Subject: Interesting discussion on Audiogon , Wayne, your thought?
Posted by Lmasino on Tue, 16 Jul 2002 11:10:25 GMT
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What happens when you put 20 Hz. into a speaker that rolls off at 40 Hz. is simply this: the cone moves a lot, there is some second, 4th, etc. harmonic reproduced, your amp works hard and may have reduced headroom if this coincides with a peak. MOST speaker systems do NOT have significant output below 40 Hz. Period. In order to produce bass below 40 Hz. you need a few things that most speakers can not and do not have. That is in specific enough surface area & excursion to move the required air, which also requires a LARGE cabinet size. It is true that you *can* make a small speaker that will have output that low, but it will NOT be able to have normal levels of sensitivity or output, or else it will have output below 40 Hz. that is WAY down from the midrange level. So, in practice, most speaker systems are not able to do much below 40 Hz. In practice, sorry to report, most have difficulty making it all the way to 40 Hz. 20 Hz is usually out of the question. There are some exceptions in this regard, but they are rather few and far between. Many that advertise output in this region do not produce much usable bass unless they are set up in a particular manner or room postion/volume. With the advent of the latest crop of high power handling/long linear excursion woofers we can expect to see much better bass response and lower F3 points in commercial speakers in the near future... but the price for this is the need for POWER on the amp end (and in the case of sealed cabinets, EQ AND POWER). To a great extent, this reality is the basis for the existance of a market for what we call "subwoofers."_-_-bearBear 07-14-02Bear, there is only one full range speaker that I know of that can effectively go down below 40hz... K-horns. You don't need subwoofers when using K-horns. These full range speakers can easily handle organ notes down to 32hz. Around this point you no longer hear sound, you feel it in your chest. If speakers can handle frequencies below 40hz, you will be able to tell the difference in pitch between each frequency. This can not be done with speakers rated above 40hz. Some have raved about LaScalas' deep base that can go down to 45hz. I have both pairs of the above speakers in my system. Trust me when I say that the K-horns can run rings around the LaScalas... even though they both use exactly the same 15 inch bass driver. What makes the difference is the folded horns inside the cabinets. You can not fight the laws of physics. Larger horns will create a deeper bass than smaller horns. It is possible to have two smaller 12 inch woofers develop bass notes down into the 20s with the proper horn cabinet (much below the range of the K-horn).This is the principle of the soon to be released Klipsch Jubilee (home version). Because of their high efficiency, K-horns only need 100 clean watts to produce 120db of earth shattering 32hz sound. Expensive high wattage amps are not needed to produce deep clean bass.Redwoodgarden 07-16-02

Subject: A couple of thoughts
Posted by Wayne Parham on Tue, 16 Jul 2002 15:45:29 GMT
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In general, I agree with the premise of the original writer. The points being that there's not much content under 40Hz, and most speaker systems cannot reproduce this range effectively. But the person responding asserts that the Klipschorn and LaScala generate deep bass, and that's simply

not true. The flare rate of both of these horns is much too high for performance under 40Hz. They're good speakers, but they don't perform well in the bottom octave.

Subject: Re: Interesting discussion on Audiogon , Wayne, your thought?
Posted by Adam on Tue, 16 Jul 2002 19:45:40 GMT
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Is he talking commercial or DIY? If commercial or pro DIY, then I would tend to agree... But I could make a list of 20 subs no problem that will dip to the low 20's in a ported box for DIY use. I made one just below actually. They don't need a lot of power, either. Flat sensitivity right to those frequencies.Adam

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Subject: Re: Interesting discussion on Audiogon , Wayne, your thought?
Posted by mikebake on Tue, 16 Jul 2002 23:23:59 GMT
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Okay Adam, here we go, but at what efficiency and at what distortion levels, or don't they publish that? We gotta convert you to the "there ain't no free lunch" crowd of thinking.

