Subject: Basshorn driver specs
Posted by Kevin Jordan on Sun, 03 Oct 2004 14:57:56 GMT
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On the subject of basshorns, there seems to be two schools of thought. The traditional"old school" method is to use large, stiff, high fs, low xmax woofers. The reasonsstated for this choice are that the horn makes the bass and excursion isn't required becausethe horn transforms high pressure low excursion at the cone into low pressure high volumeat the mouth. Then there is a new school of though that uses small, compliant, low fs,high xmax woofers. The reasons stated for this choice are that even though excursion isreduced, the deepest bass requires excursion anyway, more than is possible with theold school stiff drivers. They say the use of high fs, low xmax drivers is largely due tofolklore and should be avoided. With drivers like the LAB12 (fs=22, xmax=13mm)and the HL10 (fs=32, xmax=11mm), it would seem the common trend is towardslow fs, high xmax drivers for basshorns, just like for other bass speaker designs.What are your thoughts here?Rgs,Kevin

Subject: Re: Basshorn driver specs
Posted by Mike.e on Sun, 03 Oct 2004 23:36:48 GMT
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Hi KevinYour right there is new and old school.Xmax is easier to get these days- and smaller drivers can be used.My opinion-use the best driver for the task!A linear 12" of lab12 specs will perform very well on a horn of limited bandwidth and high efficiency.ML util program asks for this driver with given 30hz horn!Hornresp models it up well!The high BL drivers do the high end more effectively but require a long horn to achieve the same lows as the lower Bl drivers like lab12All that remains is -is there any sound difference between these 2 drivers? i would say in theory no.high/low Qms,BL,Moving mass, some say you can hear a difference,i dont see any AES articles on it..with a lab12 driver you can have a small rear chamber which provides some linearity to prevent relying on the driver spider linearity alone!Also reactance annulling can happen.Cheers!Mike.e
diy basshorn info

Subject: Re: Basshorn driver specs
Posted by Bill Fitzmaurice on Mon, 04 Oct 2004 11:36:07 GMT
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The 'old school' didn't do what they did because they wanted to, it was because they had to. Designers of those grand old horns of the RCA/Altec/Western Electric era used 15s in everything because they were the only drivers with enough displacement to deliver adequate power for the intended usage, which was primarily movie theatres. I'm sure that Harry Olsen would have used

eights and tens if any had existed suitable for the purpose.

Subject: Re: Basshorn driver specs
Posted by Kevin Jordan on Mon, 04 Oct 2004 15:23:10 GMT
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So you would rather use a small driver with high excursion to a large driver with low excursion?Mechanical limits are mostly important at low frequency, right?You like long throw woofers with low fs?Rgs,Kevin

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Subject: Re: Basshorn driver specs
Posted by Kevin Jordan on Mon, 04 Oct 2004 15:49:50 GMT
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Something is bothering me. Your statement implies that RCA, Altec and Western Electric weresomehow limited to the drivers of the day, but they *designed* the drivers of the day. They couldhave made 10" drivers with the same linear travel as the 15's they built, but they chose not to.Care to speculate why that was?Rgs, Kevin

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Subject: Re: Basshorn driver specs
Posted by Julenk on Mon, 04 Oct 2004 16:30:34 GMT
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Xmax limits bottm bass, power limits everthing above.The voice coil melts from heat in the mids.It hits the pole piece or rips the spider from overeaching the bass.

Subject: Re: Basshorn driver specs
Posted by Julenk on Mon, 04 Oct 2004 16:49:15 GMT
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No brainer. If ur power is limted, heat and xmax aint no big deal.Swept volume is king and if u aint got xmax, u gotta have surface area.Dat simpl.

Subject: --I dont disagree -nt--
Posted by Mike.e on Tue, 05 Oct 2004 01:20:05 GMT
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nt

Subject: Re: Basshorn driver specs
Posted by Bill Fitzmaurice on Tue, 05 Oct 2004 12:14:33 GMT
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I'm not so sure that they 'chose' not to; the first permanent magnet drivers appeared on the scene in the mid 1920s; the Altec A7 dates from only twenty odd years later. It's kind of like asking why Boeing didn't come out with the 747 in 1949.

Subject: Re: Basshorn driver specs
Posted by Kevin Jordan on Tue, 05 Oct 2004 14:26:25 GMT
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You missed my point, so let me rephrase it. If RCA, Altec and WE wanted 10" or 12" driversinstead of 15", it would have been easy for them to make. They *chose* to use larger speakers.I think they weren't worried about small size since they were designed for theaters.Rgs,Kevin

Subject: You forget the amplifier, Grasshopper.
Posted by Bill Fitzmaurice on Tue, 05 Oct 2004 19:41:11 GMT
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Yes, they could have used smaller drivers, they did exist. But in 1947 a very large amplifier was one pushing 25 watts. A high excursion ten, or any other size for that matter, was a moot point. Long excursions require heavier cones to withstand the stress, which raises Mms, which lowers Bl and raises Qms, which lowers sensitivity, and with the amps available it just wouldn't work.This scenario also resulted in horns with large throats and hypex tapers, as the mechanical limitations of the drivers would not allow them to operate into very high throat impedances. With the high Bl/long excursion/high Mms drivers available today I'm able to design bass horns with tapers that give throat impedances far higher than it was possible to employ 60 years ago, which allows a drastic reduction in overall cabinet size. But those drivers would have never been developed if there weren't 300 watt and better amps available to take advantage of them. The 747 analogy

wasn't a joke; Howard Hughes 1946 Spruce Goose was larger than a 747; it 'flew' only once, though in fact it didn't actually fly. Ground effect allowed it to achieve the spectacular altitude of some ten feet. Nothing wrong with the design, but the engines available weren't up to the job. Same thing with the A7, which originally used drivers rated at only 25 watts, not because they couldn't build 100 watt drivers, but because they didn't need to.