A simple 4 element 2 Meter Yagi Made from Coathangers or other Common Materials

By Pete Rimmel N8PR

Design criteria for a simple 2 Meter antenna:

They can be made using various materials and in varous sizes.

We want to keep the design simple.

We want to use readily available materials.

We want enough forward gain to hit the local repeater.

We want enough beam width so aiming is not critical.

It must be inexpensive.

The BOOM:

The boom can be made from ANY NON-METALLIC material. We do not want to use aluminum or we will have to change the dimensions that we have – and mounting will be much more difficult, since we would then have to isolate the driven element.

Wood is easy to work with, but not weather resistant.
½ inch PVC pipe and couplings are our best choice.

The ELEMENTS:

Wire coat hangars (for inside use – they will rust)

#8 Copper wire ~1/8” diameter - cheap and available (from Home Depot)

1/8 Inch aluminum tube or aluminum welding rod

(local aluminum supplier)

Bronze brazing rod (welding supplier)

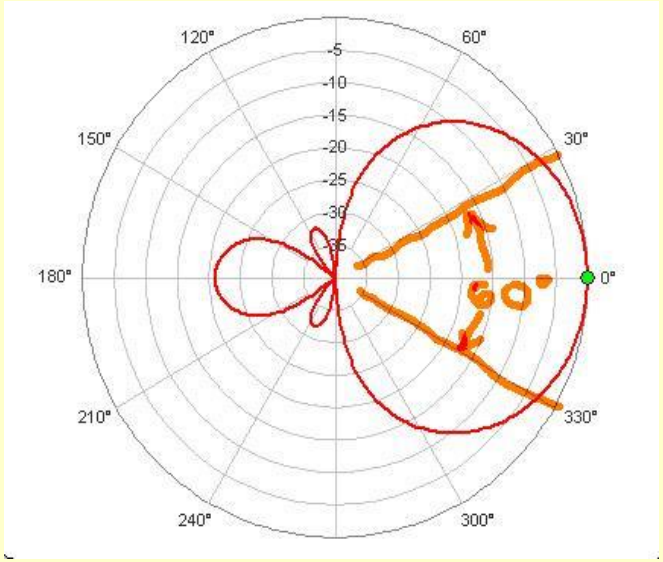
4 Element 2 Meter Yagi Dimensions

ELEMENT	ELEMENT LENGTH	DISTANCE FROM REFLECTOR
Reflector	**41 inches**	**0**
Driven Element	**37 ¾ inches**	**12 3/8 inches**
Director # 1	**36 5/8 inches**	**24 ¾ inches**
Director # 2	**36 ½ inches**	**37 1/8 inches**
		Elements equally spaced

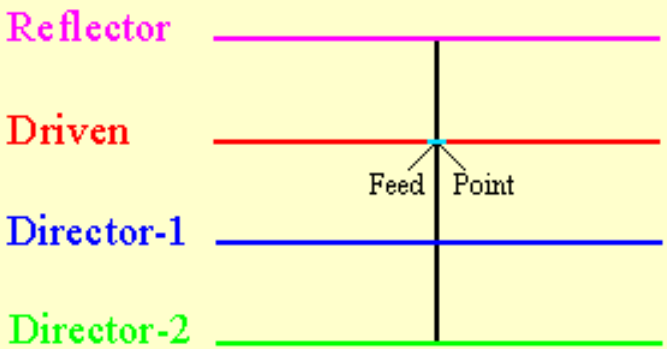
NOTE: These dimensions are on the DCARC facebook page.

How does it work?

