HRD Industries - DudeTenna 100+ Watt EFHW Kit

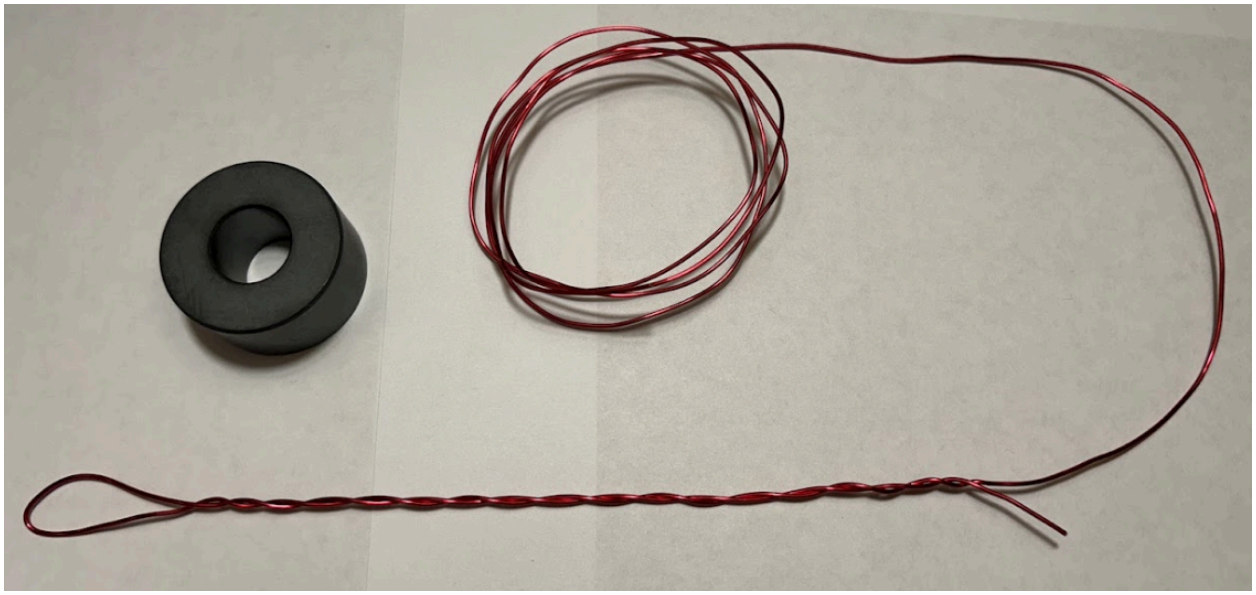
Parts List

1. DX UL Antenna wire, if purchased with the kit. (Extra winder shown not included)
2. Magnet Wire
3. Elastic Velcro Strap
4. Capacitor
5. Heat shrink tubing
6. Wire winder with hardware and SO-239 installed
7. Large toroid
8. Zip ties
9. Dudecoil
10. +10dB gain Sticker

Build Instructions

Wind the Toroid

For this step you will need the toroid, the magnet wire, and a zip tie.
Start by folding over the magnet wire by at least 9”
Twist the wire together to produce something like this, **Note: twist tight enough so that there is no space between the twisted wires, do not over twist**:



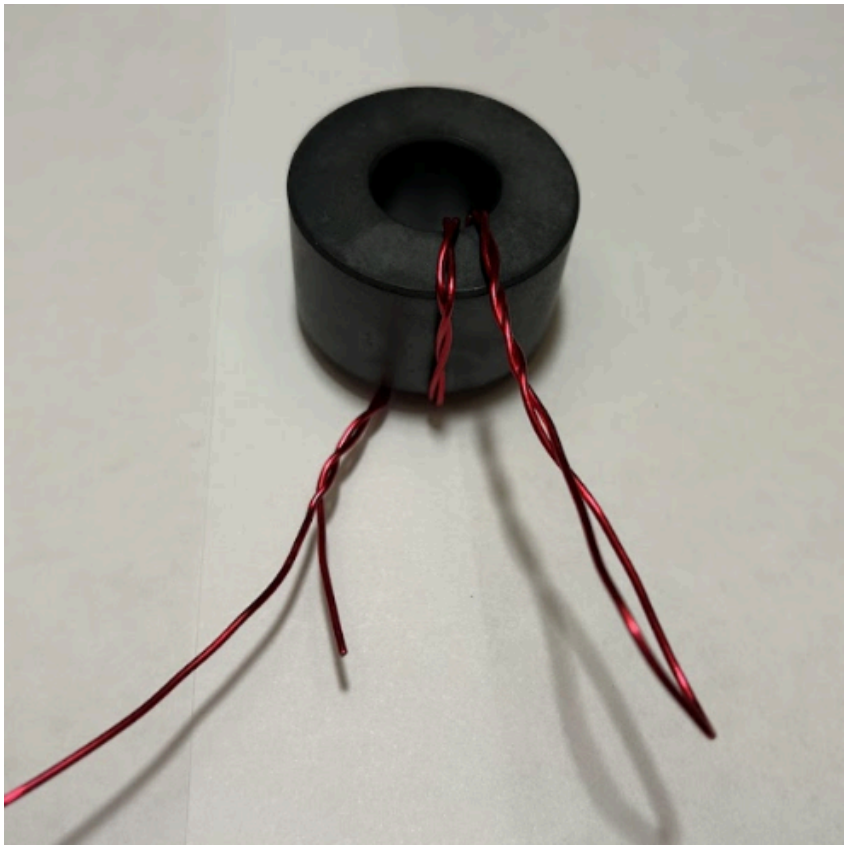
Wind two turns on the toroid with the twisted(primary and secondary) portion of the magnet wire.

Do this by inserting the loop end of the twisted magnet wire in through the **bottom** opening of the toroid and then out through the top.

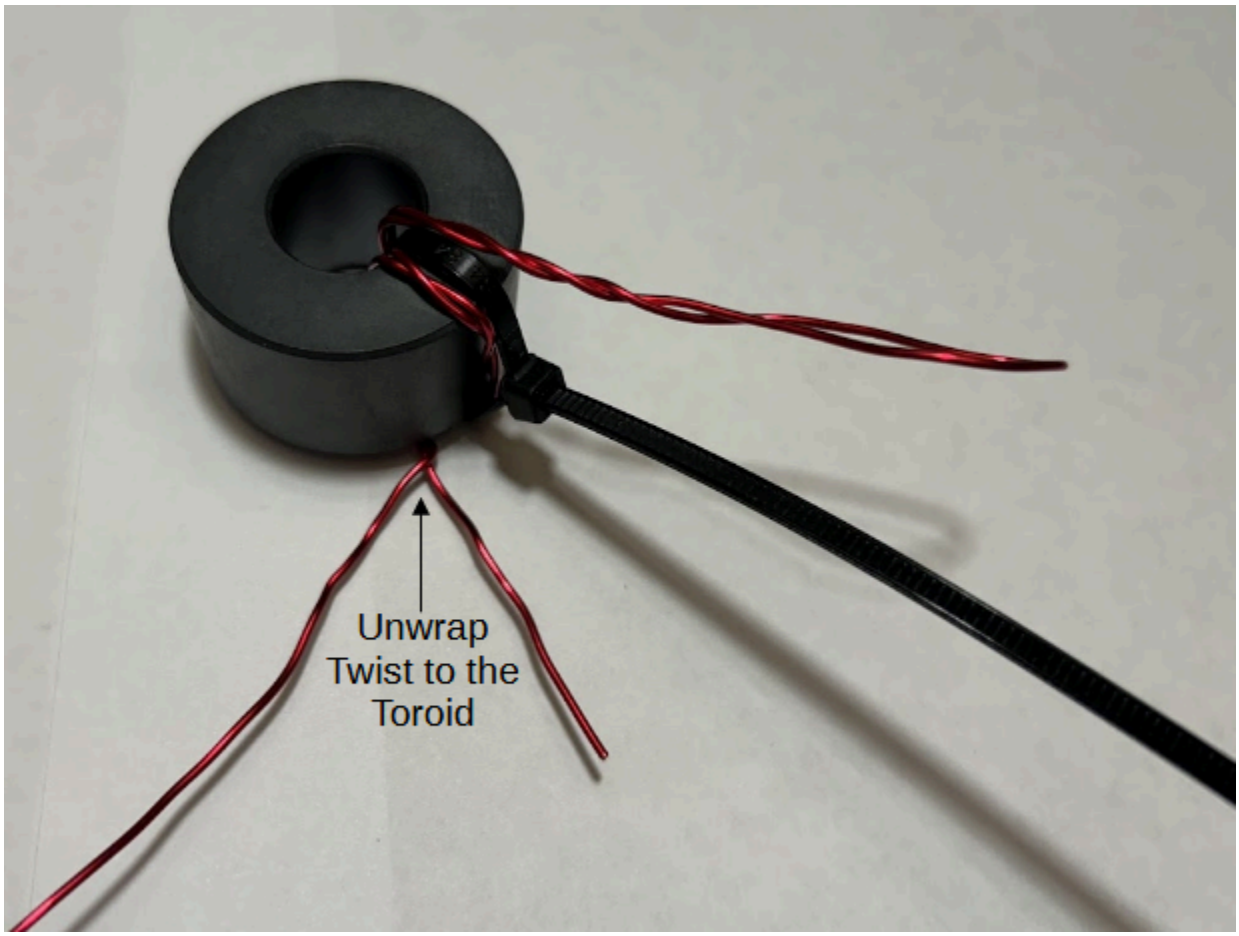
Then bend the loop end out around the outside of the toroid and back up through the hole in the toroid.

