Subject: Could use some assistance on a Marshall amp
Posted by RickBlacker on Mon, 01 Feb 2010 16:46:59 GMT
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Hey all...

I hope you don't mind me posting this here. I got great assistance from you all on my Kustom amp. Which is still running great.

Yesterday I was just given a Marshall MG50DFX. The guy who had it said he was playing through it just fine when the volume went out on it. Said it's about 8 months old. I know this guy and know he would be kind to his equipment.

Here is a link to the schematic for this amp
http://www.ampix.org/albums/userpics/10003/Marshall_MG250dfx .pdf

It has two channels, clean, dirty and an FX section.

I brought it home and started looking over it. The following are the symptoms :

Clean channel, I have to turn the master volume all the way up, bairly any audio volume comes out.

Switch to dirty channel, turn both gain all the way up and master volume to get any audio output. When turning the gain and master volume all the way up, I get what I would expect to be the normal increase in hum.

If, I plug my PODx3 FX processing unit into the return on the amps FX loop, I get audio output from that. I can increase the output from my FX procsser unit and the output from the amps speaker will increase / decrease. However, i have to have the master volume cranked all the way up. If I turn the master volume down, then I would not get any output from the PODx3.

I get the same results if I use my guitar pedals instead of using the PODx3

I know this is not a Marshall forum, and the chances of any of you all knowing what the issue is my be small, but I've gone to other forums and not getting any replies. I'm just hoping someone can give me some kind of a clue as to where to start looking for the root issue.

Any help from you guys will be greatly appreciated.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Mon, 01 Feb 2010 17:18:11 GMT
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RickBlacker wrote on Mon, 01 February 2010 10:46If, I plug my PODx3 FX processing unit into

the return on the amps FX loop, I get audio output from that. I can increase the output from my FX procsser unit and the output from the amps speaker will increase / decrease.

Is the signal loud when you do this? I mean normal volume levels?
If this is the case, try cleaning the FX loop jacks.

RickBlacker wrote on Mon, 01 February 2010 10:46However, i have to have the master volume cranked all the way up. If I turn the master volume down, then I would not get any output from the PODx3.

The master volume control on that amp comes after the FX loop so this is normal.

Have you tried posting on the Music Electronics Forum?

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Mon, 01 Feb 2010 17:24:44 GMT
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I have fixed many of these amps unforunatly.
If the amps works ok when listening thru headphones then more than likly the output IC pack (TDA 7293) has gone bad.
Its just that most times this going bad will take out the amps fuse, but it is possiblt that it could just blow open and not short out which would leave the fuse intact and the rest of the amp working normal.
Even though these IC packs are heat sink mounted to the rear wall of the amp it seems they can not dump the heat fast enough when drivin hard.
I make a extra heat sink out of aluminum flat bar stock and use a longer screw to mount the bar to the front(inside) of the IC pack which seems to do the trick!

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Mon, 01 Feb 2010 17:35:32 GMT
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Hi..

When I plug in headphones, I get the same thing. And whats odd is that when I do plug in the headphones, i still get audio out of the speaker.

As far as FX loop, I tried plugging a patch between the send and return jacks, made no difference.

chicagobill wrote on Mon, 01 February 2010 12:18Is the signal loud when you do this? I mean normal volume levels?
If this is the case, try cleaning the FX loop jacks.

Sure, based on turning up the output on my PODx3. But, again, I have to turn the master volume all the way up. Not sure if that means anything or not.

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Mon, 01 Feb 2010 17:45:09 GMT
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If you are still passing audio to the speaker with the headphones pluged in then there is a good chance that the headphone got beat up and its case got cracked which will not let the cut out/ switch terminals close as they should.
These type of totaly cheap circuit board mounted jack fail very easy if the cord that is plugged into them gets yanked hard at a angle.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Mon, 01 Feb 2010 17:48:44 GMT
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Could that lead to the problems that I'm experiancing with the amp? A short around the headphone jack?

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Mon, 01 Feb 2010 18:08:28 GMT
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Not shorted, but open, as in not able to be as intended which is a switch that is normally closed when a headphone is not plugged in and passing the preamp signal to the output stage.

Also check to make sure that none of the control pots got smaked into, as these miniature pots also break with ease.
grab the knob and rock them around to see if you get noise or the signal to then pass.

All the controls should feel the same in regards to how much they rock around.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Mon, 01 Feb 2010 18:27:37 GMT
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I did play with all the knobs. They all feel solid. None wiggled around. Nothing abnormal at all. No crackles, nothing.

I asked the guy if he dropped the amp at any point, he said no. Said he was playing the amp, and

while he was playing, it just went out on him.

