6 Meter 5/8 Wave Vertical Antenna

By Mike, G3JVL

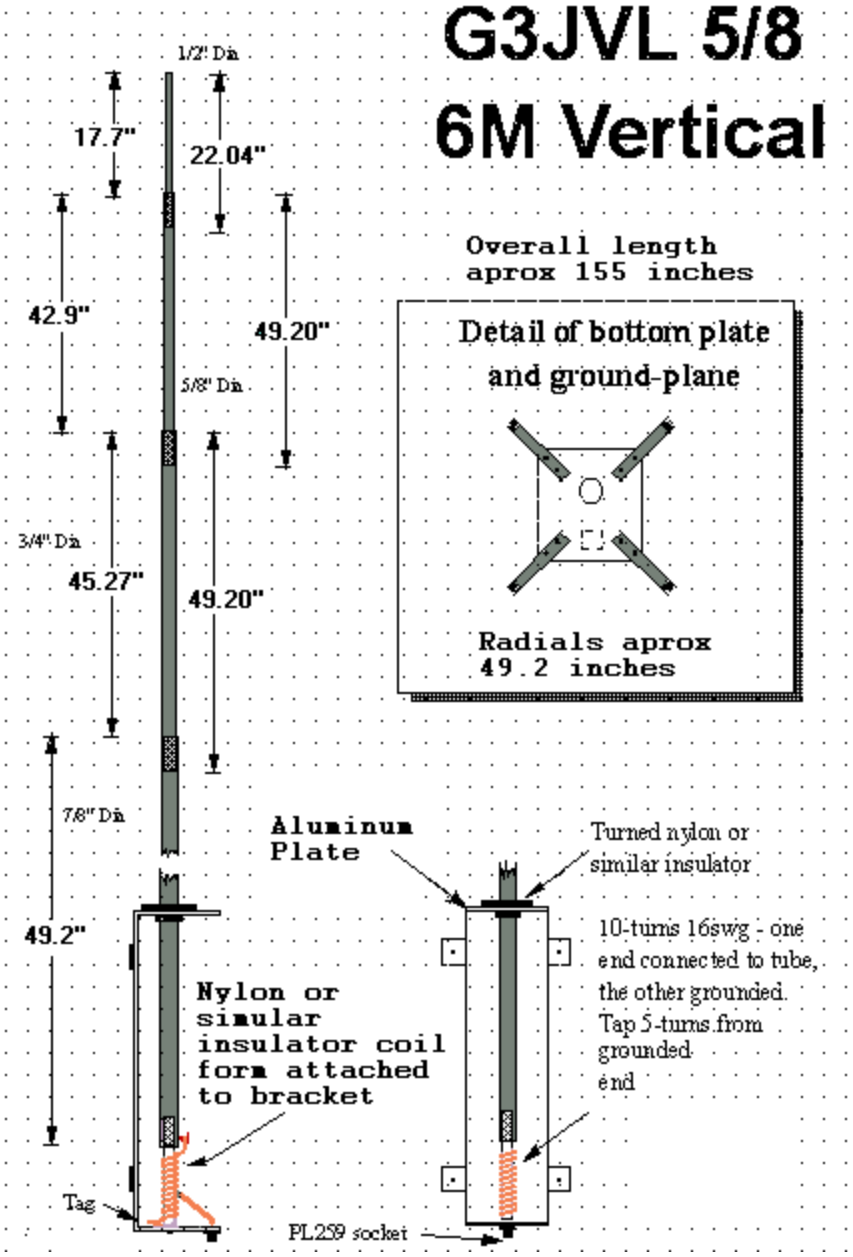
Editors note:
This antenna project and article was originally posted on the UKSMG Web Site, (The UK 6 Meter Group), in Metric measurements and is presented here for your enjoyment in U.S measurements. Full credit goes to the author of the article, MIKE, G3JVL. Only minor editing changes were made for clarity of measurements (Metric conversion to feet and inches) and wording.....N4UJW

The G3JVL 6 Meter ground plane vertical is a compact antenna that is ideal for portable operations. If needed, it can be disassembled into a very small bundle no longer than the longest element.

