

# ROTEL *hi-fi*

STEREO INTEGRATED AMPLIFIER

# RA-980BX

# owners manual

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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.

# SAFETY INSTRUCTIONS

1. **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.

## PORTABLE CART WARNING



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**

**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.

**A WORD FROM ROTEL**

Rotel take this opportunity to thank you for choosing our equipment for your home entertainment.

Rotel equipment represents a very high state of the art in sound reproduction, as the result of our everlasting determination to achieve the truly hi-fi performance. Please enjoy the sound Rotel have created for many years to come.

To make sure you get the most out of your equipment, please read this owner's manual carefully before your attempt any connections.

**BEFORE CONNECTIONS****1. Place for Installation**

Ensure to place the unit in a flat surface where it is free from humidity, vibration, high temperature and not exposed to direct sunlight. Also, be careful not to place the unit in a highly enclosed area without adequate ventilation around the unit. Do not block the ventilation openings at the top and the bottom of the unit to prevent excessive heat built up.

**2. Electrical Requirements**

Your equipment has been designed to be powered by the local AC voltage. Check the setting of your unit by looking at the rear panel name plate. Never try to plug the unit into an outlet of higher voltage, as this causes a serious fire hazard. Consult your dealer if in doubt.

**3. Connecting the Power Cord**

Always handle the Power cord with care. Ensure to connect the cord to the household wall outlet. When plugging and unplugging make sure the power switch on the unit is turned off.

**4. Do not Open the Cabinet**

There are no user-serviceable parts inside the cabinet of the unit. Do not attempt to open the cabinet or tamper with the internal components. If water or foreign object falls inside the unit by accident, disconnect the power cord immediately and consult a qualified electrician or your dealer.

**5. Cleaning Your Unit**

If your unit becomes dirty, wipe it gently with a soft, dry cloth. Never use solvents of any kind.

**CONNECTIONS****1. Connecting Components**

The illustration shows what audio components you can connect to the rear panel of the unit and how they should be properly hooked up via RCA type pin cords. Ensure that the Left and the Right channels are correctly matched between the RCA type sockets of the unit and those on the components.

**2. Connecting Speakers**

a) Use speakers with impedance ratings of 4 to 8 ohms. However, if you wish to hook up 2 sets (pairs) of speaker systems and drive both sets simultaneously, ensure each speaker is rated 8 ohms minimum. Never connect speakers with lower impedance than 8 ohms in this case. The speaker impedance is indicated on the back or in the instruction manual of the speaker.

b) Do not use speakers that have very high capacitive load, say, over 0.1 microfarads, as it may cause a damage to the power amplifier section. Normally, most speakers are low capacitance type, but there are a few which do have excessively high capacitance.

c) Use proper speaker cords normally your dealer will recommend, with as low capacitance content as possible. The speaker terminal posts provided on the back of the unit can also take banana plugs.

d) If connecting the speaker cords directly with the bare wire ends, suggest you strip about 1 cm of the insulation shield cover from the ends of the speaker cords. Twist any exposed strands tightly, and insert the ends properly to the terminal posts.

e) The DIRECT terminal posts are recommended for the best sound quality possible from the unit in the "straightpath" route bypassing the headphone circuit. The sound from the speakers connected to the DIRECT terminal posts will not be affected by the Speaker Remote button on the front panel. However, if you wish to listen to your headphone privately, connect your speakers to the REMOTE terminal posts and use the Speakers Remote button on the front panel to turn the speakers off.

f) The REMOTE terminal posts are for the second pair of speakers if you wish to use it for such as providing sound to another room. The sound from the remote speakers can be turned on and off by the front panel Speaker Remote button.

g) Ensure the Left and the Right channels are correctly connected between the unit and the speakers, and make sure for each channel the "+" and the "-" are also correctly matched. Check that the speaker cord ends (exposed tips) on the terminal posts are not stray and touching one another, which will cause short circuits and may damage both the unit and the speakers.