Being cautious not to wear away the enamel on the magnet wire by rubbing it against the toroid, carefully bend the wire around the square edges of the toroid so that the wire remains tight against the toroid

The result should look like the following figure:
Carefully note:
The directions of the turns, they were wrapped around the toroid to the right
Short primary tail twisted to the secondary on the bottom left
Loop End in the Top Right



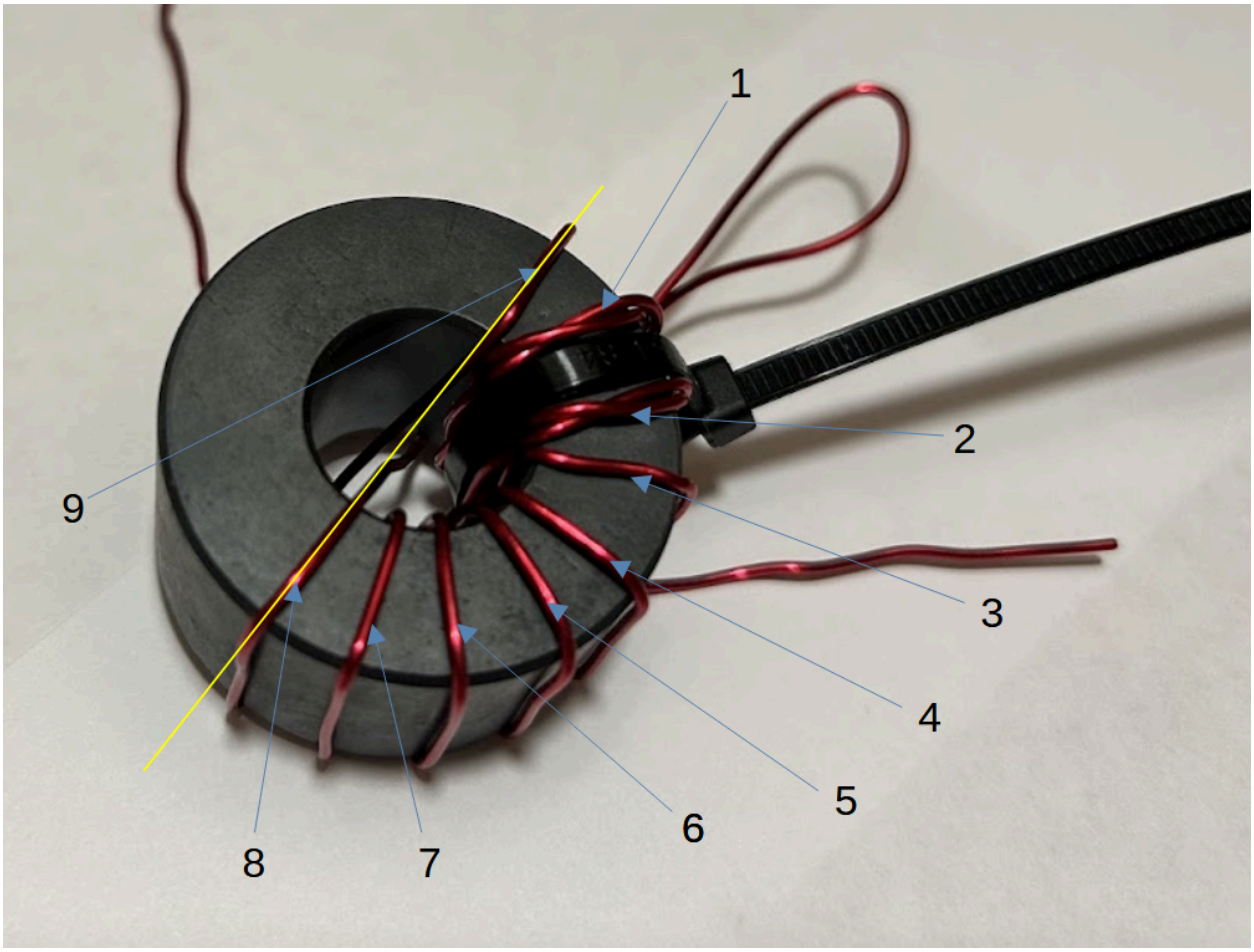
Use a zip tie to secure the twisted windings and untwist the primary wire from the secondary up to the toroid



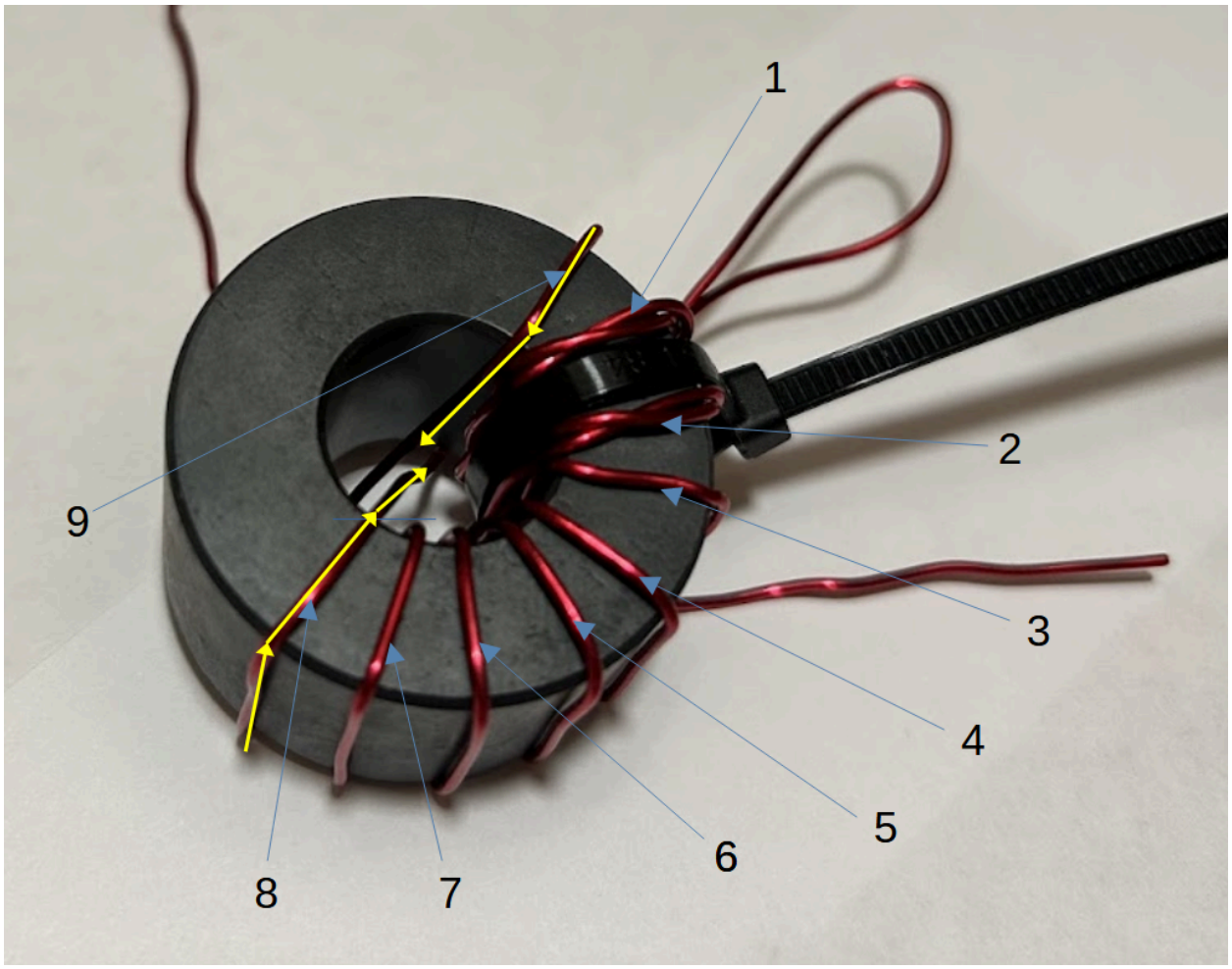
Start winding the secondary wire around the toroid spacing the turns out so that when the 8th turn crosses the toroid it will land next to the loop end with similar spacing, see yellow line in following figure.

Note: Winding the secondary wire will start in the opposite direction then the winds with the loop end. A turn with the secondary wire will start by going through the top of the toroid and out the bottom.

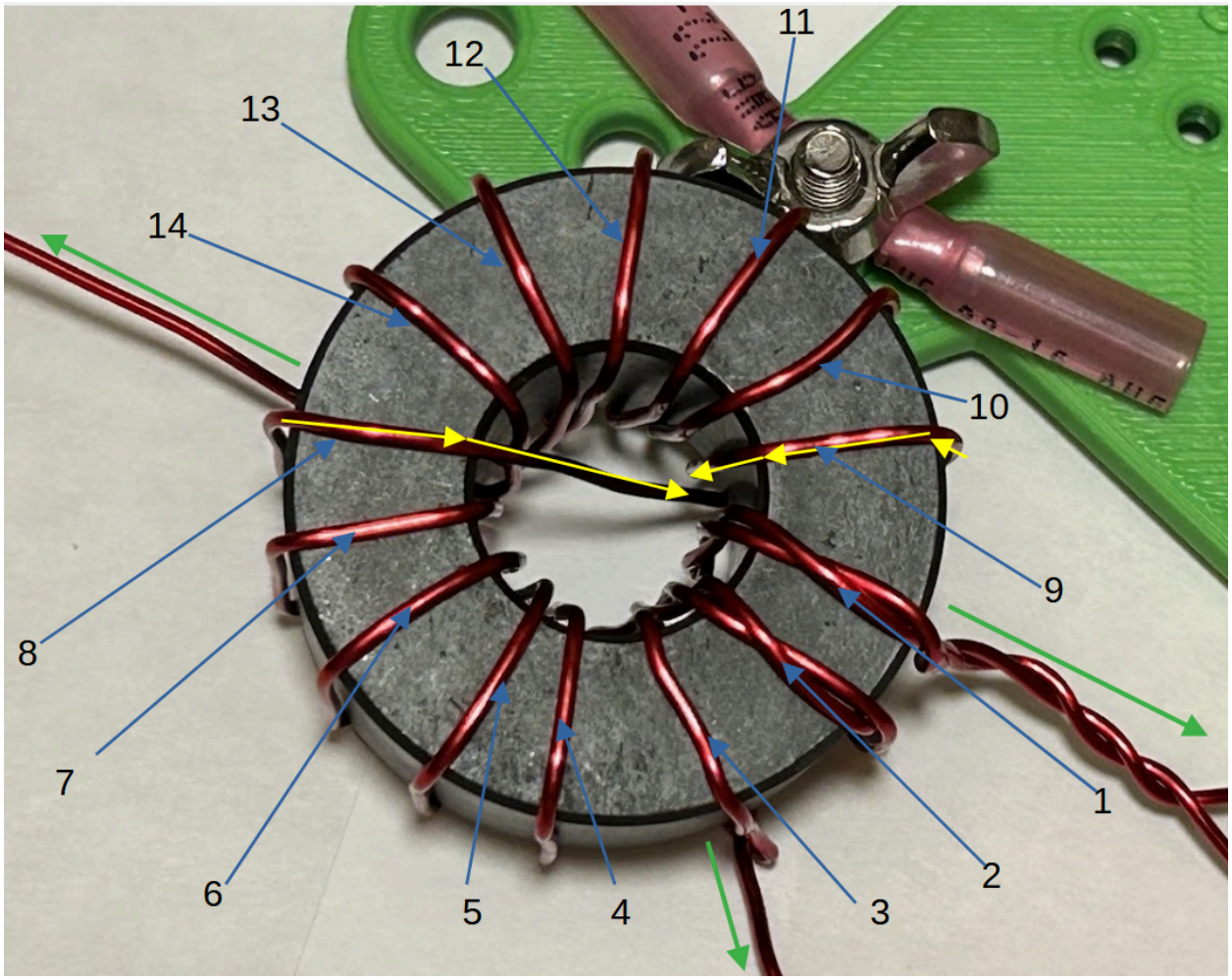
Ensure turns do not crossover each other inside the toroid. Crossing turns is like crossing the streams, do not cross the streams.


1
2
3
4
5
6
7
8
9

When the 8th turn is put into the toroid it will cross over to the other side of the bottom face such that the 9th turn will be on the opposite side of the toroid.



