

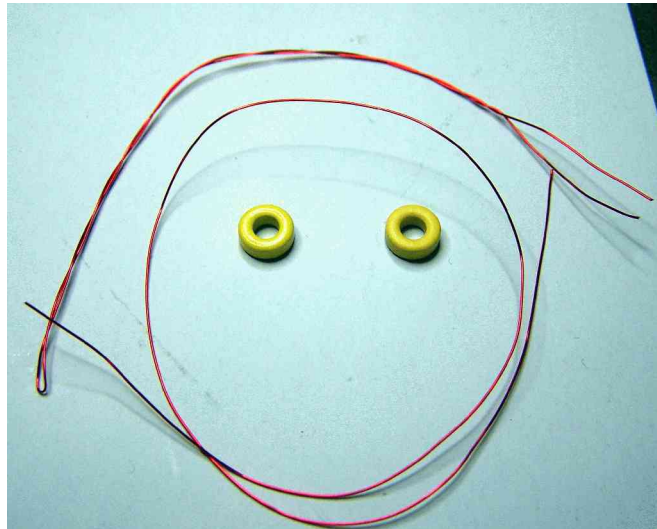
Winding T1 for the 20m SR Lite II

In the Beginning

T1 for the SR Lite II 20m RX is a transformer with an 8 turn primary and 4 turn bifilar secondary windings of #30 wire on a T25-6 (yellow) toroidal core.

The process begins with cutting off 6" (to be safe, make it 8") of #30 wire for the primary winding and another 6" (8") for the bifilar secondary windings.

Take the second length and fold it over double so that you have a wire "hairpin" with 3" (4") legs. Using a nail or mini-grabber test clip, grasp the "hairpin" by the loop end and hold the two ends while twisting until the bifilar wire has about 3 - 5 twists per inch.

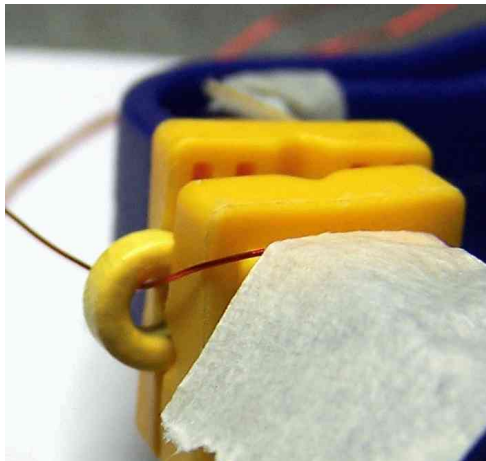


The smiley-face picture shows two T25-6 cores, the wire for the primary winding, and the twisted bifilar wire "hairpin" for the secondary winding.

Begin with the Primary Winding

The Toroidal core needs to be held stationary so you can devote both hands to the winding process.

Some builders use a small desk vise; others use a clamp, like the [Irwin Quik-Grip Clamp](#) shown in this



picture. Do not put too much pressure on the toroid when clamping it, since these powdered iron cores can crumble under too much pressure. This is unlikely if you are using soft-jawed clamps like the Irwin.



The builder begins the winding with the first of the eight turns. Remember, any pass through the “doughnut hole” counts as a single turn. This picture shows a single turn.

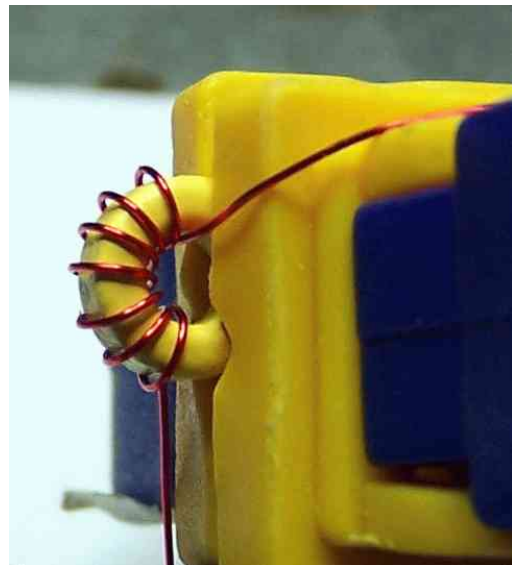
Note that you will likely want to tape the starting lead of the winding to the vise or clamp to hold the wire firmly in place.

