Subject: A-4 Repair
Posted by Jonomega3 on Sat, 27 Jan 2018 13:20:12 GMT
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Thank you stevem, really appreciate the help! Owned several guitar amps over the years and this A-4 has been and always will be my desert island amp!:)As electronic test equipment I have a multi function voltmeter that has capacitance test ability, Anatek blue ESR capacitor tester. Not the highest quality test equipment but hopefully they will be helpful in this project.

Subject: Re: A-4 Repair
Posted by chicagobill on Sat, 27 Jan 2018 17:26:06 GMT
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I went back and read the original thread that got you to this point. So to restate the distortion description is that it is on the attack transient and does not follow the note decay, correct?

Have you gone through the amp and tested the dc voltages in the power amp and compared them to the schematic? Do you feel safe in reading voltages while the amp is plugged in and turned on?

Depending upon the exact model that you have, the overload protection circuit may be the cause of your problem. Very early A's did not have this circuit, so you will need to check exactly which model power amp you have.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Sun, 28 Jan 2018 05:28:21 GMT
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Yes, past 9 o'clock the distortion happens on the note attack and the harder the note is hit the distortion kinda farts or flaps for lack of better terms lol. And louder you turn it the distortion compresses but still happens on the attack its just more uniform. But yes, the distortion goes away while the note is still hanging.

I haven't read the voltages yet, I would feel comfortable reading the voltages while the amp is on I know precautions to take so not to get hurt but I would need instruction is all.

I believe my amp to be one of the very early ones, it has the metal front with two fuses on the front one on either side of the on off switch. Guess only way to know for certain is to check pot date codes? or is there other indicators I should look for.

Subject: Re: A-4 Repair
Posted by chicagobill on Sun, 28 Jan 2018 19:13:12 GMT
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By fuses, do you mean white button circuit breakers?

As far as I know, there is very little documentation regarding the circuit breaker heads or the K200A series amps. I recently serviced a few circuit breaker heads and that's when I noticed that there was a version of the power amp that did not have the current limiter circuit included.

At the time that these heads were being designed, I imagine that there were a lot of production changes being made. I'm guessing that's also the reason that the circuit breaker heads didn't last that long and were soon replaced by the plexi front A-series heads with internal fusing.

The good news is that the basic power amp design is not much different from the later series amps, so the schematics will give you a good starting point for voltage value. I will look at my CB head and see if there is a pc board number on the power amp. Take a look at your amp and see if you can see one there.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Sun, 28 Jan 2018 20:44:46 GMT
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Yes,sorry I did mean circuit breakers. Looks like the on/off switch has been replaced

Pc 702 for power amp.

Im going to try and get some pics posted later, there looks to be some boogering in the power amp section that might help if you see. There are 4 resistors coupled together with a 250v 4.7 electrolytic cap going to ground that doesn't look like it belongs fyi

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Subject: Re: A-4 Repair
Posted by stevem on Mon, 29 Jan 2018 13:18:10 GMT
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The schematic for the 702 driver/ power does not call for a 4.7 ur cap anywhere, nor 4 resistors in series!
I would guess that those resistors are in the biasing network of one of the output transistors which is making for the issue of low wattage.
Does that board still have 4 rectangular resistors on it that are about 1 inch long and 3/8s or so in diameter?
If the values for resistors R717 , 718,725 and 726 are not dead on 1 ohm and if the values of R 716,715,724 and 723 are not dead on 100 ohms then the output stage goes south wattage wise real fast!

Subject: Re: A-4 Repair
Posted by Jonomega3 on Tue, 30 Jan 2018 02:16:22 GMT

https://drive.google.com/open?id=14Pw1SMvBWU4hT-rQzMLk3ycm_1 6aRel8

Above is a link to my google drive containing some pics of the A-4 Power amp section, I tried to get them to appear in the post but no luck, sorry but let me know if you can see them.

