

Ownership Guide: Callisto

Receiving, inspecting, unpacking, set-up, connecting

Initial receipt. You'll receive three cartons for the Callisto speakers. Two contain one speaker each and the third holds both bases for the speakers. Please take the time to inspect the shipping carton for damage, looking specifically for signs of impact damage and punctures. If none are present, proceed with opening the cartons and continue to look and listen for any shipping damage as you begin to unpack them. Look and listen for any rattles, cracks, and chips. If you discover damage, immediately contact your Retailer or the Factory. If none is present, proceed with the next steps. **Unpacking the Callisto.** The shipping-label side of each carton is the front of the speaker. It's a good idea at this stage to mark each piece of packing material in terms of 'front,' 'back,' 'top,' or 'bottom.' The cartons may be flattened; all may be stored in a dry place. Keep all materials as they will be expensive to replace. **Speaker set-up.** Set each base on a solid, sturdy surface, with the spikes to the rear. Lift each speaker body and set it straight down onto a base. The fit should be snug, solid, and feel stable. **Connecting the speaker terminals.** Connect the positive (+) and negative (-) terminals of your 4 Ohm speakers using a 7/16" nut driver to tighten the binding posts. 'Finger-tight' is not enough. There are holes for bare wire. We don't recommend using banana plugs - they don't make the best connection.

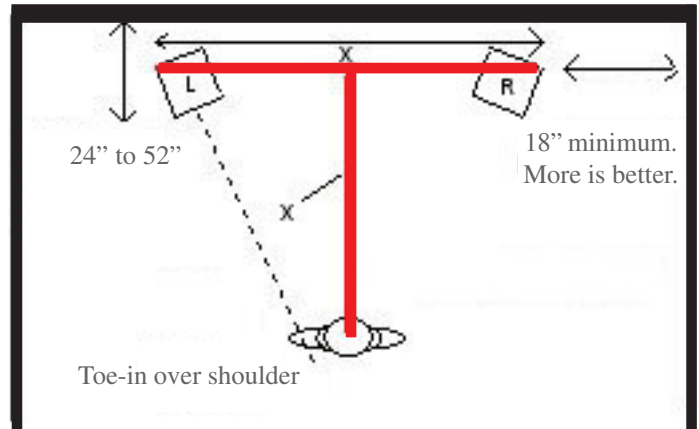
Conditioning the speakers

Your new speakers need 200 hours of conditioning (burn-in) to loosen up the drivers. Although the speakers will sound fabulous right out-of-the-box, you'll hear improved sound, even at very soft volumes, once they're conditioned. The bass will most especially sound better. Over time, they'll become more graceful and even less-mechanical sounding. Determine if you want to continue to set-up the speakers - and condition them over time in their final positions -- or condition them over the next couple of weeks before continuing with set-up. Apartment-dwellers may want to turn the speakers "out of phase" now so that the volume needed won't be an issue for neighbors, for example. Whatever your decision, fully condition the drivers before fine-tuning the speakers' positions. **How to condition the speakers.** Play music for at least 200 hours at moderately-loud levels (30 Watts). As a guide, at 30 Watts you'd have to raise your voice to speak to someone, without having to yell or shout. Remember to **slowly** increase the volume. You want to stretch out the drivers' suspensions by making them stroke so they'll respond better at any loudness. For the woofer, play music with strong bass; for the tweeter, play piano and saxophone using a variety of rock, reggae, country, pop, jazz, and R&B. **Turning the speakers 'out-of-phase.'** If loudness is an issue, consider turning the speakers 'out-of-phase,' also known as inverting one speaker's polarity. Before completing the procedure, you need to know which setting on your amplifier's volume creates the moderately-loud volume required for successful conditioning. Mark that position of the volume knob with a piece of tape **now**. Then turn the speakers face-to-face, but not touching each other. Switch the speaker wires on the back of one of the speakers -- disconnect the positive wire and connect it to the negative terminal. Then connect the negative wire to the positive terminal. This 'inverted polarity' will cause the speakers to cancel much of their sonic output. Set the amplifier's control knob to that moderately-loud setting that was marked with tape. Let the speakers 'cook' for 200 hours.

