CQ REVIEWS: BY LEW MCCOY*, W1ICP

The Alpha-Delta DX-A "Twin-Sloper" Antenna

At the Dayton Hamfest this year I had the opportunity of discussing one of the newer offerings in the antenna field with its designer, Don Tyrrel. This is a tri-band sloper, covering 160, 80 and 40 meters. The name of the antenna is the Alpha-Delta DX-A "Twin-Sloper." Don kindly offered to let me try one and do a review—and that is what this article is about.

Essentially, the antenna consists of two legs, one is 35 feet long, a quarter wavelength on 40 meters, and the other is 80 feet long, with a very rugged loading coil (not a trap) which covers 80 and 160 meters. Refer to fig. 1 for the physical layout of the antenna. Fig. 1 is a page from the instruction manual of the antenna and it shows most of the installation information plus tuning details.

Much has been written about slopers and if the reader would like some basic information, I would refer him to Doug DeMaw's article in October 1981 *QST*, called, "More Thoughts on the Confounded Sloper." A sloper can be a half-wavelength or quarter wavelength long antenna and is neither vertical nor horizontally polarized but really a combination of both. For horizontally polarized half-wave dipoles, one must consider great antenna heights in order to get good low-angle radiation for long distance DX work on the low bands. For example, in order to achieve a low angle of radiation, the bare minimum on 80 meters would be suspending the dipole at least 150 feet in the air. Two such supports plus the real estate are pretty hard to come by for the average amateur. However, excellent DX results have been obtained with the sloper type of configuration because it does have some low-angle components.

The DX-A requires a metal tower or mast at least 25 feet high and the support must have a good ground. In other words, the mast or support must be tied to earth ground. Alpha-Delta recommends a height of 25 to 40 feet for the installation. The antenna I tested was installed at 40 feet on a grounded tower. A mounting bracket is provided that is bolted to the tower via a U-bolt. The bracket also has an SO-239 coax fitting mounted on it for the feed line, which should be 50-ohm coax.

For best performance from the system, the two legs of the sloper should be installed as close to 180 degrees apart as possible and the ends should be at least eight feet above earth ground. The ele-

