
Subject: New 3Pi build

Posted by [tubemax](#) on Sun, 10 Sep 2017 22:03:37 GMT

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So I finally got some time and spare money to start collecting parts for 3Pi speakers... crossover is made with left-over PCB's I had with good/standard/whatever quality parts I could find for reasonable price: Jantzen Cross-Cap's and Bigger gauge coil for the woofer (1,4mm wire) and Metal-film non-inductive 10Watt resistors. I'm still waiting on delivery for 100Watt 8 Ohm dummy load resistors to be mounted off-board as per drawing.

For the speaker components I wanted to start with all-standard Eminence - but I got lucky and found a good deal on summer fire-sale and got myself B&C DE250 for just 25.- Euro more than PSD2002 per piece.

For the woofer I wanted to jump right on the upgraded part but it's price in Europe is just silly high (300,- Euro per piece) so I settle down for stock part Delta 12LFA.

Now that the funds are exhausted, I have to wait till next month to start working on the box itself, I will surely post many pictures of the build...

Initially I wanted to make 4Pi but after years of waiting to save some money for JBL 2226 woofers, I realized it is not going to happen as the JBL components are awfully expensive in Europe - asking price of 440,- Euro for just one woofer is pretty steep when you combine all other costs of build... so I re-read all reviews of anybody ever build 3Pi's and decided to get going with basic design and see for myself what is all about!

I know that many owners have upgraded from 3Pi to 4Pi or even 6Pi but in my case I won't be able due to costs of entire project. I hope I made right decision as I really want to have some serious sounding speakers in my room and hear that proper horn sound as I was never satisfied with normal woofer/mid/tweeter configuration.

Even the best ones were never good enough except for some older JBL 4412A series I had in the recording studio some 20 years ago and on occasion listening to 4425 - a two-way with the horn... well it had precision and fantastic insight in recorded music other speakers could not achieve. Even the big UREI 813A I had pleasure/pain to listen for extend period of time where honky, aggressive and coarse sounding and really needed a lot of power to sound best - so not the best speaker for home usage at all and this very experience made my final decision in favor of 12 inch woofer instead of 15 inch for the time being.

Please chime in with any suggestion or ideas regarding the decisions I made!

File Attachments

- 1) [PI3 crossover.jpg](#), downloaded 7460 times
 - 2) [3PI parts.jpg](#), downloaded 7281 times
-

Subject: Re: New 3Pi build

Posted by [Wayne Parham](#) on Mon, 11 Sep 2017 13:36:24 GMT

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Looks like you're off to a great start!

different midwoofers.

What are improvements are the upgrades. So you might listen to the stock model for a while while saving money for the Definimax midwoofer. It's worth the money, and offers smoother sound. This is especially true in the midrange.

See the links below for more information about models and upgrades.

Info to compare Pi models

Options in a nutshell

UpgradesBut don't worry - The stock build sounds good too. They are going to be some great speakers when you are done!

Subject: Re: New 3Pi build

Posted by [tubemax](#) on Mon, 11 Sep 2017 17:34:07 GMT

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Wayne, thanks a lot for clarifying about 3/4Pi models!

I thought always that 4Pi being bigger (bigger woofer) and pricier would automatically means better sound, but I guess in your designs is maybe less important because they are based on same principles.

I actually wanted to go for all Eminence - upgraded Definimax woofer and psd2002 but it went other way around due to price difference.

Never mind, I would like to go myself slowly through the upgrade path and find out for myself differences in quality.

Can't wait to make some dust, you will hear from me very soon!

Subject: Re: New 3Pi build

Posted by [Wayne Parham](#) on Mon, 11 Sep 2017 20:19:21 GMT

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lower and efficiency is higher. But it's not night and day - Both are very good loudspeakers.

Subject: Re: New 3Pi build

Posted by [tubemax](#) on Sun, 29 Oct 2017 21:06:38 GMT

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Well, I finally started with cutting some wood, also sourced 2,5 inch drill for bass port (was not easy find in europe) and my 100WATT 8 Ohm dummy load I ordered 2 months ago never came so I had to order this time from USA and wait again some 2-3 weeks... we will see, I hope soon to start assembly...

In the mean time I was breaking-in those Eminence 12LFA's in a guitar box - open back and they sounded ok, but need a tweeter to sound best... in short 12LFA's are not great guitar speakers, for BASS guitar they are awesome but need proper enclosure with the port...

