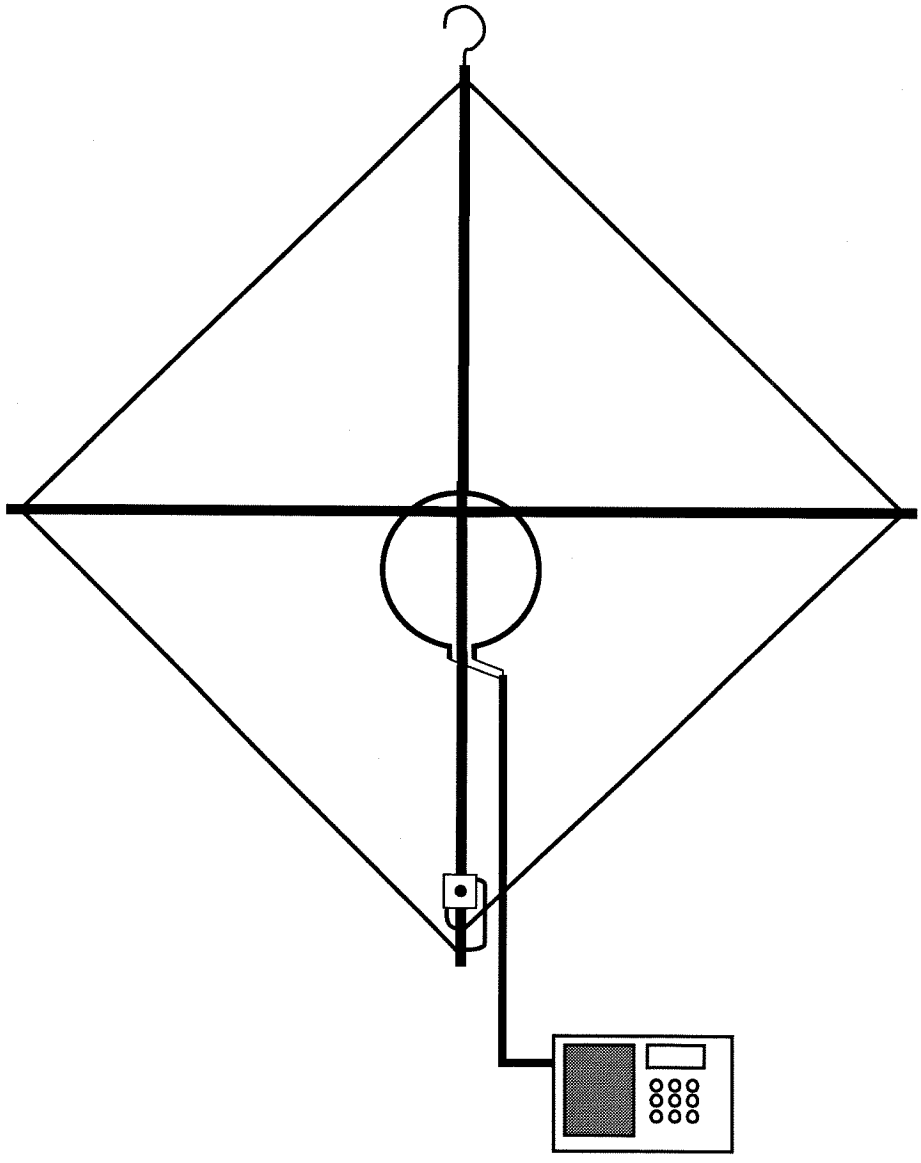
Shortwave Loop Antenna Kit



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www.mtmscientific.com

MTM Scientific, Inc. : Shortwave Loop Antenna for Indoor Reception

This kit contains the materials for building a tuned loop antenna for indoor shortwave radio reception. This antenna consists of a single large loop of wire, supported by two wooden cross beams, tuned by a variable capacitor. The tuned signal is picked up by a smaller loop inside the main loop, and routed to the radio by a short length of flexible coaxial cable. Typical frequency coverage for this antenna is about 4 MHz to 15 MHz.

