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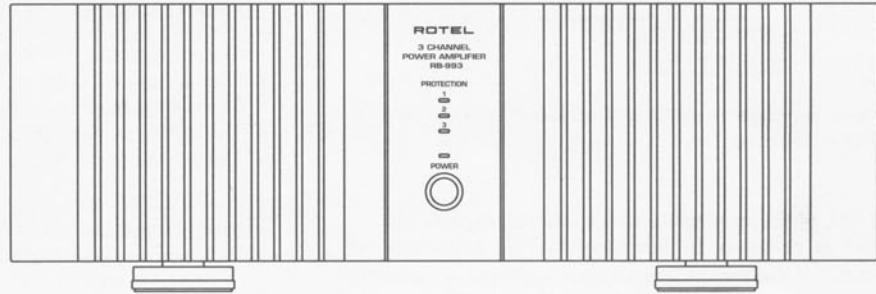
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RB-993

THREE-CHANNEL POWER AMPLIFIER



Owners Manual



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN




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


APPLICABLE FOR USA, CANADA OR WHERE APPROVED FOR TO THE USAGE

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

ATTENTION: POUR EVITER LES CHOCS ELECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.



This symbol is to alert the user to the presence of uninsulated dangerous voltages inside the product's enclosure that may constitute a risk of electric shock.



This symbol is to alert the user to important operating and maintenance (service) instructions in this manual and literature accompanying the product.

WARNING:
There are no user serviceable parts inside. Refer all servicing to qualified service personnel.

WARNING:
To reduce the risk of fire or electric shock, do not expose the RB-993 to moisture or water. Do not allow foreign objects to get into the enclosure. If the unit is exposed to moisture, or a foreign object gets into the enclosure, immediately disconnect the power cord from the wall. Take the unit to a qualified service person for inspection and necessary repairs.

Read all the instructions before connecting or operating the RB-993. Keep this manual so you can refer to these safety instructions.

Heed all warnings and safety information in these instructions and on the product itself. Follow all operating instructions.

Clean the RB-993 only with a dry cloth or a vacuum cleaner.

Keep the ventilation inlets on the unit unobstructed. For example, do not place the unit on a bed, sofa, rug, or similar surface that could block the ventilation slots. If the RB-993 is placed in a bookcase or cabinet, there must be sufficient clearance around the unit and ventilation of the cabinet to allow proper cooling.

Keep the RB-993 away from radiators, heat registers, stoves, or any other appliance that produces heat.

The RB-993 must be connected to a power supply only of the type and voltage specified on the rear panel of the unit.

Connect the RB-993 to the power outlet only with the supplied 2-pin polarized power supply cable or an exact equivalent. Do not modify the supplied cable in any way. Do not attempt to defeat grounding and/or polarization provisions. The cable should be connected to a 2-pin polarized wall outlet, matching the wide blade of the plug to the wide slot of the receptacle. Do not use extension cords.

Do not route the power cord where it will be crushed, pinched, bent at severe angles, exposed to heat, or damaged in any way. Pay particular attention to the power cord at the plug and where it exits the back of the unit.

The power cord should be unplugged from the wall outlet if the unit is to be left unused for a long period of time.

Immediately stop using the RB-993 and have it inspected and/or serviced by a qualified service agency if:

- The power supply cord or plug has been damaged.
- Objects have fallen into or liquid has been spilled into the unit.
- The unit has been exposed to rain.
- The unit shows signs of improper operation
- The unit has been dropped or damaged in any way

Place the RB-993 on a fixed, level surface strong enough to support its weight. Do not place the RB-993 on a moveable cart that could tip over.



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Figure 1 – Controls and Connections

