

SET-UP GUIDE

900

SERVO-CONTROLLED SUBWOOFER

Introduction

While many companies have rushed to fill the growing home theater market with quick redesigns of existing products, a few companies have taken their time to do it right. Our goal in the design of both a high end music and home theater product was to set a new standard of performance for both music and video – a benchmark for the industry. After many years of designing, listening and redesigning, we believe that we have achieved our goal in the Genesis 900 subwoofer.

Based on all new technology in both woofer design and the servo controlled power amplifier, the 900 is a musically accurate design in the tradition of all Genesis reference loudspeakers. So honest is this speaker's performance that the 900 is equally at home in the finest music systems as in home theater applications.

The Genesis 900 is a totally self-contained unit. Included is the woofer amplifier, an external remote controlled package that handles virtually every function on the woofer including power, volume, low pass, high pass and phase. The Genesis 900 also has the ability to be linked to another 900 woofer. In fact, the 900 can be linked to as many 900s as you wish. When linked together, the settings you choose for one subwoofer will be followed by all Genesis 900 subwoofers connected together.

The 15-inch woofer employed in the Genesis 900 subwoofer is a custom-designed and proprietary metal cone design that exhibits great strength and rigidity with little to no cone flexure. The benefits of low cone flexure include extremely low levels of distortion and nearly zero break up modes within the useable frequency band.

The heart of the Genesis 900 servo subwoofer system is our exclusive, accelerometer-based motional feedback servo system. First introduced to high end audio in 1968 by Arnie Nudell in the legendary Infinity Servo Statik One, servo bass systems continue to represent the ultimate in low frequency response today.

The concept of servo bass is an easy one to understand. It employs, through the use of an accelerometer sensor, active feedback which constantly monitors the performance of the woofer and electronically compares it to the input making instantaneous corrections.

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Without this feedback loop the mass of the woofer is too great to control properly and distortion occurs. 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 servo controlled woofer amplifier in the Genesis 900 is a unique design employing a new technology known as BASH™. Using this revolutionary technology, the Genesis 900 woofer amplifier is able to deliver a continuous power of 500 watts rms. into the woofer with peak power of over 2200 watts RMS for short periods of time.

Positioning the 900 for Music

If your primary usage of the 900 is in a music system, we recommend you follow this setup guide.

Set the woofer or woofers approximately where you want them in the room. We recommend that the woofers be placed so they fire into the long dimension of the room. As measured from the wall behind the loudspeakers, we suggest placing your Genesis 900s about 10% into the room. Example: if the length of the room is twenty feet (7.75 meters) the 900s should be about two feet (0.6 meters) from the wall behind them although excellent results can be obtained with the 900 directly against the wall or near the corner.

We recommend that the 900 be placed behind and to the outside of your main music speakers. If you only have one Genesis 900 subwoofer, we recommend that you place it on the right side. This is not a critical recommendation and you may place the single subwoofer either on the right or the left. We recommended the right (if there is a choice) because it the side in an orchestra that the bass instruments are typically located. In any case try to avoid placing the subwoofer in the center of your rear wall because this area will give you the lowest bass output of anywhere in your room.

We suggest you toe in the woofers. This means that you should angle the woofers towards the listener. Point them directly at your listening position. This will help focus the center image for the woofers higher frequencies.

Make sure you do not plug the woofer into a switched outlet. Make sure the Genesis 900 is plugged into a wall outlet that is always on. We recommend against the use of an extension cord for the AC power. If you are forced to use an extension cord, make certain it is as heavy a gauge as possible. We recommend 14 to 16 gauge.

Positioning the 900 for Video

There are a number of possible positioning schemes for video applications.

Our first recommendation is that you visit with the dealer you purchased your video sound system from and get his or her advice.

Typically, in video applications, the front three speakers Left, Center and Right (LCR) speakers are on stands, are mounted to the wall or many times are the same speakers used with your music system with the addition of the center channel. Depending on the availability of space, you may place a pair of Genesis 900's (or a single, although a pair is highly recommended) in the front or the back of the system. If you have a dual purpose system, music and video, you might consider following the music setup instructions first (if space allows).

It is permissible to place one subwoofer in front and one subwoofer in the rear to increase the "surround effect" in your video system if you wish.

The Genesis 900, in a video system environment, will typically be placed fairly close to the wall or in a corner. As with the recommendations for the music system setup try not to place the subwoofer in the middle of any wall.

Make sure you do not plug the woofer into a switched outlet. Make sure the Genesis 900 is plugged into a wall outlet that is always on. We recommend against the use of an extension cord for the AC power. If you are forced to use an extension cord, make certain it is as heavy a gauge as possible.

After positioning your Genesis 900, connect to your pre-amplifier, or power amplifier.

Use a good quality interconnect cable to connect your preamplifier's output to the low level inputs on the back of the subwoofer. You may use either balanced or single ended connections (both are available on the Genesis 900). We strongly recommend that you do not use interconnects longer than 10 feet (3.2 meters) to connect the preamplifier outputs to your Genesis 900 subwoofer. On many preamplifiers, use of an interconnect that is too long will negatively affect the performance of your pre-amplifier because of the high capacitance of the cable across the output of your preamplifier.

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 your main speaker. Use the remaining set of outputs to feed the subwoofer amplifier.

