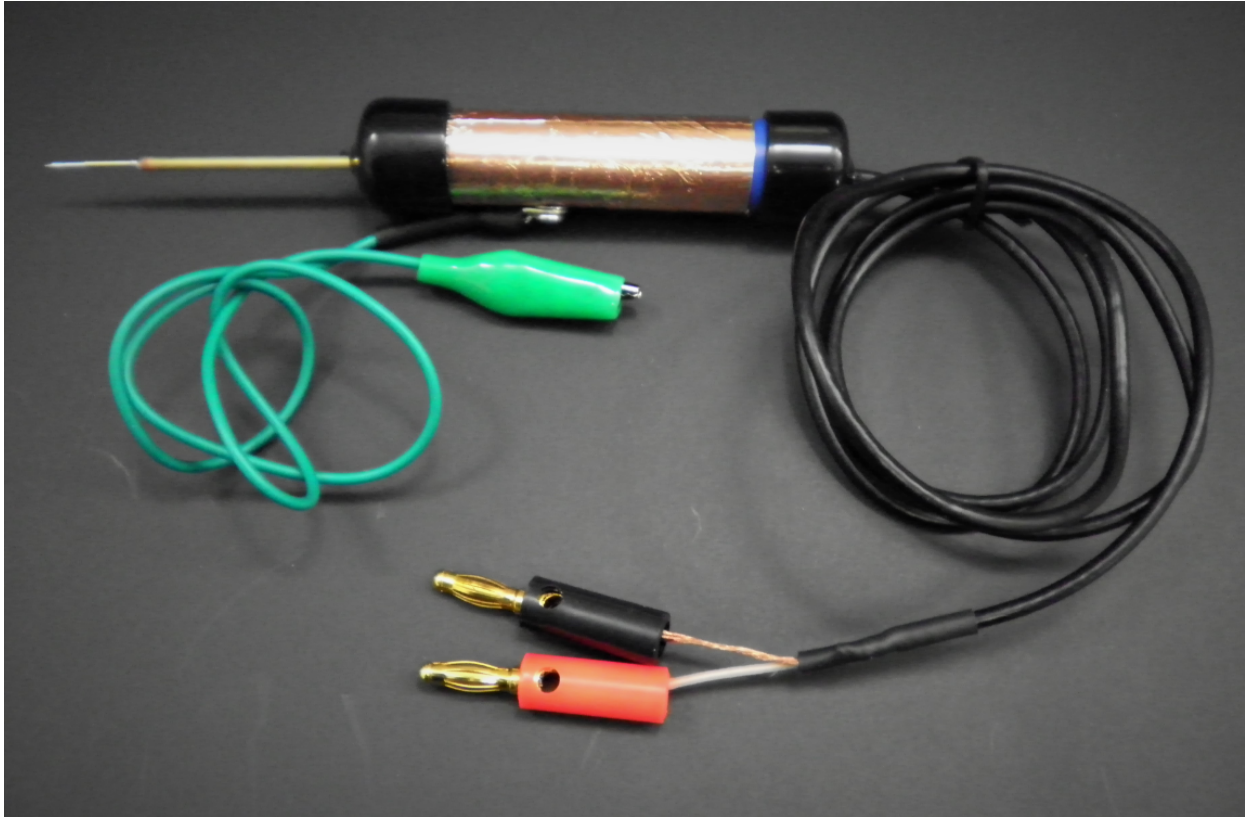


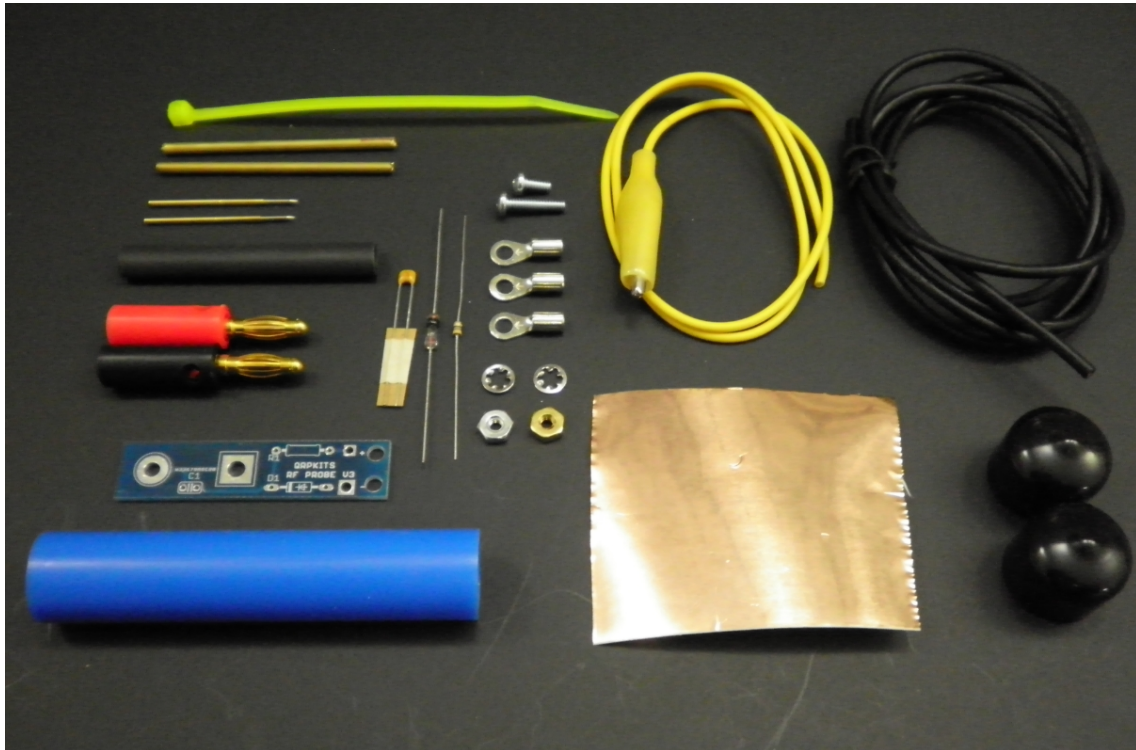
Pacific Antenna RF Probe assembly



Parts In the Kit:

- 1 – 1/2" x 3" Blue PEX tube
- 2 – 5/8" O.D. vinyl caps
- 2 – 3/32" dia x 2" brass tube sections
- 2 – Pogo spring contacts
- 1 – 4-40 x 7/16" pan head screw
- 1 – 4-40 x 1/4" pan head screw
- 2 - #4 internal tooth lock washer
- 1 – 4-40 nut, steel
- 1 – 4-40 nut, brass
- 1 – 3/32 " zip tie
- 3 - #4, 14-16ga ring terminal
- 1 – RF Probe V2 or later Circuit Board
- 1 – D1 - Germanium diode- 1N34A or 1N270
- 1 – R1 - 4.7M 1/8w resistor (YEL, VIO, GRN, GLD) See note
- 1 – C1 - .01 disk ceramic capacitor (103)
- 3' – RG-174 coax
- 2 – banana plugs, 1 red, 1 black
- 2" – 3/16" dia. shrink tubing
- 1 – alligator clip and 9" lead
- 1 - copper foil tape, 2.25" x 2"

