

## SAFETY INSTRUCTIONS

1. Read Instructions — All servicing and operating instructions should be read before the appliance is operated.
2. Read Labels Carefully — The safety and operating instructions should be read carefully by users and service personnel.
3. Service Warnings — Warnings on the appliance and in the instructions should be read and followed.

4. Servicing — The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified factory authorized service personnel.

**WARNING:** To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

# ROTEL *hi fi*

STEREO CONTROL AMPLIFIER

# RC-990BX

## OWNER'S MANUAL

1. Location or Position — The appliance should be placed on a level surface with proper ventilation. For maximum life, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or placed in a built-in installation such as a bookcase or cabinet, thereby impeding the flow of air through the ventilation openings.

2. Heat — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

3. Power Sources — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

4. Grounding or Polarization — The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.

5. Power-Cord Protection — Power supply cords should be cared so that they are not likely to be walked on or pinched by anything placed upon or against them, paying particular attention to plugs, convenience receptacles, and the point where they enter the appliance.

6. Cleaning — The appliance should be cleaned only as recommended by the manufacturer.

7. Unusual Periods — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

8. Object and Liquid Entry — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

9. Damage Requiring Service — The appliance should be serviced by qualified factory authorized service personnel when:  
A. The power supply cord or its plug has been damaged; or  
B. Objects have fallen, or liquid has been spilled into the appliance; or  
C. The appliance has been exposed to rain; or  
D. The appliance does not operate properly.



**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN



**CAUTION:** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

### Explanation of Symbolical Symbols

The warning sign with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of unenclosed "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



### EXCLUSIVE NOTE FOR U.K.

If your unit comes with a 2-core mains lead without a plug, the core is to be connected to the earth terminals of a three pin plug. Make certain that they are connected, according to the following instruction, to the proper terminals. Check that the terminals are screwed down firmly and no loose strands of wire are present.

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

**BLUE: NEUTRAL**

**BROWN: LIVE**

As the colour 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**.

**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  
identification plate on the rear panel.

# SAFETY INSTRUCTIONS

**Read Instructions** — All the safety and operating instructions should be read before the appliance is operated.

**2. Retain Instructions** — The safety and operating instructions should be retained for future reference.

**3. Heed Warnings** — All warnings on the appliance and in the operating instructions should be adhered to.

**4. Follow Instructions** — All operating and use instructions should be followed.

**5. Water and Moisture** — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.

**6. Carts and Stands** — The appliance should be used only with a cart or stand that is recommended by the manufacturer.

**6A.** An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

**7. Wall or Ceiling Mounting** — The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.

**8. Ventilation** — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

**9. Heat** — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

**10. Power Sources** — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

**11. Grounding or Polarization** — The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.

**12. Power-Cord Protection** — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

**13. Cleaning** — The appliance should be cleaned only as recommended by the manufacturer.

**14. Nonuse Periods** — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

**15. Object and Liquid Entry** — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

**16. Damage Requiring Service** — The appliance should be serviced by qualified factory authorized service personnel when:

A. The power-supply cord or the plug has been damaged; or  
B. Objects have fallen, or liquid has been spilled into the appliance; or

C. The appliance has been exposed to rain; or

D. The appliance does not appear to operate normally or exhibits a marked change in performance; or

E. The appliance has been dropped, or the enclosure damaged.

**17. Servicing** — The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified factory authorized service personnel.

**WARNING: To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture**



**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN



**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

### • Explanation of Graphical Symbols

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



### EXCLUSIVE NOTE FOR U.K.

If your unit comes with a 2-core mains lead without a plug, neither core is to be connected to the earth terminal of a three pin plug, make certain that they are connected, according to the following instruction, 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**

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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.

### PORTABLE CART WARNING



## INTRODUCTION

### A WORD FROM ROTEL

We at Rotel take this opportunity to thank you for choosing our product. Our commitment and dedication to the design and manufacturing of high fidelity products for more than thirty years have guided the creation of equipment with the highest level in sound reproduction. We are confident that you will enjoy your Rotel equipment, now and for many years to come.

Please read this instruction manual carefully before you start using your preamplifier and keep it in a safe place for future reference. Thank you.

