I. Introduction.

Thank you for purchasing the Scotty's Sled Shed Custom Probe Modification Kit for Heathkit T-3 Visual/Aural Signal Tracers.

The are a couple front face variations of the T-3 over the years, but all the units are identical in structure behind the faceplate.

This kit was developed to help fellow vintage electronic enthusiasts. The Heathkit Signal Tracers are a well-built unit but are often found missing the probe or the probe is beyond repair.

The original Probe had the RF demodulator circuit built into the probe. The Audio side did not come with a probe, and you had to make one or order a separate probe that was straight through so the Noise circuit could apply 110VDC to the component you are testing.

What this kit does is provide the customer with the components to build a set of test probes. One for Audio/Noise (direct) and one for RF (demodulator diode/capacitor). Or you can just build one probe if you want.

The original RF Probe had a series of 47k ohm, 1M ohm, 1N34A Xtal diode and a .02uf ceramic capacitor.

This kit moves the 47kohm and 1M ohm resistor inside the unit, with the capacitor and diode in the probe lead.

I also offer a complete restoration component kit for the T-3 Signal Tracer that provides a replacement for every resistor, diode, and capacitor. Please email me at mysledshed@yahoo.com or visit my eBay store listing at: https://www.ebay.com/itm/175869537468

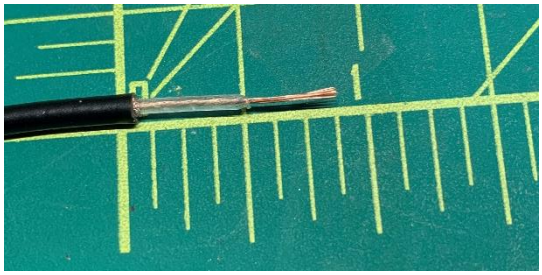
Website: www.W8AOR.com

Before you get started there is a list of items to be aware of.

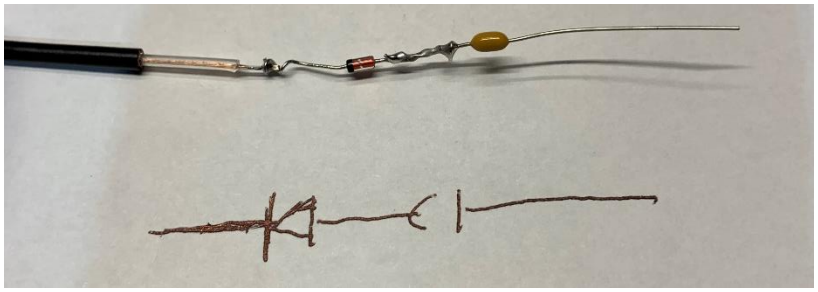
1. Due to constant supply chain challenges, Scotty's Sled Shed reserves the right to substitute component OEMs. If there is an orange bodied resistor in installation guide images and you receive a blue bodied resistor, it is due to component substitutions.
2. You may see a blue capacitor in one pic and a yellow capacitor in another picture. Multiple pictures may have been taken over various kits with different capacitor values or manufacturers.
3. Scotty's Sled Shed LLC is only providing you with components for a DIY installation.
4. The following instructions are only a guide. Experienced users may have a preferred method of installation.
5. **CAUTION: Lethal voltages are present in these devices**. If you are not aware of that by now, you should NOT be performing this upgrade.
6. The Audio/Noise probe will have ~110VDC present at "Noise setting". **You have been warned. DON'T TOUCH THE AUDIO PROBE END when switch is in the "Noise" mode. The RF Probe will NOT block the DC with the capacitor from reaching the probe end if you plug it into the Audio Side under Noise setting.**
7. Scotty's Sled Shed LLC is NOT liable for any damage caused to your equipment, bench, house, Power supply or that your spouse is mad at you for working on this 50-year-old piece of equipment. You are ON YOUR OWN.
8. Customer assumes all responsibilities and agrees to check all resistances, capacitance, and voltages before and after installation.
9. Customer assumes all responsibility to know how to read a schematic and perform the task this kit requires.
10. Customer assumes all responsibility to SAFELY perform procedures by following the Heathkit OEM manual.
11. You get the point; you are responsible for yourself.
12. Please be sure to download the Heathkit T-3 manual if you do not have it. They are readily available online at: https://www.vintage-radio.info/heathkit