4 Element yagi has ~8 dBi gain with a 3 dB beamwidth of about 60 degrees



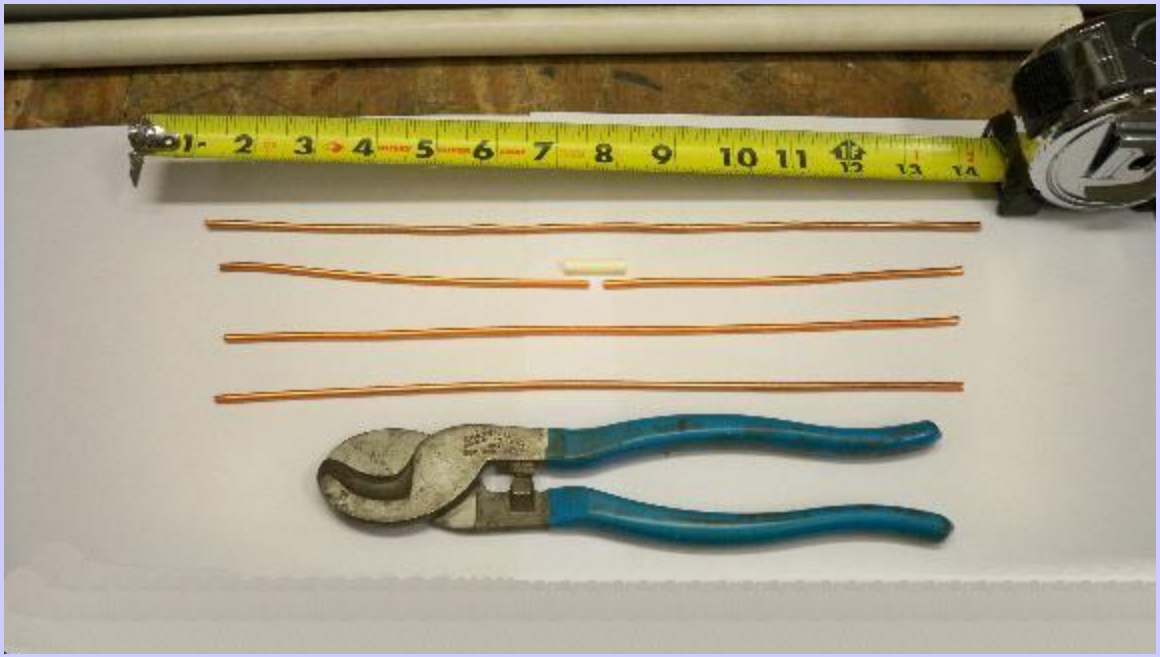
4 element yagi pattern



4 element yagi easy to build and feed directly with 50 ohm coax.

