

# **OWNER'S MANUAL**

## **SPECTRA 11 ELECTROSTATIC HYBRID LOUDSPEAKER SYSTEM**

**ACOUSTAT**

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Congratulations on your purchase of Acoustat Spectra Technology.

## **Break-In Period**

Your new Acoustat loudspeaker requires a break-in period before full performance may be realized. Even though the speaker will begin to play within a few moments of being energized, and will sound quite good, a brand new speaker is characterized by a lower efficiency, reduced dynamic capability, and a generally "flat" dimensionality.

To "break-in" the speaker, simply play music through the system at moderate volume levels. The most dramatic improvement will occur within the first 20 hours of operation, although slight improvements may be noticed even at 50 hours of playing time.

The break-in period may be conducted all at once (i.e. leaving the system playing continuously) or may be accomplished over a number of playing sessions. This break-in phenomenon occurs only when the speaker is brand new. Even if a broken-in speaker has been de-energized for an extended period, it will again reach full performance within a few moments of being re-powered.

## **Using This Owner's Manual**

We all have a tendency to read instruction manuals only if something doesn't work as intended. However, the assembly and installation of the Spectra loudspeaker, though simple, may not be obvious at first glance. Therefore, to maximize your enjoyment of this loudspeaker, please read through the entire manual before beginning.

This manual contains step-by-step information for assembling your Spectra, installation in the listening environment, and hook-up to the amplifier. We have also included additional information in an attempt to answer those most commonly asked questions.

# ASSEMBLY & INSTALLATION

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## Getting Started

There are a few warnings we will make now which will save you trouble later:

- 1) Spectra arrays are MIRROR IMAGE, i.e. there are LEFT and RIGHT arrays.

Each is identified by a small hole located in the TOP METAL CAPTURE PLATE, as well as a colored dot on the bottom surface of the array: RED for right, and GREEN for left. The hole is on the LEFT side of the LEFT array and RIGHT side of the RIGHT array--when viewed from the listening side. The two woofer boxes and two interface chassis are IDENTICAL.

- 2) The cloth arrays are easily soiled, and are very prone to picking up lint from being laid on a carpet. The protective plastic bag should be left on them until the arrays are brought into final installed upright position.
- 3) Spectra's sectorized operation requires a complex connection-set from interface to array. Care is required when making the connections.

We will repeat these warnings when appropriate.

