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Subject: K100-2 Hiss but no other output

Posted by [Jerrybass1955](#) on Mon, 11 Aug 2014 13:45:26 GMT

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Hi Folks,

Just signed up for this forum, so please pardon me if I am covering old ground.

I recently picked up a steal on a K100-2 head with reverb and Tremolo. I have only taken a brief look at it so far. I have 40V DC at the power supply caps with no ripple measured with a VOM. The output has hiss but no signal gets through from the input. Hiss is independent of all controls. I have a signal generator coming tomorrow and I have a scope, but I am just getting started troubleshooting this guy. It hasn't run in several years at least, so I thought the Power Supply Filter Caps would be gone for sure, but they seem fine for now given that I am right on the money with the 40volts DC, (that of course may change since it may have very little load at this point).

So my questions:

- 1) I have a schematic, but it is very hard to read. Anyone have a relatively clean schematic they could share?
- 2) Anyone have suggestions on where to start troubleshooting this guy?
- 3) I assume the output transistors are probably OK since I get some hiss, but maybe someone knows otherwise?
- 4) Are there routine things some of you would replace for good measure given the age of this beast? It would be nice to keep it near original, but that is kind of useless if it doesn't work!
- 5) Are there any tricks to tearing this guy down to troubleshoot it that I should know about?

I appreciate any input you folks can give. This amp is like my first serious amp when I was maybe 14 years old or so. I later switched to bass and ran a K200 bass amp. Both have long since been sold, so this will be quite nostalgic for a 58 year old guy if I can get it running. I will likely be working on it at most a half hour or so a day average, so I may be posing more questions from time to time. I am looking forward to interacting with this group.

Thanks,

Jerry

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Subject: Re: K100-2 Hiss but no other output

Posted by [daveobergoenner@gmail.com](mailto:daveobergoenner@gmail.com) on Mon, 11 Aug 2014 15:22:55 GMT

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Jerry:

Good that you have a scope, it will come in very handy.

The schematic for the K100-2 at this site is pretty clear...better than most.

Try putting your scope probe on the base of Q124, while you have some input to the amp. The base should be the middle lead of the three. See if you have audio getting to that point at least. If not, the problem is earlier in the circuit. If you do have level there, something has gone wrong in the power amp section.

Since you hear the hiss, it's more likely the problem is earlier...but you never know. Someone may have popped the first stage transistor in the preamp, which can be a bit sensitive and fragile.

Kustom used a fair amount of tantalum caps in these amps. They were very high quality caps, but they have the habit of shorting when they go bad, which frequently shunts DC voltages to ground. They are usually orange in color. After 40+ years, they are very good candidates for replacement. I usually replace those in any older piece of equipment...even before I power things up.

Dave O.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [daveobergoenner@gmail.com](mailto:daveobergoenner@gmail.com) on Mon, 11 Aug 2014 15:30:03 GMT  
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Another easy place to look is to crank up the reverb, and see if you have drive to the input of the spring tank.

For that matter, if you touch the springs, or just tap on the tank with the handle of a screwdriver, do you hear that in the output? Kinda sounds like crashing of thunder. Of course you need to make sure the reverb is engaged with the foot switch, or you won't hear anything with this test.

Dave O.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [stevem](#) on Mon, 11 Aug 2014 16:59:48 GMT  
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If you tap the non grounded side of r139 with a screw driver with your finger on the shank you should hear a buzz thru the speaker which would mean that the output stage is at least working well enough to pass some audio and this would be a good place to inject some out side audio to test the output stage.

The only thing to note is that this injection point would need some 3 volts of signal to drive the output stage to a loud volume.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [C4ster](#) on Tue, 12 Aug 2014 12:40:38 GMT  
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I have had 2 K100's that died in the same way. The 1st input transistor is the culprit. For some reason, that transistor is very easy to pop with a little static. Just touching the tip of your guitar cord with your charged finger can pop it. (I NEVER do that)Right! I use a generic 2N3904 NPN transistor and it works fine.

