

BOSE[®]

MODEL 331[™]

DIRECT/REFLECTING[®]

SPEAKER SYSTEM

OWNERS MANUAL

1. INTRODUCTION

Thank you for purchasing the Bose[®] Model 331 Direct/Reflecting[®] speaker system. Your Model 331's are the product of many years of Bose research and dedication to the art of bringing superb musical reproduction into your home.

PLEASE TAKE TIME TO READ THIS MANUAL CAREFULLY. It will help you obtain the full benefits of the Model 331's unique design.

2. UNPACKING INSTRUCTIONS

Two Model 331 speakers, marked "Part 1" and "Part 2," are packed in a single shipping carton. Unpack both speakers carefully, saving the carton and packing materials for possible transportation or shipment at a later date.

If either of the speakers has visible damage when you unpack it, do not place the damaged speaker(s) in operation. Repack the speaker(s) in the original carton with the complete packing material and notify your dealer immediately.

WARNING—DO NOT HANDLE THE SPEAKERS BY THE GRILLE. GRASP ONLY THE CABINET WHEN MOVING OR PLACING THE SPEAKER.

3. DESIGN FEATURES

The Bose Model 331 Direct/Reflecting loudspeaker incorporates several features that make its operation and placement different from other loudspeakers. The exceptional performance of the Model 331, to a great degree, can be attributed to Asymmetrical Design, the Direct Energy Control, and a Dual Frequency Crossover Network.

ASYMMETRICAL DESIGN The Asymmetrical Design of the Model 331 provides a high proportion of reflected sound at high frequencies and contributes to the exceptionally spacious stereophonic reproduction. To provide balanced spatial properties in stereo reproduction, the Model 331 stereo pair is designed so that the speaker used on the left-hand side of the room (this speaker is called "Part 1") is a mirror image of the speaker on the right-hand side (this speaker is called "Part 2").

The Asymmetrical Design and mirror image construction of the Model 331 are shown in Diagram 1 (page 2). The tweeters direct most of their energy toward the side walls of the room. The side walls reflect high frequency energy uniformly throughout the listening area, resulting in a stereo image extending from one wall of the room to the other (Diagram 2, page 3). The advantage of this design is that minimum reliance is placed on the rear wall of the room for providing reflections. This maximizes the flexibility of placement of the loudspeaker.

DIRECT ENERGY CONTROL This control, located at the top of the cabinet, allows you to select the proportion of direct to reflected sound at high frequencies to produce the optimum spatial characteristics for your particular room.

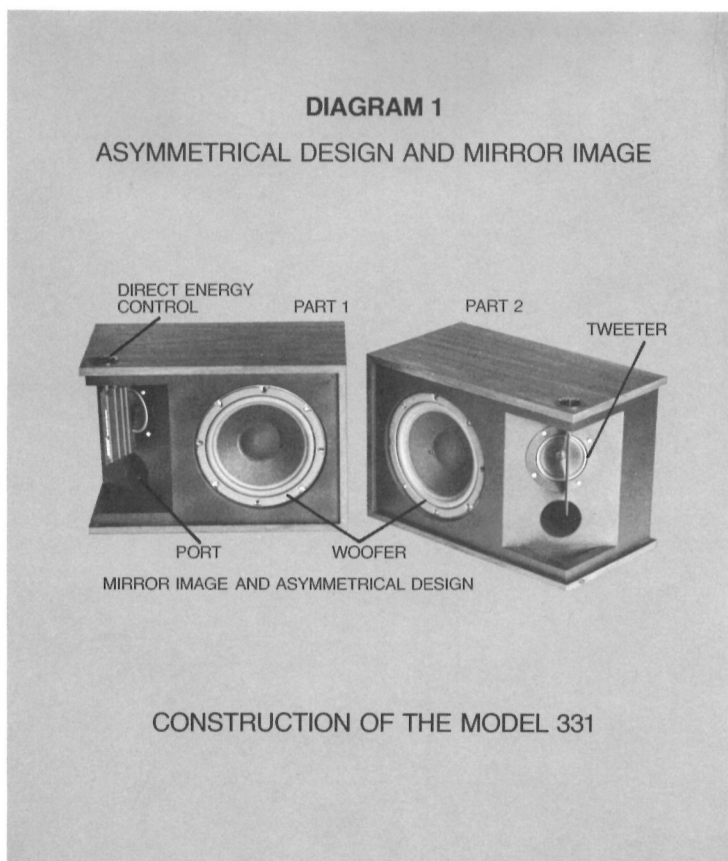
If, for example, the side walls of the room are absent, too far away, or covered by absorbing material,* the control can be set to provide predominantly direct sound at high frequencies. A predominance of direct sound results in a stereo localization of sounds primarily to the area between the two speakers. Sometimes this more "intimate" sound is preferred for soloists and small groups.