Yes, there are some rectangle ceramic resistors that are not original and in two sections where there is supposed to be one 1 ohm resistor they have two coupled together. 717 reads 1.3-4 ohms 718 1.3-4 ohms as well 725 and 726 both read 1 ohm.

716-105 ohms
715-107 ohms
724-124 ohms
723-which I think is where the 4 coupled resistors with the 4.7 electrolytic cap is and I couldn't get a reading from that mess. Closer look at the power section, it has had a lot done to it, ugh!

Subject: Re: A-4 Repair
Posted by chicagobill on Tue, 30 Jan 2018 04:48:13 GMT

I got a 404 error when I tried to get to your link.

If there has been a lot of work done on the power amp board, then there's no way to know what has been done unless you compare it to the original schematic. It may simply be that a number of parts need to be replaced and because the driver transistors were no longer available newer style parts were used which have different casings and look wrong, but they may be perfectly fine as replacements.

Or it could be that someone thought that they could modify the circuit to make it better in some way or another.

Subject: Re: A-4 Repair
Posted by stevem on Tue, 30 Jan 2018 17:07:27 GMT

Thanks for sending me those shots of your 702 board, and all I can say is it's a mess, but at least the good news is that your not blowing any fuses, which by the way I hope are the right amperage!?

Those 4 added resistors (paired in series for 39.8k ohms) with the 4.7 uf cap in the middle to ground should not be there in regards to the schematic for a 702 board, however a 703 board does have a 39k resistor with a cap going to ground.

The 702 board does however have two 3900 ohm resistors.

The first thing I would do is remove those 4 resistors and that cap and then see how the rest of the board looks in relation to the schematic.
Those .22 ohm and .82 ohm white box resistors in series are ok for now, so leave then as is until we this messed up board working better for you!

Subject: Re: A-4 Repair
Posted by Jonomega3 on Tue, 30 Jan 2018 18:24:39 GMT
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Really glad you can finally see the pics even though theyre hard on the eyes! haha. This is the model with circuit breakers no fuses. And they appear to be original with the date of 67' and also appear connected correctly.

OK I'll take those resistors and 4.7 cap out, did you notice that added 22uf 25 volt cap coupled with the .47 cap that is in proximity of that mess? According to schematics its foreign as well.

Could those coupled 4 resistors and 4.7 cap be originally an 82k resistor? Im thinking If Im reading the schematics correctly it could be

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Subject: Re: A-4 Repair
Posted by stevem on Tue, 30 Jan 2018 20:24:14 GMT
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Two resistors in that string of 4 are 33k and two are 6.8k , if someone was going for 82k which is used on a 702 board then they are way short!
Go over the schematic carefully and take out what should not be there as a start.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Wed, 31 Jan 2018 17:47:47 GMT
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OK, I removed the 4 coupled resistors and cap at R705 and at C702 there was a 22uf 25v cap coupled with a 1kv cap. If you look at C702 it says "10" as the value would that be the same as 1kv? Which is a very small cap, it looks original but I wasn't sure of that value.

Also if you look at pic 5 of the pics I sent there is a large ceramic .02 cap there that I cant seem to locate on the schematic, its actually hooked to ground and according to the schematics there is no .02 caps anywhere, remove that you think?

Subject: Re: A-4 Repair
Posted by stevem on Thu, 01 Feb 2018 13:23:00 GMT
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So your saying at C702 where there should be a 10uf electrolytic cap there is now a 22 uf cap with another disc cap in parallel with it? If so remove the second cap and if that 22 uf cap is good then that can stay there for now until we get the board working.
This other .02 uf ciramic cap on the rear of the board that you say has one end going to ground , where does the other end land at?
I do not have a board of my own out to look at the trace side so you need to tell me where that what looks like a added cap goes to schematic wise!