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Mon, 01 Feb 2010 19:04:57 GMT
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Well I`ve done all the guessing I can do to try and pass along things beyond what Bill covered! Its time to take it to a repair tech if you do not have the test equipment needed at this point to step signal flow wise thru the circiut.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Mon, 01 Feb 2010 21:45:41 GMT
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OK, if the amp works through the FX return jack, the power amp IC is ok.

As I noted earlier, the FX loop is before the Master Volume control so the Master needs to be turned up for the signal from the FX in jack to be heard.

Take a spare patch cord and plug it in from the FX out to the FX in. Does this restore the signal?

Or try taking the signal from the FX out jack and plug it into the input of another amp. Even a headphone amp will work for this. Is there a signal coming out of the preamp?

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Mon, 01 Feb 2010 22:18:32 GMT
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chicagobill wrote on Mon, 01 February 2010 16:45OK, if the amp works through the FX return jack, the power amp IC is ok. Good! I kinda suspected that it's in the preamp.

chicagobill wrote on Mon, 01 February 2010 16:45As I noted earlier, the FX loop is before the Master Volume control so the Master needs to be turned up for the signal from the FX in jack to be heard.And that makes since, but here's my question... Should I have to turn the master volume ALL the way up to get the audio signal output level from my PODx3? Is having to turn the master ALL the way expected behavior?

chicagobill wrote on Mon, 01 February 2010 16:45
Take a spare patch cord and plug it in from the FX out to the FX in. Does this restore the signal?I did this last night, and it made no difference.

chicagobill wrote on Mon, 01 February 2010 16:45Or try taking the signal from the FX out jack and

plug it into the input of another amp. So you're saying take the signal from "FX Send" and plug that into the input on another amp? I can do that tonight when I get home from work. I will have to send it to the input on my Kustom. Other than this, I don't have anything else to send it to... My Hartke Bass amp may have a different input but I doubt it.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Mon, 01 Feb 2010 23:21:01 GMT
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What is the output of the Pod X3 designed to do, is it an instrument level unit designed to be used in front of an amp or is it a line level unit designed to drive a line level input? If you normally use it going into the front of an amp, the signal will not be strong enough to drive the output amp to its full potential.

Yes, take the output from the FX send and plug it into the front of your Kustom amp. Be sure to keep the volume of the Kustom turned down for this test. All you want to do is to see if the Marshall preamp is working.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Mon, 01 Feb 2010 23:26:18 GMT
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Hi... It's this little guy. http://line6.com/podx3/
Basically it's an amp/FX modling unit. I wouldn't expect it to drive anything BUT... when I put it in front of my Kustom, I can keep the volume on the Kustom all teh way down, turn the gain/volume up on the POD and raise the volume on the Kustom.

But then again, my guitar pedals will do the same thing.

Subject: Re: Could use some assistance on a Marshall amp
Posted by pleat on Tue, 02 Feb 2010 02:17:10 GMT
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Have you tried the amp with a different speaker, or check the speaker with a working amp?
pleat

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Tue, 02 Feb 2010 03:13:52 GMT

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Ok...

Took FX out, to the input on the Kustom.

Both the speaker on the Kustom as well as the Marshall had output. The same very low level of output.

I wouldn't have thought the Marshall would have had any kind of output with the FX out going to the Kustom.

Hi Pleat... yes, I tested the Marshalls speaker. Tested it last night. I plugged the Kustoms output to the Marshalls speaker and it worked fine.

Is it just me or does it seem odd that
1) When I try plugging into the Marshalls headphone jack with my headphones and have to crank the amp to get any output, I'm still hearing output from the headphones.

2) When i send the FX Out to the Kustom, I still hear audio from the Marshall when it's cranked all the way up...

Is that expected or is this a symptom of the problem with the amp?

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Tue, 02 Feb 2010 17:08:36 GMT
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RickBlacker wrote on Mon, 01 February 2010 21:13I wouldn't have thought the Marshall would have had any kind of output with the FX out going to the Kustom.
The FX send jack does not cut off the signal only the FX return jack does.

RickBlacker wrote on Mon, 01 February 2010 21:13Is it just me or does it seem odd that
1) When I try plugging into the Marshalls headphone jack with my headphones and have to crank the amp to get any output, I'm still hearing output from the headphones.
On your amp the headphones are driven by their own small amp circuit, they have nothing to do with the speaker output. Is the headphone output loud or just as weak as the speaker output?

RickBlacker wrote on Mon, 01 February 2010 21:13Is that expected or is this a symptom of the problem with the amp?
This is as it should be, the real problem with the amp is probably in the preamp. Start by checking the input jack for broken or loose connections.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Tue, 02 Feb 2010 17:22:01 GMT
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Hey ChicagoBill....

Thanks for clarifying some of those things for me. Makes since now.

The headphone jack suffers from the same problem. I'm no rocket scientest here, but having so much of the preamp (if not all of it) being affected in the same way, seems logical to me that the issue would be late in the pre-amp section.

