

# owner's manual



Quality. Uncompromised.

# ROTEL<sup>®</sup> RMA-90

STEREO MICRO  
INTEGRATED  
AMPLIFIER

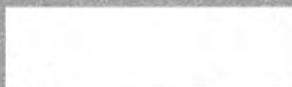
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## WARNING

TO PREVENT FIRE OR SHOCK HAZARD,  
DO NOT EXPOSE THIS APPLIANCE TO  
RAIN OR MOISTURE

Write your SERIAL NUMBER here.

The number is located near the name  
plate on the rear panel.



# ENGLISH

## STEREO MICRO INTEGRATED AMPLIFIER RMA-90

### INTRODUCTION

We at Rotel want to thank you for purchasing our audio product.

Rotel audio products are designed to use the latest electronic technology, and they incorporate our long experience as a specialist manufacturer of audio equipment. We are confident that you will find satisfaction in the high quality sound and top performance, and that you will find pleasure in the functional beauty achieved through human-engineering concept. Before starting operation, please read this instruction manual thoroughly and acquaint yourself with the proper mode of using the unit and all its connections.

We hope you will enjoy top-notch performance for many years to come.

### BEFORE ENJOYMENT/POWER SUPPLY

Follow the instructions below for maximum safety:

#### 1. Use a wall outlet or Rotel RMR-90 for power supply

Be sure to connect the AC line cord directly to a household wall outlet or Rotel RMR-90, and not to an auxiliary outlet on another component. Be certain that the outlet voltage matches the electrical rating of the unit, found on the rear panel name plate.

#### 2. Connecting and removing AC cord

Be sure to connect or disconnect the AC line cord only after turning off the power switch to prevent possible shock noise or damage to the speakers.

#### 3. Ventilate the unit well

Never block any ventilation holes at the top and bottom of the unit. Be sure also to provide ample ventilation space around the unit. Poor ventilation may result in damage due to excessive heat.

#### 4. Do not open the cabinet

In order to avoid electric shock or damage to the component, never open the cabinet. If a foreign object falls inside the unit by mistake, turn the power off, disconnect the wall plug, and consult a qualified electrician or your dealer.

#### 5. Installation

Be sure to place the unit in a level and flat place where it is free from humidity, vibration, high temperature and not exposed to direct sunlight. Be careful not to place the unit in a highly enclosed place such as near a wall or on a bookshelf. A poor ventilation will cause undesirable effects to the unit.

#### 6. Moving the unit

When transporting, remove the AC cord from the wall outlet and all other connected cords on the rear panel to prevent wire breakage and short circuits.

#### 7. If the unit gets wet

If the unit should get wet, immediately disconnect the AC cord, and consult your dealer or a qualified electrician.

#### 8. Cleaning and maintenance

Do not use chemicals such as benzine or thin-

ners on the front panel. Always use a soft, dry cloth to clean the unit.

#### 9. Owner's manual

Keep the owner's manual near the unit, and record the serial number (found on the rear panel) on the cover.

### EXCLUSIVE NOTE FOR U.K.

If your unit comes with a 2-core cable without a plug, make certain live and neutral leads are connected to the proper terminals. Check that the terminals are screwed down firmly and no loose strands of wire are present.

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

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 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.

### SPEAKERS

The unit allows hookup of two speaker systems. Use speaker systems with impedance ratings of 8-16 ohms. Before hooking up your speaker system, be sure to check its impedance, which should be indicated either on the back of the speaker, or in the speaker instruction manual.

