Subject: Help
Posted by Kawiokie on Mon, 09 Jan 2017 16:10:00 GMT
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Im scratching my head. Blew a 100 ohm resistor.next to the second 1 ohm resistor. Ill load a pic if i can figure out how too. I found #1 of 4,1 ohm resistor bad. I replaced it and installed a new 100 ohm. Switched on and smoked the 100 ohm again. Email or text me and i will send a pic of the 100 ohm resistor location
Millermichael457@yahoo.com
636 696 9238
Sorry, k100B

Subject: Re: Help
Posted by rodak on Mon, 09 Jan 2017 16:17:15 GMT
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I'll go out on a limb here, and offer a suggestion based not entirely on ignorance: I don't think resistors typically just "go bad" and need to be replaced - more likely, another component, probably a power transistor, has gone bad, and has turned into a dead short (or nearly so), allowing way too much current through which is why it smoked the 100ohm resistor.

I'm hardly an expert on diagnosing power amp circuits, though, and hopefully one of the others here who are will be along soon to either correct or affirm what I've said.

Is there such a thing as "Power Amps for Dummies"? I'd be willing to pay more than a few bucks for it!

Subject: Re: Help
Posted by Kawiokie on Mon, 09 Jan 2017 16:51:52 GMT
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I agree with you on another failed part. Like we said at work, this seems to b a secondary failure, and not the root cause. Its definately throwing more amps/volts than it should b. Ill proceed on to transisters I guess. Need to read up on proper way to check. My initial problem was low volume on both channels. Worse on the left. Volume would increase turning pot but then,there was a volume drop towards the end of the pots limits.listening thru the speakers it sounded like it was driving the amp hard but with a low volume on the last quarter turn of the pot. I cleaned both and ohmed them out. Appeared to b ok

Subject: Re: Help
Posted by chicagobill on Mon, 09 Jan 2017 17:09:41 GMT
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Yes, resistors only burn up when too much current is being pulled through them by the circuit. The

1 ohm and the 100 ohm resistors are emitter resistors for the output and driver transistors of the power amp. I will guess that you have one of each that are bad.

Normally this would cause the fuse to blow. Is the fuse original and/or of the correct 3 amp value?

Subject: Re: Help
Posted by Kawiokie on Mon, 09 Jan 2017 17:27:51 GMT
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Ill pull the fuses and look. I just got this head so i better check

Subject: Re: Help
Posted by Kawiokie on Mon, 09 Jan 2017 18:03:05 GMT
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The 3 amp fyse was in place. I did find a broken wire to a 1n3754 bias diode.. i read up on them. If i got this right, its job is to bias the output of the transistors as they heat up. I probably broke it moving the board around. Im thinking about the time all this trouble started. Maybe im hoping for too much. I found 2 on ebay. I think i will let this project rest till they get here. Maybe even drop in a smaller fuse in hopes it blows it while working on it rather than resistors. Ill update later

Subject: Re: Help
Posted by rodak on Mon, 09 Jan 2017 18:10:57 GMT
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The problem you describe with low output, and the way the volume control behaves, might be a transistor in the 1st or 2nd stage right after the volume control.

Subject: Re: Help
Posted by Kawiokie on Mon, 09 Jan 2017 18:48:02 GMT
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Would the ones you describe b on the boards with the controls? Those schematics murder me.

Subject: Re: Help
Posted by rodak on Mon, 09 Jan 2017 21:18:19 GMT
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Yes. If you trace the circuit from the input jacks, there should be a connection to the base of one transistor pretty early on - they may be capacitor in series, but little else. That's the first gain

stage. That's the first one I'd suspect. The culprit may also be the next one down the line.

I have a K150 that was doing something similar - some sound coming out, but volume control was erratic in it's behavior. I think I just replace that first one and it made a world of difference.

Subject: Re: Help
Posted by Kawiokie on Mon, 09 Jan 2017 21:22:27 GMT
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Thanks, i really appreciate all your help

Subject: Re: Help
Posted by chicagobill on Mon, 09 Jan 2017 23:05:30 GMT
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If you plan to work on amps a lot, you might want to build yourself a light bulb limiter. It is really nothing more than a 60-100 watt incandescent light bulb wired in series with the amp that you are working on. If the amp draws too much current due to a circuit problem, the light bulb lights up and protects the amp from additional damage. I'm sure that if you Google it, you can find instructions on how to build one.

The 1N3754 diode is part of the bias circuit. Its' job is to keep the two sides of the circuit (push and pull) in sync with each other. If the diode breaks loose or goes open, the two sides both turn on at the same time and will cause damage to the power amp. The diode is mounted on the heat sink near the output transistors so that as they got hot the diode would reduce the bias to cool down the circuit and keep it from overheating.

As for your other problem, if both preamps were weak then a low voltage power supply problem or problem with the power amp is more likely than a transistor in the preamp circuit.

