

# ROTEL *hi fi*

RB 970BX Mk II  
Stereo Power Amplifier

## Owners Manual

Please write the serial number, date of purchase and the name of your ROTEL *hi fi* AUTHORIZED DEALER in the spaces provided for your future reference.

SERIAL NUMBER \_\_\_\_\_ PURCHASE DATE \_\_\_\_\_

ROTEL *hi fi* AUTHORIZED DEALER \_\_\_\_\_

# SAFETY INSTRUCTIONS

**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 instructions in the literature accompanying the appliance.



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, 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.
- 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 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.

**PORTABLE CART  
WARNING**



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 and 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 the openings.
16. **Damage Requiring Service** - The appliance should be serviced by qualified factory-authorized service personnel when:
  - The power-supply cord or the plug has been damaged; or
  - Objects have fallen, or liquid has been spilled into the appliance; or
  - The appliance has been exposed to rain; or
  - The appliance does not appear to operate normally or exhibits a marked change in performance; or
  - 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.

APPLICABLE FOR U.S.A., CANADA OR WHERE APPROVED TO THE USAGE.

**CAUTION:** TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

**ATTENTION:** POUR ÉVITER LES CHOCs ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

## A WORD FROM ALL OF US AT ROTEL

Thank you for purchasing our RB 970BX Mk II stereo power amplifier. We have been designing and manufacturing high quality, high performance audio electronics for more than 30 years. This stereo power amplifier was designed to offer lifelike sound and is a natural extension of our love of music. We are *famous* for our passion for good sound and our love of music. We believe that the music played through this amplifier will be a source of enjoyment to you for many years to come.

Rotel is committed to making quality products to enhance your life. We have designed this amplifier to be durable, easy to operate and to have *high fidelity to the original sound*. Please read the owners manual to ensure that the amplifier is properly installed and able to offer optimum performance. We appreciate being a part of your life.

## DESIGN FEATURES OF THE RB 970BX Mk II POWER AMPLIFIER

The power supply is derived from a large, toroidal power transformer. The RB 970BX Mk II has a *highly regulated power supply* to ensure maximum power capability into difficult speaker loads. This type of design is more expensive to manufacture but it is *better for the music*. This amplifier will drive 4 ohm speakers very well. Two RB 970BX Mk II amplifiers would be an excellent choice for Bi-amping a set of high performance two way speakers in a stereo system. A third unit, in the BRIDGED MONO mode, would be an excellent amplifier for an 8 ohm Subwoofer.

This amplifier is capable of tripling its power output if it is operated in the BRIDGED MONO mode. The *minimum speaker impedance* for bridged operation is 8 ohms. This is done by setting the switch to BRIDGED and wiring the speaker for BRIDGED MONO use. (See CONNECTIONS.)

We have designed the PCB boards with Symmetrical Circuit Traces. This insures that the precise timing of the music is maintained and faithfully recreated. Circuit traces of different lengths change the timing between the channels slightly. This is unacceptable to us. The PCB transfers the signals as we feel this is more consistent than the sound quality of wire jumpers. The PCB contains metal film resistors and polystyrene or polypropylene capacitors in sonically selected applications. All aspects of this design have been examined with the goal being faithful reproduction of music.

## INSTALLATION OF THE RB 970BX Mk II

Please place the unit on a DRY, level surface away from direct sunlight. Please do not stack other components on top of the RB 970BX Mk II as *they may cause the amplifier to overheat*. If the amplifier is installed inside a cabinet, please be certain that there is adequate air flow to ensure proper cooling. We suggest 75 mm (~3") as a *minimum clearance* above the RB 970BX Mk II.

*Do not allow water or objects to fall into the amplifier as these will damage the circuitry*. Avoid installing the amplifier in a location where excessive humidity, vibration or moisture will be a problem.

We recommend installing the RB 970BX Mk II in furniture designed to house Hi Fi components. This will allow the amplifier to be on its own shelf with *nothing stacked on top of it*. This will minimize heat and potential interference from other components in your system. Component furniture will reduce...

when free from vibration. Ask your **ROTELhi fi AUTHORIZED DEALER** for advice about component furniture and proper installation of audio components.

Please be careful to keep the power cords, digital and signal cables separate in your installation. This will minimize the chance of interference from the power cords or digital cables getting into the analog signal cables. We recommend high quality, *shielded* cables in surround sound systems for this reason as well.

