



# *owner's manual*

*Solid State Integrated Amplifier*

**RA-211**

**ROTEL®**

## INTRODUCTION

We would like to take this opportunity to thank you for purchasing our Stereo Amplifier. With the high quality design and workmanship that goes into making this equipment, you can be assured of its flawless performance for many years to come.

We have fitted every control and feature you could conceivably need. Designed for both versatility and ease of operation, this piece of equipment will add professional studio flexibility to your Hi-Fi sound center. The performance is exceptional; it will allow you to experience

true high fidelity as never before. Its full and natural stereophonic reproduction offers you musical entertainment approaching that of live performances. We sincerely hope you will treasure this professional equipment. In order to obtain the maximum use out of your unit, please read the following pages of this Operating Manual carefully.

Do not attempt to operate the unit until you have made all the necessary connections.

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## FRONT PANEL CONTROLS

### PILOT LAMP

The lamp lights up when the power switch is turned on.

### POWER SWITCH

A push on the button turns on the amplifier and another push turns it off. The reserve power outlet on the rear panel is simultaneously turned on and off.

### SPEAKERS SWITCHES

Speaker system selector switches for individual or simultaneous operation of SPKR-1 and SPKR-2 connected to the rear panel.

### BALANCE CONTROL

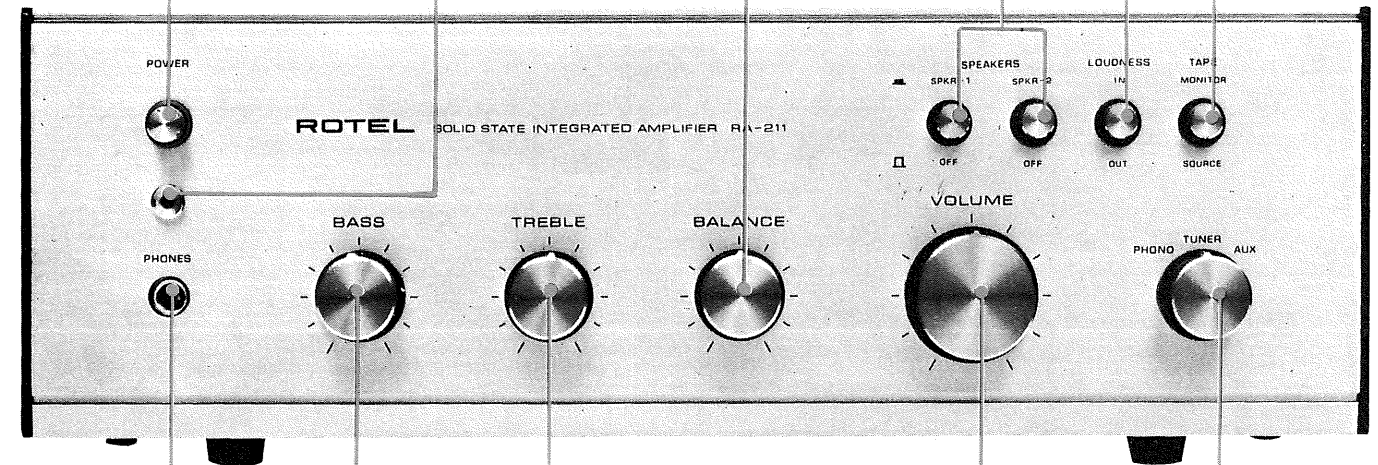
This knob is used to adjust the stereophonic balance. When it is turned clockwise the left channel sound level is decreased and when turned counterclockwise the right channel sound level decreases.

### LOUDNESS SWITCH

The human ear becomes less sensitive to low and high sounds when volume level is low. With this switch turned on at low volume settings, bass and treble notes will be emphasized for natural listening pleasure.

### TAPE MONITOR (TAPE)

This is a monitor switch for a tape recorder connected to the TAPE MONITOR terminals on the rear panel. Normally, when listening to records or FM broadcasts the switch is kept in the SOURCE position.



### PHONES RECEPTACLE

This jack is used for connection of headphones to enjoy private listening or monitoring. The speaker switches may be turned off when using headphones only.

### BASS CONTROL

When this knob is turned clockwise, bass is emphasized; when turned counterclockwise, attenuated. With the knob set in the center, the frequency response is flat or normal.

### VOLUME CONTROL

The sound level increases when the knob is turned clockwise. When switching on the power or the input selector, keep it turned fully counterclockwise at minimum.