I've not taken the board out and turned it over to see the leads on the bottom of the board, but, I did pull the head out of the cabinet and look it over. I don't see any burn spots. Nothing looks like it overheated. Nor do I smell anything peculiar.

Does it seem reasonable that it's something late in the preamp and right before the FX loop?

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Tue, 02 Feb 2010 17:41:06 GMT
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I would at this point check that any of the DG212CJ signal swicthing ICs are getting the 15 volts that they should as REG#3 on the power supply scheamtic may have gone south.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Tue, 02 Feb 2010 22:08:28 GMT
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RickBlacker wrote on Tue, 02 February 2010 11:22Does it seem reasonable that it's something late in the preamp and right before the FX loop?
With what little sound you do have, do the controls all work and change the tone, etc? How about the channel switching?

If all of the controls do work, then yes, the problem could be at the end of the preamp section.

There are a number of jumper wires that plug into each of the boards that connect the circuits together. Check to see if any of these are loose or broken.

Look for any broken or unsoldered components on the pc board. Sometimes a cap will break loose from one end.

Let us know what you find.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Wed, 03 Feb 2010 04:13:00 GMT
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The SEEM to work as far as I can tell.

I did a little probing around with my multimeter
I found C22. Put it on volts, put black lead to chassi for ground, put the red lead on one side then the other side of C22. Nothing.

I did this same thing on all the pots, never got a voltage. Being being new to this that I am, am not sure if that is expected or not.

I did go back to D2, got a reading of 14.9v.

I checked all the IC chips, the ones labled as IC1A, IC2A, IC3A... The little op-amps... They all seemed to register about the same 14.9v

For shits and grins, I pulled the connection out of CDN2. I measured what I thought would have had voltage which was pin 5, it didn't have anything... However, pins 1 and 2 registered 15v.

I checked REG1 and REG2, they had these voltages
REG 1
24.5
0.0
14.5

REG 2
0.0
-24.7
-14.5

I dunno... I was just poking around... Maybe this can give some clues.... I'll be at home all day tomorrow, if anyone happens to be on the board to help give me some test point areas...

Thanks all for all the help!!!!

Rick

Subject: Re: Could use some assistance on a Marshall amp

Posted by chicagobill on Wed, 03 Feb 2010 16:24:07 GMT
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RickBlacker wrote on Tue, 02 February 2010 22:13I checked REG1 and REG2, they had these voltages
REG 1
24.5
0.0
14.5

REG 2
0.0
-24.7
-14.5

Your low voltage supplies are ok

RickBlacker wrote on Tue, 02 February 2010 22:13I did a little probing around with my multimeter I found C22. Put it on volts, put black lead to chassi for ground, put the red lead on one side then the other side of C22. Nothing.
You won't or at least shouldn't find any DC voltages in the signal path, so this is normal.

What sort of test equipment do you have access to?

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Wed, 03 Feb 2010 16:51:06 GMT
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Just my multimeter

Here's irony for you... I work at Intel corp. Yet, I don't know anyone that works in any of the labs or plays with any of the
toys.

I'm a software engineer and deal with only software, never deal with any of the hardware stuff.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Wed, 03 Feb 2010 17:25:05 GMT
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You will need to trace the signal through the amp to find out where the signal dies.

Do you have a tape deck or a small radio with a headphone output? If you do, you can use it as a signal source. Find a suitable cable to plug into the signal source. Remember that most headphone outputs are stereo, so you'll only need to use one side of the stereo pair. Don't use a

mono plug in a stereo jack and don't short the two sides together.

Even better, do you have some kind of keyboard instrument like an synth or an organ? They will have a mono out and probably will work with a patch cord that you already have.

To start out with, take your meter and set it for AC volts. Take the output cable from whatever signal source that you have and read the AC voltage across the output cord (from tip to ground). You should find a small fluctuating voltage reading there that will change as you adjust the volume. Get a feel for what the output voltage readings look like from your signal source.

Next plug the signal into the input of the amp. Now take your voltmeter and attach the black lead to the chassis as the ground connection. Using the red meter lead, follow the signal path through the amp and see if you can follow the voltage through the different stages of the amp. Use your schematic as a guide to follow.

Start at the input jack, then check for the signal at C3. Next would be at pin 1 of IC1A. You should find that the voltage will be the same as the input or higher than the input as you trace through the amp. When taking these readings on the ICs be careful to not short two pins together with the meter probe.

Remember working on any amp that is plugged in and powered up is dangerous and should be done with extreme caution.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Wed, 03 Feb 2010 17:35:30 GMT
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Sounds good.

If I don't want to use stereo as my input, I can record a chord on my Boss Loop Station and put it into a loop for a constant signal.

