

POLARIS

POLARIS CONVERGENT SYNERGY OWNER'S MANUAL



WILSON
AUDIO

Polaris Convergent Synergy Owner's Manual

Wilson Audio® is a registered trademark of Wilson Audio Specialties, Inc.

WATT/Puppy®, WAMM®, Cub®, Sophia®, Sasha®, MAXX®, and Alexandria® are registered trademarks of Wilson Audio Specialties, Inc.

WilsonGloss™, Alexia™, Polaris™, Polaris Convergent Synergy™, Mezzo™, Mezzo Convergent Synergy™, Duette™, WATCH Center™, WATCH Surround™, and WATCH Dog™ are trademarks of Wilson Audio Specialties, Inc.

This manual was produced by the Wilson Audio Engineering and the Sales and Marketing Department. The information contained herein is subject to change without notice. Current Revision 1.8. If you are in need of a more recent manual, please contact your dealer.

The information in this manual is the sole property of Wilson Audio Specialties, Inc. Any reproduction, in whole or in part, without the express written permission of Wilson Audio Specialties, Inc., is prohibited. No material contained herein may be transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of Wilson Audio Specialties, Inc.

CE

POLARIS CONVERGENT SYNERGY OWNER'S MANUAL	1
POLARIS CONVERGENT SYNERGY OWNER'S MANUAL	2
TABLE OF CONTENTS	3
SECTION 1 – INTRODUCTION	7
SECTION 1.1 – INTRODUCTION	9
MORE ON ASPHERICAL PROPAGATION DELAY	12
SECTION 2 – UNCRATING YOUR POLARIS	15
SECTION 2.1 – UNCRATING THE POLARIS CONVERGENT SYNERGY .	17
INITIAL CHECK	17
UNCRATING THE POLARIS CONVERGENT SYNERGY	17
SECTION 2.2 – CRATE CONTENT CHECKLIST	18
POLARIS CONVERGENT SYNERGY CRATE	18
SECTION 3.1 – THE WILSON AUDIO SETUP PROCEDURE	23
FINAL LISTENING ROOM SETUP (VOICING)	23
ZONE OF NEUTRALITY: MAIN LEFT AND RIGHT CHANNEL	23
SECTION 3.2 – ROOM ACOUSTICS	25
SLAP ECHO	25
STANDING WAVES	28
COMB FILTER EFFECT	29
SECTION 3.3 – RESONANCES	30
STRUCTURAL RESONANCE	30
VOLUME RESONANCE	30
SECTION 3.4 – YOUR ROOM	31
ROOM SHAPES	31
POLARIS CONVERGENT SYNERGY IN A DEDICATED THEATER	32

SPEAKER PLACEMENT VERSUS LISTENING POSITION	33
SPEAKER ORIENTATION	33
POLARIS CONVERGENT SYNERGY	34
SECTION 4 – INITIAL SETUP	35
SECTION 4.1 – INITIAL ASSEMBLY	37
REMOVING THE PROTECTIVE FILM	37
SECTION 4.2 – GEOMETRIC TIME DOMAIN ALIGNMENT.....	38
MATERIALS REQUIRED.....	38
PROPAGATION DELAY ALIGNMENT	38
ROOM SETUP	38
ALIGNMENT PROCEDURE	39
SECTION 4.3 – MOUNTING THE MIDRANGE MODULE	42
MATERIALS REQUIRED.....	42
INSTALL THE MIDRANGE MODULE.....	43
SECTION 4.4 – MOUNTING THE TWEETER MODULE	44
SECTION 4.5 – CONNECTING UPPER MODULES’ SIGNAL CABLE....	44
SECTION 4.6 – SPIKE INSTALLATION.....	45
SPIKE ASSEMBLY.....	45
SECTION 4.7 – USING THE LIFT TO INSTALL SPIKES.....	46
MATERIALS REQUIRED.....	46
INSTALLATION PROCEDURE.....	47
LEVELING THE POLARIS.....	48
SECTION 4.8 – RESISTORS.....	49
MIDRANGE AND TWEETER RESISTORS	50
WOOFER DAMPING RESISTOR.....	50
SECTION 4.9 – BREAK-IN PERIOD	51

SECTION 5 – FINAL SETUP 53

SECTION 5.1 – TIPS FOR FINAL VOICING, HOME THEATER 55

SECTION 5.2 - LEFT AND RIGHT CHANNELS 56

 DETERMINING FRONT TO BACK DISTANCE..... 56

 DETERMINING SIDE TO SIDE DISTANCE 57

SECTION 5.3 - INTEGRATING THE POLARIS INTO A THEATER 58

 CORRECT POLARITY..... 58

 INTEGRATING THE POLARIS AS A CENTER CHANNEL..... 58

 IMAGE HEIGHT..... 59

 INTEGRATING THE WATCH SURROUND CHANNELS 59

 INTEGRATING THE PASSIVE WATCH DOG OR THOR’S HAMMER .. 60

SECTION 6 – CARE OF POLARIS 61

SECTION 6.1 – CARE OF THE FINISH 63

 DUSTING THE POLARIS CONVERGENT SYNERGY 63

 CARE OF THE GRILLS 63

SECTION 6.2 – ENCLOSURE TECHNOLOGY 64

 MATERIALS 64

 ADHESIVE..... 65

SECTION 6.3 – DEPTH OF DESIGN 65

SECTION 7 – TROUBLESHOOTING 67

SECTION 7.1 – TROUBLESHOOTING:..... 69

SECTION 8 - REPAIR PROCEDURES 71

SECTION 8.1 - REPAIR PROCEDURES 73

 REPLACING A BLOWN RESISTOR..... 73

 REPLACING A DAMAGED DRIVER..... 74

SECTION 9 – SPECIFICATIONS 77

SECTION 9.1 - POLARIS SPECIFICATIONS 79

 ENCLOSURE TYPE: 79

 DRIVERS: 79

 MEASUREMENTS: 79

 DIMENSIONS: 79

POLARIS CONVERGENT SYNERGY DIMENSIONS..... 80

POLARIS CONVERGENT SYNERGY IMPEDANCE CURVE 81

SECTION 10 – ALIGNMENT TABLES..... 83

SECTION 10.1 – POLARIS PROPAGATION DELAY TABLE 85

FOOTNOTES TO ALIGNMENT TABLES 89

SECTION 11 – WARRANTY INFORMATION..... 91

SECTION 11.1 – WARRANTY INFORMATION 93

 LIMITED WARRANTY 93

 CONDITIONS 93

 REMEDY..... 94

 WARRANTY LIMITED TO ORIGINAL PURCHASER 94

 DEMONSTRATION EQUIPMENT 95

 MISCELLANEOUS..... 95

POLARIS

SECTION 1 - INTRODUCTION



Section 1.1 – Introduction

From all of us at Wilson Audio Specialties—thank you for purchasing the Polaris Convergent Synergy loudspeaker. The information contained within the pages of this manual will inform and instruct on the proper assembly, set up, and long term care of your Polaris Convergent Synergy.

The Polaris Convergent Synergy was formulated and engineered with a specific function in mind: a loudspeaker endowed with similar authority and dynamic range as Wilson’s large floorstanding loudspeakers, Alexandria® XLF and MAXX®, but in a low-profile package. When used as a center channel, Polaris Convergent Synergy seamlessly matches the acoustic signature of Wilson’s larger loudspeakers – whether the main left/right speakers are Alexandrias, MAXXs or two more Polaris. The Polaris Convergent Synergy also provides an unprecedented level of musical accuracy in music systems and home theaters where its low-profile form solves architectural challenges, such as in those installations where a tall loudspeaker would block the view afforded by large windows, or would obstruct wall-hanging artwork. Whether it is used as a center channel or as a main loudspeaker, Polaris Convergent Synergy matches the tonal beauty, dynamic speed, tonal sophistication, resolution, and sense of “thereness” of its taller Wilson brethren.

The Polaris Convergent Synergy is the latest effort from the *Wilson Special Applications Engineering™* team. Arguably Wilson’s first Special Applications product was the WATT. Dave needed an accurate and portable location monitor for the series of audiophile recordings he was making at the time. In a way, Dave began the project out of frustration; nothing available on the market suited his exacting need. Dave set out to design and build a monitor for this specific purpose. The result was the Wilson Audio Tiny Tot (WATT). Everything about the WATT’s form was incorporated by Dave to serve its purpose as a portable monitor. This was perhaps best signified by the thick cylindrical aluminum handle that traversed the two blades in the rear of the WATT, which was placed so as to provide Dave

a safe and convenient handle by which to carry the speaker into and out of the recording locations. Prior to Polaris, Duette was the Wilson Special Applications Engineering team's most ambitious project. Here, the goal was to design a loudspeaker that would perform to Wilson Standards in environments hostile to good sound, such as against a wall or in a custom cabinet. Duette changed what was previously thought possible for these types of installations, bringing Wilson's trademark transparency, tonal accuracy, and dynamic agility to the "architectural" arena.

Among the technical innovations of the Polaris Convergent Synergy:

- The Polaris features the ground-breaking Wilson midrange drivers developed originally for the Alexandria Series 2. When listening to live music, the interaction of the hall with the instruments in the ensemble created an interaction. Dave Wilson and Wilson's engineers teamed up with a new driver to implement a new design strategy inspired by Dave's ongoing research into the sound of live, unamplified music. Dave and the Wilson engineers set out to redefine what was possible in cone midrange technology – and to capture certain qualities of live music heretofore not achieved in any other design. Their efforts were rewarded. The result was the new Wilson midrange driver. One has to hear the clarity, tonal density and truthfulness, and dynamic clarity to appreciate the resulting vast improvement in midrange over other designs.
- Wilson Audio's Convergent Synergy tweeter was originally developed for the Alexandria XLF. During the development of the Convergent Synergy tweeter, Dave and the engineers tested a wide spectrum of tweeters fabricated with exotic materials such as diamond and beryllium. Each have their own unique qualities and virtues. Many exhibit flat frequency response, or are extended several octaves above the audible bandwidth. But none matched the dynamic contrast and harmonic expression of Wilson's existing titanium design. But most importantly, none of them were an ideal match to our midrange driver. Dave began a renewed quest for an improved tweeter that culminated in a proprietary Wilson design for the Alexandria XLF. Wilson's tweeter, which was named Convergent Synergy,

rejects exotic materials in favor of a uniquely constructed silk dome design that better meets all of Dave’s musical design goals. With the Convergent Synergy driver, Dave’s design requirement of ultra-low distortion and very robust power handling down in the lower part of its range are beautifully met. These qualities converge with a much a higher resonant frequency and flatter frequency response when compared to the original inverted titanium design. Wilson’s Convergent Synergy tweeter is extremely linear. It crosses over synergistically to Wilson’s midrange driver. The noise floor is lower than the titanium driver it replaces.

- Proprietary woofer. Working with an outside vendor, the Wilson engineering team designed a new ten inch woofer. The design goal was to marry the high-speed, dynamic range, and low-frequency reach typical of Wilson loudspeakers to a compact, low-profile cabinet. Transient speed and grand-scale weight and authority, typically mutually exclusive loudspeaker traits, are revealed by Polaris with alacrity and effortlessness.
- The Convergent Synergy tweeter’s acoustic and mechanical demands are somewhat different from the titanium tweeter it replaces. Using the latest version of Wilson’s proprietary composite, X-material, Wilson’s engineers designed an all-new tweeter module. The new tweeter module accounts for the Convergent Synergy tweeter’s dispersion characteristics. The midrange module was also modified to better complement the new tweeter module, which sits directly above. Both modules are extremely inert and non-resonant. Great care was taken to address diffraction—a type of time-domain distortion that results from reflections off the speaker cabinet. The shape of the two new modules is the result of this effort, as is the shape and material of the energy-absorbing pad that surrounds the tweeter. The upper array geometry was designed to address the challenges of a low-profile design, with the two woofers mounted horizontally and flanking the mids. Two upper modules are acoustically optimized in terms of volume, structural rigidity, and low cabinet resonance.
- Aspherical Propagation Delay. Achieving near perfect alignment at the listening position requires controlling both the rotational angle of the head

(for proper dispersion) and the time alignment of the driver (its relative distance to the listener).

