

### PC-1.1 II, PC-3.1 II, PC-33.1, PC-9.1 PC-0.5, PC-1.5, PC-3.5, PC-33.5 PC-SUB

Thank you for selecting Phase Technology speakers. We know there are a wide variety of choices available today, and we sincerely appreciate your purchase of our product. Phase Technology speakers are built to exacting standards and will provide many years of listening enjoyment.



PC-1.5 Piano Gloss Black

Our speakers are the result of over five decades of designing and manufacturing what many consider the finest sound reproduction products available. We hold several key patents in loudspeaker technology including the soft-dome tweeter. Our mission, our passion is to constantly advance the art and science of accurate audio reproduction. Our dedication insures your new speakers will accurately reproduce all the impact, detail and delicacy of today's digital technology.

Regardless of application, serious audiophile listening or home theater, we recommend that you take the time to read this manual thoroughly before connecting speakers to your amplifier or receiver. In the highly unlikely event that you should experience a problem with set-up or operation, please contact one of our carefully chosen dealers for assistance, or contact us directly.

We trust that your new Phase Technology speakers will enrich your enjoyment of music and movies beyond your expectations.

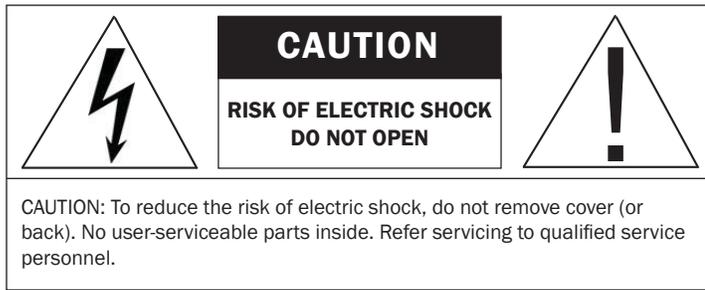
#### CONTENTS:

THANK YOU/CONTENTS	1
SAFETY PRECAUTIONS	2
GETTING STARTED AND PRECAUTIONARY NOTES	3
TWO-CHANNEL STEREO SPEAKERS	3
HOME THEATER SPEAKER SYSTEMS	4
SPEAKER CONNECTIONS	5
POWERED SUBWOOFER CONNECTIONS	6
POWERED SUBWOOFER FEATURES	7
SPECIAL PRODUCT FEATURES	9
MAINTENANCE AND SERVICE	10
SERVICE ISSUES AND WARRANTY	10

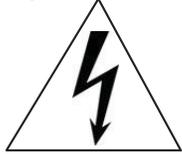
#### PC FEATURES:

Patented soft-dome midrange drivers and tweeters, patented solid-piston drivers and woofers, and Absolute Phase crossover networks all combine to produce accurate and lifelike music and video sound tracks. Absolute Phase crossovers not only allow a wider listening area than conventional crossovers, but they also insure that all the speakers in your home theater are in phase with one another to blend seamlessly together.

## SAFETY INSTRUCTIONS



### Explanation of Graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of un-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

- 1. Read Instructions** - All the safety and operating instructions should be read before the appliance is operated.
- 2. Retain Instructions** - The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings** - All warnings on the appliance and in the operating instructions should be adhered to.
- 4. Follow Instructions** - All operating and other instructions should be followed.
- 5. Water and Moisture** - The appliance should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
- 6. Carts and Stands** - The appliance should be used only with a cart or stand that is recommended by the manufacturer.

### PORTABLE CART WARNING



- 7. Wall or Ceiling Mounting** - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 8. Ventilation** - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or cabinet that may impeded the flow of air through the ventilation openings.