Please note this antenna is designed for indoor reception only. Also, loop antennas are highly directional, and this antenna is no exception. In use, the plane of the antenna should be aimed at the radio source to optimize reception. A hook is provided for hanging the antenna (at the top) to facilitate turning.

Tuning the antenna is easy to do. Simply rotate the tuning knob of the capacitor until you hear a signal enhancement. The tuning is especially sensitive at the higher frequencies.

Assembly Instructions

Refer to the figure and photos on the next page for a general layout of the antenna. The photos are also available for viewing at http://www.mtmscientific.com/swphoto.html

1. Layout and drill the two wooden cross beams as indicated in the Hole Drilling Diagram. (You may wish to stain the wood now.)

2. Connect the cross beams together using the long machine screw, nut and washers.

3. Attach the capacitor using the short machine screws, nuts and washers. (See photos.)

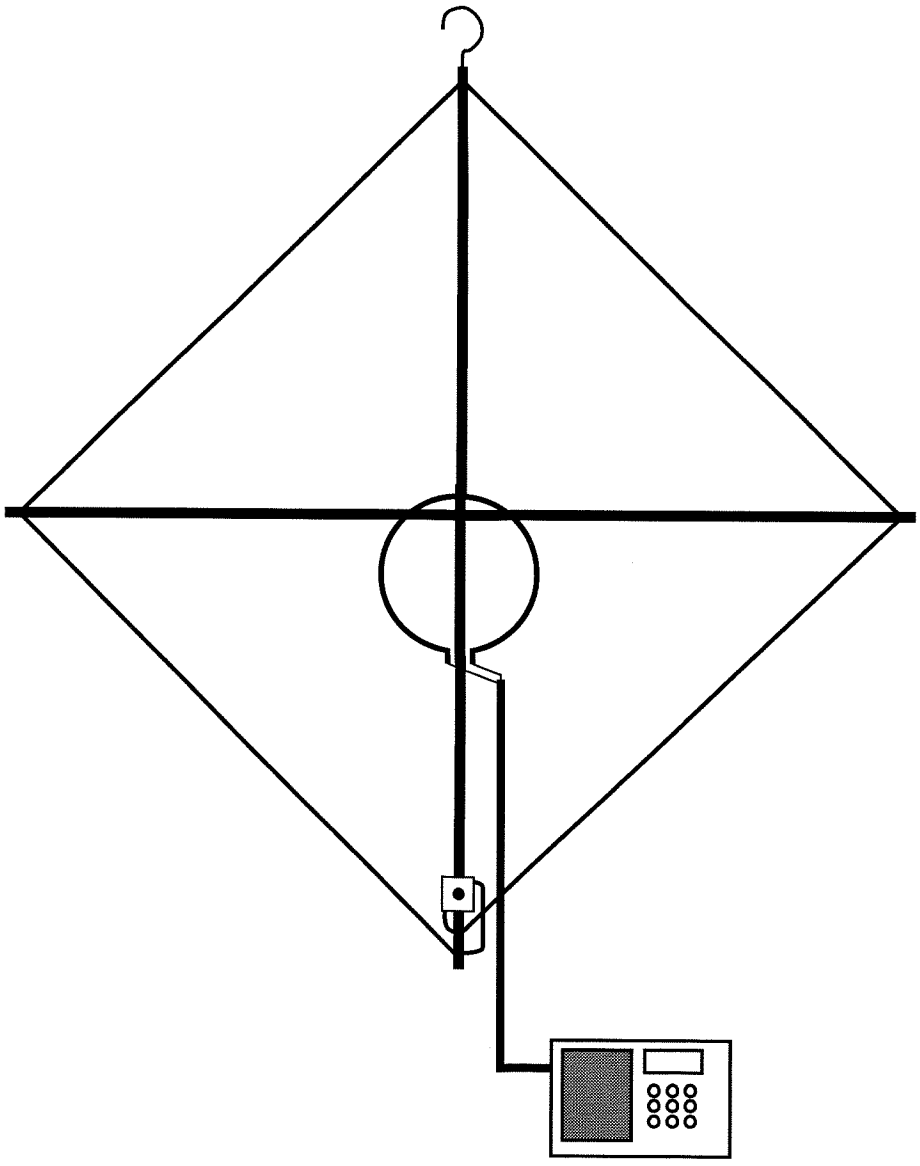
4. String the long copper wire through the drilled holes to form a diamond shaped hoop. Attach the free ends to the capacitor. One wire end connects to the frame of the capacitor using the eyelet attached to a support screw, the other wire is soldered to any of the 4 solder lugs on the capacitor. (Refer to the photos.)