- Crossovers. Applying new technology adapted from the Alexandria XLF, MAXX Series 3, and Sasha W/P Series 2. The goal was to continue to reduce propagation delay jitter and to lower the noise floor. Polaris's overall resolution, intertransient silence, dynamic speed and nuance rival MAXX and Alexandria XLF.
- "S" Material midrange baffle. S-material is a new enclosure composite designed in conjunction with the Sasha W/P project. The S-material midrange baffle reduces measurable and audible noise and coloration in the critical midrange. Wilson's proprietary X-material is used in the balance of the enclosure walls, continuing Wilson's practice of building ultra-low resonance cabinets.

More on Aspherical Propagation delay

A musical waveform is a complex overlay of frequencies, amplitudes, and phase relationships. With current technology, no single transducer can reproduce the full range of music at realistic sound pressure levels while maintaining consistent dispersion. The solution is the multiple driver array, with specific drivers dedicated to various portions of the frequency range. Multiple drivers introduce their own set of problems. A challenge typically ignored by speaker designers is preserving the precise time relationships of the leading edge of the musical waveform.

The key to solving this problem lies in Wilson's innovative and patented Adjustable Propagation Delay technology, which employs movable modules that allow the individual adjustment of the drivers in the time domain. Using this technology, each driver's waveform propagation "matches up" with the other drivers in the system in such a way as to create the sonic equivalent of a single point source. There are certain loudspeaker makers

other than Wilson that recognize the need to correctly align their drivers, but they do so for only one theoretical listening position.

The fact is, misalignment of the drivers by fractions of an inch will audibly degrade



FIGURE 1A - TYPICAL LOUSPEAKERS EXHIBIT LESS THAN OPTIMUM PROPAGATION DELAY AND DISPERSION CHARACTERISTICS. THE SOUND QUALITY IS COMPROMISED FOR ALL LISTENERS IN ALL ROOMS.



FIGURE 1B - ASPHERICAL PROPAGATION DELAY OPTIMIZES DRIVER/ROOM INTERACTION FOR A VARIETY OF SITUATIONS. THIS PROVIDES CONSISTENTLY OPTIMIZED RESULTS IN A WIDE RANGE OF ROOMS AND LISTENING POSITIONS.

FIGURE 1 – USING TECHNOLOGY FROM ALEXANDRIA AND MAXX, POLARIS’S MODULES MOVE ASPHERICALLY TO CORRECT PROPAGATION DELAY.

transient accuracy, soundstage height, depth, and width. Misalignment of the drivers will also introduce tonal anomalies that destroy the otherwise convincing “presence” of an instrument or a singer’s voice. Wilson’s solution for propagation delay correction has long set the standard for precise driver positioning in order to insure correct time-alignment for a wide range of real room listening distances and ear heights.

The Polaris Convergent Synergy cabinet is a further evolution of Wilson’s philosophy that truly great forms follow a corresponding function. It is a visual metaphor for the solution Wilson Audio pioneered to address issues of phase coherence exacerbated by large speaker systems. Typical of the creative process, the solution itself is an analogy to the field of optics and the design of wide-angle lenses. The means of maintaining edge-to-edge sharpness at both close and far focusing distances for a high quality wide-angle lens suggested a solution to the similar problem of time domain accuracy for large speaker systems at both near and far listening positions.

With Polaris, Wilson Audio takes this concept a logical step further, addressing the issue of optimal driver dispersion in the large cabinet system. Ideal driver dispersion for both near and far listening positions requires the drivers be adjustable not only forward and back, but also able to rotate on their vertical polar axes.

With Polaris, you and others you listen with, will hear your favorite recordings and soundtracks with true time coherency, full frequency range, unfettered dynamics, and vanishingly low distortion. The improvement in realism wrought by Polaris is delightfully revolutionary.

POLARIS

SECTION 2 - UNCRATING YOUR POLARIS



Section 2.1 – Uncrating the Polaris Convergent Synergy

Note: To avoid damaging the Alexx’s painted surface. Please remove any jewelry such as rings, watches, necklaces, and bracelets during this process.

Initial Check

The Polaris Convergent Synergy is shipped in two wooden crates. Upon receiving the crates, please check their condition. If there is any damage, please report it to the shipping company immediately for insurance verification.

Uncrating the Polaris Convergent Synergy

The following items are recommended for this procedure:

- Supplied hardware kit
- Tape measure
- Known listening position
- Electric screwdriver
- Phillips head drive bit or Phillips head screwdriver

Open the top of crate and determine the side where the casters are connected to the bottom of the Woofer Module. Remove the packing material from between the casters. Rotate the crate up on its end so that the casters on the woofer are toward the floor. Gently roll the Polaris Convergent Synergy out of the crate. Remove the plastic outer bags from each of the three modules. The Woofer Module is extremely heavy; removing the bag is a two-man job. Inventory the crate contents. Move the Polaris Convergent Synergy into the desired location.

Note: Be careful not to touch the driver elements when you are moving your Polaris

Convergent Synergy.

Section 2.2 – Crate Content Checklist

Now that you have unpacked your Polaris Convergent Synergy, you can inventory all the additional items in the crate.

Polaris Convergent Synergy Crate

- 1 – Owner's Manual
- 1 – Warranty Registration
- 1 – Polaris Convergent Synergy Midrange Module Grill
- 1 – Polaris Convergent Synergy Tweeter Module Grill
- 1 – Polaris Convergent Synergy Woofer Module Grill
- 4 – Hex Nut
- 4 – Threaded Pin
- 4 – 3/8-16 X 1 1/2" Set Screw
- 2 – 3/8-16 X 2" Set Screw
- 2 – 'A' Spike
- 4 – 'B' Spike
- 3 – 'C' Spike
- 2 – 'D' Spike

- 2 – 'E' Spike
- 2 – Large Spike Spacers
- 4 – Spike Diodes
- 4 – 2" Brass Spike Pad
- 1 – 3/32" Allen Wrench
- 1 – 1/8" Allen Wrench
- 1 – 1/2" Nut Driver
- 1 – 3/16" Long Arm Allen Wrench
- 1 – 5/32" Allen Wrench
- 1 – 9/16" Comb Wrench
- 1 – Caster Wrench
- 1 – Blue Polish Cloth
- 1 – 7/16" Ratchet Wrench
- 1 – Wilson Audio Spike Jack with Bag
- 1 – 2.1 ohm (parallel) spare resistor
- 1 – .5 ohm (parallel) spare resistor
- 1 – 18 ohm barrel spare resistor

Wilson Audio Specialties

POLARIS

SECTION 3 - IN YOUR ROOM



Wilson Audio Specialties

Section 3.1 – The Wilson Audio Setup Procedure

You are surely excited about setting up your Polaris Convergent Synergy 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 Polaris Convergent Synergy's size and considering low-profile configuration, it 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 Polaris Convergent Synergy, 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. What follows is an outline of the Wilson Audio Setup Procedure (WASP). When carefully followed, the process has proven to be the most effective method for setting up Wilson loudspeakers.

Zone of Neutrality: Main Left and Right Channel

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 your loudspeakers. 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, in most rooms the zone 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 outer 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 progression 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. This same procedure will be used to locate your Polaris Convergent Synergy as a center channel.

Section 3.2 – Room Acoustics

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 your Polaris Convergent Synergy.

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 2) 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)

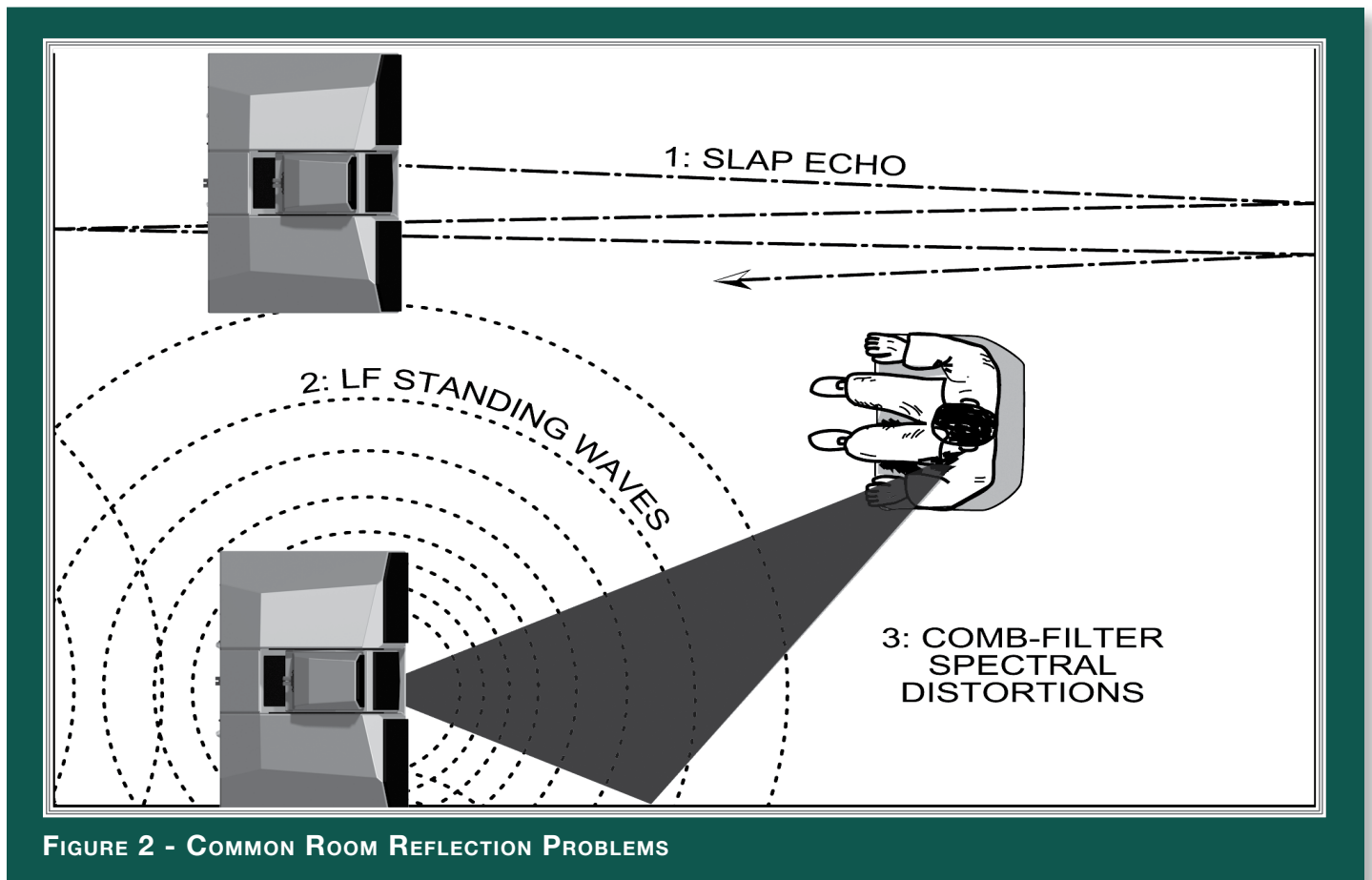


FIGURE 2 - COMMON ROOM REFLECTION PROBLEMS

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

- Illbruck 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 skews the tonal balance unnaturally toward the bass, and also compresses dynamics, robbing the system of musical life excitement.

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 sidewalls 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 Illbruck 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 Illbruck Sonex® or air duct panels applied to that part of the wall where the reflection occurs.

