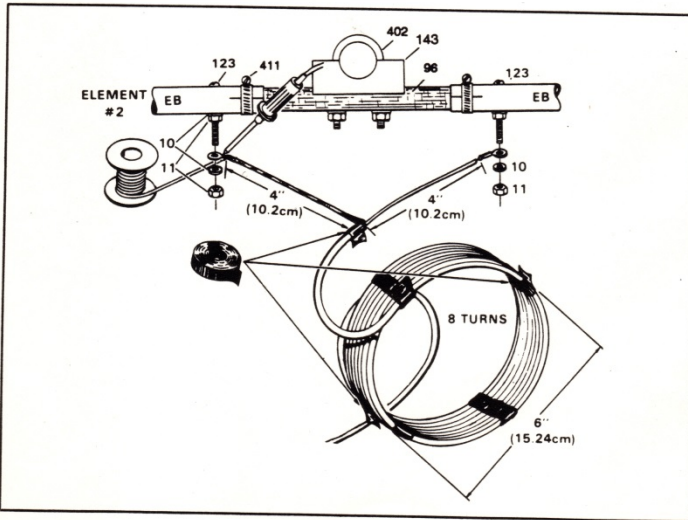


Fig. 1- As stated in the text, the instruction book is clear and detailed. This drawing from the book shows the construction details of the RF choke, and is an example of the instructions' clarity. This choke does an excellent job of feeding the beam and eliminating a balun.

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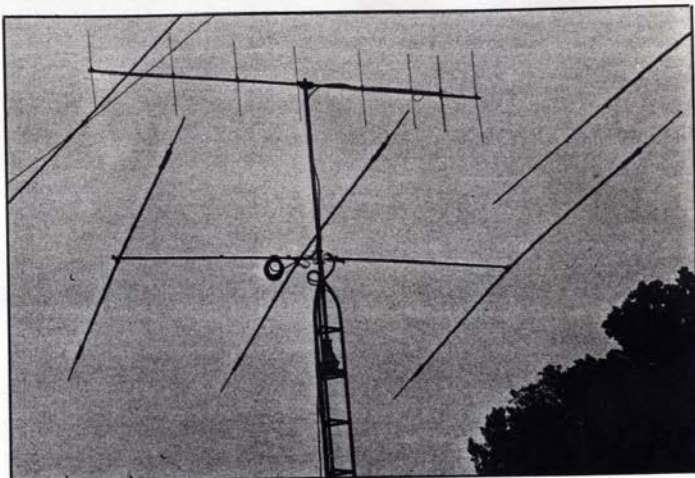


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as flat as a proverbial "pancake"—actually less than 1.2 to 1.

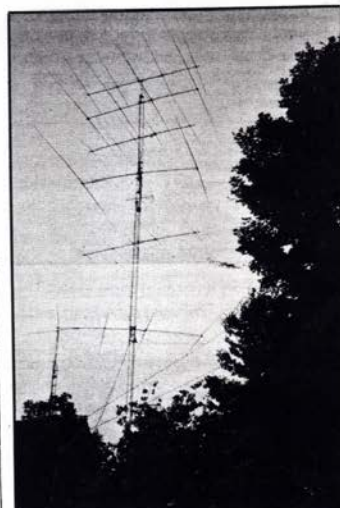
The antenna is shipped in a UPS-transportable box (see the photo). The first step was to make sure that all items checked out against the parts list, which they did. We (not an editorial "we," because Gary Hext, WB4FLB, did nearly all the work) then began the process of putting together the antenna. The antenna was supported, as you can see, on a lawn chair and a garbage can. Construction was fast, about an hour and a half from reading the directions to completion. Everything went together smoothly. Hose clamps are used throughout to hold the traps and various sizes of tubing together.

Being a writer, one of the things that has bothered me over the years when doing technical reviews is what to say about instructions or instruction manuals. Too many manufacturers make the assumption that the buyer or builder knows all about the equipment. It is always a pleasure to build Cushcraft products, however, because their manuals are very good and very detailed. In fact, I consider them excellent. Certainly the instructions with the A3WS are no exception. The parts list is not just a list, but an actual pictorial of each part. The construction of each element is thoroughly described with dimensions in both inches and centimeters. The RF choke at the feedpoint is shown very clearly in a pictorial, and I guarantee the most inexperienced beginner will have no problems. As you can gather, I am very impressed with the instructions, as I am with the performance of the antenna.



Here is the three-element beam completely installed.


Cushcraft recommends an RF choke at the feedpoint of the beam consisting of eight 6 inch turns of 50 ohm coax so no balun is required. Incidentally, we did the installation of the antenna at Gary's place in Bowling Green, Kentucky, and as you will note from the photographs, we made plenty of comparisons to wire antennas. Needless to say, it was a real ball using the Cushcraft beam and chasing DX (sometimes 100 watts, sometimes full



This is a view from the base of the tower used for the two-bander—lots of nice antennas which produce lots of contacts.

bore, and often QRP). In all our tests the beam proved to be a great performer on both bands as shown in some of the pile-ups we "topped" out.

Cushcraft also offers a 30 meter add-on kit which we did not have nor test. Details are available directly from Cushcraft.

The A3WS lists for \$350.00 and is manufactured by Cushcraft Corp., 48 Perimeter Road, P.O. Box 4680, Manchester, NH 03108. 

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