

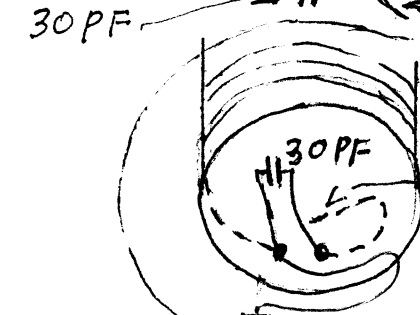
VK3EMU
TRI-BAND
SQUID POLE
80 40 20

1.2mm ϕ
Insulated
Copper
Wire

Solder to
12th
winding

Most wires on squid pole
wound same direction as
trap windings

Solder to
7th
winding



Loop hook
44 Total windings
42nd winding

Threaded
FORMER
1.5mm Pitch
Trap set to
7.1meg

24 turns Total
Section 6
21st turn

Trap set to
14.2meg

Solder to
7th winding
2nd Section

Additional
Earth to
Vehicle,
Caravan
(SHORT)

1st
Section

Full Antenna
80m
Set to
3.6 meg

3.32 m long
2mm ϕ over
Plastic coating

8th Section

105mm

7th Section

40 metre
Section
7.1meg

1.95m
approx

65mm

sections

5.12m

20 metre
Section
14.2m

3.7m
approx

20 metre
Section
14.2m

3.7m
approx

20 metre
Section
14.2m

3.7m
approx

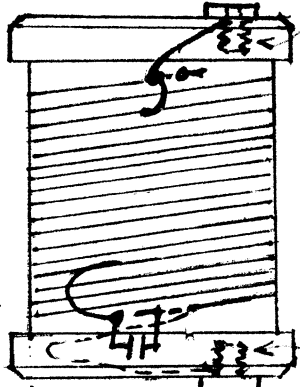
20 metre
Section
14.2m

3.7m
approx

20 metre
Section
14.2m

3.7m
approx

20 metre
Section
14.2m



56
51.5

6
42.8
47

42.8
47

65
and
105

Hole to suit
Squid pole

40m Trap, Hole to fit bottom
of 8th section

20m Trap, Hole to fit bottom
of 6th section

2 banana
sockets

Base
Plate

PL259

$\frac{1}{4}$ Wavelength on 80m
13.95m RG58 C/U
For Coaxial Ground Plane

To test length use
analyzer, for minimum
resistance with open
ended coax at eg. 3.60meg

THE VK3EMU TRI-BAND SQUID POLE.

Tuning Procedure

1.

List of items that make up the pole are:-

One 10 section 10M Tunny squid pole from sales@rippletech.com.au

From the base we have one base plate sitting on the top of the first section to attach the coax, earth and antenna wire to.

One 5.12M+ length of 3mm over plastic, insulated wire, the + allows for trimming when tuning this 20M band section.

Fitting the sixth section and sitting on top of the fifth section is the 20M trap.

One 2.08M+ length of 3mm over plastic, insulated wire, the + allows for trimming when tuning the 40M band section.

Fitting the eighth section and sitting on top of the seventh section is the 40M trap.

One 3.32M+ length of lighter 2mm over plastic, insulated wire, the + allows for trimming when tuning the 80M band section.

One small SS wire hook with three loops in it that will allow the end of the wire to thread through.

2.

Slide base plate over second section to rest on top of first section with PL259 pointing down and banana sockets pointing up.

Solder the 30pf and the 60pf ceramic capacitors inside the former tubes as drawing indicated.

Solder their connecting links to the 7th and 12th windings as per drawing.

3.

Plug the 5.12M length of insulated wire into the coax centre banana socket of the base plate.

Wind the 5.12M length of insulated wire around the 2,3,4 and 5th section in the same direction as on the drawing of the pole and finishing at the top of the 5th and fix there with electrical tape leaving the few cm's of + amount above the tape. The winding direction is the same direction as the trap coils are wound.

4.

Stand the extended pole up into position where you want to use it with the base somewhere within .5M near the ground, **has to be in this operating position for every test.**

5.

A length of RG58C/U coax has to be accurately cut to a ¼ wave length for 3.6meg.

Fit a plug to one end, cut to a plus length for 13.95meg and attach to analyser, leave other end open circuit, set to 3.6meg area.