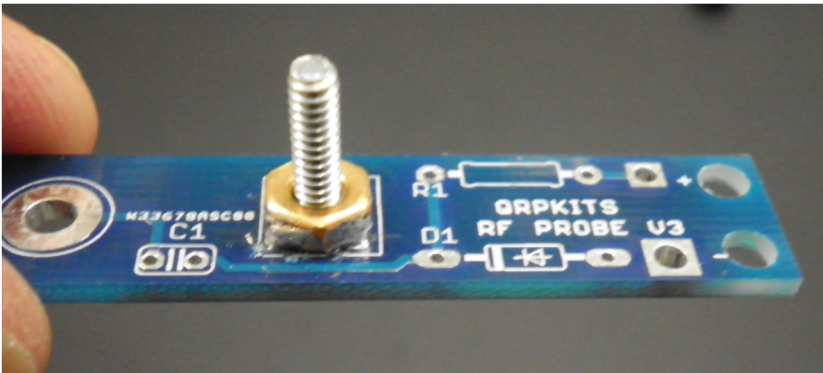
Parts Identification



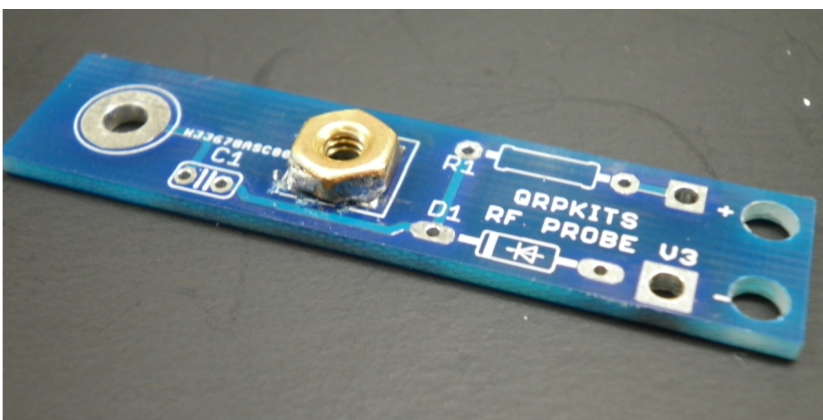
Note: We recommend identifying and inventorying the parts before beginning assembly

Assembly

The first step is to attach the 4-40 “brass” nut to the top of the circuit board



Use the 7/16” long pan head screw threaded from the bottom to position and hold the nut in place.



Solder the nut in place and then remove the screw.

Be sure that the solder has bonded to both the circuit board pads and the screw.

Next, we will add the components to the circuit board



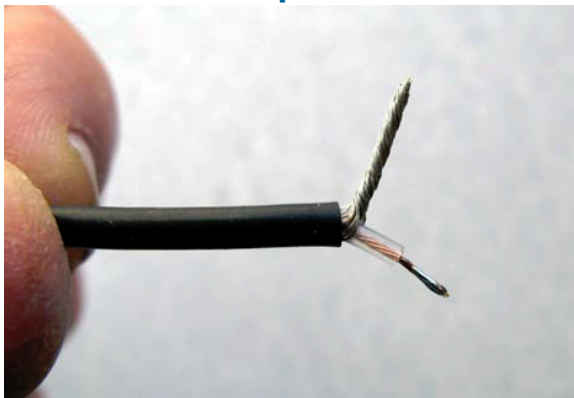
Form the leads of R1 and D1 to match the hole spacing on the board.

Insert C1, R1, and D1 into the holes in the circuit board,

Solder and trim the leads on the bottom of the board.

Note: match the band on the 1N34A diode to the band shown in the printing on the circuit board

Coax Cable Preparation



Strip and prepare as shown, approximately 1/2 inch of one end of the RG-174 coax cable.

Attach the coax to the board



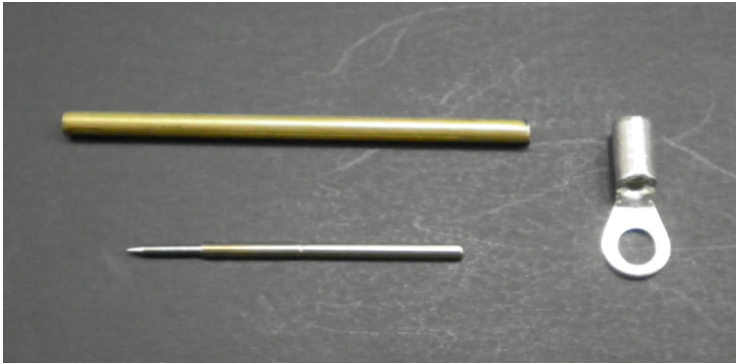
Insert the ends into the holes in the circuit board.