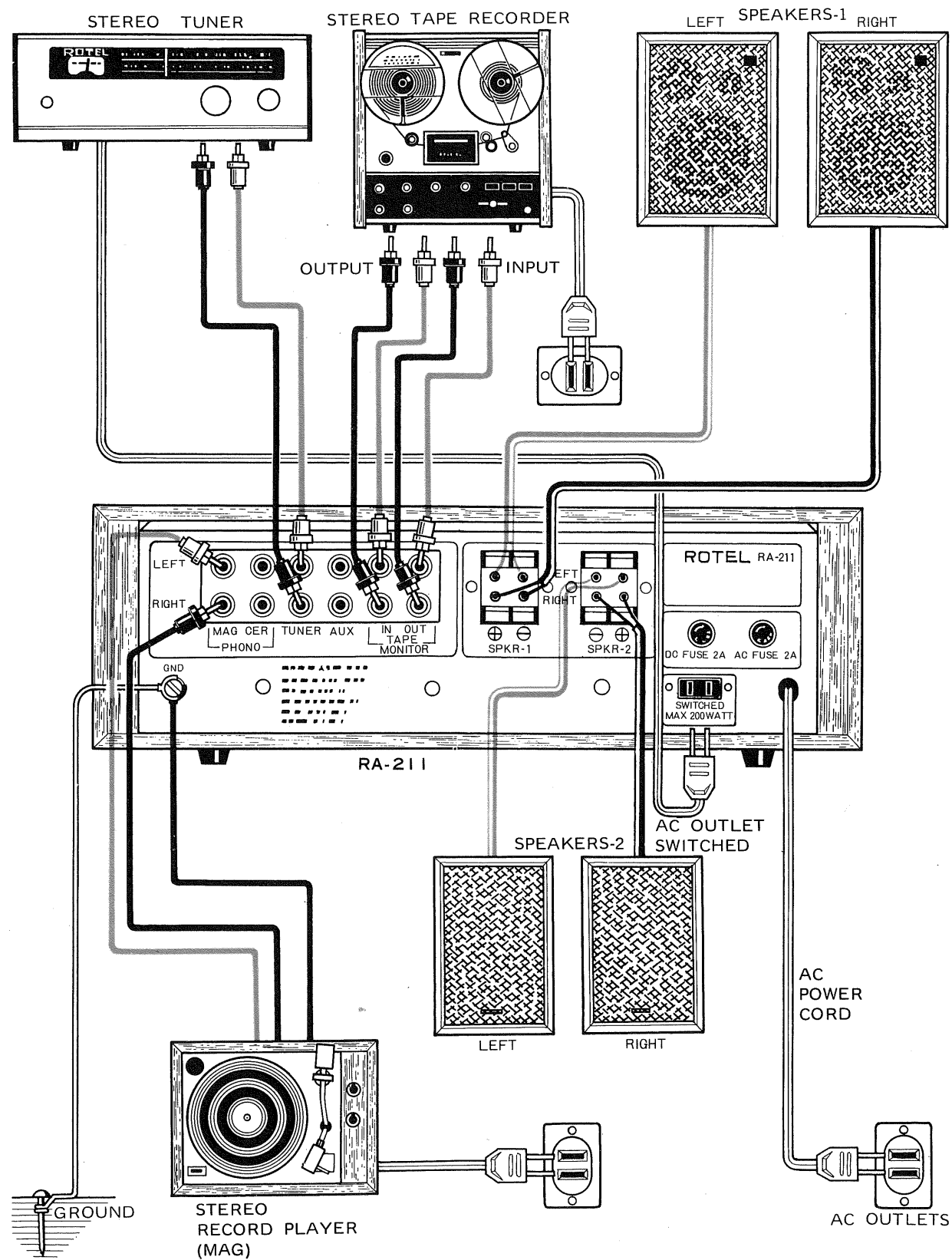
### TREBLE CONTROL

When the knob is turned clockwise, treble is emphasized; when turned counterclockwise, attenuated. With the knob set in the center, the frequency response is flat or normal.

### INPUT SELECTOR CONTROL

This is used for selection of program sources as applied to the PHONO, TUNER and AUX terminals on the rear panel.  
 PHONO.....for listening to records with a record player connected.  
 TUNER.....for listening to AM/FM broadcasts with a tuner connected.  
 AUX.....for reproduction of audio components other than those mentioned above, which is connected to this auxiliary input terminal.

