
Subject: Determining Low Freq Cut Off Of Folded Horn Box

Posted by [Ka7niq](#) on Mon, 11 Jun 2007 18:45:48 GMT

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I emailed this to Bill Fitzmaurice initially, and got an autoresponse saying I had to post it in his forum. It wanted me to register first. So, here is the question I sent to Bill. Bill, thank you for all the support you provide to us audiophiles on Audio Asylum and other Internet Forums. I picked up some old Frazier Dixielander folded horn speakers that came out of an old movie theatre. Here is a picture of one. I planned to sell off the wooden horns and compression drivers, and wanted to explore if the folded horn boxes could be used in a car trunk for my kids? The drivers in there are look like either an 8 or a 10, paper cone, looks like an old Quam speaker if you recall them? I do not know what the low freq cut off of this folded horn box is, and if it would be low enough for my kids rap music use? I have my doubts if the stock driver will take Rap either? How does one calculate the low end cut off of a folded horn box? I know you make a bass tuba, and know what it takes to make kids happy. Think I have a chance with the right driver of making these work for my kids? >

Subject: Re: Determining Low Freq Cut Off Of Folded Horn Box

Posted by [Wayne Parham](#) on Tue, 12 Jun 2007 15:04:38 GMT

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The lower cutoff of a folded horn is largely determined by path length. However, the shape of the flare and mouth size determine overall response. If there isn't enough mouth size to support the horn, response will be peaky and bottom end response may not be all that great. The flare profile also sets the response as does the size of the front and rear chambers and the electro-mechanical parameters of the driver.

Hornresp does an excellent job of simulating basshorns. I've used it for years with good results. A good Hornresp model will predict the response of a basshorn with +/- 1dB accuracy - far better than what most people can measure. So I suggest you might want to use this program to model your horn.

Subject: Re: Determining Low Freq Cut Off Of Folded Horn Box

Posted by [Bill Wassilak](#) on Tue, 12 Jun 2007 16:18:39 GMT

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I wouldn't call those Dixielander's folded horn boxes even though Frazier did. There more like slot loaded bass bins, similar to 4th order bandpass boxes. I know I've used those used those things back in high school, they were the cross-shoot monitors in our auditoriums stage. If I remember

right they start rolling off about 70-80Hz with the original driver. So I'd have to say no, there not going to cut it for bass heavy rap music nowadays. I'd model other drivers in horn response and a 4th order bandpass program to decide which drivers might work. Some of the speakers that Frasier built were junk IMHO and the Dixielander was one of them.

Subject: Re: Determining Low Freq Cut Off Of Folded Horn Box

Posted by [Ka7niq](#) on Tue, 12 Jun 2007 16:30:42 GMT

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Sure looks like a folded horn to me, and I was told it was ?It has a box within a box with a 10 inch woofer in it. Hey, maybe if I stuck a longer throw driver in it the kids could use it ?Are you sure you remember the dixielander ?It has a top mounted compression driver. I will come back and post a picture of it

Subject: Here is a Picture !

Posted by [Ka7niq](#) on Tue, 12 Jun 2007 16:35:03 GMT

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Here ya go Bill, isn;t this a folded horn box ?

<http://www.audiokarma.org/forums/showthread.php?t=81393&highlight=dixielander>

Subject: Re: Here is a Picture !

Posted by [Bill Wassilak](#) on Tue, 12 Jun 2007 16:57:51 GMT

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Yep those are the ones, the only thing I liked about them was there midrange horn that sets up on top and they went loud (very loud). But measure the total area of the openings for the mouth area and your going to see it's not going to be that large for a bass horn mouth anyway, and you have what maybe 2 to 2 1/2 foot of pathlength to the center of the woofer.

Subject: Re: Here is a Picture !

Posted by [Ka7niq](#) on Tue, 12 Jun 2007 17:40:50 GMT

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I am not really a horn guy Bill, what does this mean ? In a car, if a speaker will go down to 40 hz, it will sound ok with the gain from the car. What do you think this box might go down to with the right driver ?

Subject: Re: Here is a Picture !

Posted by [Bill Wassilak](#) on Wed, 13 Jun 2007 15:41:55 GMT

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I haven't a clue so it's best to model it.

Subject: Re: Here is a Picture !

Posted by [DMoore](#) on Fri, 27 Jul 2007 20:30:54 GMT

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I agree with Bill. That's a Frazier, and while it has some relationship to a horn, and it's definitely a folded air column, it is also clear that the mouthsize is far too small to act as an effective horn as we know it. More like a short (but expanding?) labyrinthic (capacitive) column with diffraction slot or a wide(r) bandpass port. It will go low; how low, who knows? My GUESS is that: (1) due to the VERY SHORT pathway, but which still affords some expansion, it has a wider bandpass than a simple reflex port, and it will (due to capacitance), decrease the upper frequency bandpass. (2) it is also apparently front-loaded, and it will display somewhat higher efficiency due to the air column increasing acoustic impedance. (3) the "slot" exit effect is another acoustic filter subject also to diffractive dispersion characteristics. So it should do lows, sort of a precursor to slot-loaded subwoofers. Now as to the driver employed, probably NOT a modern subwoofer type. My guess is effective down to approx. 50 Hz, probably with some good punchiness. I've never heard one, I'm just guessing. Take all of this with a grain of salt! DM

Subject: Re: Determining Low Freq Cut Off Of Folded Horn Box

Posted by [Jeffery L](#) on Wed, 26 Dec 2007 15:34:14 GMT

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I have built a Bill Fitzmaurice Auto Tuba and I put it in my car. It was built with a width of 12", which is about the smallest you would want to build it, 15" width is the recommended. I would say it responds well down to 25Hz-30Hz. If it goes any lower than that I cannot hear it. If it was built wider the lower end response would be a lot better. In a car there is a good deal of cabin gain. I used the 8" MCM woofer, purchased for about \$35. Don't be discouraged by the small driver as this horn will easily keep up with a decent 12" or 15" speaker that are using a lot more power. I am using less than 100 watts at any given time, most of the time less than ten watts. BTW way, I

like to listen to a lot of rap, metal, sometimes some Josh Groban (for the wife). It easily keeps up with any music. The bass is very precise and tight at any sound level. This is the speaker I used http://www.mcminone.com/product.asp?product_id=55-2421&catalog_name=MCMProducts These are three different reviews, each differing in use and design. <http://billfitzmaurice.com/phpBB2/viewtopic.php?t=1539> <http://billfitzmaurice.com/phpBB2/viewtopic.php?t=4201> <http://billfitzmaurice.com/phpBB2/viewtopic.php?t=3682>

Subject: Re: Determining Low Freq Cut Off Of Folded Horn Box
Posted by [chris](#) on Wed, 26 Dec 2007 16:02:42 GMT
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Thank You!
