

The VK2DOT 6 Meter Vertical Antenna:

08 Jul 2010 **Draft Not Finished.**

This antenna was first converted [scaled down] by Bob VK2ZAR from a 27 Mhz Base Style Antenna for the Tuesday Night Group in 2008. The brackets were manufactured by Chris VK2YY. The problem with this design is that the coil is open to the elements. In this redesign of the 6 Meter vertical antenna, the coil is mounted in a 50mm pole pipe, away from the elements. All parts are lastly sealed by outdoor sealant.

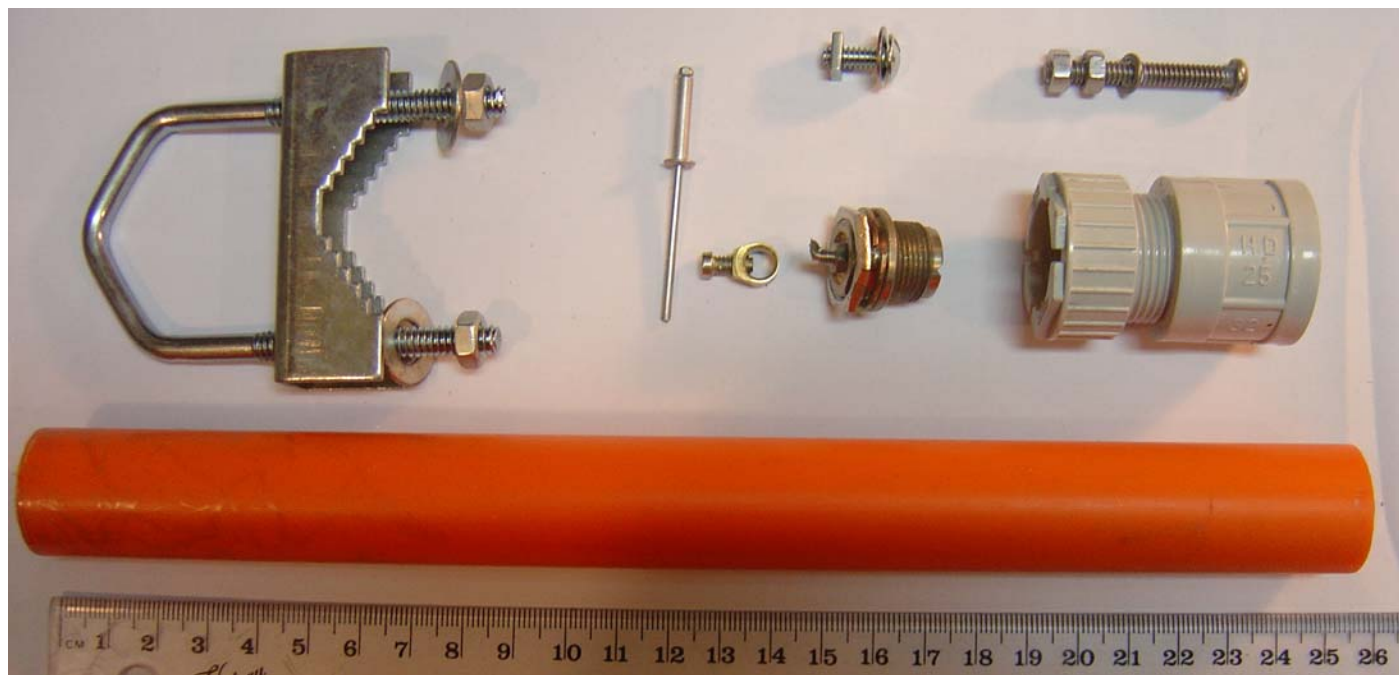
Material Required:

Aluminium bar bent below:



Aluminium bar 400mm long by 75mm wide and 3mm thick. See additional information further in pages.

Additional Parts Required below:



50mm PVC Pipe & Pipe Ends below:



Cut off 9 cm of PVC 50mm wide tube.

HD PVC conduit 25cm long by 2.5cm wide.

Conduit Adapter Plug [Female to Male with 2.5cm threaded locking ring].

One meter length of 19mm wide [outside diameter] aluminium tube for whip.

One meter length of 16mm wide [outside diameter] by 1.6mm thick aluminium tube for whip.

One meter length of 12.6mm wide [outside diameter] aluminium tube for whip.

