absolute fidelity®

GENESIS ADVANCED TECHNOLOGIES

Owners Manual and Set-up Guide
Genesis Quartet

Contents

A Message from Genesis

Congratulations! And Thank You!

You are now the owner of one of the finest loudspeaker systems in the world! The Genesis Quartet is the result of technologies developed and refined over the past 40 years in constant production.

The Quartet loudspeaker system was created for the music lover who knows (almost) no compromise. It is designed to reproduce music at live listening levels with virtually no restrictions on dynamic range, frequency response, or imaging capabilities. This is ***absolute fidelity***®, the ability to reproduce the musical event faithfully, as was intended by the musician or film-maker.

However, the Quartet is *not* meant to reproduce music at ear-splitting levels. If you are looking for just ***LOUD***, this is the wrong loudspeaker. A Ferrari and a Caterpillar may have the same price and horsepower, but they are very different vehicles and you wouldn't use your Ferrari to move a load of gravel.

The Quartet is designed to deliver music to a family, seated or standing. Other loudspeakers are designed to reproduce music perfectly for only one listener at precisely located sweetspot. With your Genesis loudspeakers, the listening sweetspot extends in width to a couch or loveseat. Vertically, it encompasses any height from 26" (70cm) to 68" (1.7m).

Please read this Owner's Manual thoroughly to get the maximum enjoyment out of your purchase.

Check out our website at www.genesisloudspeakers.com. We will put the latest updates, tips and tricks, and support for our owners on our website and in our newsletters. As a Genesis owner, you are also invited to the secret Facebook Genesis Owner's Group.

Please write the purchase details of your Genesis 2.3 System here for future reference. Remember, send in your registration card to extend the limited warranty on your loudspeakers.

Bought from: _____

_____

Date: _____

Serial Numbers:

Warranty Statement and Extended Registration Card should be placed here.

Please check with Genesis should they be missing.

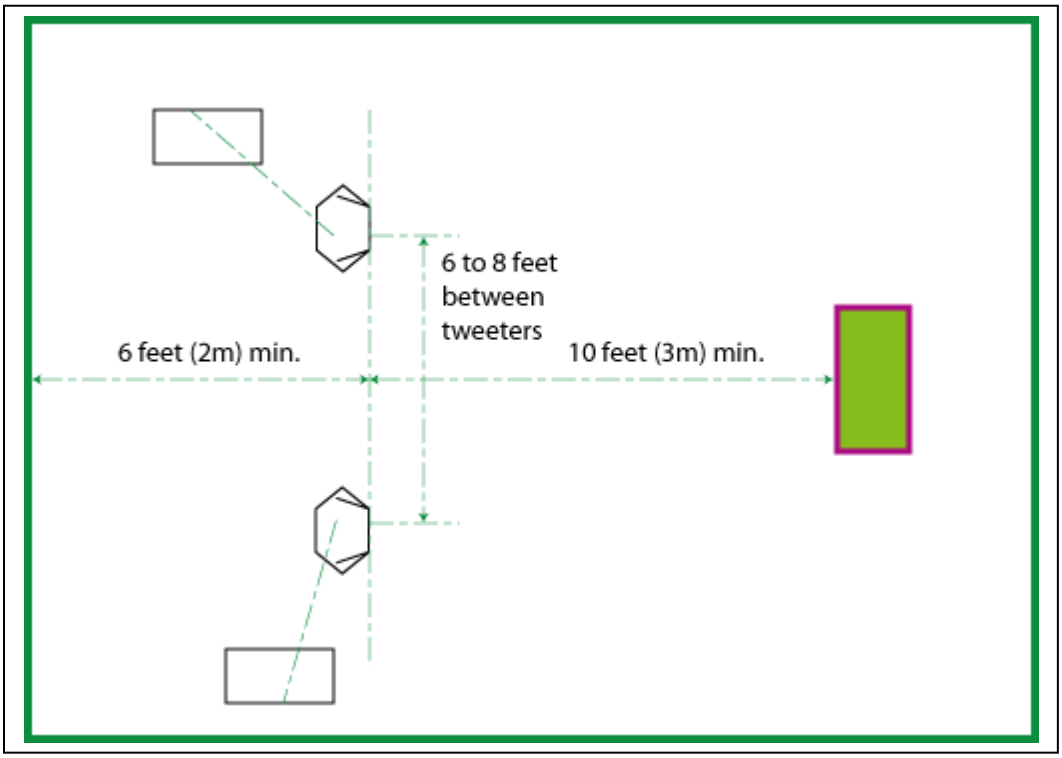
Set-up Guide

Now that you have your new Genesis Quartet loudspeaker system, we realize that you can't wait to hook it up and start the music! However, this is a big, complex system and we want you to set it up correctly and more importantly, safely. So, please read this set up guide (even if your dealer is setting it up for you!) before you proceed.

Planning the Placement

Before you even have the loudspeakers delivered, it would be a good idea to make a plan of where you will place them. You will not need a huge room, but at a minimum the room should be about 18 feet (5.5m) wide where the speakers will be placed. You should have a minimum of at least 6 feet (2m) of space behind the speakers. The listening position should be a minimum of 10 feet (3m) from the front of the midrange ribbon to allow for proper integration of the drivers.

