By Dick Stroud, W9SR

Six Meters from Your Easy Chair

Take one abandoned lawn chair, add some ham ingenuity, and voilà: an effective 6 meter squalo.

If you have a discarded aluminum folding lawn chair, chances are you have the essential elements of an effective 6 meter antenna. After one of our lawn chairs was scrapped because of deteriorating fabric, the aluminum legs were given a rebirth as the elements for a 6 meter squalo. See Figures 1 and 2.

The thin wall tubing measures 0.975 inch OD and the critical 90 degree bends have been neatly done by the chair manufacturer. You will only need to cut the tubing to the dimensions shown. A 12 inch length of 1 inch ID tubing telescopes over the elements to join the two sections. A 3 inch length of Teflon is inserted inside the tubes at the opposite side to stabilize the assembly. One inch Teflon rod (available from Small Parts, Inc[1]) can be turned down as necessary by any machine shop. The entire assembly is bolted together with stainless-steel hardware.

The two capacitance discs are of 0.050 inch aluminum sheet and are cut to a diameter of $3\frac{3}{4}$ inches. A center hole is cut in each disc to just clear the tubing OD. Small L brackets hold the fixed disc to the tubing using the same screw that attaches the Teflon spacer. The other disc, which is adjustable, also uses two brackets but one leg of each bracket is extended parallel to the element and clamped in place with a stainless steel hose clamp. The capacitor plates should be parallel and will be about $\frac{15}{16}$ inch apart if the dimensions are followed.

The gamma assembly is made from a

[1]Small Parts, Inc, 13980 NW 58th Ct, PO Box 4650, Miami Lakes, FL 33014-0650, tel 800-220-4242 (orders), 305-557-7955 (customer service), **smlparts@smallparts.com**; **www.smallparts.com/**.

Figure 1—Before: **The humble lawn chair, soon to be transformed.**

Figure 2—After: **The 6 meter squalo, ready for action.**

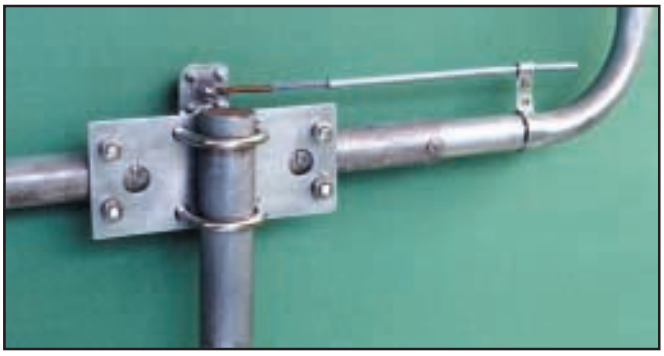

Figure 3—Gamma tuning assembly and mounting system. Two $\frac{1}{2}$ inch holes are drilled through the aluminum mounting plate to clear the screw heads when the antenna is in the vertical plane.

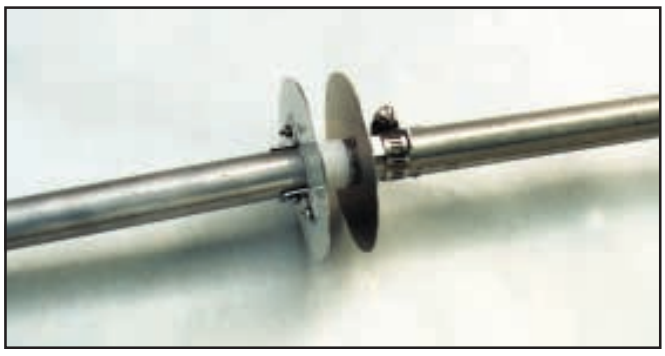

Figure 4—Detail of the tuning disk construction. The fixed disk is held in place with a screw through the assembly, and the movable disk is clamped using a stainless hose clamp. A Teflon spacer provides support and high voltage insulation.

