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THREE YEAR PARTS AND LABOR WARRANTY

Phase Linear Corporation warrants only to the original retail purchaser registered with Phase Linear, as provided below, all products against defects in materials or workmanship for a period of three years from the date of sale by an Authorized Phase Linear Dealer. This warranty excludes any and all defects: (1) not caused by Phase Linear and resulting from normal wear and tear or from damage or from use in violation of instructions, (2) in products repaired or altered by other than facilities authorized by Phase Linear, (3) in products with removed or defaced serial numbers, and (4) in any part expressly warranted by another manufacturer. Phase Linear agrees to repair or replace with original or improved design, at its option in each respect, all such warranted defects confirmed by Phase Linear or its agent, including all parts and labor, if the product is returned during the three year period to any Phase Linear authorized warranty repair facility at least as protected from damage as when in its original carton, with all transportation costs and full insurance prepaid each way by purchaser.

ALL REMEDIES AND THE MEASURE OF DAMAGES ARE LIMITED TO THE ABOVE, AND CONSEQUENTIAL AND SPECIAL DAMAGES ARE EXCLUDED, EVEN IF PHASE LINEAR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

If you have any questions concerning the warranty please write to:

Service Manager, Phase Linear Corporation
20121 48th Avenue West, Lynnwood, Washington 98036
CONGRATULATIONS,

You have purchased one of the quietest and most versatile preamplifiers available today. Phase Linear engineers have utilized recent technical advancements in order to provide total harmonic distortion of typically less than 0.03% and phono signal-to-noise ratio of -74dB! In addition to virtual noiseless operation the Phase Linear 2000 also employs novel ambiophonic circuitry which provides an audible improvement over normal stereo listening.

We hope that you will read this manual thoroughly in order to appreciate the performance and the features designed into your Phase Linear 2000.

Before leaving our factory our Phase Linear 2000 went through many stringent mechanical and electrical test procedures and is certified in perfect operating condition. This manual has been prepared to help you operate your Phase Linear as well as keep it in good condition. Your Phase Linear, if operated with the care befitting all fine instruments, is capable of providing many years of enjoyment.
CONNECTIONS

Please follow these instructions when connecting your preamplifier.

FOR STEREO USE:

1. a. Turn the volume/power switch to the off position and make sure the 2000 line cord is not plugged in.
   b. Make sure all push buttons are in the out position.

2. a. Plug the shielded phono leads from turntable into the phono inputs. Plug the AC line cord from the turntable into an unswitched AC outlet on the rear of the 2000.
   b. Plug the shielded leads from your tuner into the tuner inputs and connect all other equipment such as tape decks into the appropriate inputs.
   c. Connect the 2000's main L and R outputs into the left and right inputs of the power amplifier. The power amplifier should be plugged into a switched AC outlet on the 2000 (for ambience operation see Operating Instructions).

3. Plug in the AC cord. Leave the preamplifier turned off.

4. Final Steps:
   a. Make sure the input level controls (if present) on your power amplifier are turned down and the unit is off. Turn input selector switch on the front panel of the 2000 to the desired source.
   b. Recheck all connections and turn on your amplifier.
   c. Turn the program source (turntable, tuner, etc.) on.
   d. When using a power amplifier without a volume control your preamplifier will provide the sole control of output level. In this case turn up the volume until the desired level is reached.
   e. When using a power amplifier with input level controls, they should be advanced about 3/4 of the range available.
   f. The level settings on all auxiliary equipment should be adjusted to provide approximately equal volumes as the Selector Switch is rotated.

AUXILIARY EQUIPMENT CONNECTION

For proper hook-up of auxiliary equipment such as equalizers, expanders, noise-reduction circuits, etc., refer to the manufacturer's instruction manual.
REAR PANEL CONNECTIONS

OUTPUT CONNECTIONS

Main Outputs:
Front Left and Right: Connect to power amplifier input for normal stereo use.
Rear Left and Right (Ambience Outputs): Connect to rear channel amplifier input for ambience operation. (See Operating Instructions.)
Tape 1: Connects to line inputs of first tape machine (Tape #1).
Tape 2: Connects to line inputs of second tape machine (Tape #2).

INPUT CONNECTIONS

Tape 1: From playback/line outputs of first tape machine (Tape #1).
Tape 2: From playback/line outputs of second tape machine (Tape #2).
Tuner: From FM/AM Tuner.
Aux: From any auxiliary equipment.
Phono: From turntable.

OTHER
AC Line Fuse: AGC .125.
Accessory AC Outlets: Two switched AC sockets for power amplifier and phonograph. One unswitched for tuner.
Chassis Ground: Used for ground wire from turntable.
FRONT PANEL DISPLAY
FRONT PANEL CONTROLS

Selector Switch: Determines source to be played through the Phase Linear 2000.

Left Treble: Clockwise rotation boosts treble, counterclockwise rotation reduces treble.

Left Bass: Clockwise rotation boosts bass, counterclockwise reduces bass. (tone controls can boost or cut 12dB.)

Ambience-Level Control: Clockwise rotation increases ambience, counterclockwise rotation decreases ambience level.

Tape 1: Out for playback, in for monitor.

Tape 2: Out for playback, in for monitor. (See tape functions)

Stereo/Mono: Out for stereo, in for mono.

Ambience: To front channels, out position adds ambience, in defeats.

Right Treble: Clockwise rotation boosts treble, counterclockwise rotation reduces treble.

Right Bass: Clockwise rotation boosts bass, counterclockwise reduces bass.

Off/On Volume: Clockwise rotation increases volume, full counterclockwise turns power off.


High-Frequency Turnover: In for 2kHz turnover, out for 5kHz turnover.

Low-Frequency Turnover: In for 50Hz turnover, out for 150Hz turnover.

Tone Control Defeat: With button in, tone control circuits are de-activated which provides flat frequency response.

Balance Control: Rotation to right increases level in right channel, rotation to left increases level in left channel.

Power Indicator: Will be lit when unit is on.
OPERATING INSTRUCTIONS

Your Phase Linear 2000 preamplifier is equipped with an ambience-recovery system which can greatly enhance listening realism by adding an approximation of the natural reverberent acoustics of the concert hall which may be present in the recorded material. The amount of ambience which may be recovered by the Phase Linear 2000 preamplifier is dependent upon how the program material was originally recorded. Due to variations in recording techniques you can expect ambience content to vary from record to record. You will find that with ambience added to your music it will sound more life-like. In fact you will hear aspects of the music which would not be heard in the usual stereo mode. Note: No ambience can be extracted from a monophonic source.

The ambience recovery system may be utilized in either of the two following configurations:

OPERATION OF AMBIENCE WITH A NORMAL STEREO SETUP

The controls on the front panel of the Phase Linear 2000 should be initially set as follows if you wish to utilize the ambience feature: The ambience-level control knob should be set fully counterclockwise with the push button marked "Ambience" in the out position. Put on a program source (phono, tuner, or tape) and rotate the ambience level control knob clockwise until the ambience level is increased. We have found the setting between the one and two o'clock position of the level control knob is preferred by most listeners but personal taste should indicate the optimum setting. With the knob fully clockwise the ambience will have the greatest effect.

To check the effect of the added ambience depress the push button marked "Ambience". This will remove the ambience from your speakers. You may also remove the ambience by rotating its level control knob fully counterclockwise to the minimum position.
OPERATION OF AMBIENCE WITH AN ADDITIONAL PAIR OF SPEAKERS AND AN ADDITIONAL AMPLIFIER

You should arrange your speakers so that you have one pair in the front of your listening room and the other pair placed in the rear (or to the sides). The amplifier controlling your front speakers should be connected to the Main Outputs of the Phase Linear 2000. The amplifier running your rear speakers should be connected to the preamplifier outputs marked "Ambience Output". The controls on the front panel should initially be set as follows: The push button marked "Ambience" should be in the out position. The knob marked "Ambience Level" should be set in the counterclockwise position.

Once your program source has been selected gradually rotate the ambience level control knob clockwise until the desired amount of ambience is added. It should be noted that in this configuration the only signal present in the rear speakers is the ambience, therefore, as the ambience level control is rotated counterclockwise the volume in the ambient channel will decrease to zero at minimum. Should you wish to disengage the ambience circuit in this configuration depress the front panel push button marked "Ambience".

TONE TURNOVER AND TONE CONTROLS

The Phase Linear 2000 has the ability to change the tone control turnover points. The turnover point is the place on the frequency spectrum above and below which the tone controls will have an effect. On the Phase Linear 2000, the turnover point for the bass controls may be set at 50Hz by leaving the low frequency turnover button out. In the "depressed" position the turnover point is switched to 150Hz and the bass boost will be audibly greater. The turnover point for the treble is set at 5kHz with the high frequency turnover button in the "out" position. In the "depressed" position the turnover is changed to 2kHz which will increase the effects of the treble tone controls.