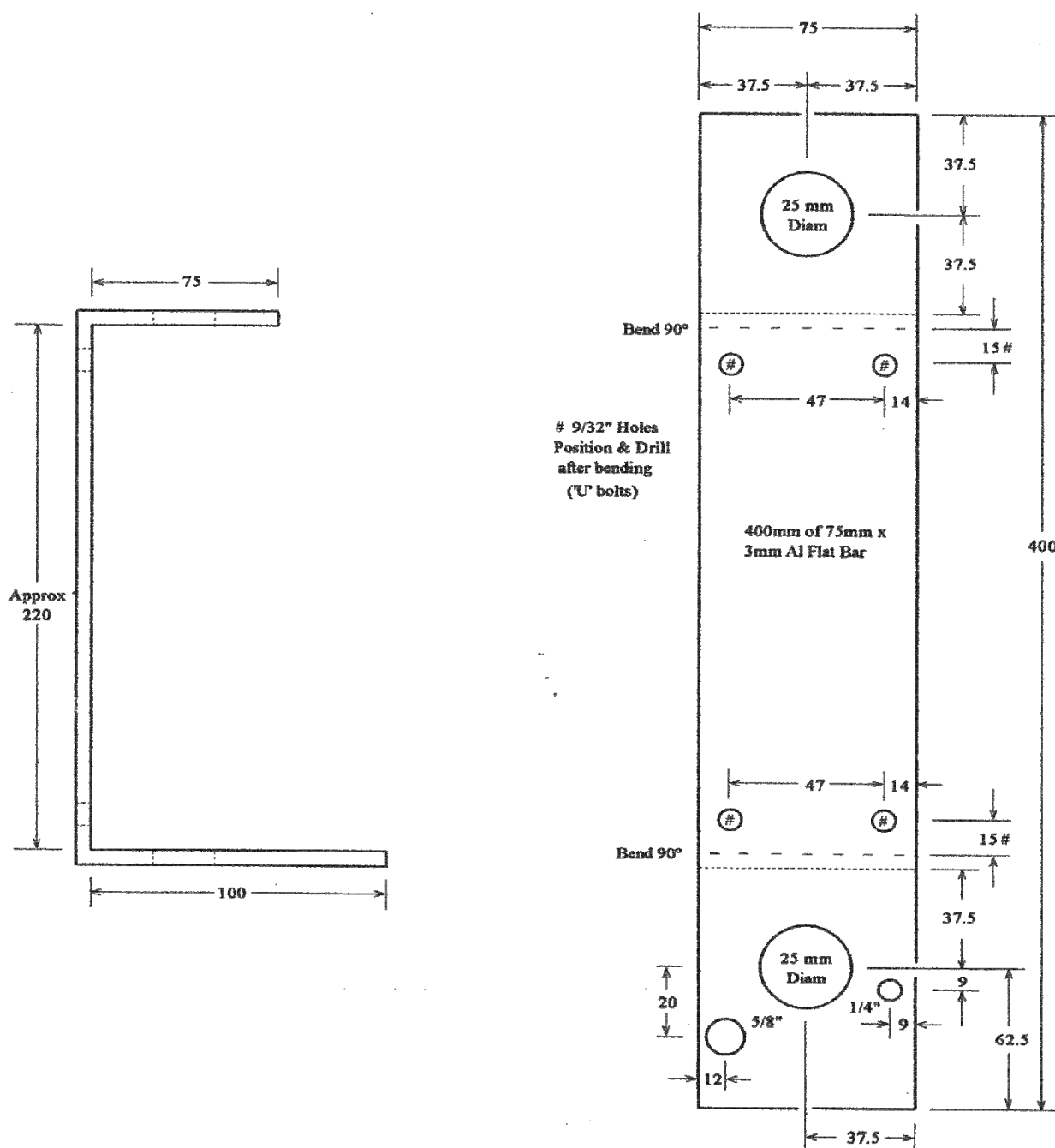
1.1 meter length of aluminium wire [ex power lines] for coil.

PVC conduit 9cm long by 5cm wide.

2 of PVC conduit end 50mm wide.

UHF Socket – Chassis mounted

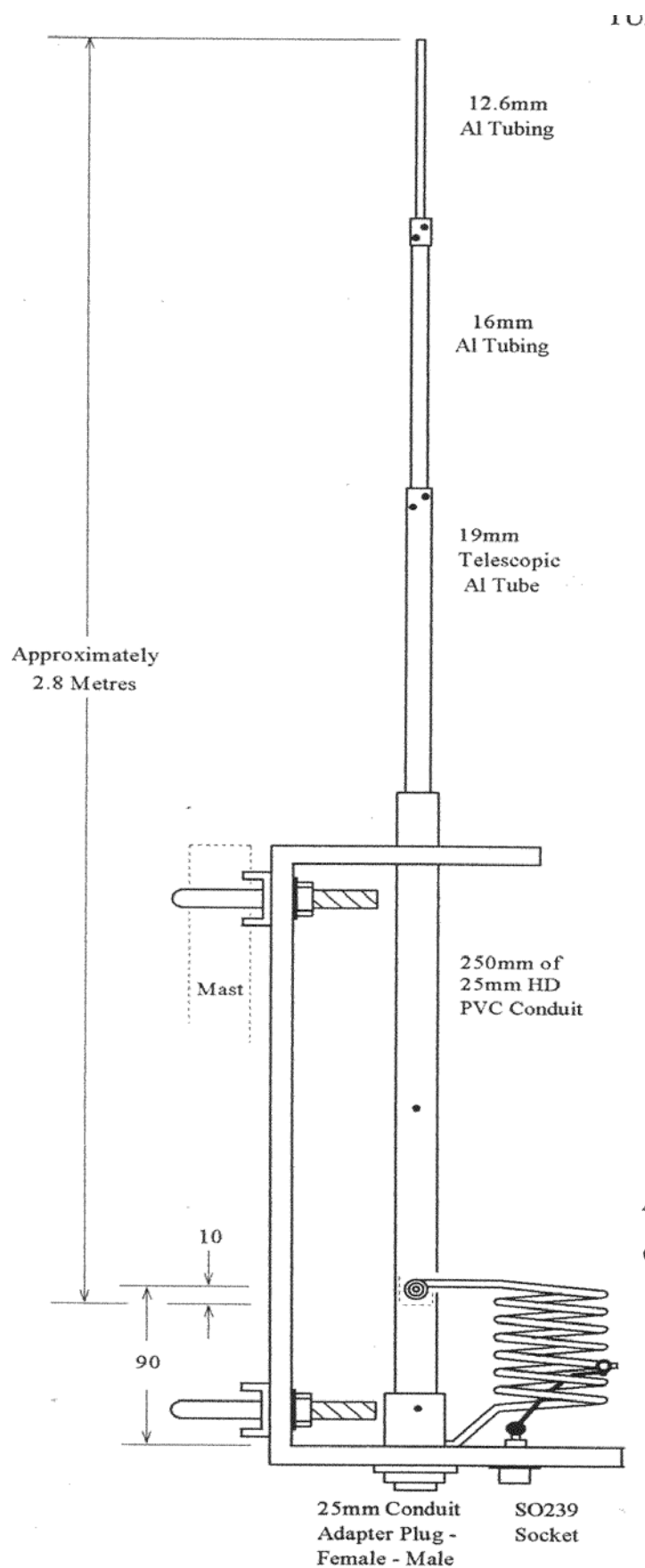
Base Bracket Details:



Above diagram by VK2ZAR.

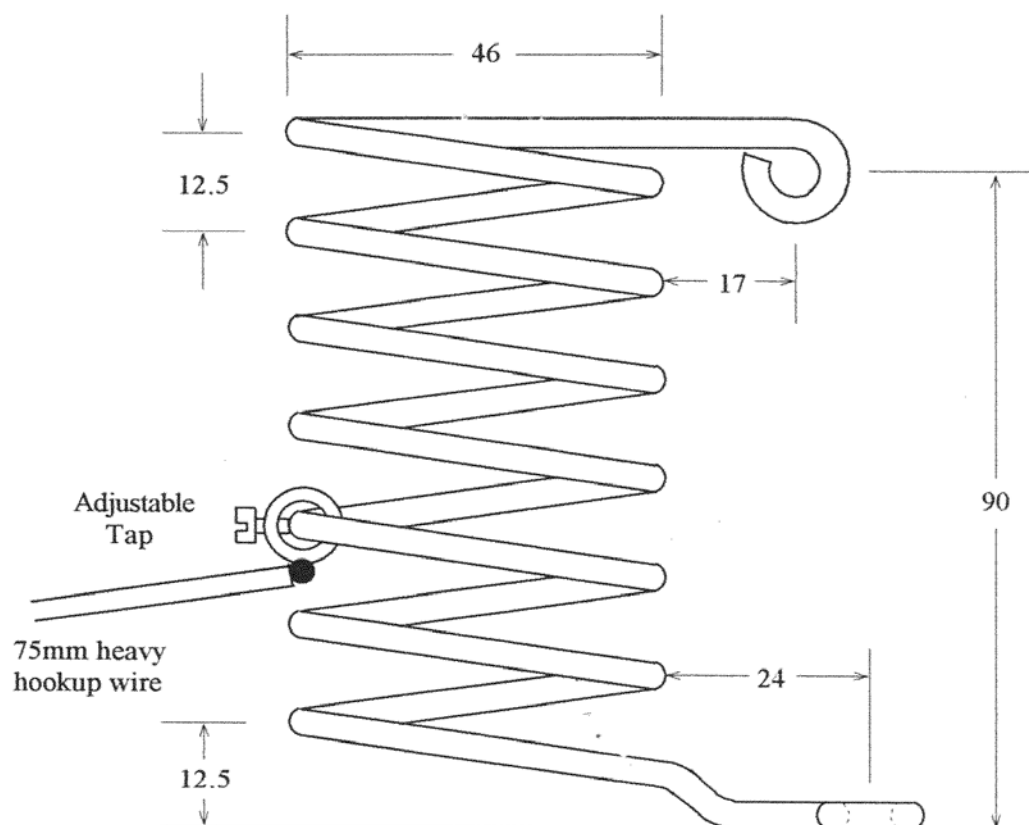
Note: Above bottom 5/8" and 1/4" holes are not correct, and should not be drilled. For correct holes see below.

Base Whip Antenna: 5/8 Wave 53Mhz



Above diagram by VK2ZAR.

Tuning & Matching Coil:



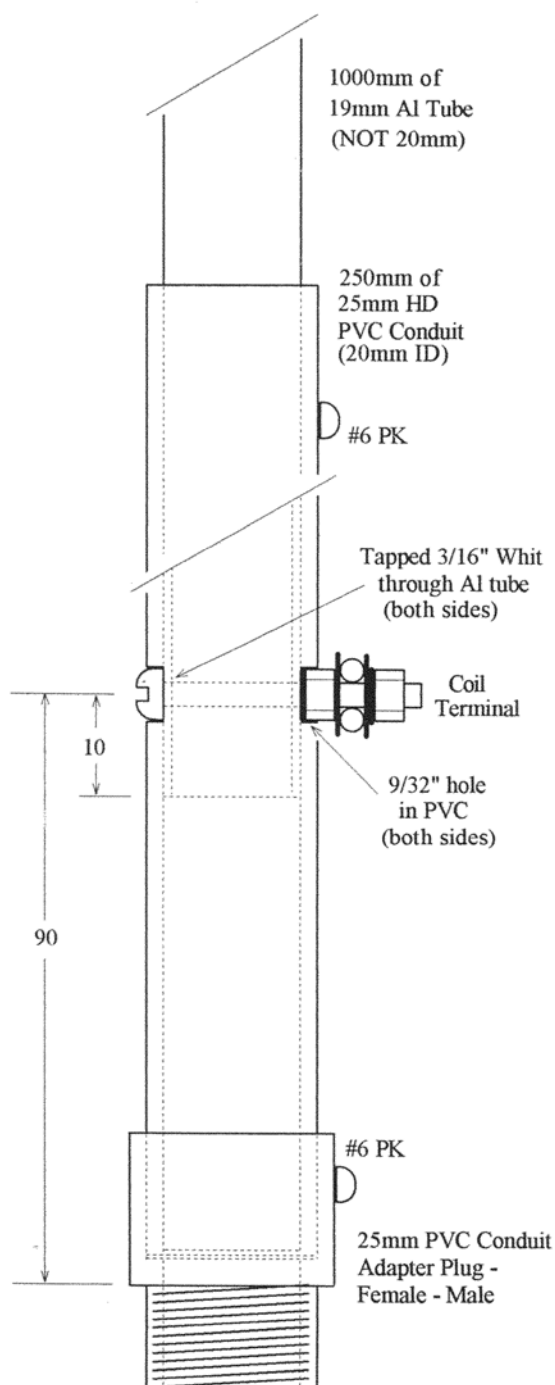
Notes:-

1. Material is 1100mm of 3mm diameter aluminium wire recovered from O/H power line offcuts.
2. Each end is formed to fit a 3/16" Whitworth screw.
3. The coil is wound on a 38mm diameter mandrill and spaced to dimensions above..
4. The coil is tapped using an HPM single screw wire connector. (Discard plastic surround)
This must be tinned and fitted onto the wire before the last eye is formed.
5. All connections are cleaned and coated with silicon compound after final tune.
6. THESE DIMENSIONS ARE CRITICAL TO THE CORRECT TUNING OF THE COIL.

Above diagram by VK2ZAR.

NOTE: See below for coil tuning changes.

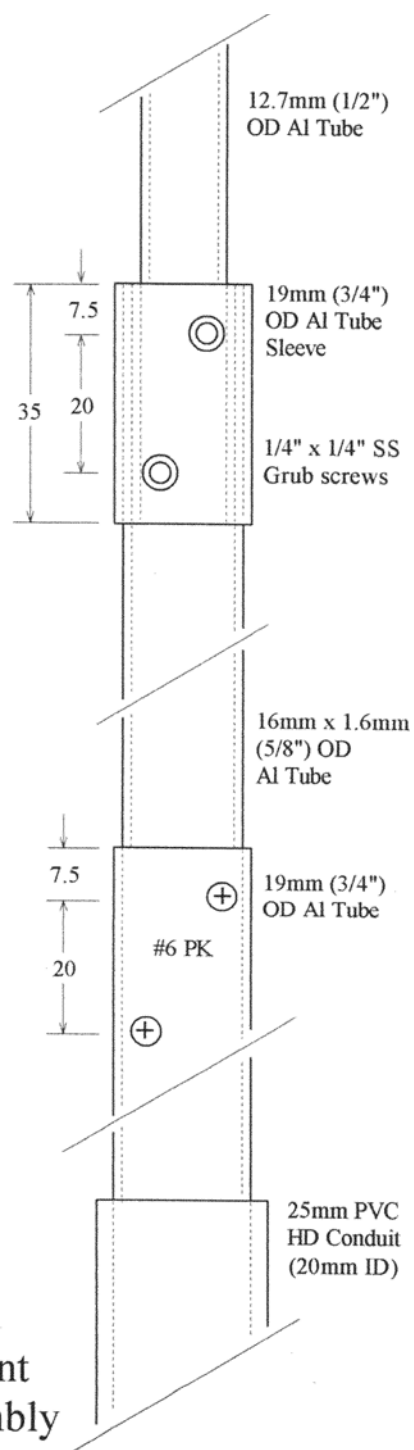
Miscellaneous Details:



Insulator Assembly Above

Above diagram by VK2ZAR.

NOTE: The #6 PK is replaced with a rivet.



Element Assembly Above

End Covers with 25mm Holes:



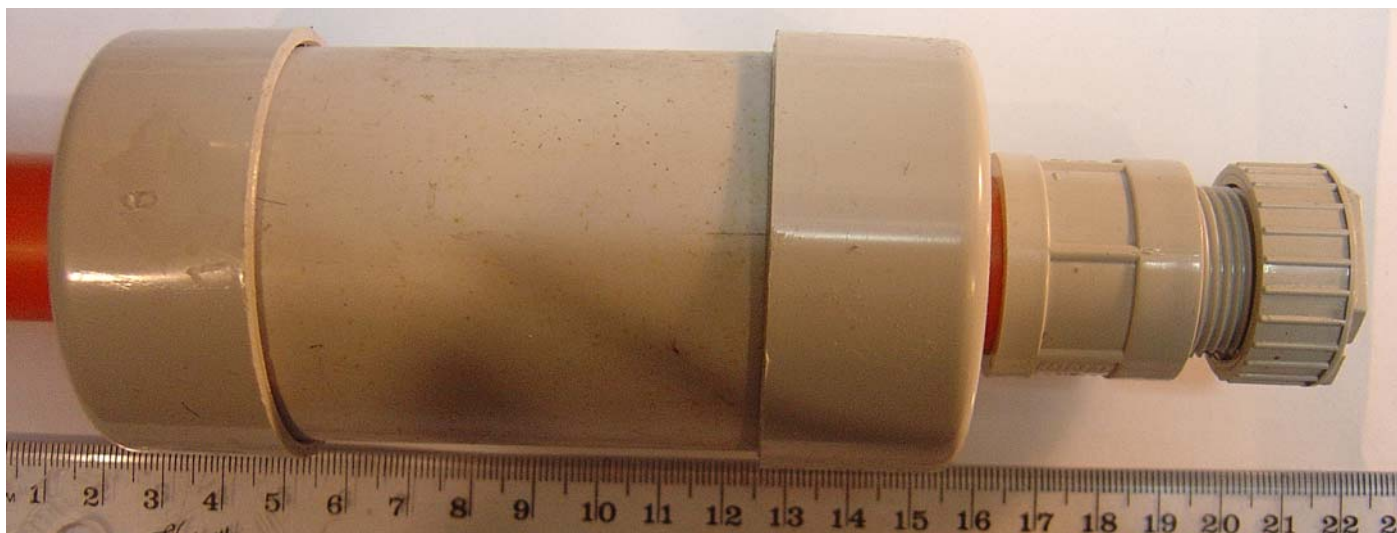
Cut 25mm holes in the centre of the two 500mm PVC pipe ends.

Bottom End Cover Below:

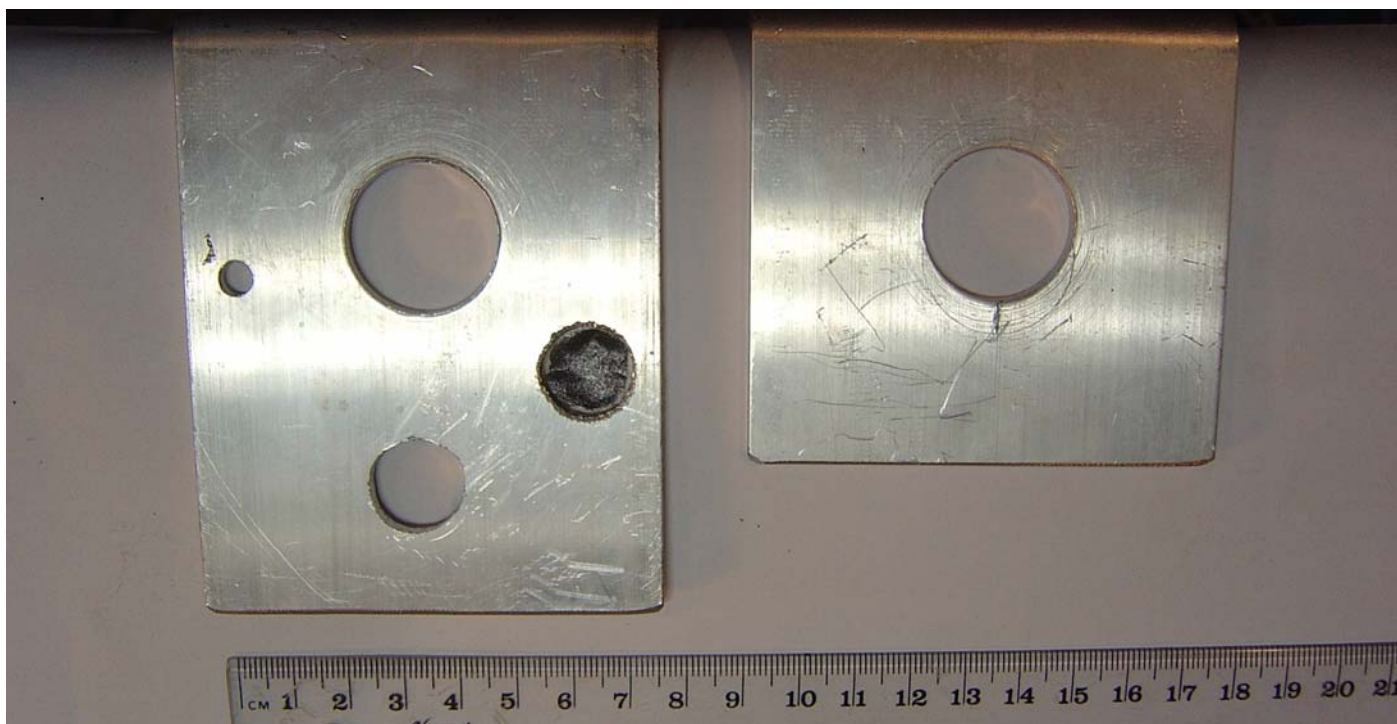


NOTE: Right hand hole used to ground coil to aluminium bracket. Left hand hole for tap wire to connect to UHF connector.

