

Miscellaneous Problems Solved!

Here are a some miscellaneous problems that were resolved. I will update this page periodically with new resolved problems. Thanks.

Revenge of the Tale of the Lost Volume

My Hot rod deville has loss of power and the clean channel is breaking up sounds like crap, i have read all other reviews and check out those things discussed but still cant find the problem, can you help.

Zenman,

You could have a power tube failure. Have you tried a set of known working power tubes? This often causes your problem. It could also be a screen resistor failure, or (less likely) a bad output transformer. Do you have any electronics experience? If not, then take it to a tech. Being able to solve a problem like this requires working on the inside of the amp while it's on, which can be very dangerous. About all a regular guitarist can do is replace the power tubes and see if it fixes the problem.

Let me know,

Justin

Hi Justin, I have replaced all the tubes and still have the same problem, i am a Master electrician and have experience, I have checked the the screen resistors. I have 480vdc at pin 3 on power tubes, 480 vdc at r61 and r62 from one side of resistor to ground (both ends of resistor) speaker connections are good, i have read your page on fixing problems and have checked all the problems that other people have had and everything seams to check out, plugging into the power amp input also yields a distorted clean, nothing looks chard, speakers are in good shape and bias is set at 75 from test point to ground adjusting this also has no effect what should i set the bias 2 it seams high? so my dilemma continues, Thanks and hoping you can help me like you have all the others

Zenman,

>plugging into the power amp input also yields a distorted clean

This is an important clue. So we know that the problem is in the power amp. The next most intuitive place to check would be the 82K resistor on the phase inverter. If this resistor would happen to come open, it would effectively "turn off" the signal to one power tube. This would result in heavy crossover distortion at low volumes, which sounds terrible btw. Measure the voltages on pin 1 and 6 of V3. If you don't read any voltage on one then we've found our problem. The last resort would be the output transformer, though I've only heard of one other case where this had happened.

Justin

Hi Justin, We Have 214 volts at pin 1 and 0 at pin 6

Hi Zenman,

There lies your problem. You'll need to replace the plate load resistor that came open. To pinpoint which one it is, check the voltage on both sides of R57 and R58. On one side of the resistor the voltage should be higher, and on the other lower (i.e. there should be a voltage drop)--you probably already know this. According to the schematic, R58 has came open; but I have a feeling it's R57 as Fender's schematics sometimes have mistakes. The bad one will have a high voltage on one side, but no voltage on the other.

Check here to order the correct part(s)..

http://studentweb.eku.edu/justin_holton/plateloads.html

Let me know how it turns out,

Justin

When you said it was a 82k resistor gone bad at the phaze inverter i looked at the schematic and from the schematic it had to be R58 but when i checked it it was fine, I then went to R57 and low and behold there it was R57 had gone bad, I was just waiting on your email to confirm.

I will let you know how it turns out, Thanks for the link, Its hard to find people who will stop what they are doing in todays busy lifestyle to help another, I often do myself, And i see my good deeds have not gone un-noticed I truly and deeply thank you for your time and expertise in this matter, May good things come to you,

Thank you: Ralph *****

Ralph,

Don't worry about it, I'm glad to help yourself and others. Let me know if you have any other problems.

God bless,

Justin

Bias to 68mV with 6V6s?

Justin,

Thanks for the reply a few days ago. I have one more question. I bought some 6V6's , two ECC83's and an ECC832 from Bob. When checking the mV when biasing, I now only read about 14 mV when the blue pot is straight up at 12. You stated on your site that the

amp should be running about 68mV. But, would this be true when using 6L6's? I called a guy in town and he thinks 6V6's should run around 22mV. What do you think?

I'm not sure if I like the new sound yet. When playing my Analogman Tube Screamer Ts9/808 Silver on the new tubes with the settings the same as with the old tubes, I hear more overdrive at lower volumes than with the 6L6's. I reckon this is what's supposed to happen. Lastly, I put in the two ECC83's and forgot to see if I was putting the balanced one in V3. So, it could be in there or I could have them backwards. Anything wrong with having them switched around? Thanks.