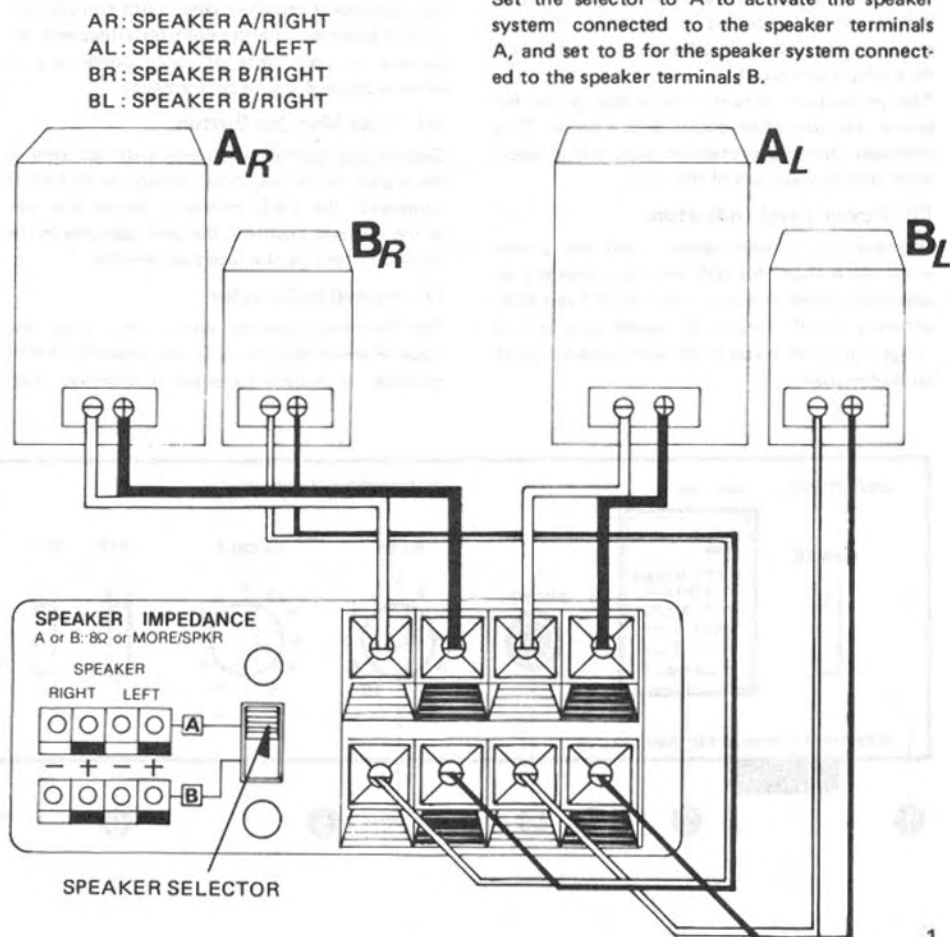
### HOOKING UP AND SELECTING SPEAKERS

On the rear panel of the RMA-90 are two sets of speaker terminals, "A" and "B", to which two speaker systems may be connected. Connect the speaker leads of the right-hand speaker to terminals "R" of "A" (or "B"), and the speaker leads of the left-hand speaker to terminals "L" of "A" (or "B"). Make sure that the "+" speaker lead is connected to the "+" terminal, and the "-" lead to the "-" terminal.

Strip 1.0cm (3/8") of the polyvinyl chloride insulation from the end of each speaker lead. Twist the exposed strands tightly, and secure the end with a touch of solder.

The terminals are the push-insert type. Insert the end of the lead into the hole while pushing on the button. Then release the button; the hole will close and the cord is firmly fixed.

A slide switch (speaker selector) on the rear panel is used to select the speaker system. Set the selector to A to activate the speaker system connected to the speaker terminals A, and set to B for the speaker system connected to the speaker terminals B.