File Attachments

- 1) [MDF pack.jpg](#), downloaded 6516 times
 - 2) [Drill.jpg](#), downloaded 6502 times
 - 3) [Burn-in.jpg](#), downloaded 6533 times
-

Subject: Re: New 3Pi build

Posted by [Wayne Parham](#) on Sun, 29 Oct 2017 23:41:11 GMT

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Makin' progress!

Subject: Re: New 3Pi build

Posted by [tom-m](#) on Wed, 01 Nov 2017 03:11:08 GMT

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You mentioned the 100 watt resistor. I know it is used in the 4pi, but not sure it is used in the 3pi? Wayne, does he need the big resistor with the woofer he is using?

Subject: Re: New 3Pi build

Posted by [Wayne Parham](#) on Wed, 01 Nov 2017 17:23:36 GMT

model.

Subject: Re: New 3Pi build

Posted by [tubemax](#) on Fri, 10 Nov 2017 22:12:19 GMT

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OK, so here I'm again with some progress... trimmed all the panels to exact same size, succeeded to cut openings for woofer & horn along with T-nuts, it took me forever just to drill those bass ports, probably most difficult job I ever done with MDF (I wish Wayne had some alternative design with standard plastic port size...).

Now I can finally move to glueing everything together, then sanding, painting, sanding again, placing isolation, wiring... it could be ready in two weeks if all goes according to plan and yes I received Dummy load 100WATT 8 Ohm resistors from Parts-express so now is crossover complete as well...

btw, 100WATT resistor is actually not needed for 3 Pi if you using AE 12TDS if I'm not wrong?

File Attachments

- 1) [Front baffle 1.jpg](#), downloaded 5863 times
 - 2) [Front baffle 2.jpg](#), downloaded 5885 times
 - 3) [Dummy load.jpg](#), downloaded 5759 times
-

Subject: Re: New 3Pi build

Posted by [Wayne Parham](#) on Fri, 10 Nov 2017 22:39:58 GMT

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Looking great!

You could have used a plastic or cardboard port tube if you wanted. Many of our speaker models use a cardboard duct. For those models, we use tubes that are made for storing or mailing large blueprints. They have really thick sidewalls - so thick they're tough as baseball bats. Cut their

length to size with a table saw and they work great for speaker ports. But the port on this model is pretty short so we glue small wood blocks on the baffle and drill through them, same as you've done.

About the Zobel resistor, you're right that the AE woofer doesn't need it. Eminence and JBL woofers do.

Subject: Re: New 3Pi build
Posted by [tubemax](#) on Fri, 10 Nov 2017 23:12:22 GMT
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Thanks Wayne,

I was actually trying to find port tube with 2,5 inch INSIDE diameter but could not find any, all of them where 2,5 inch outside - not what your design demand, so went ahead and bite the bullet with drilling... it came out ok.

Another question, how well 3 Pi works with high power transistor amp's, for example crown XLI or XLS series (AB & class D)?

Subject: Re: New 3Pi build
Posted by [Wayne Parham](#) on Sat, 11 Nov 2017 16:36:52 GMT
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I love Crown amps and have a couple of them myself. I prefer the older Class AB amps to the Class D amps, but I'll bet if I was lugging them around for gigs I might change my mind. But they're great for all-out SPL, and your speakers will love them.

About the port, the truth is the 2.5" O.D. tube would have worked just fine. The difference from the slight change of Helmholtz frequency is minor - Much less than the fluctuation you'll see from the shifting electro-mechanical parameters as voice coil temperature changes at various power levels. I design all my speakers with a wide margin of tolerance for this kind of shift.

Subject: Re: New 3Pi build
Posted by [tubemax](#) on Sat, 11 Nov 2017 23:53:23 GMT
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Good to know that speakers like higher power amps as I'm not anymore into low power tube amps as before, I should have asked about port tolerances earlier - it would have saved me some time...

going back to gluing process...

Subject: Re: New 3Pi build

Posted by [tubemax](#) on Sun, 19 Nov 2017 22:12:34 GMT

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Well, another week passed and I did so little but somehow succeeded to put together both enclosures and now I can start with placing damping material and do something about the looks... work in progress...

File Attachments

1) [Inside look.jpg](#), downloaded 2915 times

2) [Last panel in place.jpg](#), downloaded 2906 times

Subject: Re: New 3Pi build

Posted by [Wayne Parham](#) on Mon, 20 Nov 2017 14:39:22 GMT

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Getting closer!