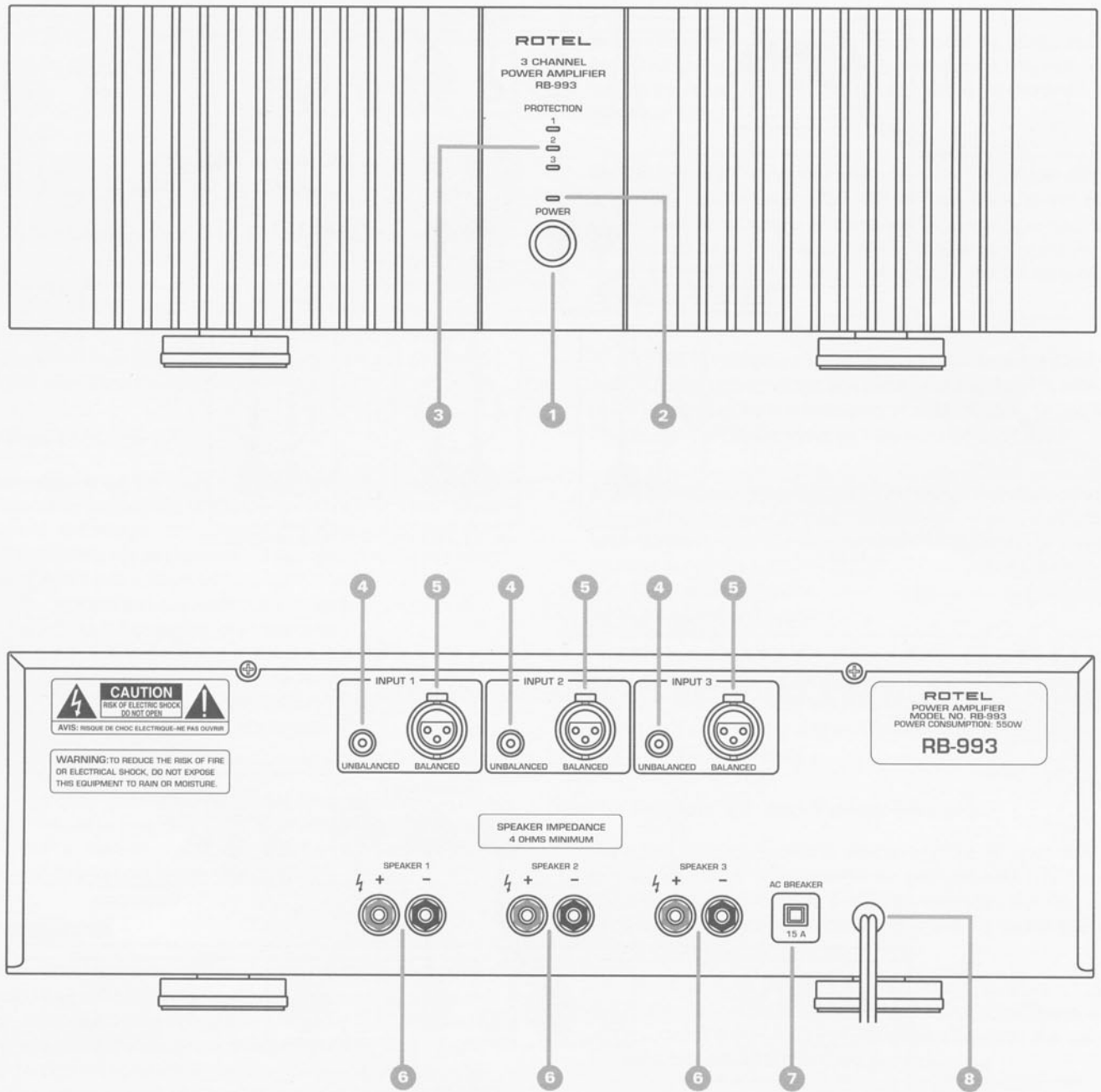


Figure 2 – Wiring Connections (RCA inputs and speakers)

