

# VK5AH -HF 4 Bander

**Construction Tips:-** None of the dimensions could be said to be critical except perhaps the 80m Tips (B) and the G/H spacings. Build the Antenna complete before adjusting or trimming anything. The Antenna was erected at about 25 feet in reasonably free space in a horizontal plane. Dimensions would differ in a sloping configuration and extra ropes may be needed from the bottom of the spacer conduits to the ends of the inductors perhaps. Feed the antenna with a 1:1 balun and be careful the common feed points dont get twisted up near the balun. The coils are not critical. Half a dozen turns here or there wouldnt be critical but would tend to affect the 80m tips a little. The resonant frequency will tend to drop typically 20-30 Khz on both 80 and 40m when the coils are soaked in rain. They could be sealed perhaps with polyresin but be careful they dont become too heavy. The spacer conduits were drilled through and threaded onto the A section and held in place using cable ties to stop it from sliding along the wire. The coils were wound with fine stranded insulated wire of about 2mm total thickness (insulation included) . The important thing is to be able to get that many turns onto the former close spaced.

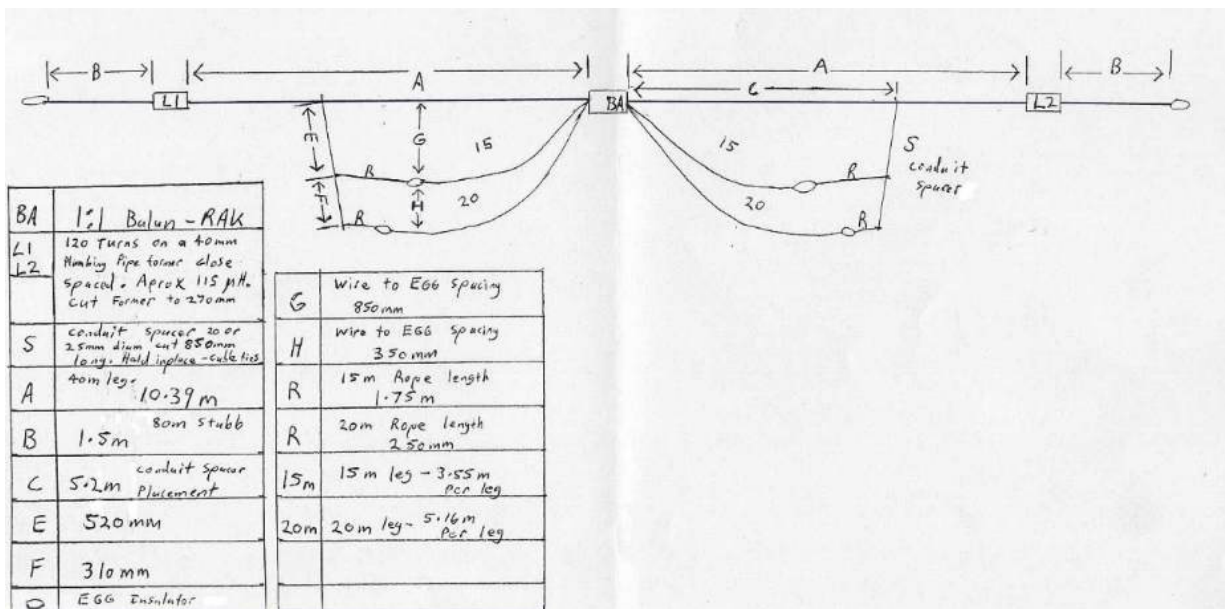
**Adjustment:-** Start by adjusting the 40m sections (A) and then the 80m tips (B) then adjust the 20m section followed by 15m lastly. Be careful to make all adjustments so as to keep the antenna symmetrical particularly the 80m tips. As a guide the 80m tips will adjust at about 40Khz per inch and the A section will adjust 40m by about 10Khz per inch. The 20 and 15m legs have little effect on 80 or 40 but the 20m legs will effect the 15m section. Do not be tempted to bring the 15m sections up closer to the 40m section as strange things start to happen on 15m. Dont be decieved adjusting the 15m legs. The SWR will appear to drop nicely at about 20.8 Mhz but this is in fact the 40m section coming into play. If problems are encountered making it work on 15m then disconnect the upper section of the antenna (A) from the balun but leave it physically in place. Then adjust the 15m section and finally reconnect the upper section. The SWR will rise slighly on reconnection and the best you will get is about 1.6:1 SWR . My solid state radios seem quite able to still deliver 100 % power forward into this sort of load.

**Performance and Characteristics:-** The antenna performs as a standard dipole on all bands except 15 and 10m. It has a bit of end fire on 15 and 10m making the antenna work almost omnidirectional. Particularly so on 15m due to the 1.5 wavelength section from 40m The Bandwidths of the 2:1 SWR points is as follows on each band.

80m - 40 Khz, 40m - 250 Khz, 20m - 500 Khz, 15m - 21.0-21.350

**Other Bands:-** I have not tried the WARC bands but the antenna seems to work reasonably well on 10m using a tuner. The SWR without is about 5:1 .

**160M-** Try adding about 6.9m to the 80m ends and it works on 160 . I used some aligator clips near the 80m end Egg insulators to clip/unclip the 160m sections as i can get my antenna ends up and down fairly quickly on pulleys. The antenna adjusts on 160m at about 3Khz Per Inch.



BA	1 1/2" Bulup - RAK
L1	120 Turns on a 4mm
L2	Ranking Pipe former close spaced. Approx 115 mm. Cut former to 270mm
S	conduit spacer 200r 25mm diam cut 850mm long. Hold in place - cables tied
A	40m leg 10.39m
B	1.5m 80m stubb
C	5.2m conduit spacer placement
E	520mm
F	310mm
O	EGG Insulator

G	Wire to EGG spacing 850mm
H	Wire to EGG spacing 350mm
R	15m Rope length 1.75m
R	20m Rope length 2.50mm
15m	15m leg - 3.55m per leg
20m	20m leg - 5.16m per leg