Chris

Hey Chris, actually 68mV is for 6L6GCs *only*, 6V6s are totally different. Tell me your plate voltage, which is measured at pin 3 on either power tube. (See the link to see where pin 3 is.)

http://studentweb.eku.edu/justin_holton/bias.html#byear

Put the red probe on pin 3, and the black probe on the chassis. Be careful though because you're going to be measuring over 400DCV. Tell me what the DC voltage is and I'll tell you exactly where you should be biased, and give you an acceptable range to play with.

6V6s distort a lot earlier, after all they put out half the power of the 6L6GC, but IMO the distortion in the clean channel sounds much better than anything in the drive channels. Don't forget to play with the tone controls, as these tubes are much brighter and have less bass response.

As far as the balanced tube in V3 goes: It's not particularly important IMO. Which ever one sounds the best is the one you should stick with.

Let me know about the plate voltage,

Justin

Hey,
Both tubes are at 484.

Chris,
29mV is a good start, but you can bias as hot as 40mV--these numbers would be read at the bias test point. That's 50% and 70% plate dissipation, respectively. 29mV with 6V6s, and with your plate voltage, is about the same as 68mV with 6L6GCs. Do not bias hotter than 40mV, though from what I've read the tubes might be able to take it. Remember, experiment with the bias and see what sounds best to you.

The guy who told you 22mV, normally that would be a good number, but he means 22mV for each tube. Since you're reading the **combined** cathode current at the bias test point, I recommend no more than 40mV (or 20mV each). The reason is because your

plate voltage is much higher than normal. (In most Fender amps with 6V6s the plate voltage is around 420V, since your plate voltage is higher the current through the tube must be less than normal.) If you can't get the bias pot to adjust to the range you want, then try replacing R77 with a 47K resistor. The carbon film resistors you get in a little bag at radioshack will work fine. 14mV is way too cold for these tubes, you're likely hearing crossover distortion.

Hope this helps,

Justin

Hey Chris,

About R77: Rather than unsoldering the 100K and resoldering in a 47K there's something much easier you could do--soldering another 100K resistor across R77. Two 100K resistors in parallel with each other will equal 50K in resistance, so it'd basically be the same thing as soldering in a 47K. Plus, 100K resistors are more widely available.

Just thought you'd like to know,

Justin

Thanks a lot. I just got it where I like it. I can definitely tell a difference.
Thanks for the help. Awesome site

No prob, glad I could help.
Justin

The Tale of the Mysterious Motorcycle Squeal

Hi Justin

What do you reckon to this ?

.....Encountered in a recent production HRDVL 2 x 12.

Approx one minute after switching from standby, an oscillation of increasing frequency can be heard through the speakers [not especially loud.. and not affected by volume, gain or any other controls. [The sound is rather like an accelerating motor cycle until it becomes a higher pitched whine.] After a further couple of minutes, the noise subsides and the amp returns to perfectly normal behavior !

Alternatively, if the amp is momentarily switched to standby and then back on, the noise will disappear instantly, not to return !

The amp operates perfectly normally in all other respects throughout this short period

after switch on, and the problem does not recur for as long as the amp remains on.

Puzzled ;^)
Smokestack.

Smokestack,

I suspect it's a 5W resistor problem, though that it stops after a few minutes is really odd. The reason the 5W resistors take a few minutes to start oscillating is because it takes a little bit for the cold solder joints to heat up--once hot they'll randomly start conducting. So this could also be a cold solder joints problem as well that could be unrelated to the 5W resistors.

As always you should rule out the tubes, as they cause 90% of the problems related to tube amps.

Hope this helps,

Justin

I'd have thought 5w resistors too, but they're sorted.

