

Infinity[®]

IRS DELTA/GAMMA SYSTEM

***Owner's Manual,
Infinity Reference Standard
Delta/Gamma Speaker System***

(p/n .930...3587)

Congratulations on purchasing one of the finest audio products available, the Infinity Reference Standard Delta/Gamma. In order to insure optimum performance from this speaker system, it is highly recommended you take the time to read this instruction booklet thoroughly before installation.

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A WORD OF WARNING

The IRS Delta/Gamma is a complex piece of audio artistry, and has certain aspects of operation which must be discussed before any attempts are made to mate these speakers with your audio system. In other words, READ:

If you are operating these speakers with the Servo Control Unit, it is absolutely essential to set the switches on the passive crossovers to the "SERVO" position. Attempting to operate the speakers with the Servo Control Unit with one or both of the switches in the "NON-SERVO" position will cause damages to your amplifier and possibly to the speakers, which is not covered under the terms and conditions of your warranty agreement.

Improper connection of the IRS Delta/Gamma's low-frequency circuit will trigger the Servo Control Unit's protection circuit. Such misconnections include:

- 1) Reversing the accelerometer cables, left accelerometer input to the right woofer tower and vice-versa.
- 2) Reversing the signal connecting cables from the LOW FREQ SERVO OUTPUTS of the Servo Control Unit to the INPUTS of the low-frequency power amplifier(s), right to left and left to right.
- 3) Reversing the left and right channels of the woofer speaker leads.
- 4) Failure to remove the shorting straps from the input posts on the passive crossovers of both speakers.
- 5) Connecting the output of a low-frequency power amplifier to the HIGH PASS inputs of a speaker.

The protection circuit of the Servo Control Unit will prevent excessively loud low frequency tones generated by misconnection; however it is advisable to make every effort to connect the servo system properly. Check and retrace the connecting cables making sure of polarity and right and left channels prior to turning on your system. These are critical connections and, therefore, they must be accurate.

UNPACKING

Check your speakers and Servo Control Unit (if applicable) carefully. If they have been damaged in transit, contact your Infinity dealer and/or whoever delivered the cartons *immediately*.

The IRS Delta/Gamma speakers are quite heavy; it is, therefore, recommended that you obtain the help of a friend before unpacking. Care should be exercised while unpacking to avoid scratching or otherwise damaging the speakers. Be especially careful to protect their black surfaces.

Keep the original cartons and packing material in the event of future need. (The cartons fold flat for easy storage.) Protect the packing materials from exposure.

ASSOCIATED COMPONENTS

Your IRS Delta/Gamma speaker system will accurately reproduce whatever you feed into it. For this reason the choice of associated components as well as the quality of listening material is important.

The IRS Delta/Gamma speakers have two basic modes of operation: with the Servo Control Unit and without. When operating the speakers without the Servo Unit, the speakers may be powered with one stereo amplifier (or two matched mono amps), or they may be bi-amped. When using the Servo Control Unit, they *must* be bi-amped. You **MUST** remove the shorting straps from the crossover input terminals whenever you are bi-amping the speakers! Failure to do this will result in damages to the amplifiers!

In the single-amp mode the speakers may be powered by either one stereo amplifier or two matched mono amplifiers. The amplifier(s) should be rated between 75 and 400 watts-per-channel into 4 ohms.

In the bi-amped mode the speakers may be powered by either two stereo amplifiers or four mono amplifiers. One stereo amplifier (or two matched mono amps) will be used to power the midrange/tweeter sections while the other stereo amplifier (or two matched mono amps) will power the woofers. The mid/high-frequency amplifier(s) should be rated between 75 and 300 watts-per-channel into 4 ohms. The low-frequency power amplifier(s) should be able to deliver between 100 and 400 watts-per-channel into 4 ohms.

In all cases, each amplifier must be able to deliver its full rated power into a 4 ohm load at all audio frequencies with absolute stability. The IRS Delta/Gamma is a low-impedance speaker system and damage could result to the speakers and/or amplifiers if the power amps are unable to deliver the required, undistorted power. Your Infinity dealer will be able to assist you in acquiring suitable amplifiers.

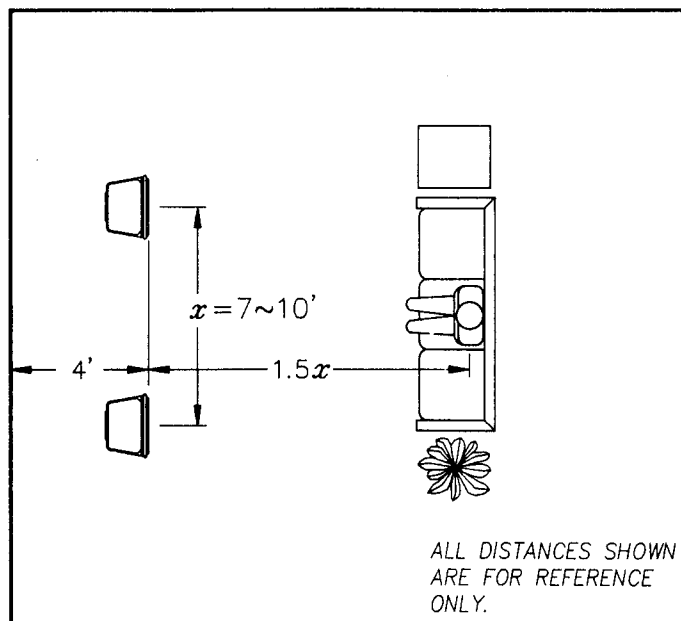
With high-powered amplifiers, it is essential that all necessary measures are taken to avoid acoustic feedback (discussed on page 17) and other non-musical input signals. Make sure that each power amplifier is TURNED OFF before connecting or disconnecting your speakers or low-level cables, and always turn the amplifier (or preamp) volume control(s) to minimum whenever the cartridge of a turntable is being raised or lowered onto a record, or whenever a change is made from one mode or another (ie, TAPE to PHONO), or when changing from station to station if your tuner does not have a muting circuit.

POSITIONING

Room acoustics vary widely depending upon the size and shape of the listening room, furniture, ceiling height and so on. Since even a slight change in the position of your speakers will affect the sound, it is worthwhile to experiment with different room positions, listening for the best results.

For the best stereo image, the speakers should be two to three meters (seven to ten feet) apart and not less than the same distance from the primary listening area (see figure 1 for a suggested starting position).

Figure 1:



The spacial relationship between the speakers and the room boundaries will have an effect on the balance of low to mid/high frequencies. Moving the speakers further away from the rear wall will give the sound more depth. Moving the speakers closer to corners and walls will add more bass.

For optimum results, avoid placing your Delta/Gamma speaker system directly in front of acoustically absorbent surfaces such as heavy draperies, open windows, etc.

Due to the driver configuration the speakers may tend to be front-heavy. As a result they lean forward a bit when placed on plush carpeting or similar surfaces. This can be compensated for by adjusting the levelers located under their front edges.

The IRS Delta/Gamma is shipped with a set of pointed steel feet which you may choose to use for optimum coupling of the speakers to your listening room floor. Ask your audio dealer for his advice as to whether or not these devices would be beneficial in your particular application.

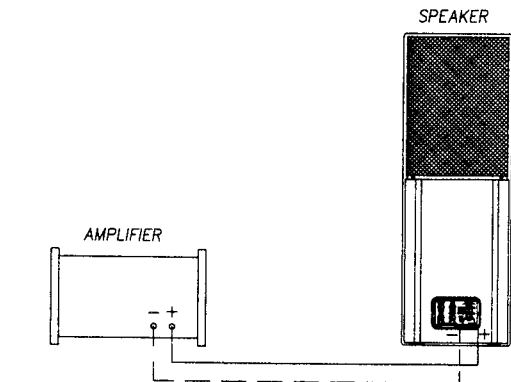
CONNECTING THE SYSTEM

All connections must be made with high-quality audio connector cables *only*.

