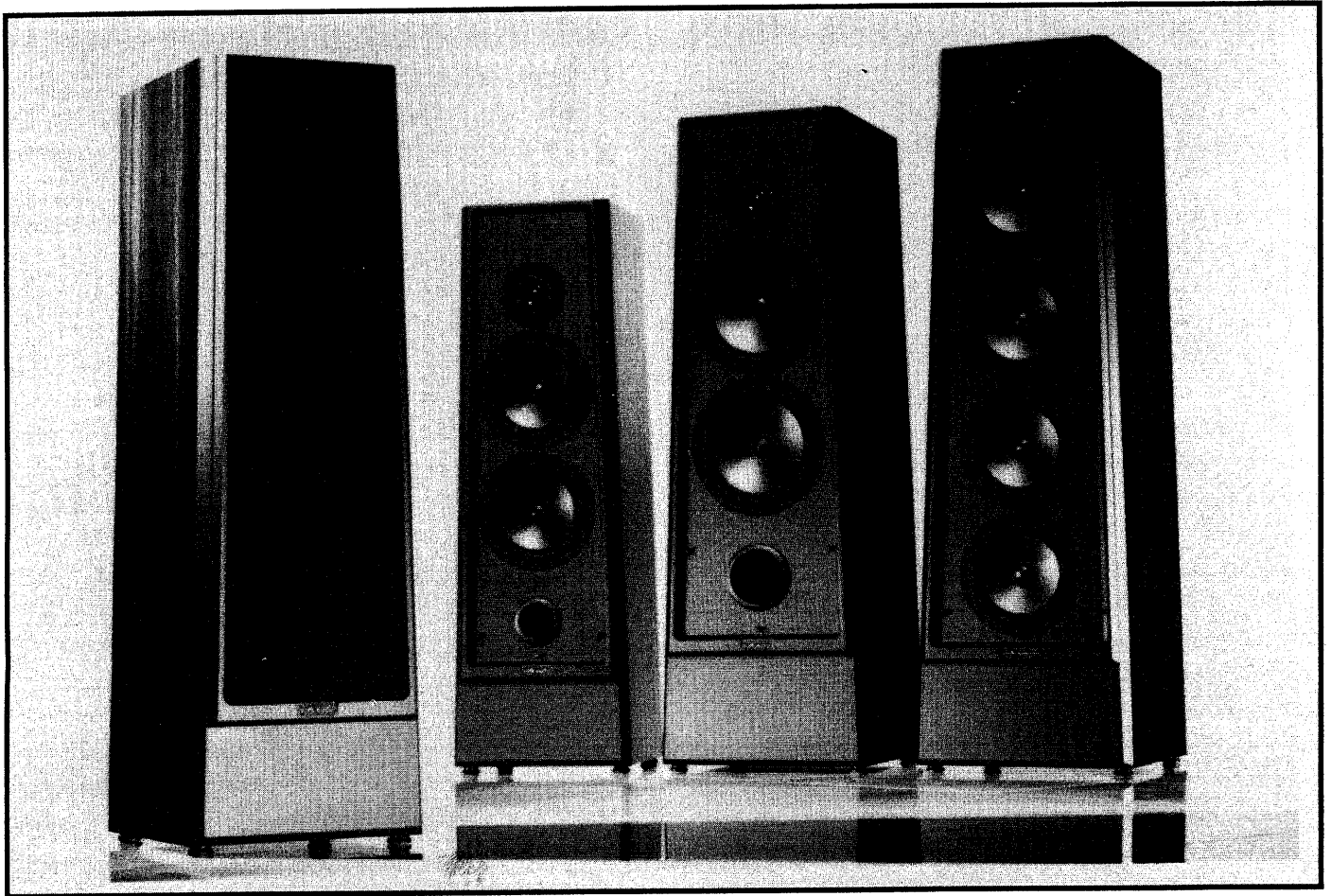


**polk audio**  
The Speaker Specialists<sup>®</sup>

# LS Series Loudspeakers Owner's Manual



Thank you for selecting a Polk Audio 'LS' Series Loudspeaker System. Only the finest workmanship and materials have been used to insure years of listening enjoyment. Please take a few moments with this owner's manual to familiarize yourself with your new loudspeakers.