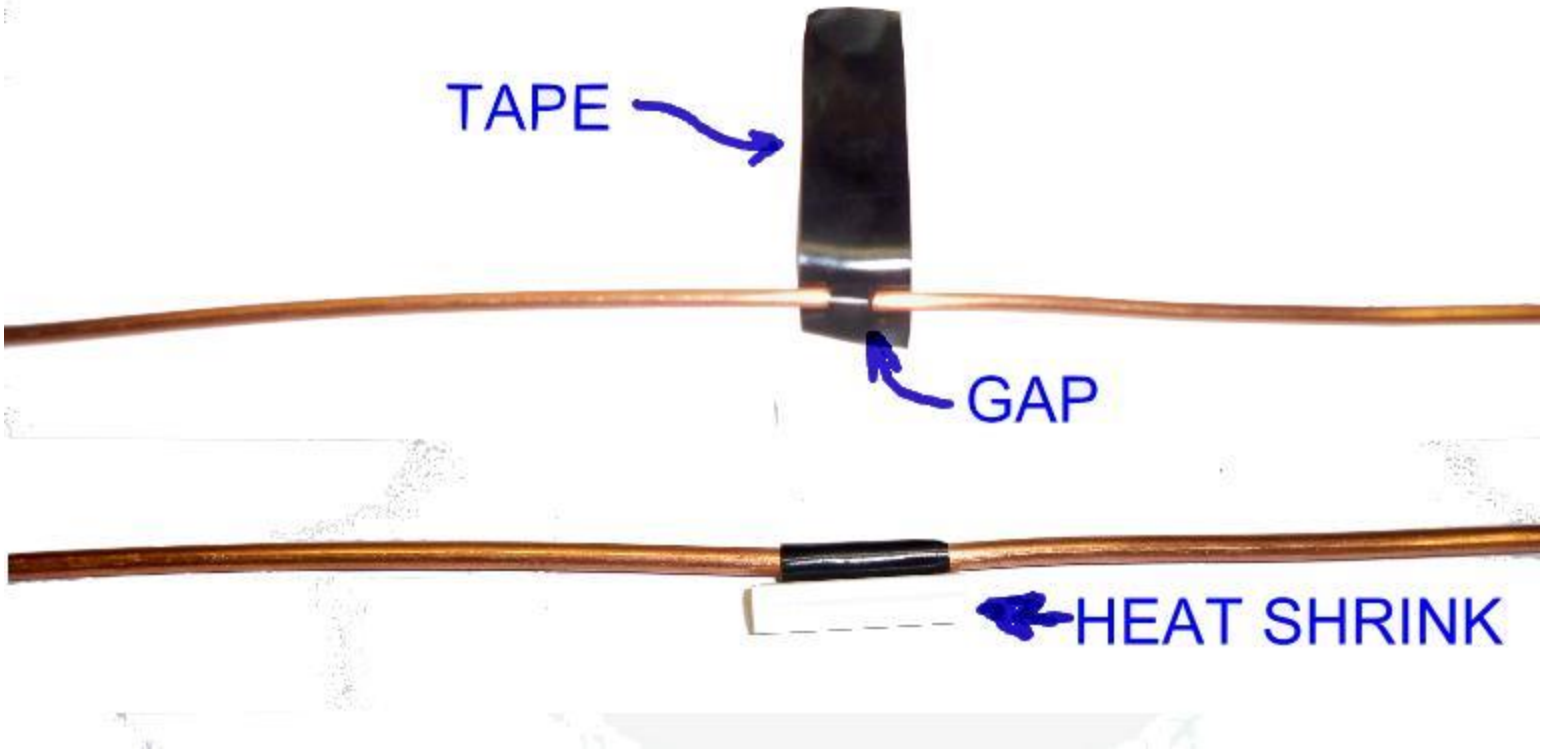
Center of boom has no element and makes for easy mounting.

Let’s build an antenna !



First measure and cut some wire or rod to the dimensions we need.

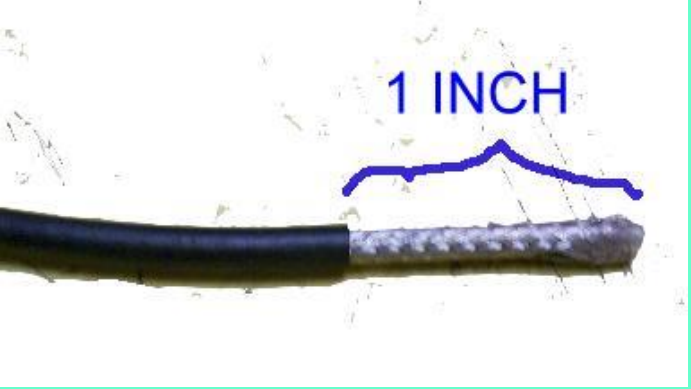
2 meter 4 element beam 1/8" diameter tubing	Element Length	Element spacing from Reflector
Reflector	41"	0
Driven	37-3/4"	12-3/8"
Director 1	36-5/8"	24-3/4"
Director 2	36-1/2"	37-1/8"



Prepare the driven element leaving a ¼" gap. Tape it and secure it with heat shrink. You may have to re-cut the element to length.