Connections from your amplifier(s) to the speakers should be made with very heavy-gauge (#14 or better) two-conductor stranded wire with a polarity coding (typically a ridge or stripe along the insulation of one of the conductors). It is *vital* that the speakers are connected "in-phase". Use the polarity coding to ascertain that the "+" outputs of the power amplifiers connect to the "+" (red) input terminals of the speakers, and the "-" outputs ("grounds") connect to the "-" (black) input terminals. (See figure 2.)

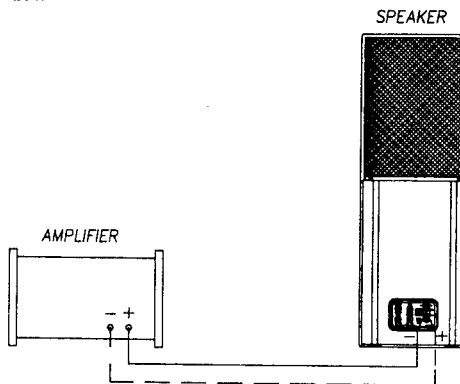
Figure 2:

CORRECT:



Correct (in-phase) connection:
Plus (red) goes to plus.
Minus (black) goes to minus.

INCORRECT:



Incorrect (out-of-phase) connection:
Plus-to-minus, minus-to-plus.
Results in distorted sound, poor imaging.

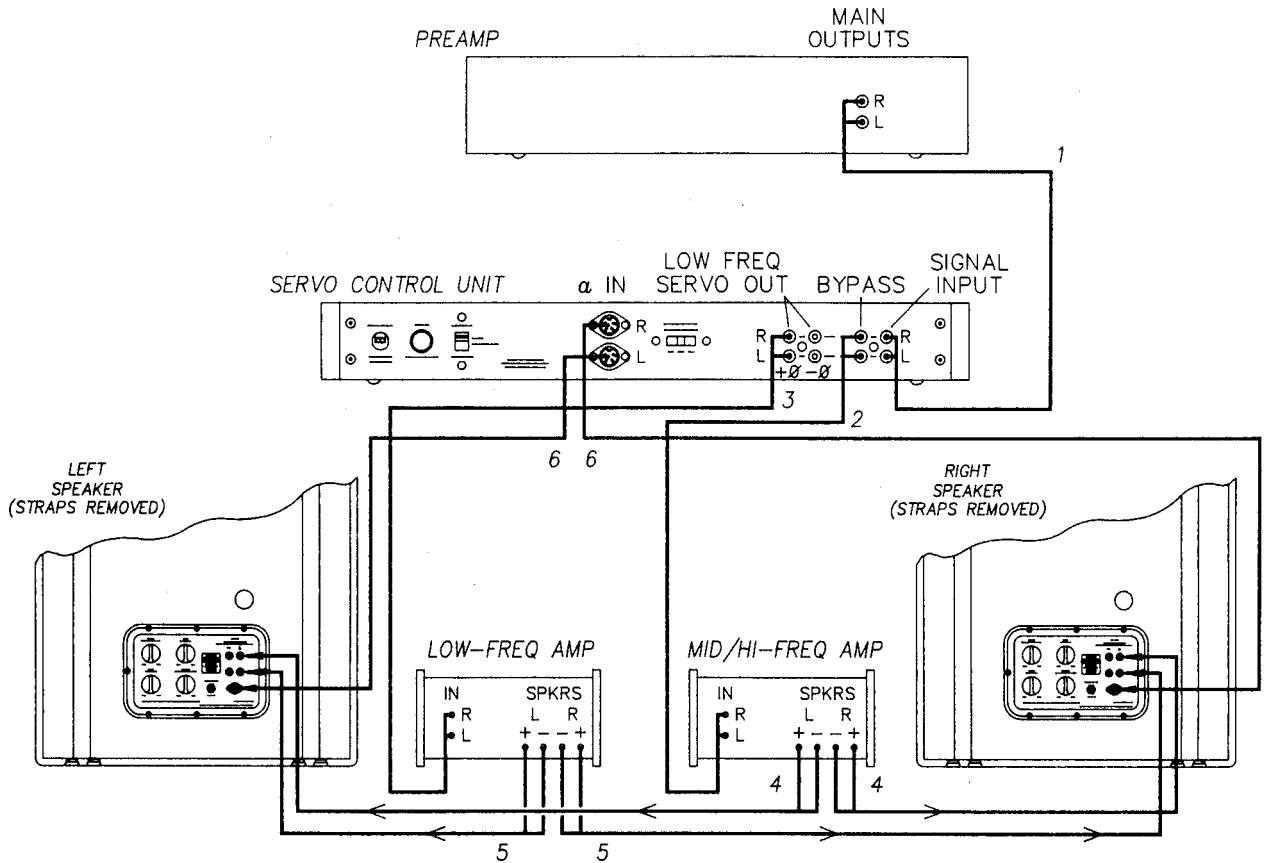
The IRS Delta/Gamma has two basic connection modes: one with the IRS Servo Control Unit, one without. The first mode to be discussed will be WITH the Servo Control Unit. If you are not using the Servo Control Unit with your speakers, skip over to page 11.

BASIC CONNECTION: WITH THE SERVO CONTROL UNIT

PLEASE NOTE: On various audio equipment, the connectors are not always labeled "left" and "right", so use the guideline: 1 = left = A; 2 = right = B.

Remove the shorting straps from the input posts of both speakers. Make sure that all components are turned off before making connections. Refer to figure 3 for an illustration.

Figure 3:



1. Connect the MAIN OUTPUTS of your preamp to the SIGNAL INPUTS of the Servo Control Unit (Left to Left and Right to Right).

2. Connect the BYPASS pair of signal jacks on the Servo Control Unit to the INPUTS of the mid/high-frequency power amplifier(s) (Left to Left and Right to Right).

3. Connect the + \emptyset LOW FREQ SERVO OUT pair of signal jacks on the Servo Control Unit to the INPUTS of the low-frequency power amplifier(s) (Left to Left and Right to Right).

NOTE: Most stereo power amplifiers DO NOT INVERT phase from input to output (i.e. they are NON-INVERTING). A few power amplifiers DO INVERT phase from input to output. If an "inverting" amplifier is to be used, use the $- \emptyset$ LOW FREQ SERVO OUTPUT pair of jacks to connect to the power amplifier(s). If in doubt about your low-frequency power amplifier being INVERTING, consult it's owners manual or contact the manufacturer.

4. Connect the SPEAKER OUTPUTS of the mid/high-frequency power amplifier(s) to the Delta/Gamma's HIGH PASS input posts observing polarity (" $+$ " to " $+$ " and " $-$ " to " $-$ ") and left/right channel orientation (left to left, right to right).

5. Connect the SPEAKER OUTPUTS of the low-frequency power amplifier(s) to the LOW PASS input posts. It is imperative to maintain proper polarity (" $+$ " to " $+$ " and " $-$ " to " $-$ ") in each wire pair along with proper channel orientation (left to left and right to right).

6. Connect the supplied ACCELEROMETER FEEDBACK cables (the two 50' 4-pin DIN cables) to the system as follows: One of the cables has a piece of red tubing at each end, just below the connector. Use this cable for the RIGHT channel connection *only*. Connect one end of the cable with the red tubing into the 4-pin jack on the back of the RIGHT speaker; the other end into the RIGHT accelerometer input (aIN, R) on the back of the Servo Control Unit. Connect the remaining cable to the LEFT speaker and the Servo Control Unit's LEFT accelerometer input (aIN, L) in the same manner. Be sure to insert the connectors fully into their jacks.

