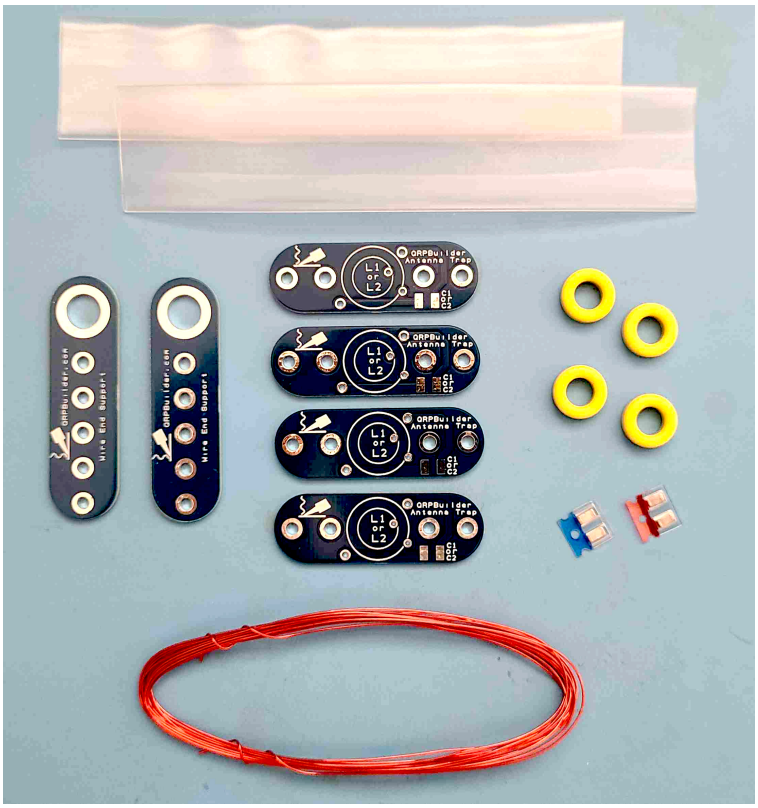
QRPBuilder Wire Antenna Trap



DIFFICULTY LEVEL
EASY SMT

First, familiarize yourself with the parts and check for all the components. If a part is missing, please contact us and we will send one. You must use ***qrpbuilder@gmail.com*** to request a part.

Parts List

4 – Trap PCB
2 – Wire end support PCB
2 – C1, 68pF, 2KV, C0G SMD capacitor, marked red
2 – C2, 150pF, 2KV, C0G SMD capacitor, marked blue
4 – T37-6 toroid, yellow
1 – 8ft. #26awg magnet wire
2 – Ø1/2” x 4” clear heatshrink tubing

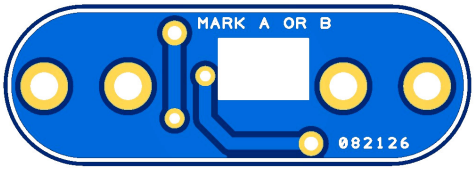
The above components supplied will enable you to construct traps for 10MHz and 14MHz. Refer to the end of the manual to modify the values for you own frequencies for end fed or dipole antennas.

All of the components mount on the top side of the boards.

Trap assembly

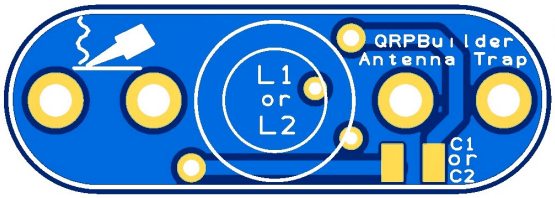
Take extra care to put the correct toroid on the correct trap. Two traps are required for the antenna, referred to as “Trap A” and “Trap B”. The traps cannot be interchanged.

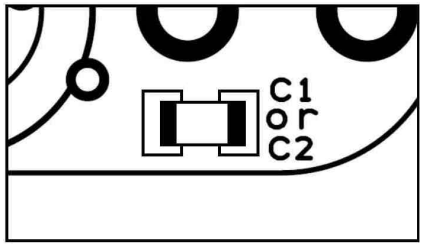
[ ] On the backside, mark one board A and the other B, with an indelible marker.



[ ] Install C1, 68pF, SMD, C0G capacitor on the “A” trap. Capacitor marked “red”

[ ] Install C2, 150pF, SMD, C0G capacitor on the “B” trap. Capacitor marked “blue”



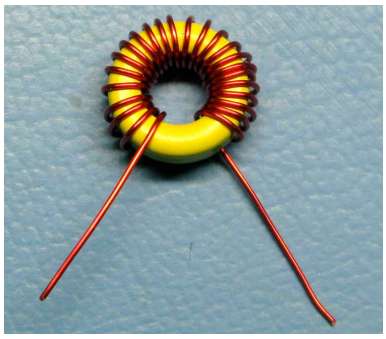


Trap “A” will be resonant just below the 20m band, and trap “B” just below the 30m band. If you desire and have the necessary equipment you can tweak the traps by spreading or compressing the turns on the toroids to achieve ideal resonance.

Trap “A” uses a T37-6 (yellow) core wound with 25 turns for “L1” as shown below, with C1, 68pF capacitor.

[ ] Cut the 18” of the 26awg wire, and wind it like the graphic, 25 turns. Every time the wire goes through the center of the core, counts as one turn. Bend the leads down, trim to 1/4” long, and tin the leads prior to soldering and install them to the top of the board. The magnet wire supplied Is Thermaleze® brand and will tin easily with a hot soldering iron. *Always tin the leads before trying to solder them in place and you will greatly eliminate any continuity problems.* Do not pull the wires through the holes past where they are tinned. Re-tin if needed.

