

Congratulations

on your purchase of the Polk Audio Stereo/Dimensional Array 1B. The SDA-1B employs a unique, patented technology which offers a major breakthrough in the quality of high-fidelity reproduction. Careful design, frequent and critical testing, and use of only the finest materials and components insure prolonged physical integrity and troublefree operation. Please read and follow the instructions carefully. They will help you to understand the operation of the SDA-1B and to realize the full potential of this extraordinary system.

If you have any questions or comments please do not hesitate to call us directly or contact your nearest Polk Audio dealer. In addition a complete technical paper on the SDA-1B is available on request, for a nominal fee of \$2.50

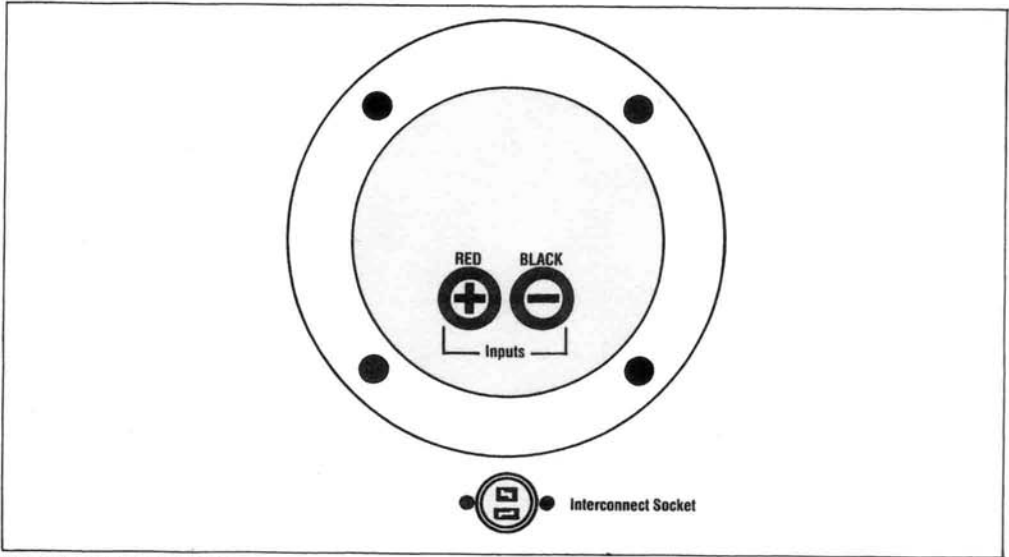


FIGURE 1. SDA 1B Terminal Plate

Inspecting for Shipping Damage: When you unpack your SDA-1B, inspect both cartons for shipping damage. Each unit leaves our plant after thorough inspection and in perfect condition. Therefore, any visible or concealed damage must of necessity have occurred in handling after it left the plant. If you obtained a delivery of the speaker directly from a Polk Audio dealer, it should be returned to him for inspection. If you received your speakers via public transportation, report the damage at once to the shipping company and follow the directions for returning the system to the factory.

