

Understanding the Double Bazooka Antenna

A Broad-Bandwidth Dipole Design for Amateur Radio

V 1.0



What is a Double Bazooka Antenna?

- ❑ **Definition:**

- ❑ A modified half-wave dipole antenna constructed primarily from 50-ohm coaxial cable (such as RG-58, RG-8X, or RG-213) instead of standard wire.

- ❑ **Origins:**

- ❑ Originally designed for military radar applications during World War II to achieve broad bandwidth without frequent retuning.

- ❑ **Basic Configuration:**

- ❑ Center section made of coaxial cable (acts as both radiation element and impedance transformer).
 - ❑ Outer ends extended with single-conductor wire to reach full electrical length.

Construction & How It Works

❑ **Center Conductor & Shield:**

- ❑ Coax shield is cut at the exact center; the center conductor continues straight through or is connected.
- ❑ The feedline connects directly to the outer shield on both sides of the center cut.

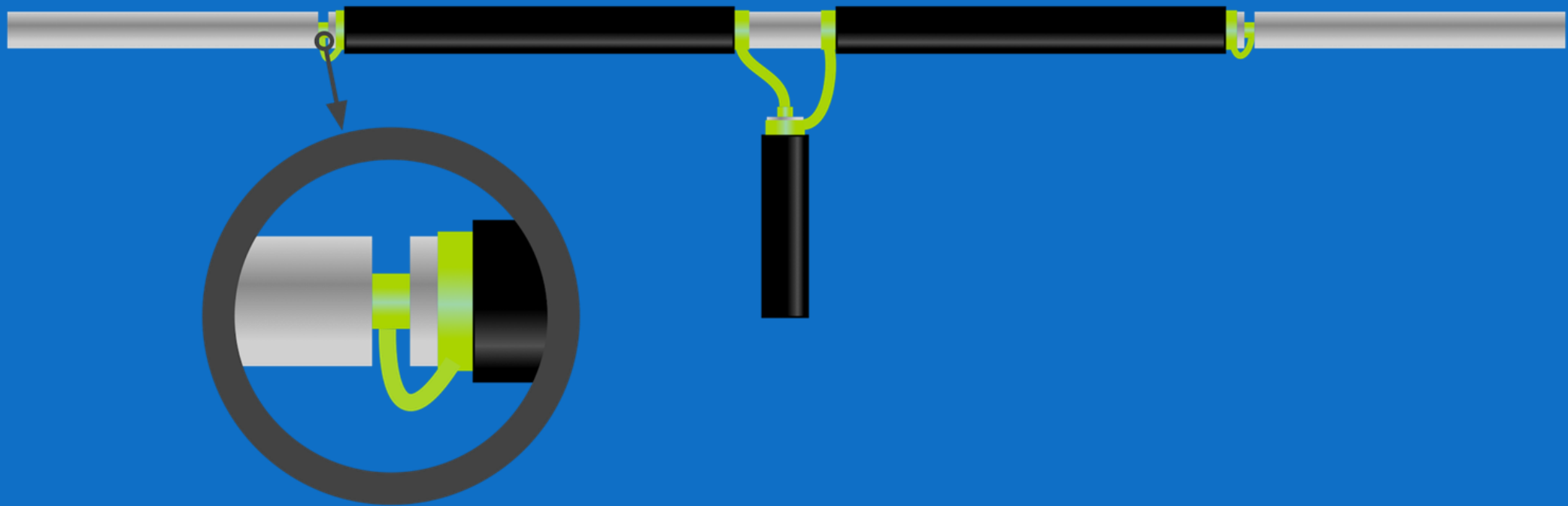
❑ **Quarter-Wave Stubs:**

- ❑ The coax sections act as quarter-wave shorted stubs connected in parallel at the feed point.
- ❑ Provides inherent impedance matching across a wider frequency range.