Coil Cover:



Mounting Bracket Ends:



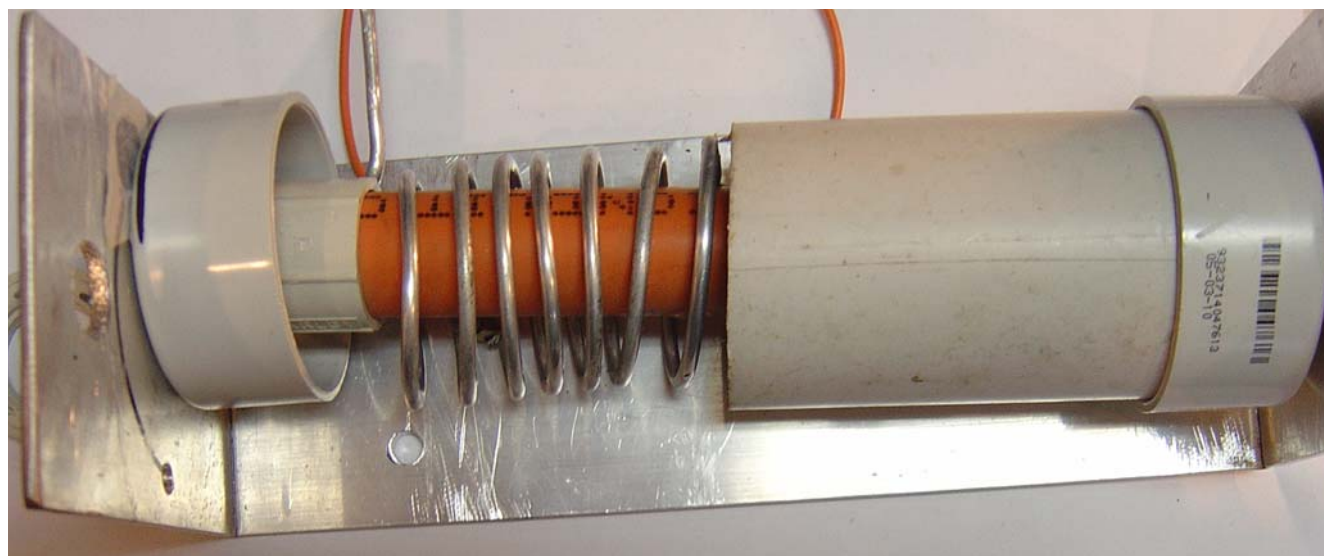
Note: Above bottom 5/8" and 1/4" holes are not correct, and should not be drilled. For correct holes see below.

Coil:

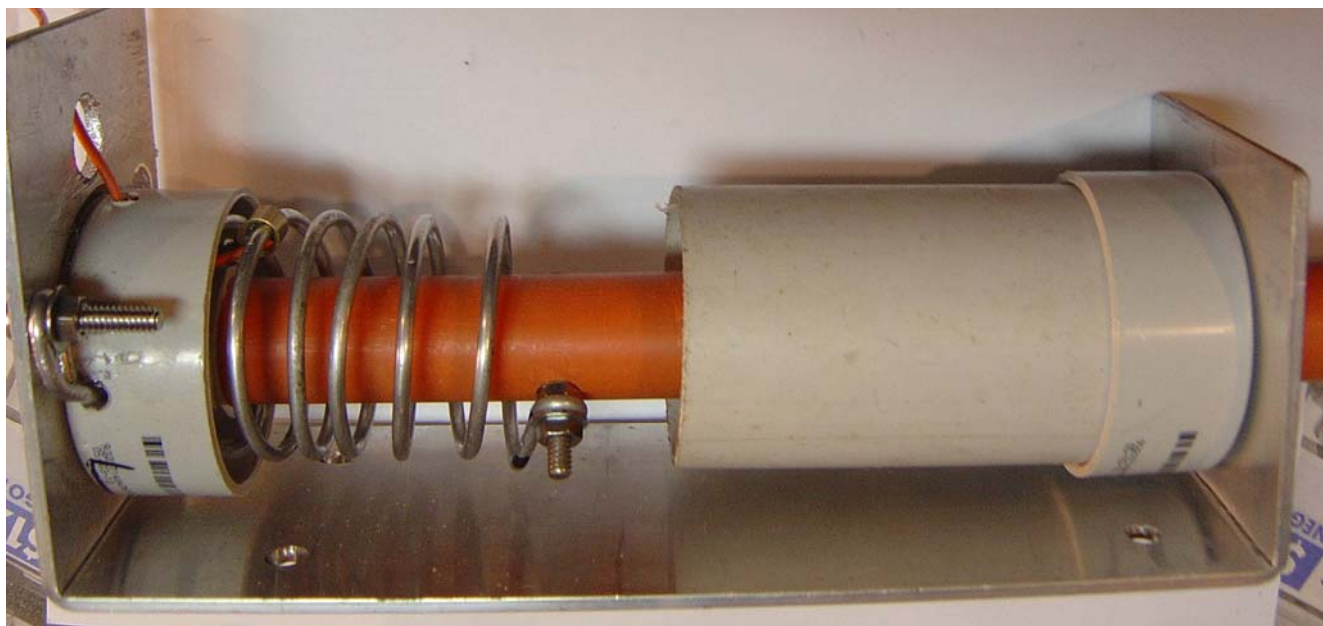


NOTE: When tuning the coil, we found that the VSWR versus frequency changed dramatically from 48Mhz to 55Mhz – dependant on the coil tapping. We tried from 2 turns to 3.5 turns, and finished up at the 3 turn point.

