



HPS-4000®

HIGH PERFORMANCE STEREO

Sound IS the Experience !™

"A" CHAIN PITFALLS

BY

JOHN F. ALLEN

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FIRST IN DIGITAL STEREO

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One of the more difficult things we have to do in audio is to transform one kind of energy to another. Microphones, tape heads, phono cartridges and speakers are familiar forms of transducers. One of the cleverest and simplest recording pickups ever developed is the optical recording reproducer used on 35 MM projectors. The film's soundtrack is passed (without contact) between a slit of light and the pickup solar cell. The wiggles on the film cause the light to fluctuate. The solar cell converts the light into electricity and we have an audio signal.

Simple to be sure but still prone to poor performance due to a lack of proper set up and maintenance. The main weakness of the system is the exciter lamp and its power supply. The problem is that for proper operation the light must be uniform across the slit and maintained at a constant level. Nonuniform light causes distortion. Drifting light levels cause the sound levels in the theatre to drift up and down. These problems are especially important when the theatre is equipped with a Dolby processor. This is because the noise reduction circuit's level calibration must be correctly maintained or mis-tracking will occur.

The best way to avoid problems associated with exciter lamps is to operate them at about 85 percent of their rated voltage and use a regulated DC power supply. Running the lamp's voltage at about 85 percent increases the life of the lamp as we all know but it also provides a more uniform filament illumination. A regulated DC power supply maintains a constant DC voltage for the lamp, keeping the light level in calibration while the theatre's AC line voltage drifts. Regulated supplies cost only \$300.00 to \$400.00, a bargain in the power supply world.

The bulbs themselves should be replaced when they show signs of turning gray. Looking closely at such a lamp reveals that the filament has shiny spots where the tungsten has fallen off. The gray on the glass is the tungsten that used to be on the filament. This is the bulb's way of telling you it's in trouble.

In two projector operations both exciter lamps should remain on all the time. Experts agree that turning a lamp on and off repeatedly decreases its life. Another disadvantage is

the unstable light level given off as the lamp warms up. This is why it is recommended that you warm up an exciter lamp before performing Dolby calibration.

When selecting a regulated power supply be sure it is truly regulated. Some so-called regulated supplies are simply adjustable. These adjust-only units lack a true regulation circuit which senses the output voltage and keeps it at a constant level. Another feature to look for is current limiting. This is helpful in preventing the power supply from failing as a result of a short circuit such as during a lamp failure when a piece of the filament drops across the base of its supports. Never use an AC exciter lamp supply. They cause hum.

Be sure the slit lens is in perfect condition and is kept clean. It is a good idea to replace the lamp and check the slit lens focus with a pink noise film (Dolby CAT 69), a real time analyzer and a dual trace oscilloscope about every six months. The procedure is carefully outlined in Dolby's manual. These small details can cause big problems with your expensive sound system if left unattended.

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John F. Allen is the founder and president of High Performance Stereo in Newton, Mass. He is also the inventor of the HPS-4000® cinema sound system and in 1984 was the first to bring digital sound to the cinema. John Allen can be reached by E-mail at JohnFallen@aol.com.