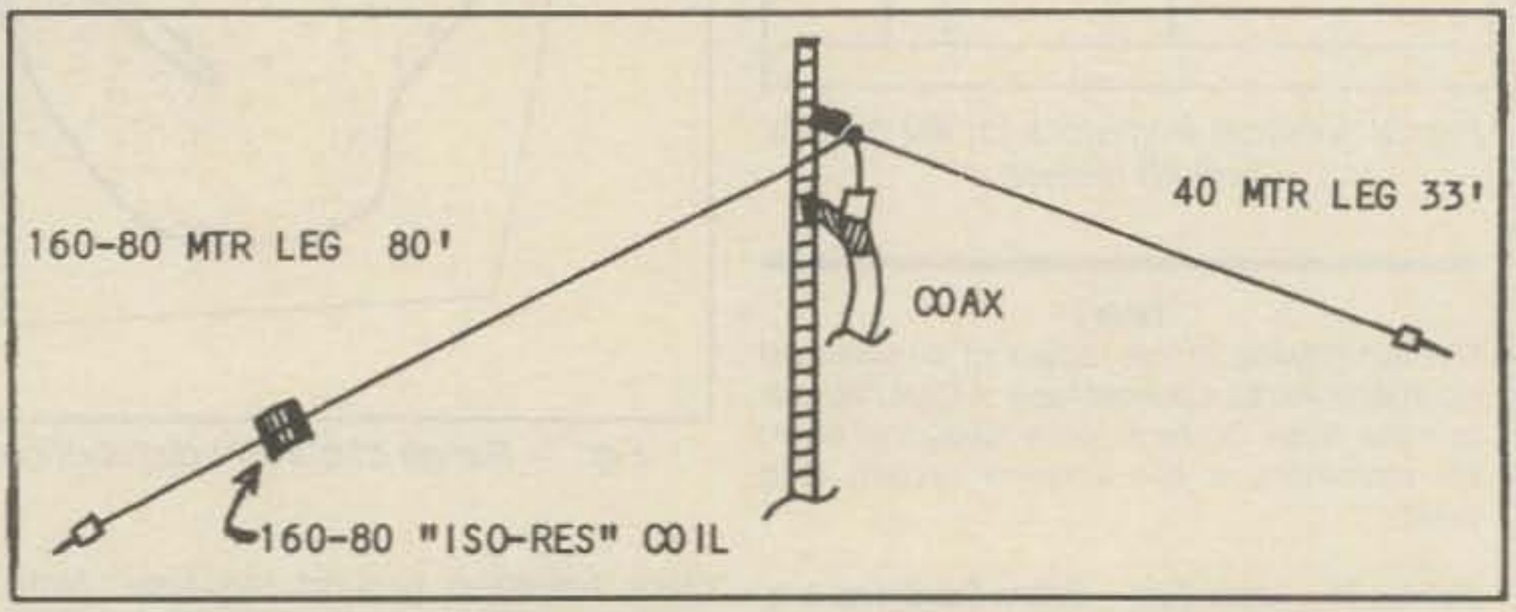
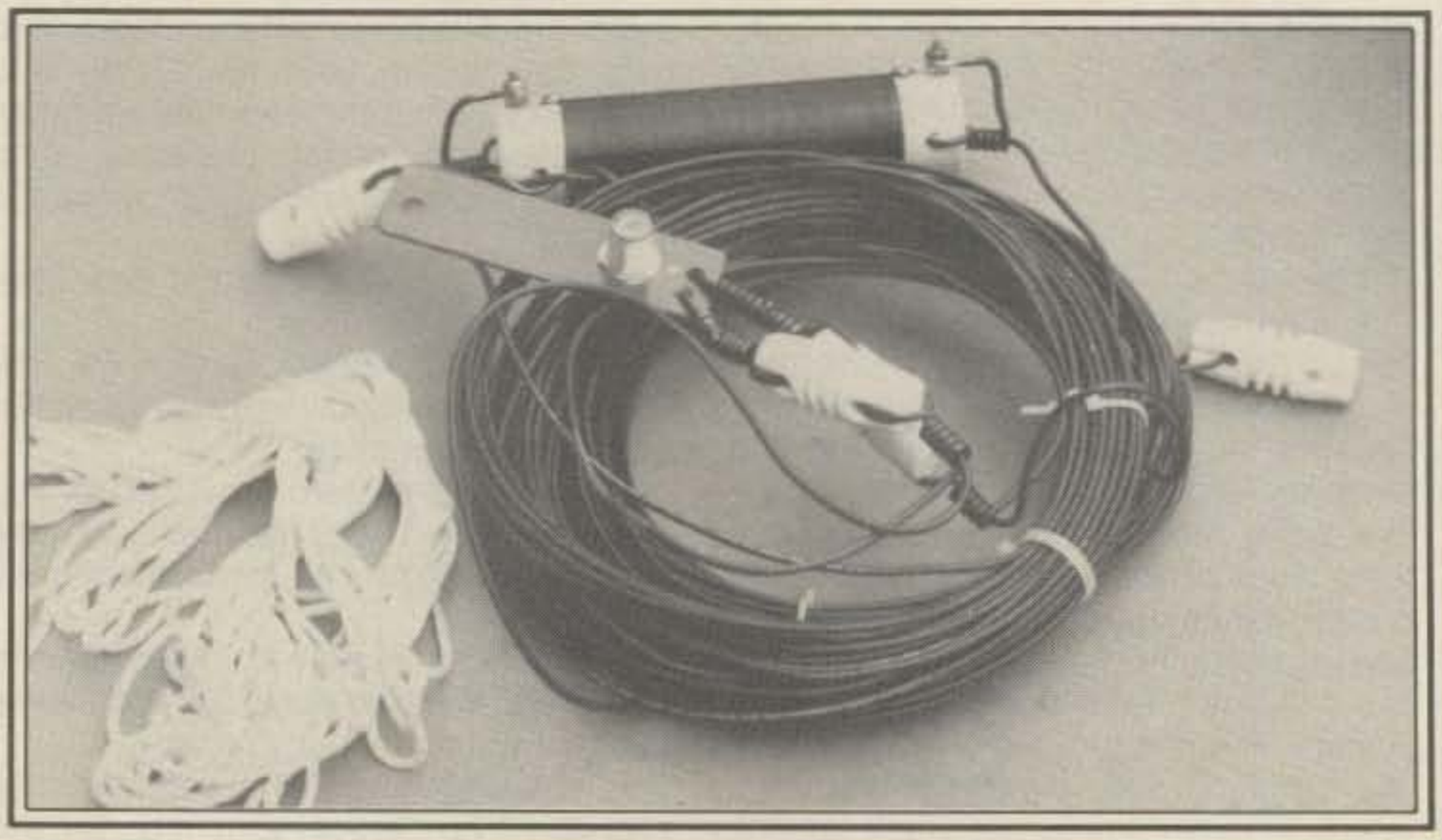


Fig. 1– This is a drawing taken from the instruction manual and it provides all pertinent details.

This photo shows the antenna as it comes out of the carton. The mounting bracket with the SO-239 coax fitting needs another u-bolt hole drilled. The u-bolt is used for securing the bracket to the tower or mast.



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ment ends have end-insulators and a special nylon rope is provided for tieing off the insulators.

The instructions are quite clear and precise on the tune-up procedure. The manufacturer states that when tuned, the VSWR is less than 2 to 1 across the entire 40 meter band. They also state that on 80, a bandwidth of 200 kHz for under 2 to 1. A bandwidth of 80 kHz for less than two to one on 160. My measurements were not quite that good. With the antenna installed at 40 feet I found the lowest, or resonant point, SWR was 1.4 on 40 meters, at 7150 kHz. The SWR went to about 2.5 to 1 at the band edges. On 80, my measurement showed a bandwidth of 160 kHz under 2 to 1 and 1.3 to 1 at resonance. On 160, my figures agreed with the manufacturer with resonance at 1.2 to 1. However, in my case, I find the SWR measurements more or less academic. I made the above measurements without a Transmatch in the line. However, I then used the system with a Transmatch and I was always looking at a 1 to 1 50-ohm load. I might add that any Transmatch worthy of the name will match this system because the feed point is close to 50 ohms in all cases and any reactive component in the feed impedance is not that high.

