Bazooka Coaxial Dipole

Developed at Massachusetts Institute of Technology

A typical, dipole antenna has bandwidth of about 50 to 100 KHz. The bazooka is resonant in the center of the band and had an SWR of 2:1 or less across the entire 80 meter band? The "Bazooka" antenna was developed by the staff of MIT. for radar use. The original "Bazooka" used coaxial cable for the entire radiating elements.

The adaptation used in amateur radio uses coax only for the broadbanding portion of the antenna, while the remaining portion of the elements are constructed of twinlead or ladder line. Ladder line is preferable for its inherent strength.

This is a single band antenna. It will not radiate harmonics of your operating frequency. In addition, there is very little feedline radiation, which is great for those who have problems with TVI. Its broadband characteristic makes it ideal for 80 meters and 10 meters.

The Bazooka antenna consists of a half-wavelength of coaxial line with the outer conductor opened at the center and the feedline connected to the open ends. The outside of the coax and the ladder line operate as a half-wave dipole. The inside of the coax elements, which do not radiate, are quarter-wave shorted stubs which present a high resistive impedance to the feed point at resonance.

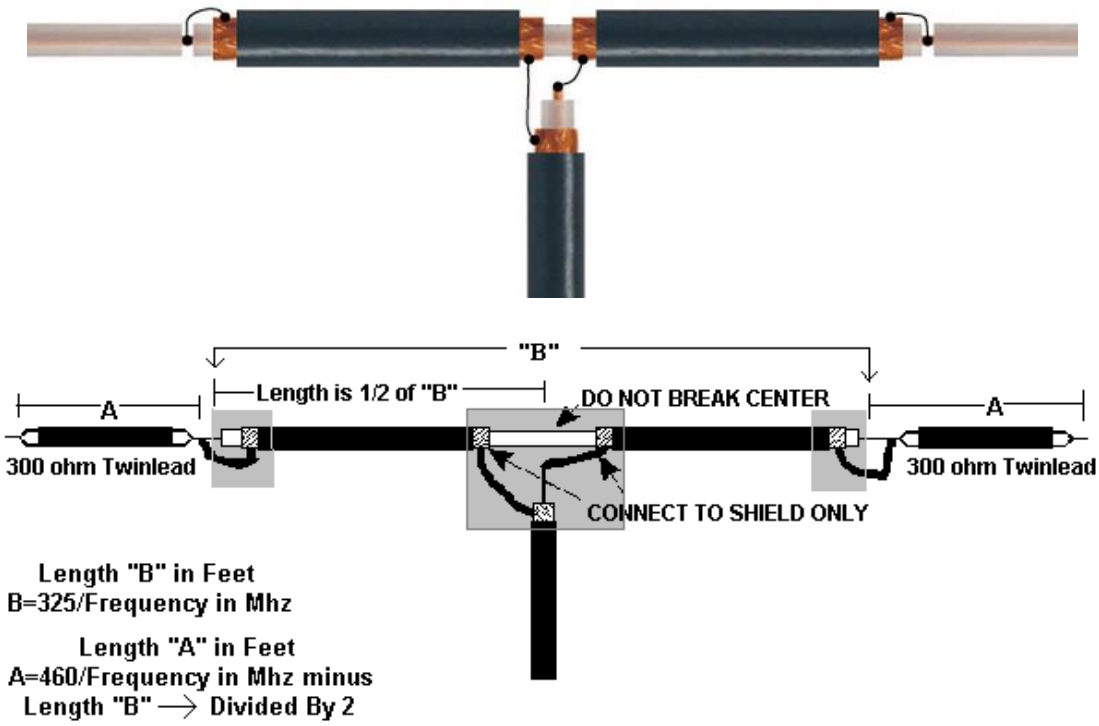
Off resonance, the stub reactances change in such a way as to cancel the antenna reactance, thus increasing the bandwidth of the antenna. At the very center of the coax carefully cut away about one inch of the outer vinyl jacket.

Then cut the exposed shield all the way around at the center of the exposed area. Be careful that you do not cut the dielectric material or the center conductor in the process. Twist the two pieces of exposed shield into small pig-tails. These are the feed-point terminals for the antenna.

The center conductor of the feedline is soldered to one and the shield of the feedline to the other. Now solder the center conductor and shield together at each end of the antenna element. Solder the two ladder line wires to the end of the antenna element. At the other end of the ladder line, solder the two wires together.

Use a square piece of plastic at the antenna center, drilling a small hole on each side of the coax, wrapping a small wire around the coax and through the holes and twisting the wire together on the other side. A small amount of quick setting epoxy secures the coax to the plastic support and prevents the wire from untwisting.

A coating of silicone rubber or epoxy seals and protects the feed-point from the weather. Do the same where the ladder line is soldered to the shorted end of the coax.



Band	**B length** 325/Freq Mhz	**A length** (460/Freq Mhz - B)/2	**Total length** (2 x A) + B
40 7.1 Mhz	45.77 ft 45' 9"	(64.79 - 45.77)/2 = 9.5 9' 6"	19.0 + 45.77 = 64.77 ft 64' 9.0"
30 10.1 Mhz	32.18 ft 32' 2"	(45.54 - 32.18)/2 = 6.68 ft 6' 8"	13.36 + 32.18 = 45.54 ft 45' 6.5"
20 14.1 Mhz	23.05 ft 23' 1"	(32.62 - 23.05)/2 = 4.79 ft 4' 9.5"	9.58 + 23.05 = 32.63 ft 32' 7.5"
17 18.1 Mhz	17.96 ft 17' 11.5"	(25.41 - 17.96)/2 = 3.73 ft 3' 8.8"	7.46 + 17.96 = 25.42 ft 25' 5.0"
15 21.1 Mhz	15.4 ft 15' 4.8"	(21.8 - 15.4)/2 = 3.2 ft 3' 2.4"	6.4 + 15.4 = 21.8 ft 21' 9.6"
12 24.9 Mhz	13.05 ft 13' 0"	(18.47 - 13.05)/2 = 2.71 ft 2' 8.5"	5.42 + 13.05 = 18.47 ft 18' 5."
10 28.5 Mhz	11.4 ft 11' 4.8"	(16.14 - 11.4)/2 = 2.37 ft 2' 4.4"	4.74 + 11.4 = 16.14 ft 16' 1.68"
6 50.1 Mhz	6.48 ft 6' 5.75"	(9.18 - 6.48)/2 = 1.35 ft 1' 4.2"	2.7 + 6.48 = 9.18 ft 9' 2.16"