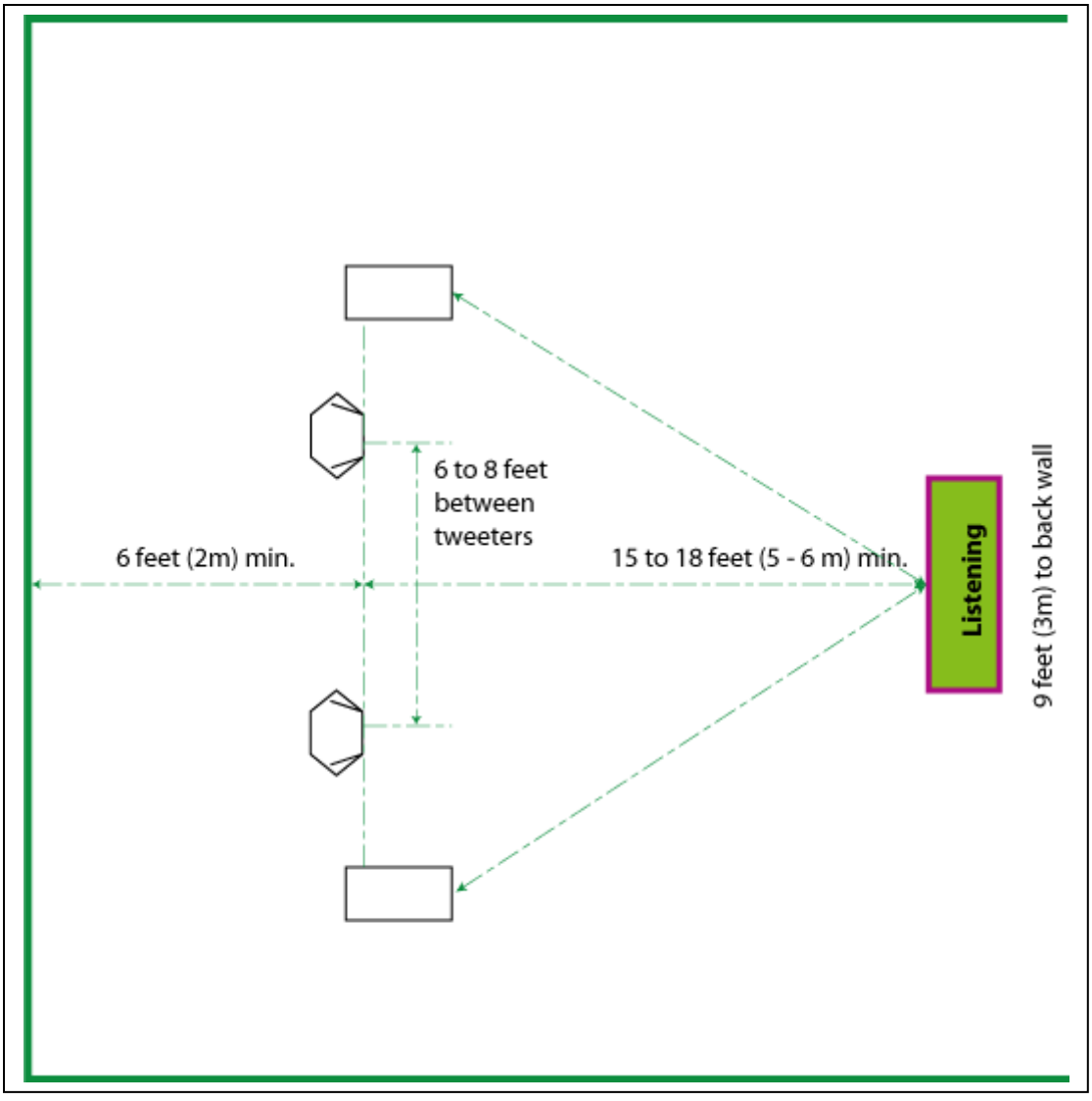
In a typical placement, the midrange/tweeter wings will be placed so that the two columns of tweeters are on the inside, and between 6 feet to 8 feet (1.8m to 2.5m) apart. The woofer towers are placed behind and outside the wings with the column of woofers about 4 feet



from the midrange ribbons. In order to allow for sufficient space from the sidewalls, this dictates that the optimum room is at least 18 feet (5.5m) wide.

Placing the woofer towers asymmetrical but equidistant from the midrange/tweeter wings will result in better integration of the bass frequencies *to the room*. Keep the side of the woofer towers no less than 12 inches from the sidewall.

The suggestions here are typical in a minimum space. With a larger room, it is possible (and optimal) to have a layout as shown below with the midrange, tweeters and woofers equidistant from the listening position. Still, the woofer towers should be placed asymmetric in the room with the distances of the woofers from the



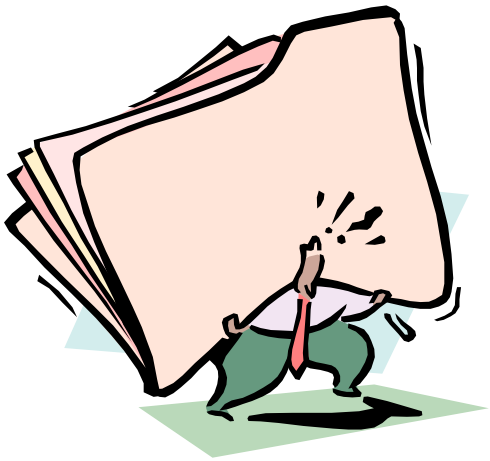
nearest wall being different.

As the room will greatly influence the sound of your system, fine-tuning adjustments in placement will be necessary. Every room will be different, with doorways, furniture, closets, wall construction and covering, etc. all making a significant impact on positioning.

Unpacking

The Genesis Quartet system will arrive in a number of parts. There are four large wooden shipping crates, two containing woofer towers, two holding midrange/tweeter panels (or “wings”). There will also be a pallet of cardboard boxes holding the various modules of the servo-controlled bass amplifier, and a box containing the various cables.

To remove the contents of all the crates, you will need help. The Quartet loudspeaker system with crates weigh a total of 1,200 lbs. Each woofer tower weighs over 270 lbs, and each tweeter tower weighs over 175 lbs and they have to be lifted out of the shipping crates. *We are **not** liable for damage (to either the speakers or your backs!) during unpacking and setting up.*



We suggest the use of a forklift to move these crates around, and at least four strong people to un-box and position the loudspeakers. In order to remove the loudspeakers from the crates, the front, top and 2 sides of the crates are removed as one unit. This is secured with screws – remove all the screws marked with green paint – and the lid of the crate can be lifted away.

This fully exposes each wing and tower of the loudspeaker, and they can be carefully tilted up and out of the crate.

After unpacking, we strongly suggest that the crates be dismantled, flattened and safely stored away in a cool, dry place. They will be needed should you relocate or move. It will be expensive to custom build crates strong enough to transport these loudspeakers without damage.

The Acoustic Suspension

Acoustic Suspension under the midrange/tweeter wings

A unique feature of the Genesis Quartet loudspeaker system is the integration of an acoustic suspension system for the loudspeaker columns. This is an essential feature of the cabinet structure – resulting in lower coloration, better definition and rock-solid imaging. It may even help your speakers survive an earthquake!