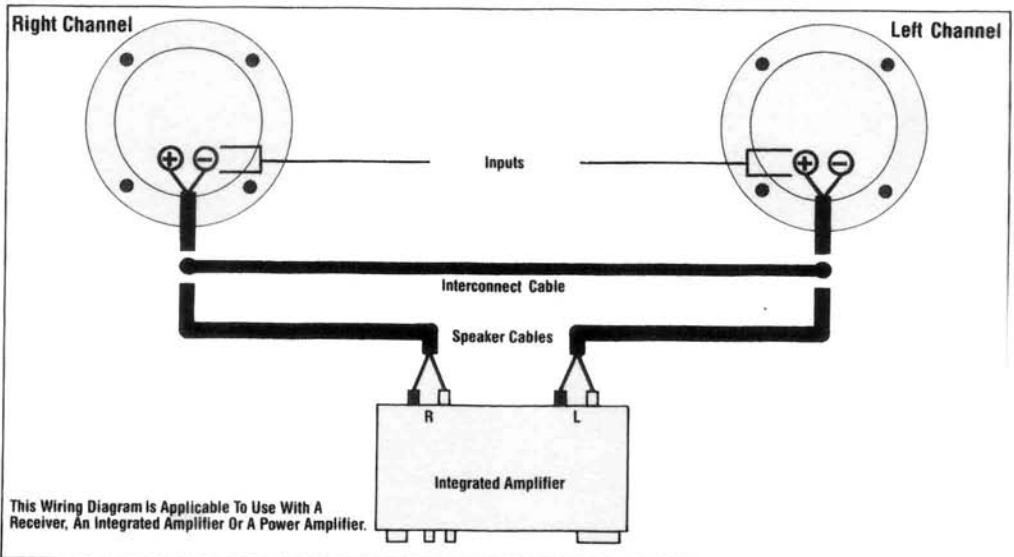
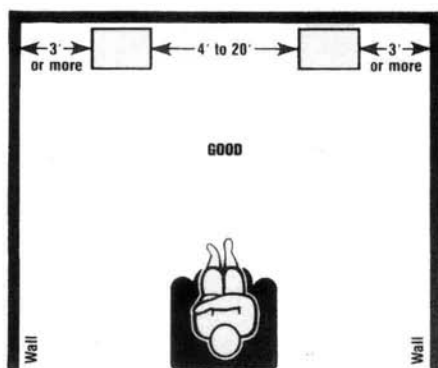


FIGURE 2. Connections to Amplifier

Speakers Flat Against The Wall



Speakers Not Flat Against The Wall

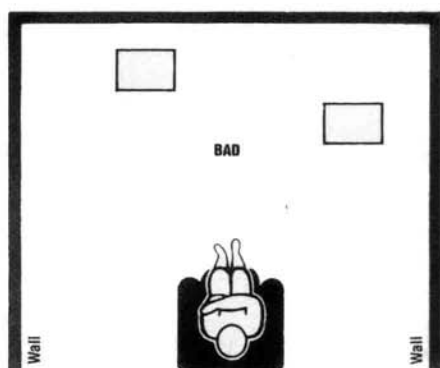


FIGURE 3. Speaker Placement

SET-UP INSTRUCTIONS:

1. Each SDA-1B weighs about 85 lbs. Note the method in which they are packed and save the packaging. There should be an interconnect cable packed with the right speaker.
2. Now, check the rear of each cabinet. You should have one left and one right speaker.
3. Start by placing the two speaker cabinets 4 to 6 feet apart with the left cabinet on the left as you face the front of the speakers, about the same distance apart (inside edge to inside edge) as you will be sitting from the speakers (defined as the distance from your head to a line drawn across the front of each speaker).
4. Locate the interconnect cable supplied packed with the right channel speaker. Walk around to the back of either speaker and locate the interconnect socket on the rear of the cabinet. (see Fig. 1). Note that the plugs on the ends of the cable are the same, and that one pin of each plug is larger than the other pin. Align the plug properly with the socket and push it gently but firmly into place until it is fully seated against the socket. To remove the plug, grasp it by the molded body (not by the insulated cord) and pull gently outward.
5. Walk across to the other speaker and connect the other end of the interconnect cable in the same manner as described in step 4.
6. Now you are ready to connect the amplifier to the speakers. But first, there is one word of caution. **WARNING; THE SDA-1B MUST BE USED WITH COMMON-GROUND AMPLIFIERS ONLY! USE OF NON-COMMON-GROUND AMPLIFIERS MAY RESULT IN DAMAGE TO THE AMPLIFIER OR TO THE SDA-1B.** Now that this has been said you will want to know if your amplifier is common-ground or not. All major brands of receivers are common-grounded and virtually all integrated and separate amplifiers are common-grounded. Very few amplifiers are not common-grounded and are usually marked with some warning near the output terminals. If you have doubts, call your local hi-fi store or call Polk Audio directly.
7. Locate the amplifier outputs. They will be marked + (plus) and - (minus), or will be colored red and black. Red corresponds to + (plus) and black corresponds to - (minus). Using whatever speaker cable you have (see the section on "Speaker Hookup Wire"), connect the left channel amplifier outputs to the left speaker, making certain to connect the red or + (plus) output to the red terminal on the speaker. Connect the black or - (minus) amplifier output to the black terminal on the speaker. Using another length of speaker cable, connect the right channel amplifier outputs to the right speaker in the same way. **BOTH SPEAKERS MUST BE CONNECTED IN CORRECT ABSOLUTE PHASE FOR PROPER OPERATION.** See Fig. 2 to check your connections.
8. Now you are nearly ready to listen. However, in order to work properly the SDA-1B cabinets must be positioned correctly. See Fig. 3 for typical set-up and read the following section on Room Placement for further experimentation.