[It's the fact that switching to standby and straight back on causes it to stop instantly that puzzles me !! ...and the fact that it's unaffected by the volume, or any of the amps controls. It doesn't get louder as you turn the amp up in either gain mode.]

I fancy it's tube related. Too weird to be down to anything else! I'll have to try swapping them all out in turn & see what happens. Could be tedious ;^)

Take care

Original suspicions were correct, 5w resistors.

[I'd foolishly discounted these on this occasion because the owner's tech had recently replaced them. Thing is, he only soldered three of the four bloody legs in !]

This sort of explains the odd behaviour. Something gets warm and moves, contact lost, something else then gets warm and expands, contact restored. Suffice is to say that with all four joints neatly re-soldered, problem gone and the amp actually sounds noticeably better for it.

Take care,
Alan

The Tale of the Lost Volume

Hi Justin,

I was at band rehearsal last night and had a problem with my HRD 4 x 10. I experienced a loss of volume and ended up using another amp because my fender just wasn't loud

enough.

When I got home I could turn the volume up to max and the volume sounded like it use to sound at around 2.

I put some Svetlana 6L6GC's in and I couldn't bias them past 60mV.

When I put the original 6L6B's in biasing pass 60mV wasn't a problem but still experienced a loss of volume.

I noticed one of the original tubes was dramatically glowing orange.

I reinstalled the tube and it stopped doing it, but still had a loss of volume.

After all that I was wondering if you have heard of this loss of volume before (without being the speaker input). I was wondering about the screen resistors or probably the output transformer. How can I check the O/P transformer on these amps? Your comments will be greatly appreciated

Thanks in advance

Nigel

Hi Nigel,

Sounds like a screen resistor problem to me. Check the plate voltage of both tubes. This is read off of pin 3 of the power tube socket, see picture at bottom of biasing page for reference. As long as you're getting 400+ DCV the output transformer should be okay.

Justin

Hi Justin, thanks for the information.

The plate voltage at V4 is 474 VDC and at V5 it is 475 VDC. The voltage at the bias test point is 66mV. (Are these values to high?)

This seems way to high? does this problem now confirm it's the screen resistors? R62 & R63?

Finally, I put Svetlanas 6L6GC's in my amp and could only bias them as high as 60mV with the bias pot to max. The plate voltage at V4 was 470 VDC and V5 was 474 VDC. Does this mean the valves (Svets) are not matched very well, or is this difference (4 Volts) alright.

Is the closer the plate voltage value of the two valves, the better there matched? Again I know it's alot but your information is greatly appreciated, especially trying to figure out my volume loss problem.

Cheers mate
Nigel

Hi Justin, I forgot to ask whether you have to de-solder one of the legs of the screen resistors to measure the resistance? and what resistance should they be, as I don't have the circuit diagram?

Cheers
Nigel

Hi Justin, last e-mail I promise. I measured the voltage drop across R61 & R62 on my Deville and I measured 477V across R61 and I got nothing across R62 (0.6V)

Is there any place on V4 I can measure to confirm the R62 is U/S and do you still recommend changing the screen resistors from 470 ohms to 5W/500V 1K resistors?

Cheers mate
Nige

Hey Nigel,

Your plate voltage and biasing readings seem okay.

But 477DCV across R61!? Sounds like a power tube, V5, has an internal short. You need to replace your power tubes. But don't freak out, it's okay, this stuff happens. (This is one of the reasons you don't find tubes in very much stuff anymore.) Does R61 look charred? It might be, so you may have to replace the resistors.

Oh yes, I have 5W 750V 1K resistors in my amp and it sounds great. From what I've read, it's best to have some fairly large screen resistors in your amp. The only problem is that the resistors I have are absolutely HUGE, so the installation job was really funky.

http://www.mouser.com/index.cfm?handler=displayproduct&lstdispproductid=300218&e_categoryid=355&e_pcodeid=02830

These resistors aren't quite as rugged, but installation will be much easier.

