

# L7 Owner's Manual Supplement

## Speaker Placement

### Bi-Wiring and Bi-Amplification

#### L7 Placement

Drawing L-A and L-B show optimal placement for your L7 loudspeakers. Note that the speakers' side-mounted woofers should be placed inwards towards the center of the room.

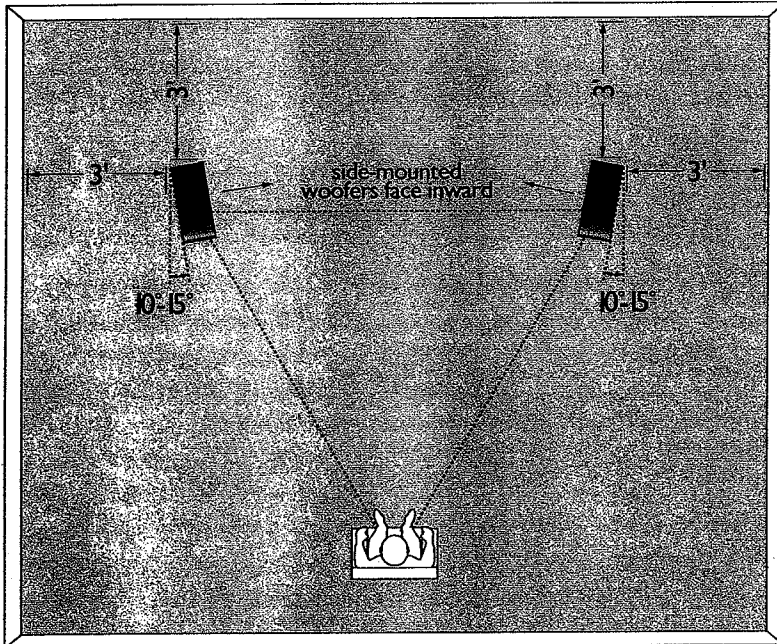
#### Bi-wiring

The L7's outer connection panel and internal dividing network are designed so that separate sets of speaker cable can be attached to the woofer (LF) and midrange/treble (HF) portions of the dividing network. This configuration is called *bi-wiring*.

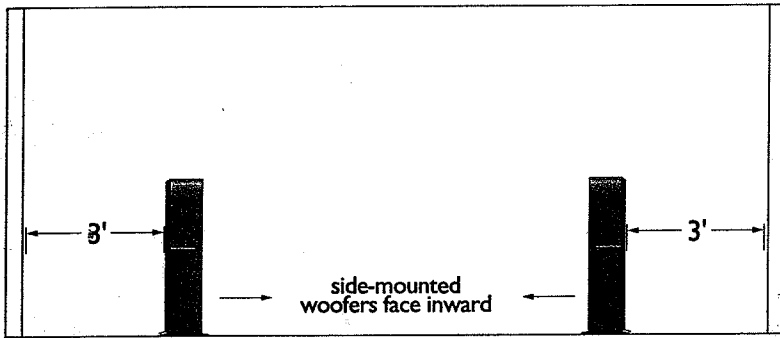
Bi-wiring can provide several sonic advantages and considerably more flexibility in power amplifier selection.

#### Reduction of intermodulation

The majority of current flowing between an amplifier and speaker is devoted to the reproduction of bass. In fact, 60% or more of an amp's power is destined for the woofers. When current flows through a wire, it produces a magnetic field (EMF) which expands and collapses at a rate

