

Thank-you for choosing the Vandersteen VCC-5 Reference, a center speaker designed for the full-range signal of modern discrete multi-channel formats (Ie. AC-3 and/or DTS). With proper care, your new speaker will provide many years of trouble free, high quality performance.

We recommend that you read this entire manual prior to installing, connecting or using your Vandersteen VCC-5 Video Center Channel Dialog Speaker.

*Vandersteen Audio*

The VCC-5 Video Center Channel Dialog Speaker is an integral part of a home audio/video system where it helps localize dialog and other movie sounds at the TV screen. The VCC-5 is the product of extensive research into the qualities required for realistic movie sound reproduction. The engineering, construction and materials of the VCC-5 far exceed conventional industry standards and result in a level of performance unmatched by other center channel dialog speakers.

The VCC-5 is a phase coherent design intended to be used in a high-quality audio/video surround system in combination with main speakers that have accurate frequency response and phase response. Whether you chose Vandersteen Audio main speakers or others with the proper qualities, the seamless

blend with the VCC-5 will insure maximum intelligibility on dialog and superior realism on music and sound effects.

The VCC-5's innovative, aligned triaxial design eliminates lobing effects and allows the VCC-5 to be placed at any height above or below the screen while maintaining consistent sound throughout the listening area. Its adjustable proximity compensation helps counter the effects of placement in a cabinet or near a wall and insures optimum performance in any environment. Its pleasing appearance allows the VCC-5 to visually complement your main speakers and the décor of your home.

The Vandersteen Audio VCC-5 Video Center Channel Dialog Speaker is designed and built in the United States of America.

## CONTENTS

Vandersteen A/V	2
Connections	4
Phase	4
Placement	5
Balancing Levels	6
Proximity Compensation	6
Amplification	6
Service	6
Packing	7
Maintenance	7
Specifications	7
Warranty	8

# VCC-5

## VIDEO REFERENCE CENTER CHANNEL DIALOG SPEAKER

## OPERATIONS MANUAL

# VANDERSTEEN AUDIO/VIDEO

The next time you're in a movie theater, shut your eyes and just listen to the movie. Listen carefully to the voices, music and sound effects with the same critical ear you would use to judge a stereo system. Without the big impressive picture commanding most of your attention and manipulating your emotions, it is easy to hear how substandard the sound truly is. Then try several different seats throughout the theater; you will find that they all have about the same poor sound.

In a theater, it is more important that every viewer be able to understand the dialog, hear the music and experience the sound effects than it is for the dialog, music and sound effects to sound real. Theater systems are engineered so that the kid in the front row right under the screen and the guy way back in the rear corner hear adequate sound even if it is detrimental to the sound in the central part of the theater. The sonic performance for the best seats is compromised to improve the performance for the worst seats. Engineering for this extreme level of consistency, guarantees consistent mediocrity. Luckily, it is not a mediocrity we have to live with in our home systems.

During the development of the VCC-5 we had the enlightening opportunity to use and evaluate numerous theater, home theater and audio/video systems with a wide assortment of equipment and configurations. We found that certain audio/video systems had better clarity, greater intelligibility and a faithfulness to the original sonic truth that other systems could not match. Based upon these superior systems, we developed some recommendations on building an audio/video system that would allow you, your family and your friends to experience videos, laser discs, DVDs, CDs, records and even broadcast television with maximum sonic realism.

## START WITH A GOOD MUSIC SYSTEM

An accurate, detailed two speaker music system is the perfect basis for a high-fidelity audio/video system. Speakers and electronics that sound real on music will also sound real on voices and other film sounds. Films contain many sounds of real life that we hear everyday so we instinctively use those familiar sounds to evaluate the visual realism. If your system cannot realistically reproduce familiar sounds as well as familiar sights, you will never be fully drawn into the emotional experience of a film.