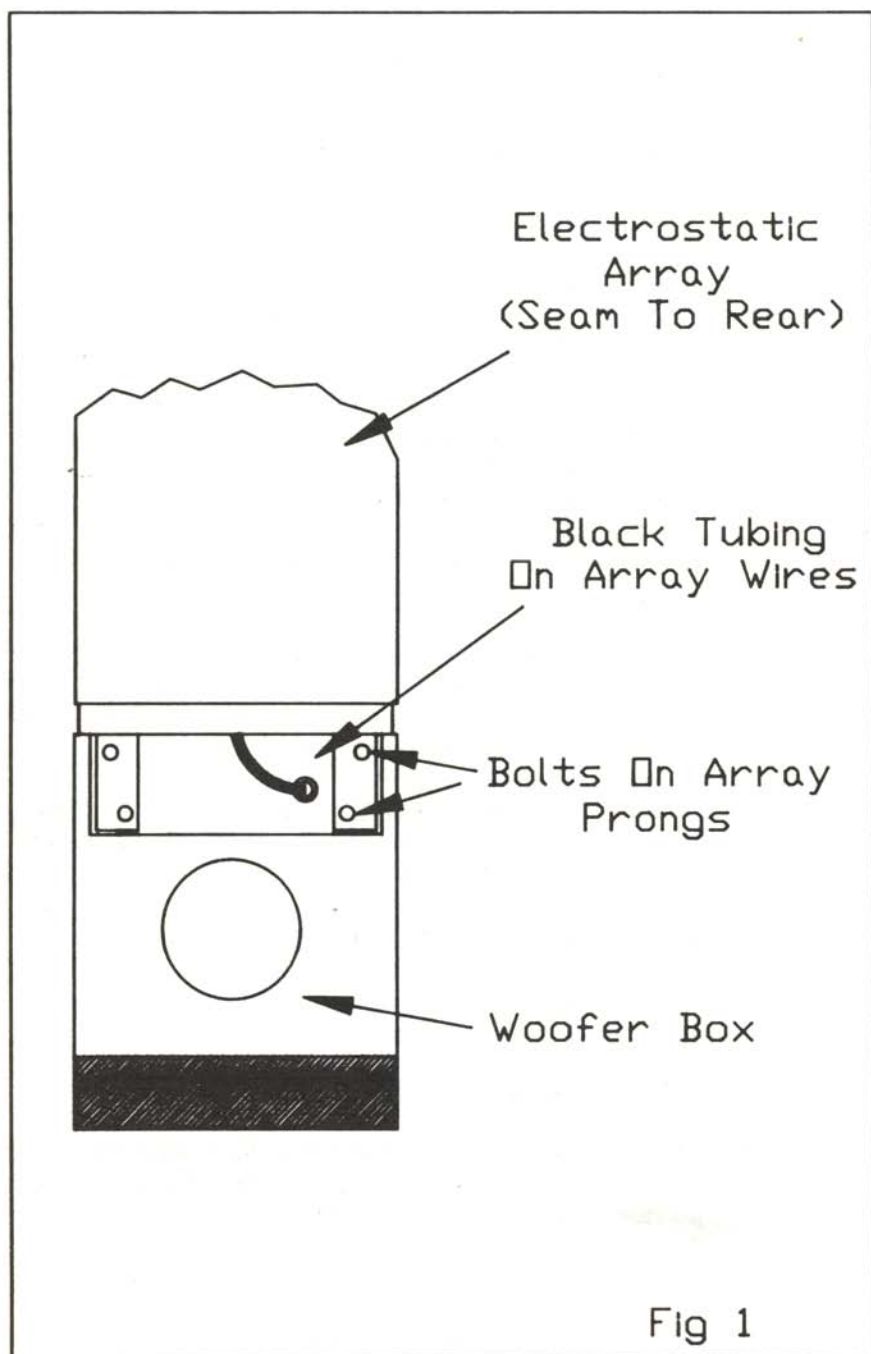
## Assembly

Tool Required: Large (#2) Phillips Screwdriver

- 1) Gently pry off the grille frame from the front of the woofer box. It is held on by four plastic ball-in-socket fasteners. Set aside the grille frame for later re-attachment.

Refer to Figures 1 and 2 for the following steps.

- 2) Remove the two large bolts at the top-front of the enclosure, and set aside. These bolts secure the