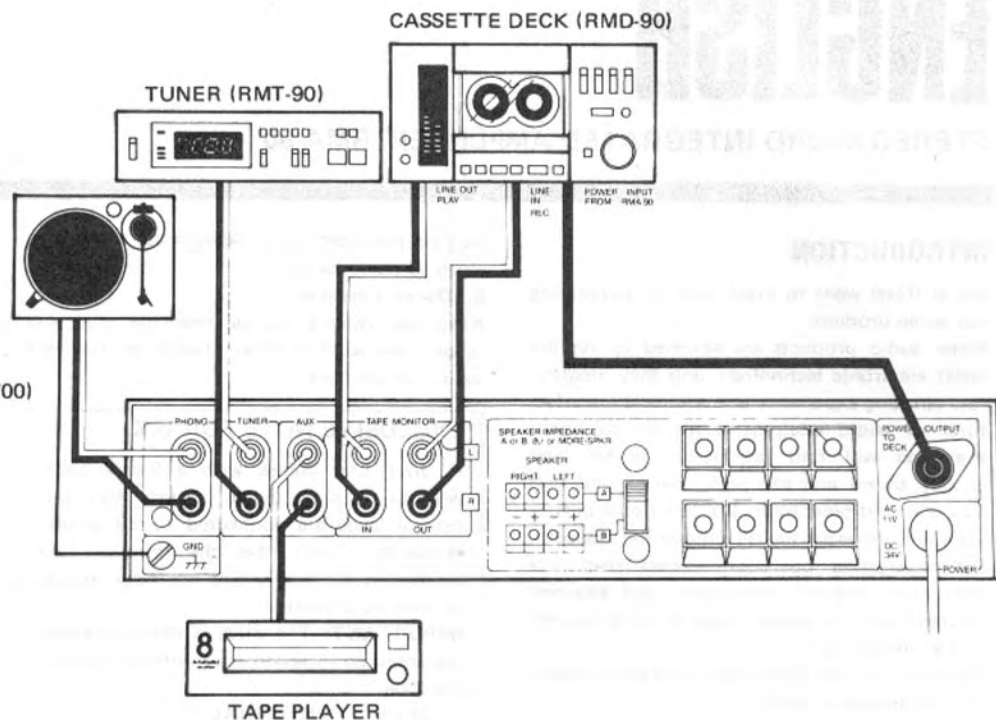


## CONNECTING COMPONENTS

Connect all necessary audio components to the rear panel of the unit, using RCA pin cords. See illustration for properly completed connections. When connecting RCA pin cords, be sure that L (left) and R (right) markings on each component are matched correctly. Connect the grounding wire of the turntable to the terminal marked GND on the amplifier.

**Note:** The rear panel of the unit is equipped with a special power supply socket for powering the cassette deck RMD-90. Use this socket for the RMD-90 exclusively, not for any other purposes.

TURNTABLE (RP-700)



## SWITCHES AND CONTROLS

### (1) Power Button

This button turns on the unit. The LED indicator above it will glow when the power is on. Press the button a second time to turn off the power.

### (2) Protection Indicator

Lights up when the protection circuit, which prevents the power amplifier section of the unit from being damaged, has been activated. When the protection circuit is in operation, the output from the power amplifier section is cut, and no sound is produced.

The protection indicator normally glows for several seconds after power is turned on. This indicates that the protection circuit is in operation during warm-up of the unit.

### (3) Power Level Indicators

Displays the output levels from the power amplifier section, for left and right channels respectively. Each indicator consists of five LEDs, allowing direct reading of power output in a range from 0.04 watts to 30 watts referenced to an 8-ohm load.

### (4) Headphone Jack

For private listening, plug your headphones into this jack, which cuts off the sound from speakers. The volume of the headphone sound can be regulated with the volume control.

### (5) Bass/Treble Tone Controls

Two separate controls regulate bass and treble respectively. BASS is for the low frequency range and TREBLE for high frequency range. Turn each knob clockwise to increase the response, and counterclockwise to reduce it. A flat response is obtained when both controls are at zero position. Use the controls effectively according to your taste or room conditions to achieve optimal sound performance.

### (6) Tape Monitor Button

Depress this button when you wish to listen to the signal from tape deck. When the button is depressed, the LED indicator above it glows. In the released position, the unit operates in the mode selected by the function selector.

### (7) Function Selector

The Function Selector works only when the Tape Monitor button is in the released (OFF) position. It is used to select program sources:

Depress PHONO button to reproduce signal from turntable, TUNER button for signal from tuner, and AUX button for signal from equipment connected to AUX terminal. LED indicators above the buttons show which function is selected.

