Subject: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Fri, 19 Apr 2019 17:28:43 GMT
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hello i picked up this early 1968 k200a-1 bass head (by ross inc on the front, no 200) for a song because the owner said all it was doing was crackling
measuring the voltage on the speaker at -12V, i can see why!
i checked the power transistors using the resistance setting on the multimeter and the only one that tested odd was the one closest to the power transformer (resistance between emitter and collector around 1M, shorting base to collector and measuring again gave around 77k. all the other power transistors measured >4M and 700k respectively). replaced that transistor with a 2n3055 i pulled from an organ and that gave me -20V across the speaker terminals
i'm having a hard time finding a schematic for this unit as the ones on the site do not match up. boards along the back of the chassis are PC702 and PC602. there's no internal reverb or anything. there does not appear to be a transformer on the output as the K200-Ax schematic would lead me to believe
another thing of concern is that it is fitted with 5 power transistors, even though there is a chassis hole for a sixth. obviously an accurate schematic would work. any help would be much appreciated

i took voltage readings on the power transistors (from left to right)

C	-18V	-18V	38V	38V	38V
B	-33V	-33V	-12V	-13V	26V
E	-33V	-33V	-12V	-14V	26V

filter caps look relatively new, and besides being attached to the chassis by a zip tie and hot glue (some tagboard would make me much more confident in its durability), i measure 38V and -32V respectively

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by stevem on Sat, 20 Apr 2019 10:20:58 GMT
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Hello!
Any schematics you look at on this site that show a transformer befiore the 4 output Transistors is a schematic for the K200 model that was made before yours, yours is a 200a model but our site info here is headed wrong.

The transformer by the way is a old school combination driver and phase splitter.

I am away from home this weekend and don't have much time to help you out , but maybe Bill will have time to do so?
If not I will help you on Monday.
I have all the right k200A schematics at home that I can fax, or mail you copy's of.
Don't fret , we will help you get it back up and running like a charm!

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by chicagobill on Sat, 20 Apr 2019 16:59:07 GMT
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Yes, my guess is that is a very early K200A amp with a single sided preamp power supply. I will assume that there is no negative power supply going to the preamp boards?

Normally, when an output goes bad in these amps, they will blow fuses and take out other components as well. If the outputs don't test as shorted, I would look at the rest of the power amp circuit.

Check for burned or open resistors, shorted caps, shorted transistors, etc.

If your meter has a diode test setting, use that to test the transistors, if not use a low ohm setting. 4 meg and 700K readings don't mean much here as the meter may not be applying enough voltage to forward bias the junctions.

Be sure not to connect the speaker to the amp until you have the voltage on the output fixed. You don't need to ruin the speaker while you are working on the head.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by JDinPA17603 on Sat, 20 Apr 2019 19:10:31 GMT
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Bill he lists a PC602 board, wouldn't that mean he should also have or need a PC502 board and the "missing" power transistor? Schematic I have shows the 602 as the minus supply and 502 as the positive supply. Just to double check went down to my bench. My A without effects just has a PC502 board in it with space (holes) in the chassis for an additional board. It is the positive regulator. The other unit with effects has both the boards a PC502 positive regulator and a PC602 negative regulator. While this should have nothing to do with his voltage on the speaker jack it will affect the units ability to function if he truly only has a 602 board along with the driver / output board on the back wall. Unless someone cobbled a +24volt supply out of zeners.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by chicagobill on Sun, 21 Apr 2019 02:09:31 GMT
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That's a good point, I didn't look up the pc numbers to see if that was the positive or negative regulator board. I assumed that it was a positive one.

We should get some more info about what this one has.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by stevem on Sun, 21 Apr 2019 10:06:22 GMT

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Yes, the sperate pc502 and pc602 are only used in the A serise amp, in the B series amps they where put on the pc703 board which is a combo regulator and driver board.

The A model preamps run on a + and - 23 volts and as in the later B series amps the negitive regulators output tracks the positive regulator.

This all means that the - 23 volts will never be correct if the positive regulators output is not right. Both of these boards have 15 volt electrolytic caps that will short out if Transistors on the board are bad and thus smack the caps with way more voltage then they are rated at..

Note that if you go into our tech section and choose the pc board listing you will atleast find schematics for all the versions of your 702 board and the schematic for a 502 board which it would seem your missing!

I guess you can bread board yourself one, but first let's get the amps driver and output stage up and running.

Just for now I would unhook the 34 volt power supply wire from the regulator board that you do have .