If a reflecting side wall is present, and a more spacious sound presentation is desired (such as for an orchestra), the control can be set to provide a larger proportion of reflected sound at high frequencies. This results in sound that actually extends beyond the spacing of the speakers.

DUAL FREQUENCY CROSSOVER NETWORK Contrary to traditional design philosophies, the crossover network of the Model 331 deliberately overlaps the response of the woofer and tweeter by over an octave, and adjusts the amplitude and phase response of the woofer and tweeter to provide exactly complementary characteristics. This Dual Frequency Crossover permits both drivers to operate throughout the crucial middle frequency range. Distributing the energy between the two drivers eliminates the undesirable "point source" effect of a conventional loudspeaker. This results in more spacious sound and unusual clarity and naturalness through the middle and higher frequencies.

4. INSTALLATION

The Model 331 provides a versatility of placement and adjustment that will produce excellent performance in virtually any room. However, all loud-



*Any surface that feels hard, such as wood, glass, wallboard, plaster or brick, is a good reflector. A soft surface, such as acoustic tile, drapery, or upholstered furniture, will absorb sound.

speakers will sound better, if installed properly. The following guidelines should be followed in installing the Model 331.

A. Speaker Placement

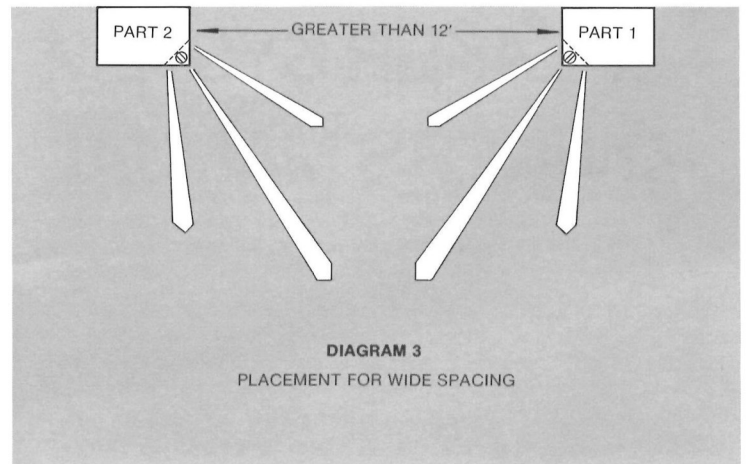
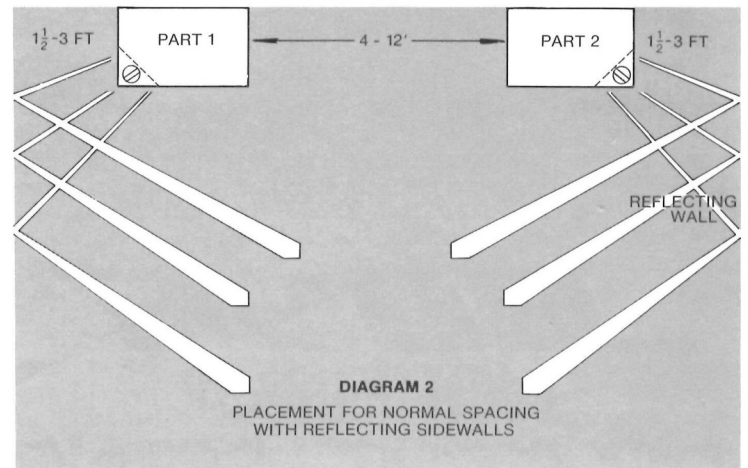
For optimum performance, the Model 331 should be positioned horizontally on a bookshelf, table, or pedestal. However, excellent performance can also be obtained with vertical placement.

HORIZONTAL PLACEMENT The speaker labeled "Part 1" is normally used on the left side of the room and "Part 2" is normally used on the right side (Diagram 2).

