WARRANTY

All parts of MARANTZ products are fully guaranteed for a period of THREE YEARS from date of purchase, except for tubes which are guaranteed for NINETY DAYS from date of purchase, and except for speaker products. Speaker products are guaranteed as follows: all speaker and electronic components are fully guaranteed for a period of THREE YEARS from date of purchase; the cabinetry is guaranteed against manufacturing defects only, for a period of TWO YEARS from date of purchase.

In the event that service is required, all necessary parts and labor will be furnished free of charge during the above stated periods. The conditions of this Warranty, and the extent of the responsibility of MARANTZ COMPANY, INC., under this Warranty, are as follows:

1. The purchase must have been made from an authorized MARANTZ dealer.
2. The Warranty extends only in favor of the original, registered owner of the product.
3. The Warranty Registration Card must be transmitted to MARANTZ COMPANY, INC., P.O. Box 99, Sun Valley, California 91352, not later than TEN DAYS from date of purchase.
4. The Warranty will become void if repairs are effected by anyone other than an authorized MARANTZ Service Station.
5. If it becomes necessary to send this product or any defective part to MARANTZ COMPANY, INC., or to an authorized MARANTZ Service Station, all shipping charges must be fully prepaid. If the entire instrument is sent, it must be shipped in its original package. No accessories should be shipped with the product. If any accessories are shipped with the product, MARANTZ COMPANY, INC., shall have no liability whatsoever for loss or damage to any such accessories, nor for the safe return thereof.
6. This Warranty shall be valid only if the purchase was made within the United States of America. The Warranty shall not apply unless shipment is made by the purchaser to the MARANTZ Service Station from a point within the United States. If the requested repairs and/or parts exchange are within the terms of this Warranty, MARANTZ COMPANY, INC., will prepay return shipping charges, provided that such return shipment is to be made to an address located within the United States.

7. This Warranty is void if the Serial Number has been altered or removed. This Warranty shall not apply if the product has not been connected or operated in accordance with the instructions furnished by MARANTZ COMPANY, INC. This Warranty shall also be void if the product has been altered or repaired in any way which MARANTZ COMPANY, INC., believes has affected the stability or reliability of the product.

8. MARANTZ COMPANY, INC., shall have no liability whatsoever for consequential damages. The sole responsibility of MARANTZ COMPANY, INC., under this Warranty shall be limited to the repair of the product, or replacement thereof, in the sole discretion of MARANTZ COMPANY, INC.

9. This Warranty does not include the furnishings of labor or parts for user maintenance, as the same is described in the instruction manual or handbook furnished with this product.

10. This Warranty is valid only with respect to repairs effected by an authorized MARANTZ Service Station.

11. EXCEPT TO THE EXTENT THAT APPLICABLE LAW PRECLUDES A DISCLAIMER OF WARRANTY, THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS WITH RESPECT TO THIS PRODUCT, NOR ARE THERE ANY OTHER WARRANTIES WHICH EXTEND BEYOND THE PROVISIONS OF THIS WARRANTY. ORDINARY PERIODIC CHECK-UPS ARE NOT INCLUDED IN THIS WARRANTY.

12. MARANTZ COMPANY, INC., reserves the right to make changes in design and/or improvements upon its products without any obligation to include these changes in any products theretofore manufactured.

TO PROTECT YOUR RIGHTS UNDER THIS WARRANTY, FILL OUT AND MAIL THE WARRANTY REGISTRATION CARD TO MARANTZ COMPANY, INC., P.O. BOX 99, SUN VALLEY, CALIFORNIA 91352, NOT LATER THAN TEN DAYS FOLLOWING THE DATE OF PURCHASE.

Should there be any questions, please contact the
Marantz National Service Manager, Marantz Company, Inc.
P.O. Box 99, Sun Valley, California 91352

REGISTRATION FOR MARANTZ 3 YEAR GOLDEN WARRANTY

Model: Marantz Model 2440
Serial No. _______________________

Purchaser’s Name _______________________

Purchased From (Name) _______________________

Address _______________________

Price Paid $ _______ Date Purchased __________

Date Warranty Reply Card Mailed ___________

The above information becomes your permanent record of a valuable purchase. It should be promptly filled in at the same time that you fill in and mail the warranty registration reply card to Marantz. This information provides a valuable insurance record and must also be referred to should you have any correspondence with Marantz.

PURCHASER'S RECORD
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GENERAL DESCRIPTION

The Marantz Model 2440 Quadradiol Adaptor-Amplifier converts any stereo system with tape-source monitor feature to a full-featured 4-channel system. The 2440 incorporates Marantz’s exclusive Vari-Matrix circuit which simulates 4-channel sound from normal 2-channel stereo programs, and is capable of reproducing 4-channel sound from any matrix-encoded source. The 2440 will also reproduce any discrete 4-channel program as well as regular stereo and monaural programs. An optional plug-in decoder adapts the 2440 for specific matrix systems such as Columbia’s SQ or Electro-Voice’s Stereo 4.

Optional Accessories Are:
   SQA-1 Plug-In SQ Decoder with Front-Rear Logic
   RC-4 Remote Balance and Volume Control
   WC-22 Walnut Cabinet

FOREWORD

To obtain optimum performance and enjoyment from the Model 2440, please study these instructions carefully. Installation and operation are not complicated if step-by-step instructions are followed.

This manual is divided into two parts. The first covers installation and operation in simple, non-technical language. The second describes the Model 2440 in more detail with technical specifications and functional explanations.

For quick identification of the controls and connections, references to them are printed in bold face type, exactly as they appear on the front and rear panels of the Model 2440.

These instructions assume your present system includes a stereo receiver (tuner, preamp, and amp sections on a single chassis). If your system includes a stereo integrated amplifier (preamp and amp sections only on a single chassis), or a stereo preamplifier (with separate amp and tuner chassis), procedures are the same. References to “receiver” in these cases refer to your integrated amplifier or preamplifier.
CONNECTING THE 2440

1. Turn the receiver off and unplug it from the A.C. wall outlet.

2. Remove all cables from the receiver’s monitor (TAPE IN and TAPE OUT) jacks.

3. If you intend to stack the 2440 and receiver, place the receiver on top of the 2440. You need not disturb the receiver’s other connections (phono, antenna, speakers, etc). If units will not be stacked, place the 2440 close to the receiver.

4. Using shielded audio cables with phono plugs, make these connections between the receiver and the 2440:

   **RECEIVER**
   - TAPE OUT (LEFT) to MATRIX INPUT L
   - TAPE OUT (RIGHT) to MATRIX INPUT R
   - TAPE IN (LEFT) to FRONT OUTPUT L
   - TAPE IN (RIGHT) to FRONT OUTPUT R

5. Using No. 18 or heavier lamp cord (zip cord), connect main rear speakers to the 2440 as follows:

   **LEFT REAR SPEAKER**
   - or GND or NEG or COMM or 0 to MAIN L− + or HOT or POS or 1 to MAIN L+

   **RIGHT REAR SPEAKER**
   - or GND or NEG or COMM or 0 to MAIN R− + or HOT or POS or 1 to MAIN R+

6. If in Step 2, above, you disconnected a stereo tape deck, re-connect it to the 2440 as follows:

   **TAPE DECK**
   - LEFT INPUT or LINE IN to FRONT TAPE OUT L
   - RIGHT INPUT or LINE IN to FRONT TAPE OUT R
   - LEFT OUTPUT or LINE OUT to FRONT TAPE IN L
   - RIGHT OUTPUT or LINE OUT to FRONT TAPE IN R

7. Put the receiver’s tape-source monitor switch in the TAPE position.

8. Set the controls as follows:

   **RECEIVER CONTROLS**
   - Volume: Mid (12 o’clock) position
   - Balance: Mid position
   - Source Selector: Phono or FM
   - Speakers: ON