ROOM PLACEMENT:

The decision on where to place the speakers is a matter of personal preference as well as acoustics. The unique design of the SDA-1B makes it unusually free of room dependent acoustic effects. However, careful attention to set-up instructions and placement suggestions is essential to the correct functioning of the SDA-1B.

Both sonic balance and stereo imaging can be influenced by room position. The following are suggestions to help you obtain the best compromise between aesthetics and performance in your listening room.

Placement Suggestions:

1. DO NOT ANGLE THE SPEAKERS INWARD OR OUTWARD. The design of the SDA-1B requires that the speakers face straightforward, as they would if placed flat against the wall.
2. Keep both speakers in the same plane and distance from the wall as shown in Fig. 3. should be no less than 1-1/2 inches from the wall to the cabinet back.
3. Sonic balance is usually best when speakers are far from corners. Placement in or near corners or near side walls will emphasize bass response, and may interfere with proper imaging.
4. Listening position is best along the axis equidistant from the two speakers as shown in Fig. 4. However, if the listener moves too close to the speakers the stereo/dimensional image may become unrealistically wide. For this reason the listener should sit a distance away from the speakers greater than the distance between them.
5. The SDA-1B is unique in offering a convincing stereo image from nearly any listening positioning. However, the stereo/dimensional imagery obtained in the ideal listening position is well worth experiencing and may startle even the most casual listener.

SYSTEM CHECK-OUT:

1. Start with the speakers set up as described in the preceding section.
2. Place a chair in the center of the listening area exactly the same distance from both speakers; for best results, the distance from the chair to either speaker should be greater than or equal to the distance between the two speakers. Use a tape measure for the purpose of this check-out procedure to verify that the chair is in precisely the correct position.
3. Choose a good stereo record or tape with several instruments or vocalists performing at once.
4. While playing the record or tape, turn the balance control all the way to the left. Walk close to each speaker in turn. BOTH speakers should be producing sound, with the left speaker somewhat louder. Turning the balance to the right, BOTH speakers again should produce sound, but now with the right side louder.
5. Return the balance to the center position and set the amplifier selector switch or button for "MONO" operation. (If there is no Mono switch, use a monaural record or tape). Sit down in the chair. The sound should seem to come from directly between the speakers with full bass response.
6. Return the amplifier to stereo operation, make certain that your record is stereo, and sit in the chair to listen for a few minutes. You should hear some sounds that appear to come from an area outside the two speakers as well as sounds that appear to come from between the speakers. By manipulating the balance control you should be able to move the apparent sound source from far outside the left speaker to far outside the right speaker. If your speakers do not perform as explained above, proceed to the Troubleshooting section and also read the section on SDA Technology.

SPEAKER HOOKUP WIRE:

We recommend that you use #16 gauge wire or larger to connect the speakers to the amplifier. This will ensure that the full power and damping capabilities of your amplifier will be available to the speakers. Heavier gauge wire will give improved performance, especially where long runs are involved.