The speakers are best located 1½ to 5 feet above the floor, with each speaker 1½ to 3 feet from a reflecting side wall, and with as much free space around the tweeter side of the speaker as possible. The following guidelines should be followed:

1. Both speakers should be at least 18 inches above the floor.
2. If the speakers are hung from the ceiling or placed on a high bookshelf, the space from the ceiling to the top of the speaker should be at least 18 inches. Placing the speaker exactly halfway between floor and ceiling is not desirable for best bass response.
3. The ideal separation between speakers should be from 6 to 12 feet, with a minimum spacing of 4 feet. If spacing greater than 12 feet is used, the alternate placement shown in Diagram 3 should be tried. This will provide a stronger sound image in the space between the two speakers.
4. If possible, locate the speaker 1½ to 3 feet from the side wall or opening into adjacent rooms (Diagram 2).
5. Allow at least 1½ feet of space on the side of the speaker where the Direct Energy Control and tweeter are located. This will provide for the best dispersion of high frequencies into the room.
6. The most accurate bass will be obtained with the back of the speaker against a wall or moved out up to 2 feet. Further spacing from the wall will result in some reduction in middle bass response. This effect happens with *all* loudspeakers.

VERTICAL PLACEMENT Should you desire to position the speakers vertically, the above guidelines should be followed, with the exception



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that No. 5 will apply to the areas above each speaker rather than to areas on the side. Be sure to place the speakers so that the tweeter is on top. As with all small speakers, placement directly on the floor will accentuate bass and restrict distribution of high frequencies.

QUADRIPHONIC OPERATION All of the above considerations are valid when operating the BOSE Model 331 speaker system in quadriphonic or four-channel sound reproduction. Because of the flexibility the Bose® Model 331 speaker system provides in room placement, the operation of the speaker system in four-channel modes is optimum for more listening environments than that of conventional loudspeakers. This is possible because the amount of direct energy reaching the listening area can be specifically adjusted at each speaker.

Diagram 4 indicates the placement position of the Bose Model 331 in quadraphonic and stereo operation. If your listening environment does not allow the possibility of placing speakers behind you, the Model 331 speakers can be placed as shown along the side walls of the listening area with the Direct Energy Control set for minimum direct energy (see section on adjustment of the Direct Energy Control).

B. Connecting the Speakers

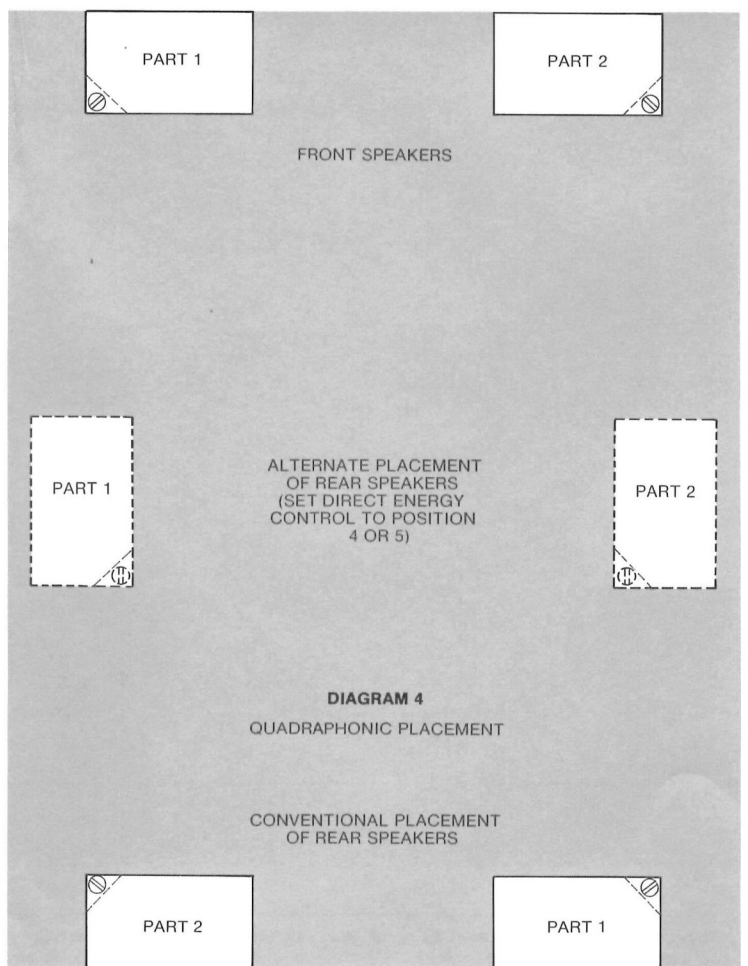
1. POWER REQUIREMENTS The Model 331 is designed to be powered by the majority of the fine amplifiers and receivers that are on the market today. Power requirements will vary substantially with room size, speaker placement, and type of music played.

