Genesis 1.2 Loudspeaker System Update Fact Sheet

Contents

Changes in the Model

The new Genesis 1.2 is the latest iteration of the flagship loudspeaker system from Genesis. The G1 is already often referred to by dealers and owners as “the best loudspeaker in the world”, so how can “the best” be improved upon?

Experience is something you gain five minutes after you needed it most. In the past 10 years of production and ownership of the G1.1, our dealers and we have learned a lot, and most of this learning experience has been incorporated into the G1.2. What did not need to change have been left well alone, but the changes made have resulted in a much better loudspeaker system.

This document lists the changes in the G1 as well as gives a brief history of the Genesis flagship product.

Structural Changes

Major changes have been made in the structure of both the midrange/tweeter wings as well as the woofer towers. New materials and construction contribute to the vast improvement in the sound of the system.

1) The midrange/tweeter wings are now hot-pressed in shape of individual thin sheets of Baltic birch, not bent plywood. Baltic birch was used as it sounds the best – due to the lightness, it stores the least vibration energy. Each sheet is individually glued to build-up the wing and then pressed to shape and cured before the next sheet is glued on. As such, there is no internal tension or air pockets created. After the wings are fabricated (which takes 2 weeks per wing), they are covered in genuine rosewood veneer.

2) The center section holding the midrange and tweeters is a solid 1” piece using a new high-density version of Corian. This shifts any resonance upwards in frequency, where there is much less power and hence the resonance is less likely to be excited.

3) The old Rosewood wings had a plywood “tongue” that fit into the base foundation. Over time, that tongue had a potential to be deformed and this result in the wings rocking with resulting variation in soundstage. A new CNC-machined Corian “tongue” on the Rosewood wings now fits precisely into a CNC-machined slot in the new foundation base. A Corian “end cap” on the wing also confers additional stiffening, matching the center Corian panel.

4) The new foundation base of the midrange/tweeter wings and the woofer towers are now made of solid Corian. This results in a base that is 10% heavier than the concrete foam moulded base previously used, and is much more inert. The bases are also machined on a CNC machine, resulting in

much tighter tolerances and a better and more precise fit for the wings and center panel.

5) The rear tweeter Corian brackets are now mounted on ½" solid cast acrylic rod stand-offs. Acrylic serves to absorb and dissipate vibrations in the mid to high frequencies. Hence, the acrylic rod stand-offs resist ringing much better than solid aluminium to eliminate the very slight metallic distortion in the rear of the speaker as a result of the rear midrange sound wave exciting the resonance frequency of the old aluminium rod used to mount the tweeter bracket.

Woofer Tower Changes

1) The construction and material of the woofer towers are much improved. Solid 1-inch mdf is used with1-inch mdf also used for internal bracing.

2) The number of woofers in each tower has doubled. A total of twelve opposing woofers (six firing front and six firing back) per tower are now used so that the vibration generated by one woofer is cancelled by the opposing woofer. Having two opposing woofers in each cavity also allows us to almost completely eliminate boxy coloration inside each cavity. The result is better bass, and a more complete coupling of the woofers to the air load in the listening room

Crossover Changes

1) The external crossover has been completely redesigned for the G1.2, ensuring greater transparency, dynamics and speed. Individual components in the crossover are hand-matched to within less than 0.1% tolerance. The coherence between tweeter and midrange, and midrange and bass has been elevated to a seamlessness that has not been experienced before. Point-to-point wiring is optimised for minimal interaction between the various parts of the crossover.

2) Each pair of crossovers is meticulously hand-built and measured at every step of the way to ensure that each pair is absolutely matched. Internal components are "bedded" in soft, vibration-absorbing silicon rubber within a solid Corian box.

3) The external crossover has a single pair of input binding posts as standard and requires only a single high-quality power amplifier. Customers who want to tri-amp (or bi-amp) the system may request that the external crossover be *specified* to be tri-amp ready. However, such customers will be warned that the amplifiers used have to be absolutely IDENTICAL – not just from the same manufacturer – because of phase and group delay inherent in amplification. If the amplifiers used are not identical, all the work done in crossover component matching will be defeated by the manufacturing tolerance and design differences in the amplification.

   We spend many, many hours ensuring the perfect phase and response crossover between the tweeters and midrange drivers, and would hate for this work to be negated by users who may use a lower-powered amplifier in the high frequency and a higher-powered amplifier in the midrange.

Wiring Changes

1) The speaker is now completely internally wired using a military-spec aerospace hook-up wire. The wire is made of highly polished silver-plated 6N copper strands. The strands are wound so tight that the silver “imprints” on one another. This confers the qualities of solid-core wire to the stranded wire, without the disadvantage of extreme stiffness (it is stiffer than normal stranded copper wire but not as stiff as solid-core). The wire is then jacketed in the best possible dielectric material – Teflon – as the insulation. Teflon (or PTFE) is the best insulator for audio cables with excellent dielectric properties, low soakage and fast release. This results in a great increase in resolution and transparency in the high- and mid- frequencies as compared to copper, but without the brightness and leaness associated with pure silver wires.

2) Even the jumper wires between the external crossover and the midrange/tweeter panels are now Genesis-manufactured and of the same wire that is used internally. This is preferable to using an externally sourced wire for a more coherent sonic presentation. Using different brands of jumpers can change the sound, but we do not advocate

using wire as “tone controls” because different does not equate to better. Using the same wire results in the greatest transparency between crossover and driver.

Genesis is also able to supply a pair of speaker cables using the same material. This will result in the greatest transparency all the way from the output terminals of the power amplifier to the crossover, to the individual driver on the speaker.

