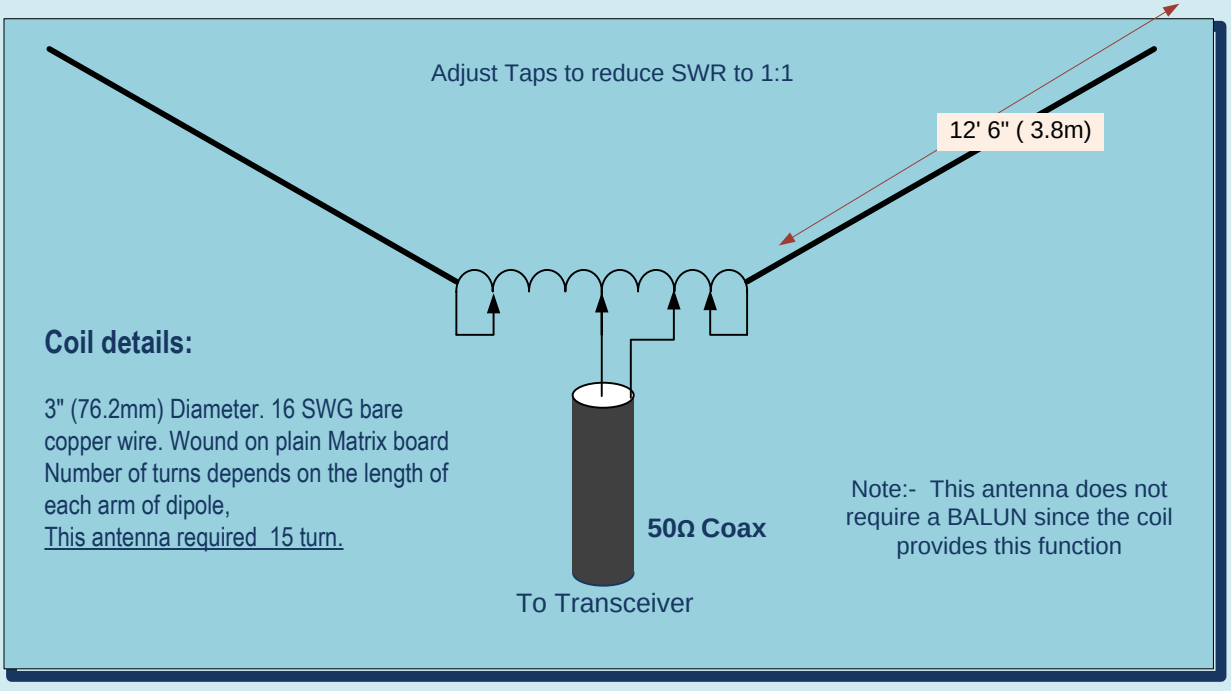
30m Half -Size Rotary Dipole - G3YEU

http://www.rsars.org.uk/ELIBRARY/docsants.htm

The G3YEU QTH has a long but quite narrow weed patch and there is a need to keep the arms of the dipole from encroaching on the neighbours' air space, so mounting the dipole as a V added some valuable feet. Each arm is about 12.5 ft and is constructed from telescoping fibreglass flag/fishing poles (about £2 each off ebay) and short lengths of aluminium tubing. Two short lengths of glass-fibre rod were used to insulate the arms from the supporting hardware. After building the antenna it was realised that slighter longer lengths of fishing pole could have been purchased, which would have made the mounting a lot easier and lighter.