I'll do this at lunch... I'm working from home today and can do this then.

Rick

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Wed, 03 Feb 2010 17:42:42 GMT
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Just thought of two questions....

1) Speaker plugged into the amp or not?

2) What should my pots be set at? All the way up or does it matter?

I understand that the pots are there to modify the resistance of the their perspective circuits, but for this type of testing, just need to know if I can put them at a setting and leave them there.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Wed, 03 Feb 2010 20:33:48 GMT
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chicagobill wrote on Wed, 03 February 2010 12:25
To start out with, take your meter and set it for AC volts. Take the output cable from whatever signal source that you have and read the AC voltage across the output cord (from tip to ground). You should find a small fluctuating voltage reading there that will change as you adjust the volume. Get a feel for what the output voltage readings look like from your signal source.

Not getting any reading at all other than 0.00 and -0.00
I setup my loop station pedal to send a coninuious signal. have my guitar cord plugged in. I took readings on the other end of the guitar cord. And those were the readings I got.

I set my meter to V~ 200

Black lead in COMM
Red lead in V(ohms)mA

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Wed, 03 Feb 2010 20:47:19 GMT
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Ok... I think all it is, is that it's not sending a strong enough signal...

I have a stereo that I plugged the guitar cable into, I was able to crank that and get a reading on the meter... I'll have to use the stereo

---

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Wed, 03 Feb 2010 21:12:53 GMT
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Ok, that worked....

However... Please bear with me here... How do I know when I should test in AC vs. DC?

I noticed that when I was in AC, I got no readings for R1 or R2, but when I switched to DC, I would get readings.

Here is what I understand...

Reading voltage, I can have the gound lead on the chassie and probe.

Reading resistance (ohms), I would need to have the leads across the resister.

But what I'm not sure about is, how do I know rather to read AC or DC???

Thanks for your help!!! I greatly appreciate it.

BTW, I did get a reading on C22.
On my digital multimeter, on 200~ I got readings that bounced between .01 and 2.5 volts

---

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Wed, 03 Feb 2010 22:17:33 GMT
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RickBlacker wrote on Wed, 03 February 2010 15:12However... Please bear with me here... How do I know when I should test in AC vs. DC?
The power supply voltages are all DC, that is what the amp runs on. The music signal will always be AC.

RickBlacker wrote on Wed, 03 February 2010 15:12I noticed that when I was in AC, I got no readings for R1 or R2, but when I switched to DC, I would get readings.
As far as I can tell, there should be no DC voltages at R1 or R2. The AC signal is applied to the input jack. From there it goes through a coil (L7) and then on to capacitor C3 and then through R1 to the input of IC1A.

RickBlacker wrote on Wed, 03 February 2010 15:12Reading voltage, I can have the gound lead on the chassie and probe.

Reading resistance (ohms), I would need to have the leads across the resister.
Yes this is correct, you read the voltages referenced to ground. The resistors you set your meter to read resistance and read across the individual component with the amp off. There may be a time when you will need to read the voltage across a resistor, but don't get ahead of yourself here.

RickBlacker wrote on Wed, 03 February 2010 15:12BTW, I did get a reading on C22.
On my digital multimeter, on 200~ I got readings that bounced between .01 and 2.5 volts
That's a good sign, on what side of C22 did you read this? It should be on both sides of the cap.

Can you set your meter to a lower range? Maybe 2 or 20 volts?

Subject: Re: Could use some assistance on a Marshall amp

Posted by RickBlacker on Wed, 03 Feb 2010 22:49:19 GMT
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On CAP 22, retaking the readings.

When reading DC at 2v
Both + and - sides of the cap bounce between
-.000 and +002

When reading AC
- side of cap reads -5 and 1.1
+ side of cap reads 1.6 and .8

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Wed, 03 Feb 2010 22:59:05 GMT
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OK That all sounds good. We're only interested in the AC readings for now.

Can you find C62? It should be somewhere near IC4. You should be getting very similar AC readings there. If you are using the schematic, this will appear at the lower right side of page 1.

If all is good there, check at C39. Then check at the clockwise and center terminals of the Master Volume control.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Wed, 03 Feb 2010 23:12:49 GMT
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chicagobill wrote on Wed, 03 February 2010 17:59OK That all sounds good. We're only interested in the AC readings for now.

Can you find C62? It should be somewhere near IC4. You should be getting very similar AC readings there. If you are using the schematic, this will appear at the lower right side of page 1.

If all is good there, check at C39. Then check at the clockwise and center terminals of the Master Volume control.

C62 is reading
0.0 to 0.1 on both leads

C39 is reading
+ side 3.0 to 1.3

- side 2.4 to 1.3

Master volume reads 0.0 for all three leads with it turned all the way up or all the way down.