## ELECTRICAL REQUIREMENTS

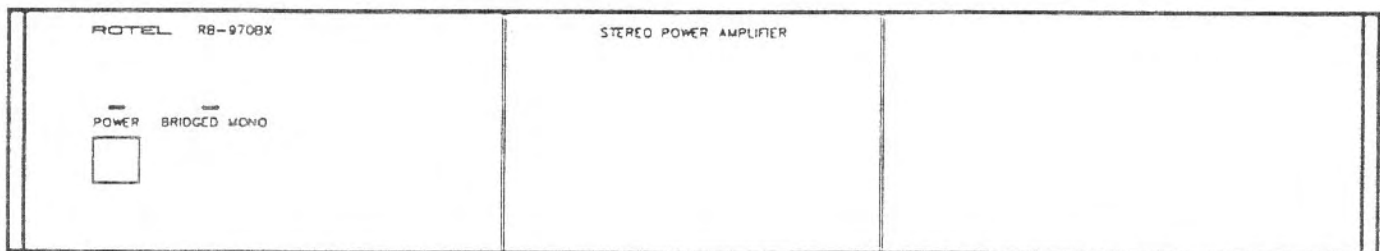
This amplifier is designed to operate on AC voltage and the correct voltage is displayed on the Back Panel. *Do not attempt to operate the amplifier on incorrect voltage as this will damage the circuitry and void your warranty.* If you are in doubt about the correct voltage for this amplifier we suggest that you please read the label on the back panel, the label on the packing carton or consult your **ROTELhi fi AUTHORIZED DEALER** for confirmation of the correct voltage.

Connect the POWER CORD to your wall socket for AC power. When you wish to disconnect the power cord from the wall, hold the plug firmly in your hand and then pull it out of the wall socket. *Do not unplug the power cord from the wall by pulling the cord only. This may damage the power cord and create a hazardous condition.* We strongly recommend that the amplifier be connected to the main's wall socket or an AC power line filter, not an extension cord.

If you wish to clean the cabinet of the RB 970BX Mk II, we suggest a clean, soft DRY cloth. *Never use cleaning compounds or solvents to clean the cabinet as they may damage the finish or remove the labels.* This could also damage the circuitry if any residue falls inside the amplifier.

There is **NO** user serviceable part inside this amplifier. **Please do not open the cabinet as this will expose you to the risk of potentially dangerous voltage and the risk of shock.**

## FRONT PANEL CONTROL AND FEATURES OF THE RB 970BX Mk II



Please refer to this front panel during installation of the RB 970BX Mk II.

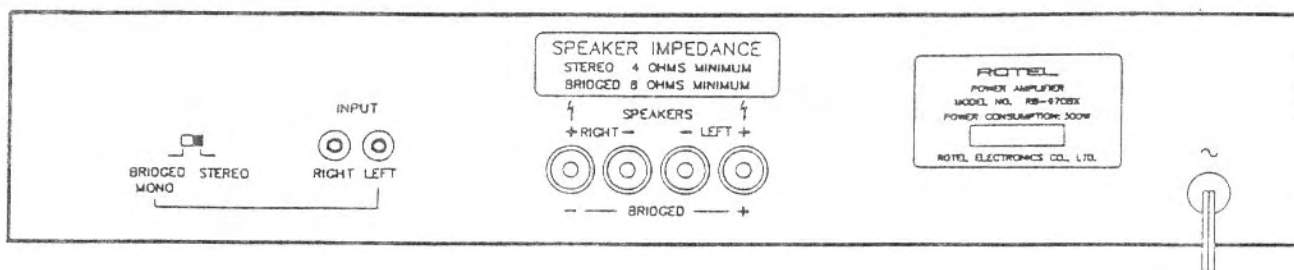
The front panel includes a **POWER** button, a **POWER** and a **BRIDGED MONO** indicator light. Press the **POWER** button once, the amplifier will turn ON and the **POWER** indicator light will illuminate. Press it again, the amplifier will turn OFF and all the indicator lights will extinguish. The **BRIDGED MONO** indicator light will illuminate *only* if the switch is in **BRIDGED MONO** position.

## MAKING CONNECTIONS TO THE RB 970BX Mk II



When connecting the amplifier, please be certain to connect the Left and Right channel RCA inputs to the appropriate channels from your preamplifier or processor outputs to avoid incorrect imaging during playback of your favorite music or movies.

The **SPEAKER** terminals are *color coded* on the RB 970BX Mk II to help with you make correct connections. The **LEFT** and **RIGHT** speaker terminals are *red* for Positive (+) and *black* for Negative (-) connections. **Please ensure these connections are correct before turning the amplifier ON for the first time.**



Please refer to this drawing of the rear panel when making Input or Speaker connections to the RB 970BX Mk II.