5. Form the small copper wire into a hoop, and bend the wire ends to form a place to solder the coaxial cable connections. You will find that the cable must be stripped carefully. Solder the connections. (See photos.)

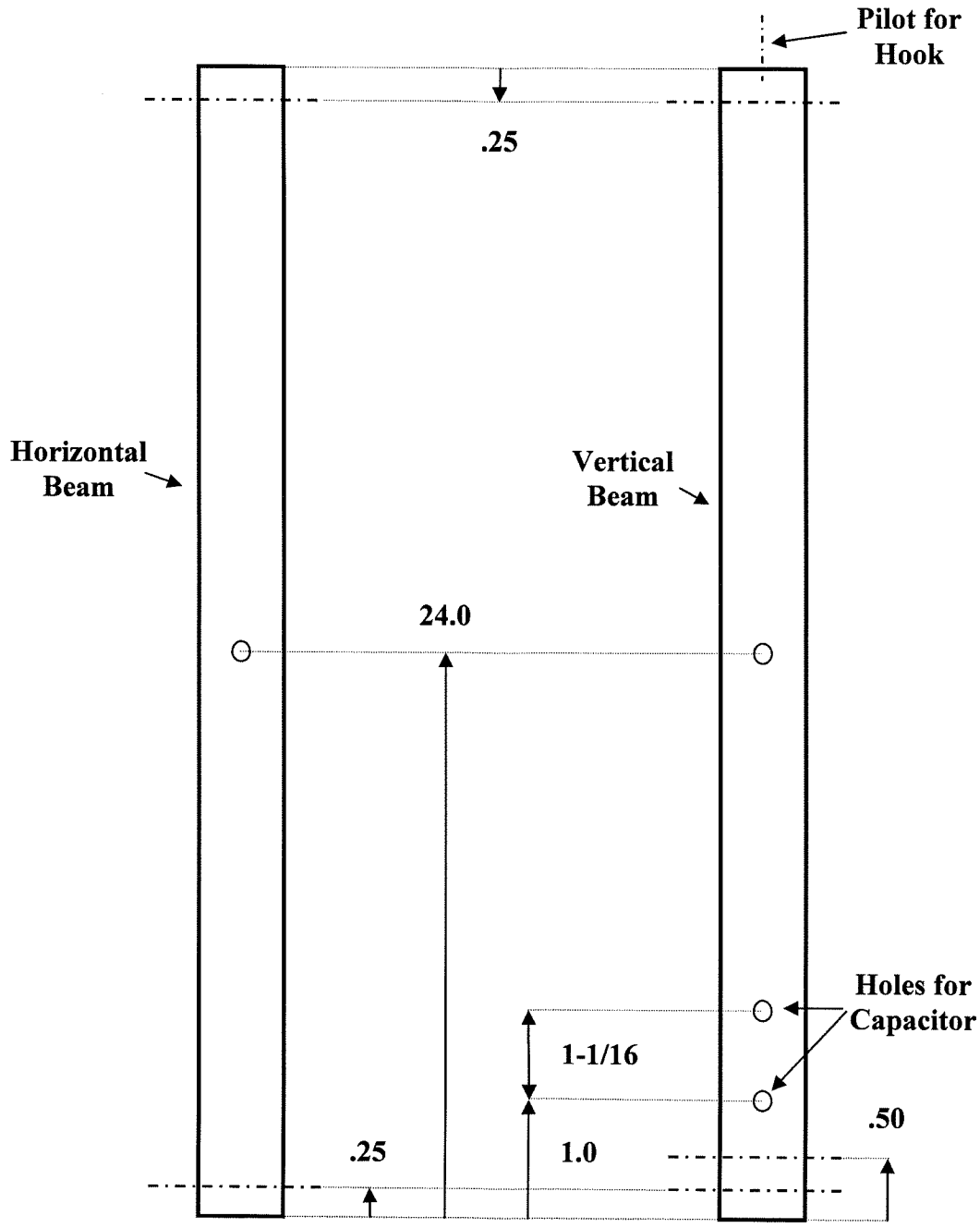
6. Attach the miniature 1/8" phone plug (or any other plug you may prefer) to the other end of the coaxial cable by soldering. The central wire conductor attaches to the central pin of the plug.

