

The VK2DOT Coaxial 6 Meter Vertical Antenna:

29-Oct-08

History:

The VK2DOT Coaxial 6 Meter Vertical Antenna was first designed in the early 1960's to be used on the frequency of 50.660Mhz AM [I think]. The original antenna was built on a ½ inch aluminum pole, with a 2 inch coaxial/matching aluminum pipe suspended on the ½ pipe with two 2 inch rubber bath plugs. The top section was attached by a metal 2 inch bath plug, with a mobile antenna mount attached to the metal bath plug. A quarter section whip was mounted on top. In the mid 1960's, this antenna was used on 52.525Mhz FM; And mounted on the bull bar of a Ford Fairmont sedan. This mobile antenna was used throughout most states in Australia with success.

Recently Peter McNab VK2NE needed a vertical 6 meter antenna for his domicile. Plus one also needed a new 6 meter vertical antenna. We went a looking for parts for the old VK2DOT Coaxial 6 Meter Vertical Antenna; We could not find the bath plugs, had problems finding 2 inch aluminum, and the price was excessive. We reviewed a number of built 6 meter verticals and decided that they were too complicated and expensive. It nearly came to purchasing a couple of Comet commercially built 6 meter antenna. We also knew that a very cheap, easily built 6 meter vertical antenna was needed.

The result was the redesign of the VK2DOT Coaxial 6 Meter Vertical Antenna. It took 5 different variations until the present design was set upon. This resulted in a 6 meter design that – used no coils, used no ground radials, SWR under 2:2 across the 6 meter band, can be built as part of your feedline, performs similar to a half wave dipole, self supporting in a radome or can be used without radome with a rope attached for throwing over trees and used as a portable antenna.

The antenna itself is an off center fed vertical dipole. With the bottom element being an electrical quarter wavelength of braid drawn back over the outside of the coaxial cable. The other half of the dipole is the center lead of the coax protruding out of the top.

Parts Required:

2.5 meters or more of RG213 coaxial cable
1 of UHF or Type N connector for end of RG213 coaxial cable.
1 of cable connector, with screw hole diameter of pop rivet or screw.
Electrical tape. [for holding braid when stretched over coax sheaf]
Approximately 1 meter length of 15mm diameter shrink tubing.

If Radome used.

2.4 meters of rigid white Ag plastic pipe of 20mm or bigger in diameter.
1 of end cap for Ag plastic pipe.
2 of adjustable water pipe clamps. [to hold 20mm Ag pipe onto mounting pole]
1 of pop rivet or screw and nut.
2 of zip ties. [for holding 213 coax onto mounting pole]

