

WX9DX

Collinear Antenna.

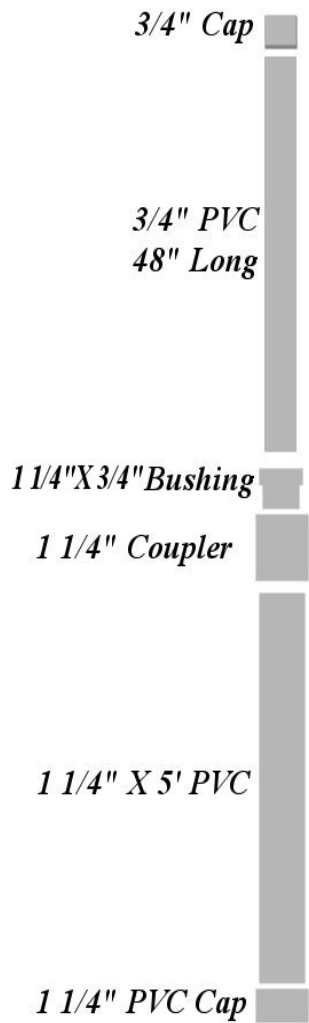
Instruction Sheet!

This antenna will cover the 2 meter Ham Radio Frequencies. It has a gain factor approx 6 to 7dbd on two meters. I've used this design for a while, and am satisfied that it will serve you well for Base, Maritime, Camping etc. It's a very versatile antenna and is salt water safe. I wrote an article about this antenna back in the early 80's for two different Ham Radio News Letters. Many people worldwide built them, and mailed me letters about their antenna. I even was asked if the State of Florida ESDA site could re-print my article on this antenna on their web site "in the early 80's". They liked how it was salt water safe, and would work for maritime use, with no ground plane. In this article, I've changed the antenna slightly, and it now has a sleeve included in the building of it. This sleeve is so the antenna can clamp to a support pipe without breaking the PVC, and also takes the RF off the feed line. This modification also includes the complete PVC casing drawing.

I hope these drawings help you with this project, and if you have any questions please contact me! wx9dx@springnet1.com



**WX9DX Collinear years ago.
@ 85 feet.**



Glue 1" X 3/4" bushing
to 3/4" PVC Pipe

Glue coupler
to 1 1/4" PVC

Drill hole in bottom
cap for Coax to exit
antenna

Do Not Glue Cap
onto antenna till
ready to install!

"Do Not "
Glue Bushing
to Coupler
till ready to
install antenna!

Antenna Casing.



Picture A. Phasing Coil.



Coil Form 2" long. ((Coil 13 T # 18 wire @ 1/2" Dia.))
Drill holes for coil 1 1/8" apart in coil form to fit the size of the wire. When you look at the form from the side the wire exits, there will be 14 loops, as seen in the picture. I used the small water line tubing from Menards to make this coil. It's sold in 5' lengths and is 1/2"OD! ((Merflex PEX OT 3/8" This is what is stamped on the tubing!))

Picture B. Feed Point.



Feed point will be 2 to 4" above the bottom of the 450 ohm ladder line. The bottom of the ladder line is shorted from one side to the other. The Hot lead of the coax hooks to the same side that the 1/2 wave/ coil/ 1/2 wave hooks to. Ladder Line is 19 inches long after shorting out the bottom.

Picture C.



Picture D.



**WX9DX VHF
Collinear Antenna**

**1/2" coil form 2" long,
with #18 Door Bell Wire,
13T between holes.
Drill holes for coil 1 1/8"
apart.**

**1/2 wave @ 146 MHz
38" if using PVC casing!**

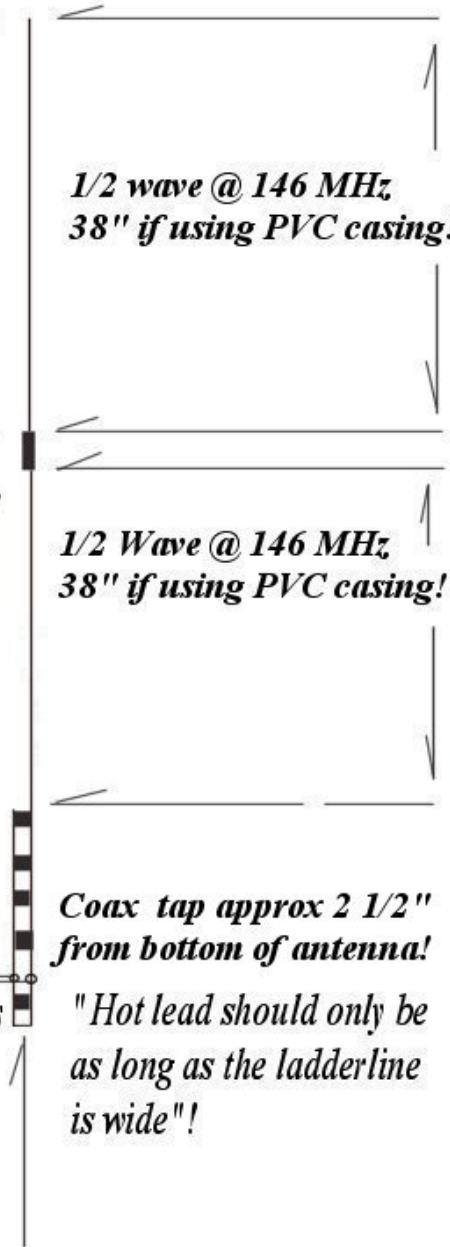
**1/2 Wave @ 146 MHz
38" if using PVC casing!**

