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Subject: Kustom 200 A-4 (Earlier)

Posted by [Shaun\\_Musings](#) on Fri, 01 Jan 2016 00:56:58 GMT

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So I have 2 A-4 heads (lucky me!) One is strong (hiss from Trem/Vib channel, fuzz works odd, but other than that, no complaints). The other one is weaker, the Selectone doesn't work, and while the trem/vib is strong, and the clipper is strong, there is no reverb.

I have decided to start working on this A-4, which has a lower serial number and a limited number of those Orange Drops that the other one does. I was playing on it, and it sounded okay, but then all of a sudden it started popping and the wouldn't let a guitar signal pass.

After talking with Don, Terry, and Brian (Great guys!!! =) I started replacing the Mallory caps on both the volume boards and the boards on the back wall (I did not replace the big 80/50v ones... Somehow I just didn't see them). I made sure they went in the right place and positions, and fired it up. The popping noise was not nearly as loud, but there was still no guitar signal.

Replaced the NTE transistors (The ones that look like 'D'). Now what's interesting is that one of the round head caps had been sliced off and soldered back on. Which made me wonder three things:

1. This amp has been worked on before; are there any other transistors in wrong,
2. Are there any wiring connections that are actually bad and need to be replaced?
3. Why is there so much flux residue and rust in here? My other A-4 is clean as a whistle!

Started cleaning. I cleaned the output jack and put it back in, cleaned the input jack and put them back in. Started it up. Before, there was about ten seconds before the popping started. Now it starts immediately.

Tested the big filter caps there in the middle, the Coke cans. The one on the right closest to the OT is reading 40V, but the other one fluctuates so fast I can't even get a value. Not sure what this means, not sure if it's normal (the amp was plugged in and turned on but the speaker was unplugged).

So, what I have ordered from Mouser are the bottom transistors: MJ15015G, which someone here said is a 'beefier' version (I swear, I stalk on this site all the time) and the 2N5008 to replace the little round three-legged transistors.

Is there anything I have missed? How do I tell which 'leg' goes in which hole on the board? If things have been moved around, I want to make sure I put them the right way.

SDC

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Subject: Re: Kustom 200 A-4 (Earlier)

Posted by [chicagobill](#) on Fri, 01 Jan 2016 09:03:44 GMT

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The MJ15015G will work just fine for replacing the output and voltage regulator transistors. The

2N5008 might be a typo, as it is not a typical replacement type for any transistor in any Kustom amp.

Let me see if I understand what you are saying: Neither channel works, there is no guitar signal output to the speakers. The amp makes a popping sound. You get a reading of +40 volts dc on one of the two filter caps. The other filter cap gives you no reading. Or your meter can't read the voltage there. Is there any dc voltage at the speaker jack? If there is don't connect the speaker to the amp until you get the problems sorted out.

How are you taking the voltage readings at the filter caps, directly across the two screw terminals or black meter lead connected to the chassis and the red connected to the filter cap terminals?

Unfortunately there is no easy way to tell you how the transistors are supposed to go into the board. The original ones are plastic cased with a flat side to the outer rim. The lead closest to the flat spot is the Emitter. The center of the three leads is the Base and the third lead is the Collector. The TO-72 D-shaped are usually leaded E-B-C with the flat side facing you, leads pointed down.

I'm not a big fan of shotgun replacements of components to try and fix things. Often times it causes more problems than it cures. I always suggest fix the problems first, then change the parts that you want to upgrade.

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Subject: Re: Kustom 200 A-4 (Earlier)

Posted by [Shaun\\_Musings](#) on Fri, 01 Jan 2016 13:48:49 GMT

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The actual second transistor is 2N5088. You're right, it was a typo. Found that information here: <http://music-electronics-forum.com/t18296/>

I will check the voltage at the speaker jack today without the speaker plugged in. As for getting the voltage reading, I am putting the red lead to the terminal near the red dot, and the black lead to the other terminal.

When this first started happening, I went to this site to find out more information. I heard it would typically either be a bad connection or a bad part. Replacing all the Mallory caps did reduce the volume of the popping, however. What I am noting is a lot of flux on these boards, and there could be something I'm missing in terms of a broken lead or broken solder joint. I plan on cleaning those, as well as the insides of this filthy cabinet, right away.

I didn't just replace everything all at once; I replaced the caps on the first board, put it back in the chassis to see if it worked, and then replaced the NTE transistors. Put it back into the chassis, then worked on the second board. I didn't necessarily want to upgrade; I know this particular A-4 had a lot of weak components, as I had it looked at before, but the guy didn't want to be swapping out every part on the board...

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Subject: Re: Kustom 200 A-4 (Earlier)

Posted by [Shaun\\_Musings](#) on Fri, 01 Jan 2016 15:49:53 GMT

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I checked the voltage at the output jack. It got 24/25 volts... I'm guessing this is normal

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Subject: Re: Kustom 200 A-4 (Earlier)

Posted by [steven](#) on Fri, 01 Jan 2016 20:55:44 GMT

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No!!, those levels of DC voltage on the speaker output Jack are a bad sign, and this leads me to ask a question about when you first posted about then amp. You told of having high levels of hiss, did you mean hum which is what you would have with 24 volts going thru a speaker?