**3. Connecting Phono Turntable**

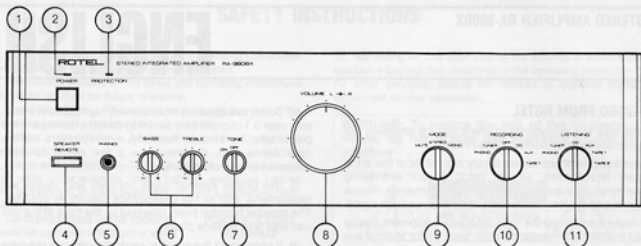
a) when connecting your turntable on the back of the unit, the MM/MC selector switch near the PHONO sockets must be set to either MM or MC position depending on the type of your cartridge. For all normal MM type cartridges, set to the MM position, and for all regular MC type set to the MC position. However, there are few MC cartridges with high output sensitivities in similar level to the MM type, so if one of such cartridges is used set to the MM position.

b) Connect the grounding wire of the turntable to the GND screw terminal on the back of the unit near the PHONO sockets.

**4. Connecting Tape Recorder**

a) When connecting only one tape recorder (cassette deck, DAT, etc.), use the TAPE 1 inputs and outputs.

b) When connecting two tape recorders, use the TAPE 2 inputs and outputs for the recorder which you wish to use for recording (dubbing) the other recorder, which then is connected to the TAPE 1 inputs and outputs. For example, connect a DAT deck to the TAPE 1 jacks and a cassette deck to the TAPE 2 jacks, as normally you wish to record DAT tapes onto cassette tapes.



## 5. PRE OUT and MAIN IN Receptacles

a) Never remove the jumper pins connecting these receptacles on the back of the unit, with only the exception as described on the item b) below. The preamplifier and the power (main) amplifier sections of the unit are joined by the jumper pins, so removing the pins will disconnect the amplifier sections and disable the unit from operation.

b) The purpose of the receptacles is to allow you connect an external equipment such as another power amplifier to PRE OUT to drive only the preamplifier section, or, another preamplifier to MAIN IN to use only the power amplifier section. In addition, such auxiliary equipment as surround sound processor or audio equalizer can be installed between the preamplifier and the power amplifier sections. This is the only case where the jumper pins can be removed for such connection. Ensure to keep the jumper pins a safe place where they will not get lost, as they will be needed to restore the unit to the original functional state when necessary.

## SWITCHES AND CONTROLS

### ① Power Button

Press this button to turn on and off the unit.

### ② Power Indicator

Glow when power is turned on with the power button.

### ③ Protection Indicator

Lights up for several seconds upon turning on the power switch due to the protection circuit activated to prevent pop noise by excessive in-rush current. No sound will come out of the speakers during the period. When the indicator goes off, the unit is in the normal operating state. During the operation, the indicator will glow when the protection circuit activates and the sound shuts down. It warns that abnormally high temperature is built up inside the unit due to a malfunction. It will not go off until the trouble is resolved and the temperature inside drops to the normal operating range.

### ④ Speaker Remote Button

Press the button to activate the speaker connected to the REMOTE speaker terminal posts on the back panel. Release the button to cut off the sound from the remote speakers.

### ⑤ Phones Jack

Plug your headphones to this jack, making sure it has the correct type connector. For private listening, if your speakers are connected to the DIRECT speaker terminal posts on the back panel, you have to disconnect the speakers off the terminal posts to cut off sound from the speakers; however, if your speakers are connected to the REMOTE speaker terminal posts, deactivate the Speaker Remote button to cut

off sound from the speakers. Hence, if you are frequent user of the headphones, you may wish to connect the speakers to the REMOTE terminal posts all the time.

### ⑥ Tone Controls

The BASS control regulates the low frequencies and the TREBLE control regulates the high frequencies. The center points are for the flat frequency response. Turn clockwise to boost the response and counterclockwise to reduce it, if your listening room acoustics are excessively lively or dead and requires the compensations when adjustments by relocating the speakers, rearranging furnitures, etc. all failed.

### ⑦ Tone Selector

Normally the tone controls should be deactivated by this switch set at the OFF position, where signals completely bypass the tone control circuit for minimal deterioration of the sound quality.

The tone controls will not function at this position. If the operation of the tone controls is necessary, set the selector to the ON position to activate the tone controls.

### ⑧ Volume Control

Used to regulate the volume level. Turn clockwise to increase the level and counterclockwise to reduce it. The control permits either the combined or the separate adjustment of the left and the right channels. Normally turn the dual concentric knob as one for the combined adjustment. When it is necessary for the separate adjustment of each channel due to unbalanced sound levels between both channels, hold the front part of the knob with one hand and turn the rear part of the knob independently. Due to the high quality material and construction used on the volume control for sound quality, the sound level will not rise sharply at low settings. Normally, the control is recommended to be set between 11:30 to 2:00 o'clock position with other Rotel's equipments connected, but a finite adjustment will depend on the sensitivity of your speakers.