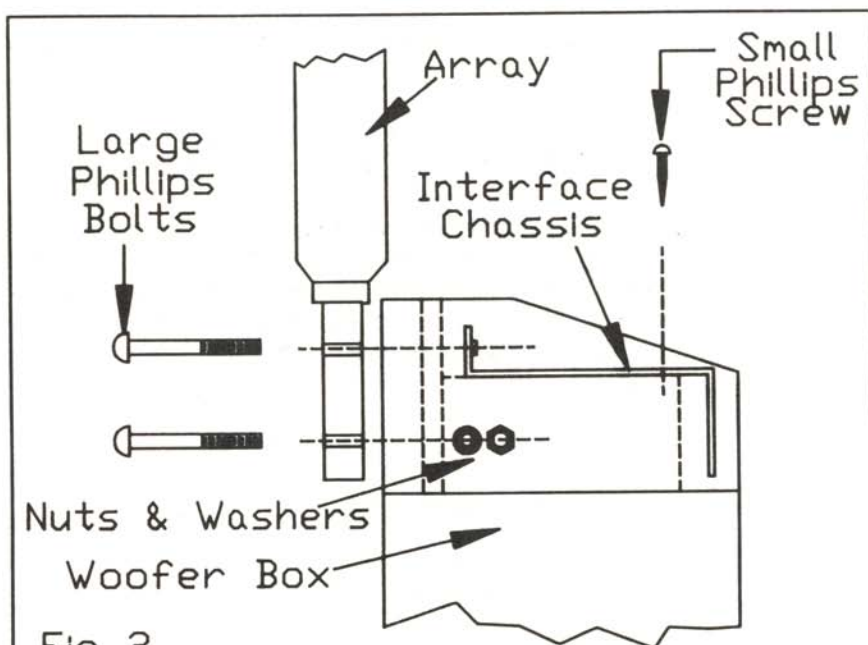


Fig 2

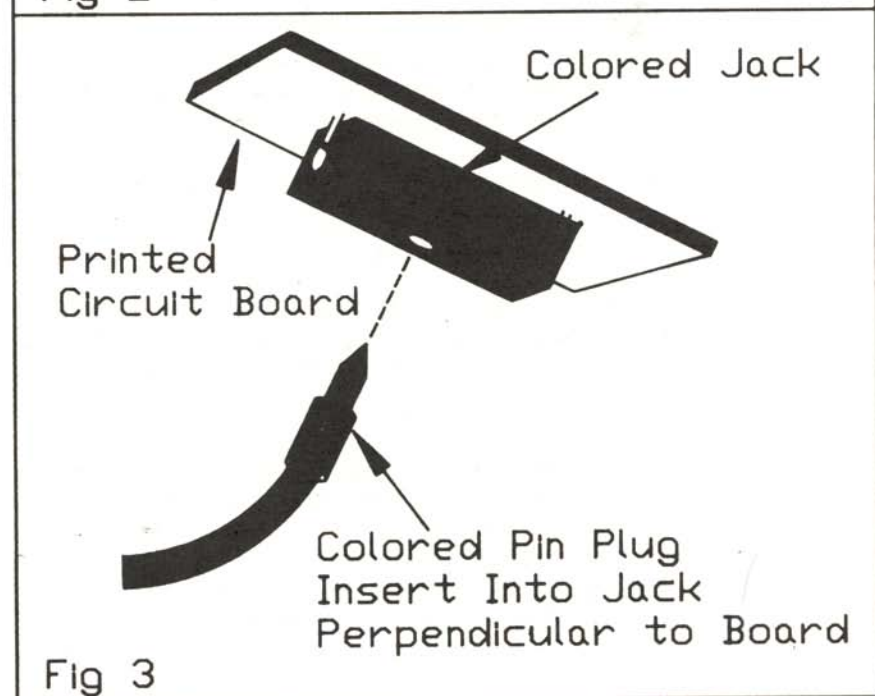


Fig 3

electrostatic array as well the front edge of the interface chassis.

- 3) Remove and set aside the two small phillips-head screws on top of the interface chassis, at the outer rear edges.
- 4) Slide the chassis rearward about 2", and lift-up the front edge. Remove the plastic parts bag located under the chassis. Plug in the white connector to the mating receptacle on top of the woofer box. Note that this connector is keyed so that it inserts only one way. Insert fully until it snaps.
- 5) The parts bag should contain the following:
  - (1) Wall Transformer
  - (2) 1/4" - 20 x 2" Bolts
  - (2) 1/4" - 20 Nuts
  - (2) 1/4" Washers
- 6) Place the electrostatic array in position on the front of the woofer box, with the wires hanging down in front of the woofer, and the seam in the grille cloth toward the rear. It is recommended that an assistant support the array in position until step seven is completed.

**Note** - If the speaker is being assembled near its final location, you may want to choose the appropriate Left or Right array.

- 7) Insert a large bolt in each of the LOWER holes located on the prongs extending from the array. Place a washer and nut on the bolts from the rear and tighten. The array will now be self-supporting.
- 8) Feed the array wires through the hole in the front of the woofer box, with the black tubing covering the wires between the array and hole.
- 9) Again lift-up the front edge of the interface chassis, and locate the 5 colored jacks (RED, BLUE, BLACK, YELLOW, WHITE) on the printed circuit board. Plug the array wires

into these jacks, PERPENDICULAR TO THE BOARD, following the color code. Refer to Figure 3.

