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# Try A Trapped Dipole

## -- save copper and coax!

Often the need arises for a permanent low cost antenna. A dipole or inverted vee is a good choice. They are easy to install and cheap to build. One of the disadvantages of such antennas is that they are only usable on a single band, unless they are fed with an open feedline and an antenna tuner.

Most traps used in amateur radio multiband antennas are made of a lumped inductance and capacitance in parallel. I tried to overcome this.

By placing a trap 32 feet 6 inches from the feedpoint, a current maximum will occur at 7200 kHz. With the correct wire length on the outside end of the trap, the antenna can also show current maximum at the feedpoint for 3900 kHz. In both cases, the dipole functions as a halfwave dipole.

Why not add another antenna under the existing 80 and 40 meter wire, fed at the same feedpoint, with another trap tuned for 21300 kHz? An outside wire of the correct length will give current maximum on 80, 40, 20 and 15 meters, all functioning as a halfwave dipole.

With the help of my XYL, I came up with this antenna. The information for construction follows. I hope it will do as well for you as mine does for me!

The dimensions given here are resonant at 3.9 MHz, 7.2 MHz, 14.3 MHz and 21.3 MHz. For 40 meters it's 160 turns, for 15 meters, 55 turns. Number 12 magnet wire is wound on a 1/2 inch rod, close wound. The coil is removed from the 1/2 inch rod and placed inside the 1/2 inch PVC pipe.

The PVC pipe is cut to 18 inches for 40 meters, 10 inches for 15 meters. The PVC is then placed inside the 7/8 inch ID, 1 inch OD aluminum tube. The aluminum is cut to 16-1/2 inches for 40 meters, 8-1/2 inches for 15 meters.

Drill a hole in the center (ends) of eight 1/2 inch PVC caps, and mount stainless steel eye bolts on them. (Cut off the eye bolts as short as possible, so they will not go into the PVC tube.) Now drill a hole to fit the #12 magnet wire below the eye bolt in each end cap. See Fig. 4.

Cement one end cap onto the PVC tube after bringing the end of the coil wire through the small hole. Secure a tin solder lug on one end of the aluminum tube, as shown in Fig. 3, with a pop rivet or small screw. Do not use aluminum or copper for the solder lug. Slide the aluminum tube over the PVC with the solder lug end first, and solder a jumper from the lug to the coil wire as close to the PVC cap as possible.

You are now ready to tune the traps. The traps were adjusted to frequency through the use of a grid-dip meter (checking on a receiver for accuracy). The coil can be changed quite easily if an extra turn or two is put on for adjusting purposes. The coil can also be wound with spacing and compressed or extended to get the traps exactly on frequency. Tune to 7.2 on 40 meters. Tune to 21.3 on 15 meters.

After the tuning is completed, the end cap can be cemented on. The two wires sticking out of the end caps are to be soldered to the antenna wires.

My antenna is supported in the center about 32 feet high and 10 feet at the ends. I show an swr of 1.2 to 1 on 3.9, 1.3 to 1 on 7.2, 1.3 to 1 on 14.3 and 1.2 to 1 on 21.3. The CW bands can be worked with the swr less than 2 to 1 on all CW bands.

The overall length is 106 feet, and it can be installed as an inverted vee in a lot less than 90 feet. ■

**Parts List**

PVC cement
8 1/2" PVC caps
56" of 1/2" PVC pipe
1 balun, 1:1
4 ceramic insulators
135' of antenna wire
50" of 1" aluminum tubing (a discarded lawn chair will do)
80' of #12 magnet wire