Whether you build your audio/video system from scratch or as an extension of an existing music system, the performance of the core components—the front left and right speakers, the preamplifier and the main front amplifier—will define the ultimate capabilities of the entire system. The core components are where an investment in better speakers or a superior preamplifier or power amplifier will significantly improve the performance of your system on both film and music.

## ADD SUBWOOFERS

Once you have the core components, the next step in building an audio/video system is the addition of subwoofers. While subwoofers are optional in a music system, they are an integral and required part of an audio/video system. Movie makers take considerable artistic license with the low frequencies to create incredible sound effects that could never occur in the real world. Even with full-range main speakers and a powerful main amplifier, the high-intensity low frequency sound effects in modern movies can only be fully experienced with subwoofers and can actually damage a system without subwoofers.

To insure proper blending with subwoofers, filter theory dictates that the main speakers must have predictable response at least an octave below the crossover point. For an 80Hz subwoofer crossover point, the main speakers must have predictable response to 40Hz or lower. This is why it is impossible to successfully mate subwoofers with mini-speakers—the small speakers simply cannot reach the required full octave below any reasonable subwoofer crossover point. Mated with full-range speakers however, powered subwoofers reduce the demands on the main amplifier as well as the speakers so that the system's treble and midrange are improved along with the bass.

There are significant advantages to using two subwoofers in an audio/video system rather than a single unit. Summing the channels into a single subwoofer alters or cancels all the low frequency information containing phase differences between the channels. Stereo subwoofers reproduce all of the bass information complete with the phase differences. Multi-channel processors sound better with the LFE (Low Frequency Effects) information redirected to the front left and right channels where stereo subwoofers are located. Stereo subwoofers are also more linear than a single unit since they introduce the bass into the room at two different places and lend themselves to natural placement in the corners where the low frequency room gain is desirable on spectacular film sound effects.

Whether you use one or two, the Vandersteen 2Wq powered subwoofer is an extraordinary performer in a high-fidelity home theater system where it has the power, cone area and frequency extension for you to fully experience the most intense low-frequency film sound effects. The high motor-to-cone-area ratio of the 2Wq's three 8 inch drivers reduces distortion and provides a more seamless transition to the main speakers than is possible with a larger driver. The 2Wq features adjustable Q so the bass can be optimized for a music or home theater system and tailored to match your room and personal taste. In a system where the LFE output features and configuration options are desirable, a V2W can be added.

## FROM STEREO TO SURROUND AND BACK AGAIN

Now that the core system and subwoofers are in place, it is time to provide surround sound capabilities to the system. In a system built around a preamplifier and power amplifier,

this functional metamorphosis will require an external surround sound processor that is compatible with the core electronics, a pair of speakers for the surround channels and an amplifier to drive them. An A/V receiver based system will only require the addition of the surround speakers as the processor and surround amplifier are already built into the receiver.

In a system with separates, a surround sound processor that can be inserted into the tape loop of the preamplifier will allow you to engage any of the surround sound modes for movie viewing while still being able to switch the processor and other surround related equipment completely out of the system for listening to stereo CDs or records. This will give you maximum flexibility since the system is not compromised to favor one listening mode over another.

There are several performance attributes to consider when selecting surround speakers for a high-fidelity home theater system. You are not forced into the compromises of a theater so you can use uncompromising speakers with precise imaging that enhances the spaciousness of your system and insures satisfying and stable surround effects. While small bookshelf surround speakers often have these desirable imaging characteristics, they do not have the bass extension or power handling capability of larger speakers. This is usually not a problem with conventional matrixed surround modes that attenuate the low frequencies to the surround speakers and keep the levels relatively low, but the discrete multi-channel modes as well as proprietary matrixed modes on many processors send full-frequency information to the surround speakers. When you consider the excessive dynamic demands this puts on small bookshelf speakers, it is easy to see the advantages of using speakers designed to handle a full range signal.

The Vandersteen VSM-1 phase-correct on-wall speaker complements our center and main speakers while providing the benefits of convenient, inconspicuous on-wall mounting. It is capable of handling a full-range signal and can be matched with a 2Wq subwoofer since the bass response of a wall-mounted speaker is very predictable. Once stereo subwoofers are set-up for the front left and right channels, a third 2Wq can be used with the VSM-1 to provide true full-range surround capability.