The suspension system comprises of a suspension frame made of 1-inch of solid cast acrylic, a set of Neoprene decoupling shock absorbers, and a set of steel spikes. Should you be placing the speakers on a hardwood floor or a floor that would scratch easily, do not use “spike cups”. These defeat the purpose of having a spike in the first place! Use a copper coin like a U.S. penny minted prior to 1984 – the weight of the speaker on the spike will create a depression in the penny and a nipple at the other side, and this point is what will efficiently transfer vibration to the floorboards.

The acoustic suspension system comes pre-assembled to the speakers, but there are spike at the four corners that are retracted. With the supplied Hex Key, screw the spikes down so that they slightly lift the suspension frame from the floor. If you have the speakers sitting on very thick carpet, you might need longer spikes for the suspension.

The Servo-Controlled Bass Amplifier

The included remote-controlled modular Servo-Controlled Bass Amplifier powers the woofer towers of the G2.

Genesis 2 Servo-Controlled Bass Amplifier

The parts of the amplifier are:

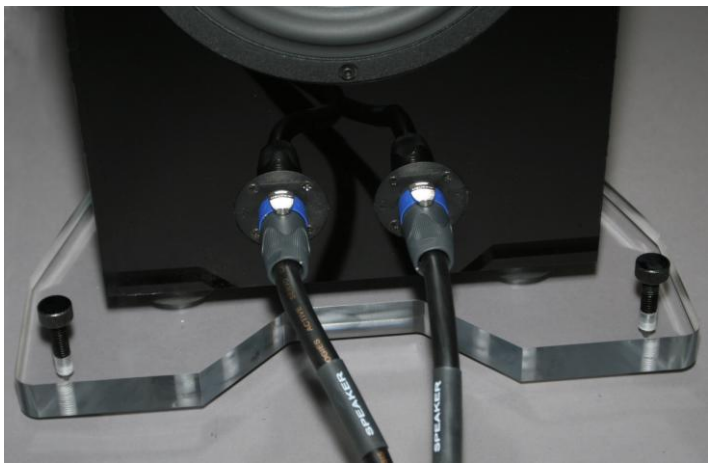
1) Two electronic crossover and Control Module (left and right) with a balanced XLR input and two control outputs;
2) A pair of Control

Interface Cables (CIC): these have 7-pin Neutrik™ connectors at each end;

3) A pair of Servo-Bass Interlink cables with XLR connectors containing internal circuitry at one end and push-lock mini-DIN connector at the other end;
4) Two Servo-Controlled Amplifier (SCAmp) Modules (left and right) with one Neutrik 20-amp PowerCon blue inlet, one control input, and two Neutrik 50-amp Speakon™ outputs and an acoustic suspension each;
5) Two pairs of Servo-Bass Cables (SBC) with Neutrik 50-amp Speakon™ plugs at each end;
6) Two Power Supply Transformer modules with a Neutrik™ 20-amp PowerCon™ grey outlets.
7) A pair of Power Umbilicals with a Neutrik 20-amp Powercon grey plug at one end and a blue plug at the other end.

A word of caution – the Neutrik PowerCon connectors used for linking the power supply to the amplifiers are designed for passing current. They are not designed to make/break current. Hence, be sure to connect the Power Umbilicals *before* you connect the Power Supply Transformer with the supplied power cord to the wall outlet. And remove the power cord from the wall outlet before you disconnect the Power Umbilicals.

Place the Control Module on top of the SCAmp Module, and using the supplied CIC them together. One amplifier module is for the RIGHT woofer tower and the other will be for the LEFT. This can be determined by the last letter of the serial number. It does not matter which CIC is used for the right channel and which is used for left. However, one is marked with a red ring and the other is marked with a white ring for convenience.



Use the SBC to connect the woofer towers to the woofer amplifier. Each end of the cable has a pair of 50 amp twist-lock Neutrik™ Speakon™ connectors, and is clearly marked, AMPLIFIER or SPEAKER. It does not matter which connector is used as long as the correct amplifier module is used for the left and right towers. It does not matter which SBC is used for the left or

the right; however, one is marked with AMPLIFIER or SPEAKER in red lettering, and the other in white lettering.

When you connect the woofer tower outputs pay close attention to the way the connector works. It only goes in one way and you cannot put it in wrong. However, you can fail to put it in all the way or fail to lock it in place. Line up the alignment pins on the connectors, push the plug in, and twist it clockwise until the lock "clicks" in place to keep it there. By looking carefully, it will be obvious as to how it works.

The Servo-Bass Interlink connects the crossover of the midrange/Tweeter to the input of the Servo-Bass Control Module.

Plug the XLR plug end of the supplied Servo-Bass Interlink cable into the input of the Control Module, and the other end into the mini-jack on the back plate of the Midrange/Tweeter wings.

Midrange/Tweeter Connections

Next, connect the mid/tweeter panels to your power amplifier using a pair of high quality loudspeaker cables (not supplied) to the 5-way binding posts. We recommend using the Absolute Fidelity Loudspeaker Interface Cables.

Servo-Bass Amplifier Remote

Your Genesis Quartet servo-bass amplifier is supplied with a remote control to control its operations.

Bass Control Adjustments

Your servo-bass amplifier should be the last thing you turn on in your system, and the first thing you turn off. As a general rule, turn your system on starting at the source to the power amplifiers, and turn it off starting at the power amplifiers back to the source.

Turn the servo-bass amplifier on by pressing Power Toggle button. The display on the Control Module shows ON .

When you make any adjustments, the display flashes to identify the function that is being adjusted.

The bass volume or gain is controlled Vol + and – rocker. When you first press one end or the other of the volume control rocker, the currently-set volume will flash. The next press will move the volume up or down. Pressing and holding the Vol + or – will change the volume up or down rapidly.

The bass volume/gain has a range of 0 to 100. A volume setting of around 18 is nominal for normal sized rooms. That is a good place to start when making adjustments. In general, a lower bass volume setting is needed in smaller rooms.

Two crossover controls are provided on the Control Module that helps you tune the system into your room. The high-pass filter determines how low the woofers will play, and the low-pass filter determines how high the woofers play to. The frequency that you set these filters to will be the “knee” frequency after which the woofers will attenuate by 6dB per octave, and is not the –3dB point.

The high-pass filter and low-pass filter is set using the up/down/left/right Pass Frequency buttons. Up/down adjusts the high-pass filter up and down respectively, and right/left adjusts the low-pass up and down respectively.