For the best performance we recommend the use of special speaker cables, particularly those of the low-inductance, transmission line type.

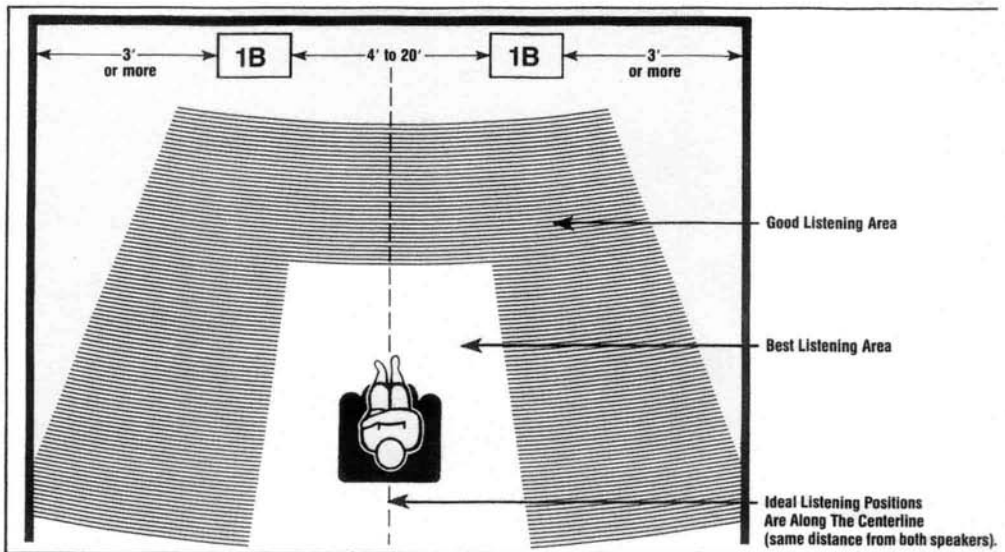


FIGURE 4. Best Listening Area

AMPLIFIERS AND THE SDA-1B

Although the SDA-1B is highly efficient and compatible with most amplifiers, a few specific things should be observed to assure the best performance from your system.

First, **THE AMPLIFIER USED MUST BE OF THE COMMON-GROUND TYPE.** Virtually all receivers and amplifiers are constructed in this way with the amplifier chassis serving as the common-ground between channels. When using separate monophonic amplifiers, it is a good idea to connect a wire between the two chassis to ensure a common-ground. If you think that your amplifier may not be common-grounded, call Polk Audio or your local hi-fi dealer to find out for certain.

Second, the SDA-1B is a very "easy" load for amplifiers to drive. This means that amplifiers of moderate power capabilities may offer a much greater dynamic range than you would expect when used with the SDA-1B.

The load is nearly a pure resistance in normal operation but varies dynamically with the balance of signals between the two channels. This means that amplifiers that are comfortable driving low impedances and do not have excessive current limiting will be better suited to the SDA-1B, especially at higher listening levels.

LISTENING LEVELS AND AMPLIFIER POWER:

The SDA-1B is a highly efficient system and will easily achieve high listening levels with moderate amounts of power. However, it will perform best with the reserve of power offered by large amplifiers so long as this power is not abused.

When properly set up, the SDA-1B will handle the output of large amplifiers on program material. However, the greatest chance of damage to any speaker occurs when the amplifier, regardless of size, is overdriven. Generally, this occurs only with small or moderate power amplifiers. Surprisingly, the possibility of damage is usually greater with small amplifiers than with large ones.

In most cases when audible distortion is heard at high levels it is caused by the overdriven amplifier and not by the speaker. It is absolutely critical to understand that regardless of amplifier size or speaker power rating, when you turn the volume control past the point where distortion becomes audible you are risking damage to both the speaker and amplifier.