Subject: Re: A-4 Repair
Posted by Jonomega3 on Thu, 01 Feb 2018 16:13:11 GMT
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Yes, the 22uf electrolytic is coupled with a small disk 1kv cap. I have a good new 10uf 16v that I can put in that spot which I believe is correct value for C702? The other end of the ground ends up at R713, 714 and 715 in that area. Im pretty certain that large .02 disk cap is not supposed to be in there, it is very sloppily affixed to the board and I went through the schematics a couple times to account for all other caps.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Thu, 08 Feb 2018 20:12:07 GMT
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Sorry, just getting back to the A-4 after getting side tracked a bit. I am ready to move forward replacing the modifications with the appropriate parts, any suggestions? Thanks! FYI, I did put a 10uf 16v cap in place of the 22uf 25v that was in C702

Subject: Re: A-4 Repair
Posted by stevem on Fri, 09 Feb 2018 13:32:58 GMT
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If you have installed the right 3900 ohm resistors then it's time to start doing some voltage test, like on Q701,702 and 703, as I think this is where your issue is, in fact it would be tempted to just shotgun in all 3 Transistors as your talking about 5 bucks in parts!

Subject: Re: A-4 Repair
Posted by Jonomega3 on Fri, 09 Feb 2018 17:54:43 GMT
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Not sure how to do a voltage test on transistors, any tips? Happy to replace the transistors you mentioned do you have a supply company recommendation?

I did replace the one 82k resistor on R705 which is the only resistor I replaced I then fired the amp up and the distortion is still there only the volume is a little better and the distortion is more of a fuzztone in the background now instead of a breakup.

Another strange thing is on the speaker output jack. a large 1.0 cap with a large watt 20 ohm resistor couple between the ground and tip on the jack. Would you like a pic? lol
I checked the schematics and couldn't find anything on the speaker outputs. Should I do away with that?

Subject: Re: A-4 Repair
Posted by chicagobill on Fri, 09 Feb 2018 20:39:55 GMT
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Is the cap on the output 1uF or a 0.1uF? Typical Zobel networks will use 0.1uf and a 22 ohm resistor. Have you tried the amp with a different speaker?

To measure the voltages, set your meter to read dc voltage. The highest voltage that you will see is about 45 volts, so set your meter to the range that will cover that amount of voltage.

Set the amp up on a well lighted bench top and plug the amp into the wall socket and turn it on. If you have a light bulb limiter use it for now. Connect the black lead of your voltmeter to the metal chassis. Carefully touch the red meter lead to the different points in the circuit and see what voltages you get compared to the voltages listed on the schematic.

For example, the two large filter caps each have two screw terminal on the top of the cans. Touch the red lead to where the red wires connect to the cap and read the voltage. You should get about +45 volts dc. Next check where the green wires connect to the other filter cap, you should read -45 volts dc.

The readings that you get will not match the schematic exactly, but what you look for is something that is completely wrong. Be very careful when probing, because if you accidentally short two points together with the tip of your meter lead, you can cause problems, like shorted transistors, etc.

Watch out for the 4 metal heat sinked transistors on the power amp pc board, because the metal cases are connected to the circuit and have high voltages on them.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Fri, 09 Feb 2018 22:07:39 GMT
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The cap definitely says 1.0 MFD not a .1 and I have tried a couple different cabs, same results.

Thank you chicagobill for the tutorial on reading the voltages I will get right on that and I will be

very careful!

Subject: Re: A-4 Repair
Posted by Jonomega3 on Fri, 09 Feb 2018 23:30:16 GMT
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Because my voltmeter prongs couldn't reach the farthest prongs of the transitors I was only able to measure the collector and base of 701 and 702, both on the collector were -34. On the base of 701 216 mv and 702 was 253 mv on the base. 703 was -34 on the base and -35 on the emitter. I am thinking so far they are not that far off?

Are there special leads you can get for the multimeter to read these transistors? If so where are they available? Or would you detach the board and read them from the backside solder points? In any case, its pretty tricky I must say

Subject: Re: A-4 Repair
Posted by chicagobill on Sat, 10 Feb 2018 04:46:30 GMT
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Welcome to my world. Yes, there are clip adapters that can get into tight spaces like that.

