

SASHA SERIES-2 OWNER'S MANUAL



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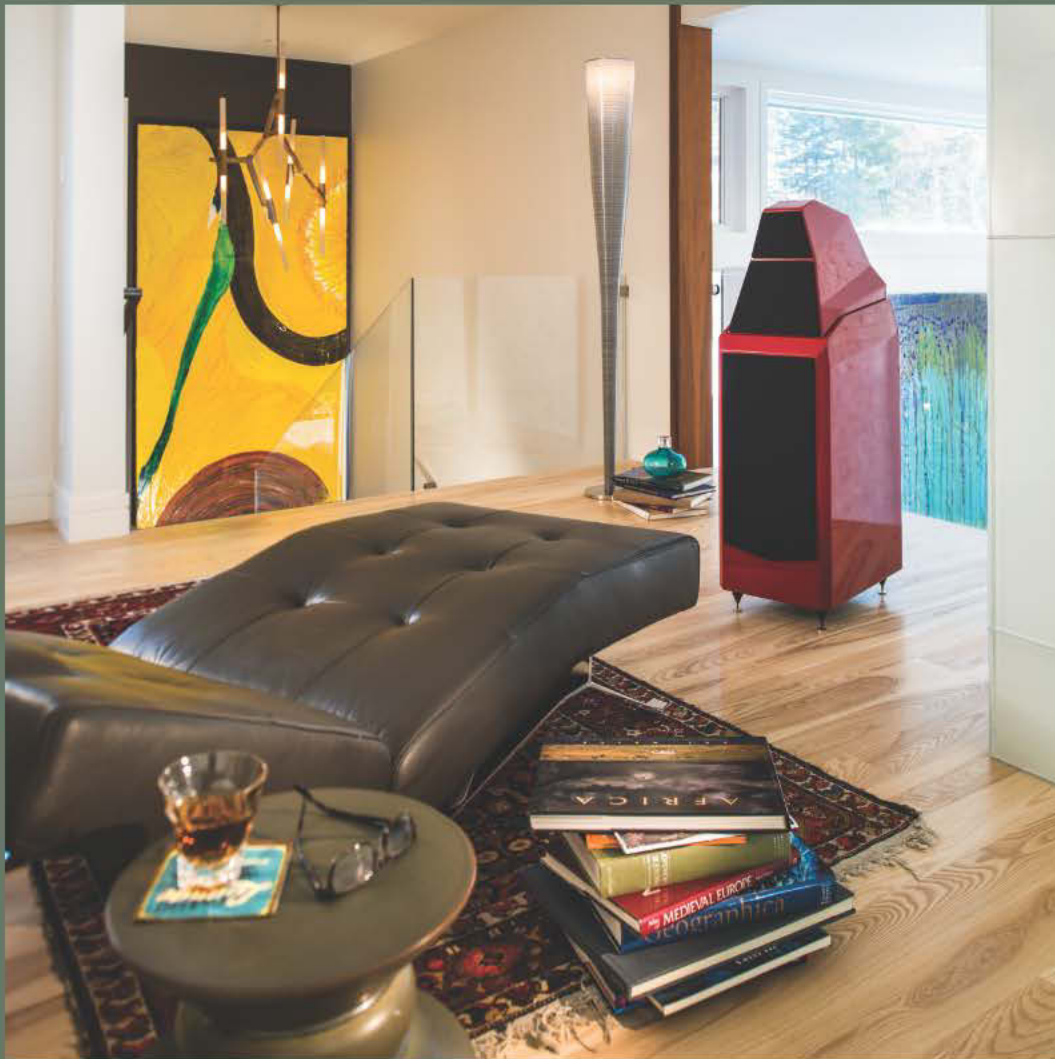
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SECTION 1—IN YOUR ROOM



Section 1.1—Room Acoustics

You are surely excited about setting up Sasha Series-2™ loudspeakers and doing some listening, but before you begin, we would like to discuss some of the important room acoustical information that will help you set up your loudspeakers properly.

Final Listening Room Setup (Voicing)

For a speaker system its size, the Sasha Series-2 is unmatched in its ability to reproduce the musical event. It is truly state of the art. However, room acoustics and boundary interactions affect the sound of a loudspeaker to such a large degree that poor setup can seriously degrade your enjoyment of even the finest loudspeaker.

Therefore, we offer the following section, which will present some guidelines on room acoustics and their interactions with loudspeakers. While we will also outline some detailed suggestions on the setup of the Sasha Series-2, we strongly suggest that you have your local Wilson Audio dealer perform the final speaker “voicing” with you. Wilson dealers are specially trained in setting up Wilson loudspeakers and will ensure that you realize the full value of your purchase.

Section 1.2—Wilson Audio Setup Procedure (WASP)

Zone of Neutrality

The “Zone of Neutrality” is an area in your room where the speakers will sound most natural. This location is where the speakers interact the least with adjacent room boundaries. It is important to have a clear working space while determining the Zone of Neutrality.

The following is a simple method to locate the Zone of Neutrality within your listening environment:

1. Stand against the wall BEHIND the location where you intend to position Sasha Series-2. Speaking in a moderately loud voice and at a constant volume, project your voice out into the room. Your voice will have an

overly heavy, “chesty” quality because of your proximity to the rear wall.

2. While speaking, slowly move out into the room, progressing in a direction parallel to the sidewall. It is helpful to have another listener seated in the listening position to assist you during this process. Listen to how your voice “frees up” from the added bass energy imparted by the rear wall boundary. Also notice that your voice is quite spatially diffuse (to your assistant, your voice will sound spatially large and difficult to localize) as you begin to ease away from the rear wall.
3. At some point during your progression forward into the room, you will observe a sonic transition in your voice; it will sound more tonally correct and less spatially diffuse (your assistant can now precisely localize the exact origin of your voice). When you hear this transition, you have entered the inner edge of the Zone of Neutrality. Place a piece of tape on the floor to mark this location. Although it will vary from room to room, the zone in most rooms begins between two and a half to three feet from the rear wall.
4. Continue to walk slowly away from the rear wall. After some distance, usually one to two feet past the first piece of tape, you will begin to hear your voice lose focus and appear to reflect (echo) in front of you. This is caused by the return of the room’s boundary contribution; your voice is now interacting with the opposite wall. At the point where you begin to hear the reflected sound of your voice, you have reached the inner edge of the Zone of Neutrality. Place a piece of tape on the floor and mark this location. The distance between the “inner” and “outer” edge tape marks is usually between eight inches (for small, interactive rooms) and three feet (for large, more neutral rooms).
5. Now position yourself against the side wall perpendicular to the intended speaker location. Stand between the two tape marks. Using the same procedure as above, begin moving into the room toward the opposite sidewall, progressing between the two pieces of tape. As above, listen for the point in the room where your voice transitions from bass-heavy and diffuse to neutral. Mark this point with tape. Continue your progres-

sion until there is an obvious interaction with the opposite wall in front of you and mark this point with tape. The four pieces of tape now form a rectangle that establishes the Zone of Neutrality for the loudspeaker located on that side of the room. Using the four marks as your guide, tape an outline to define the boundaries of the rectangle.

6. Repeat this process for each speaker location individually. These are your Zones of Neutrality, one for each channel.

Theoretically, the Zone of Neutrality for any room runs like a path, parallel to the walls all around the room. Adjacent to very large windows and open doors, the outer edge of the Zone of Neutrality moves closer to the wall and becomes wider. If you were to extend the inner and outer boundaries of the Zone for the sidewalls and the front wall (behind the speakers), they would intersect. After you complete this procedure for the other loudspeaker, you will now have two rectangles, one on the floor on either side of the room.

Section 1.3 – Room Reflections

Note: The following section contains general information on room acoustics and loudspeaker/room interaction. The concepts outlined below are equally relevant when dealing with multi-channel audio or home theater. The careful application of these concepts, as you evaluate the acoustical characteristics of your own room configuration, will allow you to optimize the performance of Sasha Series-2.

Slap Echo

Probably the most obnoxious form of reflection is called “slap echo.” With slap-echo, primarily midrange and high frequency sounds reflect off of two parallel hard surfaces. The sound literally reverberates back and forth until it is finally dissipated over time. You can test for slap echo in any room by clapping your hands sharply in the middle of the room and listening for the characteristic sound of the echo in the midrange. Slap echo destroys the sound quality of a stereo system in two ways:

- It adds harshness to the upper midrange and treble by storing time-domain smearing energy.
- It destroys the delicate phase relationships, which help to establish an accurate soundstage.

Slap echo (see Figure 1) is a common acoustical problem in the typical domestic listening room because most of these rooms have walls with a hard, reflective nature, only occasionally interrupted by curtains, wall art, or drapes. The best (but least practical) solution to eliminate slap echo is nonparallel walls. This is because, rather than support slap-echo, nonparallel walls allow the sound to diffuse. This approach can be accounted for during the construction process. For existing rooms, slap echo can also be controlled entirely by the application of absorptive materials to the hard surfaces.

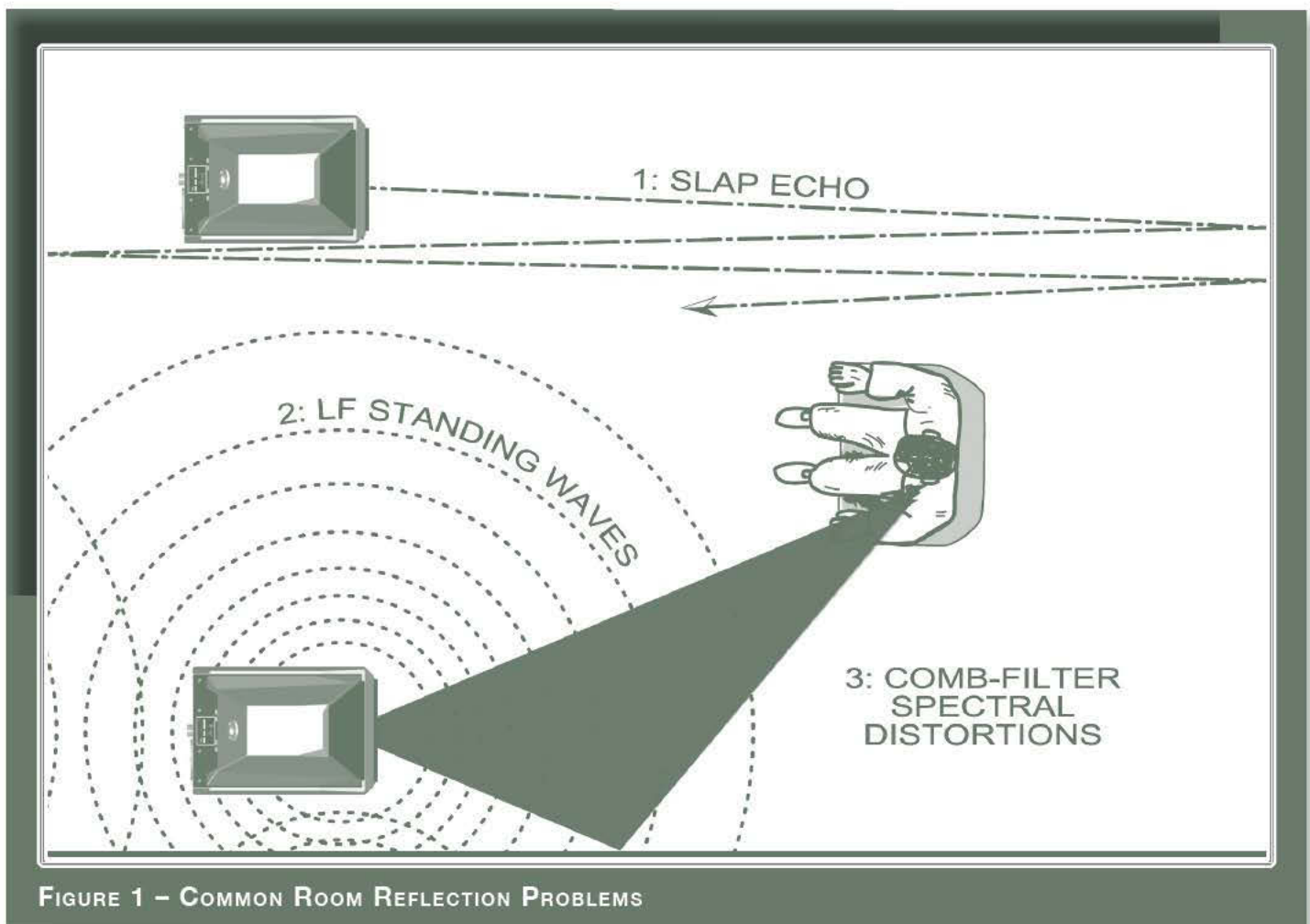


FIGURE 1 – COMMON ROOM REFLECTION PROBLEMS

These are absorptive materials that can be used to ameliorate slap echo:

- Pinta Acoustic Sonex®
- Air duct board
- Cork panels
- Large ceiling to floor drapes
- Carpeting to wall surfaces

In many domestic listening environments, heavy stuffed furnishings reduce slap echo somewhat. Unfortunately, their effectiveness is not predictable. Diffusers are sometimes also used to very good subjective effect, particularly in quite large rooms. Sound absorbent materials such as described above will alter the tonal characteristic of the room by making it sound “deader,” less “bright and alive,” and “quieter.” These changes usually make the room more pleasant for conversation, but sometimes render it too dull in the high frequencies to be musically involving. Soundtrack effects will be more localized. However, over-damping the room can render reproduced sound that is lacking in musical involvement and “aliveness.”

Diffusers, on the other hand, do not affect the tonal balance characteristic of the room as much. Placed properly, diffusers create a smoother and more open sound. Some diffusers, due to their construction, create narrow midrange peaks and suck-out the warmth region. Do not use diffusers on the wall behind the speakers or on the side-walls directly beside the speakers. It is our experience that all of these room treatment devices should be used judiciously.

Standing Waves

Another type of reflection phenomenon is “standing waves.” Standing waves cause the unnatural boosting or accentuation of certain frequencies, typically in the bass, to be found at certain discreet locations in the room. These locations differ according to

room dimension and size. A room generating severe standing waves creates difficulty in setup. In these rooms, the speaker will sound radically different as it is moved around. The effects of standing waves on a loudspeaker's performance are primarily in the areas listed.

- Tonal balance
- Resolution of low-level detail
- Soundstaging

Standing waves are more difficult to correct than slap echo because they tend to occur at a lower frequency. Absorbent materials, such as Pinta Acoustic Sonex®, are ineffective at controlling reflections in the bass region. Moving speakers about slightly in the room is, for most people, their only control over standing waves. Sometimes a change of placement of as little as two or three inches can dramatically alter the tonal balance of a small system.

Fortunately, minor low frequency standing waves are well controlled by positioning ASC Tube Traps™ in the corners of the room. Very serious low frequency accentuation usually requires a custom-designed bass trap system.

Low frequency standing waves can be particularly troublesome in rooms constructed of concrete or brick. These materials trap the bass in the room unless it is allowed to leak out of the room through windows and doors.

In general, placement of the speaker in a corner will excite the maximal number of standing waves in a room and is to be avoided for most direct radiator, full-range loudspeaker systems. Some benefit is achieved by placing the stereo pair of loudspeakers slightly asymmetrically in the listening room. This is so the standing waves caused by the distance between one speaker and its adjacent walls and floors are not the same as the standing wave frequencies excited by the dimensions in the other channel.

Comb Filter Effect

The “comb filter” effect is a special type of standing wave noticeable primarily at higher frequencies and shorter wavelengths.

Acoustical comb filtering occurs when sound from a single source, such as a loudspeaker, is directed toward a microphone or listener from a distance. The first sound to reach the microphone is the direct sound, followed by a delayed, reflected sound. At certain frequencies, cancellation occurs because the reflected sound lags in phase relative to the direct sound. This cancellation is most apparent where the two frequencies are 180 degrees out of phase. Further, there is augmentation at other frequencies where the direct and the reflected sounds arrive in phase. Because it is a function of wavelength, the comb filter effect will notch out portions of the audio spectrum at linearly spaced intervals. Subjectively, comb filter effect evidences itself as follows:

- Added roughness to the sound
- Reduction of harmonic richness
- Smearing of lateral soundstage image focus and placement

Comb filter effects are often caused by side wall reflections. They are best controlled by very careful speaker placement and by the judicious placement of Pinta Acoustic Sonex® or air duct panels applied to that part of the wall where the reflection occurs.

Section 1.4—Resonances

Resonance in listening rooms is generally caused by two sources:

- Structures within the listening room.
- The volume of air itself within the listening room.

Structural Resonance

Structural resonances are familiar to most people as buzzes and rattles, but this type of resonance usually only occurs at extremely high volume levels and is usually masked by the music. In many wood frame rooms the most common type of structural resonance problem is “booming” of walls and floors. You can test for these very easily by tapping the wall with the palm of your hand or stomping on the floor. Most rooms exhibit mid-bass “boom” when struck. The loudspeaker playing in the room also excites these resonances. To give you an idea of what the perfect wall would sound like, imagine rapping your hand against the side of a mountain. Structural wall resonances generally occur in the low to mid-bass frequencies and add a false fullness to the tonal balance. They, too, are more prominent at louder levels, but their contribution to the sound of the speaker is more progressive. Rattling windows, picture frames, lamp shades, etc., can generally be silenced with small pieces of caulk or with blocks of felt. However, short of actually adding additional layers of sheet rock to flimsy walls, there is little that can be done to eliminate wall resonances.

Volume Resonance

The physical dimensions and volume of air in a room will also support standing wave modes and resonances at frequencies determined by the size of that room. Larger rooms will resonate at a lower frequency and have more complex (better) modal distributions than will smaller rooms. Volume resonances, wall panel resonances, and low frequency standing waves combine to form a low frequency coloration in the sound. At its worst, it is a grossly exaggerated fullness, which tends to obscure detail and distort the natural tonal balance of the speaker system.

Occasionally, however, there is just enough resonance to give a little added warmth to the sound—an addition some listeners prefer. Careful placement of loudspeakers in the room can dramatically reduce the speakers’ destructive interaction

with low frequency modes. ASC Tube Traps™ are effective in reducing some of this low frequency room coloration. Custom designed bass traps, such as perforated Helmholtz resonators, provide the greatest degree of low frequency control.

Section 1.5—Your Room

Room Shapes

Standing waves are pressure waves propagated by the interaction of sound and opposing parallel walls. This interaction creates patterns of low and high acoustical pressure zones that accentuate and attenuate particular frequencies. Those frequencies are dependent on room size and dimension.

There are three basic shapes for most rooms: square, rectangular, and L-shaped (see Figure 2).

A perfectly square room is the most difficult room in which to set up speakers. By virtue of its shape, a square room is the perfect medium for building and sustaining standing waves. These rooms heavily influence the music played by loudspeakers, greatly diminishing the listening experience.

Long, narrow, rectangular rooms also pose their own special acoustical problems for speaker setup. They have the ability to create several standing wave nodes, which will have different standing wave frequency exaggerations depending on where you are sitting. Additionally, these long rooms are often quite lean in the bass near the center of the room. Rectangular rooms are still preferred to square rooms because, by having two sets of dissimilar length walls, standing waves are not as strongly reinforced and will dissipate more quickly than in a square room. In these rooms, the preferred speaker position for spatial placement and midrange resolution would be on the longer walls. Bass response would be reinforced by speaker placement on the short walls.

In many cases, L-shaped rooms (See Figure 2) offer the best environment for speaker setup. Ideally, speakers should be set up along the primary (longest) leg of the

room. They should fire from the end of the leg (short wall) toward the L, or they should be along the longest wall. In this way, both speakers are firing the same distance to the back wall. The asymmetry of the walls in L-shaped rooms resists the buildup of standing waves (see Figure 2).

Sasha Series-2 In A Dedicated Home Theater

Home theaters can be organized many different ways. Some use rows of couches. Others use rows of multiple chairs.

In addition to watching movies, most users want to listen to two-channel music at the highest quality possible. It is desirable, therefore, to choose a single optimum seating position in a home theater and build the rest of the seating positions around this position.

If your optimum position is located on a couch, you should center the loudspeakers on the center position of the couch.

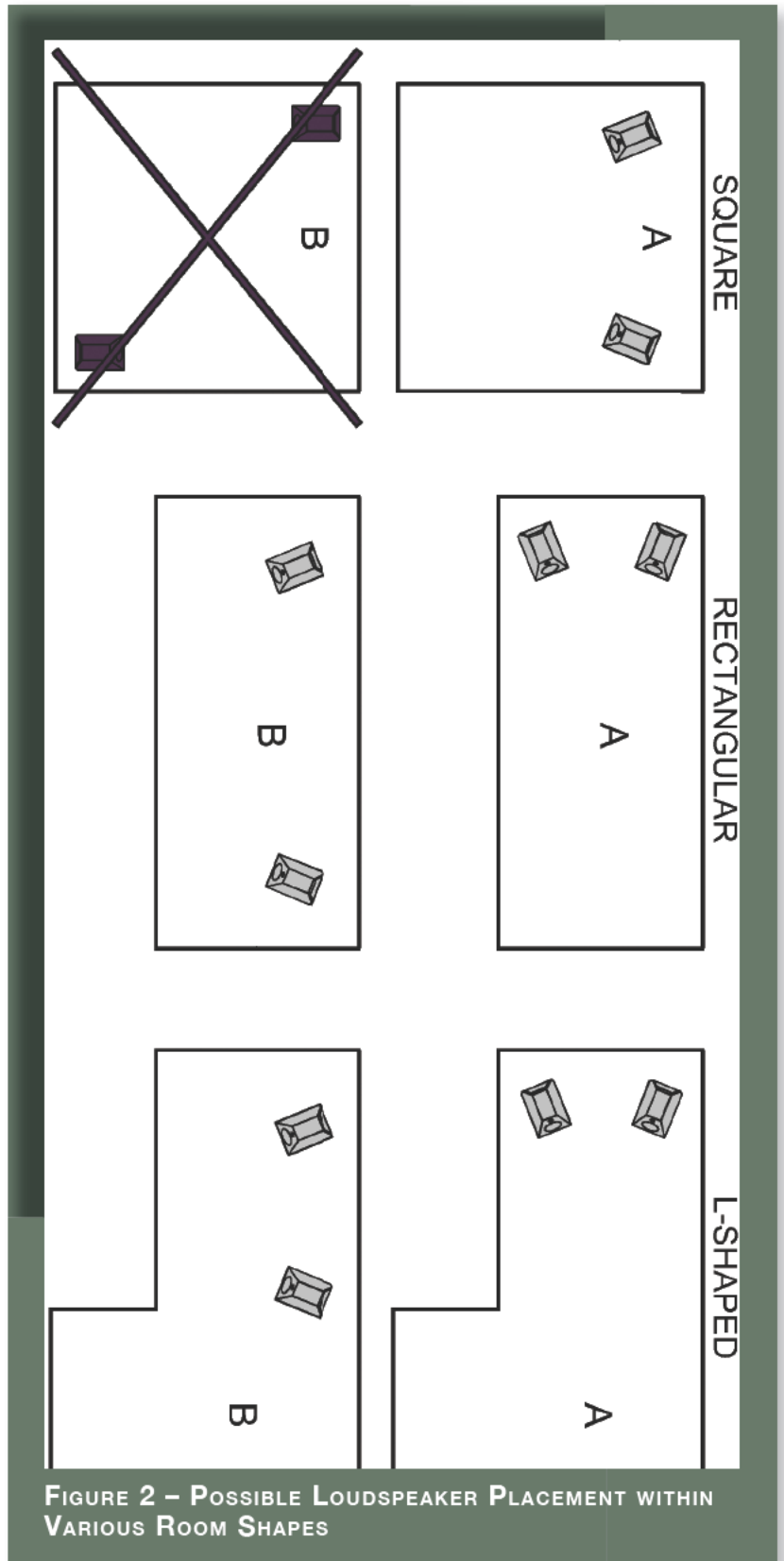


FIGURE 2 – POSSIBLE LOUDSPEAKER PLACEMENT WITHIN VARIOUS ROOM SHAPES

If the seating area consists of multiple rows of chairs, the second row should be optimized for the best sound quality. Odd numbers of chairs arranged in rows work best as this will allow a single chair to be positioned in the center. This approach will also provide the best overall sound for the greatest number of seats.

Speaker Placement Versus Listening Position

The location of your listening position is as important as the careful setup of Sasha Series-2 speakers. The listening position should ideally be no more than 1.1 to 1.25 times the distance between the tweeters on each speaker. Therefore, in a long, rectangular room of 12' x 18', if the speaker tweeters are going to be 9' apart, you should be sitting 9'11" to 11'3" from the speaker. This would be more than halfway down the long axis of the room.

Many people place the speakers on one end and sit at the other end of the room. This approach will not yield the finest sound. Carefully consider your listening position. Our experience has shown that any listening position that places your head closer than 14" from a room boundary will diminish the sonic results of your listening. Sitting directly in the center of the room will noticeably reduce the perception low frequencies.

Decide where you want your favorite listening position to be. Please remember that Sasha Series-2 will fill almost any room with the most beautiful sound available. Because the propagation delay is adjustable on the Sasha Series-2, if you take care in placing your new speakers, you will optimize Sasha Series-2's performance in your room.

Speaker Orientation

Speaker placement and orientation are two of the most important considerations in obtaining superior sound. The first thing you need to do is eliminate the sidewalls as a sonic influence in your system. Speakers placed too close to the sidewalls will suffer from a strong primary reflection. This can cause out-of-phase cancellations, or comb

filtering, which will cancel some frequencies and change the tonal balance of the music. The Wilson Audio Setup Procedure (Section 1.2) is the best method with which to position your loudspeakers. Start with the speakers about 18" from each wall and, if you need to move them relative to the side wall, move them away from the wall, not closer.

A very important aspect of speaker placement is how far from the back wall to place the speakers. The closer a loudspeaker is to the back wall, the more pronounced the low bass energy and centering of the image will be. However, this comes at a definite reduction in stage size and bloom as well as a deterioration of upper bass quality. You must find the proper balance of these two factors, but remember, if you are partial to bass response or air and bloom, do not overcompensate your adjustments to maximize these effects. Overcompensated systems are sometimes pleasing in the short-term, but long-term satisfaction is always achieved through proper balance.

The Sasha Series-2 is designed for maximum phase coherence and pulse replication accuracy when each speaker is aimed directly at the listener or microphone. Thus, Sasha Series-2 should be "toed in." In other words, the listener, when seated in the listening position looking forward with his/her head in a rested position, should just barely see the surface of the inner side of each Sasha Series-2. Toeing in the speakers provides meaningful improvements in resolution of low-level detail in the midrange as well as appreciable improvements in soundstaging performance.

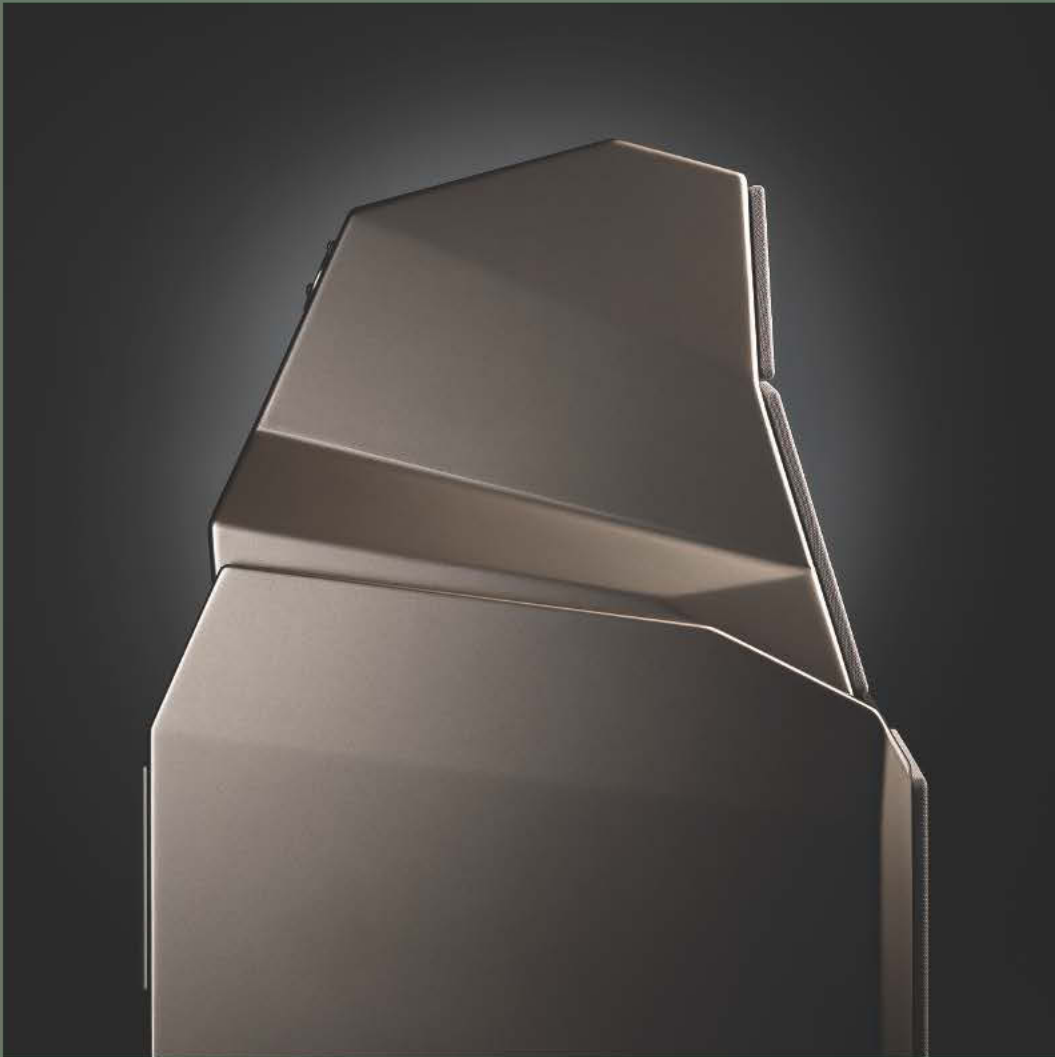
Summary

In summary, for optimal tonal balance accuracy, resolution of low level detail, and soundstaging performance, the Sasha Series-2 should be positioned as outlined in this section. Ideally, the speakers should not be positioned too far from the listener if maximum resolution of low-level detail is required. If possible, the speakers should be positioned out into the room, slightly asymmetrically vis-a-vis the side and rear walls.

The speakers should be “toed in” toward the listener, preferably so that the listener, at his seated position, can barely see the surface of the inner side of the Sasha Series-2 as he/she faces the speaker. It is recommended that a distance of two to three feet, and possibly more, be maintained between the Sasha Series-2 and the rear walls and that a distance of at least two feet be maintained between the front panel of the Sasha Series-2 and reflective side walls. Depending on the room, judicious use of sound absorbent materials will reduce the space requirement.

By following the guidelines in this manual, your new Sasha Series-2 loudspeakers can provide you with a lifetime of pure music reproduction.

SECTION 2 — UNCRATING SASHA



Note: You will have two Upper Module enclosures as well as two Woofer Module enclosures to unpack. The two modules will need to be separated into right and left channels. Clear out two spaces, one for your left and one for your right channels. Place the ODD numbered modules in the LEFT channel section and the EVEN in the RIGHT channel position.

Section 2.1—Uncrating the Sasha Series-2

Initial Check

The Sasha Series-2 is shipped in three wooden crates. Upon receiving these crates, please check their condition. If any of the crates are damaged, please report it to the shipping company immediately for insurance verification.

The following items are recommended for this procedure:

- Electric Screwdriver
- Phillips head drive bit
- Masking tape (for use in speaker setup)

Uncrating the Woofer Module

A minimum of two strong adults is required to set up the Sasha Series-2. Locate the two largest crates labeled “Sasha Series-2 Lower.” These contain the woofer enclosures and are the first components of the system to unpack.

1. With the crate lid facing up, unscrew the wood screws securing the lid. Remove the lid.
2. Carefully turn the crate upright so that the Woofer Module is now vertical. With the Woofer Module’s bottom toward the floor, reach in and gently slide the Woofer Module out of the crate, carefully, so as not to hit the Woofer Module on the crate and scratch the paint.
3. Place the Woofer Module with an odd serial number on the left side of the room and the Woofer Module with an even serial number on the right

side of the room.

Note: These two woofer enclosures are very heavy and care should be taken to prevent injury.

Uncrating the Upper Module

The Upper Modules are contained in a single crate. Unpack the modules using the following procedure:

1. With the crate lid facing up, unscrew the wood screws securing the lid. Remove the lid.
2. The Upper Module crate contains the owner's manual and tool kit. Remove these.
3. When removing the upper modules, take care so as not to hit the modules on the crate and scratch the paint. Using the small shelf on the rear of the module, tilt it so there is access to the bottom side. Slide the other hand under the Upper Module for support, and carefully lift the enclosure out of the crate.
4. The cloth grilles are attached to the modules. Detach the grilles from the module and remove the protective plastic covering the grill.
5. Place the Upper Module with an odd serial number on the left side of the room and the module with an even serial number on the right side of the room.

Section 2.2—Crate Content Checklist

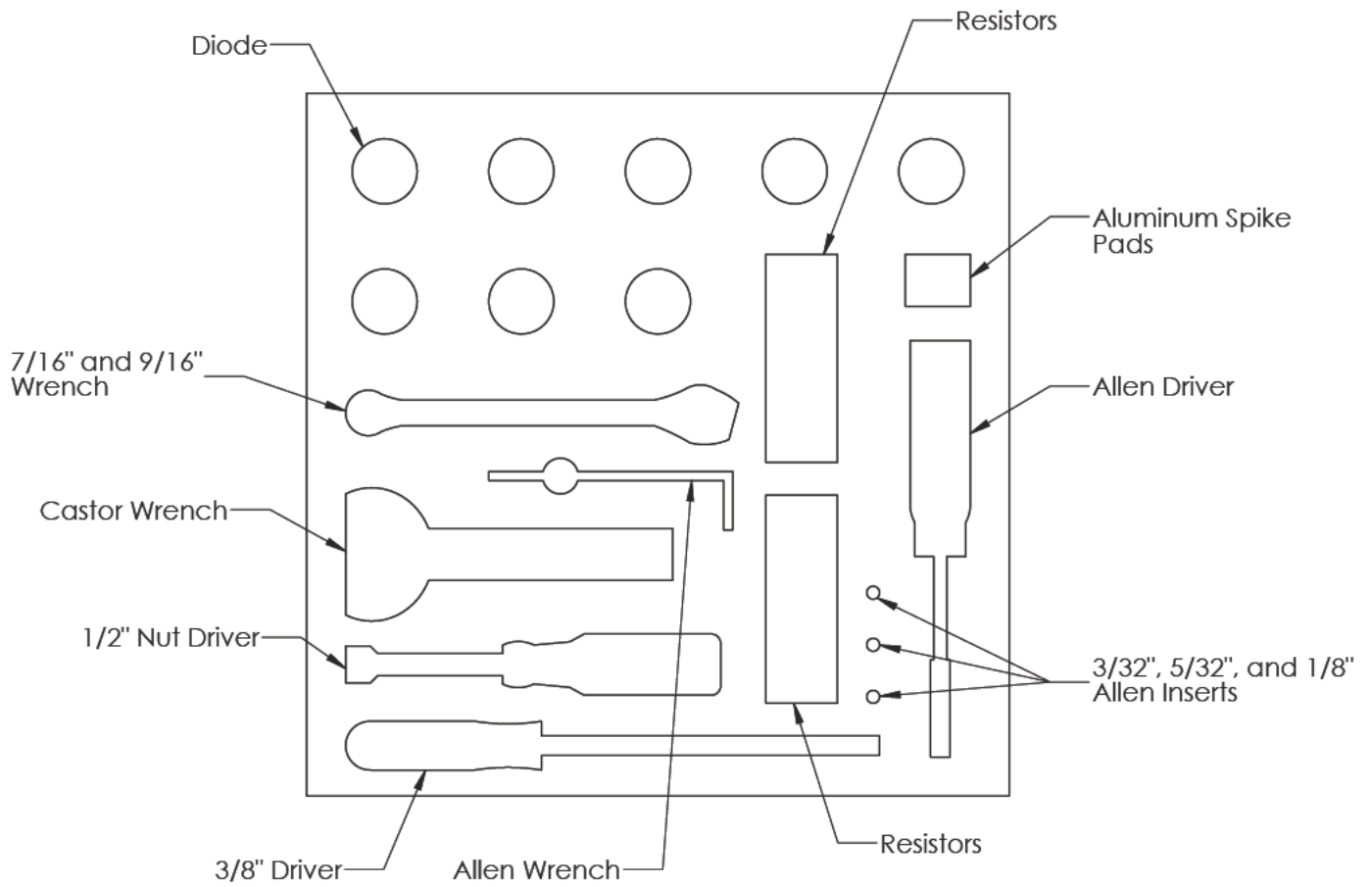
Now that you have unpacked your Sasha Series-2s, you can inventory all the additional items in the crates.

- 1 - Owner's Manual
- 1 - Warranty Registration

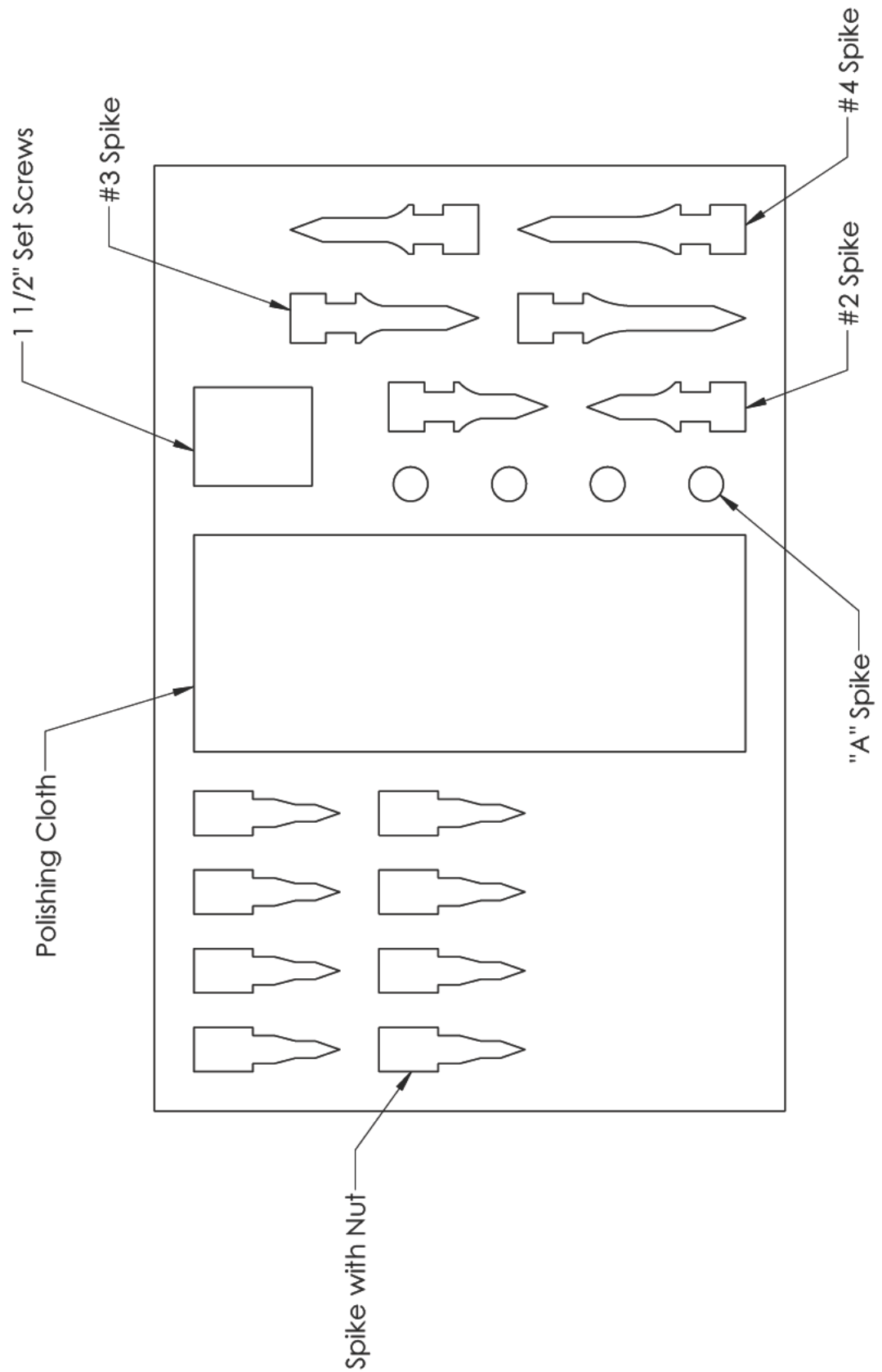
- 2 - Pin Style Grilles (1 per enclosure)
- 4 - "A" Spikes
- 2 - #2 Spikes
- 2 - #3 Spikes
- 2 - #4 Spikes
- 1 - Ladder Step Block
- 1 - 3/8" Allen Wrench
- 1 - 1/8" Allen Wrench
- 1 - 1/2" Nut Driver
- 1 - Polishing Cloth
- 2 - Pin Style Grilles (1 per enclosure)
- 8 - Spikes with Nut
- 8 - Woofer Module Spike assembly (with conical diode)
- 8 - Aluminum Spike Floor Protectors
- 1 - 3/8"-16 x 1 1/2" Set Screw
- 1 - 9/16" Combo Wrench
- 1 - 1 5/32" Allen Wrench
- 3/32" Allen bit
- 1/8" Allen Bit
- Allen Driver

Note: After set up of the system, keep the shipping crates in case of future shipping needs.

Sasha 2 Tool Kit



Sasha 2 Spike Kit



SECTION 3—INITIAL SETUP



Note: Before setting up the Sasha Series-2, study carefully Section 1, “In Your Room.” It provides valuable information on determining the ideal room location for your speakers.

Section 3.1—Initial Assembly

Preparation

You will need the following items:

- Supplied hardware kit
- Tape measure
- Propagation Delay Correction Tables (Section 8)
- Known listening position
- Masking Tape

Take a moment to familiarize yourself with the top of the tables contained in Section 8. There are two tables, which contain important information on the Sasha Series-2’s adjustable Propagation Correction, that will be needed during the setup.

Upper Module Assembly

The Upper Module uses the combination of three spikes installed into the bottom of its enclosure. The spikes provide proper coupling of the Upper Module to the Woofer Module and are used to correct propagation delay. “A” spikes are always installed in the front two positions (the threaded holes located near the bottom front of the enclosure). The spike-type is stamped in the round top of the spike. These two spikes screw into the Upper Module as shown in Figure 3. The spikes should be screwed in all the way, until they are hand tight. Do not over tighten spikes.

Alignment Procedure

Locate the Alignment tables in Section 8. These tables contain critical information that will guide you to position the Upper Module for optimized propagation delay adjustment.

The rear of the Sasha Series-2 Upper Module assembly rests on a specific step in the Alignment Block. The position of the Upper Module is facilitated by the Alignment Block steps. The position is designated by the engraved numbers in the Alignment Block mounting plate. There are also three spike configurations, the use of which are determined by the distance/ear relationship of the installation. The three configurations are: no spike, a number 2, 3, or 4 spike. The table in Section 8 contains information on the appropriate length spike to be used in the rear of the Upper Module.

Determine the alignment of each Upper Module as follows:

1. Repeat each step of this procedure on the left and right channels simultaneously.
2. Remove the Propagation Delay Tables from Section 8 in this booklet and place them close by for easy reference. Propagation Delay Tables are also available on the Wilson Audio APP, which is available on iTunes and Android Marketplace.
3. Make sure that you are in your intended listening position.

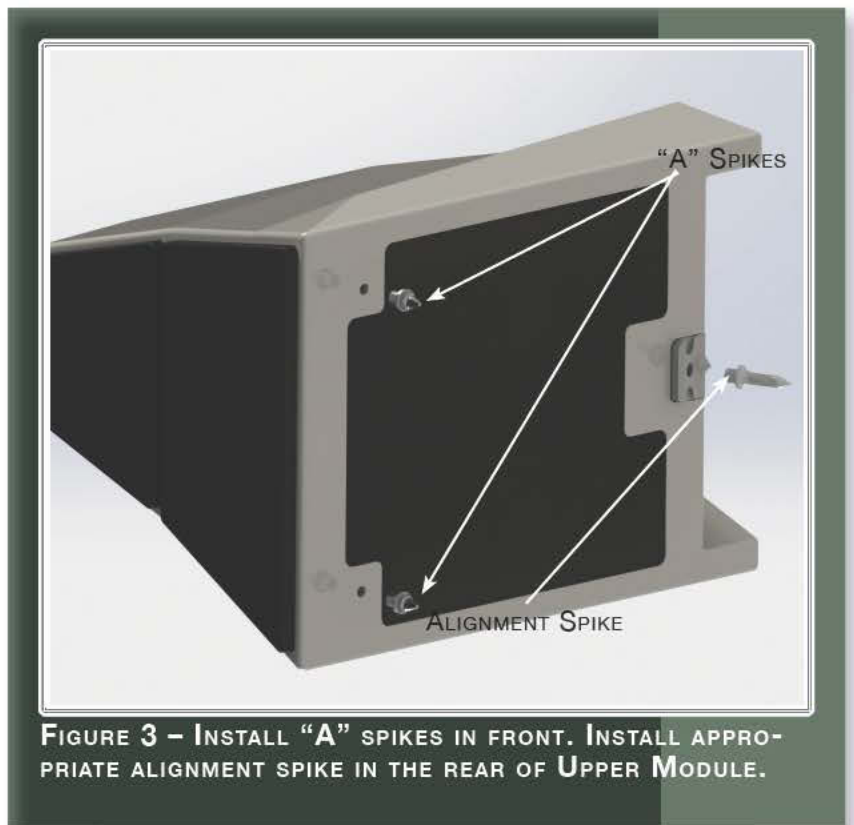


FIGURE 3 – INSTALL “A” SPIKES IN FRONT. INSTALL APPROPRIATE ALIGNMENT SPIKE IN THE REAR OF UPPER MODULE.

4. While sitting, have someone measure your ear height from the floor directly below your ear canal. You should be relaxed in your chair, as you would be when listening to music (see Figure 4).
5. Now measure the distance (on the floor) from the point on the floor below your ear to the base of the loudspeaker, as shown in Figure 4
6. Refer to the Propagation Delay Tables (Section 8) and locate the corresponding ear height for each module. There are two charts for the positioning of the Upper Module. The first: “Sasha Series-2 Spike Length” is a table determining the rear spike length. The Second, “Sasha Series-2 Alignment Block Step,” specifies the step on which the rear spike will rest (see Figure 5).
7. Make a mark on the chart Number 1 “Sasha Series-2 Upper Module Spike Length” indicating the proper rear spike for this module as determined by the ear height and distance from listening position.

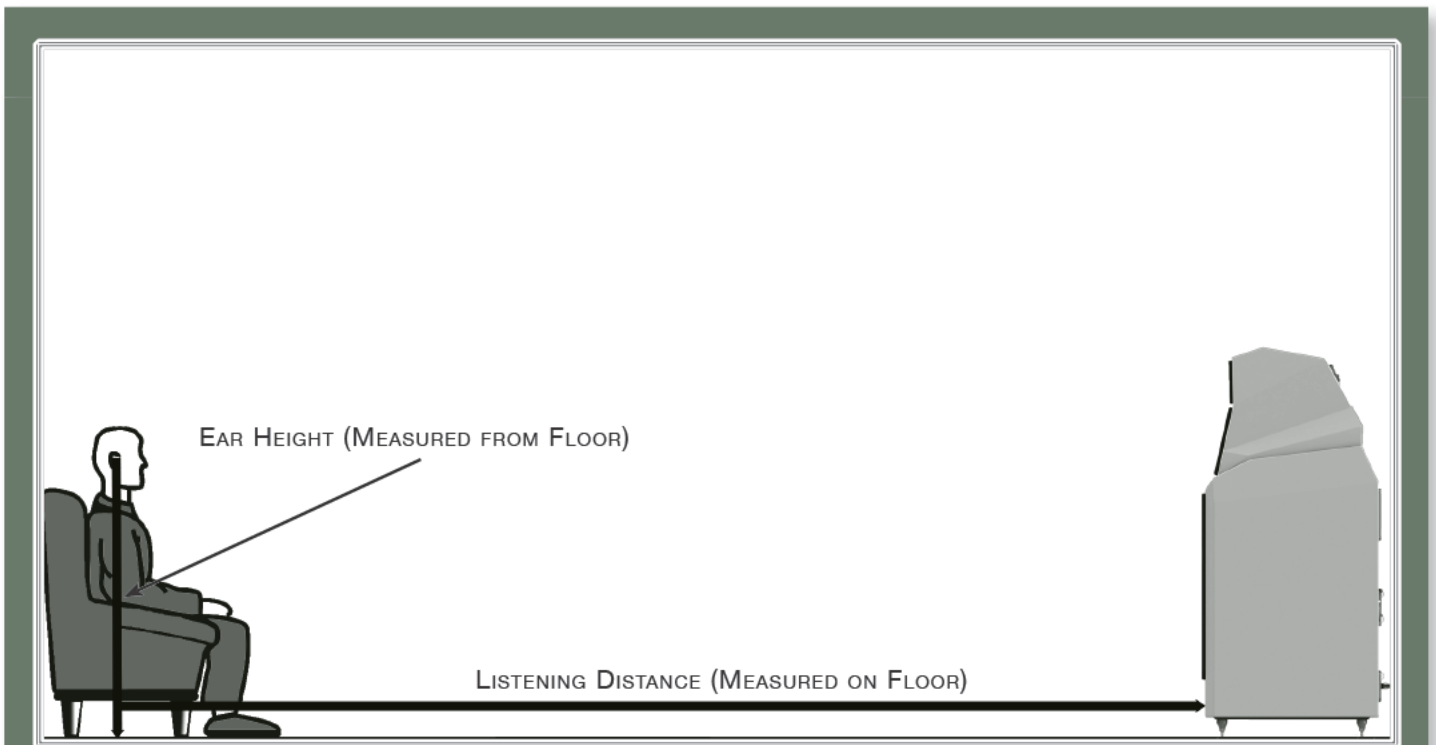


FIGURE 4—MEASURE LISTENING DISTANCE AND EAR HEIGHT.

Note: The shortest spikes (labeled A) are always used at the front of the Upper Module.

8. Make a mark on the second chart labeled "Sasha Series-2 Upper Module Alignment Block Step" indicating Upper Module spike's resting position on the alignment block. Set this information aside as you will refer to it in the next section. (See Figure 5.)

Section 3.2—Mounting the Upper Module

Materials Required:

1. Correct spikes for the upper module.
2. The pages from Section 8 show use of the proper length of rear spike of the upper module. Refer to the Sasha Series-2 Propagation Delay Tables and the procedure in the previous section to determine the correct Aspherical Propagation delay spikes as necessary, the Alignment Block position, and the proper step location on which to place the rear

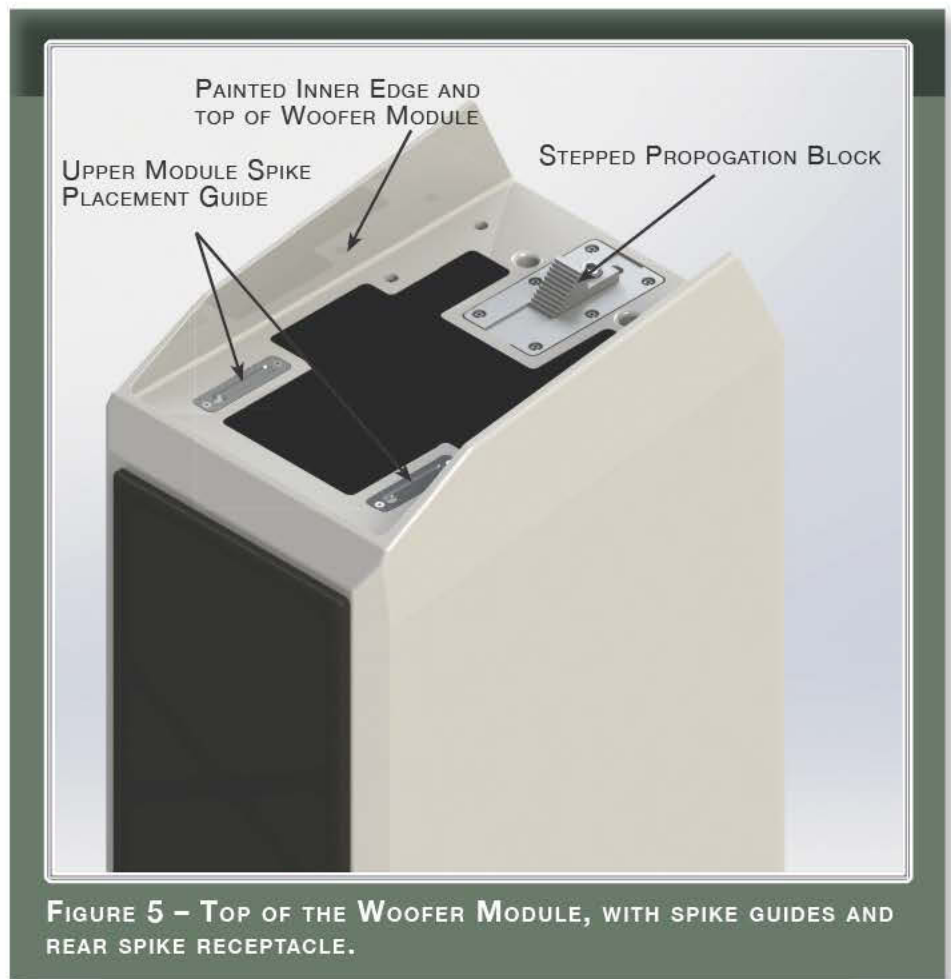
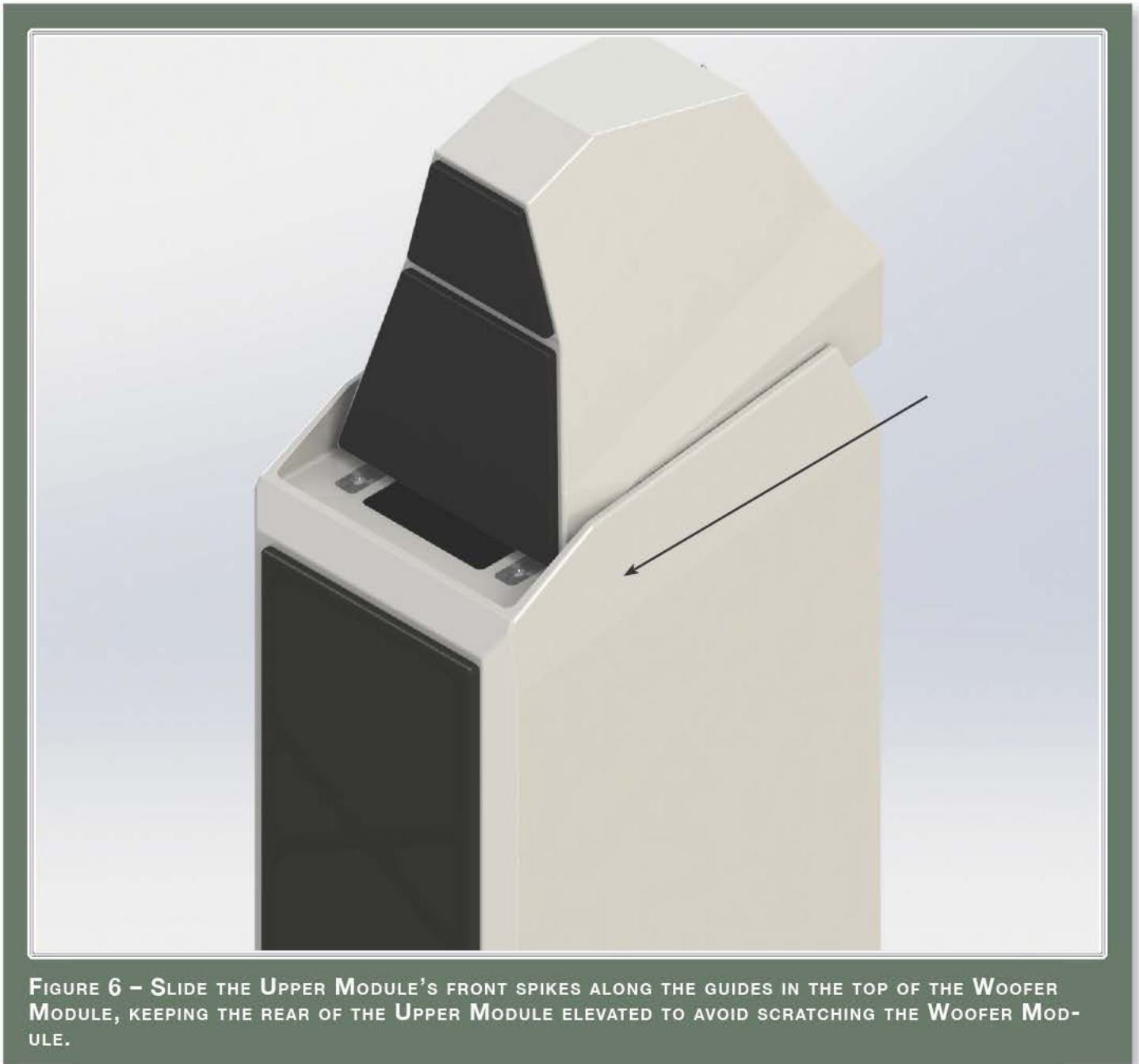


FIGURE 5 – TOP OF THE WOOFER MODULE, WITH SPIKE GUIDES AND REAR SPIKE RECEPTACLE.

spike.

Install the Upper Module As Follows:

1. Install the front pair of short (A length) spikes into the bottom of each module (see Figure 3).



2. Refer to the table labeled "Sasha Series-2 Upper Module Spike Length" and install the appropriate rear spike if necessary.
3. Refer to table labeled "Sasha Series-2 Upper Module Alignment Block Step Position." Using the numbers engraved on the side of the back, make sure the spike rests on the correct alignment step.

NOTE: Take caution not to scratch the painted surface with the alignment spike as you install the Upper Module.

Note: Ensure that the two front spikes are properly seated in their receptacles and that the Upper Module is not skewed atop the Woofer Module. The Upper Module sides should be parallel to the sides of the Woofer Module. This will ensure correct propagation alignment of the drivers.

Umbilical Connections

The correct connection of the two umbilicals to the Upper Module is as follows (See Figure 7):

1. There are two sets of connections on the Upper Module, one for the mid-range and the other for the tweeter.
2. Locate the cable marked "MID FREQ." This cable exits the Woofer Module just below the appropriate connector. Connect the RED lug of the cable to the RED (positive) terminal on the Upper Module. Connect the black lug of the cable to the BLACK (negative) terminal. See Figure 7.
3. Locate the cable marked "TWEETER." Connect the RED lug at the load end of the tail to the RED terminal on the terminal labeled "High Frequency" on the Upper Module. Connect the black lug of the cable to the BLACK (negative) terminal. See Figure 7.

Note: Please ensure that you do not invert the polarity of the umbilicals in the Sasha Series-2. Such an inversion will produce entertaining ambient effects, but destroys the linearity and harmonic structure of the system.



FIGURE 7 – CONNECT THE UMBILICALS TO THE TWO UPPER MODULE INPUTS, OBSERVING CORRECT POLARITY.

SECTION 4—FINISHING UP



Section 4.1 – Spiking the Sasha Series-2

Your dealer is trained in the art and science of the Wilson Audio Setup Procedure (WASP) outlined in Section 1.2. Before the spike/diode assemblies are attached to the bottom of Sasha Series-2, the set up and fine tuning of your loudspeaker should be completed. Before spiking Sasha Series-2, use masking tape to carefully mark their location.

Woofers Module Spikes

Included with Sasha Series-2 are two sets of Woofer Module spikes, which provide acoustical isolation as well as optimal height placement for your speakers. There are two ways of assembling the spikes (with or without the diode). Your choice will depend on your listening room and personal tastes.

Spike/Diode Assembly

1. Locate the spike assembly. On the spike, move the nut to about two threads from the point. This will allow for greater movement when leveling the loudspeaker system. See Figure 8.
2. Screw the spikes into the diode until the nut is against the diode. Be careful that the nut does not turn while inserting and threading spikes into the diode.

Note: Do not tighten these assembled spikes. You will need to unscrew them when you level the Sasha Series-2. This will ensure that if for any reason you have to remove Sasha Series-2 spikes, you will be able to withdraw the set screw using the supplied Allen wrench.

3. Screw the set screw into the diode until it meets the spike (see Figure 8).
4. Assemble the rest of the spikes/diode. See Figure 8.

Installation Procedure

1. Remove the Upper Module from the Woofer Module.
2. Carefully lay the Woofer Module on its side.
3. Insert the diode/spike assemblies into the four holes located on the bottom of each Woofer Module. Tighten until the top surface of the Woofer Module Spike (or spacer) touches the bottom surface of the "X" material plate.

Note: The spike receptacles are tapped directly into the "X" material plate on the bottom of the Woofer Module. Be very careful **NOT TO CROSS THREAD** the spikes (see

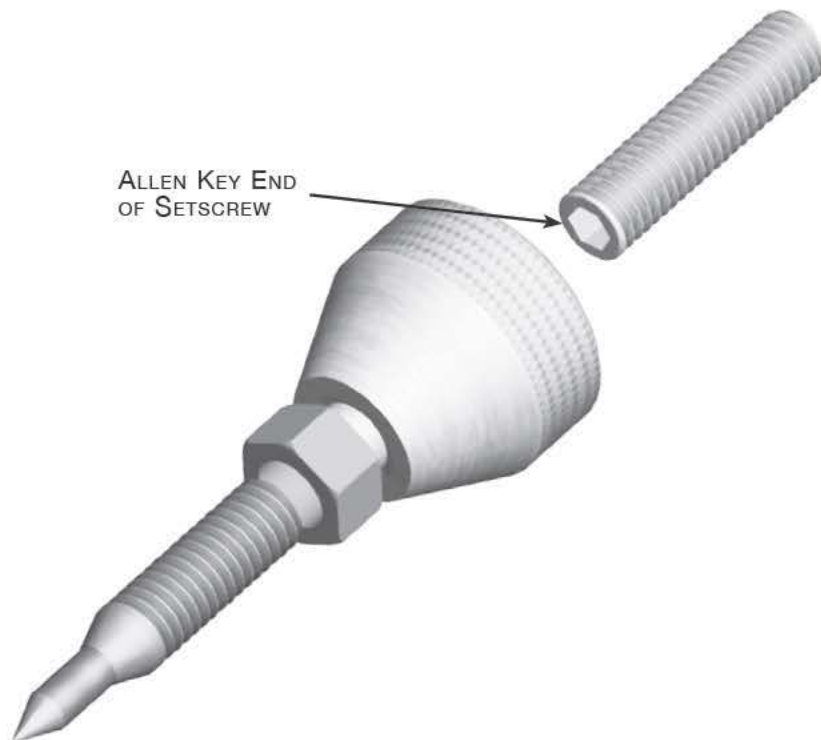


FIGURE 8 – VARIOUS SPIKE/DIODE OPTIONS, WITH NO SPACERS OR WITH ONE OR TWO SPACERS.

Figure 8).

Section 4.2—Leveling the Sasha Series-2

1. Place a level on the left to right oriented axis in the flat area atop the woofer behind the Upper Module. If it is level, move to the next step.
2. You may rotate the spike tips in place by using a vice-grip or toothed pliers.
3. Lengthen the appropriate spike or spikes (not the Woofer Module Spike diode on the set screw) on that lower side until the Sasha Series-2 is level.
4. If the speaker is leaning to the left, lengthen both Woofer Module spikes on the right hand side of the speaker. If the speaker is leaning right, lengthen the left hand spikes. Lengthen the spikes incrementally, checking and rechecking the level until the Sasha Series-2 is level left to right.
5. Place a level on the front to back oriented axis. If it is level, then Sasha Series-2 is level. If the Sasha Series-2 is leaning one way or the other, following the same process as above, lengthen the appropriate spikes on the front or rear of the Woofer Module until the Sasha Series-2 is level.



FIGURE 9 – INSTALL THE ASSEMBLED WOOFER MODULE SPIKES BY REMOVING THE UPPER MODULE AND TURNING THE WOOFER MODULE ON ITS SIDE.

6. To find out which spike to lower, grasp the Sasha Series-2 channel and gently rock it back and forth. This will identify the spike that is out of level from the other three. If there is movement, lengthen the appropriate spike until the Sasha Series-2 sits solidly on the floor. Make sure the spike is penetrating the carpet surface and is resting on the solid floor beneath.
7. Once all adjustments have been made, with the 9/16" wrench provided, tighten the nut on the spike to the diode. **DO NOT OVERTIGHTEN!** "Snug" is tight enough.

Section 4.3—Removing the Protective Film

To protect the finish of the Sasha Series-2 during final manufacture, shipment, and setup in your listening room, we have applied a removable layer of protective film over the finish. We recommend that this film be left in place until the speakers are in their final location in your listening room. Once you have determined their final position, remove the film by following this procedure:

1. Ensure the speaker surface is room temperature before removing the protective film. Removing the protective film when the speaker surface is cold can damage the paint surface.
2. Slowly remove the film from the top down, large sections at a time, gently pulling the film downward and outward. Tearing the film aggressively can damage the paint.
3. Take care in removing the protective film near edges and corners to prevent paint damage in these areas.



FIGURE 10 – THE RESISTORS ARE LOCATED UNDER THE PLATE ON THE REAR OF THE WOOFER ENCLOSURE.



FIGURE 11 – MID & TWEETER RESISTOR ARE ATTACHED TO HEATSINKS WITH ALLEN HARDWARE.

4. The protective film should not be left on the painted surface for extended periods of time nor exposed to heat sources and direct sunlight.

Section 4.4—Resistors

By removing the large aluminum back cover on the rear of the woofer module of your Sasha Series-2s, you may gain access to the resistor plate (see Figure 10). These resistors serve several functions.

Note: Only Wilson Audio replacement resistors should be used in your Sasha Series-2s. Changing the value or brand of resistor will have a deleterious affect on the sonic performance of your loudspeakers and will void your Wilson Audio Warranty.

Midrange and Tweeter Resistors

The Midrange Level, which consists of two 3.0 ohm resistors in parallel, and Tweeter Level, which consists of two 3.75 ohm resistors in parallel, resistors provide precise level matching for the midrange and tweeter drivers correspondingly. The resistors also act as ultra high quality fuses which open before a driver can be damaged by excess power. See Section 6.0 for details in replacing these resistors in the event one of

these resistors is damaged.

Additionally, these resistors can be used to tailor the output of the corresponding driver to overcome tonal balance issues that result from room acoustics.

Woofers Damping Resistor

The Woofer Damping resistor affects the way the Sasha Series-2's woofers couple to the amplifier. These resistors are pre-installed in the base of the Bass Module and should not be changed.

SECTION 5—CARE OF YOUR SASHA



Section 5.1—Care of the Finish

The Sasha Series-2 loudspeakers are hand painted with WilsonGloss™ paint and hand polished to a high luster. While the finish seems quite dry to the touch, final curing and complete hardening takes place over a period of several weeks.

Dusting the Sasha Series-2

It is important that the delicate paint finish of the Sasha Series-2 be dusted carefully with the provided dust cloth. We recommend that the following procedure be observed when dusting the speakers:

- Blow off all loose dust.
- Using the special dust cloth as a brush, gently whisk off any remaining loose dust.
- Shake out the dust cloth.
- Dust the finish, using linear motions in one direction parallel to the floor. Avoid using circular or vertical motions.

Because the paint requires a period of several weeks to fully cure, we recommend that no cleaning fluids, such as glass cleaners, be used during this initial period of time. When the paint is fully cured, heavy fingerprints and other minor smudges may be removed with a glass cleaner. Always use the dust cloth. Stronger solvents are not recommended under any circumstances. Consult your dealer for further information if



required. To maintain the high luster of the finish, periodic polishing may be desired. We recommend a nonabrasive carnauba-based wax and a soft cloth.

Care of the Grilles

Periodically, you will want to clean the Sasha Series-2's grilles. This is best done by using the round brush attachment on a vacuum cleaner hose. Gently vacuum the front surface of the grille. Be careful not to apply too much pressure. Do not use a hard plastic attachment against the grille. The grille cloth is stretched tightly over the grille frame. Too much pressure or use of a hard plastic attachment could cause the grille material to tear, especially in the corners.

Often Wilson speaker owners desire to change the look of their listening room by changing the color of their speaker grilles. In addition to basic black, Wilson Audio offers a variety of grille colors to match most WilsonGloss finishes. Contact your local dealer for grille cloth samples or to order replacement grilles for Sasha Series-2.

