

G Four

GENESIS
ADVANCED TECHNOLOGIES

Owners Manual and Set-up Guide

The Genesis 4 Loudspeaker

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A Message from Genesis

Thank you for your purchase of one of the finest loudspeakers in the world and congratulations for making the great decision to pick the Genesis 4. The G4s were developed from the ground-up, but based on technologies that have evolved over the past 40 years in constant production.

The G4 loudspeaker is designed to reproduce music (and film) at live listening levels with virtually no restrictions on dynamic range, frequency response, or imaging capabilities in a medium-sized living room. This is *absolute fidelity*® the ability to reproduce the musical event faithfully, as was intended by the performer or filmmaker.

However, the G4 is *not* meant to reproduce music at ear-splitting levels. If you are looking for just **LOUD**, this is the wrong loudspeaker. It will produce music with nuance, emotion and detail; movie dialog will be the clearest you have ever heard. We emphasize quality over quantity.... *always*.

This is the loudspeaker for a family to enjoy. While other loudspeakers are designed to reproduce music perfectly for one solitary listener at one precisely located sweet-spot, the G4 is designed to deliver music to a much larger audience. In a typical listening room, the listening sweet-spot extends in width to a loveseat and even a 4-seater couch.

Please read this Owners Manual and Set-up Guide thoroughly to get the maximum enjoyment out of your purchase. Also, please check back at 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 newsletter.

Please write the purchase details of your Genesis 4 loudspeaker 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.

Remember – the warranty on your Genesis loudspeakers is
only for 90 days unless the Extended Registration Card
is sent directly to Genesis.

Set-up Guide

Now that you have your new Genesis 4 loudspeakers, we realize that you can't wait to hook it up and start the music! However, we want you to set it up correctly to derive the greatest enjoyment from your purchase.

So, please read this set up guide (even if your dealer is setting it up for you!) before you proceed.

Planning the Placement

Although the G4 is designed for ease of placement foremost, there should still be some considerations to be made. You will not need a very large room, but at a minimum the room should be at least 12 feet (4m) wide where the speakers will be placed.

You should have at least 4 inches (10cm) of space behind the speakers and at least 8 inches (20cm) on either side of the speaker. The listening position should be a minimum of 9 feet (about 3m) from the front of the speaker to allow for proper integration of the drivers.

In a typical placement, the two speakers will be about seven feet to nine feet (2m to 2.7m) apart measured from center to center. The speakers fire straight ahead with no toe-in.

As the room will greatly influence the sound of your system, fine-tuning adjustments will be necessary. Every room will be different, with doorways, furniture, closets, wall construction and covering, etc. all making a significant impact on the sound. Luckily, the G4 provides sufficient adjustability to conform to almost any acoustic environment!

Unpacking and Positioning

The Genesis 4 loudspeaker will arrive in a two large wooden shipping crates. As the speaker weighs over 100 lbs each (more with the shipping crates), we suggest that you get some help. *We are **not** liable for damage (to either the speakers or your backs!) during unpacking and setting up.*

The speaker ships standing up and slides out of the crate. So, we suggest that you position the crates approximately at the final position where you want the loudspeaker to be. The front and top

of the crate form a lid that is removed and then the speaker can be easily pulled out.

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

The G4s incorporate an “acoustic suspension” that is designed to ensure that they will work regardless of the type of surface they are placed on. The speakers are de-coupled from the HMWA suspension frame, and the suspension frame is coupled to the floor using adjustable spikes. The system works best when the spikes barely emerge from the bottom of the suspension frame.

If the speaker is placed on a hardwood floor, a copper penny may be used under the spike to protect the finish of the floor. Do not use large, solid “spike cups” as these will not allow the spike to properly couple the suspension frame to the floor.

If a very thick carpet covers the floor, then the longer spike should be used.