Using the up/down buttons, set the high-pass (HI) filter to 30Hz until the woofers and amplifiers break in (about 300 hours of play). After which it can be set to 20Hz. Next, adjust the low pass (LO) filter to 105Hz using the left/right buttons.

In addition to the current setting, the Control Module can memorize up to two sets of settings. To store the current settings in Memory 1, press and hold the [1] button for approximately 5 seconds or until the display flashes. To store the current settings in Memory 2, press and hold the [2] button for 5 seconds or until the display flashes.

To recall the settings in Memory 1, press the [1] button momentarily. To recall the settings in Memory 2, press the [2] button momentarily.

Next, adjust the phase with the rocker marked Phase + CH -. When you first press the phase rocker, the display will flash **PH** and then the current phase setting will be shown. The next press of the button will move the phase up or down. Set the phase to zero as an initial setting.

If you are not driving the servo-bass amplifier as recommended using the output of the power amplifier and the Servo-Bass Interconnect supplied, the phase will depend on the phase shift and group delay of your power amplifier. A typical value can then be anywhere from 45 to 135 degrees. A phase inverting power amplifier will require that you invert the input phase of the Servo-Controlled amplifier.

Midrange/Tweeter Controls

You will notice two controls on the back of the midrange/ tweeter panel. The left hand knob is a trim control for the rear tweeters. Turning this control clockwise will increase the level of the *rear* tweeters.

If there is not enough space behind your loudspeaker, the rear tweeter control can be turned down. In large rooms, the tweeter control can be turned up. Use this control if you need a bit more treble or to increase the apparent space of the soundstage. Start with this control at the twelve o'clock position.

The control on the right side is a three-position switch used to adjust the midrange. Start at position two. Position one will sound fuller in the lower midrange while position three will sound leaner and have more upper midrange.

The less obvious effect (more obvious to some people!!) of the midrange control is to make the soundstage sound more forward, and change the perceived height and position of the performance. Relative to position two, you can raise the soundstage by moving to position three (it's like moving your seat forwards in the concert hall!!)

Position two gives you a soundstage perspective of about the middle of the concert hall. Position three is more like the orchestra seats, and position one may be more like the circle seats.

While it is relatively easy to put the Genesis 2 loudspeaker system into your room and system and get a reasonable sound, it is not as easy to perfectly integrate the loudspeakers into your room, and get great music out of it. The time you will take to do this properly will be well worth it for the long-term enjoyment you will derive. This fine-tuning is covered later in this manual.

Servo-Controlled Bass Amplifier Protection

The servo-bass amplifier has numerous protection circuits built in to protect both the amplifier and the woofers. If you over-drive the amplifier, it will self-protect and you will hear clicking or thumping sounds. This is caused by the amplifier limiting current to the woofers (much like the over-rev fuel-cut off in car engines).

If that happens, turn down the volume of your system to protect your hearing and your speakers. The amplifier is designed to be current-limited to 20amps – this is more than enough to supply over 1600W transients to the woofers. However, the servo-system in the G2 is not compression or dynamic limited. Hence, it is possible to play the system too loud, and damage the woofers (and also possibly blow your ribbons).

Please remember that just like a high-powered sports car, the Genesis bass amplifier has huge reserves of power. If you drove a 400hp Ferrari in a 25mph zone and used all 400 horses, you would get into a lot of trouble. The same is true of the bass amplifier on the G2 – the excess of power gives huge dynamics and speed, but you could hurt yourself if you use too much of it at the wrong time and place.

Due to the efficiency of the amplification modules, they deliver and draw current extremely quickly. Even though highly unlikely in a properly wired home, you may find that a very loud bass drum thwack will cause your lights to dim, or the circuit breakers to trip if you do not supply enough power to your system. A possible solution will be to install a dedicated 40amp circuit in your listening room.

Tuning the system

Music is the best way to begin to fine-tune your setup. We suggest that video sources be used only after you have setup the system to properly reproduce music. While we deliver the G2 system after at least a solid week of running-in, further fine-tuning of your system may be necessary after 800 hours or so. As the loudspeaker system breaks in, it will sound better and better.

A comprehensive document with music suggestions is included with this owner's manual, or can be downloaded from the Genesis website at www.genesisloudspeakers.com.

Begin with the bass level

Start with a single vocal (not a soprano) with simple instrumental accompaniment because the sound of the human voice is more easily recognizable than many instruments and is the least complex sound to deal with.

Leave the low pass filter alone for the moment, as it should remain set at 105 Hz, this control will be addressed later. Turn the volume control of the woofer amplifier up or down until the voice sounds correct. Whatever controls you use, turn them up and down one step at a time. It is easy to turn it up or down too much. Take notes so that you can come back to a previous setting.

Concentrate on the mid bass regions (as opposed to the very low bass in your recording) to achieve a natural blend. The voice and the music accompaniment should sound as if it were cut from one cloth, not separate.

If the voice sounds "thin" or does not have enough "chest" to its sound, turn the woofers amplifier's volume up till it does. If you find that turning the volume up creates too much low bass, then it is time to decrease the low pass filter control.

The low-pass control will raise or lower the frequency cutoff point of the woofer (not the crossover frequency between the bass and midrange). Turning the low pass filter up to a higher number will extend the upper bass regions into the midrange without affecting the low bass level. Some rooms may require that you set the low-pass filter to 115Hz or more. Do not be afraid to increase this control to give the sound more body.

Next, set the woofers using more than just a voice. Select some music that you know to have good deep bass. Using the volume control on the servo amplifier's remote control, set the woofers for a natural and powerful bass sound. Use a symphonic piece of music if you can, or use a natural bass instrument like a stand-up bass for your guide. Try to make it sound real. You may have to return to the vocal to make sure you have not gone too far in one direction.

If, at this point, it does not have enough mid bass, turn the low pass number to a higher position or, alternately, position the midrange/ tweeter wings closer together in order to achieve better lower midrange coupling between the main speakers. If it sounds too "fat" turn the low pass control down or adjust the volume. At this point it is suggested to use the low pass filter control until you get to the refinement stage.

Imaging and Soundstage

While imaging and soundstage are controversial subjects (how do you ever know that the soundstage is recorded correctly in the first place??), it is vitally important to our enjoyment of a recorded musical event. The G2 is able to deliver a realistic soundstage only if the recording contains such realism.