Conrad

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Subject: Re: K100-2 Hiss but no other output  
Posted by [Jerrybass1955](#) on Tue, 12 Aug 2014 13:18:59 GMT  
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Wow! You guys are a wealth of information. I should be able to start work on this guy tomorrow night and I am looking forward to checking out your suggestions. A couple of follow up questions:

"The schematic for the K100-2 at this site is pretty clear...better than most." - having trouble finding it. Can you give me a link or other ideas to get there?

"tantalum caps" - can you get by with aluminum or polyester caps, or should I order some tantalum caps?

"reverb" - I don't know if it is working. I don't have a foot switch. I guess I can easily use a dummy plug, but I don't remember having to have the footswitch plugged in to get the reverb to work, but that has been about 25 years ago or so. From the schematic, it looks like the switches are open to turn it on though. Correct me if I am wrong. And BTW, does anyone know where to get a real live Kustom footswitch?

Looks like the input transistor might be the culprit. I have hundreds of 2n3904 and 2n3906 - do they seem to be as sensitive to failure from static, etc.?

I took a quick look inside last night and wondered if there is anything holding the circuit board in place other than the pots and maybe the jacks?

First order of business is to get that power cord replaced with a 3 wire. I have a 15 foot cord ordered that should arrive tomorrow and after I get that done, the fun begins.

Thanks for the great tips guys. I'll keep you posted, and keep the advice coming!

Jerry

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Subject: Re: K100-2 Hiss but no other output  
Posted by [stevem](#) on Tue, 12 Aug 2014 14:32:39 GMT  
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Go to this sites technical listing for the schematic.  
Forget about the three prong cord for now.

The reverb needs the foot switch only to turn it off,fix the non reverb issue once you get normal output.

The main board also needs the two wires of the pilot lamp removed from the lamp, and be very

very care full with the temp sense diode in the clip that is in between the two output transistors!! This diode has phosphor bronze leads it seems, or may be the gold plating process just makes them brittle, but they are very prone to breaking off so watch it!

What I do once I pull the board is to wash off any heat sink grease from the diode and then apply black silicone sealer to the diode where the leads enter it, and to the board where they are landed. This will let you man handle the board and do no harm to the diode, just note that when you do the final re-assy on the head that heat sink compound is reapplied to the diode and that the clip holds it good and tight!

I also write next to each output transistor which way the slip on connector goes before I pull them off.

You do not have to use a tantalum caps, or even electrolytic type caps, and non electrolytic types certainly sound better so it depends on how deep your pockets are!

If you do use electrolytic types they need to go back in the way they came out!

Note that the 5 watt dropping resistor for the pilot lamp gets very hot, so steer clear if the amp has been on for two or three minutes!

The factory mounting of this resistor so close to the board always burns it to one degree or another so I pull it up off the board as far as it will go with out breaking the leads off.

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Subject: Re: K100-2 Hiss but no other output

Posted by [daveobergoenner@gmail.com](mailto:daveobergoenner@gmail.com) on Tue, 12 Aug 2014 14:55:29 GMT

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Jerry:

You might wanna try the "Panasonic FM" series aluminum electrolytic caps. Mouser (and others) carries them. I've had very good results with them in hundreds of pieces of equipment. They are rated for the higher 105 degree C temps, and have pretty low ESR. Panasonic also makes their own electrolyte paste (as opposed to buying it from a second party in China), and hasn't been subject to the "bursting cap syndrome" common in computer devices.

As was suggested, ya might wanna start with the first stage transistor, and work your way out. I haven't had any of the newer replacements fail in mine, but then again, the originals were still working too. The newer transistors are MUCH quieter however. After replacing most of the preamp transistors, and the summing board transistors in my K200, you can hardly tell that it's even on. My noise is almost 80db down from the max output!

For the schematic, go to [vintagekustom.com](http://vintagekustom.com), click on the "Technical" amp head on the left, and then to "schematics by amp model". You will see your K100-2 on the list.

Sorry about the miss-lead on the reverb foot switch. I had my switch logic confused. I don't have a foot switch for the reverb on my K200 either, but I did wire in a toggle switch on the back of the amp to turn it on and off. Since I'm a bass player, I didn't really need it on, and when it's off, the amp is considerably quieter. Always go with whatever SteveM, ChicgoBill, or C4ster say here. They have much more experience with Kustom amps than anyone else here...including me.

