

Subject: Copper Cactus INFO
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To : J-POLE@WW

The COPPER CACTUS Antenna

To: All Amateurs
From: Gary - KGOZP

Dear Fellow Hams

Here are the numbers for the Copper Cactus J-Pole antenna!

I hope you are already familiar with the construction of the standard J-Pole antenna, so I won't go into any unnecessary detail.

The antenna may be built as a Mono-Bander, Duo-Bander, Tri-Bander, Quad-Bander or whatever with great success.

You can either feed it with separate coax's for each band or a single coax, however, separate coax's make it much easier to tune.

There is no trick to building them, just remember the overall length is for the lowest frequency of operation. In other words, a Mono-Bander, Dual-Bander and Tri-Bander are all exactly the same length overall 58.09" on 2mtrs.

Feed the coax up the center of the pipes. Use T-Fittings at the proper distance below the top of the antenna for the desired frequency. The only problem is that the more bands you try to incorporate into the antenna, the harder it is to get the SWR flat on all bands.

Here are the numbers you are looking for:

Frequency	52MHz	146MHz	223.5MHz	435MHz	912MHz	1265MHz
Pipe Dia.	1"	3/4"	1/2"	1/2"	3/8"	3/8"
Stub	54.70"	19.36"	12.65"	6.46"	3.02"	2.16"
Overall Length	163.92"	58.09"	37.94"	19.39"	9.07"	6.49"
Separation	5"	2"	1-1/4"	3/4"	1/2"	1/4"
Connect at	6"	2-1/4"	1-1/2"	1"	3/4"	1/2"

For best results, build the highest band first, for e.g. the 435MHz antenna, If you really want it to look neat, use 3/8" copper for the vertical and 1/4" copper for the transformer section (stub). Naturally the finished product will be in the shape of a "J".

Now build the next band, for e.g. the 223.5MHz antenna, by adding pipe to the T-connector that is the base (mast mount) of the 435MHz antenna, I use 1/2" for the vertical and 3/8" for the stub of this section.

Now build the 146MHz antenna, don't forget the overall length of the antenna is the lowest frequency you will be using. I use 3/4" for the vertical and 1/2 for the stub.

The stub must be parallel to the vertical, however you can point the base of each stub in any direction you like. I prefer 3 equal distant points, but you can make them all on the same side if you wish. I feel the three points make it look like a cactus.

My measurements on overall length, and stub length are from the Center line of the separation pipe (horizontal) to the top of the antenna. The Separation distance is technically from center line to center line, but inside measurements are fine and visually look better.

Some of the measurements are less than physically possible, in this case just push the T-Fitting and elbow as close together as you can get them, no need to trim the fittings.

The Connect at measurement is from the top of the horizontal member to the point of connection.

Final Note: If you use 1/2" pipe for all the construction, on the 2-meter stub, add 1/4" to its length, or use pipe-caps and adjust them up or down to get the 1/4" additional length.

The antenna should be in perfect tune, SWR less than 1.2 - 1 on all bands, using separate coax for each band.

Solder all the joints before installing the coax, any pipe you have left over can be used as the mast.

To install the coax, drill a 1/4" hole in the top of the horizontal part of each T-fitting closest to the vertical, then tilt the drill at an angle, so that the drill bit is sort a heading down the vertical.

Enjoy Building: If you have any questions just ask, or further instructions, just send me a message and I will promptly respond.

PS Until you are familiar with the construction techniques of the J-Pole, I wouldn't attempt any more than three bands the first time out. In fact, A dual-bander, using the above dimensions will be perfect every time.

73s de Gary - KGØZP

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<http://archimedes.galilei.com/raiar/cactus.html>

73 from John, VK6JY @ VK6JY Albany, WA. TST HOST 1.43c

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