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Subject: What makes a driver efficient?

Posted by [Ralph](#) on Tue, 24 Aug 2004 23:06:34 GMT

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Other than horn loading, that is. What makes a cone driver efficient?

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Subject: Attempt

Posted by [Mike.e](#) on Wed, 25 Aug 2004 03:54:50 GMT

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Basically you'll notice- Home theatre subs are inefficient. Small box subs are inefficient too. Larger drivers tend to be more efficient. Lower Qts drivers are more efficient. Prosound 12"s and 15"s are efficient, they have higher Fs, Mid Q, and larger box requirements. Efficient cone drivers are often Low Qts high BL (ie powerful and in control) full range units with added HF efforts. II) Mid-Band, Reference Efficiency (%) (Infinite Baffle Mounting Assumed) [n0] = 
$$\frac{(\rho_0 \cdot [B] \cdot [c])^2}{(2 \cdot \pi)^2 \cdot [Sd]^2 \cdot [Re] \cdot ([Mas]^2)} = \frac{4 \cdot (\pi)^2 \cdot ([fs]^3) \cdot [Vas]}{([c]^3) \cdot [Qes]}$$
 You'll notice its  $fs^3 \cdot vas$ . Equations at the link

Is there a mathematical correlation to no% and sensitivity?

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Subject: Re: What makes a driver efficient?

Posted by [Manualblock](#) on Wed, 25 Aug 2004 13:45:16 GMT

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Huge and powerful magnet, light cone, big voice coil.

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Subject: That's pretty much it

Posted by [Bill Fitzmaurice](#) on Wed, 25 Aug 2004 14:22:33 GMT

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It's a matter of how well the driver can convert electrical energy into cone motion. Think of the magnet/voice coil as a motor; the larger the magnet, the smaller the voice coil gap and the better the voice coil topology the more power the motor is able to develop from the energy fed into it by the amp. Then that power has to move the cone. The less resistance the cone has to movement (caused by the combination of its mass, the stiffness of the suspension and a few other factors) the easier the job the motor has moving it. It's like a car- big motors in small cars equal fast; small motors in big cars equal slow. BUT- what it takes to gain efficiency also can lead to a loss of response in the bass end, as both the lower Qts of a strong motor and the higher Fs of a

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light cone limit bass response.

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Subject: Formula

Posted by [Ralph](#) on Thu, 26 Aug 2004 00:12:04 GMT

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Thank you very much for the formula and link.Ralph

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Subject: Power to weight ratio

Posted by [Ralph](#) on Thu, 26 Aug 2004 00:14:37 GMT

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Thank you manualblock and Bill. That is simple and to the point and it makes sense.Ralph

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