## REAR PANEL CONNECTIONS



## INSTALLATION

**IMPORTANT:** Do not turn on the power switch before completion of proper connections of the speaker systems and input.

### SPEAKER SYSTEMS

Speaker connection terminals SPKR-1 and SPKR-2 are provided on the rear panel of Model RA-211. Either of these two can be used when using two pairs of speaker systems, connect one set to SPKR-1 and the other to SPKR-2.

The speaker system on the left (when viewed from the front) should be connected to terminals LEFT, the speaker on the right to terminals RIGHT.

Be sure to connect the speaker cords for correct polarity viz., the cord marked  $\oplus$  to terminal  $\oplus$  and the cord marked  $\ominus$  to terminal  $\ominus$ . If the polarity is reversed the phase of reproduced sound is no longer maintained and stereophonic presence is lost.

To make connections twist the bare strands of the cord and insert into the terminal hole. Make sure not to let the loose strands of the cord touch the other terminals.

### RECORD PLAYER

Model RA-211 is provided with two pairs of PHONO terminals for connection and playback of two record players.

MAG (magnetic).....for connection of record player equipped with Magnetic Type cartridge

CER (ceramic).....for connection of record player equipped with ceramic type cartridge.

Connect RIGHT output pin jack of record player to the RIGHT of the PHONO terminals, and LEFT pin jack to the LEFT of the PHONO terminals. The output cord from record player to be connected to the PHONO terminals should be as short as possible in order to minimize loss of high frequency characteristics. When using a record player equipped with a ground wire, connect the ground wire to the GND terminal of this unit.

### AM/FM TUNER

For a stereo tuner, the RIGHT and LEFT outputs on the rear panel of the tuner should be connected to the TUNER terminals on the rear panel of this unit. Connect the RIGHT output cord from the tuner to TUNER terminal RIGHT of this unit, the LEFT output cord to TUNER terminal LEFT.

### CONNECTION TO THE AUX TERMINALS

Output of various types of audio equipment can be connected to the terminals, such as 8 track tape player, record player equipped with photo-conductive or semi-conductor type cartridge.

### TAPE RECORDER

The TAPE MONITOR terminals on the rear panel of this unit are for connection of tape recorder input and output. IN (tape playback input).....for connection of tape recorder output when playing back pre-recorded tape through this unit.

OUT (tape recording output)...for connection to the input of a tape recorder for recording programs from record player or tuner connected to this unit.

### CONNECTION TO THE GROUND (GND) TERMINAL

When the outputs of a recorder player and a tape recorder are connected to this unit for playback, any ground wire from the respective equipment should be connected to the ground terminal of this unit provided on the rear panel in order to prevent hum and other noises.

### CONNECTION TO THE RESERVE POWER OUTLET

Power supply to a record player or a tuner can be obtained from this outlet provided on the rear panel of this unit. The outlet is turned on and off with the operation of the power switch on the front panel. Any equipment connected to the outlet should not exceed the indicated power consumption rating.

## OPERATION

After all the connections have been made, turn on the power switch.

### PRELIMINARY CHECKS:

1. If the dial light has failed to illuminate, remove and check the AC fuse.
2. If no sound is heard when all switches and controls are correctly positioned, remove and check the DC fuses (BE SURE POWER SOURCE IS DISCONNECTED). If a fuse or fuses are blown, check possible reasons for the blowout and replace the fuse.

### SELECTION OF THE SPEAKER SYSTEMS

When only one set of speaker systems is connected, press the respective button.

When two sets of speaker systems are connected to this unit, select the desired set by pressing the button SPKR-1 or SPKR-2.

To operate the two sets simultaneously, press both buttons SPKR-1 and SPKR-2.

When using headphones only, turn off the speaker switches.

### RECORD PLAYER

- 1) Connect the record player output to the PHONO terminals on the rear panel of this unit.
- 2) Set the input selector switch on the front panel to the PHONO position.
- 3) Make sure that the tape monitor switch is in the SOURCE position.
- 4) Turn the other control knobs to obtain the sound level desired.

### AM/FM TUNER

- 1) Connect the tuner output to the TUNER terminals on the rear panel of this unit.
- 2) Set the input selector switch on the front panel to the TUNER position.
- 3) Make sure that the tape monitor switch is in the SOURCE position.
- 4) Turn the other control knobs to obtain the desired level after the tuner has been tuned in to the desired station.

### TAPE RECORDER

Connect the tape recorder input and output to the TAPE MONITOR terminals on the rear panel of this unit.

### RECORDING

- 1) Make sure that the tape monitor switch on the front panel is set in the SOURCE position.
- 2) Set the input selector switch to one of the program source positions, PHONO, TUNER or AUX.
- 3) Perform recording operation of the tape recorder to record the desired program source through this unit.

