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Subject: What is a "motor"?

Posted by [J Harris](#) on Tue, 27 Mar 2001 04:43:58 GMT

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Pardon my ignorance, but what is a "motor"? I haven't seen this term used before in discussing speakers. Wayne, I've browsed your site and find your designs very intriguing. I have a couple of questions: 1. I have Heresys driven by Bottlehead Paramours. I love the forwardness and dynamics of the Heresys, but with all the recommended modding and damping and rewiring and bracing I've done, I still haven't been able to tame that high end. How do your speakers fare in this respect? I have to confess I'm scared by metal-dome tweeters -- I once had some Monitor Audios that tore my ears off in this respect. 2. Which of your designs would suit a low-wattage SET setup like mine (3.5 WPC)? 3. Are the prices on your list for built speakers? (If so, they are great deals!) Thanks in advance --J!

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Subject: Re: What is a "motor"?

Posted by [RBP](#) on Tue, 27 Mar 2001 05:02:05 GMT

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If you have older Heresys'as in with the T-35 Electrovice tweeters, this is the crossover that works for me.....take notes. 1.0mF Solen capacitor on positive lead. .22mH coil across terminals. Non inductive 4.7ohm resistor. I prefer an L-pad there instead...for variable balancing use, to account for your room acoustics and personal taste. This works well as it crosses the tweeter over very high, but lets the efficiency cut through, without the glare. Put your head close and make sure it is not the mid doing the damage before doing this mod.

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Subject: Re: What is a "motor"?

Posted by [Wayne\\_Parham](#) on Tue, 27 Mar 2001 06:16:52 GMT

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The voice coil and magnet of a speaker form a linear motor.

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Subject: Confusion mounts... I need more comparative info! Comments anyone?  
(long)

Posted by [J Harris](#) on Thu, 29 Mar 2001 00:41:23 GMT

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There are a plethora of affordable high-efficiency speakers out there these days that all look attractive in various ways... unfortunately they are all very difficult to audition. (Best case scenario is shipping heavy speakers to NYC, auditioning them for a month, then shipping them back if dissatisfied -- and that's just one pair!) I appreciate Bill's recommendations, which he's given me before, but I'm just not enough of a techie to grasp what he's recommending. I've already replaced the stock Heresy caps with Jensen PIOs across the tweets and squawkers, and the the the 2uf cap with Solens... I've rewired too. But when he talks about rebuilding the crossover and casually referring to "coils" and "inductors", I'm sorry, I'll need detailed step-by-step instructions like Bottlehead provides, not to mention recommended parts brands and sources! I don't have enough background to grasp intuitively whatever it is he's recommending -- it's like a foreign language. Also, I'm getting a little tired of modding the Heresys. I've put tons of work into them already, and I'm starting to think there's aspects that will just never work for my ears (or possibly never work for my room). So I'm intrigued by the other designs out there. There have been plenty of discussions of single-drivers, corner horns, folded horns and array drivers on all the boards -- but precious little discussion on how they SOUND. The High Efficiency Speaker Asylum is particularly uninformative in this respect. It's not like reading reviews in magazines or even on audioreview, unreliable though they may be, which at least discuss how specific pieces of music SOUND through various speakers and speaker types. Instead people discuss "Q" or various Fostex drivers or horn flare rates, and only discuss sound in the most general way. I really have NO IDEA how most of the affordable high-efficiency speakers out there compare to each other, how they might work in my particular SET system and oddly-shaped room, and as I said, all these

different sizes, styles and driver types, and little information on how they compare with each other

inherently I'm turned off by speakers made up entirely of direct radiators; people on Bottlehead

than The Horn, but info is hazy and hard to track down. Wayne, I'm sorry that I'm filling up your board with my frustrations on choosing between high-efficiency speakers and not being able to compare them or gather detailed descriptions on how they sound. But the more I learn, the more confused I am. I like the dynamism and efficiency of the Heresys. I don't like the high end, and I doubt I ever will, at least in my room. I don't like the lack of coherence across the frequency spectrum. And I WANT MORE MIDRANGE. I'd like to stick with horns for the dynamics and forward presentation, but I want more coherence. That's why the single-driver designs appeal. But there is literally no way to hear a single-driver design without investing time and freight. And once again, I've heard precious little on what they actually SOUND like. Then, you get the Hammer Dynamics/Straight 8 world. Again, I'm at a loss to know how these fare in coherence and dynamics. Finally there's your huge variety of speakers. It seems like something here might be right for me, but I'm completely befuddled by all the options. End of rant... I guess I'm just totally overwhelmed. And I don't want to go in and modify my Heresys again. I'm ready to move on. Thanks for listening Wayne and others. J!

Subject: Finding the right sound is hard to do with words, I know

Posted by [Wayne\\_Parham](#) on Thu, 29 Mar 2001 02:12:16 GMT

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It's like trying to describe art with words. To describe what one experiences through any of the senses is difficult. Either one must describe what they feel, or they must attempt to quantify what they observe. Some people write "artistic" descriptions, making a statement of how they feel when listening to a speaker. Sometimes they write what it sounds like too. But this type of listener rarely tries to quantify the causes of his experience, and rather tries to describe his experience. This is the way of the artist. And then there are a lot of others that do not attempt to describe the experience. They are sort of leaving that to the imagination. What this person is trying to do is to quantify the components that make the system - a sort of reductionist approach - and expect the reader to comprehend this. They would then form their own opinion of how the system would sound, and how they would feel listening to it. This is the way of the engineer.