Subject: Re: Help
Posted by Kawiokie on Mon, 09 Jan 2017 23:10:36 GMT
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Thanks, ill check into the light bulb setup.and thanks again

Subject: Re: Help
Posted by stevem on Tue, 10 Jan 2017 11:16:43 GMT
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get that replacement diode, but before you install it place a good dab of silicone sealer on the base of the diode so that you can bend the leads without snapping them off as they are very

fragile.

When trouble shooting the amp and popping the board back in place to do such you do not even have to have the diode clipped in , just keep it folded out of the way with some tape on it so that the case and leads do not short to anything else.
Install a 1 1/2 amp fast blow fuse for testing and get the power amp section up and running then switch out the fuse for the correct amperage and then go after the preamp section / low volume issue if it is still present!
In regards to the output stages , and seing that you have those bad resistors you likely have at least one bad diver transistor and a bad output.
Since your gonna have to order up parts you might as well get both output transisors and both drivers to have on hand as the added cost should be no more than six bucks.

Subject: Re: Help
Posted by Kawiokie on Tue, 10 Jan 2017 18:27:17 GMT
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Thats what happened to the original. It snapped off at the resistor. Im gonna blame me for that. Good idea on the silicone. Im wondering if my resistor problems were from that wire breaking. Thats when the blowing them started.i could actually play the amp out of one channel well until that. The other one was weak though. Im in agreement on transistoor issues.ive hot two bias diodes on the way.

Subject: Re: Help
Posted by stevem on Tue, 10 Jan 2017 19:03:14 GMT
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Like Bill had posted to you in his reply, if that diode is not in the circuit then both of the output transistors are full on at the same time, and that equates to blown output transistors and burned resistors!

Subject: Re: Help
Posted by Kawiokie on Wed, 11 Jan 2017 15:37:41 GMT
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Can i get decent usable readings on the transistors still on the board? I was taught youbhad to isolate the component to prevent false readings from other components. I do have a working head i could use fir comparison readings.

Subject: Re: Help
Posted by chicagobill on Wed, 11 Jan 2017 17:29:53 GMT
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In circuit transistors are connected to resistors and other transistors that can give false readings when tested with a meter. That being said, I always test in circuit and only remove when I find something out of the ordinary. The more times that you pull the boards out and the more times that you unsolder parts, the odds of doing additional damage increases greatly.

Any chassis mounted power transistors are easily tested by pulling off the black plug that connects the Base and the Emitter to the circuit board.

You know which resistors have opened or have burned, so it should be easy to trace back from those resistors directly to the transistors that they are connected to. If you take a small flashlight and shine it under the pc board, you can see where most of the traces are and what they connect to.

If your meter has a diode test function, use it to test all of the transistors and diodes in the power amp section of the amp. You will be looking for near zero reading shorts. If there is a resistor in parallel to the transistor junction, you will get a reading that is similar in both polarities but normally not as low as zero.

Subject: Re: Help
Posted by Kawiokie on Wed, 11 Jan 2017 17:46:42 GMT
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Sounds good. I guess i can use my good amp as a value comparison also. Im familuarvwith the diode test procedure. I worked fir caterpillar. No body like the electrics/electronic aspect butvi did. It was either that or ruin your back. I got spoiled bybthe top if the line schematics and the walk thru they would give you on the component. But..... they were bad about diagnosing for a failed board and no fix procedure. Just replace the board and make sure it wasn't a secondary failure. So this is new territory for me but i enjoy it so far especially with everyone here awsome help.

Subject: Re: Help
Posted by stevem on Thu, 12 Jan 2017 11:03:57 GMT
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I need to ask about what model K100 we are talking about here as you posted that this is a K100B and there is no such thing.
Is this a piggie back model as in a Two channel K100-1 model?

Subject: Re: Help
Posted by Kawiokie on Sat, 14 Jan 2017 14:05:12 GMT
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Yes. Since on here last,i found atvleast two bad amp driver transistors. Two read the same, two are totally different out of the board, i couldn't get any decent readings with them in the board. Found nos on ebay

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Subject: Re: Help
Posted by stevem on Sat, 14 Jan 2017 16:58:54 GMT
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Since your not well versed in testing circuits like this I would shot gun it!

Replace both driver transistors making sure the NPN type and PNP goes where it should, replace both outputs which are both NPN types, replace both 1 ohm 5 watt resistors and any others that are toast and then make sure the other two diodes in the bias string are not shorted, as all you need is a ohm meter test to prove that out.
Also make sure that the slip on heat sinks for each driver transistor does not short out on any near by component leads.
And lastly make sure the the clip that holds the bias diode grips it tight and that it's leads do not want to push it in or out of the clip.

Subject: Re: Help
Posted by Kawiokie on Sat, 14 Jan 2017 20:21:09 GMT
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Earlier i found a bad 1 ohm resistor and 1, 100 ohm which i believe was a secondary failure.ive located 4, 38736, the ones with the square heat sinks. Ive installed the new bias resistor and the clip is firm. im on hold I guess till the four I ordered come in. like i stated earlier, two out of four were bad not giving readings consistant with the other two. According to the diode test, they were wacked.

