Subject: Re: 8 years later
Posted by Wayne Parham on Sun, 06 Feb 2022 17:24:41 GMT
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I'm so sorry for this trouble! The problem is in the midrange circuit, which uses the components in the center of the board. Specifically, the ones to look at are L2, L3, C4 and R4(a-d) and R5(a-b). Could be a short across C4, but it's had to see in the photos. One way for C4 to get shorted is if something pushes down really hard on L3 causing its leads to come in contact with traces below it. The silicon adhesive is there to support the coil and prevent it from doing that, but it can happen. When that happens, it almost never happens on a fully cured and hardened silicon cushion - which is super-strong - but rather it usually happens while the adhesive is still curing and is still a semi-liquid gel.

For a test, measure across C4. Capacitor C4 is the 20uF part that sits right next to the red coil L4.

that's the case, I would carefully remove coil L3 - the one above the bank of R4 resistors - from the adhesive, leaving its electrical connection intact. If it has shorted into the circuit traces below it, then once you move it so it no longer touches the traces, the midrange circuit will begin to work. If this is the case, I would re-attach the coil with silicon adhesive, being careful not to let the leads touch the traces when positioning the coil. Then let it cure for a week or two without placing weight on it that would press it back onto the PCB traces below it.

When we assemble crossovers, the silicon adhesive curing time is the most lengthy part of the assembly process. It is built-up into a thick cushion which takes a long time to cure. Once cured, it is a very strong silicon rubber pad that can support the coil even if a lot of pressure or weight presses down on the coil. It is very durable. But if we don't allow enough time for the adhesive to cure - if we ship prematurely - then the silicon is still a semi-liquid gel inside. The silicon will film-over and appear to be cured, but it's still "squishy" inside. Weight placed upon it can shift it and sometimes - rarely but I've seen it happen - push the coil's leads down onto the traces below it. So that's what I would look at first.

Again, so sorry this is happening! We test the crossovers before we ship them, and we wait a couple weeks to allow the silicon to cure. But sometimes we find coils that have shifted or lifted and it's always a result of the adhesive not fully curing so that impact loads during shipping make the heavy coils move.