The SDA-1B is equipped with a thermal protective device in the tweeter circuitry to protect the tweeter array against overcurrent situations which may occur when an amplifier malfunctions or is overdriven. When an overload condition is detected in this circuit, the protective device quickly reduces the current flow to a safe level until the condition is removed; the effect on the sound of the speakers is to reduce the output from the tweeters. The device will reset itself within about thirty seconds after the volume level is turned down.

When this device trips, it is usually an indication that the amplifier is being overdriven. A larger amplifier able to deliver more clean power will enable the speakers to go louder without tripping the thermal protection.

To see how this may happen, consider that the amplifier is a device which allows a controlled amount of power to flow from the AC wall outlet to the speaker. If the volume control is advanced too far, the amp may lose control of the flow and dump much of the power of the AC outlet into your loudspeaker. The power rating of an amplifier is a measure of how much clean power it will safely produce. However, most amplifiers are able to produce distorted power several times greater than their rated power.

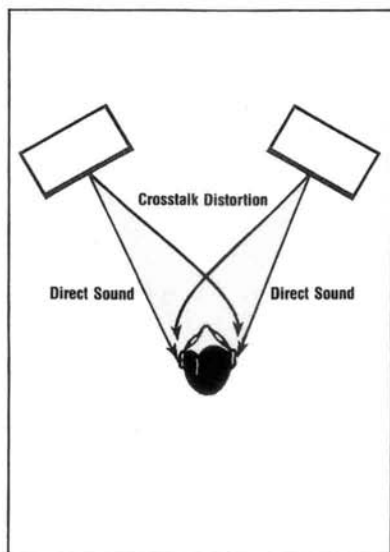


FIGURE 5. Conventional Speakers

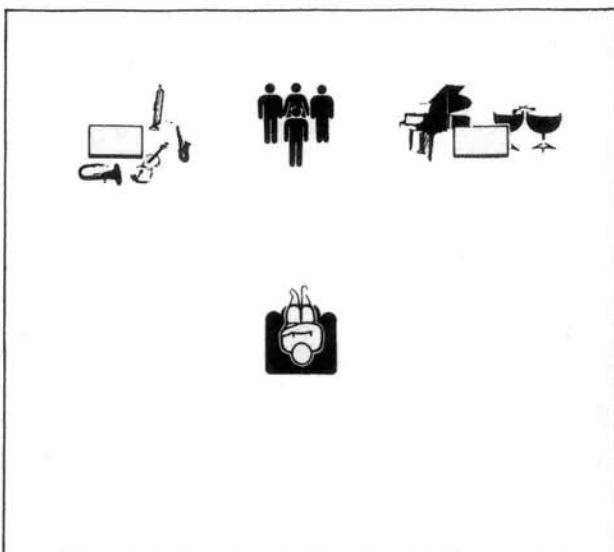


FIGURE 6. Compressed Sound Stage due to Undesired Signals

SDA, TRUE STEREO TECHNOLOGY: HOW DOES IT WORK?

SDA Technology is a means of reproducing a much larger and more realistic sound stage than can be achieved by conventional speakers. The way that this is accomplished is by making sure that only the original recorded signal reaches the listener's ears. Normally when a person listens to a conventional pair of stereo speakers sound from each speaker reaches each of the person's ears (figure 5). The original recorded signal is entirely contained in the direct sound of the left speaker reaching the left ear and the direct sound of the right speaker reaching the right ear. The extra signals, crossing the listener's head to reach the ear on the opposite side, can be thought of as a distortion which causes the sound field to be constricted and shallow (figure 6). SDA Technology uses the acoustically inverted dimensional signal to cancel the extra signals without affecting the original recorded signal reaching the listener's ears directly (figure 7). The result is that only the correct original recorded signal reaches the listener's ears and the full width and depth of the sound stage are accurately reproduced (figure 8). If you are interested in additional technical information contact Polk Audio for a copy of, "Polk's SDA Speakers: Designed in Stereo" by Matthew Polk.