The reason Randall Aiken, tube amp guru, recommends using 5W 750V screen resistors is so that if a power tube shorts out the screen resistors can take the entire power supply voltage, which is what R61 is doing. With extremely rugged screen resistors we won't have to replace them in the case of a short--that's the only reason to get heavy duty ones. Normally you shouldn't read hardly any voltage drop across your screen resistors, so we know what your problem is. A larger screen resistance, on the other hand, is different--your amp should be more touch sensitive at lower volumes with 1K resistors.

Hope this helps,

Justin

Yeh mate, R61 is charred. Thanks heaps for your help, really appreciate it. The problem I have now, is I dont know which Power tube has an internal short because I have swapped two lots of matched pairs in and out over the last week. I replaced the original Fender 6L6B's with Svetlana 6L6GC's, and then swapped them back and forth again while trying to find this fault. Is there anyway I can measure the pins on the tube with a multi-meter to check for internal shorts? I have only had the Svetlana tubes a couple of days, so I hope they aren't the problem.

Cheers
Nigel

Hey Nigel,

You might be able to spot the short with a multimeter. When one of my tubes had a short I was able to detect it this way.

Just set your meter to read ohms, then touch one probe to pin 4 while the other probe checks all other pins. (Pin 4 is connected to the screen grid.) If you get a really low resistance, especially at pins 8 or 5 (cathode and control grid, respectively), then you've found the problematic tube. Which ever tube was installed in V5 when the problem first appeared would likely be the culprit.

BTW, I forgot to mention that using 1K resistors will also help prevent another screen failure like this.

Good luck,

Justin

Justin I live in Australia and have just ordered some "fusible" resistors rated at what you said because I can't find "flame proof" ones anywhere. Do you know if they are the same thing? Cheers Nige

Nigel,

Well, I don't know if those were the best choice. Fusible resistors have properties of both resistors and fuses, that is, if the current through the resistor is exceeded it'll blow like a fuse. So once it's blown it's no good.

Flame proof resistors, on the other hand, are flame retardent. A big problem with the old vintage amps is that they didn't use flame proof resistors; they used the regular carbon comp kind, and many screen resistors would catch fire inside the amp. Now a fusible resistors won't catch fire, it'll blow before that, but you may find yourself replacing them again. If you ever need to reinstall the screen resistors, make absolutely sure that you use flame proof resistors. This isn't an option. If you look on the HRD's schematic you'll see a

"FP" next to the screen resistors, this is telling us to only use flame proof resistors.

BTW, did you check their dimensions? One of the things I done was made sure the resistor was small enough to fit comfortably on the PCB.

Good luck,

Justin

Justin, I have ordered some 3W 1.5K metal oxide resistors (out of stock with 1K) from RS Australia.....stock no. 214-2780.

There website is <http://www.rsaustralia.com/>

That's the closest I can find. It doesn't say on the website that they are flame proof but in the catalog it does.

I also checked my power tubes last night for shorts but all were ok. R62 is defiantly charred though.

Cheers mate
Nige

Nigel,

Good choice. According to Kevin O'Connor, major tube amp guru, you should have at least 1K screen resistors in all Fender amps, so 1.5K will work great. With a length of 15mm they should also be able to fit nicely into the PCB.

Is it R61 or R62 that is charred? Or both?

Justin

Only R61 is charred, R62 looks fine. I checked the socket for shorts as well and they seem to be ok. Don't know what caused R61 to char. There was hardly any voltage drop across it (R62)when I measured it. I don't know why the resistors I ordered don't say they are flame proof on the website. I assume all power resistors would be flame proof though.
Cheers mate Nigel

Nigel,

I double check, and they're flame proof. If you look on the right hand side there's a button that says tech info. You have to sign up, but it'll give you the spec sheets.

R61 was probably charred from an internal short. These shorts can be intermittent BTW.

Justin

Cheers mate, thanks for all your help, really appreciate it!