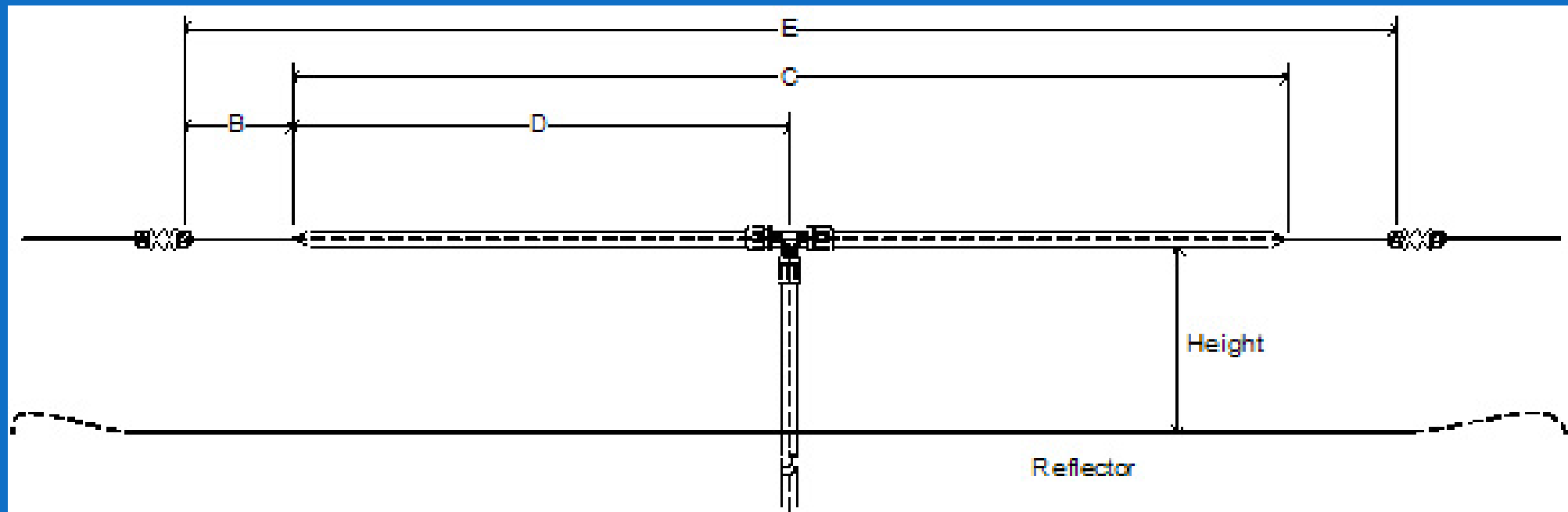
❑ **End Extensions:**

- ❑ Single-wire extensions attached to the center conductor/shield junctions complete the $1/2$ wavelength requirement.

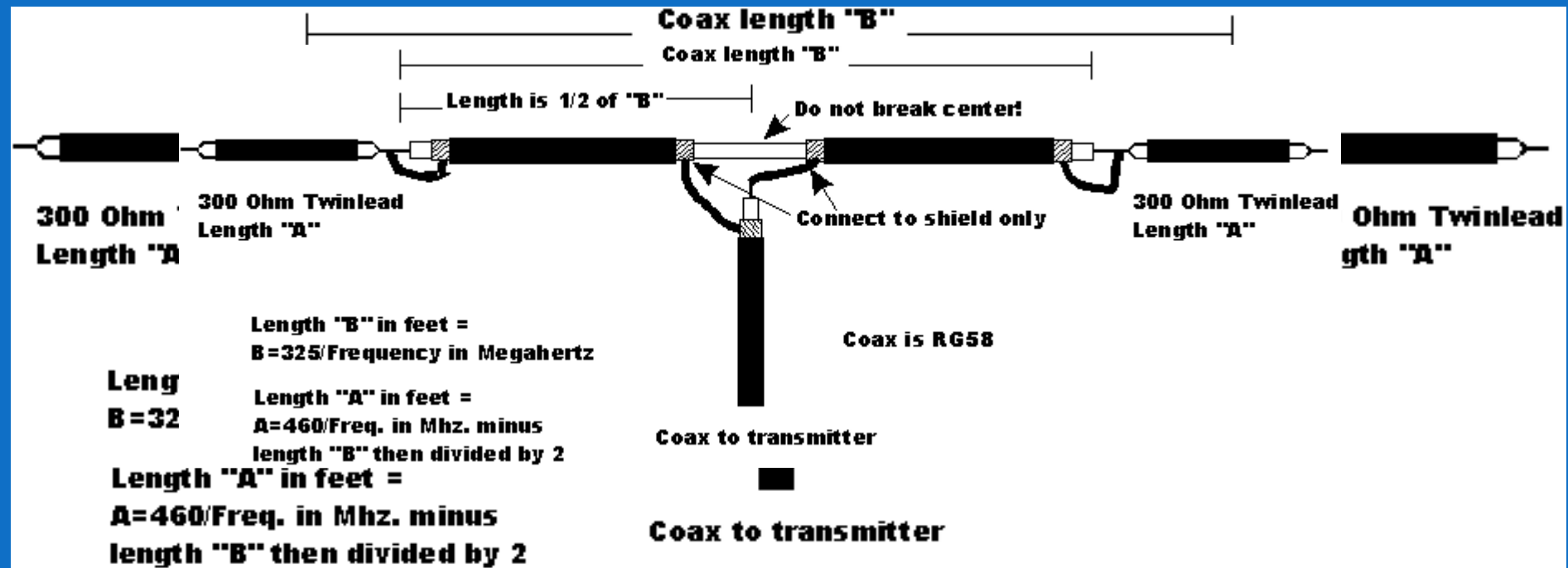
Double Bazooka Antenna



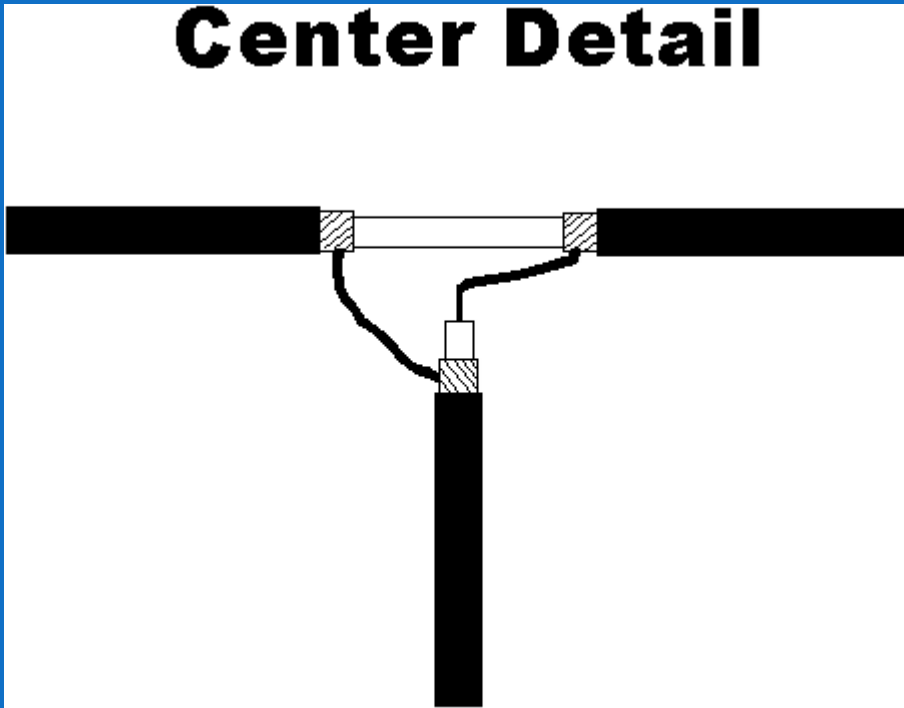
Double Bazooka Antenna



Double Bazooka Antenna



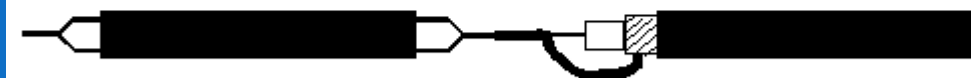
Center Detail



End Detail

Tie both leads
together

Coax length "B"



300 Ohm twinlead
length "A"

Tie center conductor,
shield, and both twinlead
wires together.

Key Advantages

- ❑ **Broader Bandwidth:**

- ❑ Maintains a low Standing Wave Ratio ($SWR < 2:1$) across a significantly wider frequency range compared to a standard wire dipole.
- ❑ Ideal for wide HF bands like 80m and 40m where full-band coverage without a tuner is difficult.

- ❑ **Reduced Static & Noise:**

- ❑ The outer braid acts as a shield against electrostatic buildup and precipitation static noise.

- ❑ **No Tuning Balun Required:**

- ❑ Inherently balances power transfer cleanly to 50-ohm coaxial feedlines.

Trade-offs and Considerations

- ❑ **Weight & Wind Load:**

- ❑ Heavier than standard wire dipoles due to the weight of the coaxial cable.
- ❑ Requires stronger center supports, end insulators, and guy lines.