### INTRODUCING THE RC-990BX CONTROL AMPLIFIER (PREAMPLIFIER)

The RC-990BX Stereo Control Amplifier includes an extruded aluminum front panel, together with functionally smooth controls and buttons. It also features a totally symmetrical, push-pull circuit topology, which eliminates all phase differences between the two audio channels, giving an astonishing sense of depth, rare in products of this price range.

The main circuit is a single high-grade epoxy resin printed circuit board, with specially formulated extra thick copper tracks on the bottom. It has a discreet line-up stage, and the phono stage boasts very refined and dynamic performance with either MC or MM cartridges, with a sophisticated circuit consisting of high frequency active and low frequency passive equalization amplifiers.

The RC-990BX also features a toroidal power transformer and a high quality, high precision, motor-driven volume control, which determines the output level of the whole musical system. The addition of the balance control allows accurate adjustment of the output levels between the left and right channels.

Six sources may be connected to the RC-990BX via the Phono, CD, Tuner, Aux, Tape 1 and Tape 2 jacks (RCA jacks), and the inclusion of a tape buffer amplifier, eliminates any possibility that a tape recorder might degrade the emanating sound quality, while recording is in process.

The RC-990BX, also comes with the RR-909 remote control unit, which is combined to also control the various functions of the RT-990BX tuner.

## UNPACKING AND INSTALLING

Pull out the flap at the back of this manual, to visualize the illustrations referred to in the text.

### CONTENTS OF THE PACKAGING BOX

- RC-990BX control amplifier
- Remote control unit RR-909 and batteries
- Instruction manual

If any of these items is missing, please contact your dealer immediately.

### UNPACKING

- Carefully unpack your control amplifier and place it gently at its intended location. Please keep the packaging material for future use in case you move or need to return the unit for servicing.
- Keep the owner's manual near the unit and write down the serial number of your preamplifier (found on the identification plate on the rear panel) on the front cover of this manual.

### LOCATION

- Place the preamplifier on a flat, firm surface where it will be free from direct sunlight, excessive humidity, vibrations, dust, heat or cold.
- Do not place the unit in a highly enclosed area or block the ventilation openings at the top and bottom of the unit, as poor ventilation can result in damage due to excessive heat build-up.

### HUM AND NOISE

In any high fidelity installation, hum may be caused by the interconnection of a turntable, tuner, amplifier and speakers, as a result of wiring, different grounding or locations of the components. If hum or noise is experienced with your unit try one or a combination of the following measures:

- Check that all cable connections have been well and securely made, and that they do not run too close to a strong AC field.
- Disconnect all components from the preamplifier, except the power amplifier. Then reconnect the turntable and if hum or howling appears, move the turntable further away from the speakers.
- Use an improved outdoor antenna on your tuner, or move the equipment away from objects such as fluorescent lamps, rheostats and house appliances that use motors or thermostats, when receiving broadcasts.
- Connect a wire from the ground terminal on the rear panel of this unit, to the ground terminal on the applicable source unit (or any other point on the cabinet where noise can be brought down to a minimum). However, absolutely ensure the wire does not touch any areas related to the power source such as auxiliary AC outlets, and do not insert the wire inside the cabinet.
- Contact your dealer for further advice.

### ELECTRICAL REQUIREMENTS

Your preamplifier has been designed to be powered by your local mains supply. Before connecting it to the mains outlet, check the voltage rating at the identification plate located on the rear panel of the unit - on the top right-hand side. Never plug the unit into an outlet of voltage different to that specified. The wrong voltage can cause a serious fire hazard. Consult your dealer if in doubt.

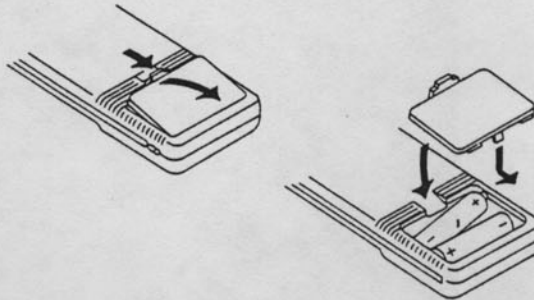
For the North American markets, there are an additional two convenient switched AC outlets on the rear panel, giving the possibility of attaching two components, such as a cassette recorder and CD player. This is for low power consumption items only and should not be used to provide power to a power amplifier.