II. Preparation

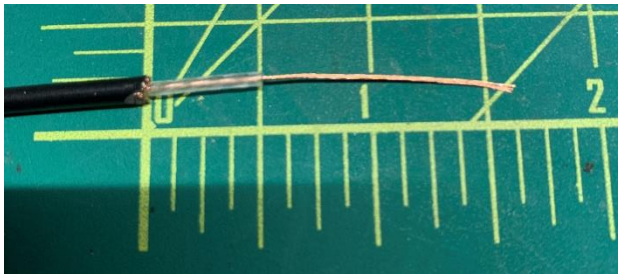
1. The first thing is to prepare the probes. Use of solder paste will improve the quality of the installation and reduce dwell time with the iron.
2. OPTIONAL. Drill an 1/8" hole at the bottom of each probe. You will use these holes to hot glue probe lead, so it doesn't pull out. This is completely up to you if you want to do that.
3. The two (one red, one black) 15" piece of 18AWG wire are for your ground leads.
4. Strip back one end of the ground lead and solder or crimp to the alligator clip(s). Add heat shrink tubing over end.
    a. Red for the Red Probe (RF)
    b. Black for the black probe (audio/noise). Set aside till step 7.
5. Prepare one 3ft section of RG174 coax for RF Probe.
    a. Strip back ¾" of outer cover and cut off all the braid.
    b. Strip back 3/8" of center dielectric. Tin center strand.
    c. Solder the capacitor and diode in series with the RG 174 coax end.
        i. Capacitor is on the probe end in the schematic
        ii. Diode is between the capacitor and the probe lead
        iii. Diode can be installed anode or cathode end out, doesn't matter.
        iv. NOTE, it does not matter if you switch around the capacitor and diode. The IT-12/T-4 probe has the directions reversed and results are the same.



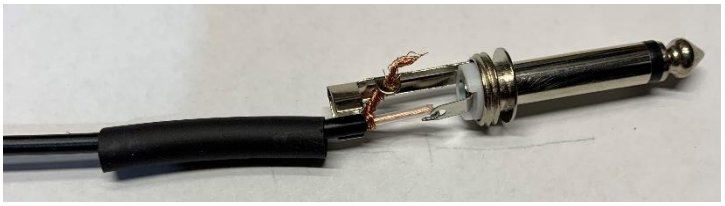
    d. Remove the probe end nut and fish the assembly through the probe end until about 1.5" of the capacitor or diode lead (install dependent) is sticking out.
    e. Wrap lead around base of probe clockwise. Tighten probe end nut.



6. Next prepare the other 3ft RG-174 coax for the Audio/Noise probe. There will not be any components soldered to the end. This is a direction connection.
    a. Strip back 1 ½" of outer casing. Cut off all ground braid.
    b. Strip back 1" of the center dielectric. Tin center conductors.
    c. Insert lead into the probe, through the hole to the tip, wrap and tighten down same as with the RF Probe lead.



7. Ground Leads: Slide a 3/16 heat shrink tube over the open end of each RG-174 coax up to the base of the probe.
8. Pick a comfortable spot about 2-3" below the probe and carefully strip back about ¼" of outer casing of the RG-174.
9. Strip ½" of other end of each 18AWG ground jumper (red for red probe, black for black probe).
10. Wrap 18AWG around the exposed braid of each RG-174 lead. Carefully solder. Solder paste will help solder flow and reduce dwell time. Too much dwell time will damage the dielectric and create a short.
11. Slide heat shrink tubing over the soldered joint and shrink with low heat.



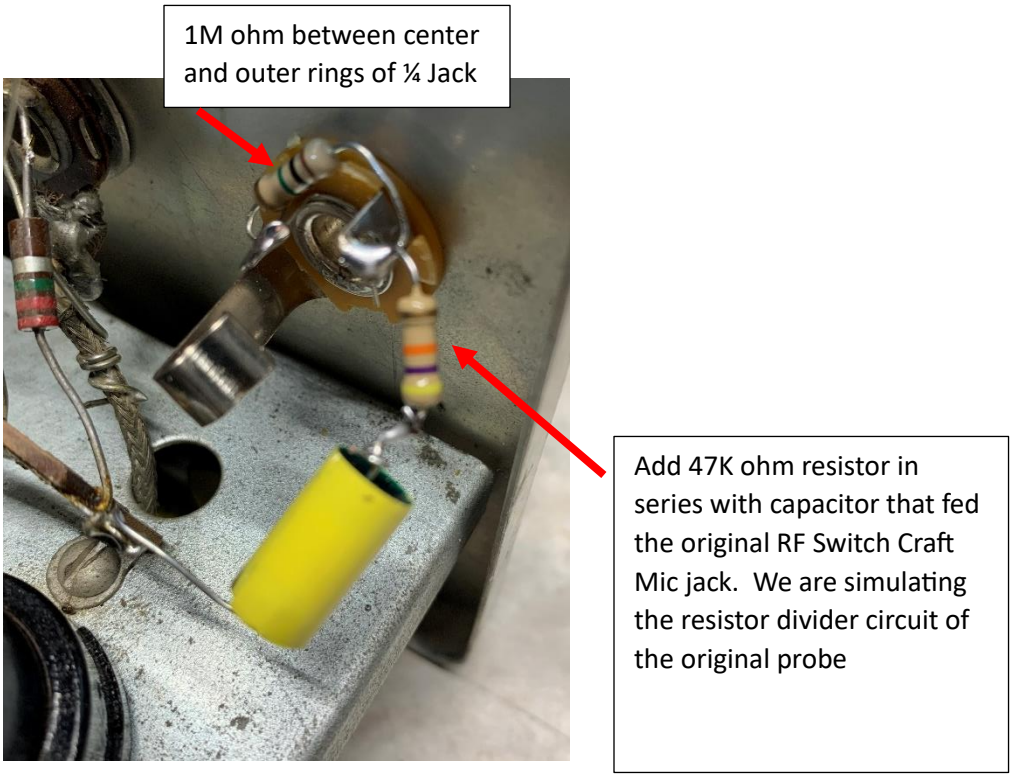
12. Optional-If you drilled the hole in the probe end, use a hot glue gun to squeeze hot glue in the hole until it starts to push out the bottom end of each probe. Allow it to cool.
13. On the probe with the diode and capacitor (RF Probe) install the RF Probe decal, and the AUDIO/NOISE decal on the other probe.
14. Slide the clear heat shrink tubing over the probe end to at least cover the decal to protect. It may take some patience to work that tubing down as it may want to stick.
15. With hair dryer or heat gun (low heat) shrink all the heat shrink tubing at probes, ground leads and alligator clips. Set assembly aside