Or look for what the other transistor leads are connected to and see if you can access that connection point instead. Both emitters of 701 and 702 are connected together and they connect to a 82K resistor R705. Can you reach the end of that resistor?

Subject: Re: A-4 Repair
Posted by Jonomega3 on Sat, 10 Feb 2018 17:00:39 GMT
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I can only imagine doing this all the time, I really respect you guys for helping keep these time machines alive. There are very few of you around at least not in my part of MD there isn't so thank you very much!
Here are the reading I have, Guess I should replace all 3 then?
Q701 B 223mv
E .824v
C -34v
Q702 B 255mv
E .82v
C -34v
Q703 B -35v

E -3.60v
C -34v

Subject: Re: A-4 Repair
Posted by chicagobill on Sun, 11 Feb 2018 04:54:24 GMT
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I think that you may have reversed the Collector and Emitter readings of Q703.

The rest of the voltages are pretty much what they should be. The 60 on the emitters is a typo, I think it should be 0.6 volts.

Is the current problem now a fuzzy distortion that is constantly there in the background and not just a distortion on peak signals?

And for now I would remove the cap and resistor from the output jack.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Sun, 11 Feb 2018 05:27:49 GMT
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"I think that you may have reversed the Collector and Emitter readings of Q703."
Yes, I wrote it down in my notes right but copied it to the post wrong, lol.

"The rest of the voltages are pretty much what they should be. The 60 on the emitters is a typo, I think it should be 0.6 volts"
Ok, that does make sense

"Is the current problem now a fuzzy distortion that is constantly there in the background and not just a distortion on peak signals?"
That is correct

"And for now I would remove the cap and resistor from the output jack."
Yes, I did, and no change

Subject: Re: A-4 Repair
Posted by stevem on Sun, 11 Feb 2018 11:24:19 GMT
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Yes, that's .60 volts even on the latter 703 and 704 boards.

I would just replace those 3 transistors since it's a pain to get at them and hopefully be done with it!
For voltage test purposes I have long 3 wire extension leads that I solder in that start off in Molex connectors so I do not have to fret about them shorting out to each other.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Sun, 11 Feb 2018 15:58:27 GMT
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"I would just replace those 3 transistors since it's a pain to get at them and hopefully be done with it!"

Sorry for all the questions and my main goal is to get the amp working properly again but Im curious to know... would the quality or transistors effect tone in the power amp circuit or in just this circuit? Ive been doing a search on transistors being sold, looking at NOS Germanium transistors available which are probably 3 times the price of the standard that I bought from radio shack several years ago. Don't mean to open a whole other can of worms but Im just thinking in terms of keeping the great tone the amp had before it went south. If it doesn't matter then great! but if it does I would be happy to go extra couple $ and get the NOS.

"For voltage test purposes I have long 3 wire extension leads that I solder in that start off in Molex connectors so I do not have to fret about them shorting out to each other."

Great idea, the set of leads Im using are pretty old and kinda bent up, I could modify them to work on these hard to reach transistors and buy a new set of leads, thanks!

Subject: Re: A-4 Repair
Posted by chicagobill on Sun, 11 Feb 2018 20:41:53 GMT
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First off, there are no Germanium transistors in these amps. Only the very early Lot-O-Tone heads had them and they failed so often that they were dumped for Silicon transistors. NOS transistors are great if you are working in a museum and want to keep things absolutely original. I use modern replacements that are cheaper, quieter and often higher rated that the originals. Your amp sounds like it has already been worked over a few times, so I wouldn't worry about originality.

If I fully understand what you describe as the fuzzy distortion, it sounds like a perfect description of crossover distortion in the power amp. At least that is what I would look at as a starting point.