Won't be long before they're makin' music!

Subject: Re: New 3Pi build

Posted by [tubemax](#) on Mon, 20 Nov 2017 21:18:30 GMT

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Thanks Wayne,

Yes, I can finally see light in the end of a tunnel...

File Attachments

1) [tunnel.jpg](#), downloaded 2822 times

Subject: Re: New 3Pi build
Posted by [tubemax](#) on Sun, 26 Nov 2017 16:49:00 GMT
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Getting even closer but not yet done...

I decided to use the vinyl to wrap the speakers, also painted the back side and I'm just about to start with front side but my back started to hurt - the more material goes in to the box - the heavier it feels. need to rest for few days...

File Attachments

- 1) [Bottom.jpg](#), downloaded 2796 times
 - 2) [First one.jpg](#), downloaded 2784 times
 - 3) [Second one.jpg](#), downloaded 2791 times
-

Subject: Re: New 3Pi build
Posted by [Wayne Parham](#) on Sun, 26 Nov 2017 17:46:48 GMT
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Your cabinets look fantastic!

Won't be long now before they're makin' music!

Subject: Re: New 3Pi build
Posted by [tubemax](#) on Tue, 12 Dec 2017 19:11:15 GMT
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Hi Everybody,

Well after some pause, the work has been resumed, so far speakers are 99% ready and just waiting to install glass wool any day from now.

I did spend a lot of time in making those speaker grills, it's a tricky work and require a lot of

patience if you want to achieve neat looking and tight grills!

Speaker raisers/stands are done as well, they are just there to help raise the woofer to a visible line with the listening position without any obstruction and are slightly angled as well. Total height is about 5 inch on the front side.

Stay tuned in for a couple of days for the first test...

File Attachments

- 1) [Front trim.jpg](#), downloaded 2631 times
 - 2) [Frames.jpg](#), downloaded 2723 times
 - 3) [Grills + front baffle cork.jpg](#), downloaded 2631 times
 - 4) [Raiser:stander.jpg](#), downloaded 2544 times
-

Subject: Re: New 3Pi build

Posted by [Wayne Parham](#) on Tue, 12 Dec 2017 21:42:36 GMT

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Wow! Those really look nice! I love the dark stain!

Subject: Re: New 3Pi build

Posted by [tubemax](#) on Tue, 12 Dec 2017 22:34:42 GMT

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Thanks Wayne, It is actually all fake vinyl wrap in different darker colors to hide imperfections, for the time being it's OK.

need to work around this detail later on...

Idea was to place a logo on the front baffle but once you put the grills on, almost nothing is visible anymore due to dark color of the speaker cloth.

Subject: Re: New 3Pi build
Posted by [Wayne Parham](#) on Wed, 13 Dec 2017 14:09:01 GMT
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I usually put the logo on the wood underneath the grilles. But then again, I usually leave the grilles off.

Subject: Re: New 3Pi build
Posted by [tom-m](#) on Wed, 13 Dec 2017 18:22:02 GMT
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Yes, they look very nice. Lots of good work here.

Subject: Re: New 3Pi build
Posted by [tubemax](#) on Sat, 16 Dec 2017 22:05:27 GMT
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Ok, they are finally finished!!!

It took me good 3 months, but it was priceless experience & education on building speaker cabinets, they are now connected in my system for initial brake-in.
I'll won't go into the details about the sound at this time as I want them to brake-in fully, it would be too early to judge them now on their sound signature...

Still I can't ignore the fact that they are already producing extremely nice sound with full scale dynamics and life-size performers in your room...

I'm so happy with finally having big sounding monitors which are not flattering signal in any way, no thumping bloated bass or scorching highs to impress you in the showroom - non of this.

Instead, they portray life size images of performers without any fuss about or any lack of headroom with crystal clear, high definition sound coming from the H290C horn + B&C250 driver... really impressive smooth performance!

I will come later during the brake-in period and give my full review of this fine sounding speaker system, bloody good work Wayne!

Thanks to everybody in showing interest in my build, I will try to make better pictures during day light as this ones are rubbish!

Ready for glass wool installation...

Damping fitted...

Drivers mounted!

And standing on its feet...