High quality sound can be achieved with amplifiers rated from 10 to 60 watts rms per channel.

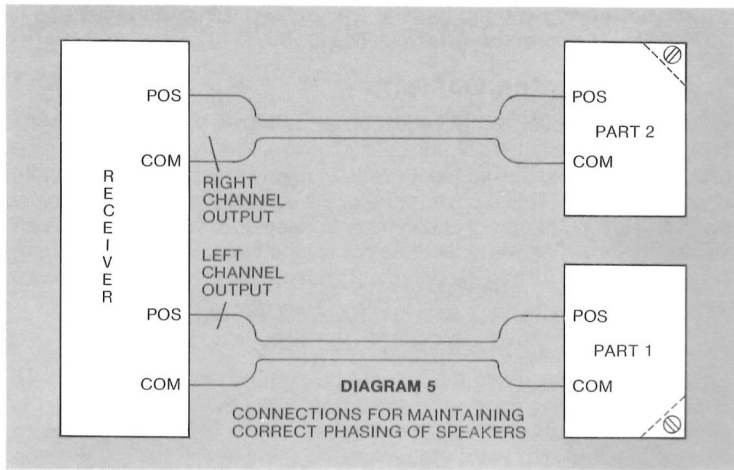
2. WIRE SELECTION If the wires to your speakers are less than 30 feet long, 18-gauge zipcord (two-conductor) wire is recommended. If 30- to 50-foot lengths of wire are needed, 16-gauge two-conductor wire should be used.

If your dealer doesn't provide you with speaker wire, it can be obtained at most hardware stores.

Choosing the correct wire size insures that the wire connecting your speakers doesn't have too much resistance. Excessive resistance causes audible coloration and loss of power with all speakers.



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3. PHASING It is important that the connections to the speakers and the receiver or amplifier be the same for both channels so that the two speakers are in phase with each other.

Refer to Diagram 5 as you do the following steps:

1. Start with the speaker marked "Part 1."
2. Place it on the left side of your room.
3. Locate the "POS" and "COM" terminals on the rear of the speaker.
4. Using your speaker wire, which is marked to distinguish one conductor from the other by means of color or grooved ridges, connect the terminal marked "COM" on the back of the left speaker to the terminal marked "COM," "negative" or (-), on the left channel amplifier output.*
5. Connect the "POS" terminal on the left speaker to the terminal marked "POS," "positive" or (+), on the left channel output of the amplifier or receiver.
6. Place the speaker marked "Part 2" on the right-hand side of the room and repeat the connection procedure.

with increasing distance from the speaker and will be less noticeable in larger rooms, where the listener is principally in the reverberant field.

Under most listening conditions, critical listeners will find that the Direct Energy Control provides a significant aid in optimizing the performance of the Model 331.

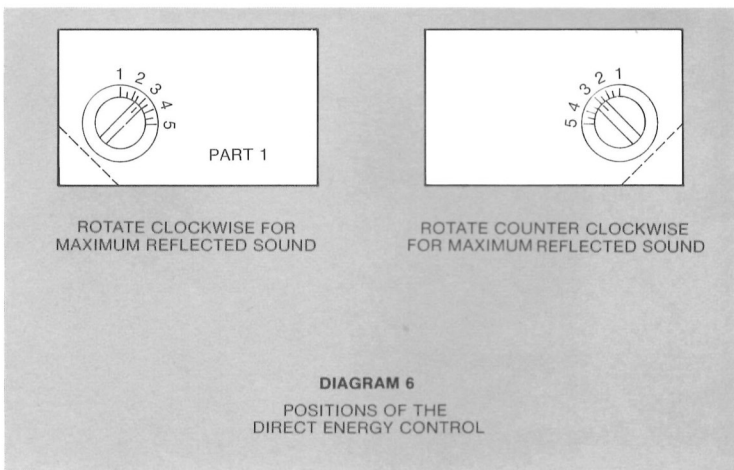
Please note that the numbers which appear in Diagram 6 are for reference only and do *not* appear on your speaker system. They are there to help you understand the positioning required for optimum performance in your listening environment. In the diagram, the left speaker, when starting from the top marking, is rotated *clockwise* for increasingly high numbers. The right speaker is rotated *counter-clockwise* for the same increase in reference numbers.

