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## **HOW LOUD IS LOUD?**

**BY**

**JOHN F. ALLEN**

HIGH PERFORMANCE STEREO™



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*FIRST IN DIGITAL STEREO*

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# HOW LOUD IS LOUD?

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It is regularly noted by many of us that movies are too often played at volume levels which are too low. Yet we hear a small but continuing number of complaints from some customers who think that movies are too loud. Is there an answer? Actually there are several issues at work here and we must understand each of them very carefully.

In an attempt to please their customers, some managers will often turn down the sound level until there are no complaints from anyone. Indeed, in theatres where this is allowed to happen, the levels are too low. So low in fact, that dialog intelligibility is impaired. True, those customers who don't like anything above a whisper level will not complain anymore, but the overall sound presentation is ruined. Not only do people miss dialog, but all of the quiet nuances in the soundtrack are gone, as is anything dynamic.

## FILM PRODUCTION

Another issue concerns the way films are made. One of the important aspects of Dolby stereo is the establishment of a relationship between the recording level on the film and the sound pressure level in the theatre. A 50 percent modulation, or recording level, on the film corresponds to a level of 85 dBc per channel in the middle of the theatre.

Each time a film is recorded, a Dolby staff member visits the dubbing stage and verifies, among other things, that the sound system is playing at the correct level. Considering the number of sound studios and the fact that they compete with each other for business, having an independent organization visit each of them is a tremendous quality control service.

We would think that if all the films are recorded at the same level, that we could play them all at the same level and be fine. We all know, however, that we can do no such thing.

Some producers and mixers prefer to record their films at a relatively high and more compressed average level. This also means that there will be less overall dynamic range. While a 100 percent modulation level on two different films will produce the same peak level in a theatre, the film with the greater average level will be louder.

When we hear a film for the first time, we haven't heard it before. This sounds silly to say. But by the time a film mix is complete, the makers have heard it lots of times, often during the same day. In such circumstances people can tend to gradually turn things up a little over time. When this happens, it explains why slightly lower fader settings in theatres seem about right for many films.

As soon as the fader must be set at other than a standard position, however, a free for all ensues. No one seems to agree where it should be set.

Incidentally, a well recorded and modulated film will sound extremely soft and thin at a fader setting 1/2 a point below standard level. Just a 1/4 point too low eliminates punch.

Of course, every technician adjusting theatre sound systems uses his own sound pressure level meter. Variations in the accuracy of these meters will lead to incorrect theatre sound levels.

### TRAILERS

Another problem arises when trailers are played too loud. Sometimes it seems that trailers are always played too loud. This is caused by two things: The mono level is set too high or the mono trailers are actually being played with the processor set for stereo. Typically, I adjust the mono level 4 to 6 dB below the stereo level with the fader in the same position. The real test though, is to be able to play mono trailers in mono, stereo features in stereo and not have to touch the fader at all.

To do this, simply adjust the mono level so that trailers play at the correct level with the fader in the same position used for stereo. This is very important.

The reason mono trailers are way too loud when played in stereo, is that mono is recorded at a very high modulation level, much greater than stereo recordings. Mono trailers should NEVER be played in stereo. The switch from mono to stereo MUST be done at the proper time during every show, either manually or by automation.

Loud trailers assault the ears. The fact that they tend to also be rather distorted, only compounds the problem. Distortion makes sound seem louder.

When trailers come on too loud, the fader gets turned down. Too often, however, the fader does not get turned back up for the stereo feature. This is a major contributor to the improper levels found in some theatres.

As mentioned above, distortion makes us feel something is louder. It is also fatiguing. Loudspeakers and amplifier found in many theatres exacerbate this problem because their old designs produce excessive amounts of distortion. In my experience, people will complain about excessive sound level when distortion is present.

By the same token, when the sound is clean and clear, people are happier and complain less or not at all. I have heard some very loud, live (no sound system) performances at Boston's Symphony Hall, but never any complaints that Beethoven's symphonies are too loud.

### **SOUND SYSTEMS AND THEATRES**

Sound systems which are poorly balanced, exhibit poor dialog intelligibility or are improperly equalized can be a real problem. In such situations, managers want to turn up the level so that the words can be more readily understood. While turning up the level may indeed improve dialog intelligibility in such a theatre, the music and effects can become unpleasantly loud and colored. Down goes the fader again.

Adjacent theatres with poor sound isolation between them cause trouble for everyone. When loud portions of a film are heard in the theatre next door, down goes the fader.

Of course, even when everything is done properly: isolation is good, distortion is absent, the sound system is a high quality one and is set up perfectly, when all these things are right, some people will simply find modern films too loud. We have to accept that this is so. My recommendation is to have sympathy for these sincere few, but not to allow their complaints to lower the sound level and ruin the presentation for everyone else.

What should the level be? The correct way to know is to listen to the DIALOG level in the middle of the theatre: **NOT THE REAR**. When dialog is right, the music and effects should generally be allowed to do what ever they will. It is the dialog level that must be correct. It is the best reference. Also, the practice of automatically turning down the fader for a small audience is no longer valid with modern films and theatres. It may indeed be necessary to turn up the level for a large or noisy audience.

If everything is perfect, my rule of thumb is that if you get about two or three complaints that the level is to high, it's probably just right.

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