New Servo-Controlled Bass Amplifier

One of the complaints encountered with the old G1.1 was that it was “not fast enough for rock music”. We found that this was due to the phase lag in the bass caused by the hook-up scheme and crosstalk between the servo-signal and the woofer signal in the original 15m long servo-bass cable supplied.

Much of the phase lag was eliminated with the development of the Servo-Bass Interconnect Cable and the new Servo-Bass Cable that have been made available in the past few years as upgrades to owners of older Genesis speaker systems.

The completely new Servo-Controlled Bass Amplifier for the G1.2 eliminates the residual bass “slowness” caused by the old G3000 servo-bass amplifier. Instead of a single piece with crossover and amplification in the same chassis, the new bass amplifier comprises two different types of electronic modules, and one transformer module. Each stack of electronics sits on a Genesis acoustic suspension system, ensuring optimal performance of the amplification.

Genesis 1.2 Servo-Controlled Bass Amplifier
(one side shown with six channels of amplification)

Some of the newest technology developed for the Genesis Statement Amplifier has been incorporated in the new servo-bass amplifier. Using the new SCAmp, the 12-in aluminum woofers are now as “fast” as the ribbon midrange – resulting in a seamless transition between the lower midrange and the upper bass.

Like the Genesis Statement Amplifier, the Servo-Controlled Bass Amplifier is

wired throughout with Teflon insulated silver/copper wire. It also incorporates the Dynamic Power Delivery Supply, and the Silent Running Voltage Supply.

Full dual-mono operation in the bass is ensured with totally separate left and right amplifiers. This allows the left and right woofer towers to be set-up and tuned differently. A total of six power cords are needed just for the bass amplification of the G1.2. We also recommend that at least 40amps be supplied to the amplification system.

It was found that even some very highly regarded sound rooms were found not to be sonically symmetrical – especially in the bass. In one case, we discovered that the left wall was made of hollow sheet-rock, whereas the right wall was backed by a solid foot of block granite. In another instance, while both left and right walls were mass-loaded and the sound room was constructed as a room within a room, the right wall had a fresh air duct right next to the loudspeaker. This acted as a Helmhotz resonator that sucked out certain vital frequencies on the right side of the room.

The various parts of the amplifier are:

1) The Control module with inputs for the servo-bass interconnects and two control outputs – one per side is provided so that the left and right woofer towers can be individually tuned. This comes with a programmable remote control that can also control the other equipment in the customer's system.

2) A total of four units of Servo-feedback Amplifier modules each with one control input, and three Neutrik 50-amp Speakon™ outputs. The servo-amplifiers are the result of lessons learned in the development of the Genesis Reference Amplifier. Unlike the old G3000 amplifiers used with the G1.1, the new amplifiers do not incorporate a compression limiter. Each 400W amplifier module is current limited to 20 amps to protect the woofers resulting in much faster and dynamic bass.

3) Each amplifier module has its own 1850VA Power Transformer (total four) connected with Neutrik™ 20-amp PowerCon™ outlets.

The result is that the left and right bass channels are completely separated and independently controlled.

The accessories for the Servo-Bass Amplifier comprise:

1) A pair of Servo-Bass Interconnects (SBI) with XLR connectors at one end and a pair of banana plugs (or optionally spades) at the other end. Using these SBI's result in very much better (and easier) integration between the servo-bass amplifier and the crossover for the midrange/tweeter wings. The Control Module can still be driven by a balanced preamp-level input if the customer desires, but the supplied SBI will be a much better interface.
2) A pair of Control Interface Cables (CIC): these cables have 7-pin Neutrik™ connectors at each end and are used to connect between one Control Module and two Servo-Amplifier Modules.
3) Four sets of 3-channel Servo-Bass Cables (SBC) with Neutrik 50-amp Speakon™ plugs at each end.
4) Four Power Umbilical with a Neutrik 20-amp Powercon plug at each end (one grey and one blue).
5) Two acoustic suspensions – one for the stack of modules on each side.

Dynamic Power Delivery Supply

One of the key improvements to the servo-amplifier is the power supply developed during research for the Genesis Reference Amplifier. Unlike conventional power supplies which are specified into constant current draws, the Dynamic Power Delivery Supply (DPDS) is designed to deliver current into non-linear loads.

A Class A amplifier, and Class AB amplifier at low power, is a constant current linear load. A Class D amplifier on the other hand is a dynamic non-linear current load. It switches current from the power supply to the loudspeaker on and off like a tap (that is why they are also called switching amplifiers – not digital!)

Like the way that the water pipes will rattle when you turn a tap very quickly on and off, the conventional power supply will distort

when delivering current to a Class D amplifier. The DPDS developed by Genesis does not.

In addition, the power supply has to be designed to deliver current at the frequencies of music, and the distribution of the power requirement of music at the different frequencies.

The sonic result is a faster, snappier bass response that is so critical to rock, swing, and dance music.

Etymology

The history of the Genesis 1-series goes back to the technologies developed for the IRS (Infinity™ Reference Standard*) – in reverse chronological order:

Genesis Advanced Technologies:
2009: Genesis 1.2 (current model)

2006: Genesis 1.1 – revision with high-excursion X-Max woofers and Servo-Bass Interconnects

2003: Genesis 1.1 – re-issue and revision with new Servo-Bass Cables

Genesis Technologies:
1998: Genesis 1.1 – new ribbed aluminium-cone woofers and new 75-inch ribbon

1993: Genesis I – 26 x Genesis ribbon tweeters, 60-inch ribbon midrange, 6 x poly-kevlar/aluminium woofers per side

Infinity Systems, Inc.:
1988: Infinity Reference Standard V – using newer bass driver from Kappa series

1978: Infinity Reference Standard – originally developed as an internal reference system. 36 x EMIT, 12 x EMIM, 6 x 12" woofers

* Infinity is a registered trademark of Harman International.