Dave O.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [C4ster](#) on Tue, 12 Aug 2014 15:54:30 GMT  
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Don't give me too much credit. I'll get a big head.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [stevem](#) on Tue, 12 Aug 2014 16:08:03 GMT  
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Your input here is very welcome Dave and I hope you are a tad younger than me?  
I will be 60 next year and as late I often wonder what will happen to this sites personal tech help when I and or Bill are gone?

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Subject: Re: K100-2 Hiss but no other output  
Posted by [daveobergoenner@gmail.com](mailto:daveobergoenner@gmail.com) on Tue, 12 Aug 2014 16:38:07 GMT  
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Thanks guys!

Unfortunately, I just turned 62 Steve, so you're the young pup to me. When I got into broadcasting everything from the mic preamp to the transmitter output was all tubes. Solid state was noisy, and very prone to lightning damage. Manufacturers were pushing it, but broadcasters didn't want it.

If you think things are scary with the age of decent guitar amp techs, you should see the situation in broadcast engineering. The average age must be 60, and I know guys who are still working full-time well into their 80s because there's just NO ONE to replace them!

I don't know who's gonna be fixing the transmitters etc 10 years from now, but I don't think it's gonna be me.

The technical knowledge-base here of Kustom amps is truly amazing!  
Now when you guys need help with a really BIG amp (like 50kw), I'm your guy.

Dave O.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [stevem](#) on Tue, 12 Aug 2014 19:37:47 GMT

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Bless you Dave! Stick around ok?

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Subject: Re: K100-2 Hiss but no other output  
Posted by [Jerrybass1955](#) on Wed, 13 Aug 2014 01:05:28 GMT

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YAHOO!

It is looking a lot like I am a 10 cent transistor away from having a functional amp. I think it will be worth the 10 cent to turn a \$30 amp into a several hundred dollar amp! We'll have to see where it goes from there.

Hooked up my generator to the input and interestingly I got sound that increases as I turn up the volume until I get about 1/3 turn around and then it starts dropping down to nothing but hiss again as I keep turning it up. Measuring close to the same DC voltage on B, C and E of the input transistor. But if I feed the generator output to the second transistor, signal seems to go all the way through as I would expect it to with a working amp and the volume control seems to be quite functional (can't crank it much cuz I have juvenile house guests right now). So I am pretty sure you guys nailed it with the remote diagnosis of a bad first preamp transistor. Wow - can't believe it will be that easy to make it basically run. We'll see what happens after that is replaced. I'll be shocked if that is all it takes to make it run right. May have to do a bit of 'just for good measure' parts replacement of anything that looks fishy.

I have one stubborn control knob that won't come off, so I am letting the screw soak in WD40 overnight to see if it will loosen up. Then I will have to look for my stash of transistors. Lots of cleaning needed inside, and when I took the reverb tank off it didn't sound quite right. There may be a broken spring from the sound of it. So I may have to get a new reverb tank, but one step at a time!

Thanks for the help so far guys .... I'll be back!

Jerry

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Subject: Re: K100-2 Hiss but no other output  
Posted by [stevem](#) on Wed, 13 Aug 2014 01:13:17 GMT

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I have found that a product call PB blaster sold for automotive use is hands above the best for rust busting, but if need be just drill out the set screw and get a new knob.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [Jerrybass1955](#) on Thu, 14 Aug 2014 14:35:10 GMT

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Got some PB Blaster at Home Depot and letting it do it's magic as we speak. Hopefully it will do the trick. I notice that it does a nice job of cleaning 45 years of gunk off the inside of the chassis too! Also got some contact cleaner to work on the jacks with. They are pretty corroded.  
Jerry

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Subject: Re: K100-2 Hiss but no other output  
Posted by [Jerrybass1955](#) on Fri, 15 Aug 2014 18:12:24 GMT  
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Just a quick update. The PB Blaster and a good fitting screwdriver did the trick and saved the knob. After I got the knob off, I pulled the circuit board and replaced the input transistor with a 2N3904. I also used the opportunity to clean up the jacks a bit. Unfortunately I ran out of time last night, so I hope to put the amp back together today and check out the repair. Wish me luck!  
Jerry

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Subject: Re: K100-2 Hiss but no other output  
Posted by [Jerrybass1955](#) on Sat, 16 Aug 2014 02:47:04 GMT  
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IT's ALIVE....mostly.