If your preamplifier does not have two outputs, use a "Y" connector to split the signal. The Genesis servo sub-

woofer amplifier presents a high impedance, very easy load to your preamplifier and can easily be used with the "Y" connector with no degradation to your main signal.

If you must employ a run of cable longer than 10 feet (3.2 meters) we recommend that you use the Genesis 900's high level inputs.

To connect the high level inputs of the Genesis 900 subwoofer, take the output of your power amplifier and, using a good quality speaker cable, connect to the binding posts on the back of the Genesis 900 subwoofer. You may also take the signal off of the back of your main loudspeaker terminals if this is more convenient. Using the high level inputs to feed the Genesis 900 power amplifier will not degrade the sound quality of either your main system or the Genesis 900 subwoofer. Make sure that you maintain proper polarity. This means that the plus (+) terminal of your amplifier must be connected to the plus (+RED) terminal on the back of the Genesis 900.

Hooking up only one subwoofer

If you are using only one subwoofer, connect both the left and right low level or high level inputs into the one Genesis 900 subwoofer. The Genesis 900 will automatically create the appropriate mono signal.

Connect the remote control housing

The Genesis 900 subwoofer is fully remote controllable. Functions such as volume, low pass, high pass, phase and power are available. To operate the Genesis 900, you must first connect the external remote control unit.

Using the included 6 pin connecting cable (similar to an S-video cable) hook up the remote control housing. On the back of the housing there is the input connector. Attach one end of the cable here. On the back of the Genesis 900 subwoofer, there are two similar inputs in the lower left hand corner of the amplifier. One is marked "main" and the other is marked "slave". Plug into the one marked "main".

If you wish to use the link feature of the 900, you will need to purchase another connecting cable from your dealer. After procuring the cable, plug one end of the cable into the remaining input marked "slave" and the other end of the cable into the second Genesis 900 subwoofer's input marked "main". You can daisy chain as many woofers as you wish in this manner.

Only the first Genesis 900 subwoofer will have the remote display enclosure.

At this point, you can turn on the woofer amplifier. Using the remote control, turn on the subwoofer amplifier by pointing the remote control at the small remote enclosure. Adjust the phase to 40 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 to 30 to start with. The volume will always flash to identify itself. Make sure the woofer works by playing some music.

Once you have adjusted the subwoofer and are happy with its settings, you may remove the remote enclosure and its connecting cable from the Genesis 900 subwoofer system if you wish. The Genesis 900 will remember the settings and will even retain the setting information in the event of a power failure. Keep the link cable connected however, if you want to make changes to all of the woofers in the chain.

Making your music or video system sound correct

The Genesis 900 subwoofer system is perfect for both music and video. The setup for either is very similar and the goals should be quite the same too. In our opinion, the end goal of adding a high end subwoofer should be to not "hear" the subwoofer work (in a music system), but rather to add the appropriate amount of low end that is currently missing in your system.

With music, the full frequency range of the orchestra should be reproduced with proper dynamic range and realism, from the lowest notes of a pipe organ to the whack of the timpani or the pluck of the lowest string on a Fender bass.

With video, the same goals should be sought after so the results are both realistic and exciting as the roar of jet planes rumble through your living room and prehistoric creatures shake the earth.

With proper setup and placement, you can achieve both stunning realism and musically correct and natural bass.

Roughing the system in

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.

Use the remote control to adjust the volume of the woofer first.

Turn the volume control of the subwoofer amplifier up or down until the voice sounds correct. 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, or at this point, you may want to experiment with increasing or decreasing the low pass filter control. This control will raise or lower the frequency cut-off point of the woofer. If you find that the sound is "thin" or lacking in mid bass and that turning the volume of the woofer amplifier up to "thicken" the sound creates too much low bass, this is a good indication that you may want to turn the low pass filter up to a higher number instead. This will extend the upper bass regions without affecting the low bass level.

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.

Low bass

With the speakers positioned in the recommended placement 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. If the use of this control causes other problems (such as too much or too little mid bass) you can alternately position the woofers closer to the rear wall (more bass) or farther away from the rear wall (less bass).

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 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.

Notes

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. 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 "boomy" in the mid bass regions.

A good rule of thumb is to first set the volume control of the subwoofer for proper midbass rather than low bass. The theory is, 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.

Push the main speakers back towards the rear wall. This will increase the coupling of the main loudspeakers woofers to the room. Do this procedure in small increments (approximately one 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.

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.

It should be noted that when you originally setup your main loudspeakers, you most likely made placement decisions based on the quality of imaging and proper bass levels. We would advise you to now think in terms

of re-positioning your main speakers strictly from imaging and tonal balance, and let your new 900 subwoofers take care of the bass.

Note: Should your woofer amplifier unexpectedly turn off and you are unable to turn it back on, you may have overheated the amplifier. It will take up to thirty minutes for the amplifier to turn back on. Be patient. The causes for this are poor ventilation or too much volume. If the amplifier is well ventilated then you have the volume control turned up too high.

Refer to the section on increasing the low frequency response of your speakers without turning up the volume control.

Fine tuning an audio or video 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 or video and their 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 (or every video you watch) 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 setup. Keep at it and remember to enjoy your music and video as you work on perfecting your setup.

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