Subject: Single driver
Posted by Manualblock on Tue, 22 Feb 2005 23:35:43 GMT
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Sorry but once again after hearing one of these I just don't get it. Is it true the SD guys are just cheap?

Subject: Re: Single driver
Posted by wunhuanglo on Tue, 22 Feb 2005 23:50:57 GMT
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Kind of depends, I guess: Supravox, PHY-HP, Fertin - they ain't cheap.In science and engineering they're always looking for the "elegant" solution.I imagine the single driver approach is the ultimate elegant solution for a loudspeaker, if you feel it works for you.

Subject: Re: Single driver, two is good, three is great
Posted by Bill Martinelli on Wed, 23 Feb 2005 02:03:25 GMT
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No not cheap. More of a purist type of arrangement. All the ones I have heard as a true single driver sound thin and I suppose you could say pure! I can’t call a single driver 'arrangement' a single driver any more when you ad a subwoofer, super tweeter or both. I have heard some awesome sounding systems with a sub and super tweeter though. Bill

Subject: Re: Single driver
Posted by Damir on Wed, 23 Feb 2005 12:32:33 GMT
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Interesting...I have some opposite experiences - sometimes cheap 10cm speaker can get you more details (midrange!) then boomy "mess" of typical 2 or 3 way Hi-Fi box...Sometimes I look at single-drivers, for example some "Visaton" small and cheap speakers are very linear, but without low bass and with small efficiency. If I only knew how to build, say 4 speaker small open-baffle system with >90dB W/m efficiency...

Subject: Re: Single driver
Posted by Manualblock on Wed, 23 Feb 2005 12:53:10 GMT
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Makes sense except I don't see many using Supravox drivers; usually Fostex. While they are run fairly full range if there is a sub and supertweeter than that; I think, is a different animal. I understand the purity angle but where's the musicality? Also they get away with cheap amps.

Subject: Re: Single driver
Posted by Martin on Wed, 23 Feb 2005 21:02:09 GMT
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Yes and No.When I first became interested in single drivers the rage was the Radio Shack $5 - $10 drivers. The Single Driver Website and Forum was filled with discussions of these Radio Shack drivers. People trying to squeeze sonic perfection from a $5 driver. Sorry, made no sense to me. But something about the single driver concept caught my interest. At that point I had owned commercial speakers and been building multi way speaker systems for 25 years. Everything from Klipsch Hereseys to some large 2 and 3 way home made Focal systems. A high power SS amp amd preamp completed the system.So I bought a pair of Fostex FE-164 drivers for less then $100 and designed and built my ML TQWT enclosure. The mid range and high end were very good with a thin and weak bass that was OK but not really what I was looking for in a speaker system of that size. Adding a correction circuit a few months later eliminated this thin bass problem and produced a nicely balanced response. I played this system for a traditional full range guy (tube amp and Supravox TQWT) and his reaction was "I'm stunned!" which is his exact first words. I ended up liking the single driver speaker better then the multi way Focal system I was listening to at the time. I sold the Focal TL system.But my approach to single driver speakers is 180 degrees out of phase with the purist approach you will find dominating places like AA. I believe that the combination of a correction circuit and a high power SS amp is the best approach for full range drivers. A correction circuit can be used to shape the voltage input to the driver so that the typical full range rising response (think shouty and shrill sound with minimal bass impact) is rebalanced closer to flat. The key is the combination of a SS power and the correction circuit that still produces 90 - 95 dB for 1 watt input at 1 m, depending on the driver. My approach is definitely not a traditional approach and probably not the type of system you heard. With this combination, the lack of a crossover and the high efficiency to me produces a much more revealing, detailed, and accurate sound from the speakers.The down side of single driver speaker systems is definintely at the frequency extremes. You will not get the bass response of a 10" or 12" woofer. You will not get the flat to 20+ kHz response of a small metal dome tweeter. With my approach you can get 40 Hz to 15-18 kHz depending on the driver. House shaking hard rock .... not really. Clean and accurate acoustic jazz and classical .... very nicely done. I really like the compromises made with this approach.Back to the original question. Are single driver guys just cheap? I am cheap, but I will spend money on something if I think it is a good value and high performer. I don't waste money on cheap drivers that I know will not meet the performance goals I have in mind. I will spend money on exotic high performance drivers without batting an eye or having a second thought. I am currently listening to the cheap Teac digital amp powering my

Lowther PM6C drivers (the cheapest ones). When I get tired of this combination I will reach behind the couch, select one of the other six pairs of Lowther drivers I own, make the swap, adjust the correction circuit, and enjoy the different strengths and weaknesses of that particular driver.One thing I have learned in audio, there are no absolutes. Try and make a blanket statement and somebody'e system or taste will contradict the conclusion. I am a single driver guy and I am cheap, just look at my new amp.Martin
Quarter Wavelength Loudspeaker Design

Subject: Re: Single driver
Posted by Manualblock on Wed, 23 Feb 2005 22:35:28 GMT
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The main thing is you have a carefully thought out approach that makes sense. Correct; the systems I heard were exactly as you describe; low power tube and uncompensated driver in a trans line box. That explains my complete bafflement at the attraction. Rolling off at 14/15k has never bothered me; but bottoming out at 100hz is a stretch. My problem was why a system would be designed to sound good on only one type of music. One of these days I would enjoy to hear your ideas in action. As for the cheap; nothing wrong with that as long as that is what it is. I have to ask; what is the deciding factor that motivates you to reach for a different Lowther? Is it music type; mood; what is it? Obviously you are aware this is a radical departure from conventional wisdom and practice. How did that evolve for you? I mean at what point did you tell yourself; hey I need to try a Lowther with my high powered amp? Lowther's are not inexpensive so it required quite an outlay of cash to initiate this experiment. Most interesting to find out how we get where we are.I would like to thank you for taking the time to post this explanation.

Subject: Re: Single driver
Posted by Martin on Thu, 24 Feb 2005 01:38:35 GMT
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"The main thing is you have a carefully thought out approach that makes sense. Correct; the systems I heard were exactly as you describe; low power tube and uncompensated driver in a trans line box. That explains my complete bafflement at the attraction."Unfortunately, what you describe above is exactly what I see people using as single driver systems. When I was debating taking the plunge with Lowthers, I read as many old posts in the single driver and high efficiency forums that I could find. There was a consistent theme coming from the people who actually listened to their creations with a critical ear. They mostly descibed very overly bright and harsh mid range and high end response and very thin bass response. This was exactly what I heard from my Fostex FE-164 ML TQWT before I added the circuit. So I became convinced that a circuit could correct the brightness problems, restore the bass, and then some of the magic I had also read about in a few credible the postings would return. That was my thinking going into the Lowther purchase.One other think that I came across was the damping factor difference between

SS and tube amps. For all practical purposes, a SS amp adds no output resistance in series with the driver. However, a tube amp can add a wide range of series resistance to the output and in some cases 3 to 5 ohms may not be far from correct. With this wide range of series resistance in the output impedances of tube amps, coupled with all of the exotic voodoo cables being used, it was not hard to imagine a real crap shoot taking place when assenbling one of these purist systems. Everything was coupled and if one piece was not right the performance could really suffer. I kept reading about people swapping amps, cables, and speakers and hearing huge differences in performance. The differences descibed to me sounded like a variable resistance impacting the way a speaker sounds, adding even one ohm in series with your speaker can make a real big audible difference. The odds of finding an amp, cables, and a speaker design that worked to gether without doing a lot of engineering types of measurements seemed to be very low. Adding a correction circuit transforms the sound of the speaker, hopefully for the better. A variable correction circuit, like I now use, can work wonders in getting just the right amount of balancing.This theory I was putting together fit well with my experiences with bass reflex, TQWT, and TL style enclosures. Where the thoery kind of falls apart is with back loaded horns. Back loaded horns are a totally different type of enclosure and if done right with a single driver can eliminate the need for a correction circuit. However, in my opinion there are not very many good back loaded horn designs available on the Internet. "Rolling off at 14/15k has never bothered me; but bottoming out at 100hz is a stretch. My problem was why a system would be designed to sound good on only one type of music."I agree with that the high end is not a big issue, but rolling off at 100 Hz is just evidence of a very poor design. I easily get 40 Hz out of my enclosures. The low bass I get is very tight but will not shake a room. When I listen to a live acoustic performance, like a jazz trio, the auditorium does not shake so I think that my bass output is close to accurate. If I play something with a heavier bass track, or worst case one of the kids cranks up something they like, the quantity of the bass is probably equivalent to a small stand mounted or bookshelf speaker. Since 99% of my music listening is to acoustic jazz, having a speaker that plays that accurately at the expense of deep pounding rock bass is a compromise I will live with anyday. Horns and piano are spectacular.The advantage of DIY is that you are not designing for the mass market making compromises in every type of music to try and reproduce them all. You design for your own set of goals. When I do listen to something from my college or high school years, gotta crank it up (the kids look at me real funny) the single driver system does the job adequately. It is not like my bigger Focal systems but it is acceptable. And you know what, the most expensive Lowthers I own (DX4 and PM2A) are still cheaper then the cost of the big Focal three way I built almost 15 years ago if you add up the cost of the drivers and crossovers. You see, I am driven by cheapness! "One of these days I would enjoy to hear your ideas in action."If you are ever passing through the Albany NY area, and the timing and my schedule works out OK, I am usually available for a listening session. I work in almost a total vacuum so getting some feedback is always appreciated. "As for the cheap; nothing wrong with that as long as that is what it is."Good performance and reasonable price is number one in my book, I see a lot of very expensive stuff that is really well hyped junk. See a lot of cheap stuff that is also junk, maybe if I take the cheap stuff to work and cryo dip it I could qualify it as expensive hyped junk and make a decent second income."I have to ask; what is the deciding factor that motivates you to reach for a different Lowther? Is it music type; mood; what is it?"Hearing the differences in performance of the different drivers has me fascinated. The lower magnet strength drivers like the PM6C, PM6A and DX2 have better bass performance at the expense of some clarity and detail. The higher magnet strength drivers like the PM2C, PM2A, and DX4 have a rolled off bass that even a correction circuit cannot totally rebalance but the midrange clarity and detail is stunning. The differences between these two groups is very obvious. Probably my favorite driver in the ML TL is the DX3