Break-in Period

All audio equipment will sound best after its components have been broken in for some period of use. Wilson Audio breaks in all woofers and mid-range drivers for approximately 12 hours. All drivers are then tested, calibrated, and matched for their acoustical properties. In your listening room, expect 25 to 50 percent of break-in to be complete after two hours of playing music at normal listening levels. Ninety percent of break-in is complete after 24 hours of playing. Playing a CD on repeat overnight can accomplish this task quickly. Wilson Audio recommends chamber music for this task.

Section 5.2—Enclosure Technology

Materials

Wilson Audio has conducted many hours of research on the impact of materials on

speaker enclosure performance. Through this effort, Wilson pioneered the use of non-resonant materials, first with the use of mineral-filled acrylic in the Upper Module and continuing with the further development of proprietary materials for X-1 Grand SLAMM and the original WATT/Puppy. Even the best materials are not suited to all aspects of enclosure construction. Therefore, like all Wilson loudspeakers, the Sasha Series-2 is constructed of several exotic materials chosen for their specific performance attributes relevant to different portions of the enclosure.

Sasha Series-2 is constructed using ultra-low-resonant, high-density, composites which are then cross-braced to further reduce cabinet resonance. Each of these composites meets and exceeds the highest of ANSI test standards for its use, while offering very tight tolerances, high hardness, uniform density, and dimensional stability.

Adhesive

Wilson Audio has conducted exhaustive research into the best adhesives to permanently bond our speaker enclosures. This is often an overlooked element crucial to the proper performance of a loudspeaker. Correct modulus of elasticity, coefficient of thermal expansion, and natural frequency response are just a few of the important elements of adhesives.

A highly cross-linked, thermo-set adhesive is used for the construction of the enclosure. It was also chosen for its excellent bond strength, solvent resistance, hardness, and optimum vibrational characteristics.

Section 5.3—Depth of Design

Sasha Series-2's compellingly authentic performance and lasting value are achieved through careful implementation of cutting edge design and engineering and then executed using the highest performance materials. Wilson Audio's use of proprietary enclosure materials and adhesives are employed to achieve truly exceptional

speaker cabinet performance. The use of these materials in Sasha Series-2 results in an enclosure that is inherently inert and non-resonant. All of these structural aspects are combined, allowing Wilson Audio to deliver a product that maintains the strictest structural tolerances, durability, and reliability. This also means that the Sasha Series-2 will have consistent, repeatable performance, unaffected by the climatic conditions, anywhere in the world. Finally, like all Wilson products, Sasha Series-2 is hand-crafted with meticulous attention to detail, with an unwavering commitment to excellence. Thus, Sasha Series-2 will impart to her owner beauty and pleasure for many years to come.



SECTION 6—TROUBLESHOOTING



Section 6.1—Troubleshooting

One channel is not operating:

Check the interconnects from source.

Check the connections on the speaker cables, both at the amplifier and speaker ends. Watch especially for connectors touching each other.

Check the umbilicals that connect the two modules. You may have forgotten to connect them, or they may have shorted or come loose during setup.

Imaging is off-center:

Check your connections. A connection to one of the modules may have come loose. When a tweeter or mid-range driver is not working, or is out of phase, the Sasha Series-2 will not “image” properly. Double check your connections for red-to-red and black-to-black.

Play music at a low level and listen to each driver in each channel. You may have a driver that is not operating correctly. If you find a driver that is silent, please go to the “Driver Out” section of this troubleshooting guide.

A chronic lack of bass energy:

Check the input cable connections on your woofer enclosure. If one channel is out of phase (connections reversed), bass will be cancelled. Note: Turn off your amplifier and unplug it from the wall.

Driver out or not playing after connections have been verified:

If you have found a driver with no output, move to the rear of this particular loudspeaker.

Using the appropriate Allen key, open the X-material door on the back of the Woofer module.

You will find some resistor connections. Replace the resistor with the supplied matching resistor. Tighten the new resistor in the old one's place. The woofer resistor may be replaced in the same manner and is located behind the access door in the bottom of the Woofer Module.

Note: Use only Wilson Audio replacement resistors in Sasha Series-2. These resistors were carefully chosen for the overall sonic and thermal performance.

Plug your amplifier into the wall and turn it on.

Listen to the channel at a low level. The driver should now be operating correctly.

Amplifier shuts off as soon as it is turned on:

Check to see if your speaker cables are properly secured. Look for frayed ends, loose connections, or a conductor contacting the amplifier chassis.

Turn the amplifier off and disconnect it from the AC wall outlet. Disconnect the preamplifier leads to the amplifier. Now turn on the amplifier.

If the problem is solved:

There is likely something wrong with your preamplifier or interconnect. Contact your dealer.

If the problem persists:

Leave the preamp leads disconnected and continue to the next step.

Turn the amplifier off. Disconnect the speaker leads at the main input to the speaker. Now turn on the amplifier.

If the problem is solved:

Call your Wilson Audio dealer. There may be a problem with the crossover or the speaker's internal wiring.

If the problem persists:

Continue to the next step.

Turn the amplifier off and disconnect it from the AC wall outlet. Disconnect the speaker cable leads to the amplifier and turn the amplifier on again.

If the problem is solved:

You have a short in your speaker cables. Check for frayed ends, holes (from spike feet), or make sure that your spade lug is not touching the chassis while it is connected to the binding post.

If the problem persists:

Call the dealer where you bought your amplifier. You appear to have a problem with this component.

SECTION 7—SPECIFICATIONS



Section 7.1—Specifications

Enclosure Type Upper Module: Rear Ported Midrange, X&S-Material

Enclosure Type Woofer Module: Rear Ported Woofer, X-Material

Woofers: Two – 8 inch (20.32 cm)

Midrange One – 7 inch (17.78 cm)

Tweeter: One – 1 inch, Dome (2.54 cm)

Sensitivity: 92 dB (one watt at one meter at 1kHz)

Nominal Impedance: 4 ohms / minimum 2.17 ohms @ 90 Hz

Minimum Amplifier Power: 20 watts per channel

Frequency Response: 20 Hz – 27 kHz +/- 3 dB room average response [RAR] (with port contribution)

Overall Dimensions: Height – 45 1/8 inches (114.61 cm)

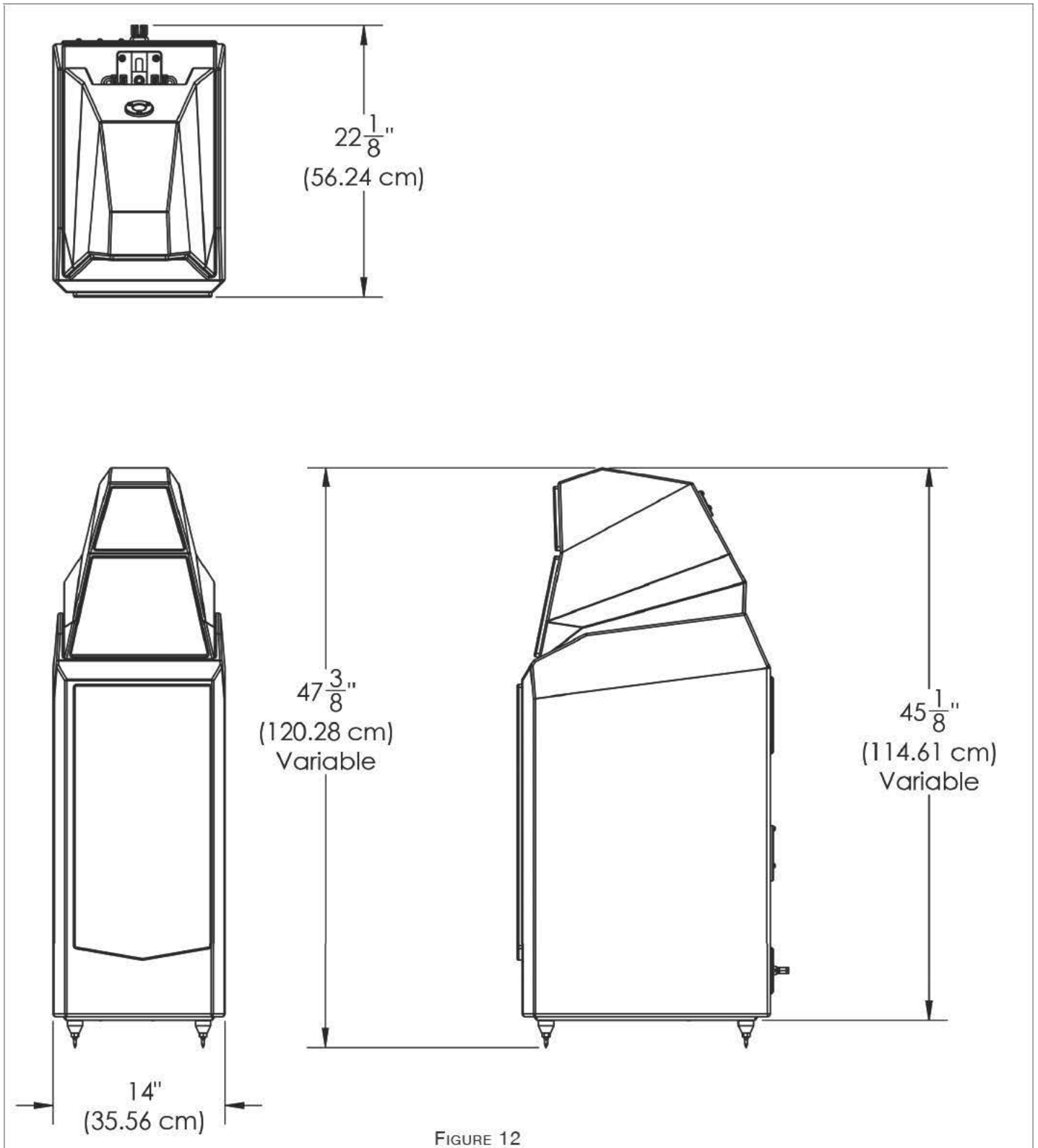
Width – 14 inches (35.56 cm)

Depth – 22 1/8 inches (56.24 cm)

Sasha Series-2 Weight Per Channel: 207 lbs (93.89 kg)

System Shipping Weight (approx.): 650 lbs (294.84 kg)