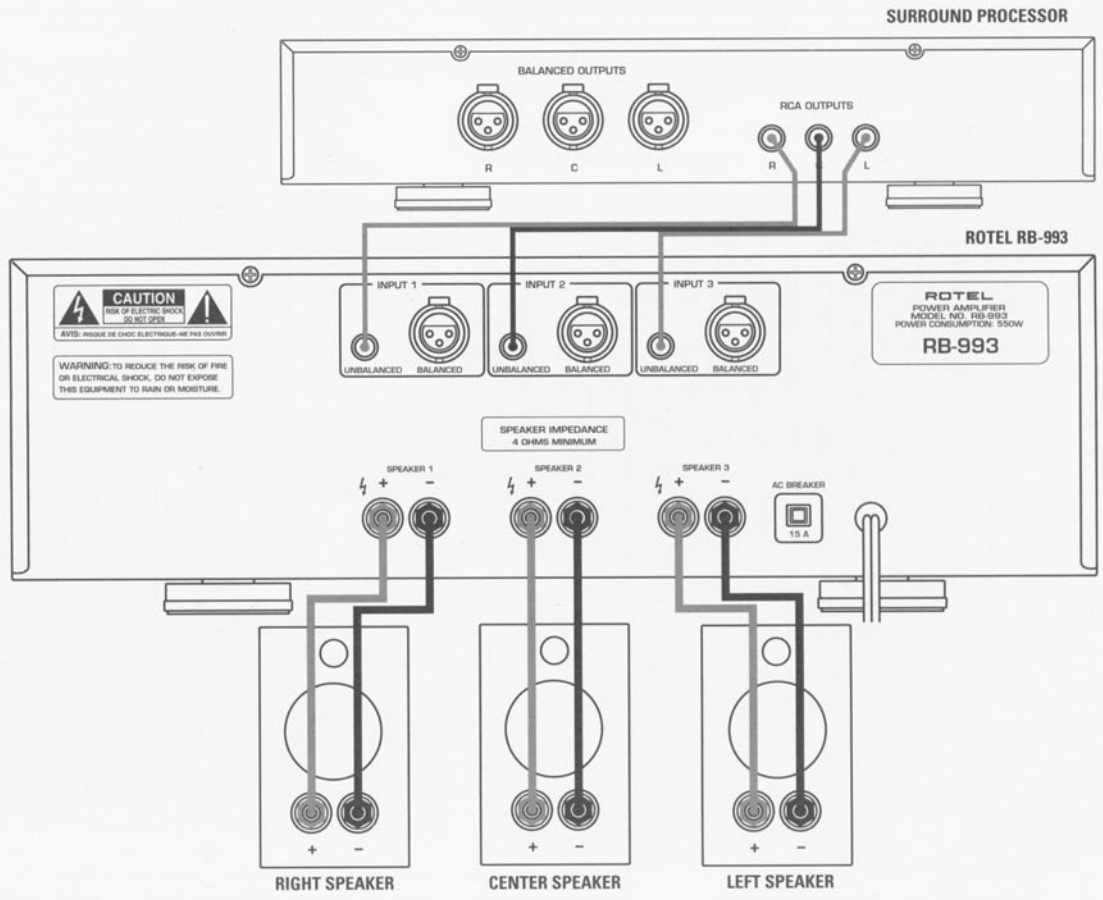
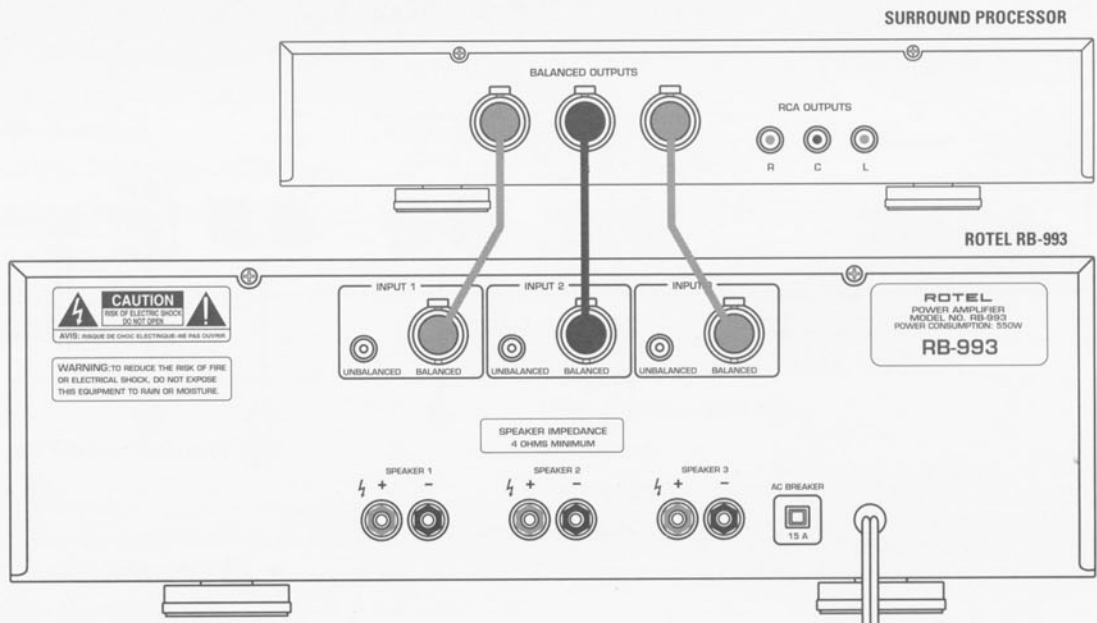