Just as a reminder, if I turn it all the way up, I do hear noise out of the speaker.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Wed, 03 Feb 2010 23:40:23 GMT
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There should be nearly the same signal on C62 as on C22.

And more importantly there should be the same signal at the top of the master volume control as there is on C39 as they are connected together.

Retake your readings and see if there is a signal at C62 and at the master control.

If there is none, shut off the amp and take a resistance reading from the negative end of C22 to the negative end of C62. Set your meter to read ohms and put one lead on C22 and the other lead on C62. There should be a reading of about 4700 ohms here.

Also check the resistance from the negative end of C39 to the top of the master control. By top I mean the clockwise side of the pot (the left lug when viewed from the rear). This should read zero ohms. Then read across the two outer lugs of the master pot. You should read 10K (10 thousand) ohms. To finish off the test of the pot, read from the left leg to the center leg. Now turn the master control knob and see that the resistance varies from zero to 10K.

If all of this checks out, then you will need to check the resistance from the center lug of the master pot to the negative end of C79.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Thu, 04 Feb 2010 00:58:25 GMT
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chicagobill wrote on Wed, 03 February 2010 18:40
Retake your readings and see if there is a signal at C62 and at the master control.

Little bit of extra information. With the channel select to the clean channel, there is no reading at all for AC voltage of for the master volume or C62. In fact, seems as thought everything is dead on this channel. But then that would make since if I'm not on that circuit...

The rest of these readings are on the dirty channel

Re-reading C22
- lead 2.0 to 0.7
+ lead 2.5 to 0.9

Re-reading C62
0.1 to 0.2 on both leads

Re-reading master vol
1.2 to 0.7

chicagobill wrote on Wed, 03 February 2010 18:40
If there is none, shut off the amp and take a resistance reading from the negative end of C22 to the negative end of C62. Set your meter to read ohms and put one lead on C22 and the other lead on C62. There should be a reading of about 4700 ohms here.

Setting the scale to 20Kohms I get a reading of 5.6

chicagobill wrote on Wed, 03 February 2010 18:40
Also check the resistance from the negative end of C39 to the top of the master control. By top I mean the clockwise side of the pot (the left lug when viewed from the rear). This should read zero ohms. Then read across the two outer lugs of the master pot. You should read 10K (10 thousand) ohms. To finish off the test of the pot, read from the left leg to the center leg. Now turn the master control knob and see that the resistance varies from zero to 10K.

I'm going to assume with the lugs pointing down...

With the multimeter set to 20k ohms, the readings are
left lug 0.0
center lug 0.47
right lug 0.47

chicagobill wrote on Wed, 03 February 2010 18:40
If all of this checks out, then you will need to check the resistance from the center lug of the master pot to the negative end of C79.

With the multimeter set to 20k ohms, the reading is
0.0

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Thu, 04 Feb 2010 11:44:54 GMT
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Sorry for missing out on all this yesterday guys as I was out sick from work.
At this point I need to ask a question as I can not recall from the last time I worked on this model of amp, but if this circuit board is the type that is a wave soldered two sided board, and you find that you have a bad IC chip to change out you are going to have one hell of a time doing that!!

On amps made like this I have spent more time removing and install a new semiconductor than tracing out and finding the problem in the first place.
In fact its to the point now where I will not waste my time fixing an amp made like this unless it involes just replacing the output pack IC, a bad input jack or control pot, It just does not pay!!

These build quality level of amps are not made to be repaired, they are throw aways. Service dealers will swap out the whole circuit board with a new factory one in far less time than replacing one IC chip!

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Thu, 04 Feb 2010 16:39:28 GMT
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I Steve, I apprecaite the input, however, I'm too stubborn to give up. ... At least not yet anyway. And if I can fix this amp for a few dollars? What a sweet deal.

Having said that... IF worst comes to worst. I just ordered a tube amp kit from Doberman, and if I can't get this amp up and running and do give up, I will just use the cab and speaker for the tube amp/kit that I just ordered...

But, I'm a looong way from giving up yet.

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Thu, 04 Feb 2010 16:42:54 GMT
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I would build the new tube amp first and listen to it thru the Marshall cabinet and I would bet you find that dropping repairing the Marshall is the way to go!

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Thu, 04 Feb 2010 16:50:40 GMT
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You know, you probably are correct. I will say this though... I'm learing a LOT about audio electronics with the help I'm getting here. So, if nothing else, by trying to repair this, I'm gaining a lot of great information! I look at the schematic for the Marshall, try analysing it, try debugging it, try following the circuits, then I look at the schematic for the tube amp. The tube amp build does not look quit as intimidating any longer.

