

Aluminum J-Pole Build

John Kotecki (KD8PVS)

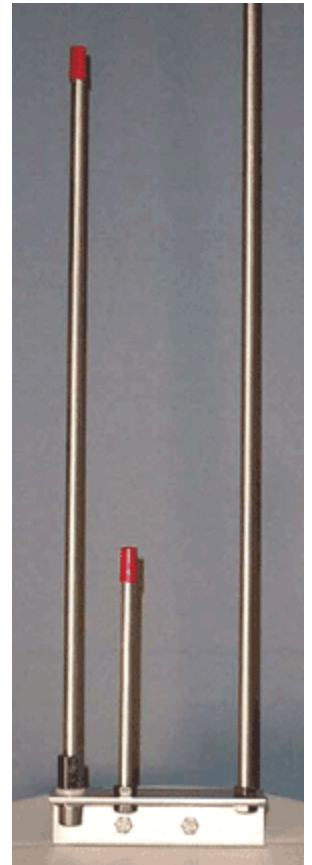
Jason Kotecki (KD8UCP)

The beginning

The original idea came from the Arrow Antenna open stub J-Pole which is made and sold by Allen Lowe (NoIMW) for \$39.

<http://www.arrowantennas.com/osj/j-pole.html>

The antenna design looked so simple that we thought we could make it ourselves for less if we only had all of the dimensions.



Google Search

- Allen's original information on this antenna can be found here: [http://www.rberger.com/radio/Dual band J-Pole/J-Pole construction plans for the model.htm](http://www.rberger.com/radio/Dual_band_J-Pole/J-Pole_construction_plans_for_the_model.htm)
However, the diagrams do not include all of the needed dimensions. It shows the lengths but not the spacing of the elements.
- Further searching brought me to Jeffrey Bail's (NT1K) blog. In one of his blog posts, <http://nt1k.com/blog/2011/open-stub-j-pole-project-completed-many-times>, Jeff had the same idea as we did. He decide to redraw the plans and he provided all of the needed dimensions. This made it all to easy for us to build the antennas.



DUAL BAND J-POLE 144/440Mhz

Original Plans By: Allen Lowe (NØ1MW)

Simple to create yet effective 144/440 Mhz Antenna.

Materials Needed (Refer to parts list below)

