

J-POLE ANTENNA

(144 Mhz, 220 Mhz, 440 Mhz)

Theory of Operation

The J-POLE antenna is a 1/2 wavelength antenna with a 1/4 wavelength matching section. This antenna design offers an omnidirectional radiation pattern with a gain of approximately 3 db. The unique coupling, the small radiating element, and the "diameter-to-wavelength" ratio give this antenna its broadband characteristics. Typically this antenna will measure a VSWR of 1.5 to 1 over the entire design band. The J-POLE antenna does not require a ground plane since the radiating elements are at ground potential. This offers some measure of lightning protection if mounted to a good earth ground such as a metal drain pipe.

Installation

Since the J-POLE antenna is effectively at ground potential, the installation is usually very simple. The design lends itself quite well to both inside and outside installations. For your convenience in mounting, the antenna is supplied with an aluminum handle attached.

For outside applications, the antenna may be mounted to the top of a mast section, a roof vent pipe, or tower stand-off using the supplied aluminum handle. The antenna may be secured using either standard "U-bolts" or radiator hose clamps. Because of its design, the J-POLE antenna represents a minimal wind load when installed.

Inside applications have found the J-POLE antenna located in attics and even mounted on camera tripods (the buyer tapped the bottom of the supplied handle 1/4-20 to fit his tripod). The effective gain of the antenna is somewhat reduced in an inside installation, but offers an alternative to buyers with antenna restrictions at their QTH.

The aluminum handle may be removed and replaced with an "L" bracket (available at any hardware store) if desired for other mounting applications (such as attic cross braces, or roof eaves).

For portable use, the 1/2 wavelength may be cut and the ends threaded and fitted with a 1/4 inch coupler. This makes it easy to carry the antenna in a suitcase for instance. Mounting on PVC pipe presents no de-tuning problems because of the ground potential design even at UHF frequencies. The J-POLE may be mounted pointing upward or downward with no loss of performance.

CAUTION

As with any antenna or mast installations, exercise extreme care when installing any antenna that may touch overhead electrical lines.

Adjustments

Normally the J-POLE should not require any user adjustments since it is pre-tuned for optimum VSWR when you receive it. Should you desire to re-tune your J-POLE for minimum VSWR at a specific frequency follow the instructions below.

Do not slide the feed wire up or down the 1/2 wavelength section.

144 Mhz J-POLE:

The 2-meter version of the J-POLE is tuned for minimum VSWR by bending the feed wire. The feed wire is connected to the SO-238 connector and is wrapped around the 1/2 wavelength section. The distance between the feed wire and the 1/4 wavelength section determines the VSWR. The feed wire should be bent either closer or farther away from the 1/4 wavelength section as needed, but must remain in the same plane as the two sections.

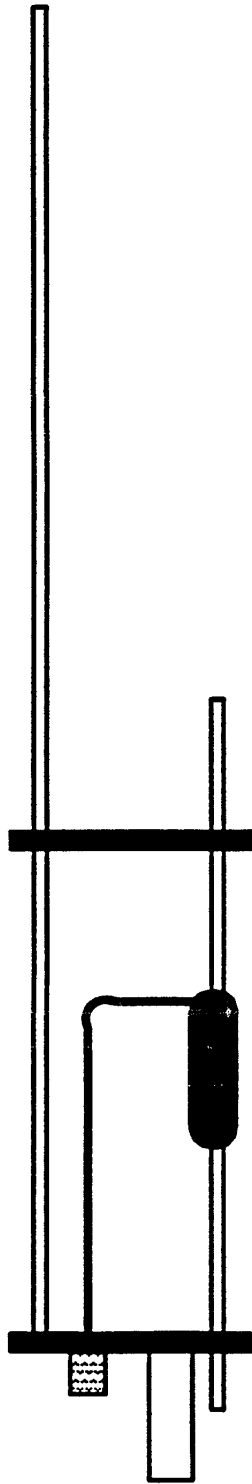
220 Mhz & 440 Mhz J-POLE:

The 220 Mhz and 440 Mhz versions of the J-POLE are tuned for minimum VSWR by adjusting the height of the 1/4 wavelength section. Remove the Silicon sealant from the Allen screw hole, loosen the screw to move the section up or down as required. When you are finished replace the Silicon sealant over the Allen screw with new Silicon.

