

# A 5/8-Wave Vertical Antenna

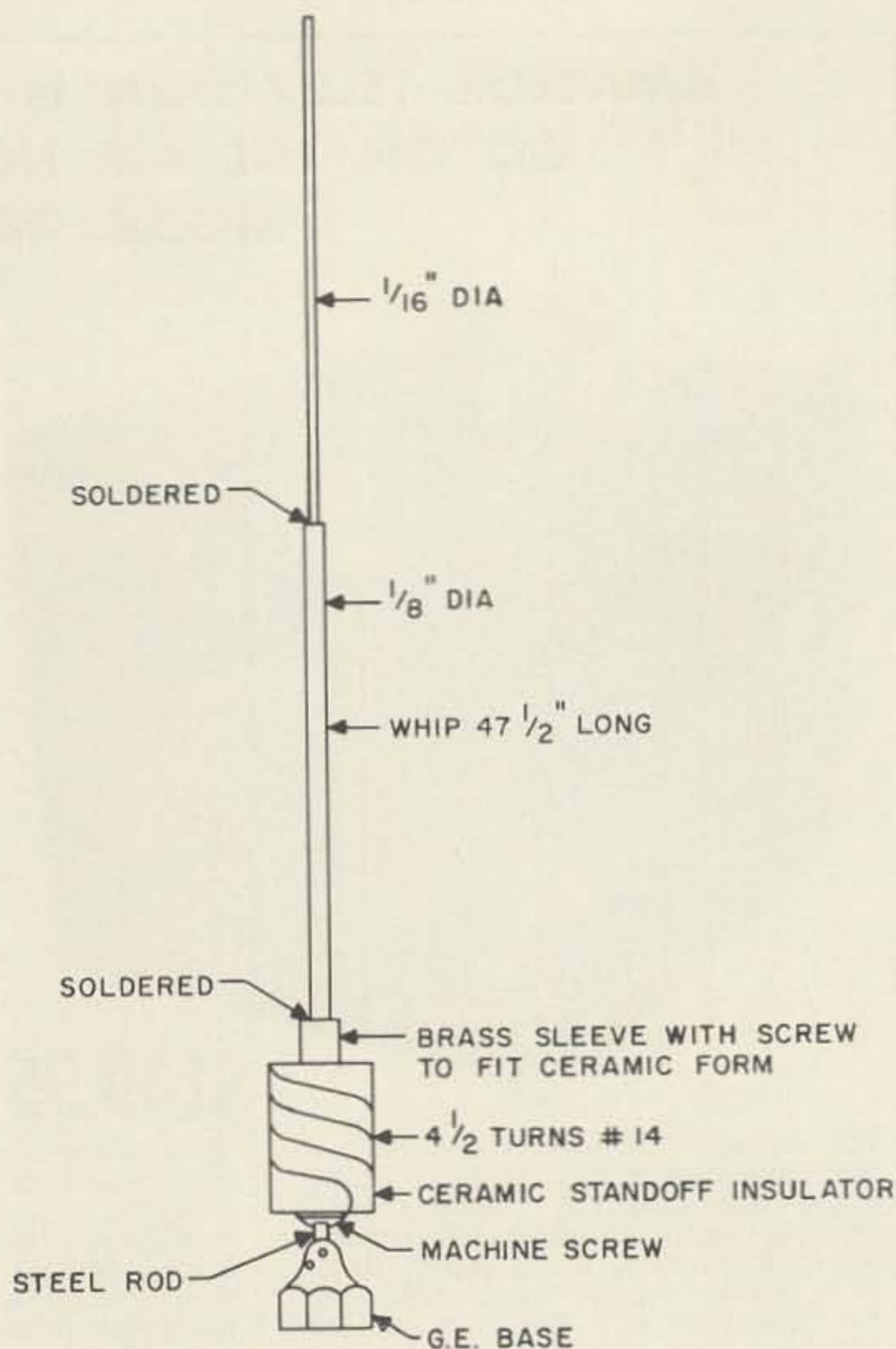
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Having a desire to improve coverage from my mobile station operating on 146.94 mc, I have scoured every ham magazine and publication that I could find, looking for information on the  $\frac{5}{8}$  wavelength vertical antenna. Finding none, I decided to try and design one myself. The following is the result of about two days' experimenting, and about four hours work on the final assembly and adjustment.

The antenna has a  $\frac{5}{8}$  wavelength radiator, based loaded to resonance as a  $\frac{3}{4}$  wavelength antenna.

The coil form is a  $\frac{5}{8}$ " dia.  $\times$  2" long ceramic standoff. The whip is made of a 30" length of  $\frac{1}{8}$ " diam. steel rod, with a length of  $\frac{1}{16}$ " rod soldered to it to make a total length of  $47\frac{1}{2}$ ". The whip was made in this manner because I could not find any material of suitable length. The rod is a stock item at most hobby shops and model stores.

A machine screw which would fit the ends of the ceramic form was drilled through the center with a  $\frac{1}{16}$ " drill. A short length of  $\frac{1}{16}$ " steel rod (the harder the better) was soldered in the resulting hole so that the rod is even with the end of the screw. The rod was then cut to a suitable length to fit in the base section of a G.E. rooftop antenna (the screw-on whip base). The base of the whip is inserted in a brass coupler made from a  $\frac{1}{2}$ " length of brass tubing that has been tapped for a machine screw that will fit the ceramic coil form. A machine screw is screwed into



the coupler for a length of  $\frac{1}{4}$ ", the base of the whip is inserted from the opposite end and the three are then soldered together to make a rigid unit. Care should be taken to keep the solder off the threads of the machine screw.

The whip and the screw with the steel rod are screwed tightly into the ceramic form (not so tight as to break the ceramic).

A length of #14 copper wire is then attached around the head of the machine screw. A coil of  $4\frac{1}{2}$  turns, spaced about  $\frac{1}{8}$ ", is then wound on the ceramic form, and the end of the wire wrapped around the base of the whip. Both ends of the coil should then be soldered in place. The whip is then mounted on the antenna base by inserting the steel rod in the base and tightening the two set screws.

The antenna is adjusted by spreading the turns or squeezing them together while watching the reflected power on an accurate reflected power meter. A liberal coat of coil dope will hold the coil in place very well.

With this antenna, I have realized a gain of about 2.5 db. The antenna has been duplicated here with the same success by another local ham. It is easy to build, and I am sure that many other methods of construction will be brought to mind with just a quick look into the junk box. Try this one; it works.

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