The center of the coax goes to + pad and the shield to the - pad as shown here

Spring Probe Assembly

A spring probe provides some compression to maintain contact with the area to be probed.

The kit includes parts to assemble 2 spring probes thus providing a spare should a probe be damaged.



A probe is assembled from a 2" section of brass tubing, a ring terminal and a spring contact pin as shown.



Insert one end of the brass tubing into the shank of the ring terminal as shown.

Note: it may be necessary to slightly flare open the terminal shank with needle nose pliers to fit the tubing.



Apply solder to the junction of the ring terminal shank and the brass tube to secure them together.



Insert the spring pin into the other end of the tubing.

Use the indentation near its center as a guide for depth of insertion.

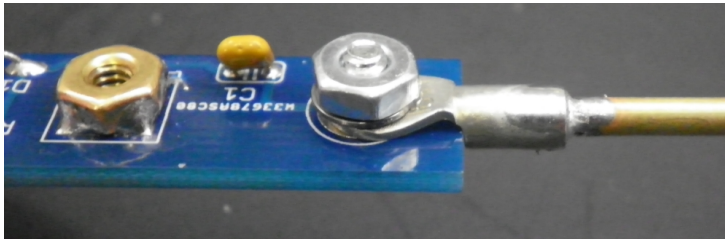
The indentation should be approximately even with the end of the brass tubing when the spring pin is inserted to the correct depth

Apply solder to the junction between the spring pin and the brass tube to complete the assembly

Completed Probe Assembly:



Your spring probe should now look like this



Secure the contact point and ring terminal assembly to the signal pad of the pcb using the 4-40 x 1/4" pan head screw, lock washer, and steel nut in the order shown.

The screw head should be on the bottom of the pcb, then the pcb, ring terminal, lock washer, and finally the nut as shown.

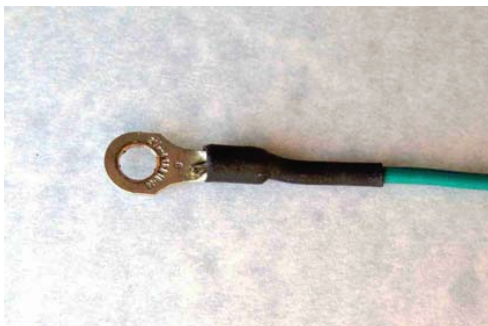
Ground Lead Preparation



Slide the plastic boot back from the alligator clip and solder the lead to the clip.

Sometimes these are crimped only, and can lose conductivity over time

Replace the boot.

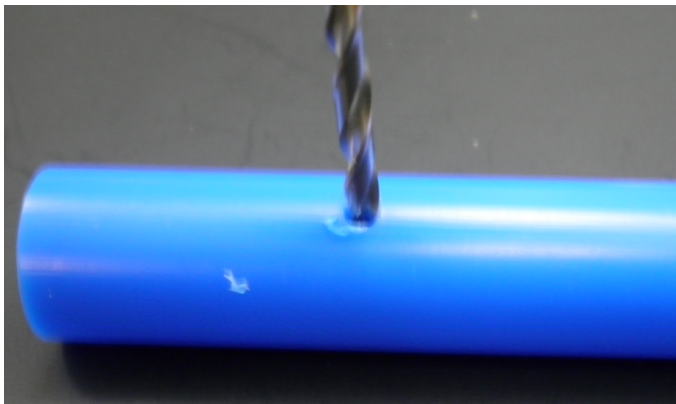


Place 1" of the 3/16" dia. heat shrink tubing over the loose end of the clip lead.

Solder the lead assembly to one of the #4 ring terminals, and shrink the tubing to the transition from the ring terminal to the lead.