Figure 3 – Wiring Connections (balanced inputs)



Getting Started

Thank you for purchasing the Rotel RB-993 power amplifier. When used in a high-quality music or home theater system, your Rotel amplifier will provide years of musical enjoyment.

The RB-993 is a powerful three-channel power amplifier, ideal for driving the front and center speakers in an audiophile quality home theater system. The RB-993 provides the highest level of audio performance. Discrete output devices, low negative feedback, and Rotel's Balanced Design ensure superb sound quality. Its high current capability allows the RB-993 to drive the most demanding loudspeakers.

Be aware that the RB-993 is capable of high power levels, in excess of 200 watts per channel. Make sure that your speakers can handle the power of the RB-993. If in doubt about your speakers, ask your local Rotel audio specialist for advice.

The RB-993 is straightforward in its installation and operation. If you have experience with other power amplifiers, you shouldn't find anything terribly perplexing. Plug in three sets of high-quality RCA cables from your preamp into the amplifier inputs, wire up your speakers, and enjoy. Alternatively, the RB-993 provides an optional set of "balanced" inputs for use with preamps or processors that offer these low-noise XLR-connections.

A Few Precautions

Please read this manual carefully. In addition to basic installation and operating instructions, it provides valuable information on various RB-993 system configurations as well as general information that will help you get optimum performance from your system. Please contact your authorized Rotel specialty retailer for answers to any questions you might have. In addition, all of us at Rotel welcome your questions and comments.

Save the RB-993 shipping carton and all enclosed packing material for future use. Shipping or moving the RB-993 in anything other than the original packing material may result in severe damage to your amplifier.

Fill out and send in the owner's registration card packed with the RB-993. Also be sure to keep the original sales receipt. It is your best record of the date of purchase, which you will need in the event warranty service is ever required.

Placement

Because of its high power output, the RB-993 may generate considerable heat. The heat sinks and ventilation openings in the amplifier are more than capable of dissipating this heat under normal conditions, but don't smother your amplifier. There must be adequate clearance around the chassis. The ventilation slots in the top cover must be unblocked, and there must be reasonable airflow around the amplifier. Use common sense when placing the amplifier in a cabinet or when stacking other equipment.

Likewise, remember the weight of the amplifier when you select an installation location. Make sure that the shelf or cabinet can support its considerable bulk. Again, use common sense.

AC Power and Control

AC Power Input 8

Because of its high power rating, the RB-993 can draw considerable current. Therefore, it should be plugged directly into a 2-pin polarized wall outlet. Do not use an extension cord. A heavy duty multi-tap power outlet strip may be used if it (and the wall outlet) is rated to handle the current demanded by the RB-993 and all the other components connected to it.

Be sure the power switch on the front panel of the RB-993 is turned off (in the "out" position). Then, connect the supplied power cord to the AC power receptacle on the rear of the unit and the AC power outlet.

NOTE: You may find it convenient to use a remote power control accessory, such as Rotel's RLC-900 Line Conditioner, to turn on and off your entire system automatically. Alternately, some preamplifiers have a switched outlet that can handle the current demands of the RB-993. However, again be sure that the switched outlet is up to the task.

Your RB-993 is configured at the factory for the proper AC line voltage in the country where you purchased it (either 115 volts AC or 230 volts AC with a line frequency of either 50 Hz or 60 Hz). The AC line configuration is noted on a decal on the back panel.

NOTE: Should you move your RB-993 amplifier to another country, it is possible to reconfigure your amplifier for use on a different line voltage. Do not attempt to perform this conversion yourself. Opening the enclosure of the RB-993 exposes you to dangerous voltages. Consult a qualified service person or the Rotel factory service department for information.

If you are going to be away from home for an extended period of time such as a month-long vacation, it is a sensible precaution to unplug your amplifier (as well as other audio and video components) while you are away.

