
Subject: crackling noise in K200b-1

Posted by [Kono](#) on Sun, 13 Aug 2006 02:42:11 GMT

[View Forum Message](#) <> [Reply to Message](#)

So, I got this K200B-1 a couple of days ago and everything seemed fine at first inspection. The amp plays nice, loud and holds its own at high volume. Today, during the few hours of playing it through a 4 ohm cab, I heard some slight crackling (could see the speaker cones slightly pop out when this happens). This is intermittent but it seems to happen rather often and it's not noticeable when playing. Maybe some DC is dumping through the outputs, however, there's no hum. I think i'm narrowing it down to the output Xstors. I know the RCA36892 crosses over to the common 2N3055. The drivers in these amps are the ones surrounded by the square [boxed] heat sinks, correct? If so, what replacement is available these days?

I know there are some good folks on here who know Kustoms really well and could help me tackle this. So, if some of you gurus can give me some ideas, I would greatly appreciate it.

Thanks

/K

Subject: Re: crackling noise in K200b-1

Posted by [stevem](#) on Mon, 14 Aug 2006 11:32:01 GMT

[View Forum Message](#) <> [Reply to Message](#)

If you do not see any DC on the output when hearing the noise than you are just driving the speakers passed their cone excursion limit. The driver transistor can be had but not with the box heat sink, so separate slip on heat sinks must be put on. Sometimes if you do a web search you can find old stock vendors that still have the original RCA made boxed heat sink drivers but they are not cheap. I like to use something equal to a nte181 for the 2n3055 outputs. You can get them in matched pairs so my preference now a days is to replace all 2 or 4 depending on the amp. Even 4 of them are not expensive and the amp likes it a lot better, and that's the way kustom did it too.

Subject: Re: crackling noise in K200b-1

Posted by [Kono](#) on Mon, 14 Aug 2006 14:16:20 GMT

[View Forum Message](#) <> [Reply to Message](#)

Steve, thanks for your reply.

The amp is a K100B-1. The noise happens regardless of whether a signal is present or not. I did not find any DC on the output, but I still suspect the transistors are going south. I agree on the matched NTE181 or the NTE130, they do have better specs than the 3055. Do you know the best place to get them? Mouser? Also, do you have a modern replacement part # for the driver? If I replace the outputs, I'll want to replace the drivers as well and won't mind using slip-on heat sinks.

Subject: Re: crackling noise in K200b-1

Posted by [chicagobill](#) on Mon, 14 Aug 2006 15:45:10 GMT

[View Forum Message](#) <> [Reply to Message](#)

Kono:

The generic number for the driver transistors in the Kustom power amps are RCA 40409 and 40410. These are the oddball TO-5 with heatsink, transistors that Kustom, Acoustic, Legend and others used in the late 60's and early 70's. You can look these numbers up in your cross-reference for replacement suggestions.

Bill

Subject: Re: crackling noise in K200b-1

Posted by [stevem](#) on Mon, 14 Aug 2006 16:47:28 GMT

[View Forum Message](#) <> [Reply to Message](#)

If my memorie is right a NTE129 is the pnp to5, and NTE128 is the npn to5. If you are carefull you can remove the rca from the box heat sink, resolder the box back in standing up as tall has it will go and still solder in, and them solder the new TO5 in while keeping it loaded firm down onto the heat sink.But I would still install a slip on heat sink just to make sure.

Subject: Re: crackling noise in K200b-1

Posted by [Kono](#) on Mon, 14 Aug 2006 16:53:49 GMT

[View Forum Message](#) <> [Reply to Message](#)

Thanks so much Bill. I'm coming up with NTE128 for the NPN and NTE129 for the PNP. I guess I'll order these along with the matched NTE130 sets.

/K

Subject: Re: crackling noise in K200b-1

Posted by [Kono](#) on Mon, 14 Aug 2006 16:58:14 GMT

[View Forum Message](#) <> [Reply to Message](#)

Steve, that's a good idea about using the original heat sink with the added slip-ons.