Should budget considerations dictate the use of inexpensive, limited-range surround speakers, we recommend that you select a phase-correct two-way with a five or six inch woofer in a narrow baffle. Speakers with small woofers and narrow baffles usually sound decent through the critical middle frequencies and have good imaging characteristics. To prevent the small speakers' woofers from distorting or being damaged by intense low frequency sound effects, you can program your processor to limit the bass to the surround channels or be careful to only use modes where the bass to the surround channels is automatically limited. If you cannot program your processor to limit the bass and you want to use a surround mode that sends full-range information to the surround speakers, you can install capacitors on the

inputs to the surround amplifier or surround speakers to limit the low bass.

To drive the surround speakers in a separates based system, choose an amplifier matched to the power requirements of the speakers that has similar sonic characteristics to the amplifier driving the main speakers. This can be either a stereo amplifier or two channels of a multi-channel A/V amplifier.

### **ADD A CENTER CHANNEL**

A center channel speaker and an amplifier to drive it are the final components you need to complete the audio portion of your audio/video system. The center channel speaker will help localize dialog and other film sounds at the screen for viewers seated outside of the central listening area. During a movie, much of the sound you hear will be coming from the center speaker so it must be carefully chosen to properly integrate with the main speakers. While adding a good, well-matched center channel speaker will improve the system's performance for listeners seated to the sides, a poor center channel speaker will completely ruin the sound of the system for everyone. No center speaker is always preferable to a poor or mismatched center speaker.

### **TRUE UPGRADABILITY**

By basing your system on a good music system, not only can you build it piece by piece, you can upgrade it the same way. You can upgrade the power amplifier or preamplifier for better sound in a separates based system or switch processors to acquire new surround modes. With an A/V receiver, you can add a separate power amplifier to better drive the main speakers and at the same time take a big step toward the superior performance of separates. You can change from small bookshelf surround speakers to VSM-1 on-wall speakers and move the small speakers into a bedroom, den or office system. Since the system is so modular, it will be easy to make any changes that future surround modes or technology will require without having to redo the entire system.

The music system based audio/video system is a good value. Most of your stereo components will integrate directly into your audio/video system. Every improvement you make to the core components will increase your enjoyment of both music and film. This double return on your investment will keep costs down since there is no duplication of components between separate systems.

### **PASS THE POPCORN, PLEASE**

Setting-up the audio portion of your home audio/video system along these guidelines will enable it to reproduce the sound of a blockbuster action movie with the same ease and realism that it reproduces a chamber orchestra or solo vocalist. Whether you use a standard size TV or a ten-foot projection unit, your system's superior voice intelligibility, superb musical accuracy and extraordinary sound effects capabilities will bring your favorite music and your favorite films to life for you and your entire family.

# VCC-5 SETUP AND USE

## CONNECTIONS

The VCC-5's barrier strip provides superior gas-tight connections that do not deteriorate with time. The center speaker should be connected with cable similar to what you are using to connect the main speakers. Connect the VCC-5 as follows:

1. Crimp and solder spade lugs to the speaker ends of the cable for your center channel as shown in illustration # 1. With a pair of pliers, slightly bend the spade lugs' blades so that the body of the spade lug will be held away from the input plate once the wires are connected as shown in illustration # 2.
2. Connect the center channel cable to the VCC-5 as shown in illustration # 3. The input screws should be snug, but should not be over tightened.