Nigel

Justin,

I changed the Power tubes and the bias voltage doesn't rise now. I changed both screen resistors and tubes and I hardly have to move the bias pot off minimum to get a little over 60mV. The amp still hasn't changed in volume though. It's still not as loud as it was. Before I hardly had to touch the volume knob and it was too loud, now I it goes to about 1 and a half before I even hear anything come out of the amp. I guess I just have to accept it Cheers again for all your help Nigel

Sorry to bother you again Justin, but I have just replaced my screen resistors and when I checked the bias voltage, it just kept on rising. It started at about 80mV and while I was measuring, it kept rising until I ended up turning the amp off. Have you heard of this before?

Cheers
Nigel

Nigel,

No, you don't have to accept it. Make sure you don't use whatever tubes you had in when the screen resistors were fried. Tell me this, when you plug your guitar into the POWER AMP IN input of the effects loop does the amp seem louder? This will tell us if the volume is being lost in the preamp or power amp.

Your tubes are probably just warm tubes, so the 60mV thing isn't no big deal. Some tubes are just more conductive than others, and it's true that the Hot Rod's bias pot has a narrow range.

Justin

Justin,

I changed the tubes again and the volume is better. I plugged my guitar in the Power amp input socket and it was loud, but in saying that it's probably the same level volume as when I have the "volume" knob (pre amp) on 3. Does that sound right? I swapped my guitar lead back and fourth until they sounded the same volume.

Basically when I have the volume knob at "3", it's the same amount of volume when I am plugged in at the Power amp input.

It's defiantly louder than it was. I put another set of Svets 6L6GC's in it. Another question I wish to ask is, does changing the screen resistors to a higher value affect the volume sensitivity? and how can I check if the pre amp valves are functioning correctly?

Cheers mate
Nigel

Hey Nigel,

That's great. Plugging into the power amp in.. I found 1.5 to be equally as loud on my HRDx. I'm not sure what to make of the difference. I don't think the larger screen resistors would make the amp quieter. The only certain way to check the preamp tubes is

with a tube tester, or installing in a known set of good preamp tubes.

Another thing I would definately do: Check both PCBs for other charred resistors. R61 may not be everything. Pay close attention to the PCB the tubes are mounted on, and areas around the filter caps.

Justin

Justin,
that's what I thought. The volume at 1.5 used to be louder than it is now. I didn't think I had to turn it up to 3 to be the same volume as the power amp input. The volume is better than it was but still not the same as it use to be.
I will check the PCB for any other components that might be u/s.
What inparticular should I check for, apart from the obvious. Should I check the diodes ect?
Cheers
Nigel

Nigel,
No, I wouldn't bother checking diodes and such, unless you really want to.

Justin

Justin,
I checked both PCB's and can't see anything wrong. I think I might change the pre amp tubes. I can get them from the attached pdf cheaper than normal.....just don't know which ones to get!
The 12AX7-EH look like they have a different socket. trying to decide between 12AX7-EH or the 12AT7 ECC81 dual triode v amp
Any suggestings? I won't bother you after this!
Cheers
Nigel

Nigel,
You're not bothering me at all. Any 12AX7 or 12AT7 will work. There are other tubes, such as the 12DW7, which are popular in small circles that will work as well. The EH tubes are made by Sovtek, which is the Reflector corp. in Saratov, Russia. What you have in your amp now are also Reflector made tubes. These tubes are okay, but if possible I would go for some EI or JJ tubes. I would get a few 12AT7s as well as 12AX7s. Some people have nothing but 12AT7s and claim it makes the drive channels better. I tried it myself, but preferred 12AX7s in V1 & V2. So it really all depends on taste.

