

Oil up the lathe and get set to build another of K3WBH's mechanical marvels. Most of it can be built with simple tools you probably have and the results will certainly be worth the effort.

A Discone Antenna For 10 And 6 Meters And Lo-Band Public Service Monitoring

BY T.E. WHITE*, K3WBH

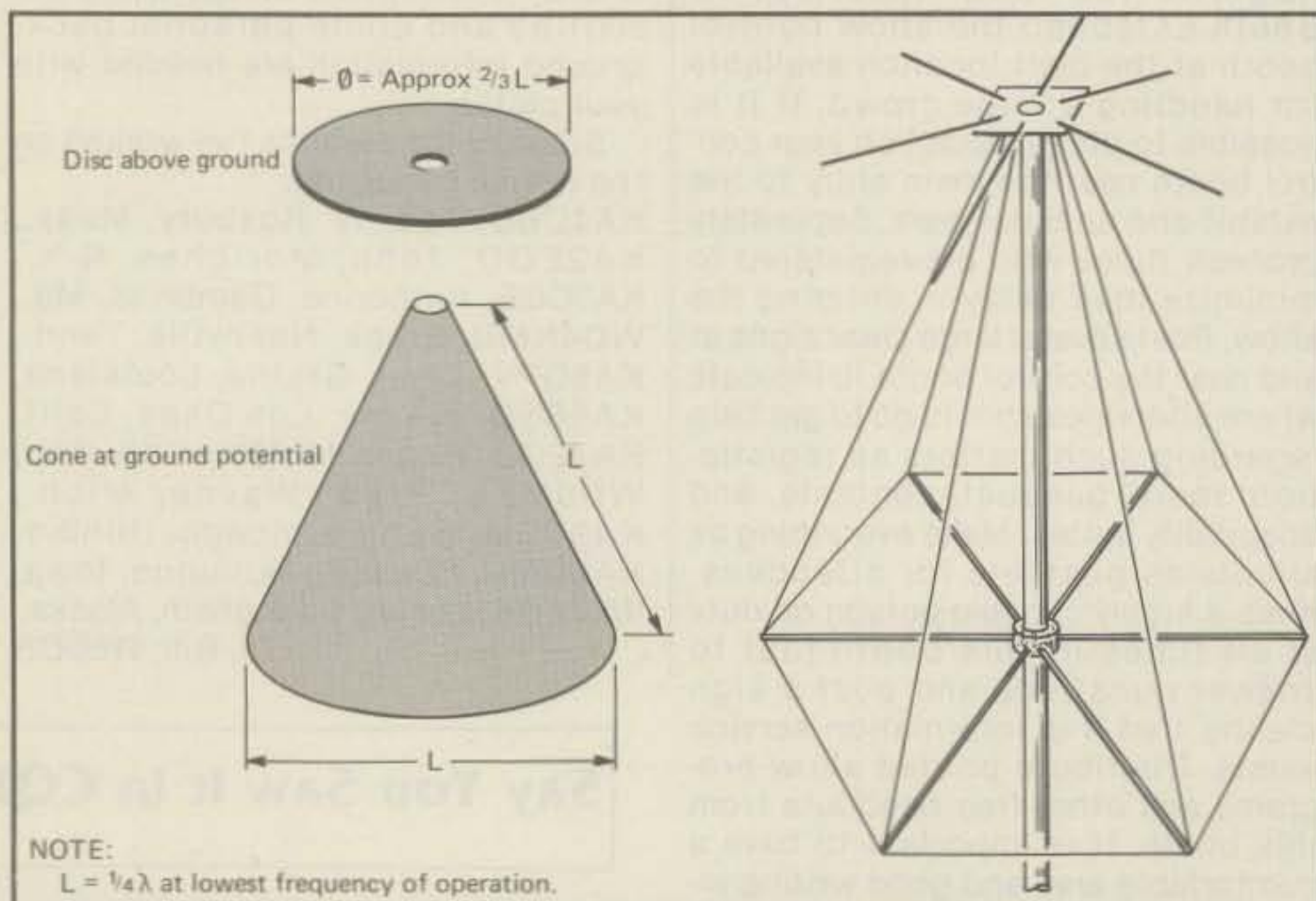


Fig. 1 - The basic discone antenna and its evolution.