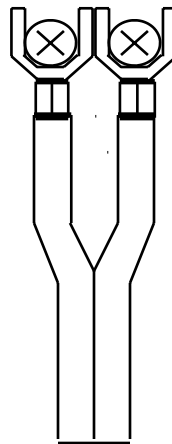


Illustration # 1

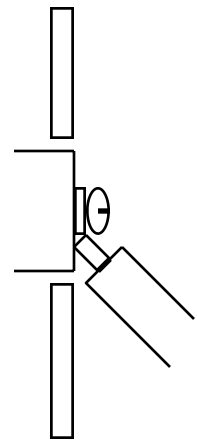


Illustration # 2

## PHASE

Like all Vandersteen speakers, the VCC-5 is phase-correct with its tweeter, mid-range and woofers connected in positive polarity through transient-perfect, first-order crossover networks. When it is used with Vandersteen or other phase-correct main speakers, the VCC-5 should be connected in positive polarity.

(Amp + to speaker +, amp - to speaker -.)

*(The only rare exception would be when the center channel amplifier or the main amplifier inverts phase. If you believe that one of your amplifiers inverts phase, contact the amplifier's manufacturer for verification. Most modern amplifiers do not invert phase.)*

When the VCC-5 is used with mixed-phase main speakers, it should be tried both in-phase and out-of-phase to determine which polarity provides better integration into the system. If you have difficulty determining the best polarity for the VCC-5 with mixed-phase main speakers, your dealer should be able to help you.

*(Please do not call the factory with phase questions about a mixed-phase system. There is nothing regarding the proper connections for the VCC-5 in this type of system that can be determined over the phone. Someone from your dealer will need to come to your home and evaluate the possible configurations with their trained ears.*

The speaker wires or spade lugs should never touch the aluminum input plate while the amplifier is on. Amplifier damage could result.

The input screws should be snug, but should not be over tightened.

Always turn off the center channel amplifier before disconnecting the speaker cable from the VCC-5 to prevent the possibility of a short.

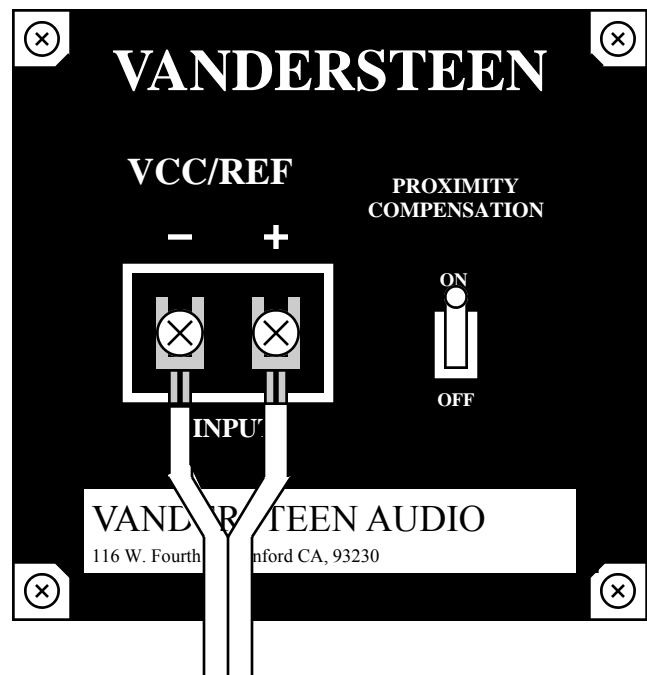


Illustration # 3

## PLACEMENT

The triaxial design of the VCC-5 enables it to be placed at any height relative to the main speakers and the listeners without affecting its performance. If possible, the center speaker should be located farther away from the listeners than the main speakers. This additional distance will slightly delay the center channel sound which often improves the spatial characteristics of the system.

## DIRECT VIEW OR REAR PROJECTION TVs

In most systems with a direct view or rear projection TV, the VCC-5 should be centered on the top front edge of the TV. The center speaker will probably be somewhat higher than the main speakers which will raise the overall image up slightly and localize the dialog and other center channel information on the upper part of the screen. When your TV is built into a cabinet or wall unit, the VCC-5 should be built in directly above the center of the TV. If your TV is tall or mounted high enough that the center speaker is two feet or more above the listener's heads, some rubber or plastic feet can be put below the rear of the speaker to tilt the front of it slightly downward toward the listeners. In situations where direct view TVs are mounted very high, the center speaker may perform better placed under the TV.