We have designed this product for you and your enjoyment. Your complete satisfaction is important to us. If you have any questions or problems regarding the use of your new Polk 'LS' Series loudspeakers, you may call us at (800) 377-POLK from 9AM to 5PM Eastern Standard Time, Monday through Friday.

## **DYNAMIC BALANCE™- TECHNOLOGY SERVING MUSIC**

Polk Audio, in conjunction with Johns Hopkins University, one of the leading academic research institutes in the U.S., has developed new tools to further our quest for greater musical accuracy and increased listener enjoyment. This joint effort created the first use of a "Full Field Laser Interferometry" system to take holographic pictures of microscopic forms of distortion on loudspeaker parts in motion.

By observing microscopic distortion on the surface of these loudspeaker parts in motion, our engineers

developed the understanding needed to optimize speaker performance, for smoother response and extended range, to yield a more accurate and exciting musical experience. We call this Dynamic Balance™ to signify this heightened level of refinement embodied in the new LS Series loudspeakers.

The results are smoother frequency response, dramatically improved phase coherence, and lowered levels of distortion for purer sound and greater enjoyment from your compact discs, records, or tapes.

## **SPEAKER WIRE**

We recommend using at least 16 gauge speaker wire; wire runs longer than 25 feet may require heavier gauge wire. For best results, invest in specialty speaker wire. Your authorized Polk dealer can help you make a selection.

## **MULTIPLE SPEAKER CONFIGURATIONS**

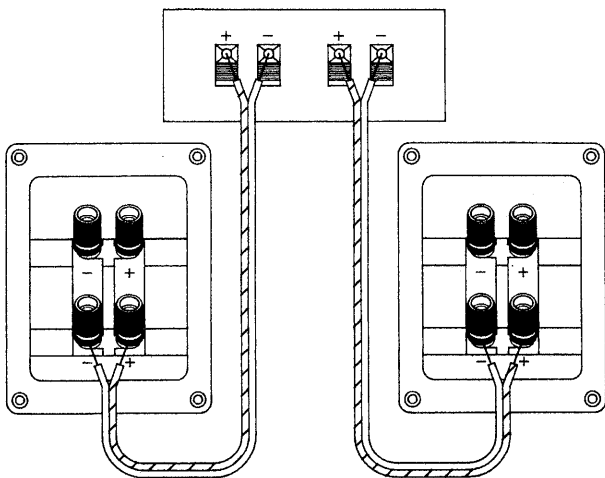
Polk 'LS' Series loudspeakers are compatible with 8 ohm outputs. Please refer to the instruction manual of your receiver or amplifier to achieve best results.

## **CONNECTING THE SPEAKERS TO YOUR AMPLIFIER OR RECEIVER**

Proper connection of the speakers is essential if you are to realize the full potential of your system. Make wire connections with your amplifier turned off.

For normal use, the factory installed jumpers between upper and lower terminal posts should be kept in place and connections should be made to the lower set of posts (LS70 and LS90 only).

Note that one of the terminals on the rear of your speaker is colored red (+) and one is black (-). Make certain that you connect the red (+) terminal to the red (+) terminal on your amplifier, and the black (-) terminal to the black (-) terminal on your amplifier (see figure 1). It is essential that both speakers be connected in this manner. Speaker wire has identifying marks to make one connector distinguishable from another. This is usually a stripe of color or a different texture on the wire. If you notice a deficiency of low frequency (bass) sound from your system, it is quite likely that your speakers are improperly connected. This can be corrected simply by reversing the connections at one of the loudspeakers.