### PLAYBACK

- 1) Press the tape monitor switch and set it in the MONITOR position. (In the case of playback, the input selector switch can be kept in any position as it has nothing to do with the operation.)
- 2) Perform a playback operation of the tape recorder and control the other controls on this unit to enjoy tape playback at the desired sound level.

### STEREO HEADPHONES

Turn off both speaker switches, SPKR-1 and SPKR-2, and insert the PHONES jack to enjoy private listening.

### TONE CONTROLS

BASS.....for control of bass notes.

TREBLE.....for control of treble notes.

Even when the tone controls are set in the center position, it is not always possible to obtain an acoustically flat response depending on program sources and acoustic characteristics of the listening room. The tone controls enable the listener to have an acoustically flat response. However, an excessive boost of bass or treble notes may produce unpleasant results, so the tone controls should be used only to compensate for acoustic requirements.

## INSTRUCTION FOR OPERATION

### LOCATION OF OPERATION

Model RA-211 is designed with due considerations for heat radiation.

However, it should not be installed in an airtight cabinet or exposed near heat sources.

### CONNECTION OF SPEAKERS

The RA-211 amplifier is specified at the load impedance of 4-16 ohms. Most speakers are rated at 8 ohms. When driving speakers connected in parallel, take care not to make the composite impedance become lower than 4 ohms.

If used at below 4 ohms, the DC fuse of this unit may burn out or give rise to mal-functioning of this unit when used continuously for considerable time.

### SPEAKER POLARITY

If the speaker polarity is reversed, sound connection between the right and left speakers will be lost, resulting in an unnatural sound in the middle. This "phase displacement" is particularly noticeable in monaural playback. With the polarity properly fixed, a monaural program will be heard playing from the middle of the two speakers.

### FUSE

Model RA-211 is provided with an AC fuse of 1.5A and a DC fuse of 2A for protection of the power transistors. Check the AC fuse when the front panel pilot lamp does not light up. If no sound is heard from the amplifier when there is nothing wrong with the power supply to the amplifier check the DC fuse. Replace any blown fuse with a new one having the same rating. When replacing make sure to turn off the power switch.

### HUM AND NOISE

In any high fidelity installation, hum may be caused by the interconnection of a record player, tuner and amplifier, as a result of the cables and different grounds. If hum is experienced with your amplifier, disconnect everything but the speakers from the unit. If hum persists, reverse the AC line cord. Plug in the record player and if hum appears, reverse the record player power plug and connect a single lead from the record player chassis to the ground post on the rear chassis. Connect your other devices in this manner.

**Caution:** Hum may also be induced by defective connecting cables or by running these cables too close to a strong AC field.

## SPECIFICATIONS

### POWER OUTPUT:

Total Music Power (IHF) .....	50W at 4ohms
Continuous Power (RMS) .....	16W+16W each channel driven at 4ohms 12W+12W each channel driven at 8ohms 13W+13W both channels driven at 4ohms 10W+10W both channels driven at 8ohms (all less than 1% THD at 1 kHz)
Harmonic Distortion .....	0.2% at 9W+9W RMS, 8ohms
IM Distortion .....	0.6% at 9W+9W RMS, 8ohms
Frequency Response .....	20 to 65,000 Hz, -3 dB at 8ohms
Power Bandwidth (IHF) .....	20 to 35,000 Hz at 8ohms
Input Sensitivity/Impedance:	
PHONO MAG .....	2.7mV/45K ohms
PHONO 2 CERAMIC .....	140mV/100K ohms
TUNER .....	170mV/50K ohms
AUX .....	170mV/50K ohms
TAPE MONITOR IN .....	150mV/50K ohms

### Signal to Noise Ratio:

PHONO .....	63 dB
AUX .....	70 dB
TUNER, TAPE IN .....	70 dB
Residual Noise .....	1.5 mV
Damping Factor .....	35 at 8ohms
Loudness Control .....	+8 dB at 50 Hz, +3 dB at 10 kHz
Bass Control .....	±10 dB at 50 Hz
Treble Control .....	±10 dB at 10 kHz
Phono Overload .....	80 mV
Phono Equalizer .....	RIAA ±0.5 dB
Crosstalk .....	-45 dB
<b>MISCELLANEOUS:</b>	
Power Consumption .....	100 watts
Dimensions .....	13" (W) x 6-1/2" (D) x 4" (H)
Weight .....	9 lbs/4 kg

Note: features and specifications subject to changes for improvement without notice.

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