7. Attach the pickup loop to the cross beams, off center, as shown in the diagram and secure the pickup loop with the cable ties. (See photos.)

8. Attach the phenolic knob to the capacitor's tuning shaft. Also attach the eye hook to the top of the vertical cross beam to facilitate easing directional aiming.



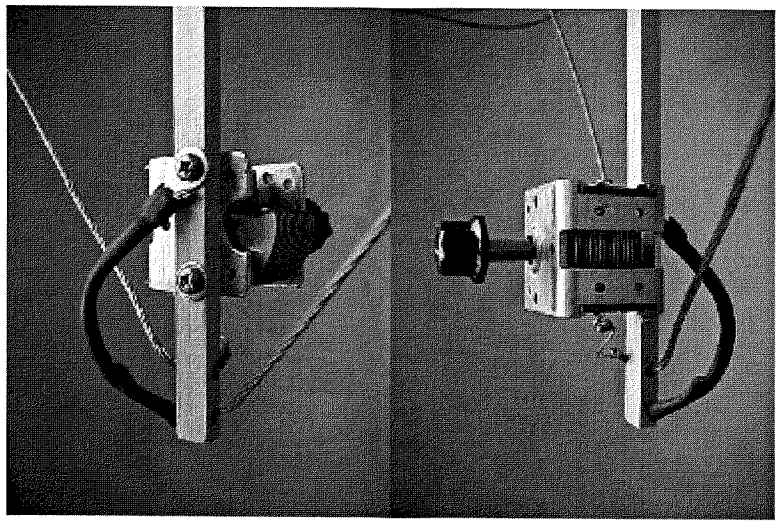
Basic Diagram of the MTM Shortwave Loop Antenna. The capacitor is most conveniently located at the bottom for easy tuning. The hook at the top is convenient for rotating the antenna for optimum reception. The pickup loop is located off center, as shown.



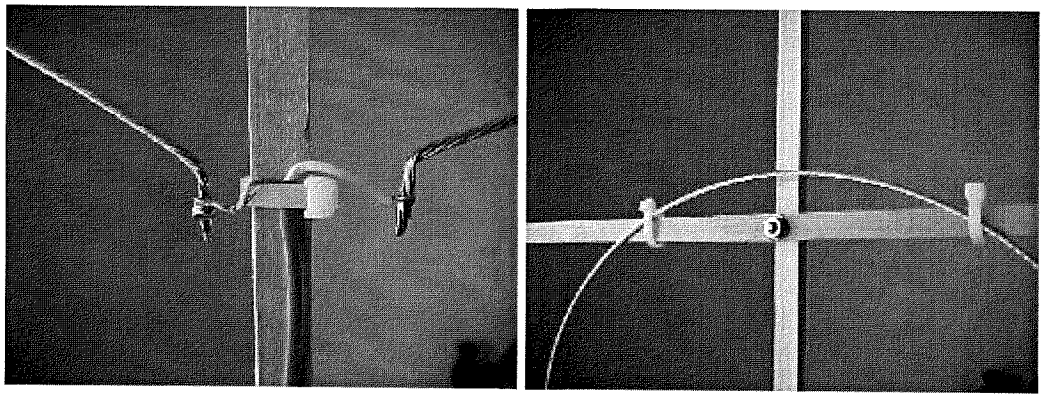
Hole Drilling Diagram: The 2 wooden cross beams are to be drilled as shown. The horizontal dashed lines indicate holes for the passage of the wire. The central holes are used to attach the pieces together. The two holes near the bottom of the 2nd piece are for attaching the capacitor. All holes are made with an 1/8 inch drill bit. Also, drill a very small pilot hole at the top of the 2nd piece for attaching the hook (Otherwise the wood will split).