Subject: Re: Help
Posted by chicagobill on Sun, 15 Jan 2017 02:36:53 GMT
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I'm confused here, but that's easy for me. Which model amp are you fixing here?

How many driver transistors are there on the board? There are two different driver transistor types, one NPN and one PNP. You must replace the NPN with another NPN and the PNP with another PNP. When you test them they will test differently the NPN will read low when the red lead is on the base and the PNP will read low with the black lead on the base.

Please tell us which anp and how you are testing the transistors, so we can help you fix it correctly.

Subject: Re: Help
Posted by stevem on Sun, 15 Jan 2017 11:36:50 GMT
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Yes, I am kinda lost here also, and I may have missed something here, as only the 200 series

amps use driver transistors with the built in heat sink,
So is it that what you are working on a 200, and not a 100?
Also why did you order 4 of the same driver transistors?
You do not have to go that expensive route of getting NOS ones , as all you need to do is get the transistor for $2.50 and then a good size slip on heat sink.

Please do not Solder anything new in untill we know what you are working on!

Subject: Re: Help
Posted by Kawiokie on Mon, 16 Jan 2017 12:26:43 GMT
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Kustom 200. My fault on the model #. Bass amp. Has no frills. I seem my mistake on the ordering the driver transistors. My eyes arnt the best. After looking at the online schematic, i went back and carefully looked at the numbers on all four. Yup, i shot myself in the foot. I found two of the other number and ordered them. Do you have the name of a good supplier? Yes, ebay is eating me up on prices. Its on hold till the parts get here.the four of a kind are in transit. Along with the other two. You are correct on the different readings. Out of the board the 38737's didnt read the same. The other two read relatively the same. On the 737's, on one reading of the same posts i got o.oo on one and open circut on the other. I assumed, which gets me in trouble, that those or at least one was at fault.

Subject: Re: Help
Posted by stevem on Mon, 16 Jan 2017 17:20:02 GMT
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Well the good thing about the original driver types is that one you get them in the right spot in regards to NPN and PNP at least you can put them in wrong lead wise as you can with some aftermarket types!

Subject: Re: Help
Posted by Kawiokie on Mon, 16 Jan 2017 17:23:51 GMT
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Thats part of the reason lol. I makes it a lot easier. With two amps i figure having a few extra parts on hand wont hurt. They are identical.

Subject: Re: Help
Posted by stevem on Mon, 16 Jan 2017 17:37:56 GMT
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When you get them test them first, do assume they are good, also do not ware any type of

clothing that can produce static electricity when handling them!

Subject: Re: Help
Posted by chicagobill on Mon, 16 Jan 2017 17:45:04 GMT
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Here's a quick semiconductor test guide for you. This assumes that you have a meter with a diode test function.

All basic semiconductors like the diodes and transistors in Kustom amps are tested like one way valves. When you connect the two test leads to the terminals, there will either be a meter reading or there will be no reading just as if the leads were not connected to anything at all.

Try this, look at the main power amp board on the back wall of the chassis. There is the bias diode that mounts to the heat sink and connected to it are two additional diodes. These two diodes might look like metal cans with leads coming out of the ends or might look like small white resistors with a black stripe or like little glass resistors with a stripe.

Set your meter to the diode test position and touch the red lead to one end of one of the diodes and then touch the black meter lead to the other end of the diode. Check the meter and see if there is a reading. If there is, it will be somewhere around 0.6 volts or so. If there is no reading the meter reading will be the same as if the two leads were not connected to anything at all. Next reverse the position of the two leads and check the meter reading.

A good diode will read 0.6 or so with the leads in one direction and open with the leads in the other direction. If you get low readings in both directions the diode is leaky and is bad. If you get a reading of 0, which would be the same as if you just touched the two meter leads together the diode is shorted. if you get an open reading in both directions, the diode is open circuit.

Transistors can be tested just like two diodes connected together. There are three terminals on a transistor the Base, the Emitter and the Collector. If you touch one meter lead to the Base and then touch the other lead to the Emitter, it will test the same way as testing a diode, it will read 0.6 in one direction and open in the other direction. The same test will work for the Base to Collector terminals. On all of the transistors in a Kustom amp, there should be no readings when testing from the Collector to the Emitter terminals.

If you get zero readings (shorts) or open readings in both directions, the transistor is bad. And will need to be replaced.

The two different types of transistors PNP and NPN can be identified by which lead polarity will turn on the transistor junction. If the meter reads 0.6 when the red lead is connected to the base terminal, the transistor is normally an NPN device, and when the 0.6 reading happens when the black lead is connected to the base the transistor is a PNP device.

So if you got a 0 (zero) reading on some of your transistors, then that is definitely a sign of a bad one. You will also need to test the 4 power transistors that are mounted to the floor of the chassis.

Subject: Re: Help
Posted by stevem on Mon, 16 Jan 2017 19:28:55 GMT
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Also note that with TO5 metal case transistors like the ones you have with the built in heat sinks that the lead on the bottom that is welded to the case is always the Collector, so that leaves only the other two leads to be the Base and Emitter.