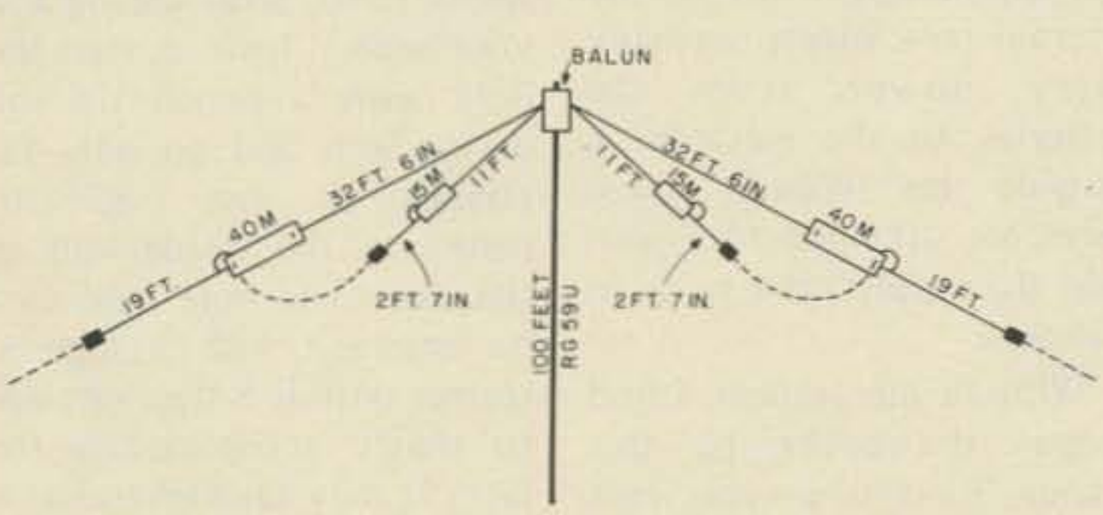


*Fig. 1.*

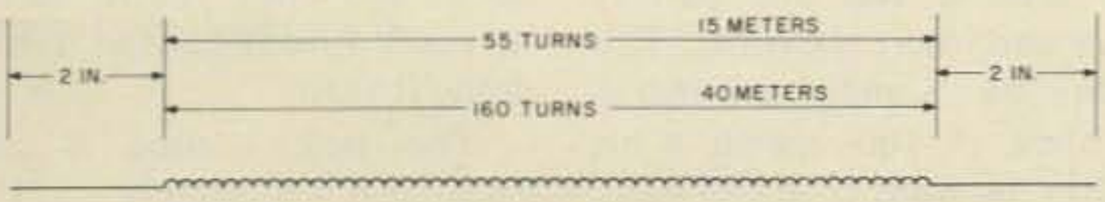


*Fig. 2. Don't forget to leave 2" on each end of each coil.*

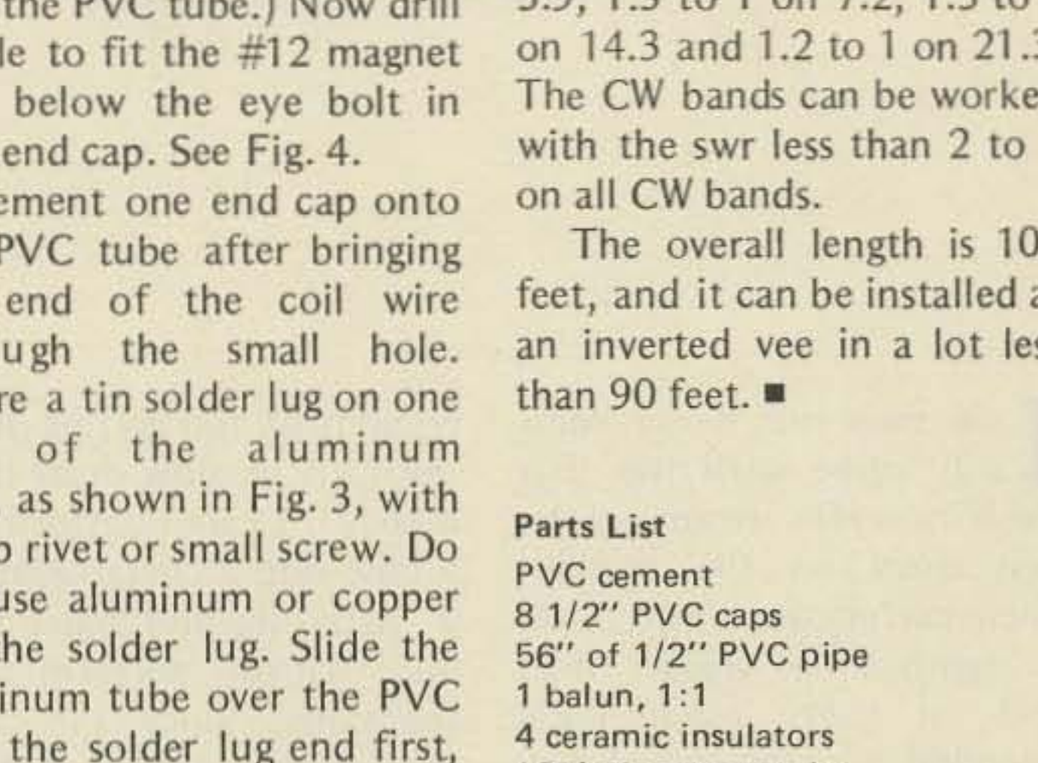


*Fig. 3.*


*Fig. 4. The coil will expand to make a nice fit inside the PVC tube. The aluminum fits snugly over the PVC, and the cap rims help hold the aluminum tube in place. It all makes a very nice looking assembly.*