“What the heck is that?” will echo through the neighborhood when you proudly erect this dashing, dramatic discone.

Amateurs wishing to get on 10 and 6 and chase sunspot and sporadic E DX will get very good results with this low-angle vertical antenna, also FB for working 6 meter repeaters. A single feed line switched at the shack between rigs serves both bands.

For those not familiar with the discone, it is a very broad-band

radiator, working from its low cutoff frequency up to theoretically infinite limits. By making the cutoff (the point where the skirt is less than $1/4 \lambda$) 28 MHz, we can work 10 and 6 (and even 2) and, if we want to, listen in on public safety, transportation and other services in the 30-50 MHz band.

The discone evolves from a solid disc atop a hollow cone (fig. 1). It is not necessary to maintain plane surfaces, however. We can simulate them by rods, wires, tubes, netting, etc., and make a much lighter antenna in the bargain. The radials are bridged between tips to make a web or “hem.”

This may be dispensed with at higher frequencies but is helpful at low v.h.f. in decoupling skirt from disc.

Feeding is a breeze. 52 ohm coax attaches directly with no matching devices needed. The antenna is largely independent of ground reflections, works well at most any height, and is far superior to the stick-and-radials variety of vertical antenna. In fact, no other single-unit vertical equals it for low radiation/reception angle. You'd need many dipoles piled up vertically to come close, and then you wouldn't be frequency-independent.

While the discone requires some lathe work or access to a metal shop, construction is straightforward. Ex-

