VANDERSTEEN

$5.00

Thank-you for your purchase of the Vandersteen Model 1Cs. Your new speakers will provide many years of trouble free, high-performance sound reproduction and thousands of hours of quality entertainment.

Due to the advanced design and features of the Model 1C, we recommend that you read this entire manual prior to connecting or using your new loudspeakers.

Vandersteen Audio

INTRODUCTION

The Vandersteen Audio Model 1C is a floor-standing, high-performance loudspeaker developed and refined by twenty years of advanced research into cost-effective dynamic loudspeaker design. The Model 1C uses the proven Vandersteen Aligned Dynamic Design to optimize the dispersion and accuracy of the drivers while maintaining the input signal's time and phase integrity. The drivers, their positioning and their minimum-sized baffles were each developed with the aid of FFT (Fast Fourier Transform) computer analysis to minimize diffraction, cone break-up, multi-driver interference and out-of-band phase irregularities. The alignment and positioning of the drivers allow a point-source wave front and maximize the phase coherence of the loudspeaker throughout the listening area.

The Model 1C is a worthy addition to any quality music or home theater system. The speaker's engineering, construction and materials far exceed conventional industry standards and contribute to performance unmatched even by larger and more costly designs. The stable impedance characteristics assure complete compatibility with any amplifier or receiver in any system. The full-range frequency response enables the speaker to be seamlessly mated with a matching high-quality subwoofer. The aesthetically pleasing appearance, incorporating an acoustically transparent, 360 degree wrap around grille cloth, a wood bottom and an audibly vented wood top, allows the Model 1C to compliment the decor of your home.

The Vandersteen Model 1C is designed and built in the United States of America.

CONTENTS

MODEL 1C LOUDSPEAKER

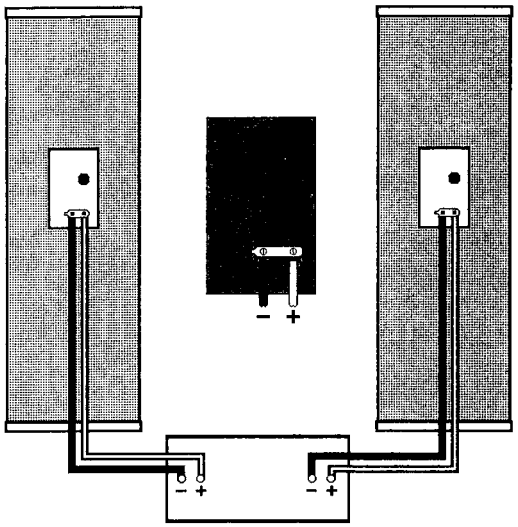
OPERATION MANUAL

Setting-Up The Speakers

Bare wires should never come into contact with the speaker's aluminum dress plate while the amplifier is on. Amplifier damage could result.

Connection

1. With the amplifier off, place the banana plug into the jack on the rear of the speaker with the ground ridge toward the left (black) terminal and loosen the set screws in the banana plug by inserting a small blade screwdriver into the rear of the plug.
2. Strip approximately 0.3 inches of insulation from the speaker ends of the speaker cable. The speaker cables should be the same length and no longer than necessary.
3. Verify cable polarity. Then, from the bottom, carefully push the exposed ground side of the speaker cable through the hole in the ground (left) side of the banana plug and tighten the set screw.
4. Repeat step 3 for the positive side of the speaker cable and the positive (right) side of the banana plug.
5. Connect cables to the amplifier in the normal manner. Verify polarity at the amplifier connection.



Vandersteen speakers will produce excellent, satisfying sound placed almost anywhere in a room. With all the possible variables in room layout, there are no magical formulas for determining the best speaker placement in every room. Since every room is different, we recommend that you try the speakers in every domestically acceptable location to find where they sound the best in your particular listening environment. The following sections contain suggestions that may be helpful in your placement experiments.

Speaker Placement

Problems can arise when you attempt to place a given loudspeaker, either front radiating or dipole, into a typical domestic environment. These problems are a function of the physical dimensions of the room. The room's dimensions dictate where in the room a node or anti-node will occur. Frequency response dips and peaks caused by nodes and anti-nodes can easily overwhelm the inherent accuracy of a loudspeaker.

