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Subject: K200b-2

Posted by [Iowa Boy](#) on Fri, 25 Sep 2015 03:58:21 GMT

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Okay guys starting to repair all these amps and getting them up to par. This K200, the reverb and tremolo neither worked. Broken wires inside pan was the reverb issue. Fixed, however when I plug in my generic double footswitch if I just push the plug so the tab connects to the jack, switch works just like it is suppose to...even lights up. However when the plug is pushed all the way into the jack, footswitch now doesn't work at all and no light. Stereo jack so I understand that the tip controls one circuit and the other part of the shaft separated by the insulator is the other and then remainder after the second insulator is the ground.

Tremolo.....nothing.

Where do we start?

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Subject: Re: K200b-2

Posted by [Iowa Boy](#) on Sat, 26 Sep 2015 02:27:38 GMT

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Man I could really use some help here guys. This things taking up bench space.

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Subject: Re: K200b-2

Posted by [pleat](#) on Sat, 26 Sep 2015 02:48:38 GMT

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K200B-2 does not need a footswitch to turn on the reverb or trem You mentioned a footswitch with a Light? These old amps won't use a lighted footswitch so not sure whats going on with that. The footswitch is only needed to turn off the effects as they short to ground. The reverb wire to the jack is the Tan wire and the Grey wire is for the tremolo/vibrato. May be something as simple as the jack has shorted out so the trem/vibrato won't turn on. You might want to unsolder the wires or even remove the Jack from the chassis to see if things will work. If so, then you need a new jack.  
pleat

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Subject: Re: K200b-2

Posted by [Iowa Boy](#) on Sat, 26 Sep 2015 03:59:29 GMT

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Thanks Pleat....I'll try that and see if it works. My footswitch is a generic Marshall I think. It does work on other amps I have and does have a red led light on it that comes on when you turn on reverb.

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Sat, 26 Sep 2015 04:11:51 GMT  
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Well crap. Knew that was just too easy. Any other idea's? When you turn the intensity pot off, it does make a pop sound so at least its getting power to the circuit I'm guessing.

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Mon, 28 Sep 2015 01:18:34 GMT  
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Hey Steve or Bill .....need a little help here. This things collecting dust.

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Subject: Re: K200b-2  
Posted by [stevem](#) on Mon, 28 Sep 2015 10:19:27 GMT  
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What do you mean things light up, on the foot switch?  
The only Kustom amps that have a circuit for lamp indicators in a foot switch is the metal face K150 and 250s!  
You need first do a test out on that foot switch Jack to see which wires have this strange voltage on them.

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Mon, 28 Sep 2015 14:39:00 GMT  
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This is a generic footswitch I bought new online. It does work on two of my other 200's to turn on the reverb. The red LED light comes on when you want reverb, the pot of course has to be turned on. The plug on it is a standard mono.

So are you saying that there should not be any voltage at the footswitch jack at all?

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Subject: Re: K200b-2  
Posted by [chicagobill](#) on Mon, 28 Sep 2015 17:05:21 GMT  
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So is your footswitch is a single or a double?

All of the K200 series amps used electronic switching to turn on and off the different effects. There may be a certain amount of voltage on the footswitch jacks, but this is a byproduct of the design and is not meant to light up the led in the footswitch.

---

The dead vibrato could be caused by a problem with the switching circuit, the low frequency oscillator circuit, or the audio modulator circuit. I will assume that you have a pc303 board in there.

As Pleat has noted, you do not need a footswitch to turn on the effects in a B-series amp. So for now don't plug one in. Set the depth control full on and the speed control somewhere in the middle.

Look at the back of the depth control and find the three terminals that come off the back of the pot and come through the pc board. You will need to measure the voltage from the middle terminal to ground with your voltmeter set to read dc voltage. Connect the black lead to the chassis and the red lead to the center terminal of the pot. I don't remember the exact layout of the board so try and find a spot that will make the board connection easy.

Now carefully turn on the amp and watch the meter. If the LFO is running, you should find a fluctuating voltage reading on the meter. If it's there, then if you rotate the speed control the rate that the voltage fluctuates should increase or decrease with the changes in the speed pot setting.

If you do not find the voltage there, then you will need to test the oscillator circuit and the switching circuit.

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Mon, 28 Sep 2015 18:43:22 GMT  
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The footswitch is a double...the single that I have used on other 200's didn't work for some reason.

I'll try what you said and get back to you. Thanks.

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Mon, 28 Sep 2015 19:02:22 GMT  
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The board number looks to the number you said. The intensity pot only has two wires a black and a grey there is no middle wire. I tried both wires separately to ground and turned the pot and no reading.