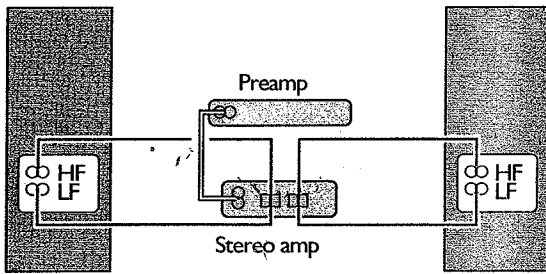


Drawing L-A – L7 position top view

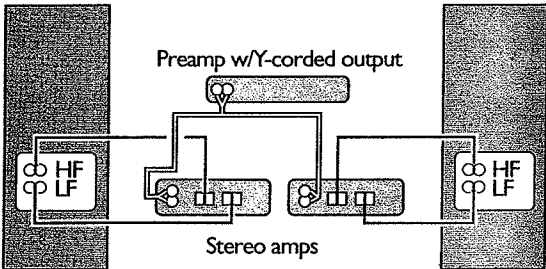


Drawing L-B – L7 position front view

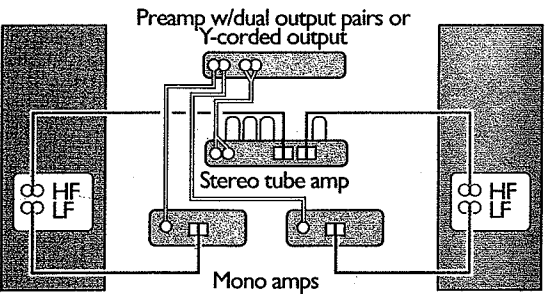




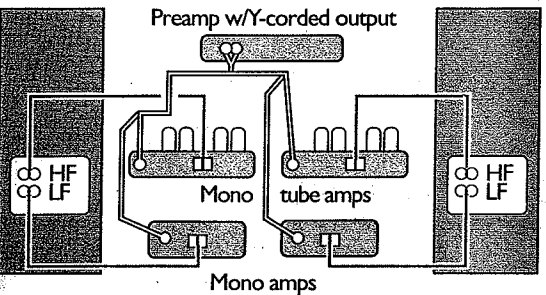
Drawing L-C – One-Amp Bi-Wire



Drawing L-D – Two-Amp Bi-Wire



Drawing L-E – Three-Amp Bi-Wire



Drawing L-F – Four-Amp Bi-Wire

equal to that of the music's complex frequency components. If a single speaker wire must conduct the full musical frequency spectrum, this preponderance of low frequency information can interact with or *modulate* high frequencies. The resulting *intermodulation* can create audible changes to treble even before it reaches your loudspeakers.

By using separate conductors for high and low frequencies (drawing L-C), unwanted treble modulation is avoided. Bass flows through one, treble through another.

### Frequency-optimized cables

Having the opportunity to use separate HF and LF cables, allows you to employ conductors best suited to each frequency range. As previously noted, most amplifier power is destined for your L7's woofers, so upon first consideration, it would make sense to use very thick wire for LF connections and thinner wire for HF connections.

However, the very fact that treble is higher in frequency, means it is actually more sensitive to the type and gauge of wire used. High frequencies are prone to attenuation from a phenomenon called *skin effect*<sup>1</sup>. High quality speaker interconnect wires

minimize skin effect by employing a large number of thin conductors with very low oxygen content<sup>2</sup>. Optimally, you should use audiophile interconnects for both HF and LF conductors. However, if your budget intervenes, use the best quality speaker cables for the high frequency connections and plan to add better bass cables later.

### Amplifier flexibility

Bi-wiring also allows you the option of using separate stereo power amplifiers for left and right L7 loudspeakers or even four mono power amplifiers.

Using two stereo amplifiers (drawing L-D) can not only add sonic improvements but upgrade convenience as well. From a sound standpoint, dual amplifiers reduce intermodulation between left and right channels, since a complete set of input and power supply circuits are devoted to each speaker. Dual amps also provide an easy power upgrade path: you can start out

<sup>1</sup>Electrons actually flow along the outermost atoms of a wire, rather than inside. The more surface area, the less resistance to current. Thus the number of individual conductors (contributing increased skin area) is more important than their individual thickness.

<sup>2</sup>Oxygen is a common impurity in copper wire. The less oxygen, the better conductivity. Zip cord is composed of electrolytic touch pitch copper (ETPC) and has slightly more oxygen content than the oxygen-free high conductivity copper (OFHC) used in special speaker wire.

with one stereo amplifier, then add a second one later to quadruple power reserves.

Three or four individual amplifiers provide even more possibilities, since you can use different brands and types of amps for HF and LF power. Many serious listeners prefer the midrange and treble sound quality produced by tube amplifiers. However, many tube designs do not provide as "tight" a bass sound as solid state models and often produce less power<sup>3</sup>. Bi-wiring with separate bass and treble amplifiers allows use of both tube and solid state designs, where each is most desirable.

Whether you are using two or four amplifiers, it is important to use the same brand and power rating to power like connections on the L7's. In fact, since the crossover point for the L7's HF/LF connections is 150Hz, using amplifiers of the same power for both woofer and midbass/midrange/treble connections is recommended. For example, in a 2-amplifier bi-wire hook-up, if you are using a 200-watt Brand X amp for the left L7, use a matching 200-watt Brand X amp for the right L7. Or if you're powering the left L7 low frequency connection with a 150-watt Brand Y amp and the high frequencies with a 150-watt Brand

Z tube amplifier, use the same types and brands of amplifiers for respective right speaker HF and LF connections.

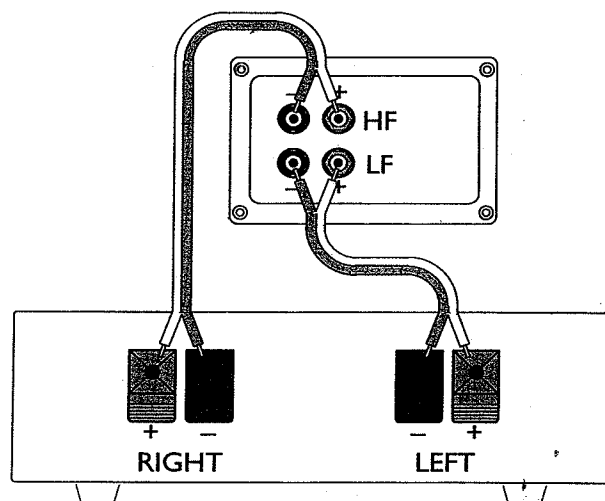
### Bi-wiring connections

Drawings L-G and L-H show two bi-amplification options: dual stereo amplifier and four-amplifier modes.

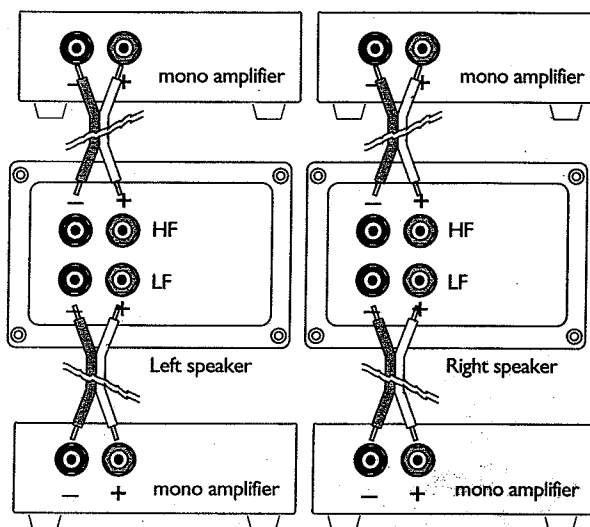
#### IMPORTANT:

1. The external "strapping bars" which normally connect the L7's HF and LF terminals **MUST BE REMOVED** as shown in Drawing L-I (on the next page) **BEFORE BI-WIRING CONNECTIONS ARE MADE.**
2. **NEVER CONNECT TWO AMPLIFIER CHANNELS TO THE SAME LOUDSPEAKER WITHOUT FIRST REMOVING THE STRAPPING BARS.** Operating two amplifier channels with the L7 strapping bars in place can seriously damage the amplifiers!
3. If your preamplifier has just one set of stereo outputs, you will

<sup>3</sup>This is not to say that they can't. There are some superb tube amplifiers which provide every bit as much tight bass as solid-state designs. However, they are high power models and are very, VERY expensive. Moderately-priced tube power amplifiers tend to be moderately powered as well. They might be acceptable for powering the midbass/midrange/treble portion of bi-wired L7's, but would not, in our opinion, be the best choice for low bass reproduction in a bi-wired system which will be played at realistic concert hall levels.



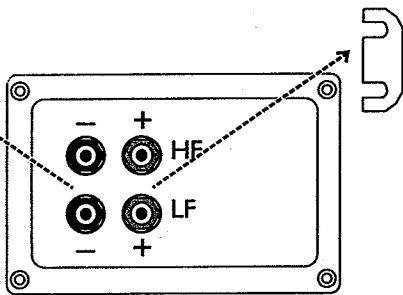
Drawing L-G – Two Amp Bi-Wire Detail  
Hook-up is identical for both L7 speakers



Drawing L-H – Four-Amp Hook-Up Detail

need to use "Y" cords in the three-amp and four-amp bi-wire hook-ups. "Y" cords are available from many sources including your JBL dealer.

4. If you have hooked up your L7's in any of the bi-wire configurations indicated, it is not advisable to use additional speakers, either separately or simultaneously.
5. As with conventional one-amplifier connections shown in the main L Series manual, make sure that all speaker cables are the same length.



Drawing L-1  
Rear of L 7 speaker with  
stepping bars disconnected

### Bi-amplification

Another advanced operation alternative is *bi-amplification*. Instead of being divided by an internal crossover, the full frequency spectrum is filtered into two segments by a 2-way external electronic crossover, which is connected between the preamplifier and power amplifiers.

In bi-amplified mode, the L7's woofer and midrange/high-frequency transducers are connected *directly* to separate amplifiers.

Only a portion of the L7's internal dividing network is used. The woofer and mid-bass transducer section of the crossover are bypassed via a special modification which can be performed by your JBL dealer. Do not attempt to bi-amplify your L7's without having your JBL dealer do the proper

modification. A suitable electronic crossover *must* be used.

While we don't discourage bi-amplification, we hasten to note that the L7's internal crossover is difficult to improve on. Its phase coherence, freedom from distortion and efficiency rival even the finest (and most expensive) electronic crossovers.

JBL Consumer Products, Inc.  
240 Crossways Park West,  
Woodbury, NY 11797  
8500 Balboa Boulevard,  
Northridge, California 91329  
(516) 496-3400

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