Note: The Callistos were designed to sound best with their grilles in place.

Positioning the speakers

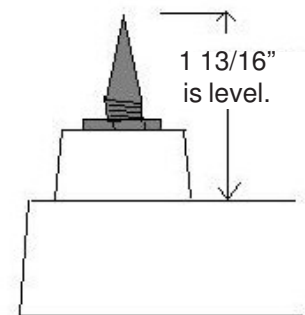
It's time to position the speakers using our 'Equal-Legged T' method. We discovered it through years of experiments in rooms from 10- to 100' wide. Since visual acuity for the fixed eye "falls off" at the 53-degree span, we believe there's a link between the point at which our peripheral vision "falls off" and our keenest sense of hearing begins. This layout will allow images to develop outside of the speakers' boundaries, if such information is in the recording. Separate the outboard rear corners of the speakers by a distance, "X." Your chair will be the same distance "X" from the mid-point of that line between the speakers. On your left, the dotted line indicates how the speaker's sound axis must be directed over your shoulder, not into your ear. You'll see approximately 1" of the enclosures' sides when sitting in a listening chair.



Modify this layout somewhat if the loudness of any center reflections is a factor -- for example, from the television or walls. The 'Equal-Legged T' is as wide apart as you'd ever want to place the speakers. This information applies regardless of how close you are to them.

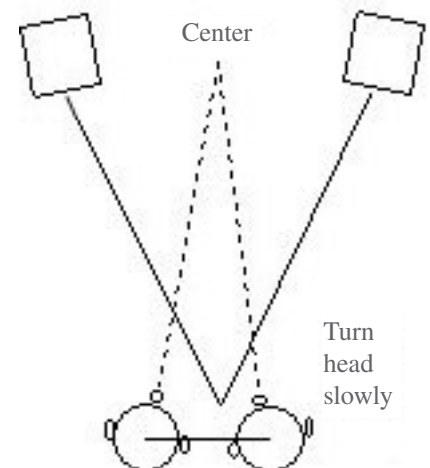
Setting the tilt

If you're 11-12' away from the front of each speaker, your ear should be approximately even with the tweeters. This is achieved by sitting on a sofa low enough to stretch out one's legs while the speakers are mounted on 24" stands. If seated 8-10' away, you'll need to be below the tweeters by another half-inch, at least. At 6-7' away, your ears will need to be at least an inch below the tweeters. Each tweeter is 2.5" below the top edge of its grille. If your ear height is above the tweeters, you'll need to tilt the speakers up to you by adjusting the spikes. This is best accomplished by trusting your ears. Play a favorite recording. With eyes closed, either stand at your listening position, behind the sofa or your chair -- you don't have to be in the middle for this technique. Slowly descend, moving well-below the tweeter height. Slowly rise up. As you do, you'll pass through the listening window, where your ear will be either below the tweeter or even with it. At the correct height (for your listening distance), you'll hear the singer's room appear, right behind the voice. The key word here is 'behind.' Everything lies up behind the singer's voice, into one height. You cannot point to the tweeter as a second sound source. You'll most clearly hear the depth of the room. If you continue to stand up, the depth perspective will flatten out -- it'll be more 'in your face.' Although you may like the tone balance, what you're actually hearing is time-domain distortion, since the tweeter is arriving too soon to your ear. When you hear the correct height, open your eyes. See how it compares to your seated height. If your ear-height is higher, tilt the speakers back. Check final alignment by sitting up or down slightly in your chair. To adjust the Callisto: Lean the speaker forward and use a 9/16" wrench to loosen the nuts. When finished, the cabinet should be stable and solid. It shouldn't rock at all for the best bass and clearest image. The top of the spikes are 'level' at 1 13/16" up from the lowest flat portion of the marble base.



