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Subject: kustom -x-stereo power amp  
Posted by [rich](#) on Tue, 21 Aug 2012 16:41:16 GMT  
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hi, everyone,, i have a kustom x stereo power amp, one channel has the ovd red indicator on and is not passing a signal, and the amp still works fine on the other channel, cant find a scematic for it, but the driver board has pc5065 rev 2 on it, from what ive seen on the your site, it seems to be a common board in many other kustom products,

i did find a partial scat of this driver board yet it seems to be a bit different, after opening it up i found 2 470 ohm resistors burned open, looks like they are a voltage divider feeding the negative -40 volts to the emiter of q3, the only transistor on the board thats in a to39 case!

i thought for sure that q3 and some of the output transistors would be shorted,, but that does not seem to be the case,,, im not sure if i should replace the resistors and fire it up on a limter and see what i get, or am i over looking something? i have some pics and the partial scat i been looking at that i will try attaching,, i dont know why them resistors burned and i wasnt with the amp when it went down

yoy guys seem to be the last resort on kustom amps so i figured id give a shout out,, any help would be appreciated!!! thanks!!

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Subject: Re: kustom -x-stereo power amp  
Posted by [rich](#) on Tue, 21 Aug 2012 16:42:36 GMT  
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seem to have a problem getting pics to post,,, sorry!

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Subject: Re: kustom -x-stereo power amp  
Posted by [chicagobill](#) on Tue, 21 Aug 2012 20:00:04 GMT  
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Welcome to the place. The PC5065 power amp board was used in a lot of stuff, the most common is the metal front K250 amps. I have the schematic if you want it, just PM me your email address.

Sometimes there's no way to tell why something blew up, but on these amps there's not much to really check, so I'd meter test all of the transistors and diodes. Pay particular attention to the drivers with the heatsinks. Be sure to check for collector to emitter shorts as well.

If everything checks out, then power it up through a light bulb limiter or with a variac and see what happens. Does the channel have a separate fuse? If something goes short on these boards, they will usually pop the fuse. The only Kustom power amp that I have is a smaller one that shares the power supply with both channels. So if one board shorts, it will kill the entire amp.

And make sure that the Molex connectors are clean and tight through the entire amp.

Let us know what you find.

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Subject: Re: kustom -x-stereo power amp  
Posted by [rich](#) on Wed, 22 Aug 2012 21:50:27 GMT  
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thanks for the scat chicago bill! after cleaning the amp out so i could do some circuit tracing and check all the diodes and transistors as you suggested,, this is what i came up with,,,,

r16 burned open.  
r13 reads 1k ohms  
r15 498 ohms  
c8 shorted

and yes bill the power supply fuse was blown, it is a pig tail type and was still soldered into place with a new 3A piggybacked on that,, so the fuse did go down, i believe r-16 burning open didnt cause the newer fuse to open up again?

i still have little issues with the scat compared to circuit,,cap c-8, c-7, threw me, was expecting axial or radial can type,, not tantalum? caps,, and there is another tant- rated at .47mf@ 75 volts that i dont see on the scat, yet its the biggest cap on the board, lol,, never worked on one of these sooo,,

do you no if there is an issue trying to get the c-8 cap, the searching i did so far hasnt been to good,, and i noticed that cap has -38v on it from the collector of q3, shouldnt that working voltage be higher?? just some thoughts ive been having?? can it be swaped with a radial can electrolytic, or would that cause interference or maybe be a heat issue?? just wondering why they are using the tantalums,,

as far as all diodes and transistors everything seem to be ok!! thanks again!!

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Subject: Re: kustom -x-stereo power amp  
Posted by [stevem](#) on Thu, 23 Aug 2012 10:42:36 GMT  
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Hi and welcome!

Kustom used tantalums back than due to there small size to uf ratio and there acurate uf value for the most part.

You can replace them with non-polarized type caps if you care to, but you should go 50% higher in the replacement caps voltage rating for safty and long life.

Make sure all the ground connections are good in the amp as a dependant where a bad one maybe the amp will blow fuses.

Another point of concern is the bias temperature sensing diode on the output ttransistor mounting strip.

These 61088 RCA diodes have very stiff leads and have been known to break off at the diode body just from age and transport vibration no less from pulling and working on the board. A mod I do to counteract that is to place a small blob of epoxy on the diode over the leads and also over the leads where they come to the board, and also make sure that the hold down clip grips the diode body nice and firm.

If this is your amp and you want it to sound sweeter and have less white noise hash then replace the rectifier bridge with 4 fast acting diodes, you will have to use two solder type terminal strips or make a small circuit board to do so but its a nice up grade!

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Subject: Re: kustom -x-stereo power amp  
Posted by [rich](#) on Thu, 23 Aug 2012 14:27:09 GMT

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hey steve,, thanks for the reply and tips!!! after reading all 65 pages of posts, ive seen them bias diodes mentioned quite often!! so when i put it all back together i will do the upgrades you mentioned, all the work iv done is been with tube amps,, so im really rusty on the solid state side of things!! but ive seen a lot of failed tube amps because of biasing problems, so i know how important them diodes are!!

im still confused on the schematic though! im not sure what q3 is doing in the circuit, is this just considered a pre driver? it checks good in circuit, and this is where most of the damaged parts were located, so im a little bit leary here

i found some caps to replace c-8 last night, closest thing i could find were 33mf@ 35v,, 5 bucks a pop! and a whole day of searching ,, im still giving it a a good cleaning while waiting, its pretty nasty, i noticed all the heatsink compound is dried up! so cleaning and regrease them, maybe help run a little cooler,,

so thank you,,, guys for your help so far, lots of good solid info!!!

