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Hux Soapbox : Monitor Speakers, Life, the Universe and Everything

Since the introduction of the compact disc the modern music consumer has become much more conscious of issues of consistency and perceived quality. While the quality of replay audio systems can vary dramatically most consumers expect an album by artist X to sound as good as one by artist Y when played back to back on the same system. The basic mission for those involved in creating and mixing audio is to produce recordings that can be enjoyed by the widest range of listeners on the widest range of replay systems. A good mix should work on everything from a mono television speaker through to a real Hi Fi system. Three of the main ingredients that allow this to happen are, the content of the audio program, the skill audio engineer and the qualities of the monitor speaker system used. The following deals only with the issue of the monitor speaker.

If you have ever listened critically to a range of speakers systems from a mono clock radio to the one of the best Hi Fi systems available you would find that all speaker systems have a flavour and all speaker systems present the balance and audibility of components in a mix slightly differently from each other. This is because all speakers are the result of one design compromise or another, these compromises range from total lack of design effort in the worst systems through to the very real limitations of cost and size in the best systems.

A good "monitor" speaker should be accurate and not flatter the sound. A monitor speaker should show the warts and all of the project and you should be able to virtually look into the sound to hear the components of the mix. A good monitor speaker will make you work for your money (so to speak). A good monitor speaker should sound good when you have pulled a good mix.

There are three basic categories of monitor speakers, (1) "near field", (2) "mid field" and (3) "full range". The current trend is to use speakers located in the "near field" for nearly all of the required tasks. The most common "near field" monitor speakers are of a 2-way design and use a dome tweeter with a 6 inch mid/bass driver.

There are two main jobs for a monitor speaker system in a recording studio. The first is give an accurate picture of the audio being tracked (recorded) and the second is to enable any audio being mixed to "translate" to other speakers in the outside world. A good audio mix will stand up on most if not all other speaker systems, if it does so then the mix is said to have "translated" to other speaker systems. In general a small "near field" monitor speaker is more likely to be better at "translation" than a large monitor speaker.

True low frequency reproduction in a speaker system can cause all sorts of room and speaker design problems. Small "near field" monitor speakers cant reproduce really low frequencies and so are generally free of fake and blurry bass. It is precisely because "near fields" have relatively limited but accurate bass reproduction (and very accurate mid range) that they are generally better at presenting and balancing mixes than larger "mid field" and "full range" speakers.

A classic "near field" monitor is the Yamaha NS-10. This is the speaker that everyone loves to hate, as much as we all claim to hate them nearly all recording studios have a pair. The NS-10 is probably one of the best "translation" monitors for rock music as it has a very good mid range, a very tight mid/bass response and gives a very good concept of "balance" in the mix. The drawbacks of the NS-10 are that it has a very aggressive tweeter that bites at your eardrums and the bass response while being fast and tight is a little too restricted. Most modern "near field" monitors have pinched the good bits from the NS-10 design concept and improved on the weak areas.

An example of a modern NS-10 replacement is the Alesis "Monitor One", this is a ported box (the NS-10 is sealed) and so has a bigger sounding bottom end while still retaining an accurate mid and bass range, it offers a nice soft dome tweeter that is a lot less fatiguing than the one used in the NS-10.

Amplifiers

The amplifier is often forgotten in the monitor system chain, modern amplifiers are pretty good in general but they are still worth paying attention to. Rule "number one" is that amplifier tone controls should not be used (equalisation, loudness, filters, sub boost etc), if the amplifier has any equalisation keep it set to bypass (flat or middle position) and get used to the sound. Make sure that whatever you are using is at least up to basic Hi Fi performance. The old rule of thumb is that the amplifier should cost about as much as the speaker system. Make sure that you have ample amplifier power and good cables. About 100 watts a side is adequate for "near field" work when mixing drums. Simple speakers such as the Yamaha NS-10 or the Alesis Monitor One are pretty easy to drive for most amplifiers. Complex speakers such as the passive Dynaudio BM-6 present more difficult loads and so require an amplifier that can provide high drive currents (a Denon amplifier for example), high current amplifiers tend to cost more. It is not unusual to use high powered amplifiers (200 watts per channel and over) on near field monitors, speakers are far more likely to be damaged by a small amplifier clipping (running out of power) than by a large amplifier running cleanly. High powered amplifiers are usually capable of higher current drive and so provide more control of the speaker which makes the sound tighter.

Active Monitor Speakers

Active bi-amplified near field monitor speakers are now becoming quite common. In a typical active bi-amped system two power amplifiers are built into the back of each speaker box. The

tweeter and the mid/bass driver each has its own amplifier and each amplifier is fed from an internal electronic crossover. Most active systems have some level of speaker protection such as a limiter to help save the components when (accidental) abuse occurs. When built properly the active approach allows the designer to tweak the performance of the entire speaker system and to greatly enhance the performance for the intended application. As the amplifiers and speakers in the system are consistent there is a good chance that all of the active speaker boxes from brand X model Y will sound the same as each other (with some variation provided by the listening room acoustics) anywhere on the planet.

An example of an active near field monitor system is the Dynaudio BM-6A. This system has a blend of well controlled bottom end, accurate mid range and open non fatiguing top end.

Placement

A golden rule with all near field monitor speakers is to keep them away from the corners, walls, floors and ceilings. Any near large surface will colour the sound, corner mounting might sound bigger and fatter but it will always be fake and blurry. If possible near field monitor speakers should be placed on stands or at least isolated from any structure in some way (placed on bricks or books etc).

You can of course add a sub woofer to near field speaker system to create a larger sound stage, in my opinion this can be a backward step. A sub woofer normally sits on the ground under the mixing console, this puts the sub in contact with the floor and will give the impression of a deeper bass response. In reality the bass produced will often be blurry and fake and could sound disconnected from the sound coming from the mid/high speakers. Subs can be very beneficial but it takes a fair bit of effort to get everything working properly and cohesively.

Ear Training

The way to judge a monitor speaker system is with bunch of known well made CDs with both male and female vocals. Listen to the vocals and check for reality. Listen to the reverb tails and effects, you should be able to hear the details as they fade away in the mix. Listen for present but tight bass response, clean well behaved mid range and open, sweet but never shrill or peaky top end. A good monitor should show balance at all volume levels. Get used to how the speaker sounds with good CDs and then try these same CDs on other systems to see how the sound is translated. Find two monitor volume levels (low and medium) that are comfortable, mark them on the volume knob of the amplifier or mixer and then use the same settings at all times. Your ears operate differently at different volume levels, most professional audio engineers use a constant mix volume (medium volume) so that they have a reference to work to.

Monitor Speaker Shopping

Rule one is to compare apples with apples, as a guide speaker models priced within 20% of each other are probably intended to compete with each other in the market place. Speaker systems must be judged on their individual merits and reputations for getting the job done properly at the relevant price point. Beware claims of lots of bang for the buck, there are some very useful budget speaker systems out there but in general you get no more than you pay for.

Last update 01/12/03.