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Thu, 04 Feb 2010 16:55:21 GMT
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A tube amp that does not use a circuit board is so easy to mod/change and tweak to your liking when compared to a SS amp you will love it.
Before you dive in to building it I can offer a ton of tips on it, so let me know before you start.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Thu, 04 Feb 2010 17:41:59 GMT
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I've got to assume anytime you don't have to flip a circuit board over, try to trace the lead to some other component, it's got to be MUCH easier.

But, back to the marshall... I still want to fix it, want to say that I did it, want to learn from it.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Thu, 04 Feb 2010 20:24:35 GMT
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If you're still working on this, I see a problem with the readings at C62. The signal leaves the preamp at C22, goes to the FX loop jacks and then returns to the output section via C62.

The signal passes through a couple of resistors and the jacks, but it should be at nearly the same voltage level at both points.

What happens if you plug the new signal source into the FX return jack? Remember that the Master Volume will still control the volume here.

A question regarding your voltage readings, what do you mean by + and - lead readings?

I don't get your resistance readings for the master pot. Are you still keeping one lead attached to the chassis? What I asked for was the reading of the resistance from the right to the left leg of the pot.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Thu, 04 Feb 2010 20:57:14 GMT
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chicagobill wrote on Thu, 04 February 2010 15:24If you're still working on this, ABSOLUTLY still working on this.

chicagobill
I see a problem with the readings at C62. The signal leaves the preamp at C22, goes to the FX loop jacks and then returns to the output section via C62.

The signal passes through a couple of resistors and the jacks, but it should be at nearly the same voltage level at both points.

What happens if you plug the new signal source into the FX return jack? Remember that the Master Volume will still control the volume here.
For measuring or for hearing something? I can take some measurments when I get home. But for audio, I definilty got audio output when I used plugged my guitar into my my FX processor unit, then plugged the fx processor unit into the FX return on the amp.

chicagobill A question regarding your voltage readings, what do you mean by + and - lead readings?

Meaning the lead wires on the various components.

chicagobill I don't get your resistance readings for the master pot. Are you still keeping one lead attached to the chassis? What I asked for was the reading of the resistance from the right to the left leg of the pot.

Yes, I have the neg lead from the multimeter touching ground on the chassis. As far as reading the resistace across the POT itself, I must have misread that. I'll go back tonight and retake the resistance readings. Put one multimeter lead on the right lug, put the other multimeter lead on the left nug.

Sorry, I just didn't understand what you were asking.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Fri, 05 Feb 2010 03:58:00 GMT
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chicagobill wrote on Thu, 04 February 2010 15:24What happens if you plug the new signal source into the FX return jack? Remember that the Master Volume will still control the volume here.
Seems to work just fine.

chicagobill wrote on Thu, 04 February 2010 15:24What I asked for was the reading of the resistance from the right to the left leg of the pot.
With multimeter on 20k ohms, I get a reading of 4.79

For shits and grins, I retook the readings on C22 and C62. I ensured that the ouput volume of the stereo that I'm feeding into the input on the amp was at the same volume. Not sure if that would make a differenc or not. The readings are the same basically.

With the multimeter set at 200AC (sorry, that's as low as it goes on AC)

C22 bounces between 3.3 and 1.5ish
C62 bounces between 0.1 and 0.2

So, are you thinking R20 or R62 is bad?

For grins, I took a RESISTANCE reading of them.
R20 reads 4.67 ohms with meter set at 20k
R62 reads 1.0 ohms with meter set at 2K.

AC voltage going INTO
R20 reads average of 1.6
R62 reads average of 0.1

AC voltage OUT of
R20 reads 0.1
R62 reads 0.1

Tried plugging in a jumper cable between FX in and FX out just to be sure, and that made no difference.

Also, not sure if this means anything or not. But, LED3 and LED4 never glow. I have a distortion pedal that I modded, and when I strum my guitar, it flutters with the addition of a LED to the circuit. Not sure if either of these are supposed to flutter or not. I tired with both clean and dirty channels.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Fri, 05 Feb 2010 17:17:08 GMT
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RickBlacker wrote on Thu, 04 February 2010 21:58C22 bounces between 3.3 and 1.5ish
C62 bounces between 0.1 and 0.2
Can you jumper a wire from the output of C22 to the input of C62?

RickBlacker wrote on Thu, 04 February 2010 21:58Also, not sure if this means anything or not. But, LED3 and LED4 never glow.
They should flicker when in the distortion channel with the gain turned up.

Have you taken DC voltage readings on the preamp chips? Start with IC1. There should be -15vdc at pin 4 and +15vdc at pin 8 (referenced to ground). There should not be any real voltage on any of the other pins. Maybe a few millivolts. Be careful not to short any pins together with your meter lead when checking the voltages. Only check IC1-IC4.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Fri, 05 Feb 2010 18:02:44 GMT
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chicagobill wrote on Fri, 05 February 2010 12:17Can you jumper a wire from the output of C22 to the input of C62?
I took a little wire from some CAT5 cable that I have. Stripped two ends, put one end in the hole where the negative wires go for each cap.