## FRONT PROJECTION TVs

The large screen of most front projection TVs along with their lack of a suitable surface to hold the center speaker can present some special challenges to positioning the VCC-5. With a conventional nonperforated screen at a normal height, the center speaker is usually mounted on a stand just below the screen. With smaller screens or screens that are lower than normal, the center

speaker may perform better mounted above the screen. If the center speaker is mounted two feet or more above the listener's heads, it should be angled slightly downward as described in the earlier section. With a perforated screen, the VCC-5 should be placed behind the screen, as close to the center as possible.

We do not recommend using double center speakers in any installation. Two VCC-5's will interfere with each other and cause a loss of definition and linearity. If for some reason you have to run two center speakers, they should be mounted above and below the screen, not to the sides, and they both should be the same distance from the listeners.

## MAGNETIC SHIELDING CONSIDERATIONS

While it is impossible to totally eliminate the magnetic field of a high-quality, large-magnet driver such as the ones in the VCC-5, we use two stages of shielding to reduce it to a level where it will not present a problem in most applications. We have used the VCC-5 on many different TVs and even on the most sensitive, we have always been able to eliminate any interference with the following methods.

The VCC-5 has a stronger magnetic field to the front and rear than it does to the top, bottom or sides. On a sensitive direct view TV, hold the speaker high above the top of the TV as you approach it and then lower the speaker directly down onto the top of the TV.

When the position of the VCC-5 on the TV has been set, you should degauss the TV either by pushing its degauss button or turning the TV off and on several times. (Modern TVs automatically degauss after a set number of power cycles.) If the center speaker is moved, the TV should be degaussed again.

With a direct view TV, when the final positioning for the VCC-5 has been set, the TV should be degaussed. If your TV does not have a degauss bottom, turn the TV on and off several times. Modern sets will automatically degauss within a few power cycles. If the center speaker is moved, the TV should be degaussed again.

The VCC-5 contains protection circuitry that tracks voice coil temperatures and reduces the current to one or more of the driver elements if excessive temperatures are detected. When this happens, the sound of the speaker will change. If this occurs, immediately reduce the volume level to allow the speaker components to cool down. Please remember that no protection circuitry is 100% effective and that repeated activation could cause the circuits themselves to fail.

## BALANCING LEVELS

Surround processors have a built-in pink noise generator that is used with a Sound Pressure Level meter to balance the volume levels of the various speakers in the audio/video system. (An SPL meter is a required tool for properly setting-up an audio/video system. Radio Shack sells an inexpensive SPL meter with more than adequate accuracy.) Do not try to balance the levels by ear. The frequency range difference between the center and main speakers will affect your perception of the pink noise levels and result in improper balancing.

Some processors can be programmed for use with a big or small center speaker. With the VCC-5, the processor should be set for a big center speaker provided that this setting does not remove the bass from the front left and right channels. For very high play back levels the

processor should be bandpass limited to 60-80Hz 6dB per octave. If your processor does not have this option contact your dealer for a X-2 Outboard High Pass Filter at the input of the center channel amplifier.

To achieve the correct balance, the VCC-5's Proximity Compensation must be turned off when the levels are set using the noise generator. Balancing the levels with the Proximity Compensation turned on will not cause any damage, but the level of the center channel will probably be set too high.

Once the speaker levels have been balanced, they should not need to be altered unless the system components are changed, the speakers are repositioned or the listening area is moved.

To avoid the possibility of a false reading, always turn off the VCC-5's Proximity Compensation when balancing the levels of the various speakers in your audio/video system using test signals and an SPL meter.

Do not change the setting of the Proximity Compensation Switch when the VCC-5 is playing. Mute the system, then make the necessary change.

## PROXIMITY COMPENSATION

The VCC-5's Proximity Compensation circuit is designed to help counter the sonic effects of nearby walls and other surfaces.