Crossover distortion occurs when the power amp circuit is under biased and the two halves of the audio signal don't transition smoothly from positive to negative polarities. Instead of transitioning perfectly in the middle, the first half shuts off before the second half turns on, creating a flat spot between the two signal halves.

Check the voltages at each end of the string of three bias diodes. There should be somewhere between 1.5 volts to 2 volts difference between the two ends of the diode string. This is a very delicate part of the power amp circuit because of the temperature sensing diode that is thermally connected to the heat sink. Be careful if you move this diode as the leads have been known to snap off at the case and the ends can also come unsoldered from the pc board. If the diode string is broken and the amp is on or turned on, the two halves of the power amp both turn on at the same time, causing the driver and power transistors to go up with a puff of smoke.

You can add heat shrink tubing to the metal tips of your meter leads leaving only a small tip exposed to avoid the tip from shorting things as you probe. I have a set of spring loaded clip adapters that I can use when things are really tight. With these you really have to attach the lead with the circuit power off and then turn it on and get your reading.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Mon, 12 Feb 2018 02:05:03 GMT
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All good points on the NOS vs new parts, thanks!

Also great tip with the heat shrink tubing on the leads, thatll make this a lot easier. I will do the voltage test on the bias diodes tomorrow and get back with the results, thanks greatly for all the excellent info too

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Subject: Re: A-4 Repair
Posted by stevem on Mon, 12 Feb 2018 12:29:04 GMT
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I would also lift one end of cr704 and cr705 to test them for shorts or leakage.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Mon, 12 Feb 2018 14:04:49 GMT
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"I would also lift one end of cr704 and cr705 to test them for shorts or leakage."

Cant seem to find these components you mentioned on my PC 702 board as well as Q705 and Q709 but they are showing up on the schematics.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Mon, 12 Feb 2018 15:10:53 GMT
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At CR701 I have .9v at the end of CR703 I have -387mv My math is terrible but I think that is close to 1.5 volt difference? Maybe 1.3 rounded off

Subject: Re: A-4 Repair
Posted by stevem on Mon, 12 Feb 2018 15:18:35 GMT
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Is there traces there for them and is the board drilled for them?

Subject: Re: A-4 Repair
Posted by Jonomega3 on Mon, 12 Feb 2018 15:41:23 GMT
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No, no holes and no sign of any missing components on the board at all.

I think the reason for this is mine is an older model with the two breakers on the front (no fuses) and the schematics are for the later PC 702 with the fuse. I have the later A-4 too and just pulled the chassis and confirm the schematics match it identically.

I say later but according to the tranny and pot numbers its only later by a couple months

Subject: Re: A-4 Repair
Posted by chicagobill on Mon, 12 Feb 2018 17:47:45 GMT
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As I mentioned much earlier in this thread, early 200A's did not have the protection circuit that would use those missing diodes. So at least now we know that yours is an early 200A without it. And a couple of months could be a lifetime in terms of production changes.

Yes, the bias voltage is about 1.3 volts rounded up. I would like to see that up a little higher, just to see if that cleans up the distortion.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Mon, 12 Feb 2018 18:25:04 GMT
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So change out all three diodes?

Subject: Re: A-4 Repair
Posted by chicagobill on Mon, 12 Feb 2018 19:25:46 GMT
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You will have a problem replacing the 1N3754, so check it but you will need to try and fix the bias with the other two didoes (see above warnings). If your meter has a diode test function test all of the diodes and see what voltage readings you get when you test them. The meter will read the voltage at which the diodes conduct. You can use these voltages to select the right mix of diodes to get the bias right.

I know that the board had been messed with previously, did you get it all back to normal? Have you checked the other voltages on the board? Any signs of burned resistors or wrong value components?

Subject: Re: A-4 Repair
Posted by Jonomega3 on Mon, 12 Feb 2018 21:07:48 GMT
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"If your meter has a diode test function test all of the diodes and see what voltage readings you get when you test them. The meter will read the voltage at which the diodes conduct. You can use these voltages to select the right mix of diodes to get the bias right."
CR701 .5v,
CR702 .0000 both ways
CR703 .49v
I guess the open reading on CR702 may explain it?