When i did this, the volume reduced.

chicagobill wrote on Fri, 05 February 2010 12:17They should flicker when in the distortion channel with the gain turned up.
I double checked again. Nothing from them at all.

chicagobill wrote on Fri, 05 February 2010 12:17Have you taken DC voltage readings on the preamp chips? Start with IC1. There should be -15vdc at pin 4 and +15vdc at pin 8 (referenced to ground). There should not be any real voltage on any of the other pins.
I checked them all. They all look good and read to your specs there.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Fri, 05 Feb 2010 18:45:37 GMT
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Set multimeter to 200vac. Took readings on IC1 and IC3

Pin1 = op-ampA
Pin7 = op-ampB

Readings are :

IC1A : 0.0
IC1B : 0.0

IC3A : 0.2
IC3B : 0.0

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Fri, 05 Feb 2010 19:44:09 GMT
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Are these AC readings with the signal applied to the input?

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Fri, 05 Feb 2010 19:50:34 GMT
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Yes, sorry... Those IC readings are AC signal readings.

Had my signal coming in through the input. Put multimeter on 200vac, black lead on ground, red lead on the IC pins.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Fri, 05 Feb 2010 20:28:43 GMT
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OK, Go back to the beginning here.

How much AC signal is the pedal that you are using as a signal source putting out?
What AC signal is at the input cap C3 (either side)?
What AC signal is at pin 3 and pin 5 of IC1?

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Fri, 05 Feb 2010 20:39:12 GMT
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chicagobill wrote on Fri, 05 February 2010 15:28How much AC signal is the pedal that you are using as a signal source putting out?
Output from stereo headphone jack is bouncing between 1.0 and 0.7 vac. I measured on the other tip of the cable. Just as a reference, I'm running the output of my stereo at a volume of 20 on the dial. Almost but not totally maxed out.

chicagobill wrote
What AC signal is at the input cap C3 (either side)?

0.0vac on both sides of the cap

chicagobill wrote
What AC signal is at pin 3 and pin 5 of IC1?
Pin 3 : 0.0
Pin 5 : 0.0

One thing I noticed is that when I touch pin 3 with the red lead, both red and green diodes will brighten up a bit.

ALSO

When driven hard enough, I did notice that they are flickering. So, I guess I was wrong before when I said they were not lighting up at all... They are.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Fri, 05 Feb 2010 20:42:56 GMT
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Either you are not getting a good reading, or there is a problem with the input jack.

Try jumpering the input signal directly to C3. You need to keep a plug in the input jack, as it has a muting function switch.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Fri, 05 Feb 2010 21:02:16 GMT
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Did my best... I would definitly get noise. Tried hard to not touch other components. Sometimes it would increase the audio, sometimes it would drain the cap.

What exactly am I trying to do here? If I'm hovering over the amp, the jack's input in pointing at me. WHich pin do I want to connect to? Top Left / Top Right / Bottom Left / Bottom right?

Does it matter which pin on the cap I'm trying to jump to?

Or am I supposed to somehow grab the signal directly off the cable itself? WHich I'm not sure how i could considering the jack is enclosed..

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Fri, 05 Feb 2010 21:07:20 GMT
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You can inject the signal into eitheir side of that cap.

I would recommend trimming that test signal back to no more than .300 volts. other wise .700 to 1 volt of signal is way more than the first gain stage wants to see. No less you may blast your ears out.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Fri, 05 Feb 2010 21:10:29 GMT
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stevem wrote on Fri, 05 February 2010 16:07You can inject the signal into eitheir side of that cap.
I would recommend trimming that test signal back to no more than .300 volts. other wise .700 to 1 volt of signal is way more than the first gain stage wants to see. No less you may blast your ears out.

I've been keeping the master volume down. But, I get what you're saying about the too much signal... I'll reduce the volume on the input.

Any suggestions on which pin on the jack to tap into?

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Fri, 05 Feb 2010 21:17:26 GMT
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Bypass the input jack altogther and if need be solder a lenght of wire to the C3 side of R1 to feed you input signal into.
You will as bill posted have to have a cord plugged into the input jack to keep the shorting switch in the jack open.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Fri, 05 Feb 2010 21:17:44 GMT
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The hot on the jack is pin #1. You could try touching a wire from pin 1 to C3.

What I was suggesting was to take the signal directly from the source plug and bypass the input jack entirely. You will need to use two wires one from the tip to C3 and one from the shield to ground.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Fri, 05 Feb 2010 21:45:56 GMT
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Right on... It works when by passing the input jack... Both clean and gain channels fire up nice!!!