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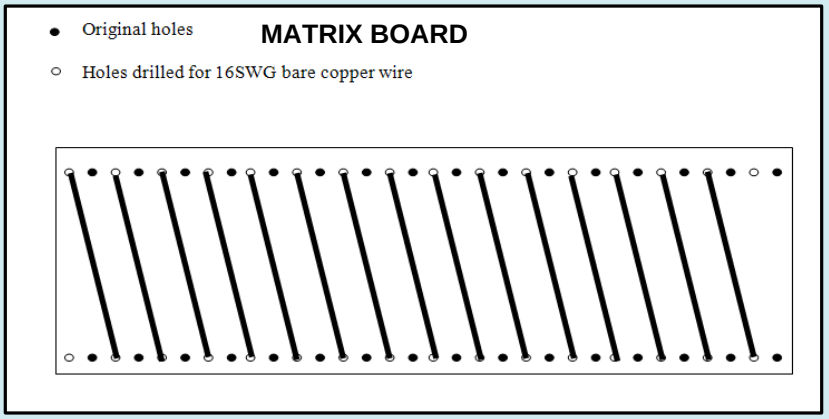
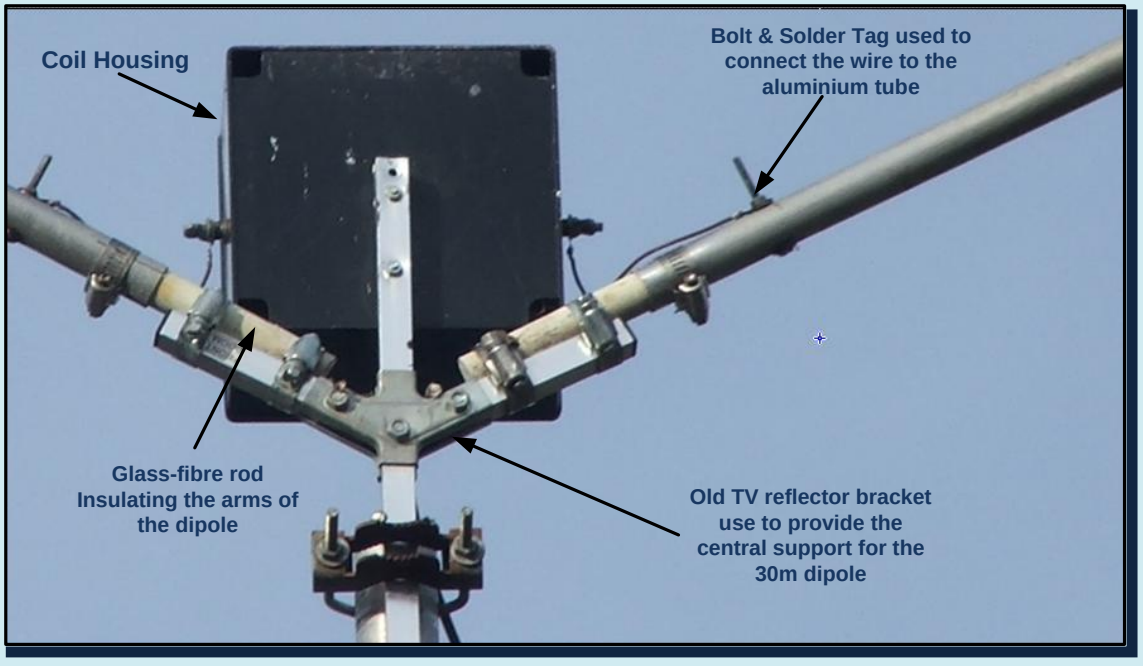
The coil is initially wound onto a 2.5in diameter former and, once complete allowed to slip off the former. The formed coil can then be carefully screwed through two parallel rows of holes (3in apart) onto a 5.5 in length of plain SRBP matrix board as per the diagram. The natural spring in the wire takes care of the ½in difference in diameter. It may be necessary to drill out alternate holes on the board to accommodate the copper wire, and keep the coil spacing quite rigid. Super glue is used to fix the wire permanently in place.

The matrix board with the coil is mounted into an ABS box measuring 6x6in. The end of the coils have solder tags fitted, and are secured with a couple of bolts, which protrude from the ABS box. (see photograph below.)

The coax is connected with SO/PL259 hardware. There is a short run of RG58 down to the rotator and then RG8 to the shack.





The reflector framework from an old analogue TV antenna provided the hardware for supporting the antenna as a V and the electrical dipole comprised a run of 20SWG wire (almost anything would do) inside the fishing poles and the short lengths of aluminium tubing. This wire was threaded through a small hole in the ali tube and connected to the tube with a solder tag and small nut and bolt.

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All metal to metal connections were made with electrically conductive grease, especially as some of the connections were made using dissimilar metals! All holes and connections (including the PL259) were then covered with Liquid Tape, a bit expensive but a couple of coats provide a lot of protection.

The dipole is mounted about 10ft above my mini-beam and is about 40ft in the air when the tower is raised.

The 30m dipole is mounted about 10ft above the mini-beam

Tuning:

Not easy without an SWR analyzer so I didn't try! The tuning was carried out with the antenna just about 6ft high.
Apart from the shield connection to the centre of the coil, initially all of the taps were made using crocodile clips. The two taps connected to the dipole arms should be adjusted in tandem until the required resonant frequency is reached. Remember that the resonant frequency will rise when the antenna is high in the air (mine was about 100kHz higher) and this must be taken into account. If you're happy with the freq, solder the taps to the coil. The tap connected to the coax centre is adjusted for best match. It will probably only be about a turn or two from the centre tap of the coil and to get the best match it may need a fair bit of trial and error. This is quite fiddly as just half a turn or less could mean the difference between a perfect match and a high SWR. Once happy solder the tap to the coil. There is no need for a balun, the connection to the coax is unbalanced.
There is a trade off between size and efficiency, but in this case efficiency is quite high as the coil Q is reasonable and the band is very narrow. I found that I could use all of 30M with an SWR no greater than 1.5:1 and the DX is certainly workable.