The following guidelines should be followed:

POSITIONS 1 AND 2 These positions provide the maximum direct sound energy at high frequencies. For horizontal placement they are used to establish high frequency balance if side reflecting walls are not present or are covered with sound absorbing material. These positions provide less stereo spread than higher numbers and will be preferred by some listeners for reproduction of soloists and small ensembles. Use positions 1 and 2 for vertical placement if the speaker is placed higher than 4 feet.

POSITION 3 This is the normal setting of the Direct Energy Control. This position is used for horizontal placement when a side reflecting wall is located near the side of the speaker, as shown in Diagram 2, page 3. Under this condition, most of the high frequency energy from the tweeter will be reflected by the side wall into the center of the room. Use position 3 for vertical placement if the speaker is placed lower than 4 feet, or within 2 feet of a hard ceiling.

POSITIONS 4 AND 5 These positions provide minimum direct sound energy at high frequencies and are used for horizontal placement if a reflecting side wall is present. Operation in Positions 4 and 5 will provide very spacious stereo reproduction, especially suited for large ensembles such as an orchestra or a chorus.



4. FUSING When using the Model 331 with amplifiers rated at more than 60 watts rms per channel, or with sinusoidal or other test signals, we recommend that the speaker be protected by a BUSS MDL 1½-amp "slow-blow" fuse (or equivalent) using an in-line HDH fuseholder (not provided) wired in series on the positive side of each speaker cable. The fuse will also provide protection against speaker damage in the event of amplifier failure.

C. Adjustment of the Direct Energy Control

The Direct Energy Control has been carefully designed to provide the optimum performance of the Model 331 under a wide range of listening conditions. This control primarily affects the spatial distribution of high frequencies above 5 kHz. At distances close to the loudspeaker, the effect of the control on high frequency energy is very large, reaching 15 dB at 15 kHz. However, the effect decreases, becoming more subtle,

*When connecting to your amplifier, if there is a choice of impedances on the amplifier output, use the terminal marked "8" or "8 ohms." If two pairs of Model 331s are being connected in parallel, the terminal marked "4" or "4 ohms" on the receiver or amplifier should be used.

D. Room Acoustics

The sound quality of loudspeakers depends on many environmental factors other than speaker placement, such as the size, shape and construction of the room, and the amount and type of furniture, rugs and draperies present. A lack of bass response frequently may be attributed to walls of thin panel construction, large openings (e.g., doorways), or excessive window glass, which allow low frequencies to pass through rather than reflecting them into the room. The overly bright sound of acoustically "live" rooms (e.g., those with uncovered floors or scatter rugs, small amounts of furniture, hard walls) can be improved by the addition of rugs and heavy draperies, which also serve to eliminate echoes and standing waves. For acoustically "dead" rooms (e.g., those with wall-to-wall carpets, heavily upholstered furniture, large amounts of draperies), furnishings should be arranged so that speakers have unobstructed sound transmission paths to the listening areas. Finally, since no room is acoustically perfect, you are encouraged to use your amplifier or receiver tone controls to adjust the sound for your maximum listening enjoyment.

5. TECHNICAL INFORMATION

SPATIAL CHARACTERISTICS Asymmetrical Design for optimum stereo reproduction utilizing side wall reflections. A Direct Energy Control for adjustment of ratio of direct to reflected sound at high frequencies.

SPEAKER COMPLEMENT **Woofer:** An 8-inch high efficiency design optimized for operation in a moderate size ported enclosure. The high frequency response is uniform to over 3 kHz for maximum utilization of the Dual Frequency Crossover Network.

Tweeter: 3-inch sensitivity design. This tweeter is designed for performance down to 1400 Hz and has exceptionally smooth and extended high frequency response. The on-axis frequency response rises at high frequencies to maintain constant total energy.

