



Shane Williams <timeisnotadistance@gmail.com>

Re: Contact Form

6 messages

LuigiRetro Sales <Sales@luigiretro.com>
To: timeisnotadistance@gmail.com

Sat, Jul 24, 2021 at 4:35 PM

Hi Shane,

The short answer is yes, the HRD2ODS circuit will work fine under your specified voltage conditions.

However, there is a more pressing issue with what you suggest, and that is tube life. I assume the heater winding was not loaded when you measured it at 8.4V, correct? This voltage will pull down a little bit, but even if it comes down to 7.8V under load, it's going to run the tubes well outside their target filament voltage range of 6.3V +/-10%. I have no way of predicting how much your tube life will be shortened, but it will be shortened. Here are a few suggestions you might consider to bring your voltages back down to spec. Any one of these will get you there:

1. Carry a variac with you so you can run the amp at 100V.
2. Use a 120V to 240V step up transformer and configure the amp for 230/240V operation.
3. Install a small 20V power transformer in the amp, wired as a bucking transformer to the amp's AC input (I can show you how to do this).

I hope this helps.

Ciao,
Luigi



Luigi RETRO-CUSTOM Amplification
www.LuigiRetro.com
PO Box 5
Slatington, PA 18080

On Jul 24, 2021, at 3:24 PM, noreply@luigiretro.com wrote:

Name: Shane Williams

Email: timeisnotadistance@gmail.com

About: HRD2ODS

Comments: Hi, I have a 1991 Hot Rod Deluxe with the export power transformer 047395 100v/230v/240v configurable. I've removed, configured it to 100v on the bench (as it was in the amp) and tested the transformer. I am measuring 405v/8.4v/49v on the secondaries with line voltage (120v measured from the wall) on the primary side.

Is this transformer acceptable to use with your circuit? Would you recommend replacing the transformer or is there a mod you would suggest when using this transformer with the HRD2ODS?

Thank you very much,
Shane

Score:

Shane Williams <timeisnotadistance@gmail.com>
To: LuigiRetro Sales <Sales@luigiretro.com>

Sat, Jul 24, 2021 at 5:47 PM

Thank you, I was concerned about filament voltages being 20% over too.

Just noticed Amazon has Japanese step up/down transformers for \$40 rated at 500watts that step voltages up or down between 100 & 120. I'll probably go with one of those to be safe.

Thank you

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2 attachments



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LuigiRetro Sales <Sales@luigiretro.com>
To: Shane Williams <timeisnotadistance@gmail.com>

Sat, Jul 24, 2021 at 6:01 PM

Hi Shane,

I just simulated a bucking PT arrangement and put a document together about it. You are the first one who has asked about the export version, and I am betting you won't be the last. I have attached the document below.

It requires a 50W 120V to 20V toroidal PT from AnTek. It measures 3.6" diameter x 1.6" tall, weighs 2 lbs and costs \$19. I don't know for sure as it has been a few years since I was inside a HRD, but I suspect there is enough room to mount it on the outside of the chassis, behind the PC Board, assuming it doesn't bump into a speaker frame.

Ciao,
Luigi

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 **Bucking PT for 100V HED Amps.pdf**
337K

Shane Williams <timeisnotadistance@gmail.com>
To: LuigiRetro Sales <Sales@luigiretro.com>

Sat, Jul 24, 2021 at 7:23 PM

Oh wow, that's awesome! So the bucking PT will connect to the 120 and step down to the required 100v? Not familiar with the term bucking PT nor have much experience with toroidal transformers outside my Variac.

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LuigiRetro Sales <Sales@luigiretro.com>
To: Shane Williams <timeisnotadistance@gmail.com>

Sat, Jul 24, 2021 at 8:54 PM

Hi Shane,

In reference to voltage shifting circuits, the terms Buck (shift a voltage down) and Boost (shift a voltage up) are in common use and it really doesn't matter if we're shifting an AC or a DC voltage. In general, DC switching regulator chips fall into one of three categories: Buck, Boost, or Buck/Boost (can do both). Your variac can do both Buck and Boost (assuming its dial goes up to 140V); when its output voltage is below its input voltage, it is operating in Buck mode. Likewise, when the output is higher than the input, it's operating in Boost mode.

You may have noticed my note on the second schematic, warning that if the primary wires of the HRD PT are not wired correctly, you will wind up with 140V, rather than 100V on the HRD's primary winding. This is determined by the phase relationship between the HRD PT primary winding and the 20V secondary winding of the added PT. We have 120V coming in from the power company line and the voltage is wired in series with the 20V secondary of the added PT. If the two voltages are in phase, then the output voltage of the circuit will be the sum of the two voltages. So, 120V + 20V from the added PT = 140V (Boost mode). Conversely, if the incoming 120V mains supply is out of phase with the secondary of the added PT, then the resulting circuit output voltage will be the difference of the two. So, 120V - 20V from the added PT = 100V (Buck mode).

By the way, I would not recommend applying 140V to the primary of HRD's PT. To that end, I would recommend bringing the voltage up slowly on the variac the first time you power up the circuit, Monitor the voltage across the HRD PT primary winding; if that voltage gets to 100V before the variac is at 120V, then you need to swap the HRD PT's primary wires.

As for the toroid transformer, I chose it for a number of reasons - none of which have anything to do with the bucking circuit. You can do that circuit with a standard EI core transformer. But the toroid's advantaged are many: It's smaller and lighter than its EI core counterparts, it's electromagnetic flux field is well contained around the transformer core, making it much easier to place near sensitive preamp circuits, it's readily available as well as cost effective.

Ciao,
Luigi



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Shane Williams <timeisnotadistance@gmail.com>

Sat, Jul 24, 2021 at 11:40 PM

To: LuigiRetro Sales <Sales@luigiretro.com>

Wow, that's fascinating. Yes, I did notice the disclaimer. Thank you for taking the time to explaining to me the why's and how's of bucking voltage. It made the drawings make more sense. Pretty rad stuff.

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2 attachments



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