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Subject: New sale price on a Vifa 3.5 incher  
Posted by [Marlboro](#) on Thu, 24 Sep 2009 23:18:33 GMT  
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One of the two major DIY sales companies is offering a good price on the Vifa TC9FD25-08 3.5 inch mid range. FR is +/- 2 db from about 80hz to 8500hz. No distortion measurements made.

Combined with either my dome treatment or a good ribbon AND stereo woofers, you could make a pretty dynamite array.

Remember that you will need to have the woofer array be at least 5 feet high to get coupling with the floor to ceiling, and that the nearfield for for each line is roughly 3 times the length of the line.

Marlboro

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Subject: Re: New sale price on a Vifa 3.5 incher  
Posted by [darkmoebius2](#) on Fri, 25 Sep 2009 01:11:34 GMT  
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Marlboro wrote on Thu, 24 September 2009 18:18FR is +/- 2 db from about 80hz to 8500hz That would be an awesome candidate if it really holds up to that graph. But, the Madisound page says - "Suggested box: 2 to 5 liters sealed and stuffed for an F3 of about 125Hz"

Wouldn't that suggest a crossover point around ~200-250Hz?

Any ideas how would that affect bass integration?

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Subject: Re: New sale price on a Vifa 3.5 incher  
Posted by [selahaudio](#) on Mon, 28 Sep 2009 15:49:25 GMT  
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darkmoebius2 wrote on Thu, 24 September 2009 20:11Marlboro wrote on Thu, 24 September 2009 18:18FR is +/- 2 db from about 80hz to 8500hz That would be an awesome candidate if it really holds up to that graph. But, the Madisound page says - "Suggested box: 2 to 5 liters sealed and stuffed for an F3 of about 125Hz"

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Th Fs is a little too high for a woofer array but it may work ok with an extended bandwidth subwoofer. A better choice is the 4" Tymphany woofer at Parts Express (#299-266).

What I would suggest is buying one to test and then you can determine where it should cross. With an array you have more flexibility because the driver isn't being pushed as hard; however, the phase shift still affects the integration with the sub.

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Subject: Re: New sale price on a Vifa 3.5 incher  
Posted by [Marlboro](#) on Mon, 28 Sep 2009 16:28:55 GMT  
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Yeah, I think it works for a three way.

While they work fine, if the woofer is bigger, I've always been a fan of three ways just like a point source speaker, and if you need bass below 30 for explosions in HT, then put in a 15 inch sub woofer with a 5 cu ft box.

These would never work for a two way line array, only for a 3-way with a woofer system.

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Subject: Re: New sale price on a Vifa 3.5 incher  
Posted by [Marlboro](#) on Mon, 28 Sep 2009 18:45:48 GMT  
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RE:

"What I would suggest is buying one to test and then you can determine where it should cross. With an array you have more flexibility because the driver isn't being pushed as hard; however, the phase shift still affects the integration with the sub."

Isn't phase shift always an issue with passive crossovers, and inherant with the 12 and 24 db/octave ones? And while you can build a phase coherent electronic crossover, they are nearly impossible to do with passive ones in the bass midrange due to uncontrolled resonances?

I was under the impression that though electronic crossovers are not immune, there is way less impact with them.

Marlboro

P.S.: there is a really good article on phase, time and distortion in loudspeakers by Rod Elliot at <http://sound.westhost.com>

Rod gives permission to quote his articles but not exact pages. Go to the site and look for the main index, articles index, and scroll down until you find the on entitled "PHASE, TIME AND DISTORTION IN LOUDSPEAKERS".

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Subject: Re: New sale price on a Vifa 3.5 incher  
Posted by [selahaudio](#) on Mon, 28 Sep 2009 19:18:55 GMT  
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Forgot to add - the Qts of the driver is especially important when you're considering something that has an Fs in the 100hz range. If the "Q" is too low then the -3db point in a sealed box won't be low enough for a smooth transition to the subwoofer.

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Subject: Re: New sale price on a Vifa 3.5 incher  
Posted by [selahaudio](#) on Mon, 28 Sep 2009 19:25:13 GMT  
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Marlboro wrote on Mon, 28 September 2009 13:45RE:

"What I would suggest is buying one to test and then you can determine where it should cross. With an array you have more flexibility because the driver isn't being pushed as hard; however, the phase shift still affects the integration with the sub."

Isn't phase shift always an issue with passive crossovers, and inherent with the 12 and 24 db/octave ones? And while you can build a phase coherent electronic crossover, they are nearly impossible to do with passive ones in the bass midrange due to uncontrolled resonances?

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No Eric, I'm talking about the driver's "Q" and how that affects the crossover and integration with the subwoofer. That's why your Sammi drivers fall short because they don't provide enough overlap to support a lower crossover point.