Continue wrapping turns 10-14 to finish out the transformer



Notes:

Turns are evenly spaced

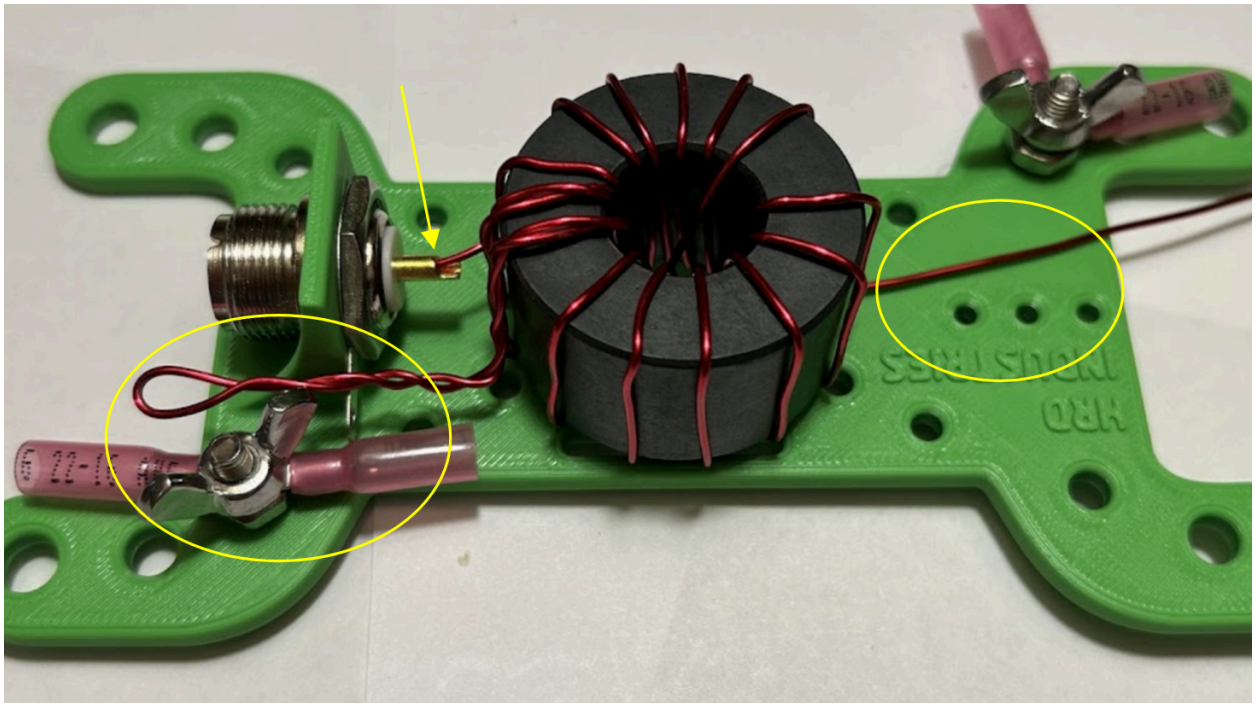
Turns do not cross over each other, do not cross the streams

Leads(shown in green arrows) are at the same level as the bottom of the toroid. This requires bending the twisted loop end down to the table surface.

Remove the zip tie so that the transformer can be fit to the winder.

Fit the Transformer

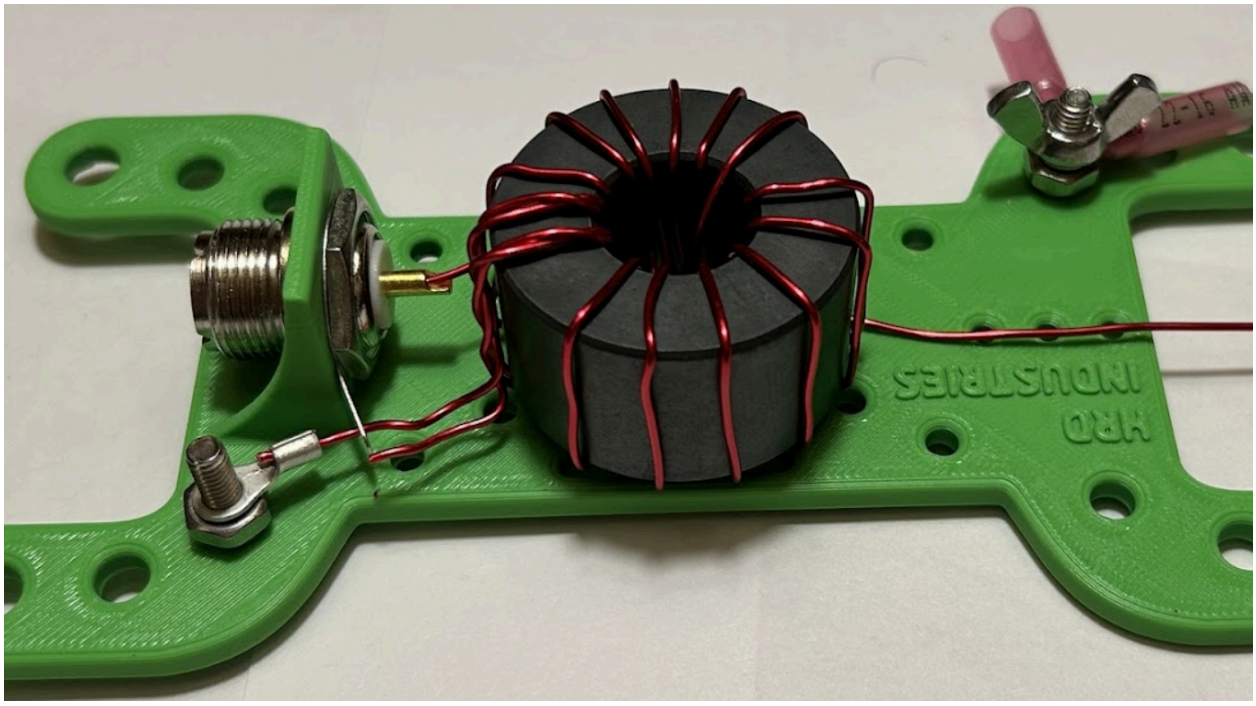
Place the transformer on the winder centered on the large hole in the winder with the transformer leads positioned like this:



You may need to cut the short tail to the primary wire to fit into the SO239 center conductor.

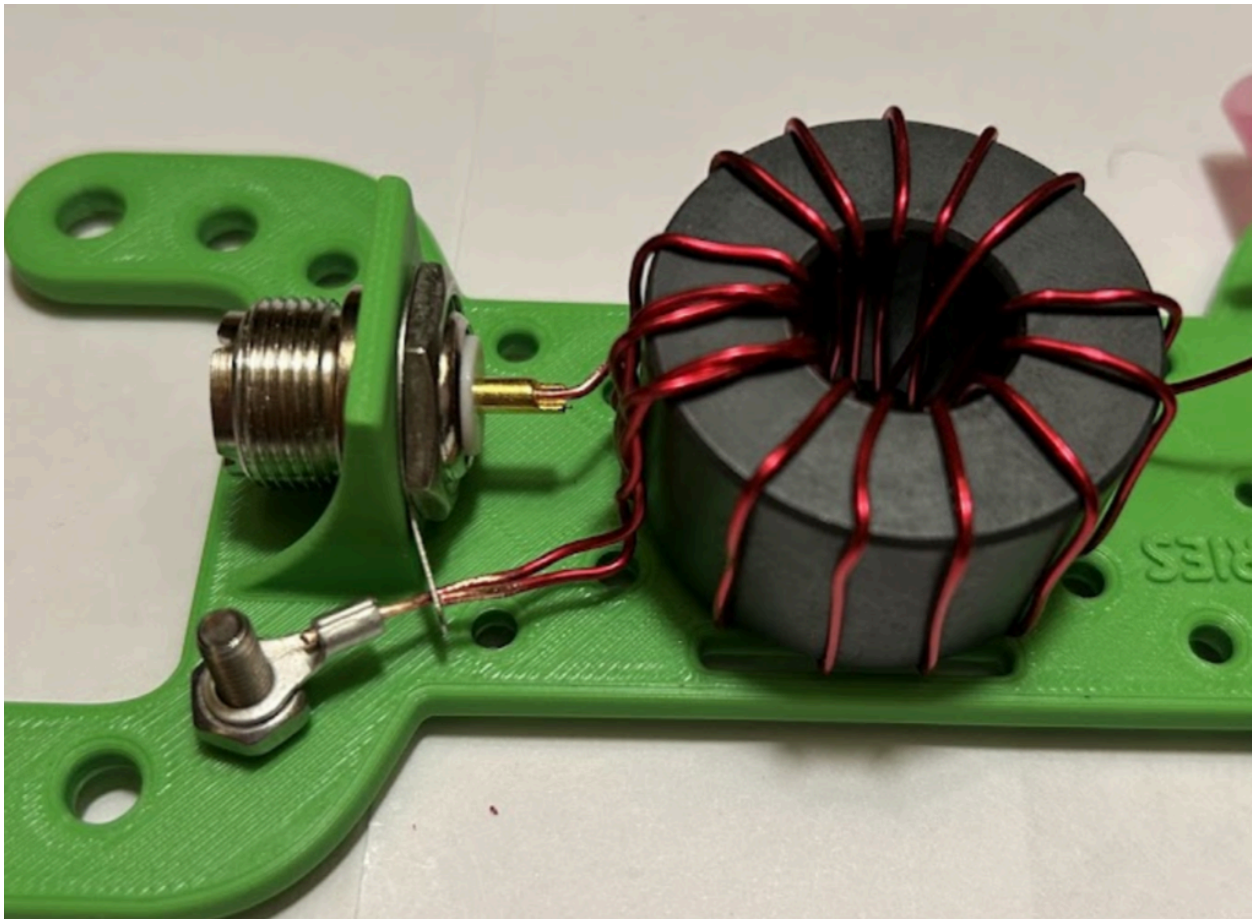
Note: Any cuts to the magnet wire from here on out should be incremental to get to the desired length so that the wires are not cut too short.

