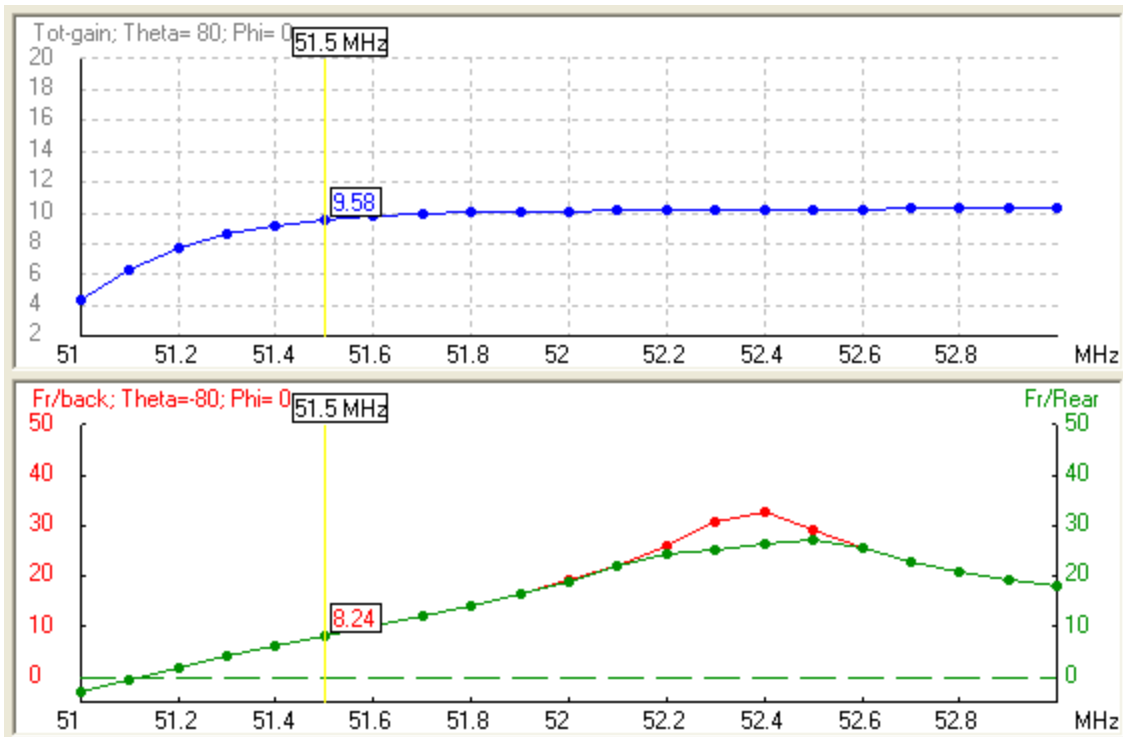


This assembly guide provides hints to fabricate a 6 meter 3-element yagi modeled for 52.5 MHz FM. Dick Sander –K5QY modeled explains the construction.

Note: This antenna was designed for 50.1 MHz Horizontal polarization. It's built and tested for that. The dimensions listed have been remodeled (not optimized) for 52.5 MHz Vertical polarization; but not tested.

The below Gain and Front-to-Back Curves show the design over a wide bandwidth..



The following illustrations give guidelines to help with the antenna construction:

1) BOOM

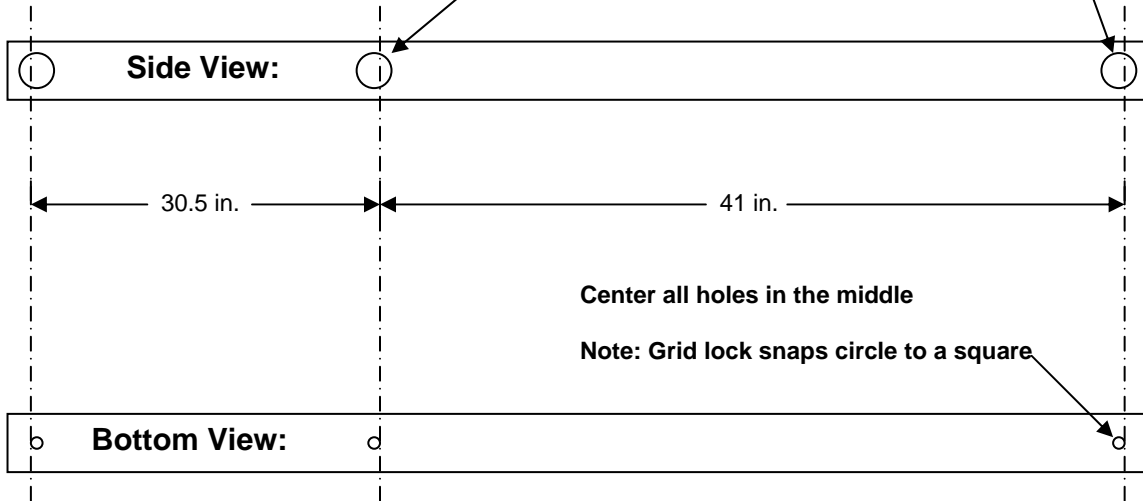
6 Meter 3-element Yagi Construction

Prepare 6 ft Boom

Boom- 1 in. X 6 ft square tubing
(Texas Tower or Grainder)

Center all holes in the middle
Note: Grid lock snaps circle to a square

Drill three holes for 1/2 in. Dia. Elements (3 places)



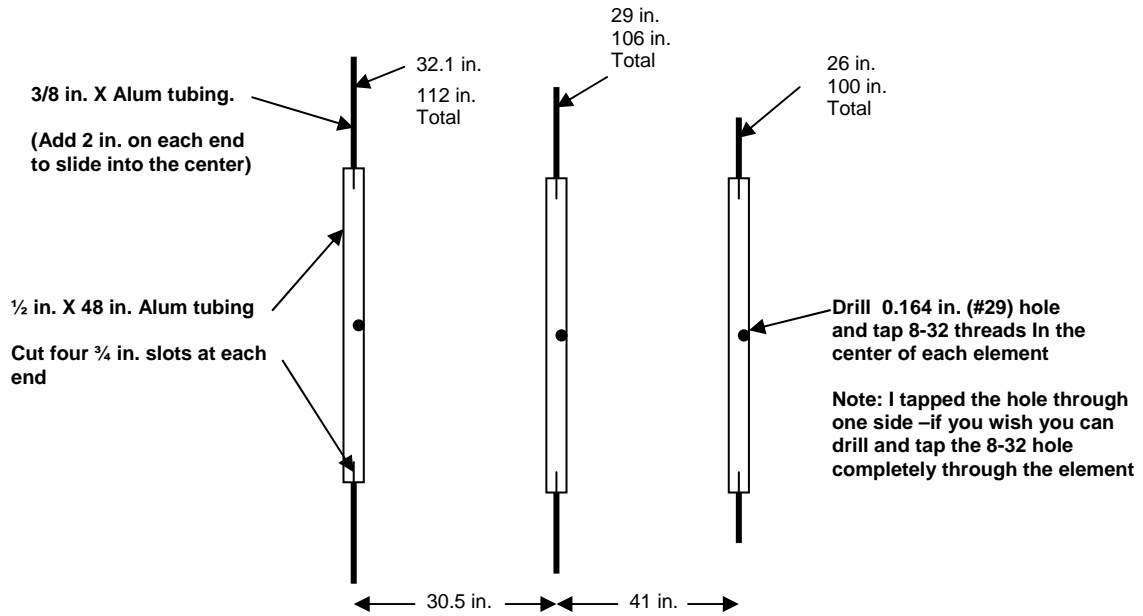
Center all holes in the middle

Note: Grid lock snaps circle to a square

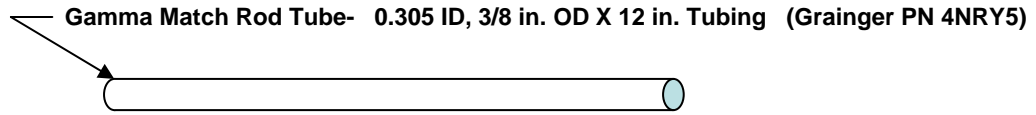
Drill three 0.2 in. (#25) holes to secure the elements (3 places)