- 10) Slide the interface chassis forward, making sure that the array wires are not pinched or strained.
- 11) Insert the remaining large bolts in the upper prong holes, thread into the interface chassis, and tighten.
- 12) Insert and tighten (but do not overtighten) the phillips head screws on top of the chassis.
- 13) Re-install the woofer grille.
- 14) Repeat steps 1-13 for the other speaker.

We recommend that you keep all the boxes if possible. If storage space is limited, keep all of them for a while until you are satisfied that both speakers are performing properly.

Experience has shown that if service or a factory modification is ever needed, it is most likely to involve sending ONLY the interfaces to Acoustat. Our packaging materials are top-of-the-line and much more protective than most home-made arrangements. (See In Case of Difficulty.)

## Disassembly of Speaker

Should your Spectra ever require disassembly for the purpose of moving or repair, simply follow the assembly instructions in reverse order, with one very important exception. After unbolting the interface chassis, but BEFORE disconnecting any internal wires, the speaker must be discharged.

» **WARNING: Always unplug the AC/DC input and audio feeds before accessing the inside of the interface.**

- 1) Even after the power is removed, a high voltage charge remains on the array for at least many hours.
- 2) To discharge the array, remove the RED pin-plug and touch its tip (while holding the wire's insulation, NOT the metal plug) to any other pin-plug connection. Expect to see a spark and hear a snap from the speaker.
- 3) The speaker will now be safely discharged, and dis-assembly may proceed.

## **Audio Input**

The red/black input terminals are standard, 3/4" spacing, banana jacks. They may accept single or dual banana plugs, spade lugs, pin plugs, or bare wires.

The terminals are to be connected to the amplifier's output. Be sure to observe polarity markings for both channels: Red (+) to Red (+), and Black (-) to Black (-). All Acoustat loudspeakers are designed to preserve absolute phase integrity: i.e. when the red input terminal is positive with respect to the black terminal, the electrostat's diaphragm will move forward.

## **AC/DC Input**

The miniature (3.5 mm) phone jack (located on the input cup, next to the audio inputs) connects to the ultrasonic bias power supply, which creates the +5000 volts necessary for electrostatic operation. The supplied wall transformer is to be connected to this input jack and plugged into an ALWAYS ON line outlet. Make sure that there are no wall switches or light dimmers associated with the outlet. All Acoustat loudspeakers are intended to be left on at all times to maintain full charge: power consumption is minimal.

# THE LISTENING ENVIRONMENT

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## Room Size

The Spectra 11 is best suited to small to medium rooms: those with minimum dimensions of 10 to 18 feet. Quite acceptable performance will be obtained in larger rooms, but with a slight loss of total volume capability.

Some of the principal considerations which will determine the performance potential of the speaker system as installed are:

- 1) **The Wall Behind The Speakers:** The walls should be neither excessively absorptive nor reflective. A highly reflective wall, such as large glass windows or smooth hard plaster, will tend to accentuate high frequencies. A highly absorptive wall such as heavy drapes or excessive application of specific sound absorbing materials, will tend to muffle high frequencies, as well as constrict the apparent depth of the sound stage.
- 2) **The Orientation of the Speaker System Within The Room:** For deepest low bass performance, the speakers should project sound along the longer axis of the room. This is true of all loudspeakers, and is in no way unique to Spectra. If this is not possible in your room, the performance will not be significantly compromised other than a slight loss of deep bass.
- 3) **Distance From the Rear Wall:** Since the Spectra is a dipole loudspeaker (producing sound from both sides) placing the speaker too close to the rear wall will yield substantially reduced bass output, due to rear-wave cancellations. A minimum speaker-to-rear wall distance of 3 feet is recommended, as measured from the rear center of the array perpendicular to the wall.
- 4) **Distance From the Side Walls:** Some space is desirable from the side walls, but the asymmetric nature of Spectra high frequency radiation makes side wall reflection less of a problem than with most other speakers. A spacing

of 1 foot is the minimum recommended distance from the side wall to the array's outer edge. In wide rooms, of course, this distance may be much greater.

