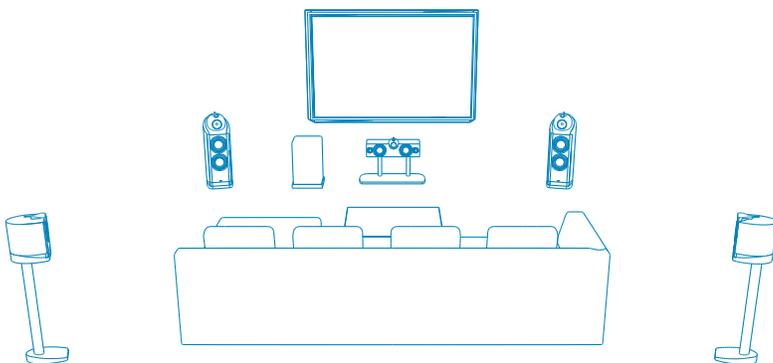
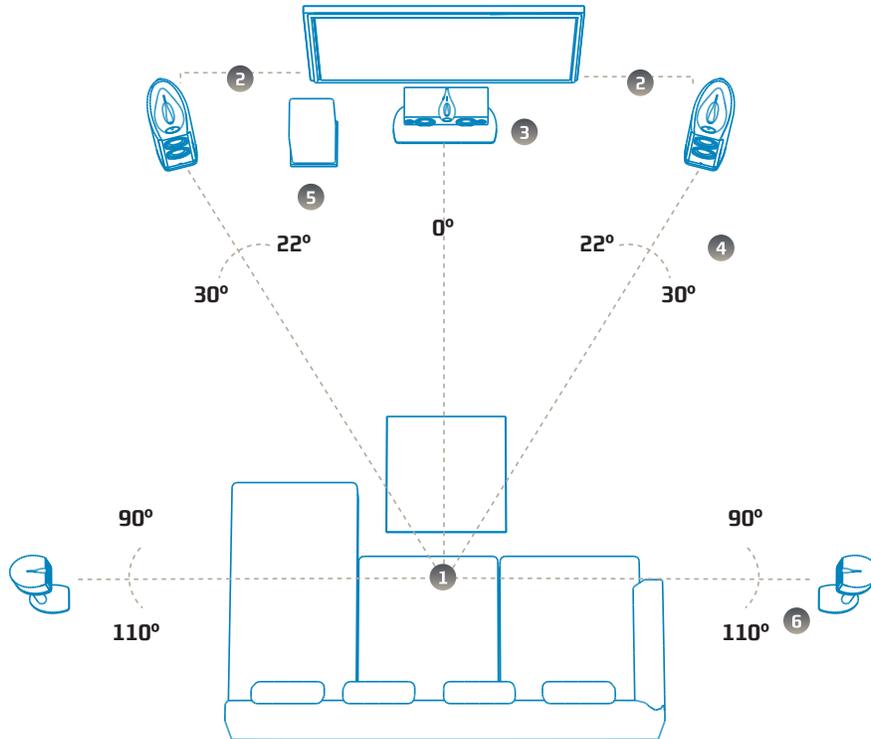


# Home Theater Speaker Guide

Optimize your sound system including Dolby technology with this step-by-step guide to the best speaker setup, including room considerations and other valuable tips.



5.1 Room View

## 5.1

5 Speakers  
1 Subwoofer

1. Seating Position
2. Left and Right Speakers
3. Center Speaker
4. Left and Right Speaker Angle
5. Subwoofer (the ".1")
6. Left and Right Surround Speakers

## Fine-Tuning

Once you've done your basic speaker setup, you're ready to enjoy the home theater entertainment experience. Keep in mind, however, that every room is different; you may be able to further improve the sound by going beyond the general guidelines and fine-tuning the speaker placement within your room. You could, of course, hire a professional installer; however, with just a little time and some careful listening, you can do it yourself.

## YOUR ENVIRONMENT

### An Ongoing Experiment

There is no objectively "perfect" setup. All speakers, no matter how good, are bound by the laws of physics. What you can do is put them in the best locations to take maximum advantage of their capabilities, both individually and within the total system. Remember that the best sound is what sounds best to you. It's your system. If you've set it up and it sounds great, you may not need to read any further.

However, if you're not hearing any bass, or there's no sense of spaciousness and depth, or something seems to be missing, some fine-tuning may be in order. Even small adjustments in placement can have clearly audible effects. And that goes for your furnishings as well as your speakers.

First, do some extended listening. Do you hear a convincing sonic "image" between your main (front left and right) speakers? This is the soundstage, and you want to maximize it for depth and richness. Ideally, the speakers will "disappear," and the sound will fill the space between them. Focus on different types of sounds—voices, motion, music, sound effects—in turn. Individual vocals or instruments, or effects such as footsteps, should be precisely placed across this space.

Now try positioning your main speakers farther apart and then closer together and listen to the results. Move the speakers in small increments, a few inches at a time. Generally, the greater the distance between your main speakers, the wider your soundstage; the closer they are, the more centered the sound. If the speakers are too far apart, they will start to sound like separate speakers rather than a coherent system.

Similarly, when fine-tuning the placement of the surrounds, keep the idea of the coherent system in mind. Surround sounds should emanate from within a general area (covering the sides and rear of the room). Even if the surround sounds can be localized, the localization should be from within this overall area and not just from an individual speaker. The sonic image should be a single entity or environment.

Many of the more full-featured A/V receivers include a calibration microphone and can generate test tones for each speaker individually, then automatically calibrate distance, levels, and other settings. An increasingly popular receiver feature goes further, providing full and automatic room equalization. These features greatly simplify setting up your system properly.

Be aware of standing waves in your room, which are caused by sound waves reflecting off the walls. Because the reflections can overlap, the waves will cancel each other out at some spots (dips or null points) and re-inforce each other at different spots (peaks). All rooms have standing waves, and they're most noticeable at low frequencies in smaller (and especially squarer) rooms. Play some music with strong, steady bass, and walk around the room. If you hear very little bass in some spots and lots of it in others, then you have a standing-wave problem, and you want to be sure that your listening spot is not in a peak or dip. If it is, first try moving your subwoofer—even a few inches can make a difference. Similar shifts in the main speakers, or in room furnishings—even moving your listening spot—may help.

### **Let Nothing Come Between You and Your Sound**

You want a clear path for the sound between your speakers and your listening position. If you have furnishings blocking your view of the speakers, you can be sure they're also blocking sound. The only exception here is the subwoofer, whose low-frequency sounds are omnidirectional and do not follow the "line of sight" rule.

### **Room Geometry**

Room shape, ceiling height, and flooring material—all contribute to your room's acoustics, its unique sound signature. While you probably can't redesign or rebuild your room, there are some things you can do to make the most of it.

First, try to minimize the areas of bare walls and floors, although that doesn't mean you need to cover every square inch. Keep the aesthetics of your room and the sound benefits of wall and floor coverings in balance. The idea is to have as much of the sound as possible reach your ears straight from the speaker—not from off your floor and walls. Reflected sounds reach your ears together with those coming directly from the speaker, reducing clarity. So the placement of rugs and wall coverings is as important as their coverage. Also, furnishings don't have to be soft and absorbent to minimize reflections. Bookshelves, for instance, can serve the same purpose by diffusing reflections.

Some of the biggest acoustic problems are caused by rooms that are perfectly square or have one dimension exactly twice another. These are the geometries that tend to generate standing waves that cause clarity and level issues. If this describes your room, you may need to perform extra experimentation with speaker and furniture placement to defeat the geometric odds.

### **The Multipurpose Home Theater**

If, like most of us, your home theater room also is your living/family/workout room, then you may have to make a few allowances for your speakers. But sound can still be a top priority.

