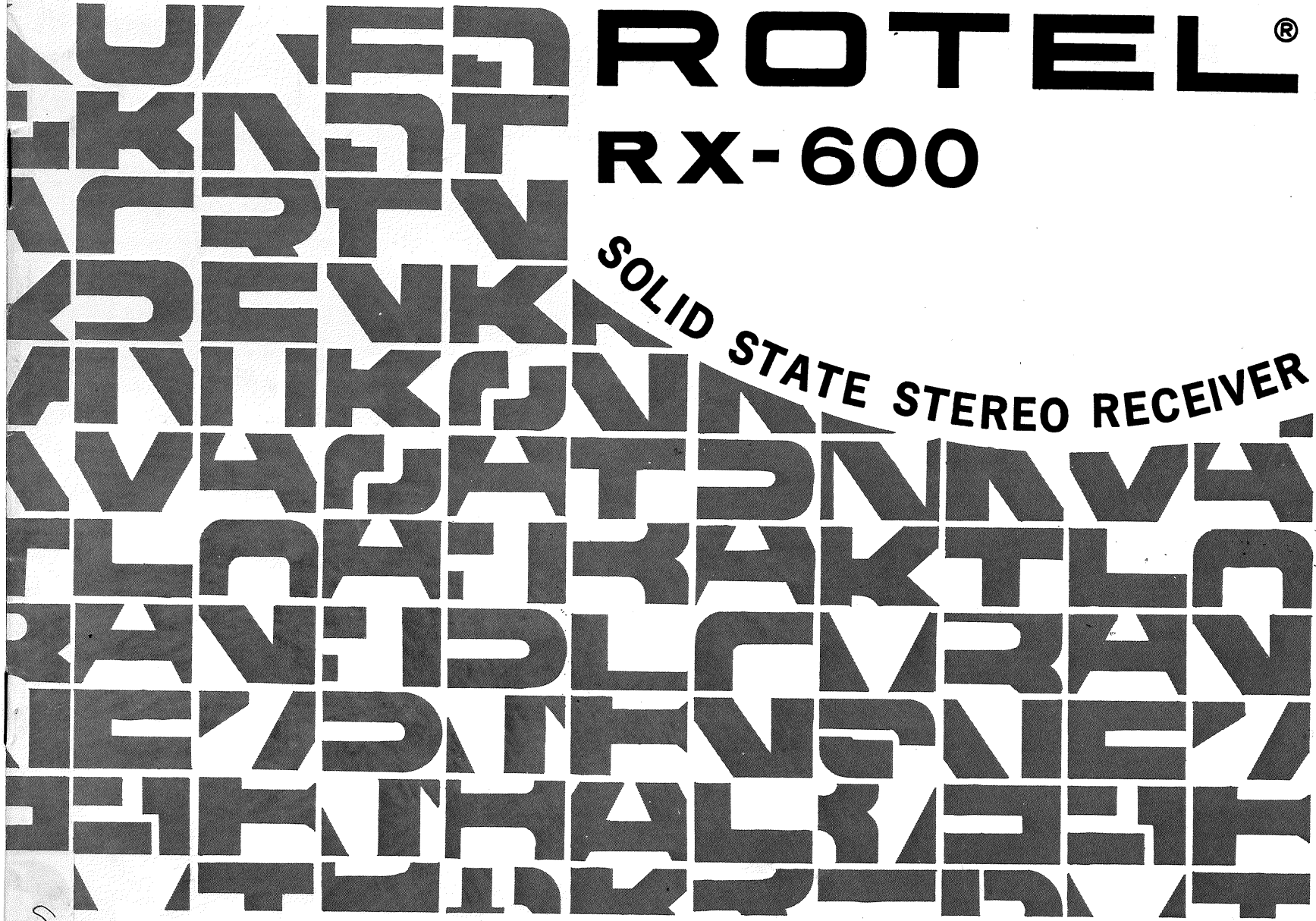


# ROTEL®

## RX-600

SOLID STATE STEREO RECEIVER



## INTRODUCTION

We would like to take this opportunity to thank you for purchasing our RX-600 AM/FM Stereo Receiver. In RX-600 you have the finest equipment available in the Hi-Fi components field. With quality workmanship that goes into making the RX-600, you can be assured of its flawless performance for many years to come.

