Owners Manual and Set-up Guide: Genesis 350SE Loudspeaker

Contents

A QUICK START SET-UP GUIDE 3

UNPACKING 3
PLACEMENT OF THE 350SE LOUDSPEAKER 3

THE TECHNOLOGY 6

THE GENESIS RIBBON TWEETER 6
48INCH MIDRANGE RIBBON 6
THE SERVO-BASS ADVANTAGE 7
ALUMINUN-CONE WOOFERS 8
1600 WATT SERVO AMPLIFIER/CROSSOVER 9
SPECIFICATIONS 10

SET-UP GUIDE 11

POSITIONING 11
CONNECTIONS 11
CONTROLS 12

TUNING THE SYSTEM IN 12

BEGIN WITH THE BASS LEVEL 12
IMAGING AND SOUNDSTAGE 13
PHASE CONTROL 15
FURTHER ADJUSTMENTS 15

THE REFINEMENT STAGE 15

ROOM TREATMENT 17
MASTERING THE REFINEMENTS OF THE SYSTEM 18

A Message from Genesis

Congratulations! You are now the owner of one of the finest loudspeaker systems in the world! Based on the technologies developed for our flagship model, the 350SE is the closest you can get to perfect sound reproduction if you do not have the space for a Genesis 1.

The Genesis 350SE loudspeaker system was created for the music lover living in the metro-environment who knows (almost) no compromise. It is designed to reproduce music (and film) at live listening levels with virtually no restrictions on dynamic range, frequency response, or imaging capabilities. This is what we mean by "*absolute fidelity*", the ability to reproduce the musical event faithfully, as was intended by the performer or filmmaker.

Weighing in at 700lbs (318kg), 66.5inches (1.69m) tall, with a total of eight woofers, eight feet of midrange ribbon and thirty tweeters, the 350SE is an impressive sight!

Please read this Owners Manual and Set-up Guide to get the maximum enjoyment out of your purchase. Also, if you have access to the internet, please check back at our website often. The address is www.genesisloudspeakers.com. We will put the latest updates, tips and tricks, and support for our owners on our website.

Please write the purchase details of your Genesis 350SE loudspeakers here for future reference.

Loudspeakers : _____/_____

Amplifier : _____

Bought at: _____ Date: _____

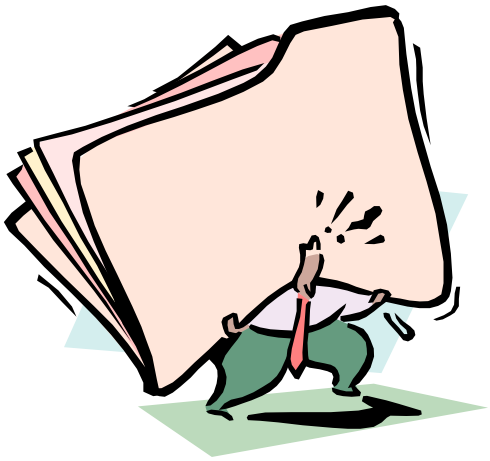
A Quick Start Set-up Guide

Now that you have your new Genesis 350SE loudspeaker system, we realize that you can't wait to hook it up and start playing! However, this is a big, complex system and we want you to set it up safely. So, please read this quick set up guide (even if your dealer is setting it up for you!) before you proceed.

Unpacking

The Genesis 350SE loudspeaker will arrive in 3 pieces. There are two shipping crates and one amplifier box.

To remove the contents of the crates, you will need help. The 350SE loudspeakers weigh over 300lbs each (about the weight of a big, 6-foot man!), so we suggest a minimum of three strong people to move the speakers around. We will ***not*** be held liable for damage (to either the speakers or your backs!) during unpacking and setting up.



Place the shipping crates on a flat surface. Unscrew only the bottom row of screws. Do not remove any other screws except the ones going along the outside bottom perimeter of the crate.

Lift off the entire top part of the shipping crate and set this aside. You can then tilt the speakers off the crate, and remove the bottom. Take the big woofer cables you will find inside the shipping crates out.

Remove the woofer amplifier and remote control from the box, and you now have the speakers and its amplifier unboxed, and ready to be positioned into your listening room.