PS, by the way there's no such thing as a vintage era Kustom bass head, they where just non effects heads and had a normal and brite channel.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by JDinPA17603 on Mon, 22 Apr 2019 06:41:15 GMT
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Just a heads up. Been working with thetragichero on this. He redid the power supply and added a ic regulator to supply the 24 volts for the preamps. This amp has been "worked" on by someone else before and they mangled it. In addition.to out of tolerance resistors, incorrect parts put in in the wrong places, the 1N3754 was substituted and just hanging in mid air. He will be checking the rest of the diodes and transistors tomorrow along with the rest of the resistors. Steve he has a couple of messages in queue that is why I put this up to let you guys know where we were at.

It was in fact a 602 board in the amp. Someone tried to "rewire" it to make it work for the 24 volt supply.

Time to put these east coast eyes to bed.

John

Oh yeah, it actually is a K200A-1 amp with no effects just like the one I have, so it has no need for -24.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by stevem on Mon, 22 Apr 2019 10:09:06 GMT
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What are we talking about here, as the 602 board is the negitive regulator board!

I have approved all of his post and put them up into the board yesterday morning.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by JDinPA17603 on Mon, 22 Apr 2019 14:27:58 GMT
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I had questioned thetragichero on the 602 board in his initial post because I knew it was the negative regulator board.
After several pm's he sent me photos - front and back of the board and it was in fact a 602! Someone in the past "worked"on the amp and literally mangled it. The issue of the 602 board is now moot. He rebuilt the power supply section on a board and added an IC regulator to provide the +23 volt supply for the 102 boards. Now have the +23 and 40 volt +/- supplies solid. Tackling issues with the 702 board now. Discovered several "replacement" components out of tolerance, connected to the wrong points, etc. Also as I stated in post above, the 1N3754 had been replaced with a substitute diode that was covered in thermal grease and hanging in mid air. After replacing all the caps on the 702 board he is in the process of checking the rest of the components.

RE messages in queue - I had only passed that on as he had stated it tome at the time he was constantly booted off after logging in. Did not mean that you had missed anything Steve.

John

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Mon, 22 Apr 2019 15:27:42 GMT
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hello all
i am guessing that the forum was going a little wonky this weekend. i made three posts between saturday afternoon and sunday morning that were QUITE difficult to get to just the awaiting moderator approval page (kept logging me out), so it is quite possible that the forum just ate the posts
i did not intend to cause a ruckus (although that would be my MO) or offend, but thankfully the nice gentleman contacted me through PM and requested a picture of the 602 board and then spent a few hours emailing me back and forth until my eyes started to tell me that it was time to give it a rest
i'll be picking this back up in an hour or so and we'll see where it gets us

thanks again everybody!

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by stevem on Mon, 22 Apr 2019 16:19:28 GMT
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No problem or apology's need gang!
Every morning I release/ approve the post that folks make until they have 5 of them at which time the site should allow him to post without going thru the approval process.

So let's all get on the same page here, he now has newly made regulator board supplying both a + and minus 23 volts for the preamps?

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by JDinPA17603 on Mon, 22 Apr 2019 16:39:50 GMT
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Steve,
No- just a + 23 that is all the 102 boards need in the A-1 chassis. Also he redid the +/- 40 volt supply with ne w components.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Tue, 23 Apr 2019 03:47:13 GMT
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just a little update I have checked all of the transistors on the 702 board with the diode setting in my trusty radio shack multimeter and they all check out (no weird diode readings at C E junctions) already replaced the electro caps, two ceramic caps tested dead on
testing the diodes now but so far so good (can't tell if it's just corrosion on the leads but it can be a pain to get a reading.... it love to just swap them all out with something not made of unobtanium/aka in my parts bin)

winding down for the night but we shall revisit this probably Wednesday

thanks so much for the continued assistance

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by stevem on Tue, 23 Apr 2019 10:14:59 GMT
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This is very very strange because you have a A series 200 that is built like a A series k 400 in regards to the preamps being power by only a positive 23 volts.
It seems all the ones I have ever worked on in the passed 45 years have had the two regulatiors in them!

My factory supplied dealer schematics for the K 200A show it as having the 502 and 602 board that I have been talking about here!

Just a note on the bias string diodes in that at times I have had them test good on a meter, but break down under voltages higher then the meter applies to them.