You may find this useful.. <http://home.mira.net/~gnb/elec/valveaus.html>

Justin

Justin,
could a problem with V3's plate resistors cause a drop in volume compared to the power amp input volume?
All I know is that the volume knob was alot more sensitive than it is now. The amp is still loud enough so I'm not going to worry too much more about it. It's just hard when you know somethings wrong, but everything seems to be alright.
I will replace the pre amp tubes as well anyway.
I would think that if there was a problem with the pre amp section decreasing volume, wouldn't the power amp stage be affected as well?

Nigel

Nigel,
If the plate resistor on V3 had come completely open it could cause a substantial loss of volume. I'm putting together a page on improving the reliability of Hot Rod amps, and replacing the screen resistors, plate load resistors, and 5W power resistors are all highly recommended--those three seem to cause the bulk of the problems in these amps.

Total cost? US\$2.40

Justin

To be continued..

Humming then Blowing Fuses?

Hi, on the fender forum I read that you had trouble with a fuse blowing in your hot rod deluxe. Apparently the amp would hum loudly before blowing the fuse. I know someone with a similar situation, and I was wondering if you had found the source of the problem, so as to give us a hint as to what it might be.

Thanks,

Justin

Hi Justin,

I learned that my output transformer was blown. It cost me about \$60.00 to get it fixed. Sorry for the news.

Frank

Master Control not Working?

I just acquired a hot rod deluxe that is new for all intent and purpose but the MASTER volume control doesn't work at all?? everything else is perfect. Am I missing something??

I suspect K2 (a relay) has gone bad--happened to my Hot Rod once. Try replacing it with the one below..

[G6A-274P-ST-US-DC24](#)

Thanks to those of you who responded to my post for hot rod deluxe trouble..It was indeed the K2 relay and it works fine now.. Honestly don't like the tone very much... but that's a whole other issue!! They just don't build 'em like they used to..Thanks to all

From a forum (link removed)

Screeching Reverb Control?

Hi Justin, came across your site a few days ago. it's really informative! good work, mate.

i posted this thread on the FDP but there weren't any replies, so i'm wondering if you could offer any advice:

i was just playing with my '00 Hot Rod Deville 410 for about half an hour, and it suddenly started producing this strange high-pitched noise that gets louder and louder as i turn up the reverb. the noise will cut off when the reverb is turned to '0'. The amp still works as normal when the reverb is not being used.

i just bought the amp used a few days ago and it was working perfectly fine until now. anyone has any idea what is going on? the amp is in very good condition and was claimed to be hardly used by the previous owner.

could something have triggered off this phenomenon? could plugging out the guitar while the amp was still on have damaged the reverb tank?

Thanks for your time, hope to hear from you soon.

-Ben from Singapore

Hey Ben,

The problem is most likely a broken ground connection on the return side of the reverb tank. This is likely somewhere on the PCB, though it could be on the tank end. Open up the amp, and visually follow the two cables coming in from reverb tank. These cables are coaxial cables, which is basically a wire shielded inside of a wire. The braided shielding of the co-ax should be soldered onto the PCB. If you're experiencing heavy noise and screeching the shielding may be broken. (Reverb circuits are very susceptible to

interference.) Someone just needs to solder the shielding back into place. That's it. It may have been poorly soldered onto the PCB to begin with, or someone may have accidentally jerked the cables too hard.

BTW, don't stick your hand inside the amp unless you know what you're doing.

Justin

Thanks a million, Justin!

The Tale of the Humming Hot Rod

Hi,

Your site is great!!

Is a small but noticeable amount of hum on the clean channel with no guitar input normal? My amp is new and my blues junior never had this prob, but that's a different animal. My HRDx sounds fantastic and I don't notice it when I'm playing, just when it's on and idle in a quiet room.

Am I nuts? Is this normal?

Cheers

Do you get it with the volume turned all the way down? My amp doesn't hum at all, but I've gotten an email from someone else (who also has a new Hot Rod) with the same problem.

Justin

Thanks for your reply, My problem has resolved itself spontaneously. I was told it was likely due to "dirty power" and they recommended a surge protector with "RF line suppression.

Thanks again

Cheers

Sven