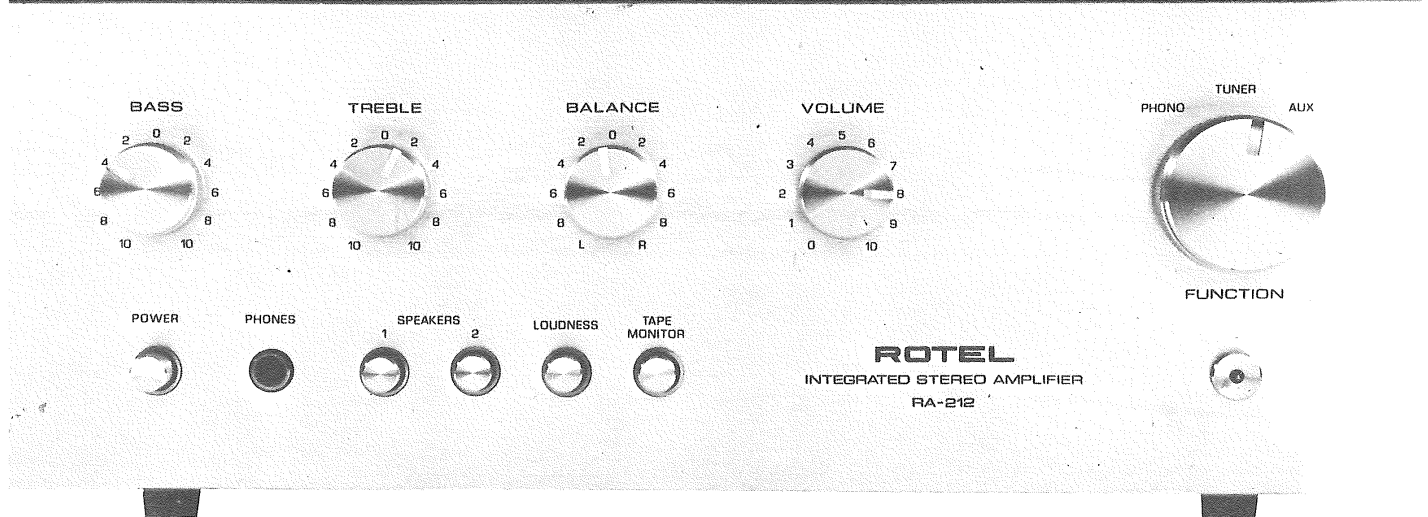


# Owner's Manual

Integrated Stereo Amplifier

# RA-212



## 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.

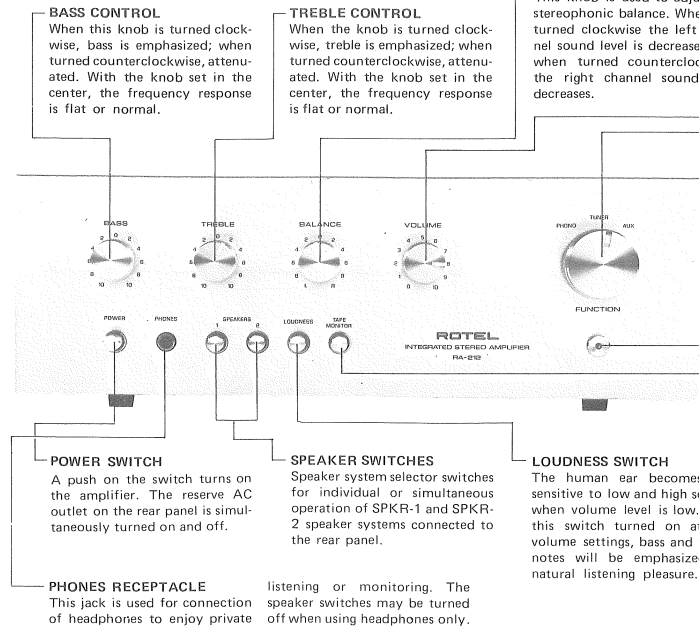
We have fitted every control and feature you could conceivably need. Designed for both versatility and ease of operation, this piece of equipment will add professional studio flexibility to your Hi-Fi sound center. The per-

formance 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.

