

Further Modifications to the Typical 1/2 wave CB Antenna for Other Bands

By P.McAdam VK2EVB

Do you require an antenna for a single band that doesn't take up much space? without a ground plane? doesn't need a tuner? If so maybe this idea will suit you. I have only managed success on the 10 (naturally), 12, 15 and 17 metre bands. In my opinion the 17 metre version is just bordering being too cumbersome but it definitely works. Success was achieved with the following thought and experimentation.

The Recipe:

Take one CB 1/2 wave antenna, (you know, about 5.5 m long with tapped coil at the base)

some 6mm and 10mm dia. aluminium tube,
some stainless steel self tappers,
a stainless steel hose clamp,
some scrap aluminium plate.

The Plan: Modify CB aerial to cover another band by changing length, apply RF and get a good SWR without a tuner, changing the coil or tap.

The Problem: Making a vertical radiator a half wave high at 17 metres causes it to almost reach 9 metres making it heavy, very whippy and likely to bend.

The Solution: Use end loading or capacity hats to shorten physical length.

The Tools: The usual plus a GDO, SWR meter and HF rig.

The Results: Mixed at first but the following formula emerged.

Note: No changes to the coil or tapping were required on a standard 1/2 wave CB antenna.

10 metres - Well, as you all know, slight shortening of the radiator will give full coverage of 10 metres. (nothing new)

12 metres - Take two 0.6 cm dia. tubes, each 90 cm long, secure them together (like a cross) at the centre with scrap aluminium brackets and mount horizontally with a stainless steel hose clamp, at a point 5cm above the top of the antenna mounting bracket. On an unmodified CB antenna this will load the radiator down to 24.9 Mhz. No other changes are required other than slight adjustment of the antenna tip for centre of band.

15 metres - Take two 1 cm dia. tubes, each 180cm long and mount them horizontally (secured at the centre like a cross) at the 5cm point above the mounting bracket. Then mount two more horizontal 0.6cm tubes x 90cm long at a point 100cm from the tip of the radiator (a top loading). The vertical element is now loaded down to 21.2 Mhz approx. No other changes required other than slight adjustment of the antenna tip for centre of band.

17 metres - Take two horizontal 1 cm dia. tubes, 275 cm long (secured at the centre like a cross) and mount at the 5cm point above the mounting bracket. The vertical radiator is ex-

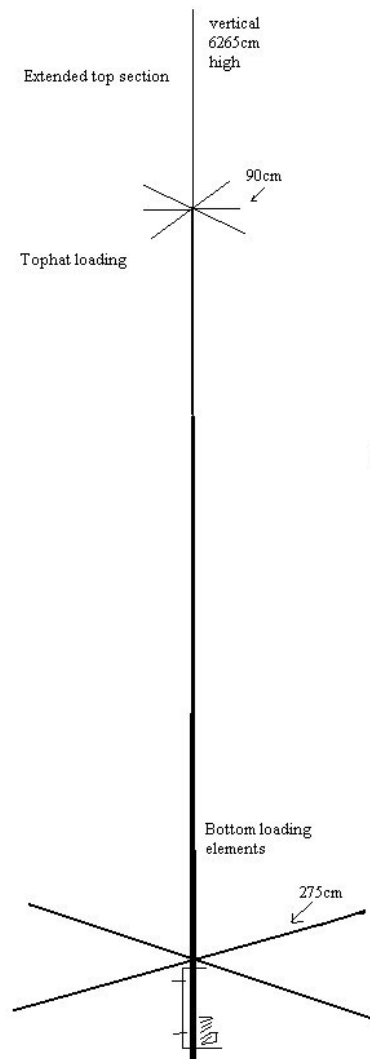


Fig.1 - 18.1 Mhz version of modified CB 1/2 wave antenna

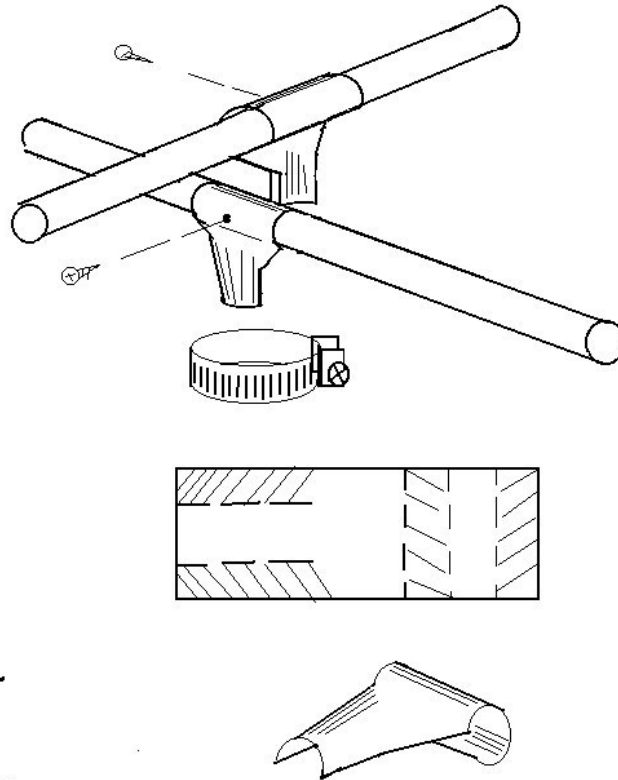


Fig. 2 - Scrap aluminium bent into brackets & screwed

tended (0.6 cm tube fitted mine) to 6265 cm and three 0.6 cm x 90 cm long tubes are secured at their centres to form a tophat 1500cm from the tip. With little adjustment this will cover 18.068 - 18.168 Mhz very nicely and again no other changes need be made.

Unfortunately I couldn't manage **20 metres** while still keeping the antenna at a size that would withstand strong winds without bending but no doubt someone will work it out. I think 20 metres may require the tapping position on the standard coil to be changed but it is worth a try.

The general arrangement is shown in fig.1 and the mounting method with simple brackets are displayed in fig.2. Stainless steel screws were used to ensure good conductivity and stall corrosion.

Perhaps if some of the above ideas were combined with a light weight coil and capacitive tophat, dual band operation could be achieved. Larger diameter loading tubes at the bottom of radiator may aid in shortening, also tapering (telescoping tube) will keep weight down. I have run out of time at the moment so will have to either try these ideas another time or rely on you amateurs out there to supply some of your typical ingenuity and expertise to this matter. I rather hope the later will prevail, causing one of you to write an article with the details explained, which I look forward to reading, so go to it.