When cut to their final lengths the transformer leads should look like this:



Note: Some hardware was removed and the plastic removed from one of the ring terminals

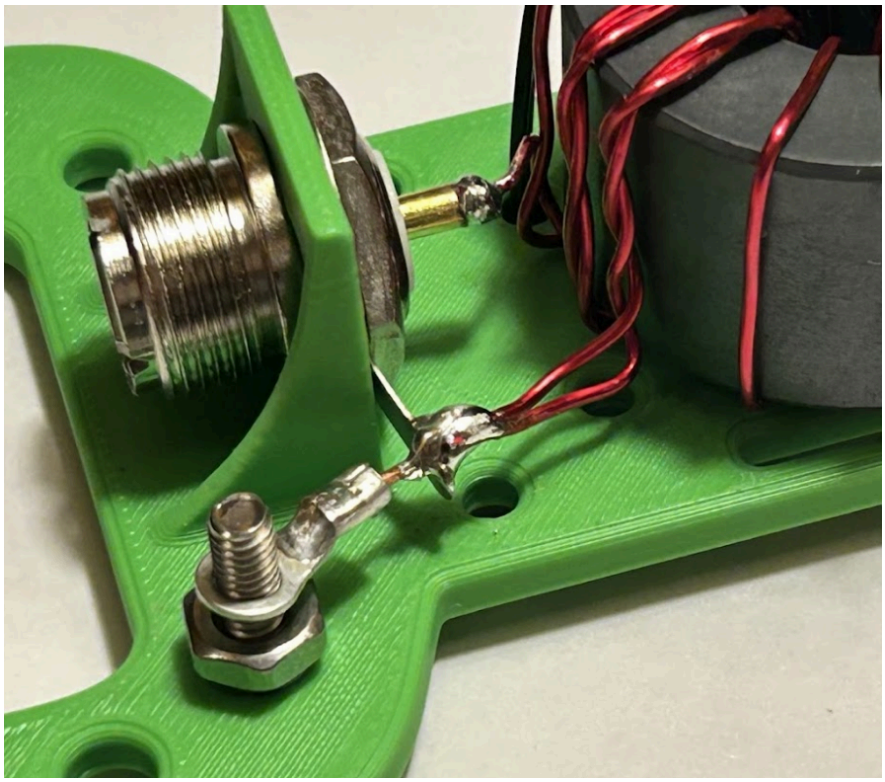
Sand or scrape the enamel from the magnet wire in preparation for solder



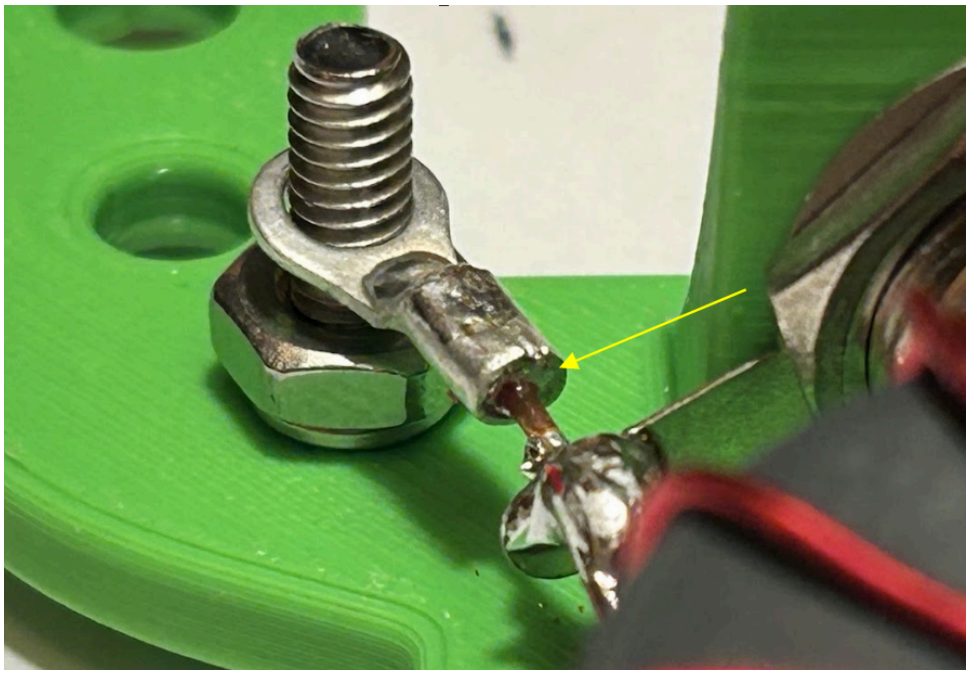
Note: the ground lead from the SO239 connector can be bent slightly for final fitment.

Solder Transformer Leads

Solder the transformer leads.

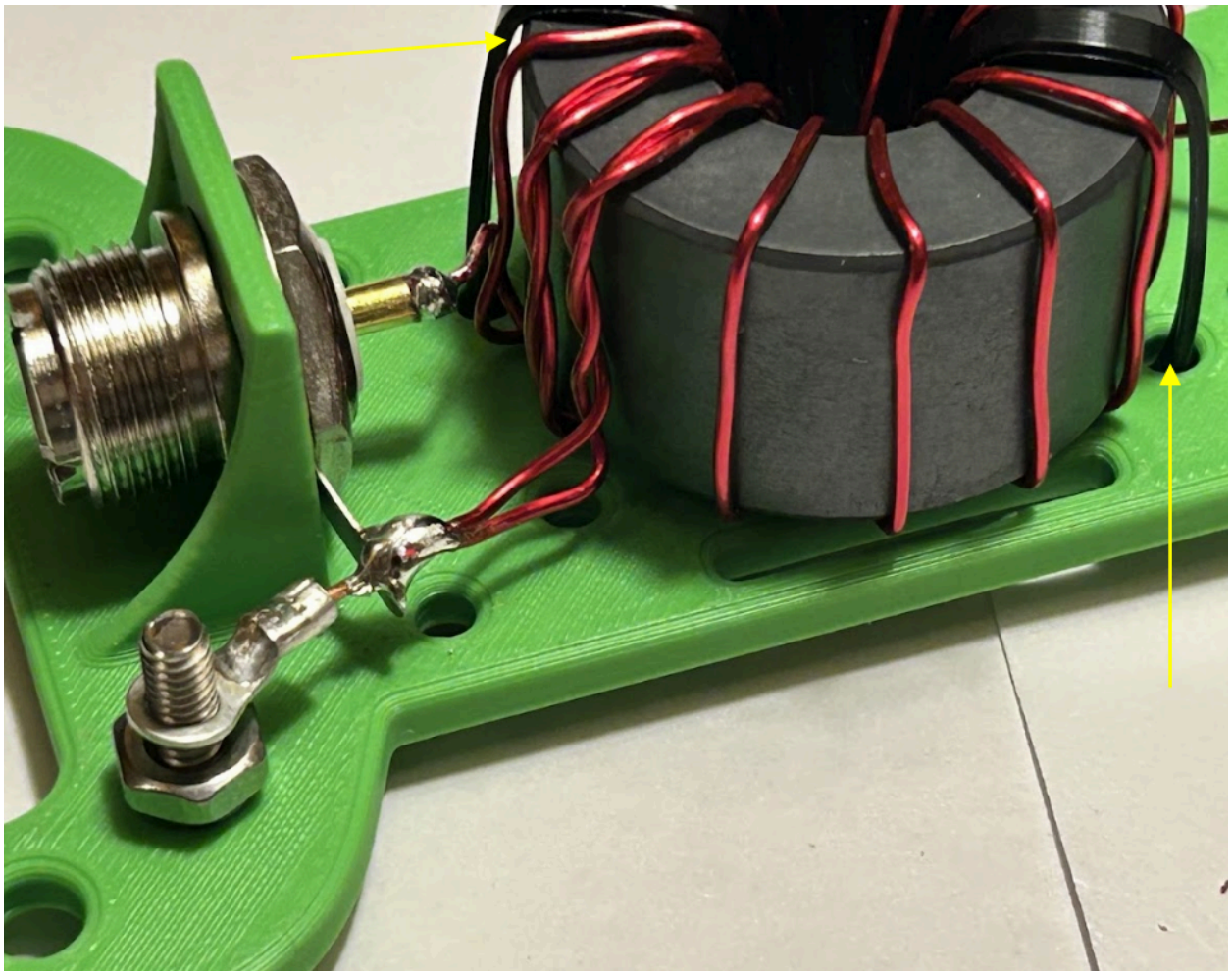


Crimping the ring terminal to the solid wire is not worth the effort. Ensure ample solder wicks into the ring terminal



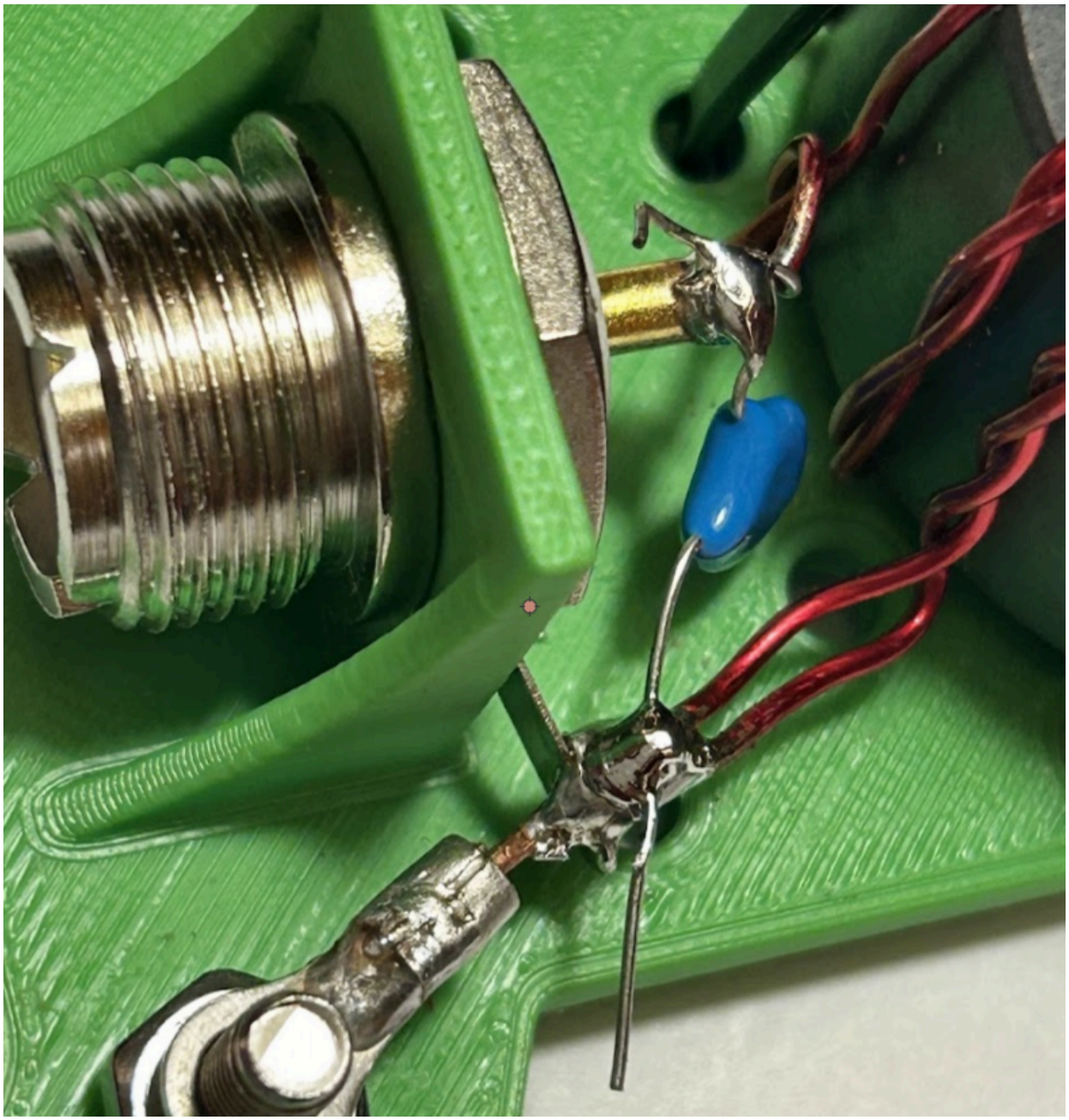
Secure Transformer

After soldering the leads to the transformer secure the transformer with zip ties

