

ROTEL *hifi*

STEREO INTEGRATED AMPLIFIER

RA-870BX

owners manual

使用説明書

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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



• Explanation of Graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you 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 you 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 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 colour BROWN or RED.

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. Head Warnings — All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow Instructions — All operating and other 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, etc.
6. Carts and Stands — The appliance should be used only with a cart or stand that is recommended by the manufacturer.
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, stoves, or other appliances 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. 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.
12. Cleaning — The appliance should be cleaned only as recommended by the manufacturer.
13. Nonuse Periods — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
14. Object and Liquid Entry — Care should be taken so that objects do not fall into and liquids not spilled into the inside of the appliance.
15. Damage Requiring Service — The appliance should be serviced by qualified 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 cabinet damaged.
16. Servicing — The user should not attempt to service the appliance beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.
17. Grounding or Polarization — The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.

ENGLISH

STEREO INTEGRATED AMPLIFIER RA-870BX

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 for power supply

Be sure to connect the AC line cord to a house-hold wall outlet. 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 thinners 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.

NOTES ON THE SPEAKER SYSTEM

Special regard has been paid to tone quality in the circuit design of this unit. To make the most of this circuit design, we recommend that you use the DIRECT SPEAKERS terminals for the speaker connection. With this connection the output signals bypass the headphone circuit, speaker remote switch, etc., thereby minimizing the deterioration of the tone quality.

If you often enjoy listening through headphones, however, use the REMOTE SPEAKERS terminals for the speaker connection instead. In this case, you can cut off the sound of the REMOTE speakers with the SPEAKER REMOTE switch on the front panel when you wish to listen through the headphones only.

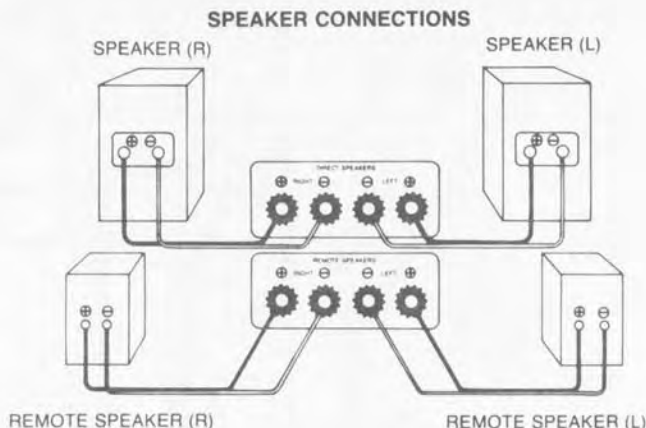
When 2 pairs of speakers are connected, one to the DIRECT and the other to the REMOTE SPEAKERS terminals, sound can be heard from all the speakers. However, only the sound from the REMOTE speakers can be cut off with the SPEAKER REMOTE switch.

Connect speakers with an impedance of 4-16 ohms. If you connect 2 pairs of speakers, use speakers of 8-16 ohms. (The speaker impedance is indicated on the speaker's inscription plate or in the instruction manual of the speaker system.)

NOTES ON SPEAKER CONNECTIONS

Connect the speaker cord of the right speaker to the RIGHT terminals and the cord of the left speaker to the LEFT terminals of DIRECT/REMOTE SPEAKERS terminals on the rear panel of this unit. Also note the +/– connections (+ lead to + terminal and – lead to – terminal).

The speaker terminals of this unit are the screw type. Strip the speaker cord insulation and insert the twisted end into the terminal after turning the screw counterclockwise to loosen. Then tighten the screw firmly by turning clockwise so that the speaker cord cannot be pulled out accidentally.



CONNECTING COMPONENTS

Connect all necessary audio/visual components to the rear panel of the unit, using RCA pin cords. See the 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.

PHONO MM/MC Selector

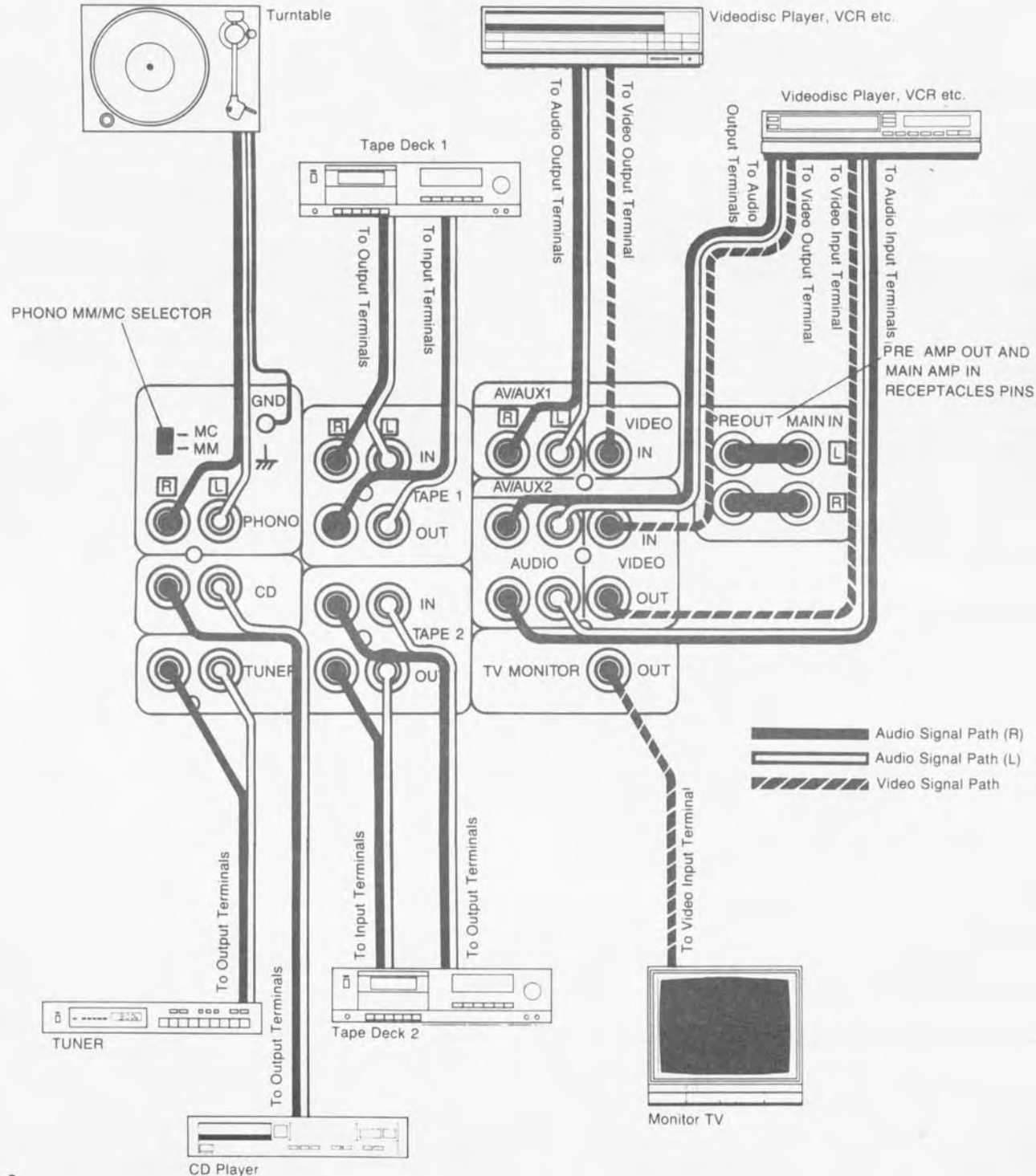
The unit has a built-in MC head amplifier. This selector is used

to receive MM (moving magnet) or MC (moving coil) phono cartridge signal with an appropriate gain. In MC position, the built-in MC head amplifier is activated. When your turntable uses an MC cartridge, set the selector to MC position. When MM cartridge is used, set the selector to MM position.

PRE AMP OUT and MAIN AMP IN Receptacles

There are pairs of terminals marked PRE AMP OUT and MAIN AMP IN, connected with a pair of jumper pins on the rear chassis. Normally with the pins in place, your receiver is the combined equipment of integrated preamplifier and main-amplifier sections. However, by removing the jumper pins,

your unit, in essence, becomes two independent components consisting of one pre-amplifier and one main-amplifier. These receptacles are intended for use with any necessary equipment designed to be installed between the preamplifier and the main-amplifier or for separate use of either section alone. Such equipment as electronic audio equalizer or reverberation unit can be used; or another pre-amplifier or main-amplifier may be hooked up. Simply disconnect the jumper pins and follow the instructions supplied with the accessory equipment. When no auxiliary equipment is being used, the jumper pins **MUST** be installed in place in order to use your amplifier.