1. Using good, clear dialog as a source, listen to your system with the VCC-5's Proximity Compensation both on and off to determine which setting provides more natural and intelligible voices in your particular listening environment.

2. If you cannot hear a difference between the two settings or you cannot decide which setting is better, leave the switch on. In our opinion, the VCC-5 has slightly lower coloration with the Proximity Compensation turned on.
3. Once the switch has been set, it needs no further attention unless the system is moved into a different environment

## AMPLIFICATION

To maintain the seamless integration of the VCC-5 with the front left and right speakers, the center channel amplifier should be a close sonic match to the amplifier driving the main speakers. The impedance of the VCC-5 center speaker is 4 ohms so that a high current amplifier is required and it should have at least as much power as the main amplifier. With only one channel of amplification

needed, you can bridge a good sounding, lower powered stereo amplifier into mono. To prevent system damage from power line fluctuations or other unpredictable phenomena, all the amplifiers in an audio/video system should be turned off when the system is not being used. Preamplifiers and CD players however, should be left on due to their lengthy warm-up periods.

## SERVICE

Should your VCC-5 require service, please follow these procedures.

1. Verify that the problem is in the speaker by substituting a speaker that is known to be working in place of the VCC-5.
2. Contact Vandersteen Audio, describe the problem

and the steps you have taken to isolate the problem to the VCC-5. A Return Authorization is available on our website, [www.vandersteen.com](http://www.vandersteen.com), under customer service .

3. Return the damaged or defective VCC-5 to Vandersteen Audio packed in its original box. Include the filled-out Return Authorization Form with the VCC-5.

## PACKING INSTRUCTIONS

To prevent physical or cosmetic damage always pack the VCC-5 in its original box prior to transportation or shipment. Please follow these instructions when packing the VCC-5.

1. Place the speaker on one side on a padded surface.
2. Pull the plastic bag over the speaker
3. Carefully turn the speaker right side up and close bag.
4. Place one tray, foam side down into the box.
5. Place the speaker into bottom tray.
6. Carefully place top tray, foam side up over the speaker.
7. Close the box flaps and seal with tape.

## MAINTENANCE

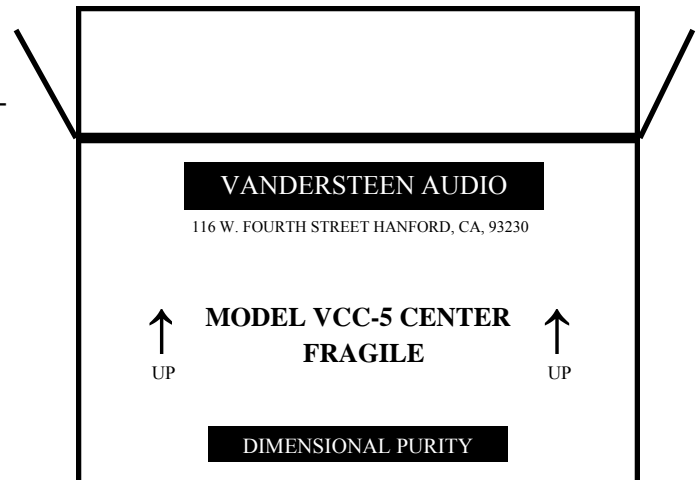
The appearance of the VCC-5 can be preserved by observing a few precautions and performing some simple maintenance. The grille cloth on the VCC-5 can be vacuumed using a brush attachment that will not snag the cloth. The top should be treated as a piece of fine furniture. The wood veneers are oiled at the factory and can be maintained with an occasional light application of Pledge or a similar product.

Care should be taken that objects that could mar the finish are not placed on top of the speaker. Do not expose the speaker to excessive heat, sunlight or moisture, which can damage the fit and finish of the veneer.