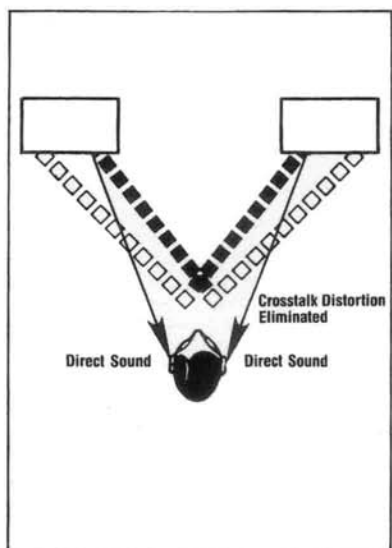


FIGURE 7. Polk TRUE STEREO SDA Loudspeakers

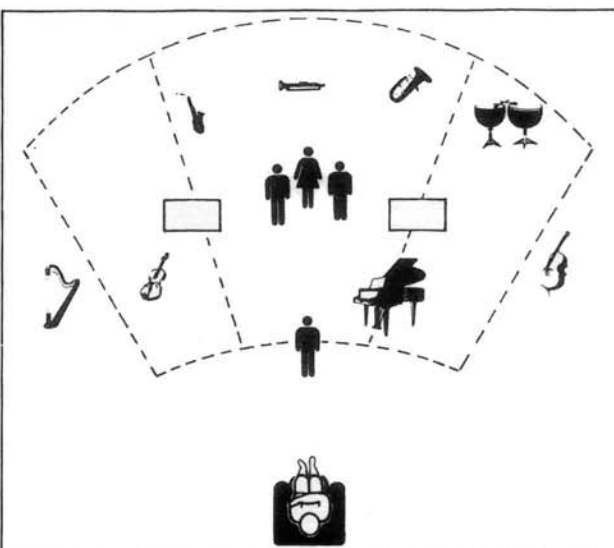


FIGURE 8. Accurate Reproduction of the Full Sound Stage by the SDA Loudspeakers

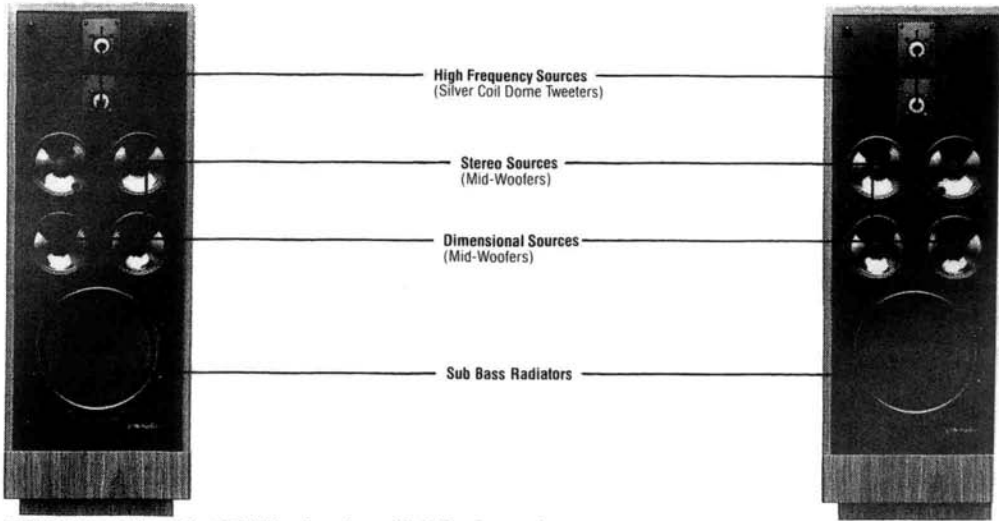


FIGURE 9. Front View of the SDA-1B Loudspeakers with Grilles Removed

TROUBLE SHOOTING:

The SDA-1B is a very unusual system and some understanding of its physical layout will be helpful in determining whether a problem lies with the speaker or with the associated equipment. Looking at the speakers from the front with the grilles off they will appear as shown in Fig. 9. Note that the companies are mirror-imaged in function.