I had to replace all three of the first transistor in the preamp. I used 2N3904 and 2N3906 and they work nicely. Pretty quiet too. I may replace some of the carbon comps with metal films to see if the noise drops further.

A few issues remain, and any assistance would be appreciated:

1- Reverb doesn't work at all, but very noisy when the reverb is turned up.

- Tank actually appears good visually - all springs connected. I can probably test it on another amp.
- Any thoughts on common failures or troubleshooting advice appreciated.
- With the tank connected, tapping or rapping the tank causes no sound at the output.
- Will modern transistors and metal film resistors in the reverb circuits help reduce the noise (assuming some of it stays after I get it working? If so, suggestions appreciated.

2- Tremolo works but needs a bit of tweaking:

- I can hear a ticking of the tremolo when turned all the way down. Planning to replace the .47uF cap for good measure.
- I notice on one schematic there is a 10K resistor in series with the intensity pot - it has been crossed out and 15K written above it. Could this be a tick fix?
- When I crank the speed up near all the way I hear it going unstable and squealing at the high end of the speed range. Any thoughts? Perhaps there is a known component tweak to fix it? My first thought is perhaps that .47 uF cap could be tweaked in value to reduce the range of the high end? Any other ideas. I don't really use tremolo so much, but it will bug me if I don't fix it!
- Moving the wires to the foot switch jack around seems to help both problems somewhat, but

doesn't fully cure it.

- Also, seems a bit odd to me that the tremolo wire and the reverb wire are twisted together going to the foot switch jack. Perhaps I should use some coax there for each connection since lead dress seems to be contributing to the problem.

Thanks for helping me get this far!

Jerry

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Subject: Re: K100-2 Hiss but no other output

Posted by [daveobergoenner@gmail.com](mailto:daveobergoenner@gmail.com) on Sat, 16 Aug 2014 04:30:37 GMT

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Jerry:

I am SO happy for you!!!

I'm not an expert on your K100, having only spent much time under the hood of my K200a5.

I can tell you that on the K200, the noise in mine reduced considerably (like 15db) with newer transistors. The ones available today are SO much quieter than what was available back then. The levels on the summing/reverb board in the K200 seem quite low, so they are sensitive to noisy transistors etc. The circuit in the K100 might be similar, but I defer to the massive knowledge of SteveM or ChicagoBill on these things.

Again, congrats on getting your Kustom to to finally make music! Feels good, don't it!

Dave O.

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Subject: Re: K100-2 Hiss but no other output

Posted by [chicagobill](#) on Sat, 16 Aug 2014 07:07:50 GMT

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Check the tank transducers with an ohmmeter. Both input and output coils will normally have around 180-200 ohms dc resistance. Sometimes you just can't see the damage. If there is no noise from shaking the tank, then the output transducer or return circuit or wiring is suspect. If you pull out the RCA plug from the output side of the tank, you can touch the tip of the plug and see if there is a buzz.

Almost all Kustom amps use switching transistor circuits to turn on and off the FX, so there is no audio signal carried on any of the footswitch cables. It could be possible that the trem circuit is putting a pulse into power supply. Maybe a bad cap.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [stevem](#) on Sat, 16 Aug 2014 13:15:12 GMT  
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One of my k100-2 amps has had a tremolo tick since I bought it. Five months ago I tried the shot gun approach to fixing it with replacing all the electrolytic caps in the trem circuit, testing the diodes (in circuit) and pulling and testing two of the transistors before running out of time, result? No fix yet!

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Subject: Re: K100-2 Hiss but no other output  
Posted by [Jerrybass1955](#) on Sun, 17 Aug 2014 01:00:33 GMT  
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Thanks for the tip ChicagoBill. I read 175 on one end and infinity on the other. So, I opened up the end with infinite resistance. Lo and behold, One of the wires to the transducer was disconnected (how does that happen?). I am out of town for the weekend and that was as far as I got, but I am hopeful that might be the only problem. Thanks again for the great tips!