- 5) **Toe-In and Distance Between Speakers:** There are numerous combinations of toe-in angle and distance between speakers that will yield excellent sonic performance. In most situations, the distance between speakers should be roughly equal to the distance from each speaker to the listening position. The speakers should also be toed-in at an angle so that they more-or-less face the listening position. Remember, these are general guidelines only. Room shape, furniture type, and personal taste are all important variables. Every listening environment is different, and experimentation is the key to satisfaction.
- 6) **The Area Between The Speakers:** This area should be kept clear of major obstructions to airflow if optimum imaging is to be achieved. The size, shape, and material of any objects placed between the speakers will determine the extent of any negative effects on imaging.

## **THEORY AND PRACTICE OF SPECTRA OPERATION**

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Spectra 11 represents a very high state of perfection of electrostatic hybrid loudspeakers.

The interface techniques allowing the **Symmetric Pair Electrically Curved TRANSDUCER (SPECTRA)** mode of operation were only perfected in late 1986.

At that time we made a quantum leap in the product of **STEP-UP EFFICIENCY** and **BANDWIDTH** which allowed us for the first time ever to combine traditional Acoustat high performance with the half-century old ideal of **VARIABLE GEOMETRY** operation.

This breakthrough solved the long standing impasse which had not allowed high SPL electrostats to have optimum behavior at all audio frequencies.

You will find Spectra has wide, pleasant dispersion at all frequencies, razor-sharp high-frequency time-alignment, and clean low bass.

Spectra achieves this by effectively changing size and shape at different frequencies. Spectra is about 3" wide at highest frequencies and about 9" wide at middle frequencies. The lowest frequencies are smoothly transitioned to an 8" dynamic woofer.

Spectra's excellent midrange results from the magic of wave physics which causes the 9" of array operational at these frequencies to act dispersively for waves leaving both the front and the rear of the array. Spectra is devoid of the midrange beaming common in planar speakers using large flat midrange radiators.

For those wishing more in-depth information about electrostats in general, and specifically Spectra, contact the factory and ask for our "White Paper" entitled "Full Range Electrostatic Loudspeakers." An electrical schematic is also available. However, the schematic is intended only for the academically curious: field repair is not recommended and not authorized.

*GOOD LUCK AND GOOD LISTENING!*

## **WARRANTY STATEMENT**

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The electrostatic elements of the Spectra 11 are warranted against defective materials and workmanship for the life of the product. The electronic components contained in the interface and the woofer are warranted against defective materials and workmanship for a period of five years from the original date of purchase. This warranty extends to the original owner, purchased from an authorized Acoustat dealer only. A dated proof of purchase must accompany all warranty claims.

For subsequent owners, the electrostatic elements, electronic components and the woofer are warranted against defective materials and workmanship for a period of five years from the date of manufacture. Manufacturing

date shall be determined from a code contained in the serial number.

During the warranty period, defective parts will be repaired or replaced, at Acoustat's option, without charge for labor or materials. The warranty does not cover transportation costs to the repair site. Acoustat will return warranty repairs to the owner freight pre-paid. This warranty does not cover damage due to negligence, misuse, modification, shipping damage or accident.

Except as provided herein, Acoustat makes no warranties, expressed or implied, including warranties of merchantability and fitness for a particular purpose. Some states do not permit limitation or exclusion of implied warranties; therefore the aforesaid limitations or exclusions may not apply to the purchaser.

## **IN CASE OF DIFFICULTY**

The Spectra loudspeaker has been designed for a lifetime of trouble-free music enjoyment. On the rare occasions that an apparent malfunction should occur, be sure to check all system signal sources, fuses, and connecting cables. If investigation pinpoints the Spectra as the source of difficulty, please contact (by telephone, preferably) our Customer Service Department before sending any equipment for service. Very often, we can offer further troubleshooting hints that simplify or even eliminate the need for factory service. Should your Spectra loudspeaker require factory service, please use original factory packaging for shipment, and include a copy of a dated Bill of Sale and a brief note describing the difficulty. Every effort will be made to perform service in a timely manner, with typical turnaround times of less than one week, exclusive of transit time.

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