Hot glue the hole you drilled till it flows out the bottom end.

The 4" clear heat shrink tubing goes over the labels.

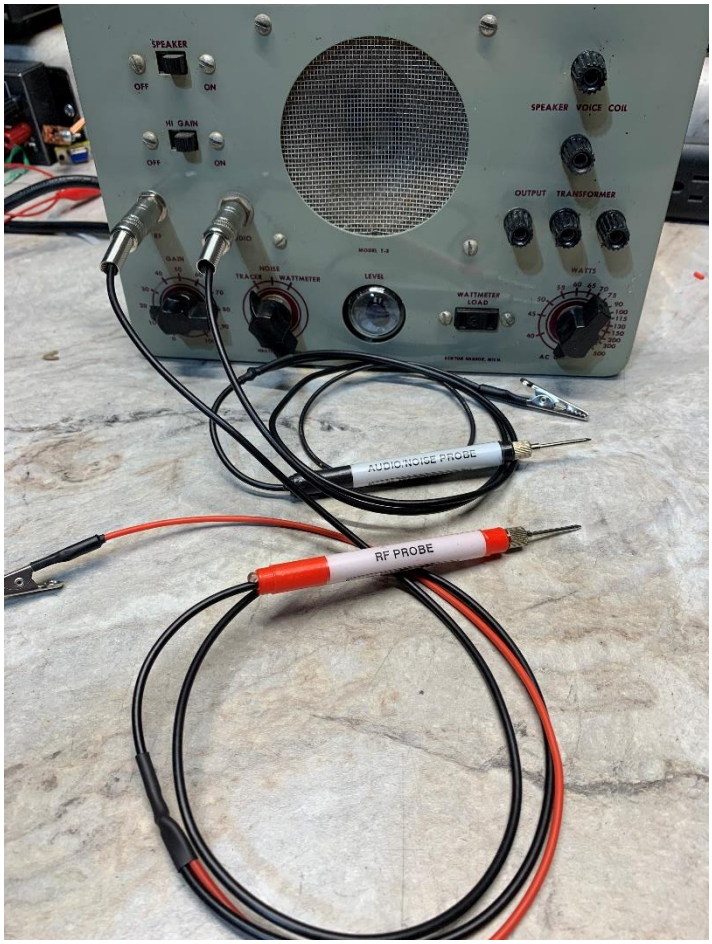
16. Remove rear cover of the Signal Tracer.
17. An additional ¼" bulkhead chassis mount ¼" phono jack is supplied to replace the Audio port. Also is a replacement 2.2M ohm resistor and 6" piece of RG174 in case it is needed. If desired, replace this jack.
18. For the RF Probe jack, unsolder the lead from the film capacitor that is in the center of the existing Switch Crack mic style connector. The outside center will desolder easily and just remove the lead.
19. Install one of the new ¼" female bulkhead chassis mounted mono jacks.
20. Solder the supplied 1M ohm resistor across the center and outer solder tabs of the ¼" jack.

21. Solder the supplied 47k Ohm resistor in series between the center solder tab of the phono jack and the capacitor that you desolder from center pin of the Switch Craft plug you just removed.
22. Modification is now complete.
23. Reinstall the rear cover and proceed to tests.



III. Completion and tests.

1. To test functions, follow the owner's manual for the RF, Audio and Noise tests. For RF test, with the RF probe connected to an outdoor antenna center and ground, you should be able to pick up audio from an AM broadcast station.
2. To use as an audio amplifier, plug a microphone, speaker out jack (IE computer, IPOD) or electric guitar to the ¼" Audio phono jack (do not use NOISE setting).



I welcome feedback on any tips or tricks you find to make the project go faster.

I would like to see customer pics of final installations.

If you find an error in this document, please kindly let me know at mysledshed@yahoo.com

Please be professional in your communique.

Thank you, and good luck!

73's

Scott

W8AOR