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Subject: Some advice (involved)

Posted by [RBP](#) on Thu, 29 Mar 2001 07:58:26 GMT

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Hi J!" You could send me your Heresys' to play with for about a month"....That would not be your best choice...Let's get down to the so called Nitty gritty. The type midrange you want is the mellow, warm, smooth, clean, clear, transparent type that does not sound like a speaker, and is seamless to the rest of the range. It has body, and it has finesse. It is understandable at any volume at any distance. It does not hurt you, and at high volumes you hear it all, and can talk over it. I know. Heresy problem: The Woofer has a cloudy sound to it, and the mid horn does not go low enough. I know...this is the situation. The trade off is that they punch nice (woofers) but they simply do not have the finesse and body of sound that is required to work with "that" midrange. That is woofer problem 1. Woofer problem 2: They simply are not loaded correctly to keep the rear wave "from" interfering with the phase of the front wave...Meaning that the cabinet is just too damn small for that woofer, the midrange horn is too small for the needed crossover frequency...(and shrill..bites and clusters the sound because not enough throat area for the horn...Paul...please don't haunt me dude...) and the tweeter requires a very special crossover individually to have optimum quality. The Tweeters can be "off" so much from one sample to another that sometimes different crossovers for each side on the tweeters are required for acoustical matching with the rest of the system. I have seen so many of the voice coils installed where the tabs are out of phase..(unmarked diaphragms) and it takes a special ear to hear it. The first thing I do to Heresys when I tweak them is remove the crossovers and put a bread board in my lap, and do driver testing at my seat. I pretty much know what it takes for different rooms to straiten out the Heresys and make them world class performers...but their are limits that must be considered .First..the absolute modified -3dB point for that speaker will be 40 hZ...and that is after porting, and extensive woofer modifications, and enclose tweaks. Secondly, to get world class sound from them, you will need to cut overall efficiency of the speaker system 3dB. This is to tame the mid, and mid /tweet/ woofer relationship to get the midrange you are desiring. Thirdly, they will no longer be Klipsch Heresys, and will not resemble the original sound. The mid driver will have to be

modified as well. Some spacing, some diaphragm dampning internally....easy if you have done it...but requires test instruments extraodinare...You are looking at about 300 dollars to do this. You will still not have pedal tones...(Partially..but not really)You will also have a different front board scheme. The inset front board will be moved, and the grills will have to be changed to a different design...or go grillless with wire baskets over the woofers. Grill design accounts for another 70 dollars or so.(Baskets 20) The sharp corners of the front edges will have to be rounded. Believe it or not...this will correct some midrange problems as well. You must ask yourself:What is the minimum effeciency I can live with.What is the desired low frequency cutoff...(Low E which is the lowest note on a 4 string bass guitar is 42hZ) Great kick drums need at least 42...preferable 36 to pull them off to full musicallity.I have Paramours. This makes it easy. I also have a reference system and measurement equipment. Unless I have another set here and do the mods, and tell you each step...most of what I am doing is off the cuff "right direction" advice...certainly not complete or tested advice. It takes absolute hands on to do the heresy work from my vantage point correctly. Been too long to remember...and the test equipment is so much better...plus the Paramours too!I know the speaker, but it has been 8 years since I have done hands on with them...and never with SET's. It would take time and perserverance.Now....How far away is you listening position and what sized room would you be in?Also...type of music, volume requirements, sources used...etc...play Rock and Roll loud, Jazz combo's, full scale symphonic?If I had to build something from scratch, I would also consider the size. Hi effeciency and bass below (usable) 35hZ does not come without size, unless you are bi amping with a PAIR of dedicated subs. With SET's that get's you even farther away from the actual goal of having a Phase coherent system..(sounds like music not speakers)You can musically match a pair of Subs to the mains using SET's and a solid state subwoofer amp with a 18/dB Octave. (steep rolloff)Choices are:Optimize the Heresys, and lose 2 to 3 dB of your effeciency.Use two subs, and raise the effeciency of the Heresys as much as 4 extra dB (Modding the Heresys for Hi Pass use (with the subs) can yield extra effeciency by opening up the horns and woofer to a near unity volume (almost crossoverless state) and they can be tamed if a pair of subs are used.Sell the Heresys and build one of Waynes designs...(Don't worry...I am going to visit him in person real soon...and if he needs some help...I will be there..LOL...Which I think he has his stuff together without my 2 cents..... nicely)Remember, I am using Paramours with NS1000M's...(not as effecient as stock Heresys') but extremely balanced.I Would love to have another pair of Klipschorns, and will most likly build a pair within the next 18 months, but I think you can get Klipschorn realism at about 1/3 price with one of Waynes' large designs...providing you have the room and space to use a speaker that large.Sorry so long, but that is what I see from my vantage point.Let me know if I can be of any assistance, and Wayne would be more than happy to hold your hand if you want to create some sawdust and get happy with it.Cheers...Bill