2) ELEMENTS

Prepare Each Element

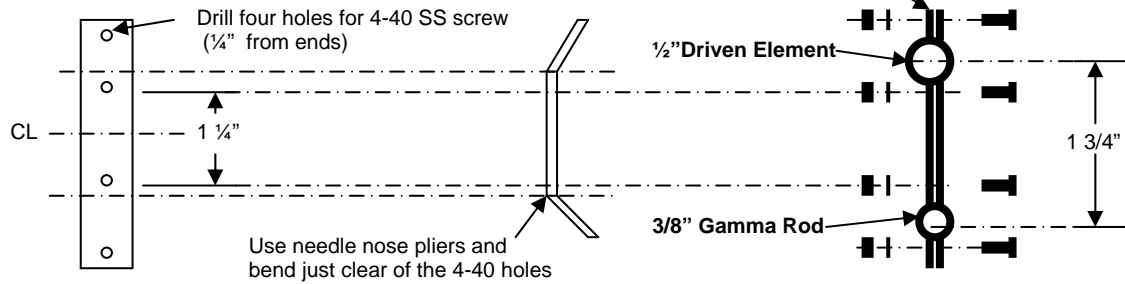


3) GAMMA MATCH



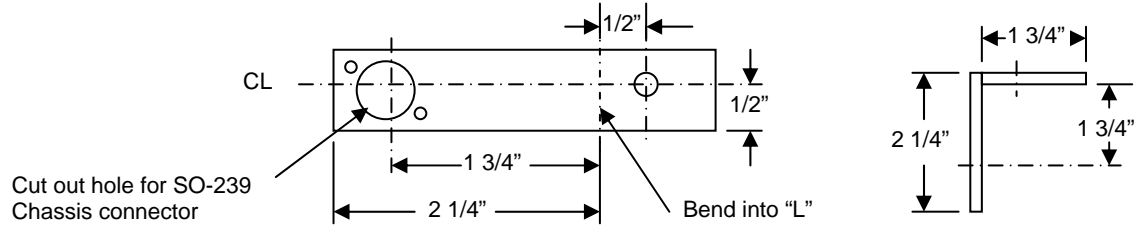
Element-to-Gamma Rod attachment pieces- 2 each, 1/2 in. X 4 in. (I used thin aluminum from an old Bud chassis box, trim it using metal shears)

Loosely insert the four 4-40 SS screws. Use force to wrap the 1" X 4" plates and bend into a bracket forming the element to the Gamma rod attachment

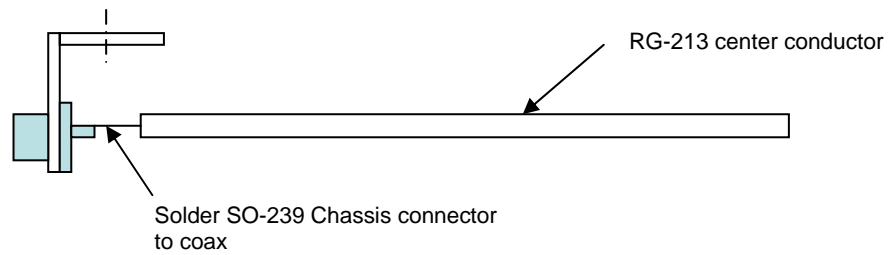


4) CONNECTOR BRACKET

Prepare SO-239 Coax Connector Bracket-
Use 1 in. X 4 in. aluminum



Inner Gamma Rod- 14 in. RG-213 with shield removed



5) SUBASSEMBLIES

Figure 1 shows assembly of the yagi after the boom, elements, and gamma match subassemblies have been fabricated.