**WARNING**—to prevent shock or fire hazard, do not expose this appliance to rain or moisture.

## FRONT PANEL CONTROLS



**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.

**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.

**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.

**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.

**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 turntable connected.  
TUNER.....for listening to AM/FM broadcasts with a tuner connected.  
AUX.....for reproduction of audio components, other than those mentioned above, connected to AUX input terminal.

**PILOT LAMP**  
The lamp lights up when the power switch is flipped on.

**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.

**POWER SWITCH**  
A push on the switch turns on the amplifier. The reserve AC outlet on the rear panel is simultaneously turned on and off.

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

**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.

**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.

## INSTALLATION

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

### SPEAKER SYSTEMS

This unit is equipped with quick-connect jaw-snap terminals for connecting two sets of speakers. Connect your main pair of speakers to the terminals marked SPKR-1. Ensure that your right speaker is connected to the terminal marked ⊕ and that the ground (−) terminal on the right speaker is connected to the terminal marked ⊖ on the extreme left of the terminal block. Similarly, connect your left speaker between the adjacent SPKR-1 terminals marked ⊕ and ⊖. If you wish to connect a second pair of speakers, connect them to SPKR-2 terminals in the manner described above.

**Caution:** Ensure that the speaker leads are fastened securely to the proper terminals, and that there are no stray strands which may cause shorting between terminals. If 2 sets of speakers are palyed simultaneously, the impedance of each unit should not be less than 8 ohms.

### TURNTABLE

Model RA-212 is provided with one pair of PHONO terminals for connection and playback of one turntable. Connect RIGHT output pin jack of turntable to the RIGHT of the PHONO terminals, and LEFT pin jack to the LEFT of the PHONO terminals. The output cord from turntable 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

turntable equipped with a ground wire, connect the ground wire to the GND terminal of this unit. If your turntable comes with a DIN plug, simply plug it to the DIN socket PHONO. If you wish to use a ceramic cartridge, move the MAG/CER selector switch down to CER position. If the cartridge is magnetic, leave it at MAG position.

### 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.

### 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 AC 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 of 150W.