The RX-600 is equipped with every conceivable control and feature any demanding audiophile ever hopes of having on his unit. The RX-600 was designed for both the versatility and ease of operation. It will add professional studio flexibility to your present music center.

The performance of the RX-600 is exceptional; it will allow you to experience true high fidelity as never before. Its full and natural stereophonic reproduction offers you musical entertainment rivaling that of live performances. We sincerely hope you will treasure this professional calibre equipment.

In order to obtain the maximum use out of your unit, please read all of the following pages of this Operating Manual carefully.

Do not attempt to operate the unit until you have made all the connections as specified in this Manual.

## SPECIAL FEATURES

- 1) All Solid State Electronics Design.
- 2) All Silicon Output Transistors.
- 3) 5-Stage IF Amplifier.
- 4) Split Power Supply.
- 5) Direct-Coupled Circuit.
- 6) Integrated Circuit (IC) in the MPX section.
- 7) Illuminated Dial Pointer with Stereo Indicator Feature.
- 8) Illuminated Dial Board with Black-Out feature.
- 9) Illuminated AM/FM Signal Strength Tuning Meter and FM Center-Tuning Meter.
- 10) Function Indicator Lights.
- 11) Control Knobs: Speakers, Concentric Bass and Treble, Balance, Volume, Selector and Tuning.
- 12) Pushbuttons: Power, Loudness, Tone Defeat, High Filter, Mode, Tape Monitor and Muting.
- 13) Front Panel Stereo Headphone jack.
- 14) Connections for: 3 Record Players, 2 Tape Recorders, Auxiliary, 2 pairs of Speaker Systems and separate Pre-Amplifier and Main-Amplifier.
- 15) 2 AC Power Outlets (switched).
- 16) Handsome Wood Cabinet.

# INSTALLATION

## IMPORTANT

Do not apply power to this unit without first making sure that both speakers are connected properly. Before attempting to operate the RX-600, please read the following instructions carefully. When all the necessary connections are made, the power may be applied.

## AM ANTENNA CONNECTION

The RX-600 has a built-in ferrite-core AM Loopstick antenna, so you will not need to make external antenna connections. For optimum reception, pull the Loopstick antenna out fully from the receiver chassis. If you live, however, in a difficult reception area, such as near a highway or airport or in a rural area far away from stations, the use of an external AM antenna may be recommended to realize the full potential of the RX-600's tuner section. To connect an external antenna, use the "ANTENNA" terminal marked "AM" on the rear panel of the receiver.

## FM ANTENNA CONNECTION

Owing to the exceptionally high sensitivity of your receiver, the 48" wire that is supplied is sufficient for all but the most difficult locations. The balanced antenna input is designed to accept a 300 $\Omega$  antenna, indoor or outdoor type. When using the antenna supplied, connect one end of its 48" length to either of the "ANTENNA" terminals marked "FM". Horizontal placement of the wire antenna will yield optimum reception.

As FM signals are in the same broadcast frequency range as TV signals, they are affected by the same external conditions. Just as TV reception is improved, you may improve your FM reception with an outdoor antenna. When using an outdoor antenna, connect both of its leads to the "ANTENNA" terminals marked "FM", "300 $\Omega$ " or "75 $\Omega$ ", depending upon your antenna.

## SPEAKER CONNECTION

The RX-600 has connections for two pairs of stereo speaker systems. The terminals are easy-to-use plug-in type that require you to only push the levers down and simply plug in the speaker leads. Connect your main pair of speaker systems to the terminals marked "SYSTEM-1", and make sure that the two leads from the right speaker are connected to the corresponding terminals marked "RIGHT", "+" and "-". Do the same for the left speaker. Repeat the procedure with the terminals marked "SYSTEM-2" if you have a remote pair of speaker systems to connect.

NOTE: Make sure that all the speaker leads are fastened securely to the proper terminals and that there are no stray strands shorting one terminal with another.

## PHASING

In a stereophonic music reproducing system, the two speakers must be properly connected to assure complementary functioning. Make sure that the terminals on the speakers are connected to the appropriate and corresponding terminals on the RX-600. If the two speakers are out of phase with each other, the stereo effect will suffer and the low frequency response will be particularly poor. Check to make sure that your speakers are in phase.