<u>Be sure to re-measure it after this step.</u>

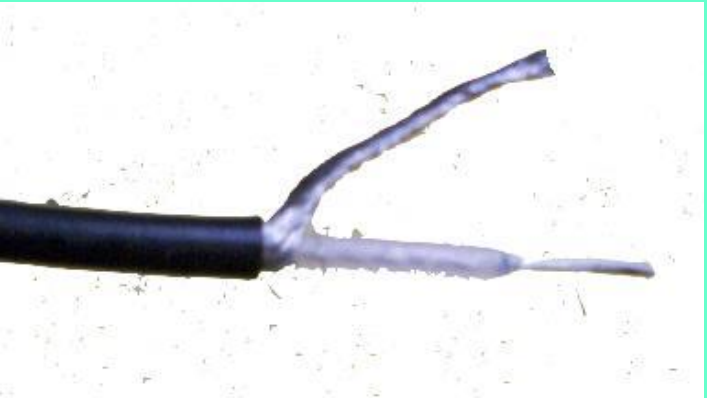
Drill the PVC boom and insert the elements. Note the 'TEE' in the middle for mounting the antenna.



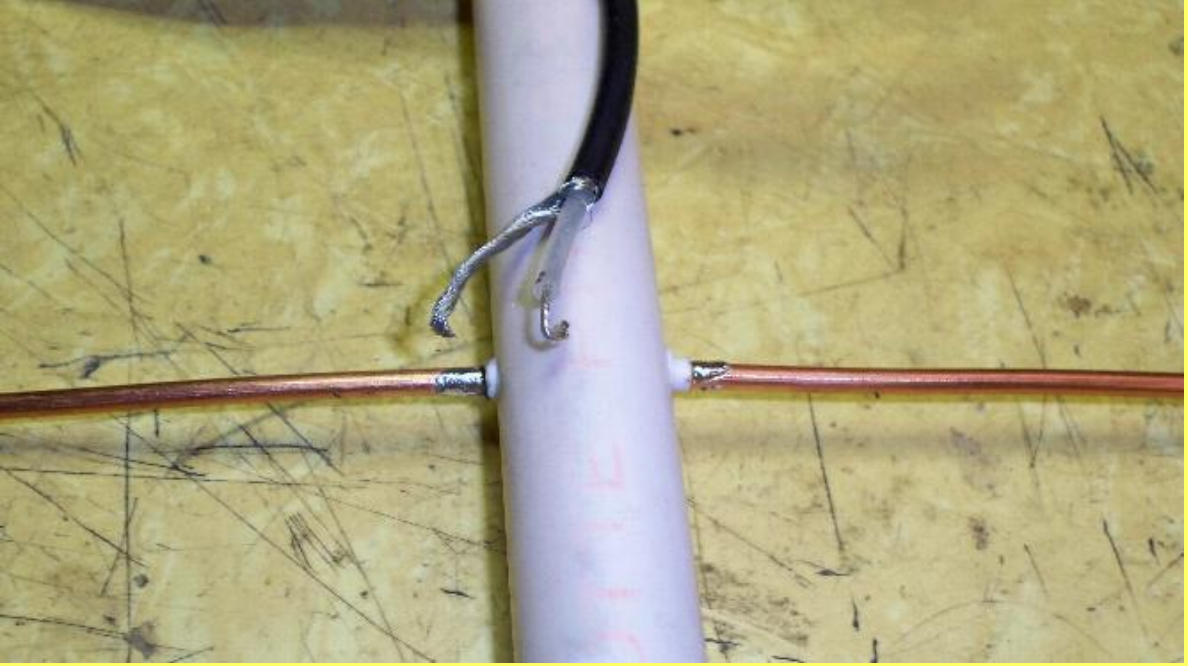
PEPARE THE FEED LINE:

Remove 1” of the outer cover of your Coax - RG-58 or RG-8X 50 Ohm Coax

With a pointed tool, comb out the Braid away from the cener conductor.