Note: Lead color may vary from picture.

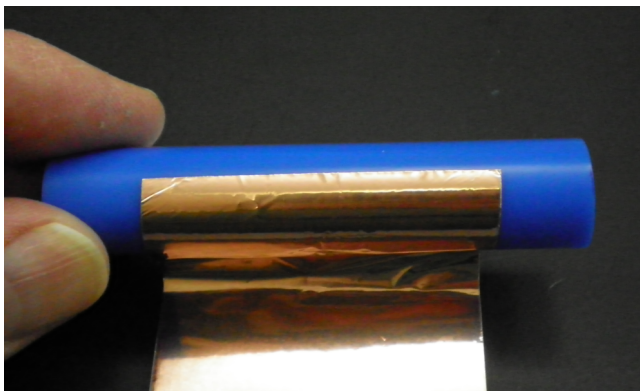
Tube Preparation



Mark and drill a 1/8" dia. hole in the side of the 3" long CPVC tube, 1-1/8" from the end.



Apply the copper tape

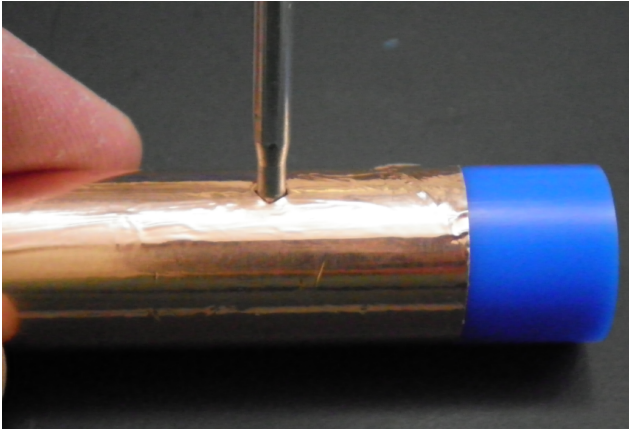


Peel off the protective backing, and wrap the foil around the CPVC tube as shown.



Wrap it as shown so it is in the center of the tube, approx. 1/2" from the end.

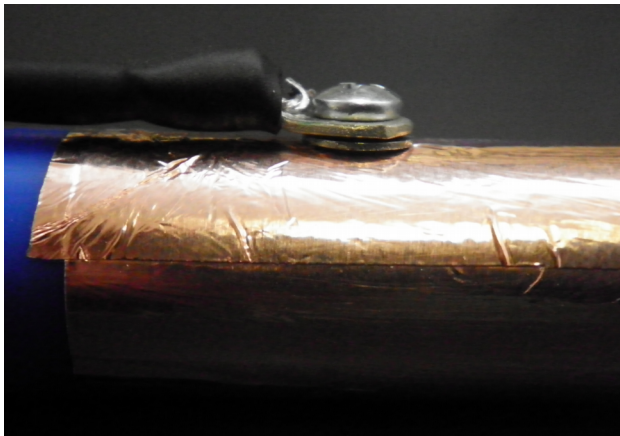
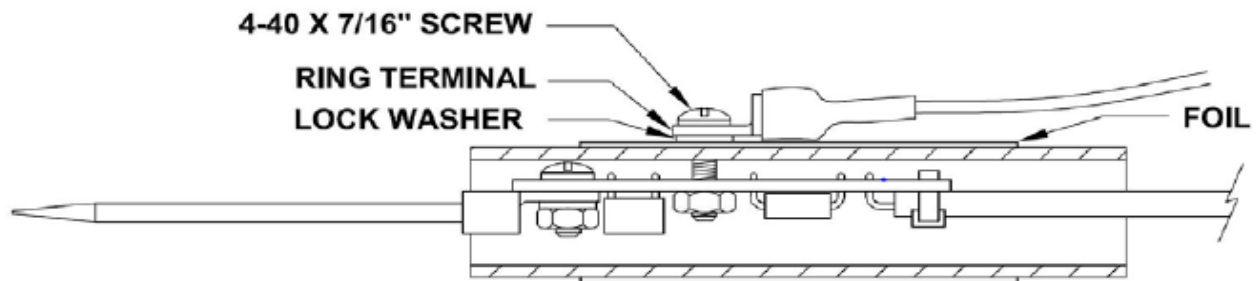
Note: the foil may wrinkle a bit during application. This will not cause any problems.