**Coax tap approx 2 1/2"
from bottom of antenna!**

**Make Shield connection as
short as possible!**

**" Hot lead should only be
as long as the ladderline
is wide"!**

**1/4 wave of 450 ohm ladder line
@ 146 MHz.
19" if using PVC Casing!**



Read every bit of text before building antenna!

1. Cut a piece of #18 solid door bell wire 105" long. Separate conductors.
2. Cut a 2" piece of PEX tubing and drill holes for coil, 1 1/8" apart. Use a bit that lets the wire fit snug.
3. Wind 13 turns of # 18 Door Bell wire around coil form. On the side the wire exits the form, it will be 14 loops. Make sure the wire that sticks out each end is 38 1/2" long! **You will cut it to 38" later.**



4. *Cut a piece of ladder line 20" long. With a tile knife trim off insulation for a 1/4" connection to the 1/2 wave wire from coil above. Now trim off 1/2" of insulation from each side at the bottom, and short together " solder"! Trim off insulation above the bottom on both sides from 2" to 2 3/4" for the coaxial cable tap point. This tap point may vary with the PVC you use and several other factors.*
5. *Solder the 1/2 wave section coming from the 1/2" coil to the Ladder line. Making sure that the lengths are correct for all the wires! See drawing #3! (((19", 38", the 1" coil, and then another 38")))*
6. *Drill a hole in the 1 1/4" PVC Cap to accommodate the coaxial cable with just a little extra room for water to drip out. Not much though!*
7. *Glue the Coupler to the top of the 1 1/4" PVC Pipe.*
8. *Glue the 1 1/4" X 3/4" Bushing to the 3/4" PVC Pipe.*
9. *Drill a Hole in the wood Button for #18 wire to fit through snug.*
10. *Put the connector on your coax!*
11. ***Check your coax with a volt/ohm meter for correct function!***

12. Put together antenna casing middle so that the casing might be used to check antenna SWR. Place antenna into casing, except the ladder line.

***13. Run the coax through the 1 ¼ cap and through the 12” sleeve!
Check that the cap is facing the proper way! Oh yeah!***



14. Strip back coaxial cable leaving long 1 ½” shield and hot lead connections. Wrap shield around short side of 450 ohm ladder line connection, and hot to long side connection. “The Long Side is the side the wire from the coil hooks to! Do Not Solder yet!

Cut off excess shield and Hot lead wire after winding it around a few times on the 450 ohm ladder line. The Shield should have no distance between it, and the ladder line connection. The hot lead should be only as long as the ladder line is wide. This also means the coax is at a right angle to the ladder line.

15. Lay the PVC Casing between two saw horses or between PVC test stands.

With the coax hooked to an MFJ analyzer or other SWR meter, adjust for lowest SWR. You should be able to get this down to a 1.2:1 SWR on 146.0MHz “or lower”. If not, check your lengths again. I usually find the coax tap to be at about 2.5 inches from the bottom of the ladder line. If not adjust up and down for lowest SWR. Solder in place, and cote with liquid electrical tape sometime before putting the antenna up in the air!

16. Now push a 3" block of 1/2" foam pipe wrap into casing under antenna. Then push in the metal sleeve. Now another 2" piece or so of
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foam pipe wrap, pull down slightly on the coax to seat the ladder line into the foam, and place a Tie Wrap on the coax so it don't pull out of the cap hole. Now put on the 1 1/4" cap " Re-check the SWR"! It should be very good at this point. Measured SWR should be less than a 1.3:1 on 146.0MHz. If not take apart antenna, and check everything out! Maybe even re-tap the feed point. Or lift one side of the coax from antenna and check coax for a short.

17. On the top of the antenna, place the wire through the wood button, strip off 1/4". Bend this over onto it self. . Later on you will be soldering this wire above the wood button. This should not pull through the button hole, if the hole is the correct size.! Put the 3/4" PVC cap on " **do NOT glue it on**" and the antenna is assembled enough for final check of the SWR. BTW this button is a Wolfcraft wooden 3/4" toy wheel, #2985.

