
Subject: 2nd order...what the doctor ordered?

Posted by [gazzamongo](#) on Sat, 12 Jun 2004 11:42:26 GMT

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i'm larking around with my new setup which is evm15l in karlson with le5 (in freespace) and 806/811 crossover is first order at 500hz and 5khs.sounds nice at low volumes but le5 is a little ragged at high volumes and 806/811 is also...but less so for comparison i tried my behringer cx3400 and cheap nad amps (3130) crossing at various points between 800 hz and 1khz using karlson and 806/811 as a two.this sounded clean up as loud as i could bear...but lacked life and transparency (4th order!!!)le5 will go in 300hz edgar midhorn soon , so will this keep it under control at high volume ?do i need to go 2nd order, if so which one?<http://larena.com/audio/calculator/apcxover/....>will it crush the life out of the sound?should i forget about compression drivers (or try 2" jbl /bigger altec?) what crossover points/orders are people using with their compression drivers?cheersgaryp.s (ruling out partisan advice...will not send 806/811 f.o.c to a good home...!)Link:
<http://uk.f2.pg.photos.yahoo.com/ph/gazzamongo/slideshow2?.dir=/6982&.src=ph&.beg=1&.spd=2>

Subject: Not for me

Posted by [Bill Fitzmaurice](#) on Sat, 12 Jun 2004 12:32:55 GMT

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1st order crossovers offer virtually no protection for HF drivers and do precious little for IM distortion so I don't use them at all except in sub applications where the high cost of components is prohibitive, and HF protection is a moot point.2nd order is better, but not by that much, and phase issues are rampant.For home use I think 3rd order all around offers the best compromise between performance and component cost.In pro use active crossovers and multi-amping are the preferred route by and large, but quite adequate protection and performance can be had with 3rd order LP and 5th order HP filtering; the performance exceeds that of 4th/4th but with the same parts count/price.

Subject: Re: Not for me

Posted by [Wayne Parham](#) on Sat, 12 Jun 2004 13:56:13 GMT

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I agree about first-order crossovers. They are inexpensive and sonically forgiving but they just don't remove enough lows for tweeters.I like first-order and pseudo-first-order filters for bass and midrange drivers, but not for tweeters. What I'm calling "pseudo-first-order" filters are those that have the reactive component in series but no impedance compensation in shunt. This makes the

driver itself have so much influence on filter characteristics that I like to make some distinction of the configuration. So for me, first-order requires a Zobel or damper resistor. Without it, I refer to the circuit as pseudo-first-order. Most tweeters I've used just don't handle the power with gradual slopes. They're not designed for that - They're designed for high frequency use only, and can't handle much excursion. I suppose that with tiny flea-power applications, it really doesn't matter. Maybe I like to listen louder than most, but I always smoke tweeters on first-order filters almost immediately. I honestly don't understand the practice of using a single series capacitor on an expensive compression horn tweeter. Don't even get it near me, 'cause it won't last long. Aside from that, I've used JBL 2105's having first-order and pseudo-first-order circuits with a great deal of success. These little 5" mids don't handle a lot of power anyway, only about 40 watts. But they're pretty durable and tolerant of low frequency energies. I crossed a lot of them at 500Hz 1st order, and they work just fine that way. If that's what you're thinking about doing, they'll work very well for you. They're a very good sounding driver. But if you're going to crossover much below that, you may want to go with a higher-order slope. Most larger midrange drivers and nearly all midwoofers don't need any crossover at all. It is sometimes appropriate for frequency response issues, but rarely for power handling. Sometimes I run woofers, midwoofers and large midrange devices with first-order filters, but sometimes I use higher slopes and sometimes none at all. I generally look at this on a case-by-case basis and design the crossover to match with the rest of the system.

Subject: so le5's ok ...806's????

Posted by [gazzamongo](#) on Sat, 12 Jun 2004 14:25:06 GMT

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thanks for the replies wayne.....the le5 on edgar mid horn should be ok then..in the 1st order setup i'm using the 806/811 comes in a 5khz....so should be -24db by 312hz?....will it still breach its xmax with this slope...and at what kind of levels i want to use this driver/horn combo as i can do without an actual tweeter (i think...or maybe a piezo coming in around 10k) and realise i couldn't junk the 806/811 and use say a jbl 2405 above the le5/edgar mid without going to a higher order crossover. it's for home use so mega spl's not req'd will it fry.....what do you think cheers gary

Subject: Re: so le5's ok ...806's????

Posted by [Wayne Parham](#) on Sat, 12 Jun 2004 15:04:03 GMT

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Hi Gary, I think you'll be just fine with the JBL 5" on a 300Hz tractrix horn. Is your Edgar horn rectangular or round? Not that it matters for the crossover frequency or slope, but I'm just wondering. You have a rectangular 811 tweeter horn, so it seems to me that it would be fitting to have a rectangular midhorn. But the round horns are all the rage for most Edgar horn enthusiasts. Either way, I'd have to say that my first choice wouldn't be a combination of 811 tweeter horn and a 300Hz tractrix midhorn. I'd either use a smaller tweeter horn or I'd ditch the

midhorn. Your 300Hz midhorn will be capable of carrying you pretty high, probably to 3kHz or higher. So I'd probably use a different tweeter when using this midrange horn. The 811 tweeter horn is perfect for use with a midwoofer run up to 1kHz. So that's what I'd do with it. Make a two-way system for the 811. The three-way system using a 300Hz tractrix midhorn and 811 tweeter horn will work fine, so if you have your heart set on this or if you already have all the components ready to go, then by all means, do it. There's no problem with the configuration. But you asked my opinion, and so I'm just telling you that if it were me, I'd run the 811's as two-ways crossed at 1kHz or so, and I'd use the 300Hz midhorns in a three-way system that had a smaller tweeter horn crossed over somewhere around 3kHz. Wayne

Subject: 2405

Posted by [gazzamongo](#) on Sat, 12 Jun 2004 15:59:33 GMT

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wayne, the edgar mid will be rectangular as per bruce's original plans here: <http://www.volvotreter.de/dl-section.htm> at the start of my diy journey so it's just a case of trying things and seeing what fits. The le5-2 is supposed to top out at 5kHz in this horn...so could I cross, 1st order, to a jbl2405 safely (at home listening levels)...I'm set on sticking with first order I think as it sounds more natural and rhythm and timing are important to the sound I am looking for. the le-5's are part of the scheme as the evm15l's get a touch cardboardy crossed too high and compression drivers (with a few, none obtainable in the UK options, don't go low enough) 90Hz straight hypex horns for mid-bass using the evm15l's are the next recipe I will be trying out, with one of the Karlsons and a plate amp as a sub (well down to 40-50Hz'ish anyway) not sure which direction the holy grail is in, but it's fun trying to find it. Cheers Gary

Subject: Re: 2405

Posted by [Wayne Parham](#) on Sun, 13 Jun 2004 02:01:45 GMT

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Hi Gary, There's surely lots of good ways to do it! Wayne

Subject: Re: 2nd order...what the doctor ordered?

Posted by [STUART](#) on Fri, 18 Jun 2004 15:31:07 GMT

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Why not try an active xover (bi, tri -amp) with a variable slope rate built in it? This way you can find the right xover points and slopes you want on your design. It will cost you in the short run but pay off in the long run instead of guessing.)