Poke a hole through the copper with a pencil or other tool through the 1/8" hole drilled in the tube.

Assemble the Probe

Slide the pcb in to the tube, with the bottom of the pcb facing the side hole in the blue tube as shown in the diagram below.

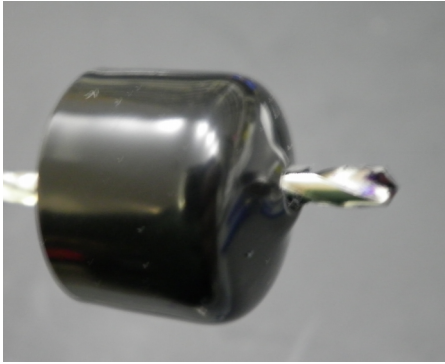


Attach the alligator ground clip assembly to the outside of the tube, as shown, using the 7/16" long pan head screw and lock washer.

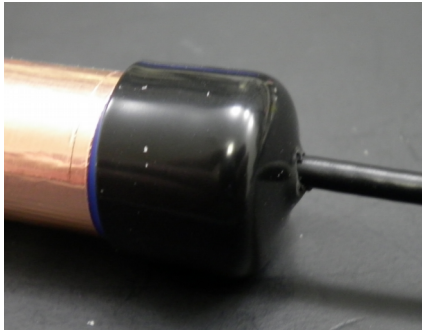
The correct order should be, 4-40 screw, ring terminal, lock washer, and copper covered tube

The screw goes through the 1/8" hole, through the circuit board the pcb, and into the brass nut.

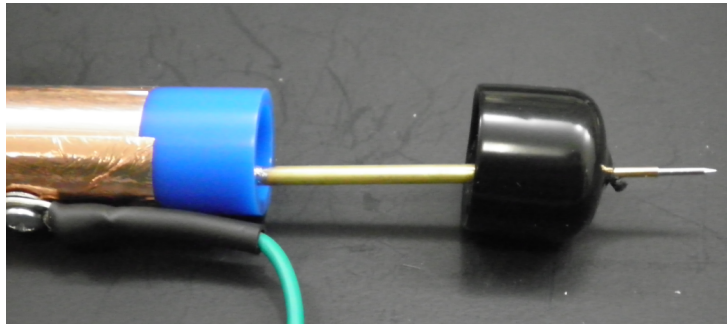
Secure, but do not over tighten.



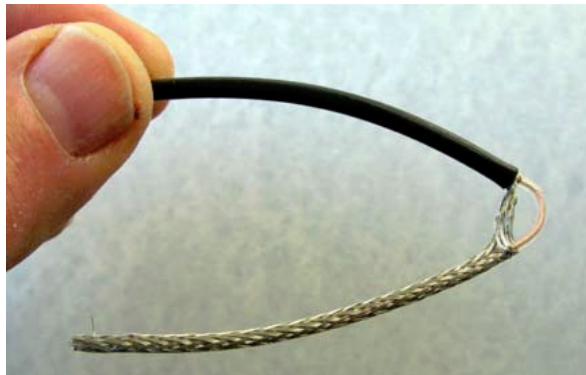
Poke a hole in the center of both vinyl caps, with a sharp tool or drill.