It's best to confirm them good by hooking them up to the 34 volt supply and see if they block it.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Thu, 25 Apr 2019 14:11:25 GMT
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just a little update
took all of the resistors off the PC702 board one by one and tested them out of circuit
here is the list of the resistors i've changed and what they measured at (they are in the order i tested)
r704 5k7
r706 5k4
r709 38k
r703 43k
r715 540r
r730 138r
r729 165r
r715 197r (WOW almost 100% out of tolerance!)
r711 5k1
r710 2k5
r701 5k6
r702 5k4

i had previously changed any other 100r resistors on the board because they seemed to have drifted the most. they must've gotten a good batch of 1k resistors because i haven't had to change a single one

while i was in there i replaced all of the electro caps on the two preamp boards (i figured if it needs to be done eventually, i might as well strike while the iron was hot, so to speak)

fired 'er up and measured voltage across speaker jack. fluctuates rapidly but mostly in the mv to +/- 1v or so range. this is close enough for me to brave testing it later, after the hallway where my music room is accessible (replacing all of the moldy, rotten subfloor from water we took on in the past two hurricanes...)

i would've tested when i finished last night but my better half was asleep and i've made the mistake of abruptly waking her with a loud guitar chord one too many times

i'll report back after testing (might be awhile)

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Thu, 25 Apr 2019 16:27:02 GMT
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update: i couldn't wait so i tried it out. sounds a bit hissy (who'da thunk with all those carbon comp resistors, right?), output power not nearly what i would've expected (it's not quiet but i expected louder... the 100watt solid state traynor pa i converted to a guitar amp is LOUD)
i will admit that the bias diode is not attached to the clip just yet, because i am waiting on a shipment of thermal grease to come in the next few days, so that could be part of the problem
i am getting 40V on r705 (i want to say it's the end connected to r710 but maybe i was looking at something upside down...) and mv on the other end, whereas the schematic says 60V at the junction of the emitters of q701 and q702
i didn't put the knobs back on so i got some crackling touching the pot shafts. i will clean the pots again

received some 2n3055 in the mail today i may chuck in just for S&Gs once the thermal grease is here. the power transistors tested fine but these were a couple bucks on ebay so no harm no foul (and if all of the power transistors i have are good, then i guess i will have to build an amp ;))

okay now back to real work lol

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by chicagobill on Thu, 25 Apr 2019 17:18:08 GMT
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Glad to hear that you got it back to life. Now just a little tweaking to get it 100%.

I'm not a big fan of replacing parts for the sake of replacing things, so I wouldn't replace the outputs if they are all working as they should. The only one I would question is the used one from the organ, if it's still in there.

Again, congrats on the repair.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by JDinPA17603 on Thu, 25 Apr 2019 18:10:07 GMT
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thetragichero

Junction of Q701 / Q702 is supposed to be about 0.60 volts NOT 60.
Also base of Q706 is supposed to be 1.5 volts NOT 15

Anyone that has an A series amp with a PC702 board take note. These measurement are from a working 100% good K200A-1 amp I have on the bench right now.

Not recommended to chance running the amp with that diode out of the clip. Chance of both sides

firing at the same time too great for my comfort zone.

Congratulations on the progress.

John

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Thu, 25 Apr 2019 18:17:11 GMT
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oh i agree in theory that shotgunning parts is a poor way of trying to diagnose a problem, since you may end up creating more problems
only one of the original rca power transistors was in the unit when i received it (because it had their part number instead of a 2n series designation, and because it appeared like it had been around the block a few more times than the others), and that was hooked up to the 602 board that wasn't even needed
i'm researching how to match output transistors because my assumption is that with all of the other bobo "repairs" done on it, i'd be willing to wager that the last guy didn't bother matching the 2n3232 output transistors
at the very least i'm hoping to learn something, which is really where the fun is in this

edit: YAY i can post without moderator approval. guess i've proven i'm not a spam bot, or at least a really sneaky spam bot ;)

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by JDinPA17603 on Thu, 25 Apr 2019 18:48:58 GMT
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I use 2N3055's for output
I use my handy dandy multi-tester to match them based on the hfe and uf readings. It is one of those 9.95 multi-testers found on flea bay but it works.
If you want to spend the $$$ NTE130MP will fill the bill.
John

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by chicagobill on Thu, 25 Apr 2019 19:21:53 GMT
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I use 2N3055's as well. I usually buy them 10 at a time and gain match them when I get them.

When working on any of these amps, I leave the compensation diode loose from the clip until I'm done removing and replacing the boards, that way the leads will not be flexed any more than necessary. I worry more that the diode lead will break and causing the amp to go into meltdown

mode.

I should have guessed that the outputs were mixed and matched from the description of the 24 volt regulator board!