Loudspeaker Connections

Once you have the G4s close to where you think they will ultimately be, connect the loudspeaker to your power amplifier using a pair of high quality loudspeaker cables (not supplied) to the 5-way binding posts. We have designed a “*Loudspeaker Interface Cable*” specifically for Genesis loudspeakers for this critical job. More information can be found from the Genesis website or from your dealer. However, any well-designed loudspeaker cable can be used.

A power cord is also needed to power the built-in servo-bass amplifier. A “starter cord” is provided with the loudspeaker, however the bass will improve with a higher-quality power cord. As the G4s contains a 500W Class D amplifier module per side, make sure that any power cord you use is up to this job. An “*Amplifier Power Interface Cable*” is also available from Genesis for this.

Before you plug in the power cord, make sure that the voltage switch is correctly set for your country.

Loudspeaker Controls

You will notice four control knobs on the back of the G4. These are labelled “BASS GAIN”, “LOW PASS”, “SOFT/BRIGHT” and “TIGHT/WARM”.



Set them initially pointing straight up – the 12 o'clock position. This is the nominal flat position and will work for the majority of installations.

For a minimum-sized room, the bass gain should be set at 3 and the low pass should be 115Hz. In general, these two controls are mirror-imaged. When you turn the bass gain to the left, the low pass should be turned an equivalent amount to the right.

Servo-Controlled Bass Amplifier Protection

The servo-bass amplifier has numerous protection circuits built in to protect both the amplifier and the woofers. The amplifier is designed to be current-limited to 20amps – this is more than enough to supply over 1,200W transients to the pair of 10” woofers. However, the servo-system in the G4 is not compression or dynamic limited. Hence, it is possible to play the system too loud, and damage the woofers (and also possibly your ears).

If you over-drive the amplifier, it will self-protect and you will hear clicking or snapping 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, although it is very efficient, also has a thermal cut-off to protect against over-heating. Should the bass amplifiers turn off and the back plate is very hot to the touch, turn the system off until it cools down again. Additional ventilation might be needed at the back of the speakers should this happen too often.

A Word about Finish

The G4 is finished to a high degree of gloss. Use only a damp cloth to wipe the speakers down. In particular, DO NOT use paper towels to wipe the surface of your loudspeakers. Paper fibres are extremely abrasive and can introduce fine scratches on the surface that will “cloud” the finish.

Treat the cabinet as you would a fine piece of furniture. If polish is used, please avoid getting any on the drivers.

Initial Set-up

Music is the best way to begin to setup your speakers. While we deliver the G4 after at least 24 hours of running-in, further fine-tuning of your system may be necessary after 400 hours or so. As the loudspeaker system breaks in, it will sound better and better.

A comprehensive Genesis Loudspeaker Set-up Procedure with music suggestions is included at the back of this owner's manual, or the latest version can be downloaded from the Genesis website at www.genesisloudspeakers.com. This section gets you going so that you can begin to enjoy your new speakers. Taking the time to properly set-up the speakers will guarantee you long term enjoyment.

Sound Controls

The knob marked **SOFT/BRIGHT** controls the output of the front tweeter. Start with this control at the 12 o'clock position. Turning the control to the left (counter-clockwise) will result in a softer sound, and turning to the right (clockwise) will result in a brighter sound.

The **TIGHT/WARM** control is a five-position switch used to adjust the 'warmth' frequencies around 150Hz. Start with the control at position three (the 12 o'clock position). Position one and two will sound leaner while position four and five will sound warmer.

There is no "correct" setting as it will depend on the room and also listener preference.

Begin with Bass Tuning

At Genesis, we believe that bass is the foundation of music, and it is important to get the bass right before we even start to "dial" in the rest of the frequency range. Unfortunately, bass is also the most difficult to get right because it is affected by how close the speaker is to the nearest wall, the size of the room, where in the room they are positioned and even the furnishings. A very large, soft leather-covered sofa can absorb up to 6dB in the bass frequencies. If you can feel the sofa vibrating under your bottom, you can be sure that it is also absorbing those frequencies.