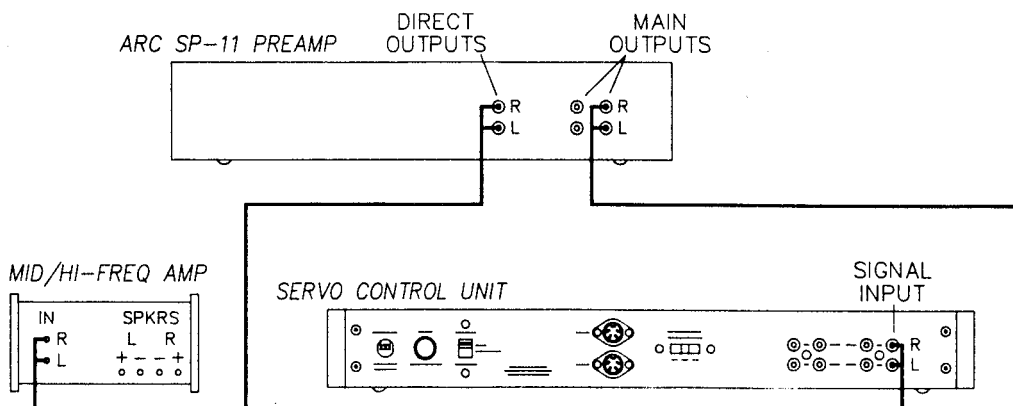
7. It is **EXTREMELY** important to get the connections to the WOOFER SYSTEM correct (accelerometer cables, speaker leads to the LOW PASS inputs, signal leads to the low-frequency power amplifier) because the Servo Control unit uses a FEEDBACK CONTROL SYSTEM that reduces woofer distortion, extends low frequency response and renders low frequency transients more acoustically correct. In order to accomplish this the feedback has to be **negative**. If, for instance, the polarity of the cables connecting the low-frequency power amplifier(s) to the LOW PASS inputs is incorrect (ie, " $+$ " of an amplifier output to the " $-$ " terminal of a woofer tower) the feedback becomes **positive**, resulting in an attempt at full power oscillation at about 60 Hz. The Servo Control Unit has a protection circuit that prevents such continuous full power oscillation from occurring. The result of an incorrect connection will be short bursts of full power oscillation which will indicate that one or more of the connections are incorrect. This condition could also occur when a NON-INVERTING power amplifier is connected at the $- \emptyset$ LOW FREQ SERVO OUTPUTS or when an INVERTING (rare) power amplifier is connected at the $+ \emptyset$ LOW FREQ SERVO OUTPUTS.

ALTERNATE CONNECTIONS WITH THE SERVO CONTROL UNIT

7A. "Purer signal path" for the mid/high-frequency power amplifier(s). "Purer" here means less interconnections - less signal jacks and cables in the signal path. Some preamps have two pairs of MAIN OUTPUTS. If this is the case with your preamp, connect the INPUTS of the mid/high-frequency power amplifier directly to one of the pairs of MAIN OUTPUTS on your preamp.

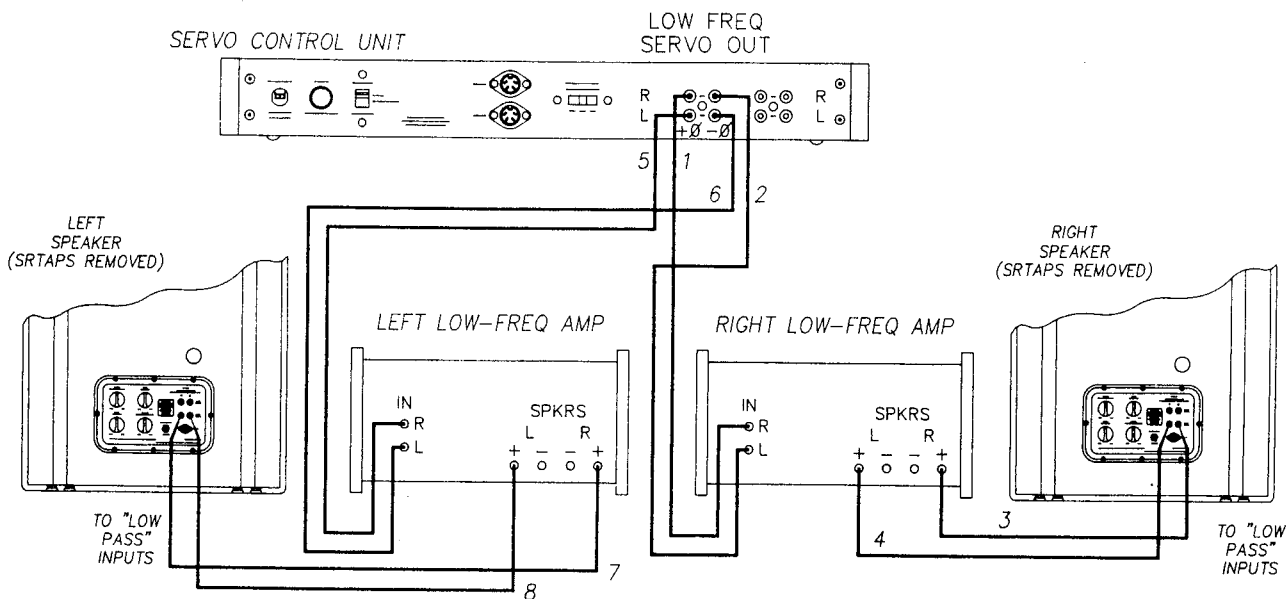
The Audio Research Company's SP-11, for example, has two MAIN OUTPUTS and a DIRECT OUTPUT. The preferred way to use the SP-11 with the Servo Control Unit is to connect its DIRECT OUTPUTS to the INPUTS of the mid/high-frequency power amplifier(s) and connect *one* pair of the MAIN OUTPUTS to the SIGNAL INPUTS of the Servo Control Unit. (See figure 4.)

Figure 4:



7B. Use of two stereo power amplifiers for driving the woofers. The Servo Control Unit contains provisions for "bridging" a stereo power amplifier, turning it into a higher-powered mono unit. (See figure 5.)

Figure 5:

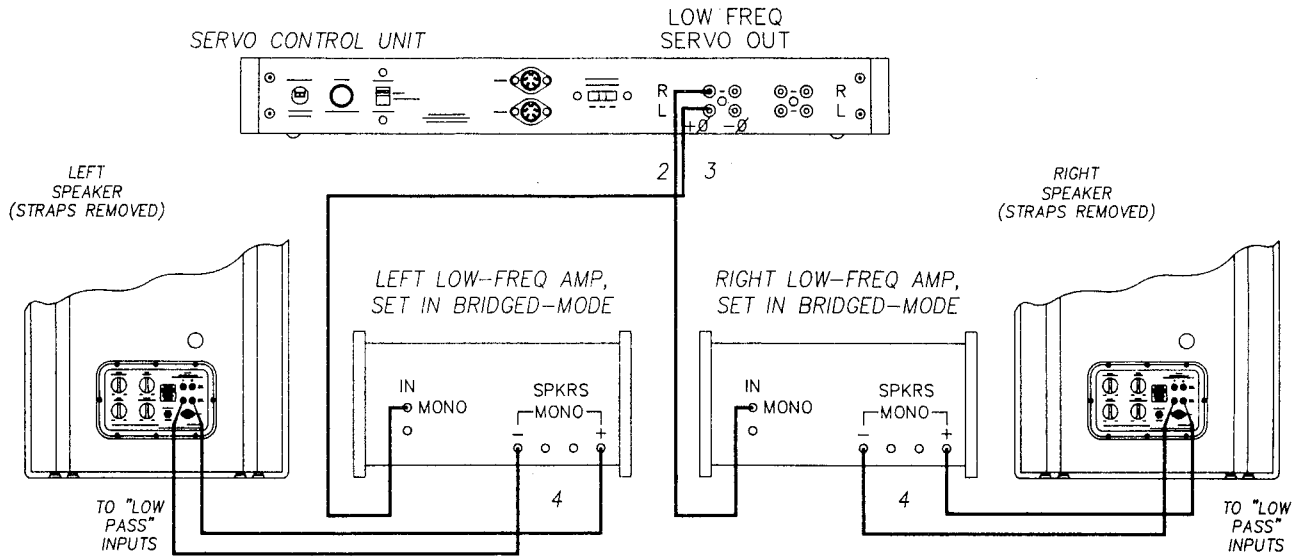


- 1) Connect one end of a signal cable to the **right-channel** INPUT of the stereo power amplifier that will drive the woofers of the **RIGHT** speaker. Connect the other end of this cable to the **RIGHT + Ø** LOW FREQ SERVO OUT jack of the Servo Control Unit.
- 2) Connect another signal cable from the **RIGHT - Ø** LOW FREQ SERVO OUTPUT to the **left-channel** INPUT of the same amplifier.
- 3) Connect this amplifier's **right-channel** "+" SPEAKER OUTPUT to the **RIGHT** speaker's LOW PASS "+" input post.
- 4) Connect the amp's **left-channel** "+" SPEAKER OUTPUT to the **RIGHT** speaker's LOW PASS "-" input post.
- 5) Connect one end of a signal cable to the **right-channel** INPUT of the other stereo power amplifier that will drive the woofers of the **LEFT** speaker. Connect the other end of this cable to the **LEFT + Ø** LOW FREQ SERVO OUT jack of the Servo Control Unit.
- 6) Connect another signal cable from the **LEFT - Ø** LOW FREQ SERVO OUTPUT to the **left-channel** INPUT of the same amplifier.
- 7) Connect this amplifier's **right-channel** "+" SPEAKER OUTPUT to the **LEFT** speaker's LOW PASS "+" input post.
- 8) Connect the amp's **left-channel** "+" SPEAKER OUTPUT to the **LEFT** speaker's LOW PASS "-" input post.

All other connections per figure 3, BASIC SYSTEM CONNECTIONS.

7C. Use of two stereo power amplifiers that are bridgeable by switching for driving the woofers. (See figure 6.)

Figure 6:



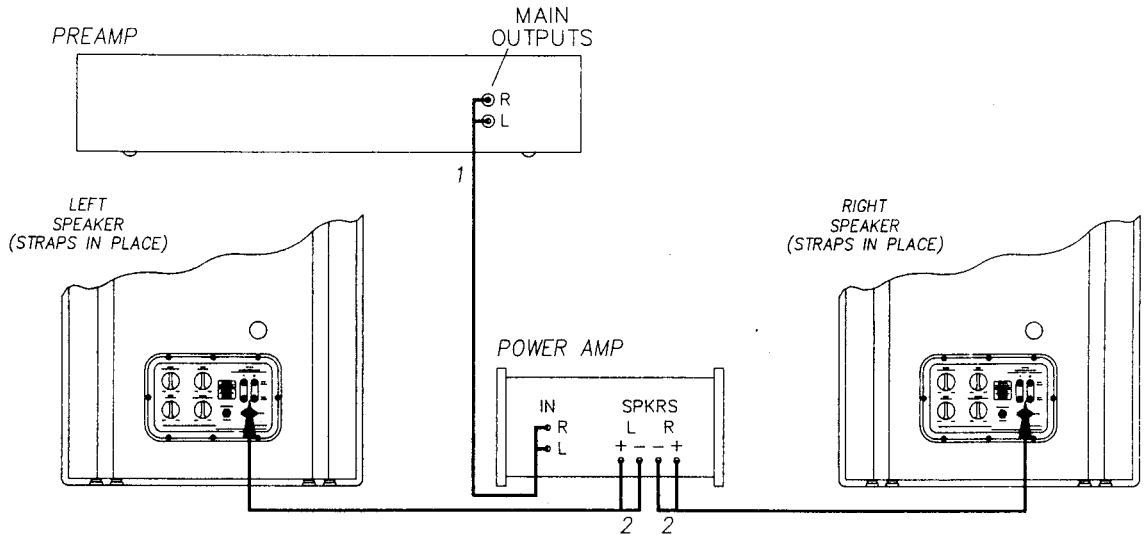
- 1) Consult the amplifier's owners manual to determine whether its MONO INPUT is its LEFT or RIGHT INPUT jack in the bridged mode.
- 2) Connect the Servo Control Unit's RIGHT +Ø LOW FREQ SERVO OUTPUT to the MONO or BRIDGED-MODE INPUT of the stereo power amplifier that will drive the woofers of the RIGHT speaker.
- 3) Connect the LEFT +Ø LOW FREQ SERVO OUTPUT to the MONO or BRIDGED-MODE INPUT of the stereo power amplifier that will drive the woofers of the LEFT speaker.
- 4) Consult the amplifier's owners manual as to which OUTPUT terminals will serve as the "+" and "-" in the bridged-mode. Connect the LOW PASS input posts to the amplifiers, maintaining proper polarity and left/right channel orientation.
- 5) Set the two amplifiers to their MONO or BRIDGED mode (consult their owners manuals).

NOTE: In the event this connection INVERTS phase within the stereo power amplifiers when used in their bridged modes and causes bursts of loud low frequency signals out of the woofers upon system power-up, use the -Ø LOW FREQ SERVO OUTPUTS in steps 2 and 3.

BASIC CONNECTION: WITHOUT THE SERVO CONTROL UNIT

When the IRS Delta/Gamma speakers are used without the Servo Control Unit, they may be single-amped or bi-amped. The single-amped mode is shown below in figure 7. You may use one stereo power amplifier or two matched mono amps to drive the speakers. Notice that the shorting straps are in place between the HIGH PASS and LOW PASS input posts.

Figure 7:

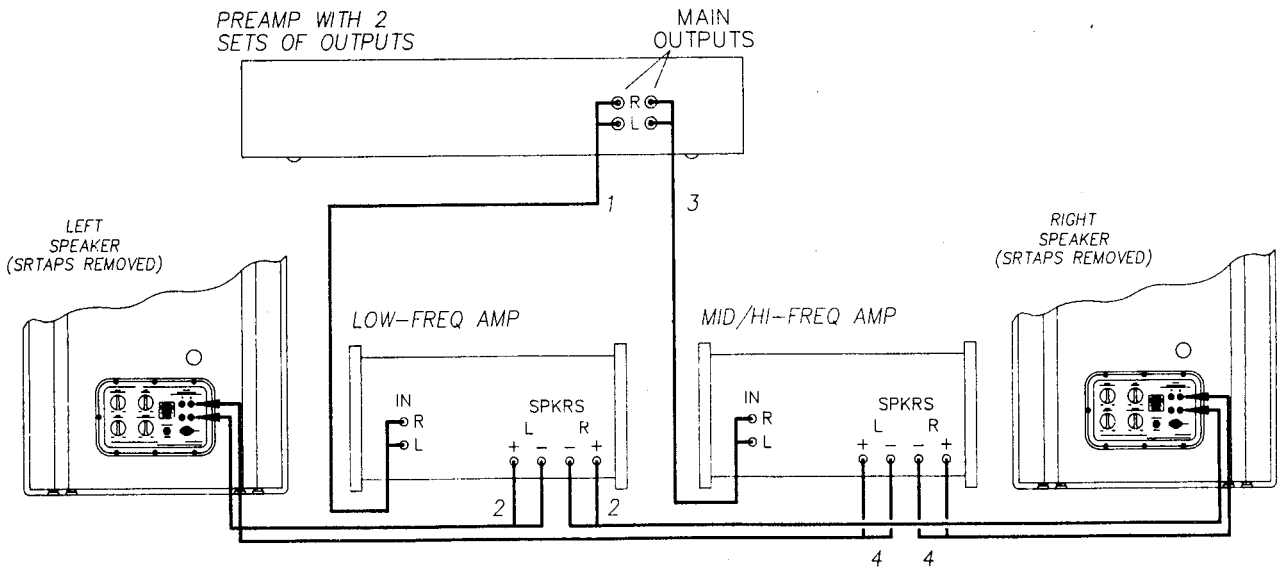


1) Connect the MAIN OUTPUTS of your preamp to the INPUTS of the amplifier(s) that will power the speakers (Left to Left and Right to Right).

2) Connect the SPEAKER OUTPUTS of the amplifier(s) to the INPUT posts of the speakers observing polarity (“+” to “+” and “-” to “-”) and left/right channel orientation (left to left and right to right).

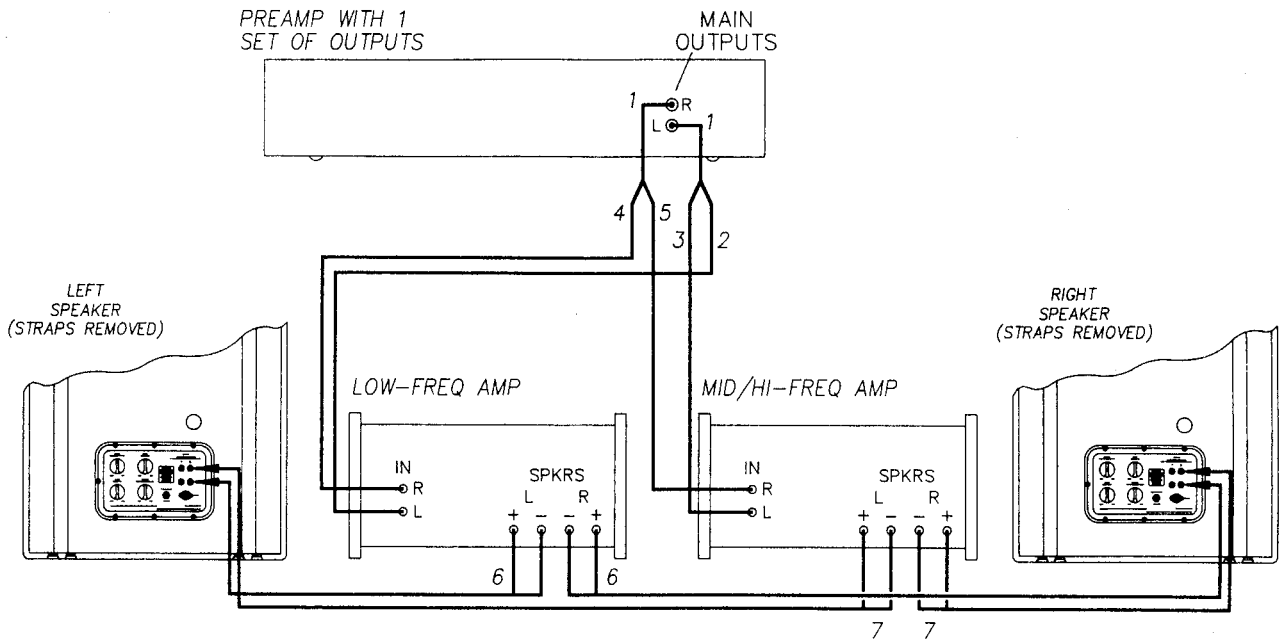
The bi-amped mode is shown below in figure 8. You may use two stereo power amplifiers or two sets of matched mono amps to drive the speakers. Notice that the shorting straps have been removed from both speakers. If your preamp does not have two sets of OUTPUT jacks you will have to use high-quality Y-connectors. (See figure 8A on the following page.)

Figure 8:



- 1) Connect one set of OUTPUT jacks from the preamp to the INPUTS of the amplifier(s) that will power the woofers.
- 2) Connect the SPEAKER OUTPUTS of the woofer amplifier(s) to the LOW PASS input posts of the speakers. Observe proper polarity and left/right channel orientation.
- 3) Connect the other set of OUTPUT jacks from the preamp to the INPUTS of the amplifier(s) that will power the midrange/tweeter sections.
- 4) Connect the SPEAKER OUTPUTS of the mid/tweeter amplifier(s) to the HIGH PASS input posts of the speakers. Observe proper polarity and left/right channel orientation.

Figure 8A:



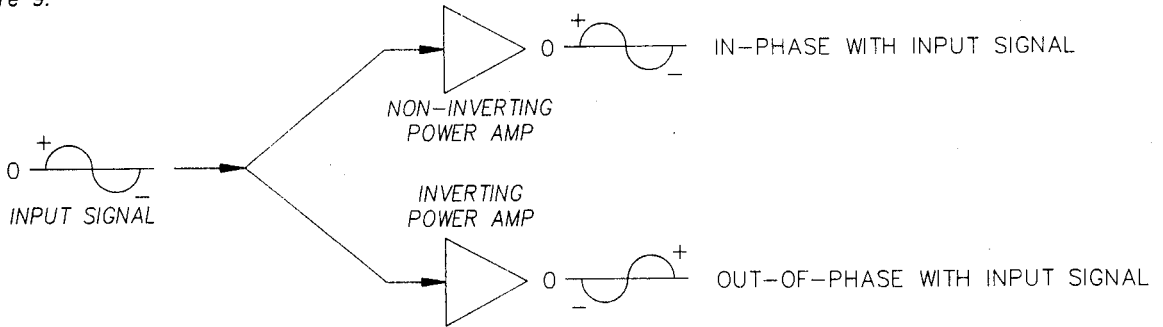
- 1) Obtain two high-quality Y-connectors (each one is to have one male RCA plug at one end and two female RCA jacks at the other end). Connect the male ends of the Y-connectors in to the OUTPUT jacks of your preamp.
- 2) Connect one of the female jacks of the LEFT Y-connector to the LEFT INPUT jack of the amplifier that will power the woofers.
- 3) Connect the remaining female jack of the LEFT Y-connector to the LEFT INPUT jack of the amplifier that will power the midrange/tweeter sections.
- 4) Connect one of the female jacks of the RIGHT Y-connector to the RIGHT INPUT jack of the amplifier that will power the woofers.
- 5) Connect the remaining female jack of the RIGHT Y-connector to the RIGHT INPUT jack of the amplifier that will power the midrange/tweeter sections.
- 6) Connect the SPEAKER OUTPUTS of the woofer amplifier(s) to the LOW PASS input posts of the speakers. Observe proper polarity and left/right channel orientation.
- 7) Connect the SPEAKER OUTPUTS of the mid/tweeter amplifier(s) to the HIGH PASS input posts of the speakers. Observe proper polarity and left/right channel orientation.

A WORD ABOUT ABSOLUTE PHASE

In order to obtain the proper results from the IRS Delta/Gamma speaker system, it is essential to maintain *absolute phase* throughout the entire audio system.

