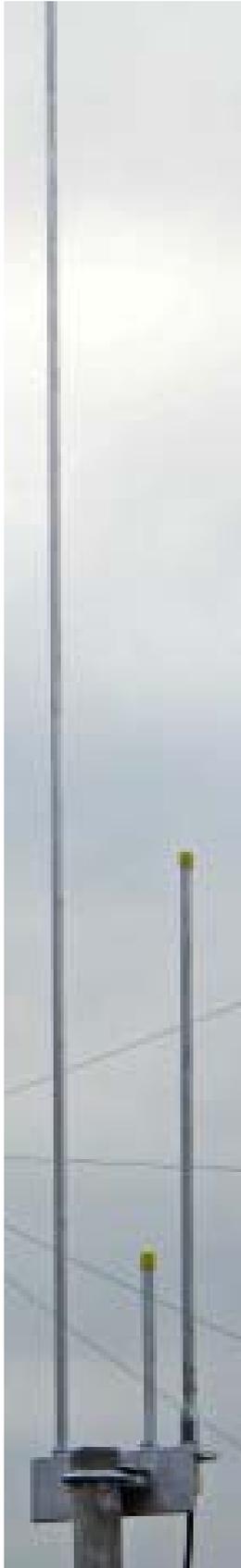


Dual Band 144/432MHz J-Pole Antenna - Colin G4FCN



After the construction night in January (2016) several members showed an interest in this antenna. Although it is scheduled to be published in Tars Talk in a future issue, I thought it would be a good idea to add it to the download page of the website before publication.

Whilst trawling around the internet a few weeks ago, looking for a design for a 2/70 antenna, I came across this one.⁽¹⁾ Whilst a lot of people have come across a single band J-Pole (The original antennae for GB3TR were J-poles, constructed from 300 ohm ribbon cable, and housed in 40mm plastic wastepipe), I had never seen a dual band example.

This one looked particularly easy to construct, with no really difficult stages, and uses easily available parts, maybe the most difficult to get would be the SO239 Stud to 3/8" UNF adaptor, as used on CB antenna bases. A search on eBay revealed several suppliers for less than £4.00 including postage and packing. I did consider making one to allow the use of 8mm hardware and tools but to make a good mechanical job with basic home tools would be pretty near impossible, so went with the original design.

Searching through the various pieces of aluminium stock from previous antenna construction projects I found I had enough 3/8" aluminium tube and a short length of angle to construct the antenna, and duly ordered a couple of base adaptors.

Whilst waiting for the adaptors to arrive, I made a start measuring and cutting the angle and tube, marking out the element positions and the securing bracket holes (the usual exhaust clamp), and centre drilling the marked positions, ready for the final holes which were to be tapped for two of the elements, and the third a clearance hole for the antenna base.

As all three aluminium rods need to be threaded on one end, and that two of them need two lock nuts each, I measured the thickness of the locknuts, and the thickness of the angle bracket, and using a 3/8" UNF die, cut a thread on the end of shortest and longest elements, slightly more than the total measurement previously obtained. The thread on the third element was cut to 0.5".

When the base adaptors arrived I measured the outer diameter of the shoulder insulator (0.5" in my case, but check before you drill!) and drilled the hole in the angle bracket.

Tap the two holes for the shortest and longest elements, run one locknut onto the elements, and screw into the hole prepared, then secure with the other nut.

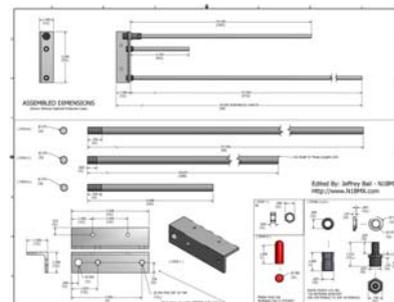
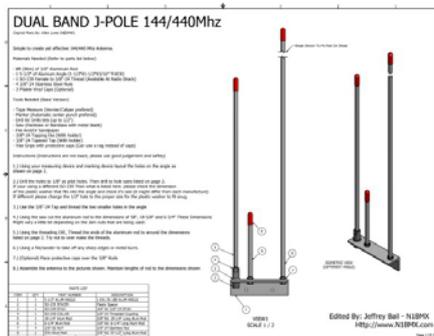


(Note: When cutting the threads, make sure they are perfectly square, else you will end up with an antenna that looks a bit strange with elements leaning at odd angles. Also, aluminium will tend to grab the tap or die so a little lubricant will help give you a clean thread, but make sure you clean it thoroughly before final assembly.)

The driven element is screwed into the connector nut on the adaptor, and secured in place with a locknut.

The completed antenna must be fixed to metal mast (all my testing was done with it on a 5' aluminium pole cable tied to the fence, fairly well in the clear.

During the testing, I found I needed to lengthen the driven element by about 10mm to bring the lowest SWR closer to the centre of the bands, so would suggest that you cut this element maybe 25mm longer than the drawing shows, and trim it for best results.



The ends of the elements are finished off with 3/8" screw thread protectors, again located on eBay for a few pennies.

A high resolution pdf file of the dimensional drawings and pictures can be obtained from the download page of the club website.

SWR measurements on my completed antenna are as follows.

144.00	1.4:1	432.00	1.2:1
145.00	1.25:1	433.00	1.1:1
146.00	1.2:1	434.00	1.15:1

Whilst the 144MHz figures could be improved upon it would be at the expense of the 432MHz readings. Feel free to experiment yourselves, but remember any simple dual band antenna will always be a compromise.

(1) <http://ve3elb.ham-radio.ch/2m-70cm%20antennas.html>