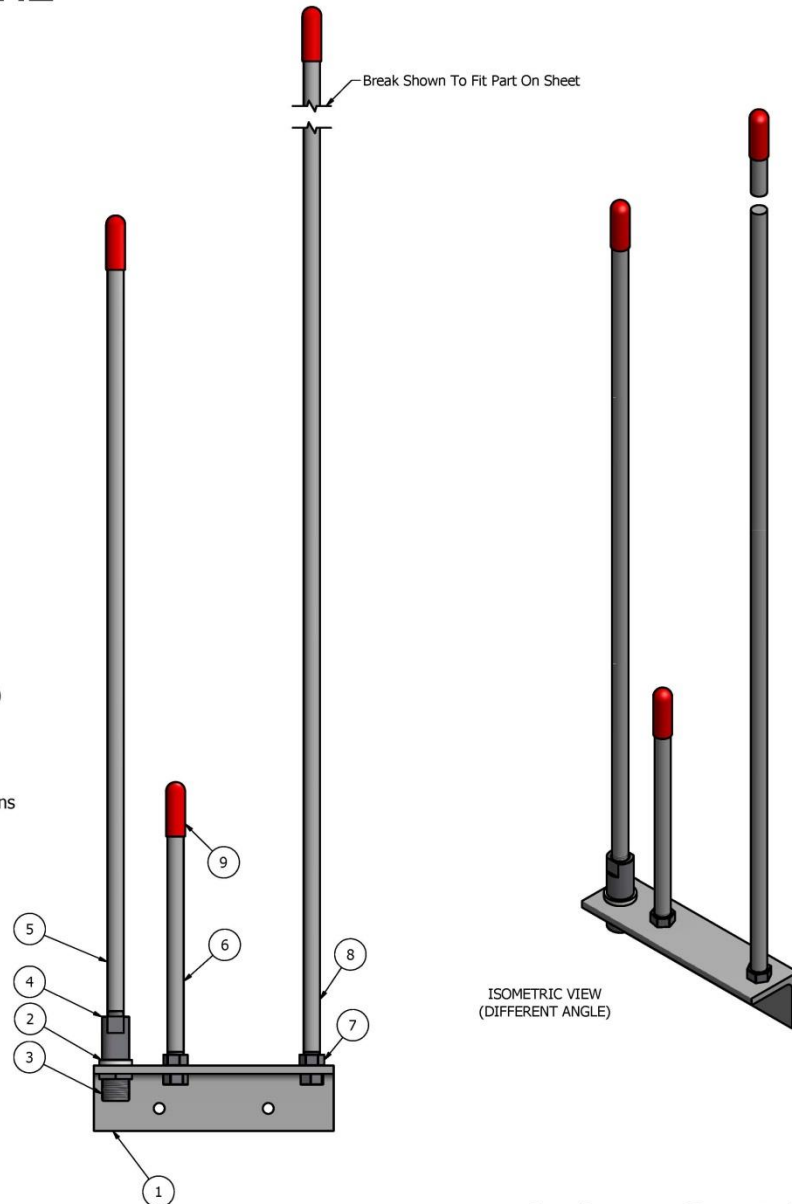
- 8ft (96in) of 3/8" Aluminum Rod
- 1 5-1/2" of Alumium Angle (1-1/2"X1-1/2"X3/16" THICK)
- 1 SO-239 Female to 3/8"-24 Thread (Available At Radio Shack)
- 4 3/8"-24 Stainless Steel Nuts
- 3 Pliable Vinyl Caps (Optional)

Tools Needed (Basic Version)

- Tape Measure (Vernier/Caliper preferred)
- Marker (Automatic center punch preferred)
- Drill W/ Drills bits (up to 1/2")
- Saw (Hacksaw or Bandsaw with metal blade)
- File And/Or Sandpaper
- 3/8"-24 Tapping Die (With holder)
- 3/8"-24 Tapered Tap (With holder)
- Vise Grips with protective caps (Can use a rag instead of caps)

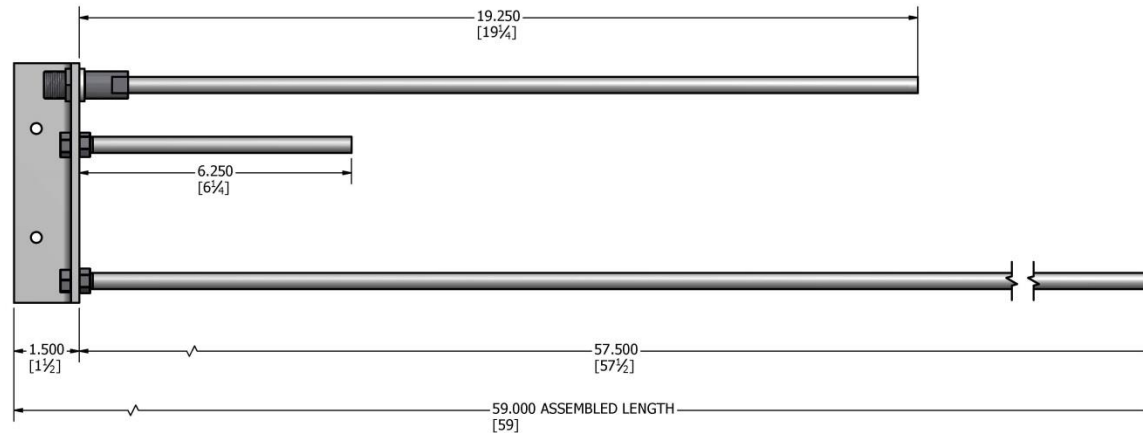
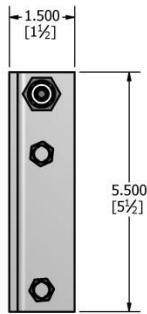
Instructions (Instructions are not exact, please use good judgement and safety)