"I know that the board had been messed with previously, did you get it all back to normal?"
Yes, I clean off all extra resistors and caps and replaced the four .82 ohm block resistors with proper value 1 ohm as well as the one 82k resistor as per the schematics. There no sign visually of burned resistors

"Have you checked the other voltages on the board?"
Havent measured the boards other voltages yet but will do that tonight carefully

"Any signs of burned resistors or wrong value components?"
No signs of burned resistors or leaky E caps and they test correctly with my ESR meter. I went through all the values of other components compared to schematics and all is as it should be.

Subject: Re: A-4 Repair
Posted by chicagobill on Mon, 12 Feb 2018 23:08:18 GMT
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Yes, .000 or zero (not open), could be your problem. Try replacing it.

Subject: Re: A-4 Repair
Posted by stevem on Tue, 13 Feb 2018 12:39:43 GMT
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Bill, do you have a schematic of this early 702 board you can email, or fax me?

Subject: Re: A-4 Repair
Posted by Jonomega3 on Tue, 13 Feb 2018 16:04:03 GMT
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Ah shoot, that wasn't it, distortion still there but at least the voltage is up to 1.89 on the string of diodes now. I still haven't gotten around to checking the rest of the voltages but will try to do that this evening.

Subject: Re: A-4 Repair
Posted by chicagobill on Tue, 13 Feb 2018 21:40:08 GMT
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Steve- I'll have to look. I have just been looking at the one posted in the technical section here.

Jonomega3- Well, I hoped you'd found it. Keep us informed of your progress.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Thu, 26 Jul 2018 16:43:49 GMT
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I,m back on it! Sorry, just had to take a break from the amp for a while. In testing the 6 power transistors found a few that are bad....all are RCA, 4 are the 36892 and 2 have the numbers 3 7 0000 7701 on them, are these the same as the 36892 transistors? replacements would be NTE130?
Thanks!

Subject: Re: A-4 Repair
Posted by chicagobill on Fri, 27 Jul 2018 04:02:33 GMT
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Those numbers don't mean anything to me other than the date code of 1977, so I don't know if the 2 replacements are correct or not. I would suggest that you replace the 4 outputs with the same number or same types. The generic part number is 2N3055, which you will find a lot cheaper than the NTE parts.

Which of the 6 transistors are bad, the RCA's, the replacements? There are 4 for the power amp

and 2 for the low voltage power supply. If the 4 RCA's are good, use them in the power amp and replace the power supply transistors with new ones. If some of the RCA's are bad, replace the 4 power amp outputs with new ones and use any others in the power supplies. The power supplies do not need matching transistors, while it is best to use the same type transistors in the power amp section.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Sat, 28 Jul 2018 18:31:00 GMT
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Sorry bout the numbers. Didn't realize they were all the same type transistor.
Two that are bad are RCA and I suspect one of the no label transistor is bad as well.
They were cheap enough so I ordered 6 today

Subject: Re: A-4 Repair
Posted by stevem on Sun, 29 Jul 2018 10:06:44 GMT
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On circuit traces that have had parts yanked out of them I would also test for good continuity between parts.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Sun, 29 Jul 2018 18:10:26 GMT
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Good point, I will do some checking while waiting for the parts to come, thanks!

Subject: Re: A-4 Repair
Posted by Jonomega3 on Thu, 16 Aug 2018 15:45:19 GMT
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No change...I'm seeing +37 volts dc at the speaker output schematics say +34 , that normal or a mistake in the schematics?

Subject: Re: A-4 Repair
Posted by stevem on Thu, 16 Aug 2018 16:40:12 GMT
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I believe your reading the schematic wrong as + 34 volts on the red wires is the power supply rail.

