# Construction of a FULL WAVE LOOP for HF Bands

**Materials Required:**

1 1 ¼ inch Polyethylene 90 degree elbows X 3

2 1 ¼ inch Polyethylene "T" connector X 1

3 ¼ inch stainless steel bolts X 2

4 ¼ inch stainless steel washers X 8

5 Wire - preferably #10 - coated to reduce rain noise -the heavier the gauge wire the greater the tunable bandwidth

6 450 ohm ladder lines to suit - length is not an issue (RG8 may also be used if a 6" diameter coil at 10 turns is done right at the feed point. This will decouple the coax from the antenna since coax is an unbalanced line).

7 **Heavy duty** copper lugs that *fit tightly* over the bolt threads (automotive type)

8 Lanyard rope to suit - the best quality rope you can afford

9 Silicone sealant to waterproof feed point connections - be generous

## Calculating Antenna Length

1068 divided by the required frequency in megahertz. For example : For 3.729 megahertz

**1068 / 3.729 = 286.4 feet overall length**

Divide by 4 to get each length of the 4 sides = **71.6 feet** (Cut overall length long by approx. 3 feet (18 inches for each end of the feed) to allow for wrapping at the feed point. It's a lot easier to cut some off than trying to add).

## Laying Out the Antenna

This is the fun part. If at all possible lay it out as it will go up (around the house - around any obstructions etc).

Measure off the required length marking the corners as you go (71.6 feet each leg). *Remember to start measuring the extra length **in from the end** that you have allowed for feed point wrapping*!

Run the elbows down the wire placing them at the pre-marked spots along the wire. At each elbow wrap extra wire to secure elbow at that point (see drawing).

Construct the feed point (T connector). Spend lots of time putting this together. Over-build it since this is where the major stress will occur. Mine is 5 years old and still looks like the day it was built even though it has been subjected to 100 + kph winds and major ice loads.

Rather than drilling the holes for the antenna wire use a soldering iron if possible. There are no sharp edges using this method.
**NOTE:** If the feed point is located at a metal tower ***DO NOT*** attach the ladder line to the tower. A standoff system is required. Coax, of course, can be taped or wire stayed to a leg of the tower.

At all 4 corners attach lanyard rope using a clove hitch followed by 2 half hitches then 2 or 3 plastic wire stays around the loose ends and tape the wild end tightly.

Ideally, the antenna should be ½ wavelength above ground (not bloody likely). Get it as high as possible though. I've found that it works well from 50 feet and up.

With a good tuner you should be able to tune **any** HF band.

Run a 100 foot ground wire in contact with the earth (it can be insulated or uninsulated – it doesn't matter – although insulated will last longer. The wire can be any length as long as 100' is in contact with the earth. It's best if you bury it by taking a square nosed spade and dig a shallow trench to hide the wire. Just push the shovel in a few inches and fold the grass and dirt over, lay the wire in the trench and tamp the grass/dirt back over it. The trench will disappear within a couple of weeks. It does not matter what configuration you install the ground wire (straight line, zig-zag, whatever fits).

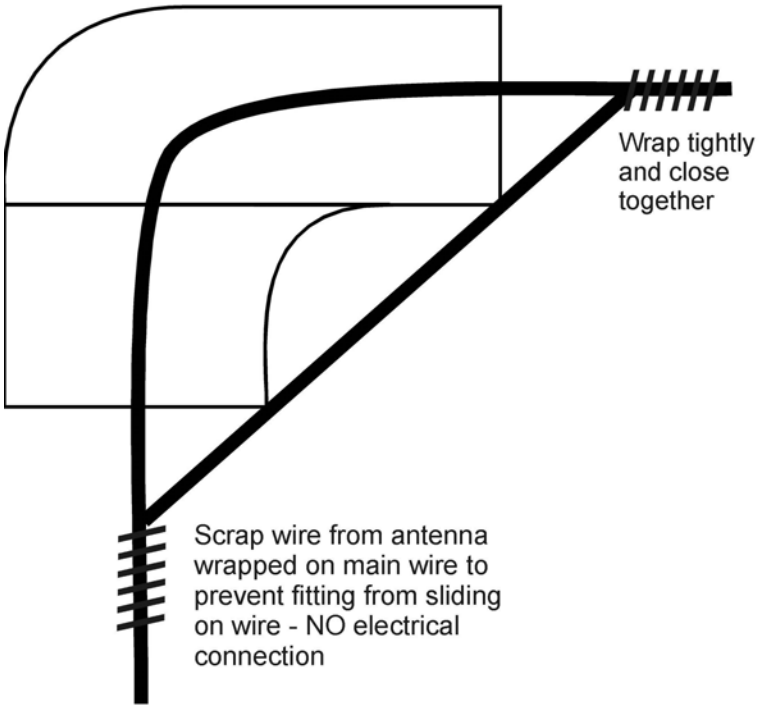
Connect one end of the ground wire to a bus bar at the back of the radios (a ½" piece of copper pipe **sanded clean** works great and attach every piece of transmitting equipment to it at **different points** across the pipe) **Don't** gang all of the connections to one place. Using stainless steel water pipe clamps work best. Soldering can cause a high resistance if a joint goes dry. Use ground shield from an old piece of RG8 for the grounding straps – here, the bigger the better.

