
Subject: Skywave's 3 Pi Build

Posted by [skywave-rider](#) on Sat, 16 Feb 2013 23:08:47 GMT

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Finally got my AE TD12S woofers.

I have a few questions. First, there is an inconsistency in the circular cutout of the cone surrounding the phase plug. I tried to get it clear in pics, but it looks worse in real life. Is this OK? I assume that as long as it doesn't rub, and is close enough to the phase plug, I am OK. However I never had woofers like this and, like I said, it looks worse in person.

Secondly, Wayne, would you kindly send the latest 3Pi schematic?

Assuming all goes well, I will do a temporary setup in smallish trap cabs (PE, sealed,) to check it out. I have moved the baffles forward on those and I think the volume is about 2 cu ft.

Thanks.

File Attachments

- 1) [4photo.JPG](#), downloaded 5379 times
 - 2) [3photo.JPG](#), downloaded 5381 times
 - 3) [1photo.JPG](#), downloaded 5378 times
 - 4) [2photo.JPG](#), downloaded 5319 times
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Subject: Re: Skywave's 3 Pi Build

Posted by [Wayne Parham](#) on Sat, 16 Feb 2013 23:39:07 GMT

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I'll send plans out right away.

As for the TD12S, I think what you're saying is the voice coil former was cut slightly on a diagonal. I suppose it doesn't matter, since there is no dust cap to interfere with. For that matter, some dust caps are glued to the former but others are glued to the cone, and don't touch the former. There are probably a lot of 'em out there covering voice coil formers that were cut just like yours.

All that said, I would probably give John Janowitz a call. The AE woofers are very attractive, and most people proudly run 'em without grille's because of that. So can understand that you don't

want 'em looking funny. You might give John a call and see what can be done.

Subject: Re: Skywave's 3 Pi Build

Posted by [skywave-rider](#) on Sun, 17 Feb 2013 02:07:43 GMT

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Thanks or pointing that out, Wayne. I did not consider that the voice coil former could be out of round, thinking there would be a tight tolerance in the gap. But now I understand that one is really the same as the other.

I am not talking about a diagonal. but out of round.

I think I can unscrew the phase plugs to get a better look at the vc former roundness.

Not happy at all.

Subject: Re: Skywave's 3 Pi Build

Posted by [Wayne Parham](#) on Sun, 17 Feb 2013 05:07:26 GMT

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Yeah, I suppose it could be a little out of round without rubbing. The gap tolerance isn't like hydrodynamic bearing clearance, nothing even close to that. It couldn't be and still allow room for thermal shifts. But it is best that the former be round and centered in the gap.

Subject: Re: Skywave's 3 Pi Build

Posted by [skywave-rider](#) on Mon, 18 Feb 2013 00:25:00 GMT

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I couldn't wait, so I threw one woofer in my existing too-small box, sealed, a lot of stuffing, with the H290C on top just to check it out. I was previously using a 4 Pi crossover, so was not difficult to change the circuit to 3 Pi.

As expected, not much bass due to the small, sealed box. I could mount the waveguide in the baffle. However this is just temporary because I will use a ported box to spec.

Have not decided what I will do about the out of roundness.

File Attachments

1) [3 Pi test cab.png](#), downloaded 5122 times

Subject: Re: Skywave's 3 Pi Build

Posted by [rkeman](#) on Mon, 18 Feb 2013 12:05:28 GMT

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The three AE TD12Ss that I have all show an even reveal of a bit less than a millimeter around the phase plug, so you you're driver may be an exception. Do both woofers show the same issue? Is the phase plug really round or a subtly elliptical? As Wayne said, the issue is probably only cosmetic and won't have any functional consequence, but I'd confirm that with Acoustic Elegance. Mounting the woofers with the most uniform gap area at the top may address the cosmetic issue with the TD12Ss mounted in the cabinets if there are no functional issues. The Eminence 12LFA is a good driver, but the AE TD12S is worth the extra cost in the 3Pi. Good luck!

