

Pepco 201 Amplifier Mod

Wednesday, 20 February 2013

Paul (Pepco) 201 Chassis Isolation

Many folks have an old tube amp that is great fun to play, and ooze with wonderful tube tone. With more info available about the safety related to "transformerless" amps, and tons of well meant cautionary recommendations, lots of folks are letting these old amps collect dust or abandoning them altogether. Good choice.

Perhaps after having been mildly surprised or well bitten, you got the message.
I got my surprise with damp socks in the basement. 'Nuff said.

This is my 2nd Pepco amp and this one having a 50L6 output tube, can really impress with those great tones at bedroom levels.

This is a working PEPCO 201 and the mods I made can be performed with similar amps that use line AC to feed the tubes' heaters. These typically are 12AX7, 35Z5, 50L6 or other variants like 35W4, 50C5.

You should have some insight as to the circuit layout and some familiarity with power supply construction principles, tubes, safety, etc.

Many will and do say that these old amps are easily recreated with newer components, and not worth the effort to go this far. It really is a matter of choice, or opportunity. My total outlay was surprizingly well under 200 smackers, and some parts, like the bridge, I rescued out of another project.

My thoughts are that if you dish out 150 bucks or more for a transformerless amp, you are hitting the boundary of whether to trade up for a newer entry tube amp, unless other considerations might include collectibility.

So, what I have done here might apply equally for those considering the similar tube radio mods for guitar or harmonica. I'd like to do a "AM Radio" head one of these days and see no reason why not. Knowing a little about how to make amps safer, might also help you determine (and talk down a price) what is a reasonable price for an old relic.

Here we go

1. Get a isolation transformer that will handle the power requirements for the amp. Note that there's a 1/2 wave rectifier that will create an imbalanced load on the tranny. Research suggested this is cause for some level of saturation, so I looked to balance the load by inserting a full-wave bridge rectifier. My transformer is 60VA. A new 3 prong line cord also is needed. Star washers for your chassis grounds.

2. Get a bridge with sufficient current carrying capacity with PIV near 3x the 120v to be good. Mine (8A 800 PIV)is bolted to the chassis with some thermal lube. Using diodes in free air could be done. You should double what you determine the expected current, for the rating of the diodes for that comfort headroom.

3. For necessary new connections get a terminal strip of sorts, heat shrink tubing, etc. You don't want to have connections hanging in space. (If you think this amp will change hands, you certainly want it to look right.) I used crimp on connectors for the terminal block, and drew a little solder into the crimp. You'll also need to re-wire the primary side, on-off switch and power indicator.

4. Plan your chassis real estate for placement of the transformer. Ideal, would be to have it on the chassis. I was fortunate to find a place for this one. Locating it elsewhere would require some thought to shield hands from the connections to the chassis from ... where-ever.

5. Do some safety checks after (make sure you evaluated your plan correctly and executed just that)

- Check your line cord for shorts and chassis->earth ground continuity.
- Do a smoke test with no tubes in, check voltages at tube sockets.
- When you're happy, put the tubes in, check for glow, and listen for that soft hum at what should be the same level as before.
- recheck voltages at tube sockets, input jacks, etc.
- plug in a guitar or mic and give it a test.

Notable Pepco References

[Nice ARC \(Regal\) demo](#)

<http://pepcotubeamps.blogspot.ca/>

<https://sites.google.com/site/pepcotubeampinfo/>

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I won't lie and say it was easy, there was certainly some head scratching and thoughts of "gee, what if I have to back it out ?"

Take plenty of good clear pictures so that if you want to go back, you have images documenting the original state.

I went a step further and reconstructed schematics of the intended mod, and ended up later plotting the schematic of the whole amp. My intention here was to capture info of all of the circuit elements that required chassis ground, and the elements that connected to DC common return. (these are not the same)

Anyway, heres some pics and a circuit (I welcome any corrections on the circuit as I make no guarantees of its accuracy).

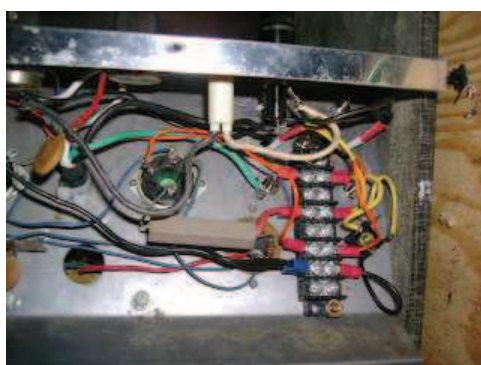
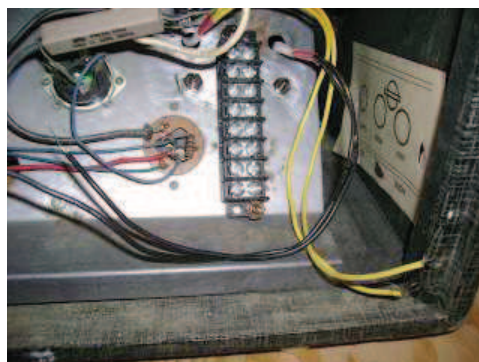


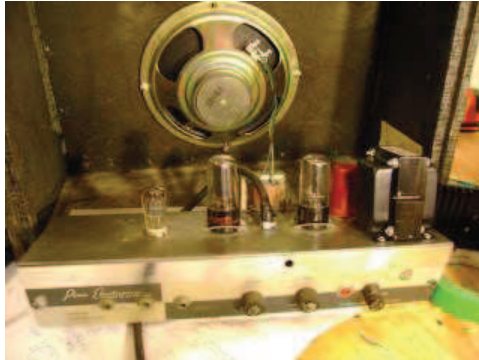
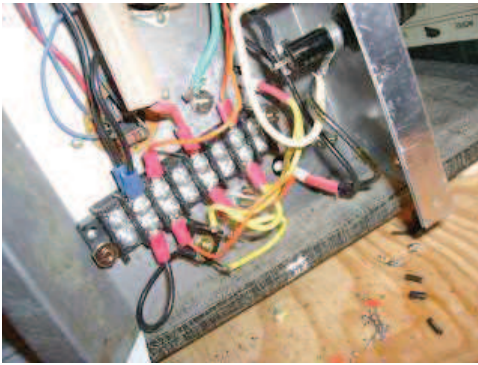
Covers off



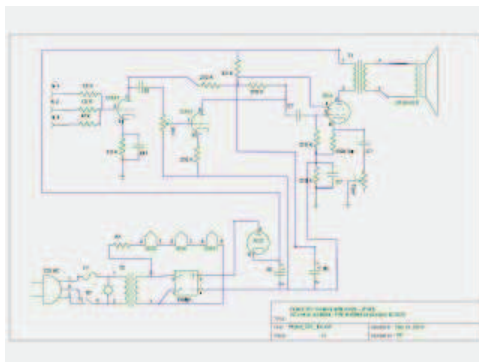
Before

Put some heat shrink to protect wires through the chassis and de-burr the holes you make.





Done, almost looks like it belongs



Posted by [no fwet](#) at 00:07

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9 comments:

 **pontiacpete** 2 October 2013 at 06:05

Hi
Nice work.
I have this amp on the bench now and going ahead with the mod you suggest
How has it worked out for you?
Where did you get the iso tranny?
CE only has a 90VA and a 30VA.
thanks
pete

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no fwet 27 January 2014 at 22:35

So Sorry for the delay Peter, I'm pretty sure I did a phone order from a local electronic supply shop. It's a Hammond 169RS 60 VA