
Subject: Frankie Confusion

Posted by [carlc](#) on Fri, 12 Mar 2010 20:06:38 GMT

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I have a low volume issue with my Frankie. Both channels are the same so the assumption is the problem is in the Driver/Regulator.

I took it to a tech since I don't have test equipment, etc. Initial look it appears that capacitors and resistors are good. Capacitors checked with a tester including C203.

Any ideas?

Thanks,
Carl

Subject: Re: Frankie Confusion

Posted by [chicagobill](#) on Fri, 12 Mar 2010 23:06:36 GMT

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Have you checked the voltages in the power amp?

Subject: Re: Frankie Confusion

Posted by [carlc](#) on Sat, 13 Mar 2010 16:54:46 GMT

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I had to leave, but he was to check them out. I assume all of the voltages shown on the schematic are correct?

Subject: Re: Frankie Confusion

Posted by [steven](#) on Sat, 13 Mar 2010 23:48:38 GMT

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Did you buy the amp with this problem, or did it just happen?
Does it have low volume with no distortion, or does it distort.

Subject: Re: Frankie Confusion

Posted by [carlc](#) on Sun, 14 Mar 2010 13:31:38 GMT

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I bought it new in 1966. It was not played for a long time and just sat in a closet. Does not distort.

Carl

Subject: Re: Frankie Confusion
Posted by [carlc](#) on Sun, 14 Mar 2010 15:10:58 GMT
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Guys,

Here is some info from the tech. His e-mail is wt5565@sccoast.net Steve said he is open to suggestions.

Thanks,
Carl

From tech (Steve Wheeler):

I went to the site and seen what you posted...All voltages check out on the power supply and the DC ripple is well below noise threshold...there is no distortion with the sound and I did scope both channels and at full volume full treble and full bass they were within a few milivolts of each other according to my scope...the amplification factor in the driver board shows good and constant through the entire series of transistors...I loose the signal just as I reach the driver transformer...the transformer reads continuity on input as well as both outputs and since the unit works it is magnetically coupling as it is suppose to...Not sure if the transformer has an internal problem but I am going to go back and look into the reverb board also just to be sure there is no loading occurring although this should not be an issue since the two channels are separate and both show consistency in signal amplification...I am using a 1 MV 1 KHZ signal through the system and it tracks as I say constant through the unit...

All voltages fall within the specs on the output transistors and are very consistent to the schematic...there is one major voltage differential which is at the transformer or Q1 it reads 23 volts at the collector prior to going into the transformer...all resistors in that area read as they should and all voltages prior to that are correct...I changed Q1 and Q 201 with no differential results...I am now going to go into the reverb board to see if there is some sort of issue in there...will get back to you...

Subject: Re: Frankie Confusion
Posted by [stevem](#) on Mon, 15 Mar 2010 10:11:38 GMT
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I will get some voltages off of mine tonight and post them in the morning.
My first thought is that the driver transformer has a shorted winding, I will resistnace check mine for you but some times the only way to check these in by unsoldering them from the circuit and pumping in 10 volts AC from a variac to check out the turns ratio.
What is strange though is if the amp got stuffed in a closet in working order it should still be working if non of the bypass or coupling caps are shot.
Most times these amps have at least two caps that should be replaced with fail.
These are both big black paper cased 500 uf caps, one on the driver board and one on the reverb board if the amp has verb.

Subject: Re: Frankie Confusion
Posted by [steven](#) on Mon, 15 Mar 2010 13:27:46 GMT
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Also your statement in the PM you sent me in regards to the treble control not working would lead me to believe that the 25uf cap off of the emitter of the 3rd gain stage is shorted.

Subject: Re: Frankie Confusion
Posted by [steven](#) on Tue, 16 Mar 2010 10:15:53 GMT
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Here are some results from testing on of my Frank heads last night.

I unsoldered the blue wire on the input side of the driver transformer, and the resistance across that and the red wire was 9.7 ohms

I then switched to the output side of it where I unsoldered the tan wire and the orange wire. The resistance across the tan and green wire was 5.9 ohms. Resistance read across the orange and brown wire was 6.1 ohms.

I then set out to test some A/C drive volatges. I hooked the amps speaker jack up to a 4 ohm test load and my O-scope. I pumped in a 1k test tone into channel one(really does not matter which channel though) untill I got the output of the amp up its maximum RMS power. At this point the amp was outputting 19.11 volts, or 91.2 watts and this was with an A/C line voltage of 118.9.

With the amp still drivin to this RMS power I took my meter now set for A/C volts and placed it across the red and blue wires on the primary of the driver transfoer where I read 12.85 vac.

Switching to the secondary side I then read 4.93 vac across the tan and green wire, and 4.99 vac across the orange and brown wire. These voltage test where done with all of the transformers wires hooked back up and with the amp putting out the wattage stated as above.

As you can see the higher output voltage seen across the brown and orange wire confirms the higher resistance reading also seen across those two wires.

Pass this info along to your tech and he should then be able to pin down whats going on with your amp.

Subject: Re: Frankie Confusion
Posted by [carlc](#) on Wed, 17 Mar 2010 10:25:39 GMT
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From my tech:

I just got through doing this testing described and I duplicated the results almost to the letter...there was a few differentials...