I have nothing against NTE parts, but I hate to pay all that money for them when it isn't needed.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Thu, 25 Apr 2019 20:28:02 GMT
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oh see i have it out for nte

my first second foray into guitar electronics (after building a simple bjt boost kit) was a germanium fuzz face. why germanium? thought it would make me sound like jimi i guess (it didn't, and years later where i thought i hated the fuzz face circuit it turns out i just needed to try a silicon one)
so instead of paying the per piece upcharge from the diy stomp box seller (which would also include a list of resistor values that would work for those specific transistors), i decided to order a bunch of nte germanium transistors from mouser
bunch of low gain, leaky, no good pieces of (*&^^%$%^$#
sometimes my cheapskate, diy attitude comes back to bite me ;)

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Sun, 28 Apr 2019 02:20:35 GMT
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don't know if it was a shoddy output jack connection or the fact that all of my cables (except the one that lives in my bass case for church) are sketchy, but doing very little it works and it's loud!
I've ordered the bias diode off eBay but until then I've put one of the 1n3193 I replaced with newer rectifier diodes (when I removed them from the circuit it seemed as if the oxidation on the leads made it hard to get a good read on my meter)

thank you all for the help! it anyone needs a pc602 board, I'd be more than happy to send it their way

---

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Sun, 28 Apr 2019 04:14:57 GMT
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done for the night, but as I was testing resistors for my switch to cascade channel 1 into channel 2 (because channel 1 out is too hot a signal to just run right into channel 2 in) I watched r716 (probably the only 100r resistor I didn't replace on that board) let out some magic smoke and my amp go really quiet
guess it's time to dig around for a new resistor

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by stevem on Sun, 28 Apr 2019 10:04:22 GMT
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Please explain!

I do not understand how you are cascading 1 into 2?
If you mean you are pulling your gtrs signal out of input 2 of channel one and the pumping that into channel two then you are putting the channels in parallel.

To me the term cascade imply's a series connection!

Please also note that the first gain stage Transistors in these amps can be blown out if you apply more then 1 volt of signal to them.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Sun, 28 Apr 2019 13:34:16 GMT
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oh i am talking about series
guitar -> channel 1 input. output from channel 1 pc102 -> x value resistor (this was being tested on) -> channel 2 input on pc102
switchable, of course

i figure if the amp is worth little on the resale market due to undoing previous "repairs" by any means necessary (voltage regulator, etc), i might as well make the amp into what will be useful to me
so an in-amp higher gain option and a buffered fx loop (instead of a monitor out) are on the table

---

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Wed, 08 May 2019 04:51:49 GMT
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hello again
1n3754 finally arrived from Poland so I've installed that and placed it I its clip
when I was testing with the 1n3193 temporarily installed r716 (probably the only 100r resistor that had tested within tolerance so I hadn't replaced it) started smoking so I ordered some 1watt 100r metal film resistors
replaced r716 with one and fired 'er up. pretty much instantly started burning (a lot more spectacularly than the carbon comp resistor did)
am I correct in assuming that q6 may be drawing too much current?

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by JDinPA17603 on Wed, 08 May 2019 22:39:36 GMT

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All ... replying to thetragichero at this time going to try to talk him through a step by step to resolve this.

Update May 9 - had phone phone call with thetragichero and determined the accidental short wiped three of the four outputs.

He is going through the board rechecking diodes / transistors and resistors then ordering what he needs. This beast will roar again.

I highly recommended as others have that he implement a light bulb limiter into the process.

John

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Thu, 09 May 2019 21:31:17 GMT
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all four driver transistors tested bad. once the first tested bad, I found two matched pair for 24 bucks shipped on eBay. will drill out the old transistors so I have some spare heat sinks.
ordered a bunch of 1r 5 watt resistors, 10 2n3055 (not much more than 5 so why not?). guess I need to invest in a 100w bulb and junction box. I'm certain I have a spare socket somewhere (updating a house with original fixtures from the 50s and 60s...)
so now again we wait for parts. weekend visiting the in-laws shall be spent checking usps tracking

---

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by chicagobill on Fri, 10 May 2019 16:07:37 GMT
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The driver transistors are welded to the heat sinks. If you place them leg side up on your bench, you can hit the bottom of the transistor case with a large screwdriver and the transistor will break free from the heatsink.

I then use a tapered reamer to slightly open up the hole in the heatsink so that a new transistor can be pushed in from the bottom. I will tack solder the new transistor's case to the heatsink.

The simplest light bulb limiter can be made from a wired lamp socket, you know the kind of socket with the wires already attached and two insulated alligator clips. Put an alligator clip on each of the two socket wires. Then use the clips to attach the bulb to the two terminals of the fuse holder, so that the light bulb replaces the blown fuse.