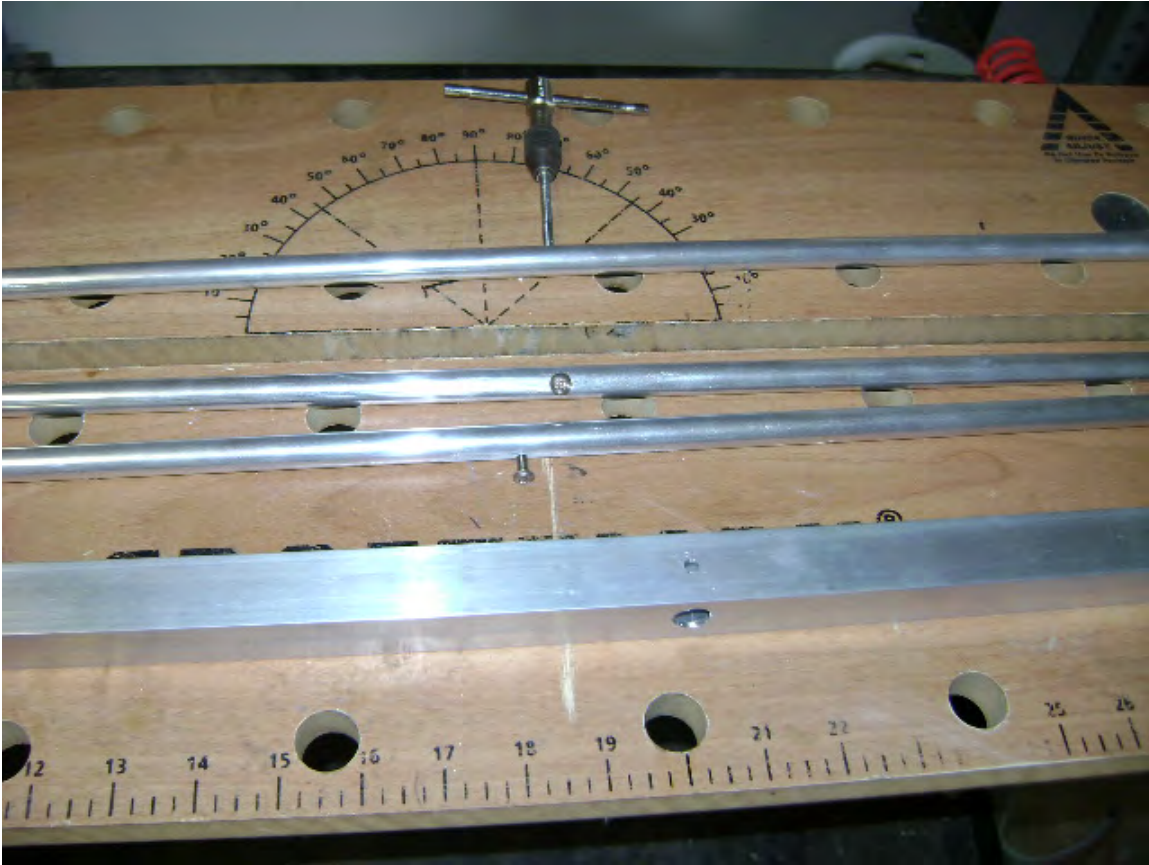


Figure 1. Yagi Assemblies

6) ELEMENT TO BOOM ASSEMBLY

Start by inserting each $\frac{1}{2}$ in. X 48 in. element into the boom. Align the 8-32 threaded holes of the center element to the holes in the boom and tighten down a $\frac{1}{2}$ in. 8-32 screw and lockwasher into the Reflector and Director elements. (Don't insert a screw into the Driven element yet.) See **Figure 2**.



Figure 2. Center Elements into Boom Installation

7) GAMMA MATCH INSTALLATION

Install the L-bracket with connector and coax into the Driven element using an 8-32 screw and lockwasher. **Note:** Connector should face towards the center of the boom (or Director). **Figure 3** shows the connect rear facing the Reflector.

Install the 3/8 in. X 12 in. gamma rod tubing over the coax.

Install the two assemblies supporting the Driven element to the gamma rod with 4-40 screws and lockwasher. (Do not completely tighten –just enough to secure the gamma assembly.)

