

Here's how K1PCK combined two interests—sailing and amateur radio. This little antenna can be installed in a jiffy.

A 10 Meter Antenna For Maritime Mobile

BY JAMES M. MORAN*, K1PCK

High sea adventure and amateur radio naturally seem to go together. Both are modes that carry the spirit to those romantic far-away places. I have had the opportunity to combine both adventure modes into an ideal vacation plan aboard one of New England's many sailing schooners.

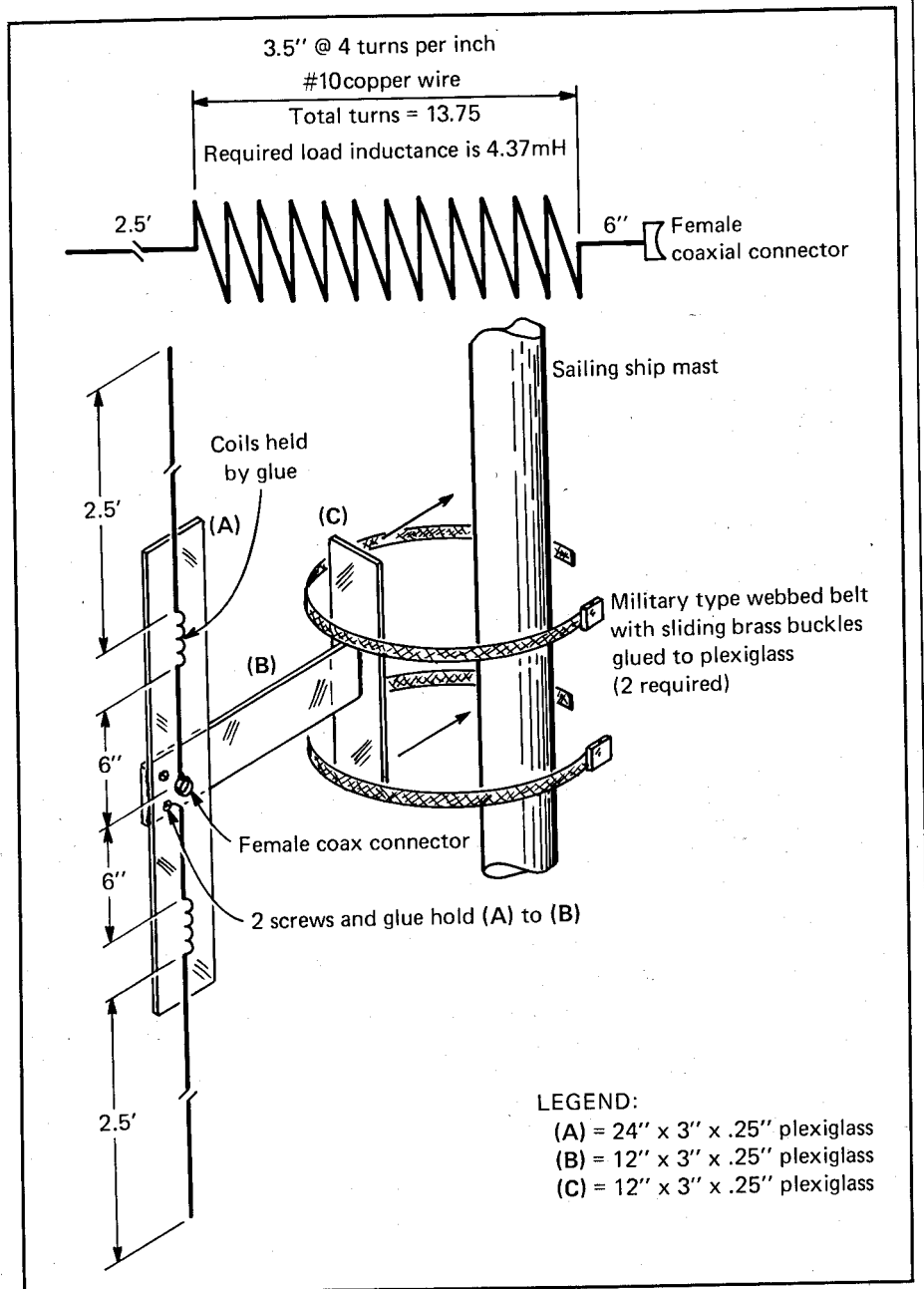
Today's solid state rigs present no serious space problems for the vacationing maritime mobiler. However, the antenna needs required by this high adventure are quite another story. To help overcome the restrictions that the salty amateur adventurer is faced with, I designed the following plans for what I call the Tall Ships' 28 MHz vertical dipole. The following instructions are for an antenna whose resonant frequency is cut for the lower c.w. portion of the 10 meter band. Other useful frequency specifications appear at the end of this article.