I would be remiss if I didn't point out that this antenna does not use a "trap" on 80 and 160 meters. The unit that Alpha-Delta calls the "ISO-RES" is an extremely rugged loading coil (it easily handled 1500 watts p.e.p.— and would probably handle more!)

Tune-up is fairly easy. I used an SWR bridge and took a run across 40 meters looking for resonance. I had not pruned any wires at this point. I assumed (correctly) that resonance would be below 40 meters because the wire would be too long (always a good way to start—if you make the wire too short you have to solder or add wire some other way). The instructions say to prune the wire but I preferred to scrape away the insulation and fold the wire back on itself through the end insulator and connect it with a clip. I did this scraping of insulation in increments of a foot or so and kept taking frequency runs to determine the resonance point. Once I found the resonant length I made a permanent connection. Maybe I should explain "frequency runs" and finding resonance because some readers may be new amateurs and not know how.

Many amateurs who cut an antenna to formula length often wonder if the dog-gone thing is resonant or not. There is a rather easy way to find out. This is accomplished by using and ordinary SWR bridge and taking a frequency run across the desired band. One simply puts an SWR bridge in the 50 ohm feed line. Run enough power from the rig to get a full-scale reading in the forward position and take a reading at the bottom of the band. Write down the forward and reflected readings and then move up about 50 kHz and repeat measurements. Keep doing this across the entire band. If you are lucky, you'll find a dip in the readings and that indicates (more or less for you engineers reading this,resonance of the system, please note I said "system"). But let's assume you don't find a dip in the readings. Well, if the reflected readings beginning at the bottom of the band, say 3500 kHz, start low and get high at the top end, 4000 kHz, that means the antenna is too long. Resonance is probably outside the bottom end of the band. Of course, the reverse is true. If the readings (reflected) diminish as you get to the top end, then the antenna is too short. One last thing, many times resonance does not produce a 1 to 1 match, in other words, maximum forward for minimum reflected. This merely means, usually, that the impedance of the antenna has reactance present in the feed point or several other factors are getting into the act. Such things as height above ground, nearby objects and other things can make the antenna have an impedance other than 50 ohms. Of course when using a Transmatch, one tunes the entire system to a 1 to 1 match. Some day, I'll write a discussion of resonant antennas versus resonant systems—there is a difference.

However, this is a product review and I am not being fair to the manufacturer because I should keep to the subject, the DX-A Antenna. In any case, the foregoing discussion will help you in tuning and adjusting the twin sloper because that's the way I did the job. Don't misunderstand, the instructions are more than satisfactory and one should be able to get the system tuned without any problems. However, there are cut and tune adjustments to be made in this installation so the user should be aware of that fact.

The system proved to be a good performer. I had an 80 meter dipole on another support so I got to compare the two. On 40, I have a loaded quarter wavelength dipole that is rotatable so I could check against that. On 80, my dipole was higher, and horizontally polarized and most of the time, as it should have been, was the better performer— but by very little. In several instances, mostly on long DX, the sloper was a much better performer. On 40, the sloper in most instances was about the same as my loaded dipole. However, the sloper did provide better signal reports on long DX again.

For anyone with a tower and a triband beam on it, installing a DX-A is a good way to add the three lower bands. One more point here: I reduced power (about 200 watts) and because I was using a Transmatch, I tried tuning up on the 10.1 MHz band. The DX-A did not show any resonance on that band. However, as the SWR was not too high, I figured it wouldn't hurt anything to try it on 10.1. I worked a bunch of contacts, including DX!

The antenna is not expensive. The list price is only $49.95 which isn't too bad in this day and age. the antenna is made by Alpha Delta Communications, Inc., P.O. Box 571, Centerville, Ohio 45459, (513-435-4772). CQ

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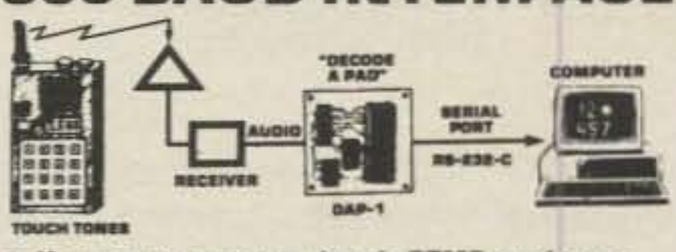

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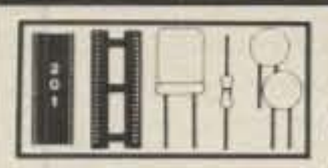

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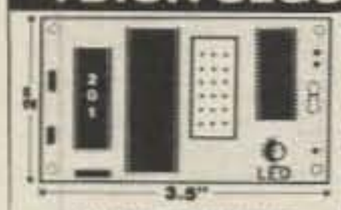

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