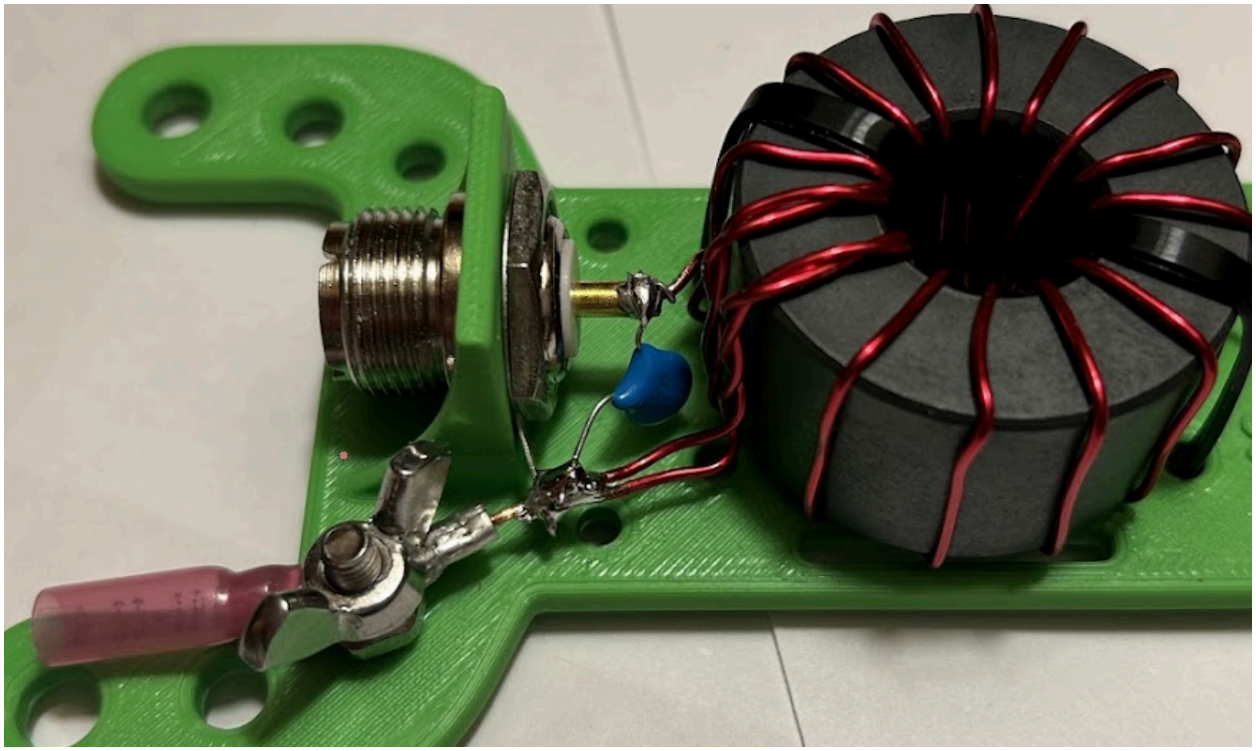


Add Capacitor

Solder in the capacitor



Remove/Cut the extra length of capacitor leads

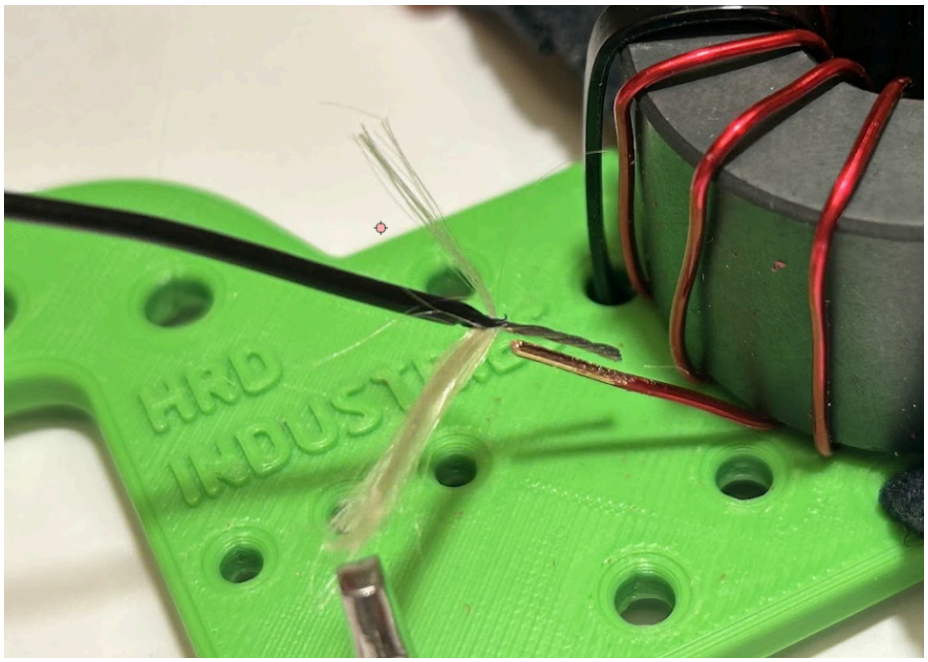


Add Antenna Wire

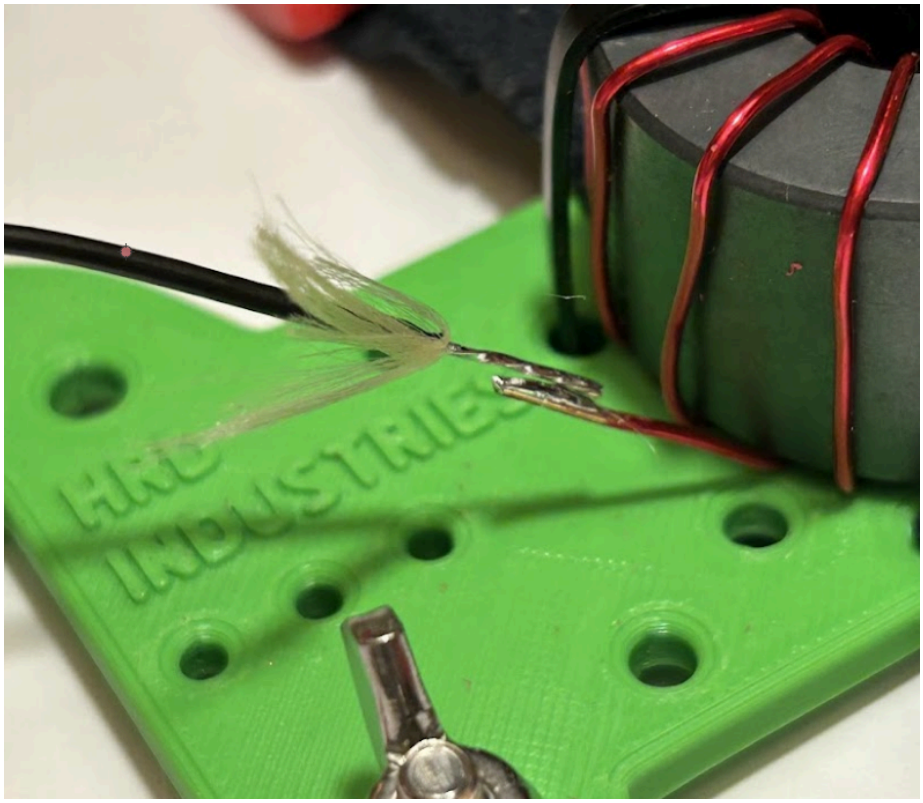
The following sections show two methods for attaching the antenna wire. Method 1 is a direct solder connection between the antenna wire and the antenna lead of the transformer. Method 2 allows more flexibility in the potential use of different antennas wires. Method 2 puts a ring terminal on both the antenna lead from the transformer and on the antenna wire itself. **Note: extra ring terminals are provided in the kit if method two is desired.**

Attachment Method 1

Strip the antenna wire separating the fiber strands from the copper strands and sand/scrape off the magnet wire enamel.



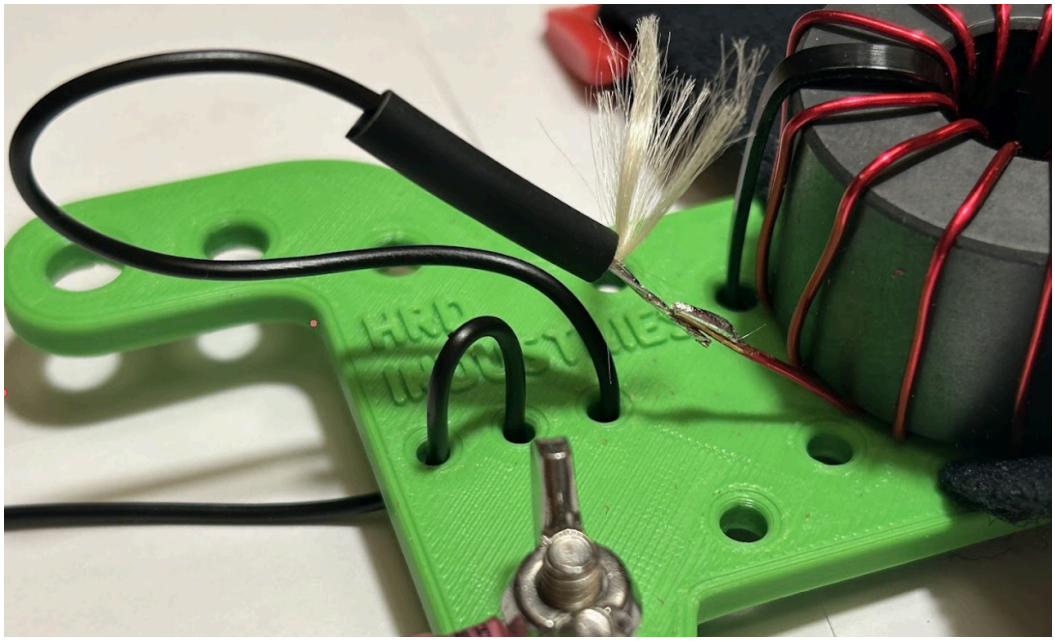
Tin both the magnet wire and the antenna wire **DO NOT Solder the wires together**



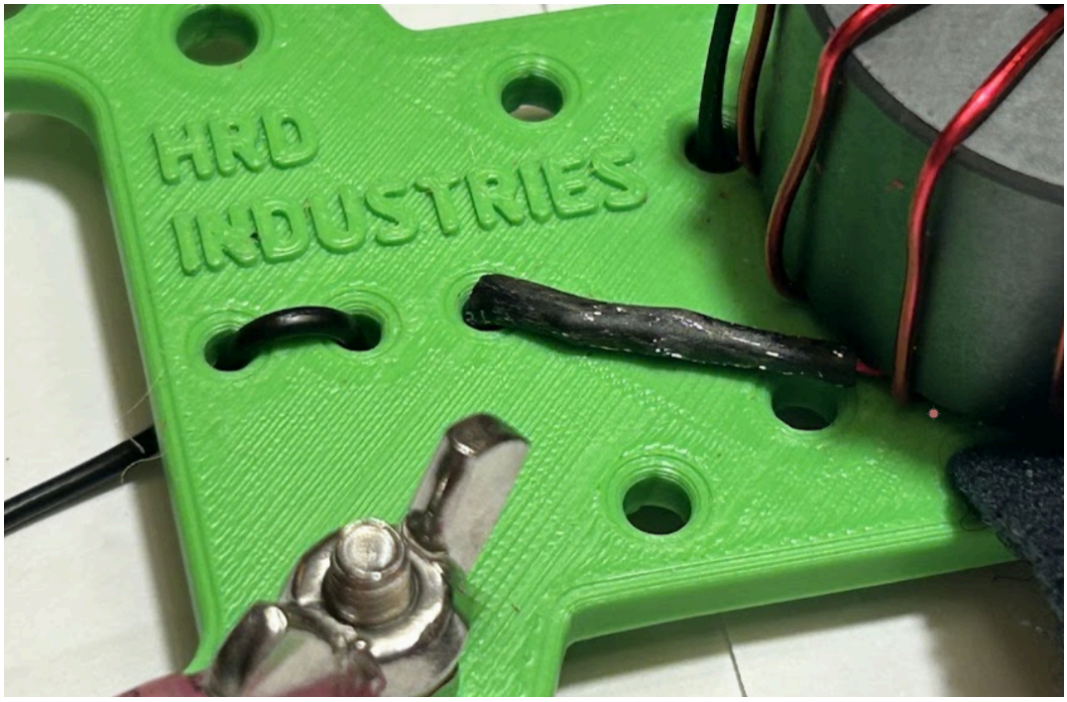
<u>Before soldering the wires together:</u>