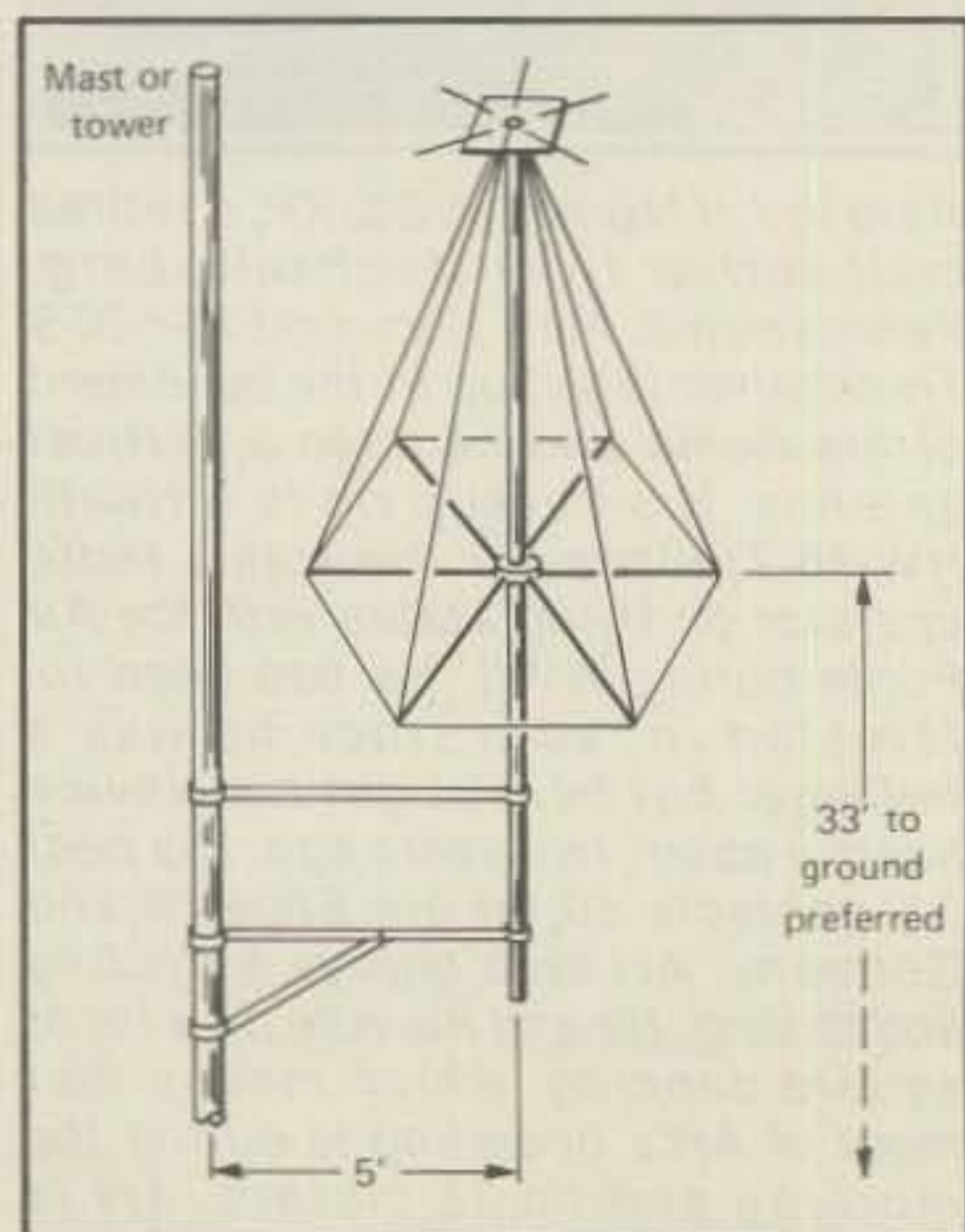


Fig. 2 - A side mounted discone antenna.