Section 3.3 – 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 3.4 – 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 depen-

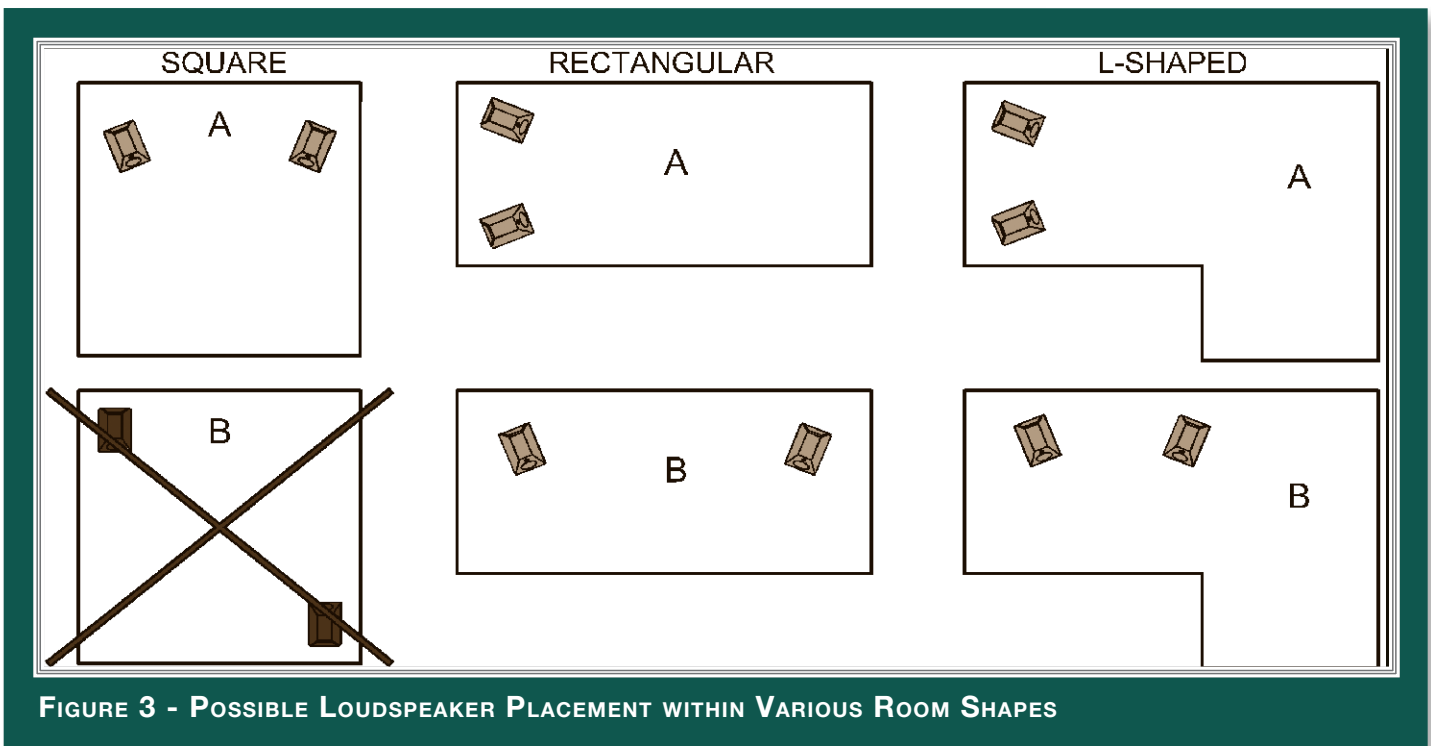


FIGURE 3 - POSSIBLE LOUDSPEAKER PLACEMENT WITHIN VARIOUS ROOM SHAPES

dent on room size and dimension.

There are three basic shapes for most rooms: square, rectangular, and L-shaped (see Figure 3).

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 3) 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 3).

Polaris Convergent Synergy 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 middle position of the couch.

If the seating area consists of more than two rows of chairs, typically 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 your Wilson Audio loudspeakers. 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.

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 Wil-

son Audio Setup Procedure (Section 3.1) is the best method with which to position your loudspeakers. Start with the speakers about 18" from each wall (as measured from the rear of the enclosure) 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. Over-compensated systems are sometimes pleasing in the short-term, but long-term satisfaction is always achieved through proper balance.

Polaris Convergent Synergy

After determining the general area for the Left and Right channels, determine the best place for your Polaris Convergent Synergy. A poor placement of the Polaris Convergent Synergy will hamper its integration with the rest of the system. As a general rule, when Polaris Convergent Synergy is used as a center channel, the distance from the main Left and Right channels, as well as the Polaris Convergent Synergy (as measured from the tweeters) should be equal in their relationship to the listening position. This maintains the time coherence of the three front loudspeakers. Ultimately, the Polaris Convergent Synergy phase delay correction will be made adjusting the midrange and Tweeter Modules.

When used as a center channel, Wilson recommends that the Polaris Convergent Synergy be positioned between the Left and Right speakers as centrally possible. Using the Wilson Audio Setup Procedure, experiment with the fore to aft placement of the Polaris Convergent Synergy. This process will help you find the location that offers the smoothest left, right, and Polaris Convergent Synergy integration.

POLARIS

SECTION 4 - INITIAL SETUP



Wilson Audio Specialties

Section 4.1 – Initial Assembly

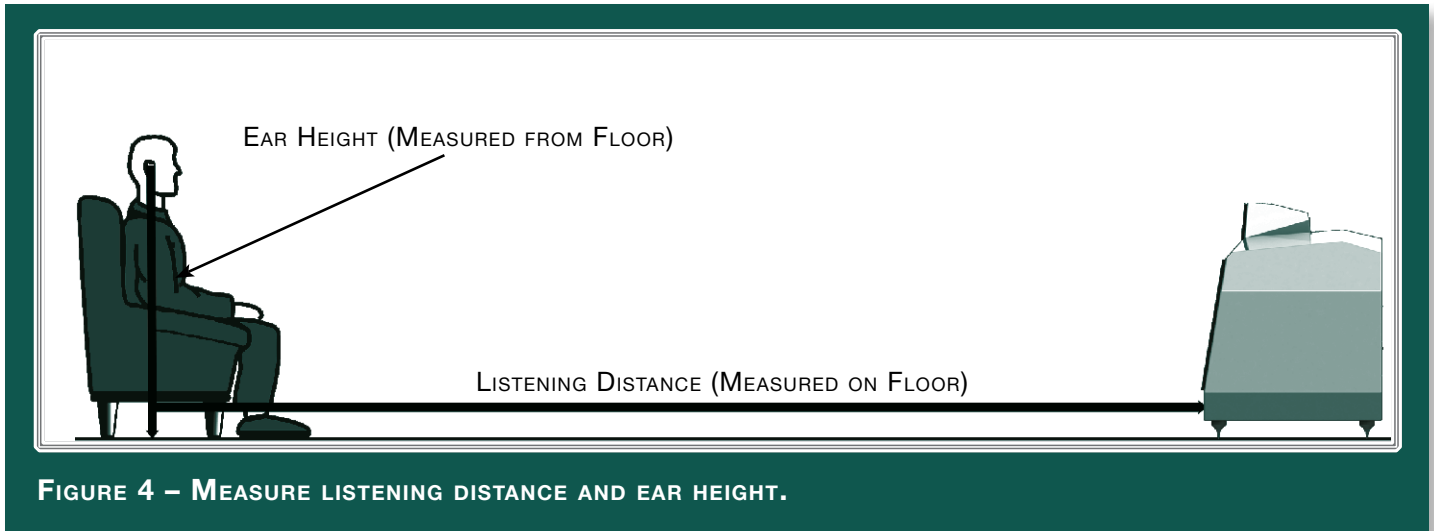
In order to realize the capabilities of the Polaris, we strongly recommend that you have it installed by a trained Wilson Audio installer. Your dealer will have a person trained in the art of the Polaris installation. If you choose to do this installation yourself, here are some guidelines to assist you. These guidelines come from many years of experience and should be followed closely.

First, place the Woofer Modules in the Zone of Neutrality as determined by the procedure outlined in Section 3.1. Remove the casters. Final setup and tuning will follow the assembly of your Polaris.

Removing the Protective Film

Wilson Audio has applied a protective film with a special adhesive to protect the paint surface of your loudspeakers. Please take the following precautions when removing this film:

1. Ensure the speaker surface is room temperature before removing the protective film. Removing protective film when 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.
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 4.2 – Geometric Time Domain Alignment

Materials Required

- Tape measure
- Known listening position (see Section 3)
- Polaris Propagation delay Alignment Tables from Section 10

Propagation delay Alignment

Propagation delay alignment accuracy of the Polaris has been established and verified by Wilson Audio. The graphs and charts used in this section are a result of this testing.

Room Setup

As indicated in Figure 4, the Polaris system allows for different listening distances (away from the speakers) and listening ear heights (measured distances from the floor to your ear). For each distance/ear height combination there is a unique alignment geometry.

To make correct in-home set up of the Polaris possible without test equipment, Wilson

Audio has measured the correct geometric time domain alignment for different distance/ear height combinations. This information is provided in the Propagation delay Tables in Section 10. By measuring the ear height and the distance from the speaker to the listening position, you will be able to align the system for your listening position.

Alignment Procedure

Locate the Alignment tables in Section 10. These tables contain critical information that will guide you to position the upper modules for optimized propagation delay adjustment.

Front-to-back alignment for each module is accomplished by resting the spike in a specific indent. The Alignment plates are calibrated with numbered indents. There are also four spike configurations for the Midrange Module, and two for the Tweeter Module which rotate the head adjusting for proper axis alignment. The spike used depends on the distance/ear relationship of the installation. The four spike lengths are labeled “B”, “C”, “D” and “E” for the Mid Module and “B” and “C” for the Tweeter. The alignment tables also contain information on the front to back alignment of the midrange and Tweeter Modules. This position is designated by the engraved numbers in the Spike mounting plate. Position the module by aligning the Spike to the number indicated in the chart.

The Midrange Module’s **front spike** rests in a specific **numbered indent** that determines its individual propagation delay position within the modular array. The Tweeter Module’s **rear spike** rests in a specific **numbered indent** that determines its individual propagation delay position within the modular array. Each alignment plate beneath each module contains numbered indents. The alignment tables contain the information for positioning each module in the array, determined by the indent in which the corresponding spike rests. The table also contains information on the appropriate length spike to be used in the rear of each module. In the case of the Midrange Module, two spikes of the correct length must be used. Determine the alignment of each upper module as follows:

1. If you are using the Polaris as stereo pair, repeat each step of this procedure on the left and right channels simultaneously.
2. Remove the Propagation Delay Tables from Section 10 in this manual and place them close by for easy reference.
3. Make sure that you are in your intended listening position.
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.



FIGURE 5 - INSTALL THE ALIGNMENT SPIKES INTO THE MIDRANGE/TWEETER MODULES.