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Fri, 05 Feb 2010 21:50:43 GMT
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In that case eitheir you have a shorted C1 OR C2 cap.
An open L7 choke .
or like I posted way back in this string, a bad input jack or its connections to the circuit board.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Fri, 05 Feb 2010 21:55:35 GMT
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Tell us how you bypassed the jack.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Fri, 05 Feb 2010 21:57:47 GMT
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Put a dummy jack into the input

wrapped a wire around the ground on the plug, tapped it to the chassie

Wrapped a wire around the positive part of the jack (tip) taped it on. Then probed C3. Got a nice output from the amp.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Fri, 05 Feb 2010 22:03:33 GMT
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OK You're on the right track now.

As Steve said, check the input jack connections and all of the components from the jack to C3 and you'll be all set.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Fri, 05 Feb 2010 22:13:27 GMT
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I'm going to assume that it's safe to do the same bypass probing... Yes?

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Fri, 05 Feb 2010 23:03:04 GMT
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Yes, try injecting the signal at the input of C1, then at the input of L7, etc.

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Sat, 06 Feb 2010 00:09:53 GMT
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YOU GUYS ARE AWESOME!!!!!!

Thank you so much for all your help. I was able to pin point the issue and I've fixed it.

One of the legs on the output jack had a bad solder joint on it. Resoldered it and WALA...

I wasn't going to get a chance to work on it this weekend and now I don't have to.

I learned a LOT from this experiance. It's been VERY helpful for me. Now in a week or so, I get to start building my tube amp.

I can't believe I got this marshall for free.

Subject: Re: Could use some assistance on a Marshall amp
Posted by Jc on Sat, 06 Feb 2010 03:37:08 GMT
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I have to admit to not understanding about half of this thread - But man, it was fun watching you guys work this thru - Nice job and really interesting - jc

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Sat, 06 Feb 2010 06:00:03 GMT
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I have been reading up on electronics the last few weeks. But if it wasn't for these guys It would have taken me a couple ofmonths to figure out. Like I said. I learned a LOT by this little project.

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Mon, 08 Feb 2010 11:07:48 GMT
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Good deal!

Besides knowledge there are two other things that get you thru you first repairs like this.
#1 is you have go t to sick with it and not get bent out of shape.
#2 you have to know when to take a break of even sometimes 24 hours so you can step back and review what you have done and or covered, and then pick up from there.
Sometimes even simple distractions will kill you!
For example last fall I was working on a amps circuit installing new parts when my cell phone rag while I had a hot iron in my hand.
I put tham in standby and then took the call. 10 minutes latter got back to work, flipped the amp off of standby and the fuse for the tube heaters blew.And I had done nothing be take the cell call.
Well 10 minutes latter I tracked down the cause of the blown fuse.
When I moved to take the call I had a blob of hot solder that dropped off of my iron and onto the circuit board ubder some wires that bridged the heater trace to make the short.
So you gotta stay on your toe`s but when you get to point of stressing out, take a good long break!

Once again, congrats on the repair!

Subject: Re: Could use some assistance on a Marshall amp
Posted by RickBlacker on Mon, 08 Feb 2010 16:31:43 GMT
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Thanks.
Funny thing is, I got all that work into it and I'm not even all that fond of it. However, when I put some pedals in front, I like it. But the amp by itself is rather bleh sounding. To my ears anyway.

I understand what you mean about taking a break if you need to and concentration. I'm a software engineer and there have been many times I've struggled with some code, walk away for a while, come back and the light bulb turns on.

Well, I greatly appreciate everything you guys did for me. Like I said, I really learned a lot. But, I still have so much to learn.

Subject: Re: Could use some assistance on a Marshall amp
Posted by stevem on Mon, 08 Feb 2010 16:39:42 GMT
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Good tone rule #1.
The less circuit crap/bells and whistles that the signal has to be pushed thru,the worse it will sound!!!
A amp consisting of just two gain stages, a phase inverter/driver and output stage will 98% of the time sound killer even if its SS.

Subject: Re: Could use some assistance on a Marshall amp
Posted by chicagobill on Mon, 08 Feb 2010 17:31:15 GMT

Glad to hear it's up and running.

The real trick to repairing any amp, Kustom or not, is simple logic. The circuit is supposed to do something, if it doesn't do it, you just need to look at the clues and figure out why it isn't working.

If an experienced tech had that amp on the bench, it probably would have taken ten minutes to find the problem. But that's because a tech would have been able to hear the amp and see the amp and get a bunch of clues from the way that the amp responded to different signals, etc.

It's always tough to fix an amp on line, because the information we get to work with is filtered by the person giving us the information. Sometimes it's also difficult to judge how technically able someone is on line.

Have fun with it, and just remember when you do build the tube amp, that unlike most solid state amps, there are voltages in a tube amp that can hurt you.