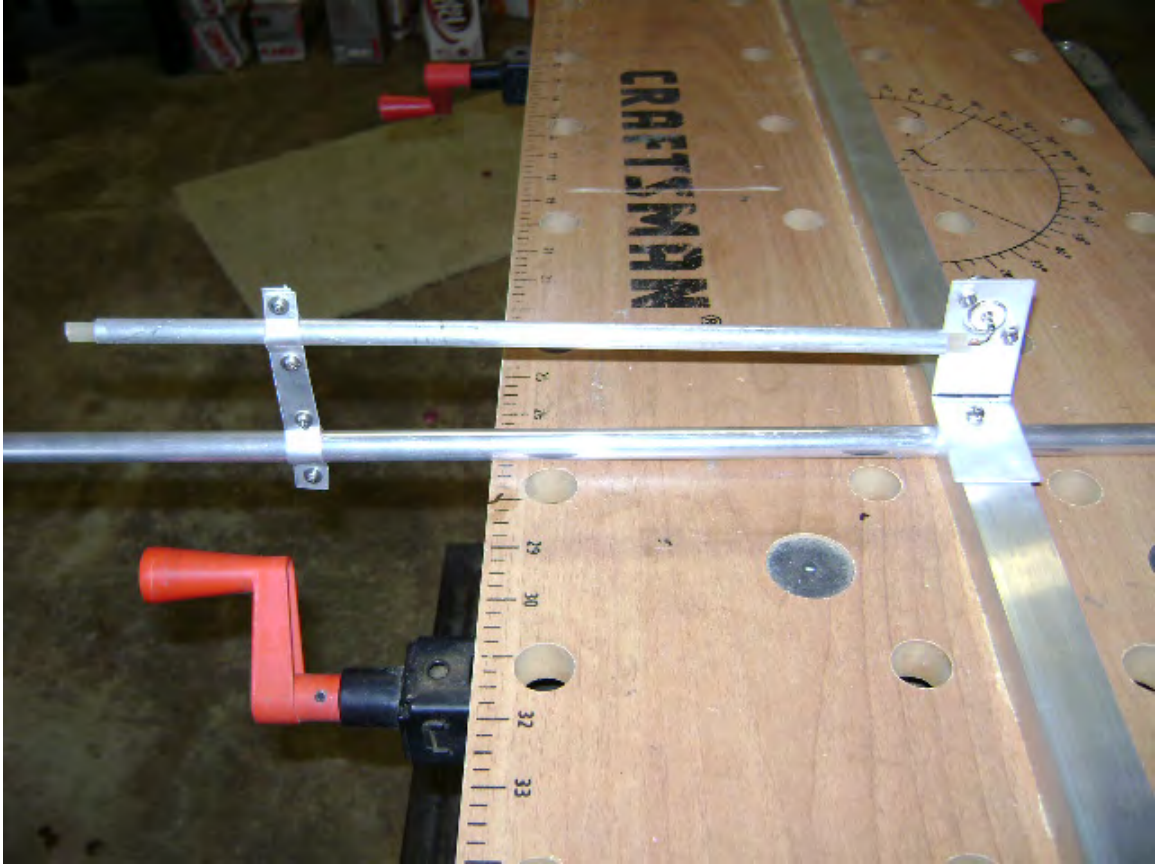


Figure 3. Gamma Match Installation

8) 3/8 in. ELEMENT TIP INSTALLATION

Install the 3/8 in. element tips into the 1/2 in. elements. Loosely tighten each with SS #4 hose clamps.

Note: Each element should be at least 2 inches or longer to slide in the larger tubing.

Reflector (rear)	32.1 in.	Total Reflector length 112 in.
Driven Element	29 in.	Total Driven Element length 106 in.
Director (front)	226.1 in	Total Direct length 100 in,

When all elements are measured, tighten the #4 hose clamps.

9) ADJUST GAMMA MATCH

Note: A boom-to-mast mounting bracket was not built in this assembly guide. It is up to the user to fabricate his own.

Note: A $\frac{1}{2}$ -wavelength length of coax reflects the actual yagi feed point impedance. If one is available it should be used.

Figure 4 shows the yagi 8 ft above ground while the gamma match is adjusted. If a mast is not available pointing the beam towards the sky with the Reflector element near ground will give acceptable results.

Connect SWR Analyzer.

Start by moving the two plates between the Driven element and gamma rod until the lowest SWR is obtained. Then move the $\frac{3}{8}$ in. gamma back and forth until the lowest SWR is obtained.

Repeat above procedure until an acceptable low SWR is obtained and tighten the four 4-40 screws down. Weather proof the gamma match.



Tested at 50.1 MHz and A-B compared favorably to my 4-ele yagi.