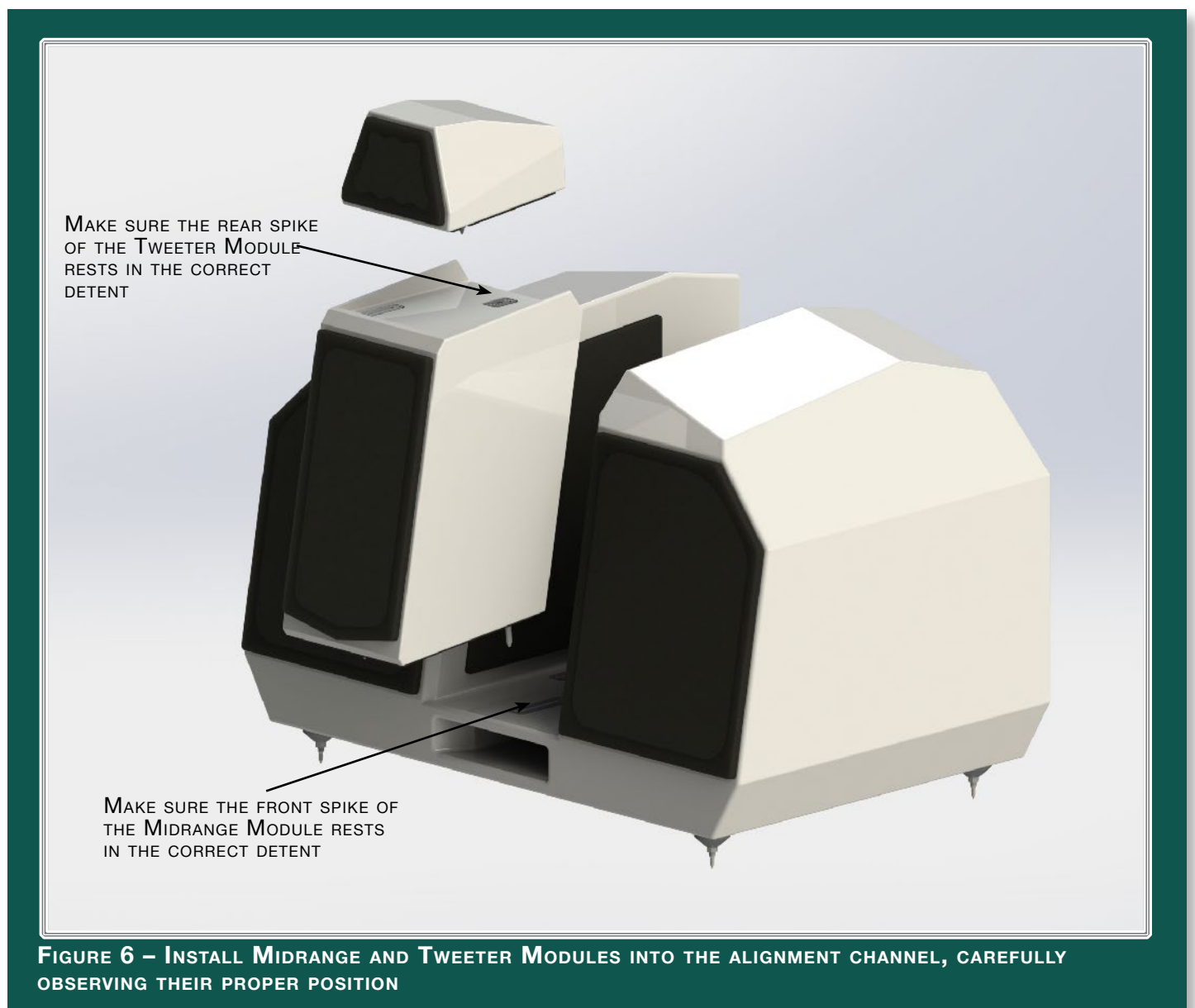
6. Refer to the Propagation Delay Tables (Section 10) and locate the corresponding ear height for each module. There are two charts for the Midrange Module, the first (Midrange Module Spike Length) is a table determining the rear spike length. The second table (Midrange Spike Position) specifies the indent on which the front spike will rest (see Figure 6).
7. Make a mark on the chart labeled "Midrange Module Spike Length" indicating the proper rear spike for this module as determined by the ear height and distance from listening position.

Note: The spike labeled B is always used in the front of the Midrange Module.

8. Make a mark on the labeled “Midrange Spike Position” table (Section 10) indicating the indent on which the front spike of the lower module will rest. Set this information aside as you will refer to it in the next section

Note: The two spikes labeled A is always used in the front of the Tweeter Module.

9. There are two charts for the Tweeter Module, the first (labeled Tweeter Module Spike Length) is a table determining the rear spike length. The second is a table (labeled Tweeter Spike Location) determining the indent location.



10. Make a mark on the chart labeled Number 3, "Tweeter Module Spike Length" indicating the proper rear spike for this module as determined by the ear height and distance from listening position.

11. Make a mark on the table labeled "Tweeter Module Spike Detent Location" indicating the detent in which the rear spike of the Tweeter Module will rest.



FIGURE 7 - SPIKE POSITION IN THE PROPAGATION DELAY DETENT

Section 4.3 – Mounting the Midrange Module

Materials Required

- Correct spikes for the modules. Refer to the Polaris Propagation delay Tables and the procedure in the previous section to determine the correct Aspherical Propagation delay spikes necessary, the Spike position, and the proper indent location.

Mounting Procedure

The front-to-back location of each module, along with the use of the proper length of rear spike of the upper modules, achieves the correct propagation delay and axial response

vis a vis the listener.

Install the rear “B” length spike into in the bottom of each module (see Figure 5).

Install the Midrange Module

The Midrange Module is installed first. Install the module as follows:

Note: Connect the midrange cable to the Midrange Module before installing the module into the woofer enclosure. Locate the cable marked “Midrange” and connect this cable to the Midrange Module’s binding post. This will make it easier to connect the cable to the crossover module.

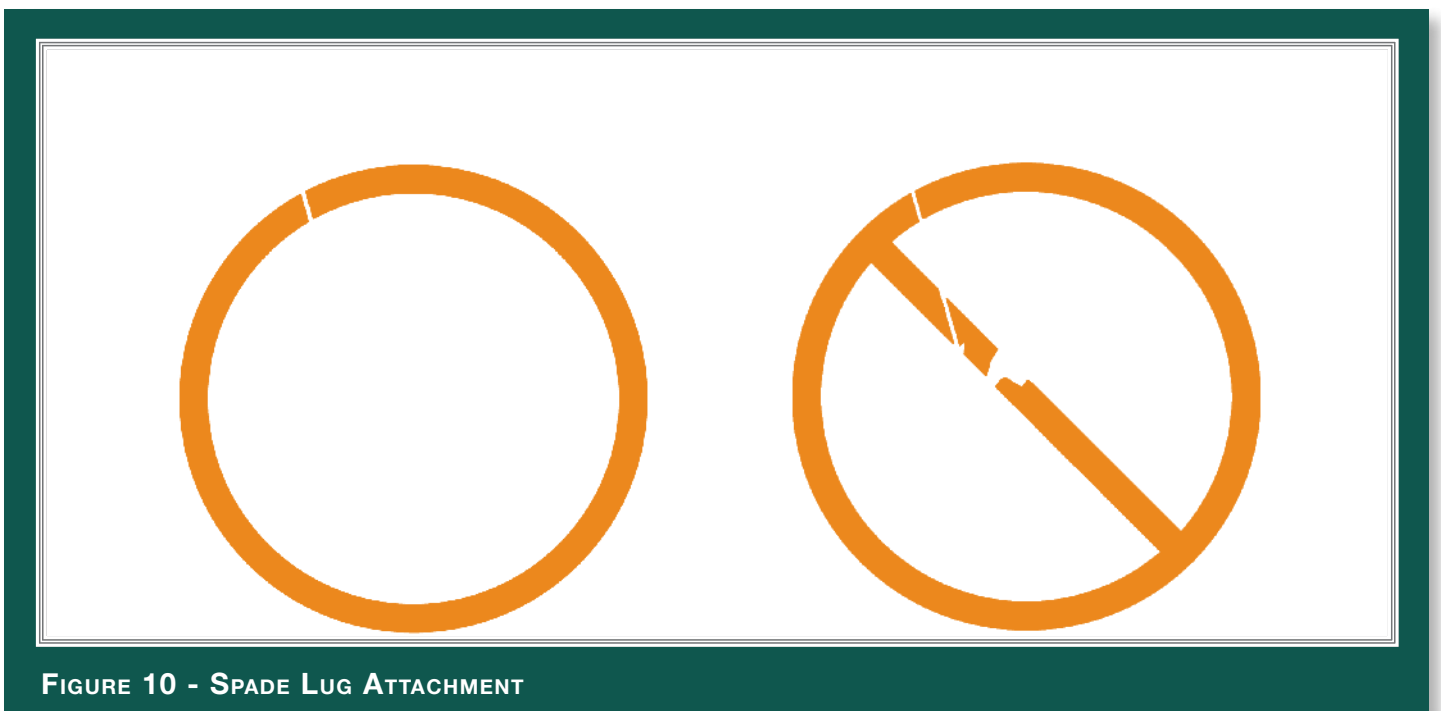
1. Turn the Midrange Module over, being careful not to damage the paint. There are spike receptacles on the bottom of the Midrange Module, one in the front, two in the rear.
2. Install the single B spike into the front receptacle. The front spike rests in a specific detent in the alignment plate.
3. Refer to Chart (Section 10) labeled Midrange Module Spike Length, and install the correct propagation delay spikes (there are two for the Midrange Module) in the rear of the Module.
4. Refer to the table labeled “Midrange Spike Position.” The alignment plate is located in the front of the channel between the two woofers (see Figure 6).
5. Position the Midrange Module inside the channel, placing the two rear spikes into their corresponding slide tracks.
6. Tilt the front of the module up so you can see the correct spike detent on the plate below. Carefully position the front spike of the Midrange Module in the correct detent.

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

Section 4.4 – Mounting the Tweeter Module

1. Refer to Chart (Section 10) labeled Tweeter Module Spike Length, and install the correct propagation delay spike in the rear of the Tweeter Module.
2. Install two “A” spikes in the front of the module.
3. With the front pair of short spikes pointing down, carefully lower the Tweeter Module between the woofer and set the front two spikes on top of the Midrange module. Align the spikes into the alignment tracks.
4. Refer to your mark on the table labeled Tweeter Module Spike Location, to determine the proper location of the rear spike in its detent (see Figure 7), noting that the position will be different from the Midrange Module.
5. Rest the rear spike in the proper detent (See Figure 7) as determined in the previous step. Make sure that the front spikes stay in the front alignment tracks so the paint surface on the top of the Midrange Module does not get scratched.

Section 4.5 – Connecting Upper Modules' Signal Cable



The Polaris uses binding posts that were designed in-house and are manufactured exclusively for Wilson Audio. The design goal was to create a connector with superior overall sound quality, consistency, and longevity.

A note about these connectors: You risk breaking the binding post if they are overtightened. Use the supplied binding post wrench and tighten until just snug.

The tweeter and Midrange Module signal cables are labeled so that they can be easily attached to their appropriate module. This is accomplished as follows:

- The midrange cable should already be connected to the module. Locate the binding post marked “midrange,” and connect this cable to the Midrange output binding post, making sure to observe proper polarity.
- Locate the cable marked “Tweeter,” and connect it to the Tweeter Module’s binding post, which is on the rear of the Tweeter Module. In turn, connect the other end of the cable to the Tweeter output on the Woofer Module.

Section 4.6 – Spike Installation

Note: We strongly recommend that your authorized Wilson Audio installer finalize and fine tune your Polaris. Your dealer is trained in the art of the Polaris installation. If you choose to adjust the Polaris on your own, before spiking your Polaris, refer to Section 3.1 which contains instruction on the Wilson Audio Setup Procedure (WASP).

Spike Assembly

1. Remove the mechanical diodes and move the nut to about two threads from the point. This will allow for greater movement when leveling the loudspeaker system.
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 Polaris.

3. Place the set screw into the other end of the diode with the Allen head toward the spike. This will ensure that if for any reason you have to remove your Polaris spikes, you will be able to withdraw the set screw safely using the supplied Allen wrench. Screw the set screw into the diode until it meets the spike (see Figure 11).
4. Place the assemblies out of the work area until they are needed during the installation.

Section 4.7 – Using the Lift to Install Spikes

Materials Required

Note: This is a two person job. Do not attempt this by yourself. The Polaris's weigh over 400 LBS and may seriously injure someone if tipped over.

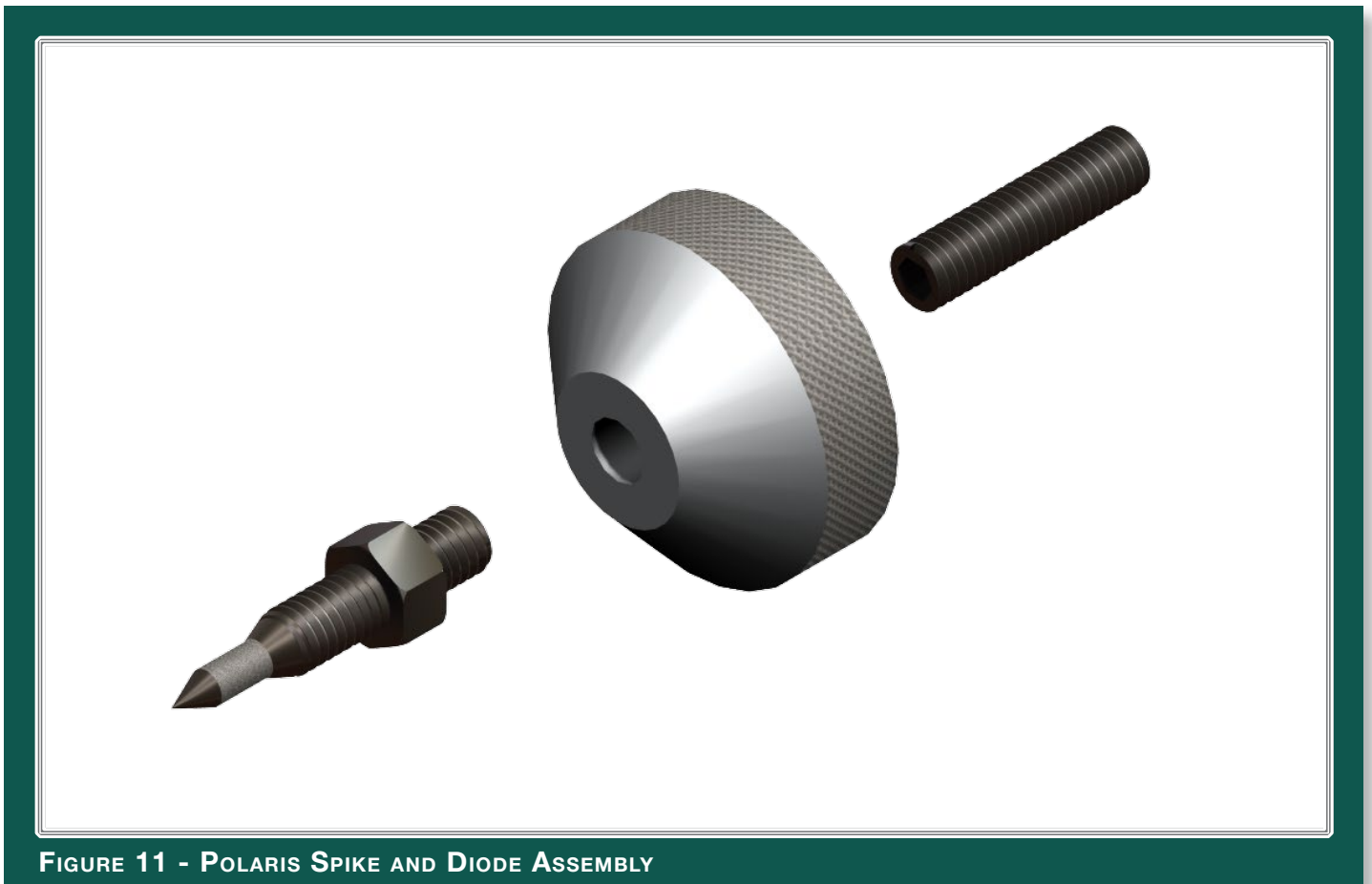


FIGURE 11 - POLARIS SPIKE AND DIODE ASSEMBLY

- 4 (8 if you are using the Polaris in two-channel installation) sets of assembled spikes
- The Wilson Audio Jack
- The jack socket wrench
- Swivel caster wrench

Installation Procedure

5. Remove the midrange and Tweeter Modules.
6. Slide the Wilson Audio Jack under the front of the Polaris, centered between the casters, so that the jack's lift bolt is exposed. Place the lift plate so it is positioned about an inch behind the front of the Polaris woofer enclosure.
7. Attach the wrench to the lift bolt and begin to slowly raise the front of the Polaris by turning the bolt clockwise.
8. After the front of the Polaris is high enough (you will need approximately one and half inches of clearance beneath the caster), use the swivel caster wrench to loosen the casters. Remove the casters.
9. Insert and screw-in the finished spike assembly. **Hand tighten only!**

Note: Be very careful NOT TO CROSS THREAD the spikes. The base of the Polaris is made of "X" material and is vulnerable to cross-threading.

- With one person stabilizing the Polaris, lower the Polaris by turning the jack counterclockwise. Note that the Polaris will now sit lower in the front as the spike assembly is shorter than the caster. Use caution.

Note: It is very important, at this point, that an able assistant stabilize the front of the Polaris until the rear spikes are attached and the unit is lowered.

- If you are using your Polaris in as left/right stereo pair, repeat the previous process of the caster removal/spike insertion on the opposite side of the enclosure. Then continue the process on the other channel.

Leveling the Polaris

1. It is not necessary to use the jack to level the Polaris.
2. Place a level on the left to right oriented axis on the plane above the port. If it is level, move to the next step.
3. If the bubble shows that the speaker is leaning toward the center of the room, you will have to lengthen one of the inside spikes down toward the

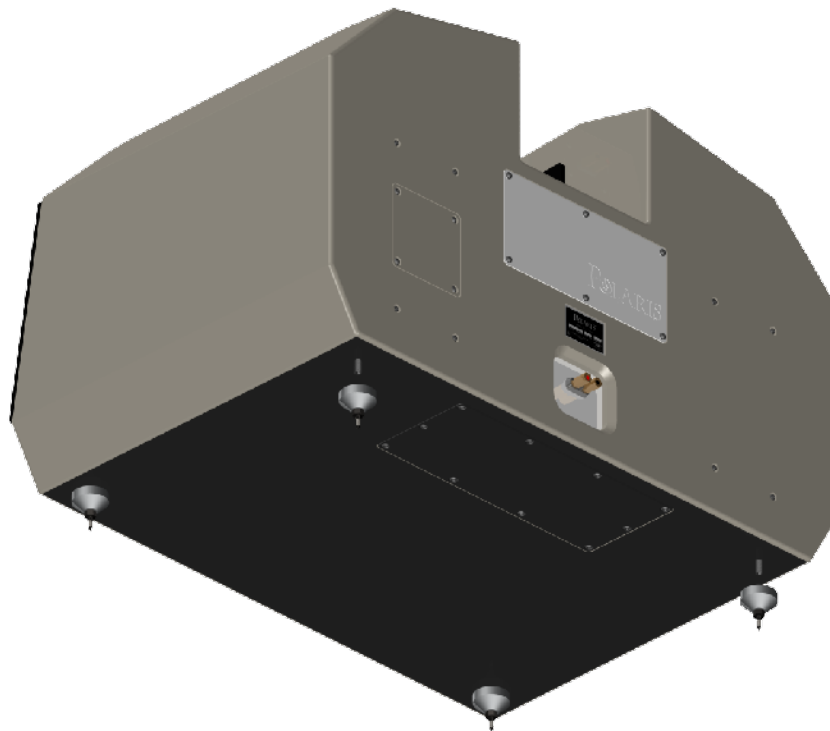


FIGURE 12 - CAREFULLY THREAD THE SPIKE ASSEMBLY INTO THE PRE-DRILLED HOLES

floor. If the bubble is leaning toward the outside of the room, you will have to lengthen one of the outside spikes down toward the floor.

4. Loosen the nut on the spike and rotate it the appropriate direction to lengthen the spike.
5. To find out which spike to lower, grasp the Polaris channel and rock it back and forth. This will identify the spike that is out of level from the other three.
6. Reinstall the midrange and Tweeter Modules, taking care to ensure the correct propagation delay adjustments.

Section 4.8 – Resistors

By removing the large aluminum back cover on the rear of the Woofer Module of your Polaris, you may gain access to the resistor plate (see Figure 13). These resistors serve several functions.

Note: Only Wilson Audio replacement resistors should be used in your Polaris. Changing the value or brand of resistor will have a deleterious affect on the sonic performance of

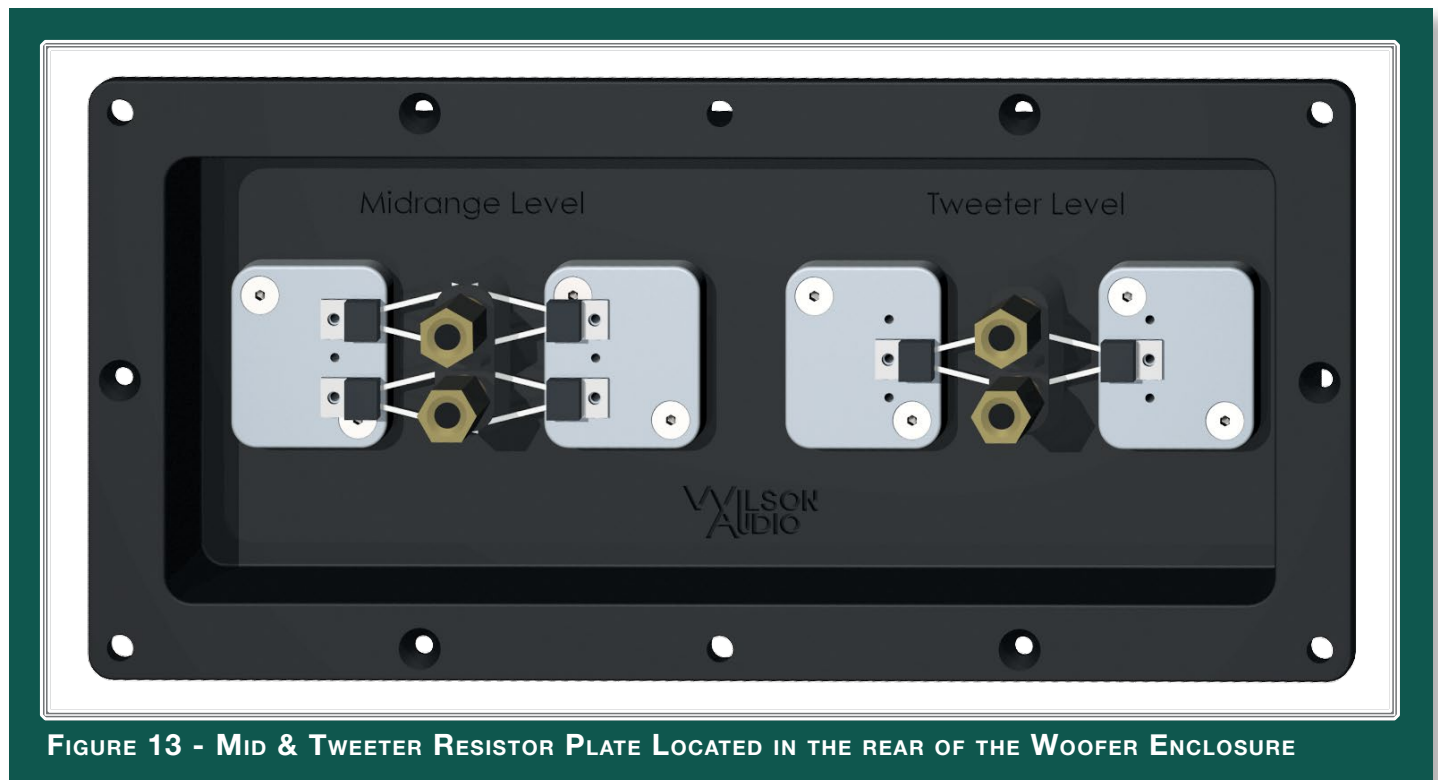
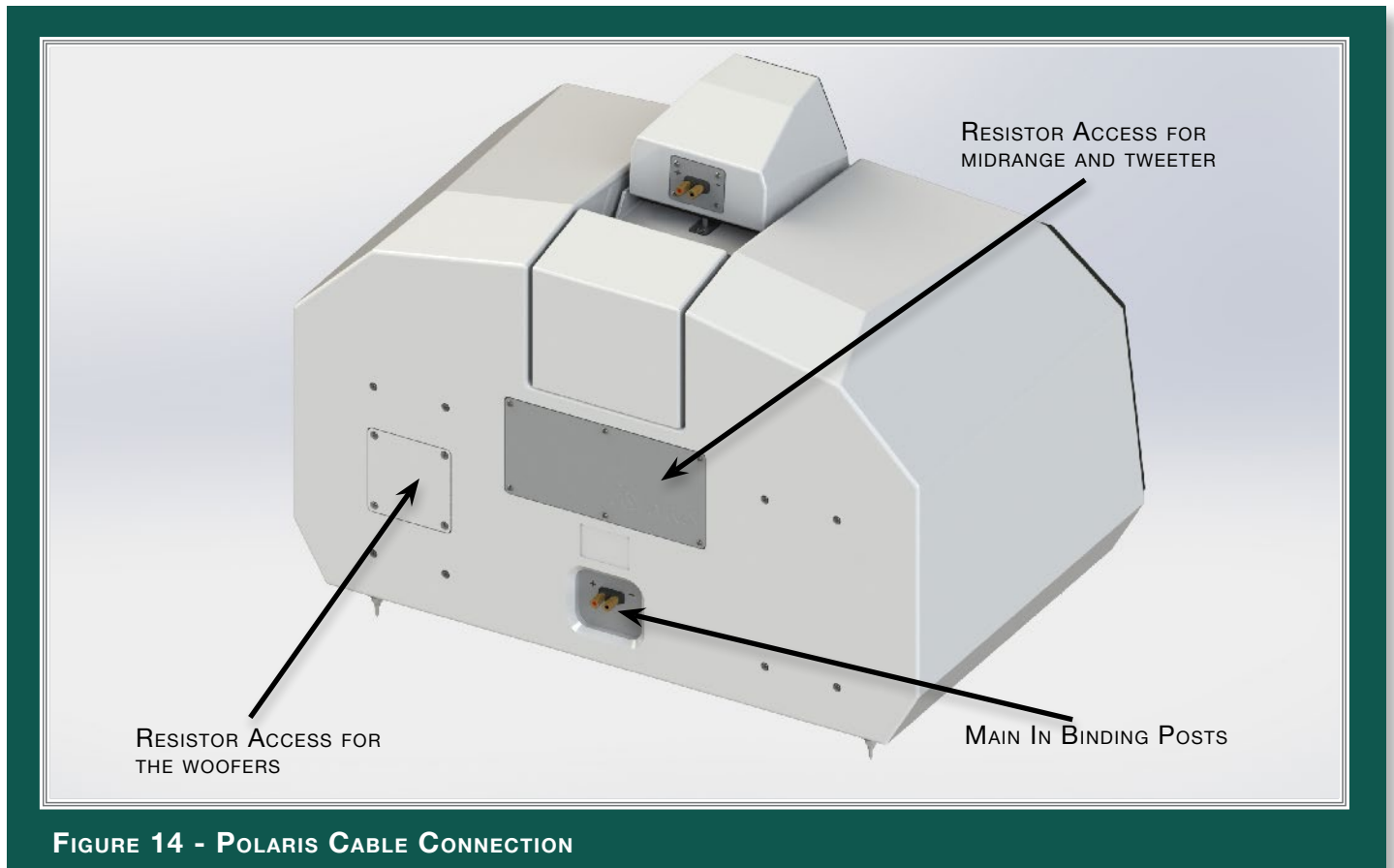


