
Subject: B-4 Hiss

Posted by [ellum68](#) on Sun, 14 Feb 2010 16:28:24 GMT

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Yup, another hiss thread. You can listen to it right here. IIRC I've changed Q300-302 and Q400-402 transistors trying to tame this noise. Should there be other transistors replaced or should I go after the metal film resistors? I remember someone talking about a bulletin where Kustom advised going after the resistors tied to the bases of certain transistors. Specific locations are appreciated because I'm not quite all the bright.

Subject: Re: B-4 Hiss

Posted by [stevem](#) on Mon, 15 Feb 2010 11:28:31 GMT

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Metal film type resistors would be the last thing to check on my list of noise makers. Yes, it could be other noisy transistors or even electrolytic caps (of which there are many) like C303 that have due to age gone way up in mfd value which in turn will drive the gain of that stage way above what it was designed to be.

If you do not have use of a O-scope and a cap checking meter its going to be hard to pin down what stage is producing the hiss.

A simple thing to try would be to get a .005/15 to 25 volt cap and connect one end to ground thru a clip lead, then with the other end you can short out the signal chain to ground at whatever points and stages you want to test to see where the hiss gets introduced into the chain.

Subject: Re: B-4 Hiss

Posted by [ellum68](#) on Mon, 15 Feb 2010 21:26:32 GMT

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Thank you for straightening me out on this. It seems that you and a couple other fellas on here always seem to assist me with my "simple" issues. I wish I could find a basic book or resource that could teach me about audio amplifier circuits. I have only a rudimentary understanding of things (safety is ALWAYS observed). I'm just thankful I have a smooth enough hand to cleanly replace componets on the board.

I do have a Fluke 179 that will test capacitance. I do not have a scope unfortunately. I take it I would have to remove each capacitor to test it? I'm about half tempted to disconnect the output from each board to see if it's just one side giving me trouble. I'm also tempted to just shotgun the whole thing. Seems like a shame ditching so many original parts though. Oh, I did replace the transistors I thought I did earlier. I used NTE123 as a replacement. I have a couple extra NTE123s laying around in my grab box actually. I'll have to see if I have any caps laying around for that test method you spoke of. I'm very glad for your reply on this.

Subject: Re: B-4 Hiss

Posted by [steven](#) on Mon, 15 Feb 2010 21:43:33 GMT

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You can test each boards hiss level seperatly.

Just clip off each blue audio output wire from the rear mounted driver/output board.

Clip these off about 3 inches away from the board and just use a red (22 to 18 ga) butt connetor to splice them back once your test out is done.

You may find that the hiss is from the driver/output board if the hiss is still at a high level with both blue wires un-hooked.

Subject: Re: B-4 Hiss

Posted by [ellum68](#) on Tue, 16 Feb 2010 01:55:13 GMT

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Alrighty, I just desoldered both preamp boards with no change at all. Thankfully that takes alot componets out of the equation. I take it the power amp is the next place to go? I measured the big filter caps at around 4,400mfd each. Where should I check on the power amp?

Subject: Re: B-4 Hiss

Posted by [steven](#) on Tue, 16 Feb 2010 10:54:21 GMT

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In that case Q700 thru Q702 on that driver board owuld be the only other transistors that produce volatge gain and could effect the hiss/noise level, so I would just replace those three and if at that point the noise level is still the same than check the small electrolytic caps in and around those transistors.

If at that point they all check out close to the rated spec than I would have to say that the amps hiss level is normal .

Subject: Re: B-4 Hiss

Posted by [ellum68](#) on Tue, 16 Feb 2010 19:50:14 GMT

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Q700 and Q701 have been just replaced. I'm out of NTE159's, so I'll have to wait on Q703.

Changing Q700/701 helped a little, but not alot. I would say this thing hisses 4x louder than my other Kustoms. Definatley not normal. I pulled every tantalum on the right 2/3 of that board and tested them. All fell within spec. Some were suprisingly close! Would touching up the solder on all the joints be of any help?

Subject: Re: B-4 Hiss

Posted by [chicagobill](#) on Tue, 16 Feb 2010 21:25:46 GMT

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Don't forget that even though a cap can test good on a meter, once it is charged with a voltage it could start to breakdown and create noises.