Yet another question. While I was disconnecting wires to the board, one of the red wires to the power transistors was connected to a very rusty terminal that broke off as I took the nut off. There are still a couple of usable threads, but I wonder if there is any problem with using the other terminal on the opposite side of the transistor which is still in pretty good shape. I assume they are both connected to the power transistor case?

Thanks again,  
Jerry

P.S., on the way out of town, I stopped in at the pawn shop that I got the amp to tell the owner that I got it running. He was surprised but not upset and wants me to work on some other amps he has that have problems! LOL

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Subject: Re: K100-2 Hiss but no other output  
Posted by [chicagobill](#) on Sun, 17 Aug 2014 01:32:36 GMT  
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Good, I hope that the broken wire will fix it up.

Yes, both screws are connected to the case/collector, so if the red wire can reach over, you can use the second screw for the contact.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [Jerrybass1955](#) on Tue, 19 Aug 2014 16:04:22 GMT  
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An update:

I re-soldered the broken reverb wire and technically it works, but is very very sensitive. I think the springs may be too saggy to give good results. That said, there is a post suggesting increasing the value of R170 rather drastically and I may try that and see what happens. Maybe a trim pot there. But a new pan may be in my future.

I noted that the PS caps are allowing some hum to ride on the supply so I replaced them with 10,000uF caps and the supply is quite solid now and the amp is noticeably quieter.

But ..... since changing out the PS caps, I find that the amp oscillates when you switch it off until it is completely off!!! Very strange!!!

The tremolo still has a tick/thump when turned all the way down. and still goes unstable with speed above about 8. I am going to try upping R152 to 15K and check the remainder of the circuit out more carefully.

In probing and scoping around at random, I noted that there is an oscillation at Q122, but the + and - 8V power supplies are rock solid and if I recall, read 8.4 and 8.5. Gotta look into this further. Maybe a degraded cap in the neighborhood and maybe that is the source of the oscillation when I turn off the amp?

I also checked the value of 8 or 10 resistors and found none that were out of spec. Most were within 5%, so perhaps this amp hasn't seen hard use. Will continue checking as I go.

Any comments or thoughts on any or all of the above will be appreciated. Thanks for helping me get this far.

Jerry

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Subject: Re: K100-2 Hiss but no other output  
Posted by [chicagobill](#) on Tue, 19 Aug 2014 16:49:02 GMT  
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Try and isolate the turn off oscillation to the power amp or the preamp, that will at least divide the search into smaller sections. You can ground out the audio at the input of the power amp and see if the sound is coming from through the audio path. Most likely a failing tantalum cap somewhere.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [Jerrybass1955](#) on Wed, 20 Aug 2014 02:22:29 GMT  
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Did a little work on it today and the turn off oscillation is clearly from the tremolo. It is in time with the tick/thump that bleeds through. Maybe fixing one will fix the other!

I also plugged in a footswitch for a different amp to see if it would work and it sort of did. Wow was the amp ever near dead quiet when I turn off the effects with a foot switch! Clearly I have some work to do to quiet down the effects circuits!

Jerry

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Subject: Re: K100-2 Hiss but no other output

Posted by [daveobergoenner@gmail.com](mailto:daveobergoenner@gmail.com) on Wed, 20 Aug 2014 13:58:08 GMT

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Jerry:

Two things I always try to get changed first on any older piece of gear are the aluminum electrolytic caps, and especially any tantalum electrolytic caps.

The aluminum caps usually just dry out, the ESR goes up, and they usually just gradually stop working. Like your power supply caps getting weak. They can sometimes short, but that's far less common.

Tantalum caps are a different story. They can dry out, and just stop working, but their failure mode most often is to SHORT. If the cap is across the power supply as a filter, you can imagine the mess that can cause. If they are just in there to block DC, they suddenly start passing the DC they are supposed to be blocking, and can damage the following stages.

Tantalum caps are BAD NEWS! For the longevity of your amp, you really need to get rid of them all before they cause serious problems for you down the road.

You may be asking, why would they be used then.?. Well, they do very accurately hold their value over the long term...usually till they short. They are very good for timing circuits...like setting the repeat rate of your tremolo / vibrato. They were quite expensive back in the days these Kustom amps were built. It's not that Kustom was cutting corners, they thought they were putting in the best possible parts money could buy. We didn't know at the time that they would become so likely to short after many years of use.