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Subject: Re: K200b-2  
Posted by [chicagobill](#) on Mon, 28 Sep 2015 19:30:13 GMT  
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The wires that you are talking about are the switch wires. There is a switch on the back of the pot that turns on and off the vibrato. The connections that I am talking about connect to the pc board

itself.

If you look at the back of the pot, along the outer rim, there is an open section where the carbon trace comes out of the case and is connected to some crimped on terminals. The ends of these terminals pass through the pc board and are soldered to the traces underneath.

If you've ever looked at the back of one of the pots in your guitar it will have the same three terminals, but in the guitar the terminals end in a loop for wires to be connected to. On these pots, the terminals are made to fit the pc board.

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Mon, 28 Sep 2015 19:41:25 GMT  
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Okay I think your talking about the pins from the pot that go into the board....correct. I did see those and the middle pin is black .....at least this is were the middle pin should be. No voltage.

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Subject: Re: K200b-2  
Posted by [chicagobill](#) on Mon, 28 Sep 2015 19:49:49 GMT  
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I'm not sure that I understand the black box thing, but if you get no voltage there then the LFO may not be running.

I think that I will have to pull open a head to see where things are located on this board. My guess would be that if I ask you to find capacitor C330, you're gonna need some direction.

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Mon, 28 Sep 2015 20:14:08 GMT  
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Yep that's a definite yes.

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Subject: Re: K200b-2  
Posted by [chicagobill](#) on Tue, 29 Sep 2015 17:33:13 GMT  
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Okay, no black box but a tarnished black lead from the pot. Can you take a clear photo of your pc board and email it to me? Maybe a couple of shots of different sections.

And I wanted to test something that Pleat mentioned before about the footswitch jack. Try unscrewing the nut holding the footswitch jack in place and pull the jack out from the front panel.

Don't lose the lock washer and be sure that the jack doesn't short out anything while it's hanging there.

Now turn on the amp and see if the vibrato is working. Next read the voltage on the two wires that connect to the jack. One should be grey and the other one tan. Connect the black meter lead to the chassis and then touch the red lead to the end of each wire at the jack. There should be a small negative voltage on the grey wire and a small positive voltage on the tan one.

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Subject: Re: K200b-2

Posted by [Iowa Boy](#) on Tue, 29 Sep 2015 18:00:20 GMT

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I don't know how to post to this site, but think I still have your email address. Will send pictures there. I'll pull the jack and take readings.

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Subject: Re: K200b-2

Posted by [Iowa Boy](#) on Tue, 29 Sep 2015 18:07:09 GMT

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Yes the voltage is just like you said.....little over 5 volts.

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Subject: Re: K200b-2

Posted by [chicagobill](#) on Tue, 29 Sep 2015 21:29:24 GMT

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I don't remember what sort of meter you have, does it have a diode test function?

I know that you can test voltages, so let's start there. If you look at the top edge of the board right next to the RCA reverb jack that is closest to the speed pot, you will see three round button transistors. Two are smaller and have white midbands and the third one is a little larger and is brown in the middle. From right to left, these three transistors are Q310, Q311 and Q312.

Directly below Q310 (closest to the jack) are two resistors. One is marked with the color bands Blue-Grey-Orange-Silver (68K) and the other one Red-Violet-Orange-Silver (27K). You want to read the voltages on each side of the two resistors.

Connect the black meter lead to the chassis and then touch the red lead to the right end of the 68K resistor. There should be about +8 volts there. Next touch the red lead to the left side of the 68K resistor. There should be -1 volts there.

Both left leads of the resistors are connected together by the pc board so the left side reading on the 27K resistor should also be -1 volt. The reading on the right end of the 27K resistor should be about -5 volts.

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looking at before. If you look at the transistor there are three leads coming out of the bottom in a triangular pattern. The leads are offset so they are all close to the outer rim of the case. On Q310 (closest to the RCA jack) the middle lead is oriented closest to the edge of the board. This lead is the Base. Looking from the top of the case, the lead to the right is the Emitter and the lead to the left is the Collector.

To test the transistors you will need to touch one meter lead to the Base and then touch the other meter lead to the Emitter and Collector. Then you will reverse the two meter leads and see how the two sets of readings compare.

So with the amp off and unplugged, set your meter to read ohms. Hold the red lead to the Base and touch the black lead to the Emitter and then the Collector. Make note of the meter readings for each contact. Then hold the black lead to the Base and touch the red lead to the Emitter and then the Collector. Now compare the two sets of readings. With the leads connected one way, you should get a low reading on the meter, and when you reverse the meter leads you should get a higher reading.

