Subject: K200B-1 left channel makes a loud whooshing sound
Posted by gui_tarzan on Thu, 02 Jul 2015 22:27:32 GMT
View Forum Message <> Reply to Message

The right channel is pretty quiet but the left channel (as you're looking at the front) is a lot more than just a hiss. It's a full-blown whoosh. It gets loud as you turn it up so I'm thinking it's in the pre-amp section. I don't have much trouble with tube amps but solid-state amps are still pushing me out of my comfort zone so any help would be great.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by chicagobill on Fri, 03 Jul 2015 00:32:50 GMT
View Forum Message <> Reply to Message

Yes, the volume control on these amps does two things. One it changes the gain of the stage and two it grounds out the signal from the output of the stage. If the noise is controlled by the volume control, then the first transistors are suspect.

Look up the schematic in the technical section and you'll see what I mean.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by stevem on Fri, 03 Jul 2015 10:53:31 GMT
View Forum Message <> Reply to Message

While you have it opened up replace that first preamp transistor on both preamp boards as many times on preowned amps that issue is due to blasting the preamp with a stomp box at a high level of drive signal!

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by gui_tarzan on Fri, 03 Jul 2015 13:03:43 GMT
View Forum Message <> Reply to Message

I'm looking at the pre-amp schem and it is confusing. The signal path seems radically different from a tube circuit but that's just my inexperience with transistors talking. Can someone explain the signal path to me?

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by chicagobill on Fri, 03 Jul 2015 17:20:24 GMT
View Forum Message <> Reply to Message

Here's a real basic explanation.

Okay, I'm looking at PC105. The input transistor is Q100. The signal comes in from the input jack

and goes through R118 and C100 to get to the base of Q100. The base is sort of the same as the input grid of a tube triode.

The signal comes out from the collector and goes to the base of Q101. The output comes from the collector of Q101 and goes on to the input of Q102 and then to the tone controls. The last two transistors bring back the lost signal level from the tone controls.

The volume control when turned CCW grounds the signal output from the input stage through cap C104. When the volume control is turned CW, it grounds the emitter circuit of Q100 which increases the gain of that stage.

Basic transistors are pretty much the same as tube triodes.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by gui_tarzan on Fri, 03 Jul 2015 18:16:18 GMT
View Forum Message <> Reply to Message

So the signal comes out of the collector of Q101, goes through R103, R106, R107 and R108 and into the base of Q102 and out the emitter of Q102, right?

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by stevem on Fri, 03 Jul 2015 20:40:02 GMT
View Forum Message <> Reply to Message

Yes, out the Emitter and into what most folks call in the tube world the tone stack.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by gui_tarzan on Fri, 03 Jul 2015 22:50:58 GMT
View Forum Message <> Reply to Message

So how does that volume control work? I don't recall seeing one that dumped the wiper to ground.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by chicagobill on Sat, 04 Jul 2015 02:59:22 GMT
View Forum Message <> Reply to Message

Not really a tone stack, that's more like the typical Fender circuit. This is more like a cut and boost Baxendall circuit.

I already explained the volume control. It turns up and down the gain of the first stage and also turns up and down the output signal. When the gain is turned down the output volume is also

turned down. When the gain is increased the output volume is also increased.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by stevem on Sat, 04 Jul 2015 10:00:32 GMT
View Forum Message <> Reply to Message

It's funny our Kustoms have a great sounding tone section , yet I have a Heathkit TA-17 guitar amp that I built back in 69 I think it was and it has a similar tone section and it sounds pretty bad! I think the Heathkit one works on a phase cancelation basis.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by gui_tarzan on Sun, 05 Jul 2015 18:00:20 GMT
View Forum Message <> Reply to Message

Ok, it's still not making sense to me but I'll take your word for it.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by gui_tarzan on Tue, 07 Jul 2015 02:46:50 GMT
View Forum Message <> Reply to Message

So I did some searching here for the input transistors and they cross (apparently) to a fairly common transistor which I forget the number of at the moment but I have some. Are they really that standard? What I mean is, if the specs are in the ballpark, is close really close enough in this case?

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by chicagobill on Tue, 07 Jul 2015 06:41:00 GMT
View Forum Message <> Reply to Message

There are two types of transistors in the input stage, one is an NPN and the other is a PNP. Almost any transistor will work in these circuits, but low noise ones are best.

Okay, let's look at the first transistor stage and how the volume pot works to change the gain of the first stage. The gain of the first transistor stage in the preamp is partially controlled by the value of the resistor from the emitter to ground. In rough terms, the lower the value the higher the gain. Because the volume pot is connected to the emitter resistor of the first transistor, the resistance that appears on the volume pot is part of the resistance of the emitter circuit to ground. When the wiper of the volume pot is turned CCW the full resistance value of the volume pot is added to the resistance of the emitter circuit, which reduces the gain of the stage. As the pot is turned CW the wiper reduces the resistance in the emitter circuit until the resistance of the pot is zero in the emitter circuit increasing the gain.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by gui_tarzan on Wed, 08 Jul 2015 00:09:09 GMT
View Forum Message <> Reply to Message

Ok, that makes sense. C103 and C104 are polarized 'lytics and their positive ends both point to the volume control, what's happening with the signal there?

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by chicagobill on Wed, 08 Jul 2015 06:39:28 GMT
View Forum Message <> Reply to Message

Both of those caps are there to block the negative dc voltage from ground. All audio circuits tube or transistor have two voltage components dc power supply and ac signal.

Both of those caps will allow the ac signal to pass to the volume control, but block the dc (negative) voltage from the ground circuit.

The ac signal output from the 1st stage comes from the emitter of Q101. The output of the circuit is sent through R106 and then through C104 to the volume control. When the volume control is turned CW the signal coming from C104 is raised up from ground by the value of the volume control. When the volume control is turned CCW the signal from C104 is sent directly to ground through the wiper of the pot.

R106 and R107 basically form a voltage divider for the ac signal coming from the emitter of Q101. When R107 is bypassed by the bright cap C105 the ratio of high frequencies to low frequencies is altered.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by gui_tarzan on Wed, 08 Jul 2015 22:55:27 GMT
View Forum Message <> Reply to Message

I appreciate your willingness to take the time and explain this circuit Bill, this part is really different from the tube amps I typically work on. I know this should be circuits 101 but like I said, I haven't seen a design like this before.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by gui_tarzan on Fri, 17 Jul 2015 23:41:31 GMT
View Forum Message <> Reply to Message

So I did some searches here a couple of weeks ago to find out what transistors I can swap but now I can't find the pages. What current transistors can I swap for these? I have a slew of 2Nxxxx from RS.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by chicagobill on Sat, 18 Jul 2015 06:13:16 GMT
View Forum Message <> Reply to Message

So what are they 2N????

I've used 2N3904 and 2N3906 as replacements, as well as 2N4401, etc.

Subject: Re: K200B-1 left channel makes a loud whooshing sound
Posted by stevem on Sat, 18 Jul 2015 10:27:05 GMT
View Forum Message <> Reply to Message

This site's tech section contains a transister sub guide!