If you are seing 34 volts positive on the speaker jack then you have one or more output transistors or driver transistors bad in the positive side of the output stage.

The normal D.C. Voltage seen on the speaker jack 2 seconds after turn on should be less then .045 volts D.C. .

Also if you are seing that level of D.C. Voltage on the speaker jack do not plug in a speaker as 34 volts is = to over 140 watts and you will likely blow the stock speaker (s)!

Subject: Re: A-4 Repair
Posted by Jonomega3 on Thu, 16 Aug 2018 17:14:36 GMT
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Ah, thanks Stevem testing of the driver transistors, in circuit they don't read as good but not bad either they all read the same actyually so its possible all are bad I guess, ugh! The output Transistors were replaced and all test good now.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Thu, 16 Aug 2018 22:51:15 GMT
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So, the driver transistors are the 4 inside the heat shields? If so, I have the numbers 38736 and 38737 2 of each, all RCA in there now. I suppose these numbers are not the type of transistor I need to order?

Subject: Re: A-4 Repair
Posted by stevem on Fri, 17 Aug 2018 10:51:31 GMT
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If your fuse is the right value then you likely have no bad output transistors because they would blow the fuse.
Before we get into anything else here it's what you have posted true, that you have a plus 34 volts on the speaker output jack ?

Subject: Re: A-4 Repair
Posted by Jonomega3 on Fri, 17 Aug 2018 10:58:32 GMT
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Steady 37 dc volts, mine is the early circuit breaker model no fuse on this one

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Subject: Re: A-4 Repair
Posted by stevem on Sun, 19 Aug 2018 10:15:30 GMT
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Well it's time to yank the driver transistors Q708 and Q704 and test them and also check that the 1 ohm 5 watt resistors have not be blown open.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Mon, 20 Aug 2018 16:18:50 GMT
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Pulled Q704 and it tested as bad, also replaced one of the questionable 5 watt 1 ohm resistors. Like the output transistors should the driver transistors be matched? Or just get replacements for the one that is bad if that's the case?

Subject: Re: A-4 Repair
Posted by stevem on Mon, 20 Aug 2018 16:27:04 GMT
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A replacement for that is a NTE128 , this is a TO39 case transistor like the original but without the heat sink so you will need to also get a slip on star type heat sink to make it live.

Subject: Re: A-4 Repair
Posted by Jonomega3 on Fri, 24 Aug 2018 22:22:57 GMT
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found RCA NOS 40409-10 on Ebay and put them in...good news the amp actually works now, bad news the distortion and low volume still there. Checked some voltages and getting voltages everywhere but at the connection at the 40410 base where schematics say should be 15 volts, getting about 1 volt at the 1st diode

Subject: Re: A-4 Repair
Posted by chicagobill on Sat, 25 Aug 2018 04:15:51 GMT
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The 15 volts is a typo. If it wasn't there would be about 13 volts across the bias diode string. The usual voltage would be about -0.5 volts.

Does the distortion occur with both preamp channels?

Subject: Re: A-4 Repair
Posted by Jonomega3 on Sat, 25 Aug 2018 11:58:21 GMT
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Yes distortion in both channels,
so 13 volts should at 40410 base, not 15v? I'm not getting any voltage there. I'm getting a little more than 1 volt at the input of the 1st diode

Subject: Re: A-4 Repair
Posted by Jonomega3 on Sat, 25 Aug 2018 15:43:04 GMT
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Shouldn't respond till I've had at least a second cup of coffee, LOL! You are saying there should be -0.5 volts at the base, sorry for the misunderstanding

Subject: Re: A-4 Repair
Posted by chicagobill on Sat, 25 Aug 2018 16:41:18 GMT
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There should be a small voltage at the base of the transistor. Because of tolerances of the individual components, the reading will be different for every amp.

My point was that the 15 volts is a typo. In fact one schematic that I have looked at lists .15 volts there. Maybe the decimal got wiped out at some point along the line.