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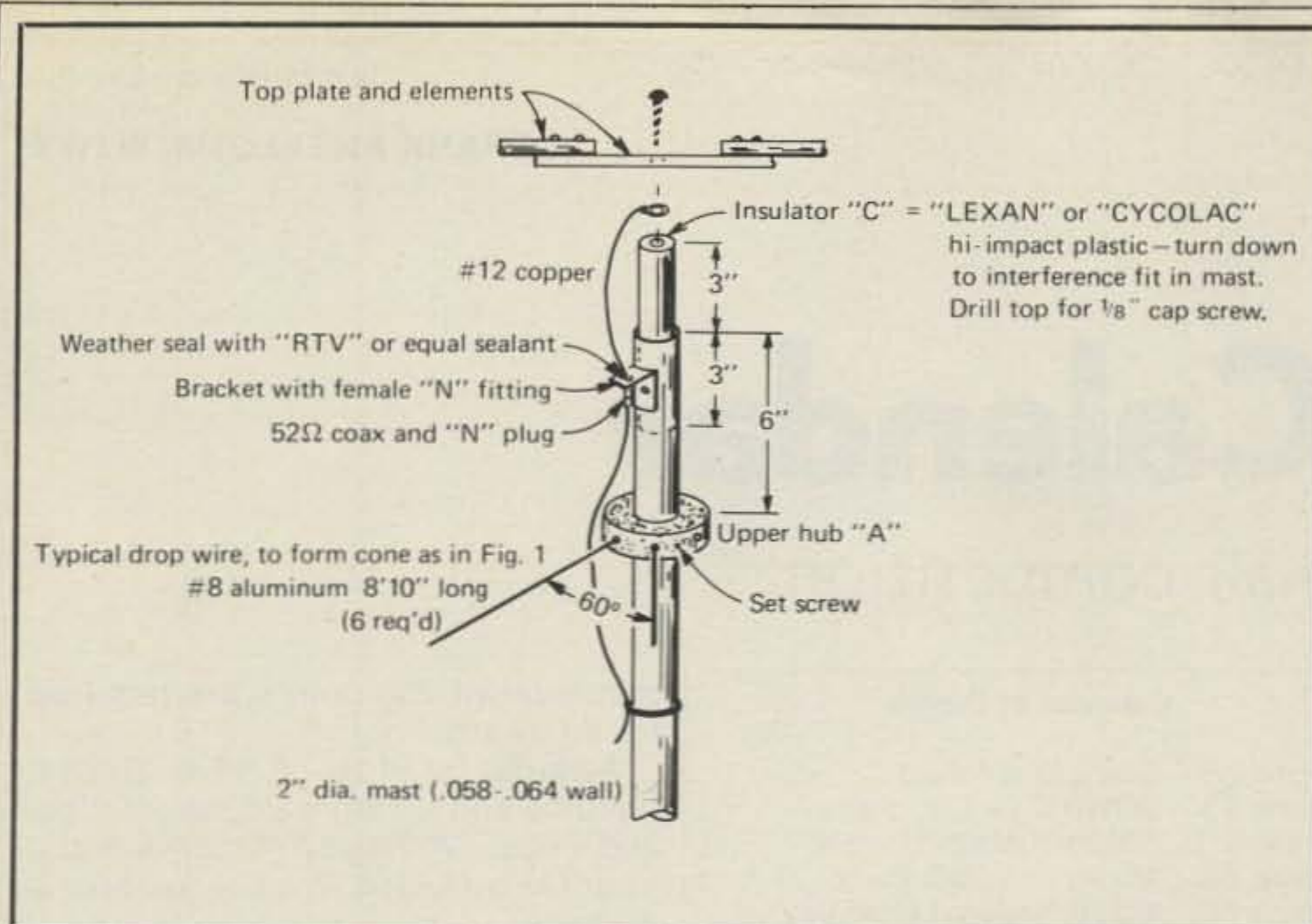