SWITCHES AND CONTROLS

(1) Power Button

Depress this button to turn on the power in the unit. Press the button a second time to release it and to cut off the power.

(2) Power Indicator

Glowes when power is turned on with the power button.

(3) Speaker Remote Button

Press the button to activate the speaker system connected to REMOTE speaker terminals on the rear panel. Release the button OFF to cut off sound from remote speakers.

(4) Protection Indicator

The indicator normally lights for several seconds upon turning on the power. When the indicator goes off, it means the unit is in the normal operating state.

The indicator glows when abnormally high temperature is built up inside the unit. In such a case, the indicator will remain on until the temperature inside the unit drops to a normal level. When the indicator goes off, it indicates the unit has returned to the normal operating state.

(5) Headphones Jack

Connect headphones to listen through the headphones. When the SPEAKER REMOTE button is at OFF, the sound from the speakers connected to the REMOTE SPEAKERS terminals is cut off and you can adjust the headphone volume with the VOLUME control.

If a speaker system is connected to the DIRECT SPEAKERS terminals, however, the sound from those speakers cannot be cut off, so listening through the headphones only is impossible.

To listen through the headphones alone, do not connect any speakers to the DIRECT SPEAKERS terminals.

(6) Tone Controls

Two separate tone controls regulate bass and treble respectively: knob labeled BASS is for low frequency range and TREBLE for high frequency range.

Rotate the knob clockwise to boost the response, and counterclockwise to cut it.

(7) Tone Selector

With the selector at OFF, the signals do not pass through the tone control circuit (in order to prevent deterioration of the tone quality). Therefore the tone controls do not function, but this unit provides superior tone quality. If the listening room acous-

tics are extremely lively or dead and no adjustment is possible by rearranging the furnitures or the speakers, set this selector to ON. You can then adjust the tone with the tone controls.

At the MONO position, all the signals are output in mono, and the tone controls are active.

(8) Volume Control

Used to regulate the volume level. Turn clockwise to increase the volume, and counterclockwise to reduce it. This is a dual concentric knob which permits either separate or combined adjustment of both channels.

(9) CD Direct Switch and Level Control

With the switch at ON, the signals from the CD player are sent to the power amplifier section directly to be amplified and output. In this case, no control functions of this unit activate and you can enjoy the excellent sound quality of the compact disc without any deterioration. The volume of the CD sound can be adjusted by using the input LEVEL control.

Normally set the switch to OFF. The signals from the CD player pass through the control amplifier section, and the volume control and tone control functions activate. The LEVEL control does not function with this switch at the OFF position.

(10) Tape Monitor Selector

Used to listen to a signal supplied from the tape deck. Set the selector to TAPE 1 position for the signal from a tape deck connected to TAPE 1 terminals on the rear panel, and set to TAPE 2 for the deck connected to TAPE 2 terminals.

When it is set to the "1 ▶ 2" position, you can perform tape-to-tape copying from the TAPE 1 to the TAPE 2 deck. Likewise, the "2 ▶ 1" position permits copying from the TAPE 2 to the TAPE 1 deck.

Be sure to set this selector to SOURCE when listening to a source selected by the Input selector.

(11) Function Selector

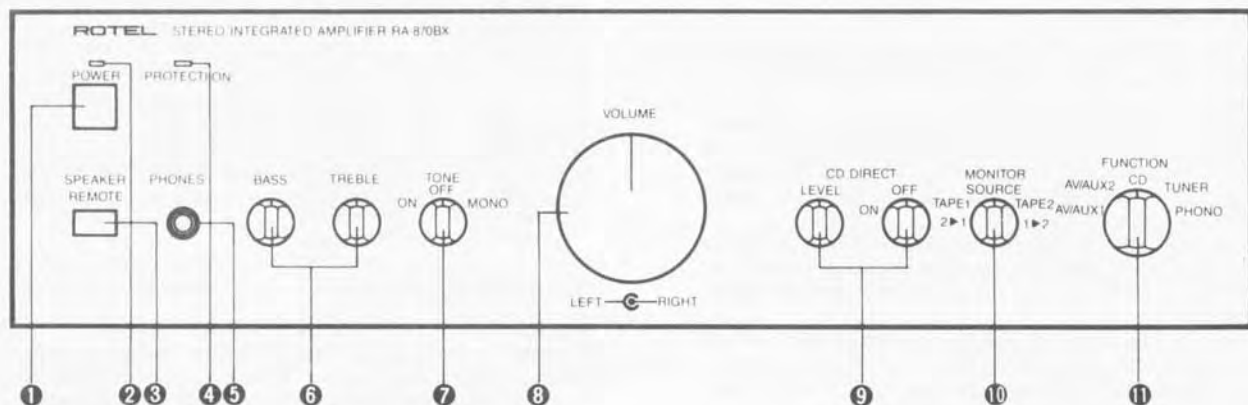
Select the program source to play or record.