- **Feed the antenna wire through the strain relief holes as shown**
- **Put the heat shrink over the antenna wire**

Note: The heat shrink may need to be cut to fit between the toroid and the first strain relief hole



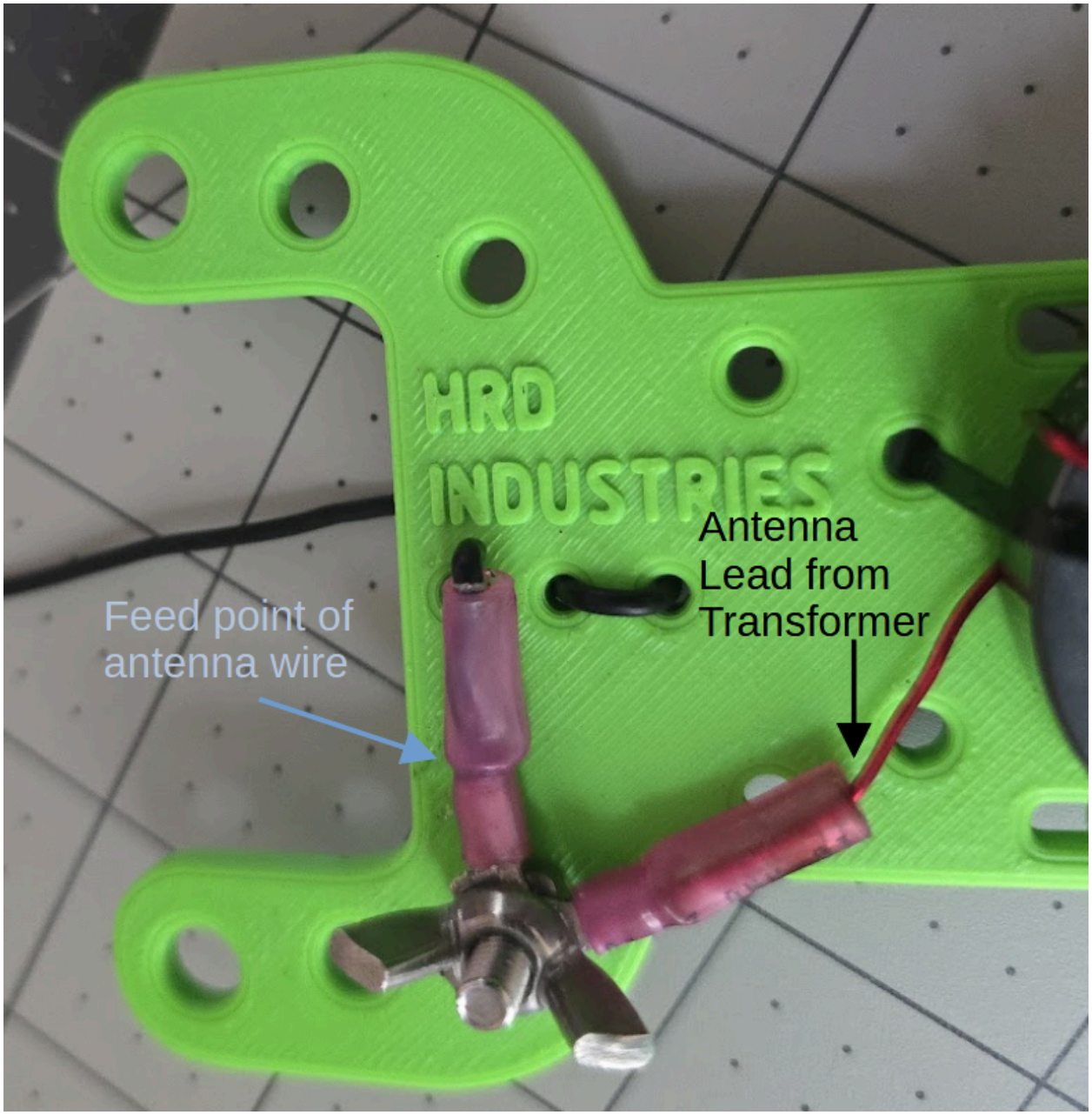
Now solder the wires together, trim up the fiber strands, shrink the heatshrink in place and pull the wire tight. **Note: You can use the solder iron to shrink the heat shrink with quick movements, take you time do not melt the plastic or wire insulation**



Attachment Method 2

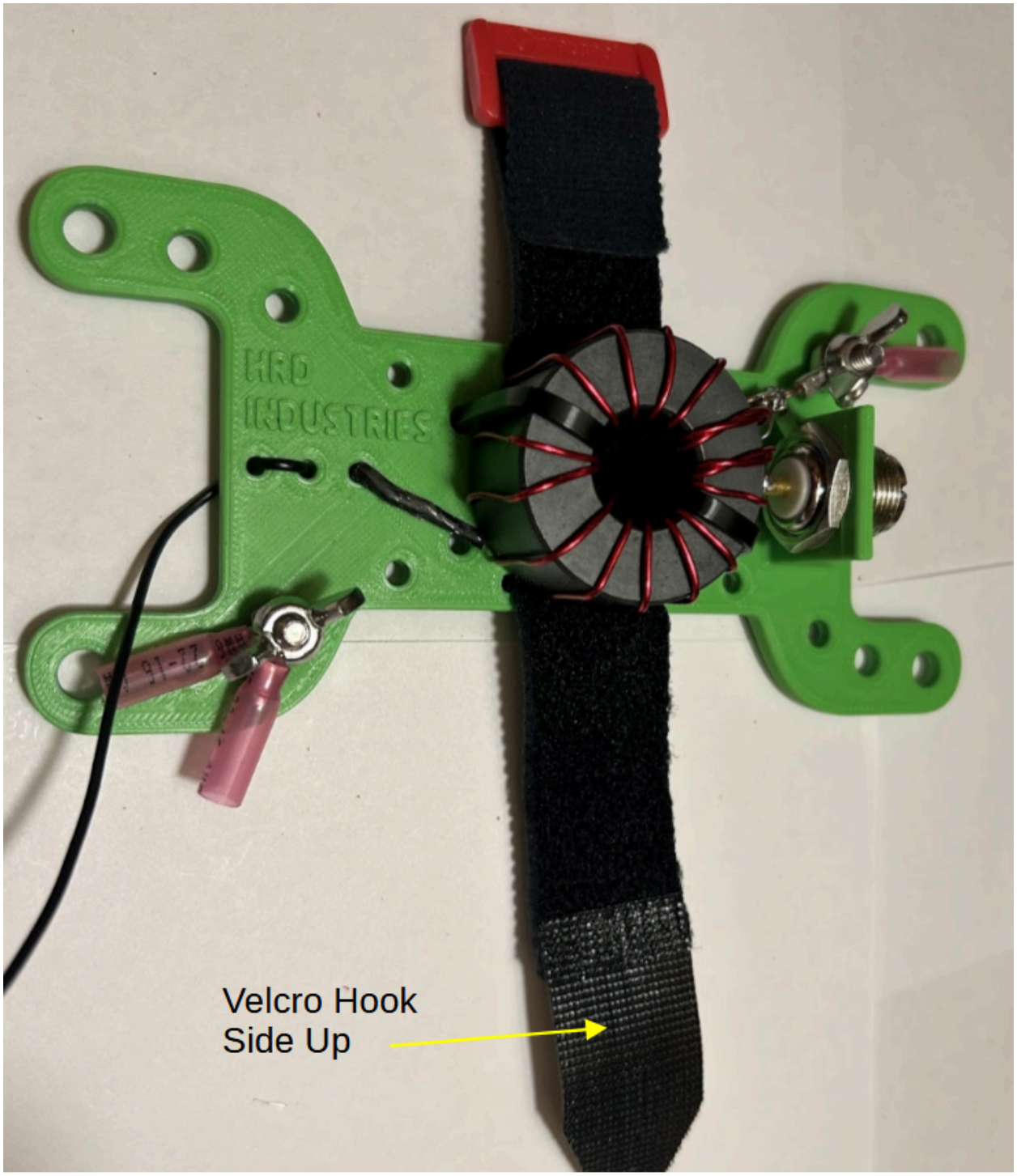
This method is similar to the ring terminal attachment done earlier.

- Carefully cut wires to length with the ring terminals on the stud so that the proper length seen
- Strip Antenna Wire of insulation, remove fiber strands, solder bare wire into the ring terminal using plenty of solder
- Sand/Scrape Enamel from magnet wire solder into ring terminal
- Heat shrink the plastic on the ring terminals