Subject: Re: crackling noise in K200b-1

Posted by [stevem](#) on Tue, 15 Aug 2006 11:19:16 GMT

[View Forum Message](#) <> [Reply to Message](#)

If you preheat the box heat sink with a lighter you can tack solder the new TO5 back to it.Both items have to be tinded first and you need a pair of leather gloves.

Subject: Re: crackling noise in K200b-1
Posted by [Kono](#) on Tue, 15 Aug 2006 23:33:34 GMT
[View Forum Message](#) <> [Reply to Message](#)

you know, now that you mention tack soldering the new units to the old heat sink, I noticed that 2 of the original ones are completely loose off the heat sink. This may have cooked them. Anyway, your idea is pretty interesting, I should be getting my parts from Mouser tomorrow or the day after. I'm definitely going to try and make use of the old boxed heat sinks along with the slip-ons. I'll let you know how it works out.

Subject: Re: crackling noise in K200b-1
Posted by [Kono](#) on Wed, 16 Aug 2006 14:31:26 GMT
[View Forum Message](#) <> [Reply to Message](#)

Just a quick question for Steve or Bill:
I'll be installing 2 matched pairs of output transistors. Does the first pair go to the left and the other pair to the right or does one pair go at position 1 and 4 and the other at 2 and 3. Thanks.

Subject: Re: crackling noise in K200b-1
Posted by [chicagobill](#) on Wed, 16 Aug 2006 15:23:08 GMT
[View Forum Message](#) <> [Reply to Message](#)

Kono:
The output design is push pull just like a tube amp. Ideally you'd install a matched quad. With that being said, I'd split the pairs 1-4 and 2-3, so that each half of the circuit has even pairs.

Bill

Subject: Re: crackling noise in K200b-1
Posted by [Kono](#) on Wed, 16 Aug 2006 16:08:17 GMT
[View Forum Message](#) <> [Reply to Message](#)

So, I replaced the output transistors, the 4 driver transistors and the 2 transistors to the left of the board too. Well, it's still crackling. I went through every solder joint to rule out faulty connections. everything is solid. Does anybody have any other ideas as to where to look next before I tear up the whole thing? it's starting to drive me nuts.
Thanks.

Subject: Re: crackling noise in K200b-1
Posted by [Kono](#) on Thu, 17 Aug 2006 15:13:48 GMT
[View Forum Message](#) <> [Reply to Message](#)

I just went through all the resistors on the power board (PC703). They all checked within specs. Anyone know a good tech who knows old Kustoms in the NYC area or somewhere I could ship it to? Thanks
/K

Subject: Re: crackling noise in K200b-1
Posted by [chicagobill](#) on Thu, 17 Aug 2006 16:31:39 GMT
[View Forum Message](#) <> [Reply to Message](#)

Kono:
Checking the resistors with a meter will not find noisy ones. The noise generated by the resistors is usually a caused by the heating of the carbon mash used to form the resistor core. The low voltage from a meter is not enough to generate any readable fluctuations in resistance.

Sometimes manufacturing defects or small cracks in the outer body of the resistor will allow moisture to get into the core, and this will contaminate the carbon and can cause the popcorn popping or random "thermal" sizzling noise that can drive any tech crazy.

Speaking of crazy techs, I think Steve M is in your area. (Just kidding Steve!)

Bill

Subject: Re: crackling noise in K200b-1
Posted by [stevem](#) on Thu, 17 Aug 2006 16:33:30 GMT
[View Forum Message](#) <> [Reply to Message](#)

If the amp still has its original round rectifier bridge make sure all the spade connections on it are good, and check if all the screws on the filter cap to wire leads are tight, same with the nut that holds the output jack to the chassis. If both preamps do it, it has to be coming from the driver board. To confirm this, remove one of the 2 blue audio wires from either preamp and pump some audio in to it from something else.

Subject: Re: crackling noise in K200b-1
Posted by [stevem](#) on Thu, 17 Aug 2006 16:38:35 GMT
[View Forum Message](#) <> [Reply to Message](#)

Are you playing a bass thru it with hot active pickups?