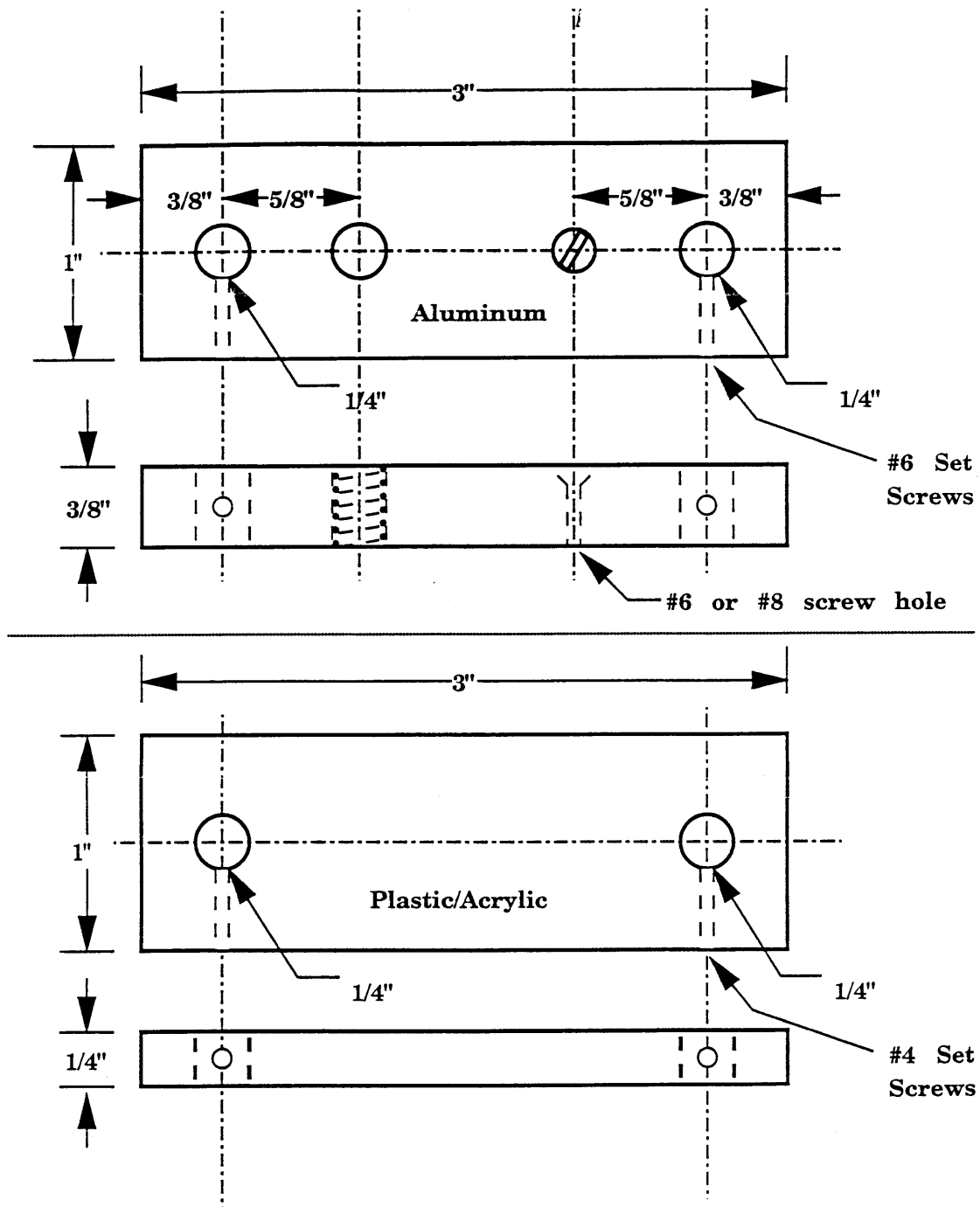
Maintenance

Your J-POLE antenna is designed and built using high quality components. The simplicity of its design and construction lends to its durability. Because of these features your J-POLE requires no special maintenance.

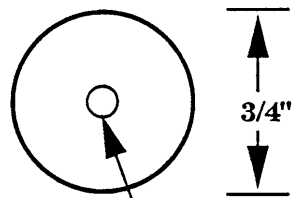
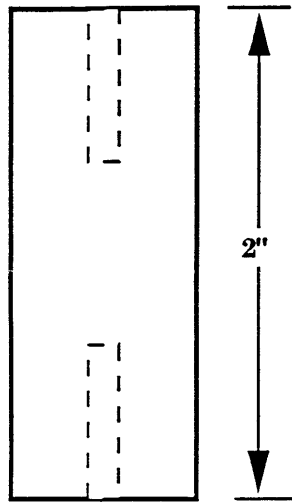
J-Pole Antenna Building Instructions



Top and bottom section guides, bottom plate with screw in VHF male connector

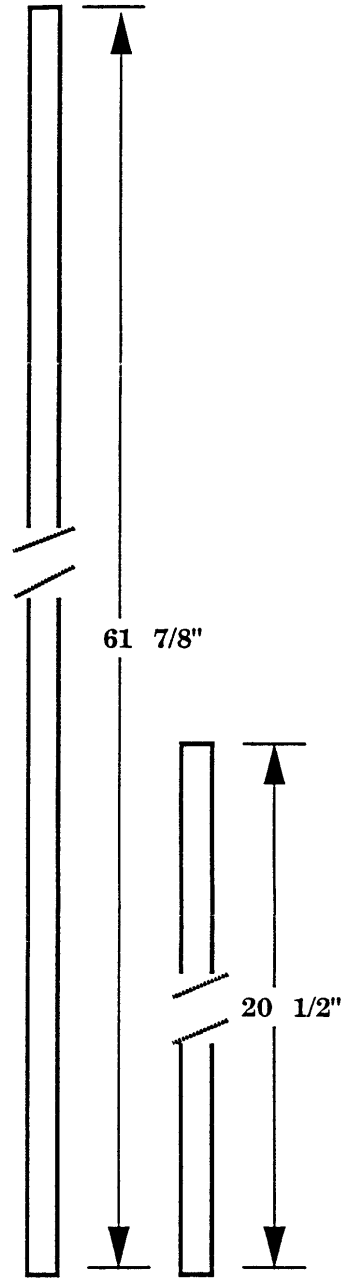


**Antenna
Mounting shaft**



#6 or #8 thread

Radiator elements



Alignment and adjustments

