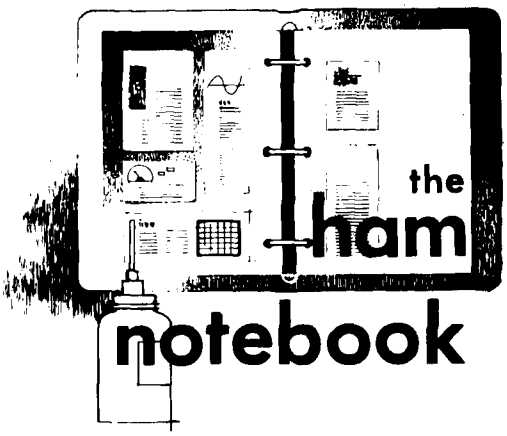

a 2-meter halo antenna

After obtaining a 2-meter multimode radio and operating it mobile for a short time, I came to a conclusion: 2-1/2 watts output and a 5/8-wave vertical wasn't good enough.

I decided to improve the antenna first; I could install my small 80-watt amplifier later for long trips. I decided to build a 2-meter halo since I'd worked several mobile stations who were using them, and they seemed to do a good job.

construction

The halo is a half-wave dipole bent into a circle (**fig. 1**). To make the insulator mounting block (**fig 2**), cut a piece of 1/2-inch thick plastic into a 2-1/2 by 3-inch rectangle. Cut a slot and drill the holes as shown in **fig. 2**.

The driven element or dipole is made from a 38-inch long, 3/8-inch diameter piece of copper tubing. Mark the center of the piece of tubing and bend it into a hoop measuring 12 inches in diameter. Drill a 9/64-inch hole at the top of the center mark on the dipole element. Secure the dipole element to the mounting block by inserting a screw through the dipole element and mounting block. Fasten with a lockwasher and nut. Insert a small piece of 5/16-inch diameter wood dowel into the ends of the halo element, leaving a 1-1/2 inch gap between the tubing ends. This completes the main element of the halo (see **fig. 1**).

To assemble the rest of the halo, refer to **fig. 3**. Mount the small plastic (*not metal!*) box under the insulator mounting block.

Following the details shown in **fig. 3**, drill the holes in the box and install the coax connector and gamma match capacitor. A variable capacitor of about 35 pF will work fine.

A 6-inch length of 3/8-inch diameter copper tubing is used for the gamma rod. Bend it around the halo's element to form it into a slight circle. Make a shorting bar now so you can secure the gamma rod to the halo antenna. (Any kind of easily bendable metal will work.) Be careful to keep the spacing between the gamma rod and dipole element to about 1-3/4 inch.

Insert one end of the gamma rod into the gamma match box and install the shorting bar on the other end.

Lay the halo on its side, with the open end of the gamma box facing up. Apply some 5-minute epoxy around the gamma rod and let it dry. Your halo is now finished and needs only to be tuned.

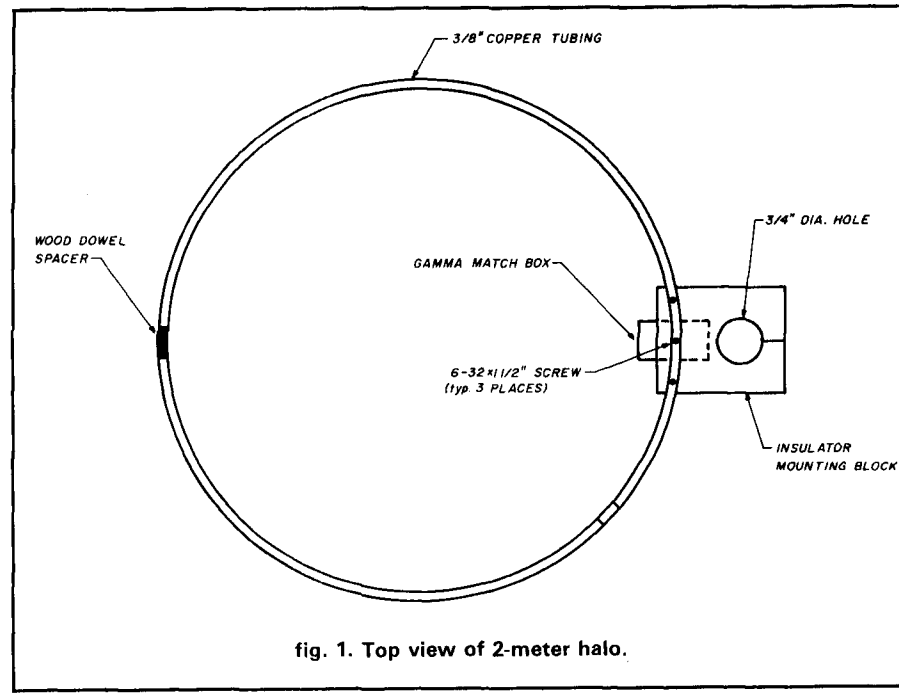

fig. 1. Top view of 2-meter halo.