The **SPEAKER** terminals will accept spade connectors, bare wire, "banana" plugs or 4 mm plugs for speaker connection. Please observe proper channel connections. Regardless of the type of connection made, please be certain that no stray wires are touching between the **POSITIVE (+)** and the **NEGATIVE (-)** terminals for each channel. This will cause the amplifiers **PROTECTION** circuit to operate and the amplifier will not play.

When using the RB 970BX Mk II in the **BRIDGED MONO** mode, the amplifier becomes a single channel, high power *mono* amplifier. Two are required for stereo operation. The **SPEAKER** wiring and the **INPUT** used are different when this is done. The **LEFT** channel positive speaker terminal is used as the (+) terminal and the **RIGHT** channel positive speaker terminal is used as the (-) speaker terminal. The **LEFT** channel **INPUT** is used for the input signal in **BRIDGED MONO** mode. *No connection is made to the RIGHT channel INPUT or to the negative (-) speaker terminals for either the RIGHT or the LEFT speaker channels when in BRIDGED MONO mode.*

The minimum speaker impedance during **BRIDGED MONO** operation is 8 ohms. This is because *when BRIDGED*, an amplifier will "see" the speaker impedance as half of its rated value. An 8 ohm speaker will appear to be a 4 ohm speaker to a **BRIDGED** amplifier. Therefore, *when BRIDGED*, a 4 ohm speaker would represent an unacceptably low impedance load for the RB 970BX Mk II. ( $4 \times 1/2 = 2$  ohms)

In stereo mode, the **POSITIVE** amplifier (+) terminal for each channel should be connected to the Positive or Red terminal on your speaker. The **NEGATIVE** amplifier (-) terminal for each channel should be connected to the Negative or Black terminal on your speaker. If you incorrectly make these connections you will have a vague stereo image and very little bass response from your system.

*If you are in doubt about the sound quality or correct polarity when listening, then reverse the Positive (+) and Negative (-) connections on the back of the Left (L) or Right (R) speaker only. If the stereo image becomes more specific and the bass improves then ALL speaker connections should be rechecked to ensure correct connection of the speakers. You may*

confirm this by placing the L and R speakers face to face 75 mm (~3") apart and playing music with a strong bass content as a source. The connection that has the most bass output is the correct connection. Incorrect polarity will have vague imaging and poor bass as each of the speakers will attempt to cancel the sound the other is making due to the opposite motion of the drivers. (This is *not the same thing* as Absolute Polarity switching on a Digital to Analog converter, such as the RDP 980.)

Connecting the speakers OUT OF PHASE, face to face, is an excellent way to "break in" new speakers. They will make very little sound when played at a *moderate* level while out of phase with each other. *In a surround system, set the processor to stereo or bypass mode for this purpose.* Please remember to connect the speakers for correct polarity when finished. Ask your **ROTEL hi fi AUTHORIZED DEALER** for advice if you are uncertain about this.

### A FINAL WORD ABOUT THIS POWER AMPLIFIER

We have designed this amplifier for high performance using test equipment and the human ear. We believe both methods are useful in the design of high fidelity audio electronics. *This is time consuming but we feel the music benefits from this care and attention to detail.*

With our reputation for excellent sound quality, *you can be certain that the RB 970BX Mk II represents excellent value for money.* We realize that there are many choices available in the market today and we thank you again for choosing the RB 970BX Mk II for your system. Enjoy the music!

### SPECIFICATIONS: RB 970BX Mk II

Continuous Power Output	60 watts/ch (20-20 kHz, $\leq 0.03\%$ THD, 8 ohms)
DIN Output	110 watts/ch (1 kHz @ 4 ohms, 1% THD)
Bridged Output (mono)	180 watts, 20-20 kHz, $\leq 0.03\%$ THD, 8 ohms
Total Harmonic Distortion (20 Hz-20,000 Hz)	$\leq 0.03\%$
Intermodulation Distortion (60 Hz : 7 kHz, 4:1)	$\leq 0.02\%$
Frequency Response	15-100,000 Hz, $\pm 1$ dB
Peak Current Output (0.1 ohm load, 10 microseconds, 1 pulse)	30 Amps
Damping Factor (20-20,000 Hz, 8 ohms)	280
Speaker Impedance	4 ohms minimum
Signal to Noise Ratio (IHF A network)	116 dB
Input Impedance/Sensitivity	27 k Ohms/1 volt
Power Requirements	115 Volts, 60 Hz <i>or</i> 230 Volts, 50 Hz
Power Consumption, Max.	300 Watts
Dimensions (H, W, D)	440 (W) x 92 (H) x 334 (D) mm 17-3/8" (W) x 3-5/8" (H) x 13-3/6 (D)
Weight	6.8 kg / 15 lbs

All specifications are accurate at the time of printing. Rotel reserves the right to make improvements without notice.