- 1.) Using your measuring device and marking device layout the holes on the angle as shown on page 2.
- 2.) Drill the holes to 1/8" as pilot holes. Then drill to hole sizes listed on page 2. If your using a different SO-239 Than what is listed here. please check the dimension of the plastic washer that fits into the angle and check it's size (it might differ from each manufacture) If different please change the 1/2" hole to the proper size for the plastic washer to fit snug.
- 3.) Use the 3/8"-24 Tap and thread the two smaller holes in the angle
- 4.) Using the saw cut the aluminum rod to the dimensions of 58", 18-5/8" and 6-3/4" These Dimensions Might vary a little bit depending on the Jam nuts that are being used.
- 5.) Using the threading DIE, Thread the ends of the aluminum rod to around the dimensions listed on page 2. Try not to over make the threads.
- 6.) Using a file/sander to take off any sharp edges or metal burrs.
- 7.) (Optional) Place protective caps over the 3/8" Rods
- 8.) Assemble the antenna to the pictures shown. Maintain lengths of rod to the dimensions shown

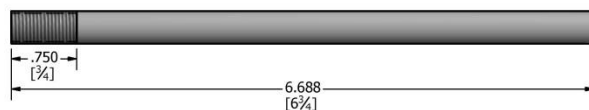
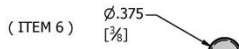
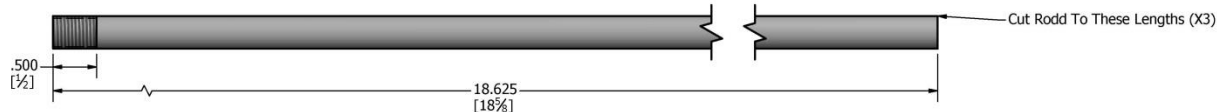
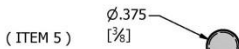
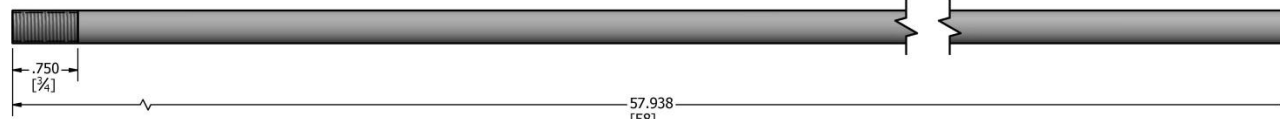
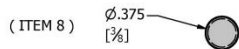


PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	5-1/2" ALUM ANGLE	1.5X1.5X.188 ALUM ANGLE
2	1	SO-239 SPACER	Plastic Spacer
3	1	SO-239-STUD	UHF W/ 3/8"-24 STUD
4	1	SO-239-COLLAR	3/8"-24 Threaded Coupling
5	1	19-1/4" Alum Rod	3/8" Rd. 19-1/4" Long Alum Rod
6	1	6-1/4" Alum Rod	3/8" Rd. 6-1/4" Long Alum Rod
7	4	3/8" SS NUT	3/8"-24 Stainless Nut
8	1	57in Alum Rod	3/8" Rd. 57-1/2" Long Alum Rod
9	3	Optional Protective Cap	Red Protective CAP

