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Zed Zed's Workbench

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The 40/80/160 Meter Coil-loaded Inverted V Dipole Antenna

You're going to really enjoy this antenna! Three HF bands in one space saving compact inverted V antenna design means that you no longer need five acres of land to put up a 160 meter antenna. The amount of space that you do need is about the same amount required for an 80 meter inverted V antenna which can usually be mounted in the average size backyard.

This coil-loaded inverted V dipole antenna is a resonate antenna that does not require the use of an antenna tuner. It will work all of the 40 meter band plus a portion of the 80 and 160 meter bands. An antenna tuner can of course be used to increase bandwidth.

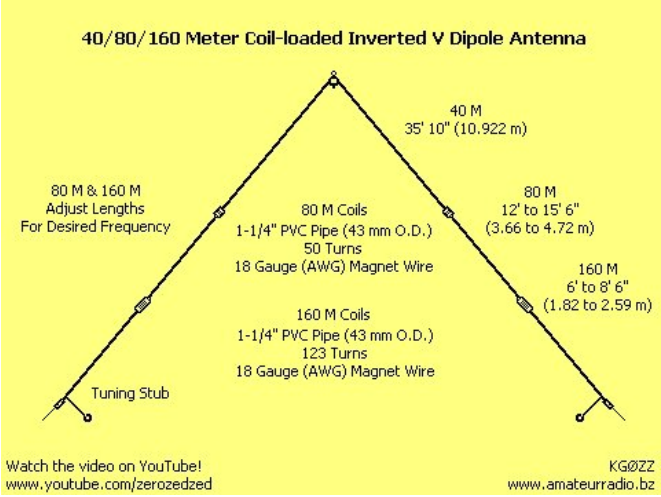
This antenna was first tested at a height of about 37' with good results. Mounting the antenna at a height of at least 39' or higher should yield even better results.

Construction

There are four previous videos that lead up to making this antenna. These videos explain mounting and tuning the antenna as well as teach construction techniques. After watching all four of these videos you should then be ready to build this antenna.

The four videos leading up to this antenna project are:

- Feed-point Connector for Inverted V Dipole Antenna
- Dipole and Inverted V Antenna Basics
- 40 Meter Inverted V Antenna - Build, Tune & Test!
- Ham Radio 40/80 Meter Inverted V Dipole Antenna



Parts List for Loading Coils -- All #6 Stainless Steel Hardware

- 2 ea. 1-1/4" (43 mm O.D.) Schedule 40 PVC Pipe, 4-1/4" (10.8 cm) long.
- 2 ea. 1-1/4" (43 mm O.D.) Schedule 40 PVC Pipe, 7-1/4" (18.4 cm) long.
- 1 ea. 18 Gauge (AWG) magnet wire, one pound spool.

Video Instructions

Watch the video below to learn how to make this antenna.

Ham Radio 40/80/160 Meter Inverted V Dip...

Tuning the Antenna

This antenna can be tricky to tune but is easy to raise and lower in frequency. An SWR analyzer is a huge help in adjusting an antenna like this but with some patience tuning can also be done using only an SWR meter. Making a chart and keeping notes is the best way to tune the antenna.

Changes made to one band will affect all three bands. Adjusting the 80 and 160 meter lengths should only change the 40 meter resonate frequency just slightly. Shortening the 80 meter wire section to raise the resonate frequency will also increase the resonate frequency of the 160 meter section. The same is true when lengthening either of the 80 or 160 meter wire sections.

In my notes I had written, adding 3" to the 160 meter elements decreases 160 meters by about 20 KHz and decreases 80 meters by about 10 KHz.

I had also noted that shortening the 80 meter elements 8" increases 80 meters by about 54 to 57 KHz and increases 160 meters by about 17 to 18 KHz.

Below are my notes from experimenting with this antenna. The lengths are approximate. Add 20" (50.8 cm) of extra wire to all the lengths given. Use 10" of wire at each end of the wire sections for connecting the feed-point, coils and insulator. The 40 meter sections were eventually lengthened to 35' 10". The 160 meter lengths can be lengthened to lower the resonate frequency but my goal at the time was to be resonate at about 1.958 MHz.

My Tuning Notes

A tuning stub was not used and the insulator was attached at the end of the elements. Again, **add 20" (50.8 cm)** to these lengths for making connections. Mounting height will also affect tuning. Results shown below are with the antenna mounted at about 47' (14.3 m).