- 9. Heat** - The appliance should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.
- 10. Power Source** - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
- 11. Power Cord Protection** - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed up or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
- 12. Cleaning** - The appliance should be cleaned only as recommended by the manufacturer.
- 13. Nonuse Periods** - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- 14. Object and Liquid Entry** - Care should be taken so that neither objects fall nor liquids spill into the inside of the appliance.
- 15. Damage Requiring Service** - The application should be serviced by qualified service personnel when:
  - a. the power supply cord or the plug has been damaged,
  - b. objects have fallen onto or liquid has been spilled into the appliance,
  - c. the appliance has been exposed to rain,
  - d. the appliance does not appear to operate normally or exhibits a marked change in performance, or
  - e. the appliance has been dropped or the cabinet damaged.
- 16. Servicing** - The user should not attempt to service the appliance beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.
- 17. Grounding or Polarization** - Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

### APPLICABLE FOR USA, CANADA OR WHERE APPROVED FOR USAGE

**CAUTION:** TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE PLUG TO WIDE SLOT, INSERT FULLY.

**ATTENTION:** POUR EVITER LES CHOCS ELECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRESE ET POUSSER JUSQU'AU FOND.

## GETTING STARTED AND PRECAUTIONARY NOTES

For proper connection and therefore full enjoyment of your new Phase Technology speakers, we encourage you to read this owners' manual thoroughly, even if you are very familiar with installing speakers and home entertainment equipment. We offer the following "getting started" guidelines and precautions.

**Speaker placement** is very subjective, guided by personal considerations, and yet also follows the guidelines for the developers of multi-channel home entertainment systems. The proper spacing, location and adjustment of front, rear and center-channel speakers as well as subwoofers are critical for complete enjoyment of your new speakers. This manual covers those topics thoroughly.

**Before connecting your new speakers of other system components**, turn the system power off and unplug your amplifier to avoid any possibility of damaging power surges or unbalanced loads before the system is properly connected.

**Observe speaker polarity carefully!** Every cable, speaker terminal and amplifier connection are clearly marked to show their positive (+) and negative (-) polarities. For ideal system performance, always connect the positive side of the cable (marked with a stripe, color and /or other indicator) to the positive terminals on your speakers and amplifier and the negative side of the cable to the negative terminals.

**Amplifier selection is critical to your enjoyment of your new speakers. If you are considering upgrading your** current component amplifier or multi-function receiver, we suggest purchasing as much power as your budget can afford. It will always be preferable to have an affordable high-powered model with fewer "bells and whistles" than a lower-powered model straining to operate near its power limits.

**High volume settings** that produce audible distortion – indicating an under-powered amplifier – could eventually damage your speakers and your amplifier.

**Begin and end listening sessions at low volume levels** so you will not power up your system the next time with possibly harmful high voltages. A damaging surge also could result if you change the input source (from FM tuner to CD player, for example) at high volume levels.

**If you suspect that one channel of your amplifier has failed**, have it repaired immediately by your dealer. Damage to your speakers could occur if you switch between the good and defective channels.

## TWO-CHANNEL (STEREO) SPEAKERS

Phase Technology audiophile speaker pairs for stereo applications can be affected by listening room geometry, furnishings and fixtures. Experimentation with placing your new speakers in your unique listening environment will dictate how you arrive at the final answer.

We recommend starting the positioning process by selecting a favorite recording to use as the reference source. Place your new stereo speakers 1-3 feet away from rear and side walls and 6-8 feet apart. With bookshelf models, the tweeters (small, high-frequency drivers) should be positioned at about ear level when you're seated in your favorite listening position.

In most rectangular rooms, the speakers will sound best when placed along the short wall; but again, experimentation will provide the best answer. Move the speakers around slightly to determine any changes in sound balance and stereo imaging. Even try angling the speakers slightly toward your listening area. You may be surprised by the differences you will hear with even the slightest adjustments.

Owners of Phase Technology speakers equipped with the company's acclaimed variable-axis soft dome tweeter have additional latitude in speaker placement. Please see the Special Product Information note on manual page nine.