### THE CABINET

There are no user-serviceable parts inside the unit. Do not open the cabinet, as this may void your warranty. If water or a foreign object falls inside the preamplifier, disconnect the power cord immediately and consult your dealer. To clean, wipe gently with a soft, clean, dry cloth. Never use solvents of any kind.

### REMOTE CONTROL UNIT

See Illustration 3 - Battery Positioning:



Remove the battery cover on the back of the remote control unit and insert two batteries in the correct position, as indicated. Close the cover to secure the batteries properly.

To ensure the proper functioning and safe-keeping of the remote control unit:

- Keep the remote control unit away from extremely hot or humid places.
- Avoid dropping and spilling liquids on or into the remote control unit.
- Avoid exposing the sensor to direct sunlight or lighting apparatus.
- Remove the batteries when the remote control unit will not be used for a long time, to avoid leakage of the batteries, which could damage the unit.

Aim the remote control unit toward the preamplifier to activate the remote functions. The average lifetime of the batteries is approximately one year, but may vary with the intensity of usage. When the preamplifier no longer responds to remote commands, the batteries should be replaced.

### AGING AND HANDLING OF THE VOLUME AND SELECTOR SWITCHES

- Like other high-grade components, this unit requires "aging" to stabilize the performance and characteristics of the parts and circuits, so they can deliver the highest possible sound quality. Once all the connections have been completed and the system is fully assembled, turn on the power to the system and conduct the "aging" process in conjunction with the other components. The "aging" time required is normally about 100 hours.
- This component is equipped with the highest grade Alps volume control. Occasional rotation of all the controls when the power is off will serve to clean the contacts and help to prevent deterioration over the years. We recommend this.

**NOTE:** It is not necessary to leave the unit "aging" for 100 continuous hours. Instead, let the unit "age" for a few hours a day over several days, while you enjoy normal listening.

## MAKING THE CONNECTIONS

See Illustration 1 - Rear Panel, to visualize where the connections are to be made.

**NOTE:** Please be sure the power is turned off and that the power cords from the equipment have been unplugged from the mains outlet before making any connections.

### 1. CONNECTING A PHONO TURNTABLE

- Switch the MM/MC button either to the MM position for all normal MM cartridges, or to the MC position for all regular MC cartridges. Note that there are a few MC cartridges with high output sensitivities (2 mV), similar to that of a MM type. If this is the case, switch the MM/MC button to the MM position.
- Connect the ground wire of the turntable to the screw terminal.
- Connect the output jacks of your turntable to the PHONO input jacks at the rear of the preamplifier, using the correct interconnect cords supplied with your turntable.
- Make sure the right (RED) and the left (WHITE) channels are correctly connected.

### 2. CONNECTING A COMPACT DISC (CD) PLAYER

- Connect the output jacks of your CD player to the CD input jacks at the rear of the preamplifier, using the correct interconnect cords supplied with your player.
- Make sure the right (RED) and the left (WHITE) channels are correctly connected.

