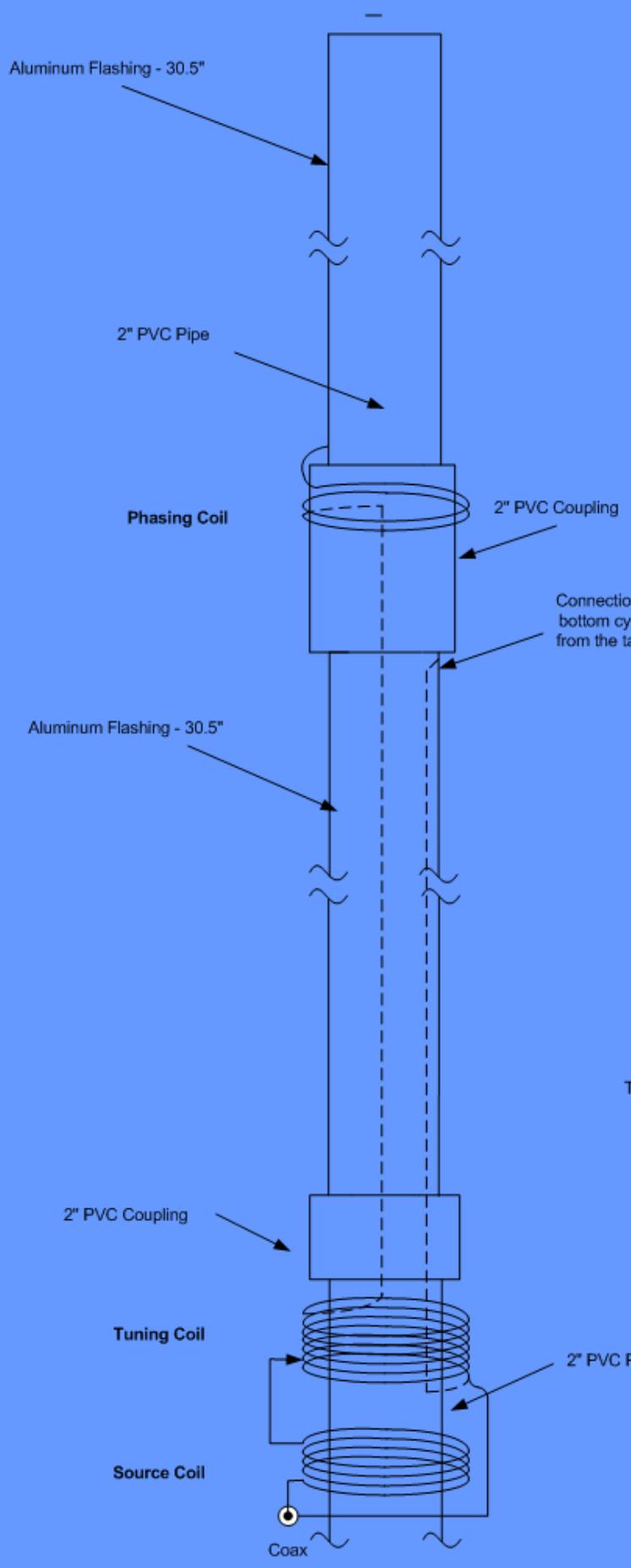
80M - 6 Foot EH Antenna

This is a picture of my EH 'STAR' antenna for 80 meters. It has two cylinders made from aluminum flashing 30 1/2" long, wrapped around 2" (2.375") PVC pipe. Below the cylinders are two coils for matching and developing the EH fields. There is a phasing coil between the cylinder. This antenna is described in Demonstration # 5 on the EH Antenna Web Site.

Building the aantenna is very easy and inexpensive. It has outperformed my other antenna (dipole made from two mobile whip antenna up 20 feet and a vertical w/o radials). The first test was when I checked into the weekly ARES Net (Stateswide ARES Net for South Texas). usually have to check in from an alternate net control station due to a weak signal. The first night net control heard me the first time without any repeats. I next checked into the Southwest Traffic Net with the net control in Hot Springs Arkansas without any trouble. For a limited space antenna it appears to be doing a good job.