# HOME THEATER SPEAKER SYSTEMS

## Speaker Placement

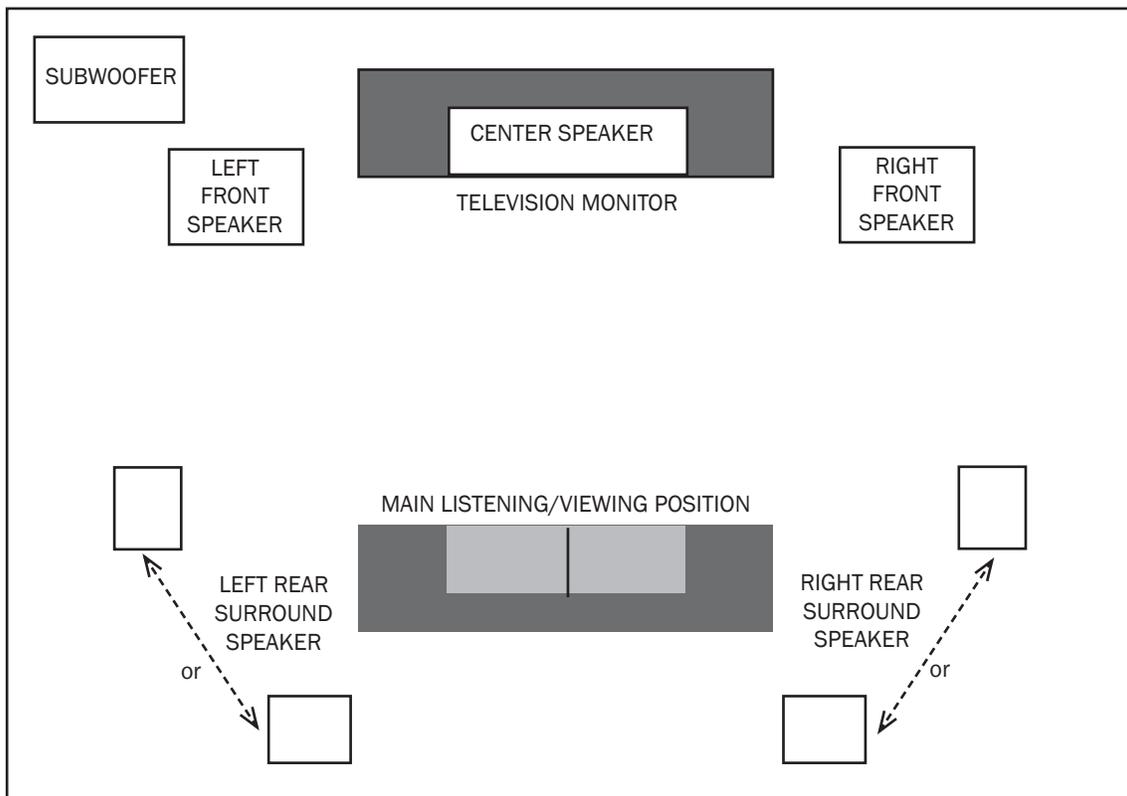
Today's multi-channel home theater technology has elevated the art of "surround sound" to offer the exciting impact of the movie theater experience in your own home. Speaker requirements and placement are critical to reproduce these multi-media effects.

**Front speakers (left and right), rear speakers (left and right), and a center-channel speaker define the minimum arrangement for multi-channel systems** such as Dolby Pro Logic, DTS, and Dolby Digital (originally known as AC-3). It is recommended that all of these speakers be from the same company so they are matched in components and design and therefore as identical as possible in acoustic performance.

For the ultimate in movie sound track impact and realism, **a powered subwoofer is also strongly recommended.** Some home theater enthusiasts use two subwoofers for truly impressive, floor-shaking effects.

Powered subwoofers are large speakers, often 10-15" in diameter, with built-in power amplifiers specifically designed to reproduce bass frequencies from the lowest sound octaves. Powered subwoofers also reduce the strain on your other speakers by using an electronic crossover network to channel these powerful bass frequencies to the subwoofer and, thus, away from the front, center-channel and rear speakers.