1. Push the MODE button in to "MONO" for monophonic operation.
2. Play a monophonic source with solo singing or instrument.
3. If the speakers are in phase, the sound will appear to come from the exact center between the two speakers, but if they are out of phase, the sound will appear to come from the two speakers separately.
4. If the speakers are out of phase, reverse the connections of the two speaker leads (from only one of the speakers, although it may be either one) at the SYSTEM-1 speaker terminals. The speakers will then be in phase with each other. If you have speakers connected to the SYSTEM-2 terminals, repeat the procedure.

## RECORD PLAYER CONNECTION

The shielded cables from your stereo record player should be terminated with Pin type phono plugs. To avoid loss in the high frequency sounds, the cables should not exceed 10 feet in length.

The RX-600 is equipped with terminals for connecting up to three record players. If your record player has a magnetic cartridge, connect its left and right leads to the corresponding "LEFT" and "RIGHT" terminals marked "PHONO-1", and if you have another record player with a magnetic cartridge, connect its leads to the "PHONO-2" terminals marked "MAG". If your record player has a ceramic or crystal cartridge, connect its leads to the "PHONO-2" terminals marked "CERA".

If your record player has a groundwire, connect it to the screw terminal marked "GND".

## TAPE RECORDER CONNECTION

The RX-600 is equipped with connections for two tape recorders, so that you may dubb from one to the other. If your tape recorder has a special monitor head, connect its left and right output leads to the corresponding "LEFT" and "RIGHT" "TAPE" terminals marked "MONITOR", and connect its input leads to the "TAPE" terminals marked "OUT". If you have another tape recorder or one without the monitor head, connect its input leads to the terminals marked "REC-OUT", and connect its output leads to the terminals marked "AUX-2". If you wish to connect a tape recorder for playback purpose only, connect its output leads to the terminals marked "AUX-1".

## CONTROLS AND THEIR FUNCTIONS

**SIGNAL METER** indicates the strength of the signal being received. It is used to for both AM and FM to the right indicates strongest reception.

**FM TUNING METER** is a center-tuning indicator for FM signal reception. Dead-center position of the meter indicates clearest reception.

**VOLUME** modifies the sound level of the system. Set to suit your taste.

**FUNCTION INDICATOR LIGHTS** light up "PHONO-1", "PHONO-2", "AM", "FM", "AUX-1" or "AUX-2" to indicate the setting you have made on the Selector.

**ILLUMINATED DIAL BOARD** lights up for AM and FM operations, but when the Selector is set for Phono or Aux operations, it blacks out.

**ILLUMINATED DIAL POINTER** brightens up as an indication whenever you have tuned in an FM Stereo broadcast.

**HIGH FILTER** in "IN" position activates a filter that effectively removes high frequency noises such as scratching sounds that are present in old or poor phono discs.

**TUNING KNOB** allows you to tune for whatever AM or FM station you wish to hear.

**POWER** activates the system. simply push in.

**PHONES** allows you to listen to your headphones by simply plugging in the lead. If you wish to listen to the headphones exclusively, you may deactivate the external speakers by turning "OFF" the Speakers knob.

**SPEAKERS** allows you to select your speaker systems for activation. At "OFF" all the speakers are deactivated; at "1" the speakers connected to the System-1 terminals on the rear panel are activated; at "1+2" both the speakers connected to the System-1 and System-2 are activated simultaneously, and at "2" only the speakers connected to the System-2 terminals are activated.

**BASS** is a concentric control that modifies the low frequency sounds of the right and left channels separately. The black outer ring is for the left channel, and the inner knob is for the right. Set to suit your taste.

**BALANCE** modifies the sound level of each channel in relation to each other. Set to adjust for unequal sounds caused by room acoustics or faulty program material.

**TREBLE** is a concentric control that modifies the high frequency sounds of the right and left channels separately. The black outer ring is for the left channel, and the inner knob is for the right. Set to suit your taste.