If, for example, you place a loudspeaker with excellent frequency response characteristics in the corner of a room, you will increase response below about 200Hz by 6dB. This particular condition is a worst case example, but similar conditions apply throughout the room to some extent.

Odd Dimensions Placement

Research on speaker placement has produced a method for reducing the nodes and anti-nodes in many rooms by positioning the loudspeakers on the odd dimensional intersections of the room. The odd dimensional intersections are the intersections of the imaginary lines you would draw if you divided the length and width of your room by odd numbers.

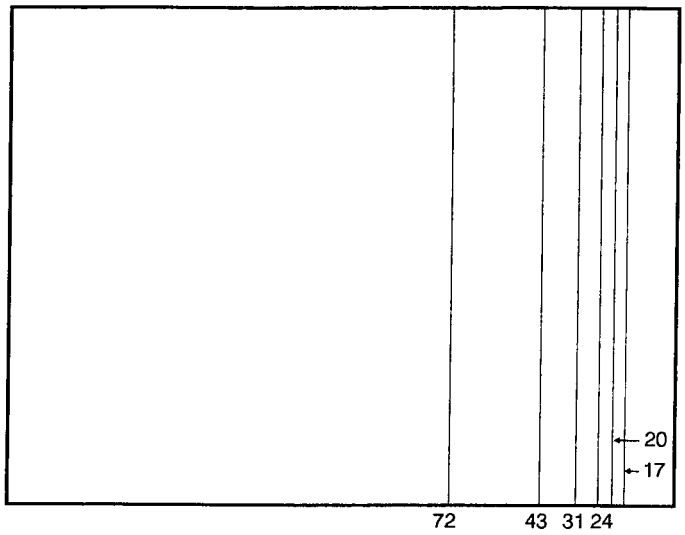
As an example, we will use a rectangular room measuring 14 feet wide by 18 feet long. We'll assume that you want to set the speakers on one of the short walls, although this method works equally well for long wall placement.

The first step is to take the length of the room, (18 feet in our example) convert it from feet to inches, (18 x 12 = 216) and divide the result by odd numbers.

216 divided by 3 is 72 (all to the nearest inch)
216 divided by 5 is 43
216 divided by 7 is 31
216 divided by 9 is 24
216 divided by 11 is 20
216 divided by 13 is 17 (And so on; eventually the lines start to pile on top of each other or the speaker runs into the wall.)

The results are the distances in inches that the center of the speakers can be placed into the length of the room, away from the wall behind them, to minimize nodes and anti-nodes.

Now we can graph these odd dimensions distances on a drawing of the room. We only need to graph them for the wall where we intend to place the speakers.

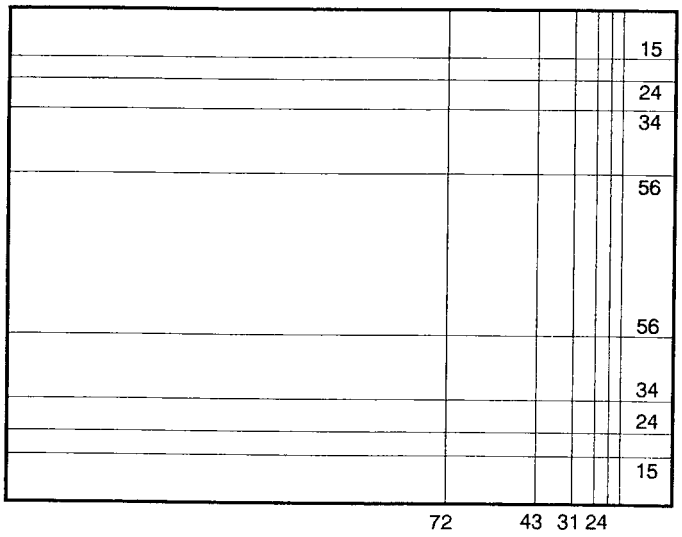


We use the same method to figure how far the centers of the speakers should be from the side walls. We take the width of the room, (14 feet) convert it from feet to inches, (14 x 12 = 168) and divide the result by odd numbers.