Section 7.2—Sasha Series-2 Dimensions



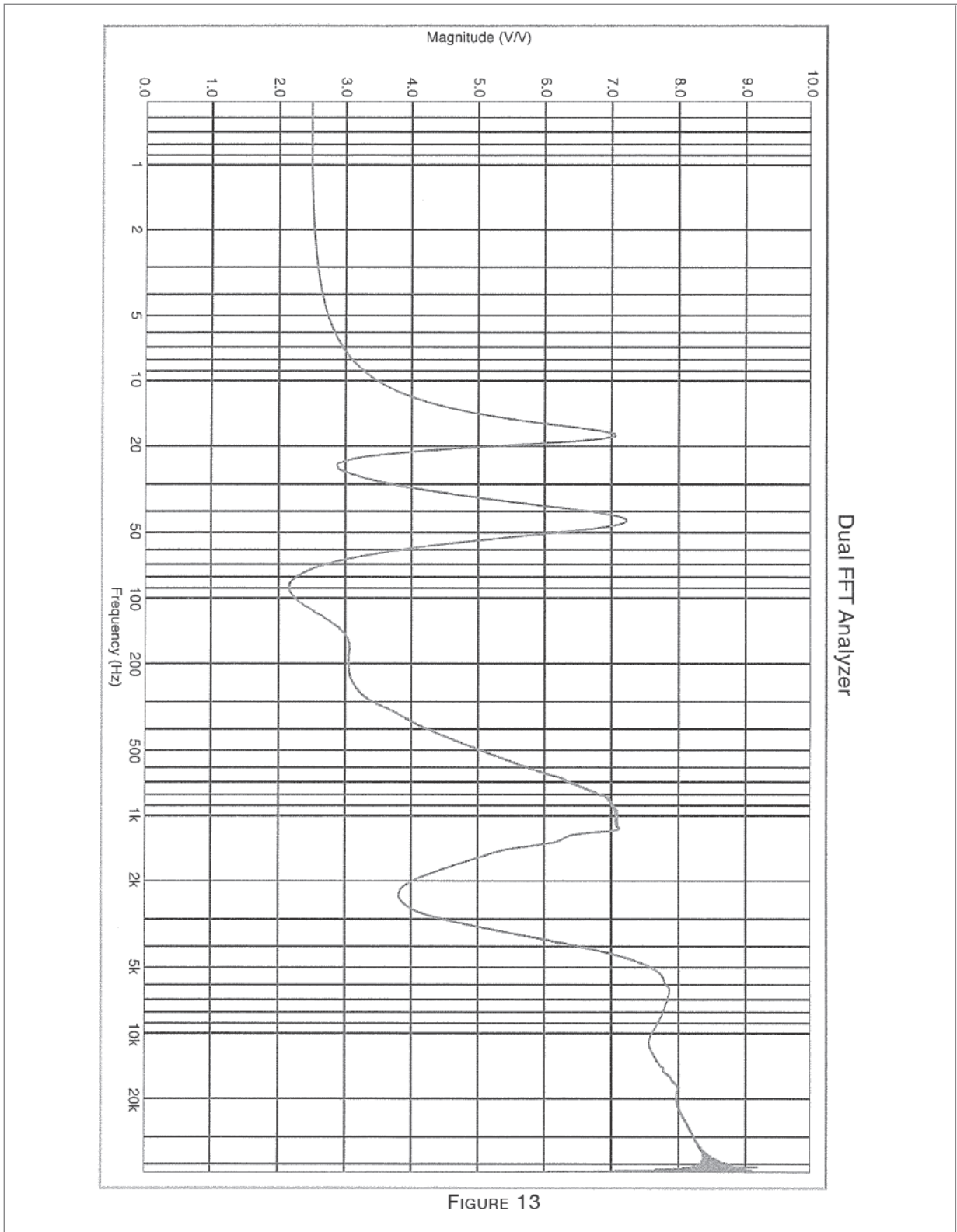
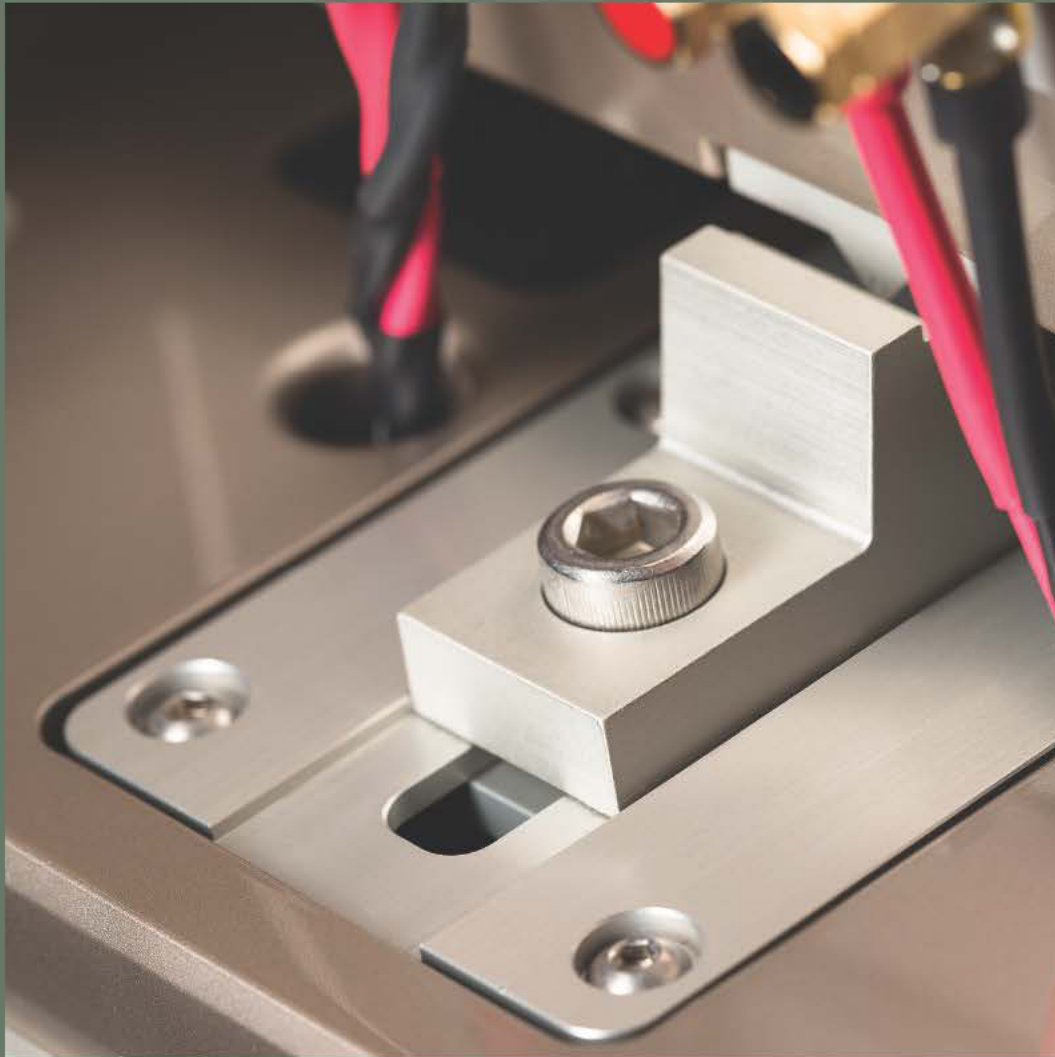


FIGURE 13

SECTION 8 — PROPAGATION DELAY TABLES



Section 8.1—Propagation Delay Tables

Sasha Series-2 Spike Length

Far Height in Inches	Listening Distance in Feet											
	8'	9'	10'	11'	12'	14'	16'	18'	20'	22'	24'	26'
48	No Spike	No Spike	2	2	2	2	2	2	2	2	2	2
46	2	2	2	2	2	2	2	2	2	2	2	2
44	2	2	2	2	2	2	2	2	2	2	2	2
42	2	2	2	2	2	2	2	2	2	2	2	2
40	2	3	2	2	2	2	2	2	2	2	2	2
38	3	3	3	3	3	3	3	2	2	2	3	3
36	4	4	4	3	3	3	3	3	3	3	3	3

Sasha Series-2 Spike-step Location

Listening Distance in Feet

Far Height in Inches	Listening Distance in Feet											
	8'	9'	10'	11'	12'	14'	16'	18'	20'	22'	24'	26'
48	9	10	2	2	3	3	3	4	4	4	4	4
46	3	3	3	4	4	4	4	5	5	5	5	5
44	5	5	5	5	5	5	5	5	6	6	6	6
42	7	7	7	7	7	6	6	6	6	6	6	6
40	9	6	8	8	8	8	7	7	7	7	7	7
38	8	8	7	7	7	6	6	8	8	8	5	5
36	7	6	5	8	8	7	7	6	6	6	6	5

SECTION 9 — WARRANTY INFORMATION



S E R I E S — 2

Section 9.1—Warranty Information

Limited Warranty

Subject to the conditions set forth herein, Wilson Audio warrants its loudspeakers to be free of manufacturing defects in material and workmanship for the Warranty Period. The Warranty Period is a period of 90 days from the date of purchase by the original purchaser, or if both of the following two requirements are met, the Warranty Period is a period of five (5) years from the date of purchase by the original purchaser:

Requirement No. 1. No later than 30 days after product delivery to the customer, the customer must have returned the Warranty Registration Form to Wilson Audio;

Requirement No. 2. The product must have been professionally installed by the Wilson Audio dealer that sold the product to the customer.

FAILURE TO COMPLY WITH EITHER REQUIREMENT NO. 1 OR REQUIREMENT NO. 2 WILL RESULT IN THE WARRANTY PERIOD BEING LIMITED TO A PERIOD OF 90 DAYS ONLY.

Conditions

This Limited Warranty is also subject to the following conditions and limitations. The Limited Warranty is void and inapplicable if the product has been used or handled other than in accordance with the instructions in the owner's manual, or has been abused or misused, damaged by accident or neglect or in being transported, or if the product has been tampered with or service or repair of the product has been attempted or performed by anyone other than Wilson Audio, an authorized Wilson Audio Dealer Technician or a service or repair center authorized by Wilson Audio to service or repair the product. Contact Wilson Audio at (801) 377-2233 for information on location of Wilson Audio Dealers and authorized service and repair centers. Most repairs can

be made in the field. In instances where return to Wilson Audio's factory is required, the dealer or customer must first obtain a return authorization. Purchaser must pay for shipping to Wilson Audio, and Wilson Audio will pay for shipping of its choice to return the product to purchaser. **A RETURNED PRODUCT MUST BE ACCOMPANIED BY A WRITTEN DESCRIPTION OF THE DEFECT.** Wilson Audio reserves the right to modify the design of any product without obligation to purchasers of previously manufactured products and to change the prices or specifications of any product without notice or obligation to any person.

Remedy

In the event that the product fails to meet the above Limited Warranty and the conditions set forth herein have been met, the purchaser's sole remedy under this Limited Warranty shall be to: (1) contact an authorized Wilson Audio Dealer within the Warranty Period for service or repair of the product without charge for parts or labor, which service or repair, at the Dealer's option, shall take place either at the location where the product is installed or at the Dealer's place of business; or (2) if purchaser has timely sought service or repair and the product cannot be serviced or repaired by the Dealer, then purchaser may obtain a return authorization from Wilson Audio and at purchaser's expense return the product to Wilson Audio where the defect will be rectified without charge for parts or labor.

Warranty Limited to Original Purchaser

This Limited Warranty is for the sole benefit of the original purchaser of the covered product and shall not be transferred to a subsequent purchaser of the product, unless the product is purchased by the subsequent purchaser from an authorized Wilson Audio Dealer who has certified the product in accordance with Wilson Audio standards and requirements and the certification has been accepted by Wilson Audio, in which event the Limited Warranty for the product so purchased and certified shall expire at

the end of the original Warranty Period applicable to the product.

Demonstration Equipment

Equipment, while used by an authorized dealer for demonstration purposes, is warranted to be free of manufacturing defects in materials and workmanship for a period of five (5) years from the date of shipment to the dealer. Demo equipment needing warranty service may be repaired on-site or, if necessary, correctly packed and returned to Wilson Audio by the dealer at dealer's sole expense. Wilson Audio will pay return freight of its choice. A returned product must be accompanied by a written description of the defect. Dealer owned demonstration equipment sold at retail within two (2) years of date of shipment to the dealer is warranted to the first retail customer to be free of manufacturing defects in materials and workmanship for the same time periods as if the product had originally been bought for immediate resale to the retail customer. Wilson Audio products are warranted for a period of 90 days, unless extended to 5 years, as provided above, by return and filing of completed Warranty Registration at Wilson Audio within 30 days after product delivery to customer and the product was professionally installed by the Wilson Audio Dealer that sold the product to the customer.

Miscellaneous

ALL EXPRESS AND IMPLIED WARRANTIES NOT PROVIDED FOR HEREIN ARE HEREBY EXPRESSLY DISCLAIMED. ANY LEGALLY IMPOSED IMPLIED WARRANTIES RELATING TO THE PRODUCT SHALL BE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. THIS LIMITED WARRANTY DOES NOT EXTEND TO ANY INCIDENTAL OR CONSEQUENTIAL COSTS OR DAMAGES TO THE PURCHASER.

Some states do not allow limitations on how long an implied warranty lasts or an exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