Consider a sine wave being fed into two amplifiers, one NON-INVERTING, the other one INVERTING. The output of the NON-INVERTING amplifier is *in-phase* with the input signal, while the output of the INVERTING amplifier is now *180-degrees out-of-phase* with the input. (See figure 9.)

Figure 9:



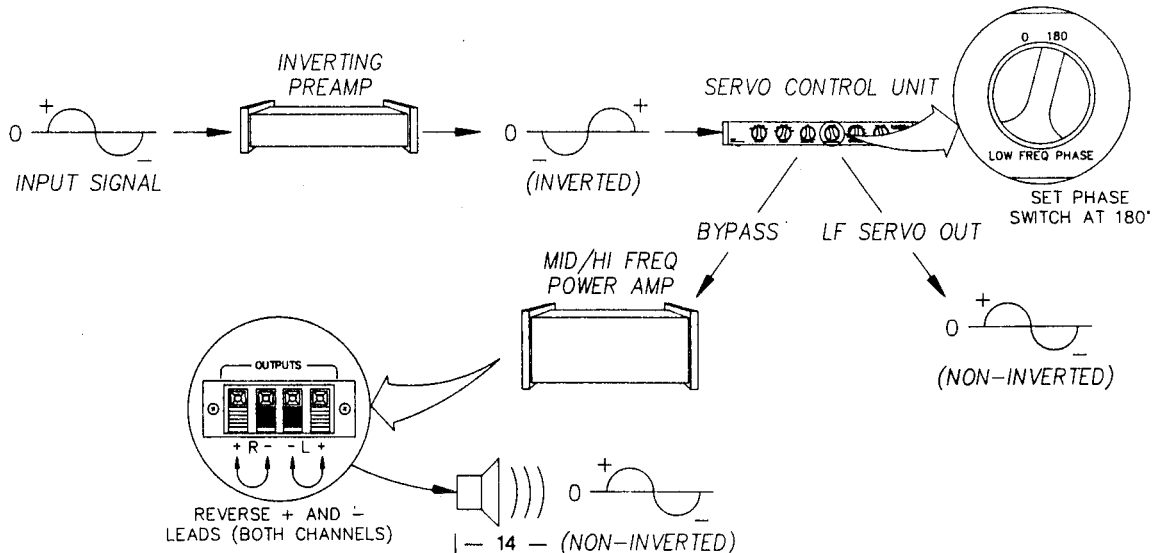
Determine if any of your audio components are INVERTING. (If this information is not provided in the owners manuals, consult your audio dealer or the equipment manufacturer.)

If all of your components are NON-INVERTING, absolute phase will be maintained simply by observing proper polarity at all connections ("+" to "+", "-" to "-"), and by setting the LOW FREQ PHASE control of the Servo Unit to its 0 position. However, if *any* of your components are INVERTING some connection changes will be necessary to maintain absolute phase.

Example #1: If your preamp was your only INVERTING component, the signal would be 180-degrees out-of-phase from the preamp through the rest of the audio chain. Two changes are required to maintain absolute phase in this instance:

- 1: Set the LOW FREQ PHASE control of the Servo Control Unit to its 180 position. This corrects the low-frequency signal.
- 2: Reverse the polarity of the SPEAKER OUTPUTS of your mid/high-frequency power amplifier(s). (See figure 10.)

Figure 10:



Example #2: If both your preamp and mid/high-frequency power amplifier(s) were INVERTING, and the rest of the components were NON-INVERTING:

1: Set the Servo Control Unit's LOW FREQ PHASE control to its 180 position.

Since the mid/high-frequency amplifier is also INVERTING, the signal which was inverted by the preamp will be phase-corrected when it passes through the mid/high amplifier.

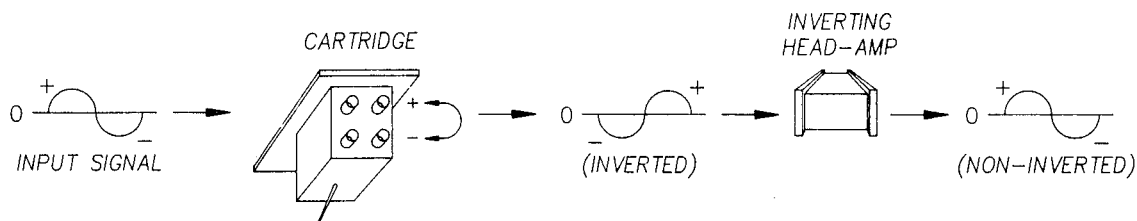
Example #3: If your mid/high frequency amplifier is your only INVERTING component:

1: Reverse the polarity of its SPEAKER OUTPUTS.

Example #4: If your turntable employs a head-amp (pre-preamp for the cartridge), and if that head-amp is INVERTING:

1: Carefully reverse the "+" and "-" leads at the cartridge. (See figure 11.)

Figure 11:



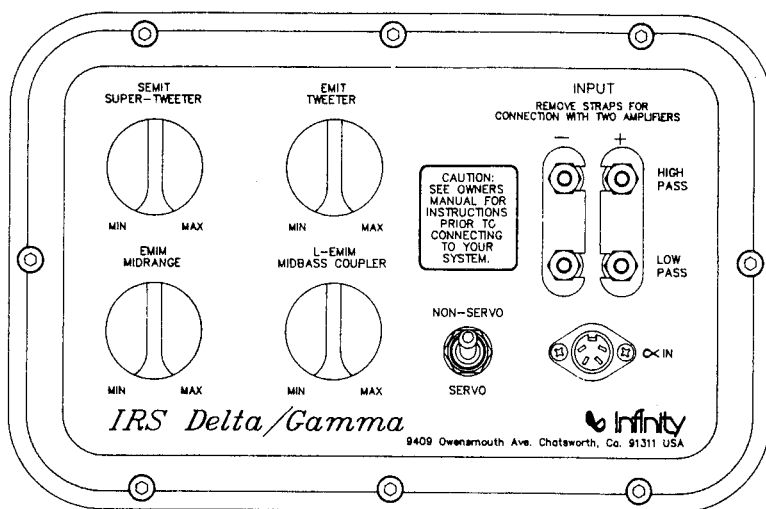
In short, if the number of inverting components that a signal must pass through is ODD, the signal will end up 180-degrees out-of-phase, or INVERTED. If the number of inverting components is EVEN, the signal will end up in-phase, or NON-INVERTED.

Use the previous guidelines to determine what changes, if any, need to be made in the polarity of the connections in your audio system, and where to set the LOW FREQ PHASE control of the Servo Control Unit, and make all necessary changes prior to operating the system.

THE PASSIVE CROSSOVER CONTROLS

The passive crossover controls are located on the back of the woofer enclosures. (See figure 12.)

Figure 12:



Each of the speakers have a SERVO/NON-SERVO selector switch along with the level controls, input posts and accelerometer cable connectors. If you are using the IRS Servo Control Unit with the speakers, set the switch to the SERVO position. **SETTING THE SWITCH IN THE NON-SERVO POSITION WHEN USING THE SERVO CONTROL UNITS WILL RESULT IN DAMAGES TO YOUR AMPLIFIERS which are not covered in your warranty.** If you are not using the Servo Control Unit, set the switch in the NON-SERVO position. (If the switch was set to the SERVO position, the output from the woofers would not be acoustically correct.)

The SEMIT SUPER TWEETER control adjusts the output level of the ultra-high-frequency reproducing SEMIT tweeter which operates above 10kHz. The EMIT TWEETER control adjusts the output level of the EMIT tweeter which operates from 4500 to 10kHz. The EMIM MIDRANGE control adjusts the output level of the EMIM midrange driver which operates from 750 to 4500Hz. The L-EMIM MIDBASS COUPLER control adjusts the output level of the L-EMIM mid-bass coupler operating from 100 to 750Hz.

Begin with all of the controls at their 12 o'clock position and audition some of your favorite recordings, making small adjustments in the settings of each of the controls, as well as the position of the speakers. While such fine-tuning may seem tedious, the results will be well worth the time and effort.

Due to the differences between listening rooms and equipment, we cannot prescribe exact settings that will best suit your particular application. We do, however, offer the following guidelines.

If your listening room has many smooth, reflective surfaces, and lacks heavy draperies, plush carpeting, or other such acoustically absorbent materials, you may wish to turn the SEMIT and EMIT controls towards their "MIN" positions.

If your listening room has an abundance of acoustically absorbent surfaces, try turning the SEMIT and EMIT controls towards their "MAX" positions.

Adjustment of the EMIM controls will provide for a smooth blend of midrange to high frequencies, and will have an effect on how near or distant the vocals and instruments in the vocals range appear.

Adjustment of the L-EMIM controls will provide for a smooth blend of low-bass to low-midrange frequencies.

THE TWEETER/MIDRANGE PROTECTION CIRCUITS

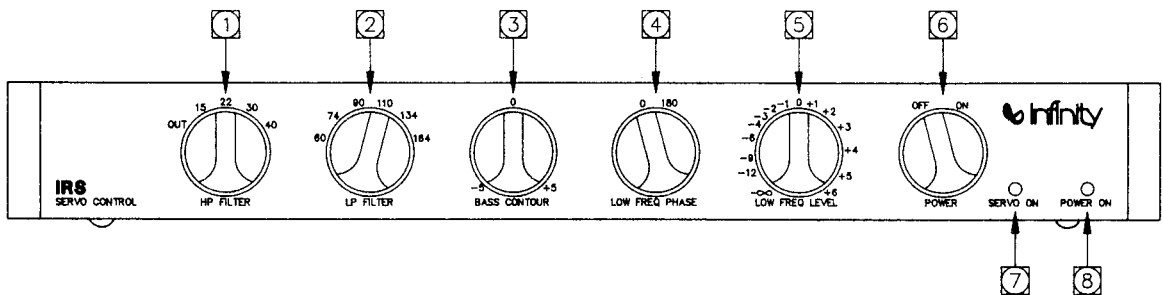
The IRS Delta/Gamma speakers employ internal, automatic protection circuits to help protect the tweeters and midrange drivers from damages due to hazardous energy levels. In the event you hear the tweeters and/or midrange drivers cutting in and out, chances are that the power amplifier is clipping (its output is distorted due to being pushed beyond its capabilities). Reduce the volume until the condition stops, or check your amplifier for possible internal damage.

ACOUSTIC FEEDBACK

If, while listening to record albums, the bass seems boomy, or you detect a low-frequency howl, and/or if you notice excessive woofer excursion, the cause may be acoustic feedback. (The low-frequency output of the woofers is being picked up by the tonearm/cartridge of your turntable.) Some methods of eliminating this problem include placing the turntable on a solid stand, as far from the speakers as possible. Also, some combinations of tonearm/cartridge are more susceptible than others; consult your audio dealer if the problem persists.

THE SERVO CONTROL UNIT

Front Panel:



1: HIGH PASS FILTER sets the low-frequency limit of woofer operation. The numbers refer to the 3dB-down point of the filters. The normal setting is the "22Hz" position; adjust to eliminate excessive woofer excursion if necessary. **NOTE:** The filter cutoff in the "OUT" position is 1.5Hz: DO NOT USE in the "OUT" position with records (to help avoid acoustic feedback) and caution with CD's and tapes.

2: LOW PASS FILTER sets the upper-frequency limit of woofer operation. The numbers are the 3dB-down point of the filters. The normal setting for the Delta/Gamma is 134.

3: BASS CONTOUR puts boost or cut slope, 20Hz - 100Hz, up or down by as high as 5dB at 20Hz. This control is useful for contouring the bass range to accommodate differing listening environments.

4: LOW FREQ PHASE sets the absolute acoustic phase of the woofer output. For a NON-INVERTED signal source, set this control to "0". For an INVERTED signal source, set the control to its "180" position (refer to the section on Absolute Phase to find out what other changes, if any, need to be made in the connections).

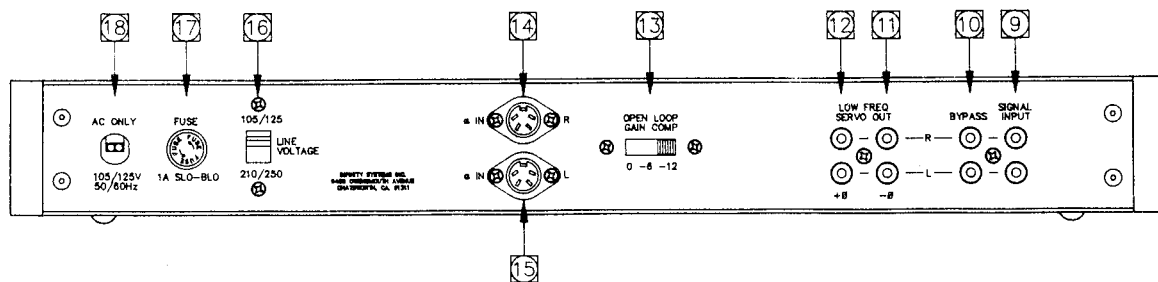
5: LOW FREQ LEVEL sets the amount of low-frequency output from the woofers. Adjust the level to obtain the best balance of bass to mid/high-frequencies.

6: POWER switches the A.C. power to the unit. (There is a 12 to 15 second delay before the woofers begin playing after power is turned on.)

7: SERVO ON indicator comes on after the 12 to 15 second woofer delay and indicate that the servo is on and active.

8: POWER ON indicator stays on while the unit is turned on.

Rear Panel:



9: SIGNAL INPUT jacks are used to connect the low-frequency control system input signal from the preamp main output.

10: BYPASS jacks are used to connect the signal to the inputs of the mid/high-frequency power amplifier(s).

11: LOW FREQ SERVO OUT, $- \emptyset$ jacks are used to connect to the low-frequency power amplifier(s) when the amplifiers are INVERTING. (Note: Both $+ \emptyset$ and $- \emptyset$ are used to bridge drive two stereo amplifiers for more low-frequency power; see pages 11 and 12.)

12: LOW FREQ SERVO OUT, $+ \emptyset$ jacks are used to connect to the low-frequency power amplifier(s) when the amplifiers are NON-INVERTING.

13: OPEN LOOP GAIN COMP is used to compensate for various power amplifiers that have different gains (ratio of output voltage, usually expressed in decibels or dB) so that the amount of motional negative feedback in the woofer system is in the proper range. Most power amplifiers have a gain of 26 to 30 dB. The normal position of the switch is 0 dB. Some power amplifiers have higher gains than this normal range and if used with the switch set at 0 dB, may cause the woofer system to oscillate in the frequency range of 5 to 20Hz or 500 to 1000Hz **even though the system is correctly hooked up**. This would occur with no signal going through the system (the preamp volume at minimum, for example). If this should occur, place the switch in the -6 dB (middle) position. If the power amps used for the woofer system are operated in the bridged mode (see pages 9 and 10), start with the switch in the -6 dB position and if any signs of the aforementioned oscillation occurs, move the switch to the -12 dB position.

14: A (ACCELEROMETER) IN, RIGHT is used to connect the right-channel's accelerometer cable between the Servo Control Unit and the right speaker's 4-pin connector using one of the cables supplied.

15: A (ACCELEROMETER) IN, LEFT is used to connect the left-channel's accelerometer cable between the Servo Control Unit and the left speaker's 4-pin connector using one of the cables supplied.

16: LINE VOLTAGE selector sets the primary strapping of the power transformer for the line voltage to which the unit is connected. Use the tip of a flatblade screwdriver in the slot of the switch to slide it into the proper position.

17: FUSE protects the unit against possible internal damages in the event of power surges or a malfunction inside the Servo Control Unit. To avoid the possibility of electrical shock or other damages, replace the fuse with the specified size and type **ONLY**:

| | |
|--------------|-------------------|
| 105/125 VAC: | 1-amp slow-blow |
| 210/250 VAC: | 1/2-amp slow-blow |

18: POWER CORD connects to a suitable source of A.C. power.

INITIAL SYSTEM CHECK WITH THE SERVO CONTROL UNIT

After finalizing all connections, and double-checking proper polarity and channel orientation of all leads and signal cables, set the controls of the Servo Control Unit as follows (all other components are OFF at this time).

| | |
|----------------|--|
| HP FILTER | 22 |
| TP FILTER | 134 |
| BASS CONTOUR | 0 |
| LOW FREQ PHASE | Refer to the section on Absolute Phase |
| LOW FREQ LEVEL | FULL CCW |
| POWER | ON |

Remove the grille from one of the speakers and **gently** tap the cone of the TOP woofer, along its vertical axis between the dust cap and the foam surround with your fingernail. Under normal operating conditions, you will hear tapping reproduced in the other woofer. (NOTE: Do not tap or poke the woofer along its horizontal axis, since the control woofer may react adversely to this.) Repeat for the other speaker.

If the reproduced taps are not present, double-check all connections to the Servo Control Unit, the accelerometer cables, and the power supply to the Servo Unit. If the woofers still seem inoperative, contact your Infinity dealer or Infinity's Customer Service department.

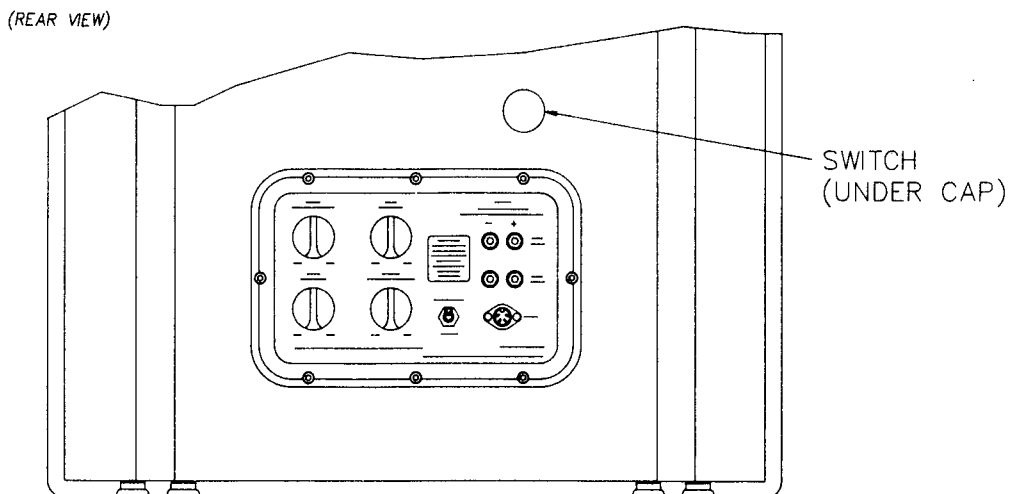
Turn on all of your audio components and slowly bring the volume of a record, tape or disk up to a comfortable listening level. (At this time you will not have low-frequencies reproduced.) Turn the balance control to fully the right and verify output from the RIGHT mid/tweeter section **only**. Turn the balance fully to the left and verify output from the LEFT mid/tweeter section **only**. Return the balance control to center. Slowly bring the Servo Control Unit's LOW FREQ LEVEL control up until there is a balance of low-frequencies being reproduced with the output of the mid/tweeter sections. Repeat the balance test.

IN CASE OF CURRENT LIMITING PROBLEMS...

NOTE: This section is applicable **only** in the NON-SERVO operating mode.

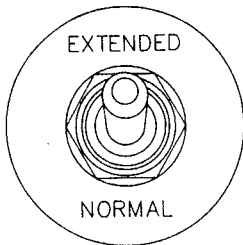
Should your low-frequency power amplifier go into current limiting during heavy bass passages, or if you desire to cut back slightly on bass response due to room acoustics or speaker placement, these speakers employ an adjustment (located on the rear of the cabinets, just above the passive crossover controls) which reduces the current required by the woofers. This adjustment affects only the very lowest frequencies without changing the voice or balance of the system. (See figure 13.)

Figure 13:



Locate the black plastic cap above the crossover and pry it loose with a small screwdriver (taking care not to scratch the cabinet). The switch located underneath the cap is marked EXTENDED (up) and NORMAL (down). It is placed in the EXTENDED position at the factory. (See figure 14.)

Figure 14:



Throw the switch **down** to the NORMAL position if you wish to reduce the current requirement of the woofers. Replace the cap **after** the switch has been set.

Set the switch on both speakers to the same position: **do not** operate the speakers with one switch in the NORMAL position and the other in EXTENDED.

Infinity strives always to improve existing products, as well as create new ones. Therefore the specifications and construction details in this and other Infinity publications are subject to change without notice.

Infinity Systems, Inc.
9409 Owensmouth Avenue, Chatsworth, CA USA (818) 709-9400

LIMITED WARRANTY

Who is protected by the warranty?

Your Infinity warranty protects the original retail purchaser and all subsequent owners for a period of five (5) years (parts and labor) from any failure as a result of an original manufacturing defect so long as: (1) your Infinity loudspeakers were purchased within the fifty United States or by military personnel from an authorized military outlet and (2) the *original dated bill of sale* is presented whenever service is required during the warranty period. This warranty does not apply to products purchased elsewhere; other purchasers should contact their local Infinity distributor for warranty information.

What does the Infinity warranty cover?

Except as specified below, this warranty covers all defects in original materials and workmanship. The following are *not* covered: damage caused by accident, misuse, abuse, neglect, product modification; damage occurring during shipment; damage caused by failure to follow instructions in the owners' manual, including failure to perform recommended periodic or routine maintenance; damage resulting from repairs by someone not authorized by Infinity; claims based upon any misrepresentations by the seller; and any Infinity product on which the serial number has been altered, defaced or removed.

Who pays for what?

During the period of this warranty, subject to the above conditions, Infinity will pay all of the labor and material expenses to repair a warrantable defect.

How can warranty service be obtained?

In the event that your Infinity loudspeaker(s) should require service, you should first contact the Infinity dealer from whom the product was purchased or, if this is not practical, contact Infinity directly (ATTN: Customer Service) at 9409 Owensmouth Avenue, Chatsworth, CA 91311 (818) 709-9400. We may direct you to an authorized service center for Infinity products or ask you to send them to us for repair. In either case you will have to present your *original dated bill of sale* to establish warranty coverage. Do not send your speaker(s) to us without prior *written* authorization! You are responsible for transporting your product for repair and for payment of any and all shipping charges; however, Infinity will pay the return shipping charges if the repairs are covered by this warranty. If you experience difficulty in transporting your speaker(s) or need adequate packing materials, please contact us and we may be able to suggest alternative procedures or provide adequate packing.

LIMITATION OF IMPLIED WARRANTIES: All implied warranties, including fitness for a particular purpose and merchantability are limited in duration to the length of this warranty.

LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES: Infinity is not responsible for any incidental or consequential damages of any kind. Our liability is limited to the repair or replacement, at our option, of a defective product. Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion of incidental or consequential damages so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.