Subject: Re: Skywave's 3 Pi Build

Posted by [Wayne Parham](#) on Mon, 18 Feb 2013 15:28:20 GMT

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What kind of finish are you planning to put on the cabinets? What look are you going for?

Subject: Re: Skywave's 3 Pi Build

Posted by [skywave-rider](#) on Mon, 18 Feb 2013 17:59:01 GMT

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Thanks, rkeman, I will attempt to call AE tomorrow and see what they say. I have not been able to remove the phase plugs, I'm a little afraid of applying a lot of torque to unscrew them.

Wayne, I have not decided on the finish. It looks like I will be moving in the near-mid term, so the woofers will go back in boxes for the trip.

I might go with a traditional veneer or maybe something very modern. What that means, I'm not sure. Non wood look, I suppose.

For giggles, here's my crossover, modified. All the components on that board are not in use because the 3 Pi uses fewer components. Following that are the beefy Pi crossover boards I have waiting in the wings for the build.

File Attachments

- 1) [test crossover.JPG](#), downloaded 4926 times
 - 2) [pi x-o board.JPG](#), downloaded 4947 times
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Subject: Re: Skywave's 3 Pi Build

Posted by [skywave-rider](#) on Wed, 20 Feb 2013 17:06:04 GMT

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OK, I moved parts from my breadboard to the Pi PC board. I don't have enough of the correct value resistors for the HF attenuation circuit, so I improvised. What I have is a total of 30 Ohms (single 30 Ohm, jumpering R1B) in the R1 position and 14 Ohms (2 paralleled 20 Ohms to a 4 Ohm in series) in the R2 position. Let me know if I did anything stupid.

I will order Mills resistors in the correct amounts and values so the crossover will be able to handle full rated power. At the moment there is no chance anything will become warm.

I used silicon under the permanent components, as Wayne suggests.

Tidy!

File Attachments

- 1) [xo.png](#), downloaded 4721 times
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Subject: Re: Skywave's 3 Pi Build

Posted by [Wayne Parham](#) on Wed, 20 Feb 2013 17:13:44 GMT

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skywave-rider wrote on Wed, 20 February 2013 11:06OK, I moved parts from my breadboard to the Pi PC board. I don't have enough of the correct value resistors for the HF attenuation circuit, so I improvised. What I have is a total of 30 Ohms (single 30 Ohm, jumpering R1B) in the R1 position and 14 Ohms (2 paralleled 20 Ohms to a 4 Ohm in series) in the R2 position. Let me know if I did anything stupid.

I will order Mills resistors in the correct amounts and values so the crossover will be able to handle full rated power. At the moment there is no chance anything will become warm.

Looks good! You're on your way to having a top-notch speaker!

Your resistors will work that way, but, yeah, when you get the Mills, it will be better 'cause not only will it take full rated power but even at lower power levels, the resistors will stay very cool. That's always good.

I see you drilled holes for component leads, as most circuit boards are done. I didn't do that because I normally put the board on a gasket and mount directly to the inside bottom panel of the cabinet. The solder pads would protrude if I did it this way, so I mount the components on the solder side. But if you use stand-offs for mounting or use a really thick gasket, the solder pads won't protrude into the wood panel.

Subject: Re: Skywave's 3 Pi Build

Posted by [skywave-rider](#) on Wed, 20 Feb 2013 17:58:44 GMT

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Thanks, Wayne,

I went with the conventional way because I wanted to try out my new mini drill press before I have to pack it up. I'm also an old dog, so...

I think I will use little mini wood standoffs, glued into the cab, then I'll screw the board onto that.

Subject: Re: Skywave's 3 Pi Build

Posted by [Wayne Parham](#) on Wed, 20 Feb 2013 18:07:27 GMT

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Should work very nicely, I think. Just make sure you have enough support, especially under the coils. Might add extra wood supports or cushion with rubber supports in-between mounting holes and under heavy components.