PHONO: Turntable connected to the PHONO terminals.

CD: CD player connected to the CD terminals.

TUNER: Tuner connected to the TUNER terminals.

AV/AUX 1, AV/AUX 2: Video cassette recorder or video disc recorder connected to the AV/AUX 1 or AV/AUX 2 terminals. Use this selector with the Tape Monitor selector at the SOURCE position.



OPERATION

• Before commencing operation, check to see if all connections are properly made.

• Always be sure to set the volume control to the minimum position before turning on power.

• When listening to a compact disc with the CD DIRECT switch at the ON position, be sure to turn the LEVEL control completely to the left before turning the power switch to ON.

Listening from turntable

1. Set Tape Monitor selector to SOURCE.

2. Select PHONO on the function selector.
3. Start playing turntable, and raise the volume to the desired level.

Playing a compact disc

• **Playing in the direct signal path mode**

1. Set the Tape Monitor selector to SOURCE.
2. Select CD on the function selector.
3. Set the CD DIRECT switch to ON.
4. Start playing the compact disc and adjust the volume with the LEVEL control.

• Playing in the normal signal path mode

1. Set the Tape Monitor selector to SOURCE.
2. Select CD on the function selector.
3. Set the CD DIRECT switch to OFF.
4. Start playing the compact disc and raise the volume to the desired level with the VOLUME control.

Radio broadcast reception

1. Set the Tape Monitor selector to SOURCE.
2. Select TUNER on the function selector.
3. Tune in the desired station on the tuner and raise the volume to the desired level.

Playing back tape deck

1. Set Tape Monitor selector to TAPE 1 or TAPE 2 position according to the tape deck you are going to play back.
2. Start playback.
3. Raise the volume to the desired level.

Recording program source

Play the desired program source according to the procedures mentioned above. The signal from the source will be sent through TAPE MONITOR OUT terminals on unit's rear panel. Put the tape deck in the record mode to record the signal. During recording, operation of Volume control, and Tone control will have no effect on the signal being sent through TAPE MONITOR OUT terminals.

Note: When playing a compact disc in the direct signal path mode, the signal will not be sent to TAPE MONITOR OUT terminals but only to the speaker terminals, and so cannot be recorded.

Dubbing

By connecting two tape decks, dubbing (tape-to-tape copying) of prerecorded tapes can be performed. The unit allows two modes of dubbing: from TAPE 1 to TAPE 2 deck, and TAPE 2 to TAPE 1 deck.

1. Set Tape Monitor selector to "1▶2" or "2▶1".
2. Play back TAPE 1 (or TAPE 2) deck, and put TAPE 2 (or TAPE 1) deck in record mode, then dubbing starts. During this operation, you can listen to the signal with Volume control or Tone control set as desired; they have no effect on the signal to be recorded.

PLAYBACK AND RECORDING WITH AV EQUIPMENT

The RA-870BX permits connection and switching of audio-visual components, so that the receiver can be used as an AV control center.

There are one set of inputs for a stereo AV component such as a video disc player and one set of inputs/outputs for a stereo video recorder. There is also a separate TV monitor output for connection of a color monitor for high quality viewing.

This system then not only provides for easy selection of video sources, but also allows high performance operation for optimal sound quality such as digital sound from a Hi-Fi video recorder.

In addition, sound track of video components can be dubbed onto a tape recorder connected to the receiver, or vice versa. Video dubbing is also possible from AV/AUX 1 to AV/AUX 2.