Analyser needs to read minimum resistance at the 3.6meg and ignore the SWR it will be off the scale.

Trim it back till you achieve the 3.6meg area, when coax too long the minimum resistance point will read low in frequency.

When finished attach the other PL259 plug.

6.

Loop once the 13.95M of RG58C/U coax around the base of the caravan, car and attach one end to the PL259 socket on the base plate and place the other near where you wish to have the transceiver. Attach a banana plug to the shortest piece of 3mm dia wire necessary to go from the earth socket on the baseplate to the body of the car, caravan terminating this other end of the wire with an, for example, alligator clip.

7.

Attach your antenna analyser to the coax end that is going to be attached to your transceiver. I use a Comet CAA-500 analyser with the twin needle metre, this I find is very user friendly to the eyes and very easy to use.

8.

Switch the analyser on to the 14.2 meg area and find where the swr swings low and the reactance needle shows approx. 50 ohms which has to be low in frequency somewhere below the 14.2m.

With the + length on the wire the swr should be minimal at a frequency lower than the 14.2 meg.

Trim the + length till the swr sits about + or - .05 meg around 14.2 meg.

Swing the analyser frequency so the swr goes as low as possible, if it sits above 1.2 to 1 it is mostly because you have a ground plane problem, try a different earthing point on the vehicle

You should be able to achieve an almost zero swr, when achieved at 14.2, the little bit of additional hook up wire in the trap will lower the tune up point slightly lower, that is good as it is recommended to always have the antenna slightly inductive for optimum radiation.

After trimming the wire, re fit the banana plug so it can now be plugged into the bottom of the 20M trap.

9.

Slide the 20M trap onto the sixth section so it rests on top of the fifth section.

Plug the top of the 5.12M wire into the bottom of the 20M trap.

Make sure you have shorted the 21,22,23 and 24 windings at the top of the 20M trap coil.

10.

Plug the 2.08M+ wire into the top of the 20M trap and wind it around the pole the same direction as the 20M wire and using insulation tape to hold it at the top of the seventh section where the 40M trap will rest later on.

You have soldered the 30pf ceramic capacitor into position and soldered its connecting wire to the seventh winding as per the drawing.

Stand the mast up again.

11.

Switch on the analyser and check the 14.2 frequency again to see if the trap is resonating at the 14.2 frequency.

If it is off then an adjustment is needed either the capacitor or the tapping, usually changing the capacity a few pf's will be sufficient.

Switch on the analyser and change its frequency to the 7.1 meg area and see where the swr will drop.

Trim the top end of the 2.08M + wire till the swr comes up to this 7.1 meg frequency

Re fit the banana plug so it can now be plugged into the bottom of the 40M trap.

12.

Slide the 40M trap onto the eight section so it sits on top of the seventh section.

Plug in the top of the 2.08M wire into the bottom of the 40M trap.

Make sure you have shorted the 42,43 and 44 windings at the top of the 20M trap coil.

13.

Plug the 2mm dia x 3.32M + wire into the top of the 40M trap.

Wind this wire in the same direction as the other two, onto the 8th,9th and 10th sections so what ever is in excess of the 3.32M terminates at the top of the pole and is held up by threading through the three looped terminating hook.

14.

Turn on the analyser and check that it is still tuned to 7.1m that the trap is resonating at 7.1m.

If not, changing the capacitor a few pf's should suffice.

Tune the analyser to the 3.5meg area and find where it dips.

Trim the very top protruding wire until you achieve a mid-frequency of about 3.6meg.

Once achieved, wind remaining wire at the tip onto the rod so it just hangs out of the hook.

15

If needed change the shorted wires at the top of the 40M trap onto a winding that brings the swr dipped at the centre frequency you wish to use, thus allowing you at a later date to be able to change this if needed, trimming the end of the top wire should be sufficient.

16.

All should be tuned, but go through the three frequencies to check that they have remained tuned to the chosen mid frequencies, 14.2, 7.1 and 3.6 meg.

If they have unacceptably changed, repeat the trimming procedure, you can't do a shortcut as a miss match will occur if the wire concerned either the 5.12m or the 2.08m is not disconnected from the bottom of the appropriate trap and then tuned before re plugging in and checking that the trap is working and is the same frequency.