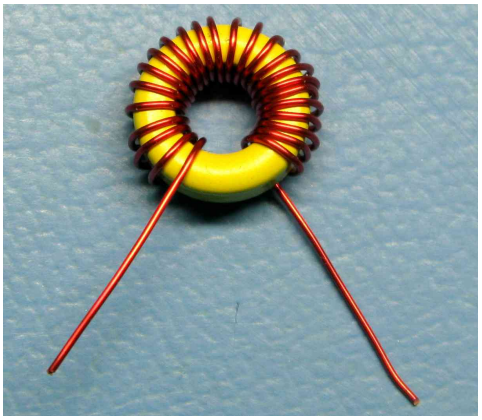
Theoretical inductance is 1.9uH for 14.000MHz.



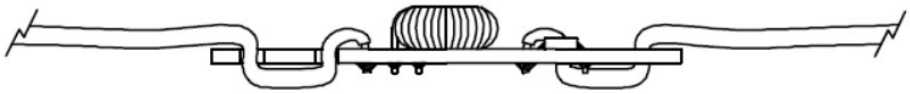
Trap "B" uses a T37-6 (yellow) core wound with 24 turns for "L2" as shown below, with C2, 150pF capacitor.

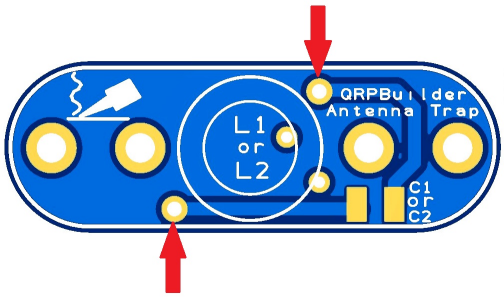
[ ] Cut the 18" of the 26awg wire, and wind it like the graphic, 24 turns. Every time the wire goes through the center of the toroid, counts as one turn. Bend the leads down, trim to 1/4" long, and tin the leads prior to soldering and install them to the top of the board. The magnet wire supplied Is Thermaleze® brand and will tin easily with a hot soldering iron. *Always tin the leads before trying to solder them in place and you will greatly eliminate any continuity problems.* Do not pull the wires through the holes past where they are tinned. Re-tin if needed.

Theoretical inductance is 1.70uH for 10.000MHz.



[ ] Install the lengths of wire through the strain relief holes and solder where indicated below, and solder to the pads shown below.

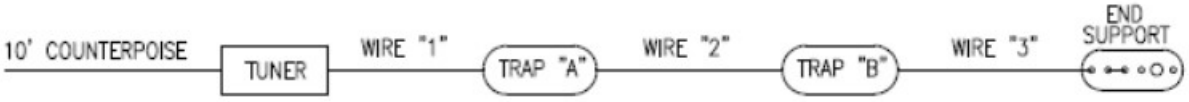




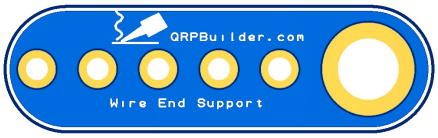
The user supplies the three wires for the driven element. We recommend stranded #22-24 AWG for this purpose. The lengths shown below are the lengths we tested and work for most locations and deployment schemes. ***Don't mix up the traps.*** Trap "A" has the 68pF cap. and trap "B" the 150pF cap.

Here are the wire lengths for a 20m/30m/40m EFHW antenna.

Wire #1 – 32’ 6” (9.90m) Wire #2 - 11’ 2” (3.40m) Wire #3 - 16’ 9” (5.10m)

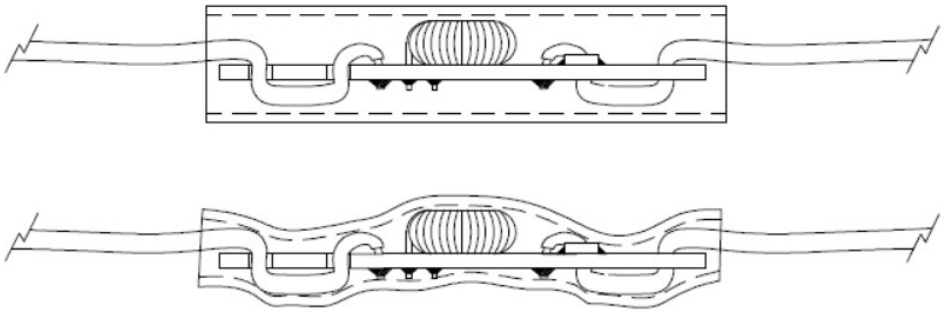


Route and terminate the end wire as shown below with the supplied End Support.



It is best to test the antenna wire lengths before you install the heat shrink tubing in case adjustments are necessary.

When you are satisfied with the performance, cut a 1.75” long piece of the Ø1/2” heat shrink tubing, slide the heat shrink onto the end of the wire, center it on the trap, and shrink it to the assembly, as shown below. It not designed to be waterproof, but will protect the trap from mechanical damage in the field and during storage.



This completes the electrical and mechanical assembly.

You can design traps for other frequencies, there are many sources on the internet for design help. A simple one can be found here:

https://www.jotrin.com/tool/details/TTXSJJSQ

We use Diz's site to calculate the turn count for our toroids:

http://www.kitsandparts.com/toroids.php

FREQUENCY	C – pF	L –uH

Notes: