

Positioning speakers for 2-channel stereo

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There are four main considerations when choosing the position of your speakers and they are not always mutually compatible:

1. Getting the best balance
2. Getting the best image
3. Avoiding room acoustic problems
4. Working round everything else in the room

The last of these is often the controlling factor and there is often a limit to what you can do. But here are a few tips:

Getting the best balance

Most of our speakers are designed to give the correct balance when freestanding; in other words clear of walls. There are obvious exceptions to this, notably in-wall speakers and those specifically designed for on-wall mounting, such as DS6 and Nautilus SCM1.

At low frequencies, where the wavelength is large compared to the dimensions of the speaker, the sound radiation is fairly omni-directional. At higher frequencies, where the wavelength becomes comparable with the dimensions of the cabinet, progressively more of the sound is radiated to the front. The result is that, if a speaker is moved closer to reflecting surfaces, such as walls, the sound that would have radiated to the rear gets reflected to the front and you get a boost to the level of the bass. So adjust the position of the speaker relative to the walls to get the best balance in your room.

Often it is not possible to pull the speakers as far out as you might like and the bass remains too full. Some of our vented-box (reflex) speakers are provided with foam bungs to put inside the ports to effectively stop them operating – the system then becomes a closed-box. This reduces the level of bass and may be used to offset the effects of the near-wall boost.

With any multi-driver system, you have to take care to sit far enough away from the speakers to allow the outputs of the drivers to integrate. Get too close and you will be aware of the separate sources.

Getting the best image

The object here is to get a smooth left-right spread, with as convincing and stable a phantom central image as possible, and the best impression of depth. The best starting point for this is to place the speakers and listeners at the corners of an imaginary equilateral triangle. In other words, the angle subtended by the speakers at the central listening position should be around 60 degrees. If the angle is too small (speakers too close together), you will not get enough width to the image. If the angle is too large (speakers too far apart), you may get a “hole in the middle” effect.

Large objects – chimney breasts, equipment racks etc. – between the speakers can totally ruin the imaging. If you have ever A-B compared two pairs of speakers, one pair positioned outside of the other, you will have noticed that the inner pair always images better. That’s because the inner pair alters the way the sound from the outer pair spreads in the space between the speakers.

The impression of depth is directly related to the distance from the speakers to the rear wall. The farther you can pull the speakers away from the wall, the deeper the image seems to be. This effect is more noticeable on some recordings than others, depending on the microphone technique used. Usually the simpler techniques produce a more three-dimensional image.

If you move the listening position away from the central position equidistant from both speakers, the phantom centre image will tend to flip to one side. While this is of little consequence to a single listener who can

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choose to sit on the centre line, you can take steps to improve things for the off-centre listener. A sound seems to come from a central position when the signals from both speakers are the same. They are the same loudness and arrive at the same time. Move to one side and the nearer speaker's sound is louder and arrives first, dragging the apparent source position with it. To offset this a little, you can use the fact that a speaker's response decreases in level off axis. Toeing the speakers in, so they point at or just in front of the central listener can help to reduce the central image movement. If you move nearer to, say, the right speaker, the increase in its loudness is offset by your being more off axis. Conversely, you move more on axis to the left speaker, which offsets the fact that you are further away. Of course, you can't do anything about the time of arrival of the signal, but nevertheless there is a worthwhile improvement in the stability of the central image.

Avoiding room acoustic problems

Look at the article **Dealing With Room Acoustics** for more information on this and room acoustics in general.