Subject: Euro friendly power transformer
Posted by claussoegaard on Thu, 27 Oct 2022 07:37:37 GMT
View Forum Message <> Reply to Message

I own a Kustom K200A-2 head, which I love. I recently moved back home to Denmark where I'm from, and here we run on 230V. My amp will obviously work fine on a step-down transformer, but I plan to take this on the road with me and in studios and such, and lugging an extra step-down around with me isn't ideal. So if possible, I'd love to experiment with swapping out the US power transformer with something that'll work in the EU. Whether it just be a replacement with only a single primary for ~230V, or something with multiple primaries, doesn't matter.

I'm at a loss as to where to start looking for something like this, with specs and behaviors that would come close enough to the existing transformer. Any help, pointers, guidance would be greatly appreciated! Thanks!

Claus

Subject: Re: Euro friendly power transformer
Posted by stevem on Thu, 27 Oct 2022 11:24:05 GMT
View Forum Message <> Reply to Message

Hello!

Hammond manufacturing in Canada make a Toridal type that has two primary winding that when connected in series will be for 230 usage.

It's part number 1182G18.

You will have to drill a new hole to mount it on the rear will oft the chassis where the original power transformer was.

Subject: Re: Euro friendly power transformer
Posted by stevem on Thu, 27 Oct 2022 12:27:00 GMT
View Forum Message <> Reply to Message

In the US Avel Lindberg manufacturing offer a similar Toridal part number Y236804.

Subject: Re: Euro friendly power transformer
Posted by pleat on Fri, 28 Oct 2022 02:29:10 GMT
View Forum Message <> Reply to Message

Steve, what would be the secondary voltage? 38 Volts, plus and minus?

Subject: Re: Euro friendly power transformer
Posted by claussoegaard on Fri, 28 Oct 2022 08:05:26 GMT
View Forum Message <> Reply to Message

Thank you so much Steve! You're a fount' of knowledge.

Looks like the Hammond part you mentioned has 36V on the secondary, and the Avel Lindberg has 40V on the secondary. So I am guessing that as long as you get in that ballpark you're good? Also depends on the exact input VAC from the wall obviously. The schematic shows +/- 34VDC after the rectification. Who knows, I might even buy both those transformers and see which one I prefer.

Thanks again Steve!

Subject: Re: Euro friendly power transformer
Posted by stevem on Fri, 28 Oct 2022 09:59:46 GMT
View Forum Message <> Reply to Message

Pleat, the Frank models and the A series run on 34 volts plus and minus.

Without going with a custom wound PT the closet you can get is 36.

This Hammond transformer is a little shy on the current needs of the amp and has a 7.3% regulation factor.
This means that under load the amp will then be running very close to the as built 34 volts.

My first pick out of these two would be the Hammond.

Subject: Re: Euro friendly power transformer
Posted by claussoegaard on Sat, 29 Oct 2022 07:43:29 GMT
View Forum Message <> Reply to Message

Yeah the Hammond was my first thought too, to get "back down" to around those 34V it would have seen back in the day and was designed for. I ordered both, so I'll do a little experimenting I guess. :)

A related question - do you know how much step-down converter (230V to 115V) would need to be rated for in Watts to be powerful enough to run this amp? I know it's a 100W amp, but that has to do with the output right, not the power needs? I've seen a general rule of thumb somewhere to just double the W rating of the amp. So for a 100W amp, make sure the step-down is rated for at least 200W. Does that make sense? What do you think?

Thanks again!

Subject: Re: Euro friendly power transformer
Posted by stevem on Sat, 29 Oct 2022 16:04:07 GMT
View Forum Message <> Reply to Message

A 1000 watt rating will have tons of reserve.
You need close to 700.

Subject: Re: Euro friendly power transformer
Posted by claussoegaard on Sat, 03 Dec 2022 20:20:35 GMT
View Forum Message <> Reply to Message

I have a follow-up here. My stuff and myself have finally arrived in Denmark where I am now working on replacing the power transformer. Trying to decide between the Hammond and the Avel Lindberg, I decided to take some measurements, and I'm a bit confused, and wondering if either will be a good fit?

Hooking things up through a variac, I get the following measurements.