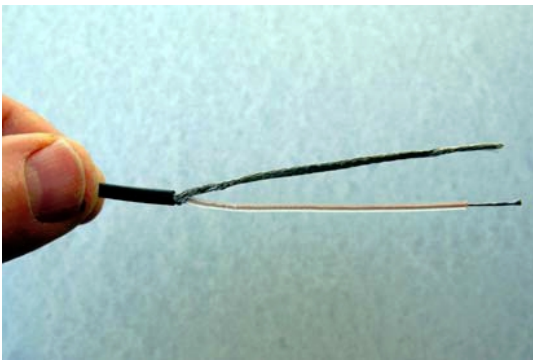
Slide one of the vinyl caps over the probe end and the other cap over the loose end of the RG-174 lead, and slide onto the tube ends.



Do the same, sliding the cap over the spring probe end.

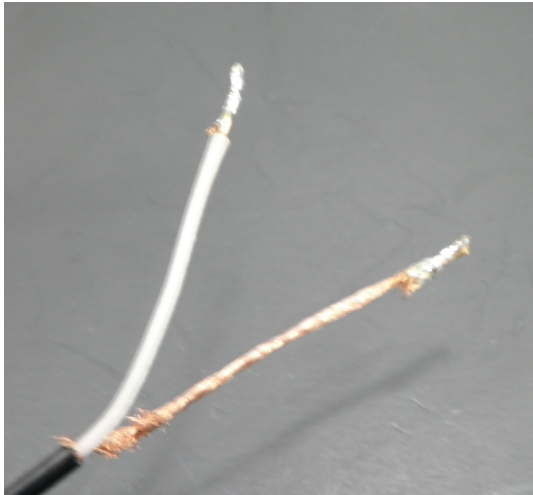


Strip 2 1/2" of the coax cable outer insulation and prepare the side of the braided shield, as shown.



Pass the center conductor through the side of the braided shield, as shown to separate the leads.

Slide the remaining piece of shrink tubing over the end before attaching the banana plugs.



Prep the ends of the wires by stripping approximately 1/2" of the insulation on the center conductor.

Fold back approximately 1/4" of each wire on itself and apply solder until coated thoroughly.

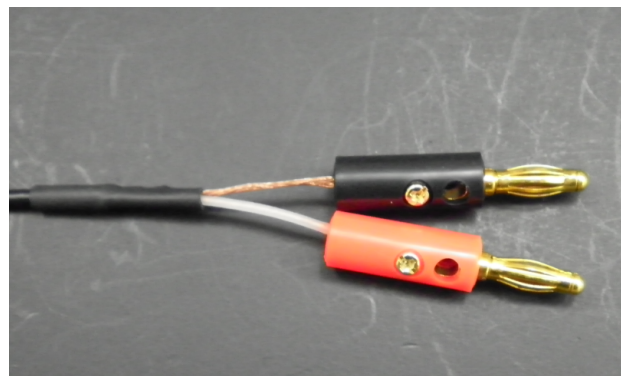
This provides a more secure connection for the banana plugs to be added next