BTW, tantalum caps are most likely to short when the amp has been sitting for a long time...like years, and then powered up. In daily service, they are not nearly as likely to short. I see this a LOT in older broadcast gear that has been sitting for years, then someone plugs it in, and the thing starts smoking, or catches fire!

Getting rid of all the tantalum and aluminum electrolytic caps in your amp would still be advisable. It will sound better, be quieter, be less likely to oscillate, and last a lot longer before the next failure.

I have very good results with the Panasonic FM series caps. They are rated for the higher 105 degree temps, are low ESR, and last a long time. I test every cap before installing it for value and

ESR, and these FM series are consistently right on their rated value too...generally not more than +5%. That makes them pretty good replacements for timing circuits where tantalum caps were originally used.

Just my 2 cents worth,  
Dave O.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [Jerrybass1955](#) on Wed, 20 Aug 2014 16:02:19 GMT  
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Thanks for the advice Dave. You have my attention!!

I looked at the Panasonic site and at DigiKey and Mouser at the caps. I notice that the lowest value is 22uF. What do you do about lower value caps like the 6.8 and 10uF caps in this circuit (Rev. 4, btw). In most instances, I assume you can just use a larger value with the only consequence being that lower frequencies will get passed. I have some nice polyester film and orange drops that I can use for 1uF and below, but what is your advice on the lower values?

Jerry

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Subject: Re: K100-2 Hiss but no other output  
Posted by [chicagobill](#) on Wed, 20 Aug 2014 17:39:42 GMT  
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I'd recommend the Panasonic FC series caps.

As for the tantalum caps, I'm not ready to write them off as much as Dave, but I haven't had them burst into flames before.

Kustom was about the only company using them back in the day for guitar amps. I have not seen any great failure rate in any of the Kustoms that I've seen. I see more failures in regular electrolytics of the same age than of the tantalums.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [daveobergoenner@gmail.com](#) on Thu, 21 Aug 2014 03:10:27 GMT  
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Agreed...just about any caps from Panasonic are very good quality. Matsushita has always made their own electrolytic paste, and as a result have never suffered the expanding cap syndrome so common in PC's.

Bill, you just haven't lived till you've powered-up a Harris FM exciter with about 50 of the darn

things on-board, and a bunch of them let go, and the magic smoke all pours out at the same time. Had to evacuate my shop for over an hour. It still smelled like rotten eggs and burning garbage in there a week later.

Thus began my hatred of tantalum caps! I can't tell you all the grief they have caused me. Broadcast gear from the 70's and 80's is loaded with them.

Here's a quote from just one (of MANY) sites I found tonight posting others techs hatred of them... "The current flow can generate a good amount of heat, which can start an exothermic reaction where the tantalum and manganese dioxide act as a type of thermite. Yes, that capacitor, with enough energy, becomes a tiny thermite grenade. The flame from an exploding tantalum capacitor is usually enough to ruin nearby circuitry. The worst part is that they often fail short." I've had them burn holes right through the circuit boards and vaporize traces.

I really don't think I want "thermite grenades" in my Kustom (or the smell)...Whew!

Dave O.

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Subject: Re: K100-2 Hiss but no other output  
Posted by [Jerrybass1955](#) on Thu, 21 Aug 2014 17:52:48 GMT  
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Here is an interesting paper about tantalum caps. <http://www.avx.com/docs/techinfo/rmtant.pdf> Interestingly, it appears that some caps are starting to incorporate fuses to assure that they fail as an open circuit.

I think I am convinced that at least in areas where there is significant voltage (with respect to voltage rating) on the cap, I will ditch the tantalums and get some aluminum electrolytic caps for that application. I may just get some 50V caps for all applications to give a margin of safety. I have never had a tantalum do the flash-bang, but I have opened up a TV or two to find ribbons of foil everywhere from an aluminum electrolytic failure.

While waiting for some other parts to arrive, I decided to go ahead and do the three prong AC conversion and install a panel mount fuse holder in case the surge from the bigger PS caps starts popping fuses (or in case I make other goofball errors while doing the repair). In the process, I broke my only fuse holder! So, looks like I have a little setback, but I'll be back on it as soon as I can.