Crossover Network: The crossover network utilizes a Dual Frequency design whereby the transition frequencies of the woofer and tweeter are separated by over one octave. The network consists of an inductor, two resistors, and a high grade film capacitor. Computer style wire-wrap connections are used for maximum reliability. Crossover transition frequencies are 1400 Hz and 3000 Hz.

MINIMUM AMPLIFIER POWER—10 watts rms into 8 ohms
MAXIMUM AMPLIFIER POWER—60 watts rms into 8 ohms
(for reproducing speech and music)

SIZE—16½ inches wide by 11¼ inches high by 9¼ inches deep.

SHIPPING WEIGHT—Forty pounds per pair. The Model 331's are packed one "Part 1" (left speaker) and one "Part 2" (right speaker) per shipping carton.

6. CARE AND MAINTENANCE

The Model 331 has an attractive walnut vinyl veneer finish which may be cleaned by wiping with a soft cloth.

The grille cloth of the Model 331 requires virtually no care, although it may be vacuumed or dusted if necessary.

The loudspeaker and crossover elements of the Model 331 are designed for a long, maintenance-free life. Used properly, the Model 331 should provide you with many years of enjoyment.

7. IN CASE OF DIFFICULTY

If you suspect a problem with one of your Model 331 speakers, it is worth a few minutes of your time to determine whether the defect is in your speaker or in some other portion of your high fidelity system.

IF ONE SPEAKER SOUNDS DEFECTIVE, first disconnect the speaker that is operating properly by disconnecting the wire from the output terminals on the rear of the amplifier. Next, disconnect the wire running to the speaker which sounds defective and connect it to the output terminals of the amplifier channel which you are sure is operating properly. If the speaker now seems to be operating properly, the defect is in another part of your hi-fi system.

IF THE TROUBLE APPEARS IN BOTH CHANNELS, connect your Model 331's to another amplifying source or high fidelity system that is operating properly. If the trouble is no longer apparent, the difficulty is not with the speakers.

IF THE TROUBLE PERSISTS IN ONE OR BOTH SPEAKERS, contact your dealer. He will verify the defect and will arrange for service

either at our factory-authorized service agency or by the Bose® factory. If it becomes necessary for you to return your unit to the factory, you must obtain a return authorization number from the Customer Service Department at Bose. This number *must* appear clearly on the outside of the carton or the unit will not be received by the factory. Bose Corporation

will make every effort to remedy any problem within the terms of the warranty at a minimum inconvenience to you.

8. FULL FIVE YEAR WARRANTY

Bose warrants the Model 331 Loudspeaker System to be free from defects in materials and workmanship for a period of five years from the original date of purchase. During that period, Bose will remedy all such defects, without charge for parts or labor, upon return of the unit together with the original sales receipt or other proof of purchase to Bose or to an authorized Bose service agency. This warranty does not extend to damage resulting from improper installation, misuse, neglect or abuse, or to exterior appearance.

IN NO EVENT SHALL BOSE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Should this unit fail within the warranty period, you should contact your nearest Bose dealer for service instructions. The dealer may ask you to return the unit together with proof of purchase to him, or direct you to return the unit together with proof of purchase to the nearest authorized Bose service agency. Alternatively, you may elect to send the unit directly to Bose by carefully following this procedure:

1. Obtain a "Return Authorization" number from the Bose Customer Service Department, 100 The Mountain Road, Framingham, Massachusetts 01701.
2. Return the unit together with proof of purchase to Bose Corporation, 100 The Mountain Road, Framingham, Massachusetts 01701, **freight prepaid** in its original shipping carton. If you need a new carton, your dealer or Bose Corporation will provide a free replacement carton. Any damage in transit due to improper packing is not covered by the warranty and will not be recognized as an insurance claim by the transportation companies.

Your unit will be repaired and returned to you at Bose's expense. If the defects cannot be repaired after a reasonable number of attempts by Bose to do so, you may elect to receive a refund or replacement, but only if the unit is returned to Bose free and clear of all liens and other encumbrances.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow the exclusion

or limitation of incidental or consequential damages, so that the above limitation may not apply to you.

A registration card is provided requesting information about you and your high-fidelity system. The return of this card is encouraged, but is not a condition to coverage under this warranty.

BOSE®

Better Sound Through Research

100 The Mountain Road, Framingham, MA 01701