First Antenna

- 8 ea. #6 x 32 x 3/4" (20 mm) Machine screw.
- 8 ea. #6 x 1/2" (13 mm) Pan head screw.
- 24 ea. #6 Flat washer.
- 8 ea. #6 Split lock washer.
- 8 ea. #6 External tooth lock washer.
- 16 ea. #6 x 32 Nut.

40 M Length	40 M Frequency	80 M Length	80 M Frequency	160 M Length	160 M Frequency
35' 8" (10.871 m)	7.158 - 7.195 MHz	14' 11" (4.547 m)	3.779 MHz	7' 3" (2.210 m)	1.959 MHz
35' 8" (10.871 m)	7.158 - 7.195 MHz	14' 9" (4.496 m)	3.793 MHz	7' 3" (2.210 m)	1.964 MHz
35' 8" (10.871 m)	7.160 - 7.201 MHz	14' 7" (4.445 m)	3.803 MHz	7' 3" (2.210 m)	1.965 MHz
35' 8" (10.871 m)	7.173 - 7.200 MHz	13' 11" (4.242 m)	3.857 MHz	7' 3" (2.210 m)	1.983 MHz
35' 8" (10.871 m)	7.187 - 7.208 MHz	13' 3" (4.039 m)	3.914 MHz	7' 3" (2.210 m)	1.998 MHz
35' 8" (10.871 m)	7.176 - 7.211 MHz	13' 3" (4.039 m)	3.904 MHz	7' 6" (2.286 m)	1.979 MHz
35' 8" (10.871 m)	7.184 - 7.215 MHz	13' 3" (4.039 m)	3.894 MHz	7' 9" (2.210 m)	1.958 MHz
Second Antenna					
35' 10" (10.922 m)	7.175 MHz	13' 3" (4.039 m)	3.895 MHz	7' 9-1/2" (2.375 m)	1.958 MHz
35' 10" (10.922 m)	unavailable	12' 6" (3.81 m)	3.963 MHz	7' 9-1/2" (2.375 m)	1.971 MHz
35' 10" (10.922 m)	7.183 MHz	12' 6" (3.81 m)	3.952 MHz	7' 10-1/2" (2.4 m)	1.958 MHz
35' 10" (10.922 m)	unavailable	12' 4" (3.759 m)	3.973 MHz	7' 10-1/2" (2.4 m)	1.963 MHz
35' 10" (10.922 m)	7.185 - 7.214 MHz	12' 4" (3.759 m)	3.969 MHz	7' 11-1/2" (2.426 m)	1.959 MHz

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Safety First!

Please use caution and keep common sense safety rules in mind when installing an antenna. Never install antennas near power lines or in any location that would place people or pets within the near field radiation pattern of an antenna. All users understand and agree that the owner of this web site is not responsible for accidents or other mishaps that may have been caused directly or indirectly as a result of the information published on this web site and/or in any of the video presentations.

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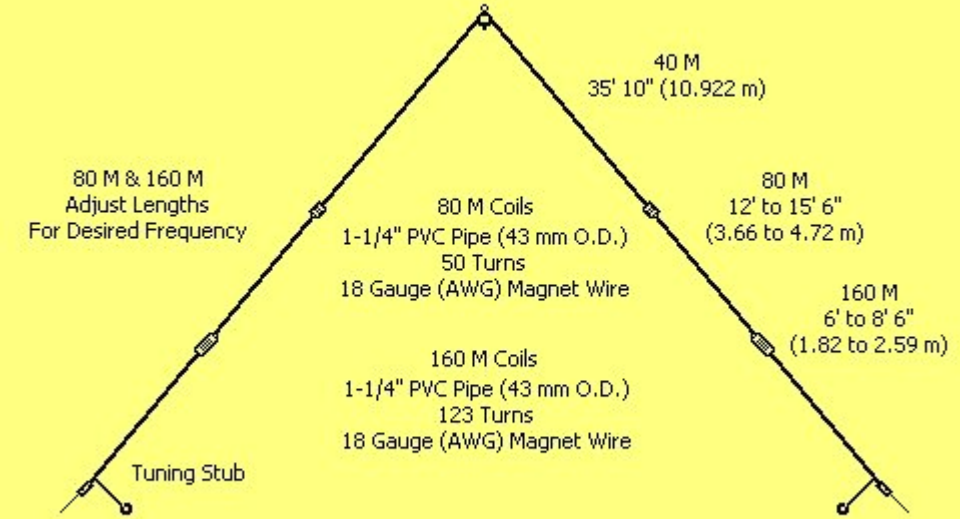

Watch the video on YouTube!
www.youtube.com/zerozedzed

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