## OPERATION

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

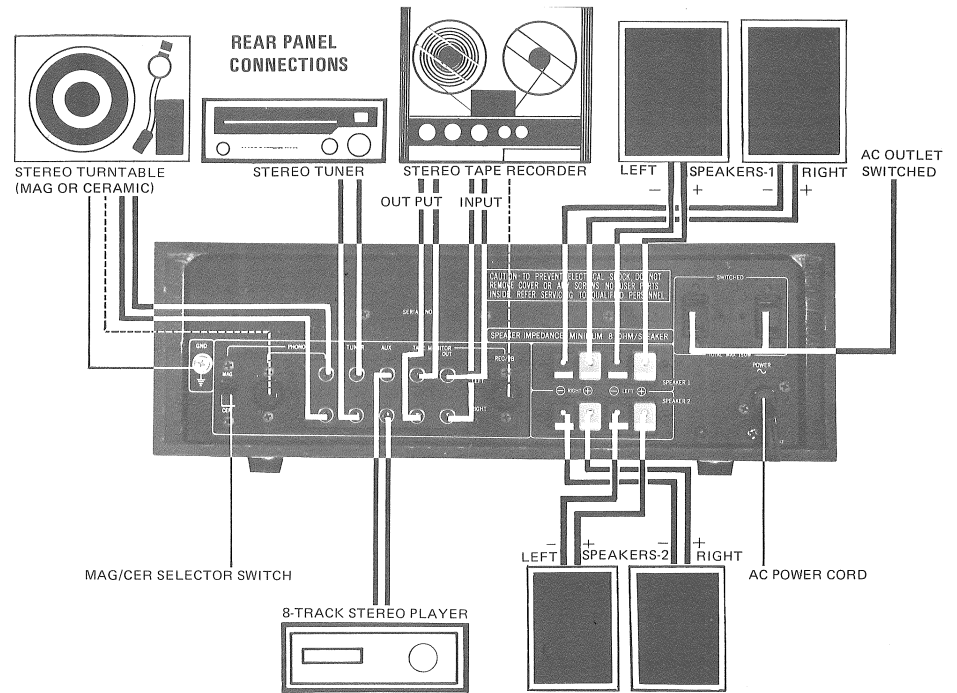
### TURNTABLE

1) Connect the turntable 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 is overridden at this 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

Just insert to 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.

rated at 8 ohms.  
If used at below 4 ohms, this unit may burn out or give rise to mal-functioning of this unit when used continuously for considerable time. Also, do not use speakers rated below 8 ohms, when playing two pair of speaker systems simultaneously.

### 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.

## INSTRUCTION FOR OPERATION

### LOCATION OF OPERATION

Model RA-212 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-212 amplifier is specified at the load impedance of 4-16 ohms. Most speakers are

## SPECIFICATIONS

Continuous Power Output . . . . .	10 watts per channel, min. RMS, both channels driven into 8 ohms from 50 to 20,000 Hz with no more than 1 % total harmonic distortion
IM Distortion . . . . .	not more than 0.2 % at rated output, $\pm 1$ dB
Frequency Response . . . . .	15 to 50,000 Hz, $\pm 3$ dB at 1 watt per channel
Damping Factor . . . . .	40 at 1 KHz
Signal to Noise Ratio . . . . .	(IHF, 'A' network closed circuit)
PHONO . . . . .	more than 65 dB
TAPE, AUX, TUNER . . . . .	more than 80 dB
Residual . . . . .	less than 1 mV
Input Sensitivity/Impedance (at rated output, 1 KHz)	
PHONO (magnetic) . . . . .	2.8 mV/47 kohms
PHONO (ceramic) . . . . .	150 mV/100 kohms
TUNER . . . . .	150 mV/50 kohms
AUX, TAPE . . . . .	150 mV/50 kohms
Output Level (TAPE OUT) . . . . .	350 mV/3.3 kohms (5 mV input)
Phono Overload . . . . .	more than 90 mV
Phono Equalization . . . . .	R.I.A.A. STD $\pm 1.5$ dB
Crosstalk . . . . .	50 dB (overall at 10 KHz)
Bass Control . . . . .	$\pm 10$ dB at 100 Hz
Treble Control . . . . .	$\pm 10$ dB at 10 KHz
Loudness . . . . .	+ 7 dB/100 Hz, +3 dB/10 kHz
<b>GENERAL:</b>	
Power Consumption . . . . .	100 watts
Dimensions . . . . .	335 (W) x 240 (D) x 115 (H) mm
Weight . . . . .	4 kg/8.8 lbs

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

## EXCLUSIVE NOTE FOR U.K.

If your unit comes with a 3-core cable without a plug, make certain live, neutral and (where appropriate) earth leads are connected to the proper terminals. Check that the terminals are screwed down firmly and no loose strands of wire are present.

**WARNING: THIS APPARATUS MUST BE EARTHED**

**IMPORTANT:** The wires in this mains lead are coloured in accordance with the following code:

GREEN/YELLOW: EARTH  
BLUE: NEUTRAL  
BROWN: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows.

The wire which is coloured GREEN/YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol  $\perp$ , or coloured GREEN or GREEN/YELLOW.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLUE or BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured BROWN or RED. The apparatus must be protected by a 3 Amp fuse if a 13 Amp (BS 1363) plug is used. If another type of plug is used a 5 Amp fuse or lower must be used, either in the plug or adapter or at the distribution board.

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