- ❑ **Construction Complexity:**

- ❑ Requires precise measurements, cutting, soldering, and weatherproofing at the coax-to-wire junctions.

- ❑ **Radiation Efficiency:**

- ❑ Radiation pattern is identical to a standard half-wave dipole (bi-directional pattern perpendicular to the antenna line).

Summary and Best Use Cases

- ❑ **Best For:**

- ❑ Permanent base station setups on wide HF bands (80 meters, 40 meters).
- ❑ Operators looking for low-noise reception without needing an antenna tuner across the entire band segment.

- ❑ **Key Takeaway:**

- ❑ Trades extra weight and construction effort for superior operational bandwidth and lower static noise.

Another Use for Double Bazooka

❑ NVIS Configuration & Placement

- ❑ **Low Height:** For true NVIS propagation (steep takeoff angles straight up into the ionosphere), mount the antenna low—typically **0.1 to 0.2 wavelengths (λ)** above the ground (e.g., 6 to 15 feet high for 40 or 75 meters).
- ❑ **Ground Reflector:** Placing an optional ground reflector (parallel wire grid, poultry netting, or hardware cloth) directly underneath the low-slung antenna pushes the radiation pattern upward, boosting signal gain for local/regional coverage.
- ❑ **Configuration:** Can be deployed as a flat-top horizontal dipole or as an inverted-V.

Questions

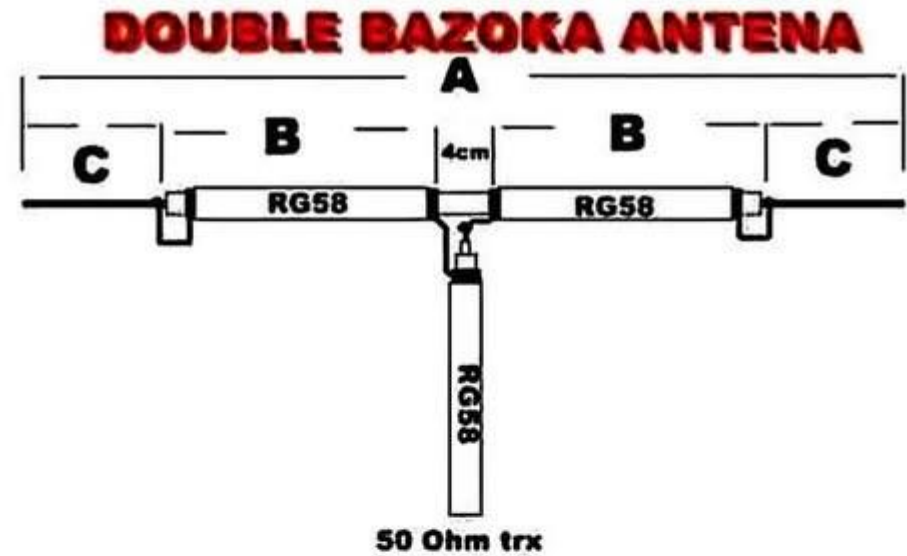
West Mountain Radio Calculator

https://www.westmountainradio.com/antenna_calculator_bazooka.php

UltraMax Antennas

<https://ultimaxantennas.com/>

<https://www.facebook.com/groups/practicalradioantennadesign/posts/1270503737362191/>



Band	A	B	C	frek.
80M	37.5 m	13.03 m	5.72 m	3.8 Mhz
40M	20.21 m	7.02 m	3.09 m	7.05 Mhz
20M	10.04 m	3.49 m	1.53 m	14.2 Mhz
15M	6.74 m	2.34 m	1.03 m	21.15 Mhz
10M	5.05 m	1.76 m	0.77 m	28.2 Mhz
11M	5.24 m	1.82 m	0.80 m	27.2 Mhz

Sunday Workshops

Double Bazooka End of August ??? open to suggestions

Co-Phase POTA Antenna End of September

Beam Antenna for Pota Similar to Co-Phase End of October

Paint Can Dummy Load Kit End of End of November

- ☐ Anyone interesting in doing
 - ☐ Soldering Class
 - ☐ FM Radio kit
 - ☐ Coax termination again
 - ☐ Fm Radio
 - ☐ SDR
 - ☐ Anderson power pole
 - ☐ Cat6 Network Cabling
 - ☐ Nano VNA
 - ☐ Balun/UNUN
 - ☐ Common mode Chokes line isolator
 - ☐ ?