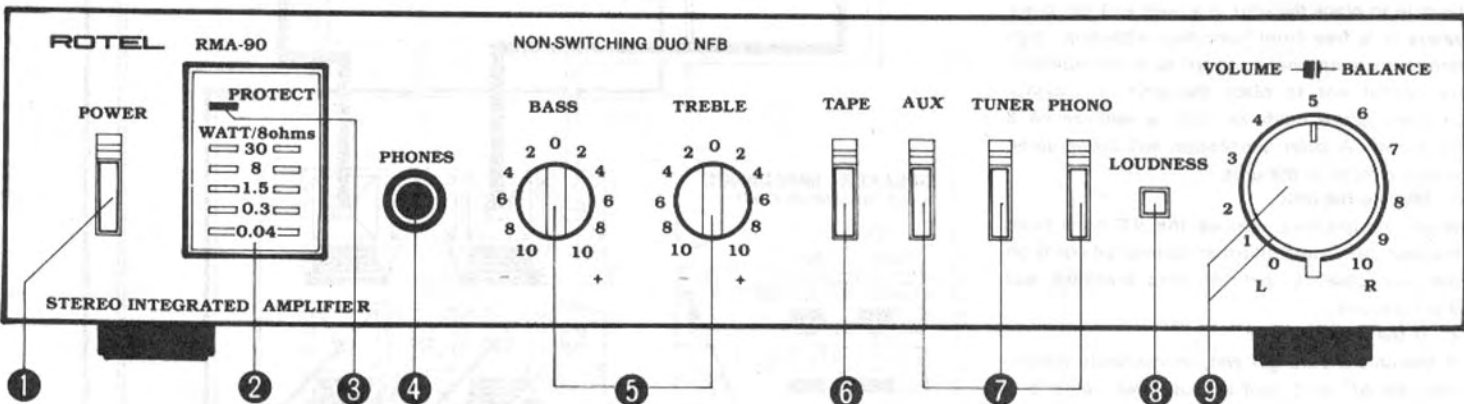
### (8) Loudness Button

The human ear has a tendency to become less sensitive to very low or high frequencies when listening at reduced volume levels. This button activates a compensation function that boosts those frequencies so that a more natural sound is heard.

### (9) Volume/Balance Control

The knob regulates the volume level. Turn it to the right to raise the level. When turned all the way to the left, no sound is produced. Before turning on the power, always be sure to have the volume set at zero.

The adjoining ring is used to regulate the balance of sound output from the speakers. Turning the ring to the left shifts the center of total sound to the left, and turning to the right shifts the center to the right. In mid-position, sound produced from both speakers is equally balanced.



## OPERATION

- Before commencing operation, check to see that all connections are properly made.
- Always be sure to set the volume control to the minimum position before turning on power.
- Because of the activation of the protection circuit, the unit will be operative a few seconds after turning on power.
- Set the speaker selector on the rear panel to position A or B according to speaker system connected.
- Set tone controls and loudness button as desired.

### Listening from Turntable

1. Set Tape Monitor button to released (OFF) position.
2. Depress PHONO button on the function selector.
3. Start the play, then raise the volume.

### Listening from Tuner or Equipment Connected to AUX Terminal

1. Set the Tape Monitor button to released (OFF) position.
2. To listen to radio broadcast, depress TUNER button on the function selector. To use equipment connected to AUX terminal, depress AUX button.
3. Tune in to the desired station, or put the equipment connected to AUX terminal into playing mode.
4. Raise the volume.

### Playing Back Tape Deck

1. Depress Tape Monitor button to ON.
2. Start playback.
3. Raise the volume.

### Recording Program Source

Play the desired program source according to the procedures noted above. The signal from the source will appear at TAPE MONITOR OUT terminals on the unit rear panel. Put the tape deck in the recording mode to record the signal. During recording, manipulating volume control, tone controls, etc. will have no effect on the signal being sent through the TAPE MONITOR OUT terminals.

## PROTECTION CIRCUIT

The RMA-90 incorporates all possible safety measures by combining multiple protection circuits to prevent accident or damage.

If for some reason the protection circuit is activated, there will be a sudden cut-off of sound from the speakers, and the protection indicator will light up.