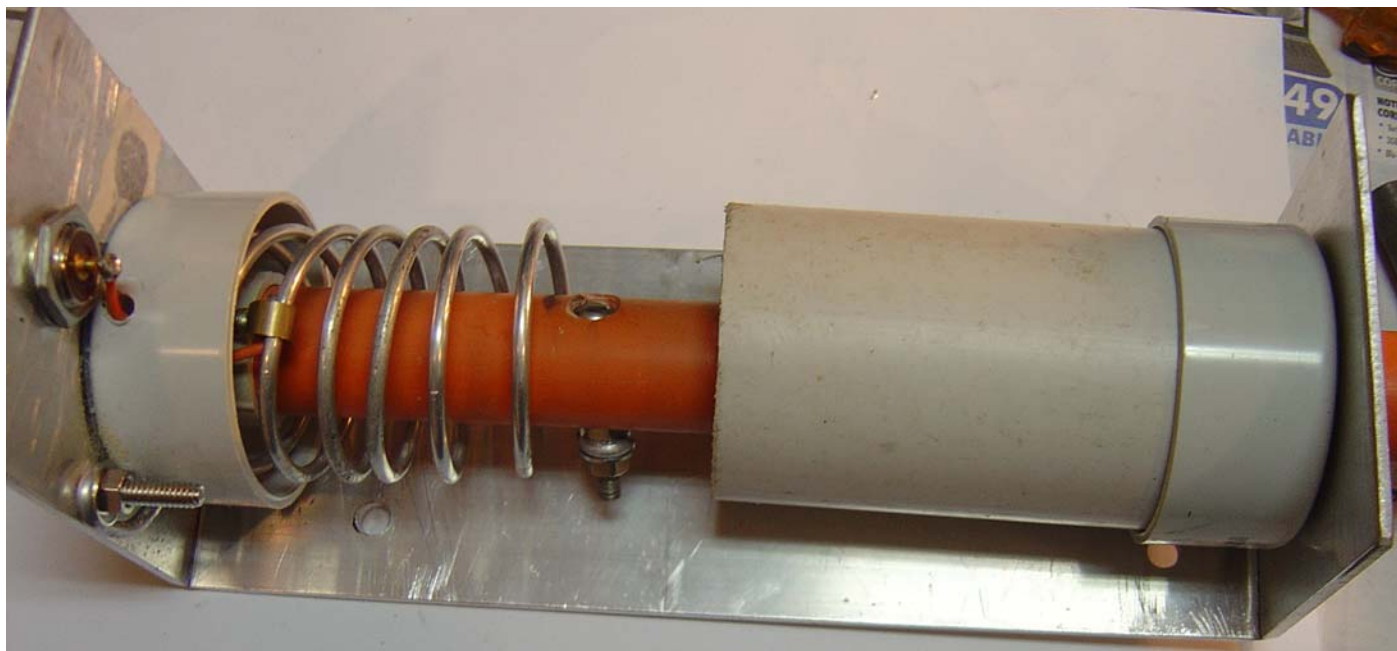
Mounting Step 1 below:



Mounting Step 2 below:

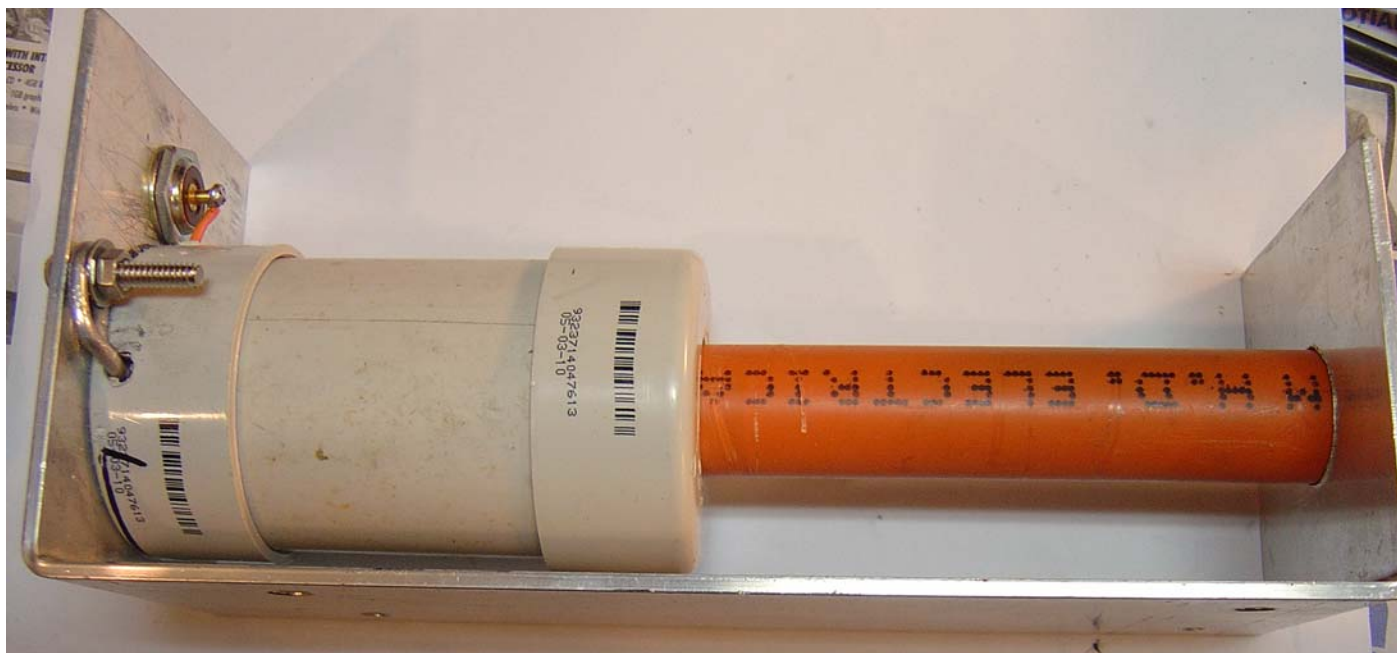


Mounting Step 3 below:



Notice the UHF connection above, plus the top of the coil connected to the bottom of the whip section. The screw of the HPM single screw cable connector points towards the centre of the coil. Watch the mounting screw connecting the top of the coil to the bottom of the whip section – it may have to be moved back with a nut on the other side of the coil connection. This will allow the coil cover to fit smoothly over the coil.