FIGURE 13 - MID & TWEETER RESISTOR PLATE LOCATED IN THE REAR OF THE WOOFER ENCLOSURE



your loudspeakers and may void your Wilson Audio Warranty.

Midrange and Tweeter Resistors

The Midrange Level, which consists of two .5 ohm resistors in parallel, and Tweeter Level, which consists of two 2.1 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 8.1 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 Polaris's woofers couple to the amplifier. These resistors are pre-installed in a module behind the small trap door to the left of the main resistor plate (Figure 14).

Section 4.9 – Break-in Period

All audio equipment will sound its best after its components have been broken in for some period of use. Wilson Audio breaks in all woofers and mid-range drivers for a 12 hour period. The 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 fairly loudly. Ninety percent of break-in is complete after 24 hours of playing. Playing a “disc repeat” overnight can accomplish this task quickly. Wilson Audio recommends chamber music for this task.

Wilson Audio Specialties

POLARIS

SECTION 5 - FINAL SETUP



Wilson Audio Specialties

Section 5.1 – Tips for Final Tuning and Voicing, Home Theater

This loudspeaker placement method was developed by David A. Wilson, for Wilson Audio Specialties, Inc., to find optimum loudspeaker locations in any given room within one hour. Participating in numerous audio/multi-channel/home theater shows with very different and difficult acoustic environments necessitated this procedure. Currently, all Wilson Audio dealers employ this setup procedure for their customers, in order to quickly and predictably achieve the best performance from their systems (this procedure can be used successfully with ANY moving coil speaker system).

Proper system calibration is the most important step in the setup of your multi-channel/home theater system. The WATCH system offers increased resolution and overall system performance. This increased resolution allows you to fine tune your system, thus increasing overall performance, more than any other system available.

Fine tuning and “voicing” generally involve only small changes in location and rotation (or toe) of your multi-channel system. With proper calibration you will find that changes as small as 1 inch will have an impact on the performance of your system. The following sections will step you through this fine tuning process. The setup will be done as follows:

- Set up the Left and Right channels with all other speakers disconnected.
- Add the Polaris.
- Add the surround channels.
- Add the subwoofer.

Adding one speaker at a time will allow you to easily evaluate the integration with the system and make the necessary adjustments to fine tune the setup.

Section 5.2 - Left and Right Channels

Determining Front to Back Distance

The proper setup of the left and right channels is crucial for optimum system performance. If these speakers are not set up correctly, the entire system will suffer from poor integration. Please follow these steps carefully:

- Place the speaker in an appropriate location relative to your screen and listening area. Make certain to remove the grills and spikes.
- Toe the speakers in so that you can just barely see the inside edge when seated in the primary listening position.
- Using removable masking tape, graph off the floor so that you can accurately move both speakers forward and backward in 1/2 inch increments.
- Place your multi-channel processor into stereo mode.
- Using a piece of full range music (dynamic with a lot of low frequency information) played at a moderately high level, take notes on the sound quality. Pay specific attention to upper and lower bass quality, dynamic contrasts, image height, and focus.
- Move the speakers back or forward in 1 inch increments and then 1/2 inch increments.

Note: Moving the speakers BACK will generally increase low bass, sharpen focus, lower image height, and increase dynamics up to the point where you go too far, in which case the sound will start to lose these qualities in addition to becoming boomy and slow sounding. Moving the speakers FORWARD will increase air and bloom, raise image height, and generally increase the sense of space. Moving too far forward will cause the soundstage to become unnaturally high with a lack of focus, dynamics, and low-end extension.

- Find the front to back location where the bass is tight, dynamics are correct, image is well-focused, and you find the best soundstaging. Mark this as your final front to back location.

Determining Side to Side Distance

The distance the speakers are from the side walls is very important. This distance determines the amount of comb filtering you will hear. In effect, you are “tuning” the comb filter interaction between the speaker and the wall. Perform the side to side analysis as follows:

- Place a piece of tape on the floor parallel to the front edge of the speaker and again mark off 1/2 inch increments side to side.
- Using only one channel/speaker at a time, now determine the optimum position with regard to side walls.

Note: A high quality, solo piano recording works well for this step.

- While music is playing, slowly move the speakers left or right 1 inch then 1/2 inch at a time until you achieve the best harmonic integrity.

You should not need to move the speaker any more than one inch left or right from the original location. Do this independently for each channel. What you will hear when the speaker moves into the correct location is a reduction of hardness and muddled harmonics from the piano.

Note: If you continue moving the speaker past this point, you will begin to hear again this fatiguing artifact.

When you have determined the optimum location for each speaker, mark it carefully, and make certain the toe-in is correct. When installing the spikes, the speakers may shift slightly, but you can move them precisely back to the correct location again using your tape markers.

Section 5.3 - Integrating the Polaris into a Wilson Theater

Note: Many processors offer a setup guide that steps you through the integration of each of the speakers, specifically, setting speaker distances, delays, and phase rotation. These adjustments are made via internal electrical adjustments. We have found that actual geometric changes, that is, moving the speaker location and rotation, offer improved results when integrating speakers. We recommend that you follow the steps outlined below, evaluate your system performance, and then make adjustments in the processor. Ultimately, you will, of course, need to make level adjustments via the processor.

Correct Polarity

Using a pink noise generator, play pink noise through the Polaris together with alternating Left and Right channels. If the polarity is correct on the Polaris, you will hear the pink noise centered between the Polaris and either the Left or Right speakers. If the polarity is incorrect, you will hear two point sources that are unfocused and located at each speaker playing.

Integrating the Polaris as a center channel

The next step in the setup process is to fine tune the location and rotation of the Polaris. Do as follows:

- Place the Polaris centered between the main speakers and even with the front inner edge. Set the alignment spikes as indicated in Section 10.
- Follow the processor instructions on level adjustment. Adjust the level on the Polaris so it matches in level with the left and right channels. Do not be surprised if the Polaris requires 3-7 dB lower adjustment than the left and right channel.
- Make sure that only the front Left, Right and Polaris are connected.
- With the Polaris spiked, put on a multi-channel audio track or movie scene with which you are familiar.

- Play the selection and listen for the integration with the main speakers. As the audio moves across the three front speakers, listen for a smooth transition from one speaker to the next. You should not hear any voids in the sound stage.
- Make 1/2" changes in front to back location until you find the Polaris location that offers the best integration.

Image Height

Check the image height. Does the dialogue of a movie have the correct height? Is it too low or too high?

If needed, adjust the amount of rotation until the image height is correct. Raising the front spikes will raise the image height; lowering the front spikes will lower the image height. Where possible, we recommend that you add or remove a spacer to get the correct image height. This will allow the propagation delay alignment to be reset using the tables in Section 10.

Integrating the WATCH Surround Channels

- Follow the processor instructions on level adjustment. Adjust the level on the Surround channels so they match in level with the front channels.
- Play a DVD that has a scene with something moving around the room. Listen for the correct spacial imaging. A correctly adjusted Surround channel will have good imaging characteristics, will be seamlessly blended, and should be just as transparent as the front channels.
- Adjust the rotation of the Surround channel until you find the best integration.

Note: The Surround channel rotates on the upper two spikes. Examine carefully this rotation and the mounting bracket before trying to adjust the angle of rota-

tion. Be careful when rotating the speaker as it is very heavy and could fall off of the mounting bracket.

Integrating the Passive WATCH Dog or Thor's Hammer

The WATCH Dog or Thor's Hammer will perform well in almost any location in the room. In general, the closer you place the subwoofer to a wall or corner, the greater the augmentation of the bass. However, the increase in bass comes at a cost of perceived speed, dynamics and bass clarity. We recommend that you experiment with the placement of the subwoofer to find a balance of the above mentioned items with which you are satisfied. For complete information on integrating a Wilson Audio WATCH Dog or Thor's Hammer, please refer to your subwoofer owner's manual.

POLARIS

SECTION 6 - CARE OF POLARIS



Wilson Audio Specialties

Section 6.1 – Care of the Finish

The Polaris Convergent Synergy loudspeaker is 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 Polaris Convergent Synergy

It is important that the delicate paint finish of the Polaris Convergent Synergy be dusted carefully with the dust cloth, which has been provided. 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 Grills

Periodically, you will want to clean the Polaris Convergent Synergy's grills. This is

best done by using the round brush attachment on a vacuum cleaner hose. Gently vacuum the front surface of the grill. Be careful not to apply too much pressure. Do not use a hard plastic attachment against the grill. The grill cloth is stretched tightly over the grill frame. Too much pressure or use of a hard plastic attachment could cause the grill 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 grills. In addition to basic black, Wilson Audio offers a variety of grill colors to match most WilsonGloss finishes. Contact your local dealer for grill cloth samples or to order replacement grills for your Polaris Convergent Synergy.

Section 6.2 – 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 WATT and continuing with the further development of proprietary materials for X-1 Grand SLAMM, MAXX, Sophia. Throughout this time, the Wilson engineering team continues to work with outside vendors to refine and evolve these composites. With Sasha, Wilson introduced its latest composite, dubbed internally “S” Material. Like the materials before it, “S” redefines what is possible in low-resonance materials. Polaris Convergent Synergy joins Sasha in the use of “S” material in its midrange baffle. Even the best materials are not suited to all aspects of enclosure construction. Therefore, like all Wilson loudspeakers, the Polaris Convergent Synergy is constructed of several exotic materials, including Wilson’s X-material, each chosen for their specific performance attributes relevant to different portions of the enclosure.

The Polaris Convergent Synergy is constructed using non-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, thermoset 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 6.3 – Depth of Design

Polaris Convergent Synergy'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 the Polaris Convergent Synergy results in an enclosure that is inherently inert and lowresonant. 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 Polaris Convergent Synergy will have consistent, repeatable performance, unaffected by the climatic conditions, anywhere in the world. Finally, like all Wilson products, the Polaris Convergent Synergy is hand-crafted with meticulous attention to detail, with an unwavering commitment to excellence. Thus, the Polaris Convergent Synergy will impart to her owner beauty and pleasure for many years to come.

SECTION 7 - TROUBLESHOOTING



Wilson Audio Specialties

Section 7.1 – Troubleshooting:

Polaris is not operating:

Check the interconnects from the source.