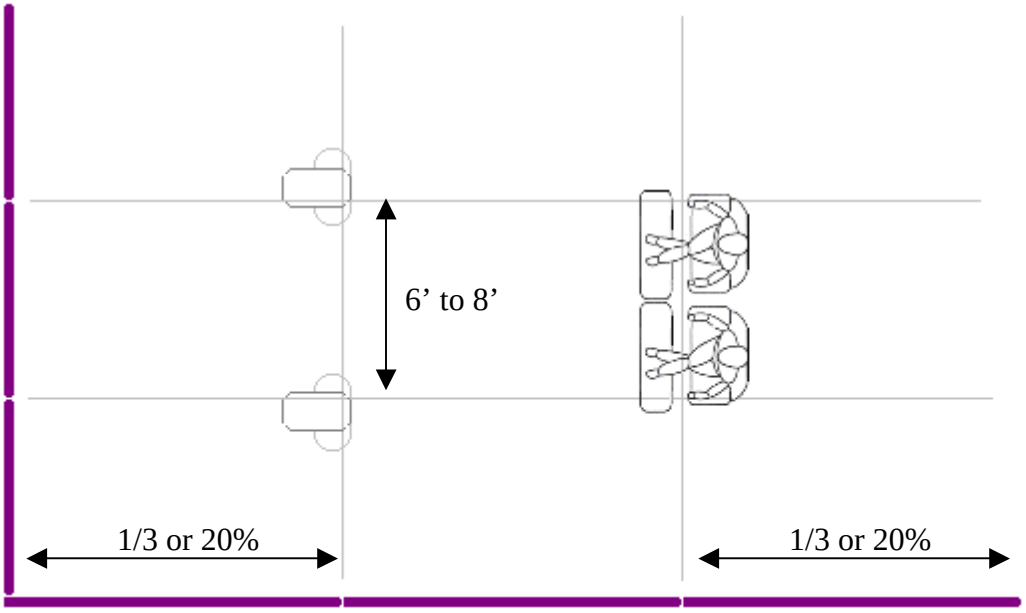
Placement of the 350SE Loudspeaker

A good starting position for your 350SE is about one third the way into the room as measured from the rear wall (the wall you look at as you are seated listening to the speakers). You want to sit approximately two-thirds of the way in the room, again as measured from the rear wall. For many rooms, you may not have the space, and for these situations, having the speakers 20% of the way into

the room will work well. In that case, the listeners can also be 20% of the way into the room.

Place the row of tweeters on the inside, and position the speakers so that the rows of tweeters are between six to eight feet apart (if you have the space). If you do not, having them closer together is acceptable.

Typical room placement: Place speakers and listeners about 1/3 or 20% of the way into the room



Next, use the woofer cables to connect the speakers to the woofer amplifier. Each end of the cable is clearly marked, "amplifier" or "speaker". It does not matter which connector is attached to which woofer as long as the channels are correct.

On the top of the woofer box of the speakers, you will see the input connections of the 350SE. Connect your power amplifier to these inputs using a high-quality speaker wire.

You will also notice two controls on the back of the midrange

tweeter panel. The left hand knob is a volume control for the rear tweeters. Turning this control clockwise will increase the level of the rear tweeters. 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 one 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.

Connect the woofer amplifier to your preamplifier, and plug the woofer amplifier into a power outlet. Using the remote control, turn it on. Adjust the phase to 45 with the button marked "phase" on the remote control. Next, adjust the low pass filter (how high the woofer goes). Set this to 85 using the button marked "low pass" (on the remote control). Use the button marked "volume" to adjust the gain to 20 to start with.

While it is relatively easy to put the 350SE into your room and system and get some music, it is not as easy to integrate the loudspeakers into your room, and get great music out of it. Hence, once you're done with messing around, we recommend that you read the rest of this Owners Manual and Set-up Guide, and properly position your loudspeaker system. The time you will take to do this properly will be well worth it from the long term enjoyment you will derive.

Should your woofer amplifier unexpectedly turn off and you are unable to turn it back on, you have overheated the amplifier. It will take up to thirty minutes for the amplifier to cool down sufficiently for it to be turned back on. Be patient.

