
Subject: 4pi flat pack, Rhino Line
Posted by [rage889](#) on Sun, 06 Sep 2020 18:59:37 GMT
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Hi Wayne,

I just competed the assembly of my flat packs. The quality is great and the front baffle is very impressive.

I want to have them sprayed at a local Rhinoliner. Do you think I need to prime them first or can I just have it shot straight on to the MDF?

I *believe* it is a two part polyurethane.

I will post pictures when complete!

Sean Richardson

Subject: Re: 4pi flat pack, Rhino Line
Posted by [compaddict](#) on Sun, 06 Sep 2020 19:06:31 GMT
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I did mine with automotive primer and finished with automotive semi-gloss black.
Turned out very nice!

Subject: Re: 4pi flat pack, Rhino Line
Posted by [Wayne Parham](#) on Mon, 07 Sep 2020 17:31:58 GMT
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That's been my experience too. I'm really the guy to ask about electronics and acoustics, but not so much on cabinetry and finishes. I tend to leave the woodworking and finish-coating answers to those more familiar. There are some really good cabinetmakers here.

That said, I have done a lot of speakers with various truck bed liner finishes and they apply great right onto MDF or Baltic Birch, without any special preparation. Some paints really need adhesion modifiers and/or primers applied, but truck bed liner seems to be an exception. It bonds to wood just great. And its texture tends to cover rough spots in the wood and also to hide joints, so you don't have to work as hard in the sanding department either.

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:43:13 GMT

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If you would like to save some money you can DIY them using Duratex.

<https://www.acrytech.com/product-category/speaker-cabinet-coatings/>

It's very simple to use and will provide a very durable great looking minimal finish.

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:47:23 GMT

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Starting Assembly

File Attachments

1) [assembled raw.JPG](#), downloaded 110 times

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:48:14 GMT

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Another

File Attachments

1) [clamped.JPG](#), downloaded 110 times

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:49:10 GMT

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Had to install the Neutrik connector. Thanks to TomS for the suggestion of the 2" Forstner bit.

File Attachments

1) [Neutrik.JPG](#), downloaded 105 times

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:49:41 GMT

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Next was some sanding. I chose to use an orbital sander with 80 grit to knock the overhang of the baffle off and really get the MDF smooth. As my previous painting training has taught me the prep work is the dirtiest and certainly the most important for the final finish. I used BIN Primer that I had tinted as a white base with black Duratex going over didn't make any sense to me. I did one coat of BIN then sanded with 120 grit and repeated.

File Attachments

1) [IMG_3515.JPG](#), downloaded 102 times

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:50:30 GMT

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I like to finish the inside. If it was ever sold and someone opened it, I like it to look finished. Also, it really cuts down on the possible MDF dust and just makes it so much nicer to me. How crappy is it to open a speaker and see it raw and cheesy inside? Yuck. Doesn't take much more effort to make it look a bit nicer and an advantage of diy since you're not against the Excel Sheet of the bottom line.

File Attachments

1) [IMG_3511.JPG](#), downloaded 99 times

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:51:47 GMT

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2-3 coats of Duratex provides an excellent finish. I have found that while you put it on heavy, it really takes rolling it in all directions to smooth it out evenly. Then for the final finish, you slowly roll one direction with no pressure with 50% overlap. No zebra stripes and a consistent texture.

File Attachments

1) [finished top.JPG](#), downloaded 94 times

2) [durainside.JPG](#), downloaded 89 times

Subject: Re: 4pi flat pack, Rhino Line
Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:52:41 GMT
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I really dislike drivers being held in with wood screws. If you ever need to remove a driver more than once, the hole is usually bugged up as it's not really made for multiple disassembly. So how does one deal with that? Tee Nuts! This is how I use them...

First you need to purchase some quality tee nuts as these are meant for a permanent installation. I will be using SHCS as my finish bolt to hold the 45 lb 18" driver in.

So you get the Tee Nuts and some basic grade 5 bolts with washers along with PL Adhesive as seen below. See where this is going?

File Attachments

1) [T Nut Install.JPG](#), downloaded 76 times

Subject: Re: 4pi flat pack, Rhino Line
Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:53:11 GMT
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Now this is very important. If you get the PL on the threads of the Tee Nut, you're screwed!
:nono:

So I put 3 dabs around the side of the Tee Nut like below.

File Attachments

1) [PL on T nut.JPG](#), downloaded 70 times

Subject: Re: 4pi flat pack, Rhino Line
Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:53:47 GMT
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So the little teeth on the Tee Nut are obviously meant to penetrate the substrate - MDF in this case. If you hammer them in, the teeth get bent and mangled and usually cause more harm than good and also put the Tee Nut in crooked which can lead to cross-threaded bolts. That is a nightmare!

So using those grade 5 bolts and washers you "draw" the Tee Nut up into the substrate. DO NOT tighten too tight, just enough to squeeze the extra PL out and hold it. Remember: The PL is really what is holding the Tee Nut, not those goofy teeth. I personally like to leave the bolts in for 48 hrs to make absolute certain the PL has fully cured.

File Attachments

1) [t nut bolt 24 hrs.JPG](#), downloaded 71 times

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:54:34 GMT

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Now you might be wondering what it looks like underneath? Of course, I'll show you a terrible pic!

See how it squeezed out evenly? Now you might want to touch it and remove the extra. Do not! Why? You run the risk of getting it on the bolt and not even knowing that and then when you go to remove them, you realize what happened. :o :slap: :bawl: :finger:

File Attachments

1) [IMG_3536.JPG](#), downloaded 68 times

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:55:05 GMT

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Next was to solder the Belden 1313A to the Neutrik speakON and install into the cabinet.