Mounting Step 4 below:



From the above photograph it can be seen that if a larger coil cover was used – the connections to the UHF connector and earth could have been within the bottom end of the coil cover. Thus not exposed to the outside elements.

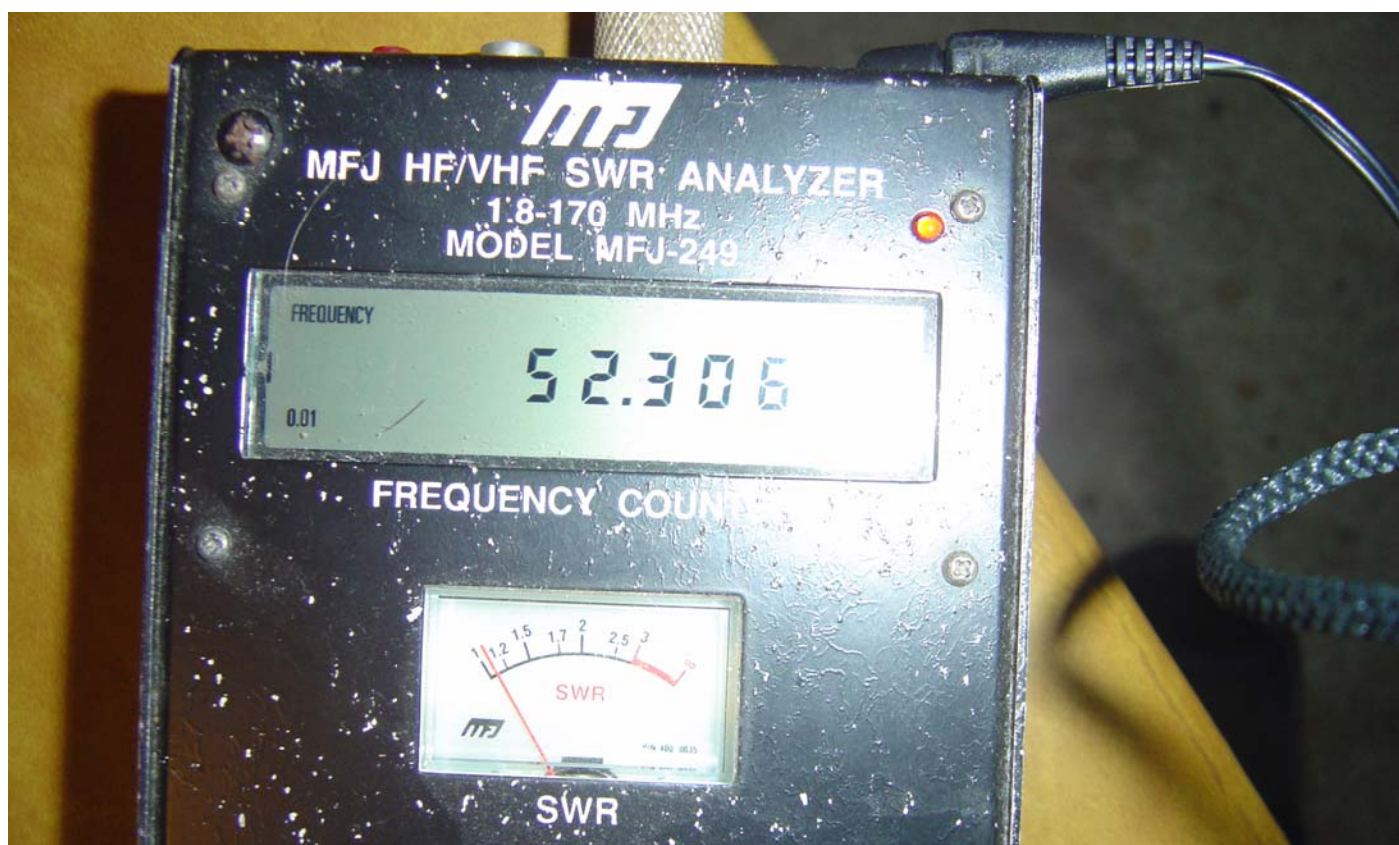
Antenna Mounted on Test Pole:



Test Results:

When tuning the coil, [setting the tap point] we found that the VSWR verses frequency changed dramatically from 48Mhz to 55Mhz for a VSWR of less than 1.2 to 1 – dependant on the coil tapping. We tried from 2 turns to 3.5 turns, and finished up at the 3 turn point.

The Antenna is less than 1.5 to 1 from 50.0 Mhz to 53.75 Mhz.



Final Task – Seal Coil Cover & UHF Connection with Outdoor Sealant:

