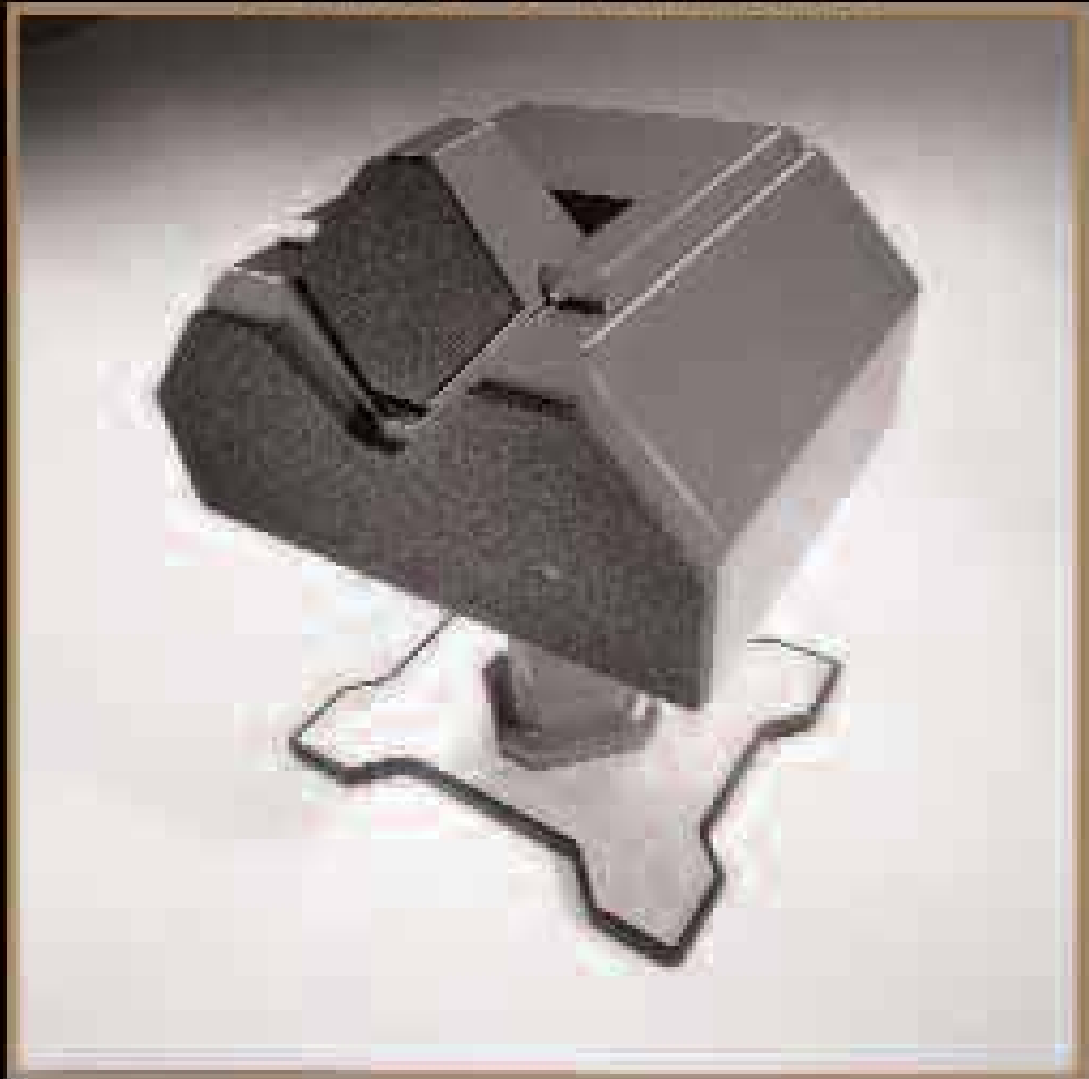




# OWNER'S MANUAL



*Always  
Ahead*

## WATCH CENTER CHANNEL OWNER'S MANUAL

---

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

Cub®, Sophia®, WATT/Puppy®, MAXX®, X-1/Grand SLAMM®, WAMM®, and Alexandria® are registered trademarks of Wilson Audio Specialties, Inc.

WATCH Center™, WATCH Surround™, WATCH Dog™, and Duette™ are trademarks of Wilson Audio Specialties, Inc.

This manual was produced by the Wilson Audio Engineering Department in cooperation with Sales and Marketing. The information contained herein is subject to change without notice. Current Revision 3.0. 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.

**Section 1 - WATCH Introduction .....11**

**Section 1.1- Applications .....11**

        Design Considerations .....12

**Section 1.2 WATCH Package .....13**

        WATCH Center .....13

        WATCH Surround .....14

        WATCH Dog .....15

        Conclusion .....15

**Section 2 - In Your Room .....21**

    Slap Echo .....21

    Standing Waves .....23

    Comb Filter Effect .....25

**Section 2.1 - Resonance .....27**

        Structural Resonance.....27

        Air Volume Resonance .....28

**Section 3 - Initial System Setup .....33**

    System Setup Procedure .....33

    Room Shapes .....34

    Zone of Neutrality .....36

**Section 3.1 - Choosing a Listening Position.....38**

        Speaker Placement vs. Listening Position .....38

        Speaker Orientation .....39

        Center Channel .....39

        Surround Channel .....41

        WATCH Dog .....42

- Section 3.2 - Initial Setup Summary.....42**
- Section 4 - WATCH Center Channel Setup .....47**
  - Setup Procedure .....48
  - Center Channel Spike Assembly .....48
  - Section 4.1 - Measured Listening Position .....50**
    - Room Setup .....50
    - Center Channel Configurations .....51
  - Section 4.2 - Center Channel on Floor .....53**
  - Section 4.3- Center Channel on Stand .....54**
  - Section 4.4 - Center Channel on Custom Stand or Shelf..56**
  - Section 4.5 -Center Channel Mounted to Ceiling .....59**
    - Custom Made Mounting Bracket Requirements .....59
    - Mounting Center Channel above Television .....62
    - Setup .....63
  - Section 4.6 - Center Channel Final Setup.....65**
    - Phase Delay Correction (PDC) - Stand or Floor Mounted 65
    - PDC - Ceiling or Other Custom Location.....66
    - Speaker Cables.....68
    - Spade Lugs .....68
    - Connection of the Center to the Power Amplifier .....69
    - Center Channel Setup Completed .....70
- Section 5 - Final System Tuning and Voicing .....75**
  - Section 5.1 - Left and Right Channels .....76**
    - Determining Front to Back Distance .....76

Determining Side to Side Distance .....77

**Section 5.2 -Integrating the WATCH System.....78**

    Integrating the WATCH Center.....79

    Image Height .....80

    Center Rotation.....80

    Resetting the PDC.....81

    Integrating the Surround Channels.....82

    Integrating the WATCH Dog .....83

**Section 6.0 - Care of the Finish .....87**

    Removing Protective Film .....87

    Dusting the WATCH Center .....88

**Section 6.1 - Care of the Grilles .....89**

**Section 6.2 - Break-in Period .....89**

**Section 6.3 - Enclosure Technology .....90**

    Adhesive .....90

    Depth of Design .....91

**Section 7 - Troubleshooting .....95**

**Section 8 -Center Channel Specifications .....101**

    Specifications .....101

    Dimensions .....101

**Section 9 -Geometric Alignment Table .....107**

**Section 9.1 - Center on Floor - No Spacers .....109**

<b>Section 9.2 - Center on Floor - One Spacer .....</b>	<b>110</b>
<b>Section 9.3 -Center on Floor - Two Spacers .....</b>	<b>111</b>
<b>Section 9.4- Center on Stand - Spike and Nut Only .....</b>	<b>112</b>
<b>Section 9.5 -Center on Stand - Spike, Nut, and Diode....</b>	<b>113</b>
<b>Section 10 - Warranty Information .....</b>	<b>117</b>
Limited Warranty .....	117
Remedy .....	118
Warranty Limited to Original Purchaser .....	119
Demonstration Equipment .....	119
Miscellaneous .....	120

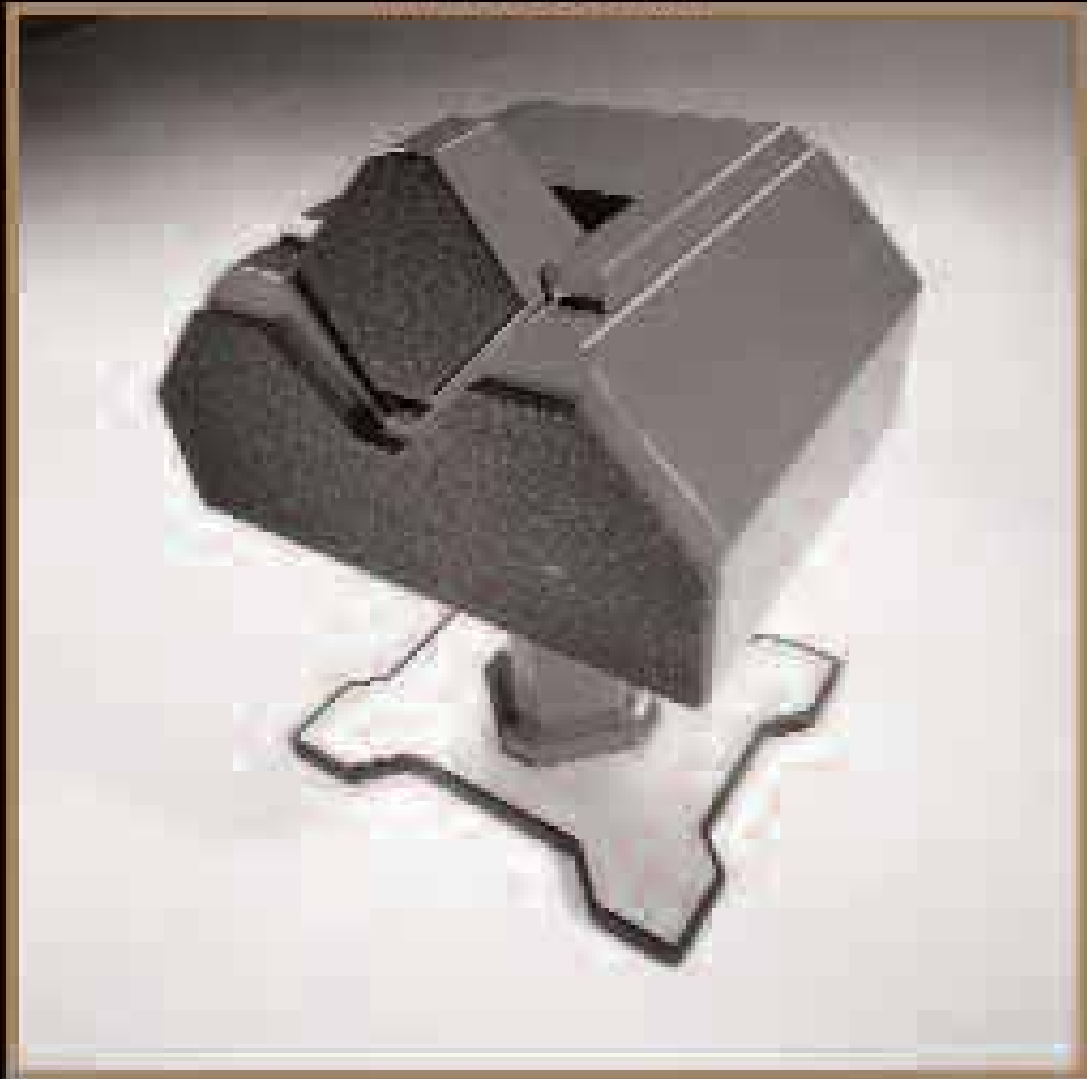
## TABLE OF CONTENTS

---





INTRODUCTION



## WATCH CENTER CHANNEL OWNER'S MANUAL

---

## **Section 1 - WATCH Introduction**

If your passion is home theater, and you have sought the full sensory experience created as your eyes absorb the vision and your skin awakens to the power of the sound, Wilson Audio has your answer. Introducing WATCH.

While all Wilson speakers are designed to take full advantage of today's popular multi-channel formats, WATCH is the first Wilson system designed from the ground up to excel specifically at home theater performance. Best of all, it comes in a package as small or as large as you desire.

The fact is, you haven't truly experienced home theater until you've felt the impact, power, and passion of a film score the way the director intended it, and no company will deliver this passion like Wilson Audio. That's why in the past decade, more blockbuster hits have been mixed, composed, or recorded using Wilson Audio than any other loudspeaker.

### **Section 1.1- Applications**

For more than 20 years, Wilson Audio loudspeakers have set the standard for performance in a wide variety of two-channel audio and multichannel home theater applications. The WATCH (Wilson Audio Theater Come Home) surround system was designed to offer a more compact and versatile home theater option for those with limited space. Purchasing a surround system design by Wilson Audio insures the very best possible integration with your Wilson Audio stereo loud-

speakers. The Watch system is designed to integrate with the Sophia, WATT/Puppy, MAXX and, in many instances, the Alexandria.

Using structural enclosure, speaker driver, and geometric time alignment technologies developed for the WATT/Puppy, MAXX, and the X-1 Grand SLAMM, the WATCH system is truly the thoroughbred of its class and is well-suited to carry on the heritage of Wilson Audio speakers.

One of David Wilson's most important criteria in speaker development is that a speaker meets the accuracy and dynamic demands of studio monitoring, analytical hardware and software evaluation, and, of course, critical music and theater sound track listening. Therefore, the WATCH has been designed to deliver all of the speed, dynamics, and musical accuracy to satisfy even the most demanding of music lovers. The WATCH system will provide years of satisfaction whether listening to two-channel audio, multi-channel audio, or today's latest movie sound track technology.

The WATCH has also been engineered to take full advantage of today's multi-channel surround formats, especially the latest AC-3 (Dolby Digital), THX, and DTS (Digital Theater Systems) formats. The WATCH will provide the speed, dynamic impact, and realism you have come to expect in a high-performance home theater system.

### **Design Considerations**

Your WATCH system has been designed to perform all of the specific func-

tions of a high-performance home theater system. This was a difficult task because of the many interactions that occur in a home theater environment. Because the WATCH system was designed in-house and voiced with a variety of Wilson speakers, you can be sure that the driver blend will be excellent whether your system includes Sophias or Alexandrias. To accomplish this task, David Wilson and his engineering department used some extraordinary material and enclosure techniques.

## Section 1.2 WATCH Package

### WATCH Center

Specifically designed to excel at center channel functions, WATCH Center is extremely dynamic with high sensitivity and strong power handling. Unlike most center channels, it provides listeners not only with optimal on-axis response, but also smooth, linear, off-axis response. This is in part a result of Wilson PDC™ (phase delay correction), a technology first developed for Wilson's WAMM® and X-1 Grand SLAMM systems, and later applied to the rest of the Wilson Line. PDC allows for optimal tuning of a loudspeaker for various listening distances and heights and gives listeners much greater control over their sound.

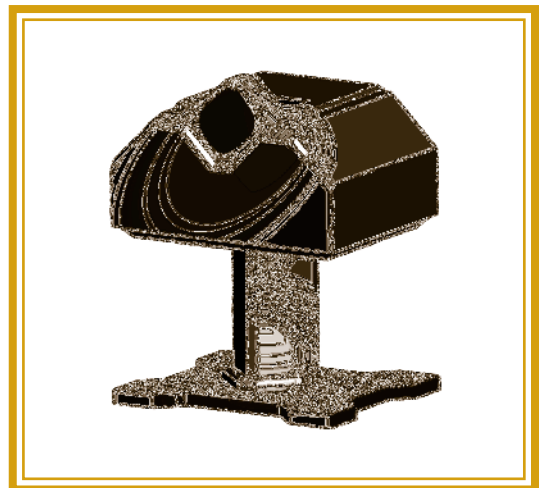


Figure 1 - WATCH Center

The WATCH Center Channel was designed from the ground up as a center channel. It is not merely a standard speaker that was tipped onto its side. The Center Channel was voiced and optimized to truly represent dialogue for movies as well as music and vocals when used in a multi-channel audio setup.

Of course, WATCH Center lives up to Wilson high standards of cutting edge design, superior build quality, and stunning sonic performance. WATCH Center is shielded and is available with a matching stand.

### **WATCH Surround**

WATCH Surround is a perfect example of performance disproportionate to size. With strong power handling capacity and low end frequency response reaching 45Hz, this speaker will take your surround sound to new heights. Unlike most surround speakers, WATCH Surround is more than a noisemaker. It brings accuracy, dynamics, and emotion to your theater. With its gorgeous Mirrorgloss™ finish, it looks right at home on your wall.

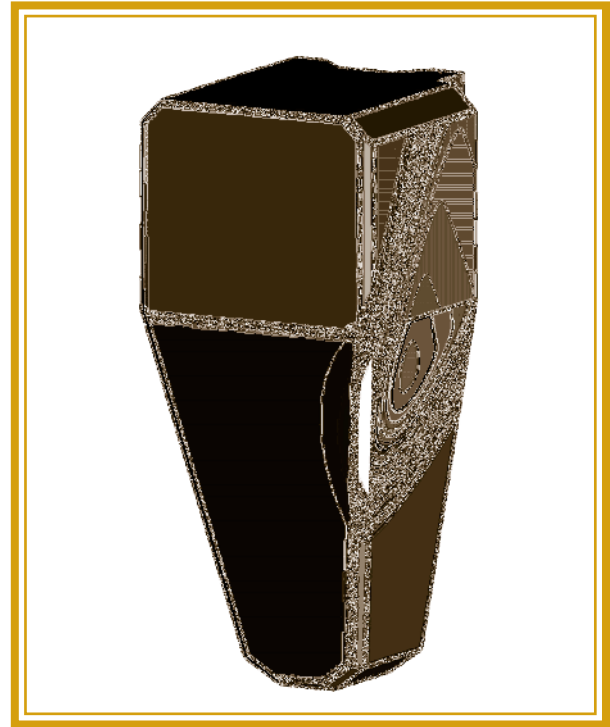
WATCH Surround also minimizes wall/ceiling resonant interactions through its advanced mounting system. Perhaps the greatest challenge for a mounted speaker, these interactions cause coloration of sound; accentuating some frequencies and effectively masking others. Using state-of-the-art materials technology first developed for the X-1 Grand SLAMM, WATCH Surround provides stunning results.

The Surround wall mounting bracket allows the Surround to be spiked to the

bracket, further reducing wall interaction and resonance. The Surround can also be rotated towards the listening position, offering improved integration with the front speakers and better imaging.

### **WATCH Dog**

The WATCH Dog has been designed to integrate well with any of the Wilson Audio loudspeakers you chose for your multi-channel system. The bass is clean, powerful, and uncolored. It offers speed, dynamics, and clarity that are often talked about with a subwoofer, but rarely realized in the design. If you are looking for that extra bass extension, the WATCH Dog is the only solution to give you truly high-end audio bass without compromise.



**Figure 2 - WATCH Surround**

### **Conclusion**

Finally, a home theater, designed from the ground up as multi-channel, that is truly high-end. Combine the structural and design considerations with the superior sonic quality and finish, and you find what makes Wilson Audio the leader in the industry. Wilson Audio delivers a product that maintains the strictest structural tolerances, durability, and reliability. You will have consistent, repeatable

## WATCH CENTER CHANNEL OWNER'S MANUAL

---

performance, unaffected by climatic conditions, anywhere in the world. You are about to experience multi-channel audio/home theater like you never thought possible.

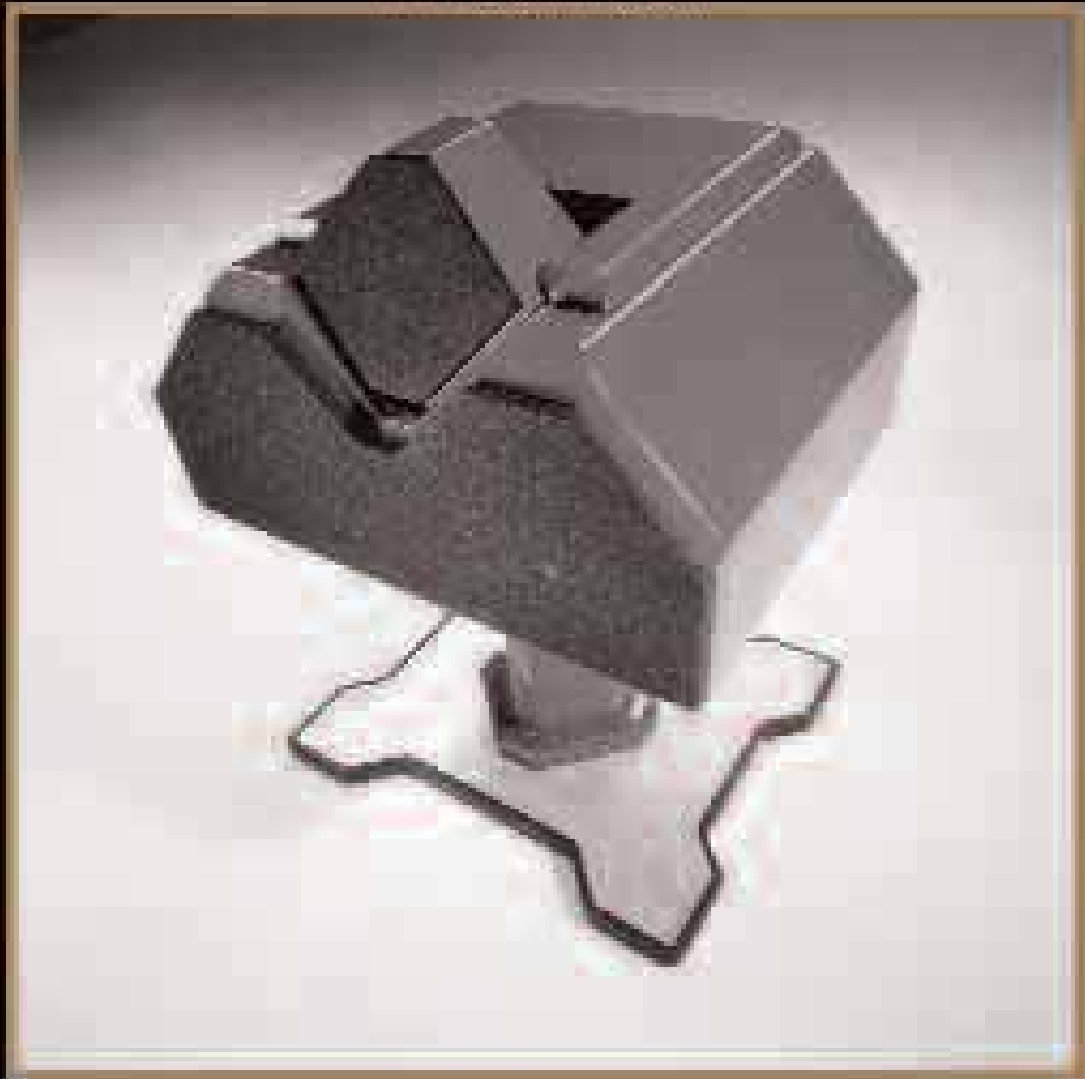


## SECTION I - INTRODUCTION

---

WILSON AUTO SERVICES, INC.

IN YOUR ROOM



## WATCH CENTER CHANNEL OWNER'S MANUAL

---

**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 WATCH Center Channel.**

## **Section 2 - In Your Room**

There are three commonly encountered room reflection problems, slap echo, standing waves, and comb filter effects.

### **Slap Echo**

Probably the most obnoxious form of reflection is called “slap echo.” In slap echo, primarily mid-range and high frequency sounds reflect off of two parallel hard surfaces. The sound literally bounces 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 mid-range. Slap echo destroys the sound quality of a playback system primarily in two ways:

- Adding harshness to the upper mid-range and treble through energy time storage.
- Destroying the delicate phase relationships which help to establish sound stage and image localization clues.

Nonparallel walls do not support slap echo, but, rather, allow the sound to

diffuse.

Slap echo is a common acoustical problem in the typical domestic listening room because most of these rooms have walls of a hard, reflective nature, usually being only occasionally interrupted by curtains or furniture. Slap echo can be controlled entirely by the application of absorptive materials to hard surfaces, such as:

- Illbruck Sonex®
- Airduct board
- Cork panels
- Large ceiling to floor drapes
- Carpeting to wall surfaces

In many domestic listening environments, heavy, stuffed furnishings are the primary structural control to slap echo. 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,” much heavier in bass tonal balance, 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. Diffusers, on the other hand, tend to not change the high frequency tonal balance characteristic of the room. Used properly, they can increase transparency. Used incorrectly, how-

ever, diffusers can rob the system of bass richness and add significant midrange colorations. A combination of absorptive and diffusive treatments is usually the best approach.

### Standing Waves

Another type of reflection phenomenon is standing waves. Standing waves cause the unnatural boosting of certain frequencies, typically in the bass, at certain

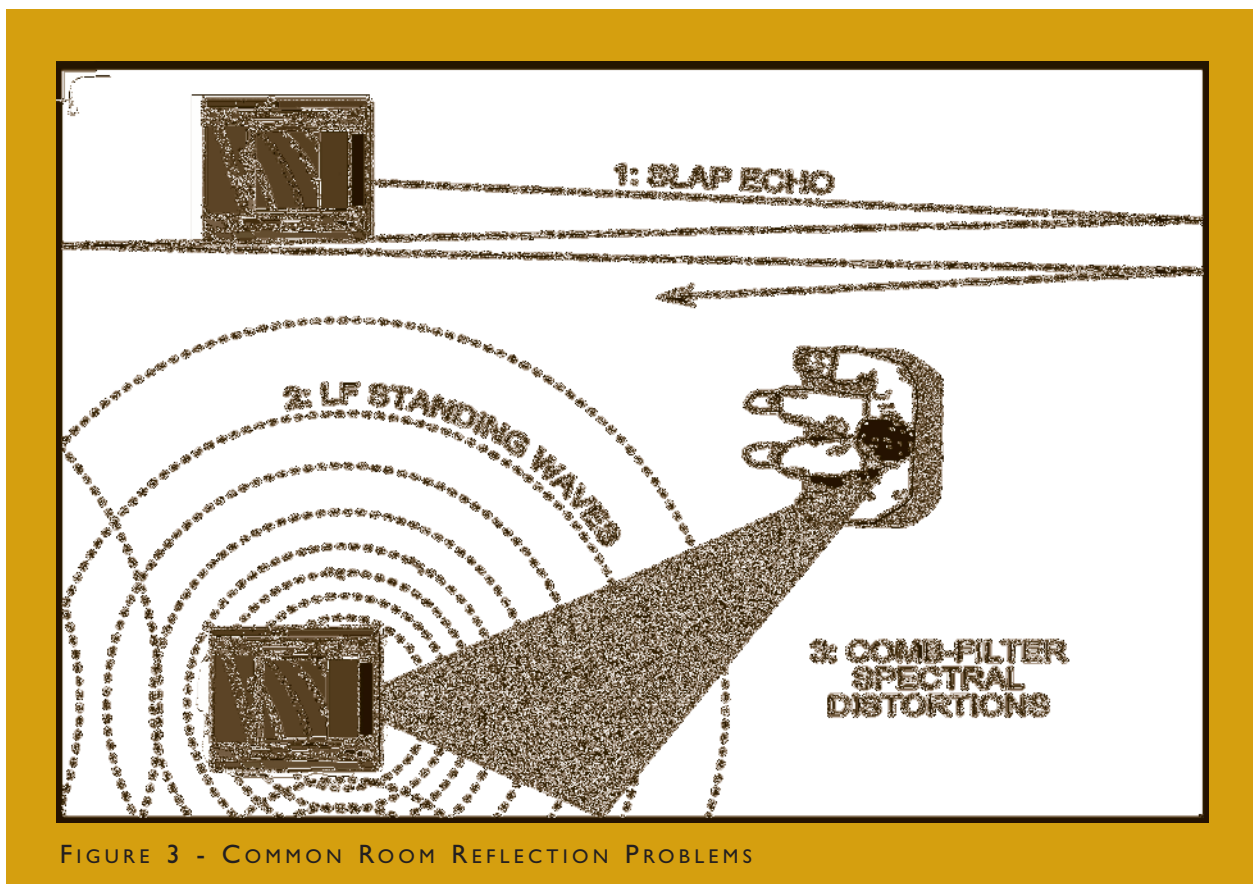


FIGURE 3 - COMMON ROOM REFLECTION PROBLEMS

discreet locations in the room. A room generating severe standing waves will tend to make a loudspeaker sound one way when placed in one location and entirely different when placed in another. The effects of standing waves on a loudspeaker's performance are primarily as follows:

- Tonal balance - bass too heavy
- Low-level detail - masked by long reverberation time LF standing waves
- Sound staging - LF component of image shifted

Standing waves are more difficult to correct than slap echo because they tend to occur at lower frequencies, whose wave lengths are long enough to be ineffectively controlled by absorbent materials such as Illbruck Sonex®. Moving speakers about slightly in the room is, for most people, their only control over standing waves. Sometimes a change of placement as little as one inch can dramatically alter the tonal balance of a system because of standing wave problems.

Fortunately, minor low frequency standing waves are sometimes 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. This rigid and massive construction method traps the bass in the room unless it is allowed to leak out of the room through large window and door areas.



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 very slightly asymmetrically in the listening room so that 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**

A special type of standing wave, noticeable primarily in the midrange and lower high frequencies, is the so-called “comb filter effect.”

Acoustical comb filtering occurs when sound from a single source, such as a loudspeaker, is directed toward a microphone or listener at a distance. The first sound to reach the microphone will be the direct sound, followed by 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 are 180 degrees out of phase. There is augmentation at other frequencies where the direct and the reflected sounds arrive in phase. Because it is a function of wave length, the comb filter effect will notch out portions of the audio spectrum at regularly spaced intervals.

The subjective effect of comb filter effects, (such as is shown in Figure 4), is as follows:

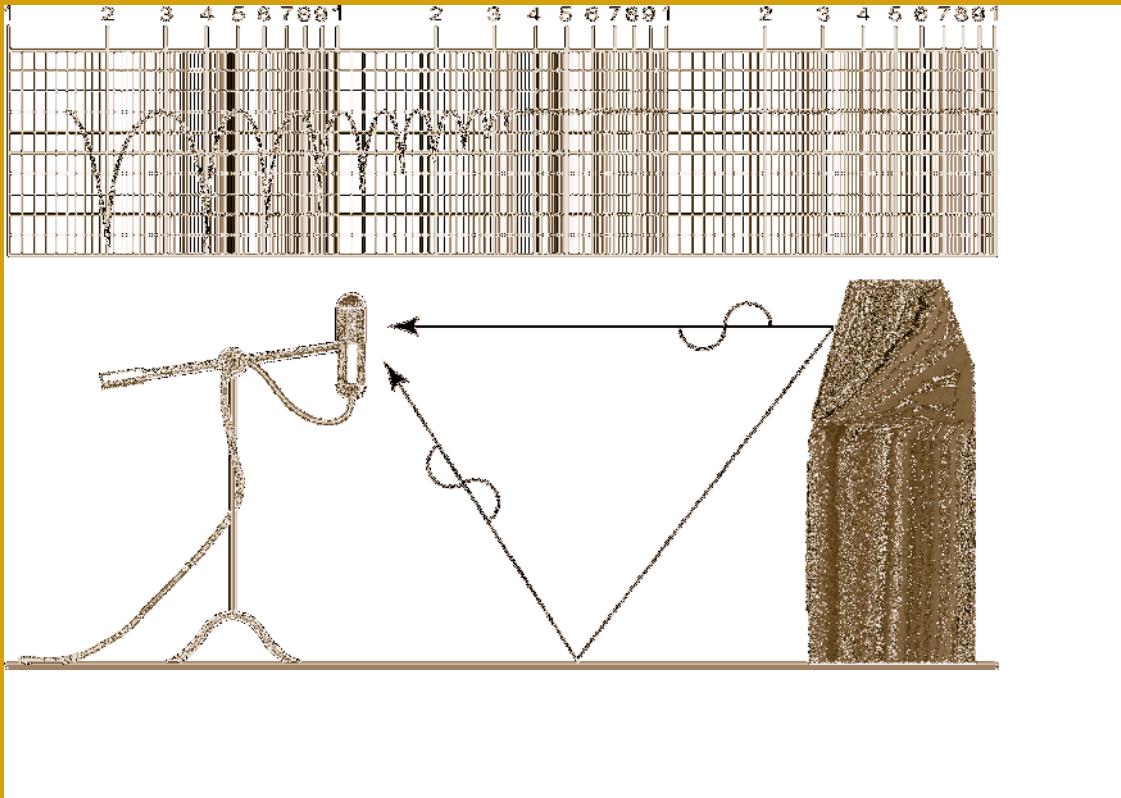


FIGURE 4 - COMB FILTER EFFECT

- Added roughness to the sound
- Reduction of harmonic richness
- Smearing of lateral sound stage 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 reflec-

tion occurs.

## Section 2.1 - Resonance

Resonance in listening rooms is generally caused by two sources:

- The structures within the listening room
- The volume of the air itself in 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 heel of your hand or stomping on the floor. If it is a wooden floor, this is done to detect the primary spectral center of the resonance. 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 tonal balance fullness to any system played in that room. 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. Short of actually adding additional lay-

ers of sheet rock or book shelves to flimsy walls, however, there is little that can be done to eliminate wall resonances.

### **Air Volume Resonance**

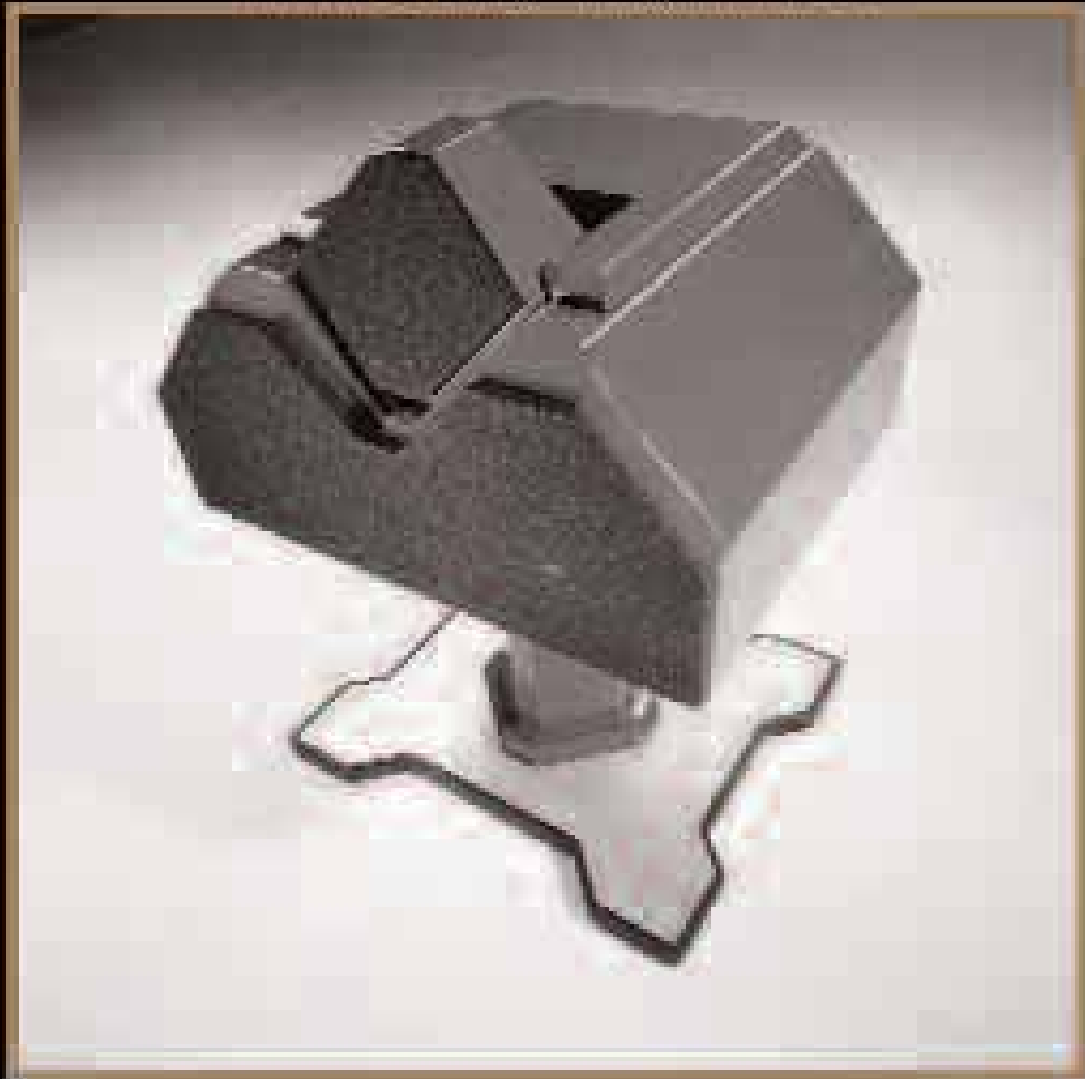
The physical dimensions and volume of air in a room will also support standing wave modes and resonances at a frequencies determined by the size of the room. Larger rooms will resonate at a lower frequency and have more complex (better) modal distributions than will smaller rooms. Air volume resonances, wall panel resonances, and low frequency standing waves, together, 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™ have been found to be effective in reducing some of these low frequency room colorations. Custom designed and constructed bass traps, such as perforated Helmholtz resonators, provide the greatest degree of low frequency control.

## SECTION 2 - IN YOUR ROOM

---

WILSON AUTO SERVICES, INC.

## INITIAL SETUP INFORMATION



## WATCH CENTER CHANNEL OWNER'S MANUAL

---



### **Section 3 - Initial System Setup**

We strongly recommend that you have a Wilson Studio dealer come to your home and help you with the set up of the WATCH System. They have been trained on setting up our systems to provide you with the most satisfying results. However, if you choose to set up the system yourself, we have provided some instruction that will allow you to achieve very good performance from the WATCH System.

If you have not read the previous section on room acoustics, do so now. It will provide you with valuable information for determining the overall best speaker placements and listening position. It will also allow you to fully evaluate the acoustical qualities of your existing room and give you some ideas on how you can improve your overall system performance.

#### **System Setup Procedure**

We recommend that you setup your multi-channel system as follows:

- Perform an acoustical analysis of your existing room.
- Find and mark the “Zones of Neutrality” for each of the speakers in the WATCH system (more specific details are found below).
- Follow the setup procedures outlined in Section 4 and your left and right channel owner’s manual.
- Perform the final system setup and fine tuning steps outlined in Section 5.

## Room Shapes

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

There are three basic shapes for most rooms: square, rectangular, and L-shaped (see Figure 5).

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.

SECTION 3 - INITIAL SETUP INFORMATION

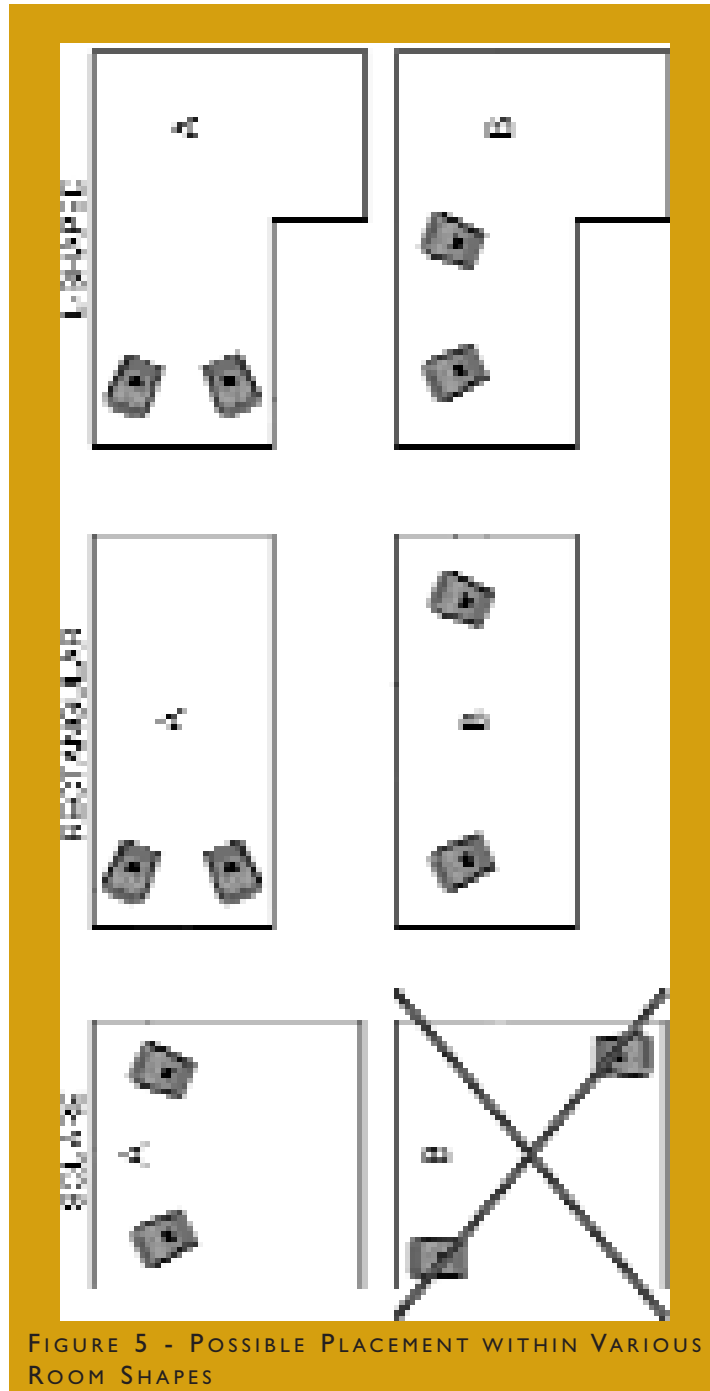


FIGURE 5 - POSSIBLE PLACEMENT WITHIN VARIOUS ROOM SHAPES

In many cases, L-shaped rooms 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 5 ).

### **Zone of Neutrality**

The “Zone of Neutrality” is an area in a 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 placing your left and right speakers. Speaking in a moderately loud, normal toned voice and a constant volume, project your voice out into the room.
2. As you slowly walk out from the wall, (it is helpful to have another listener seated in the listening position to aid you in the evaluation), listen to how the voice “frees up” from the added bass energy and diffuseness imparted by the rear wall boundary.
3. When you hear the voice “free up” from this artifact, place a piece of tape

on the floor to mark this location. You will now be entering the outer edge of the “Zone of Neutrality.” Although this can vary from room to room, this is usually between 2 and 3 1/2 feet from the rear wall.

4. Continue to walk slowly away from the wall. After some distance, usually one to two feet, you will hear the beginning of a new artifact - the interaction with the opposite wall. This will manifest itself when you hear your voice again lose focus and it appears to reflect or echo in front of you.
5. When you begin to hear this artifact, place a piece of tape on the floor and mark this location. This is the inner edge of the “Zone of Neutrality.”
6. Repeat the procedure with the side walls, positioning yourself with the zone you have established above. Continue to listen for the point in the room where your voice loses the added bass energy from the wall behind you, and continue until there is an obvious interaction with the opposite wall in front of you. Do each side or speaker location individually.

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 extend the inner and outer boundaries of the Zone for the side walls and the front wall (behind the speakers), they will intersect. You will now have two rectangles on the floor on either side of the room, which is your Zone of Neutrality for each channel.

### **Section 3.1 - Choosing a Listening Position**

Decide where you want your listening position to be. Please remember that your WATCH System can fill most rooms with beautiful sound. However, for the PDC advantage, we want to ensure that you get all the benefits possible with the propagation delay adjustment features that are built into this design. Listening positions that are too close to a boundary will deteriorate the overall system performance.

#### **Speaker Placement vs. Listening Position**

The location of your listening position is as important as the careful setup placement of your speakers in your room. The listening position ideally should be no more than 1.1 to 1.25 times the distance between the left and right channel 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 about halfway down the long axis of the room. Experiment carefully for best low frequency response.

Some people place the speakers on one end and sit at the other end of the room. Needless to say, this will not yield the finest sound. Carefully consider your listening position for optimal performance. Our experience has shown that any listening position that places your head closer than 14" to 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 minimize the influence of the side walls on the sound of your system. Speakers placed too close to the side walls 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. A good place to start is with the speakers about 18" from each wall and, if you need to move them relative to the side wall, move them away from the wall, not closer.

Another important aspect of speaker placement is how far to place the speakers from the wall behind them. The closer 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. Remember, if you are partial to bass response or air and bloom, do not overcompensate your adjustments to maximize their effects. Overbalanced systems are sometimes pleasing in the short term, but long term satisfaction is always achieved through proper balance.

## **Center Channel**

After determining the general area for the left and right channel, determine the best place for your WATCH Center Channel. The following center channel

configurations are possible:

- Set on the floor with speaker angled up towards the listener.
- Mounted on stand with no rotation.
- Mounted on stand with longer spikes in the front of stand and shorter spikes in the back allowing the stand and speaker to be rotated up toward the listener.
- Mounted above TV on a custom made bracket.
- Mounted upside down on ceiling with speaker angled down towardsthe listener.

Except for the ceiling mounted option, all of the above arrangements will allow for some fine tuning of speaker placement once the entire system is set up. If you are mounting the speaker to the ceiling, be sure to choose the location carefully as you will not be able to move the WATCH Center Channel once it is bolted to the ceiling. A poor placement will lower overall system integration and performance. As a general rule, the distance from the main left and right tweeters to the listening position should be the same as the distance from the center channel tweeter to the listening position. This allows the sound provided by each speaker to arrive at the ear at the same time. The phase delay correction will be made via the sliding tweeter module on the WATCH Center Channel.

Our testing has shown that a floor or stand mounted center channel inte-



grates best when placed centered between the left and right speaker and either aligned horizontally with the front inner edge of the left and right speakers or slightly behind the front inner edge. You will want to experiment with the center channel distances and find the location that offers the smoothest left, right, and WATCH Center Channel integration. We will step you through this process in Section 5.

### **Surround Channel**

Wilson Audio has done everything possible to eliminate the boundary interactions caused by mounting a speaker onto the wall. The mounting bracket allows for significant improvements in detail, speed, and clarity. The WATCH Surround channels will perform well in almost any location they are placed. The mounting bracket and the careful design of the WATCH Surround have eliminated most of the sonic problems encountered when placing a standard speaker too close to a boundary. Nevertheless, we have performed extensive testing on the WATCH Surround and found that significant improvement on speaker linearity and integration can be achieved by careful selection of the surround channel mounting location.

We realize that the location of the WATCH Surround channel is generally set by the architecture of the room. However, if you have some flexibility in the wall mounting location, we suggest that you perform a zone of neutrality test and find the area along the wall where your voice sounds the most natural and has the

least amount of reflections or standing waves. Be sure to listen for room modes and frequency response peaks or dips.

### **WATCH Dog**

The WATCH Dog will perform very well in any location in the room. In general, the closer you place the WATCH Dog 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 WATCH Dog to find a balance of the above mentioned items.

### **Section 3.2 - Initial Setup Summary**

Ideally, the speakers should not be positioned too far from the listener if maximum resolution of low level detail is required (near-field monitoring). If possible, the speakers should be positioned out into the room, slightly asymmetrically away from side and rear walls. The speakers should be toed-in toward the listener, It is preferable that the listener, at his seated position, can barely see the surface of the inner side-panel of the left and right speakers as he faces the speaker. It is recommended that a distance of 2-3 feet, and possibly more, be maintained between the left and right speakers and the rear walls. A distance of at least 1 1/2 feet should be maintained between the front panel of the left and right speakers and reflective side walls. Use of sound absorbent materials may reduce the space requirement somewhat. Experiment for each room.

### SECTION 3 - INITIAL SETUP INFORMATION

---

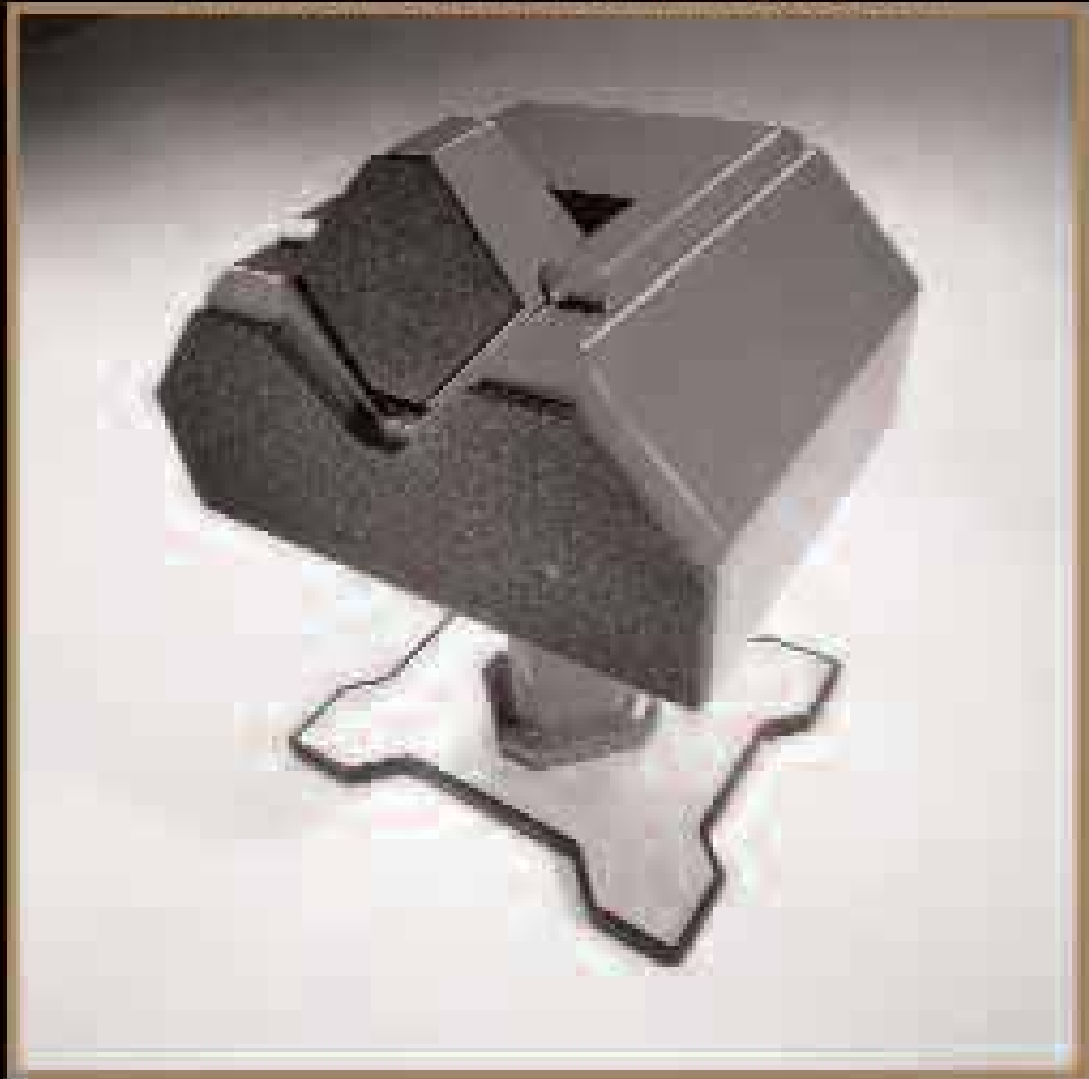
Be sure to place the WATCH Center Channel even with or slightly behind the front inner edge of the left and right speakers.

The WATCH Surround channel should be mounted on the wall in a location that has the least amount of reflections and standing waves. The location should have a natural sound if you stand next to it and project your voice into the room.

The WATCH Dog has a great degree of flexibility in its placement. The final location will be determined by aesthetics and user taste, balancing the quality versus the quantity of bass.

WILSON AUTO SERVICES, INC.

WATCH CENTER CHANNEL SETUP



## WATCH CENTER CHANNEL OWNER'S MANUAL

---

**Note:** Before setting up the WATCH Center Channel study carefully the previous sections on room acoustics and initial setup information. They provide valuable information on determining the ideal room locations for your speakers.

## Section 4 - WATCH Center Channel Setup

You will need the following items:

- Supplied hardware kit
- Tape measure
- Known listening position

**Note:** The WATCH Center Channel is shipped with four set screws, which are inserted into the threaded holes on the bottom of the Center Channel. If you are simply placing the Center Channel on a shelf and are not planning on following the setup procedure, leave these set screws in place. If you are planning on mounting the Center Channel to a stand or using any provided spikes to angle the Center Channel towards the listening position, these four set screws will need to be removed. Remove the set screws as follows:

1. Carefully set the speaker onto its side.
2. Using the provided 3/16" angled Allen wrench, unscrew the set screws.

**Note:** You should have two 1 1/2" set screws and two 2" set screws. Save these set screws as you will need them if you plan on adding rotation towards the listening position.

3. Proceed to the installation instructions provided.

## Setup Procedure

1. Gently slide the WATCH Center Channel out of the crate. Remove the plastic outer bag by tilting the Center channel over on one side and opening the bag at the base of the Center channel. Remove the bag.

**Note: Do not cut the bag off of the Center channel. You may mark the cabinet or damage a driving element. Additionally, you will need this bag, if you need to repackage the Center channel. Save your shipping crates and all packing materials. They are specifically designed to prevent harm from coming to your Center channel.**

2. Move the Center channel into the desired location.

**Note: Be careful not to touch the driving elements when you are moving your WATCH Center channel!**

## Center Channel Spike Assembly

The WATCH Center channel comes with two sets of spikes with a diode and spacers, and two sets of spikes with only the spike and nut. This will allow the speaker to be tilted to a variety of angles. These spikes provide acoustical isolation as well as optimal height placement for your speakers. There are three ways of assembling the spikes (without spacers, with one spacer, or with two spacers), and your choice will depend on the location of the Center channel and personal tastes. The spacers are provided to allow for the rotation of the WATCH Center towards the listener. If the speaker is floor mounted, it will be tilted upward so the drivers



## SECTION 4 - WATCH CENTER CHANNEL SETUP

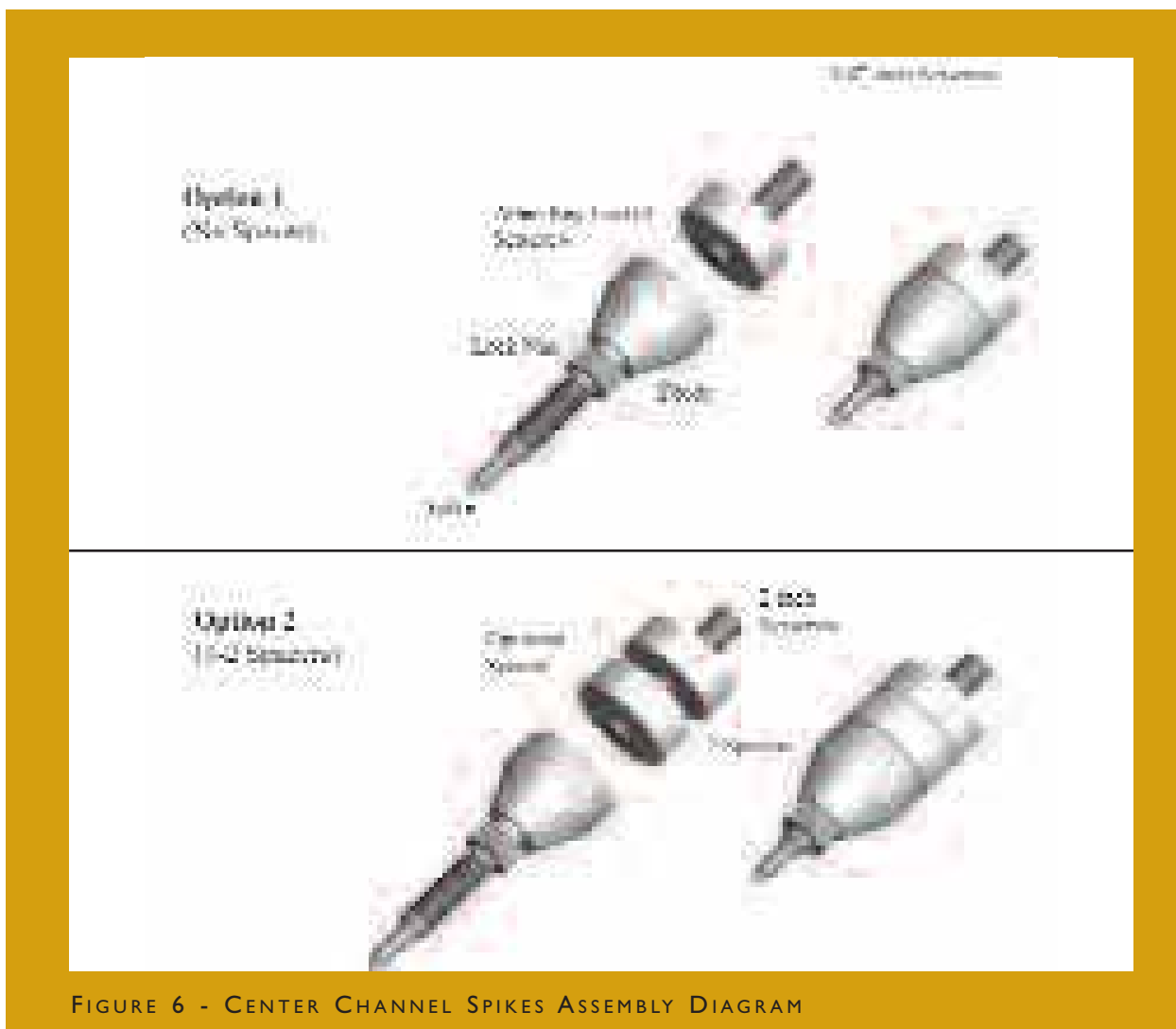


FIGURE 6 - CENTER CHANNEL SPIKES ASSEMBLY DIAGRAM

are firing toward the listener. If the speaker is mounted above the listening ear height, it will need to be raised more in the back so the speaker is firing down toward the listener.

After determining the required rotation for the Center channel, (see Sections 4.2-4.5), assemble the spikes as follows:

1. Insert either the short or the long threaded bolt, depending on the desired height (see Figure 6) as far as it will go into the hole in the bottom of the Center channel. Make sure the Allen key end is accessible.
2. If required, place the corresponding number of spacer discs over the bolt.
3. Screw the acoustical diode onto the bolt until it is roughly half way into the diode.
4. Screw the spike (with nut) all the way in until it just touches the bolt. Do not tighten the nut at this time.
5. Repeat steps 1 through 4 with the other spikes.

### **Section 4.1 - Measured Listening Position**

Pulse alignment accuracy of the Center channel has been established and verified at Wilson Audio's R&D laboratory. The tables used in this section are a result of this testing.

#### **Room Setup**

The Center channel allows for different listening distances (away from the speakers) and listening ear heights (measured distances from the floor up to your ear). See Figure 7 below. For each distance/ear height combination, there is a unique alignment geometry. To make correct in-home setup of the Center channel possible without test equipment, Wilson Audio has measured the correct geometric

## SECTION 4 - WATCH CENTER CHANNEL SETUP

PDC (phase delay correction) alignment for different distance/ear height combinations. This information is provided in Section 9. 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.

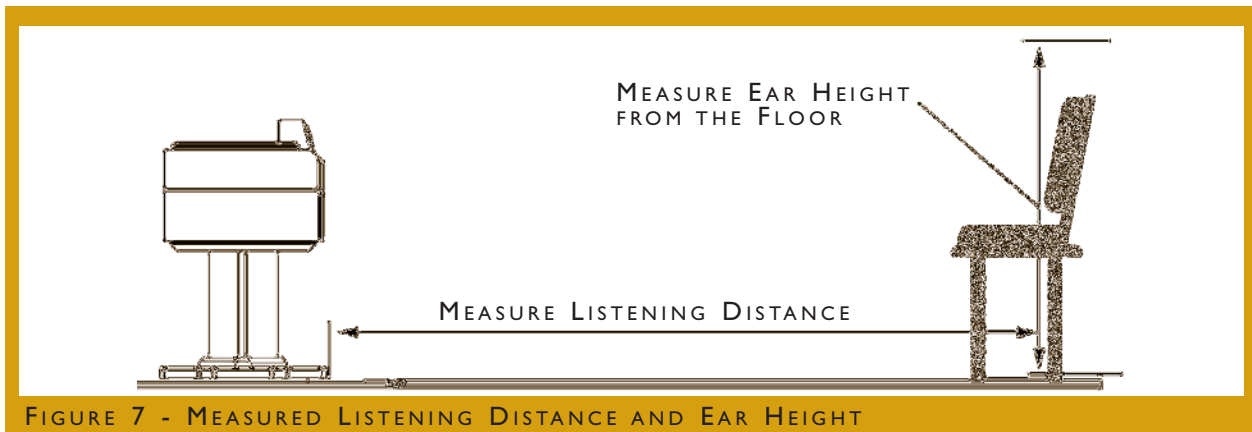


FIGURE 7 - MEASURED LISTENING DISTANCE AND EAR HEIGHT

### Center Channel Configurations

The WATCH Center channel has been designed to accommodate most any mounting location. These locations, in order of preference, are as follows:

1. Center Channel on Stand (Recommended Location)
2. Center Channel on Floor
3. Center Channel on Custom Stand or Shelf
4. Center Channel on Ceiling

The Center channel crossover has been optimized for use with the Center stand. This is the preferred location. When you mount the Center channel in most

other locations, you will begin to see more boundary interactions, which may alter the performance of the speaker. Nevertheless, the WATCH Center Channel will certainly out-perform any other center channel placed in a given location.

Placing the Center channel in any location other than on the Wilson Audio WATCH Center stand will require the WATCH Center channel to be rotated toward the listening position. This will allow the center channel to take advantage of the phase delay correction technology (PDC). Simply placing the Center on top of the TV or any other location, without following the directions below, will hinder the performance of the WATCH Center channel. With the correct PDC you will find the vocals and dialogue more realistic and satisfying. As with any component in your system that offers increased resolution and detail, a careful setup is required.

There are four different setup procedures depending on your Center channel location. The possible Center channel configurations are as follows:

- Section 4.2 - Center Channel on Floor
- Section 4.3 - Center Channel on Stand
- Section 4.4 - Center Channel on Custom Stand or Shelf
- Section 4.5 - Center Channel on Ceiling

For detailed setup instructions, please proceed to the indicated section for your particular installation.

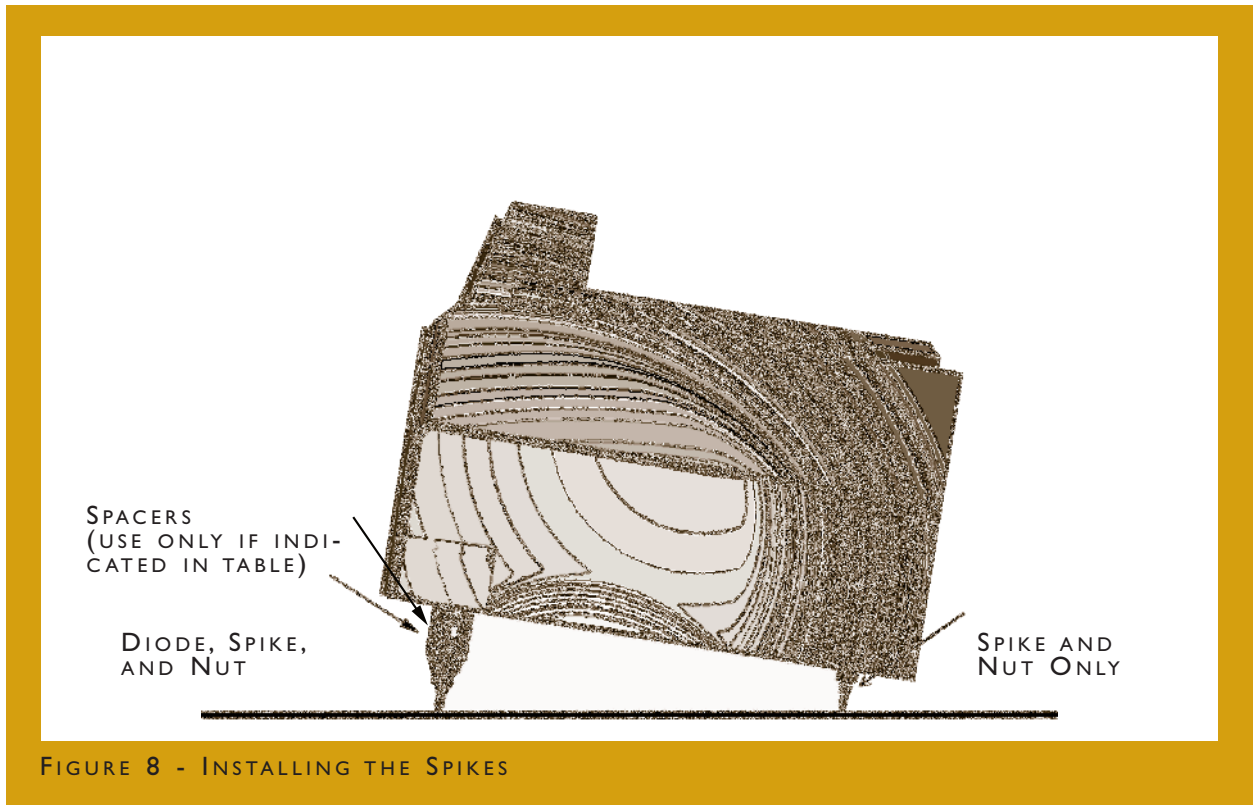


FIGURE 8 - INSTALLING THE SPIKES

### Section 4.2 - Center Channel on Floor

The floor mounted Center channel must be rotated up toward the listening position. This is done by using a taller spike in the front than in the back of the speaker (see Figure 8). The default rotation is set by using a combination of a spike, a lock nut, and an acoustical diode. If required, additional rotation can be achieved by using the provided 1/2" spacers between the diode and the bottom of the cabinet (see Figure 6, page 49). The amount of rotation depends on your listening position.

Set the rotation as follows:

1. Using provided 3/16" Allen wrench, remove the 4 setscrews from the bottom of the Center channel. Keep these as they are the setscrews needed to assemble your spikes.
2. Turn to Section 9, page 107. Locate your listening position on the table.
3. Assemble the front spikes with the listed diode/spacer combination.
4. Install the spikes as shown in Figure 8 above.

**Note: The material used for the bottom of the WATCH Center channel is a high density composite. This material is easily cross-threaded when installing the spikes. Be careful that the spike thread is engaging properly into the bottom of the enclosure.**

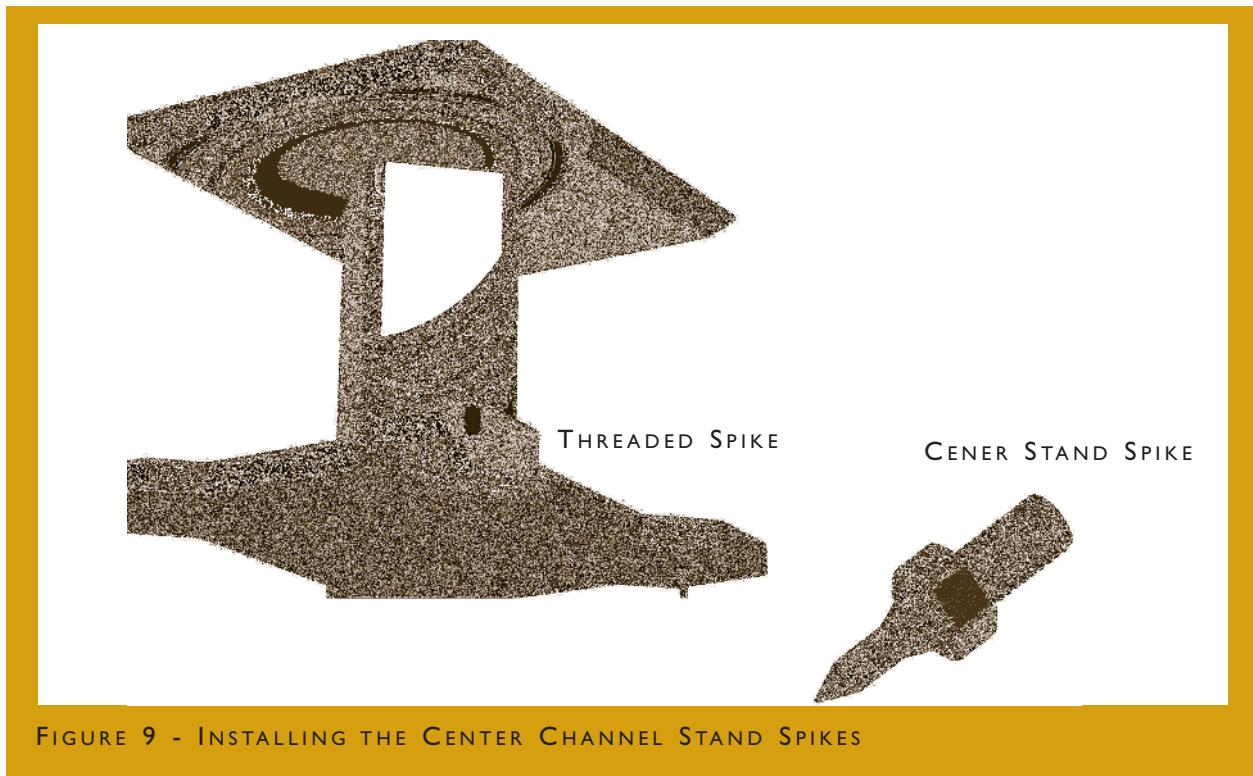
5. Carefully lift the Center channel into the desired location and set it down.

**Note: Four small brass disks have been provided for use as spike pads. Place these under the spikes to protect the finish of your floors.**

6. Turn to section 4.6 for final assembly instructions.

### **Section 4.3- Center Channel on Stand**

1. Set the stands in the desired listening location.
2. Attach the spikes to the bottom of the stand by screwing in the spike and nut combination until the nut is flush with the bottom (see Figure 9).



**Note: Do not tighten the nut at this time. Wait until the fine tuning has been completed for the entire system and the speaker has been leveled.**

3. Using provided 3/16" Allen wrench, remove the 4 setscrews from the bottom of the Center channel. Keep these as they are the setscrews needed to assemble your spikes and may be required during final setup.

**Note: Four small brass disks have been provided for use as spike pads. Place these under the spikes to protect the finish of your floors.**

4. Bolt the Center channel to the stand using the four 3/8"-16 threaded socket head capscrews and washer provided (see Figure 10).

**Note: Do not over tighten the bolts. A snug fit is all that is required to secure the Center channel to the stand.**

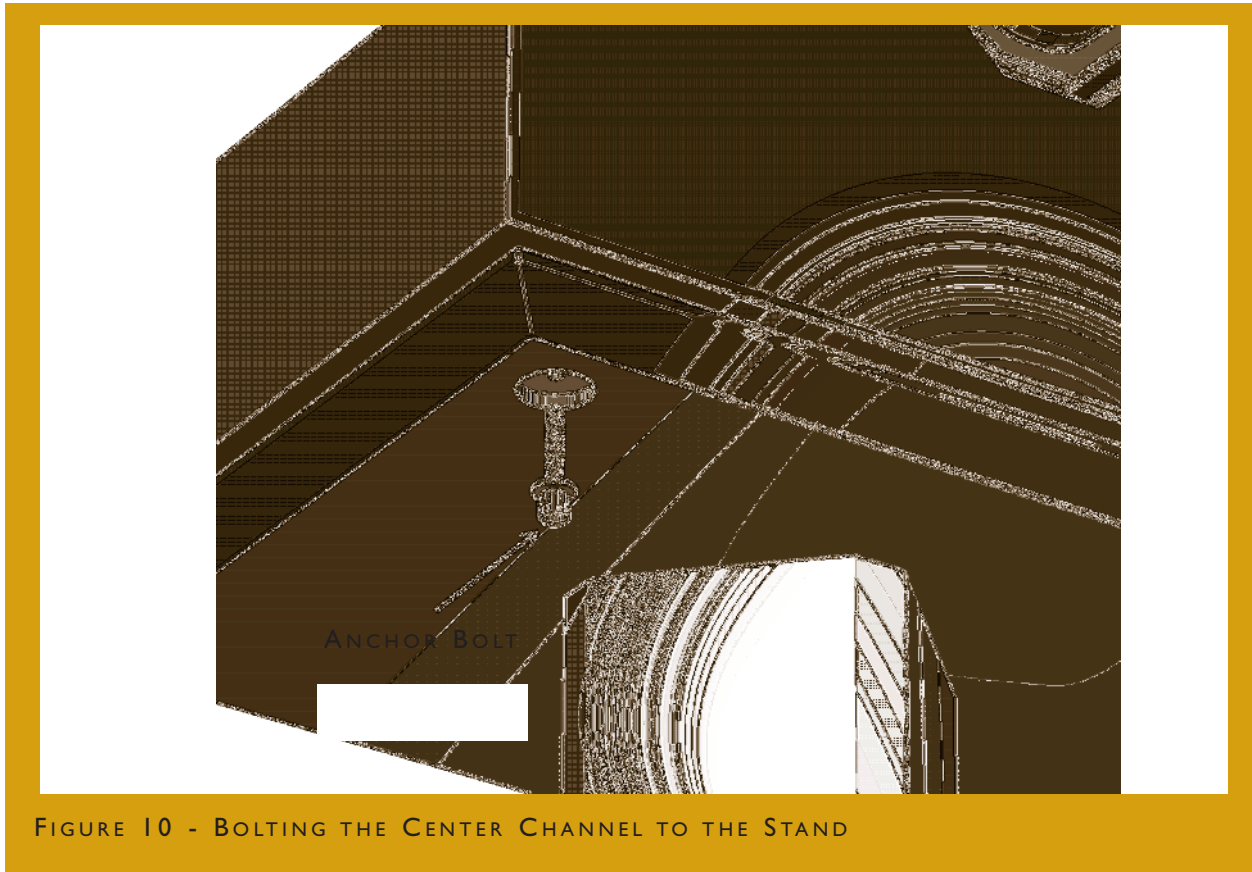


FIGURE 10 - BOLTING THE CENTER CHANNEL TO THE STAND

5. Turn to section 4.6 for final assembly instructions.

#### **Section 4.4 - Center Channel on Custom Stand or Shelf**

The Center Channel is a shielded speaker, and therefore, could be placed directly on top of a television. However, this is not recommended due to the weight of the speaker. In time, damage may occur to your television. We recommend that you have a custom shelf built that allows the WATCH Center to be bolted securely

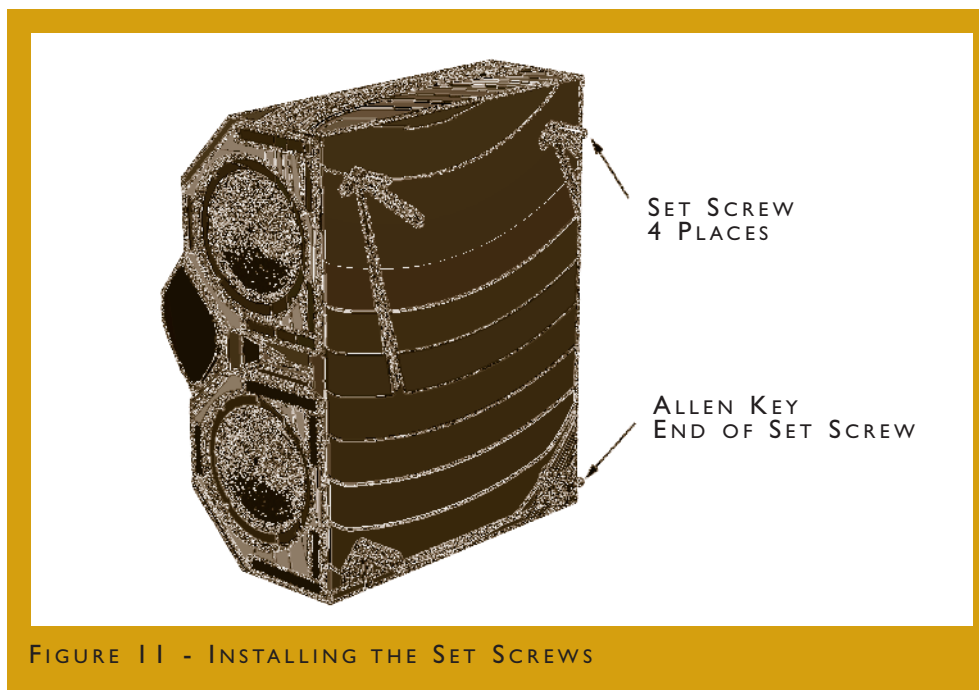


## SECTION 4 - WATCH CENTER CHANNEL SETUP

---

above the television and rotated down toward the listening position. The requirements for this bracket are outlined at the beginning of Section 4.5 on page 59. The speaker should be rotated so that the midrange drivers are firing just below the listening position. Once you have made and mounted the custom bracket, setup the Center channel as follows:

1. Lay the Center Channel on its side.
2. Using provided 3/16" Allen wrench, remove the 4 setscrews from the bottom of the Center Channel.
3. Install the 2" threaded setscrews into the threaded holes on the bottom of the speaker.



**Note: Be sure that the Allen key end of the set screw is facing out.**

4. Carefully lift the Center channel and set the threaded setscrews into the four mounting holes located on the top of the mounted custom shelf.
5. Using the provided 3/8"-16 nut, bolt the Center channel to the mounting bracket.
6. Turn to section 4.6 for final assembly instructions.

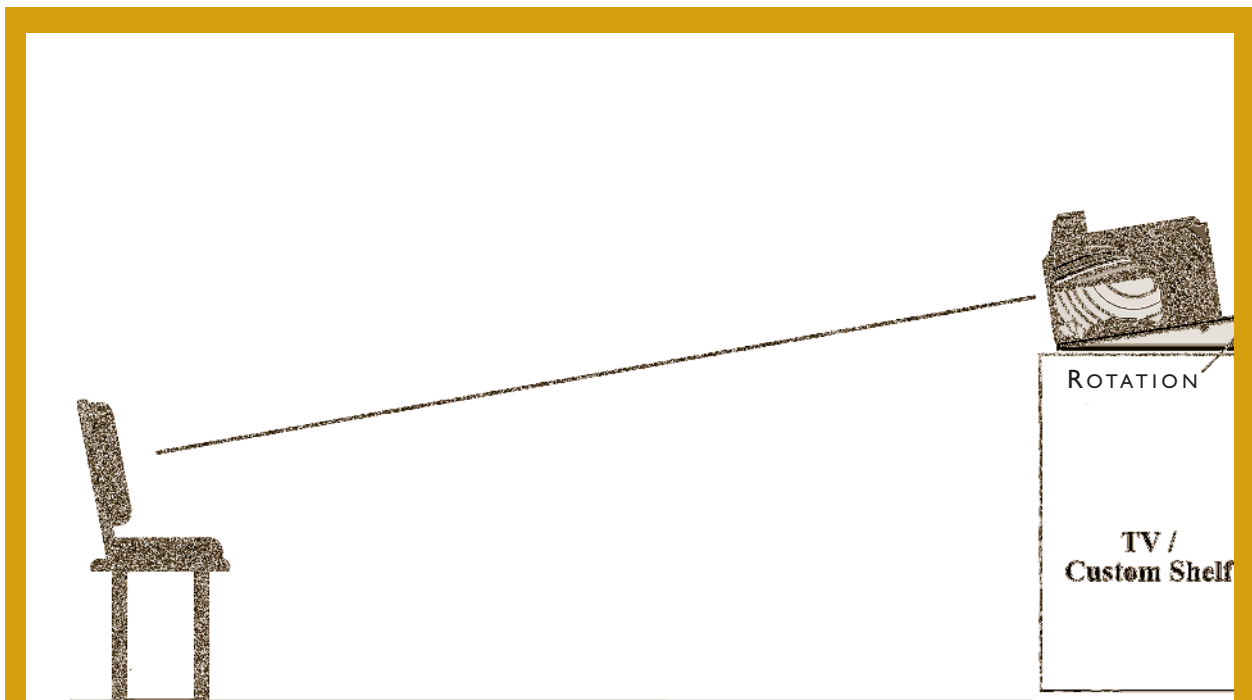


FIGURE 12 - CENTER CHANNEL MOUNTED ABOVE TV

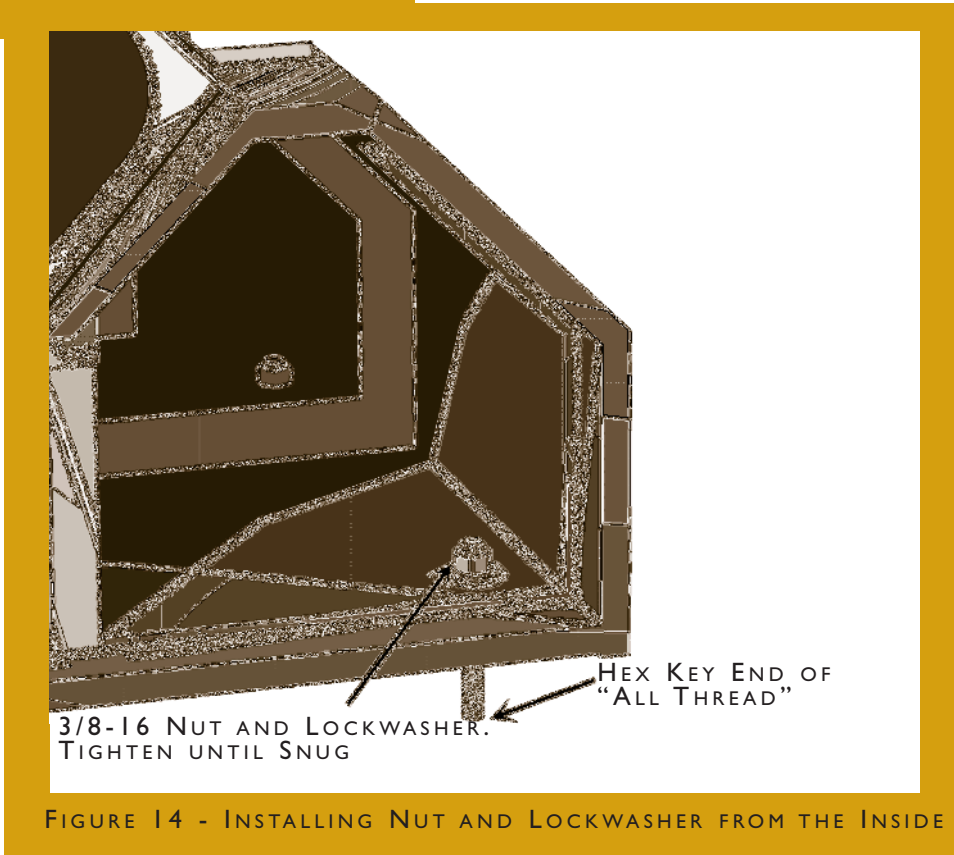
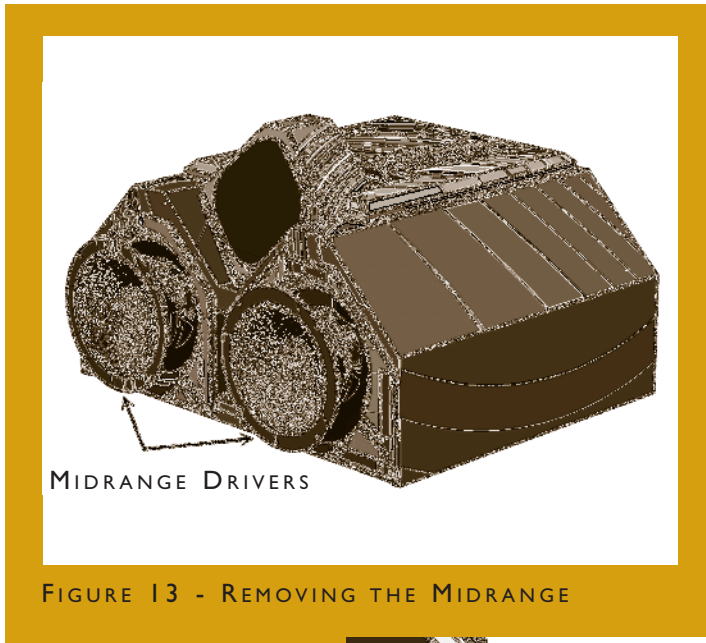
### **Section 4.5 - Center Channel Mounted to Ceiling**

**Note: For a floor or wall mounted Center Channel, a custom mounting bracket is required. It is important that this bracket be made as instructed so as to be strong enough to securely fasten the Center Channel to the ceiling or wall.**

#### **Custom Made Mounting Bracket Requirements**

A ceiling mounted WATCH Center Channel will be mounted upside down (tweeter beneath the midrange drivers). It will also need to be rotated down towards the listening position. Due the variation in mounting locations and ceiling heights, we are unable to determine for you, based solely in listening distance and measured ear height, the amount of required rotation for your particular setup. However, we will offer some suggestions that will allow you to achieve the best performance possible for your particular speaker location. The guidelines are as follows:

- The bracket must be able support 250 pounds. This more than the weight of the Center channel but is necessary to maintain correct safety standards.
- The bracket should angle the speaker down towards the listening position. Ideally, the midrange drivers should be firing 15” below the listening ear height (see Figure 16).



## SECTION 4 - WATCH CENTER CHANNEL SETUP

- A good material for the bracket is 1" square tubing. This can be easily welded together and will provide a rigid, strong support for your WATCH Center channel.
- The slanted portion of the bracket will require mounting holes whose location match those on the bottom of the Center channel. The hole pattern is shown in Figure 15.

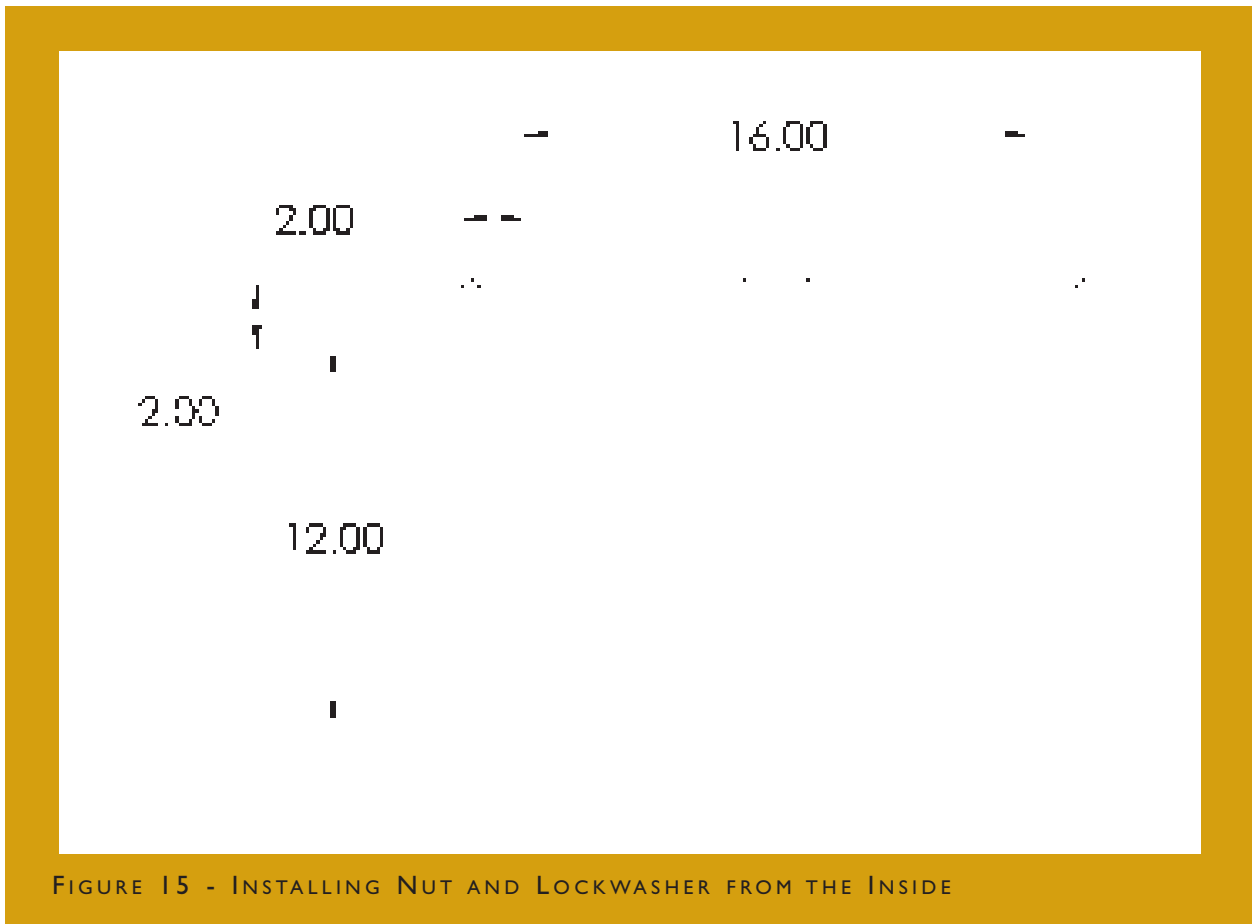


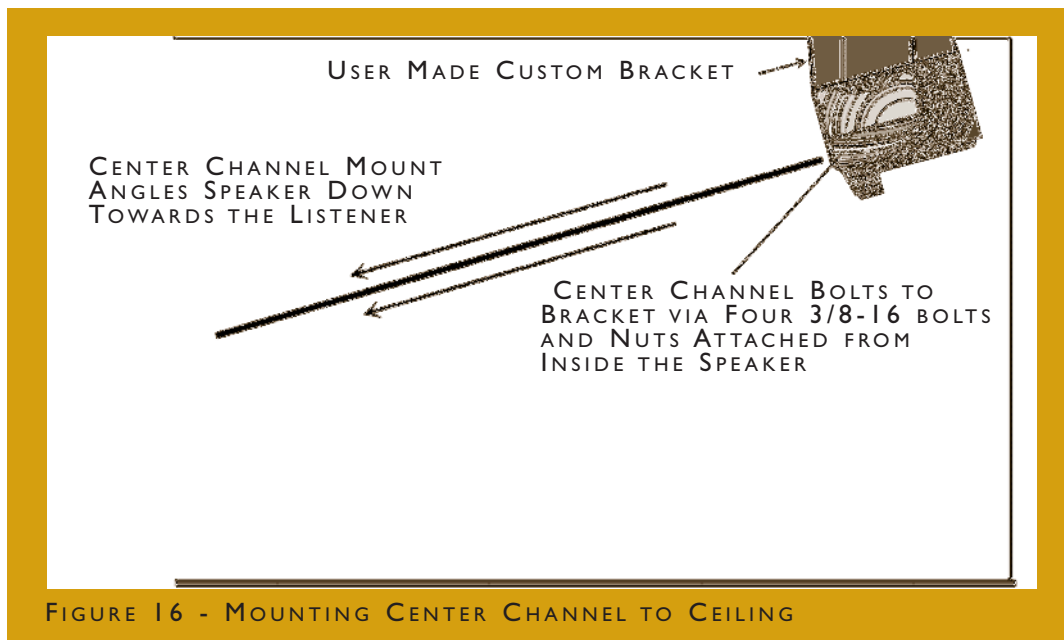
FIGURE 15 - INSTALLING NUT AND LOCKWASHER FROM THE INSIDE

## Mounting Center Channel above Television

Mounting the Center channel above a TV requires a custom made bracket. This bracket will support the weight of the Center channel and allow it to be rotated toward the listening position (see Figure 12). This rotation will significantly improve the performance of your Center channel, improving system integration, phase delay correction, and providing a correct image height.

The custom made bracket must have four mounting holes as shown in Figure 15. These holes will allow the Center channel to be bolted to the mount. Make sure that the holes go all the way through the bracket. Also see that the locations are such that they will allow a nut to be tightened to the bolt that is inserted through these holes.

The bracket must also rotate the Center channel towards the listening posi-



## SECTION 4 - WATCH CENTER CHANNEL SETUP

---

tion. This can be achieved by making a bracket that is higher in the back than in the front. Because the rotation required for the WATCH Center channel depends on your listening position, speaker mount height, and listening ear height, we are unable to provide a table with all of the possible combinations. However, we offer the following rotational suggestions that will bring you very close to the ideal rotation (assuming a 5 foot mounting height).

<b>Listening Distance</b>	<b>Required Rotation</b>
5 - 10 feet	25 degrees
10 - 15 feet	15 degrees
15 - 20 feet	10 degrees

### **Setup**

The Center Channel has four 3/8"-16 threaded holes on the bottom of the speaker. These holes can be used to bolt the Center channel to a custom made bracket (not provided) that is attached to the ceiling. Please see above for the requirements of this custom bracket. Once the bracket is made and mounted, follow these instructions to bolt the WATCH Center channel to the ceiling as follows:

1. Set the Center channel on the floor.
2. Using provided 3/16" Allen wrench, remove the four setscrews from the bottom of the Center Channel.

3. Lay the Center Channel on its side and screw the four 3-inch setscrews one inch into the threaded holes on the bottom of the speaker.

**Note: Be sure that the Allen key end of the setscrews is facing out when screwing it into the enclosure. This will allow for easy installation and removal in the future.**

4. Using the 5/32" T-handled Allen wrench, remove the two midrange drivers. Do not unsolder the leads (see Figure 13).

**Note: The material used for the bottom of the Center channel is a high density composite. This material is easily cross threaded when installing the setscrew. Be careful that the spike thread is engaging properly into the bottom.**

5. Screw on the 3/8"-16 nut and lockwasher onto the setscrew from the inside of the enclosure (see Figure 14).
6. Tighten until snug using the open ended wrench.
7. Replace the midrange drivers.
8. While two people hold the speaker up to the mounting bracket, a third person bolts the speaker to the ceiling. Use two 3/8"-16 nuts on each threaded road. This will lock the nuts into place.

**Note: The custom mounting bracket should be designed to hold three times the weight of the Center Channel (250 lbs). This gives an acceptable safety factor of three.**

9. Turn to Section 4.6 for final assembly instructions.



## Section 4.6 - Center Channel Final Setup

The final setup work needed before fine tuning and other speaker setup is performed as follows:

- Set the Phase Delay Correction on the tweeter assembly.
- Connect the speaker cables from the amplifier.

### Phase Delay Correction - Stand or Floor Mounted

The phase delay correction is one of the most important elements of the setup. There are two methods for setting the PDC: one for floor and stand mounted Center channel and one for ceiling or any other custom location. Set up the PDC as follows:

1. Find your measured listening distance and ear height.
2. In Section 9, locate the table that corresponds to your Center channel location and front spike combination (i.e. floor mounted center channel with spike, nut, diode and one spacer).

**Note: There is a unique PDC setting for each Center channel location and front spike combination. Be sure you are reading from the correct table.**

3. Read from the table the required offset (1-13).

4. Using a 3/16" Allen wrench, loosen the 1/4"-20 socket head on tweeter assembly (see Figure 17 below).
5. Slide the tweeter until the lock down bolt is centered above the alignment mark on the tweeter mounting bracket.
6. Retighten the socket head capscrews until snug.

**Note: When loosening or tightening the screws, be careful that you do not damage the painted finish.**

### **Phase Delay Correction - Ceiling or Other Custom Location**

Because of the large number of unique combinations for your location, we are unable to provide the exact alignment setting for you. If you have followed the instructions closely up to this point, you will be able to set the PDC by experiment. This is done as follows:

- Unhook all the speakers except the Center Channel.
- Using a 3/16" Allen wrench, loosen the 1/4"-20 socket head bolts that hold the tweeter in place.
- Play a sound track that has female vocal.
- Sit in your listening location and have someone slowly slide the tweeter forward and backwards. Listen for the location that the female vocal is free from any chest or nasal sound. The vocals will be clean

## SECTION 4 - WATCH CENTER CHANNEL SETUP

and clear, free from any veiling of the sound. This is the correct alignment position.

- Lock down the tweeter in this position.

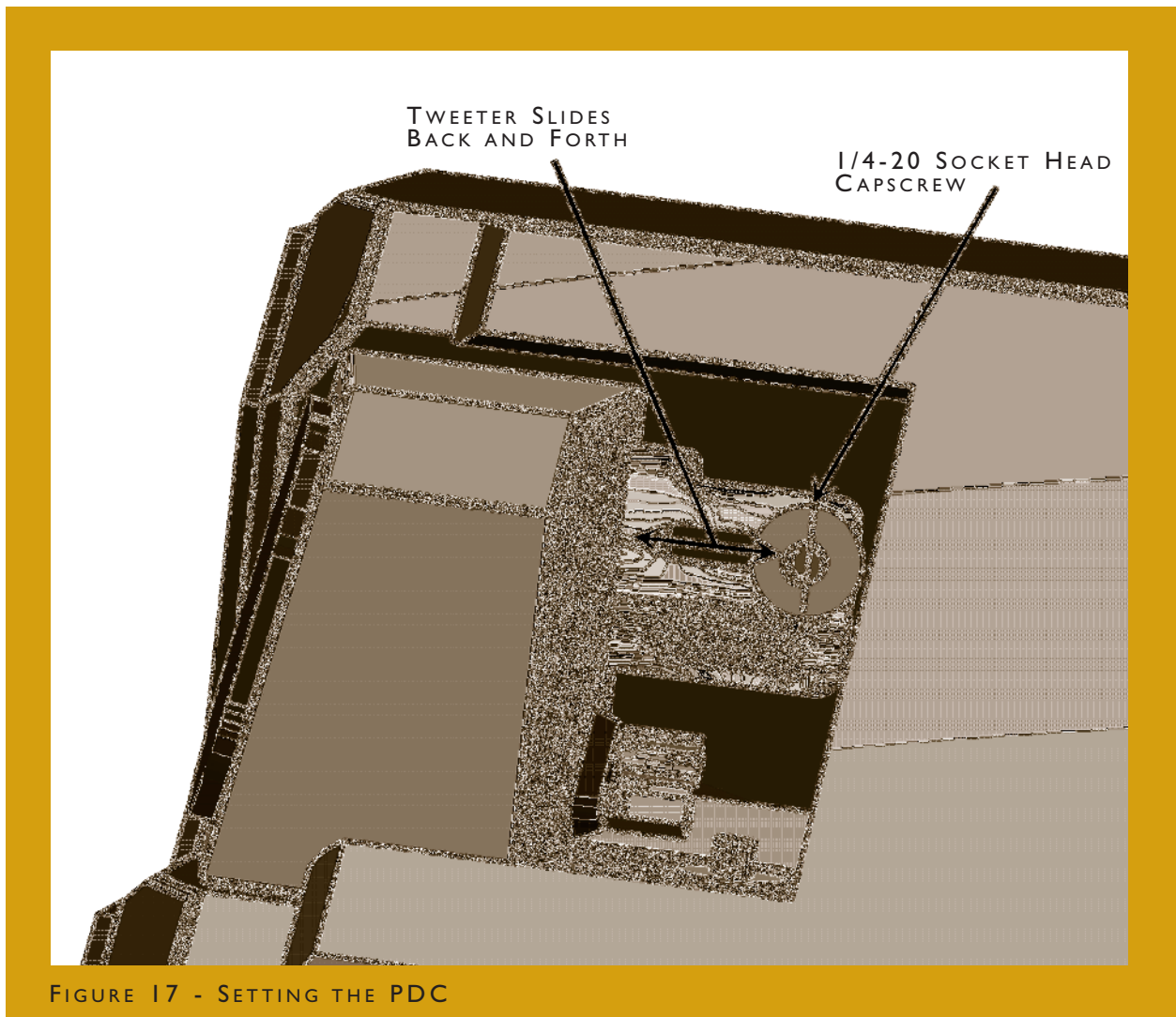


FIGURE 17 - SETTING THE PDC

## **Section 4.7 - Connecting Speaker to Amplifier**

### **Speaker Cables**

The very high current input terminals located on the rear of your Center channel loudspeaker are color coded with a small plastic plug so that RED corresponds to positive and black to negative, common, or ground on the amplifier output. Be sure to connect the loudspeakers in phase with each other. We recommend the use of the very highest quality loudspeaker cables, particularly those designed for high frequency propagation correction and phase linearity. Beware of “zip cord” type speaker cables which will smear the sound and limit their effective bandwidth. Also, do not use braided litz type loudspeaker cables as they will cause an unnatural brightness to the sound, compromise sound staging performance, and may cause instability, oscillation, and damage in wide bandwidth solid state amplifiers.

### **Spade Lugs**

The spade lugs of some of the high quality cables often used with the Center channel are angled to reduce pressures on the cable during installation. Avoid the instinct to push the cable's spade lug ends all the way into the Center channel's

connectors (See Figure 18). Partial insertion of these angled spade lugs will actually improve the reliability of the connection. Flat lugs may be fully inserted into connectors before tightening.

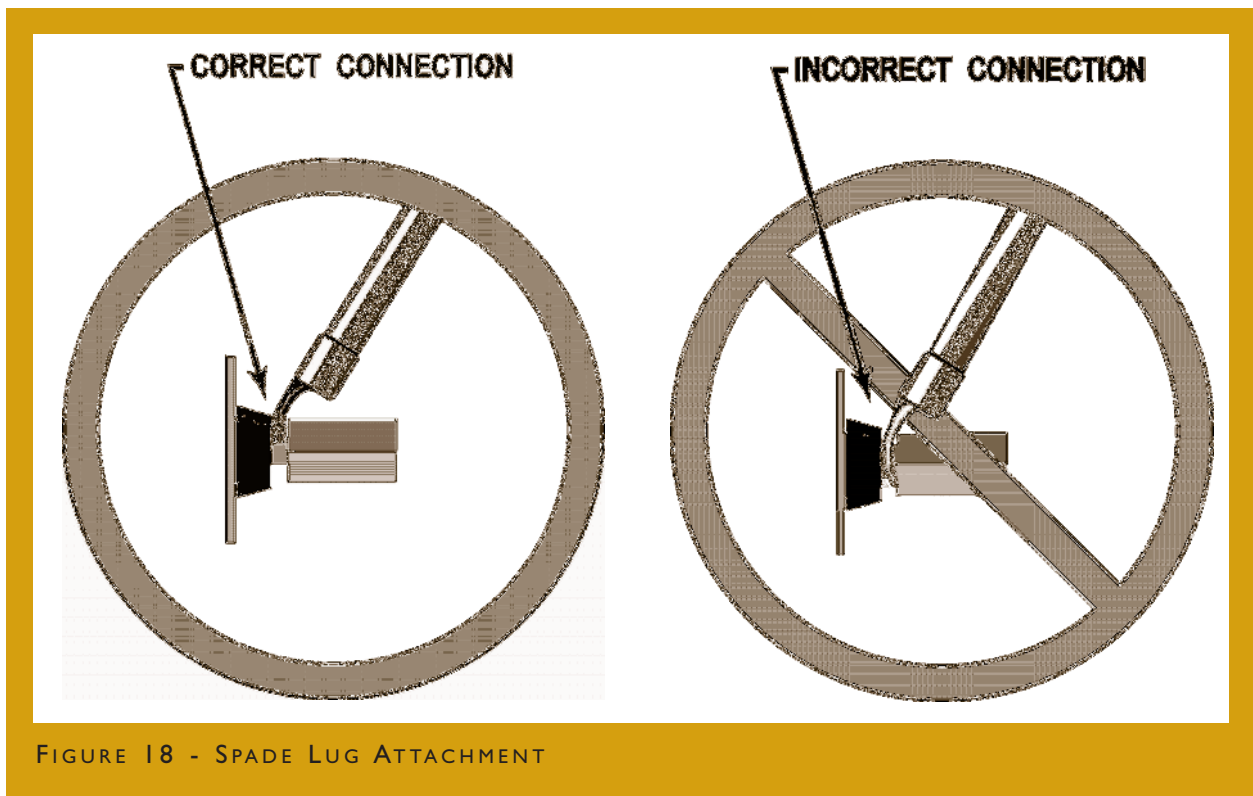


FIGURE 18 - SPADE LUG ATTACHMENT

### Connection of the Center Channel to the Power Amplifier

1. Turn off the power amplifier(s) and remove the AC power cord from the wall outlet.
2. Lay out the speaker cables before hooking them up to the WATCH Center channel. Make sure that there are no kinks, twists, or right-

angled bends in the cable. If you need to turn corners, attempt to use a gradual curve as opposed to a severe right-angled bend.

3. Connect the negative (normally black) end of the speaker cable to the high current speaker binding post with the engraved “-” above it ( see Figure 19).

**Note: Do not over tighten the binding posts. Over tightening can cause the posts to break off.**

4. Connect the positive (normally red) end of the speaker cable to the high current speaker binding post with the engraved “+” above it.
5. Plug your amplifier(s) AC power cord into the wall outlet.

**Note: Always attempt to keep your pair of speaker cables the same length. This will ensure that the signals arrive at each speaker in the proper time frame, by traveling the same distance to each speaker.**

## Center Channel Setup Completed

This completes the initial setup of your WATCH Center channel. Final system tuning and voicing should be performed as outlined in Section 5. Section 5 will evaluate your entire speaker setup and allow you to make small modifications in speaker rotation and location that will greatly improve the performance of your multi-channel audio or home theater system.

SECTION 4 - WATCH CENTER CHANNEL SETUP

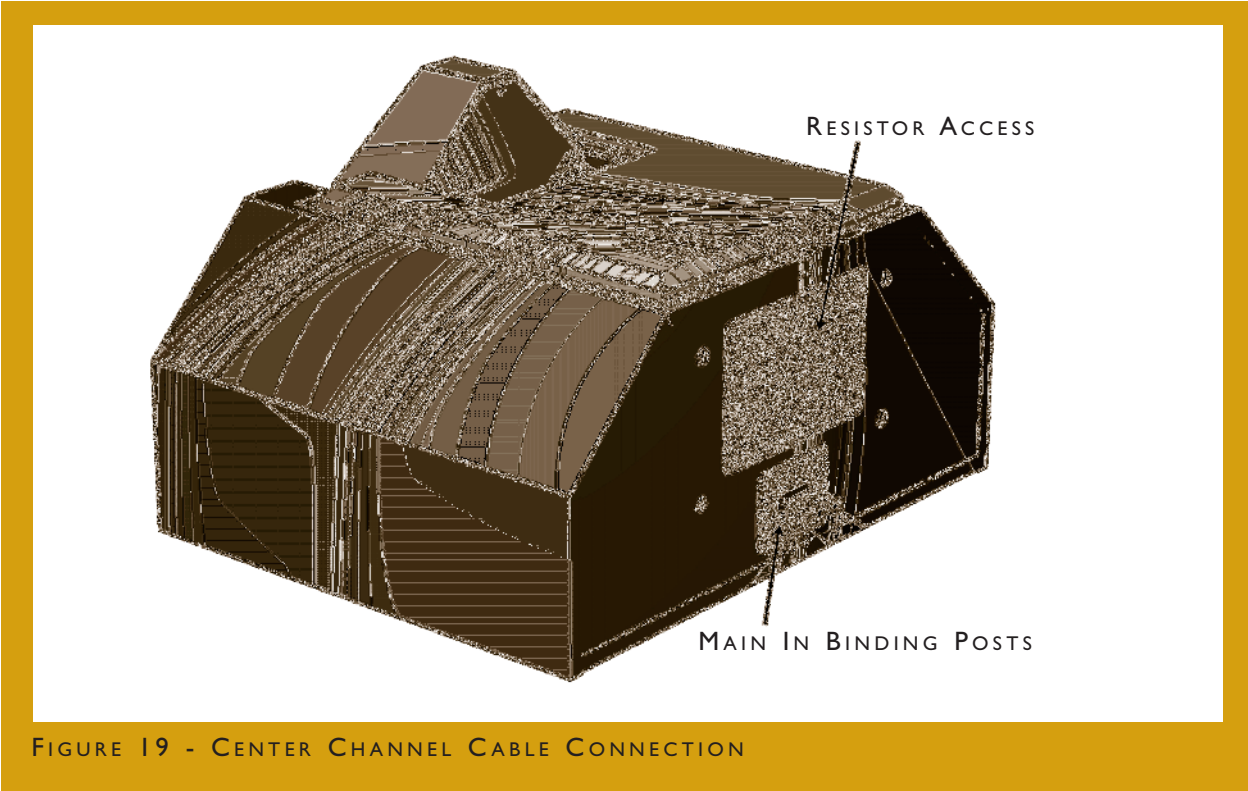
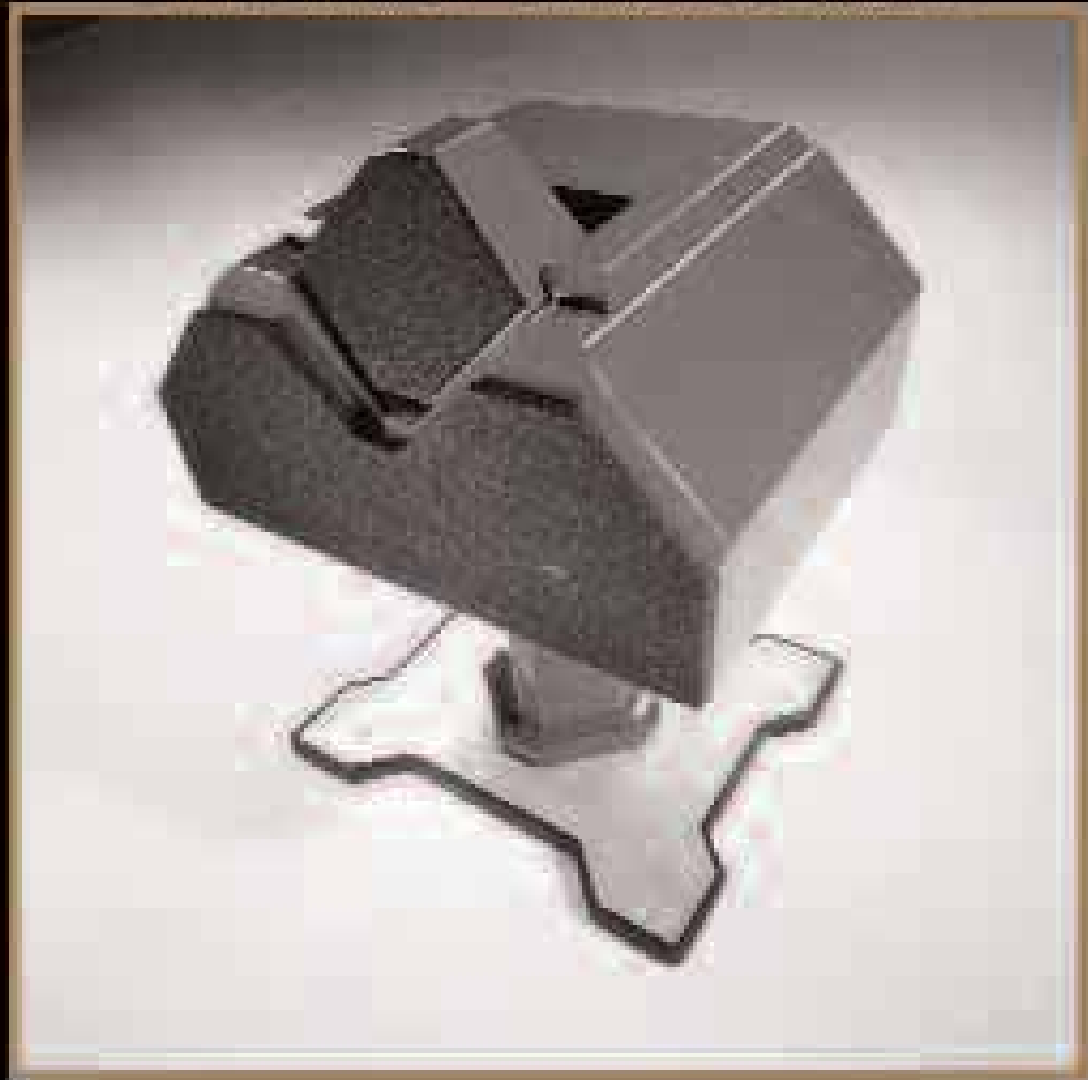


FIGURE 19 - CENTER CHANNEL CABLE CONNECTION





## FINAL SYSTEM TUNING AND VOICING



## WATCH CENTER CHANNEL OWNER'S MANUAL

---

## **Section 5 - Final System Tuning and Voicing**

This loudspeaker placement method was developed by David A. Wilson, for Wilson Audio Specialties. The purpose of this method is to find optimum loudspeaker location 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 one 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 of Left and Right Channels, with all other speakers disconnected.
- Add the Center Channel.
- 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 5.1 - 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 grilles and spikes.
- Toe-in the speakers 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 one 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 this 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, and image is well focused, and you find the best sound staging.
- 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, you will now determine the optimum position with regard to the side walls.

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

- While the music is playing, slowly move the speakers left or right one 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 5.2 -Integrating the WATCH System**

**Note: Many processors offer a setup guide that steps you through the integra-**

**tion of each of the speakers, 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.**

### **Integrating the WATCH Center**

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

- Place the Center Channel centered between the main speakers and even with the front inner edge. Set the spikes as indicated in Sections 4.2 - 4.5.
- Follow the processor instructions on level adjustment. Adjust the level on the Center channel so it matches in level with the left and right channels. Do not be surprised if the Center channel requires 5-7 dB lower adjustment than the left and right channel.
- Make sure that only the front left, right, and Center channels are connected.
- With the Center channel 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 smooth transition from one speaker to the next. You should not hear

any voids in the soundstage.

- Make 1/2" changes in front to back location until you find the Center channel 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. On a stand or floor mounted Center channel, 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 PDC to be reset using the tables in Section 9.

## **Center Rotation**

Our testing has shown that a stand mounted Center channel, at listening distances greater than 2-3 meters, requires the front of the Center channel to be raised about one inch. This is because the effects of comb-filtering are more noticeable the further you are away from the Center channel. This combfiltering reveals itself as a slight nasal sound in the voice. If you notice this in the sound, you should raise the front spikes of your WATCH Center channel. This can be done by removing the front spikes and replacing them with the spike assembly as shown in Figure 20 below. Do as follows:

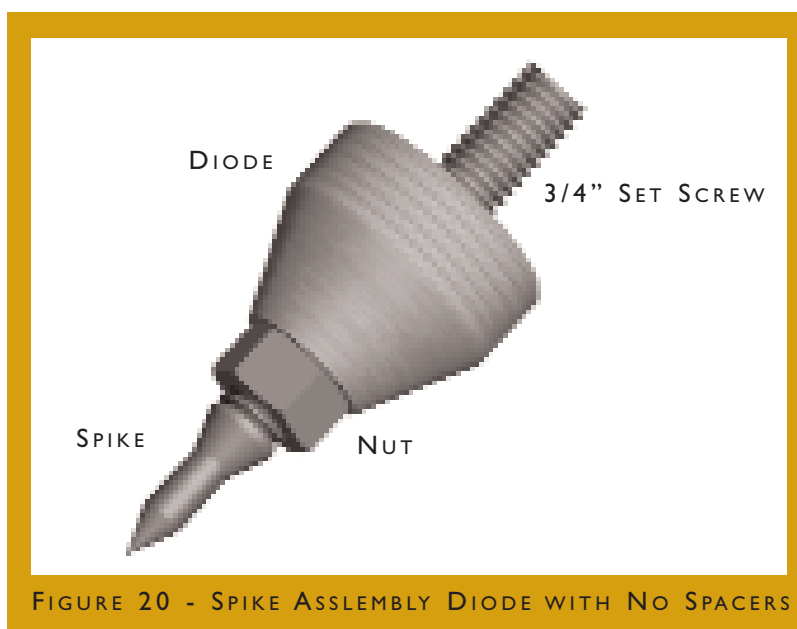


- Screw the spike and nut into the diode.
- Screw the 3/4" setscrew into the front spike holes in the stand.
- Thread the spike assembly onto the setscrew.

### Resetting the PDC

Once the final rotation has been determined, you will need to reset the PDC. If you have raised the speaker by adding a diode or 1/2" spacer, read the PDC from the table that matches your current spike configuration in Section 9. If you have adjusted the rotation by unscrewing the spike, do as follows:

- Measure the distance you have raised the speaker.
- Slide the tweeter forward 1/2 of the distance you raised the speaker.



**Note: If you lowered the speaker, then the tweeter will slide back 1/2 of the lowered distance.**

Every system has a unique time and phase character, which can effect the PDC accuracy. Because of this, you may find that sliding the tweeter forward or backwards a few positions increases the clarity and correctness of your Center channel. If you like, experiment with the tweeter position and lock it in position when you find the location you feel to be most accurate.

### **Integrating the 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, 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.

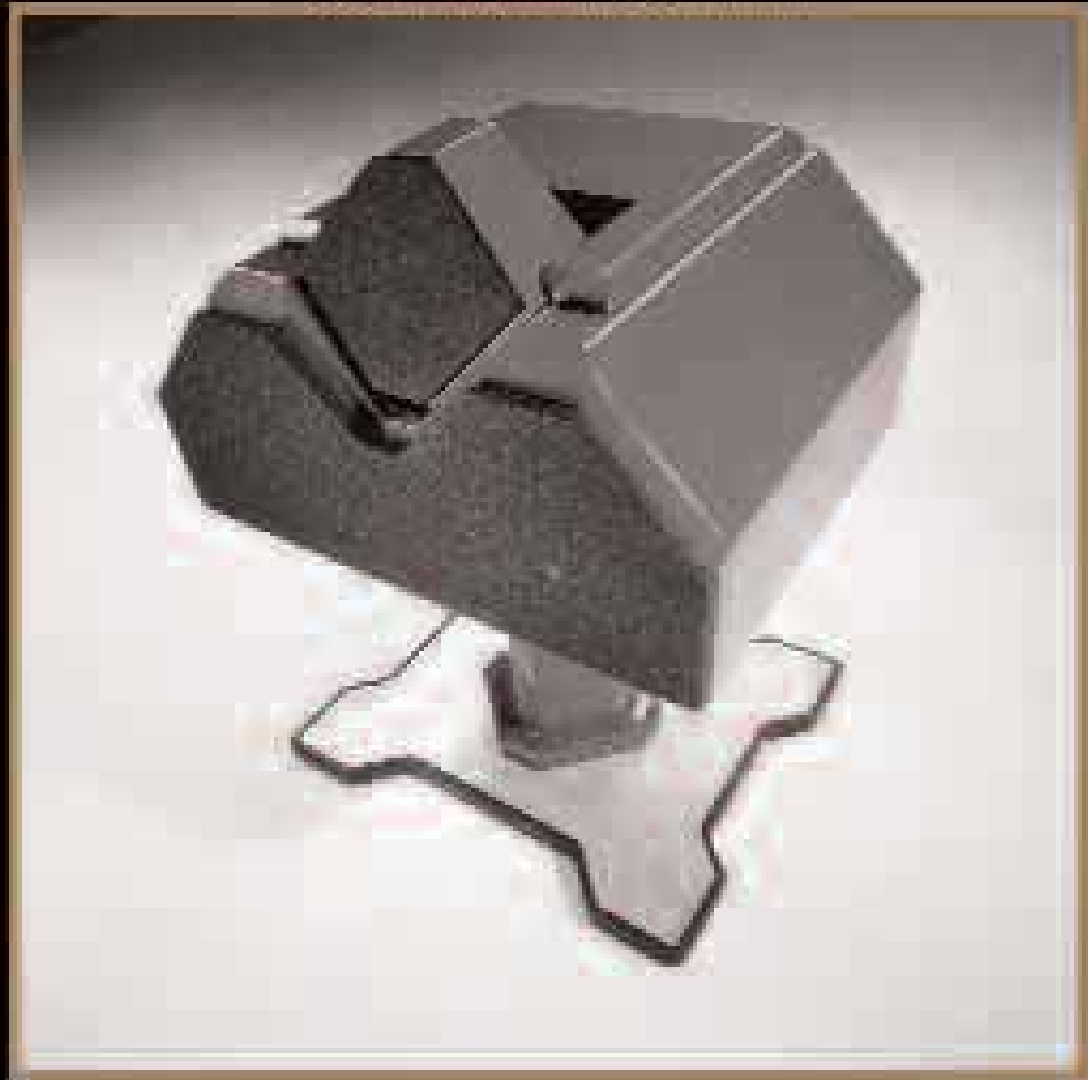
**Note: The Surround channel rotates on the upper two spikes. Examine carefully this rotation and the mounting bracket before trying to adjust the angle of rotation. Be careful when rotating the speaker as it is very heavy and could fall off of the mounting bracket.**

### **Integrating the WATCH Dog**

The WATCH Dog will perform well in almost any location in the room. In general, the closer you place the WATCH Dog 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, please refer to your WATCH Dog owner's manual.



CARE OF THE CENTER



## WATCH CENTER CHANNEL OWNER'S MANUAL

---

## **Section 6.0 - Care of the Finish**

The WATCH Center 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.

### **Removing Protective Film**

To protect the finish of the WATCH Center during final manufacture, shipment, and setup in the listening room, a removable layer of protective film has been applied over the finish. It is recommended that this film be left in place until the speakers are in their final location in the listening room. Once their final position has been determined, remove the film by following this procedure:

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

## Dusting the WATCH Center

It is important that the delicate paint finish of the WATCH Center 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 over the years. We recommend a nonabrasive carnauba-based wax and a soft cloth.



### **Section 6.1 - Care of the Grilles**

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

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

### **Section 6.2 - Break-in Period**

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

chamber music for this task.

### **Section 6.3 - Enclosure Technology**

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 and MAXX. Even the best materials are not suited to all aspects of enclosure construction. Therefore, like all Wilson loudspeakers, the WATCH Center is constructed of several exotic materials chosen for their specific performance attributes relevant to different portions of the enclosure.

The Center is constructed using non-resonant, high-density, composites which are then highly-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. In the most critical areas of the enclosure, the WATCH Center uses our proprietary "X" material, a very dense, strong composite developed for the X-1 Grand SLAMM. The high hardness of these composites offers excellent acoustical properties.

#### **Adhesive**

Wilson Audio has conducted exhaustive research into the best adhesives to

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

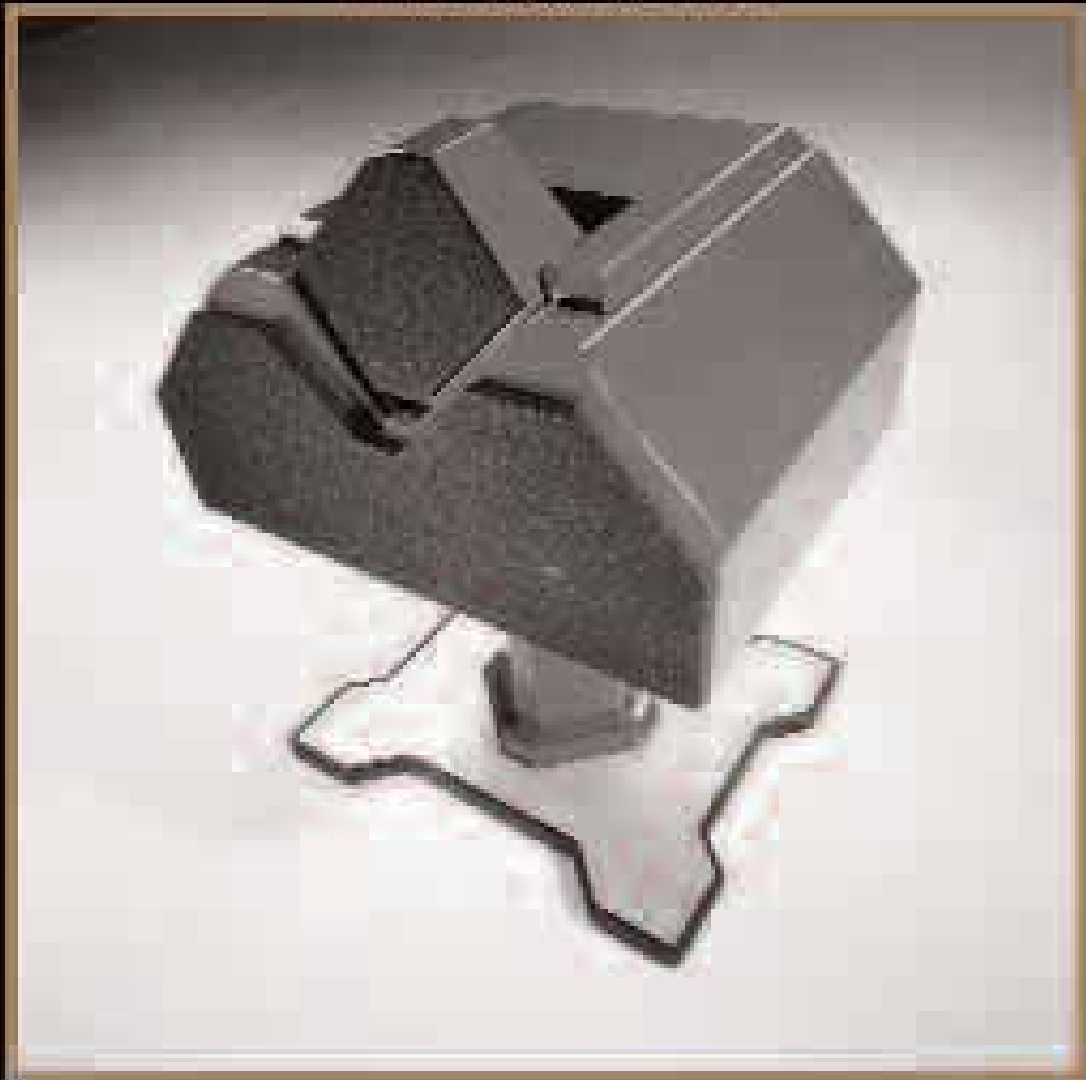
A highly cross-linked, thermo-set adhesive is used for the construction of the enclosure. It was also chosen for its excellent bond strength, solvent resistance, hardness, and optimum vibrational characteristics.

### **Depth of Design**

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



TROUBLESHOOTING



## WATCH CENTER CHANNEL OWNER'S MANUAL

---

## Section 7 - Troubleshooting

### One channel is not operating...

Check the interconnects from source.

### Imaging is off-center...

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

Check your connections. When a tweeter or mid-range driver is not working, or is out of phase, the imaging will be off.

Double check your connections for red-to-red and black-to-black.

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

### A chronic lack of bass energy...

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

**Driver out or not playing after connections have been verified:**

If there is a driver with no output, potentially the resistor is damaged and needs replacing. Contact a local Wilson dealer for replacement parts and service.

**Amplifier shuts off as soon as it is turned on:**

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

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

**If the problem is solved:**

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

**If the problem persists:**

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

Turn the amplifier off and disconnect it from the AC wall outlet. Disconnect the speaker leads at the main input to the speaker. Now turn on the amplifier.

**If the problem is solved:**

Call your Wilson Audio dealer. There may be a problem with the crossover or



the speaker's internal wiring.

**If the problem persists:**

Continue to the next step.

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

**If the problem is solved:**

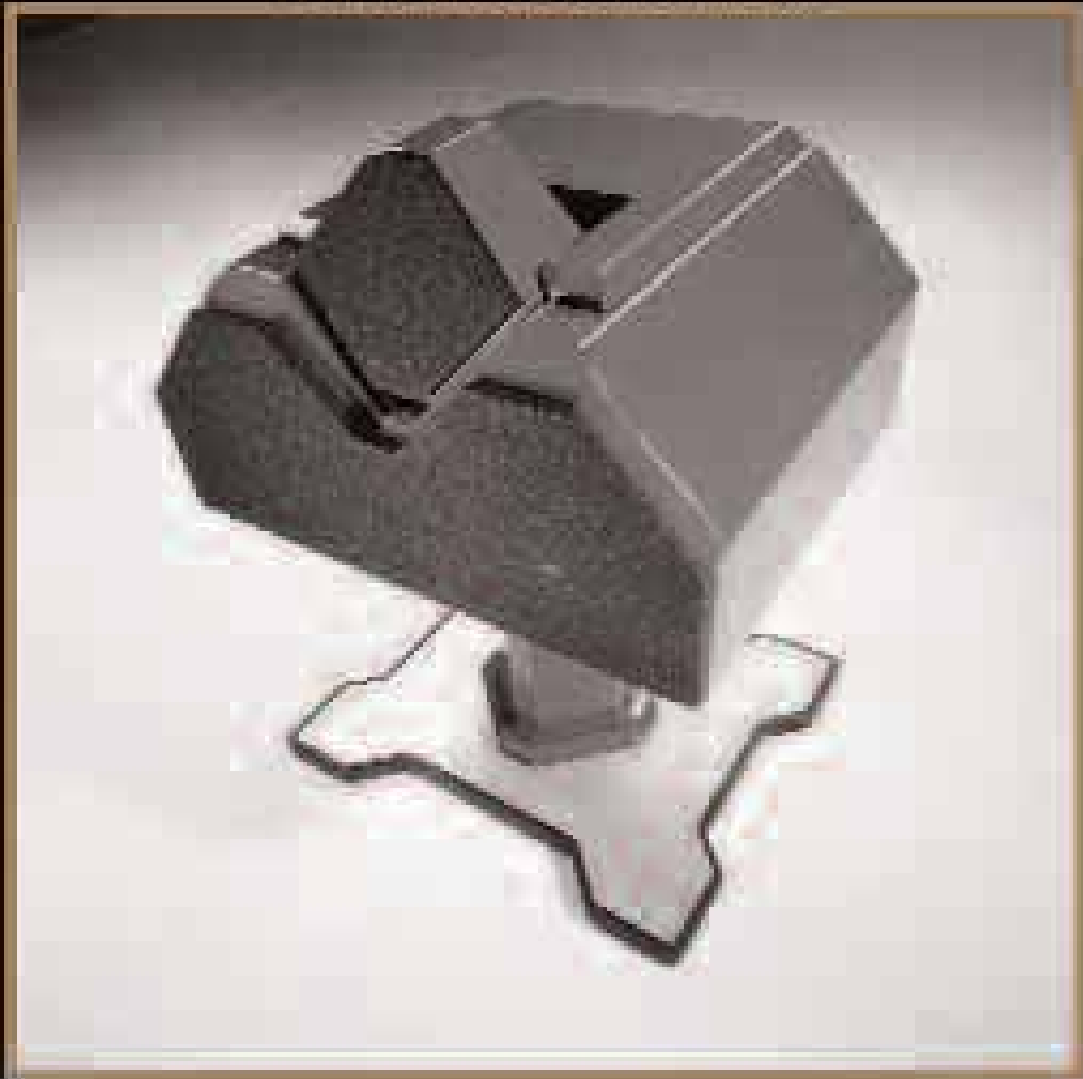
There is a short in the speaker cables. Check for frayed ends, holes (from spike feet), or make sure that the spade lug is not touching the chassis while it is connected to the binding post.

**If the problem persists:**

Call the dealer where the amplifier was purchased. There appears to be a problem with this component.

WILSON AUTO SERVICES, INC.

SYSTEM SPECIFICATIONS



## WATCH CENTER CHANNEL OWNER'S MANUAL

---

## **Section 8 -Center Channel Specifications**

### **Specifications**

Woofers: 2 - 6.5 inch {16.51 cm}

Tweeter: 1 - 1 inch {2.54 cm} inverted titanium dome

Sensitivity: 94 dB (2.00 V measured at 1 meter)

Nominal Impedance: 4 ohms

Minimum Amplifier Power: 7 WATTS per channel

Frequency Response (with port contribution): 45 Hz - 22.5 kHz (+ 0, -3 dB)

### **Dimensions**

Height: 12.5 inches {31.75 cm}

Width: 20 inches {50.8 cm}

Depth: 16 inches {40.64 cm}

Uncrated Weight: 70 lbs {31.82 kgs}

System Shipping Weight (approx.): 95 lbs. {43.18 kgs}

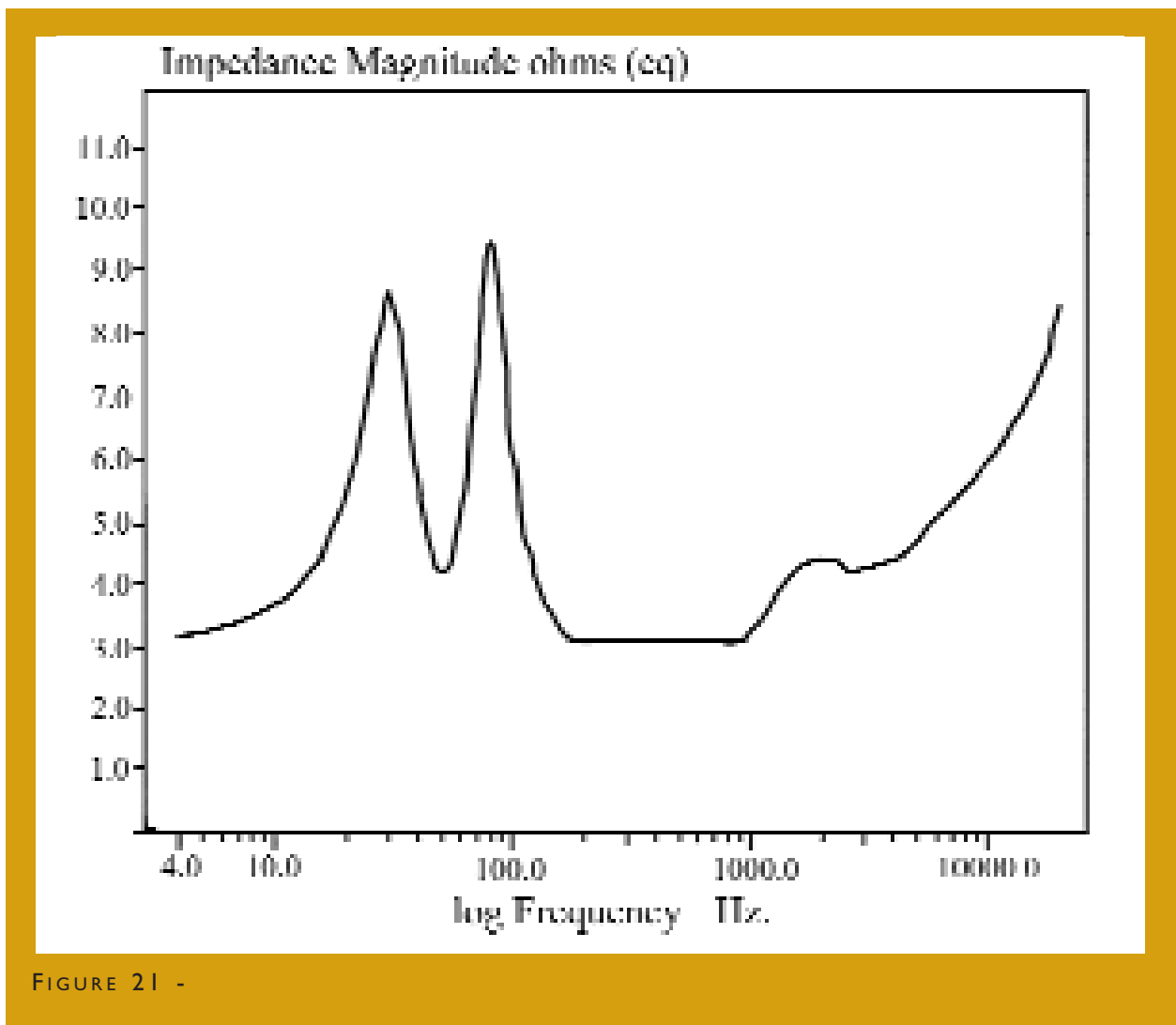


FIGURE 21 -

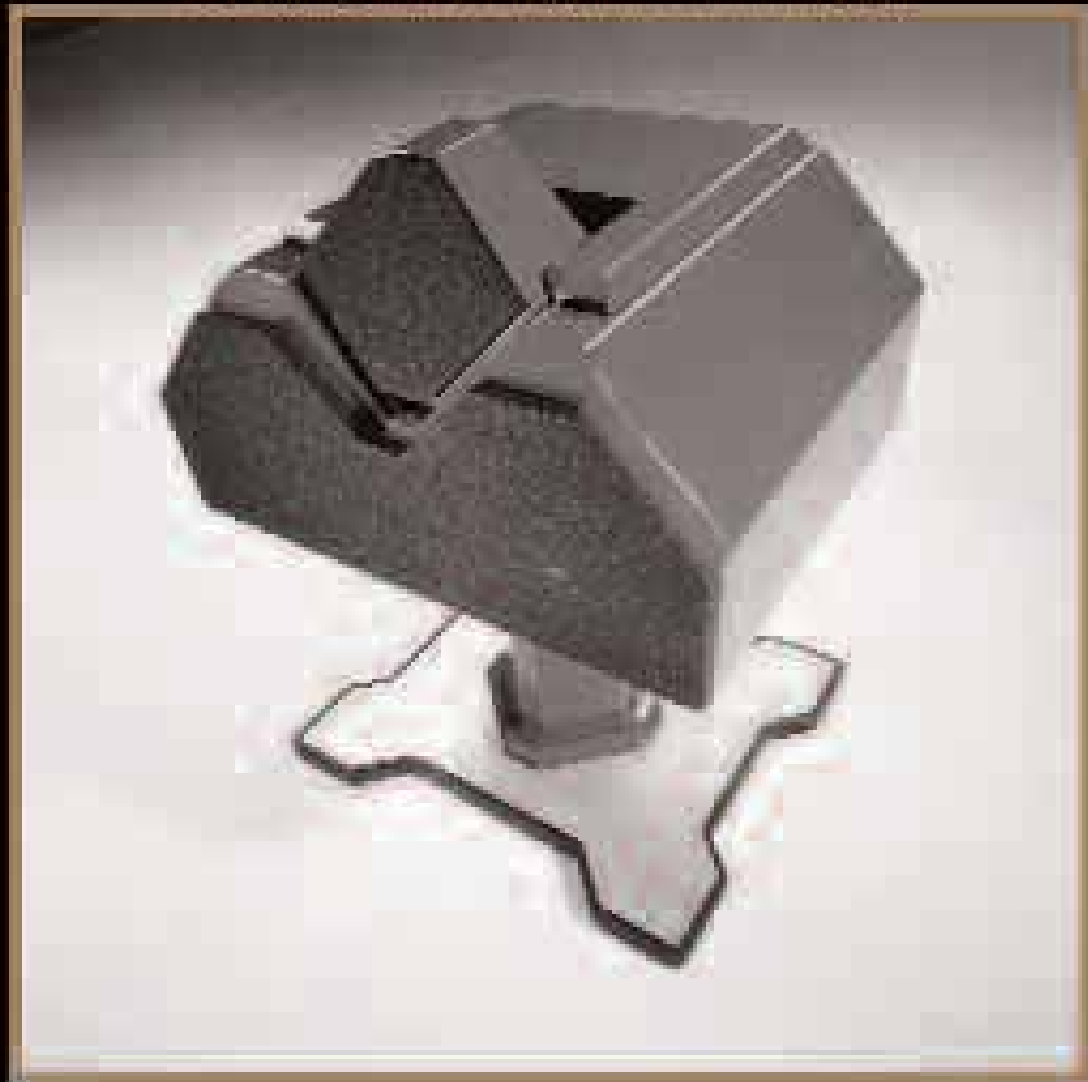
## SECTION 8 - WATCH CENTER CHANNEL SPECIFICATIONS

---





## GEOMETRIC ALIGNMENT TABLES





## Section 9 - Geometric Alignment Tables

The tables included in this section are intended to help determine the proper placement of the tweeter based on measured listening position and measured ear height of the listener.

Included in the crate with your Center channel was a hardware kit containing spikes, nuts, diodes, and spacers (see Figure 22 below) to be used after the final tuning and voicing of the Center channel. Except for the combinations listed below, all ear height and listening combinations should reference **Table A - No Spacers** (Use only the spike, nut, and diode) for the correct tweeter alignment location for floor placement of the WATCH Center Channel.

The following measurements should reference **Table B - One Spacer** (use the spike, nut, diode, and one spacer) for the correct tweeter alignment location for floor placement of the WATCH Center:

Ear Height	Listening Distance
40"	60" to 64"
44"	68" to 72"
48"	76" to 80"
52"	84" to 88"

The following measurements should reference **Table C - Two Spacers** (use the spike, nut, diode, and two spacers) for the correct tweeter alignment location for floor placement of the WATCH Center Channel:

Ear Height	Listening Distance
44"	60" to 64"
48"	64" to 72"
52"	72" to 80"

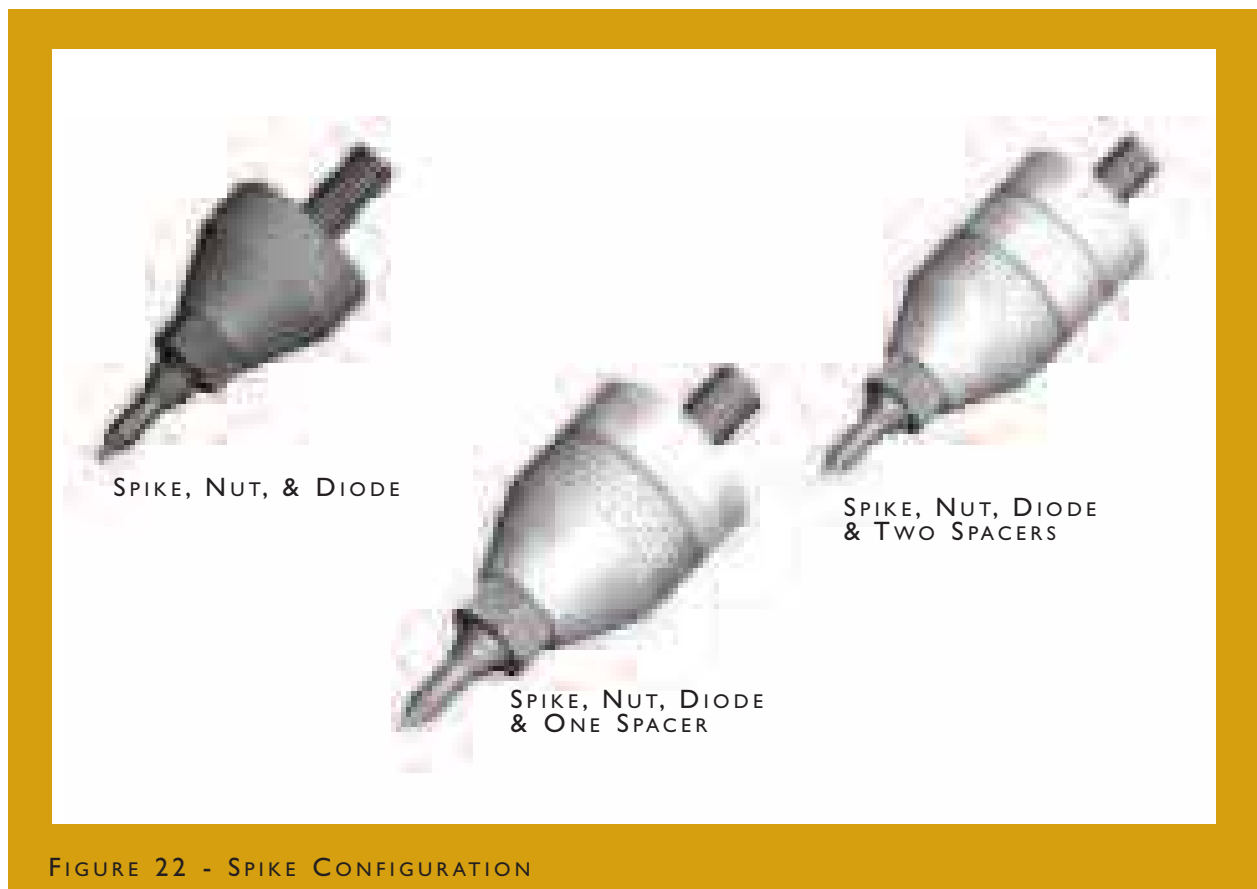
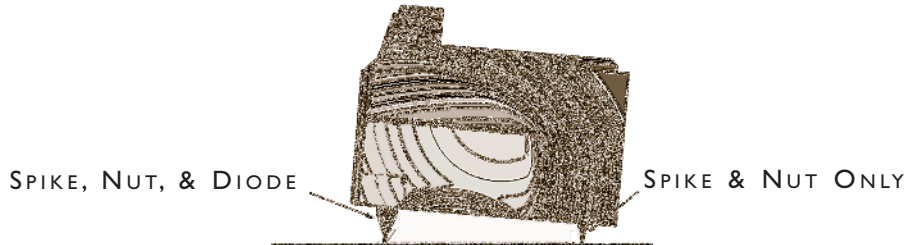


FIGURE 22 - SPIKE CONFIGURATION

SECTION 9 - GEOMETRIC ALIGNMENT TABLES

Section 9.1 - Center on Floor - No Spacers



Measured Ear Height (inches)						
Measured Listening Distance (inches)		36"	40"	44"	48"	52"
	60"	1	na	na	na	na
	64"	3	na	na	na	na
	68"	4	1	na	na	na
	72"	4	2	na	na	na
	76"	5	3	1	na	na
	80"	6	4	2	na	na
	84"	7	5	3	1	na
	88"	7	5	4	2	na
	92"	8	6	4	2	1
	96"	8	7	5	3	1
	100"	9	7	5	4	2
	104"	9	8	6	4	3
	108"	10	8	7	5	3
	112"	10	9	7	6	4
	116"	10	9	7	6	5
	120"	11	9	8	7	5
	124"	11	10	8	7	6
	128"	11	10	9	7	6
	132"	12	10	9	8	6
136"	12	11	9	8	7	
140"	12	11	10	8	7	
144"	12	11	10	9	8	
148"	12	11	10	9	8	
152"	13	12	10	9	8	
156"	13	12	11	10	9	
160"	13	12	11	10	9	
164"	13	12	11	10	9	
168"	13	12	11	10	9	
172"	na	13	12	11	10	
176"	na	13	12	11	10	
180"	na	13	12	11	10	

TABLE A - CENTER CHANNEL ON FLOOR: NO SPACERS

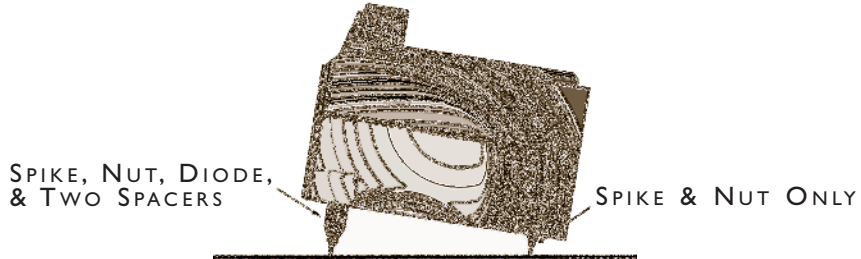
Section 9.2 - Center on Floor - One Spacer



Measure Ear Height (inches)						
Measured Listening Distance (inches)		36"	40"	44"	48"	52"
	60"	3	1	na	na	na
	64"	4	2	na	na	na
	68"	5	3	1	na	na
	72"	6	4	2	na	na
	76"	7	5	3	1	na
	80"	8	6	4	2	na
	84"	9	7	5	3	1
	88"	9	7	5	3	2
	92"	10	8	6	4	2
	96"	10	8	7	5	3
	100"	11	9	7	6	4
	104"	11	9	8	6	5
	108"	11	10	8	7	5
	112"	12	10	9	7	6
	116"	12	11	9	8	6
	120"	13	11	10	8	7
	124"	13	11	10	9	7
	128"	13	12	10	9	8
	132"	13	12	11	10	8
136"	na	12	11	10	9	
140"	na	13	11	10	9	
144"	na	13	12	11	9	
148"	na	13	12	11	10	
152"	na	13	12	11	10	
156"	na	na	13	11	10	
160"	na	na	13	12	11	
164"	na	na	13	12	11	
168"	na	na	13	12	11	
172"	na	na	13	12	11	
176"	na	na	na	13	12	
180"	na	na	na	13	12	

TABLE B - CENTER CHANNEL ON FLOOR: ONE SPACER

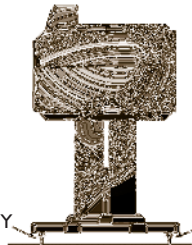
Section 9.3 - Center on Floor - Two Spacers



Measure Ear Height (inches)						
		36"	40"	44"	48"	52"
	Measured Listening Distance (inches)	60"	5	2	na	na
64"		6	4	1	na	na
68"		7	5	2	na	na
72"		8	6	3	1	na
76"		9	7	4	2	na
80"		10	8	5	3	1
84"		10	8	6	4	2
88"		11	9	7	5	3
92"		11	10	8	6	4
96"		12	10	8	7	5
100"		12	11	9	7	6
104"		13	11	10	8	6
108"		13	12	10	9	7
112"		na	12	11	9	8
116"		na	13	11	10	8
120"		na	13	11	10	9
124"		na	13	12	10	9
128"		na	na	12	11	10
132"		na	na	13	11	10
136"		na	na	13	12	10
140"	na	na	13	12	11	
144"	na	na	13	12	11	
148"	na	na	na	13	11	
152"	na	na	na	13	12	
156"	na	na	na	13	12	
160"	na	na	na	13	12	
164"	na	na	na	na	13	
168"	na	na	na	na	13	
172"	na	na	na	na	13	
176"	na	na	na	na	13	
180"	na	na	na	na	na	

TABLE C - CENTER CHANNEL ON FLOOR: TWO SPACERS

Section 9.4- Center on Stand - Spike and Nut Only



SPIKE & NUT ONLY

Measure Ear Height (inches)						
Measured Listening Distance (inches)		36"	40"	44"	48"	52"
	60"	7	4	2	na	na
	64"	8	5	2	na	na
	68"	8	6	3	1	na
	72"	9	6	4	2	na
	76"	9	7	5	2	na
	80"	9	7	5	3	1
	84"	10	8	6	4	2
	88"	10	8	6	4	3
	92"	10	8	7	5	3
	96"	11	9	7	5	4
	100"	11	9	7	6	4
	104"	11	9	8	6	5
	108"	11	10	8	7	5
	112"	11	10	8	7	5
	116"	12	10	9	7	6
	120"	12	10	9	8	6
	124"	12	11	9	8	7
	128"	12	11	9	8	7
	132"	12	11	10	8	7
136"	12	11	10	9	7	
140"	12	11	10	9	8	
144"	13	11	10	9	8	
148"	13	12	10	9	8	
152"	13	12	11	10	8	
156"	13	12	11	10	9	
160"	13	12	11	10	9	
164"	13	12	11	10	9	
168"	13	12	11	10	9	
172"	13	12	11	10	9	
176"	13	12	11	10	10	
180"	13	12	12	11	10	

TABLE D - CENTER CHANNEL ON STAND: SPIKE AND NUT ONLY



SECTION 9 - GEOMETRIC ALIGNMENT TABLES

Section 9.5 - Center on Stand - Spike, Nut, and Diode



SPIKE, NUT, & DIODE

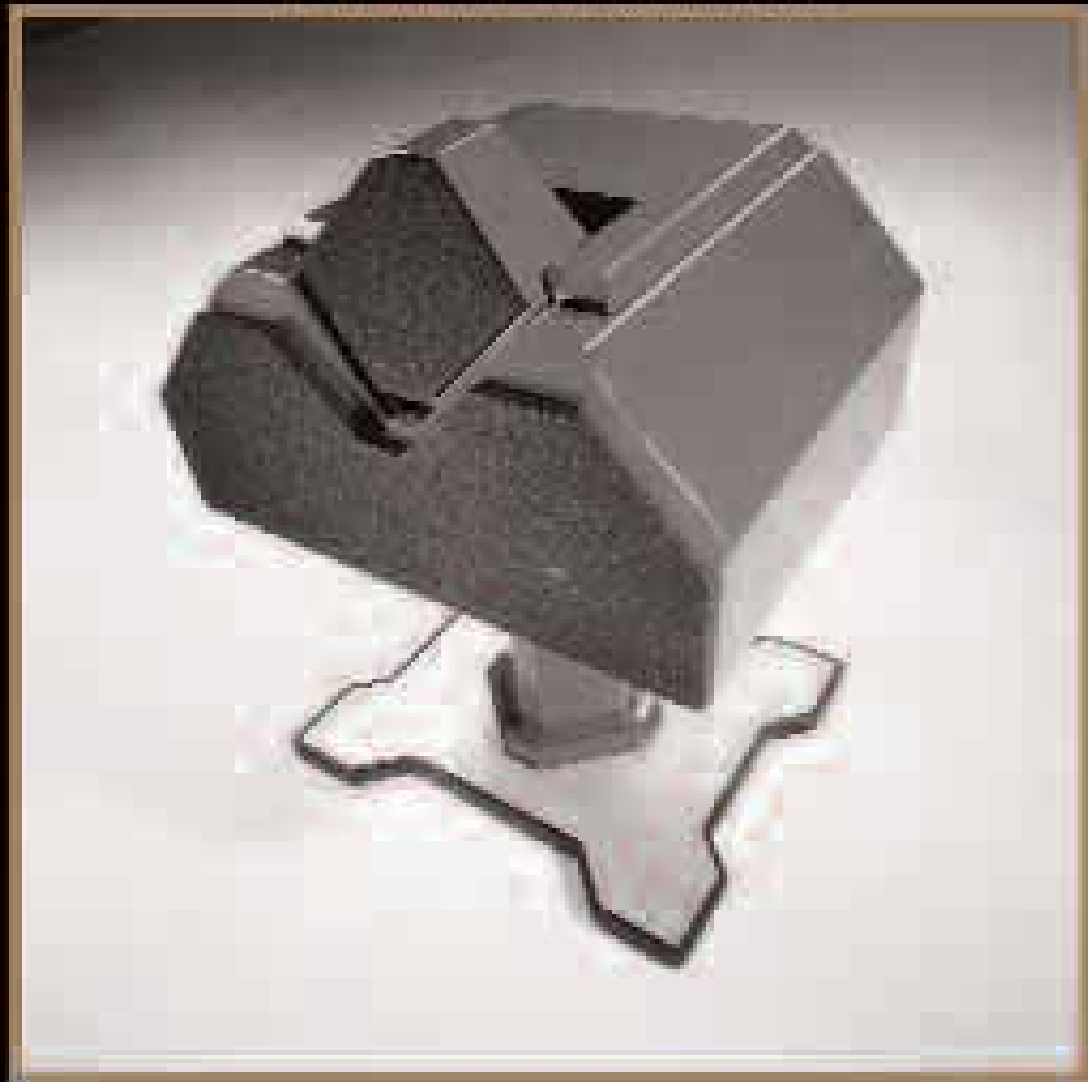
SPIKE & NUT ONLY

Measure Ear Height (inches)						
Measured Listening Distance (inches)		36"	40"	44"	48"	52"
	60"	10	8	5	2	na
	64"	11	8	6	3	1
	68"	11	9	6	4	2
	72"	12	9	7	5	3
	76"	12	10	8	6	3
	80"	13	10	8	6	4
	84"	13	11	9	7	5
	88"	13	11	9	7	6
	92"	13	12	10	8	6
	96"	na	12	10	8	7
	100"	na	12	11	9	7
	104"	na	13	11	9	8
	108"	na	13	11	10	8
	112"	na	13	12	10	9
	116"	na	13	12	10	9
	120"	na	13	12	11	9
	124"	na	na	12	11	10
	128"	na	na	13	11	10
	132"	na	na	13	11	10
136"	na	na	13	12	10	
140"	na	na	13	12	11	
144"	na	na	13	12	11	
148"	na	na	13	12	11	
152"	na	na	na	13	11	
156"	na	na	na	13	12	
160"	na	na	na	13	12	
164"	na	na	na	13	12	
168"	na	na	na	13	12	
172"	na	na	na	13	12	
176"	na	na	na	13	13	
180"	na	na	na	na	13	

TABLE E - CENTER CHANNEL ON STAND: SPIKE, NUT, AND DIODE



WARRANTY INFORMATION





## Section 10 - Warranty Information

### Limited Warranty

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

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

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

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

### Conditions

This Limited Warranty is also subject to the following conditions and limitations. The Limited Warranty is void and inapplicable if the product has been used

or handled other than in accordance with the instructions in the owner's manual, or has been abused or misused, damaged by accident or neglect or in being transported, or if the product has been tampered with or service or repair of the product has been attempted or performed by anyone other than Wilson Audio, an authorized Wilson Audio Dealer Technician or a service or repair center authorized by Wilson Audio to service or repair the product. Contact Wilson Audio at (801) 377-2233 for information on location of Wilson Audio Dealers and authorized service and repair centers. Most repairs can be made in the field. In instances where return to Wilson Audio's factory is required, the dealer or customer must first obtain a return authorization. Purchaser must pay for shipping to Wilson Audio, and Wilson Audio will pay for shipping of its choice to return the product to purchaser. A RETURNED PRODUCT MUST BE ACCOMPANIED BY A WRITTEN DESCRIPTION OF THE DEFECT. Wilson Audio reserves the right to modify the design of any product without obligation to purchasers of previously manufactured products and to change the prices or specifications of any product without notice or obligation to any person.

### **Remedy**

In the event that the product fails to meet the above Limited Warranty and the conditions set forth herein have been met, the purchaser's sole remedy under this Limited Warranty shall be to: (1) contact an authorized Wilson Audio Dealer

within the Warranty Period for service or repair of the product without charge for parts or labor, which service or repair, at the Dealer's option, shall take place either at the location where the product is installed or at the Dealer's place of business; or (2) if purchaser has timely sought service or repair and the product cannot be serviced or repaired by the Dealer, then purchaser may obtain a return authorization from Wilson Audio and at purchaser's expense return the product to Wilson Audio where the defect will be rectified without charge for parts or labor.

### **Warranty Limited to Original Purchaser**

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

### **Demonstration Equipment**

Equipment, while used by an authorized dealer for demonstration purposes, is warranted to be free of manufacturing defects in materials and workmanship for a period of five (5) years from the date of shipment to the dealer. Demo equipment

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

### **Miscellaneous**

ALL EXPRESS AND IMPLIED WARRANTIES NOT PROVIDED FOR HEREIN ARE HEREBY EXPRESSLY DISCLAIMED. ANY LEGALLY IMPOSED IMPLIED WARRANTIES RELATING TO THE PRODUCT SHALL BE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. THIS LIMITED WARRANTY DOES NOT EXTEND TO ANY INCIDENTAL OR CONSEQUENTIAL COSTS OR DAMAGES TO THE PURCHASER. Some states do not allow limitations on how long an implied warranty lasts or an exclusion or limitation of incidental or consequential



## SECTION 10 - WARRANTY INFORMATION

---

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.