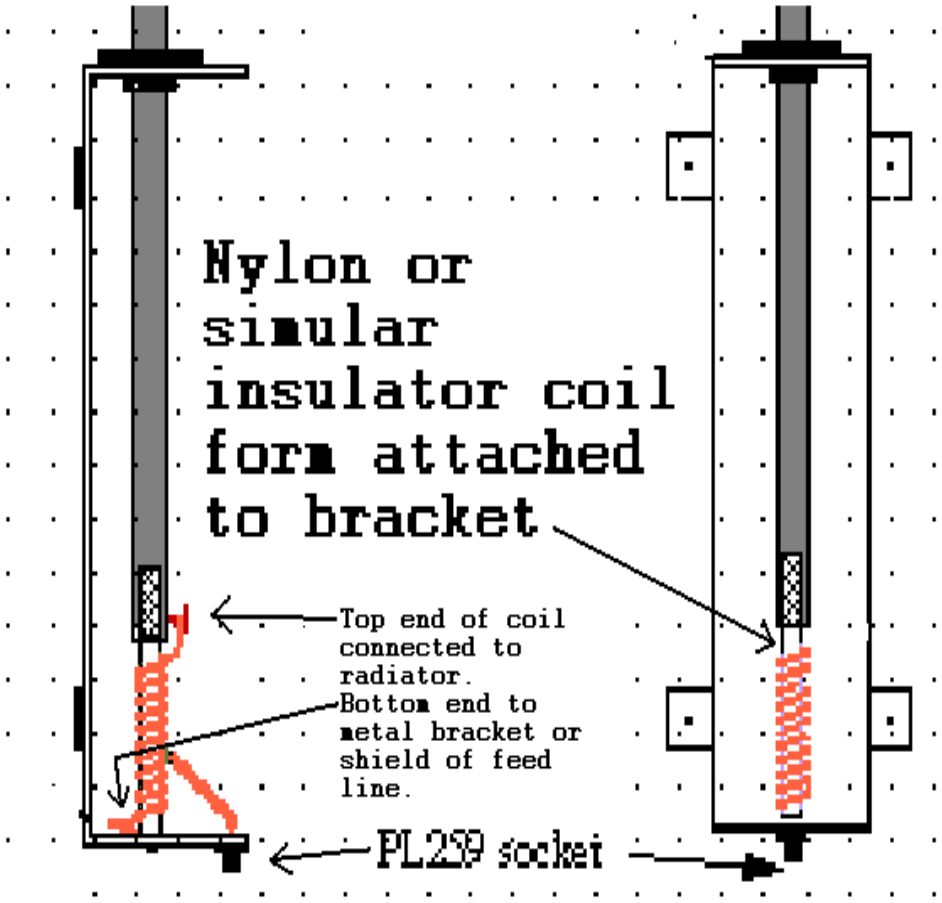
Although a little engineering work is required, it is well within the abilities of the home workshop and all you newly licensed amateurs or 6 Meter buffs!

The vertical itself is constructed out of four overlapping sections of aluminum tube whose sizes are given in the diagram below. The four tubes are meant to telescope, so wall thickness should be chosen to achieve this. In practice, 16swg might be OK but 18swg will easily fit. The lengths can be held in place by three stainless steel self-tapping screws or hose clamps.

The vertical is bottom-loaded with a coil wound on an insulated form (nylon or similar material - it is not too critical at 50MHz). - the form is about 5 inches long with the top 3/4 inch turned so it can be inserted into the bottom section of the vertical. The loading coil consists of ten turns of 16swg diameter coated or insulated copper wire with one end connected to the bottom section of the vertical with a machine screw and the other end connected to the ground plate. An adjustable tap at 5-turns is connected to the input PL-259 socket. Tap can be soldered or permanently attached in place after VSRW adjustment is final.



Base Details Below:



The construction of the 6m vertical antenna:
The four ground plane elements are Constructed from 49.2 inch long, (3/8") diameter aluminum tube. These are mounted to the base plate by the use of eight stainless steel machine screws.
This arrangement allows easy disassembly if needed.

The vertical itself is supported by a piece of 14 inch by 2 inch aluminum plate about 1/8 to 3/16 inch thick bent into a 90 degree angle on each end forming a... |_____|... shape as viewed from the side and layed down.
The bottom section of the vertical is insulated by a turned piece of nylon or similar tubing. If you do not have access to a lathe, any other insulating arrangement should suffice so long as it is robust and can withstand wind loading on the mount.

The overall length of the vertical is about 13 feet 6 inches including the loading coil.
The top section should be adjusted to set the center frequency. If the

VSWR at resonance is not close to 1:1 then alter the position of the tap on the loading coil (remember, changing this will alter the resonance of the antenna!).

Once completed give the whole assembly several coats of varnish to keep out the weather.