Also, the *height mode* of the room is usually the most problematic frequency. This is because the height of the room from ceiling to

floor (anywhere from 8 feet to 12 feet) corresponds to the wavelength of sound from about 92Hz to about 140Hz.

A very easy way to very quickly set-up the bass is to use a sound pressure meter. Even a smart phone with a sound pressure app will work as we need to set relative level. We recommend using test tones at about 300Hz and 60hz to rough the system in.

Play the 300Hz tone, and measure the sound pressure level at the listening position. Then, play the 60Hz tone and adjust the **BASS GAIN** until the sound pressure level matches the 300Hz tone. Next, adjust the **LOW PASS** setting to mirror-image the **BASS GAIN**.

If, at this point, it does not have enough mid bass (male singers sound too skinny), turn the low pass up slightly or alternately position the speakers closer together in order to achieve better lower midrange coupling between the main speakers. If he sounds too fat turn the low pass control down slightly or adjust the gain down.

When you have had a bit more time to know your speakers better, you will be able tailor the sound of the G4s to your preferences. In the meantime, you should already have a flat in-room frequency response after this step.

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 G4 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 (assuming that he or she is not very close miked) should appear to come from between and behind the loudspeakers and be at the appropriate height and size for a standing person. If it is not, there are several remedies that will address this.

If the voice is shifted to one side (left or right), move the speaker which the voice is apparently closer to slightly (about ¼" or 6mm) backwards until the voice centers. You can also move the speaker which is apparently further from the voice forwards the same amount.

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 speakers in a very slight amount or place them closer together and re-listen. Repeat this process till you have it right. The total toe-in should be no more than about 5 deg.

If the voice is too low in height, tilt the BACK of the speaker up using the adjustable spikes. 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 too close 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 G4 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 somewhere between six to seven feet apart as measured from center to center. And then move the speakers apart small increments at a time as you tune the system. They seldom work well closer than six feet apart or much more than nine feet apart.

If you are not getting proper focus of the soundstage, you may angle the speakers inwards 1 to 3 degrees (but no more) towards your seating position until you have a properly defined soundstage

image. The usual reason that you will want to do this is that you have a “W” soundstage. The sound images are most dense (or focussed) in the middle, and then dense around where the speakers are, but less dense between the center and the speaker.

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 or projected forward of the loudspeakers. 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.

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) or further apart.

The Refinement stage

After following the rough setup guide above, live with the results for a while before attempting to refine further – give the speakers a chance to run in. Then, follow the Genesis Loudspeaker Set-Up process to dial the speakers in.

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 bass 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 as the furniture and the room may be asymmetric in the first place.

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. The recordings in the Genesis Loudspeaker Set-up Procedure have all been carefully chosen, so those will be the fall-back recordings to use for system set-up.

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 left and right mid-bass coupler. 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 **BASS GAIN** on the woofers. 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.

You may need to trade-off soundstage depth for deep bass by pushing speakers back towards the front 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 as you will create a boominess in the sound.

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 mid-bass coupler. This would tend to sound bloated or thick in the mid bass regions.

Another good rule of thumb is to set the **BASS GAIN** 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 52 feet (16m), 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.

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 art form 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 4 loudspeaker integrates a ribbon tweeter and a ribbon midrange with a pair of dynamic mid-bass couplers and a pair of servo-controlled woofers. Add the rear tweeter with its own crossover, and you have a five-way loudspeaker that is a marvel in technology. The cabinet structure is designed to *manage* vibrations and resonance instead of using brute-force methods of tremendous mass.

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 G4 is a point-source dipole loudspeaker, and hence, the challenge during the design was to approximate an infinitesimally small pulsating point from a 4-foot tall loudspeaker. We have achieved this using carefully calculated crossover slopes and our own crossover topology.

The G4 is also a dipole radiator with the front and rear tweeters, midrange and mid-bass couplers are open front and back and mounted on a light, resonance-managed baffle 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 resulting in fewer detail-robbing room reflections 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.