The Technology

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 reproduce accurately frequencies beyond 40k Hz.

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 350SE uses twelve of these tweeters configured as a vertical line source. This brings two major advantages: because the output is distributed over many drivers, each works at very low-stress. This dramatically lowers the distortions in the high frequencies.

Moreover, the vertically oriented line source sends the critical frequencies towards the listeners without generating significant floor or ceiling reflections that obscure clarity. A line-source with dipolar radiation carries this one step further. Dipoles radiate the same sound from both front and rear out of phase in "push/pull" fashion.

The 350SE also use three rear-firing tweeters per channel wired to the crossover out of phase to the front tweeters creating a dipole. Thus, the sound waves from the front and back of the speakers cancel out as they radiate from the sides of the speakers; which means that there is minimum radiation of sound to the sidewalls of the room too.

The net result is that the 350SE generates far fewer detail-robbing room reflections from the floor, ceiling and side-walls 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.

48inch 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 350SE loudspeaker system uses a single 48inch ribbon per channel as a dipolar line-source to reproduce these critical frequencies.

The midrange ribbon used in the 350SE is manufactured to Genesis' 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 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. However, the Chief Scientist of Genesis, Arnie Nudell, first introduced the servo system in the legendary Infinity Servo Statik One in 1968(!) – so we know how to design and build servo systems.

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 instantaneously compares it to the input signal. This comparison circuit identifies any deviation from the input and instantaneously applies a corrective signal to compensate, resulting in 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 is moving, the momentum of the cone makes it continue to move after the signal has stopped.

The sonic result is overhang, bloat, 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 detects that the woofer will continue to move when it shouldn't 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 seem 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. It also drives the woofer to constant acceleration, which makes its frequency response totally flat!!

Aluminium-cone 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 350SE features a total of four 8-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.

The woofers are a uniquely designed metal cone driver made for the Genesis servo system. Made of 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 (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 350SE.

Unlike the midrange and the tweeters, the four woofers in the bass box of the 350SE operate in phase as an omni-polar arrangement in which all four operate in unison to control the air mass of the entire room. This means that the surface area of the four cones and the large bass enclosure all work together in unison to produce bass output that descends evenly to below your hearing limits.

1600 watt Servo Amplifier/Crossover

One problem, however, of metal cones, is that of greater mass. To over come this, Genesis had to build an amplification system of great wattage, 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. Combined with the metal cones, this means that the amplifier used must deliver extraordinarily large amounts of clean power.

In the Genesis 350SE, the amplifier was designed as a holistic system of integrated connecting cables, woofers, and custom tailored EQ network and remote controlled crossover circuitry. The proprietary four-channel 400 watt per channel switching amplifier is specifically designed and tuned specifically for low frequencies in order to produce “floorshakingly musical” bass to power the servo woofers.

One side benefit of this powered woofer system is that almost any sized amplifier can be used to drive the Genesis 350SE. 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.

Specifications

- Dimensions:
  - Loudspeakers: H 66.5” x W 21.5” x D 36”
  - Amplifier: H 10” x W 12” x D19”
- Weight: 630 lbs (286kg) per side
70 lbs (32kg) amplifier
- Frequency Response: 16Hz to 36kHz, +/- 2dB
- Controls (on amplifier): Phase, low-pass, high-pass, gain
- Controls (on speaker): Tweeter (+/- 1 dB)
Midrange (+/- 1.5 dB)
- Nominal Impedance: 4 ohms (speakers)
- Input Impedance: 33K ohms (amplifier)
- Sensitivity: 91 dB 1 watt 1 meter
- Amplifier Power Rating: 4 channels @400 watts each
- Amplifier Inputs: 1pair XLR (balanced)
1pair RCA (single ended)
- Finish: Rosewood

Set-up Guide

Positioning

A good starting position for the 350SE is about one third the way into the room as measured from the front wall (the wall you look at as you are seated listening to the speakers). You will want to sit approximately two thirds of the way in the room, again as measured from the front wall. In tight metro-environments, the 350SE can also be positioned about 20% of the way into the room, with the listeners 20% of the way from the back wall.