Playback

To carry out playback with the equipment connected to the AV/AUX inputs, set the function selector to AV/AUX 1 or AV/AUX 2 as required and set the tape monitor selector to SOURCE position.

Set the TV or video monitor to the video input mode to view the picture. Adjust the volume and other controls on the receiver to suit your needs.

Recording (Dubbing)

Set the tape monitor selector to SOURCE position and function selector to AV/AUX 1, where the source to be recorded is connected.

Then record with the video recorder connected to the AV/AUX 2 terminals on the rear panel. The video signal being recorded can be monitored by the connected TV or video monitor. For advanced applications, such as combining sound from an audio source with a video signal and recording both on the video cassette recorder connected to the AV/AUX 2 terminals, please refer to the signal flow table shown on page 21. (Note: the audio and video signal supplied to the video recorder is completely unaffected by the volume, balance and tone settings of the receiver).

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 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 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.

PROTECTION CIRCUIT

The RA-870BX incorporates thermal 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.

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. Then locate and remedy the cause of the trouble. When the thermal protector is activated, the unit will start functioning automatically after the temperature is lowered again.

If the protection circuit is activated again despite taking the above action, cut off the power supply 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 from being generated upon turning on the power. No sound is produced for several seconds after turn-on.

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.

SWITCHES AND CONTROLS

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Depress this button to turn on the power in the unit. Press the button a second time to release it and to cut off the power.

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Press the button to activate the speaker system connected to REMOTE speaker terminals on the rear panel. Release the button OFF to cut off sound from remote speakers.

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Connect headphones to listen through the headphones. When the SPEAKER REMOTE button is at OFF, the sound from the speakers connected to the REMOTE SPEAKERS terminals is cut off and you can adjust the headphone volume with the VOLUME control.

If a speaker system is connected to the DIRECT SPEAKERS terminals, however, the sound from those speakers cannot be cut off, so listening through the headphones only is impossible.

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Two separate tone controls regulate bass and treble respectively: knob labeled BASS is for low frequency range and TREBLE for high frequency range.

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(7) Tone Selector

With the selector at OFF, the signals do not pass through the tone control circuit (in order to prevent deterioration of the tone quality). Therefore the tone controls do not function, but this unit provides superior tone quality. If the listening room acous-

tics are extremely lively or dead and no adjustment is possible by rearranging the furnitures or the speakers, set this selector to ON. You can then adjust the tone with the tone controls.

At the MONO position, all the signals are output in mono, and the tone controls are active.

(8) Volume Control

Used to regulate the volume level. Turn clockwise to increase the volume, and counterclockwise to reduce it. This is a dual concentric knob which permits either separate or combined adjustment of both channels.

(9) CD Direct Switch and Level Control

With the switch at ON, the signals from the CD player are sent to the power amplifier section directly to be amplified and output. In this case, no control functions of this unit activate and you can enjoy the excellent sound quality of the compact disc without any deterioration. The volume of the CD sound can be adjusted by using the input LEVEL control.

Normally set the switch to OFF. The signals from the CD player pass through the control amplifier section, and the volume control and tone control functions activate. The LEVEL control does not function with this switch at the OFF position.

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Used to listen to a signal supplied from the tape deck. Set the selector to TAPE 1 position for the signal from a tape deck connected to TAPE 1 terminals on the rear panel, and set to TAPE 2 for the deck connected to TAPE 2 terminals.

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Be sure to set this selector to SOURCE when listening to a source selected by the Input selector.

(11) Function Selector

Select the program source to play or record.