Subject: Re: Interesting discussion on Audiogon , Wayne, your thought?
Posted by Adam on Wed, 17 Jul 2002 11:31:02 GMT
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Well, depends dude.Distortion is obviously directly related to excursion. With a quick look, the only one that i could find that had distortion figures was the Adire Maelstrom, advertised as 3% THD, 16 Hz - 200 Hz, @ 105 dB SPL in a sealed box.The drivers I mentioned range in sensitivity from around 86db/1w/1m to 94db/1m/1m. They are less sensitive then many JBL drivers and whatnot, but that's the trade off for the long excursion. The Adire Brahmas have been DUMAX'd at 27.32mm one way. Dumax measures excursion by cone travel before BL drops below 70% I believe it is. So a lot of these drivers are touting excursion levels two to three times that of the best JBL drivers.There is indeed no free lunch... Most of these woofers will need more power and don't have the useable bandwidth of say, a JBL pro woofer, or whatever. However, that is not to say they don't maintain reasonable sensitivity ratings, and the bandwidth issue is just something you have to deal with. Pro woofers and car/home woofers are designed for different frequency response applications (wide bandwidth use vs narrow bandwidth) so this isn't an issue.I'd never

recommend a woofer like this for a 2-way system even if it had the bandwidth. The intermodulation distortion of a woofer throwing 15mm xmax delivering 30 Hz notes while also trying to throw out 1,000 Hz notes would be just unbearable. When it comes to any situation where you are using the sub only up to 80 Hz or so and have plenty of power on tap, I feel choices like these are superior.Adam

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Subject: Re: Interesting discussion on Audiogon , Wayne, your thought?
Posted by Anonymous on Wed, 17 Jul 2002 18:56:38 GMT
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--I'd never recommend a woofer like this for a 2-way system even if--it didn't have the bandwidth. The intermodulation distortion of a--woofer throwing 15mm xmax delivering 30 Hz notes while also trying--to throw out 1,000 Hz notes would be just unbearable.Food for thought - can we also say that a midrange/midbass drivertrying to deliver 100hz notes while also trying to throw out2khz notes would be just unbearable? *OR* is the distortionlevels acceptable by human standards?I've been wondering about this for a long while since mostpeople like to use midrange drivers at low crossover frequenciesespecially car audio folks. They place midrange units in the doorsand cross them over at 70-80 hz to match their subwoofer. How muchenergy can that midrange output in that low frequencies rangewhile still trying to sound good. Perhaps at low listening levels it works, but I'm more or lessinto listening to music at high output in which case, it doesn'tseem like a good idea to do this.Home audio - 2 way systems - It seems these systems are highlycompromised at high spl for the said reason, but people insiston building them? The only reason I can think of is.. they don'tcrank the tunes?

Subject: Re: Interesting discussion on Audiogon , Wayne, your thought?
Posted by Adam on Wed, 17 Jul 2002 21:01:26 GMT
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thylantyr, it greatly depends on excursion levels. That's why I mentioned not acceptable for a woofer moving 15mm each way.The higher the excursion levels, the more IM distortion there would be...I do agree with you though about some car speakers. Some component systems have a crossover point of like 6,000 Hz with the tweet, and the most common low xover is 80 Hz. So it is really excessive. However, most of these designs aren't exactly ideal anyway. 6.5" woofer up to 6 kHz? Gimme a break.I'll be running Seas Excel 7's from 60 Hz to 1.2 kHz in my car, coupled with horns... It's a wide band for the excels to do, but I'll be running four of them so there will be less excursion.When you talk about this, don't just confide it to home and car systems, either. Look at most pro systems... 2-way units running 15" woofers up to 1.5 kHz. So the woofer is delivering 40 Hz tones at 10mm p-p excursion while trying to throw out 1,500 Hz signals as well. No matter how well the design, this becomes a problem."Home audio - 2 way systems - It seems

these systems are highlycompromised at high spl for the said reason, but people insiston building them? The only reason I can think of is.. they don'tcrank the tunes?"Cost is one... Complexity is another...Adam