If your vocal selection is a well-recorded audiophile CD or LP, the performer should appear to come from between and behind the loudspeakers and be at the appropriate height for a standing person. If it is not, there are several remedies that will address this.

Assuming that the vocal recording is accurate, if the vocalist appears to be larger than life, you should first check the system volume. Is it a volume that would be appropriate for someone actually singing in your room? If there is too much volume the artist will appear too big and the opposite is true for too little volume. If the volume is set correctly and the image is still too big, toe the *woofer* towers in a very slight amount or place them closer together and re-listen. Repeat this process till you have it right. Do not toe in the midrange/tweeter wings – they should be pointing straight ahead.

If the voice is too low in height, turn the midrange control to the next highest position and the image of the voice will move upward. There are many solo vocal recordings where the singer is recorded using a microphone hung above head height. In this case, it is

correct for the system to portray a singer that seems to be singing from a pit in between your loudspeakers.

If you have the speakers only 20% away from the front wall, and you are not getting enough front to back depth (the singer not appearing behind the speaker enough) pull the midrange tweeter panels away from the front wall a little bit at a time. If you do not have them pulled far enough away, you may not have enough front to back depth. If you get the speakers much beyond 1/3 of the way into the room, it is unlikely that pulling them further away is reasonable.

Too much absorption on the wall behind the speakers will also result in less depth in the soundstage. The G2 requires a relatively “live” front wall.

Find the best compromise for your room, your tastes and your space requirements. If the speakers are too far apart you will lose the side image and the image density in the middle of the soundstage will be too diffuse. If the speakers are too close together you will have too small a center stage, and you may find that the edges of the soundstage collapse inwards.

We recommend you begin with six to seven feet apart as measured from tweeter to tweeter. If you are not getting proper focus on the voice, you may angle the midrange panels from 1 to 3 degrees inwards towards your seating position until you have a properly defined center image.

When properly set up very little sound should appear to come directly from the speaker, instead, the sound stage should extend far beyond the left and right edge of the loudspeakers and they should have tremendous front to back depth. When the recording is close miked (when the instrument or performer is very close to the recording microphone) the music may appear to come directly from the loudspeaker. This is normal. Typically, however, the sound should appear to be detached from the loudspeakers.

A simple rule of thumb to follow is that focus will be achieved by placing the speakers closer together or farther apart, and front to back depth can be adjusted by the distance from the front wall and treatment (or lack of) of the front wall. Further, as the system “breaks in”, the depth and width of the soundstage will increase, and so will the “smoothness” of the sound.

Phase Control

We suggested in the beginning of this manual to set the phase to zero degrees.

Now that you have roughed the system in, you may want to experiment with different phase angles. Using the remote control you can adjust the woofer's phase angle five-degree increments.

The changes are subtle and they usually affect the imaging and soundstage. Listen carefully to the positioning (in acoustic space) of the orchestral players as you change the phase control. You may notice small shifts in their apparent relationship to the other members of the orchestra. Do not expect them to actually move**.** Expect minute changes in the soundstage, the apparent width of the stage, your ability to distinguish individual players etc. If you reach a phase shift of 45 degrees you have probably gone too far. Using the recommended connection, the phase shift needed is typically 15 degrees or below.

The other change to listen for is rhythm and timing. Adjusting the phase will subtly change the relationship between the bass and the midrange. When you get the phase perfectly correct, you will find that the timing between the vocalist and the double bass “snaps” in place, and your foot will start to tap, and you will sway to the music. This is basically what we term “PRaT” – or Pace, Rhythm and Timing.

Further adjustments

With the woofer towers positioned in the recommended placement behind and outside the midrange tweeter panels, low bass in the room should not be a problem. Should you have too much bass, simply turn the volume down on the remote control. Too little, and the opposite will apply.

In general, the low-pass filter and the bass volume goes in opposite directions. With higher bass volume, a lower frequency for the low-pass is needed. And with lower bass volume, a higher frequency is needed for the low-pass.

In some problematic rooms a resonance may develop at one or two frequencies that is unnatural to the music. By moving the woofer towers closer to the rear or side wall or farther from the rear or side wall, the resonance may be reduced at the listener’s position. There are no absolute rules concerning problematic

rooms, so do not be afraid to experiment with best woofer placement.

Ultimately, it is all about balance. You have a number of controls at hand with which to adjust the bass response, the low-pass filter frequency and woofer volume. You can also move the speakers closer together (for better coupling), and also move the woofer towers closer together, or further apart, or even move them closer to a corner of the room for more bass.

One trick that we have found to always work is NOT to have the woofer towers placed symmetrically in the listening room. When you have the woofers equidistant to the walls, there will be wall-loading which will increase the volume of some frequencies in the bass and mid-bass. However, for proper soundstage development, the midrange/tweeter wings should be symmetric in the room.

Place the left and right woofer towers equidistant from the midrange towers. However, have one woofer tower further to the side of one midrange tower, and have the other woofer tower further to the back of the other midrange tower. It may look strange, but the principle here is to position the midrange/tweeter towers for the best imaging and soundstage, and the woofer towers for the smoothest and best bass and ambience retrieval.

The Refinement stage

After following the rough setup guide above, you may not be completely satisfied with the results. We share with you here some of our observations in setting up these loudspeakers.

Make One Change At A Time

One rule of thumb you should always keep in mind. Make one change at a time! Do not, for instance, change position of the speakers and make an adjustment to the amplifier all at once. Make each of these changes separately and note the difference - by listening - with each adjustment, then make the next change.

Each adjustment, in positioning, and in control adjustment will result in a subtle sonic change. Even when you are moving the midrange/tweeter panels further apart, or closer together, move

one panel, listen, and then move the other panel. You may also find an asymmetric placement in-room more accurate and pleasing.

Defining the Soundstage

A common problem we find with many set-ups is a tendency to separate the speakers too far from each other. This gives an unnaturally stretched soundstage between the two speakers, and creates problems with focus. The key problem is a lack of soundstage information beyond the left and right sides of the speakers.

If you find that the sound is not spacious enough or you are not getting enough front to back depth, pull the speaker away from the front wall. This is typically preferable to separating the two speakers too far, and will almost always give you better depth and soundstage information. A word of caution though: if you move the speakers too far from the front wall you may lose the focus of the image.

A problem with the soundstage could also be caused by the recording. Try another recording if you cannot achieve what you are trying to do.