MTM Scientific, Inc... Shortwave Loop Antenna Photos

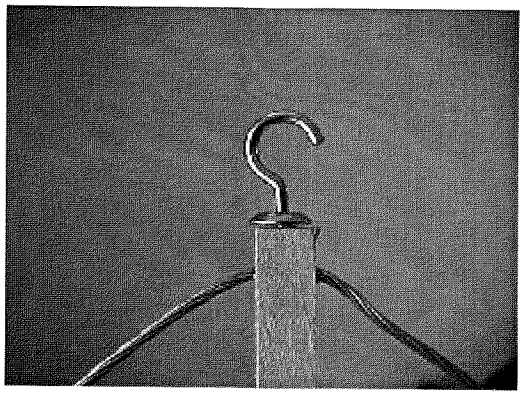
Here are some photos of the Shortwave Loop Antenna assembly to help you with putting it together....



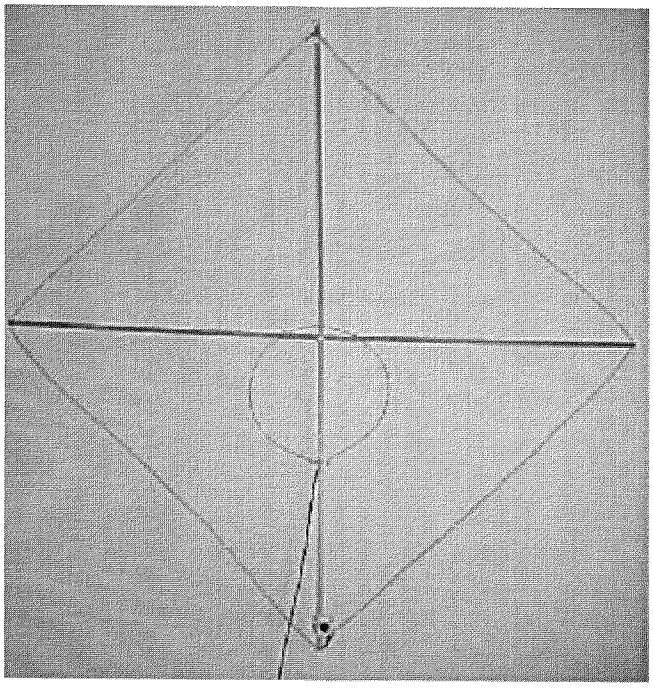
These photos detail the electrical connections to the Air Variable Capacitor. Note that one connection is made to the capacitor frame, and the other connection is made to any of the 4 electrical terminals on the capacitor.



These photos detail the electrical connections to the pickup loop. Note that the super flexible coaxial cable is stripped back, split 2 ways and secured with nylon cable ties.



It is especially convenient to hang the Shortwave Loop Antenna from a hook to facilitate rotating the assembly for directional tuning.



The completed Shortwave Loop Antenna. The coaxial cable from the Pickup Loop is routed to the radio.

This is a view of the flexible coaxial cable from the pickup loop being routed to the external antenna jack of a portable shortwave radio.