**figure 1: Proper connections from amplifier to loudspeakers. Note use of jumpers for LS70 and LS90**

## **BI-AMPLIFICATION AND BI-WIRING**

### **LS70 and LS90 only**

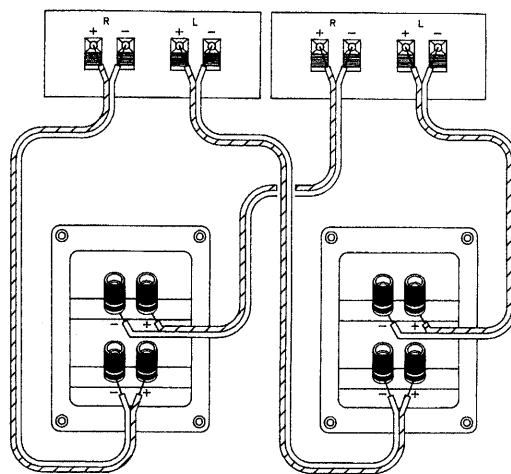
The LS70 and LS90 loudspeakers are equipped with two sets of inputs to facilitate bi-amplification or bi-wiring. These techniques can improve the performance of your system. **IF YOU DECIDE TO BI-AMP OR BI-WIRE YOU MUST REMOVE THE JUMPERS BETWEEN TERMINAL POSTS. FAILURE TO DO THIS COULD RESULT IN DAMAGE TO YOUR AMPLIFIER OR LOUDSPEAKERS.**

Bi-amping allows you to use separate amplifiers for the high and low frequency sections of your loudspeaker to achieve greater dynamic range and lower distortion.

To bi-amp, first remove the jumpers between the upper and lower terminal posts on the rear of the speaker. Then connect speaker wires from the outputs of the high frequency amplifier to the upper set of terminal posts on each speaker. Follow the same procedure for the low frequency amplifier to the lower set of terminal posts (see figure 2). Then connect the output of your preamplifier to the inputs of the two amplifiers. Remember to keep black to black and red to red in all cases.

Bi-wiring also separates the high and low frequency sections of your loudspeaker without the need for two amplifiers and can improve performance especially if long runs of speaker wire are needed.

To bi-wire your system, first remove the jumpers between the upper and lower terminal posts on the rear of the speaker. Connect two sets of speaker wires to each speaker, one set to the upper and one set to the lower sets of terminal posts. Then connect the other end of BOTH sets of wires to the output of your amplifier (see figure 3).



**figure 2: Bi-amplification diagram for LS70 and LS90.**

**Note that jumpers have been removed.**

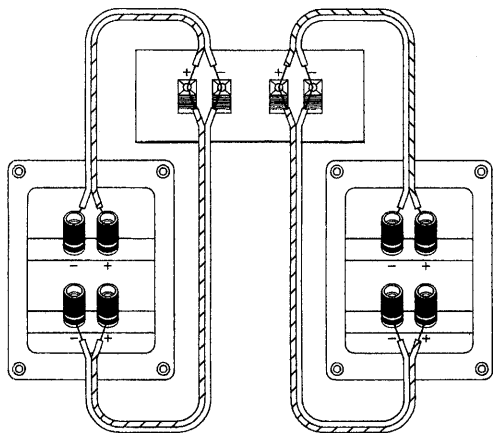
## **PLACEMENT**

Your LS Series speakers are capable of producing a lifelike and exciting presentation of the musical performance. To fully experience this presentation, follow these simple guidelines. Place them away from corners of the room and along the same wall. Both speakers should be the same distance from the rear wall with the listener equidistant from both speakers. They may be placed as shown in Figure 4 or angled slightly inward.

Because listening rooms vary greatly in shape and size, no specific recommendation is possible. We recommend that you experiment for the most enjoyable listening experience.

## **LISTENING LEVELS AND AMPLIFIER POWER**

All 'LS' Series loudspeakers are highly efficient systems designed for use with a wide variety of amplifiers. It is important that you are *alert* to the quality of sound coming from your loudspeakers at all times. If the sound becomes harsh, fuzzy, or distorted at higher volume, you have exceeded the safe operating wattage of your amplifier. This will usually happen between the 12 o'clock and 2 o'clock volume setting regardless of the specified wattage of your amplifier. The chances of exceeding your amplifier's rated wattage is greater on less powerful amplifiers. This distortion is known as clipping and can result in loudspeaker damage. When you hear this distortion, turn your volume control down to a safe operating level. If you find that you want more volume than your system is capable of providing without distortion, we suggest that you invest in a higher powered amplifier.



**figure 3: Bi-wiring diagram for LS70 and LS90.**  
**Note that jumpers have been removed.**

## **CARE AND CLEANING OF YOUR 'LS' PRODUCT**

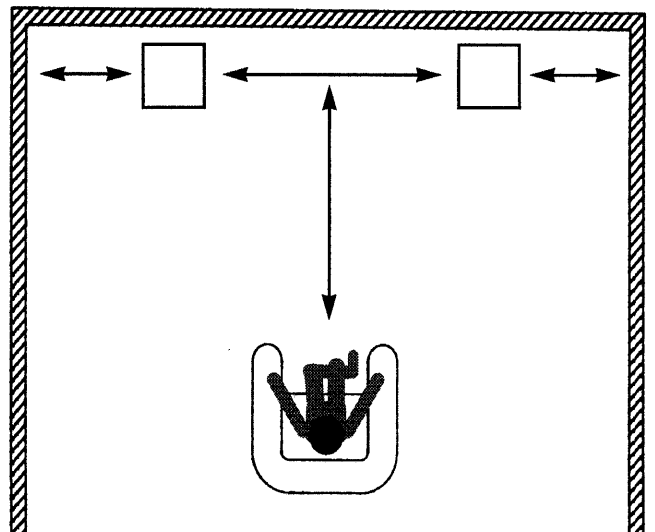
The appearance of your speakers can be maintained with reasonable care. The cabinets of the LS50 and LS70 can be cleaned by wiping with a sponge or cloth dampened with water. The Black and Oak LS90's are finished in a furniture grade natural wood veneer, and will benefit from a high quality wood polish. The rosewood LS90's are covered with a tough polyester finish, which can be cleaned by dusting or with a mild detergent or glass cleaner, if necessary. Household cleaning solvents should not be used on any of the LS Series as they may damage the finish. The grille may be cleaned by brushing gently or vacuuming.

## **TECHNICAL ASSISTANCE AND SERVICE**

If you experience difficulty with your audio setup, first check that all connections are made properly, that any selectors are properly set, and check any filters that may affect the sound. Make sure speakers are connected properly (see figures 1 through 3).

If you have any problems with your loudspeaker system, please call your authorized Polk Audio dealer. Your Polk Audio dealer has the experience needed to help with many problems and questions and has easy access to technical information from the Polk Audio factory and is the first avenue for repair, in or out of Warranty.

If you have further needs, our factory customer service phone number is (800) 377-POLK from 9AM to 5PM Eastern Standard Time, Monday through Friday.



**figure 4: general loudspeaker placement guidelines**

## **Limited Five Year Warranty**

Polk Audio, Inc. warrants to the original purchaser only that this Polk Audio Loudspeaker Product (the "Product") will be free from defects in materials and workmanship for a period of five (5) years from the date of original retail purchase from a Polk Audio Authorized Dealer. However, this Warranty will automatically terminate prior to the expiration of the five (5) years if the original retail purchaser sells or otherwise transfers the Product to any other party. The original retail purchaser shall hereinafter be referred to as "you." To allow Polk Audio to offer the best possible warranty service, please fill out the Product Registration Card(s) and send it to the Factory, at the address provided on the Product Cards(s) within ten (10) days of the date of purchase.