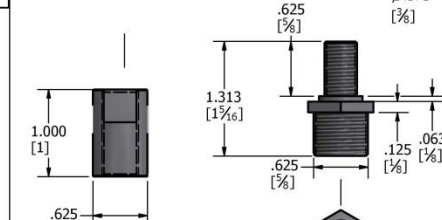
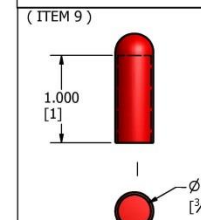
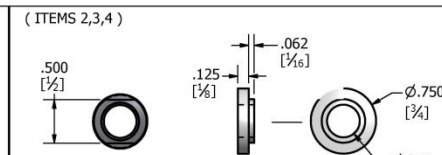
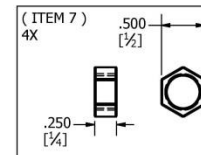
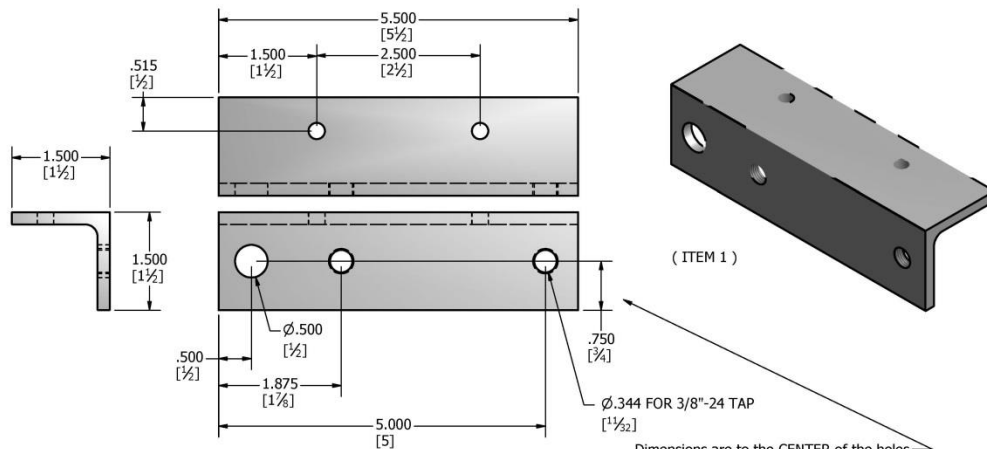
Edited By: Jeffrey Bail - N1BMX
<http://www.N1BMX.com>



ASSEMBLED DIMENSIONS
(Shown Without Optional Protective Caps)



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Pliable Vinyl Cap
McMaster Carr # 9753K42