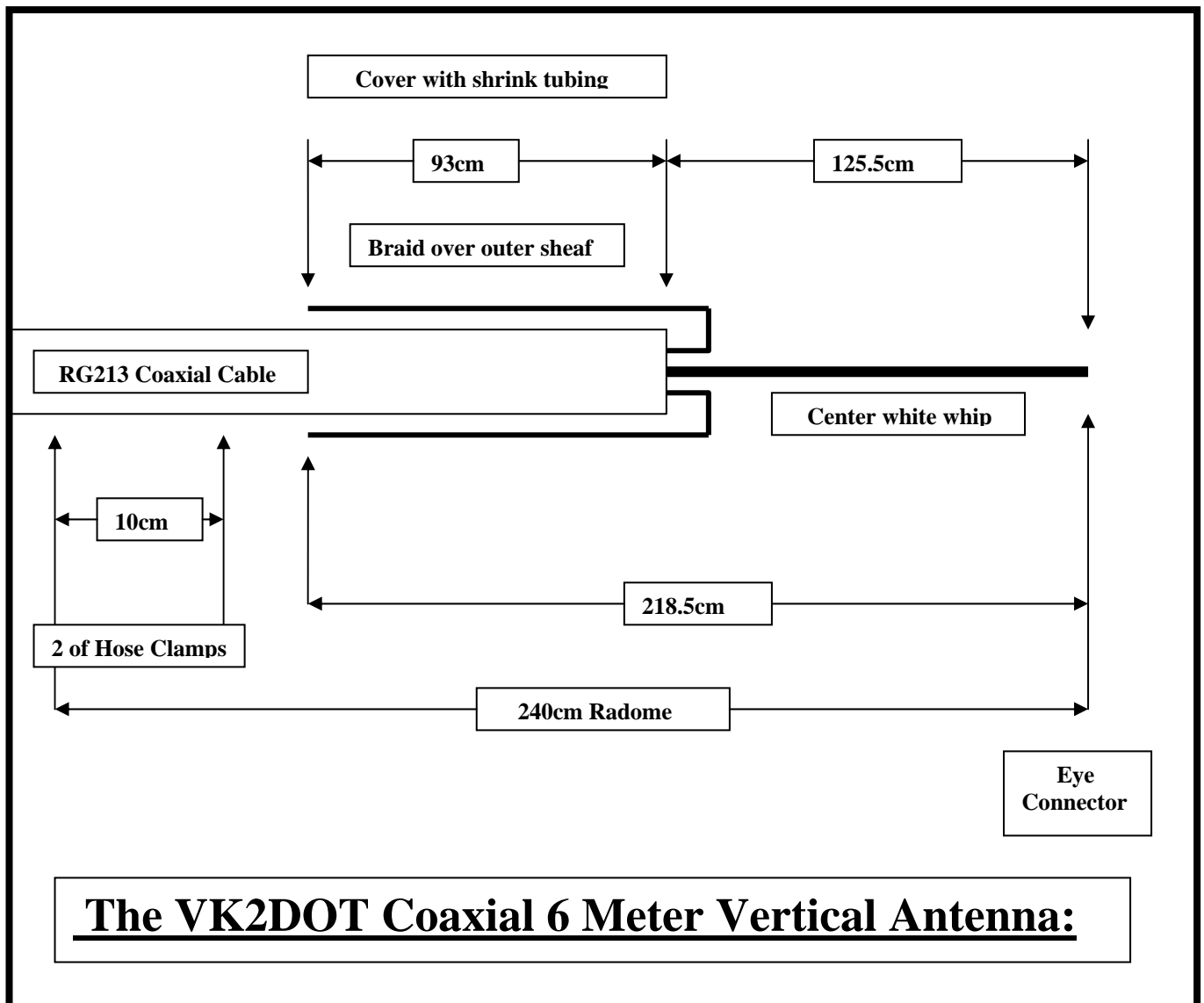
Else.

Non conductive rope. For throwing over tree limb.

Extra Items:



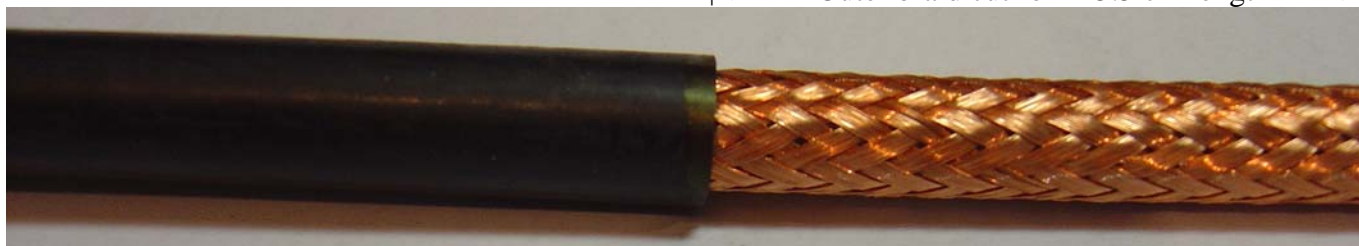
The Antenna:



Construction:

- 1: Using 213 coaxial cable, remove 1.255 meters of outer covering from 213 coaxial cable, from the above cut braid and outer covering point. See photo below.

|<----- Outer braid cut for 125.5 cm length ----->



<----- From photo above to end ----->



- 2: Grasp braid at end [photo above] and move left to bunch the braid up. As displayed in photo below.



- 3: Grab braid from left [from photo above] and move gently to the left over the outer black sheaf. See photo below.