80 Meters

Phasing Coil	4 turns
Tuning Coil *	32 turns
Source Coil	7 turns

* Tuning Coil is tapped at 2 turns from bottom

All coils use # 14 enamel wire

Spacing

Phasing Coil is at least ½" above top of bottom cylinder.

Tuning Coil is 1 cylinder diameter (2 3/8") below bottom cylinder.

Source Coil is 1/2 cylinder (1 1/8") below Tuning Coil.

Cylinder spacing is 1 cylinder diameter (2 3/8").

Information - Demonstration #5 -
www.eh-antennas.com/EH_Antenna_Tools_and_Tips.htm

Download the 80M EH antenna drawing in PDF

Bill of Materials:		
2" PVC Sch. 40 Pipe 10'	$ 4.25	Home Depot / Lowe's
2" PVC Cap	$1.05	Home Depot / Lowe's
Aluminum Flashing 10" X 10'	$ 4.57	Home Depot / Lowe's
2" PVC Short Couplings (2)	$ .88 (ea)	Home Depot / Lowe's
# 14 Enamel Wire (~ 40')	$ 0.23/ft	The Wireman (Internet)

Construction:

I drilled a small hole to start winding the Phasing Coil on one of the 2" PVC Couplings. The hole will also be used to place the wire down the middle of the cylinder, making sure the wire will reach the bottom of the turning Coil (5 feet). Secure the winding using hot glue. I made each item (cylinder, coils) and then assembled them. It is easier to handle the smaller pieces that the large piece.

Componet parts before assembly

I cut a 24 inch piece of 2" PVC pipe to be used for winding the Tuning and Source Coils. I would the Tuning Coil about 2 1/2" below the top of the pipe (when assembling the antenna this will be cut to maintain the dimensions of the antenna). Wind 34 turns on this PVC pipe (the source coil will be installed later). Antra two turns are used to fine tune resonance of the antenna (it is easier to remove "turns than to add them).

Phasing Coil

Tuning & Source Coils

I cut two pieces aluminum flashing 8 1/2" X 30 1/2". This is used to make the cylinders. Cut 2 peces of PVC pipe 36 inches. On one of the pieces mark the pipe 3/4" from the end (top of the top cylinder). Bend the flashing around the pipe starting at the mark. This will be the top cylinder. Secure the flashing with sheet metal screws every 1 - 2". Drill a hole on the bottom of the cylinder (long protion) and mount a 8 X 32 brass bolt 1/4" above the end of the cylinder.

Mark the other PVC pipe 1 3/8" from the end. This will be the top of the bottom cylinder. Secure the fashing to the PVC pipe using sheet metal screws. Mount a 8 X 32 bolt 1/4" below the top of the bottom cylinder. Drill a small hole just above the bolt (this will be used to route the # 14 enamel wire to the inside of the tube). Run the # 14 enamel wire down the inside of the bottom tube. This wire should be as close to PVC pipe as possible. Route the wire through the hole and mount to the bolt (remember to scrape the enamel off the wire before connecting to the bolt).

Install the top cylinder to the 2" PVC coupling with the Phasing coil using PVC cement. The aluminum flashing should be against the coupling (we will cut the bottom cylinder PVC to get the correct spacing). Ensure that the end of the coil is lined up with the bolt. Scrape the enamel off the wire and install on the bolt. Put the bottom cylinder ito the coupling for measurement. The two cylinders should be 1 diameter spacing (2 3/8"). After cutting the bottom cylinder to the correct imensions it is time to glue it into the coupline. The tap on the bottom should be mounted 180 degrees fromthe tap on the top cylinder. Measure the

bottom end of the bottom cylinder and cit it off so the flashing is flush with the bottom coupling. Glue the couplin in place. Measure the pipe containing the tuning coil to all for 1 diameter spacing between the cylinder and the tuning coil. Glue in place. Now we are ready to tune it.

Using the instruction in the Demostration documents, tune the antenna. After the antenna is tuned, the source coil should be wound on the pip and tuned per instructions.