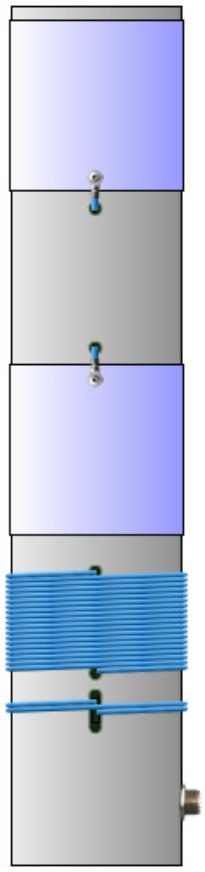


EH antenna for 7 MHz

Source http://f5swn.free.fr/
Contact f5swn@free.fr

Introduction

an antenna of 50 cm usable on 7mhz, inside or in little cleared zone?

The effectiveness of such an antenna is obviously definitely lower than a dipole correctly deployed and released in outside.

By taking the example of a dwelling not allowing the installation of antennas on the roof, it is nevertheless a means of making qso on HF band.

Several web sites approach already the theoretical aspect and one finds sufficient contradictory explanations on the subject. Here thus a simple description of a realization practises which wants to be centered on the experimentation.

Supplies

- 1 GREY tube PVC (because without carbon) diameter 100mm height about 50cm
- SO239 (or BNC chassis)
- 1 leaf of alu thickness 0.5mm (decorative ray of a DIY shop, in general dimension 100 x 50cm) but 2 rectangles of 32,9 x 10 cm will be needed only.
- short rivets of 3mm of diameter (a dozen maxi)
- 2 opening pods of an internal diameter of 3mm and being able to accept a thread of 2.5mm2 to be welded.
- 1 tube of glue (to immobilize coils once ended regulatings. I used of the cyanolite)

Dimensions and preparation of the tube

Having drawn the different elements on the pvc, holes are pierced and the chip SO239 or BNC, installed.
During the research of frequency agreed, it will be necessary to shorten the last turn of the main coil and so necessarily to make additional holes.
On the contrary a vertical slit will favourably be able to allow the source coil to slide for the research of SWR minimum vertically.

Cylinders

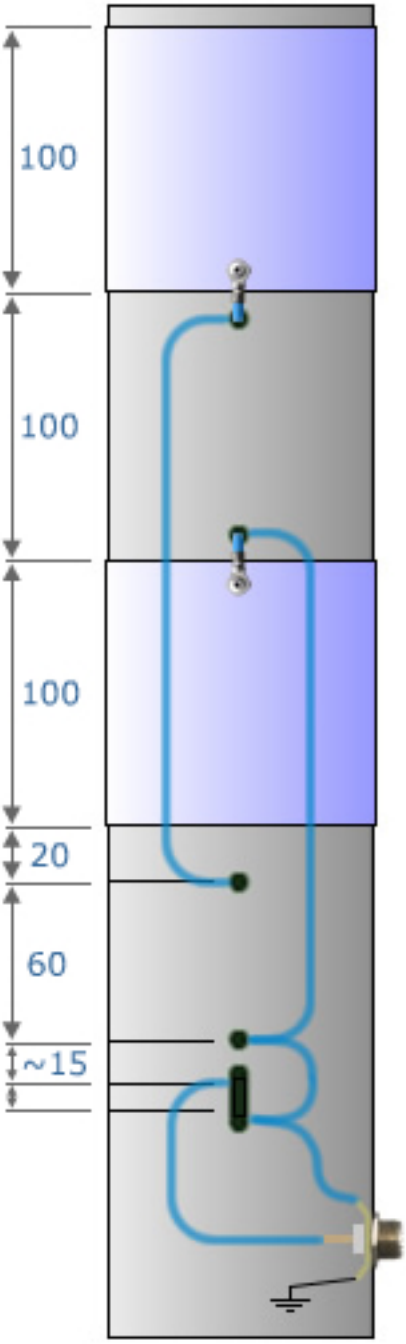
Cylinders have height 100mm. The circumference of the being tube 3,14x100 = 314mm to which they add 15mm for levy.

It is therefore necessary to cut up two rectangles of 100x329mm.

The cut can be made with a good pair of scissors. (with a Stanley knife, by marking trait enough on both sides with the leaf, they can also "break" the alu by successive torsion)

The format of cylinders can be made with a tube of the lower diameter allowing so to "pre-form " the leaves of alu. They can also plate leaves on the tube with the aid of a strap during fixing.

To note: if they make coincide joints (the party of levy accepting rivets) with the alignment of holes by which will pass the threads of links, it is possible to use the rivet the closest to the edge of the cylinder to accept the pod.



Links

Link up points as on the drawings.
The wire are put inside the tube and go out by holes.

The flexible thread for link in the chip SO239.

The link in the lower cylinder is plated to the tube. The thread of link in the upper cylinder passes in the middle of the tube.
Weld a pod on every exits intended for cylinders.

Coils and adjust

They both are wound in the same sense and their ends are welded to the threads of links.

Tuning coil: 19 jointives turns (18,5 after tune but start with 19)
source coil: 2 jointives turns

The tuning of frequency is made by shortening little by little the turn of the bottom of the tuning coil. (it is possible that additional holes are necessary to move the threads of links according to tune).

For every modification of the tuning coil, it is necessary to search SWR minimum. For it, make slide the source coil by successive tries by moving it away or bringing closer to it to the tuning coil.

Use a noise bridge or an network analyzer.
you will obtain thus an indication of frequency agreed and impedance in the single measure.

Lastly, it is preferable to complete the adjustment of this antenna with the length of coaxial which will be used and the antenna placed on its final place of emission.

Obstacles surrounding, position of the coaxial in comparison with the antenna, its length, have an impact on the tuning of the antenna.
The coaxial is not therefore exempt from radiance and it is to envisage possible HF returns if one microphone amplified meadow is used.
These problems can be minimized by linking up the mass of SO239 with the earth.

Although the tune of this antenna is more or less difficult to acquire, SWR will be able to be minimum as the curve above shows it.

The band pass is about 150 kHz.

Good entertainment.

F5SWN Ludovic