Measure the distance between the tweeters on each panel. Make sure that the tweeters are on the inside edge of the speaker. Start with the tweeters approximately six to eight feet apart if your room dimensions will allow.

Connections

Inside each shipping crate, there is a set of large cables used to connect the woofers of the 350SE. Each end of the cable is clearly marked, "amplifier" or "speaker". Connect the appropriate ends to your Genesis Woofer amplifier, and the rear of the speaker. It does not matter which connector is attached to which input as long as the channels are correct.

When you connect the woofers pay close attention to the way our connector works. The connector is called a Neutrik, it only goes in one way. You cannot put it in wrong. However, you can fail to put it in all the way. Push the plug in, and twist it clockwise until it "clicks" in place to keep it there. By looking carefully, it will be obvious to you how it works.

Connect the input of the woofer amplifier to the output of your preamplifier. Choose either balanced or unbalanced for inputs. If your preamplifier has only one set of balanced outputs and one set of unbalanced (RCA) type outputs, choose your first preference of connection for the amplifier that is driving the midrange and tweeters of your speaker. Use the remaining set of outputs to feed the woofer amplifier.

Next, use a high quality speaker cable to attach the mid/tweeter sections to your power amplifier.

Controls

At this point, you can power-up the woofer amplifier with the remote control, and make the initial settings.

Adjust the phase to 45 with the button marked "phase" on the remote control. The high-pass filter determines how low the woofers will play. Set this initially to 20Hz.

Next, adjust the low pass filter (how high the woofer goes). Set this to 85Hz using the button marked "low pass". Use the button marked "volume" to adjust the gain to 20 to start with. The display will always flash to identify the function being adjusted, and the value.

Next, set the mid/tweeter using the two knobs located next to the speaker connections. The left hand knob is a volume control for the rear tweeters. Turning this control clockwise will increase the level of the rear tweeters. 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 one 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 two will sound leaner.

Tuning the system

Music is the best way to begin your setup procedure. We suggest that video sources be used only after you have setup the system to properly reproduce music.

We suggest that you start with a single vocal with 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.

Begin with the bass level

Leave the low pass filter alone, for the moment, as it should remain set at approximately 85 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 only a little at a time. It is easy to turn it up or down too much.

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, you may want to experiment with increasing or decreasing the low pass filter control. This control will raise or lower the frequency cutoff point of the woofer.

Turning the low pass filter up to a higher number will extend the upper bass regions without affecting the low bass level. Some rooms may require you to set the low pass filter up to 100Hz. 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 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 main speakers closer together in order to achieve better mid bass 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

If your vocal selection is a well-recorded audiophile CD or LP, the performer should appear to come from 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.

If the vocal 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 slight amount or place them closer together and re-listen. Repeat this process till you have it right. 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 slightly.

If you have the speakers 20% of the way into the room, and you are not getting enough front to back depth (the singer not appearing behind the speaker enough) pull the speakers 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. However, slightly more than 1/3 of the way into the room is about as far as you want to go. Pulling them half-way into the middle of the room is unlikely to help (and moreover probably incur the wrath of your wife).

Find the best compromise for your room, your tastes and your space requirements. If you are not getting proper focus on the voice, you may angle the left and right speaker about 15 to 20 degrees towards your listening position until you have a properly defined center image. If the speakers are too far apart you will lose the side image and if they are too close together you will have too small a center stage. We recommend you begin with six to seven feet apart as measured from tweeter to tweeter.

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 rear wall. Further, as the system “breaks in”, the depth and width of the soundspace 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 forty 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 up and down in 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 ninety degrees you have probably gone too far (zero is okay).

Further adjustments

In some problematic rooms a resonance may develop at one or two frequencies that is unnatural to the music. By moving the speakers closer to the front wall or farther from the front 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 speaker 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), or further apart.

The Refinement stage

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

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.

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 image focus.

If you have the speakers 20% of the way into the room and you are finding 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, however, if you move the speakers too far from the front wall you may lose focus. Just over a third of the way into the room is as far as you want to go in this respect. Having the speakers in the middle of the room is unlikely to work, and you'll probably incur the wrath of your wife!

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 overheat the amplifier.

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 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.

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 is wall to wall 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 piece of furniture 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.

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