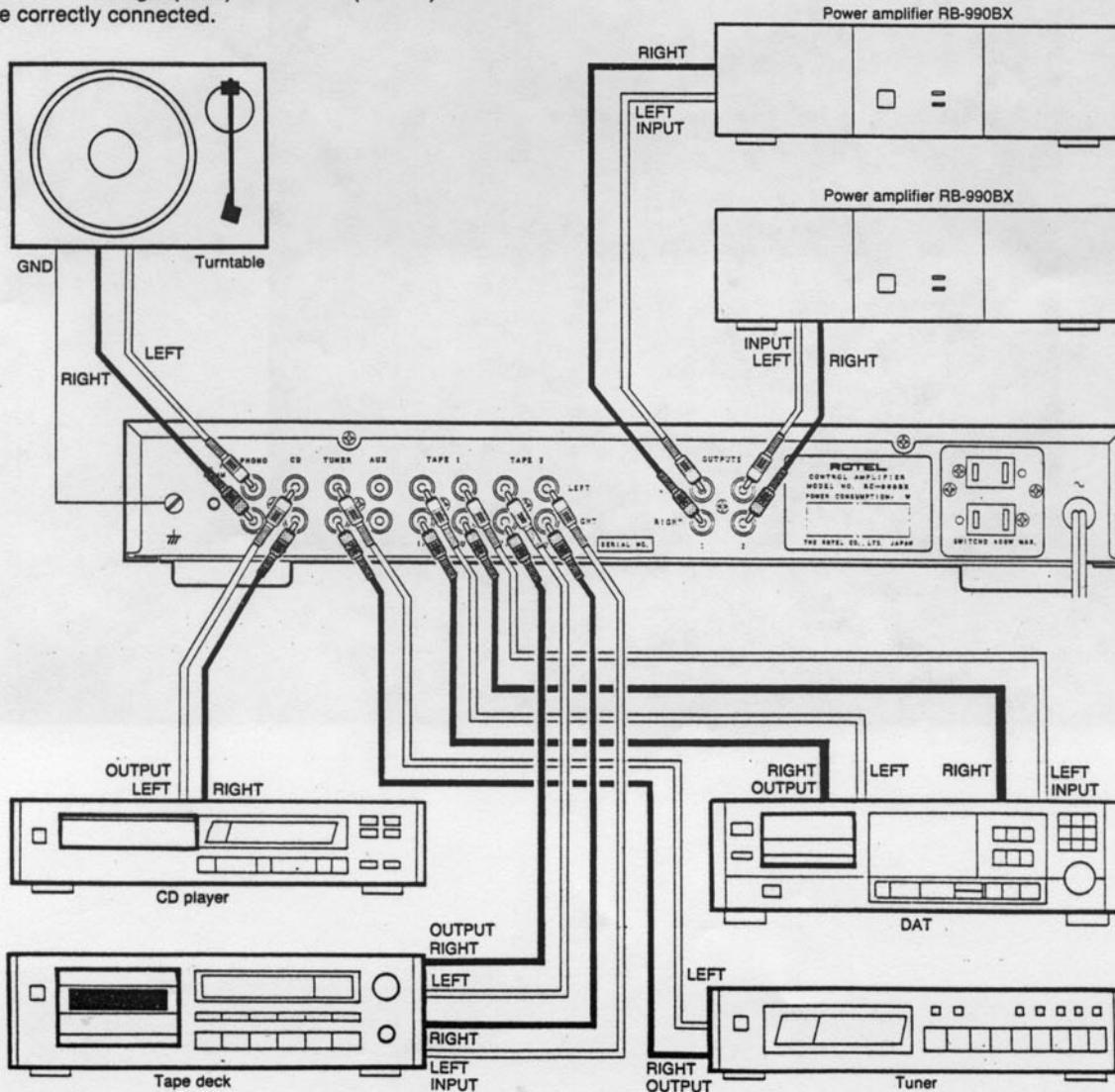
### 3. CONNECTING A TUNER

- Connect the output jacks of your tuner to the TUNER input jacks at the rear of the preamplifier, using the correct interconnect cords supplied with your tuner.
- Make sure the right (RED) and the left (WHITE) channels are correctly connected.
- If possible, turn your tuner's power off when not operating it, as this will eliminate any interference from bleeding through into any other source being used.

### 4. CONNECTING TO THE AUX INPUT

- Connect the output jacks of your component to the AUX input jacks at the rear of the preamplifier, using the correct interconnect cords supplied with your component.
- Make sure the right (RED) and the left (WHITE) channels are correctly connected.

**NOTE:** The AUX input jacks may be used for connecting to any component that has a high level input, such as a CD player, cassette player, video recorder, or tuner. Note however, that it cannot be used for connecting to a turntable (without an external PHONO preamplifier).



## 5. CONNECTING A TAPE RECORDER

- Connect the output jacks of your tape recorder (cassette deck, DAT, etc.) to either the TAPE1 or TAPE2 input jacks, using the correct interconnect cords supplied with your recorder.
- Make sure the right (RED) and the left (WHITE) channels are correctly connected. The TAPE OUT on the preamplifier goes to the 'tape in' or 'record in' jacks on your tape recorder. The TAPE IN on the preamplifier goes to the 'tape out' or 'playback' jacks on the tape recorder.
- When connecting only one tape recorder (cassette deck, DAT, etc.), use the TAPE1 input jacks.
- When connecting two tape recorders for dubbing (tape-to-tape recording) purposes, use the TAPE2 input jacks for the unit you wish to record from, and the TAPE1 input jacks for the unit you wish to record to. For example, to record DAT tapes onto cassette tapes, use the TAPE2 input jacks for the DAT unit and TAPE1 input jacks for the cassette unit.