   **2440 CONTROLS**
   - FRONT L-R balance: Mid position
   - REAR L-R balance: Mid position
   - FRONT-REAR balance mode: Vari-Matrix position
   - dimension: Mid position
   - remote control: LOCAL
   - rear bass and rear treble controls: Mid position
   - master volume: Minimum (fully counterclockwise)
   - MAIN SPKR: ON (in)
   - REMOTE SPKR: OFF (out)
   - TAPE MON: OFF (out)
   - TAPE/AUX: OFF (out)

9. Plug the 2440 into the A.C. wall outlet or into your receiver’s A.C. outlet.

10. Plug the receiver into the A.C. wall outlet.
11. Turn the power switches of both units ON.

12. If phono is selected, put on a stereo record. If FM is selected, tune to a stereo broadcast.

13. Increase the 2440's master volume control to a comfortable listening level.

14. Increase or decrease the receiver's volume control until a pleasant front-rear balance is achieved.

NOTE: If obvious distortion exists at moderate listening levels, move the 2440's rear panel MATRIX INPUT LEVEL switch from LOW to HIGH.

Your complete 4-channel system is now operative, and you may experiment with the various controls to discover their effects. The remainder of this manual explains how to use your system most effectively.

SOURCE DEVICES

2-channel
2-channel playback devices (record changer, tuner, tape player, etc.) may be connected to the receiver as usual.

A 2-channel tape recorder may be connected to the FRONT TAPE IN and TAPE OUT jacks of the 2440.

4-channel
Discrete 4-channel playback devices (Q-8 cartridge player, 4-channel reel-to-reel player, RCA/JVC discrete disc demodulator, etc.) may be connected to the TAPE/AUX IN or TAPE IN jacks of the 2440.

A discrete 4-channel tape recorder may be connected to the TAPE IN and TAPE OUT jacks on the 2440.

REMOTE SPEAKERS

If your receiver will accommodate both main and remote speaker systems, a second group of four speakers may be set up in another room. Connect these four remote speakers to the receiver and 2440 as you did the main speakers, but use the REMOTE speaker terminals on your receiver and 2440.

Your receiver's speaker switching now permits activation of MAIN FRONT and/or REMOTE FRONT speaker pairs. Similarly, your 2440's speaker switching permits activation of MAIN REAR and/or REMOTE REAR speaker pairs. With the 2440, the (MAIN and/or REMOTE) speaker pair is "on" when the pushswitch is "in".

NOTE: Do not use 4-ohm speakers if main and remote speakers are to be used simultaneously. Use 8 or 16-ohm speakers only.

SPEAKER PHASING

To assure the best 4-channel separation and frequency response, the following tests will verify that all four speakers are correctly phased.

1. After the speakers are connected to the receiver and the 2440, place all four speakers in the center of the room.

2. Set mode switch at MONO. Play a record (or radio or tape) with strong bass tones, at a low volume level. Center the FRONT L-R and REAR L-R balance controls. Set FRONT-REAR balance control at extreme FRONT position.

3. Position the front (left and right) speakers about six inches apart, face-to-face. Listen, particularly to the apparent loudness of the
bass tones.

4. Next, turn off all power, but do not disturb the volume, tone, or balance settings. Reverse connections on the right-front speaker only. Turn on the power, and listen again. If the bass tones now seem louder than in (3), you have corrected the phasing between the front (left and right) speakers. If the bass tones now sound softer, then turn off all power, and reconnect the right-front speaker as you first had it connected.

5. Now check phasing between the two left (front and rear) speakers. Set both FRONT L-R and REAR L-R balance controls at extreme L position, and set FRONT-REAR balance for equal loudness from the two speakers. Position the two speakers face-to-face, about six inches apart, and listen for bass as in (3).

6. Turn off power. Experimentally reverse connections only on the left rear speaker. Turn on power and listen. Retain the left-rear speaker connections which give the "best bass" as in (4).

