
Subject: My journey so far fixing my new K200A-2 head
Posted by [claussoegaard](#) on Thu, 28 Jul 2022 00:50:37 GMT
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I received this amp last week - the seller already warned me of a very loud "noise floor" on the effect channel. The non-effect channel is super quiet and sounds great. But I set out to fix the effect channel. I am just sharing my experience here. I am obviously more than open to any comments or suggestions from anyone, but mostly just posting here for posterity and in case it's helpful for others.

This amp uses two 102 pre amps, a 302A/B effect board (trem/vib/rev), 502 (positive) and 602 (negative) regulator boards and a 702 power amp board. It took me a while to track down all the schematics and the main layout, but Steve helped me out - thanks Steve!

So far I have found two issues.

1. Incorrect wiring between boards

The effect channel is supposed to be wired like this, as far as signal goes

[PC102 pre amp] -> [PC302 effects] -> [PC702 power amp]

However, someone had wired it up backwards. Like so

[PC302 effects] -> [PC102 pre amp] -> [PC702 power amp]

This was the cause of the really loud noise floor. It sounded like white noise or static, not your usual 60 cycle hum. I fixed up the wiring and boom, the noise floor was gone. As long as the effects are turned off/down, both channels now sound equally quiet and great.

2. Issue with negative regulator board (PC602)

The negative regulator board is only used to supply -23V to the effect board (302A/B). I noticed that it was in fact supplying around -40V! It was essentially just taking the -40V (-34V on the schematic) it gets from the main power supply and passing it straight through somehow. No power regulation was happening. One of the three 2N3638 transistors on the board turned out to be bad, there was a short on one of the junctions. I decided to just replace all three transistors with some NOS 2N3638 I found on eBay.

I have no reason to think any of the remaining components have issues. I lifted one leg of all resistors, and they all measured correctly. The 25uF cap also measured just fine on both my multimeter, and with a ESR tester.

Now this is a little odd. It didn't fix the issue, but it changed things. Instead of -40V, it now supplies around -5V.. The effects sound better and less noisy now, but definitely still fairly noisy. As far as I can tell, the 36892 transistor also seems OK, but I have ordered some 2N3055 that I'll try and replace and see what happens. Just for Q1. All the remaining 36892s don't show any signs of having any issues.

That's where I'm at for now. Will probably share more when I get around to continuing this.

Subject: Re: My journey so far fixing my new K200A-2 head

Posted by [stevem](#) on Thu, 28 Jul 2022 10:30:23 GMT

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Thanks for posting what you are doing and what you have found!

Until you get the replacement Transistors and maybe just for S & Gs you might try swapping the 3055 from the 502 to the 602 and see if the good voltage output you have from the 502 changes.

Another thought is that the the high voltage out of the leaky Transistor has exceeded what one of the other Transistors is rated for and now even though it may test ok, it breaks down when hit by a much higher voltage then what a tester can provide.

Subject: Re: My journey so far fixing my new K200A-2 head

Posted by [claussoegaard](#) on Thu, 28 Jul 2022 14:59:27 GMT

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That's a good point Steve! I also wonder - this amp was made for the days of 115V, not the ~125V we have nowadays. I assume that's why my main +/- 34V lines are actually more like +/- 40V. And the 502 board actually outputs +26V, not the +23V. So that means the difference in potential between negative and positive power the 602 board gets, is -40V to +26V (66V) and not -34V to +23V (57V). I don't know - maybe that's fine and not enough to cause problems, but maybe some of those transistors were already pushed close to their limits in the days of 115V? If I had my variac on hand, that would be something to play around with.

That actually brings up something I've been pondering. Do people ever replace the power transformers on these things, for something that produces the "stock" DC voltages from today's ~125V? Or maybe other tricks to bring the DC further down after the PT? Like a choke or voltage divider or something. I have no idea what the power transformer replacement market looks like for these Kustom amps.

Good idea with swapping Q1 and Q2 around to see what happens! I might try that while I wait for the new ones to arrive.

Subject: Re: My journey so far fixing my new K200A-2 head

Posted by [chicagobill](#) on Thu, 28 Jul 2022 19:39:34 GMT

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Just a few thoughts, there is no need to replace the power transformer on these amps. The increased line voltages have been around since the 1970s and there hasn't been a huge number

of transformer related amp failures occurring. If there was a problem, it would effect all amp brands made before the increased line voltages.

The negative regulator circuit is a tracking type regulator. It takes the +23 volts and uses it as a reference to produce the -23 volts. Make sure that the +23 volt line is connected to the negative regulator board input.

On a K200A-2 the negative supply is there for only one purpose, to supply the effects switching circuits. None of the preamp or effect signal circuits use minus voltages. If I remember correctly, the K200A-1 does not even have a 602 board installed.

Subject: Re: My journey so far fixing my new K200A-2 head

Posted by [steven](#) on Thu, 28 Jul 2022 19:41:24 GMT

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The 34 volt label is wrong , it's even too high for the unloaded AC voltage that the Pt puts out which is 31 volts on each leg.

The dc power supply rails must be 40 volts for the amp to output 100 watts rms, or 200 watts peak, there's no getting around that!

I keep meaning to correct that wrong 34 volt labeling every time I send that schematic to someone, but I forget.

Sorry!

Subject: Re: My journey so far fixing my new K200A-2 head

Posted by [claussoegaard](#) on Thu, 28 Jul 2022 19:45:37 GMT

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Oh nice! That's good knowledge. Well, then the DC supply rails are pretty spot on! That's good. My money's on the 36892 being bad then. We'll see. Whenever I get around to "round 2" on this amp, I'll make sure to write a follow-up post or extend this one.

Subject: Re: My journey so far fixing my new K200A-2 head

Posted by [steven](#) on Fri, 29 Jul 2022 22:43:37 GMT

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To answer your question about replacement power transformers here's what I have found/ used, note that the Toridal types are a upgrade.

Frank 200 type

Hammond 182P15 Torrid type

K100.

Triad F-272U non Torrid

Hammond 182N18

Avel Lindberg Y236654

Both are Torrid.

K200A non Frank type & K200B
Triad F-273U non Torrid

Hammond 182G18
Avel Y236804
Both Torrid.

The Kasino 100s and 200s would use these same spars.
