The Delta Loop Antenna....

And how to make one!

By Chris, G0DWV
What is a Delta Loop

• It’s a Full wave loop in the shape of a triangle, with sides of 1/3 wave length (this is not critical but it’s best to keep as equal as possible).
• Made from wire or tubing

This is 7 elements on 10m
What do I need to know?

• Loop size, to determine the length of the wire needed for the desired band, simply divide the desired resonant frequency in Mhz into 1005.
  eg. $1005 / 18.118 = 55.31$ feet for midband 17 meters.

• Matching to 50 Ohm Feeder using 75 Ohm Quarter Wave Stub, The formula for this is: $1005 \times \frac{\text{velocity factor of coax}}{4} \times \text{target frequency}$

• 50 Ohm Coax via Gamma match (Tube or variable Capacitor), W2DU 4.1 Balun, 450 Ohm ladder line (Multiband).

• Horizontal or Vertical. Where to Feed it

- Apex Up Apex Feed
- Apex Up Low - Side Feed
- Apex Down Apex Feed
- Apex Up Corner Feed

<table>
<thead>
<tr>
<th>Polarization</th>
<th>Radiation Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Horizontal</td>
<td>Moderately High</td>
</tr>
<tr>
<td>B: Horizontal</td>
<td>High</td>
</tr>
<tr>
<td>C: Horizontal</td>
<td>Moderately High</td>
</tr>
<tr>
<td>D: Vertical</td>
<td>Low</td>
</tr>
</tbody>
</table>

Feed Impedance ≈ 100 Ω
Delta lengths for Mid band

- 10 meters  34.835 feet
- 12 meters  40.296 feet
- 15 meters  47.349 feet
- 17 meters  55.469 feet
- 20 meters  70.546 feet
- 30 meters  97.185 feet
- 40 meters  140.559 feet
- 75/80 meters 269.798 feet
- 160 meters  528.947 feet

Lengths above are in feet and inches.

When cutting wire to make the Antenna, always add some for final tuning and the physical attachment on insulators.
What do you need?

- Wire for the element – Any size, WHY
- Dipole centre – Commercial, Improvised or make your own
- Coax Feeder – Coax 50 and or 75 ohm
- Slotted line –450 (you will need a balun and ATU to match to your TX for multiband use)
Delta Loop Feed point
RG58 Cable Preparation

• Trim back the sheath—about 4 inches

• Move braid to one side and pull centre wire through the hole by bending as this.
RG58 Cable Preparation

• Separate ends

• Heat shrink sleeve the braid and waterproof using self amalgamating tape-

• Add solder tags.
Putting in together
What happens at the Corners?

• You need to place an insulator between the wire and whatever you use to tie it off.
• Cable ties come in so handy.
Summary

• Vertical Deltas are a very good antenna for DX as they are omni directional if fed in the corner, low angle radiation.
• Not so good for local.
• Monoband, when fed with ¼ wave 75 ohm stub.
• Multiband if fed with 450 ladderline and using an ATU
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