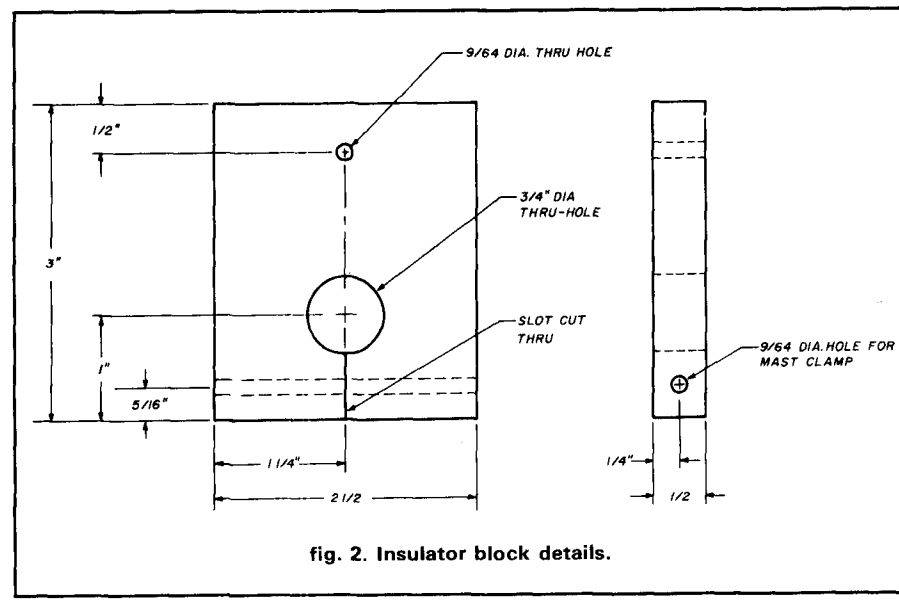

fig. 2. Insulator block details.

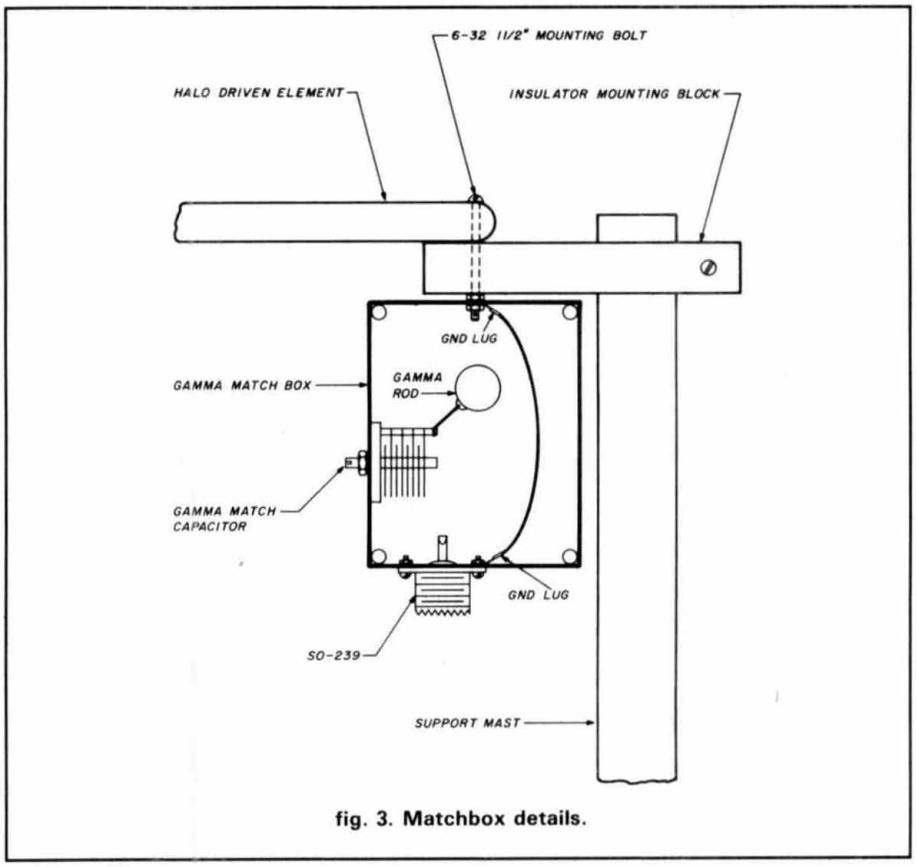

fig. 3. Matchbox details.

tuning

Mount the halo 5 to 6 feet above the ground or temporarily attach it to your car. Adjust the spacing on the driven element for minimum reflected-power indication. (Mine was lowest at an 11/16-inch spacing.) Do the same for the shorting bar, sliding it back and forth along the gamma rod. (My lowest SWR was 1 inch from the end of the gamma rod.) The final adjustment is made by tuning the gamma-match capacitor for minimum reflected power. My final SWR is 1.2:1 on the halo.

Remove the halo and seal the gamma match box. Plug the end of the gamma rod with RTV or epoxy. Coat the wood dowel spacer on the driven element with epoxy; this will waterproof it and keep it from slipping. The last step is to spray paint the assembly with a nonlead-based paint.

The 2-meter halo has increased my range significantly. While on vacation in Oklahoma, I worked West Virginia, New Jersey, and Maryland during an E opening. (My normal range is 50 to 100 miles with only 2-1/2 watts.)

One final word of caution: if you build and mount the halo, be prepared for lots of stange stares and questions. You'll get plenty of them.

Jerry Felts, NR5A
ham radio

short circuit

MMIC multiplier chains

In **fig. 5** of N6JH's article, "MMIC Multiplier Chains for the 902-MHz Band" (February, 1987, page 72), all values indicated as "μF" should be corrected to read "pF." Note too that coil L1, which can be seen just to the left of the crystal and directly above the partially meshed plates of the variable capacitor (**fig. 7**), is not the same as the coils in the multiplier. L1, which is five turns of No. 24 (AWG), is air-wound with an interior diameter of about 0.2 inches — this dimension is not critical because only broad resonance is needed to select the correct crystal overtone.