I would be tempted to change out some of the carbon comp resistors around Q701 and Q702. Even if you only used carbon film (rather than metal film) you may find a difference in the noise levels.

Subject: Re: B-4 Hiss

Posted by [ellum68](#) on Wed, 17 Feb 2010 15:37:34 GMT

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Good call on the caps and resistors, Bill. I have an old buddy that's actually quite familiar with this style of power amp. He told me that if I'm replacing those transistor in the Q701 and Q702 that I should be sure to order a matched set. So, I ordered new caps, matched transistor pair, and alotta resistors. If a resistor wasn't over in the regulator section or down low by the output transistor, it got a replacement ordered. It's quicker and easier for me to just replace them rather than trying to figure out a schematic or keep posting replies.

Subject: Re: B-4 Hiss

Posted by [chicagobill](#) on Wed, 17 Feb 2010 16:42:42 GMT

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Your friend is right about the differential pair at the front end of the power amp. The design works best with a matched pair there.

Let us know how it all turns out.

Subject: Re: B-4 Hiss

Posted by [ellum68](#) on Wed, 17 Feb 2010 17:28:27 GMT

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Will do! Transistor matching adds a little wait time from Mouser, but it's worth it. Ya, I need to have my friend pass on some of his knowledge. He used to work in the lab area when we had a Zenith plant in town. He's the same fella that taught me how to use a 100w gun for jobs like these. I thought he was nuts until I started turning out better looking work then with my 35w pencil. Just be sure and don't dawdle!

Subject: Re: B-4 Hiss

Posted by [ellum68](#) on Sat, 06 Mar 2010 04:06:38 GMT

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Got it all back together and now get a LOUD hum out the speakers. So, I'm pretty bummed and disappointed with myself. I haven't a clue where to look at for my screw up. Fortunately I made a copy of the transistor location diagram and penciled a map of every resistor I swapped along with its value and color bands. I have pictures of the board loaded with the original resistors and this map is 100% correct. I just finished checking the board and every new resistor is of the correct value. I also compared my new tantalum capacitors against a power amp board in my K400 and I have the polarity correct. The only thing I have think of is the transistor pair of the comparator section. I used a NTE159 matched pair. Is not the pinout read by having the flat side of the transistor facing towards you? They also were heatsinked during installation. I do not have the diode by the output transistor in its clip however. I'm terrified of breaking a lead and don't want to clip it back down until I'm done.

FOUND IT! NTE159MCP is NOT a matched pair of NTE159s. It's a matched NTE159 and NTE123AP. Go figure. Gonna go change it now.

Subject: Re: B-4 Hiss
Posted by [ellum68](#) on Sat, 06 Mar 2010 05:01:32 GMT
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Alright, I yanked out that NTE123AP and put in an NTE159. The amp works now. I still have hiss, but it seems much more level now (more ocean in your ear, instead of bacon sizzle). I might just be time to live with it I guess.

Subject: Re: B-4 Hiss
Posted by [chicagobill](#) on Sat, 06 Mar 2010 17:26:05 GMT
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The NTE159MCP is a pair of Matched Complimentary Pair of transistors, one NPN and one PNP, like what would be used in a push pull output section.

I'm not sure of what you replaced on the power amp board, all of the resistors and tantalum caps? All of the transistors?

And now if you disconnect the preamps, does the hiss level change?

Subject: Re: B-4 Hiss
Posted by [ellum68](#) on Sat, 06 Mar 2010 18:55:09 GMT
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Ya, the transistor issue was just my ignorance. It's a little emabarassing, but at least I'm wiser for the experience. I changed six tantalums. IIRC all of them were right of the pre-amp connections. The resistors changed were everything to the right of the pre-amp hook up and above the

heatsinks of the driver transistors. Transistors Q700-702 were replaced. I haven't unhooked the preamps yet. I'm still at work (shh, dont tell).

Subject: Re: B-4 Hiss

Posted by [ellum68](#) on Sat, 06 Mar 2010 19:07:36 GMT

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