
Subject: Circuit board corrosion
Posted by [toopicky](#) on Wed, 22 May 2013 15:43:49 GMT
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This amp still works pretty good but all of the boards have this corrosion on a lot of the resistors where the leads come through the board. My original plan was to re-cap this amp and try to get the effects working, but when I recently pulled it out of the case, I found this. Now I'm wondering if it would still be worth the effort. Is there a way to remove the corrosion?

Any thoughts?
Here is a photo. I hope you can see what I'm talking about.

Subject: Re: Circuit board corrosion
Posted by [pleat](#) on Wed, 22 May 2013 17:50:59 GMT
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My guess would be the corrosion is actually rosin from the soldering process. I'd take a guess and say the circuit board is from a K200A-2 series. The white mally cap was used in the A series. To get the effects to work you have to have the footswitch or short the pins to ground at the XLR footswitch jack, so you may not have that much work to get the effects to work.
pleat

Subject: Re: Circuit board corrosion
Posted by [stevem](#) on Wed, 22 May 2013 18:26:02 GMT
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That is not corrosion, those resistors have been either replaced, and or pulled out of circuit for testing and what you are looking at is soldering flux residue.
It is not causing a problem, but if you must rid your amp of it get a spray can of flux remover, or use a machinist scribe to scrap it away.
The place in any electronic circuit where left over flux can make for a problem is on the other side of the board where if its going across the copper traces, it can cause signal and or voltage bleed.

Subject: Re: Circuit board corrosion
Posted by [pleat](#) on Wed, 22 May 2013 20:52:15 GMT
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And that's why I generally state I'm not a tech. I did notice that the top center transistor has been replaced, looks like the tech decided to cut the legs of the transistor and soldered the replacement transistor to the original legs. Top center transistor 2N424- something. Probably not the best way to install it. Odd the tech would remove the resistors to test and then not install the replacement transistor the correct way since the board would have been out of the chassis. I also think it is a

K200A-4 model, not the K200A-2 I thought earlier. But then again, I'm no tech. lol

pleat

Subject: Re: Circuit board corrosion

Posted by [chicagobill](#) on Thu, 23 May 2013 04:06:21 GMT

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I keep telling you Pleat, you know more than a lot of techs out there. His other photos show an K200A-4 head in blue.

I don't think that the resistors have been removed, that kind of flux migration is more typical of when the solder joints have been reflowed with too hot an iron. I don't see it all over the board just that row of parts. I use denatured alcohol on a cotton swab to remove that flux residue.

The replaced transistor was done by a lazy tech who didn't want to remove the board to do it right. Sometimes this works, and sometimes it doesn't. If the solder on the underside of the board gets too hot it can cause a cold or loose connection.

And to toopicky, I don't recommend a shotgun recap of the FX boards. I don't see a lot of cap failures in these amps. The only exception to the rule are certain electrolytic caps.

Subject: Re: Circuit board corrosion

Posted by [toopicky](#) on Thu, 23 May 2013 15:52:26 GMT

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So, it shouldn't be a problem, right? I'll try to clean it just because.

Also, I am aware that the effects require the footswitch and I have tried grounding them to see if they work. Here is what happens:

First, the trem can be heard slightly, but is very noisy. A loud hiss that gets louder as you turn it up and you can hear a slight pulsing sound.

Second, the boost does seem to work sometimes. I'm thinking that the switch may need cleaned since it makes a VERY loud popping and crunching sound when it is switched and the boost will sometimes come on.

Third, the clipper doesn't seem to work at all. At least not that I can tell. I can't hear any change.

Fourth, the reverb is very weak, almost nonexistent, but if I even tap a little on the amp at all I can hear a reverb like sound inside, if you know what I mean. It's also quite noisy.

I opened the reverb and didn't find anything broken, however the springs seem like they may be

stretched out. You can see in the bottom of the pan where the springs have been rubbing on it (I should get a photo of it so you can see what I mean). Everything that should be plugged in, is and all connections seem to be good, tight and clean.

Any ideas? And thanks for the info. I'm determined to get this thing working.

Subject: Re: Circuit board corrosion

Posted by [chicagobill](#) on Thu, 23 May 2013 16:32:55 GMT

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My first question is do you have a multimeter to check things?, and the second question is do you have the schematics for your amp?

Kustom FX use transistors to switch the circuits in and out and on and off. Because of this, a bad switch transistor can cause an effect to either not work at all or to work weakly or noisily. This might be what is wrong with the trem/vib circuit and the Clipper.

The reverb sounds like the return signal and circuit are working okay, that's why when you shake the tank it rattles through the speaker. So the problem is in the input of the tank or the drive from the amp.

Even though the wires look okay inside the tank, they still may be the problem. Try switching the two tank wires and then shake the tank. Do you hear the springs rattling through the speaker? If you do, then the tank is okay and the problem is in the send wire or the drive circuit. If you don't, then the tank is the problem.

If you have an ohm meter, read the resistance across both of the RCA jacks on the tank. There should be somewhere around 200 ohms on either one. Use the meter to test the cables themselves and also be sure that the RCA jacks and plugs are clean and making good contact.

Let us know what you find out.

Subject: Re: Circuit board corrosion

Posted by [toopicky](#) on Thu, 23 May 2013 18:30:07 GMT

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I will have to get a meter and no, I don't have the schematics for the amp. You can hear the springs slapping around inside with even slightest movement of the amp, which, to me doesn't seem right.

Here are a few pictures of the reverb. Nothing seems to be broken or disconnected. As you can see, the springs have rubbed the label quite a bit. Is that normal?

Thanks for the continued help.

Subject: Re: Circuit board corrosion
Posted by [chicagobill](#) on Thu, 23 May 2013 19:16:02 GMT
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The rubbing on the label is a sign that the amp has been shipped a lot, like in a truck or a car on the road being bounced up and down.

I used to see that all of the time in old Fender amps that lived in the trunk of a players' car. It also shows you how well made those old tanks used to be. Modern tanks will not stand up to that kind of abuse.

Did you try reversing the in and out wires to see if the tank still made noise when rattled?

Subject: Re: Circuit board corrosion
Posted by [toopicky](#) on Thu, 23 May 2013 22:33:35 GMT
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I'll get back to you on that tomorrow. I have to go to work now.

Subject: Re: Circuit board corrosion
Posted by [toopicky](#) on Fri, 24 May 2013 15:11:00 GMT
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Ok, I'm back.

I switched the reverb wires around and didn't get any sound from the tank when I tapped on it. With the wires the correct way, I can hear the springs when I tap on it. There is no reverb at all when I play through it. Also, as I mentioned before, there is a hiss that gets louder the more I turn up the reverb.

Subject: Re: Circuit board corrosion
Posted by [pleat](#) on Fri, 24 May 2013 16:34:35 GMT
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One thing I noticed on your tank, it appears that the springs are different lengths. It looks like the

spring farthest away from the transducer has less tension and could be the reason you have the label worn away. I don't know if the springs themselves differ from model to model. One of the guys might be able to tell us about that. Do you have another kustom amp that you could swap tanks? I'd take the tank you are having problems with and try it in another kustom K200 amp. If you don't get any reverb, then you have a bad tank.
pleat

Subject: Re: Circuit board corrosion
Posted by [toopicky](#) on Fri, 24 May 2013 17:12:58 GMT
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That's something I was wondering about. I thought that the springs may be stretched because even just carrying the amp across the room you can here them banging around. Doesn't seem that they should be that loose to me, but then I don't know anything about reverbs, so I couldn't be sure.

I do have a Lead III here that I could try it in. Would they be compatible? My other K200 isn't here at this time.

Subject: Re: Circuit board corrosion
Posted by [pleat](#) on Fri, 24 May 2013 17:17:50 GMT
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No, the input and output impedances are different for the lead III. The K200 uses 185 ohm in and 185 ohm output.
pleat

Subject: Re: Circuit board corrosion
Posted by [toopicky](#) on Fri, 24 May 2013 17:48:46 GMT
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Kinda figured that would be the case. Where can I get a new one if that's the way this ends up going?

Subject: Re: Circuit board corrosion
Posted by [chicagobill](#) on Fri, 24 May 2013 22:45:26 GMT
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The springs may be streched out, as that will happen with age, etc. Originally the springs are of different lengths and are wound in different directions. It's all supposed to made the reverb sound more natural.

If there is no crashing sound when you reversed the wires, then either the input coil is open or one of the two small wires that connect the coil to the RCA jack is open. Now is when you need to have an ohm meter to find out where the problem is.

Accutronics has been sold to a Korean company (Belton), but they make a similar tank as a replacement. They can be purchased from any of the major music electronics companies, like Antique Radio Supply or Mojo, etc. I think that the new tanks sound different from the old ones, thicker, more complex sounding, less clear.

You can also check with the old US factory to see if they can rebuild the old tank, as they were offering this service on eBay. They also make the Morley pedals here in Cary, Illinois.

But you should check the input coil and wires first, as you may be able to fix it.

Subject: Re: Circuit board corrosion
Posted by [toopicky](#) on Sat, 25 May 2013 16:40:45 GMT
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Thanks pleat & chicagobill.

I was looking at replacement tanks and the only one I could find that was specifically listed for Kustom Amps was this one:

<http://www.tubesandmore.com/products/P-R4BB2C1A>

Looks like a direct replacement. This is what I got from the part # as for specs:

Type 4

Input impedance = 150 ohms

Output impedance = 2,250 ohms

Decay = medium

Connectors = input insulated/output grounded

Lock = none

Mounting = horizontal/open side up

Does all that sound like it would be correct if I need to replace it?

I'll see if I can get ahold of a meter and do some checking over the weekend when I have more time to play with it.

Subject: Re: Circuit board corrosion
Posted by [pleat](#) on Sat, 25 May 2013 19:46:29 GMT
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If you click on the technical tab, you will find the schematics page. You may have to hunt but look

for Service Memo's. In the service memo page, there is a reverb memo page. It does state the tanks are 185 ohms in, and 185 ohms out. Looking at the schematic for the A series, it appears that both input and output are grounds, and the B series the input was isolated and the output was grounded. I'm sure chicagobill or stevenm can shed some light, but I'd say the link you provided would have been for the tolex series kustoms.

pleat

Subject: Re: Circuit board corrosion
Posted by [chicagobill](#) on Sun, 26 May 2013 04:40:30 GMT
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Pleat, the memo is referring to dc resistance values, the tubes and more listing is talking about ac impedances, two different things.

The listed tank should work as a direct replacement, but the input jack may need to be grounded for it to work. Most all K200 amps use a grounded input jack because one of the cables is not grounded on the amp side.

Subject: Re: Circuit board corrosion
Posted by [pleat](#) on Sun, 26 May 2013 11:28:19 GMT
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It's always great to learn more on the technical side. The subject of replacement tanks is always confusing especially on the grounding of the input and or output side of the tank. I know that the slant metal face amps use a different model tank in DC resistance than the earlier plexi face kustoms. I received several emails last week from a kustom owner who needed to replace his tank on a Hustler amp. He sent several sites asking me which one would be correct. I kept telling him, I'm not a tech, and to do a post on this site, but I see he didn't bother.

pleat

Subject: Re: Circuit board corrosion
Posted by [toopicky](#) on Sun, 26 May 2013 15:52:38 GMT
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How would I know if the input jack needs to be grounded and how would you do it? Can you tell by looking at the old one if it is? They both look the same to me.

On the one in the link I posted, the input is insulated and the output is grounded. Does that need to be reversed, or would they both need to be grounded?

Sorry for all the questions, but I really don't know anything about these and whatever I end up doing, I want it to be right. Pleat is right, this is confusing.

Thanks, you guys for helping me with this stuff.

Subject: Re: Circuit board corrosion
Posted by [chicagobill](#) on Sun, 26 May 2013 17:34:50 GMT
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Looking at the photos of your tank, both input and output jacks are grounded. If the jack is insulated, there will be a brown phenolic wafer that keeps the shell connection of the RCA jack from touching the metal chassis of the tank.

In order to ground the insulated jack, a small jumper wire needs to be soldered from the shell connector to the mounting bolt. Just a basic soldering job. Do you have a soldering iron and basic soldering skills?

Pleat, as far as I know, all T&R Kustom amps used tanks that were grounded at both input and output. I would have to look up all of the schematics to prove this one way or another.

Personally, I'm more into the wide panel heads, and these came with tanks with grounded jacks. They also would run a separate ground wire from the chassis to the tank shell. This creates a ground loop that causes hum in the amp.

In the K200A and later heads, they disconnected the ground from one of the two cables at the pc board to eliminate the ground loop.

Subject: Re: Circuit board corrosion
Posted by [toopicky](#) on Sun, 26 May 2013 18:51:47 GMT
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Ok, I see what you're talking about. Soldering is no problem. It's the one thing I feel comfortable with.