Follow the system check-out procedure described earlier in the manual to determine whether there is a problem specific to the Stereo/Dimensional effect. If so, follow Part II of the trouble-shooting chart. If the problem seems to be generalized to the entire system, use Part I.

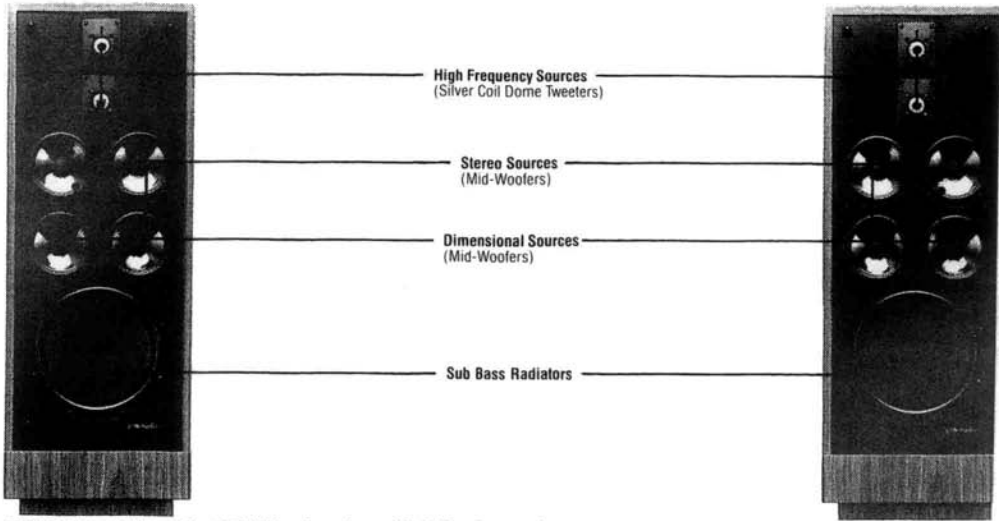


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TROUBLESHOOTING CHART PART II

Problem

1. Sound from one speaker only when balance control is tuned to one side. (When balance control is turned all the way to one side or the other, the image should shift far to one side or the other. However, some sound should still come from both speakers.)
2. Image does not spread outside speakers
3. Image is balanced to one side or the other
4. No center image

PHYSICAL SPECIFICATIONS:

Dimensions	12"D X 16"W X 43½"H
Shipping Weight per Cabinet	85 lbs.
Driver Complement	4 X MW6509 2 X SL2000 H.F. 1 X SW120-A Passive Radiator
D.C. Resistance	5 ohms
Tweeter Protection	Semiconductor, thermal, self-resetting
Enclosure Type	Passive Radiator, Left-Right Mirror-Imaged Cabinets
Crossover Type (each cabinet)	
High-pass — #1a	(One per cabinet) 2nd order Gaussian; Resonance and Inductance Compensated: 2KHz
High-pass — #1b	(One per cabinet) 2nd order Gaussian; Resonance Compensated: 2 KHz
Low Pass — #1a	(Two per cabinet) 2nd order, Impedance Compensated: 2 KHz
Low Pass — #2	(One per cabinet) Fully complementary sub-bass operation of both drivers below 150 Hz
Dimensional Matrix —	One per system

Solution

- 1a. Check interconnect cable for proper connection.
- 1b. Check to make certain that both speakers are connected in the proper phase.
- 2a. Check interconnect cable.
- 2b. Speakers should face straight-forward, not angled inward. For best results, listener should be equidistant from the two speakers.
- 2c. Make sure amp is set to stereo and recording is in stereo.
- 2d. Check phase of speaker connections.
- 3a. Check amplifier balance control for center.
- 3b. Check phase of speaker connections.
- 3c. Check program material.
- 4a. Check phase of speaker connections.
- 4b. Check program material.