Power Switch 1 and Power Indicator 2

The power switch is located in the center of the front panel of your amplifier. To turn the amplifier on, push the switch in. The LED indicator above the switch will light, indicating that the amplifier is turned on. To turn the amplifier off, push the button again and return it to the "out" position.

NOTE: If you are using the Rotel RLC-900 AC Line Conditioner or other switched outlet to turn on and off your amplifier, you can leave the power switch in the "on" position.

Protection Circuitry 3

The RB-993 features a thermal protection circuit that protects the amplifier against potential damage in the event of extreme or faulty operating conditions. Unlike many designs, the RB-993's protection circuit is independent of the audio signal and has no impact on sonic performance. Instead, the protection circuit monitors the temperature of the output devices and shuts down the amplifier if temperatures exceed safe limits.

Most likely, you will never see this protection circuitry in action. However, should a faulty condition arise, the amplifier will stop playing and the LED indicator on the front panel will light up.

If this happens, turn the amplifier off, let it cool down for several minutes, and attempt to identify and correct the problem that caused the protection circuitry to engage. When you turn the amplifier back on, the protection circuit will automatically reset and the indicator LED should go out.

In most cases, the protection activates because of a fault condition such as shorted speaker wires, or inadequate ventilation leading to an overheating condition. In very rare cases, highly reactive or extremely low impedance speaker loads could cause the protection circuit to engage.

If the protection circuitry triggers repeatedly and you are unable to isolate and correct the faulty condition, contact your Rotel audio specialty retailer for assistance in troubleshooting.

Input Signal Connections

The RB-993 gives you a choice of two different kinds of input connections — conventional "unbalanced" RCA type connections (such as found on nearly all audio equipment) or "balanced" XLR-type connections for use with some high-end preamps or digital processors featuring this lower noise connection.

NOTE: You must choose one or the other type of input connection — not both. Do **not** connect both balanced and unbalanced inputs simultaneously.

RCA Input Connections (unbalanced) 4

[See Figure 2 for wiring illustration]

When a component with "RCA" connectors — such as a preamplifier or surround sound processor — supplies signals to the RB-993, the RCA-type phono plug inputs should be used.

NOTE: To prevent loud noises that neither you nor your speakers will appreciate, make sure the amplifier is turned off when you make any signal connections.

Select high quality audio interconnect cables. Connect the first output channel of your preamp or surround processor to the Input 1 "unbalanced" RCA-connector on the RB-993. Connect the

second output channel of your preamp to the Input 2 "unbalanced" connector. Connect the third output channel of your preamp to the Input 3 "unbalanced" connector on the RB-993.

XLR Input Connections (balanced) 5

[See Figure 3 for wiring illustration]

If you are using one of the few high-end preamplifiers or processors with low-noise "balanced" signal outputs to drive your RB-993, you may choose to use special XLR-type connections. See your audio specialist for the appropriate cables.

Connect the first output channel of your preamp to the Input 1 "balanced" XLR-connector on the RB-993. When properly seated, the connector should "click" into the connection. Connect the second output channel of your preamp to the Input 2 "balanced" connector. Connect the third output channel of your preamp to the Input 3 "balanced" connector on the RB-993.

Speakers

Speaker Selection

We recommend using loudspeakers with a nominal impedance of 4 ohms or higher with the RB-993. You should exercise some caution in driving multiple pairs of speakers in parallel configuration, because the effective impedance the amplifier sees is cut in half. For example, when driving two pair of 8 ohm speakers, the amplifier sees a 4 ohm load. When driving multiple speakers in parallel, it is recommended that you select speakers with a nominal impedance of 8 ohms or higher. Speaker impedance ratings are less than precise. In practice, very few loudspeakers will present any problems for the RB-993. See your Rotel audio specialist if you have any questions.

Speaker Wire Selection

Use insulated two-conductor stranded wire to connect the RB-993 to the speakers. The size and quality of the wire can have an audible effect on the performance of the system. Standard 18 gauge "zip cord" will work, but can result in lower output or erratic frequency response. For wire runs of 50 feet or less, we recommend 16 gauge or larger wire. For longer runs and for optimum performance, 12 gauge wire should be used. For best performance, you may want to consider special high-quality audio cables. Your local audio specialty retailer can help in the selection of speaker cables.