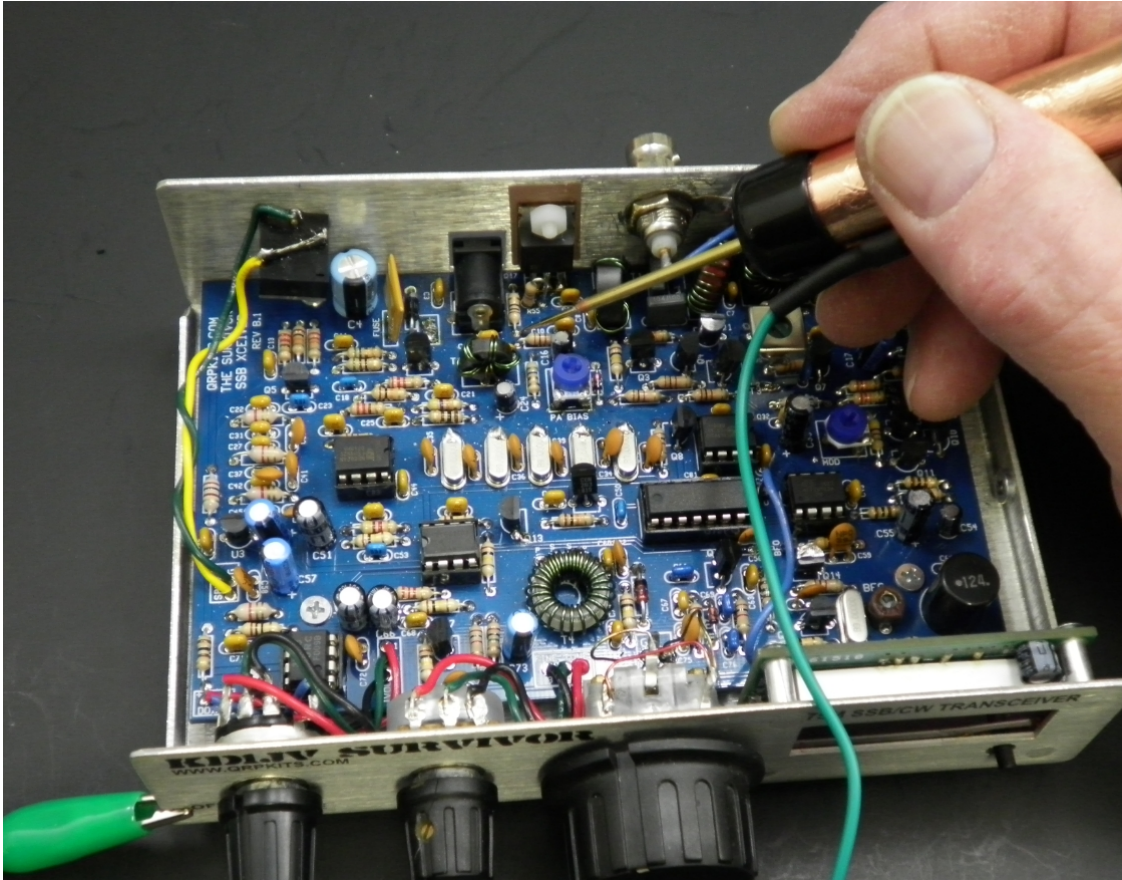
Back off the screws in the banana plugs.

Insert the solder coated ends until they reach the bottom and tighten the screws to secure the wires into the plugs.

Attach the center conductor of the coax to the RED plug and the shield to the BLACK plug and shrink the tubing at the transition.

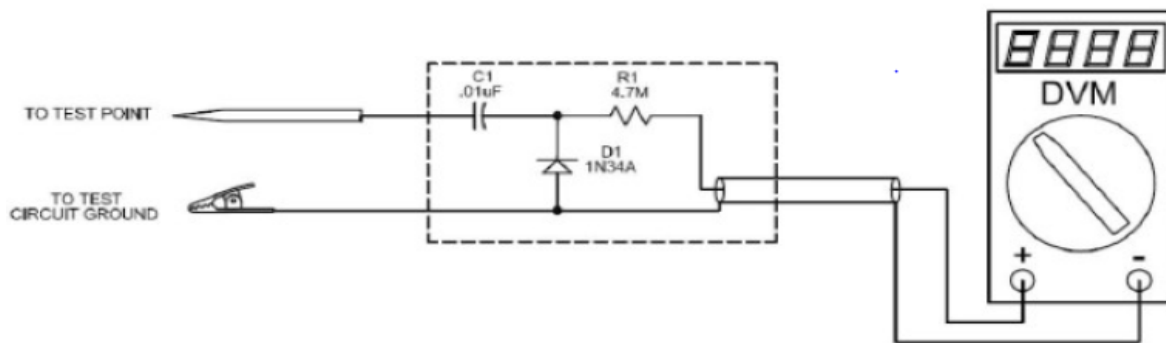


Congratulations, your RF probe is now complete and ready for use



The RF probe is connected as shown and your DMM will indicate RF voltage at the point being probed.

Look in the files section for additional application and usage tips for the R.F. Probe.



Support: qrpkits.com@gmail.com