To position your speakers, there are some general guidelines that take room size, shape, and fixtures and furnishings into account. The following diagram illustrates typical speaker placement for surround-sound systems:



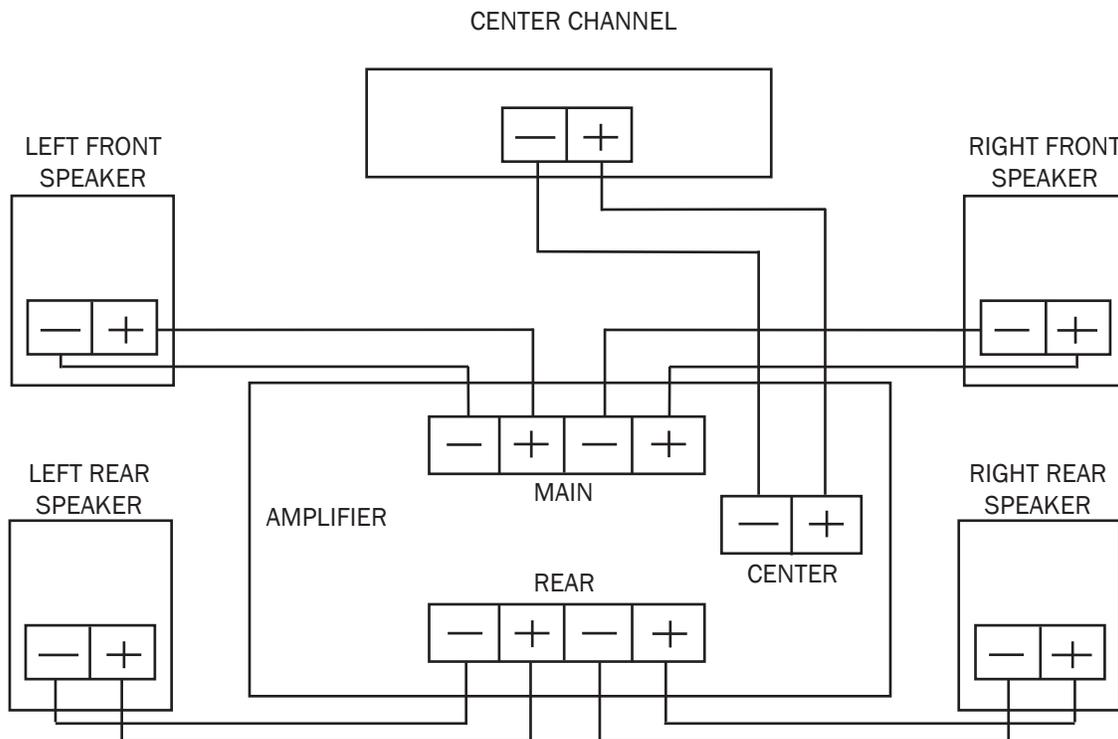
**Front speakers** should be placed far enough apart (at least eight feet) to fully separate the left and right channels of sound, music, and/or dialogue. Whether floor-standing, on speaker stands, or placed on shelves, your speakers should be at or slightly above ear level.

**Rear surround speakers** also should be placed at or slightly above your listening position for the best reproduction of surround-sound effects. Ideally, they should be facing into your favorite listening position from either side of the room, but placing them at the rear corners of the room facing front is also recommended.

**Center speaker** placement should be, if possible, directly on top of or under your TV monitor or projection TV screen. This correctly positions the critical sound track information (usually dialogue) that filmmakers direct to the center channel. Phase Technology center speakers are magnetically shielded so that they will not interfere with your TV picture.

**Subwoofer** placement is less critical, because the frequencies they reproduce are omni directional. This means the human ear doesn't perceive these low frequencies as coming from a specific direction, enabling placement of a subwoofer virtually anywhere in the listening room.

It's best, however, to keep a subwoofer within the sound field of the other speakers. The closer the subwoofer is to a wall, the louder and more intense its bass output will be: this effect is even stronger when the sub is placed in or near a room's corner. If you must choose a less-than-ideal position, the output level of Phase Technology powered subwoofers is adjustable to compensate for your listening environment.



## SPEAKER CONNECTIONS

The following instructions apply whether you are using a separate amplifier and other components or an integrated receiver. However, for simplicity we will use the term “amplifier” throughout this manual to mean both. With system power off and your amplifier unplugged, please follow these steps:

### **Special Note: Observe Speaker Polarity Carefully!**

*Every cable, speaker and amplifier is clearly marked to show their positive (+) and negative (-) terminals. Amps and speakers may use some combination of these symbols and/or colors to indicate positive (usually red) and negative (usually black or white) connections. One strand of your cable will also be ridged and/or marked with a colored line or other indicator on the positive side.*

*For proper polarity and, thus, ideal system performance, always connect the positive side of the cable to the positive terminals on your speakers and amplifier and the negative side of the cable to the negative terminals.*

**Front Speakers:** The pair of front speaker connections (left and right) on your amplifier will be labeled “Front” or “Main.” Connect the speaker cables for your left and right front speakers using these terminals and then connect the cables to the speakers. Observe positive and negative polarities.

**Rear Speakers:** The pair of rear speaker connections (left and right) on your amplifier will be labeled “Rear” or “Surround.” Connect the speaker cables for your left and right rear speakers using these terminals and then connect the cables to the speakers. Observe positive and negative polarities.

**Center Speaker:** The center speaker connections on your amplifier will be labeled “Center” or “Center Channel.” Connect the speaker cables for your center channel speaker using these terminals and then connect the cables to the speaker. Observe positive and negative polarities.

## **POWERED SUBWOOFER CONNECTIONS**

There are two ways to connect Phase Technology Powered Subwoofers to your system: through **low-level and high-level connections**. These methods differ depending on whether you are using components or a multi-purpose receiver; whether your amplifier, receiver, and surround-sound decoder have separate subwoofer output connections; and whether you are using one or two subwoofers in your system.

Therefore, **please read the following guidelines carefully**. Be sure to choose one or the other of the connection options, as using both at the same time could severely damage your speakers and amplifier. And always remember to keep the polarity connections correct (positive to positive and negative to negative).

To prevent low-frequency information from being fed to your main speakers, we recommend connecting your front speakers directly to the subwoofer using the sub’s own high-level-output speaker terminals. This method of connection reduces the stress on the main speakers; it requires using the high-level connection guidelines below for your subwoofer(s).

After your powered subwoofer is properly connected, plug it in to AC power and turn the subwoofer’s own level control all the way down, counter-clockwise, before activating the subwoofer’s power switch. Then, gradually increase the volume level while playing music you are familiar with until the bass level is to your liking.

### **Special Note: System Adjustment for Low-Level Connections**

*When using a subwoofer that is connected to your amplifier through the low-level inputs, it is recommended that your surround-sound processor (or multi-channel amplifier) be set, if possible, to enable a low –frequency roll-off for your full-range speakers.*

*This adjustment, sometimes labeled “small speakers” will enable a smoother crossover transition between your primary speakers and the subwoofer.*

### **Single Subwoofer with Low-Level Connection:**

Use this method if 1) you use a separate preamplifier and power amplifier, 2) if you use a receiver with preamplifier outputs and/or subwoofer output jacks, or 3) if you use a separate surround-sound decoder with your amplifier.

Use a pair of audio-interconnect cables – the ones with the colored RCA plugs – to connect the left and right outputs of your pre-amplifier or surround decoder to the left and right low-level inputs of your powered subwoofer. Connect your front, center-channel and rear speakers to our amplifier as previously outlined in this manual.

If you are using equipment that has only one monaural subwoofer-output jack, you may make the connection between this jack and the left or right low-level input of the powered subwoofer. If more volume is desired even after increasing the subwoofer's separate level control, use a "Y" audio connector to connect both the left and right low-level subwoofer inputs to the single monaural subwoofer output jack.

#### **Dual Subwoofers with Low-Level Connection:**

When using two powered subwoofers, one will be connected to the right channel and the other to the left channel. This requires using RCA audio cables to connect the left output of your preamp or decoder to the left low-level input on the subwoofer that you are designating as the left-channel sub.

Repeat this process for either subwoofer, using the right-channel low-level outputs and right-channel low-level inputs of the subwoofer.

#### **Single Subwoofer with High-Level Connection:**

You will be connecting your subwoofer directly to your amplifier's main speaker outputs with this method and then connecting your speakers to the subwoofer's outputs.

To do so, connect the left-channel main speaker output of your amplifier to the high-level left-channel input terminals of the subwoofer. Then connect the left main speaker to the left-channel output on the subwoofer. Repeat this process for the right channel. We suggest using good-quality, heavy-gauge cables for the amplifier-to-subwoofer-to-speaker connections.

#### **Dual Subwoofers with High-Level Connection:**

Connect the left-channel speaker terminals of your amplifier to the high-level, left-channel input terminals of the subwoofer that you are using for the left channel. Repeat the process for the right-channel subwoofer, using the right-channel outputs and inputs.

Now connect your main left and right speakers directly to your subwoofer speaker outputs. Your center and rear speakers are connected to your amplifier as normal.

#### **Alternate Subwoofer High-Level Connection:**

With some system configurations it may not be convenient to connect the main loudspeakers through the subwoofer high-level outputs. Under these conditions, an alternate connection method may be used. To accomplish this, connect the left-channel speaker level input of your subwoofer to the left-channel speaker output of your amplifier. Repeat the process for the right-channel connections of your subwoofer and the main right-channel speaker. This means that you are connecting the subwoofer high-level inputs in parallel with the connections for your main speakers. (See diagram alternate connection 2.)

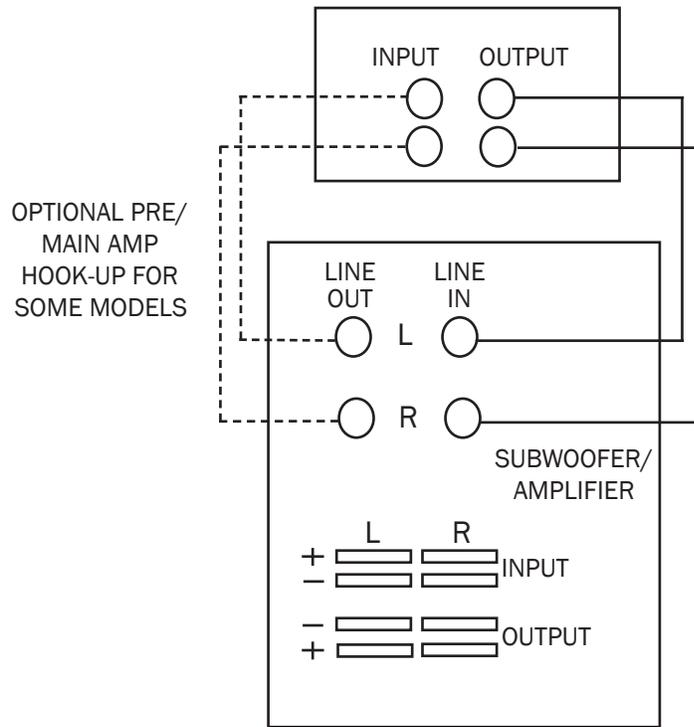
## **POWERED SUBWOOFER FEATURES**

**Subwoofer Connections with High-Pass Filters:** Phase Technology powered subwoofers are equipped with internal high-pass crossovers providing a -6 dB per octave slope for the high-level outputs.