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Subject: Re: kustom -x-stereo power amp  
Posted by [chicagobill](#) on Thu, 23 Aug 2012 16:21:11 GMT

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Yes, Q3 could be called a pre-driver, it's just another gain stage.

What Steve mentioned about grounds and the bias diodes are very true. If the bias diode string opens up, it will cause both sides of the power amp to turn on at the same time, causing all sorts of damage. And yes the leads of the temperature sensing diode will break off, especially if you flex the leads a lot. I see this happen more in handling the board during repairs than during normal usage. I recommend that you pop the diode out of the clip before you remove the board for service.

As far as the tantalums go, back in the day tantalums were state of the art, high tech Nasa type stuff. Everybody thought that they would solve all of the problems that normal electrolytics

suffered from. Instead, they have their own set of problems. Replace them with any good quality cap and you're good.

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Subject: Re: kustom -x-stereo power amp  
Posted by [rich](#) on Fri, 24 Aug 2012 00:09:30 GMT  
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yea guys i was trying to be very carefull working on that board, i didnt want to completely pull it out, kinda tight in there!!

i went ahead and used an a radial cap stood up,to test it, brought it up on the variac, and used both of my d,m,m,s to monitor the filter voltages, 37.7 and 37.6,,,,, the overload indicator was off!!! im getting excited!! so far so good!! i might have got real lucky here!!

i think its time to run a signal through it, what do ya"s think? any thing else i should do before putting it under a load?

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Subject: Re: kustom -x-stereo power amp  
Posted by [chicagobill](#) on Fri, 24 Aug 2012 00:56:06 GMT  
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I'd power it up without a load and see if there are any problems like voltage on the output, etc. If everything comes up alright then add the load and see what happens.

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Subject: Re: kustom -x-stereo power amp  
Posted by [rich](#) on Fri, 24 Aug 2012 01:53:35 GMT  
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thanks chicagobill,, i didnt think about that, and it could of cost me a speaker!! heres what i got,, 46.2mv on side that was damaged,, and 26.8 on working side!! loks like there might still be a problem?? i dont know what is good or bad measurement here,, no signal or loads plugged in,, does this mean bias is off,, or leaking dc from powersupply??

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Subject: Re: kustom -x-stereo power amp  
Posted by [chicagobill](#) on Fri, 24 Aug 2012 04:47:53 GMT  
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That much voltage on the output could be mismatched output transistors or a few off value resistors. I don't worry about that amount of voltage on the output, if it gets up around 100mV or more I'll start checking things.

I'd hook up the speaker and see how everything holds up.

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Subject: Re: kustom -x-stereo power amp  
Posted by [rich](#) on Fri, 24 Aug 2012 14:05:35 GMT  
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hey bill, does the 100mv rule hold true when the amp is loaded and full volume? i mean are these mv readings going to rise when amp is full on?,, and i just noticed that there are no load ratings on the outputs, does that mean the amp can run on either 4 or 8 ohm loads, just as long as the loads are the same on both channels??

and theres another label, input-4.5amps?? do not parallel outputs? is this for bridging the amps? that 4.5amps is confusing me ,, the way i used this amp was for a stereo setup,, guitar procesor, left and right to inputs of power amp,, the outputs of pwr\amp to 2. 4x12,, 8 ohm cabinets!!

thanks guys, sorry about all the questons!!

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Subject: Re: kustom -x-stereo power amp  
Posted by [chicagobill](#) on Fri, 24 Aug 2012 16:39:32 GMT  
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There should never be any real amount of dc on the output of the amp regardless of how much power it is producing. The voltage from the audio signal is ac not dc.

The 4.5 amp rating is how much current the amp can draw from the 120 volt wall outlet.

These amps were not designed to be used in bridge mode or to have their outputs paralleled. By that I mean hooking both outputs up to a single speaker system. It's just a warning for the end used.

The power output of each amp is rated at 120 watts per channel into a 4 ohm load. You will get less power if you run them with an 8 ohm load. Each side is independent from each other, so one amp could be hooked up to a 4 ohm load and the other into an 8 ohm load. This set-up is common in a biamp system with the low end going to a 4 ohm load and the highs going to a 8 ohm load.

It sounds like the way that you are hooking it up is just fine.

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Subject: Re: kustom -x-stereo power amp  
Posted by [rich](#) on Fri, 24 Aug 2012 23:26:43 GMT  
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yea i thought thats what the 4.5 was, the tag on inside calls for a 3Aslow blow, so thats what i put back in it,, it sounds fine, i only have 8 ohm loads here,, but it is passing signal and the channels both felt the same as far as heat goes, so i think im ok!! it never got hot to the touch, warm at best!! ill have to hook it up with some 4 ohm loads and see how she does!!

thanks chicagobill and steve,M, for all your help and tips!! this is a great site!!

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Subject: Re: kustom -x-stereo power amp  
Posted by [steven](#) on Sat, 25 Aug 2012 12:27:01 GMT  
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your welcome for the help anytime, and I`am sure Bill would say the same!

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