168 divided by 3 is 56 (all to the nearest inch)
168 divided by 5 is 34
168 divided by 7 is 24
168 divided by 9 is 19
168 divided by 11 is 15

The results of these odd number divisions are the distances in inches that the center of each speaker can be placed into the width of the room, away from the side wall, to minimize nodes and anti-nodes.

Now we can graph these odd dimensions distances on the room drawing and see the intersection points of the lines. These points represent where the centers of the speakers can be placed to minimize nodes and anti-nodes.



As you can see, we have many intersections to choose from in our example room. Some of the intersections in your room will probably be eliminated by aesthetic or room function considerations, so you may have less.

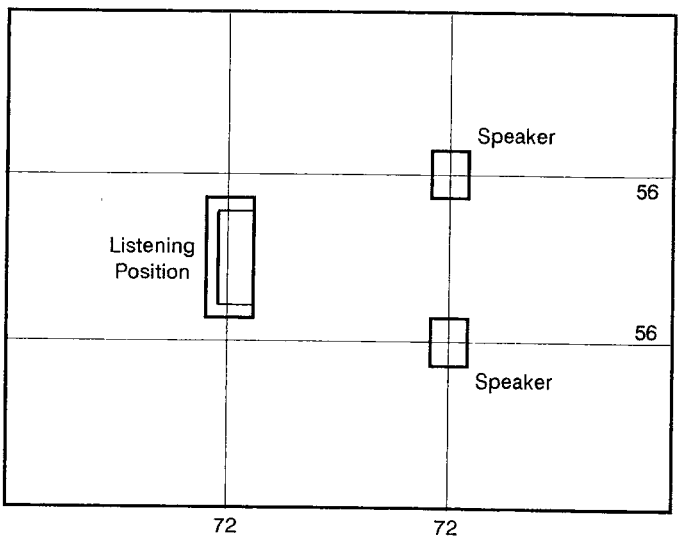
As you try different placements for your speakers, always place both speakers on the same length line. For example, both speakers would be placed on the 43 inch line or both speakers would be placed on the 24 inch line. The speakers can be placed on different width lines, for example one on the 34 inch line and the other on the 56 inch line. Placing the speakers on different rather than matching width lines will require that the listening position be offset to center it between the speakers. Often, the bass response of the system will be slightly more linear with the speakers placed on different width lines, (asymmetrical placement) while the imaging will often be better with the speakers placed on matching width lines (symmetrical placement).

After listening to the speakers centered on the charted intersections, you should listen with the speakers a couple of inches away from the intersection points in each direction. In some cases, the speakers will sound better slightly off the intersections due to the particular characteristics of your room or a slight error in your original room measurements. Both speakers should be moved the same amount forward or backward when fine-tuning placement.

Several factors influence how speakers interface with a room other than the room's basic dimensions so it is possible that none of the placement options on the wall you initially place the speakers on will sound quite right. The sound may have too much or too little bass or be too forward or too withdrawn. If you are unable to achieve satisfactory sound with the speakers placed on one wall, try placing the speakers on another wall of the room. Even in a rectangular room, the speakers will interface differently with the room depending upon which of the four walls they are placed. In some rooms the speakers will sound best on a short wall while in other rooms the speakers will work better on a long wall.

Third Dimensions Placement

A placement method that provides some unique effects is to place each speaker on the thirds of the room measurements and the listening position on the third of the length. The speakers are placed one third the length of the room from the wall behind them and one third the width of the room from the walls along side them. The listening position is then placed one third the length of the room from the wall behind it.



In our 14 by 18 foot example room, the thirds are 72 inches in the long dimension and 56 inches in the short dimension. The intersections of these measurements are used for third dimensions placement. In addition, the listening position is placed 72 inches from the rear wall of the room.

Both speakers should be tried up to two inches ahead and behind the intersections to determine if this improves the sound. Both speakers should be moved the same

amount forward or backward.

Third dimensions placement reduces the interaction of the speakers with the room to an absolute minimum, but can create aesthetic or room function problems due to the speakers and listening position being so far out into the room. (The lower the odd number used to divide the dimensions the lower the interaction between the speakers and the room.)