Appropriate Mid-bass/Low-bass Balance

Yet another problem is a lack of mid bass energy. In order for the appropriate amount of mid bass energy to be present, the speakers should be close enough together to achieve proper "coupling" of the midrange ribbon driver. Coupling is desirable in the lower frequencies from the mid-bass on down. This simply means that the left and right drivers "work together" as opposed to working separately.

If you find there isn't enough deep bass, your first remedy is the volume control on the woofer amplifier. This has several limitations. First, turned up too high, you may get some distortion on very low frequencies or you may drive the amplifier into protection. Because of the high efficiency of the amplifier, it is unlikely to overheat.

Push the woofer towers back towards the rear- or side- wall. This will increase the coupling of the woofers to the room. Do this

procedure in small increments (approximately half an inch at a time) and return often to the recordings you have used to adjust the front to back depth and soundstage properties of your system. It is easy, yet unproductive, to go too far in one direction (and if you move the woofer towers too far from the wall you may lose low bass extension and if they are too near the walls, you will create a boominess in the room).

Secondly, you may make the mid bass produced by the top of the woofer out of proportion with the mid bass produced by the bottom of the midrange ribbon. This would tend to sound bloated or thick in the mid bass regions.

Another good rule of thumb is to first set the volume control of the woofer towers for proper midbass rather than low bass. The theory is that if the midbass is correct, then the low bass should be very close to correct. If the midbass is proper and the low bass is still not right, here are some other suggestions.

A good balance between proper low bass extension and a deep and spacious soundstage needs to be established to optimize your new speaker's performance. This is because large space ambience information is largely in the lowest frequencies. The wavelength of a 20Hz soundwave is approximately 60 feet (20m), so if you want to recreate the soundspace of a cathedral, you will need to go lower than even 20Hz.

In order to achieve what the speaker is capable of we suggest you focus your efforts on a proper balance of soundstage elements that includes information beyond the left and right sides of the speakers, front to back depth well behind the speaker, excellent focus of instruments and voices with proper vertical information and mid bass fill.

A Genesis loudspeaker system correctly set up, can and should provide a soundstage that will “melt the walls” and with pinpoint focus, the speakers disappearing completely on a recording containing such information.

Room Treatment

No room is perfect. To optimize your sonic presentation it may be helpful to treat your room. Here are some guidelines:

1. **Front walls**. This loudspeaker is a dipole and therefore there is sound coming from both the front and the back of the speaker. How the front wall is treated or not treated is important. Generally speaking, the Genesis loudspeakers prefer a live front wall.

   By these terms we mean the amount of reflection of sound. A typical wall of glass or, brick, cement or drywall material is a reflective surface. A heavily curtained or sound proofed wall would be considered a "dead wall" or a non-reflective wall. A normal thin curtain across a window causes only a small amount of absorption.

2. **Sidewalls**. Because the speaker is a dipole it is less sensitive to the sidewalls. However, as a rule of thumb, it is a good idea to keep the speaker as far away from the sidewalls as is practical. With this in mind, it may be helpful to add some damping material or diffuser panels to the point of first reflection. This is a point on the sidewalls between the listener and the loudspeaker. It is where the sound from the loudspeaker first hits the sidewall, then bounces to the listener. This reflection is undesirable because it is slightly delayed from the original sound. This point on the sidewall can be easily determined with the help of a second person and a mirror.

   Sitting in your listening position have an assistant hold a mirror up on the sidewall. Move the mirror until you can see the tweeter. This is the point of first reflection. A diffuser (see your dealer), an absorptive material or even a CD rack can help break up this point of first reflection.

3. **Rear wall.** In many cases it will be unnecessary to do anything with the wall behind your listening position. However, you may want to experiment with diffusers or absorbers behind you for best sound. Absorption behind the listener is usually beneficial.

Mastering the Refinements of the system

Fine tuning an audio system is an art that will take time and patience. It can be one of the more rewarding learning

experiences you will have in the pursuit of music and its enjoyment.

The Genesis Loudspeaker Set-up Process can be used for finely-tuned set-up of the G2.2's. The white paper that describes this process is attached as an appendix to this manual, and the latest version is available on the Genesis website.

One of the best pieces of advice we can offer is that you take advantage of the ear's ability to identify similarities in sound. This ability is useful in fine tuning your system because if every recording you listen to has a similarity of sound (too much or too little of a certain frequency for instance) then you can be fairly certain that you have yet to perfect your set-up. Keep at it and remember to enjoy your music as you work on perfecting your set-up.

During the design stage of Genesis loudspeakers, we rely on hundreds and hundreds of hours of critical listening. There are changes we can make to the crossover that we can measure, but can hardly hear the difference. And then there are the changes that we make that we can easily hear, but cannot measure. It is an artform as much as a science! Setting up the audio system is the same.

If you have any questions, feel free to contact us at Genesis. Our website is the first place that you should look to for more information, but you are welcome to either send us an email, or just give us a call!

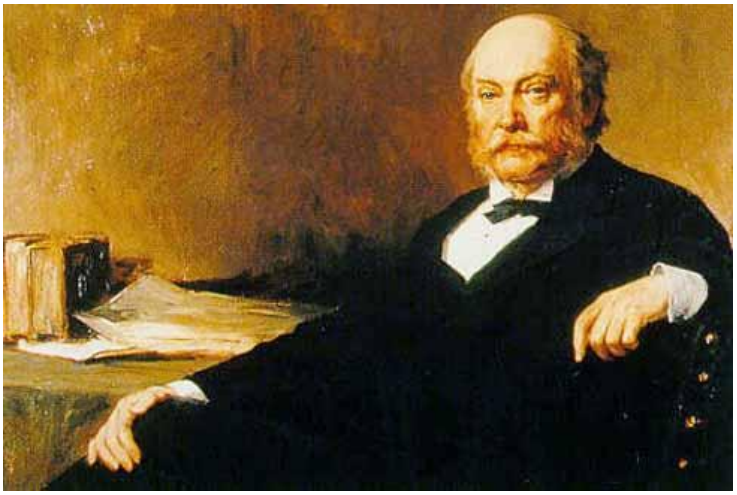
The Technology

The Genesis Quartet loudspeaker comprises four “towers”: two midrange/tweeter wings and two woofer columns. It also comes with two servo-controlled bass amplifier systems. Each tower is over 6 feet tall (183cm), and the cabinet is made of a vibration damping and resonance-control carbon fiber composite sandwich.