I will put my answers in red next to the information supplied...

Here are some results from testing on of my Frank heads last night.

I unsoldered the blue wire on the input side of the driver transformer, and the resistance across that and the red wire was 9.7 ohms 9.6 ohms

I then switched to the output side of it where I unsoldered the tan wire and the orange wire. The resistance across the tan and green wire was 5.9 ohms. 6.1 ohms

Resistance read across the orange and brown wire was 6.1 ohms. 6.4 ohms

I then set out to test some A/C drive voltages.

I hooked the amps speaker jack up to a 4 ohm test load and my O-scope. I pumped in a 1k test tone into channel one(really does not matter which channel though) until I got the output of the amp up its maximum RMS power.

At this point the amp was outputting 19.11 volts, 20.3 volts or 91.2 watts and this was with an A/C line voltage of 118.9. 122.6

With the amp still drivin to this RMS power I took my meter now set for A/C volts and placed it across the red and blue wires on the primary of the driver transformer where I read 12.85 vac.

Switching to the secondary side I then read 4.93 vac across the tan and green wire, and 4.99 vac across the orange and brown wire.

These voltage test were done with all of the transformers wires hooked back up and with the amp putting out the wattage stated as above.

As you can see the higher output voltage seen across the brown and orange wire confirms the higher resistance reading also seen across those two wires.

Pass this info along to your tech and he should then be able to pin down whats going on with your amp

I once again went through every voltage on each transistor on every board and they were all within a few decimal points of the schematic...At this point I am at a brick wall in finding what may be going wrong in this amp...every resistor on the driver board checks out and I have changed two of the transistors on this board with no obvious change...This shouldn't be difficult as this is a very basic circuit but I am stumped...unless the transformer, a capacitor or a transistor is breaking down at certain frequency levels I don't know what more to do with this...

Again I am open for any and all suggestions...

Subject: Re: Frankie Confusion
Posted by [carlc](#) on Sat, 27 Mar 2010 17:30:01 GMT
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OK Guys...

The tech said he has been through this amp 3 times and all of the voltages are basically the same as what stevem had posted, including the transformer.

Could the transformer be breaking down? If so, are replacements (exact or crosses) available? I don't have the numbers, but will be getting them soon so I can start looking. Everything seems to point to the transformer even though it shouldn't be bad.

Thanks,
Carl

Subject: Re: Frankie Confusion
Posted by [stevem](#) on Sun, 28 Mar 2010 14:01:13 GMT
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Its time to take your amp to a different tech, as by the voltages he has found and posted, your amp has no problem and he is jerking you off!

Subject: Re: Frankie Confusion
Posted by [chicagobill](#) on Tue, 30 Mar 2010 16:02:17 GMT
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Carl:

There are some questionable numbers that appear in the above response. Specifically the 20.3 volts of output. If the amp is actually producing that much output, there should be no problem with the volume.

As for transformers, there are two in your amp. The power transformer and the driver transformer in the power amp.

From the listed information, the power transformer appears to be putting out the correct voltages and is not failing under load.

This would leave the driver transformer. According to the resistance tests that your tech made, it seems to be ok, but it could have some shorted turns or something that will not show up with simple resistance tests.

I recently searched for a replacement for one of these and had no luck in finding anything that would be a good replacement for it. If yours really is bad, maybe it would be a good candidate for a rewind.

As for Steve's comment, a second opinion may not be a bad thing.

Subject: Re: Frankie Confusion
Posted by [stevem](#) on Wed, 31 Mar 2010 11:09:17 GMT
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Last night I was doing some web snooping and found that the company that made the output drive transformers for these Frank amps are still up and running!
I sent off a email to see if they still had the spec`s on these transformers and if they make, or offer a close or up rated replacement.

Subject: Re: Frankie Confusion
Posted by [carlc](#) on Wed, 31 Mar 2010 15:06:30 GMT
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Bill,

Sorry for my confusion. I was referring to the output transformer as possibly being bad/breaking down.

Stevem,
Do you have any information to share as to manufacturer, model #, part #, etc?

Thanks,
Carl

Subject: Re: Frankie Confusion
Posted by [stevem](#) on Wed, 31 Mar 2010 15:10:33 GMT
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Their is no output Transformer in that amp, it has a driver transformer that by the voltage results your tach posted is working fine.
See my previous post to this string done this morning.

Subject: Re: Frankie Confusion
Posted by [carlc](#) on Thu, 01 Apr 2010 10:27:13 GMT
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Steve,

Sorry, I used the word output meaning drive for the transformer.

Carl

Subject: Re: Frankie Confusion

Posted by [steven](#) on Thu, 01 Apr 2010 12:29:04 GMT

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There is one way outside chance that the amp's output stage is as posted, working fine, but the amp is oscillating at an inaudible frequency and with a substantial power output all the time.

This will make for very poor sound, and even when hooked up to speakers the high frequency is above the reproduction range of the speaker and you do not hear it.

Ask the tech if with the amp hooked up to his test rig and no signal input if he reads more than 1 volt of output?