Subject: Re: crackling noise in K200b-1
Posted by [Kono](#) on Thu, 17 Aug 2006 18:38:34 GMT
[View Forum Message](#) <> [Reply to Message](#)

Bill, so that pretty much means I'd have to replace all the resistors on there...S&#\$!!!!

Steve, it does this with no signal applied. I Checked the connections at the bridge rectifier - solid. Checked all the jacks, no rust or oxidation - very firm connections. Checked the filter caps' connections and even temporarily swapped in a pair of 10,000uF caps - no change, same thing. I'm going to remove the blue audio wires and inject a signal, as you suggested. If it is coming from the driver board, it can't be the transistors, I just replaced those with matched NTE128/NTE129 sets. I'll report back in a bit. Thanks!

Subject: Re: crackling noise in K200b-1
Posted by [IFixAudio](#) on Thu, 21 Sep 2006 19:12:32 GMT
[View Forum Message](#) <> [Reply to Message](#)

Hey Guys,
First I want to say thanks to Bill for the help with my K200.
My amp originally had this problem and I found connections on the board to the drive transformer were bad.
Don't check, RESOLDER ALL of the connections on the driver board, there aren't that many.

Jim

Subject: Re: crackling noise in K200b-1
Posted by [stevem](#) on Fri, 22 Sep 2006 11:27:10 GMT
[View Forum Message](#) <> [Reply to Message](#)

I do not know what you mean by the driver transformer in a B model kustom?
Only the first models made up to late 1967 had PHASE inverter transformers on the output drive board.

Subject: Re: crackling noise in K200b-1
Posted by [IFixAudio](#) on Fri, 22 Sep 2006 16:30:50 GMT
[View Forum Message](#) <> [Reply to Message](#)

Sorry, my mistake. I was unaware of the "B" version cexchange.
Just trying to help.

Good Luck

Jim

Subject: Re: crackling noise in K200b-1
Posted by [stevem](#) on Fri, 22 Sep 2006 16:36:15 GMT

[View Forum Message](#) <> [Reply to Message](#)

Its no problem at all jim, I just did not follow as to what model amp you have.
Glad to here its back to working!

Subject: Re: crackling noise in K200b-1
Posted by [Kono](#) on Fri, 22 Sep 2006 20:04:57 GMT
[View Forum Message](#) <> [Reply to Message](#)

Sorry folks, I never reported back on the progress of my repair. So, for the record, here goes: I did get rid of the crackling noise. The tantalums were the culprit - a couple of them in the driver area I discovered to be extremely noisy and a couple in the regulator area tested out of specs. I replaced them and the crackling went away completely, along with most of the hiss noise. I ended up replacing all the tantalums on the power and preamp boards and decided a few days later to replace the power cord, the filter caps with 10kuF units and the old rectifier with a 20A bridge. I know lots of parts were replaced but it sounds like a brand new Kustom now and I'm very happy with with the outcome.

Thanks to all who helped - specially Bill and Steve.

/k

Subject: Re: crackling noise in K200b-1
Posted by [steven](#) on Mon, 25 Sep 2006 11:10:53 GMT
[View Forum Message](#) <> [Reply to Message](#)

Hey, great news!!! Good for you for stickin with it. Those tantalums can really suck! a 20 cent cap cost you an easy hour of your labor time. I have a k100 head of mine that has a ticking from the tremolo circuit, and I am fairly sure that when I get in their it will be one of those caps gone leaky. If anybody wants to get rid of a fair amount of hiss from their kustom, then replacing the first gain stage transistor in each channel, and all the darn tantalums in the signal path is great change.

Subject: Re: crackling noise in K200b-1
Posted by [steven](#) on Mon, 25 Sep 2006 11:26:55 GMT
[View Forum Message](#) <> [Reply to Message](#)

Oh, and bill, your asesment of my mental state is pretty much right on, as this past weekend I went out with my girl freind garage sale hopping. What a mistake, what was planed to be an hour or so turned into 4 1/2.

I could have just stayed home and worked on my k100s tremolo problem.