The antenna does not have to be a perfect square nor does it have to be particularly level although if it has a significant slant to it you'll tend to be somewhat directional.

**By Drew Watson VA7DR**

# 90 degree elbow at corners

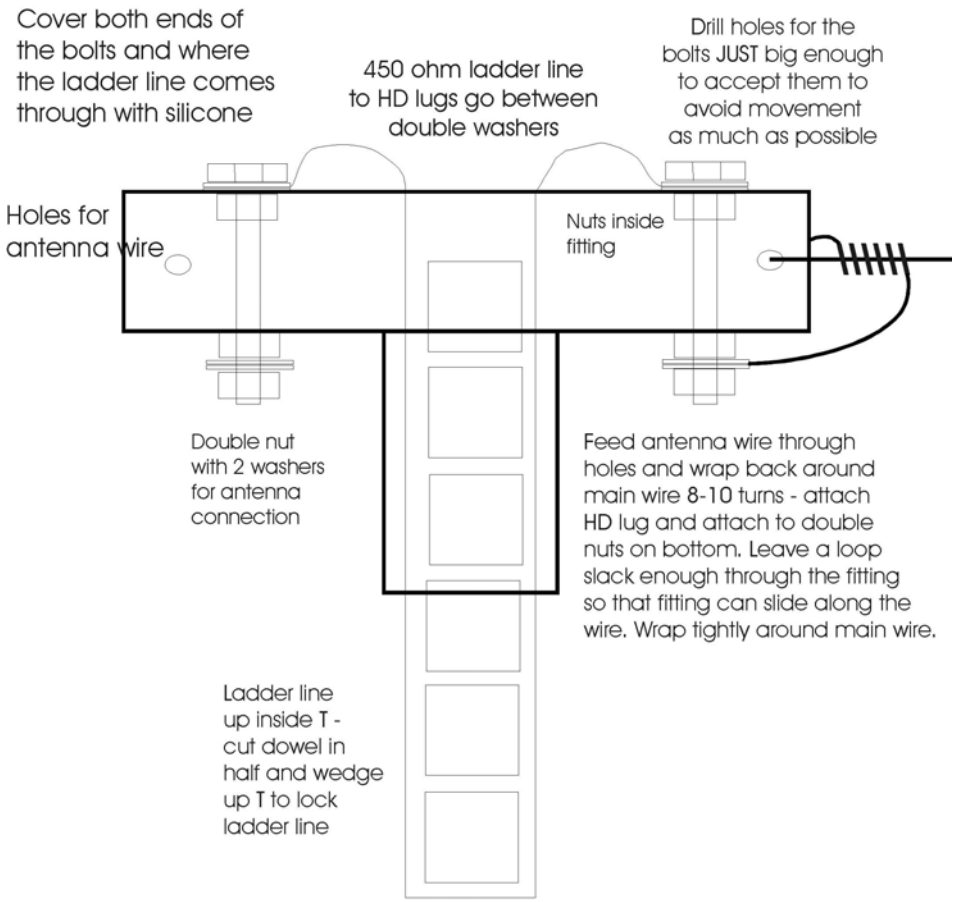
1.25 inch Polyethylene water pipe fitting




Drawn by VA7DR

# Feed Point

**1.25 " Polyethylene**
**"T" connector**
**water fitting**

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