HRD
INDUSTRIES
Antenna
Lead from
Transformer
Feed point of
antenna wire

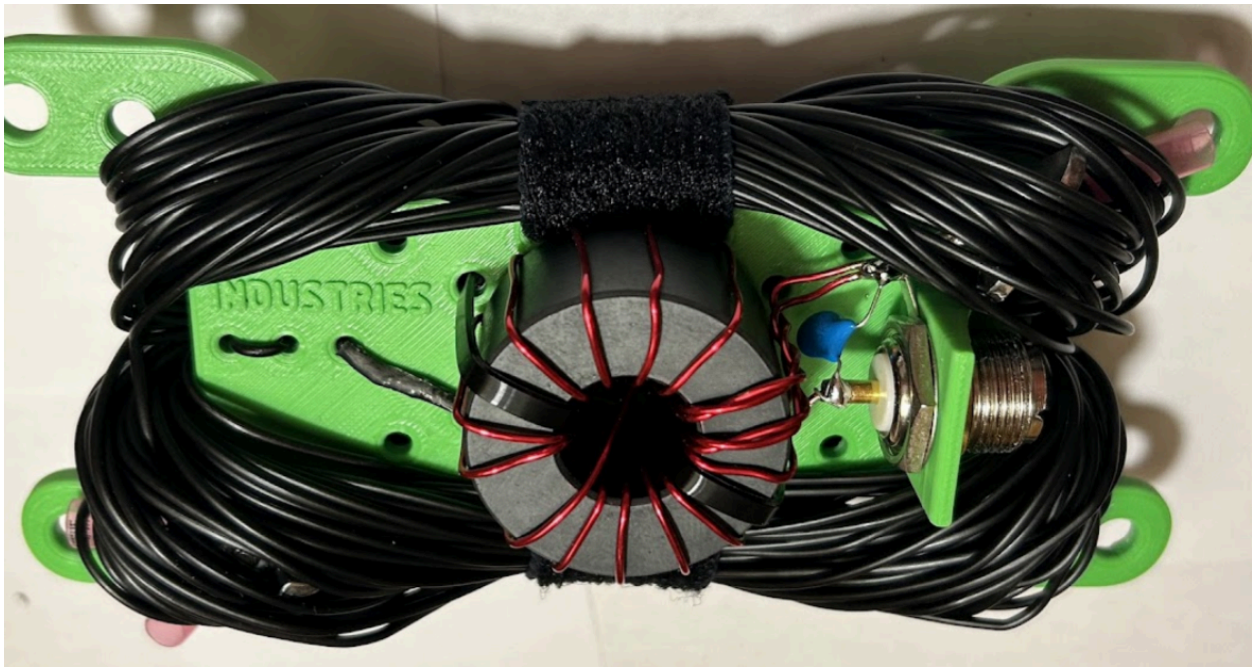
Add Elastic Velcro Strap

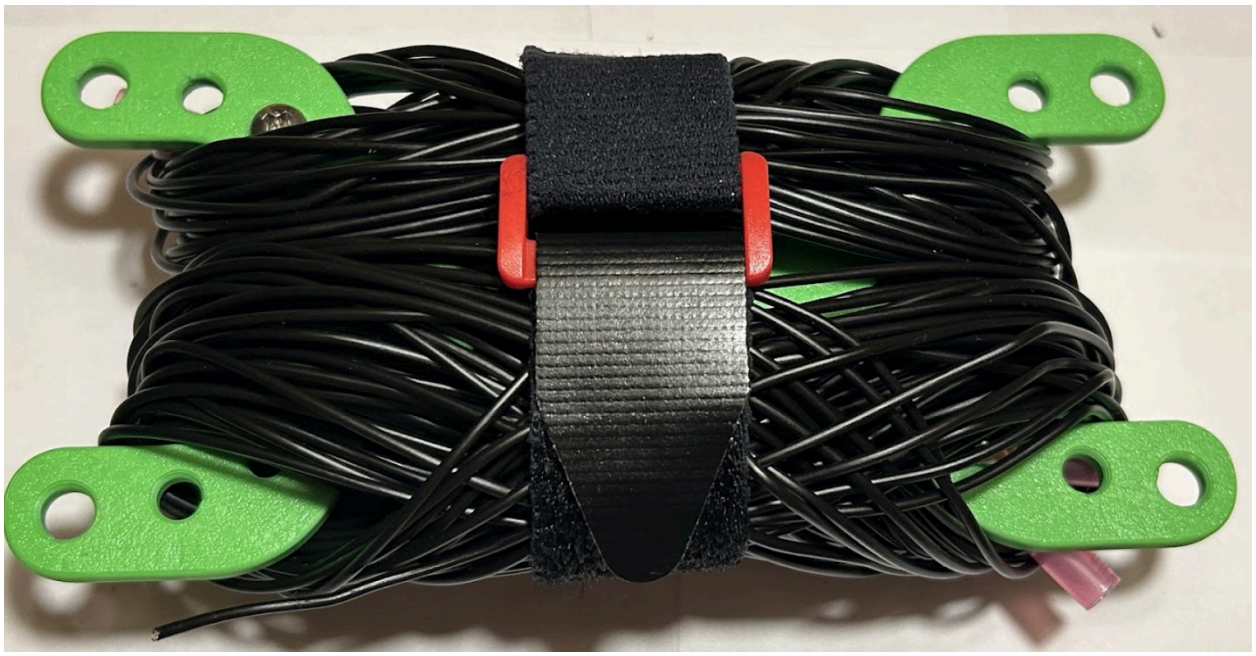
There are slots in the winder for the Elastic Velcro Strap install with the velcro hooks(sticky side) up.



Wrap Antenna Wire

Last step of the build is to secure the antenna wire with the strap



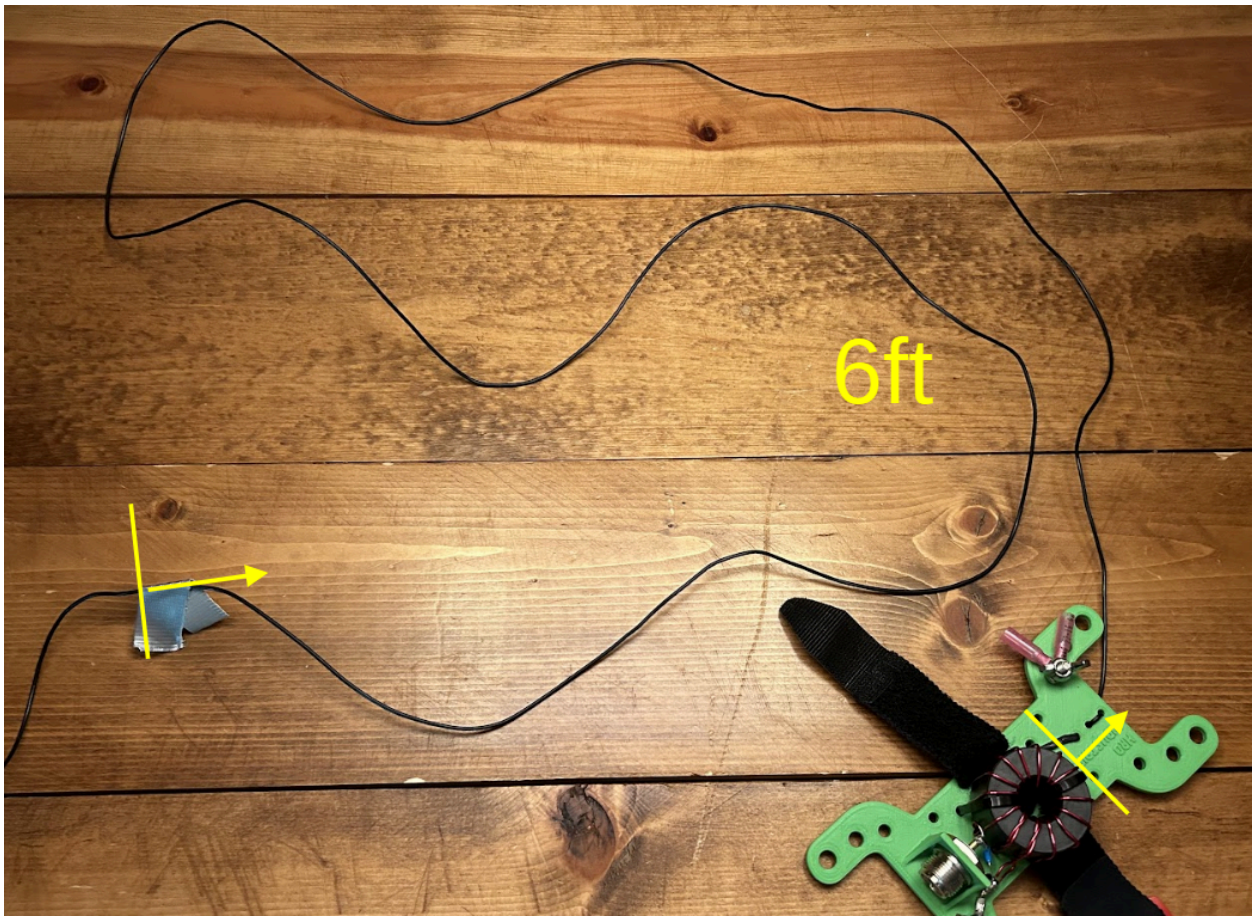


Add the Dudecoil

Adding this coil isn't critical if you only plan on using the 40m and 20m bands. However if you also want this antenna to resonate on the 15m and in part of the 10m band adding this antenna is important. See this video for more detail:

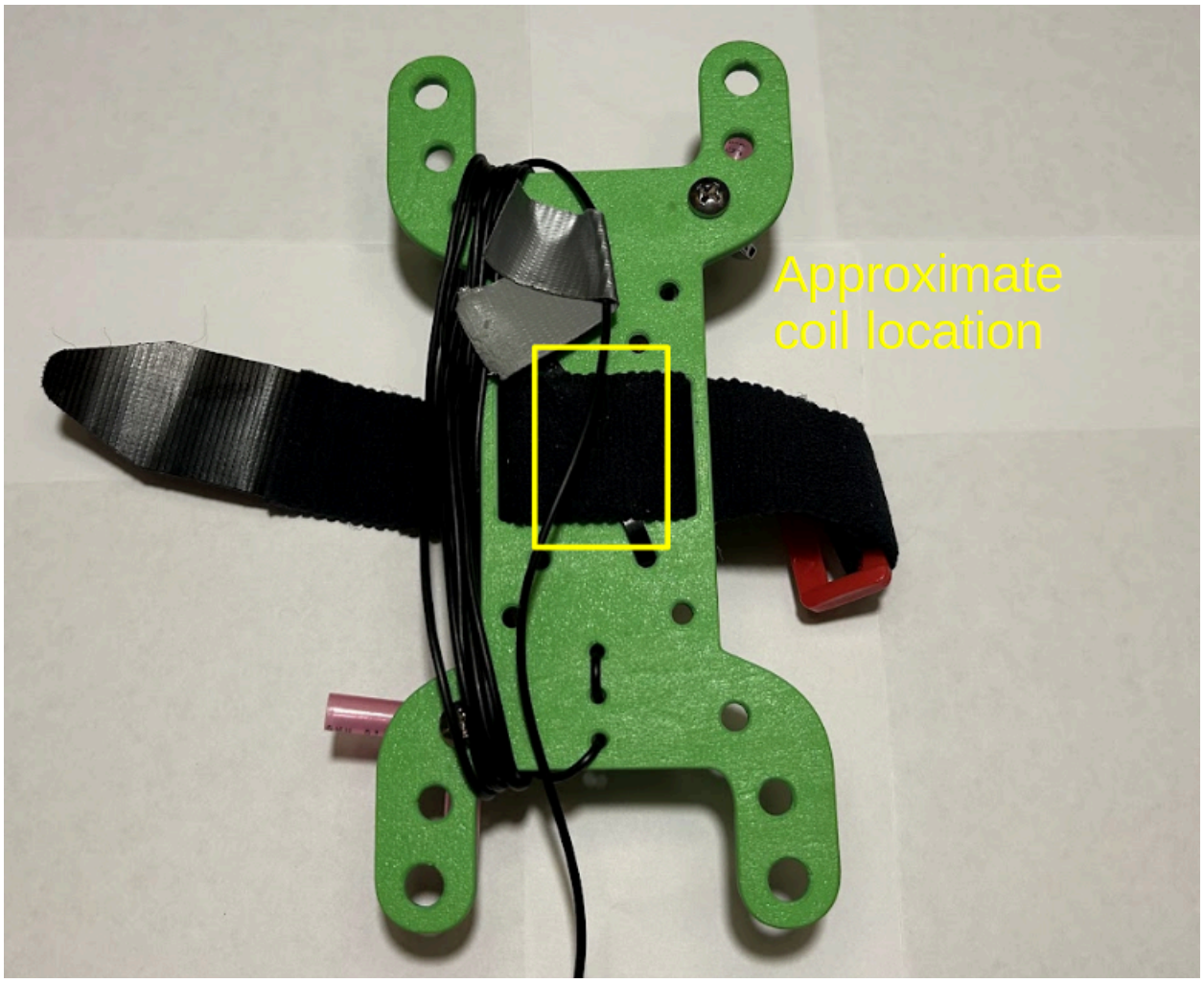
How to Tune a 40M EFHW if 20, 15 and 10. DO THIS on a 1934-1079-ND Toroid!
https://youtu.be/VvYtT-4UwqM?si=Jx4foCcuAWhNVdz3

The first step is to measure 6ft of wire from the transformer and mark with tape. The coil will be installed just after the tape.