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Subject: Re: New sale price on a Vifa 3.5 incher  
Posted by [darkmoebius2](#) on Mon, 28 Sep 2009 19:49:13 GMT  
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Rick, I have noticed that this is probably the first BIG challenge of designing(or even understanding the design of) 2-way arrays.

I have been doing a lot of late night research of 3"-4" widerange mid drivers and it seems that

those few that go low enough to provide smooth transition to a sub tend to fall short on the upper transition to ribbons/tweeters. Either they become excessively ragged or just cannot go that high.

Conversely, if there are ones which go high enough to provide a nice transition to tweeters, they drop off too early to work smoothly with a subwoofer.

Interesting challenge to the dynamic benefits of small widerange mid drivers

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Subject: Re: New sale price on a Vifa 3.5 incher  
Posted by [selahaudio](#) on Mon, 28 Sep 2009 20:38:32 GMT  
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darkmoebius2 wrote on Mon, 28 September 2009 14:49Rick, I have noticed that this is probably the first BIG challenge of designing(or even understanding the design of) 2-way arrays.

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Conversely, if there are ones which go high enough to provide a nice transition to tweeters, they drop off too early to work smoothly with a subwoofer.

Interesting challenge to the dynamic benefits of small widerange mid drivers

There are drivers available that will work great with the various tweeters that I've mentioned. What's your budget? How many woofers? Crossover point to the sub?

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Subject: Re: New sale price on a Vifa 3.5 incher  
Posted by [Marlboro](#) on Mon, 28 Sep 2009 20:48:41 GMT  
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Rick,

I'm not sure there is much point in discussing this with you because you seem to miss significant points and keep on talking no matter what. Also, I can't find any references to support many of your comments; they may be there, but I don't know where they are. The last time I tried to access your references, and one of them was so general that I couldn't find it, and the other one required that I be a full fledged member of the AES to access any of the papers.

When I designed my system Q was this:

"Qms, Qes, and Qts are measurements related to the control of a transducer's suspension when it reaches the resonant frequency (Fs). The suspension must prevent any lateral motion that might allow the voice coil and pole to touch (this would destroy the loudspeaker). The suspension must also act like a shock absorber. Qms is a measurement of the control coming from the speaker's mechanical suspension system (the surround and spider). View these components like springs. Qes is a measurement of the control coming from the speaker's electrical suspension system (the voice coil and magnet). Opposing forces from the mechanical and electrical suspensions act to absorb shock. Qts is called the 'Total Q' of the driver and is derived from an equation where Qes is multiplied by Qms and the result is divided by the sum of the same.

"As a general guideline, Qts of 0.4 or below indicates a transducer well suited to a vented enclosure. Qts between 0.4 and 0.7 indicates suitability for a sealed enclosure. Qts of 0.7 or above indicates suitability for free-air or infinite baffle applications."

You've made comments about integration, but I can't reference them. My crossover is way above this. You complain that my speakers don't have a high enough xmax, despite the fact the the xmax on your little HV's is only 3.0 mm and mine is 3.3. You complain that my speakers don't have a low enough FS, but mine are 103, which is way lower than any standard midrange.

And then, you complain its really a problem with the Q.

Read this again: "Qms, Qes, and Qts are measurements related to the control of a transducer's suspension when it reaches the resonant frequency (Fs)." My speakers don't need to worry about out of control movement at the resonant frequency BECAUSE THEY CROSS WAY ABOVE THAT FREQUENCY." Also I specifically put them in very tightly sealed Acoustic suspension system to avoid an issue with control, AND because they don't use a passive crossover, the damping is handled by their direct connection to the amp since the cross is before the amp.

Please not again:

"Qts of 0.7 or above indicates suitability for free-air or infinite baffle applications." This means that lower than .7 the speaker really needs supports to make sure that you don't have bad actions at the resonance. Your HV's are high enough to make sure that this isn't a problem. They have a Qts of 0.86. Guess what? My Sammi's have a Qts of 0.869. And just so we get out numbers right, Qms on the HV's is 4.48, and on the sammi's 4.421, and Qes on the HV's is 1.07 and the Sammi's is 1.09.

It actually looks like HV bought a bunch of Sammi's and tried to make a speaker just like them.

Now I'm sure that you'll come up with something new to try to rain on my parade, but it may be that you are like Joe B%\$#@ in the comics and that the little cloud is only over your head.

Finally, this a dead horse for you. No one can buy any more Sammis in quantity enough to build a line array with them. If mine died its nice to know that the HV 3 inchers are so close to my Sammi's that I could really just substitute them.

Kind regards,

Marlboro

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