## 6. CONNECTING TO THE PREAMPLIFIER OUTPUT JACKS

- The RC-990BX is equipped with two sets of output jacks in parallel.
- Connect a power amplifier to either OUTPUT 1 or 2.
- When using a bi-amp speaker system, a bass power amplifier is connected to one of the output jacks and a treble power amplifier is connected to the other output jack.
- Use only the highest grade interconnect cables when making the connections.
- Left channel jacks are aligned along the upper row, and right-channel jacks are on the lower row. Please be sure that the LEFT and RIGHT OUTPUT jacks are correctly connected.

## 7. CONNECTING THE POWER CORD/STANDBY INDICATOR

- Please be sure the VOLUME control is set to the minimum position before turning on the power.
- Connect the power cord to the mains outlet.
- The standby indicator light will be illuminated.
- Always handle the power cord with care. Never pull it out from the wall socket by tugging the cord. Instead, hold the cord firmly by the plug and gently pull.

**NOTES:** Verify that all connections are properly and securely made and that the preamplifier and components have been plugged in to the mains outlet(s).

We also recognize that the highest quality cables improve sound quality and recommend their use.

## LOCATION AND OPERATION OF CONTROLS

See Illustration 2 - Front Panel, to visualize the location of the front panel controls.

## 8. STANDBY BUTTON/INDICATOR:

Switches the preamplifier between on and standby. Standby is similar to an "off" function and disables all preamplifier functions. The STANDBY button also operates from the remote control unit.

- To turn the preamplifier on, press the STANDBY button. The Volume knob indicator will turn red.
- To turn the preamplifier off, press the STANDBY button again. The Volume knob indicator disappears.

## 9. HEADPHONE JACK (PHONES)

To listen to headphones, plug them into the HEADPHONE jack.

## 10. REMOTE CONTROL SENSOR:

Receives the control commands from the remote control unit. The remote control unit should be aimed toward the sensor - in as straight a line as possible -, in order for the remote functions to be acknowledged.

## 11. MUTING BUTTON/INDICATOR

Switches off the sound from the source currently playing. This function is also available from the remote control unit.

- Press the MUTING button in, to activate this function. The red MUTING indicator will light up and the sound from the currently playing source will be cut off.
- Press the MUTING button out, to deactivate this function. The MUTING indicator will disappear and the sound from the currently playing source will be heard.

## 12. VOLUME CONTROL

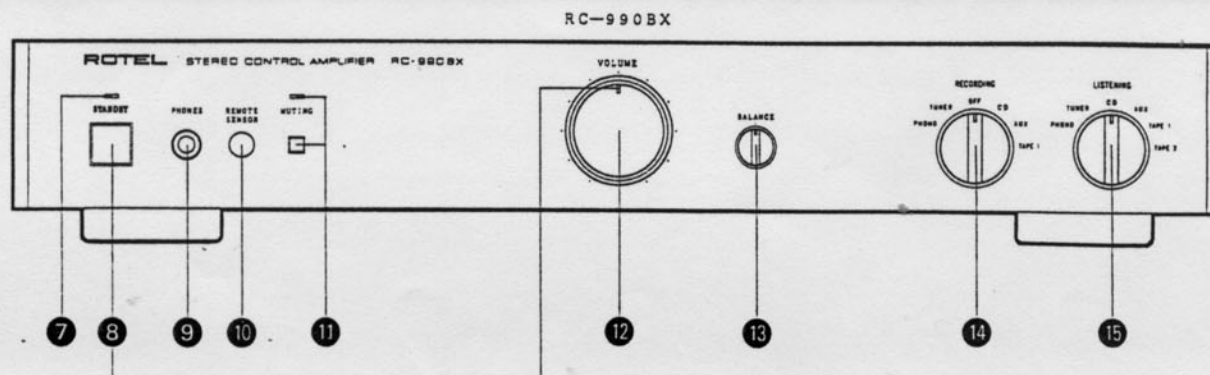
Controls the volume level. This control is also available from the remote control unit.

- Turn the VOLUME control clockwise to increase the volume, and counterclockwise to reduce it.
- Due to the linear taper and high quality material and construction used on the volume control, the sound level will not rise sharply at low settings. Normally the control is recommended to be set between the 10:00 to 1:00 o'clock position, when other Rotel equipment is connected, but a finer adjustment will depend on the sensitivity of your speakers and your own personal taste.

