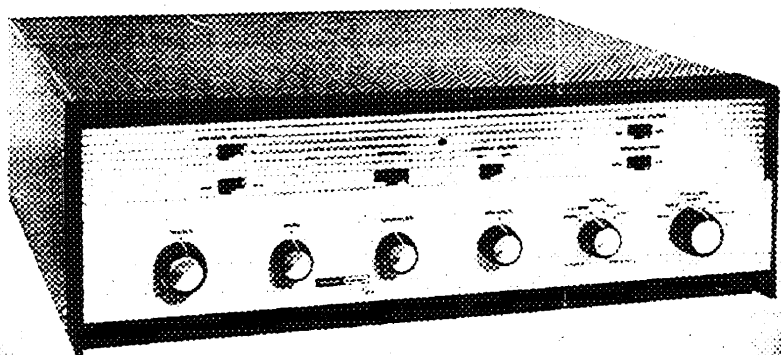


harman kardon



The Epic

MODEL A-250

STEREOPHONIC AMPLIFIER

## INSTRUCTION MANUAL

It is essential you read this instruction booklet carefully before installing your high fidelity system. You have invested in an extremely fine electronic instrument into which many excellent engineering developments have been incorporated, and each is important for the proper operation of your system. This booklet has been written in simple non-technical language and if you will take time to read it first before doing anything else, you will find it simple to obtain optimum performance from your Harman-Kardon Model A-250 Stereophonic Amplifier.

Be sure to keep this booklet available at all times. It contains indispensable technical and service information.



*This is the Harman-Kardon Stereo Symbol. It is your assurance of superb stereo performance.*

## GENERAL DESCRIPTION

The A-250 stereophonic amplifier is extremely versatile and may be used in any of the following ways.

- 1—Stereophonic amplifier with 25 watts of audio in each channel.
- 2—Monaural amplifier with 50 watts of audio, 100 watt peaks.
- 3—Stereophonic conversion amplifier utilizing your present high fidelity amplifier or combination unit for the second channel.

## UNPACKING

After unpacking the Epic, inspect it carefully for signs of transit damage. The unit was subjected to many inspections and tests prior to final packing, and it therefore should be in perfect condition. If damage is visible, notify your dealer at once. If the unit was shipped to you, notify the transportation company without delay.

Check the contents of the carton thoroughly and inspect the folds of the packing material before discarding it. Your package should contain the following items:

- 1 Epic, Model A-250 Stereophonic Amplifier-Preamplifier.
- 1 Instruction Booklet.
- 1 Warranty Card.
- 1 Mounting Template.

## WARRANTY POLICY

We urge you to completely fill in your warranty card and mail it to the factory without delay to protect your rights under warranty. The warranty cards are carefully filed for reference and should you require information on the use of this high fidelity unit, or repair service, we will be able to immediately identify your set and reply quickly.

**NOTE:** It is necessary to receive factory authorization before returning a set for warranty repair either to the factory or to an authorized station. Repairs are to be returned on an Express Prepaid basis. A letter describing the exact difficulty must be enclosed with the unit.

## WARRANTY

We warrant each Model A-250 to be free from defects in material and workmanship under normal use and service, and in accordance with the conditions herein below set forth, for a period of 1 year from date of delivery to the original purchaser, and agree to replace or repair any part or parts, with the exception of tubes which are under the manufacturer's 90 day warranty, returned to us within said 1 year, with transportation prepaid and which our examination shall disclose to our satisfaction to have been thus defective. This warranty does not include free labor, nor is it applicable to any instrument which shall have been repaired or altered in any way so as in our judgment to affect its stability or reliability nor which has been subject to neglect, misuse, abuse, negligence or accident nor which has had the serial number altered, effaced, or removed. Neither shall this warranty apply to any instrument which has been connected otherwise than in accordance with instructions furnished by us.

This warranty is expressly in lieu of all other warranties, express or implied, and of all other obligations or liability on our part, and we neither assume nor authorize any representative or other person to assume for us any other liability in connection with the sale of this instrument.

# USING THE MODEL A-250 AS A STEREOPHONIC AMPLIFIER

## INSTALLATION PROCEDURE

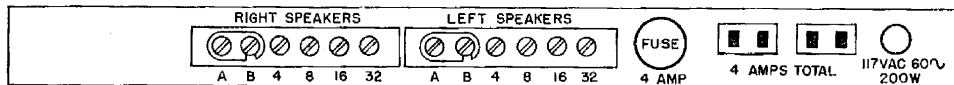
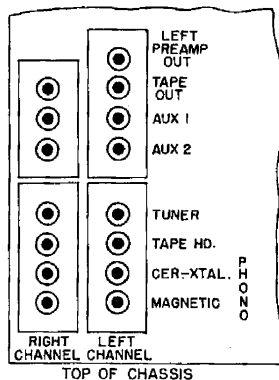
### Ventilation:

The unit is well ventilated in itself, but sufficient space must be allowed around it to permit proper air flow. Install the amplifier in a manner to allow for unrestricted circulation. Do not place books or other objects on the cage or in the immediate vicinity of the instrument. Reducing the air flow will result in sharply reduced component and tube life.

### Power Requirements:

Plug the AC cord into any outlet furnishing 117 volts 50 or 60 cycle AC current. The voltage may vary between 105 and 125 volts. Two AC convenience outlets are located on the rear of the instrument. Auxiliary equipment (tape deck, record player, additional amplifier) may be plugged into these outlets and will be controlled by the on/off switch located on the A-250.

## REAR PANEL CONNECTIONS



REAR PANEL MODEL A250

### Connecting Your Speakers:

Your two speakers should be matched if possible to obtain optimum results and should be placed approximately 8 to 15 feet apart against one wall of your listening room. Corner placement is also quite acceptable. Facing the speakers straight out or slanting them slightly will depend on your room size, acoustic effect and where you will be seated for listening. It may be necessary to experiment with speaker placement until best results are obtained.