**SELECTOR** allows you to select whatever function you wish to operate at, whether "PHONO-1", "PHONO-2", "AM", "FM", "AUX-1" or "AUX-2"

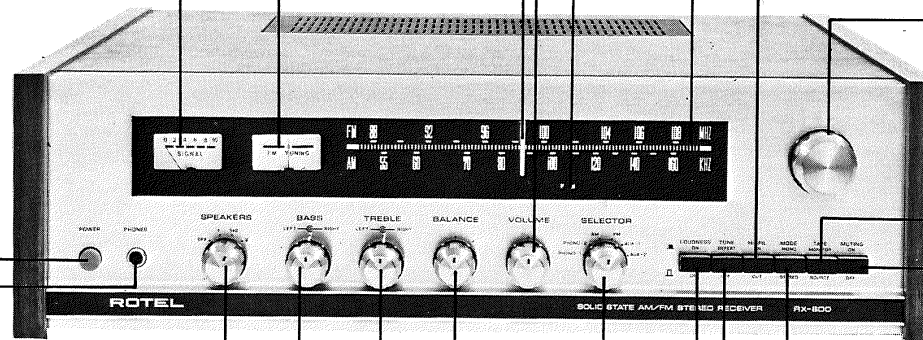
**LOUDNESS** in "ON" position introduces a circuit that boosts the extreme low frequency sounds for listening at low volume levels. It compensates for the natural deficiency of the human ear to perceive at low volumes.

**TAPE** in "MONITOR" position allows you to listen to playback from a tape recorder connected to the "TAPE" terminals on the rear panel. If the tape recorder is equipped with a special monitor head, it allows you to monitor a tape recording, and in "SOURCE" position, it allows you to listen to the source from which the recording is being made.

**MUTING** in "ON" position introduces a circuit that reduces the sound level to 1/10. Use this to achieve temporary quietness, such as during a telephone call, and return to normal listening level without having to readjust the Volume.

**MODE** in "MONO" position is for monophonic program material, and in "STEREO" position it is for stereophonic program material.

**TOPE** in "DEFEAT" position defeats the Bass and Treble tone controls and allows for absolutely flat response, and in "OFF" position, the Bass and Treble tone controls remain functional.



## MODE

The MODE button in the "STEREO" position is for both stereophonic and monophonic operations, but in the "MONO" position, it is limited to stereophonic operation. In "STEREO" all monophonic sources will be reproduced monophonically and whenever the source changes to stereophonic signals, the mode of reproduction will be automatically switched to stereophonic. Therefore, for normal operation the MODE button should always be set at "STEREO", but, for instance, if you are receiving a stereo broadcast that is badly degraded and you wish to improve the quality of reproduction, you may listen to it monophonically by setting the MODE to "MONO" and thereby restricting the broadcast to monophonic reproduction.

## LOUDNESS

Whenever your system is operated at low volumes, the sound will not seem as full as it is at higher levels. This is because the human ear does not perceive as well the low frequency sounds when the volume is low. The LOUDNESS button is used to compensate for this deficiency. Whenever the volume is reduced, push this button to "ON"; and the extremely-low frequency sounds will be effectively boosted.

## MUTING

For momentary quietness during telephone calls or conversations, push the MUTING button to "ON"; it will instantly reduce the volume to 1/10. And when you are ready to resume listening, by turning "OFF" the button you will be able to restore the previous volume level without having to reset the volume control.

## FM TUNER

Set the SELECTOR to "FM", and tune for the desired station with the TUNING knob. Use the SIGNAL METER to locate the position on the DIAL BOARD where the signal strength is at highest, and use the FM TUNING METER to locate the position where the signal reception is at clearest.

NOTE: Whenever you have tuned in a Stereo broadcast or the station you have been listening to changes from Mono to Stereo broadcast, the ILLUMINATED DIAL POINTER will brighten up as an indication.

## AM TUNER

Set the SELECTOR to "AM", and tune for the strongest reception with the SIGNAL METER.

## RECORD PLAYER

Set the SELECTOR to "PHONO-1" if you wish to operate the record player that is connected to the PHONO-1 terminals, or set to "PHONO-2" if you wish to operate the

record player that is connected to either MAG or CERA of PHONO-2 terminals. If you have two record players connected to the PHONO-2 terminals, the output from whichever record player that you are operating will be amplified by the RX-600.

NOTE: If your phono disc is very old or of poor quality, it may cause scratching noises out of the speakers. Should such noises occur to the extent of detracting from your listening pleasure, push "IN" the HI-FIL (HIGH FILTER) button—it will effectively remove the noises without affecting the overall quality of the recording.