Defective Products must be shipped, together with proof of purchase, prepaid insured to the Polk Audio Authorized Dealer from whom you purchased the Product, or to the Factory at the address given on this manual. Products must be shipped in the original shipping container or its equivalent; in any case the risk of loss or damage in transit is to be borne by you. If upon examination at the Factory or Polk Audio Authorized Dealer it is determined that the unit was defective in materials or workmanship at any time during this Warranty period, Polk Audio or the Polk Audio Authorized Dealer will, at its option, repair or replace this Product at no additional charge, except as set forth below. All replaced parts and Products become the property of Polk Audio. Products replaced or repaired under this warranty will be returned to you, within a reasonable time, freight prepaid.

This warranty does not include service or parts to repair damage caused by accident, disaster, misuse, abuse, negligence, inadequate packing or shipping procedures, commercial use, voltage inputs in excess of the rated maximum of the unit, cosmetic appearance of cabinetry not directly attributable to defect in materials or workmanship, or service, repair, or modification of the Product which has not been authorized or approved by Polk Audio. This warranty shall terminate if the Serial number on the Product has been removed, tampered with or defaced.

This warranty is in lieu of all other expressed Warranties. If this Product is defective in materials or workmanship as warranted above, your sole remedy shall be repair or replacement as provided above. In no event will Polk Audio, Inc. be liable to you for any incidental or consequential damages arising out of the use or inability to use the Product, even if Polk Audio, Inc. or a Polk Audio Authorized Dealer has been advised of the possibility of such damages, or for any claim by any other party. Some states do not allow the exclusion or limitation of consequential damages, so the above limitation and exclusion may not apply to you.

All implied warranties on this Product are limited to the duration of this expressed Warranty. Some states do not allow limitation on how long an implied Warranty lasts, so the above limitations may not apply to you. This Warranty gives you specific legal rights, and you also may have other rights which vary from state to state.

This Warranty applies only to Products purchased in the United States of America, its possessions, and U.S. and NATO armed forces exchanges and audio clubs. The Warranty terms and conditions applicable to Products purchased in other countries are available from the Polk Audio Authorized Distributors in such countries.

## **Specifications**

### **LS50**

#### **Driver Complement**

1 x 1" (25mm) dome tweeter  
2 x 6-1/2" (165mm) driver

#### **Size**

32-1/2"H x 10-9/16"W x 11-9/16"D  
(82.5cm x 26.8cm x 29.4cm)

#### **Overall Frequency Response**

30Hz - 26kHz

#### **-3dB Limits**

45Hz - 25kHz

#### **Recommended Amplification**

20 - 250 watts / channel

#### **Impedance**

Compatible with 8 ohm outputs

#### **Efficiency**

89.5dB

#### **Shipping Weight**

48 lbs (21.8 kg)

### **LS70**

#### **Driver Complement**

1 x 1" (25mm) dome tweeter  
2 x 7-1/2" (165mm) driver

#### **Size**

37"H x 12-1/4"W x 14-9/16"D  
(94cm x 31cm x 37cm)

#### **Overall Frequency Response**

25Hz - 26kHz

#### **-3dB Limits**

37Hz - 25kHz

#### **Recommended Amplification**

30 - 250 watts / channel

#### **Impedance**

Compatible with 8 ohm outputs

#### **Efficiency**

90dB

#### **Shipping Weight**

62 lbs (28.1 kg)

### **LS 90**

#### **Driver Complement**

1 x 1" (25mm) dome tweeter  
4 x 6-1/2" (165mm) driver

#### **Size**

40"H x 12-1/4"W x 14-9/16"D  
(101.6cm x 31cm x 37cm)

#### **Overall Frequency Response**

20Hz - 26kHz

#### **-3dB Limits**

35Hz - 25kHz

#### **Recommended Amplification**

30 - 250 watts / channel

#### **Impedance**

Compatible with 8 ohm outputs

#### **Efficiency**

90dB

#### **Shipping Weight**

73 lbs ea. (33.1kg ea.)

**polkaudio**  
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