As you wind the turns, you should wind each turn firmly on the core, pulling the wire taught after each pass through the core and using your fingernail to push the turns closely together. You may need to use a finger to press the toroid firmly into the clamp when tightening the wire, so as to avoid having the core pop out of the clamp.

Check the Completed Turns.

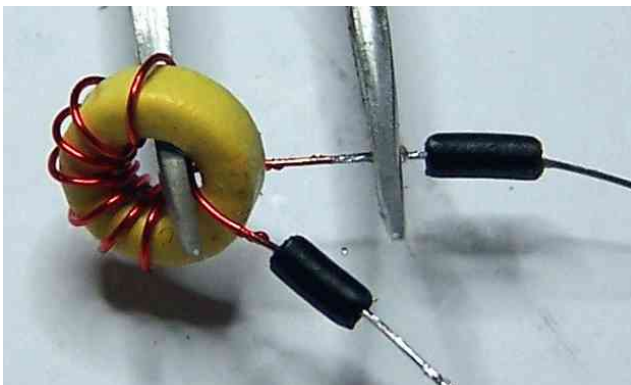
Once you have wound the 8 turns, double check visually to ensure there have been 8 passes through the center hole of the toroid.

This picture shows the completed primary winding, with the core still in the clamp, and prior to tinning and marking the leads.



Tin and Mark the Primary Leads

The leads must be tinned to ensure a good solder joint when installed on the board. One of the most common causes of low sensitivity in Softrock receivers is poor solder joints on the T1 leads.



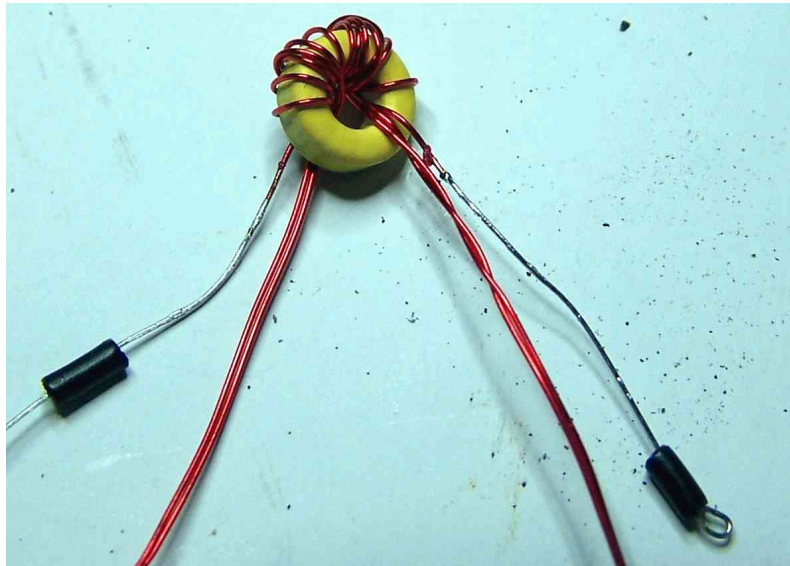
One easy way to remove the insulation and tin the leads is to slather flux paste on the leads and then draw the leads through a fresh blob of solder on a hot iron. The flux acts to help remove the debris

from the enamel insulation. A couple of passes through the flux/solder cycle and the leads come out nicely tinned (the picture suggests the leads might need another pass through the flux/solder cycle).

Since the final transformer will end up with six leads (2 for the primary winding and 2 each for the two secondary windings), it is very important to identify the primary leads prior to and after winding the secondary. One way to do this is to slip tiny bits of insulation from hookup wire onto the primary leads. The example in the picture uses black insulation to identify the primary leads.