Finally you need to hold the red lead on the Emitter and touch the black lead to the Collector. Then again reverse the meter leads and compare the readings.

Do this to Q310 and post your readings.

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Wed, 30 Sep 2015 02:39:24 GMT  
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Okay did exactly what you said.....reading from base to emitter was 26.9 K, didn't change when lead were reversed. Reading from base to collector was 48.6 K also didn't change with leads reversed. Reading from emitter to collector was 31K....same reading when leads were reversed as well.

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Subject: Re: K200b-2  
Posted by [chicagobill](#) on Wed, 30 Sep 2015 03:34:34 GMT  
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Well, I'm not sure if the readings are that way because of the meter or if the transistor is bad or if there is something else happening here.

So, try testing the next transistor in the line there. Because the transistor is rotated the base is still in the middle, but the emitter and collectors are opposite to the other transistor. If you get the same readings as above, then the meter is suspect if you get more normal readings, then the transistor is suspect.

What range do you have the meter set to?

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Wed, 30 Sep 2015 03:55:36 GMT  
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Okay....meter is set on ohms.....with red probe on base 3.5M at collector; 31K at emitter; with black probe on base collector shows OL, with probe on emitter 31K. Emitter to collector shows 3.6M, reverse the probes OL.

---

Subject: Re: K200b-2  
Posted by [chicagobill](#) on Wed, 30 Sep 2015 04:09:52 GMT  
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Okay, you are getting more normal readings there. Try testing the larger third transistor the same way.

You may have to remove the first transistor from the pc board to do a final test.

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Wed, 30 Sep 2015 04:56:48 GMT  
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With black probe on base.....both collector and emitter 3.6M With red on base....both OL. Emitter to collector 13.5K either way.

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Subject: Re: K200b-2  
Posted by [chicagobill](#) on Wed, 30 Sep 2015 06:26:02 GMT  
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I tried using my meter set to ohms and tested the same transistors. I got similar readings as you did, so using your meter may be a problem for testing the transistors.

We may have to switch to voltage readings instead.

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Wed, 30 Sep 2015 18:14:10 GMT  
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I buy a lot from Parts Express, Freight Harbor is a lot of cheap imported junk I think. What do they have in the way of test equipment that you would suggest? I do have an account with Johnstone Supply but they are not an electronic parts store but they do have test equipment as well.

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Subject: Re: K200b-2

Posted by [chicagobill](#) on Wed, 30 Sep 2015 19:37:33 GMT

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I agree with you on Harbor Freight stuff, but you wanted cheap and Free was as cheap as I could think of.

I go in and buy the rubber gloves which are cheap and surprisingly not made in China. And if the flyer has an coupon for a free item, sometimes I get one if it's something that I can use.

Parts Express is where I order speakers and some parts, but the big suppliers are usually better stocked and cheaper for most electronic stuff.

Sometimes I get in a speaker cabinet repair that has blown woofers, and reconing would cost more than the cabinet is worth. So PExpress is a great source for replacement drivers.

What make and model is the meter that you have now? I have two basic meters. My main bench meter is a 25 year old Radio Shack unit that still works just fine. My portable meter is a 15 year old Fluke.

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Subject: Re: K200b-2

Posted by [Iowa Boy](#) on Wed, 30 Sep 2015 21:35:30 GMT

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Mines a Fluke 16 multimeter.

So where do we go from here?

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Subject: Re: K200b-2

Posted by [Iowa Boy](#) on Wed, 30 Sep 2015 21:43:06 GMT

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Parts Express has a Triplet 1101-B meter that has diode check and resistor test for \$40

I also found an old meter of mine...A.W. Sperry DSA-400 Digisnap . Instructions says it can test diodes but I don't see that function on the meter only continuity, ohms, DCV ACV and ACA.

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Subject: Re: K200b-2

Posted by [chicagobill](#) on Wed, 30 Sep 2015 22:24:47 GMT

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Check your manual, according to the web, the Fluke 16 has a diode test function under the continuity setting.

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Wed, 30 Sep 2015 22:38:20 GMT  
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Your right continuity and diode are the same function.

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Subject: Re: K200b-2  
Posted by [chicagobill](#) on Wed, 30 Sep 2015 23:14:56 GMT  
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On my Fluke you turn the selector switch to the continuity setting and the you push the selector button until the diode symbol shows up in the screen.

