

# Construction of an EH Antenna

## WB5CXC



### Materials:

2" PVC pipe - 2 - 3'

Home Depot/Lowes

Aluminum Flashing

Home Depot/Lowes

Short Couplings - 3 - 2"

Home Depot/Lowes

Sheet Metal Screws #6 or #8 X 1/2"

Home Depot/Lowes

PVC Cap - 2"

Home Depot/Lowes

Brass Bolts #6 X 3/4"

Home Depot/Lowes

### Building the Pieces:

Cut two pieces of 2" PVC pipe 10 1/2 - 11" (7.25" cylinder + 1.5 + 1.5 space for inside of coupling).

Cut two pieces of aluminum flashing 8 1/2" X 7 1/4".

Make the two cylinders. Wrap a piece of the aluminum flashing around the PVC pipe leaving 1 1/2" at each end for the coupling. Secure the flashing using # 6 or #8 X 1/2" sheet metal screws. It helps to have a partner during this part of the assembly. They can hold the flashing around the pipe until you get a couple of screws mounted. I drill a pilot hole of 1/8" to get the screws started. On the end of each cylinder drill a hole to mount the # 6 or #8 brass screw. The hole should be very close to the edge of the aluminum. Mount a bolt in each cylinder with the head inside the pipe, tighten the connection. On one cylinder drill a small hole (~ 5/64") next to the bolt, this will be the top of the bottom cylinder. Take a piece of #14 enamel wire 14 - 16" long and scrape 1/2" of enamel off one end. From the inside of the cylinder place the wire through the hole and wrap it around the bolt on the bottom cylinder, and secure it with another nut.

Take one of the couplings and drill a 5/64" hole in the center of coupling. Cut a piece of #14 enamel wire 36". Push 16" inside the hole and leave 20" exposed. Now bend the wire as it comes out of the hole and wrap two turns around the coupling. This will be your Phasing Coil. I secure the coil with black tape until it is time to assemble the antenna.

Take a piece of 2" PVC (~ 6") long and drill a 5/64" hole about 2" from one end. Cut a piece of # 14 enamel wire 11'. Scrape the 1/2" enamel off one end. Bend the wire at a right angle 1/4" from the end. Place this end in the hole and start winding your coil. Use electricians tape to hold the coil in place after you have turned ~ 5 turns. Wind 13 - 14 turns on the piece of PVC pipe.

### Assembly:

Take the coupling that you wound the Phasing coil on and measure the depth that the pipe will penetrate. Now cut off the bottom of the top cylinder and glue it into the coupling (the outside wire should be closest to the cylinder bolt). Scrape 1/2" of the enamel off the wire and connect it to the bolt of the top cylinder.

Now measure the depth of the coupling and measure the distance that the bottom cylinder will have to be for 1 diameter (2 3/8") spacing. Before gluing route the wire from the phasing coil down the center of the bottom cylinder.

Using another coupling measure and cut the bottom of the bottom cylinder and the top of the pipe with the tuning coil to have 1 diameter spacing between the top of the coil and the bottom of the bottom cylinder. Now glue the coil on to the existing antenna.

Drill a 5/64" hole next to the end of the coil. Route the wire from the phasing coil through this hole. Scrape the enamel off the end and cut leaving ~ 1/4" (this needs to connect with the top end of the coil)

bend and solder to the top end of the coil.

Solder a short piece of coax (~ 1 foot) to the coil and the wire from the bottom cylinder. Now we are ready to tune the antenna. The center of the coax will be connected to the bottom of the coil and the shield will be connected to the wire from the bottom cylinder.