### ⑨ Mode Selector

Ensure the selector is set at the STEREO position for the normal use. The MONO position is only used when you wish to play monaural CD or phono discs or receive monaural broadcasts, where same signals will come out from both the left and the right channels.

The MUTE position is for a convenience of instantaneously and temporarily reducing the volume level whenever necessary such as receiving a phone call, etc. Turning the selector back to the STEREO (or MONO) position will restore the volume level to the set position before the muting.

### Recording Selector

Permits choose any input connected to the unit and feed it directly to the TAPE 1 and TAPE 2 outputs on the back of the unit for recording the selected input. However, note the TAPE 1 input can be recorded by the TAPE 2 output, but the TAPE 2 input cannot be recorded by the TAPE 1 output. It is possible to record one source, e.g., CD or TUNER, while listening to a different source such as PHONO or AUX. When not recording, ensure to set the selector at the center OFF position to cut off the circuit completely from the signal path.

### Listening Selector

Allows choose any input connected to the unit. The selector operates independently from the Recording selector above, so you can listen to one source while recording another different source.

## WORDS ON OPERATIONS

### Precautions

1. Before commencing operation, check to see if all connections are properly made.
2. Always ensure to set the Volume control to the minimum position before turning on the Power switch.
3. Make sure the Recording selector is at the OFF position when listening to any source and not recording.

### Playing Turntable

1. Set to the PHONO position on the Listening selector.
2. Use only a high quality cartridge to obtain the maximum potential from the unit's high quality phono circuit.
3. Using an MC cartridge with an extremely low sensitivity way below the specified value on the SPECIFICATIONS table at the last section of this manual may create problems. Try avoid use such cartridge, as there are many as good ones with the normal output sensitivities.

4. Usually using cartridges as recommended by your dealers will prevent any grief on the suitable matching.

### Tuner Reception

1. Set to the TUNER position on the Listening selector.
2. If possible, turn your tuner's power off when not operating it. Although crosstalks are held to minimum by the circuit design, this is the perfect way to cut off the signal from the radio reception bleeding through to the other inputs connected to the main unit.
3. A Rotel tuner is recommended for the optimum matching in sound quality.

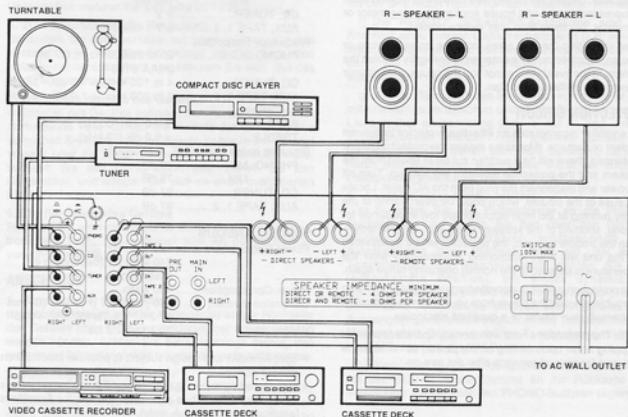
### Operating CD Player

1. Set to the CD position on the Listening selector.
2. Read the instruction manual of your player carefully to maximize the full potential.
3. Using higher quality interconnecting cords between your CD player and the amplifier may often improve sound quality.

### Tape Deck Playback

1. Set to the TAPE 1 or TAPE 2 position on the Listening selector depending on which input your tape deck is connected.
2. Use only a good quality cassette tape deck (in terms of sound quality) or a DAT deck, etc. for maximizing the full potential of the amplifier.
3. Using higher quality interconnecting cords between your tape deck and the amplifier may often improve sound quality.

## CONNECTING COMPONENTS



## Recording Tape Deck

1. Set the Recording selector to any input you wish to record, and proceed the recording with your tape deck connected to the TAPE 1 or the TAPE 2 outputs. If you have two tape decks, you can only record the TAPE 1 inputs with the TAPE 2 outputs. The TAPE 2 inputs cannot be recorded by the TAPE 1 outputs.

2. During recording, operation of the Volume control and the Tone controls have no effect on the recorded signal being fed to the TAPE 1 or TAPE 2 outputs.

3. You may monitor recording signals by setting the Listening selector to the same input as the Recording selector. For example if you are recording CD, set the Listening selector to CD.

## Dubbing

1. When two tape decks are connected, you can dub (tape-to-tape copy) one tape deck to the other tape deck. Note the dubbing can only be done from the deck connected to the TAPE 1 input to the other deck connected to the TAPE 2 output.