wich is in a middle region of magnet strength, it is a nice compromise of bass and midrange performance. I am now interested in the PM7C and PM7A drivers to see if this trend continues, I am waiting for the right time to tell my wife that I want two more pairs of Lowther drivers for the collection.I had a friend over a few months ago and we started listening to the PM6A driver, he really liked what he heard. The PM6A probably has the best bass of the Lowthers that I have so he was happy. After a while we switched to the PM2A and the improved midrange was really apparent on a Art Pepper disk, he loves the alto sax, but the bass ouput was a little thin. We discussed which driver was better, he liked the PM2A and would live with that set of compromises over the bass output from the PM6A. I tended to agree.The differences in the Lowther drivers are subtle but clearly audible. I have taken the least expensive Lowthers, the PM6C and the DX2, and ran them beside my two Fostex systems, FE-164 and FE-208 Sigma, and the Lowthers are clearly superior. My son easily picks the Lowthers and can accurately describe the differences he hears, if he repeats this summary to my wife I slip him some cash.As you can tell I am really hooked and probably somewhat biased towards single drivers. I love the sound and can accept the required compromises. House shaking bass is not of primary importance, home theater is not even in the picture, reproducing acoustic jazz is the goal. "Obviously you are aware this is a radical departure from conventional wisdom and practice."Absolutely! I have been told I am completely full of crap by many audio purists. This goes back years to my early TL work too. I was called a troll on the AA high efficiency forum by Magnetar or Kloss, I forget which one, so I don't post there anymore. In public forums, I am probably a good joke. I could not care less what some of these other people think, my speakers sound very good to me and the occasional visitors who have heard them.The private e-mails I get from people trying this approach verify that it does work better in most systems and really transforms the quality of the reproduction of music with these types of drivers. If you look closely at some of the recent full range rooms at the audio shows, some vendors are using exotic cable materials and claiming big improvements that sound to me like just plain old higher resistance in series created by the cable. The Bottle Head guys are designing a similar active circuit to go between the preamp and amp so that the purity of the system will be maintined and efficiency won't be compromised, I have some doubts that it will perform that much better then the passive version I currently use."How did that evolve for you? I mean at what point did you tell yourself; hey I need to try a Lowther with my high powered amp? Lowther's are not inexpensive so it required quite an outlay of cash to initiate this experiment. Most interesting to find out how we get where we are."I started with a Fostex FE-208 Sigma driver which was not very expensive. It had a Qts of about 0.2 which placed it in the Lowther range. The technique worked very well and the speakers now reside in my family room and have taken a lot of punishment over the past few years without any ill effects. The newer correction circuit has worked very well and this speaker became a proof of concept.I started slow with the Lowthers buying a pair of DX2 drivers. Lowther and one of the Lowther dealers became interested in what I was doing and made a very generous arrangement for me to acquire the DX3 and DX4 drivers. This was the start and the ML TL design evolved. In return, they are selling more drivers as people build my designs.A year or so later I won a pair of PM6C drivers off of an E-Bay auction from a Lowther dealer and asked how much adding in a pair of PM2C drivers would cost. Good deal made, so I had the two C series drivers. Then six months later a chance to buy the PM6A and PM2A drivers came my way so I sprung for them also. Now I am waiting for the right timing to pick up the PM7C and PM7A to add to my hobby experiments.I cannot justify these purchases in any way other then as a hobby. The cost was spread out over time so it was not too painful. These drivers are not for everybody but I like them a lot. My next step is to go for a back loaded horn design which I think will be a big step up in bass performance using the PM2C, PM2A, and DX4 drivers. If that works, I will need to decide where the hobby is headed. "I would like to thank