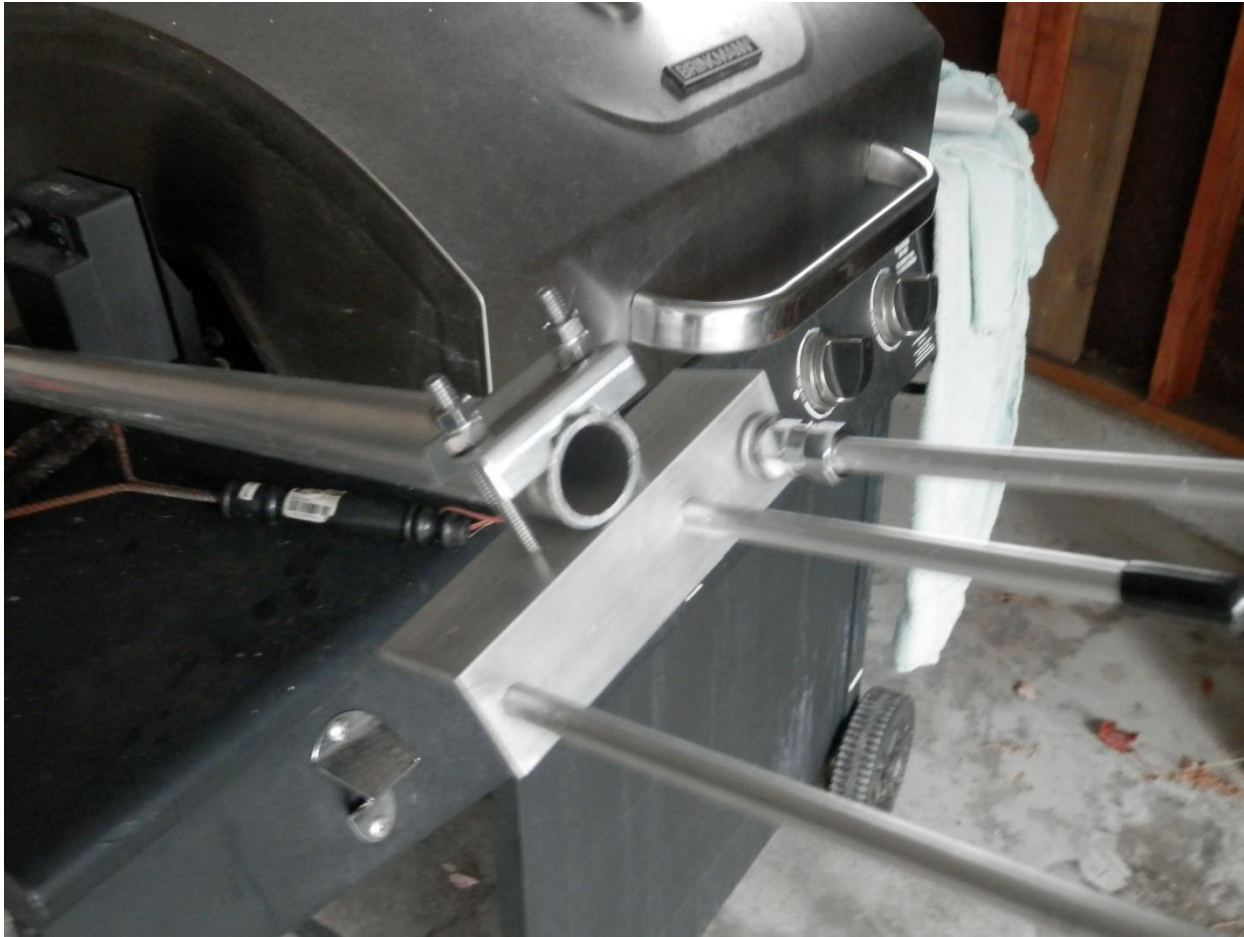
RADIO SHACK #21-961
"CB ANTENNA ADAPTER"
(SO-239 FEMALE TO 3/8"-24 FEMALE)

Materials

- We looked for the aluminum solid rod from some online sources but due to the length needed the shipping cost almost doubled the price. We decided to try a local metal supplier so that we could avoid the shipping cost. We purchased all of the aluminum pieces from:
 - Central Iron and Steel
 - 1730 Alpine Ave NW, Grand Rapids, MI 49504
 - (616) 363-4013
- One antenna requires around 7 feet of the 3/8" aluminum rod. A 12' piece was only \$6 from Central Iron and Steel which is enough to almost make two antennas but gave us a lot of room for error.
- We bought a 12" 1.5"x1.5"x3/16" aluminum angle for about \$5 which was enough for two antennas.
- We wanted a new mast so we also bought a 12' 1.25" aluminum tube for \$20.

Pieces and Parts

- First we needed the antenna adapter to connect the coax to. The adapter is available from Radio Shack for \$10 each.
<http://www.radioshack.com/product/index.jsp?productId=2062083>
- In the interest of saving money, we were able to get two for \$10 off of eBay.
<http://stores.ebay.com/TINT-N-ELECTRONICS/i.html?nkw=FireStik+lot+studs>
- Jeff purchase his plastic caps from McMaster Carr. We looked at those but the shipping would be more than the parts cost. So once again we turned to eBay. We found an auction which gave us 10 caps for less than \$5 which included the shipping (<http://www.ebay.com/itm/150993297889>). We only needed 6 caps so again we had extras.



This picture shows that the base of the antenna is mounted flush to the top of the mast. This is important because if the mast extends above the antenna ground plane it will affect the performance of the antenna.



Here is a picture of the antenna mounted on the new mast.