Since reverb tanks are pretty cheap, I went ahead and ordered a replacement so I can use it for comparison and figure out if the problem is with the circuit or tank. I'll go with whatever sounds best.

BTW, do any of you have experience with Nichicon electrolytic caps? I only ask because there appears to be a wide selection with good specs (and my next door neighbor is a Nichicon rep!).

I'll be back!  
Jerry

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Subject: Re: K100-2 Hiss but no other output

Posted by [daveobergoenner@gmail.com](mailto:daveobergoenner@gmail.com) on Thu, 21 Aug 2014 20:45:44 GMT

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Jerry:

Nichicon caps would be my close second choice. Very good quality for the most part.

They did have a few types that suffered the expanding cap syndrome a few years back (bad electrolyte paste), but I think they have corrected all those problems now. Just make sure you get fresh stock. Your friend would probably know more about all that than I do. Perhaps you can update us after speaking with him about which type would be best for service in our Kustom amps.?. I do usually try to go with 105 degree C rated caps, just because they seem to last longer, and be of better quality.

I was worried about the turn-on, in-rush current blowing fuses on my K200 head too after I more than tripled the original factory filter cap values, but so far, the original fuse has not blown...much to my surprise. I would rather have an easily replaceable fuse socket on the rear of the amp myself, and may still add one.

I'd also like to add an MOV after the fuse to protect the amp from surges and over-voltage. Some may think that's silly, but way back in the 70's my band had an outdoor gig, and the generator we were getting power from went crazy, and started pumping out about 200+ volts. Our Kustom amps and PA were OK, only suffering blown fuses. The guy with the Hammond B3 and a different brand of solid-state amp was not so fortunate.

I've also had stage hands inadvertently put 240 up to the 120 volt sockets on the stage. Trust me, it happens.

Anyway, a heavy duty MOV after a replaceable fuse should protect my amp.

Dave O.

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Subject: Re: K100-2 Hiss but no other output

Posted by [stevem](#) on Fri, 22 Aug 2014 10:51:34 GMT

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I like to go with the 105 rated caps also where I can and I do not mind installing a radial cap in place of a axial one, I just make sure to dab some black silicone at its base to hold it basically solid to the board.

In regards to the MOV I use them all the time but you must take note that a 130 volt one will fail

just due to the normal peak AC voltage in most parts of the country now, but this failure will take some 5 to 6 years, but there brake down starts sooner!

I use 150 MOVs.

In regards to start up surge Dave I like to stick in Thermisters like Fender uses!

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Subject: Re: K100-2 Hiss but no other output

Posted by [Jerrybass1955](#) on Fri, 22 Aug 2014 15:44:20 GMT

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Hi Folks,

While I am waiting for capacitors and some other misc. parts (Aluminum electrolytic), I polished off replacement of the fuse holder and power cord, etc. I put a clamp-on ferrite on the cord and now only have to replace the bridge rectifier (which should be a no brainer).

While I had the soldering iron hot, I took a shot at the tremolo and changed the resistor R152 to 15K and replaced C122, C123 and C124 with some caps I had around. Some parasitic oscillations went away, but otherwise no change in the tremolo problems. The tremolo speed seems to have increased, and I am guessing it is the 15K resistor, but the other components are also a bit different in measured values than the parts they replaced, so possibly a combination of things.

Since I now no longer have "hiss but no other output" I will probably start a new thread or two dealing with the Tremolo and Reverb problems so they might be easier to spot in the unlikely event I do something useful to others.

Oh yea, I have some MOVs and will likely put one in this beast too. I do that in the tube amps I have build.

Thanks again to everyone for your help.

Jerry

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Subject: Re: K100-2 Hiss but no other output

Posted by [daveobergoenner@gmail.com](#) on Fri, 22 Aug 2014 19:35:10 GMT

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Well Jerry, you are certainly headed in the right direction. I'd say getting rid of the oscillations is a pretty important, major step.

Good idea to start up a new topic for reverb / tremolo.

Your reward will be a really great amp which will run for many years.  
And just look at all the fun you've had!

Dave O.

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