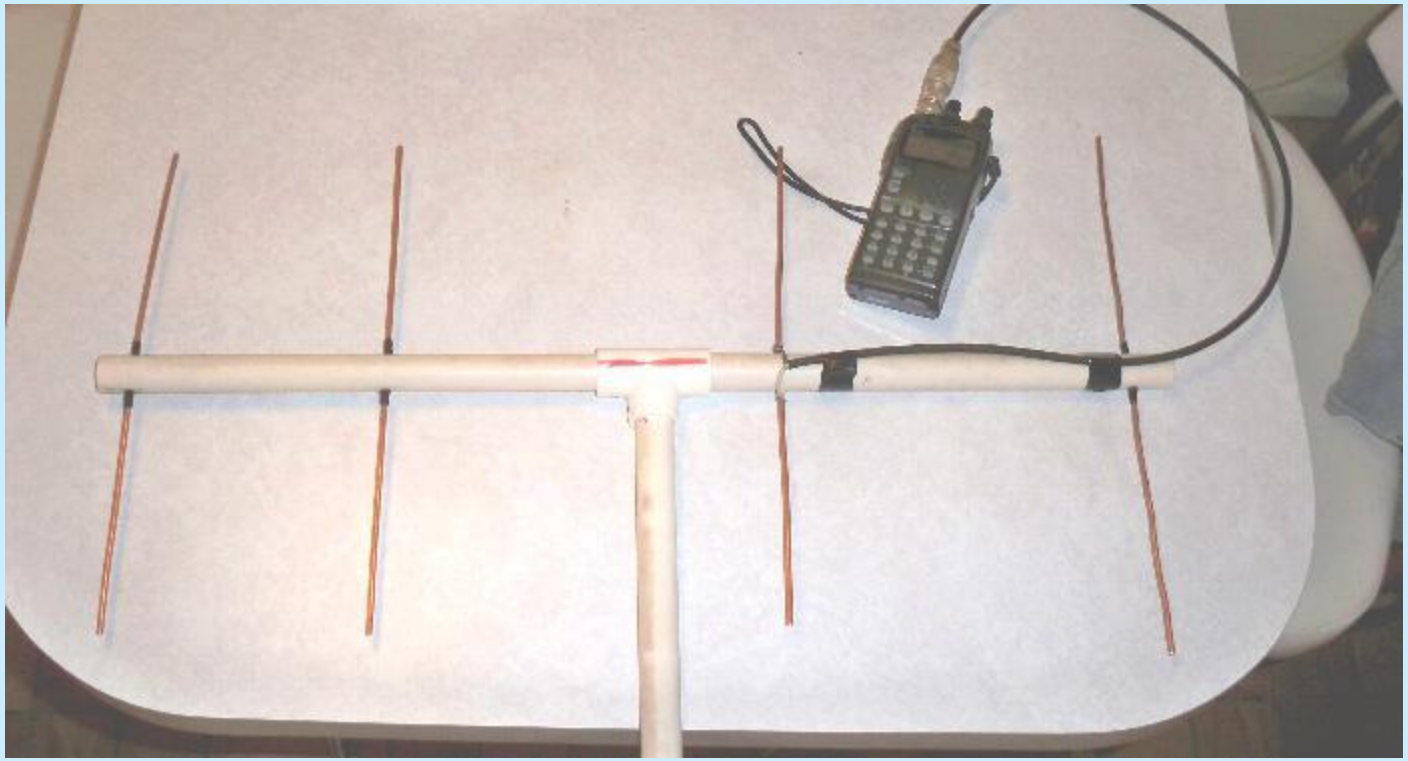
Twist and tin the braid. Cut 3/8” Off the center insulation and tin The center conductor.



Bend the tinned wires to fit over the driven element… Tin the driven element where you will attach the coax. DO NOT USE EXCESSIVE HEAT !

Solder the coax to the driven element and tape the coax to the boom in two places.

The coax should lead toward the reflector.



Here's the finished antenna…

Any questions???

Thank you for your interest.

See you (hear you) on the repeater !

73 de N8PR