4: Move braid to the left until the braid is fully covering the black outer sheaf to the left. Once you have the braid free to move to the left, simply grab the braid a few centimeters above the bottom of the exposed part and push it to the left over the black outer sheaf in short sections. Once you get the first section over, move down a bit and continue with the next. Once you get it started, it will actually go quite easily. The right of the fold over point of the sheaf should be the white center insulator.



|<----- 93 cm to end of braid ----->|

5: The stretched braid should now cover 93 cm of black outer braid. As Displayed above. If the braid is longer than 93 cm, trim off excessive braid with side cutters.

6: Tape over end of shield with tape, then use shrink tubing to seal all of exposed braid. As displayed below.



7: The center insulated cable should be protruding for 1255 mm from braid fold over. As photo below.

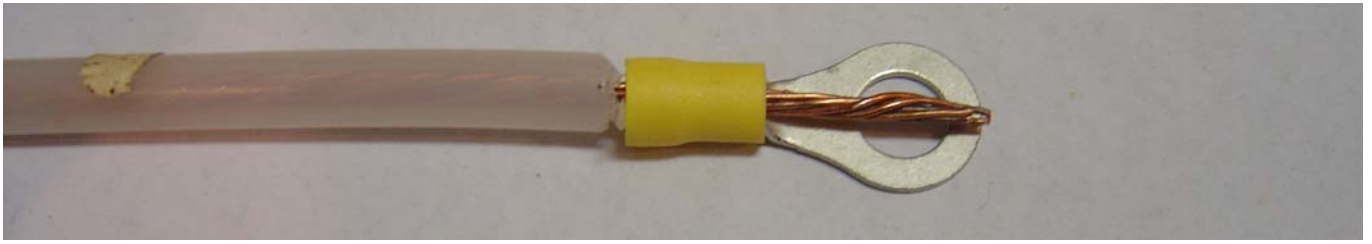
|<----- 1255 mm to end ----->|



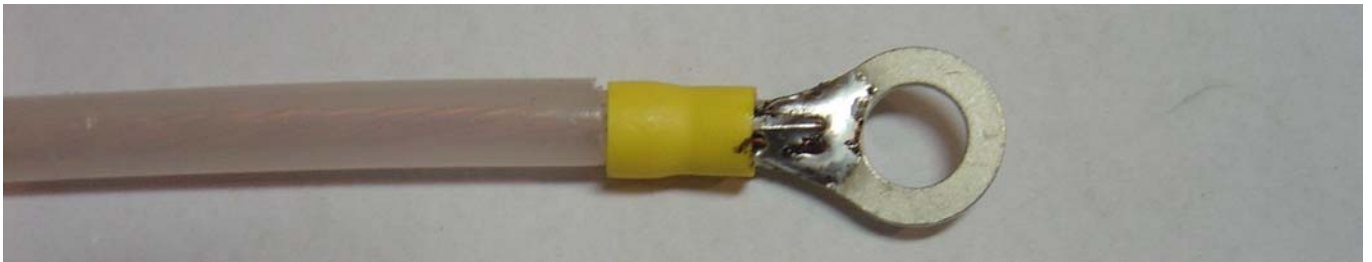
8: Measure length of metal in cable Eye connector [say 2 cm]. Then cut 2 cm of white center insulation from the section protruding from the center of the coax cable. Ie Top of antenna.



9: Place the cable Eye connector onto the end of the center wire of coax cable, [making sure the center of the coax meets the top of the cable Eye connector]. Cut the coax cable off, enabling a free Eye for the rivet or screw. See photo below.



10: Then, crimp and solder. See photo below.



11: Connect UHF or Type N connector to other end of 213 coaxial cable.



12: Drill a hole 1cm from the top of the white Ag water pipe, diameter of the pop rivet of screw.

13: Thread the 213 coaxial cable antenna through the inside of the white Ag water pipe, with the top connector aligned with the drilled hole on the outside of the white Ag water pipe.

14: Glue the top cap onto the top of the white Ag water pipe.

15: Mount the antenna at the bottom, by using the two adjustable water clamps. The mounting position is clear of the antenna itself and should be clamped at the bottom of the 20mm Ag pipe and 10cm from the bottom. The 213 coaxial cable protruding from the end of the Ag pipe should then be held onto the supporting pole by two

16: Check VSWR of antenna. No adjustments should be necessary. You are now finished.

Test Rig:

