

OPERATING MANUAL

ROTEL®

RA-210

SOLID STATE STEREO AMPLIFIER

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INTRODUCTION

We would like to take this opportunity to thank you for purchasing our Rotel RA-210 Stereo Pre-Main Integrated Amplifier. We are confident that it will give you unequalled excellence in trouble-free performance for many years to come.

The RA-210 is equipped with every necessary control and feature to give it both versatility and ease of operation. It will add studio flexibility to your present music system.

In order to obtain the maximum use out of your unit, please read all of the following pages of this Operating Manual carefully.

Do not attempt to operate the unit until you have made all the connections as specified in this Manual.

SPECIAL FEATURES

- 1) All Solid State Electronics design.
- 2) All Silicon Output Transistors.
- 3) Pushbutton Function Selectors: Phono, Tuner, Aux and Tape.
- 4) Bass and Treble with both "boost" and "cut" tone controls.
- 5) Balance and Volume/Power controls.
- 6) Power Indicator Light.
- 7) Front Panel Headphone Jack.
- 8) Inputs for: Phono, Tuner, Aux and Tape.
- 9) Output for Tape Recorder.
- 10) AC Power Outlet.
- 11) Record Player Ground Terminal.
- 12) Handsome Wood Cabinet.

INSTALLATION

IMPORTANT

Do not apply power to this unit without first making sure that both speakers are connected properly. Before attempting to operate the RA-210, please read the following instructions carefully. When all the necessary connections have been made, the power may be applied.

SPEAKER CONNECTIONS

Connect your two left hand speaker leads to the corresponding "SPEAKERS" terminals designated "LEFT" and "GND" and your two right hand speaker leads to the corresponding "RIGHT" and "GND" terminals on the rear panel of the RA-210.

With the RA-210, any speaker system of 4, 8 or 16 ohm impedance can be used.

NOTE: Be sure that all the speaker leads are fastened securely to the proper terminals and that there are no stray strands shorting one terminal with another.

PHASING

In a stereophonic music reproducing system, the two speakers must be properly connected to assure complementary functioning. Make sure that the terminals on the speakers are connected to the corresponding terminals on the RA-210. If the two speakers are out of phase with each other, the stereophonic effect will suffer and the low frequency response will be particularly poor. Check to make sure that your speakers are in phase.

1. Play a monophonic source with solo singing or instrument.
2. If the speakers are in phase, the sound will appear to come from the exact center between the two speakers, and if the speakers are out of phase, the sound will appear to come from the two speakers separately.

3. If the speakers are out of phase, reverse the connections of the two speaker leads (from only one of the speakers, although it may be either one) at the RA-210's speaker terminals. The speakers will then be in phase with each other.

TUNER CONNECTIONS

Connect the right and left leads from your stereo tuner to the corresponding terminals marked "TUNER" on the RA-210. With a monophonic tuner the output lead may be connected to either one of the terminals, RIGHT or LEFT.

RECORD PLAYER CONNECTIONS

The two shielded cables from your stereo record player should be terminated with RCA type phono plugs. To avoid loss in the high frequency signals, the cables should not exceed 10 feet in length. The RA-210 accepts magnetic type phono input, so make sure that your record player is equipped with a magnetic cartridge.

Connect the right and left leads from the record player to the corresponding "RIGHT" and "LEFT" terminals marked "PHONO" on the RA-210.

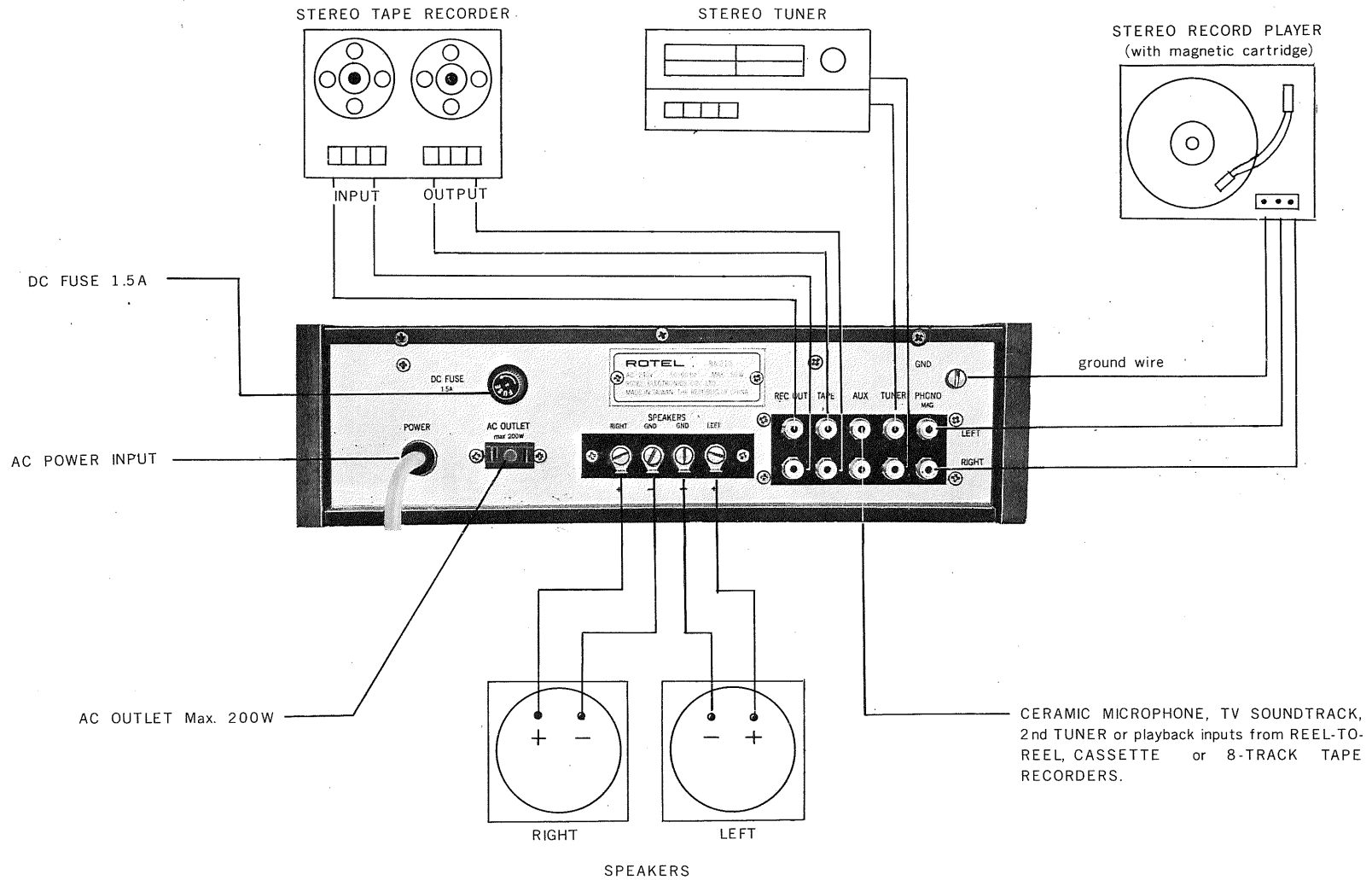
AUXILIARY CONNECTIONS

A pair of terminals marked "AUX" is provided for any other high level source you may wish to connect to the RA-210. You may connect a ceramic microphone, second tuner, TV soundtrack, or playback input from reel-to-reel, cassette or 8-track type tape recorders.

GROUND CONNECTIONS

With record players or tape recorders that must be grounded to reduce hum to unobjectionable levels, connect any grounding wire to the terminal marked "GND" on the rear panel.

INTERCONNECTING DIAGRAM



OPERATION

When all the connections have been made according to the preceding instructions, you may apply the power by turning to the right the VOLUME/POWER knob.

NOTE: If the Power Indicator Light fails to light and if no sound can be heard, even when all the buttons and controls are placed at their correct positions, remove and check the DC Fuse. If the Fuse is blown, check for possible reasons for the blow-out (eg., short at the speaker leads and etc.), and replace the Fuse. (CAUTION: The RA-210 is protected with a 1.5 amp fuse in the DC output circuit. Replacing with a fuse of different rating will not protect the unit any more effectively, rather it may result in severe damage to the unit; therefore, be sure to replace with a fuse of same rating.)

tone controls

The RA-210 is equipped with Bass and Treble tone controls that adjust the low and high frequency sounds, respectively. Both the Bass and Treble enables you to "boost" or "cut" the RA-210's frequency response in accordance with your personal listening taste, component or music characteristics. Normal setting of the BASS and TREBLE knobs is at the 12 o'clock position. Clockwise turn from the 12 o'clock position increases (or boosts) the frequency response, and counterclockwise turn from the 12 o'clock position decreases (or cuts) the frequency response.

BALANCE CONTROL

Each music, component, and room acoustics all have its own characteristics, and to enable you to enjoy the best possible stereophonic effect, the RA-210 is equipped with a Balance control to make corrections for these characteristics.

The BALANCE control adjusts the sound level of the two stereo channels (or speakers) in relation to each other. Clockwise turn of the BALANCE knob increases the sound level of the Right Channel, and counterclock-

wise turn increases the level of the Left Channel. The 12 o'clock position is where the output levels of the two channels are equal.

Set the BALANCE knob to where the resulting sound levels of the two speakers sound equal to you.

RECORD PLAYER

Push the PHONO button "IN", and operate your Record Player. Adjust the BASS, TREBLE, BALANCE and VOLUME/POWER controls to suit your personal listening taste.

TUNER

Push the TUNER button "IN", and operate your Tuner. Adjust the BASS, TREBLE, BALANCE and VOLUME/POWER controls.

PLAYBACK OF TAPE RECORDING

To listen to a playback of pre-recorded tape, push the TAPE button "IN", and operate your Tape Recorder. Adjust the BASS, TREBLE, BALANCE and VOLUME/POWER controls.

MAKING TAPE RECORDING

To make off-the-air recordings, push the TUNER button "IN", and operate your Tuner and Tape Recorder. To record off phono records, push the PHONO button "IN", and operate your Record Player and Tape Recorder. To record off another Tape Recorder, push the AUX button "IN", and operate your Tape Recorders (The back panel connections should be made so that the "playback" Tape Recorder is connected to the input terminals marked "AUX" on the RA-210 and the "recording" Tape Recorder to the "TAPE" and "REC. OUT" terminals.).

HEADPHONES

To listen through a pair of Stereo Headphones, simply plug the Headphone lead into the jack marked "PHONES" on the front panel. The external speakers will be automatically deactivated.

CONTROLS AND THEIR FUNCTIONS

PHONO in "IN" position allows you to listen to your recorder that is connected to the input terminals marked "PHONO MAG" on the rear of this amplifier.

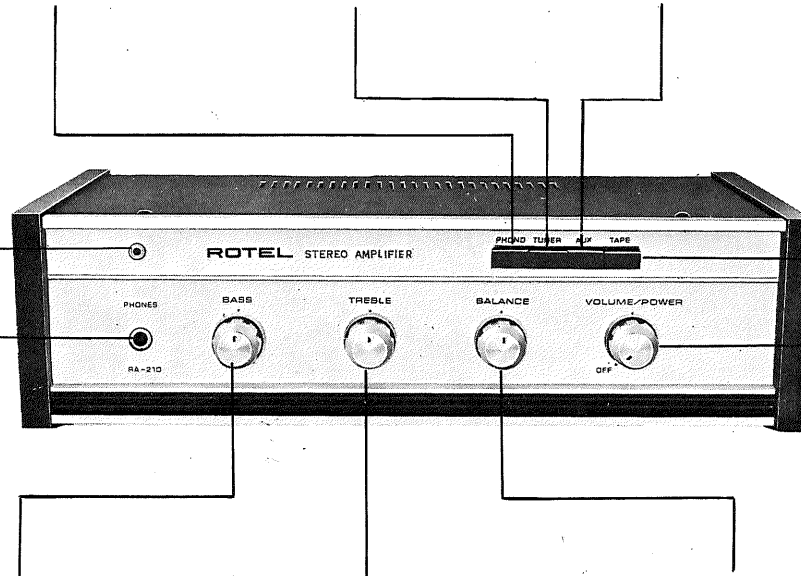
TUNER in "IN" position allows you to listen to your tuner that is connected to the input terminals marked "TUNER" on the rear of this amplifier.

AUX in "IN" position allows you to listen to whatever component that is connected to the input terminals marked "AUX" on the rear of this amplifier.

POWER INDICATOR LIGHT

POWER INDICATOR LIGHT lights up as an indicator whenever power has been applied to this amplifier.

PHONES allows you to listen to your headphones by simply plugging in the lead. The speakers will be automatically deactivated.



TAPE in "IN" position allows you to listen to a playback from your tape recorder that is connected to the input terminals marked "TAPE" on the rear of this amplifier.

VOLUME/POWER in "OFF" position deactivates the amplifier. Clockwise turn activates the amplifier and increases the volume. Set to suit your taste.

BASS modifies the low frequency sounds. Clockwise turn increases the bass, and counterclockwise turn decreases the bass. Center position is the normal setting, but may be set anywhere to suit your taste.

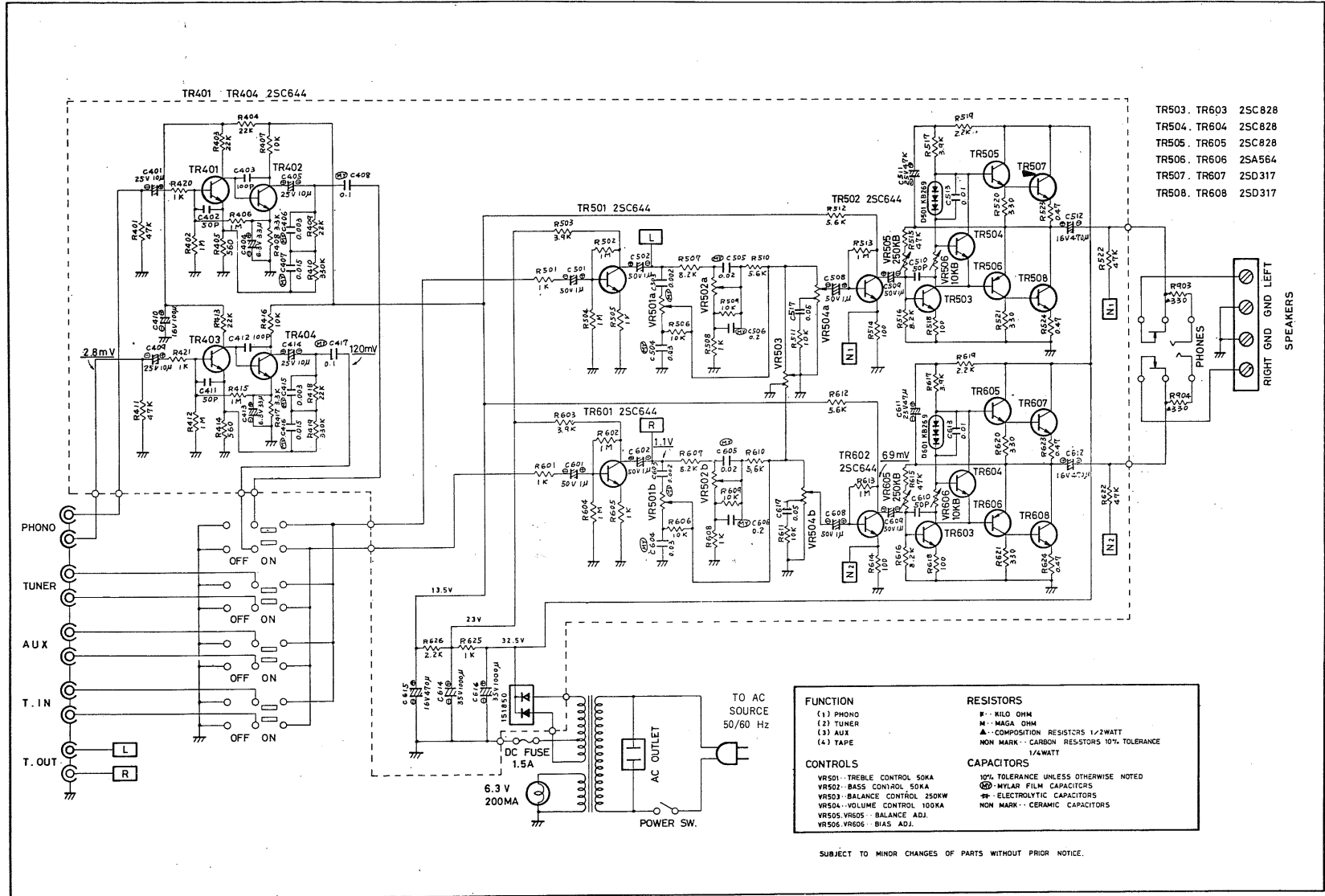
TREBLE modifies the high frequency sounds. Clockwise turn increases the treble, and counterclockwise turn decreases the treble. Center position is the normal setting, but may be set anywhere to suit your taste.

BALANCE modifies the sound level of each channel in relation to each other. Clockwise turn increases the sound level of the right speaker, and counterclockwise turn increases the sound level of the left speaker. Center position is the normal setting, but may be set anywhere to adjust for unequal sounds caused by room acoustics or faulty program material or components.

SPECIFICATIONS

TOTAL MUSIC POWER (IHF):	20 watts at 8 ohms.
CONTINUOUS POWER (RMS):	8 watts per channel at 8 ohms, 6.5 watts both channels driven at 8 ohms.
HARMONIC DISTORTION:	less than 0.5% at rated output.
IM DISTORTION:	less than 1.1% at rated output.
FREQUENCY RESPONSE:	25—75,000 Hz at rated output.
POWER BANDWIDTH (IHF):	30—25,000 Hz.
INPUT SENSITIVITY:	PHONO 2.7mV, TUNER 180mV, TAPE 180mV, AUX 180mV.
INPUT IMPEDANCE:	PHONO 45kohm, TUNER 200kohm, TAPE 200kohm, AUX 200kohm.
SIGNAL TO NOISE RATIO:	PHONO 60db, TUNER 70db, TAPE 70db, AUX 70db.
HUM AND NOISE:	PHONO 60db, TUNER 65db, TAPE 65db, AUX 65db.
RESIDUAL NOISE:	2mV.
DAMPING FACTOR:	15 at 8 ohms.
SQUARE WAVE RISE TIME:	9 Microseconds.
SPEAKER IMPEDANCE:	4, 8, 16 ohms.
BASS CONTROL:	±12 db at 50 Hz.
TREBLE CONTROL:	±12 db at 10,000 Hz.
POWER CONSUMPTION:	40 watts.
POWER VOLTAGE:	AC 117V or 200V or 220V or 230V or 240V 50/60Hz.
WEIGHT:	7.5 lbs.

SCHEMATIC DIAGRAM





ROTEL® RA-210