18. Final check the SWR, then if it is ok! Glue the top and bottom cap on with a thin film of Silicone glue, on the outside rim of the PVC Caps only, Not inside the casing!

This will allow you to take the antenna apart in the future. Don't seal the coax exit hole shut with silicone leave it to " weep". Unless the antenna is for maritime use!

19. Place the antenna on a short Test Stand in your yard for a couple days just to make sure you did not forget anything, and that the antenna works as you'd like it to. The SWR should be very good over the entire Two Meter band. If so! Remove the top cap and undo the button from the wire . Glue the center of the PVC casing together, **re-install the button and wire junction, bend over, and solder the wire this time above the button.** Place the 3/4" cap on the top and silicon glue around the cap. Re check the SWR and put it up on the tower, pushup pole etc. Have fun and hope you enjoyed the project!

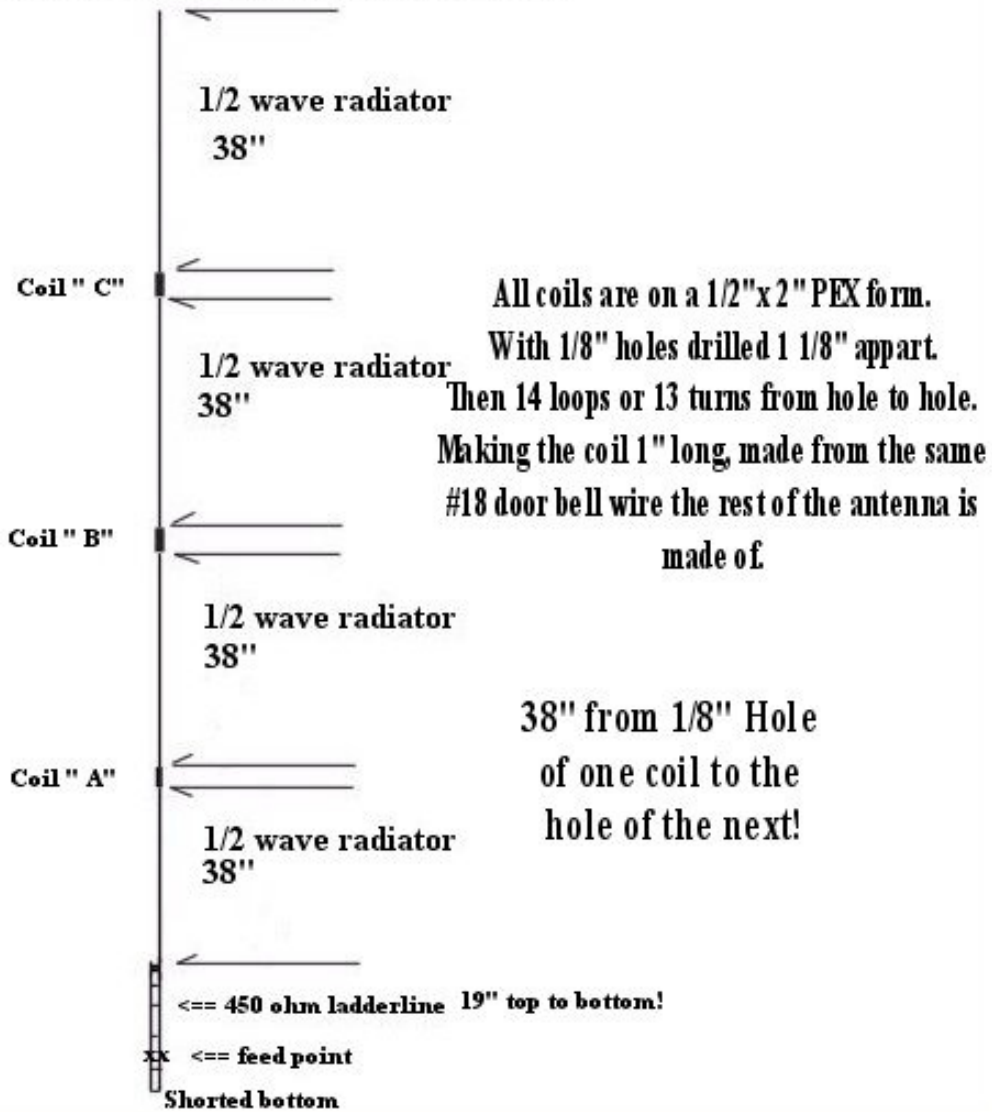


WX9DX antennas at work for Antenna Class students.

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WX9DX 4 bay collinear
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