## SPECIFICATIONS

- Driver:** Magnetically shielded triaxial design combining (2) 6 1/2" die-cast basket polycone woofers, (1) 6 1/2" die-cast polycone mid-range and a proprietary 1" critically-damped, alloy dome tweeter.
- Crossover:** 150, 3500Hz. First order, 6dB per octave.
- Phase:** All drivers in positive absolute phase.
- Enclosure:** 1-11/2" thick constrained-layer-dampened MDF.
- Impedance:** 4 ohms nominal.
- Sensitivity:** 86dB at 1 meter with a 2.83 volt input.
- Response:** 55Hz to 21,000Hz  $\pm$  3dB Proximity Off.
- Amplification:** 100 to 200 watts per channel .
- Size:** 24 1/4" wide, 9 3/4" high, 17 1/2" deep.
- Weight:** 68# net, 78# gross.

Specifications and design are subject to change without notice due to our continuous research and development program



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## LIMITED ONE YEAR WARRANTY

VANDERSTEEN AUDIO loudspeakers are warranted to the original purchaser to be free from defects in materials or workmanship, SUBJECT TO THE FOLLOWING CONDITIONS, for one (1) year from the date of purchase from an authorized VANDERSTEEN AUDIO dealer.

### **THIS WARRANTY IS SUBJECT TO THE FOLLOWING CONDITIONS AND LIMITATIONS:**

This warranty is void and inapplicable if the loudspeaker has:

- a. not been used in accordance with the instructions contained in the operations manual.
- b. been subject to misuse or abuse; examples of which would be burned driver voice coils.
- c. been modified, repaired, or tampered with by anyone not specifically authorized to do so by Vandersteen Audio.
- d. been subject to inputs in excess of the maximum rating, or inputs from an unstable or clipped amplifier.
- e. suffered physical damage to the structure or components due to accident, neglect, or transportation.

IF A VANDERSTEEN AUDIO LOUDSPEAKER FAILS TO MEET THE ABOVE WARRANTY AND THE ABOVE CONDITIONS HAVE BEEN MET, THEN THE CUSTOMER'S SOLE REMEDY SHALL BE TO RETURN THE PRODUCT TO VANDERSTEEN AUDIO WHERE THE DEFECT WILL BE REPAIRED WITHOUT CHARGE FOR PARTS OR LABOR. THIS WARRANTY APPLIES ONLY TO PRODUCTS RETURNED TO VANDERSTEEN AUDIO IN HANFORD, CA USA.

(Returning the product to Vandersteen Audio from some countries other than the United States may involve considerable time and expense. The customer is responsible for all fees and duties and for providing instructions and all the paperwork required to return the product after it is serviced.)

The speaker must be packed in the original packing and returned to VANDERSTEEN AUDIO via insured freight by the customer at his or her own expense. A returned product must be accompanied by a Return Authorization Form, (available from VANDERSTEEN AUDIO upon request) which includes a written description of the defect and return shipping information.

ANY IMPLIED WARRANTIES RELATING TO THE ABOVE PRODUCT SHALL BE LIMITED TO THE DURATION OF THE ABOVE WARRANTY. THIS WARRANTY DOES NOT EXTEND TO ANY INCIDENTAL OR CONSEQUENTIAL COST OR DAMAGES TO PURCHASER.

Some states do not allow limitations on how long an implied warranty lasts, or an exclusion of incidental or consequential damages so the above limitations or exclusions may not apply. This warranty gives you specific legal rights, you may also have other rights in your state.

VANDERSTEEN AUDIO reserves the right to modify the design of any product without any obligation to previous purchasers and/or to change the prices or specifications without notice or obligation to anyone.

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### **A Personal Note**

I have been doing volunteer work for several years with elderly people with severe hearing losses, and I have seen the frustration and anger that are brought on by these losses. We now know that many of these people developed their hearing problems because of exposure to high noise levels when younger.

Many home stereo systems, as well as audio/video, personal, and automobile sound systems are capable of volume levels potentially damaging to your hearing. Please use common sense, and listen to your music and movies at safe levels now so you will still have the ability to hear and enjoy them in the future.

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Richard Vandersteen