## PLAYBACK OF TAPE RECORDINGS

Set the SELECTOR to "AUX-1" if you wish to operate the playback tape recorder that is connected to the AUX-1 terminals, or set to "AUX-2" if you wish to operate the tape recorder that is connected to the AUX-2 and REC-OUT terminals. If you wish to operate the tape recorder that is connected to the MONITOR and OUT of the TAPE terminals, push in the TAPE button to "MONITOR"

## MAKING TAPE RECORDINGS

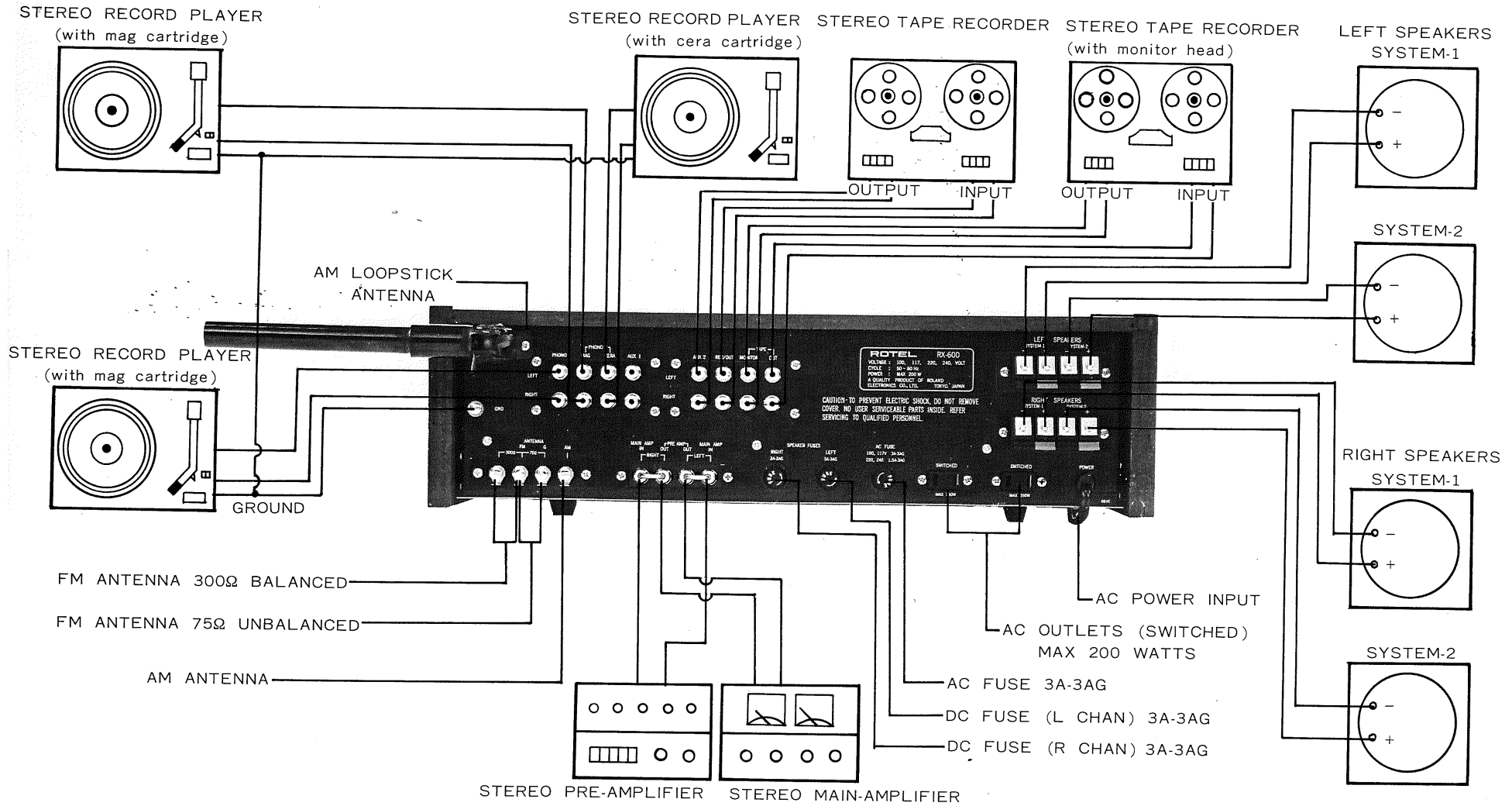
Set the SELECTOR to "AM" if you wish to record from the RX-600's AM Tuner section, to "FM" if you wish to record from the RX-600's FM Tuner section, to "PHONO-1" if you wish to record from your record player connected to the PHONO-1 terminals or to "PHONO-2" if you wish to record from your record player connected to either MAG or CERA of PHONO-2 terminals. If your tape recorder is equipped with a special monitor head and is connected to the TAPE terminals you may "monitor" or compare the recording being made with the source from which the recording is being made with the TAPE button: The TAPE button in "MONITOR" lets you hear the recording being made on the tape recorder, and in "SOURCE", it lets you hear the recording source. Thus, in this way you may compare the recording with the source while the recording is still being made.