Driver out or not playing after connections have been verified:

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

Amplifier shuts off as soon as it is turned on:

If you have found a driver with no output, turn off your amp and disconnect the speaker cable. Refer to section 8.1, which discusses replacing and open resistor.

Using the appropriate Allen key, open the door on the back.

You will find some resistor connections. Replace the resistor with the supplied matching resistor. Tighten the new resistor in the old one's place.

Note: Use only Wilson Audio replacement resistors in your Polaris. 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 Polaris at a low level. The driver should now be operating correctly.

Check to see if your speaker cables are properly connected to the binding posts. Look for frayed ends, loose connections, or a conductor contact-

If the problem is solved:

If the problem persists:

If the problem is solved:

If the problem persists:

If the problem is solved:

If the problem persists:

ing 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.

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

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.

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

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.

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.

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

SECTION 8 - REPAIR PROCEDURES



Section 8.1 - Repair Procedures

Replacing a Blown Resistor

The Polaris tweeter and midrange drivers are protected by resistors, which will open, in most cases if the speaker is over driven during normal operation before the driver is damaged.

Replace a blown resistor as follows:

1. Determine which driver is not playing functioning properly.
2. Remove the appropriate resistor access cover from the enclosure by removing each of the 10-32 button head machine screws (see Section 4 for resistor

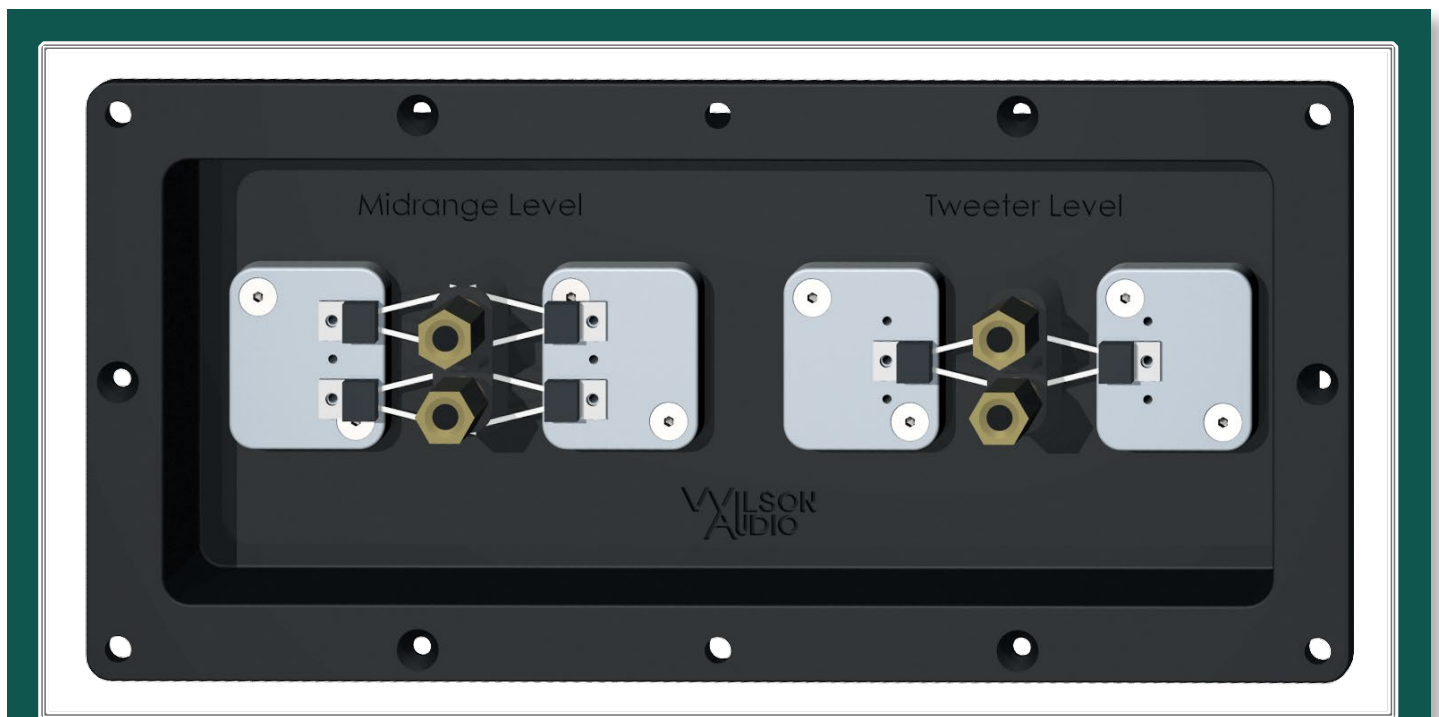


FIGURE 15 - MID & TWEETER RESISTOR PLATE LOCATED IN THE REAR OF THE WOOFER ENCLOSURE

cover locations).

3. The midrange and tweeter resistor are labeled accordingly. Locate the blown

resistor.

4. Remove the allen bolts attaching the resistor to its heatsinks.
5. Using the 5/8" nutdriver, loosen the binding post and remove the open resistor. (See Figure 15.)
6. Replace the resistor with a Wilson spec'd unit, attaching it to the binding post and heatsinks as before.
7. Re-attach the resistor access cover to the enclosure, making sure not to over tighten the screws.

Replacing a Damaged Driver

If you believe that a driver is blown, make sure that you have tried replacing the protective resistor before you replace the driver. No sound coming from a driver is often a blown resistor and not a bad driver. If you need to replace a driver, do so as follows:

1. Using the supplied Allen wrench, remove the machine screws holding the driver in place.
2. Insert the Allen wrench into one of the driver screw holes 1/8 inch. Gently lift out the driver, and place it onto the foam pad covering the front baffle.

Note: It is best to place an old towel under the driver so that you will not damage the enclosure when un-soldering the driver.

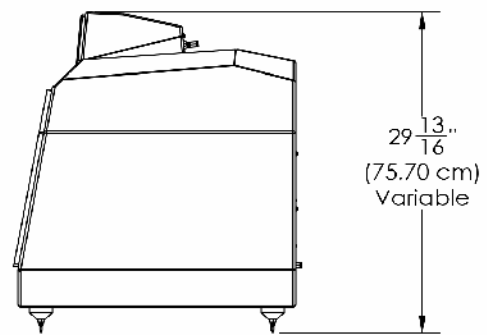
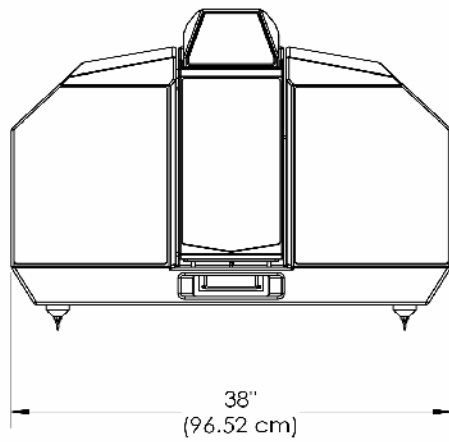
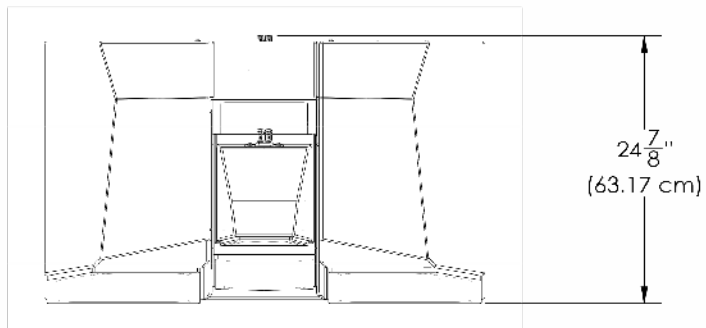
3. Using a 900 degree F soldering iron, heat up the solder joints and remove the driver.
4. Melt a small 1/8" diameter bead of solder onto the tip of each wire. Heat the wire up until you see the solder wick into the copper.
5. Place the replacement driver onto the cloth and solder on the wires to the driver. The white wire connects to the positive side, and the black wire connects to the negative. The positive side is generally indicated by a red dot.

Make sure to heat up the solder joint completely and hold firmly in place until the solder sets.

6. Replace the driver foam gasket.
7. Place the driver into the machined recess.
8. Replace the machine screws, tightening them to 30 inch/pounds (**not** foot pounds) of torque.

Note: Be careful not to over tighten the screws.

SECTION 9 - SPECIFICATIONS



Section 9.1 - Polaris Specifications

Enclosure Type:

Woofers: Front Ported

Midrange: Rear Ported

Tweeter: Sealed Tweeter Drive Unit

Two – 9.5 inch (24.13 cm)

Drivers:

Woofers: Two – 7 inch (17.78 cm)

Midranges: 1 inch silk fabric dome (2.54 cm)

4 ohms / minimum 2.25 ohms @ 49 Hz

Tweeter: 94 dB @ 1 watt @ one meter @ 1 kHz

Measurements:

+/- 3 dB 20 Hz – 28 kHz Room Average Response

Impedance: 27.25 inches (69.18 cm) w/o spikes

Sensitivity: 29 5/8 inches (75.23 cm) with spikes

Frequency Response: 25 inches (63.33 cm)

38 inches (96.52 cm)

Dimensions:

Polaris Height: 294 lbs (133.36 kg)

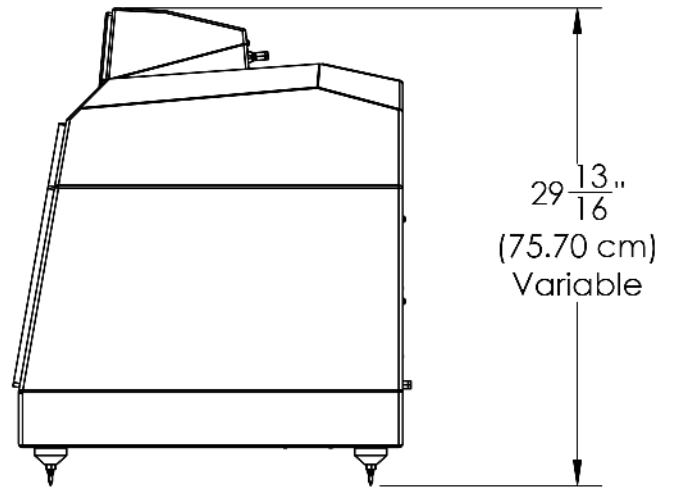
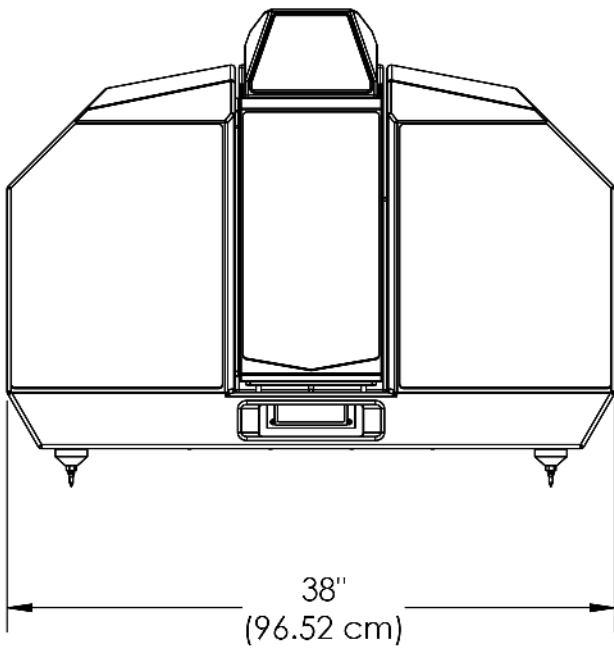
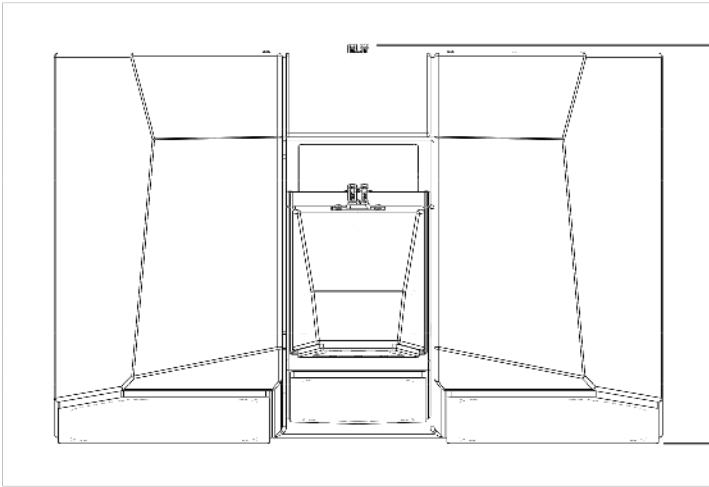
Polaris Depth: 485 lbs (219.99 kg)