The tone controls can boost or cut up to 12dB starting at the turnover point selected and rotating clockwise for boost and counterclockwise for cut. There are separate Bass and Treble controls for each channel for even greater flexibility.

Below are sighted some hypothetical loudspeaker irregularities and how to utilize the tone controls and turnover points to correct them:

1. Excessive or "boomy" bass: set bass turnover for 150Hz and gradually turn both bass control knobs counterclockwise until bass response is "tighter".

2. Excessive midrange or presence: set treble turnover for 2kHz and gradually turn both treble control knobs counterclockwise until the midrange level is more closely matched to the bass response.

3. Lack of High Frequency Response: set treble turnover for 5kHz and gradually turn both treble control knobs clockwise until the response is improved.
Above are just a few examples of the many ways you may use the Phase Linear 2000's tone controls to correct for frequency-response inadequacies in speakers, the listening-room acoustics or program material.

**ACTIVE EQUALIZER**

A switchable built-in active equalizer is provided to boost the extreme lows (below 50Hz). The majority of loudspeaker systems, even rather expensive systems, exhibit a gradual roll-off below 50Hz in most listening rooms. The boost is designed to produce a flatter, more uniform total system response and is particularly useful when used together with powerful amplifiers and speaker systems exhibiting high power handling capacity.

**SPEAKER FUSING**

Phase Linear recommends fusing all speakers for maximum protection. Consult the speaker manufacturer for the proper fuse and install it in the speaker line.

**TAPE FUNCTIONS**

The Phase Linear 2000 preamplifier is equipped with two complete tape recording-playback circuits which provide for a great deal of flexibility. In addition to the usual record and playback facilities for two tape decks it is also possible to copy from Tape 1 onto Tape 2 or vice versa. Below are connection and operating instructions for using one or two tape machines.

**Playback of Tape 1:** Set the Selector Switch to the Tape 1 position and insure that the Tape 1 push button is in the **out** or source position.

**Record on Tape 1:** Set Selector Switch to the source you wish to record. With the Tape 1 push button in the **out** position you will hear the source you are recording. With the Tape 1 button in the **in** position you are monitoring the recording being made.

**Playback of Tape 2:** Same as procedure for Tape 1.

**Record on Tape 2:** Same as procedure for Tape 1.

**Copy Tape 1 onto Tape 2:** Set the Selector Switch to Tape 1 button in the **out** or source position. With the Tape 2 button **in** you are monitoring the new recording being made on Tape Deck 2. To hear the original source (Tape 1) the Tape 2 button must be in the **out** or source position.

**Copy Tape 2 onto Tape 1:** Set the Selector Switch to Tape 2 with the Tape 2 button in the **out** or source position. When the Tape 1 button is **in** you are monitoring the new recording being made on Tape 1. To hear the original source (Tape 2) the Tape 1 button should be **out**. It should be noted that while “dubbing” from one recorder to another you may only listen to tape as a source.

**Note:** For the correct connection and operation of auxiliary equipment normally used in the tape path, such as equalizers, you should refer to the respective manufacturer's instruction manual.
MAINTENANCE AND SERVICING

CLEANING
To keep your preamplifier clean and looking like new, occasionally clean the front panel with a soft paper towel and full strength ammonia. This will remove dulling films which have a tendency to build up on the brushed finish.

CAUTION: Never remove the front panel by turning the bolts on the face of your preamplifier. This will scar the front panel. To remove the front panel loosen the nuts on the rear of the unit. We do not recommended that any person other than a qualified technician authorized by Phase Linear remove the front panel. This could invalidate the unit’s warranty.

RETURN AUTHORIZATION
No preamplifier should be returned to the factory without an Authorized Return card which will be supplied by Phase Linear. Write to the factory in care of the Service Department for the authorization. Packages returned without an authorization card will not be accepted.

REPAIR FACILITIES
Only qualified technicians should be allowed to repair your Phase Linear 2000. The Phase Linear Corporation and its authorized warrant stations have the trained personnel and special equipment required to repair your unit. Should you have any trouble with your unit write to the factory for the address of the nearest repair facility. Please include the model and serial number of the unit together with a description of the problem.

SHIPPING
Never ship your Phase Linear in any shipping carton other than the original or a replacement supplied by Phase Linear. For a replacement write to the factory or see your local dealer. If the preamplifier is shipped in other than a Phase Linear carton which is properly packed, all damages must be paid for by the store or person shipping the unit. Ship only via a reputable carrier. DO NOT USE PARCEL POST! Insure the unit for the full value and double check to ensure the unit is properly packed.
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<tr>
<td><strong>High noise or hum</strong></td>
</tr>
<tr>
<td>Poor connection in wiring</td>
</tr>
<tr>
<td>Power amplifier turned up to</td>
</tr>
<tr>
<td>full gain</td>
</tr>
<tr>
<td>Check all wiring</td>
</tr>
<tr>
<td>Adjust amplifier</td>
</tr>
<tr>
<td><strong>High noise, hum or squeal in phono</strong></td>
</tr>
<tr>
<td>All above causes</td>
</tr>
<tr>
<td>Turntable not properly grounded</td>
</tr>
<tr>
<td>Turntable or phono cartridge not wired properly</td>
</tr>
<tr>
<td>High local RF radiation from local broadcasting stations</td>
</tr>
<tr>
<td>Ground to preamplifier</td>
</tr>
<tr>
<td>Check wiring</td>
</tr>
<tr>
<td>Keep leads short</td>
</tr>
<tr>
<td><strong>One channel dead</strong></td>
</tr>
<tr>
<td>Poor connection</td>
</tr>
<tr>
<td>Balance control improperly set</td>
</tr>
<tr>
<td>Front panel adjustments incorrect</td>
</tr>
<tr>
<td>Check wiring</td>
</tr>
<tr>
<td>Adjust</td>
</tr>
<tr>
<td>Read connection procedures</td>
</tr>
<tr>
<td><strong>All channels dead</strong></td>
</tr>
<tr>
<td>Tape monitor engaged</td>
</tr>
<tr>
<td>Power amplifier inoperative</td>
</tr>
<tr>
<td>Improper hookup</td>
</tr>
<tr>
<td>Source not operative</td>
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<tr>
<td>Selector switch set incorrectly</td>
</tr>
<tr>
<td>Adjust switch</td>
</tr>
<tr>
<td>Check amplifier fuses</td>
</tr>
<tr>
<td>Check</td>
</tr>
<tr>
<td>Check tuner, turntable or tape deck</td>
</tr>
<tr>
<td>Reset switch</td>
</tr>
<tr>
<td><strong>Distortion</strong></td>
</tr>
<tr>
<td>Power amplifier fuses blow</td>
</tr>
<tr>
<td>Phono tone arm vibrating</td>
</tr>
<tr>
<td>Replace fuses</td>
</tr>
<tr>
<td>Insure turntable is not affected by the acoustic vibrations from your speakers.</td>
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SPECIFICATIONS

FREQUENCY RESPONSE
Phono ± .5dB of RIAA Standard

TOTAL HARMONIC DISTORTION
Basically so low it is unmeasurable. Less than .1% at rated output with IHF measurement.

INPUT SENSITIVITY
High level input: 350mV
Low level input (Phono) 3.2mV

INPUT IMPEDANCE
High level input: 40k
Low level input: 47k, 290pf

HUM AND NOISE
20Hz to 20,000Hz inputs shorted:
High level: 88dB below 2V
Low level: 74dB below a 10mV input

AMBIENCE SIGNAL
(L-R) → L & (R-L) → R

GAIN
Low Level (Phono) to preamplifier output: 56dB at 1kHz
Phono to tape output: 41dB at 1kHz
High level to preamplifier output: 15dB at 1kHz

VOLUME CONTROL TRACKING
Less than 1dB tracking error.

DYNAMIC RANGE:
Phono overload 80mV

MAXIMUM OUTPUT LEVELS:
Rated at 2V; maximum 10 volts will source a 5k ohm load.

TONE CONTROLS
10 step Rotary Switch for each channel. Turnover frequencies adjustable.

BASS
Turnover Frequency 50Hz: ± 11dB at 20Hz
Turnover Frequency 150Hz: ± 13dB at 20Hz

TREBLE
Turnover Frequency 5kHz: ± 10dB at 20,000 Hz
Turnover Frequency 2kHz: ± 14dB at 20,000 Hz

AC OUTLETS
2 switched; 1 unswitched

DIMENSIONS
5½” H × 19” W × 6” D
Weight: 9 lb. without cabinet

OPTIONAL ACCESSORY
Walnut Cabinet