To avoid shaking and rumbling the whole house or disturbing your neighbors, you can place your subwoofer on rubber, dense foam, or neoprene pads to isolate it from the floor. (Many companies sell pads and platforms specifically for subwoofer isolation.) Also, make sure all your speakers are far enough away from intersecting room boundaries (wall and ceiling, wall and floor, and especially corners) to reduce "boom"—these areas naturally reinforce bass frequencies.

To ensure a home theater experience that isn't dominated by dramatic sound effects at the expense of dialogue clarity, be sure to set the proper volume level for your center speaker. Turning up the overall volume to compensate for dialogue that's too soft will often overpower you with everything except dialogue. Most movies and TV shows are mixed with the bulk of the dialogue in the center channel, and proper level setting will keep it loud and clear.

All in all, your home theater can deliver great sound while still accommodating the other activities in your home.

### **A Bit About the Visual**

Audio's not the only part of your home theater you'll want to calibrate. Most TV sets will need calibration as well. Most TVs have been factory calibrated to look good in a retail showroom, whereas your lighting conditions and preferences are likely to be very different. Your furniture and decorations affect how you see your TV picture, too, so it's important to calibrate your visual settings—like brightness, contrast, and colors—for your room. As with audio, this can be done by a professional installer, for a fee. For much less, you can buy a calibration DVD to help you. These are available from a number of different manufacturers—ask your A/V equipment retailer or check the Web. This calibration will probably take half an hour to an hour, time well spent.

For the optimum viewing experience, check out the recommended viewing distance for various screen sizes and resolutions when choosing a TV set. Most manufacturers offer guidelines on this.

## BASIC SPEAKER MATH

### Five from Two

Even if most of your TV and music is in stereo, you can still take advantage of a multichannel surround system, using all your speakers, thanks to Dolby® technologies. Enable Dolby Pro Logic® IIx for your stereo content (there's usually a control for this on your receiver), and you'll hear very natural surround sound. Dolby Pro Logic analyzes the stereo signal and creates the surround channels based on directional cues in the signal.

### Distribute Your Frequencies Properly

If you have a subwoofer, don't ask your other speakers to try to reproduce low-frequency bass. Receivers with Dolby Digital technology can be set for "large" or "small" speakers. Set it for "small," and the subwoofer to "on." Now the bass frequencies will be sent only to the subwoofer, and your sound dynamics will open up as your other speakers are freed from reproducing low bass.

### Further Reading

Another tip: The owner's manuals that come with your equipment usually have a great deal of good information in them, with far more specific instructions than we can offer here.

## MYRIAD MEDIA PREFERENCES

**Terrific TV:** Watching TV is an increasingly captivating experience, particularly with the switch from analog to digital broadcast television in the United States. Why does Dolby matter? Digital high-definition TV broadcasts include Dolby Digital 5.1-channel surround sound technology, so you get compelling audio along with the super-sharp high-definition picture. Make sure your set-top box or TV is set to output Dolby Digital to take advantage of great cinema-quality surround sound.

**Magic movies:** Movie soundtracks are engineered by industry-leading professionals, so they offer a great opportunity to let your sound system show what it can do. Surround sound home theater systems bring out optimal movie sound: bass response you can feel, the ambience of each scene all around you, and crystal-clear dialogue from your center channel.

**Go games:** Games immerse you in a virtual world. When the game world is coming at you from all sides, you can really enjoy your system (and especially your rear speakers). If you're auto racing, you'll hear the car drafting you. If you're in a stealth first-person shooter, you'll hear a creeper lurking around the corner. Note that Dolby Headphone technology delivers full surround sound for gaming headsets, giving you all the benefits of surround sound without all of the speakers.

**Enter Internet:** With more and more receivers able to pull in Internet radio and other media using an Ethernet connection, the Web is playing an increasingly larger role in the home theater lineup. Plus, game consoles and PCs hooked up to movie and media services can deliver media on demand to your TV. Your sound system is equipped with Dolby technologies (and others) ready to handle these services, so don't be afraid to check out what Web-enabled devices can do for a home theater.