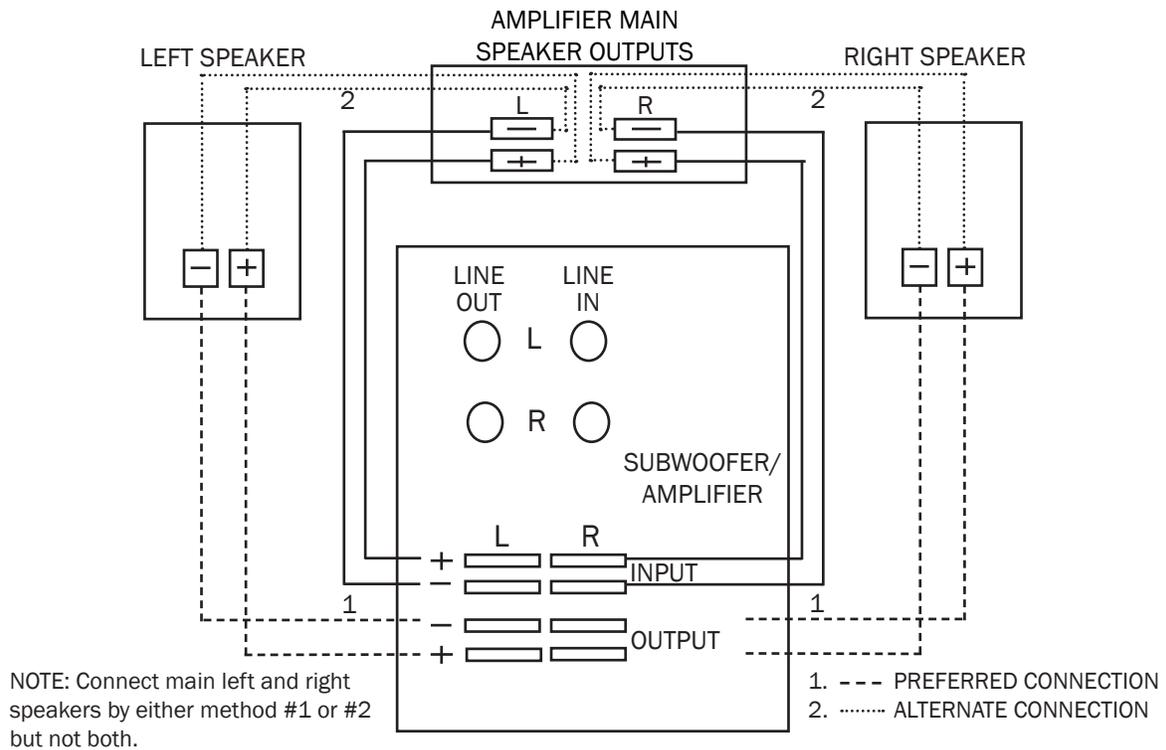
Some premium models also feature an active crossover with -24 dB per octave slope for its low-level output. (Refer to the specifications for your model.)

When using these low-level outputs, it is necessary to have either separate preamp inputs and outputs or separate component amplifiers, preamplifiers or decoders. The low-level inputs should be connected as noted in this manual. The low-level outputs from the subwoofer must be connected back to a preamplifier, a decoder, or main amplifier inputs with standard RCA-type connecting cables. Be certain to connect the respective left- and right-channel inputs and outputs as noted.

## LOW-LEVEL SUBWOOFER HOOK-UP



## HIGH-LEVEL SUBWOOFER HOOK-UP



**Automatic Power Circuitry:** This feature activates your subwoofer whenever it senses a signal (any music source) coming from your amplifier. The same circuit will automatically shut power off to your subwoofer about ten minutes after you turn off your main amplifier. This means you may always leave your subwoofer's power switch on.

**Level Control:** A precision level control is built into your subwoofer to enable volume adjustment of the bass frequencies. Set the level according to your personal preferences from significant bass response, as might be preferred in home theater listening, to the softer, more natural presence that might be the choice for enjoying musical programming.

**Crossover Point Control:** Phase Technology Powered Subwoofers also feature internal crossover networks designed to enable the subs to be acoustically matched to virtually any pair of full-range speakers.

The adjustable crossover control on the subwoofer's back panel should be set near the low-frequency roll-off point of our front speakers. The specifications listed for your main speakers will generally specify this point as a "-3 dB" frequency. It's important to trust your ears when setting this control. Too high a setting will exaggerate bass response, while too low a setting could produce weak bass.

When using low-level connections on certain Phase Technology premium subwoofers, the network controls both the low-pass and high-pass crossover points with matched slopes for uniform frequency response. (Please refer to the specifications included with your subwoofer.)

**Servo Control:** This innovative feature protects your Phase Technology powered subwoofer from being over-driven and, thus, producing unnecessary distortion. It automatically limits the subwoofer's loudness and excessive movement of the speaker cone in the unlikely event that the demands of your program material exceed the capacity of the subwoofer's internal amplifier and speaker.

**Phase Control:** This feature enables setting the subwoofer's phase at two positions, which may be labeled "+" or "-" or "0°" or "180°." We suggest starting with the control at the "+" or "0°" position with someone else adjusting the control while you listen from where you normally sit. One of the settings will produce a fuller, more robust bass response, and the Phase Control should be left in that position.