Fig. 3 - The assembly of the top junction.

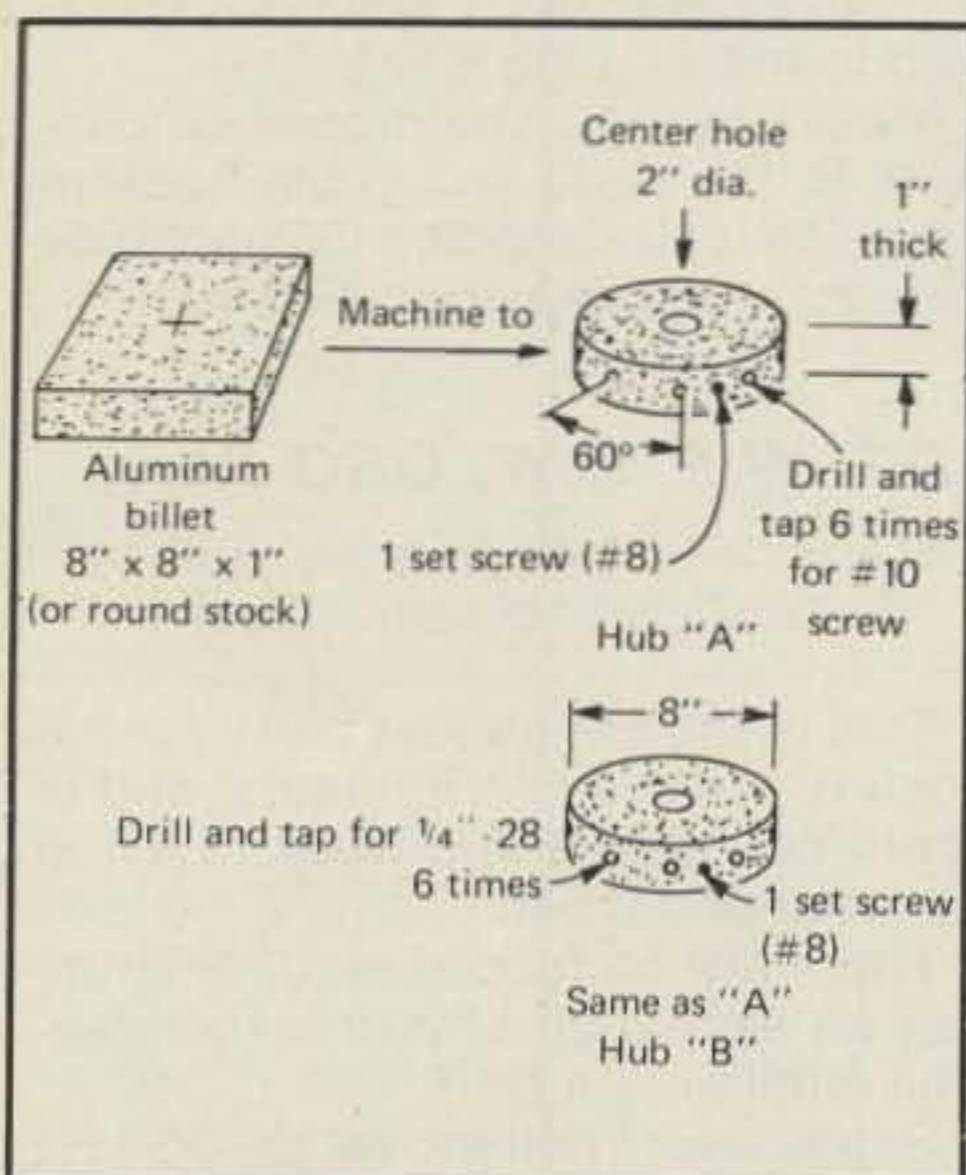


Fig. 4 - Machining details for hubs A and B.

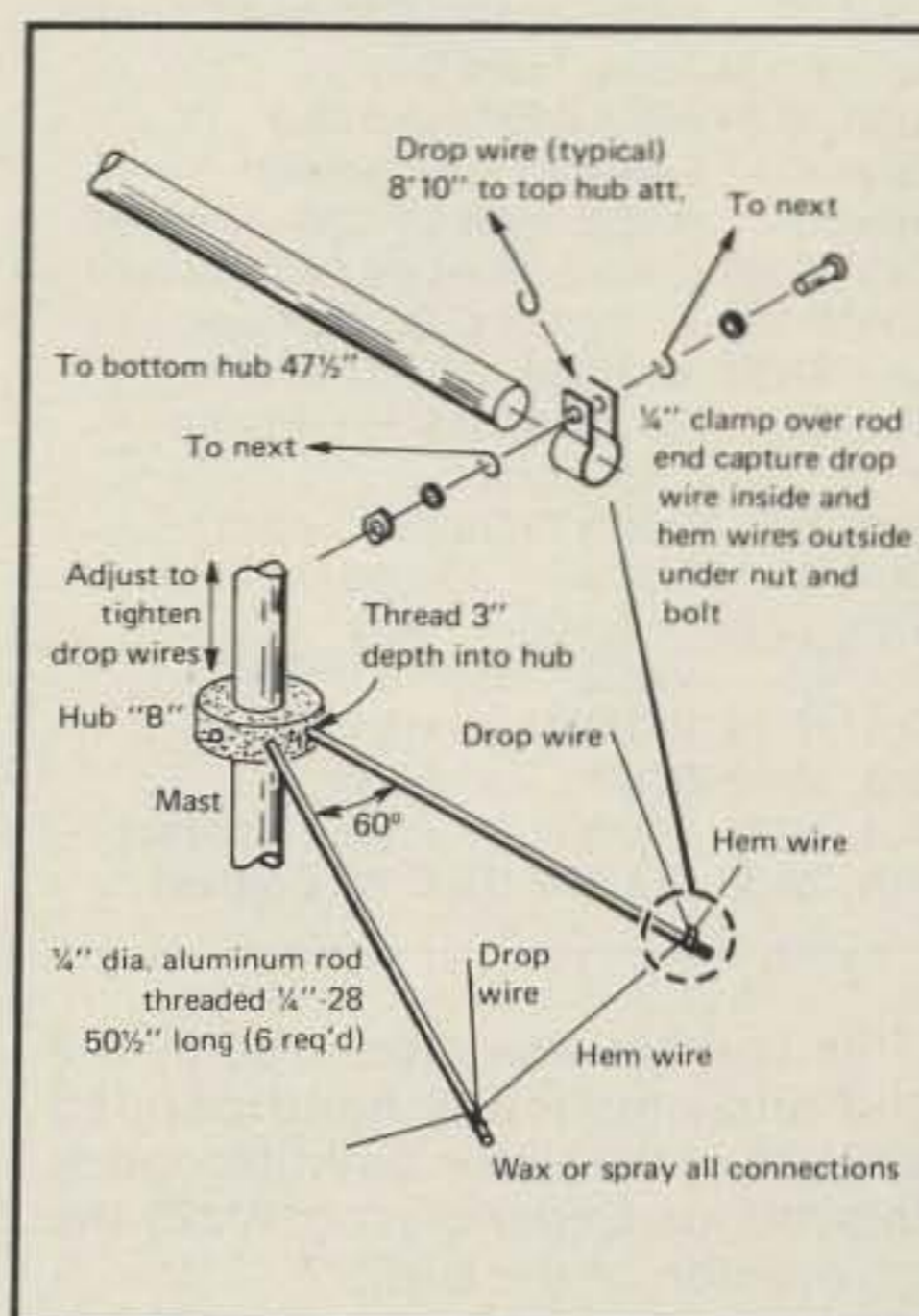


Fig. 5 - Assembly of the lower portion.

