



Bass Management 101

Digital surround sound receivers, preamps or processors must be configured properly to get the best performance from your speakers. This involves "telling" the surround processor where to send each channel's bass information. This is known as "bass management." Most processors and receivers allow you to adjust these functions in the on-screen Speaker Set Up menu. Check the user's manual of your electronics to learn how to access these functions. Yes, you actually have to read parts of your receiver's owner's manual. Painful, yes; but it will save you loads of frustration later.

The good news is that once you've selected the bass management mode that you're happy with, you can forget about it and just enjoy your system. The bad news is that bass management may be confusing at first. Take your time, read this article, and then experiment.

Auto Set-up - Many receivers today come with automatic microphone setup functions that attempt to make many of the settings and adjustments that this article covers. In our opinion some of them work well and some of them work poorly and none of them work well with specific types of speakers such as speakers with built-in subwoofers and single speaker surround products. If your receiver has such a system by all means give it a try, but we believe that in most cases you will get better sound from manual set-up as no computer or microphone is as relevant to your sonic enjoyment as your ears. When using auto set-up we recommend using a camera tripod to mount the microphone near your ear height at the listening position. Please do not simply lay the microphone on the couch, or worse, on the floor. Do not use automatic setup with the Mythos SSA models or any other single speaker surround product.

Large vs. Small - When a channel is selected as "Large" it means the bass information for that channel will be directed to that speaker along with all the other frequencies. When "Small" is selected, the bass is filtered out of that speaker and directed to either the subwoofer output jack or to the Left and Right channels (depending on whether the subwoofer is selected as "on" or "off"). For example, if you select the center channel speaker as "Large," the center channel bass will go to the center speaker. If you select "Small," the center bass will go elsewhere.

Subwoofer - If you have connected your subwoofer to the subwoofer output jack (sometimes labeled "LFE"), select subwoofer as "On" or "Yes." The subwoofer will now play the Low Frequency Effects bass channel plus the

bass of any channels that you set as "Small." If your subwoofer is connected to the system in any other way (such as L&R pre-outs or L&R speaker outputs), set the subwoofer as "Off" or "None." LFE and bass from channels selected as small will now go to the Left and Right front channels.

Left and Right Front Speakers - Sometimes the choice between "Small" and "Large" is not so clear-cut. These are the tradeoffs: When the main speakers are set to "Small" you will enable the speakers to play at higher volume levels with lowered distortion. Setting them as "Large" will improve lower midrange/upper bass performance and speaker-to-subwoofer blending (better sound quality) but at the expense of high volume capability. Here are some speaker set-up suggestions for the major categories of speaker types. Follow these guidelines and you can't go wrong; but we encourage you to experiment and see what works best for you. Provided you don't play the system at ear-splitting levels you will do no harm by trying various settings.

Floor-standing - If your main front speakers are floor-standing models with good bass response, select "Large." If you have speakers with built-in powered subwoofers such as Mythos ST or BP7000 series speakers you must select the "Large" setting. If your subwoofer is connected to the subwoofer output (LFE) jack and you wish to limit the bass response of your main speakers for the sake of higher volume, select "Small."

Bookshelf - Choose "Small" unless you are not using a subwoofer anywhere in the system, in which case choose "Large."

Palm-sized satellite/subwoofer systems - If the subwoofer is hooked up to the subwoofer output jack, select "Small." If the subwoofer is hooked up to the receiver's front left and right speaker or preamp outputs choose "Large." The latter method generally yields better midrange warmth and body from little satellite systems.

Center Speaker - Very few center channel speakers can produce as much bass as a subwoofer or most main speakers. Unless you have a truly full-range center speaker, set the center speaker as "Small." In the case of center speakers with built-in powered subwoofers, such as the Definitive C/L/R Series models, set the center as "Large."

Surround Speakers - If you are using bookshelf, on-wall or in-wall speakers as surrounds, select "Small." If you have large floor-standing speakers with good bass response, or have a second subwoofer for the surround channels (a bass freak, eh?), select "Large."

Crossover Frequency Adjustment – Many current surround receivers allow you to set the crossover frequency for the "Small" setting. That means you can select which frequencies go to the subwoofer and which go to the speakers. The type of main speakers you have will determine the appropriate crossover frequency. Small satellite style speakers should be set to 120-150 Hz. Bookshelf speakers 80-100 Hz and tower speakers 60-80 Hz. Again the tradeoffs are between volume capability and sound quality. Experiment!

Speaker Distance/Time Delay - Dolby Digital receivers and processors have a "set speaker distance," or time delay function, that ensures that all channel sounds reach your ears at the correct time to aid proper imaging and localization. In most units this is accomplished by simply selecting the distance from your listening position to each speaker via an on-screen display. In other units you must select the amount of delay in milliseconds. Consult your owner's manual for specific instructions. On most receivers, once this adjustment is set, you can forget about it.

Channel Balance - Once your speakers have been properly installed, consult your receiver or processor's owner's manual for instructions on balancing the output levels for all channels. Sitting in your normal listening position, engage the test tone on your receiver, and adjust the levels until each channel produces identical volume.

We recommend using a Sound Pressure Level (SPL) meter to set your channel balance. Radio Shack stores have them for less than \$50. Getting the channel balance within 1 dB accuracy (something that's hard to do by ear) makes an enormous difference in the quality of surround sound. An SPL meter is worth every penny of its modest cost.

It is always best to start out with balance set by SPL meter, but don't be afraid to make minor level corrections by ear. If the dialog seems unclear, boost the output by a dB or two. Likewise, if the surround speakers are calling too much attention to themselves, turn them down a bit. But resist the temptation to over-fiddle with the levels. Instead, just sit back and enjoy the movie!