2. The Volume control and the Tone control settings have no effect on the signals being recorded.

## HUM AND NOISE

In any high fidelity installations, hum may be caused by the interconnection of turntable, tuner, 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 of howling appears, move it away from the speakers as much as possible.

Note hum may also be induced by defective cable connections or by running the cables too close to 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 than may induce noise.

Either relocating the unit away from the noise sources or using an improved outdoor antenna may readily resolve the problem. In the event you cannot find the cause, consult your dealer or a qualified electrician.

## PROTECTION CIRCUIT

The amplifier incorporates an effective protector 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. Turn off the power and disconnect the plug from the AC outlet. Locate the cause of the trouble, which could be overheating of the unit by running at too high output or too low impedance for too long, shorting of the speaker wires, etc., and remedy it. When the trouble is cured, the protector will be deactivated and the unit will start functioning automatically after the temperature is lowered to the normal operating range again.

If the protection circuit is activated again despite resolving the trouble, shut off the power from your entire audio system and consult your dealer or a qualified electrician.

**NOTE:** The protection circuit will normally operate to prevent a popping noise upon turning on the power, so no sound is produced for several seconds after the turn-on.

## SPECIFICATIONS RA-980BX

### Continuous Power

Output .....	100 watts* per channel, min. RMS both channels driven into 8 ohms from 20 to 20,000 kHz with no more than 0.03% total harmonic distortion.
DiN Output .....	190 watts per channel (1 kHz, 4 ohms, 1% THD)
Peak Current .....	80 A (0.1 ohms, 10 $\mu$ sec, 1 Pulse)
Total Harmonic Distortion .....	No more than 0.03% (continuous rated power output) No more than 0.03% (continuous 1/2 rated power output) No more than 0.05% (1 watt per channel power output, 8 ohms)
Intermodulation Distortion .....	No more than 0.05% (continuous rated power output) No more than 0.05% (continuous 1/2 rated power output) No more than 0.05% (1 watt per channel power output, 8 ohms)

Output: SPEAKERS .....	4 ohms minimum
HEADPHONE .....	8 - 2,000 ohms
Damping Factor .....	1000 (20 to 20,000 Hz, 8 ohms)
Input Sensitivity/Impedance:	
PHONO: MC .....	250 $\mu$ V/100 ohms
MM .....	2.5 mV/47 kohms
CD, TUNER .....	150 mV/33 kohms
AUX, TAPE 1, 2 .....	150 mV/33 kohms
Overload Level (THD 0.5%, 1 kHz):	
PHONO: MC .....	17 mV
MM .....	160 mV
CD, TUNER .....	5 V
AUX, TAPE 1, 2 .....	5 V

Output: SPEAKERS .....	4 ohms minimum
HEADPHONE .....	8 - 2,000 ohms
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Input Sensitivity/Impedance:	
PHONO: MC .....	250 $\mu$ V/100 ohms
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CD, TUNER .....	150 mV/33 kohms
AUX, TAPE 1, 2 .....	150 mV/33 kohms
Overload Level (THD 0.5%, 1 kHz):	
PHONO: MC .....	17 mV
MM .....	160 mV
CD, TUNER .....	5 V
AUX, TAPE 1, 2 .....	5 V

Frequency Response:	
PHONO .....	20 to 20,000 Hz, $\pm$ 0.2 dB (RIAA STD)
CD, TUNER .....	4 to 100 kHz, +1.0 dB, -3.0 dB
AUX, TAPE 1, 2 .....	4 to 100 kHz, +1.0 dB, -3.0 dB

Tone Control:	
BASS .....	$\pm$ 6.0 dB (100 Hz)
TREBLE .....	$\pm$ 6.0 dB (10 kHz)
Signal to Noise Ratio (IHF, A network):	
PHONO: MC .....	70 dB
MM .....	75 dB
CD, TUNER .....	97 dB
AUX, TAPE 1, 2 .....	97 dB

## MISCELLANEOUS

Power Requirement .....	120 V/60 Hz, 220 V/50 Hz, 240 V/50 Hz (depending on destinations)
Power Consumption .....	400 watts
Dimension (overall) .....	440 (W) $\times$ 121 (H) $\times$ 347 (D) mm 17-3/8" $\times$ 4-13/16" $\times$ 13-11/16"
Weight (net) .....	10.1 kg/22.2 lbs

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