File Attachments

- 1) [Ready for insulation.jpg](#), downloaded 2243 times
 - 2) [Damping fitted 1.jpg](#), downloaded 2263 times
 - 3) [Damping fitted 2.jpg](#), downloaded 2298 times
 - 4) [Drivers mounted.jpg](#), downloaded 2257 times
 - 5) [Standing on feet.jpg](#), downloaded 2246 times
-

Subject: Re: New 3Pi build

Posted by [tubemax](#) on Sat, 16 Dec 2017 22:10:47 GMT

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Peek at the back side... I also installed parallel speakon connector...

First listen in my system...

Left speaker and...

Right speaker...

That's all for now folks... till next time

File Attachments

- 1) [Back side.jpg](#), downloaded 2183 times
 - 2) [First listen.jpg](#), downloaded 2193 times
 - 3) [Left speaker.jpg](#), downloaded 2202 times
 - 4) [Right speaker.jpg](#), downloaded 2234 times
-

Subject: Re: New 3Pi build

Posted by [Wayne Parham](#) on Sun, 17 Dec 2017 15:27:37 GMT

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Fabulous!

Now your hour hard work pays off!

Subject: Re: New 3Pi build

Posted by [tubemax](#) on Thu, 28 Dec 2017 21:13:25 GMT

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Hi everybody, I'm back as promised with updated review...

Well after two weeks of playing (about 60-70 hours of break-in time), there are significant positive changes in the sound. Woofer is going deeper and stronger, easily reaching 30-35 Hz in-room response, while compression driver smooth-out fully. Pi3's are finally playing nice from low, mid to high SPL and are sufficiently broken-in to assess their sound.

They truly portray large and wide sound with precision, depth, outstanding detail recovery, warm tonality and great dynamics. Guitars and vocals sound big and realistic while amplified instruments like bass guitar have real weight and is delight to listen on good recordings.

As a side effect, badly compressed music, badly mastered or any mistakes in production (too much or too little bass, hot top end, etc...) will be glaringly obvious - thanks to very detailed but smooth presentation of the this fine sounding horn speaker.

With modern Jazz recordings, (like FourPlay, Chuck Loeb, Lee Ritenour, Joyce Cooling etc...) they excel in great tonality, musicality, timing, slam and fun factor without even breaking a sweat. Classical recording are something special as you really feel the live performance, presence, dynamics and sheer size of the venue it's been recorded. Even multitude amount of instruments simultaneously playing is not a difficult task for them.

With older Rock and Pop music it's a mixed feeling as every CD sound different - thanks to the producers who used way too much compression, reverb or other effects which are easily detectable with H290C Horn and B&C DE250 driver.

There is also a down point to this fine sounding speakers... (and it's not their sound)...

Physically, Pi 3's are quite large speakers, way wider than any standard speaker I know, almost like a pair of monoliths in your room, which reflects in negative WAF factor in our small living room. Their sheer size and appearance has not won any awards in spite of good looking cabinets - in contrary - only critics and constant hammering why I ever built so big speakers in our small room!

Wish I had a separate man-cave room for myself only!

Actually, it boiled down to the point that I have to move or sell the speakers or...

I really didn't see this coming... it feels like a cold shower and it basically means that I have to sell speakers whether complete or in the parts or face never ending discussion!!!

Please don't understand this as that is something wrong with their sound, it's a pure bad luck that I need to live with it...

As I'm not going to advertise, If anybody has any interest, please e-mail me on my private e-mail address by clicking on my name... in the mean time I can take a closer look at the One Pi's as a new alternative...

I wish good luck to everybody and Happy New Year to you All!

Front row naked...

Left speaker...

and Right speaker...

File Attachments

- 1) [Front view.jpg](#), downloaded 2006 times
 - 2) [Left.jpg](#), downloaded 1942 times
 - 3) [Right.jpg](#), downloaded 2045 times
-

Subject: Re: New 3Pi build

Posted by [tubemax](#) on Sun, 31 Dec 2017 00:19:06 GMT

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Hi Everybody,

Now that they are 100% finished, just a few more pictures in the winter day-light before they are gone...

File Attachments

- 1) [Speakers 1.jpg](#), downloaded 1959 times
 - 2) [Speakers 2.jpg](#), downloaded 1790 times
 - 3) [Speakers 4.jpg](#), downloaded 1931 times
 - 4) [Speakers 6.jpg](#), downloaded 1855 times
 - 5) [Speakers 7.jpg](#), downloaded 1907 times
-