If no sound is produced, the reason may be due to the functioning of the protection circuit. First, turn off the power and disconnect the plug from the electrical outlet, and check to be sure that the speaker cables are not short-circuited. Also check to make sure the impedance of each speaker is 8 ohms or over (if it is below 8 ohms, the unit will be overloaded due to low impedance).

After checking the above points, turn the power on, and the protection circuit will be automatically deactivated and the unit will start functioning again.

## HUM AND NOISE

In any high fidelity installation, hum may be caused by the interconnection of a turntable, tuner and amplifier, and speakers as the result of wiring, different grounding or locations of components.

If hum is experienced with your unit, disconnect everything but the speakers from the unit. Plug in the turntable and if hum or howling appears, move the turntable away from the speakers as much as possible.

Note hum may also be induced by defective cable connections or by routing the cables too close to a strong AC field.

When your unit picks up noise during the reception of broadcasts, causes are mostly due to external objects such as fluorescent lamps and house appliances using motor or thermostat, or others that may induce the noise.

Either relocating the unit away from the noise sources or using an improved outdoor antenna may readily solve the problem.

In the event you cannot find the cause, consult your dealer or a qualified electrician.

## VOLTAGE SELECTION

### Not available for U.K., Canada and Scandinavia

The unit is a variable voltage equipment that can run on 120V, 220V or 240V power supply. Your unit should already be preset at the proper voltage for use in your area. However, if you move to an area where the power supply voltage is different, consult your dealer.



# SPECIFICATIONS

Continuous Power Output . . . . .	.30 watts* per channel, min. RMS both channels driven into 8 ohms from 20 to 20,000Hz with no more than 0.03% total harmonic distortion.
Total Harmonic Distortion. . . . . (20 to 20,000Hz, from AUX)	No more than 0.03% (continuous rated power output) No more than 0.02% (continuous 1/2 rated power output) No more than 0.03% (1 watt per channel power output, 8 ohms)
Intermodulation Distortion . . . . . (60Hz : 7kHz = 4 : 1)	No more than 0.03% (continuous rated power output) No more than 0.02% (continuous 1/2 rated power output) No more than 0.03% (1 watt per channel power output, 8 ohms)
Output: Speaker . . . . .	.8 ohms
Headphone. . . . .	.4-16 ohms
Damping Factor. . . . .	.30 (20 to 20,000Hz, 8 ohms)
Input Sensitivity/Impedance:	
PHONO (MM). . . . .	.25mV/47 kohms
TUNER, AUX. . . . .	.150mV/33 kohms
TAPE MONITOR. . . . .	.150mV/33 kohms
Overload Level (T.H.D. 0.5%, 1kHz):	
PHONO 1 . . . . .	.130mV
TUNER, AUX, TAPE . . . . .	.5V
Frequency Response:	
PHONO . . . . .	.30 to 20,000Hz, $\pm 0.5$ dB (RIAA STD)
TUNER, AUX, TAPE . . . . .	.5 to 70,000Hz, +0.2dB, -1.0dB
Tone Control:	
BASS. . . . .	$\pm 10$ dB, 100Hz
TREBLE. . . . .	$\pm 10$ dB, 10kHz
Loudness Contour . . . . .	+10dB (100Hz), +4dB (10kHz) (volume control set at -40dB position)
Signal-to-Noise Ratio (IHF, A network):	
PHONO 1 . . . . .	.75dB
TUNER, AUX. . . . .	.95dB
TAPE MONITOR. . . . .	.95dB

## MISCELLANEOUS

Power Requirement. . . . .	.120V/60Hz, 220V/50Hz, 240V/50Hz, 120, 220, 240V/50-60Hz (switchable)
Power Consumption . . . . .	.275 watts
Dimensions (overall) . . . . .	.279 (W) x 66 (H) x 262 (D) mm 11" x 2-19/32" x 10-5/16"
Weight (net) . . . . .	.4.5kg/99 lbs.

- Specifications and design subject to possible modification without notice.
- \*Measured pursuant to the Federal Trade Commission's Trade Regulation Rule on Power Claims for Amplifiers (applicable to the U.S.A. only).