Setting the center image

With the speakers an equal distance from the wall behind, locate your chair on the exact center line between them. Houses aren't perfectly square...use a tape measure if needed. Sit in your center seat and listen to the center image of a not-too-complex recording. Close your eyes and locate its origin. When you can literally point to it, check BY EAR for equal acoustic distance to the speakers. Move your shoulders left and right, as if you were sliding on the couch, while keeping your nose *pointed to the geometric center*. Close your eyes (no eyeglasses), and slowly move sideways while rotating your head. The center point of your head won't move much at all. The correct angle has the most 'depth of center image.' If you're looking at the right speaker, *rotate your chair very slightly to the left*.



Details matter for the best sound

Speakers will sound best when you aren't wearing eyeglasses; are seated in a low-backed sofa or chair; there's carpet on the floor; there's no coffee table or ottoman between you and the speakers; there's no TV screen or equipment rack between the speakers (unless it's far behind and/or the speakers are more than 15' apart); the control center and CD player are always on; a power amplifier is warmed-up for a half-hour, and all cable connections are regularly cleaned with denatured alcohol.

For home theater use

A believable surround-sound experience means that the five speakers around you blend to create a realistic acoustic world. Studios place surround monitors 90 to 120 degrees to the left and right -- at ear level or slightly above -- but then, the studios have no walls near their monitors. You do, and they add reflections. That same span lets your sidewall reflections create 'holes in the side images,' just as moving the front speakers too far apart creates a hole in the middle. For a smooth blend between the surround and front channels, we suggest you try the following technique for identifying and closing up any holes in your room's sonic image. This suggested setup will close any gaps to create a continuous, sonic arc that encompasses your visual field.

1. This step would ordinarily be the point at which you'd want to position your speakers using our 'Equal-Legged T' configuration. For a home theater, a strong center reflection may be a factor -- for example, the television. You would then not toe-in the speakers as much, or widen their separation (to get them away from the television screen). You'd also sit a little farther away to preserve your same triangle. The 'Equal-Legged T' layout is as wide apart as you'd ever want to place the speakers.

2. To further help you, use a music DVD, such as the Eagles' *Hell Freezes Over* (in DTS), as it's panned evenly to all five speakers. Try the surround speakers along the side walls, where they're slightly in front of you by 5-10 degrees. Place them below your ear height, tilted up towards you. When the speakers are properly placed, your room will disappear in every direction. Why? Because you'll be hearing the sounds from the recording instead of the reflections from your walls.

3. When you've physically placed all five speakers, including the center channel, it's important to make them all the same 'acoustic distance' from your ears. If the center speaker must be closer, then time-delay it to 'move it back' (one millisecond per 13.5" of distance). Studios place their surround monitors at the same distance from the ear as the left, center, and right, and thus don't add any time delay to any particular speaker. If your surround speakers must also be closer to your ears than the distance to your main left and right speakers, then time-delay them to move them 'back' to the same 'listening distance' as to the front left and right speakers. On top of that delay, add another 15msec delay for the older Dolby Pro-Logic and Dolby Surround analog sources, although some newer processors automatically add this extra delay when these are selected.

Any of our floorstanding and bookshelf/compact speakers can be used in a surround-sound application. For center channels, one would use either Vortex or Aperture. If you're using one of our Hammer Brothers subwoofers, try to assign it just the full range of the Low Frequency channel (LFE). For bass augmentation of our compact speakers for two-channel music, the preferred crossover slopes are 24dB per octave for the Hammer, and 12dB per octave for the Callisto and Europa, at a crossover point of 80Hz. Visit our website for more information about room acoustics, speaker placement, and home theater.

Speaker care

Cabinets. Using ONLY the aerosol-type of Johnson Wax's Lemon Pledge, liberally spray the speakers and rub in with a paper towel or lint-free cloth. Polish with a second, clean paper towel or cloth.

Grilles. Vacuum the foam grilles when simple care is needed. They may be washed by hand. Being careful not to stretch, wring, shake, twist, or squeeze them, lay them flat on a towel to dry afterwards, or toss in a warm dryer to tumble for a few minutes. To reinstall a grille, hold the craft stick at an angle away from you to tuck it into the channel. If needed, contact us for free grille replacements.