File Attachments

1) [Soldered speakON.JPG](#), downloaded 69 times

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:55:38 GMT

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Stuff it!

File Attachments

1) [Stuffing.JPG](#), downloaded 66 times

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:57:30 GMT

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Install the driver!

I was confident that it was all correct as I always check each step; however, it's so much easier to check now as a complete assembly...

File Attachments

1) [bolts installed.JPG](#), downloaded 63 times

2) [Battery Polarity.JPG](#), downloaded 64 times

Subject: Re: 4pi flat pack, Rhino Line

Posted by [jtwrace](#) on Wed, 09 Sep 2020 18:58:50 GMT

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And finally the completed sub with a measurement:

File Attachments

1) [Complete!.JPG](#), downloaded 67 times

2) [UM18 scaled.jpg](#), downloaded 64 times

Subject: Re: 4pi flat pack, Rhino Line

Posted by [Wayne Parham](#) on Wed, 09 Sep 2020 19:09:39 GMT

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Looks great! You inserted your T-Nuts exactly the same way I do - With a dab of glue to hold 'em in.

Thanks for the build thread!

Subject: Re: 4pi flat pack, Rhino Line
Posted by [compaddict](#) on Wed, 09 Sep 2020 19:15:12 GMT
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Nice work!

Subject: Re: 4pi flat pack, Rhino Line
Posted by [jtwrace](#) on Wed, 09 Sep 2020 19:15:56 GMT
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Wayne Parham wrote on Wed, 09 September 2020 14:09 Looks great! You inserted your T-Nuts exactly the same way I do - With a dab of glue to hold 'em in.

Thanks for the build thread!

Glad it's Wayne approved! Now I await the Pi 4 kit to document each and every step as a build guide. ;)

Subject: Re: 4pi flat pack, Rhino Line
Posted by [Wayne Parham](#) on Wed, 09 Sep 2020 22:22:56 GMT
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I'm anxious to see Sean's build too. I'll bet he'd be happy to get the same look as you did on your subs. You really did a good job and I'm sure he appreciated the tips.

Subject: Re: 4pi flat pack, Rhino Line
Posted by [jtwrace](#) on Wed, 09 Sep 2020 22:38:44 GMT
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Wayne Parham wrote on Wed, 09 September 2020 17:22 I'm anxious to see Sean's build too. I'll bet he'd be happy to get the same look as you did on your subs. You really did a good job and I'm sure he appreciated the tips.

Guess you missed my intent :lol:

I do look forward to his build though.

Subject: Re: 4pi flat pack, Rhino Line
Posted by [rage889](#) on Thu, 10 Sep 2020 02:27:47 GMT
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I'm impressed you made that Duratex look so good!

I was tempted to go that route - but laziness prevailed and I dropped the assembled cabs off to the local Rhino liner today. I'm guessing cost will be about Double the diy route - hopefully the results are as good as what you did!

I like the choice of neutrik connector as well - that is also a tempting option here.

Subject: Re: 4pi flat pack, Rhino Line
Posted by [jtwrace](#) on Thu, 10 Sep 2020 02:30:54 GMT
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rage889 wrote on Wed, 09 September 2020 21:27 I'm impressed you made that Duratex look so good!

I was tempted to go that route - but laziness prevailed and I dropped the assembled cabs off to the local Rhino liner today. I'm guessing cost will be about Double the diy route - hopefully the results are as good as what you did!

I like the choice of neutrik connector as well - that is also a tempting option here.

Go get them back! You'll need a half gallon of duratex and one roller. The cleanup is so easy with Duratex it's silly. The Neutrik is just nice and simple without any wires falling out ever. I like them when possible.

If you really are going to add the Neutrik, I really suggest you do it before paint though. It would really suck to have an "oops" on a finished cabinet.

Subject: Re: 4pi flat pack, Rhino Line
Posted by [tubino](#) on Tue, 15 Sep 2020 21:05:47 GMT
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Thanks for posting these details! It's very useful for me. Did you use 10-32 for the t-nuts, or 1/4" x 20?

Subject: Re: 4pi flat pack, Rhino Line
Posted by [jtwrace](#) on Tue, 15 Sep 2020 21:14:33 GMT
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tubino wrote on Tue, 15 September 2020 16:05 Thanks for posting these details! It's very useful for me. Did you use 10-32 for the t-nuts, or 1/4" x 20?

1/4"-20 Tee Nuts for my driver. However, if you are using a small Waveguide or driver you can use 10-32 without an issue. Overkill is usually good; however, the bolt still needs to go through the trim ring. ;)

Subject: Re: 4pi flat pack, Rhino Line
Posted by [rage889](#) on Tue, 15 Sep 2020 21:59:40 GMT
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Wayne - what size bolts/screws do I need for the T-nuts installed in your flat pack cabinets?

Here are a few progress photos:

File Attachments

- 1) [621527792.jpg](#), downloaded 39 times
- 2) [621527801.jpg](#), downloaded 40 times
- 3) [IMG_2373.jpg](#), downloaded 41 times
- 4) [IMG_2395.jpg](#), downloaded 42 times
- 5) [IMG_2396.jpg](#), downloaded 41 times

Subject: Re: 4pi flat pack, Rhino Line
Posted by [Wayne Parham](#) on Wed, 16 Sep 2020 03:32:11 GMT
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Wow! Those look great!

Use 10-32 screws. Black oxide button head screws look really nice.

Subject: Re: 4pi flat pack, Rhino Line
Posted by [Barryso](#) on Wed, 16 Sep 2020 11:52:38 GMT
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Black usually isn't my favorite speaker finish but those look fantastic. The texture really make it pop.