The Genesis Ring-Radiator Ribbon Tweeter

Reviewers in the audiophile press have often remarked that the Genesis ribbon (technically, it is a planar-magnetic) tweeter is the world's best. It is a one inch ring-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 is a 4mm wide ring that has less mass than the air in front of it! That is why it will accurately reproduce frequencies with true point-source dispersion to 40 kHz. (As comparison, a 1" diameter dome will only have true point-source dispersion to about 13kHz.)



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 large, squarish ribbon tweeters. The G4 also use a rear-firing tweeter with its own independent crossover out of phase to the front tweeter creating a dipole.

6-inch Ribbon Midrange

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 G4 uses a ribbon (technically also a planar-magnetic) for a midrange.

The midrange ribbon used in the G4 is manufactured to Genesis' exacting specifications. The ribbon itself is made of a very thin layer

of aluminium laminated to a substrate of mylar that is 0.001inch thick. The ribbon is then suspended in the magnetic field created by 5 feet of neodymium magnets.

This result in a near perfect ribbon midrange with the same wide and even radiation characteristics as the Genesis tweeter.

Titanium Mid-Bass Coupler

The G4 uses a pair of Genesis-designed proprietary 5.5 inch solid titanium-coned transducers to cover this critical frequency spectrum between the midrange and the servo-bass woofers. Manufactured out of one of the lightest and stiffest materials known, this low mass cone driver with nearly instantaneous transient response, enables the G4 to sound lifelike and effortless.

The stiffness of the titanium cone allows it to retain its low distortion even on long throw application needed in delivering lower frequencies. Hence, the solid titanium cone allowed Genesis to develop a driver that is exemplary in the midrange, as well as deliver the heft and impact of a woofer to “bridge the gap”.

Proprietary Crossover Topology

We believe that the crossover is the brain of the loudspeaker. In order to manage and maximize the performance of the extensive complement of transducers used in Genesis loudspeakers, we spend more money on the crossover than many other manufacturers put in their entire speaker.

Each crossover is designed by computer modeling plus years of knowledge and experience. The inductors are custom designed and made for Genesis with OFC copper windings. The special film&foil capacitors used are also custom made for Genesis, using high-quality polypropylene-film and tin-foil. The crossover of each G4 weighs over 11 pounds (5kg)!

More importantly, the crossovers are designed with many, many hours of music listening and constant refining, tuning and tweaking of the circuit. Out of this comes the “magic” that is a Genesis-designed loudspeaker system

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 the past 40 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 Servo-controlled Woofers

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 G4 features two side-firing 10-inch woofers per channel.

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.

A pair of matched woofers are horizontally opposed and in phase with one another, with the vibrations generated by one woofer cancelling out the vibrations generated by the other woofer – further reducing any image-distorting vibrations in the loudspeaker.

Servo-controlled Bass Amplifier

The servo-controlled bass is a holistic system of woofers, acceleration sensors, servo-feedback circuits, crossover circuitry and amplifiers. The system places extraordinary demands on the amplifier because the system uses enormous amounts of current to make the woofer follow the input signal. In order to deliver this current, a Class D amplifier module is used with specially designed and tuned Dynamic Power Delivery System (DPDS) power supplies.

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 4. 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 midbass/tweeter section due to the need to drive a pair of dynamic 5.5-inch titanium mid-bass couplers.

The Acoustic Suspension

The suspension for each loudspeaker 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 HMWA (high molecular weight cast 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: H 50" x W 18" x D 22"
- Weight: 120 lbs (55kg) each
- Frequency Response: 20Hz to 40kHz, +/- 3dB
- Controls: Soft/Bright (+/- 4.5 dB)
Warm/Tight (+/- 4.5 dB)
Bass Gain (1 - 11)
Low Pass (71Hz to 135Hz)
- Input Impedance: 4 ohms (nominal)
- Sensitivity: 89 dB/watt @ 1 meter
- Amplifier Power Rating: 500W Class D
- Inputs: 5-way binding posts
- Finish: Custom