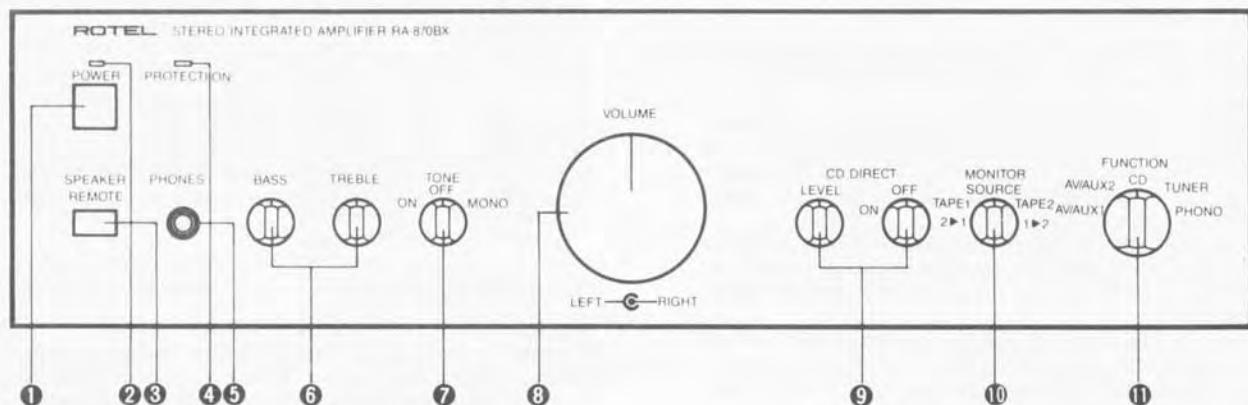
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CD: CD player connected to the CD terminals.

TUNER: Tuner connected to the TUNER terminals.

AV/AUX 1, AV/AUX 2: Video cassette recorder or video disc recorder connected to the AV/AUX 1 or AV/AUX 2 terminals.

Use this selector with the Tape Monitor selector at the SOURCE position.



OPERATION

• Before commencing operation, check to see if all connections are properly made.

• Always be sure to set the volume control to the minimum position before turning on power.

• When listening to a compact disc with the CD DIRECT switch at the ON position, be sure to turn the LEVEL control completely to the left before turning the power switch to ON.

Listening from turntable

1. Set Tape Monitor selector to SOURCE.

2. Select PHONO on the function selector.

3. Start playing turntable, and raise the volume to the desired level.

Playing a compact disc

• **Playing in the direct signal path mode**

1. Set the Tape Monitor selector to SOURCE.
2. Select CD on the function selector.
3. Set the CD DIRECT switch to ON.
4. Start playing the compact disc and adjust the volume with the LEVEL control.

SPECIFICATIONS

Continuous Power Output	80 watts* per channel, min. RMS both channels driven into 8 ohms from 20 to 20,000 Hz with no more than 0.03% total harmonic distortion.
DIN Output	150 watts per channel (1 kHz, 4 ohms, 1% THD)
Peak Current (0.1 ohms, 10 μ sec, 1 pulse)	50 A
Total Harmonic Distortion	No more than 0.03% (conti- nuous rated power output) No more than 0.03% (conti- nuous 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% (conti- nuous rated power output) No more than 0.05% (conti- nuous 1/2 rated power output) No more than 0.05% (1 watt per channel power output, 8 ohms)
Output: SPEAKERS	8 ohms nominal
HEADPHONES	4-16 ohms
Damping Factor	180 (20 to 20,000 Hz, 8 ohms)
Input Sensitivity/Impedance:	
PHONO(MC)	250 μ V/180 ohms
PHONO (MM)	2.8 mV/47 kohms
CD, TUNER	150 mV/24 kohms
AV/AUX 1, 2	150 mV/24 kohms
TAPE MONITOR 1, 2	150 mV/24 kohms
Overload Level (T.H.D. 0.5%, 1 kHz):	
PHONO (MC)	20 mV
PHONO (MM)	180 mV
CD, TUNER, TAPE 1, 2	5V
AV/AUX 1, 2	5V
Frequency Response:	
PHONO	20 to 20,000 Hz, \pm 0.2 dB (RIAA STD)
CD, TUNER, TAPE 1, 2	4 to 100,000 Hz, + 1.0 dB, - 3.0 dB
AV/AUX 1, 2	4 to 100,000 Hz, + 1.0 dB, - 3.0 dB
Signal-to-Noise Ratio (IHF, A network)	
PHONO (MC)	70 dB
PHONO (MM)	80 dB
CD, TUNER, TAPE 1, 2	102 dB
AV/AUX 1, 2	102 dB
Power Requirement	120V/60 Hz, 220V/50 Hz, 240V/50 Hz or 120, 220, 240V/50-60 Hz (switchable) (depending on destinations)
Power Consumption	380 watts
Dimensions (overall)	430 (W) x 109 (H) x 317 (D) mm 16-15/16" x 4-7/32" x 12-15/32"
Weight (net)	9.8 kg/21.56 lbs.

• Specifications and design subject to possible modifica-
tion 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).