Hiss problems with these amps are more often then not caused by one of the first two preamp transistors after the input Jack being toast!

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Subject: Re: Kustom 200 A-4 (Earlier)

Posted by [steven](#) on Fri, 01 Jan 2016 21:00:50 GMT

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In reagards to testing the power supply voltage on the two big main filter cans the meter goes across red and the black that spans both filters , and the green and black.

Red to the common wire / common terminal will be a positive DC voltage, and the other a negative .

The reading should be close to 40 volts each way.

Also the preamps boards in this amp run on a positive and negative 23 to 24 volts , do you have that ?

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Subject: Re: Kustom 200 A-4 (Earlier)

Posted by [Shaun\\_Musings](#) on Sat, 02 Jan 2016 04:12:48 GMT

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Not a hiss, but rather, a popping sound. I've ordered new RCA transistors, and they should be in Monday, so I'm guessing that should resolve some of this issue...

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Subject: Re: Kustom 200 A-4 (Earlier)

Posted by [Shaun\\_Musings](#) on Sat, 02 Jan 2016 04:13:36 GMT

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Where do I test for the preamp boards?

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Subject: Re: Kustom 200 A-4 (Earlier)  
Posted by [steven](#) on Sat, 02 Jan 2016 11:46:00 GMT  
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Which transistors are you ordering up?

The red wire into each board is the + 23 volts and the green is the -23.

These come from a regulator board for each voltage that takes the higher voltage from the main filters and as stated regulates it down to pretty much 23 volts.

If one of these two voltages is much more than 2 volts lower than what Which is called for then that could be why you have that voltage showing up on the speaker output jack.

Are you looking at the schematic for this amp on our site here in the tech section because I just noticed that the site shows everything but for the power supply and the output stage !

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Subject: Re: Kustom 200 A-4 (Earlier)  
Posted by [Shaun\\_Musings](#) on Sat, 02 Jan 2016 15:30:46 GMT  
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Hi! The transistors are MJ15015G and 2N5088. Which red wire? There are two that go into the board, a blue one that connects to the jacks, and another blue one that I believe is the output...

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Subject: Re: Kustom 200 A-4 (Earlier)  
Posted by [chicagobill](#) on Sun, 03 Jan 2016 04:28:19 GMT  
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The two red wires are both connected to the positive 23 volt supply, the second one carries the voltage to the next pc board.

The negative 23 volt power supply is mainly used for the FX switching, so it will not connect to the basic preamp boards.

The input wires are blue as is the output wire.

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Subject: Re: Kustom 200 A-4 (Earlier)  
Posted by [Shaun\\_Musings](#) on Tue, 05 Jan 2016 01:47:30 GMT  
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Okay, an update. I replaced the bottom transistors and a metal film resistor burned up on the rear circuit board (second board from the left, the last resistor in a row). I figured it might have been a bridge solder I might have made when putting back the red leads on the main channel board, so I double checked that, plugged it in, and it blew a fuse. So, that really narrows it down. It has to be

those To-39 transistors, the ones with the heat sinks, right?

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Subject: Re: Kustom 200 A-4 (Earlier)  
Posted by [chicagobill](#) on Tue, 05 Jan 2016 02:28:29 GMT  
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If the board that you are talking about is one of the two smaller boards, then it is one of the 23 volt power supplies.

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Subject: Re: Kustom 200 A-4 (Earlier)  
Posted by [Shaun\\_Musings](#) on Tue, 05 Jan 2016 02:51:33 GMT  
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Wait, you say the input wires are blue, right. Those are connected to the jacks, but those aren't the boards I am talking about. There are two smaller boards against the back wall of the chassis right next to the big one. The big one has the heat sink transistors, and the hookup to the output jack.

Oh, the RCA jack doesn't work, either.

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Subject: Re: Kustom 200 A-4 (Earlier)  
Posted by [chicagobill](#) on Tue, 05 Jan 2016 17:50:10 GMT  
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On the back wall of the chassis there are three boards. One is large and contains the power output amp circuit, yes the one with the heat sink transistors.

Then there are two small boards that contain the 23 volt regulator circuits. One for the positive side and one for the negative side.

The RCA jack on the back is an output from the preamp circuits or can be used as an input to the power amp for test purposes.

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Subject: Re: Kustom 200 A-4 (Earlier)  
Posted by [Shaun\\_Musings](#) on Tue, 05 Jan 2016 18:01:12 GMT  
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Yes, these are what I was talking about. I saw earlier someone had completely redone their A-series head. What I've done up until now is replace the transistors, etc. I think it's been pretty much narrowed down to those transistors with the heat sinks attached. I don't know much about the diode; could this be a problem? What are the replacements for those RCA heat sink transistors? I ordered 2N5679 and 2N5681, as someone here had mentioned them before...

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Subject: Re: Kustom 200 A-4 (Earlier)

Posted by [chicagobill](#) on Tue, 05 Jan 2016 18:16:49 GMT

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Yes, those transistors should work as replacements. Be sure to add a heat sink to them.

The heat sink diode is no longer made, but can be replaced with a 1N4148. It will take a little bit of ingenuity to get it mounted so that it will sense the heat of the heat sink.

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