## 13. BALANCE CONTROL

Regulates the balance of sound coming from the left and right OUTPUT jacks.

- When the control is in the center (or detent) position, the sound is equally balanced between the left and right channels.
- Turn the BALANCE control to the left, to emphasize the left channel, or turn to the right to emphasize the right channel.



## 14. RECORDING SELECTOR

Permits the choice of recording from any source connected to the preamplifier, and to feed it directly to the TAPE1 or TAPE2 output jacks on the back of the unit, for recording the selected input.

- To record, turn the RECORDING selector so it points to the desired source indicated around the selector. This selects the source that is to be recorded onto TAPE1 or TAPE2. Set the tape recorder to record mode (following the record instructions of your tape recorder) and play the source to be recorded.
- When not recording, ensure the RECORDING selector is set to the OFF (center) position, to cut the circuit off completely from the signal path.
- To listen to one source - such as the tuner -, while recording another - for example the turntable -, turn the RECORDING selector to PHONO, and the LISTENING selector to TUNER.
- During recording, operation of the VOLUME control will have no effect on the recorded signal being fed to the TAPE1 or TAPE2 output jacks. To monitor the recording signals, set the Listening selector to the same input as the Recording selector.

**NOTE:** The TAPE2 input cannot be recorded by the TAPE1 output, though the TAPE1 input can be recorded by the TAPE2 output.

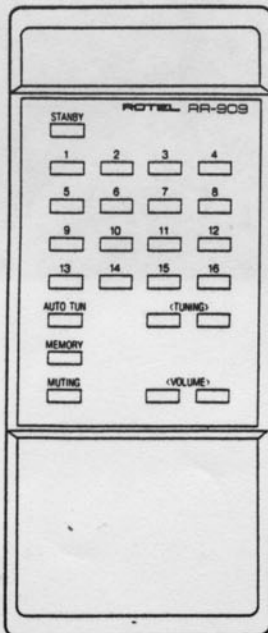
## 15. LISTENING SELECTOR

Permits the choice of listening to any source correctly connected to the preamplifier.

- To listen, turn the LISTENING selector, so that it points to the corresponding source indicated around the selector. The LISTENING selector operates independently from the RECORDING selector, so you can listen to one source while recording another.

## 16. REMOTE CONTROL UNIT

Allows easy access and use of the STANDBY button, the MUTING button and the VOLUME control of your RC-990BX. It also controls the standby button and tuning controls of the RT-990BX tuner.



## SPECIFICATIONS

Total Harmonic Distortion.....	No more than 0.004%
(CD/TUNER, 20 Hz to 20 kHz)	
Intermodulation Distortion .....	No more than 0.004%
(CD/TUNER, 60 Hz : 7 kHz = 4:1)	
Output (Headphones).....	8 to 2,000 ohms
Input Sensitivity/Impedance ..	PHONO: MC 250 $\mu$ V/ 100 ohms
	PHONO: MM 2.5 mV/ 47 kohms
	CD, TUNER: 150 mV/ 18 kohms
	AUX, TAPE1/2: 150 mV/ 18 kohms
Output Sensitivity/ Impedance.....	1.0 V / 100 ohms
Overload Level (THD 0.5 %, 1 kHz).....	PHONO: MC 16 mV PHONO: MM 160 mV CD, TUNER: 9 V AUX, TAPE1/2: 5 V
Frequency Response .....	PHONO: 20 Hz to 20 kHz, $\pm$ 0.2 dB (RIAA STD) CD, TUNER: 4 to 100kHz, $\pm$ 0.5 dB AUX, TAPE1/2: 4 to 100kHz, $\pm$ 0.5 dB
Signal to Noise Ratio (IHF, A network).....	PHONO: MC 70 dB PHONO: MM 75 dB CD, TUNER: 100 dB AUX, TAPE1/2: 100 dB
Power Requirement .....	120 V/60 Hz, 230 V/50 Hz, 240 V/50 Hz, 100V/50-60 Hz (depending on destination)
Power Consumption.....	13 watts (2.4 watts during standby)
Dimension (overall) .....	440(W) $\times$ 70(H) $\times$ 325(D) mm 17-1/3" (W) $\times$ 2-3/4" (H) $\times$ 12-4/5" (D)
Weight (net).....	5.4 kg / 11.9 lbs

**NOTE:** Specifications and design are subject to possible modification without notice.