

## End Fed Antenna

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translated by Earl VA6TJ

What more could we wish for? An easy to build antenna made from inexpensive materials, covering all the HF bands! The simple end fed antenna described in this article meets these requirements.

A half wave end fed antenna exhibits a high impedance to the transmitter. This mis-match is too high for most external or internal antenna tuners to deal with. However we can use a transformer to overcome this mis-match.

An matching transformer can drop the impedance of the antenna by a ratio of 9:1 to a value easily handled by antenna tuners. The transformer I used is a 9:1 UN-UN.

### Winding the transformer:



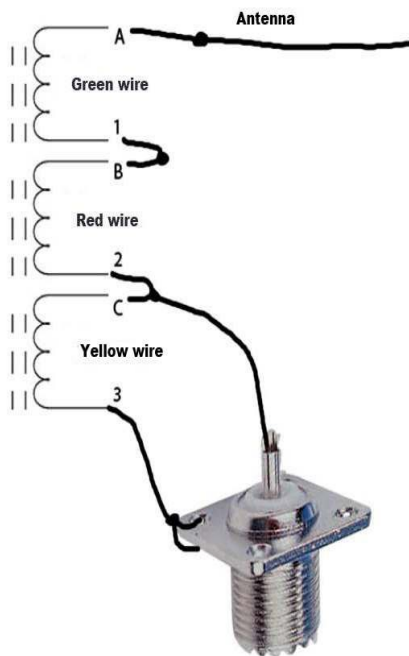
1. A trifilar winding is used. Cut 50 cm lengths of different colored insulated wire of at least 0,75 mm<sup>2</sup> cross section. As you can see in the photo I used red, yellow and green wire. [multi stranded wire from a discarded computer power supply should work well.] Use about 9 windings (one winding on a toroid is counted each time a conductor passes through the centre hole). Details of the toroid core are given below.

2. Cut and solder point 1 of the green (blue-green) wire to point B of the red wire.

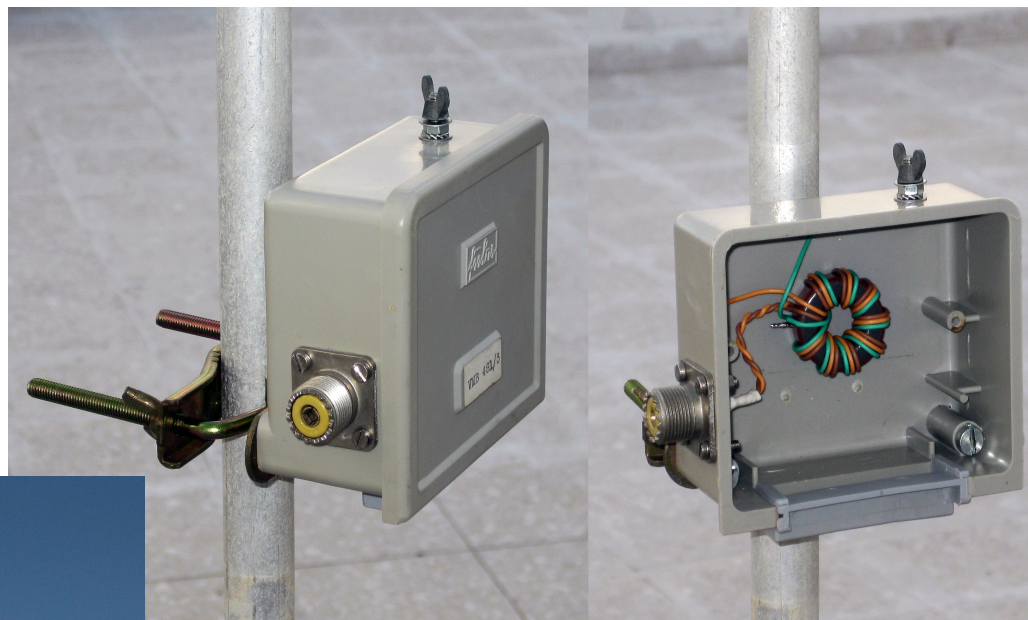
3. Solder point 2 of the red wire to point C of the yellow wire. This point will also be connected to the centre pin of the SO239 connector.

4. Connect point 3 of the yellow wire to a solder terminal bolted on to the base of the SO239 connector.

5. Connect point A to the antenna.



As you can see in the photo I have mounted the UN-UN in a weatherproof PVC electrical box.



I recommend an antenna comprising a conductor about 10 meters long or longer if possible. Copper wire of 1 or 1.5 mm cross section works well. I checked a number of configurations with the antenna horizontal, vertical or at an angle. I recommend trying different possibilities. I tried several and to my amazement they all worked. My TS590 transceiver matched the load from 3.5 to 30 MHz. A 5m long vertical wire attached to (loosely wrapped around) a fishing rod gave good results both from the standpoint of matching and with regard to signal strength for local and DX signals. [note: surf casting rods up to 7 m long can be purchased at low cost. These telescope into a small case and can be extended in a jiffy.]

The toroid was glued to the box to keep it from moving and compromising the connections. I used a bolt and wing nut to attach the antenna wire and a standard SO239 to connect the coax feed to the transceiver.

One important advantage is that **there is no need for radials** a convenience which greatly reduces the time and effort that go into setting up the antenna in the field. So it's great for field day and portable operation.

Notes:

1. Signal strength was checked by a number of local hams (40m net) with uniformly good results.
2. The project is based on an article published on the website <http://www.earchi.org/>
3. For RF power levels up to 200W use a T106-2 toroid
4. For RF power levels up to 1 KW use a T200-6 toroid. [translator's note, don't see why type 2 core material is not used so maybe you can experiment here]
5. [I have purchased toroid cores both from Amidon and from <http://www.kitsandparts.com/toroids.php> ]