The rationale for the four-tower system separating the woofers from the midrange/tweeters is to allow the placement of the high-frequency wings to optimize imaging and soundstage, and the placement of the woofer towers to optimize in-room bass response.

Design Philosophy

Nothing has changed in theoretical acoustics since Lord Rayleigh’s original book on acoustics published in 1877. There are still only two proper ways for a transducer to propagate sound in a room: a point source and a line source. Anything else, or everything in between, is a compromise.


John William Strutt Lord Rayleigh (1842 – 1919)

In order for all frequencies of sound from the loudspeaker to reach the listener at exactly the same time, a coherent wave front is important - not just “time-alignment” of drivers. The ideal is either an infinitely small pulsating point or a pulsating line with a size on the order of the room dimension.

Obviously, a line-source is much easier to mechanize than the ideal point source. The line-source (if large enough), can approximate the ideal, and in doing so, provide sufficient radiating area for dynamically and spatially realistic sound reproduction.

The Genesis quartet is a line-source that is 4 feet long (nearly the half the room’s entire height). Very importantly, the line source has no vertical dispersion at any frequency. Hence, there is no sound

bouncing from either the floor or the ceiling. No deleterious interference from these surfaces is created (as in virtually all other kinds of speakers).

A second great advantage of the line source is that the vertical spectral content of music is virtually the same throughout the length of the line source. Hence, the seating height does not matter with this speaker; unlike point source speakers where it is important for the ears to be aligned in relationship with the tweeter.

The third important advantage of a line source is that it attenuates at –3dB with a doubling of distance whereas a point source attenuates at –6dB with a doubling of distance.

For example, with a sensitivity of 91dB/watt at 1m, the Genesis 2 is about average for large loudspeakers. At 2m, the G2 line source can deliver 89dB/watt, at 4m 86dB/watt, and at 8m 83dB/watt. For the equivalent point source loudspeaker, it will be 85dB/watt at 2m, 79dB/watt at 4m, and 73dB/watt at 8m.

Hence, for a listening distance of 5m (about 15ft) the line source will appear to be more than twice as loud as a point source loudspeaker. This is the great advantage that a line source loudspeaker will have over a point source loudspeaker in a large room.

As a result the change in loudness of the line source is much less over a small change in distance. Hence, it results in a much larger sweet spot as small side-to-side changes in seating position result in less of a sonic change than with the point source loudspeaker.

The Genesis 2 is also a dipole radiator. The midrange and tweeter drivers are mounted on a rigid acrylic panel with no enclosure. This has two advantages: firstly, it eliminates any enclosure or boxy colorations caused by cabinet vibrations or resonance.

Secondly, the dipole creates a cardioid radiation pattern (like a figure-eight), which has its maximum output at the listening position and behind the speaker itself, and minimum output to the sides in the plane of the loudspeakers. This very effectively minimizes the bounce from the sidewalls.

Hence, in conjunction with the line source, the G2 has no first reflection from the floor, ceiling or sidewalls. The net result is that

there are far fewer detail-robbing room reflections from the room than other types of loudspeakers. With fewer spurious reflections to confuse your hearing, the program source emerges more clearly. Imaging is deeper, yet more focused.

This results in a loudspeaker system that is virtually room-independent. Also, because there are no phase and frequency distorting reflections created, one can be transported into the audience of the actual concert hall where the music was recorded.

The Genesis Ribbon Tweeter

Reviewers in the Audiophile press have often remarked that the Genesis circular ribbon tweeter is the world's best. It is a one inch circular planar ribbon design crafted from an extremely thin membrane of Kapton with a photo-etched aluminium "voice coil" that is a mere 0.0005 inch thick. The entire radiating structure has less mass than the air in front of it! That is why it will accurately reproduce frequencies to 40 kHz.

The result of this design is a driver that has a rapid and uniform response to high frequencies, and has the speed of the best ribbon/electrostatic designs without the high distortion and poor dispersion that is typically associated with them.

The G2 uses twelve of these tweeters configured as a vertical line source. Because the output is distributed over many drivers, each works at very low-stress. This dramatically lowers the distortions in the high frequencies. In addition, there are three rear-firing tweeters per channel with their own crossover out of phase to the front tweeters creating a dipole.

Genesis 1.2m midrange ribbon

We sometimes say that the midrange is a window into the mind of a composer or a singer. And indeed, the midrange is where the "magic" is in a well-recorded musical event. This is why the G2 loudspeaker system uses a single midrange ribbon per channel (not a pseudo-line array of individual midranges) as a dipolar line-source to reproduce these critical frequencies.

The midrange ribbon used in the G2 is designed and manufactured by Genesis. The ribbon itself is made of a very thin layer of aluminium laminated to a polycarbonate substrate that is less than

0.001inch thick. The ribbon is then suspended in the magnetic field created by over 24 feet of barium ferrite magnets.

This results in a perfect line-source ribbon generating a continuous and perfectly coupled wave front. The benefit of this to the listener is a wide and even horizontal dispersion yielding a large and highly stable sweet spot.

As a line-source dipole, the midrange ribbon has a vertical dispersion pattern identical to that of the line array of tweeters. Thus further insulating the listener from the room's negative effects, and enhancing the sense of spaciousness and depth.

The Servo-bass Advantage

Very few loudspeakers use servo drive, either because most designers think that it is too difficult to design, too expensive, or because of the extraordinary demands a servo system makes on the amplifier and the transducer. The history of the Genesis servo-system started from the first introduced in the legendary Infinity Servo Statik One in 1968(!) – so we know how to design and build servo systems. The technology has been constantly updated and refined over nearly 50 years.

The concept of our servo bass system is an easy one to understand: It employs an accelerometer as a sensor to constantly monitor the movement of the woofer cone and continuously compares it to the input signal. This comparison circuit instantly identifies any deviation from the input and applies a corrective signal to compensate for any deviation, resulting in the virtual elimination of the inherent distortion of the woofer.

As an example, when you have a high-impact, low-bass signal that starts and stops suddenly (for example a tympani), the inertia of the woofer cone makes it slow to start moving, and then after it has started moving, the momentum of the cone makes it continue to move after the signal has stopped. The sonic result is softness, overhang, and bloat in the bass. This results in a perceived lack of tautness and definition, and a blurring of dynamic impact.

