Subject: Sound Boxes - Calculating Dimensions
Posted by jazzlover on Mon, 27 Sep 2010 01:17:52 GMT
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I'm a newbie and I have an honest-to-goodness question. Given a certain speaker size, there's got to be a corresponding size for the box, right? Is there a method for calculating the proper dimensions of a sound box? All I know is that the bigger the speaker, the bigger the box. Anything beyond that is a haze

Again since I'm new, I still get lost in many of the jargons in this site. Hope you can share what you know in plain language

Subject: Re: Sound Boxes - Calculating Dimensions
Posted by Wayne Parham on Mon, 27 Sep 2010 01:37:38 GMT
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There are a variety of cabinet types, each using different acoustic mechanisms. Four of the most common are listed below:
Acoustic Suspension (sealed)
Bass Reflex (vented)
Transmission line (pipe)
Horn (tapered pipe)Click on each link and study the threads returned. There is plenty of information in the archives on AudioRoundTable.com, but you have to dig through them and soak up the material. Loudspeakers are very simple machines, but you will need to know some basic physics to understand them.

Subject: Re: Sound Boxes - Calculating Dimensions
Posted by jazzlover on Tue, 28 Sep 2010 01:48:33 GMT
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Thanks Wayne! I'm bookmarking the links to read later. Those are free lessons indeed. I'll get back to post more questions if you don't mind

Subject: Re: Sound Boxes - Calculating Dimensions
Posted by AudioFred on Sun, 21 Nov 2010 22:43:00 GMT
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There is a correlation between the diameter of a bass driver and the box volume, but other factors enter the equation too. Many years ago determining the right box size and port dimensions was a trial and error thing, and when a design did sound right nobody knew why. Then two guys named Theile and Small identified the mathematical correlation between driver parameters and box size

and tuning, and the world has never been the same.

Check out some drivers on any speaker site and you will notice some parameters known as the TS parameters will be listed. This include VAS, QES, QMS, QTS, etc. You can use these to calculate the optimum box size and tuning using any of a number of calculators. One of the most popular is WinISD, which can be downloaded free from this site:
http://www.linearteam.dk/default.aspx?pageid=winisd

You can plug in the TS parameters of a driver and the program will suggest an optimum box size and tuning (if the driver is appropriate for a tuned box), and will show a freq resp graph. You can change the box size and tuning, and the graph will indicate the changed freq resp and other characteristics.

Download WinISD and not WinISD Pro. It's simpler to use. And be sure when you enter data you're using the right measures (e.g. don't confuse cu liters with cu ft, etc.

Subject: Re: Sound Boxes - Calculating Dimensions
Posted by Scots Rich on Tue, 23 Nov 2010 10:25:48 GMT
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What a great thread - those links are priceless, I shall be studying them carefully. This had inspired me to have a go at building my own sound boxes - update your progress jazz lover.