100 watt incandescent lamps are difficult to find, I'd just use a 60 watt one that are still being sold everywhere.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by stevem on Fri, 10 May 2019 16:17:07 GMT
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You can still find some 100 watt bulbs in auto parts stores or suppliers under the name ruff service bulbs.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Wed, 15 May 2019 16:20:34 GMT
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driver transistors have arrived from across the country while the power transistors and 1 ohm cement resistors will be here at the end of the week from an hour and a half away in Orlando(now that i think about it i bet they were drop-shipped from china)
picking up a cheap harbor freight multimeter to measure gain for matching

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Fri, 17 May 2019 20:46:06 GMT
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seller sent me 10r cement resistors instead of 1r. so i figured I'd test the unit as it is. burnt different resistors than ones i had previously, and through a few 2n3055 (I'm gonna have to dream up a fuzz box using all these as clipping diodes lol)
couldn't read q709 so i swapped with the 2n3638 from the spare 602 board. replaced q701 and q702 with a pair of bc161 i had (both had been replaced previously, twof different transistors). still smoked a couple resistors. changed q703 with a nsd104 (closest i had too the pet1075). not wanting to burn ought my last quad of 2n3055, i threw in the 2n3232 that were originally in it and no smoke, so i plugged in guitar and speaker cabinet and: LOUD pleasantly distorted guitar. doesn't clean up (kind of a blatty, gated fuzz sound at low levels
now it is time yup put on 2n3055s and pray that the proper component cleans er up a bit (if not, this would still work for the sabbathy stuff I'm intending for it)

i shall report back

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Fri, 17 May 2019 23:47:44 GMT
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2n3055 in and nothing smokes. super loud and distorted. sounds great! when i feel like messing with it again i will troubleshoot preamp board. for now it's getting put back together so that i can move onto other projects

thank you all for your help!

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Sat, 18 May 2019 01:46:07 GMT
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okay helping a friend move and I've decided that I'll replace the preamp transistors in channel 1 for the 2n4249 i am hoping i ordered a 2n3906 in the bin. otherwise will have to look up some salvaged parts until i find something suitable
for the se4002 mpsa18 came up as a substitute, but i feel like it might be too high gain. maybe 2n3904?
won't know what i have until i get home...

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by stevem on Sat, 18 May 2019 09:54:08 GMT
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NOTE, the rca jack on the rear of the amp can also be used as a input right into the power amp to bypass the preamp section and just confirm the power amp.

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by thetragichero on Sat, 18 May 2019 14:40:06 GMT
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after consulting some datasheets i've replaced the se4002 with bc547b (these even tested right around the same hfe) as i have a ton (one of the guys from the diy fx forum often uses them as clipping diodes). i did not have anything suitable for the pnp transistor so i just left it alone
channel 1 preamp now is loud and clean (rca monitor out jack was replaced with a more useful 1/4 before i received this unit, but yes it works both ways)
i am now convinced that i have purchased counterfeit 2n3055s. besides the fact that the part of the case where the part number is located has silver paint applied over it (looks like they were dipped) and the 2n3055 markings are "upside down" on some of them, they were 70 cents apiece with shipping whereas mouser charges ~5 bucks apiece. i played the amp with the 2n3232 in it for at least 20 minutes without any issue, and comparing their datasheets that *should* be the inferior part. the 2n3055 seem to last a matter of minutes before failing (i've had one or two q6 end up with a short between collector and emitter) and drawing too much current through the 100R resistors. unhooking the power resistors (which i did after i burned through the first set) everything else checks out on the power amp board, voltages etc. so (knock on wood) the most expensive parts (those driver transistors) appear to be okay

i've run out of 1w metal film so i decided to stop messing around on ebay and placed a small mouser order for 2% 100R 1W metal oxide resistors along with 2% 1R 5W resistors. will replace my smokey resistors and reinstall the 2n3232 (even their casing seems more rugged - these are cast while the 2n3055s were made from sheet metal)

i'm not as angry about all this as i was the other day, as i have at least reasoned through some of this

---

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by stevem on Sun, 19 May 2019 09:54:50 GMT
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Good to hear it's basically up & running!
Radio shack is still up and running on line and they have 2N3055's for 2 bucks with free shipping over 19 bucks.

I have used these on many amps and they are of the heavy case design.

If you want to continue with this string of post on your amp I would suggest that you start a new version 2,0 because this baby is taking a long time to scroll thru at this point, lol!

Subject: Re: K200A-1 Power Amp Rescue Needed
Posted by JDinPA17603 on Sun, 19 May 2019 12:37:57 GMT
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Glad to hear it is up and running!
Counterfeit 2N3055's unfortunately abound.I lucked out with my last purchase - got 10 matched pair for $30.00. Guy had bought a storage locker and it was half full of new parts still in bags. I just checked with him and in six months he managed to sell it all.

Enjoy the amp.

John