

Delta Antenna for 80- 10 meter Band

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The simplest antenna that could provide operation on all HF bands is a Delta Antenna. The antenna made in the shape of Delta needs minimum points for installation, does not required grounding like a vertical does and the antenna is not critical to nearest objects. The antenna does not required high mast for installation. If the antenna made as one band one it may feed direct through a coaxial cable. However for multiband operation the antenna is required a matching device at its feed-points.

ATU consists of a broad band balanced RF transformer T1 and Pi circuit that match antenna impedance to impedance of the feeding coaxial cable. **Figure 3** shows design of the balanced transformer. The transformer may be connected to the antenna and to matching circuit according to variant 1 or variant 2. It is depends on antenna placement (so on to antenna impedance on the bands) and to parameters of the transformer. Practice shows best variant for your antenna installation.

For a long time I use to a Delta Antenna for 80- meter (perimeter is 84 meters) on amateurs bands from 80 to 10 meters. Two upper points of the antenna are fixed at the roof of a five-storey building third point (feed-points of the antenna) is fixed on the balcony on the third floor. Wires from the feed- points are going into my shack and connected to an ATU. The ATU may be connected to transceiver by coaxial cable of any length. **Figure 1** shows design of the delta antenna. **Figure 2** shows schematic of the ATU.

Inductor L1 has 13 turns coiled on 45 mm OD, length of winding is 70 mm. It is coiled by enameled wire in diameter of 2... 2.5- mm (10- 12 AWG). Taps made from 2, 2.5, 3 and 6 turns counting from the left side (according to the schematic on **Figure 2**) of the L1. Capacitors at the matching device are composed from several fixed capacitors and one variable capacitor switched in bridge makes the fine tuning.

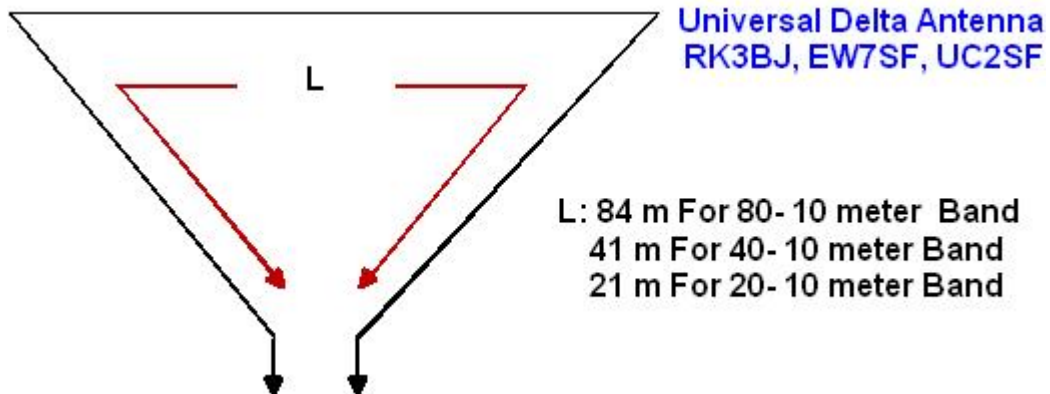


Figure 1 Design of the Delta Antenna



Figure 3 Design of the Balanced Transformer

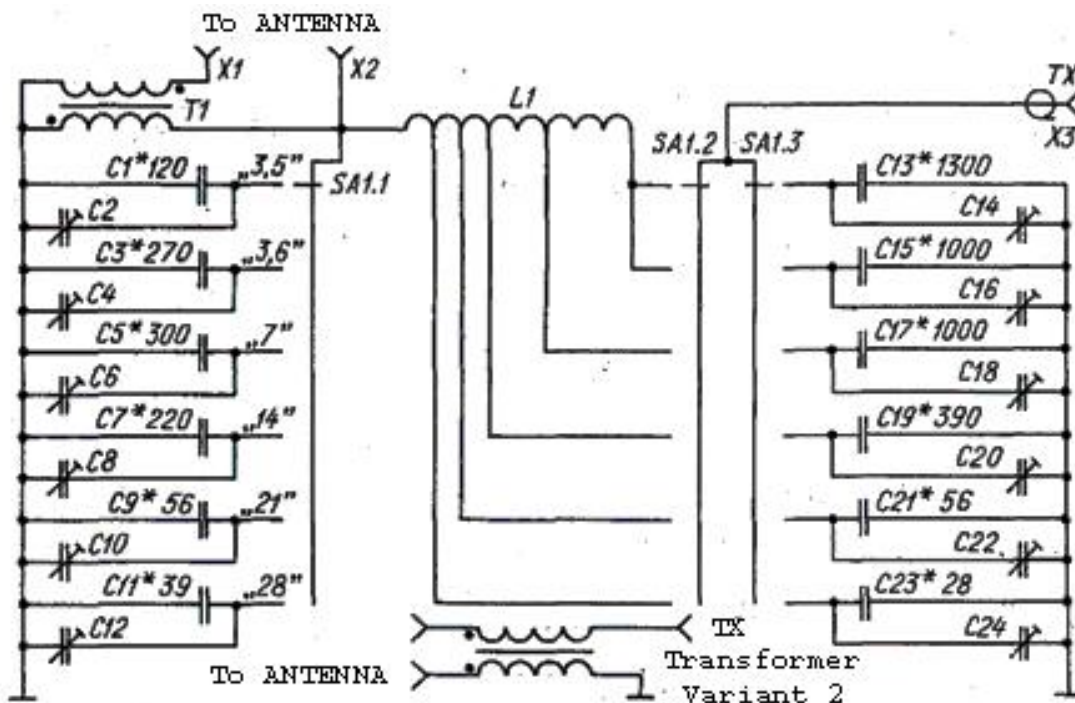


Figure 2 Schematic of the ATU

It is possible use two good quality variable capacitors instead S1.1 with fixed capacitors and S1.3 with fixed capacitors. In this case it is very conveniently to tune the antenna inside the 80- 10 meters band. The antenna works well on the WARC bands.

Antenna may be used on the 160 meter Band. For this case the inductor L1 should have more turns to match the antenna on the band or antenna should have perimeter 160 meters. It is possible to use antenna with perimeter less 84 meters however on the low bands efficiency of the antenna is decreased.

73! de RK3BJ

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