The rigging of a schooner is complex. It requires neatness and orderliness to sail properly. In designing my maritime mobile antenna, I had to take these restrictions into consideration and come up with an antenna that would fit into a small area on the mast where it would not interfere with the proper sailing of the ship. Vertical polarization is ideally suited to these restrictions, because a vertically polarized dipole mounted one wavelength above ground, or in this case saltwater, gives the best low-angle radiation for omnidirectional DX work. Also, with the use of loading coils, the compactness of this 5-foot dipole allowed parallel mounting to the wooden mast. It should be obvious that this type of antenna will only work with a nonconductive mast.

Before beginning this antenna project, you will need the following materials:

RG8 or RG58U feed line, any length, and two male coaxial connectors.

20 to 30 feet of No. 10 insulated copper wire.



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Fig. 1—The simple construction details for the maritime mobile 10 meter antenna.

female coaxial connector.
 4" x 3" length of plexiglas, 1/4 inch thick.

- 1 tube of plastic cement.
- 2 military-type, cloth, webbed belts (the kind that have the sliding brass belt buckles).
- 2 nuts and bolts with washers, size optional.
- 2 flat-headed wood screws no bigger than 1/8 inch in diameter and no longer than 3/4 inch.

The tools that are required are a screwdriver, hacksaw, rat-tailed file, 2-inch diameter coil form, wire snips, and a drill with 1/8-inch and 1/4-inch bits—nothing special, just common tools found around the shack.

Because the antenna is self-supporting, it requires the use of heavy-gauge wire—in this case No. 10 insulated copper wire, similar to the Bell Telephone Company's grounding wire. This wire has the proper stiffness for an antenna of this length mounted vertically and is also pliable, allowing for the winding of the inductor coils.

To begin the project, cut the antenna wire into two equal lengths. From one end measure 6 inches in, and on the 2-inch coil form begin winding the coil at 4 turns per inch, for a total of 13 3/4 turns. The coil should be about 3 1/2 inches long. The required load inductance of the antenna is 4.37 microHenrys.

Measure 2 1/2 feet from the coil end of the wire, and cut the excess wire off. Repeat the above for the second leg of the dipole. When you have made both legs of the dipole, attach the female coaxial connector—one 6-inch end to the center conductor and the other 6-inch end to ground.

Next cut the plexiglas into the following lengths: one piece 2 feet long and two pieces 1 foot long. In the center of the 2-foot-long piece drill two holes. At the end of one of the 1-foot long pieces drill two identical holes. Glue and then bolt these two pieces together so that they form a letter "T". At the foot of this plexiglas "T" drill two 1/8-inch holes 1 inch apart into the 1/4-inch edge, and two equally spaced holes into the remaining 1-foot length of plexiglas at its center. Connect the two pieces together with the wood screws and plastic cement. What you should have is a free-standing plexiglas "T".

Next find the center of the two webbed belts, and glue them with lots of cement to the flat end sides of the "T's" base. You may also wish to bolt these to the "T" as well, but if you do, you will have to use flat-headed bolts and counter sink them into the plexiglas. This could possibly weaken the connection and also scratch the finish on the mast.

When the glue is dry you will have the frame on which your dipole will be mounted. The webbed belts will easily attach to

a schooner's mast without marring its finish.

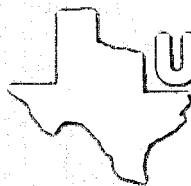
Next drill a 1/4-inch hole into the center of the now doubly thick plexiglas where the center of the dipole and the center of the "T" will meet. With a rat-tailed file widen this hole so that the female coaxial cable fitting can be mounted and bolted into it.

To attach the antenna to the plexiglas frame, lay the antenna parallel and center to the upper cross piece of the plexiglas frame and glue the two coils onto it. This will require a solid, flat area to prevent the glue from running. Use lots of glue, the more the better. When the glue is dry, you will have a solid, durable vertical dipole that will withstand the high winds found off the New England coast.

Remember when mounting your antenna to get it as high as possible above the water. Vertically polarized dipoles work best when mounted at one full wavelength above ground. Use electrical tape to secure the floppy ends of the belt and to secure your feed line. Floppy feed lines and accessories are not welcomed aboard any ship.

If you wish to use your rig aboard a chartered vessel, you first will have to get the permission of the captain. He will need assurance that your rig will not interfere with his navigational aids and communications equipment.

Let me know how your antenna works out. Happy sailing!



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