With the servo system, the circuit senses that the woofer is not moving as fast as it should, and it instantaneously applies much more current to make it move faster. When the signal stops, it senses that the woofer is continuing to move when it shouldn't be

moving and applies a counter-signal to stop the woofer faster and more effectively than an open loop woofer could possibly respond.

Thus, the servo-drive reduces distortion and improves transient response by making the woofer appear to be massless. Typical non-servo woofer systems have distortion levels that exceed 10% at even moderate levels. The Genesis servo bass system reduces this distortion to below one percent at almost any output level. The system also drives the woofer to constant acceleration, which makes the frequency response of the woofer anechoically flat to the lowest frequencies.

The Woofer Tower

The transducer used in a servo system must be strong enough to withstand the high current approach of the servo, and yet delicate and light enough to react extremely quickly. The G2 features a total of four front- and four rear-firing 8-inch woofers per channel – a total of sixteen woofers in the system.

While the servo system is able to ensure that the driver works linearly as a perfect piston, it is unable to correct for distortion caused by cone wobble, bending, and break-up. Hence, the drivers were designed to minimize these non-linear distortions.

The woofers are a uniquely designed metal cone driver made for the Genesis servo system. Made with a cone of solid aluminium, the suspension and voicecoil have been maximized for long distortion-free excursion so as to increase dynamic range. Our aluminium cones are a magnitude stiffer than any plastic cone on the market, and virtually eliminate the problems caused by cone bending and break-up.

The lowest break-up mode in the 8-inch woofer (where there can be any chance of distortion at all) is at 6,000Hz – far above the 16Hz to 120Hz frequency range that these drivers operate at. Therefore, the driver is a perfect piston within the frequencies used. Thus, extremely low cone break-up distortion is inherent in the driver that is designed for the Genesis servo-bass system.

Unlike the midrange and the tweeters, the front and rear woofers operate in phase as a bipolar arrangement in which all sixteen operate in unison to control the air mass of the entire room. This means that the surface area of the eight cones and the large

enclosure all work together in unison to produce bass output that descends evenly to below your hearing limits.

Servo-controlled Bass Amplifier

One problem, however, of metal cones, is that of greater mass – even ones as light as the ones used by Genesis. To over come this, we had to build an amplification system of great power, and high damping factor. The servo-system also places extraordinary demands on the amplifier because the system uses enormous amounts of current to make the woofer follow the input signal. This means that the amplifier used must efficiently deliver extraordinarily large amounts of clean power into low impedances.

The servo-controlled bass amplifier was designed as a holistic system of woofers, integrated connecting cables, amplifiers, servo-control and remote controlled crossover circuitry. Two separate two-channel Servo-Controlled Amplifiers are used for the left and right woofer towers. Each channel drives four woofers in parallel with a total of four channels of amplification.

Specially designed and tuned Dynamic Power Delivery System (DPDS) power supplies are used to deliver balanced dynamics which are critical to bass accuracy. This improves the power factor of the power supply in delivering the bass frequencies, resulting in “floorshakingly musical” bass to power the servo woofers.

With the Quartet, left and right SCAmps separately control left and right woofer towers. This makes it easier to fine-tune the system into rooms that are asymmetric in the bass frequencies. It also allows for much finer bass control to tame room modes.

A further advantage to separating the amplifier modules of the left and right woofer towers is that if you are lucky enough to have multiple 20amp circuits in your listening room, you can power each woofer tower from a separate circuit. This allows for even better transient bass dynamics.

One side benefit of this powered woofer system is that almost “any” sized amplifier can be used to drive the mid/tweeter section of the Genesis 2. No longer must one choose between having an amplifier with enough power to drive the woofers, and a smaller amplifier having better spatial and tonal characters. Nevertheless,

we do recommend no less than 100 watts as a minimum for the midrange/tweeter sections.

The Acoustic Suspension

The suspension for each loudspeaker tower comprises three elements:

1) The neoprene vibration absorbers are tuned to isolate and decouple the loudspeaker cabinet for optimal imaging and bass response no matter what surface the loudspeaker sits on.

2) The skeletal frame acts as a tuned absorber. Made of an inch of solid acrylic, no two parts of the frame will resonate at the same frequencies. This ensures that all midrange frequencies are “dumped” below the base of the cabinet so that floor-borne vibrations do not affect the imaging and soundstage of the loudspeaker.

3) The spikes rigidly couple the suspension system to the floor. If you have hardwood floors and do not want to make holes in the wood, use a copper penny (instead of expensive “spike cups”) under the spike.

   A pin-point suspension system is designed to pass ***all*** frequencies. Using a spike cup under the spike will defeat this system. The spike passes all frequencies to the spike cup, and then depending on the diameter of the spike cup, it passes only frequencies below a particular frequency.

   A copper penny gets deformed – the spike making an indentation where it meets the penny, and a little “nipple” on the other side. This still performs the same function as a pin-point suspension system, but at the same time protects your hardwood floor.

Nevertheless, despite the acoustic suspension, if you have a extremely light and resonant floorboards, the acoustic suspension may still transmit sufficient vibrations to make your floor resonate and hence muddy up the bass and the imaging. In that case, it may be necessary to place heavy marble, slate, or granite slabs (at least 200lbs per slab) under the speakers. This slab serves as a foundation on which the acoustic suspension will work.

Specifications

- Dimensions:
  - Mid/Tweeter Wing: H 75” x W 22” x D 16”
  - Woofer Tower: H 75” x W 15” x D 26”
  - SCAmp: H 11” x W 19.5” x D14”
  - Power Supply: H 5” x W 9” x D 9”
- Weight:
  - Mid/Tweeter Wing: 175 lbs (80kg) each
  - Woofer Tower: 270 lbs (123kg) each
  - Servo-Bass Amplifier: 150 lbs (68kg) total
- Frequency Response: 16Hz to 40kHz, +/- 3dB
- Controls (on amplifier): Bass gain, phase, low-pass, high-pass
- Controls (on speaker): Rear Tweeters (+/- 1.5 dB)
Midrange (+/- 0.75 dB)
- Input Impedance: 4 ohms (nominal)
- Sensitivity: 91 dB/watt @ 1 meter
- Amplifier Power Rating: 4 channels @800 watts each
Power Supply 1.8kVA x 2
- Finish: High Gloss Black Acrylic
Carbon Fiber/Kevlar
Rosewood
“Any” finish on request