Polaris Width:

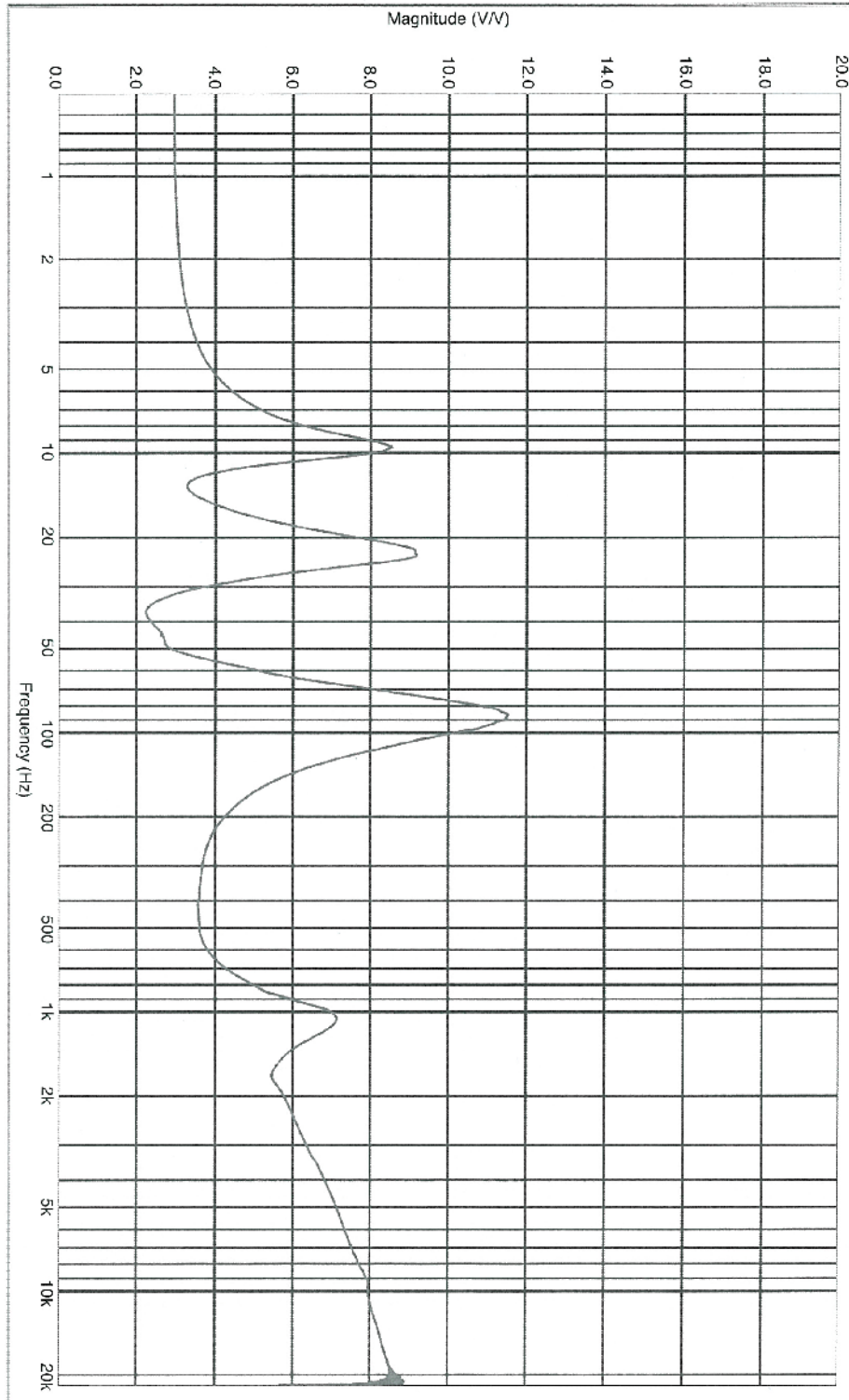
Speaker Weight Uncrated:

Shipping Weight (approximate):

Polaris Convergent Synergy Dimensions



Polaris Convergent Synergy Impedance Curve



Dual FFT Analyzer

SECTION 10 - ALIGNMENT TABLES

Polaris Mid Spike Length														
Ear Height	Listening Distance													
	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'
36"	C	C	C	D	D	D	E	E	D (See Note 5)	D (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)
38"	B	C	C	D	D	D	D	D	E	D (See Note 5)	D (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)
40"	C (See Note 2)	C	C	C	D	D	D	D	D	E	D (See Note 5)	D (See Note 5)	D (See Note 5)	E (See Note 5)
42"	B (See Note 2)	B	C	C	C	D	D	D	D	D	E	E	D (See Note 5)	D (See Note 5)
44"	B (See Note 3)	C (See Note 2)	B	C	C	D	D	D	D	D	D	D	E	D (See Note 5)
46"	C (See Note 4)	B (See Note 2)	B	C	C	C	D	D	D	D	D	D	D	E
48"	B (See Note 4)	B (See Note 3)	C (See Note 2)	B	C	C	C	D	D	D	D	D	D	D
50"	N/A	N/A	B (See Note 2)	C (See Note 2)	C	C	C	C	D	D	D	D	D	D
52"	N/A	N/A	N/A	B (See Note 2)	C (See Note 2)	C	C	C	C	D	D	D	D	D
54"	N/A	N/A	N/A	N/A	C (See Note 2)	C (See Note 2)	C	C	C	C	D	D	D	D

SECTION 10.1 – POLARIS PROPAGATION DELAY TABLE

Note: Always install the “B” length spike into in the bottom front of Midrange Module.

Polaris Mid Spike Length													Listening Distance														
Ear Height	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	30'	31'	32'		
36"	C	C	C	D	D	D	E	E	D (See Note 5)	D (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
38"	B	C	C	D	D	D	D	D	E	D (See Note 5)	D (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
40"	C (See Note 2)	C	C	C	D	D	D	D	D	E	D (See Note 5)	D (See Note 5)	D (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
42"	B (See Note 2)	B	C	C	C	D	D	D	D	D	E	E	D (See Note 5)	D (See Note 5)	D (See Note 5)	E (See Note 5)	E (See Note 5)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
44"	B (See Note 3)	C	C	C	C	D	D	D	D	D	D	D	D (See Note 5)	D (See Note 5)	D (See Note 5)	E (See Note 5)	E (See Note 5)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
46"	C (See Note 4)	B	B	C	C	C	D	D	D	D	D	D	D	E	E	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	N/A	
48"	B (See Note 4)	B	B	C	C	C	C	D	D	D	D	D	D	D	E	E	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	N/A
50"	N/A	N/A	N/A	B (See Note 2)	C	C	C	C	D	D	D	D	D	D	D	E	E	E	D (See Note 5)	D (See Note 5)	D (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	
52"	N/A	N/A	N/A	B (See Note 2)	C	C	C	C	C	D	D	D	D	D	D	D	D	E	E	D (See Note 5)	D (See Note 5)	D (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	E (See Note 5)	
54"	N/A	N/A	N/A	N/A	C	C	C	C	C	C	C	D	D	D	D	D	D	D	D	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	
56"	N/A	N/A	N/A	N/A	C	C	C	C	C	C	C	D	D	D	D	D	D	D	D	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	
58"	N/A	N/A	N/A	N/A	C	C	C	C	C	C	C	C	D	D	D	D	D	D	D	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	D (See Note 5)	
60"	N/A	N/A	N/A	N/A	C	C	C	C	C	C	C	C	C	D	D	D	D	D	D	D (See Note 2)	D (See Note 2)	D (See Note 2)	D (See Note 2)	D (See Note 2)	D (See Note 2)	D (See Note 2)	

		Listening Distance																								
		8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	30'	31'	32'
Ear Height																										
36"	4	5	7	8	9	10	10	11	10	10	10	11	11	11	12	12	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
38"	2	4	6	7	8	9	9	10	10	11	9	10	11	11	11	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
40"	2 (See Note 2)	3	4	6	7	8	9	9	10	11	9	10	10	10	11	11	11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
42"	1 (See Note 2)	1	3	5	6	7	8	8	9	10	10	11	11	10	10	10	10	11	11	N/A	N/A	N/A	N/A	N/A	N/A	N/A
44"	1 (See Note 3)	2	2	3	5	6	7	8	8	9	10	10	11	11	10	10	10	10	11	11	11	N/A	N/A	N/A	N/A	N/A
46"	3 (See Note 4)	1	1	2	4	5	6	7	8	8	9	9	9	10	10	11	9	10	10	10	11	11	11	11	11	11
48"	2 (See Note 4)	1	2	2	3	4	5	6	7	8	8	9	9	10	10	10	9	10	10	10	10	11	11	11	11	11
50"	N/A	N/A	1	2	2	3	4	5	6	7	8	8	9	9	10	10	10	11	11	9	10	10	10	10	11	11
52"	N/A	N/A	1	2	2	3	4	5	6	7	8	8	9	9	10	10	10	11	11	9	10	10	10	10	11	11
54"	N/A	N/A	1	2	2	3	4	5	6	7	8	8	9	9	10	10	10	11	11	9	10	10	10	10	11	11
56"	N/A	N/A	1	2	2	3	4	5	6	7	8	8	9	9	10	10	10	11	11	9	10	10	10	10	11	11
58"	N/A	N/A	1	2	2	3	4	5	6	7	8	8	9	9	10	10	10	11	11	9	10	10	10	10	11	11
60"	N/A	N/A	1	2	2	3	4	5	6	7	8	8	9	9	10	10	10	11	11	9	10	10	10	10	11	11

SECTION 10.1 – POLARIS PROPAGATION DELAY TABLE

Note: Always install the “A” length spikes into in the front bottom of Tweeter Module.

Polaris Tweeter Spike Length		Listening Distance																								
		8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	30'	31'	32'
36"	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
38"	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
40"	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
42"	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
44"	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
46"	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
48"	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50"	N/A	N/A	C	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
52"	N/A	N/A	N/A	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
54"	N/A	N/A	N/A	N/A	C	C	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
56"	N/A	N/A	N/A	N/A	N/A	C	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
58"	N/A	N/A	N/A	N/A	N/A	N/A	C	C	C	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
60"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B	B	B	B	B	B	B	B	B	B	B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Polaris Tweeter Spike Position

Listening Distance

Ear Height	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	30'	31'	32'
36"	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
38"	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
40"	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
42"	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
44"	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
46"	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
48"	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	N/A
50"	N/A	N/A	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
52"	N/A	N/A	N/A	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
54"	N/A	N/A	N/A	N/A	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
56"	N/A	N/A	N/A	N/A	N/A	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
58"	N/A	N/A	N/A	N/A	N/A	N/A	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
60"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1

Footnotes to Alignment Tables

Note 1: For positions labeled “N/A,” please contact your dealer for information for this listening distance and ear height.

Note 2: Add one spacer to each front woofer diode and spike assembly.

Note 3: Remove diodes from the rear woofer spikes and install only the spikes.

Note 4: Add one spacer to each front woofer diodes and spike assembly. Remove diodes from the rear woofer spikes and install only the spikes.

Note 5: Add one spacer to each rear woofer diode and spike assembly.

Wilson Audio Specialties

POLARIS

SECTION 11 - WARRANTY INFORMATION



Wilson Audio Specialties

Section 11.1 – Warranty Information

Limited Warranty

Subject to the conditions set forth herein, Wilson Audio warrants its electronics 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.