Try your meter to test the transistors again using the diode test setting. In one direction you should get low readings somewhere around 0.6 volts and OL in the other.

---

Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Thu, 01 Oct 2015 01:03:05 GMT  
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Collector .647 Red probe base emitter .672 emitter -collector 2.163 collector -emitter  
Collector 2.35/OL Black probe base emitter 2.3

Q310

---

Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Thu, 01 Oct 2015 01:06:50 GMT  
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collector .637 red probe base emitter .668  
OL black probe base emitter OL/2.134

emitter to collector OL reversed 2.08

Q311

---

Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Thu, 01 Oct 2015 01:09:33 GMT  
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collector OL red probe base emitter 2.341

---

.696 black probe base emitter .700

emitter to collector 2.13 reversed 2.11

Q312

On Q310 collector to emitter was 2.163 reversed it was .687

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Subject: Re: K200b-2

Posted by [chicagobill](#) on Thu, 01 Oct 2015 02:23:38 GMT

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Those results look better. Now test the last transistor in the section. It's straight down from Q313, underneath the large orange drop cap between the two pots.

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Subject: Re: K200b-2

Posted by [Iowa Boy](#) on Thu, 01 Oct 2015 02:49:45 GMT

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collector 2.157 black probe base emitter OL; collector .703 red probe base emitter .695; collector -emitter 2.153 reversed 1.732

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Subject: Re: K200b-2

Posted by [chicagobill](#) on Thu, 01 Oct 2015 03:34:11 GMT

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Well, the good news is that all of the transistors seem to be okay. The bad news is we haven't found the problem yet. The next step will be to start reading voltages and comparing them to the schematic.

All of the measurements will be to ground, so the black lead will be connected to the chassis and the red lead will connect to different points in the circuit. As long as you are careful not to short anything with the tip of the red lead you should be okay.

Keep your hands away from any of the 120 volt ac sections like the back of the power switch, the fuse and the thermal cutoff switch.

The preamp section runs on plus and minus 8 volts dc, so the maximum voltage you will be dealing with is 16 volts or so. Not enough to really hurt you, but if you short the wrong things together you might see some unwanted fireworks. Can you read the schematics drawings?

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Subject: Re: K200b-2

Posted by [Iowa Boy](#) on Thu, 01 Oct 2015 03:47:07 GMT

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As long as there not written in Chinese. Spoke too soon. After blowing up the schematic as large as possible, I could finally read it. I guess I'm more use to reading schematics that are broken down into segments of each function.....I really don't know where to start with this. Wished there was some way to print this off so I can go thru it while your online.

---

Subject: Re: K200b-2

Posted by [chicagobill](#) on Thu, 01 Oct 2015 06:33:23 GMT

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I open a second window so I have one for the schematic and one for the board.

Look at the left edge of the schematic and then look at the center section. You should find the three transistors that we started testing there Q310, Q311 and Q312. If you don't know it already, the drawing of the transistor is the circle with the vertical bar in the center and three terminals coming out of it. The center lead on the left side of the center vertical bar is the Base, the plain line on the right side of the bar is the Collector and the line with the arrow head is the Emitter.

If you look at Q310 there are dc voltage numbers next to the different leads, -1.1 B, 0 C and 0 E. You'll find these numbers near most of the transistors. What you need to do is to read the voltages in your amp and compare them with the voltages listed on the schematic. They don't need to match exactly, but what you are looking for are voltages that are way off.

If the schematic reads +6 volts and you get -3 volts there, you need to try and find out why.

---

Subject: Re: K200b-2

Posted by [stevem](#) on Thu, 01 Oct 2015 09:55:52 GMT

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If you go to the music parts site you can print off the schematic.

NOTE that all the voltages per the schematic are taken with all the controls full up with no speaker load!

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Subject: Re: K200b-2

Posted by [Iowa Boy](#) on Thu, 01 Oct 2015 13:54:33 GMT

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Steve what do you mean the music parts site?

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Subject: Re: K200b-2  
Posted by [Iowa Boy](#) on Thu, 01 Oct 2015 14:35:23 GMT  
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Okay now see what your taking about as too whats what on the schematic. Once I know the starting point, I can follow the path. Waiting to here back from Steve as to printing a schematic.

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Subject: Re: K200b-2  
Posted by [chicagobill](#) on Thu, 01 Oct 2015 16:45:26 GMT  
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Music Parts is a site where you can buy copies of the schematics for a lot of older music gear. I've bought stuff from them before, but most everything you could want is out there free on the web.

When I was fixing my Guitorgan, I really needed a schematic to figure out where things were and they had what I needed.

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