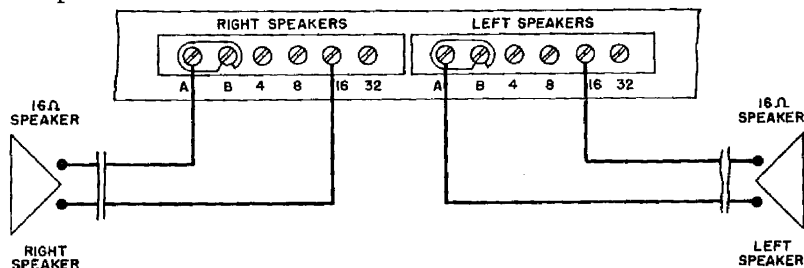
Use any type wire to connect your speakers. Lamp cord is excellent and may be easily dressed around the molding for an inconspicuous and neat installation.

### Normal Stereo Speaker Arrangement:

Connect one lead from the left speaker to the 16 ohm terminal on the LEFT SPEAKER OUTPUT strip and the other lead to the A and B terminal on the same strip. Now connect one of the leads from the right speaker to the 16 ohm terminal on the RIGHT SPEAKER OUTPUT strip and the other lead to the A or B terminal on the same strip. NOTE: A and B terminals on both SPEAKER output strips are strapped together at the factory and should be allowed to remain strapped for this method of stereo speaker connection. (See Diagram A) The output terminals used should be those marked with the same impedance as the speakers. The above illustration is for 16 ohm speakers. If you are using 8 ohm speakers connect to the 8 ohm SPEAKER output terminals rather than to the 16 ohm terminals.

The two **SPEAKER SELECTOR** switches located on the front panel are inoperative for this method of connection, and their setting is therefore not critical.

**IMPORTANT:** For all methods of stereo operation, the **SEPARATE-PARALLEL** switch mounted on the front chassis support apron directly behind the pilot light *must* remain in the "SEPARATE" position. The cage (if used) must be removed to provide access to this switch.



**Diagram A**

**Two Independent Stereo Speaker Systems:**

The Model A-250 stereo amplifier incorporates a unique switching arrangement enabling the user to operate two independent stereo speaker systems located in different rooms.

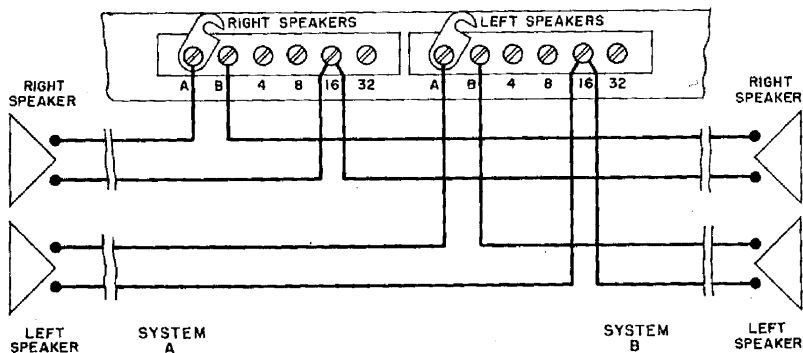
Remove the shorting bar between A and B terminals on both **SPEAKER** output strips. Connect a lead from the left speaker in System A to the 16 ohm terminal on the **LEFT SPEAKER OUTPUT** strip and another lead from this speaker to the A terminal on the same strip. Connect the right speaker in System A to terminals 16 and A on the **RIGHT SPEAKER OUTPUT** strip. This completes System A installation.

To install System B connect a lead from the left speaker to the 16 ohm terminal on the **LEFT SPEAKER OUTPUT** strip and another lead to the B terminal on the same strip. Now connect the right speaker in System B to the 16 and B terminals on the **RIGHT SPEAKER OUTPUT** strip. This completes System B installation. (See Diagram B)

The above illustration is for 16 ohm speakers. If you are using 8 ohm speakers connect to the 8 ohm terminals on the **SPEAKER OUTPUT** strip rather than to the 16. If one pair of speakers is 8 ohms and the other pair 16 ohms, then connect appropriately.

For this type of installation the **SPEAKER SELECTOR** switches located on the front panel are operative. See Stereo Operating Instructions.

**IMPORTANT:** The **SEPARATE-PARALLEL** switch located on the front chassis support apron directly behind the pilot light must remain in the "SEPARATE" position. The cage (if used) must be removed to provide access to this switch.



**Diagram B**

Since several different recording curves have been used in the past (differing with respect to the turnover points and the degree of emphasis or de-emphasis) a choice of playback curves is provided in Harman-Kardon instruments.

For all stereophonic records set the EQUALIZATION switch in the RIAA position.

For stereophonic tapes set the control to the appropriate tape playback speed. This automatically compensates for the tape equalization.

### ADDITIONAL INFORMATION

#### Speaker Phasing:

When more than one speaker is used in any music reproducing system they must be connected in such a way as to aid each other, rather than to work against each other. Since two speakers must be used for stereo reproduction, this caution applies. Checking for phase, and correcting if necessary, is quite simple, and is done at the time of installation of the system.

Play a record with readily apparent bass tones. Listen carefully to the strength and clarity of the bass. Now reverse the connections of *one* of the speakers. If the bass notes are now louder and clearer, the speakers are now correctly phased. If the bass seems weaker, the original connection was correct.

#### How To Play A Monaural LP Record:

If you have been playing stereo records, merely remove the stereo record and put on a monaural record. It's as simple as that! All stereo record players and phonographs are completely compatible with monaural LP records. LP's and stereos may be intermixed on any good stereo record changer.

## USING THE MODEL A-250 AS A MONAURAL AMPLIFIER

### INSTALLATION PROCEDURE

#### Connecting Your Speakers:

The Model A-250 may be used as a 50 watt monaural amplifier merely by throwing the SEPARATE-PARALLEL switch, located on the front chassis support apron directly behind the pilot light, to the "PARALLEL" position and by strapping the speaker output strips together. **IMPORTANT:** Whenever the SEPARATE-PARALLEL switch is in the "PARALLEL" position, the speaker output terminals must be strapped together, and conversely, whenever the speaker output terminals are strapped together, the SEPARATE-PARALLEL switch must be in the "PARALLEL" position.

Connect one speaker lead to either 32 ohm terminal on the SPEAKER OUTPUT strip and the other lead to either A terminal. Tie the 32 ohm terminals together. If you are using an 8 ohm speaker, tie the two 16 ohm terminals together instead of the 32 ohm terminals as described. The A and B terminals on both output strips have been strapped together at the factory, and should be left that way. The SPEAKER SELECTOR switches located on the front panel may be placed in any position since they are inoperative for this method of operation. (See DIAGRAM C).

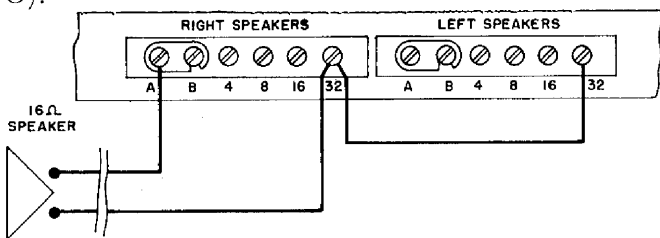


Diagram C

## Connecting Two Monaural Speaker Systems:

Set the SEPARATE-PARALLEL switch in the "PARALLEL" position and strap both 32 ohm terminals. Remove the straps between A and B on the LEFT and RIGHT SPEAKER OUTPUT strips. Attach one speaker to the 32 ohm and A terminal on the LEFT SPEAKER OUTPUT strip and the other speaker to the 32 ohm and B terminal on the LEFT SPEAKER output strip. (See Diagram D).

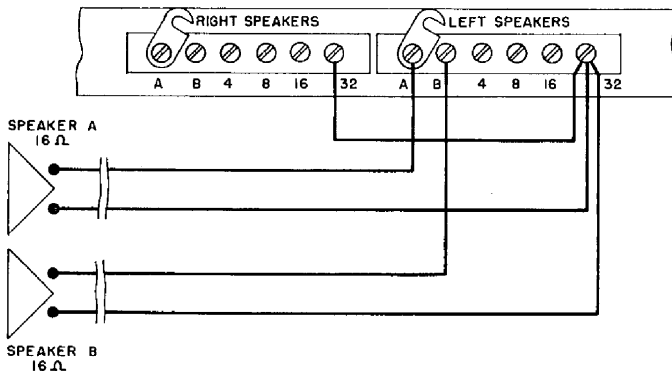


Diagram D

## Connecting Your Tuner:

The output of your monaural tuner should be connected to either the LEFT or RIGHT TUNER INPUT jacks located on the rear panel. Plug the AC power cord of your tuner into one of the AC convenience outlets located on the rear panel of the A-250 amplifier.

## Connecting Your Record Player:

Any type of monaural record player may be used with this amplifier. If your player uses a low level magnetic cartridge plug it into either the RIGHT or LEFT CHANNEL MAGNETIC input. If you are using a monaural ceramic or crystal cartridge plug it into either the RIGHT or LEFT CER-XTAL input.

## Connecting Your Tape Player:

Connect your monaural tape deck to either the RIGHT or LEFT CHANNEL TAPE HD input jack.

## Connecting Your Tape Recorder:

Since most monaural tape recorders have their own preamplifier, it is not desirable to plug the output of the recorder into the TAPE HEAD jack. This might cause overloading of the input stage. Connect the recorder output plug to either LEFT or RIGHT AUX 1 or AUX 2 jack on the rear panel.

## Connecting Your Tape Recorder To Make A Recording:

Provision is made on your Model A-250 amplifier to permit the recording of any program material. Connect the input of your monaural tape recorder to either the LEFT or RIGHT TAPE OUT receptacle located on the rear panel. If the program source you desire to record is plugged into the left preamplifier channel, use the LEFT TAPE OUT jack and if it is plugged into the right preamplifier channel, use the RIGHT TAPE OUT jack. This will enable you to make a recording with the proper recording equalization as determined by your recorder, while simultaneously monitoring the program with the proper tone control, contour and loudness setting.

## Connecting Auxiliary Monaural Equipment:

A TV tuner or other similar device with high output level may be connected to either the LEFT or RIGHT AUX 1 or AUX 2 jack on the rear panel.

No further connections need be made to your old monaural amplifier. Program sources such as tuner, tape, phonograph, etc., are connected to the appropriate receptacles on the A-250 as described under stereo installation.

#### **Lead Dress:**

A black plastic clamp is located on the rear of the chassis near the input receptacles. Remove the rubber clamp on the upper portion of the block, insert the shielded leads into the clamp assembly and replace the rubber clamp. This will offer a neat installation.

### **OPERATING YOUR MODEL A-250 AS A CONVERSION AMPLIFIER**

Operation of the Model A-250 as a stereo conversion amplifier is identical with its operation as a normal stereo amplifier. The controls of the old monaural amplifier, now being used as one channel of your new stereo system, must be properly set, however, and then left permanently in that setting. Set the tone controls and contour switch to flat, the rumble and scratch filter switches to off, and the function selector to AUX or TUNER, depending on which input receptacle was used for connecting to the A-250.

Set the VOLUME control on your old amplifier to minimum and adjust the BALANCE Control on your Model A-250 to the mid-point. Play a stereo record or tape and turn the LOUDNESS Control on your A-250 up to a normal listening volume. The left channel will be inoperative since the volume control on this amplifier is set at minimum. Now slowly rotate the volume control on your old amplifier until the loudness of the two channels is equal. Allow the volume control on your second amplifier to remain in this position permanently.

### **ADDITIONAL INFORMATION**

#### **Speaker Phasing:**

When more than one speaker is used in any music reproducing system they must be connected in such a way as to aid each other, rather than to work against each other. Since two speakers must be used for stereo reproduction, this caution applies. Checking for phase, and correcting if necessary, is quite simple, and is done at the time of installation of the system.

Play a record with readily apparent bass tones. Listen carefully to the strength and clarity of the bass. Now reverse the connections of *one* of the speakers. If the bass notes are now louder and clearer, the speakers are now correctly phased. If the bass seems weaker, the original connection was correct.