Existing PT at 115VAC on primaries, I get 28VAC between one of the secondaries and the center tap. This gets me to around +/- 38VDC after rectification in the circuit.

Hammond at 230VAC on primaries, I get only 19VAC between one of the secondaries and the center tap. This only gets me around +/- 24VDC after rectification in the circuit, which is quite a bit less than the 34V the circuit schematic calls for.

Avel Lindberg at 230VAC on primaries, I get 42VAC between one of the secondaries and the center tap! This in particular seems like way too much and I didn't test it in the circuit out of fear of damaging stuff.

Thoughts? Are these actually not good fits? Maybe faulty?

Subject: Re: Euro friendly power transformer
Posted by stevem on Sat, 03 Dec 2022 21:34:38 GMT
View Forum Message <> Reply to Message

How many milliamperes is the secondary of that Linberg rated at?

Subject: Re: Euro friendly power transformer
Posted by claussoegaard on Sun, 04 Dec 2022 09:24:47 GMT
View Forum Message <> Reply to Message

Just did some more research, and I think maybe neither PT are actually good fits. If I understand the circuit correct and other posts I've found on this forum, the DC rail in the circuit is supposed to be around +/- 40V, not the +/- 34V that the schematic says. The current PT achieves those

40VDC by having 60VAC CT (or 30VAC on either lug) of the secondary. That 60VAC gets rectified to those 40VDC.

So the two replacement PTs I got are: Hammond 1182G18 and Avel Lindberg Y236804.

The Hammond is actually only spec'ed to 36VAC CT (or 18VAC on either lug) @ 6.25A. So obviously not high enough voltage.

The Avel Lindberg is spec'ed at 80VAC CT (or 40VAC on either lug), also @ 6.25A. So obviously too high voltage.

What I actually need is something that has those 60VAC CT (or 30VAC on either lug). Looking around on the Avel Lindberg and Hammond spec sheets, here are a couple of candidates I found.

Hammond 1182P30: 60VAC CT (or 30VAC on either lug) @ 5A (not sure if that's enough amps?)
Hammond 1182R30: 60VAC CT (or 30VAC on either lug) @ 8.33A (leaning towards buying either this one or the AL Y236802)

Avel Lindberg Y236802: 60VAC CT (or 30VAC on either lug) @ 8.33A (leaning towards buying either this one or the Hammond 1182R30)
Avel Lindberg Y236751: 60VAC CT (or 30VAC on either lug) @ 5.5A (not sure if that's enough amps?)

Thoughts?

Subject: Re: Euro friendly power transformer
Posted by stevem on Sun, 04 Dec 2022 22:39:17 GMT
View Forum Message <> Reply to Message

The transformer specs are for AC voltage, when the AC voltage gets full wave rectified as in the actual amp the DC voltage will be 1.4 times the AC voltage.

Subject: Re: Euro friendly power transformer
Posted by claussoegaard on Mon, 05 Dec 2022 10:37:54 GMT
View Forum Message <> Reply to Message

Right, instead of saying the 60VAC (which is the full secondary winding) gets rectified to 40VDC, I should have said that each "side" of the secondary winding, relative to the center tap, i.e. 30VAC, is what gets rectified to +/- 40VDC. Which is in line with the 1.4 factor you mention.

But regardless, what this amp needs is a PT with a center tapped secondary that has 60VAC on the full winding, or 30VAC on either "side", relative to the center tap. And neither Hammond 1182G18 or Avel Lindberg Y236804 are anywhere close to that.

I'll update the thread once I receive one of the PTs with more appropriate secondary voltages for

posterity.

Subject: Re: Euro friendly power transformer
Posted by claussoegaard on Fri, 09 Dec 2022 17:12:02 GMT
View Forum Message <> Reply to Message

I ended up opting for the "Hammond 1182P30". It supplies the correct AC voltage and after rectification I get +/- 40.5VDC. Close enough! Although the schematic says +/- 34VDC, I've seen elsewhere on this forum that's actually supposed to be 40. Works great! Making it fit was a little bit challenging, but eventually I found a good solution. The real test will be once I start cranking it and playing it a lot and seeing if the PT can keep on supplying enough amps. Time will tell.

But the conclusion is that to anyone looking for a replacement PT for a K200A-2 amp, the 1182P30 seems like a great one.