
Subject: K200 Repair PC203 Board Issue
Posted by [g2s](#) on Thu, 25 Mar 2021 03:39:15 GMT
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Hey all,

I have a K200-B1 that I'm on the home stretch of repairing.

It has low output when plugged into the 'Boost' channel that runs through the PC203 board.

Everything is working up until Q203. I have replaced Q203 with a 2N4401.

Plenty of signal at the base, low signal at collector. Voltages are B: 2.4VDC C: -0.55VDC E:GND.

The schematic shows the Base voltage should be +6V. Is that right? Possible mis-print? I can only see how it is connected indirectly to the negative rail, so how can it have a positive voltage?

Not sure what else to check here. Here is the schematic: shorturl.at/xLUV8

Any suggestions are appreciated! A lot of great info on this forum I am continuing to read through it now.

Thanks in advance.

Subject: Re: K200 Repair PC203 Board Issue
Posted by [stevem](#) on Thu, 25 Mar 2021 09:54:59 GMT
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Hi to ya!

Don't use the pc203 schematic on our site , use pc303 and look at Q303.

That base voltage should be + .6 , not plus 6 volts, that 203 schematic lost its dot in the copy process somehow!

If you have no proper way to test out C222 for leakage and ESR then I would for atleast replace it with something close, like even a 5 uf filter at the needed voltage or better, or even a 50 uf of the same voltage detail.

PS, 203 is not connected to the -8 volt rail .

I would also confirm that c212 is not leaky just to cover all the bases!

I would also test or replace c213 and check if r219 is within its tolerance range .

Let us know how it goes!

Subject: Re: K200 Repair PC203 Board Issue
Posted by [g2s](#) on Thu, 25 Mar 2021 14:12:04 GMT
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Thnaks for reply Steve.

Quote:Don't use the pc203 schematic on our site , use pc303 and look at Q303.
If someone wants to send me the pc203 schematic I can add a dot that looks original. Just let me know and I'll PM an email address.

Quote:If you have no proper way to test out C222 for leakage and ESR then I would for atleast replace it with something close, like even a 5 uf filter at the needed voltage or better, or even a 50 uf of the same voltage detail.

I do have means to test for ESR and Leakage but if I'm going to pull the cap I'll just replace it. I suspect shotgunning all those 50 year old tantalums would not be a bad idea, but I prefer to only change things I suspect and I wasn't sure what to suspect here.

I pulled C222 and replaced with a 33uf electrolytic. The old tantalum reads 30uf ESR 1.4ohms, not bad.

No change to base voltage of Q203 -0.56V.

Quote:I would also confirm that c212 is not leaky just to cover all the bases!

I would also test or replace c213 and check if r219 is within its tolerance range .
R219 seems fine, 11K.

Replaced C212, no change.

Replaced C213, no change.

Quote:PS, 203 is not connected to the -8 volt rail .
I see bottom line of the schematic Green Wire -8V, no? My board definitely has the green wire with -8V. Not sure what I'm missing.

Thanks again!

Subject: Re: K200 Repair PC203 Board Issue
Posted by [stevem](#) on Thu, 25 Mar 2021 15:44:39 GMT
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Look closer!

The negative voltage output side of r220 does not connect anywhere to Q203, it just crosses Q203s base lead on the schematic.

Subject: Re: K200 Repair PC203 Board Issue
Posted by [g2s](#) on Thu, 25 Mar 2021 16:28:18 GMT
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Quote:Look closer!

The negative voltage output side of r220 does not connect anywhere to Q203, it just crosses Q203s base lead on the schematic.

When I read "203 is not connected to the -8 volt rail" for some reason I thought you meant the rail did not connect to PC203, the actual board. I see now you meant Q203. Got it. Misunderstanding as the numbers are the same.

In any case I swapped in a new transistor for Q204 and it restored positive voltage at base Q203.

Now voltages are:

Q203: B: +0.6V C: 3.95V E: GND

Q204: B: 4V C: 7.8V E: 3.3V

R219 is spot on 10k.

Still a long ways off from the schematic.

Oddly I am not seeing much signal at Q203 base (something like 20mV p-p) but am getting a large signal (2Vp-p) at collector.

Q204 base and emitter have the same signal, no amplification is happening.

The amp is now passing sound and sounds 'ok', but is obviously not there yet.

Subject: Re: K200 Repair PC203 Board Issue
Posted by [chicagobill](#) on Thu, 25 Mar 2021 17:32:09 GMT
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The missing voltage at the collector of Q203 is the concerning thing here. Have you tested Q204?

Is the signal weak in both positions of the bright switch?

Subject: Re: K200 Repair PC203 Board Issue
Posted by [g2s](#) on Thu, 25 Mar 2021 19:16:30 GMT
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I swapped Q204 and got positive voltage at Q203. Few other issues with the amp but was able to work through them all.

Voltages are slightly higher than schematic (e.g. 3V at Q203 Collector) but this seems fine as the schematic for PC105 calls for 2.9V there and the circuits are the same.

Amp is sounding good and putting out it's full rates power. In the end I put in all new transistors in PC203, made for a substantially lower noise floor.

Thanks for all input.

Subject: Re: K200 Repair PC203 Board Issue
Posted by [stevem](#) on Fri, 26 Mar 2021 20:22:07 GMT
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Great news to hear!