#### **How To Play A Monaural LP Record:**

If you have been playing stereo records, merely remove the stereo record and put on a monaural record. It's as simple as that! All stereo record players and phonographs are completely compatible with monaural LP records. LP's and stereos may be intermixed on any good stereo record changer.

#### **System Hum and Noise:**

In any high fidelity installation, hum may be caused by the interconnection of a record changer, tuner and amplifier, as a result of the cables and different grounds. A good way to eliminate this problem is to first disconnect everything but the speakers from the amplifier, and listen for hum. If the hum persists, make the balance adjustments described below. Try reversing the amplifier power plug. Now plug in the record player. If hum appears, try reversing the record player power plug, and try connecting a wire from the record player chassis to the amplifier chassis. In this way, connect the tuner, tape deck and other devices in turn.

Note that hum may be picked up by defective interconnecting cables, and by interconnecting cables running too close to power cables.

### **Lead Dress:**

A black plastic clamp is located on the rear of the chassis near the input receptacles. Remove the rubber clamp on the upper portion of the block, insert the shielded leads into the clamp assembly and replace the rubber clamp. This will offer a neat installation.

## **OPERATING THE MODEL A-250 AS A MONAURAL AMPLIFIER**

The Model A-250 incorporates the following front panel controls. Viewing the instrument from left to right you will note a TREBLE control (on/off switch is incorporated in this control), BASS control, LOUDNESS control, BALANCE control, MODE switch and FUNCTION switch. On the upper left section of the front panel you will note two SPEAKER SELECTOR switches and a CONTOUR switch. On the upper right there is a RUMBLE FILTER switch, a SCRATCH FILTER switch and an EQUALIZATION switch.

### **TECHNICAL EXPLANATION OF THE CONTROLS**

#### **Bass and Treble:**

These controls provide the full range of tonal adjustment necessary for high fidelity listening. These controls can either boost or cut the bass and treble tones of your monaural system. The controls should be set in accordance with your listening preference, speaker characteristics and room acoustics.

#### **Loudness Control:**

This control adjusts the volume level of any program material fed into your high fidelity system. Its effect can be modified by the CONTOUR switch.

#### **Contour Switch:**

One of the limitations of human hearing is its tendency to lose sensitivity to the very low pitched sounds, as the program sound level is reduced. It is this characteristic (known as the Fletcher-Munson effect) which causes one to play music programs at high listening level in order to experience the full rich tone available from fine modern recordings. The Harman-Kardon CONTOUR switch compensates for the Fletcher-Munson effect, thus eliminating high listening levels as a requisite for full enjoyment of reproduced music.

For low level listening throw the CONTOUR switch located on the front panel to either number 1 or number 2 position, depending on your listening preference. You will note how the low frequencies become more apparent while the volume level remains unchanged.

#### **Balance Control:**

This control has no function in monaural listening and should be left in the center position. If rotated to either extreme position, it would completely shut off the preamplifier on that side.

#### **Mode Switch:**

The only application for this switch in monaural operation is to select between the two preamplifiers. This allows for double the usual number of input jacks found on ordinary monaural amplifiers. The STEREO NORMAL and MONAURAL RIGHT positions are identically connected and will activate the Right preamplifier, therefore switching on all program material connected to this preamplifier. STEREO REVERSE and MONAURAL LEFT are identically connected and will activate the Left preamplifier.

For simplicity, it is suggested to use only the MONAURAL RIGHT and MONAURAL LEFT positions on the MODE switch for monaural operation. Switch to MONAURAL RIGHT or MONAURAL LEFT as a function of the preamplifier you wish to use.

#### **Function Switch:**

The FUNCTION switch selects the desired type of program source and has five positions: AUX 1 and AUX 2 selects equipment connected to the



auxiliary input jacks. TUNER selects your monaural tuner for operation and PHONO selects either your magnetic or ceramic cartridge. TAPE HD selects your tape deck.

### **Speaker Selector Switch:**

In a monaural installation where more than one set of speakers are installed (for example: one speaker in the living room and another in the den) selection between the two speakers is made by operating the SPEAKER SELECTOR switch on the front panel.

To operate Speaker A (located in your living room) set the upper SPEAKER SELECTOR switch located on the front panel to "A", and the lower SPEAKER SELECTOR switch to "One". To select Speaker B (located in another room), set the upper SPEAKER SELECTOR switch to "B" and the lower SPEAKER SELECTOR switch to "One". To operate both speakers simultaneously, set the upper SPEAKER SELECTOR switch to either "A" or "B" and set the lower SPEAKER SELECTOR switch to "ALL".

### **Rumble Filter Switch:**

At times, record changers, turntables and even some FM stations produce an objectionable low frequency signal that is strong enough to be introduced into the sensitive playback system. Known as "Rumble", this undesirable signal can be eliminated by the RUMBLE FILTER switch incorporated in the Model A-250. Whenever rumble is encountered, set the switch to "ON".

### **Scratch Filter Switch:**

In the event of objectionable high frequency record scratch throw the SCRATCH FILTER switch to "ON". This will roll off the higher frequencies.

### **Equalization Switch:**

In order to assure good reproduction of the wide range of frequencies in music and to make necessary adjustments for the limitations of the recording technique, record manufacturers have found it necessary to modify the actual frequency response of the music while it is being recorded. Thus, to avoid over-cutting and consequent distortion, a measured and deliberate reduction is effected in low frequency response by selecting a "turnover frequency" and by recording attenuated response below that point. To assure optimum signal-to-noise at the high frequency end when the record is played at home, the highs are deliberately exaggerated during the recording process. A measured and deliberate boost is effected above a certain frequency. This combination of deliberate exaggeration at the low and high ends of the frequency response can be expressed in a "recording curve". When the record is played a mirror image of that curve should be available so that the ideal "flat" response may be achieved. Since several different recording curves have been used in the past (differing with respect to the turnover points and the degree of emphasis or de-emphasis) a choice of playback curves is provided in Harman-Kardon instruments.

Monaural records usually indicate the correct equalization setting on the jacket. Follow the record manufacturer's recommendation as to the exact setting. However, it should be noted that it is not compulsory to adhere strictly to the recommendation. For example: Capital records are recommended to be played on the "RIAA" equalization curve, but if for some reason (room acoustics, speaker location, type of program source) the sound is not quite satisfactory, it is permissible to change the equalization control setting to "EUR". If the overall sound quality pleases you more, leave it that way. Your hearing should be the final judge as to the exact equalization control setting.

For monaural tape playback set the control to the appropriate tape speed. This automatically compensates for the tape equalization.

# USING THE MODEL A-250 AS A CONVERSION AMPLIFIER FOR STEREO

If you now own a basic amplifier, or an amplifier-preamplifier, you may utilize the Model A-250 for the second channel and control the entire stereo system with the A-250 preamplifiers. For this application the Model A-250 is connected in the manner described below.

## INSTALLATION PROCEDURE

### Connecting Your Speakers:

Your two speakers should be matched if possible to obtain optimum results and should be placed 8 to 15 feet apart against one wall of your listening room. Corner placement is also quite acceptable. Facing the speakers straight out or slanting them slightly, will depend on your room size, acoustic effect and where you will be seated for listening. It may be necessary to experiment with speaker placement until best results are obtained.

Use any type wire to connect your speakers. Lamp cord is excellent and may be easily dressed around the molding for an inconspicuous and neat installation.

### Speaker Connection For Conversion Arrangement:

Set the SEPARATE-PARALLEL switch located on the front chassis support apron directly behind the pilot light to the "PARALLEL" position and strap the appropriate Speaker Output terminals together. **IMPORTANT:** Whenever the SEPARATE-PARALLEL switch is in the "PARALLEL" position, the Speaker Output terminals must be strapped together, and conversely whenever the Speaker Output terminals are strapped together, the SEPARATE-PARALLEL switch must be in the "PARALLEL" position.

Connect Speaker A (refer to Diagram E) to either 32 ohm terminal on the SPEAKER OUTPUT strip and the other lead to either A terminal. Now tie the two 32 ohm terminals together. The A and B terminals on both output strips have been strapped together at the factory, and should be left that way. If you are using an 8 ohm speaker, tie the two 16 ohm terminals together instead of the 32 ohm terminals as described. The SPEAKER SELECTOR switch on the front panel may be placed in any position since it is inoperative for this method of installation.

Connect Speaker B to the "G" and 16 ohm speaker terminals on your other monaural amplifier.

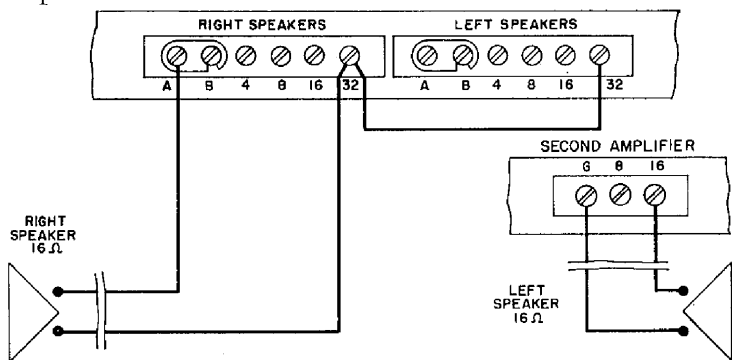


Diagram E

### Connecting Both Amplifiers For Stereo Operation:

Connect a shielded lead not longer than 3 or 4 feet between the LEFT PREAMP OUT jack on the rear of the A-250 and the Aux or Tuner input on your other amplifier.

**IMPORTANT:** Connect the AC power cord from your monaural amplifier to the AC convenience outlet on the rear of the Model A-250. The on/off switch on the A-250 will now control the power for both amplifiers.

### **Connecting Your Tuner:**

The FM output of your Harman-Kardon stereo tuner should be connected to the LEFT CHANNEL TUNER input jack located on the top rear of the chassis. The AM output should be connected to the RIGHT CHANNEL TUNER input jack. The same method applies if you are using separate FM and AM tuners. Plug the AC line cord of your tuner into one of the AC convenience outlets located on the rear of the chassis.

### **Connecting Your Stereo Record Player:**

A stereo cartridge uses two output plugs. If you are using a magnetic type low output cartridge plug one of the output leads into the LEFT CHANNEL MAGNETIC input jack and the other lead into the RIGHT CHANNEL MAGNETIC input jack.

Stereo crystal or ceramic cartridges may also be used with this amplifier. They must be plugged into the LEFT CHANNEL and RIGHT CHANNEL CER-XTAL input jacks.

### **Connecting Your Stereo Tape Player:**

A stereophonic tape deck utilizes two playback heads usually contained in one head assembly. Each head has its own output plug. Connect one plug to the LEFT CHANNEL TAPE HD input jack and the other plug to the RIGHT CHANNEL TAPE HD input jack.

### **Connecting Your Stereo Tape Recorder:**

Since most stereophonic tape recorders have their own preamplifiers, it is not desirable to plug the output of the recorder into the TAPE HD input jacks. This might result in overloading of the input stage and cause distortion. Connect one of the output plugs into the LEFT CHANNEL AUX 1 or AUX 2 input jacks and the other plug into the RIGHT CHANNEL AUX 1 or AUX 2 input jacks.

### **Connecting Your Tape Recorder To Make A Recording:**

Provision is made on your Model A-250 to permit the recording of any program material. Connect the left input of your stereo tape recorder to the jack marked LEFT CHANNEL TAPE OUT and the right input of your stereo tape recorder to the jack marked RIGHT CHANNEL TAPE OUT. To connect a monaural tape recorder, connect its input to either LEFT or RIGHT CHANNEL TAPE OUT receptacle. If the program source you desire to record is plugged into the left preamplifier channel, use the LEFT TAPE OUT jack, and if it is plugged into the right preamplifier channel, use the RIGHT TAPE OUT jack. This will enable you to make a recording with the proper recording equalization as determined by your recorder, while simultaneously monitoring the program with the proper tone control, contour and loudness setting.

### **Lead Dress:**

A black plastic clamp is located on the rear of the chassis near the input receptacles. Remove the rubber clamp on the upper portion of the block, insert the shielded leads into the clamp assembly and replace the rubber clamp. This will offer a neat installation.

## **OPERATING THE MODEL A-250 AS A STEREOPHONIC AMPLIFIER**

Every control on a well designed and honestly considered high fidelity instrument has a specific useful function, related to each of the other controls. A brief explanatory note on the relationship of the various front panel controls will doubtless prove useful in organizing and clarifying them for you.

The Model A-250 incorporates the following front panel controls. Viewing the instrument from left to right you will note a TREBLE control (on/off switch is incorporated in this control), BASS control, LOUDNESS control, BALANCE control, MODE switch and FUNCTION switch. On the upper left section of the front panel you will note two SPEAKER SELECTOR switches and a CONTOUR switch. On the right section of the front panel there is a RUMBLE FILTER switch, SCRATCH FILTER switch and an EQUALIZATION switch.

### TECHNICAL EXPLANATION OF THE CONTROLS

Since a stereo amplifier is actually two amplifiers in one, the number of operating controls would normally be doubled. This would make operation unnecessarily cumbersome. For convenience the duplicate controls are mechanically tied together, or ganged, to be operated by one knob.

#### **Bass and Treble:**

The BASS and TREBLE controls on the Model A-250 provide the full range of tonal adjustment necessary for high fidelity listening. These controls can either boost or cut the bass and treble tones of the stereo system. The controls should be set in accordance with your listening preference, speaker characteristics and room acoustics.

#### **Loudness Control:**

This control adjusts the volume level of any program material fed into your stereo system. Its effect can be modified by the CONTOUR switch.

#### **Contour Switch:**

One of the limitations of human hearing is its tendency to lose sensitivity to the very low pitched sounds, as the program sound level is reduced. It is this characteristic (known as the Fletcher-Munson effect) which causes one to play music programs at high listening level in order to experience the full rich tone available from fine modern recordings. The Harman-Kardon CONTOUR switch compensates for the Fletcher-Munson effect thus eliminating high listening levels as a requisite for full enjoyment of reproduced music.

For low level listening throw the CONTOUR switch located on the front panel to either number 1 or number 2 position depending on your listening preference. You will note how the low frequencies become more apparent while the volume level remains unchanged.

#### **Balance Control:**

The nature of stereo reproduction is such that it requires two identical channels to attain the highest degree of faithfulness and spatial distribution. Any variation in the efficiency of one channel as compared to the other will disturb this relationship. Since there may be slight differences between the two speakers, tape heads, etc., the A-250 includes a control to balance one channel against the other. Sufficient range is covered by this control to permit rebalancing of the overall system even in cases where major unbalance exists. This control may be set anywhere within its range to attain system balance.

When the BALANCE control is properly set, the apparent sound source will lie in a broad area between the two speakers. When the BALANCE control is rotated to the right the sound will move to the right and when the control is rotated to the left, the sound will move to the left.

#### **Mode Switch:**

The MODE switch selects between stereo operation, where a stereo program source is available, and monaural operation utilizing the full power of both channels and both speakers when the program source is monaural only.

This switch has four positions. STEREO NORMAL enables the speakers to operate in the manner in which they are normally connected. STEREO REVERSE interchanges the channels so that the program source appearing at the left speaker now appears at the right and the program source appearing at the right speaker reverses to the left. MONAURAL RIGHT and MONAURAL LEFT can be utilized when the amplifier is used in stereo connection, but with a monaural program source such as an FM broadcast. Setting the MODE switch to RIGHT allows any program material being fed into the right stereo input to be reproduced by both speakers simultaneously. Setting the MODE switch to LEFT allows all program material being fed into the left stereo input to be reproduced by both speakers simultaneously. Under each of these conditions the combined power of both channels is available.

#### **Function Switch:**

The FUNCTION switch selects the desired type of program source and has five positions. AUX 1 and AUX 2 selects equipment connected to the auxiliary input jacks. TUNER selects your stereo tuner for operation and PHONO selects either your magnetic or ceramic stereo cartridge. TAPE HD selects your stereo tape deck.

#### **Speaker Selector Switch:**

In a stereo installation where more than one set of stereo speakers are installed (for example: one pair of speakers in the living room and one pair in the den) selection between the two systems is made by operating the two SPEAKER SELECTOR switches located on the front panel.

To operate only System A, set the upper SPEAKER SELECTOR switch to "A" and the lower switch to "ONE". To operate only System B, set the upper SPEAKER SELECTOR switch to "B" and the lower speaker switch to "ONE". To operate both systems simultaneously, the upper speaker switch may remain in "A" or "B" and the lower SPEAKER SELECTOR switch must be set to "ALL".

#### **Rumble Filter Switch:**

At times, record changers, turntables, and even some FM stations produce an objectionable low frequency signal that is strong enough to be introduced into the sensitive playback system. Known as "Rumble" this undesirable signal can be eliminated by the special RUMBLE FILTER switch incorporated in the Model A-250. Whenever rumble is encountered, set the switch to "ON".

#### **Scratch Filter Switch:**

In the event of objectionable high frequency record scratch, throw the SCRATCH FILTER switch to "ON". This will roll off the higher frequencies.

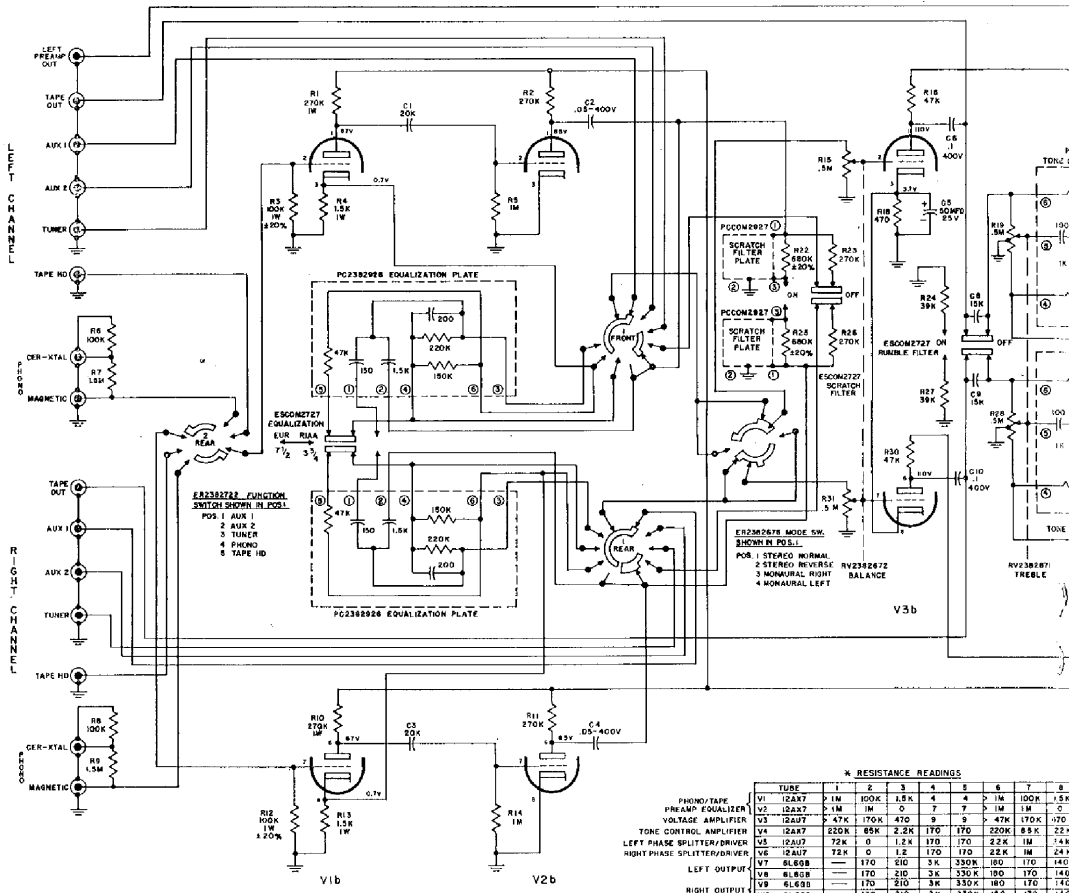
#### **Equalization Switch:**

In order to assure good reproduction of the wide range of frequencies in music and to make necessary adjustments for the limitations of the recording technique, record manufacturers have found it necessary to modify the actual frequency response of the music while it is being recorded. Thus, to avoid overcutting and consequent distortion, a measured and deliberate reduction is effected in low frequency response by selecting a "turnover frequency" and by recording attenuated response below that point. To assure optimum signal-to-noise at the high frequency end when the record is played at home, the highs are deliberately exaggerated during the recording process. A measured and deliberate boost is effected above a certain frequency. This combination of deliberate exaggeration at the low and high ends of the frequency response can be expressed in a "recording curve". When the record is played a mirror image of that curve should be available so that the ideal "flat" response may be achieved.

V1a  
12AX7/ECC83

V2a  
12AX7/ECC83

V3a  
12AU7/ECC82



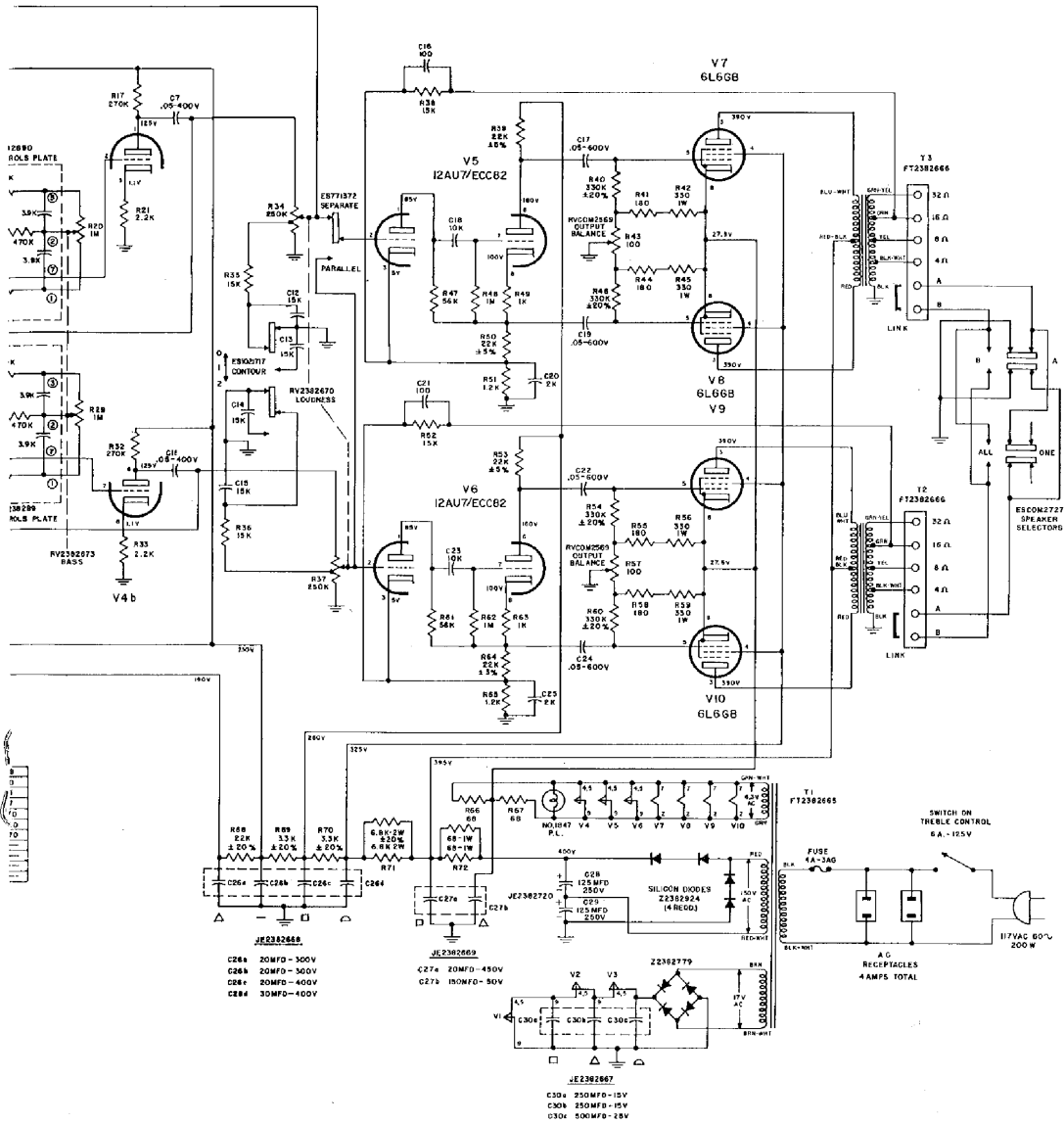
ES238272 FUNCTION SWITCH (SEE IN POS. 1) POS. 1 AUX 1 2 AUX 2 3 TUNER 4 PHONO 5 TAPE HD

\* RESISTANCE READINGS

TUBE	1	2	3	4	5	6	7	8
V1 12AX7	1M	100K	1.5K	4	4	1M	100K	1.5K
V2 12AX7	1M	1M	0	7	7	1M	1M	0
V3 12AU7	2.47K	170K	470	9	9	47K	170K	170
V4 12AU7	220K	68K	2.2K	170	170	220K	68K	2.2K
V5 12AU7	75K	0	1.2K	170	170	2.2K	1M	14K
V6 12AU7	75K	0	1.2K	170	170	2.2K	1M	24K
V7 6L6GB	170	210	3K	330K	100	170	140	140
V8 6L6GB	170	210	3K	330K	100	170	140	140
V9 6L6GB	170	210	3K	330K	100	170	140	140
V10 6L6GB	170	210	3K	330K	100	170	140	140

\* FUNCTION SWITCH IN POS. 1  
 MODE SWITCH IN STEREO NORMAL  
 BALANCE CONTROL: CENTERED  
 LOUDNESS CONTROL: MIN.  
 TONE CONTROLS PLAT  
 CONTOUR SWITCH IN POS. 0  
 SCRATCH AND BUMBLE SWITCHES OFF

NOTE:  
 UNLESS OTHERWISE SHOWN  
 ALL RESISTORS 1/2 WATT 510%  
 ALL CAPACITOR VALUES WITH DECIMAL TO BE PAPER IN WFO  
 ALL CAPACITOR VALUES WITHOUT DECIMAL TO BE GENERAL  
 PURPOSE CERAMIC 500VDC IN WFO  
 ALL VOLTAGES ARE DC  
 ALL RESISTANCES ARE IN OHMS



## ADJUSTMENTS

### Output Tube Balance Controls:

There are two output tube balance controls located between the output tubes. They are accessible from below when the bottom plate is removed and from above when the cage is removed.

These controls are factory adjusted and should not be touched unless tubes are changed. If adjustment is necessary follow the procedure listed below.

1. Set the volume control to minimum volume.
2. Turn off all auxiliary equipment connected to the A250.
3. Slowly rotate the control for minimum hum.
4. If it is not possible to hear hum in your speakers, set the balance control to the mid-position.
5. For absolute perfection adjust the balance control on an IM distortion analyzer for minimum intermodulation distortion.

## MAINTENANCE AND REPAIRS

### Fuse:

In the event of a potentially damaging failure of tubes or components, the Model A-250 is protected by a 4 ampere, type 3AG fuse, located on the rear of the unit. If this fuse is blown, it should be replaced only with one of the same rating. Replacing with a fuse of higher rating will not protect the amplifier, and may result in severe damage, which will not be covered by the factory warranty.

### Repair:

Only the most qualified service technician should be employed, as special equipment and training is required to properly service a high fidelity amplifier. This manual contains information of great value to the repairman, and should be kept available.

Factory Warranty Stations are maintained in most major cities. For the address of the nearest one, or for any other information relating to your Harman-Kardon products, write to the attention of the Customer Service Department, Harman-Kardon, Inc., 520 Main St., Westbury, N. Y. Be sure to include the model and serial number of the set in question. A short description of your complete installation is often of help in answering your questions.

### A250 REPLACEMENT PARTS LIST

Part No.	Description	Price
ESCOM2727	Slide Switch—DPDT	.40
ES1021717	Slide Switch—DPDT	.70
FT2382665	Transformer—Power	20.50
FT2382666	Output Transformer	18.75
JE2382667	Electrolytic Cond. 500MFD/25V, 250MFD/15V	2.95
JE2382669	Electrolytic Cond. 20MFD/450V, 150MFD/50V	2.10
JE2382668	Electrolytic Cond. 30-20MFD/400V, 20-20MFD/300V	3.20
RVCOM2569	Balance Pot 100 Ohm	.60
Z2382779	Selenium Rectifier Int. Rec. #BIB	3.75
ER2382722	Function Switch	3.30
ER2382676	Mode Switch	1.85
RV2382672	Balance Control—Ganged Tandem	2.20
RV2382670	Loudness Control—Ganged Tandem	2.40
RV2382673	Bass Control—Ganged Tandem	2.20
RV2382671	Treble Control—Ganged Tandem	3.50
PC2382890	Baxandall Tone Network	1.10
PCCOM2927	Scratch Filter	.75
PC2382926	Equalization Network	.90
Z2382924	Sil. Diode, .5 Amp/300VPIV Int. Rect. #SD-93A or Equiv.	3.50
PCOM2840	Knob w/White Line (Rohden #14801-1)	.25
L2382914	Instruction Book	} i n c } r } ty
L2382915	Mounting Template	
L2382920	Instruction Sheet	