## **SPECIAL PRODUCT FEATURES**

### **Adjusting Variable-Axis, Soft-Dome Tweeters**

Some Phase Technology speakers feature the company's acclaimed variable-axis soft-dome tweeter (refer to the model specifications included with your speakers) offering even greater latitude in selecting speaker locations and listening positions.

This revolutionary tweeter **can be adjusted by hand** to direct the high frequencies towards a specific listening area for optimal tonal balance and channel separation. This enables owners of these Phase Technology models to place the speakers where they look or fit best and then aim the tweeter for best effect.

When adjusting these units, be careful to **press on the outer rims only**, avoiding contact with the center, or soft dome, of the speaker. A series of adjustments may be necessary to achieve the ideal clarity and smoothness of the high frequencies that the variable-axis soft-dome tweeter was designed to present.

### **Bi-Wired Connections**

Some Phase Technology premium audiophile speakers are equipped for bi-wiring, with four speaker terminals instead of two. This may enhance speaker performance by using an additional pair of speaker cables.

In order to bi-wire these speakers, remove the gold-plated strips between the speaker terminals and connect two

cables between your amplifier's positive output terminal and the two positive (red) terminals on the speaker. Then connect the other two cables between the amp's negative output terminal and the two negative (black) terminals on the speakers.

If you chose not to bi-wire your speakers, do not remove the metal strips between the speaker terminals. Connect each cable in the standard manner, with one cable each between the positive and negative speaker terminals and your amplifier.

### **Floor Spikes**

Floor spikes may have been provided with your new Phase Technology speakers to steady the speaker cabinets, especially on carpeting and uneven floor surfaces. Because most speakers tend to rock back and forth in small increments due to the force of the in/out motions of speaker drivers, these movements can affect the speakers' performance.

Attach the floor spikes by screwing them into the pre-drilled holes in the base of the speaker and tighten the nuts securely. The sharp points will penetrate the carpet to make a more solid contact with the underlying floor surface. If your floor is not rigid, the spikes may actually add to the rocking motion, so we recommend you audition the speakers with and without the spikes inserted to see if you discover a personal preference in the sound quality.

**Be especially careful when moving speaker cabinets** with the spikes attached, as the points could damage carpeting or scratch floors.

## **MAINTENANCE AND SERVICE**

### **Care for Your Speaker Cabinetry**

All Phase Technology speakers are finished with a high degree of craftsmanship in either wood veneers or vinyl laminates. We recommend using a fine-quality furniture polish to maintain the long-lasting beauty of wood veneers. Avoid products containing silicones, oils, or oil derivatives. Enclosures finished in vinyl laminates may be cleaned with a damp cloth as necessary.

### **Some Advice About Amplifiers**

If you are considering upgrading your amplifier, we offer this advice: **Purchase as much power as your budget permits.** It will always be better to have an affordable higher-powered amplifier with fewer "bells and whistles" than a lower powered model straining to operate near its power limits.

Critical questions about your current system – its power ratings, the number of speakers it can drive, future expansion capabilities, and compatibility with multi-channel surround-sound systems – should be directed to your Phase Technology dealer.

## **SERVICE ISSUES AND WARRANTY**

Because of Phase Technology's uncompromising quality control programs, it's unlikely that your speakers will ever need service if connected and used as outlined in this Owners' Manual.

In the unlikely event that a problem does occur, please contact your Phase Technology dealer. Your dealer has the necessary factory-authorized parts and trained technicians to quickly restore your speaker to its original performance specifications. Please refer to the warranty card included with your new Phase Technology loudspeakers.

Please note that repairs made by an unauthorized service agency will void your Phase Technology warranty. There are no user-serviceable parts inside your speakers and opening speaker cabinets also will void your warranty. Also be advised that opening a powered subwoofer can present the risk of electrical shock.

FOR YOUR RECORDS

Please use this space to record information about your purchase in the event you need assistance in the future.

Model \_\_\_\_\_ Serial # \_\_\_\_\_

Retailer Name \_\_\_\_\_ Retailer Phone \_\_\_\_\_

Date of Purchase \_\_\_\_\_