you for taking the time to post this explanation."Hope that helps,Martin
Quarter Wavelength Loudspeaker Design

Subject: Re: Single driver
Posted by Manualblock on Thu, 24 Feb 2005 13:08:26 GMT
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Oscar Wilde Said,"When people agree with me I always feel I must be wrong."So there you go. I would like to e-mail you if I may. Let me know.

Subject: Re: Single driver
Posted by Martin on Thu, 24 Feb 2005 13:12:06 GMT
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E-mail me at your convenience. I try and respond to every e-mails within 24 hours.Martin
Quarter Wavelength Loudspeaker Design

Subject: What's a single driver?
Posted by akhilesh on Wed, 02 Mar 2005 18:34:51 GMT
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My single driver setup has evolved to a 3-way, with the wide range driver doing the honors from about 80HZ to about 3500 HZ. The systems sounds a lot cleaner to me that way (of course I am also using active xover). If I had a fostex, I might stretch it to 5 K. But in my experience, the highs get muddied if you ask the same driver to do all the work, as well as the lows of course. In my opinion at present, single driver speakers are best used as wide band drivers, covering 5-6 of the 10 octaves. Usually from 80 Hz up to about 2500 to 5000 HZ. Of course this will depend on the drivers. My wide range drivers are vintage and go for around $350-400 a pair, Not cheap! My sub right now is a $89 sub I got for $40 (incl shipping) and my tweeters are vifas taht cost me $60 the pair (incl shipping). So maybe I am cheap!-akhilesh

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Subject: Re: What's a single driver?
Posted by Martin on Wed, 02 Mar 2005 23:57:10 GMT
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Hi akhilesh,"If I had a fostex, I might stretch it to 5 K. But in my experience, the highs get muddied if you ask the same driver to do all the work, as well as the lows of course."I have two Fostex systems.The FE-164 ML TQWT does a good job over the whole frequency range and only really falls a little short on loud bass passages. But it is only a 6" driver so I can forgive that weakness.The FE-208 Sigma does much better in the bass but maybe runs out of steam at the very top. I have thought about a super-tweeter but have never tried one. I would say this driver is marginal at the very top.Most of the Fostex systems I have heard do a good job of being truely full range. Maybe a little help at the very extremes is warrented for some recordings, but even without help the speakers sound very good all by themselves. "In my opinion at present, single driver speakers are best used as wide band drivers, covering 5-6 of the 10 octaves. Usually from 80 Hz up to about 2500 to 5000 HZ."I have not really felt the need to add a tweeter at the top for my Lowthers. The bigger magnet models do a very good job of the mids and highs, they could use a little help at the bottom. I am hoping my back loaded horn design will solve the bottom without going to a multi-driver set-up. The smaller magnet Lowthers have more bass punch but at the exxpense of a little high end. In both cases I can easily live with the Lowthers running full range with the type of music I enjoy.Part of the challenge is to squeeze everything out of one driver. So it is a technical enclosure design issue as well as a can I enjoy the music issue."Of course this will depend on the drivers."Absolutely true!Martin
Quarter Wavelength Loudspeaker Design

Subject: Re: What's a single driver?
Posted by akhilesh on Thu, 03 Mar 2005 11:53:28 GMT
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I've never heard a lowther, Martin... and it cerrtainly seems like they do well on the highs. THe vintage trusonics 80FR I use suck on ths highs...:-) so my comment was somewhat biased based on that. They do have a very nice midrange though. I'd love to hear your speakers someday.
-akhilesh

Subject: Single Driver speakers asre like an old sports car
Posted by akhilesh on Thu, 03 Mar 2005 11:54:49 GMT
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May not have the best specs, but it may "involve" you better. Don;t ask me to define involvement.
-akhilesh