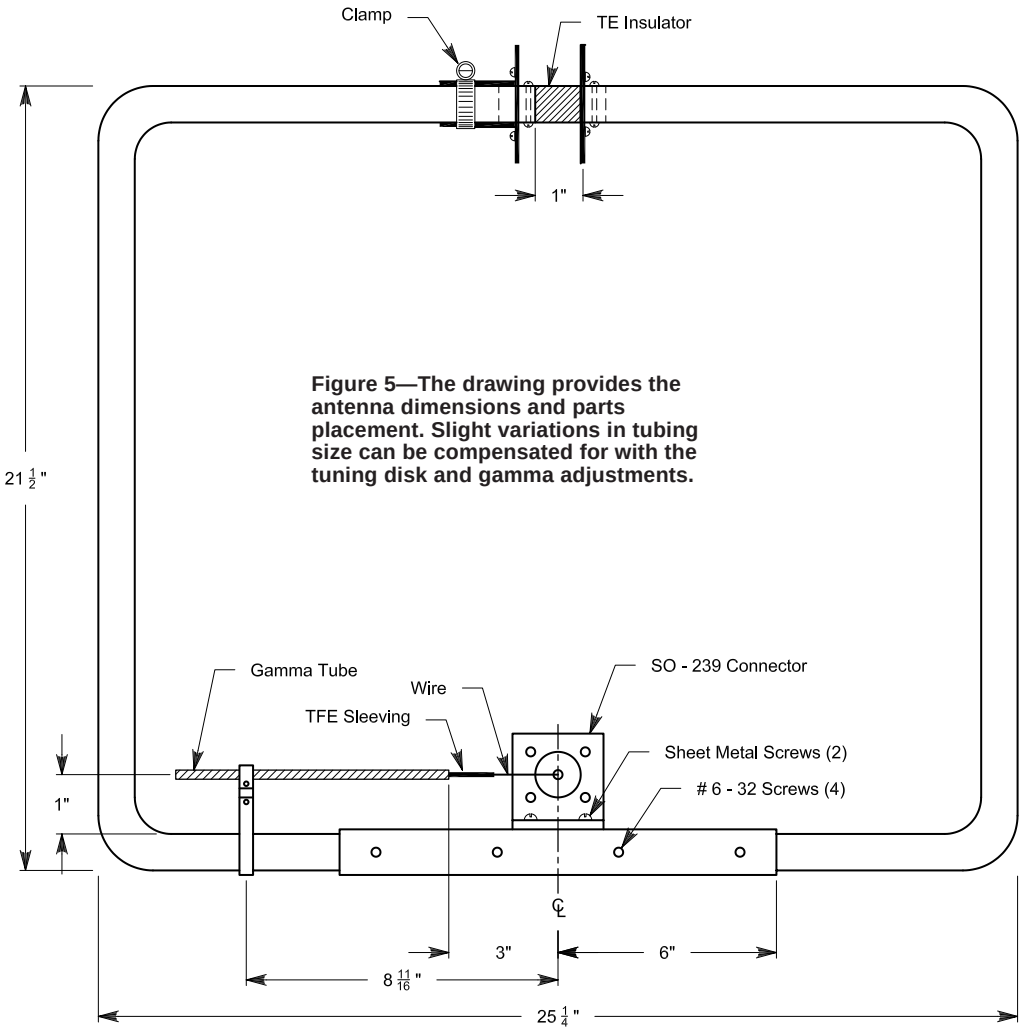

Figure 5—The drawing provides the antenna dimensions and parts placement. Slight variations in tubing size can be compensated for with the tuning disk and gamma adjustments.

7¼ inch length of 0.225 in OD thin-wall aluminum hobby tubing with the center element being a 9⅜ inch length of 0.125 inch diameter (8 gauge) soft copper wire. Teflon sleeving over the wire makes for a good fit inside the aluminum tube. The sleeving should extend ½ inch beyond the length of the wire to provide necessary insulation. A ½ inch wide double clamp is formed of 0.030-inch aluminum sheet to support the gamma tube 1 inch above the element. The wire is soldered to the center pin of an SO-239 connector mounted in an aluminum bracket at the center of the assembly (see Figure 2). The bracket is fastened to the tubing at the center with sheet metal screws.

Adjustment is made using an MFJ-259B antenna meter with the antenna supported on a mast, in the clear and away from metal objects. Adjust the tuning discs by temporarily loosening the hose clamp and sliding the adjustable disc as necessary. (See Figure 3.) This is a critical adjustment and should be done carefully. If the minimum SWR is above your desired frequency, the discs should be moved closer together and if the frequency is below the desired frequency they should be moved farther apart. Because of the high Q this will probably take several attempts. The hose clamp should be tightened when the frequency is properly set. The next step is to adjust the gamma rod, if necessary, to lower the SWR to 1:1. This is done by moving the gamma attach point and by sliding the tube through the clamp to change the series capacitance. Chances are you will be at a very low SWR with the dimensions shown. After alignment the 2:1 SWR bandwidth is 333 kHz.

The 0.125 inch thick aluminum mounting bracket is 2¾ inches by 6 inches and stainless U bolts are used to attach the antenna to a mast. (See Figure 4.) The antenna can be used vertically or horizontally by turning the bracket 90 degrees. The antenna is ideal for mounting horizontal on one leg of a triangular tower, in which case the coax should enter from the top with the connector sealed to prevent moisture entry. Construction details are provided in Figure 5.

The antenna was tested in the vertical plane during the July CQ VHF contest and 47 grids were worked including Cuba and Puerto Rico. This was with the antenna on a test stand at 20 ft above ground and with 40 W output. If placed higher, such as on an existing station tower, the antenna would do an outstanding job. Since it is not directional it is good for monitoring for surprise band openings that could be missed with the station Yagi.

It could be used for mobile operation with a suitable support. Without the mounting hardware, the antenna weighs less than ½ pound.

Dick Stroud, W9SR, is a retired electrical engineer who spent over 30 years designing military electronics equipment. He was first licensed in 1939 and obtained the Extra class ticket in 1952. You can contact the author at PO Box 73, Liberty Center, IN 46766-0073; **dikw9sr@citznet.com**.