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Subject: tales from the cript..... comedy
Posted by Anonymous on Thu, 18 Jul 2002 05:35:16 GMT
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/ begin jokeso in order to completely eliminate this problem, we needone driver per frequency... so we need 20,000 drivers per cabinetright? each handling 1 hz increments../ end joke/ begin tales of the cript. Prepare for humor.Many many moons ago, perhaps 13 years ago, I was obssessed withcar audio. Actually 20 years ago is when I started with a carstereo system. I got tired of it and bought a used long bed 1 ton vanto put a prosound system in it using EV drivers. More is better! yum.Ahh memories .. much has learned since then.Things that come to mind from those years.1. Used 2"x4" wood + 3/4" plywood to make an internal skeltonframe inside the van to make a sound proof chamber. I isolated thewood from vehicle chassis using rubber feet. I stuff so manybags of poly fiber between the van wall and wood wall. Dead chamber.2. Built a rear chamber for battery and amplifier storage. I had to build a 6" thick wooden doors with 1/4 steel plates to thwart offthieves. Did I mention I had 10 deadbolt locks and 8 inch nailsto form a spike stick, "" cause I had a vent chamber to get ridof battery fumes.. Don't want those pesky theive to crawl into the van,, lotsa spikes.. hehe3. Gets funnier. I installed a bunch of air horns inside the vanand made another box mounted underneath the van with more air horns.Air horns? yeah, I made my own custom alarm system and when the alarmwent off, it sounded like a friking frieght train..4. Yep, there is more comedy. After all this, the van was weigheddown, had to get helper springs - doh, forgot that wood has weight,forgot was gravity was..... or is....5. So, after 1 1/2 years, I completed steps 1-4 above. Now I'mready for tunes! yah!6. Took a piece of plywood and made a box in the back, well, the vanwas a box at this point - haha so I mounted three EVX18B? 18 inchwoofers, each running 200w mono amp. Here is the yummy part,I bought two giant EV compression horns that spanned the internalwidth of the van, each running a 200w mono amp. For kicksI threw in a couple of EV 15's. This was my temporary solutionfor a quick sound system until I designed the real one.I'm already broke at this point.....Did I mention I took out the passenger seat and made a crazy rotatingconsole for the HU's and what not ? hahaha Want to ride in myvan? sure get in the back - hahahaOh, had the engine rebuilt, need to tow the stereo systemand since the van was ancient, it barely ran on it's own....Shoulda seen the numerous runs of double O guage wire I ran for power. Should seen the three 100A alternators I mounted in this beast.Does the comedy end? No.....I was designing on Autocad a horn loaded enclosure to replacethe bass section. Get this, sixteen 18" EV woofers. How doI fit these? pound head on wall a hundred times.... sleep invan with the tape measure.... make girlfriend angry.....Howabout an "Isobaric horn loaded" design?What is this? I don't know, I just did it on the cad systemand it fit! sweet.. I made a mock up of the horn using cheapparticle board with two 18", isobaric/horn loaded. One 200Wmono per woofer. Hmm.. I design my own parametric equalizer and found the sweetspot when testing this box out.. the sound of just twowoofers was punishing me bad, the box almost fell apart too.... drools .. what will 16 woofers do I think to myself ? where do I get the money to finish this system ? I'm alreadybroke multiplied by 10 .....Meanwhile, I'm just driving my ugly 1978 dodge van with

rustblasting my tunes and thrashing on people in public. One dayat work while eating lunch, the security guard (some young guy)peeks into my van and wants to listen to tunes. I put in somemetallica and he started head banging in my van as if we wereat some show.. Whoa kemosabee, chill out bro.....Another memorable event was when I took some friends who playedin a band to Berkeley. Sure call me up to haul yer drum kitsand equipment 'cause I have a van!.. Ok fine.. I show upat this hole in the wall joint with punk-ish type of bands playing.Shortly a mob of people crowd my ugly van and seem to worship thisthing.. "It's the van, this is THE van" while they poke their heads inside tripping out on acid.....So where is the van today? I had to pick, girlfriend or van ?hmmmm.hmmmm.hmmmm.hmmmm.I dismantled the beast, sold some of the wares (cry!) and got rid of the van.But, the evil me managed to secure some wares over the yearsand like a pack rat, I have in storage nineteen 18 inch woofers,sixteen of them are Earthquake (eminence 3" VC) woofers,the EV horns and drivers, and I managed to get about 8 HifonicsZeus series 7 amplifiers..... What am I gonna do with this stuff?It's been in storage for what seem EONS.. I wouldn't even usethis stuff today except for the amps and horns....I have pics of this beast, perhaps I can scan them and putthem up on some site.. You prolly think I'm bs'ing.. heheheh / end insanity