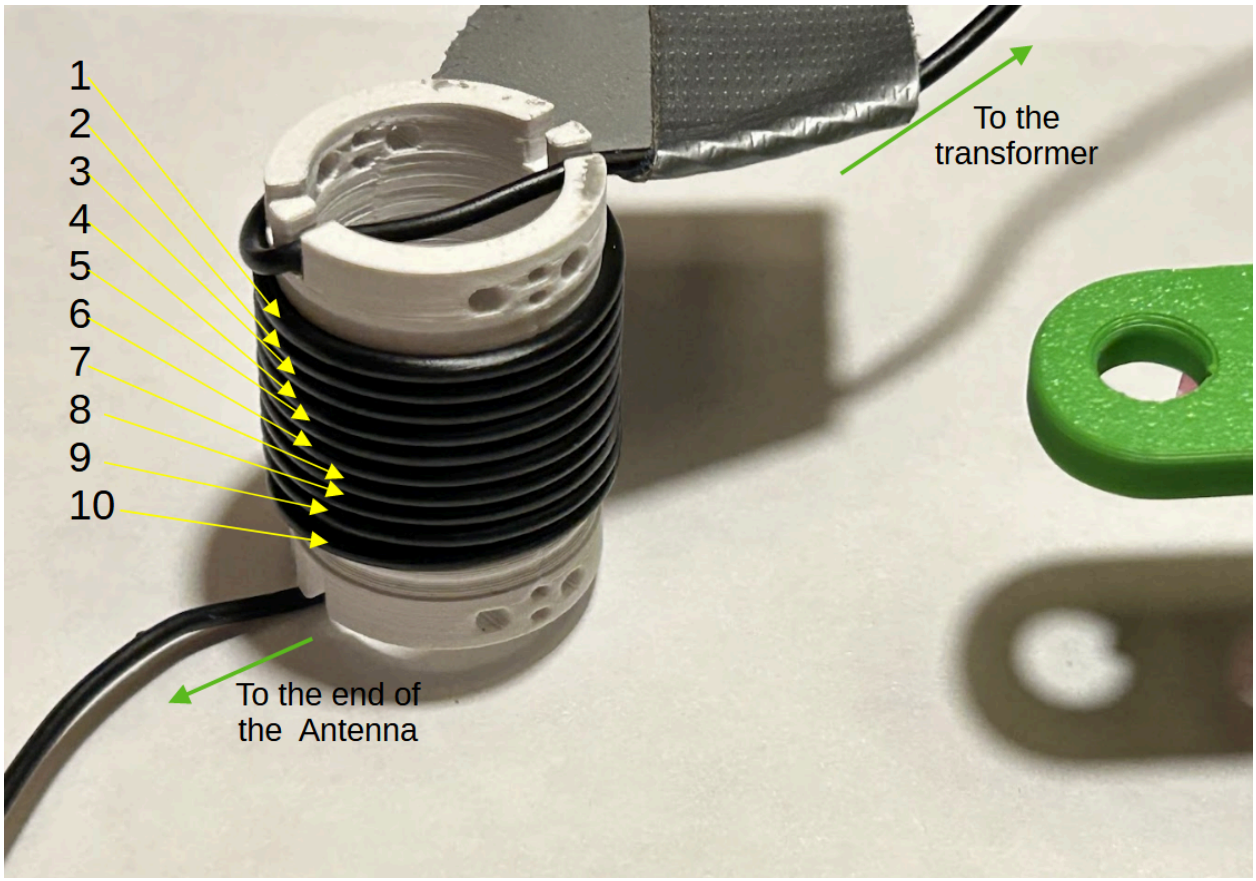


Begin to wind the wire to see where the piece of tape falls on the winder. Wind it in a repeatable fashion and such that the tape falls close to the following location:

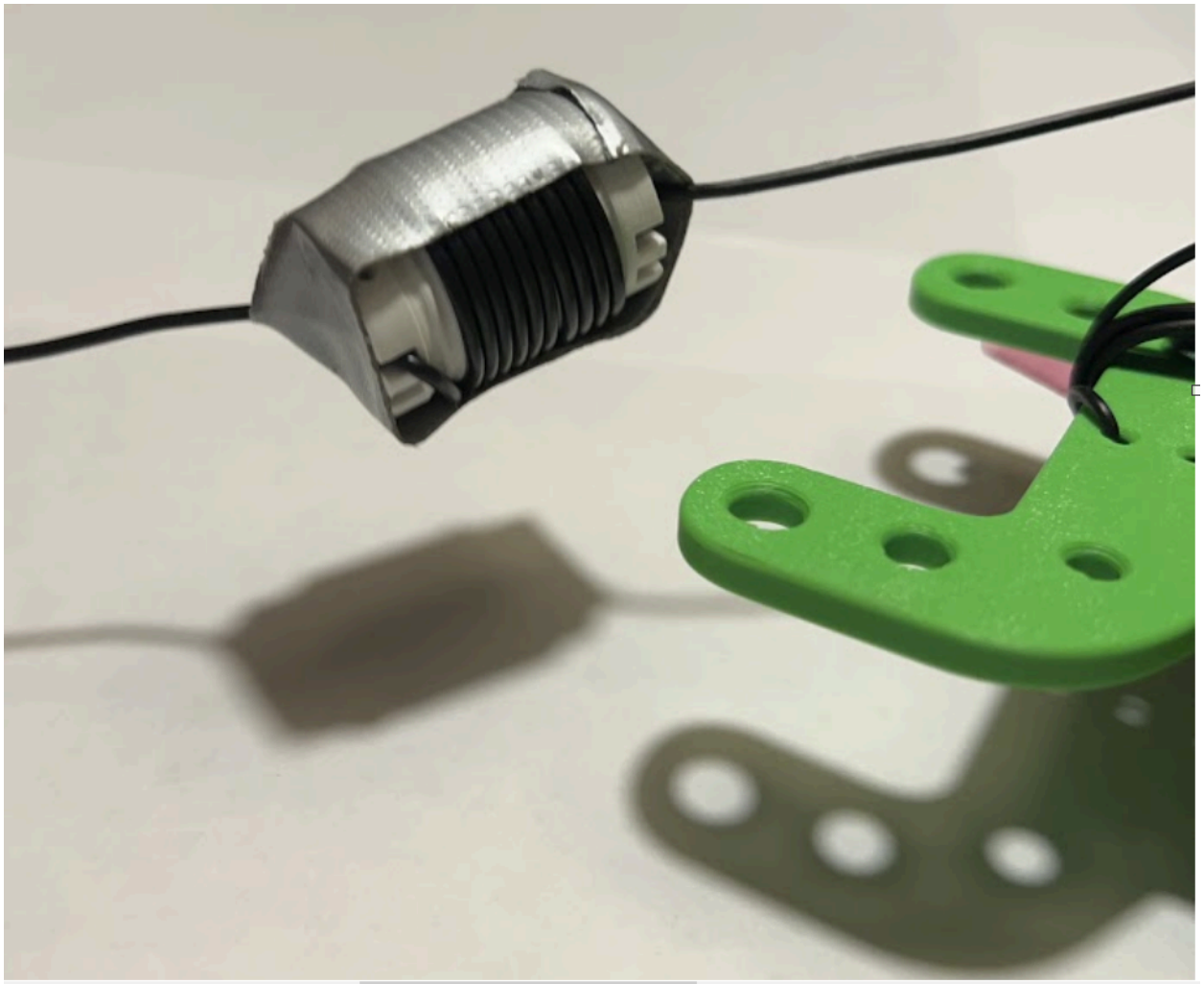
Note: you can slide the tape a few inches from the initial position in either direction along the wire so that the coil will fall here:



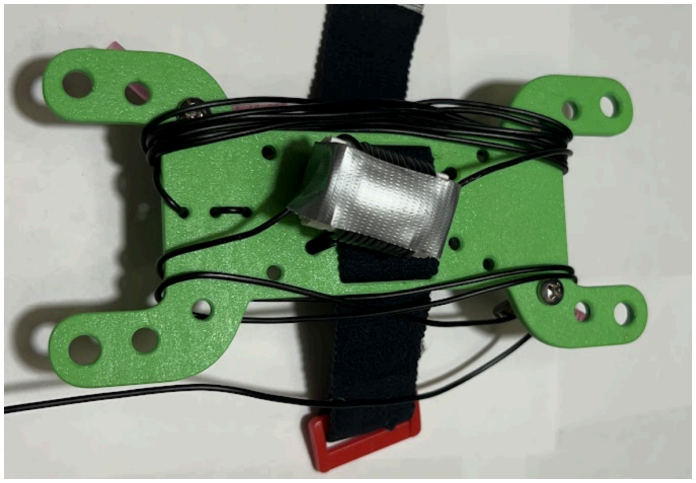
Wrap the dudecoil with 10-12 turns just past the tape mark towards the long end of the antenna. 10 turns shown here. The exact number of turns will be found during the tuning process.



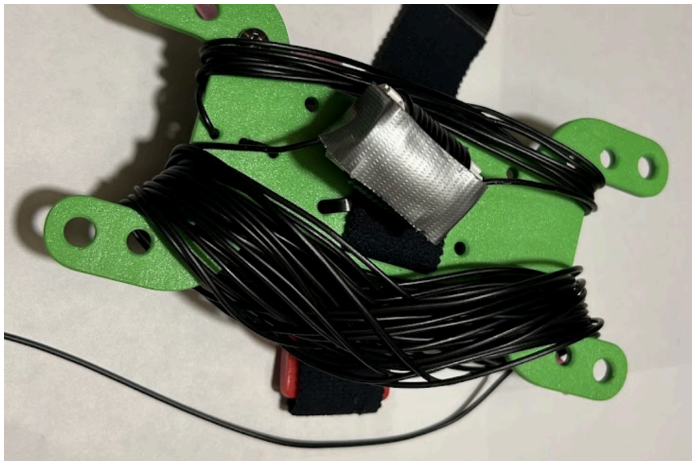
Secure the wire on the coil. It needs to be secure enough that when raising the antenna up into the final position for tuning, the coil does not come undone. You also do not want to use the entire roll of tape because you may need to add or remove a coil depending on tuning.



Start to re-wrap the antenna wire in the same repeatable way that was done when adjusting the tape location and see that the coil lands in the desired spot. Then switch to wrapping the wire on the other side of the winder. This should center the coil.



Continue wrapping until about half the wire is on the winder



Switch sides and finish wrapping

Lastly secure the wire and coil with the velcro strap