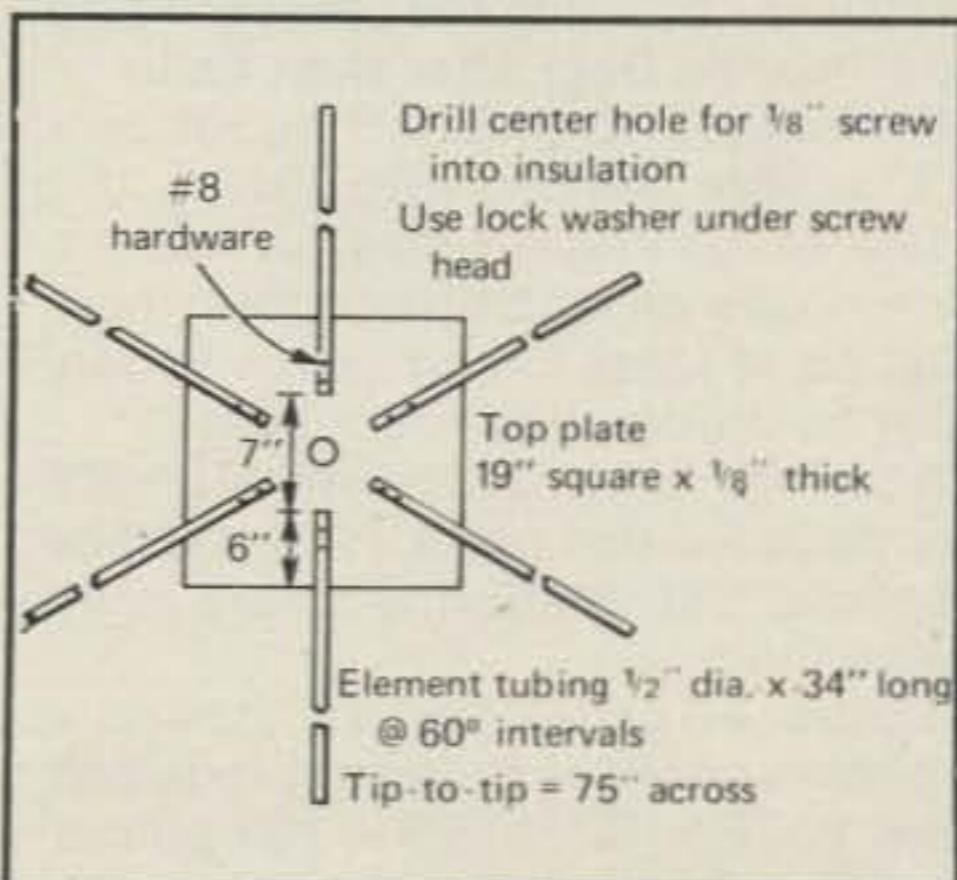


Fig. 6 - The top plate and element assembly.

cept for the hubs, only hand labor is required. It can be mast-top mounted or hung out the side of a tower (fig. 2).

The top assembly is "live" at all times with respect to lightning, especially if mast-top mounted. When not in use, the coax should be disconnected from the rig and plugged into a receptacle whose inner conductor lug is shorted directly to ground.

The secret of 10 and 6 meter DX is not Texas kilowatts or 50 foot booms. It is low wave angle. Those sporadic E ionized clouds are often far from your QTH. To bounce off them with maximum effect requires the lowest "angle of approach" you can possibly get. Spend a few hours making this "torn umbrella" and forget the 15dB yagis. You'll be glad you did. ☐

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