

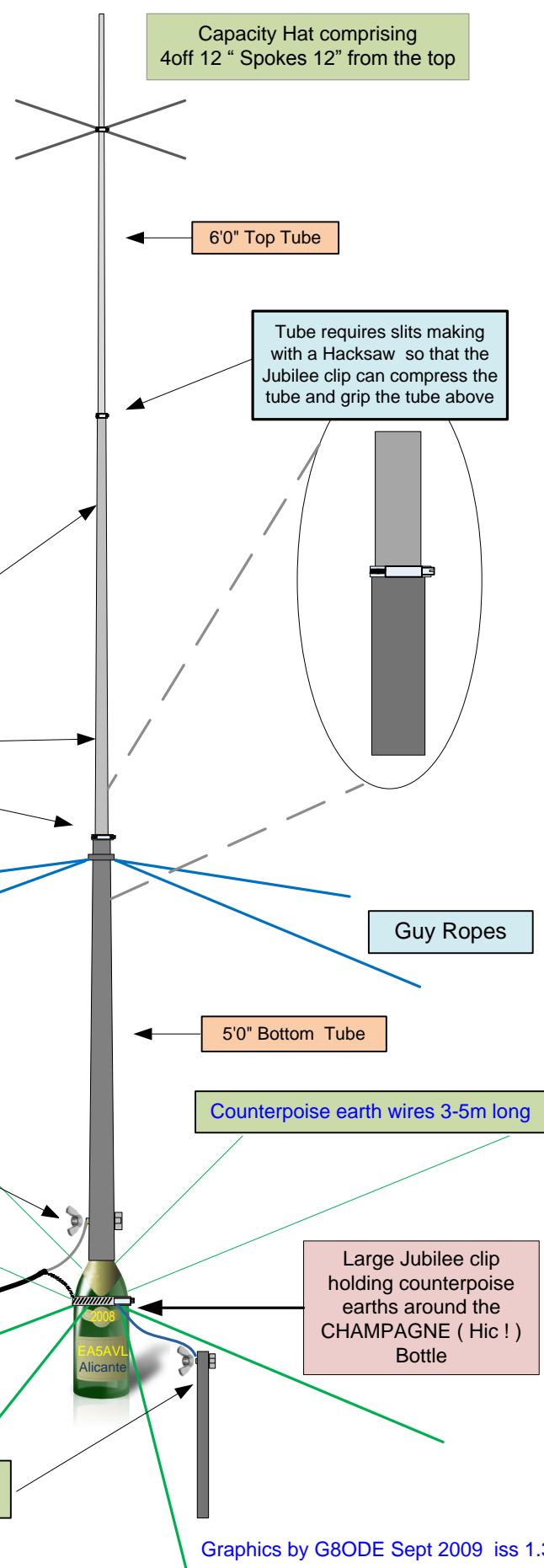
5 Band 1/4 wave Telescopic Antenna - EA5AVL

(20m -10m)



Notes :-

1. An old Champagne bottle acts as the an insulator at the base of the antenna.
2. The antenna is made from 3 sections of sliding-fit alloy tubing. When extended = 15'10" (4.825m) and Retracted = 6'6" (1.98m)
3. Three counterpoise wires are required for each of the 5 bands.
4. The lower alloy tube section of the 5-band antenna is guyed to stabilise the antenna in high winds
5. **Metric dimensions:-**
Top Tube = 1.83m, Middle Tube = 1.68m, Bottom Tube = 1.53m
The bottom and middle tubes have hacksaw cuts so that the Jubilee clamps can compress the tube slightly to grip the tube above
6. Earth Rod = 1.25m long



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Readings taken with an MFJ 296 Antenna Analyser 13Aug/2008

| 5 BAND 1/4 Wave Alloy Telescopic Antenna Measurements | | | | | | |
|---|-----|----------------------|-------------------------------|--------------------------|-------------------|--------------|
| Frequency MHz | SWR | Input Impedance Ohms | Bandwidth @ SWR 1.2:1 or less | $1/4\lambda = 234/F$ MHz | Length when Tuned | Efficiency % |
| 14.00 | 1.2 | 52 | | | | |
| 14.10 | 1.0 | 54 | | | | |
| 14.20 | 1.0 | 51 | 700 KHz | 16' -7" (5.05m) | 15' -2" (4.62m) | 99 |
| 14.30 | 1.0 | 48 | | | | |
| 14.350 | 1.0 | 48 | | | | |
| 18.068 | 1.0 | 42 | | | | |
| 18.118 | 1.0 | 42 | 1.69 MHz | 12' -11" (3.93m) | 11' -2" (3.40m) | 99 |
| 18.168 | 1.0 | 43 | | | | |
| 21.0 | 1.0 | 50 | | | | |
| 21.2 | 1.1 | 49 | 1.90 MHz | 11' -1" (3.38m) | 9' -1" (2.77m) | 99 |
| 21.4 | 1.2 | 46 | | | | |
| 21.450 | 1.2 | 45 | | | | |
| 24.890 | 1.0 | 48 | | | | |
| 24.940 | 1.0 | 48 | 2.16 MHz | 9' -3.5" (2.83m) | 7' -4" (2.24m) | 99 |
| 24.990 | 1.0 | 48 | | | | |
| 28.0 | 1.1 | 43 | | | | 99 |
| 28.4 | 1.1 | 43 | | | | |
| 28.8 | 1.1 | 44 | 2.11 MHz | 8' -3" (2.51m) | 6' -3" (1.90m) | ~99 |
| 29.2 | 1.2 | 42 | | | | |
| 29.6 | 1.3 | 40 | | | | 98 |

The table above shows how the 5-Band antenna has to be mechanically adjusted for each band of operation. This is achieved by loosening the Jubilee clips, and sliding the sections in or out a small amount.

Each Band should be tuned on the centre frequency preferably using an antenna analyser or a transceiver on low power in conjunction with an SWR meter. A cross needle SWR meter will make the task even easier as the Forward Power will not need to be rest every time the antenna is adjusted.

Once the correct measurements are determined, the tubes can be marked with a waterproof pen, so that future adjustments can be made more easily.

A shop bought 5 Band Vertical should cost £250 - £390, this "5-Bander" is a true quarter wave on each of the 5 bands, without any losey loading, and MUCH cheaper to make.

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"Here's one I made earlier" EA5AVL



The 20m and the 5-Band Vertical antenna prior being loaded for the holiday in Andorra Sept 08.



Photograph showing the Jubilee pipe clips use to secure the sections of aluminium tubing together.



The 5 band vertical antenna mounted on the car on a calm evening and without any need for guy ropes.



The 5 band antenna deployed at the Alicante QTH during the testing phase.

The 5-band antenna is simple and cheap to make, and has a performance that matches commercial antennas but at cost considerably lower. The design was purposely based on a telescoping fibre glass fishing rod as this allows it to be easily stowed away in the car.

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