Wind the Secondary (bifilar) windings

The secondary windings (4 turns) are wound over the top of the primary winding. It is important to start the secondary winding at roughly the same point that the primary winding began and to spread the windings over the primary such that the secondary wires end at roughly the same point as the primary wire ended. The secondary must be wound in the same direction and fashion as the primary.



This picture shows the completed secondary (bifilar) windings, with two leads at the start point by the primary start point and two more leads at the primary's end point. The bifilar wires are still twisted.

Tin and Mark the Secondary Leads

To finish the transformer, we need to separate the twisted bifilar leads, tin them, and mark one of the secondary leads.



Tinning the leads is accomplished as described with the primary.

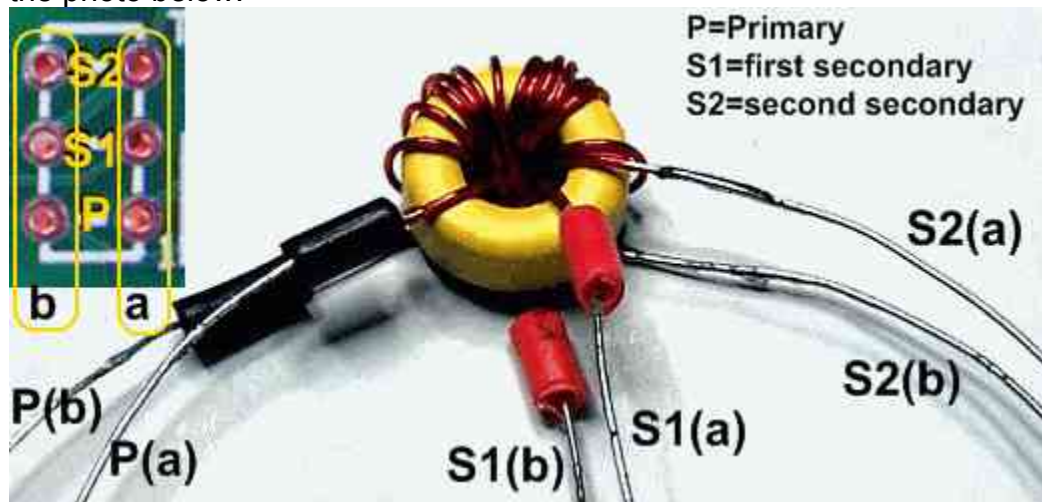
You will need to identify and mark one of the two pairs of secondary leads. This is best done using an ohmmeter to identify continuity.

Having identified a pair, then you slip on a bit of colored hookup wire insulation (please: don't use the same color as that used for the primaries!). When finished, you have a completed T1 with six leads:

- 2 leads for the primary – marked with one color of insulation
- 2 leads for the first secondary – marked with a different color of insulation
- 2 leads for the second secondary – unmarked.

Mounting the Transformer

The transformer is mounted in the six T1 holes on the SR Lite II RX board as per the photo below:



- Correct wiring is with leads from one side (the "a" side) of the core going to one group of three holes and the leads from the other side (the "b" side) of the core going to the other group of three holes as shown above..
- Note the photo above shows the holes for the primary ("P") and each of the two secondary ("S") leads, with the "a" and "b" designating from which side of the core the particular winding's lead should go. Do not refer to the schematic diagram when mounting the transformer – you will be tempted to “over-engineer” the process.
- For example:
 - **Primary (P)**
 - The primary winding's "b" lead would go into the left-hand "P" hole
 - The primary winding's "a" lead would go into the right-hand "P" hole (identified by the numeral “1” – see above)
 - **First Secondary (S1)**
 - The first secondary winding's "b" lead would go into the left-hand "S" hole in the middle row of mounting holes

- The first secondary winding's "a" lead would go into the right-hand "S" hole in the middle row of mounting holes
- **Second Secondary (S2) ...**
 - The second secondary winding's "b" lead would go into the left-hand "S" hole in the top row of mounting holes
 - The second secondary winding's "a" lead would go into the right-hand "S" hole in the top row of mounting holes
- Be careful when threading the leads through the holes to avoid their lassoing and getting tangled up with nearby components!