7. Last, check phasing between the two rear (left and right) speakers. Center both FRONT and REAR balance controls. Set FRONT-REAR balance control at extreme REAR position. Position the two rear speakers face-to-face as before. Listen for bass.

8. Turn off power. Experimentally reverse connections only on the right rear speaker. Listen again to determine the "best bass" method of connecting the right-rear speaker. All speakers will then be in phase, and you may use all controls normally.

9. Once having phased your four speakers, you need not repeat the procedure in the future if you now codify the speaker connections and/or the speaker cables. Any method of codifying is satisfactory, provided it enables you in the future to duplicate your now-correct hookup between speakers and amplifiers.
SPEAKER PLACEMENT

Experimentation will reveal the best speaker locations in your room. The following placements are suggested.

Figure 4. Speaker Placement
FRONT PANEL FEATURES

MODE SWITCH

MONO
When the mode switch is in the MONO position, all input signals are summed. Speakers are driven as follows:

![Mono Mode Sound Dispersion](image)

Figure 5. Mono Mode Sound Dispersion
Use the MONO position for a) Phasing speakers and b) Playing a monaural source such as TV audio, AM radio, or monaural records through all four channels.

2 CH
When the mode switch is in the 2 CH position, left-front and left-rear inputs are summed. Right-front and right-rear inputs are summed. Speakers are driven as follows:

![2 CH Mode Sound Dispersion](image)

Figure 6. 2 CH Mode Sound Dispersion
Use the 2 CH position for playing regular stereo records without synthesizing rear channels.

DISCRETE
When the mode switch is in the DISCRETE position, each input signal goes to its respective output channel. Speakers are driven as follows:

![Discrete Mode Sound Dispersion](image)

Figure 7. Discrete Mode Sound Dispersion
Use the DISCRETE position for a) Playing discrete 4-channel sources such as Q-8 cartridges, or JVC/RCA records, and b) Playing 2-channel stereo programs through front speakers only.

VARI-MATRIX
When the mode switch is in the VARI-MATRIX position, rear input signals are internally disconnected. Left-front and right-front inputs feed left-front and right-front speakers, as in the DISCRETE MODE. Rear channel signals are "synthesized" or derived from the left-front and right-front input signals. The characteristics of the rear channel signals are varied by the dimension control. Speakers are driven as follows:

![Vari-Matrix Mode Sound Dispersion](image)

Figure 8. Vari-Matrix Mode Sound Dispersion
SQ DECODER 4 CHANNEL

With the mode switch on SQ DECODER, any rear input signals to the 2440 are internally disconnected. The rear channel outputs are, instead, derived from front channel signals which have been processed by the plug-in decoder. The characteristics of these derived rear channel outputs are determined by the type of plug-in decoder.

Use the SQ DECODER position only with an optional plug-in decoder installed. Without this optional decoder, there will be no output when the mode switch is on SQ DECODER.

DEMISSION

The dimension control is operative only when the mode switch is set to the VARI-MATRIX position. This control optimizes the 4-channel VARI-MATRIX effect.

BALANCE CONTROLS

The Model 2440 has three balance controls: FRONT L-R, REAR L-R, and FRONT-REAR. The FRONT L-R slide knob adjusts the balance between the front-left and right channels. The REAR L-R slide knob adjusts the balance between the rear left and right channels. The FRONT-REAR slide knob adjusts the balance between front and rear pairs of channels. To balance the front channels, first set the FRONT-REAR control all the way to the FRONT, to silence the rear speakers while you adjust the FRONT L-R balance control. To balance the rear channels, move the FRONT-REAR control all the way to the REAR, and then adjust REAR L-R balance. Now you are ready to adjust the FRONT-REAR control for the most pleasing overall balance.

REAR BASS AND REAR TREBLE CONTROLS

These control the low and high frequency response of the rear channels. Your receiver controls the tone of the front channels. With both rear bass and rear treble controls set at the center position, frequency response of the rear channels becomes flat. Turn either tone control knob clockwise to boost, or counter-clockwise to attenuate its respective frequency range.

TAPE MON SWITCH

With this pushswitch "in", the signal connected to the rear panel TAPE IN jacks is played back. The signal at the MATRIX INPUT (or TAPE/ AUX inputs if the TAPE/AUX pushswitch is "in") continues to feed the TAPE OUT jacks, regardless of the position of the TAPE MON switch.

Operation is as follows:
To play back a source connected to the TAPE IN jacks, put the monitor switch "in".
To monitor a recording on a three-head tape recorder while a program is being recorded, be sure the mode switch is in the DISCRETE, VARI-MATRIX, or SQ DECODER position. The recorded signal may be compared to the source signal by using the TAPE MON switch.
To record a discrete 4-channel source on a 4-channel recorder, put the mode switch in DISCRETE.
To record a 2-channel stereo program on a 2-channel recorder, put the mode switch in the 2 CH or discrete position.
To record a discrete 4-channel source on a 2-channel recorder, put the mode switch in the 2 CH position. Leave the TAPE MON button "out" while recording. This will feed the sum of the left-front and left-rear inputs to the left-front TAPE OUT jack, and the sum of the right-front and right-rear inputs to the right-front TAPE OUT jack.
To record any type of source on a monaural recorder, put the mode switch in the MONO position. Leave the TAPE MON button "out" while recording.

TAPE/AUX SWITCH

With this switch "in", the signal connected to the TAPE/AUX jacks on the rear panel is played back.

REMOTE CONTROL SWITCH

This switch assigns control of balance and volume to the optional RC-4 Remote Control. When the RC-4 is not used, the remote control switch must be in the LOCAL position.

MAIN AND REMOTE SPKR SWITCHES

These switches select the loudspeaker terminals to which audio power is fed. The MAIN and REMOTE groups of loudspeakers may be operated separately or simultaneously. With both speaker switches in the "out" position, all loudspeakers are disconnected. The signal at the rear phones jack is not affected by the MAIN and REMOTE switches.

POWER SWITCH

This pushswitch turns the power on and off.
SQ DECODER 4 CHANNEL

With the mode switch on SQ DECODER, any rear input signals to the 2440 are internally disconnected. The rear channel outputs are, instead, derived from front channel signals which have been processed by the plug-in decoder. The characteristics of these derived rear channel outputs are determined by the type of plug-in decoder.

Use the SQ DECODER position only with an optional plug-in decoder installed. Without this optional decoder, there will be no output when the mode switch is on SQ DECODER.

DIMENSION

The dimension control is operative only when the mode switch is set to the VARI-MATRIX position. This control optimizes the 4-channel VARI-MATRIX effect.

BALANCE CONTROLS

The Model 2440 has three balance controls: FRONT L-R, REAR L-R, and FRONT-REAR. The FRONT L-R slide knob adjusts the balance between the front-left and right channels. The REAR L-R slide knob adjusts the balance between the rear left and right channels. The FRONT-REAR slide knob adjusts the balance between front and rear pairs of channels. To balance the front channels, first set the FRONT-REAR control all the way to the FRONT, to silence the rear speakers while you adjust the FRONT L-R balance control. To balance the rear channels, move the FRONT-REAR control all the way to the REAR, and then adjust REAR L-R balance. Now you are ready to adjust the FRONT-REAR control for the most pleasing overall balance.

REAR BASS AND REAR TREBLE CONTROLS

These control the low and high frequency response of the rear channels. Your receiver controls the tone of the front channels. With both rear bass and rear treble controls set at the center position, frequency response of the rear channels becomes flat. Turn either tone control knob clockwise to boost, or counter-clockwise to attenuate its respective frequency range.