Acoustical Center

The Model 1C's acoustical center is the physical center of the loudspeaker. In a perfect rectangular room with absolutely rigid walls and no doors or windows, the acoustical center of the loudspeaker would be placed exactly at the point where the two dimensions intersect to realize the full benefits of odd dimensions or third dimensions placement. In a real room, the actual best placement may vary from the intersection by as much as two inches or so. Fine-tuning the placement by moving the speakers a couple of inches off the odd dimension intersections takes these real world conditions into account.

You should not use any placements that would place the acoustical center of the loudspeaker the same distance from the rear and side walls. The measurement from the center of the loudspeaker to the two walls should differ by at least two inches. Odd dimension intersections that are within two inches of the same distance from both the side and rear wall should not be used.

Speaker Toe-In

The degree of toe-in can affect the imaging and response characteristics of the speakers. In most rooms, the speakers will sound best with some toe-in. Speakers that are placed close to the side walls or in rooms with very reflective side walls may require additional toe-in to avoid a confused image and/or a forward midrange and treble.

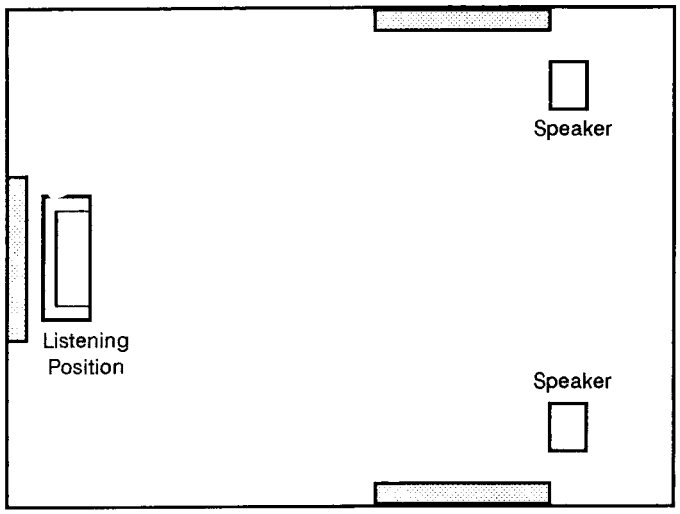
If the speakers seem to need an excessive amount of toe-in to image properly or achieve good center fill, there may be a problem with the set-up or connection of the speakers or some part of the system may not be functioning as intended. To determine why the speakers require excessive toe-in, check all your speaker wire connections for correct phase and verify that the electrical components in the system are connected and functioning properly.

Acoustic Treatments

If the speakers are close to the side walls and you hear a brightness in the midrange/treble or a problem with the imaging that toeing-in the speakers does not help, some sound absorbent material should be mounted on the side walls to control reflections.

To determine where the sound absorbent material should be placed, imagine that the walls are mirrors and mount the material on the walls where you would see the reflections of the speakers when you are in your normal listening position. Before you actually mount anything on the side walls, experiment with a folded natural-fiber blanket to verify the positioning of the material and that you get the desired results.

If your listening position is close to the wall behind you, mount some sound absorbent material, such as a hanging tapestry, directly behind your head. As with the material for the side walls, experiment with a folded natural-fiber blanket to verify the results before you acquire or mount the material.



Bass problems that cannot be corrected with placement adjustments may be helped by the addition of bass traps or other bass control devices. Follow the instructions of the bass control devices as to their proper set-up and placement to correct the problems you are experiencing.

Helpful Hints

a. To try the speakers on different walls, set your equipment in the middle of the room so the speaker cables can reach each possible location.

b. When you change the placement of the speakers, listen to several different pieces of music before judging the results of the change.

c. If you set the speakers on a wood floor, place a coin under each stand spike or use ¼-20 thread carriage bolts in place of the spikes to prevent damage to the floor. Carriage bolts have rounded heads that will not put holes in the floor.

d. Keep the spikes or carriage bolts on the bottom of the stands as short as possible while still accomplishing the proper vertical angle for your listening height and distance. Excessive length will reduce the stability of the speakers.

e. When you have discovered the optimum speaker positioning in your room, mark it with tape so you can move the speakers to vacuum without loosing your placement.

f. If the bass is ill-defined in your room regardless of where you place the speakers, check your windows for loose panes of glass. Loose glass will vibrate and can seriously impair the low frequency detail of the system.

g. Keep notes on the sound of different placements you try. It is easy to get mixed-up and forget which placement sounded the best.

h. Don't over-analyse the sound of each placement. When the sound is right, it will be obvious.