Polarity and Phasing

The polarity — the positive/negative orientation of the connections — for every speaker and amplifier connection must be consistent so all the speakers will be in phase. If the polarity of one connection is mistakenly reversed, bass output will be very weak and stereo imaging degraded.

All wire is marked so you can identify the two conductors. There may be ribs or a stripe on the insulation of one conductor. The wire may have clear insulation with different color conductors

(copper and silver). There may be polarity indications printed on the insulation. Identify the positive and negative conductors and be consistent with every speaker and amplifier connection.

Connecting the Speakers 6

[See Figure 2 for wiring illustration]

The RB-993 has three pairs of color coded binding posts on the back panel. These connectors accept bare wire, connector lugs, or dual banana type connectors (except in the European Community countries where their use is not permitted).

Be sure that you are connecting the correct speaker to the desired output. For example, if you have connected the left channel signal to Input 3 on the RB-993, make sure that you connect the left speaker to the Speaker 3 terminals, etc.

Route the wire from the RB-993 to the speakers. Give yourself enough slack so you can move the components enough to allow access to the speaker connectors.

If you are using dual banana plugs, connect them to the wires and then plug into the backs of the binding posts. The collars of the binding posts should be screwed in all the way (clockwise).

If you are using terminal lugs, connect them to the wires. If you are attaching bare wires directly to the binding posts, separate the first few inches of the wire conductors and strip about 1/2" of insulation from the end of each conductor. Be careful not to cut into the wire strands. Twist the strands of each conductor together to avoid fraying. Unscrew (turn counterclockwise) the binding post collars. Place the connector lug around the binding post shaft, or insert the bundled wire into the hole in the shaft. Turn the collars clockwise to clamp the connector lug or wire firmly in place.

NOTE: Be sure there are no loose wire strands that could touch adjacent wires or connectors. Short-circuits caused by loose strands touching will trigger the amplifier's protection circuitry.

Troubleshooting

Most difficulties in audio systems are the result of poor or wrong connections, or improper control settings. If you encounter problems, isolate the area of the difficulty, check the control settings, determine the cause of the fault and make the necessary changes. If you are unable to get sound from the RB-993, refer to the suggestions for the following conditions:

Front Panel Power Indicator Is Not Lit

No main power to the RB-993. Check the front panel power switch. Make sure that it is set to the "on" position. Check AC power connections at the amplifier and the AC outlet.

Fuse Replacement 7

If everything checks out correctly and you still cannot get the amplifier to turn on, check for a blown fuse. Disconnect the AC from the wall and remove the fuse holder on the back panel. If the fuse is blown, replace with a new fuse, and try again.

NOTE: Make sure that the power cord is disconnected from the wall before checking or replacing the fuse. Replace only with the identical size and type fuse (10 amp AGC).

No Sound

If the amp is getting AC power, but is producing no sound, check the Protection indicator on the front panel. If it is lit, see below. If not, check all of your connections and control settings on associated components. Check the input selector switch on the RB-993 back panel to be sure that its setting matches the type of input you are using.

Protection Indicator Is Lit

The front panel indicator lights when the RB-993 protection circuits have shut off the amplifier. Typically, this occurs only when the ventilation openings are blocked, when there is faulty speaker wiring, or after a period of extreme use. Turn off the system and wait for the amp to cool. Then push the front panel power switch in and out to reset the protection devices. If the problem is not corrected or reoccurs, there is a problem with the system or the amplifier itself.

Specifications

Continuous Power Output (20-20 kHz, < 0.03%, 8 ohms)	200 watts/ch
Total Harmonic Distortion (20 Hz-20 kHz, 8 ohms)	< 0.03%
Intermodulation Distortion (60 Hz : 7 kHz, 4:1)	< 0.03%
Frequency Response (+ 0.5 dB, -3 dB)	15-100k Hz
Damping Factor (20-20,000 Hz, 8 ohms)	280
Speaker Impedance (Normal mode)	4 ohms minimum
Signal to Noise Ratio (IHF A network)	116 dB
Input Impedance/Sensitivity	32 k Ohms/1.5 volt
Power Requirements	115 Volts, 60 Hz or 230 Volts, 50 Hz
Power Consumption	600 Watts
Dimensions (W, H, D)	440 x 121 x 365 mm 17.38 x 4.75 x 114.38"
Weight (net)	18.3 kg, 40.3 lb

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

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