TAPE MON SWITCH

With this pushswitch "in", the signal connected to the rear panel TAPE IN jacks is played back. The signal at the MATRIX INPUT (or TAPE/AUX inputs if the TAPE/AUX pushswitch is "in") continues to feed the TAPE OUT jacks, regardless of the position of the TAPE MON switch.

Operation is as follows:
To play back a source connected to the TAPE IN jacks, put the monitor switch "in".
To monitor a recording on a three-head tape recorder while a program is being recorded, be sure the mode switch is in the DISCRETE, VARI-MATRIX, or SQ DECODER position. The recorded signal may be compared to the source signal by using the TAPE MON switch.
To record a discrete 4-channel source on a 4-channel recorder, put the mode switch in DISCRETE.
To record a 2-channel stereo program on a 2-channel recorder, put the mode switch in the 2 CH or discrete position.
To record a discrete 4-channel source on a 2-channel recorder, put the mode switch in the 2 CH position. Leave the TAPE MON button "out" while recording. This will feed the sum of the left-front and left-rear inputs to the left-front TAPE OUT jack, and the sum of the right-front and right-rear inputs to the right-front TAPE OUT jack.
To record any type of source on a monaural recorder, put the mode switch in the MONO position. Leave the TAPE MON button "out" while recording.

TAPE/AUX SWITCH

With this switch "in", the signal connected to the TAPE/AUX jacks on the rear panel is played back.

REMOTE CONTROL SWITCH

This switch assigns control of balance and volume to the optional RC-4 Remote Control. When the RC-4 is not used, the remote control switch must be in the LOCAL position.

MAIN AND REMOTE SPKR SWITCHES

These switches select the loudspeaker terminals to which audio power is fed. The MAIN and REMOTE groups of loudspeakers may be operated separately or simultaneously. With both speaker switches in the "out" position, all loudspeakers are disconnected. The signal at the rear phones jack is not affected by the MAIN and REMOTE switches.

POWER SWITCH

This pushswitch turns the power on and off.
When the power switch is "in" the meter lamps illuminate. Be sure to turn the power pushswitch off before plugging or unplugging the power cord.

REAR PHONES JACK

This jack accepts a standard 3-conductor phone plug employed with standard stereo or 4-channel headphones. When using 2-channel headphones, insert the plug into the phones jack on your receiver. When using 4-channel headphones, insert the front plug into the phones jack on your receiver and the rear plug into the rear phones jack on your 2440. Either high- or low-impedance headphones may be used.

METERS

The meters on the front panel indicate the presence of an audio signal in each of the four channels. Relative output levels are indicated to assist in setting four channel balance.

MASTER VOLUME

This control regulates volume of all four channels simultaneously.

MATRIX INPUT JACKS

These two jacks connect to the TAPE OUT jacks of the receiver (Refer to "CONNECTING THE 2440", page 2).

FRONT OUTPUT JACKS

These two jacks connect to the TAPE IN jacks on the receiver (Refer to "CONNECTING THE 2440", page 2).

TAPE IN AND TAPE OUT JACKS

These four jacks are for the connection of a 2-channel or 4-channel tape recorder. (Refer to "SOURCE DEVICES", page 3).

REAR SPEAKER SYSTEM TERMINALS

Eight quick-connect terminals are provided; four for main speakers and four for remote speakers. (Refer to "CONNECTING THE 2440", page 2, and "REMOTE SPEAKERS," page 3.) Terminal work as follows:

1) Press terminal in  2) Insert speaker wire  3) Release terminal

POWER CONNECTION

Plug into 117 Volt A.C. outlet.

CAUTION:  DO NOT PLUG THE MODEL 2440 INTO A D.C. OUTLET SINCE SERIOUS DAMAGE WILL OCCUR.

AC CONVENIENCE OUTLETS

Two A.C. outlets, one switched and one unswitched, are provided on the rear panel to supply power to associated components of the system (tape recorder, record player, etc.) The maximum
power available from the UNSWITCHED and SWITCHED A.C. OUTLETS is 200 Watts and 60 Watts, respectively.

REMOTE CONTROL

This rear panel REMOTE CONTROL connector and front panel switch are intended for use only with the optional Model RC-4 Remote Control. For use, follow the instructions supplied with the RC-4.

EXTERNAL DECODER CONNECTION

A pocket on the bottom of the chassis will accommodate Marantz 4-channel decoders such as the Model SOA-1. For use, follow the instructions supplied with the optional decoder.

TAPE RECORDING

Instructions for connecting a recorder and playing back a tape are given in "SOURCE DEVICES", page 3.
To record, select the desired program source, using the receiver’s source selector. If the desired source is connected to the TAPE/AUX jacks on the 2440, push the TAPE/AUX button "in". Put the recorder connected to the 2440 in the record mode.
For additional information, refer to "MODE SWITCH", page 6, and "TAPE MON SWITCH", page 7.

TECHNICAL DESCRIPTION

GENERAL

The block diagram of the Model 2440 is shown in Figure 10. To simplify the description, only the left-front (LF) and left-rear (LR) channels are shown.
The Model 2440 is primarily comprised of the VARI-MATRIX circuit for conversion of the 2-channel program source into 4-channel, TONE CONTROL circuit for rear channels, two power amplifiers for rear channels, buffer amplifiers for front channels, control circuits, meter circuits and power supply circuit.

INPUT LEVEL SELECTOR

The 2-channel signal applied to the MATRIX INPUT jacks on the rear panel is fed to the TAPE/AUX switch through the INPUT LEVEL switch. When the INPUT LEVEL switch is in the "LOW" position, the input signal is connected directly to the TAPE/AUX switch. When the INPUT LEVEL selector is in the "HI" position, the input signal is connected to the TAPE/AUX switch after having been attenuated by approximately 14 dB.

TAPE/AUX

The MATRIX INPUT and front TAPE/AUX

Figure 10. Functional Block Diagram
signals are connected to the front channel section of the TAPE/AUX switch. The rear TAPE/AUX signals are connected to the rear channel section of the TAPE/AUX switch. When the TAPE/AUX switch is "in", the signal from the TAPE/AUX terminals is sent to the TAPE MON switch. The output of the TAPE/AUX switch is sent to the TAPE MON switch and to the TAPE OUT jacks on the rear panel.

BUFFER AMPLIFIER

The front channel signal levels (LF and RF), are adjusted by the master volume control and sent to the buffer amplifier to compensate for the attenuation in the balance/remote control section where the signal is fed through the remote control switch.

TONE CONTROL CIRCUIT

The signal levels of the rear two channels (LR and RR) are adjusted by the master volume control and fed to the TONE CONTROL circuit. The input stage of the TONE CONTROL circuit consists of a direct-coupled circuit consisting of an NPN transistor and PNP transistor with bootstrap configuration to produce a high impedance termination for the master volume control.

The TONE CONTROL circuit is of the NF type with continuously-variable response. The bass and treble circuits operate on rear channels only. The frequency responses at the maximum boost and cut are shown in the Figure 11. When the bass and treble controls are set at the center position, the frequency response of the rear channels is flat.

A direct-coupled circuit consisting of NPN and PNP transistors is used at the output of the TONE CONTROL amplifier.

Figure 11. Tone Control Characteristics
POWER AMPLIFIER

Two power amplifiers are incorporated for driving left-rear and right-rear speakers. Each of these amplifiers includes preamplifier, driver, and output circuits. The preamplifier and driver circuits have A.C. negative feedback and D.C. negative feedback, respectively, from the output circuit. This provides superior dynamic characteristics and satisfactory D.C. stability. The output circuit uses a complimentary Darlington configuration with high-power NPN transistors having superior linearity and sufficient collector loss margin. The output circuit provides a very low output impedance for a good damping factor, as well as sufficient negative feedback to the preamplifier circuit. Figure 12 shows the distortion factor-to-output characteristics of the Model 2440; Figure 13 is the frequency response. The amplifiers incorporate an all-electronic protective circuit which protects the output transistors from breakdown. The protective circuit, comprised of two transistors and two diodes for each channel, limits the maximum current through the output transistors to a safe, predetermined value.

LEVEL METERS

Model 2440 is equipped with four meters which indicate the signal levels of each channel. The meter signals of the front channels are obtained from the output of the balance control/remote control section, amplified by the METER amplifier, and rectified into D.C. to drive the front channel meters. The rear channel meters are driven by the output of the power amplifiers which are rectified by the meter driver.

Figure 12. Harmonic Distortion
Figure 13. Frequency Response
**TECHNICAL SPECIFICATIONS**

- **Rated Continuous (RMS) Power Output per Channel,**
  Both Channels Operating Simultaneously, 20Hz to 20,000Hz
  - 20 Watts at 4 and 8 ohms
  - 10 Watts at 16 ohms

- **Comparable Total Music Power (IHF)**
  - 60 Watts at 8 ohms

- **High-level Hum and Noise (Ref. 20 W at 8 ohms)**
  - -80 dB

- **I.M. Distortion (SMPTE), at Rated Power**
  - Distortion decreases as power is lowered
  - 0.3% Maximum

- **Total Harmonic Distortion at Rated Power**
  - Distortion decreases as power is lowered

- **Power Bandwidth (IHF) for 0.3% THD**
  - 5 Hz to 45,000 Hz

- **Damping Factor (Ref. 8 ohms)**
  - Greater than 45

- **Input Sensitivity (for 20W at 8 ohms)**
  - 150mV

- **Input Impedance**
  - 100K ohms

- **Channel Separation 20 Hz to 20,000 Hz**
  - 30 dB Minimum

- **Front Channel Maximum Output Voltage for 1% THD**
  - 1,000mV

- **Front Channel Total Harmonic Distortion at 150mV Output**
  - 0.1% Maximum

- **Power Requirement**
  - 120V AC
  - At Rated Output, Both Channels Operating
  - 220 Watts
  - Idling Power (Volume Control at Zero)
  - 20 Watts

- **Dimensions**
  - Panel Width
    - .17-21/64 Inches
  - Panel Height
    - .5-25/64 Inches
  - Depth
    - 14-3/8 Inches

- **Weight**
  - Unit alone
    - 24.2 lbs
  - Packed for Shipment
    - 35 lbs

*These specifications and exterior designs may be changed for improvement without advance notice.*
SERVICES NOTES

REPAIRS

Only the most competent and qualified service technicians should be allowed to service the Marantz Model 2440. The Marantz Company and its warranty station personnel have the knowledge and special equipment needed for the repair and calibration of this precision instrument. In the event of difficulty, write directly to the factory (to the attention of the technical service department) for the name and address of the nearest Marantz warranty or authorized service station. Please include the model and serial number of the unit together with a description of the problem. If it should ever be necessary to ship the unit to the factory or authorized service station, and your amplifier is mounted in its accessory walnut cabinet, ALWAYS REMOVE IT FROM THE CABINET BEFORE PACKING. DO NOT SHIP THE ACCESSORY WALNUT CABINET.

Pack the unit carefully, using the original packing material. If the packing material has been discarded, lost, or damaged, write to the factory (to the attention of the technical service department) for new packing material. Carton, fillers, and packing instructions will be shipped to you at a nominal charge. No Amplifier should be returned to the factory without an Authorized Return Label which the Marantz company will supply if the description of difficulties appears to warrant factory service.

Figure 14. Packing Instructions
The Sound of Marantz
is the compelling warmth of a Stradivarius.
It is a dancing flute, a haughty bassoon
and the plaintive call of a lone French horn.
The Sound of Marantz is the sound of beauty,
and Marantz equipment is designed to bring
you the subtle joy of its delight.
Wonderful adventures in sound await you
when you discover that the Sound of Marantz
is the sound of music at its very best.