The 1C is not magnetically shielded and should be positioned at least 10 inches away from a direct view television set.

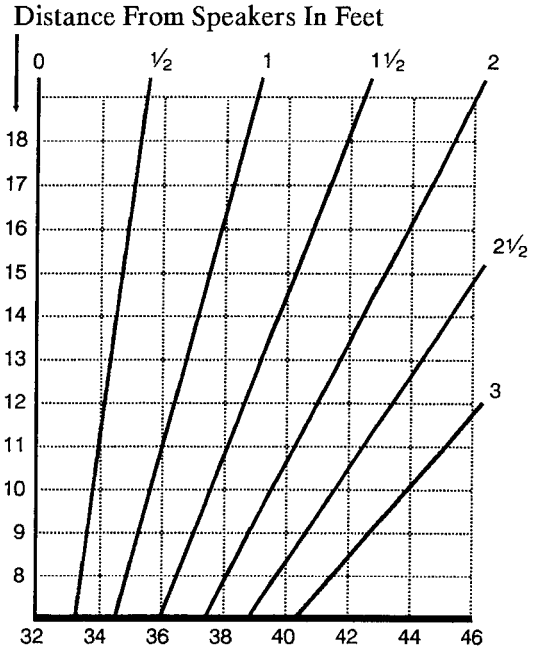
Listening Height

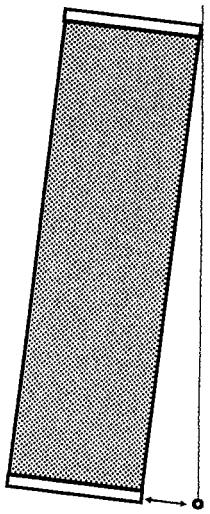
The sound from a properly aligned loudspeaker reaches the listener with the audible frequencies correct in both time and phase. This alignment contributes to a more accurate sound, but also increases the importance of the height relationship between the speaker and the listener.

When placed on a spiked base with a 2½ inch total height, the Model 1C's vertical listening window is centered at 32 inches. It extends about 4 inches above and below the nominal height. Outside of this 8 inch vertical listening window, the sound and performance of the speaker will be somewhat compromised.

If your Model 1Cs are on 2½ inch high dedicated bases and you wish to maximize the speakers' performance, please follow these instructions.

1. Measure the distance from the listening position to the speakers and the height of your ears when you are seated at the listening position. (Ear height is roughly equal to the height of the tip of your nose.)
2. Find the values closest to your actual measurements on the chart to the right.
3. Follow the horizontal line across from your distance and the vertical line up from your ear height to the point where they intersect. The graph lines numbered from 0 to 3 indicate how many inches the top of the speaker should be behind the bottom of the speaker to center the eight inch high listening window at your particular listening height and distance.
4. Adjust the length of the base's front and rear spikes to lean the speakers backward the proper amount.
5. As an example of how to accomplish the proper amount of lean:
   a. Tie a nut to a piece of thread about four feet long.
   b. Hang the thread and nut from the back of the speaker and measure the distance between where the thread attaches to the nut and the bottom of the speaker as shown in the diagram. This measurement is the amount of speaker lean. (For clarity, the amount of lean in the diagram has been exaggerated and the base is not shown.)





The Model 1C requires at least 100 hours at a moderate volume level before its performance and response stabilize. Higher volume levels will not shorten this break-in period.

The Contour Control

A tweeter contour control is on the aluminum dress plate at the rear of the Model 1C. This control adjusts the tweeter level over a limited range. The control may be used to compensate for a bright or dull room that could not be corrected with speaker placement, acoustic treatments or other passive means. The control is limited in its effect and even at maximum rotation it will not take the response of the speaker out of a plus or minus 3dB envelope. Changing the contour control will not affect the detail, imaging or phase performance of the speaker due to its unique incorporation into the crossover circuitry.

Do not change the tweeter contour controls and the speaker placement at the same time. After adjusting the contour controls or altering the speaker placement, carefully listen for the sonic differences the change has made before making any other changes to the system.