If you wish to record from another tape recorder and if your recording tape recorder is connected to the TAPE terminals and the playback tape recorder is connected to the AUX-1 terminals, set the SELECTOR to "AUX-1". If the playback tape recorder is connected to the AUX-2 terminals, set the SELECTOR to "AUX-2". If the recording tape recorder is connected to the AUX-2 and REC-OUT terminals and the playback tape recorder is connected to the TAPE terminals, set the TAPE button to the "SOURCE" position. (The SELECTOR setting in this case will be irrelevant and may be left anywhere.)

## HEADPHONES

To listen through a pair of stereo headphones, simply plug the headphone lead into the PHONES jack on the front panel. If you wish to listen to the headphones exclusively, you may deactivate the external main and remote speakers connected to the SYSTEM-1 and SYSTEM-2 speaker terminals by setting the SPEAKERS knob to the "OFF" position.

# INTERCONNECTING DIAGRAM



## PRE-AMPLIFIER OUTPUT AND MAIN-AMPLIFIER INPUT

There are pairs of terminals marked "PRE AMP OUT" and "MAIN AMP IN", connected with a pair of Jumper Pins, on the rear panel. This novel ROTEL feature permit flexible use of the RX-600. Normally, with the Jumper Pins in place, the RX-600 is a receiver with integrated pre- and main-amplifier sections, but by removing the Jumper Pins, the RX-600 in essence becomes two independent units consisting of one pre-amplifier and one main-amplifier. In this way the RX-600 can be used in various combinations with other components.

1. The RX-600's pre-amplifier section can be used with a separate main- (power) amplifier, in which case all of the control functions, e.g., volume, tone, etc and the tuner section will remain operational. To effect this combination, first remove the Jumper Pins, thereby breaking the circuits between the pre- and main-amplifier sections, and secondly, using cables terminated with the Pin type phono plugs, connect the "PRE AMP OUT" terminals on the RX-600 with the input terminals on the separate main-amplifier. Lastly, remove the speaker cables from the RX-600 and reconnect them to the speaker terminals on the separate main-amplifier.
2. The RX-600's main-amplifier section can be used with a separate pre- (control) amplifier, in which case all of the control functions and the tuner section will no longer be operational. (The control functions will be provided by the separate pre-amplifier, and for tuner operation, a separate tuner should be connected to the separate pre-amplifier.) To effect this combination, remove the Jumper Pins and connect the "MAIN AMP IN" terminals on the RX-600 with the output terminals on the separate pre-amplifier. The speakers should remain connected to the terminals on the RX-600.
3. For making tape recordings off of such sources as tuners, record players and other tape recorders, the RX-600 is equipped with the necessary connections and controls. In recording straight off of sources, however, you will not be able to use the RX-600's tone controls to affect the quality of the recording to be made, only the sound coming out of the speakers. To "color" a tape recording, the signals from the source to be recorded must be passed through the RX-600's pre-amplifier section, so that the tone controls will become applicable. To effect this, remove the Jumper Pins and connect the "PRE AMP OUT" terminals on the RX-600 with the tape recorder's input terminals and connect the "MAIN AMP IN" terminals with the tape recorder's output terminals. The speakers should remain connected to the terminals on the RX-600.

## AC OUTLET

The RX-600 is equipped with two AC Outlets (both switched) to provide switching control and power to whatever component you may wish to connect to the RX-600.

CAUTION: Do not connect a component whose power requirement exceeds 200 watts.

## FUSE

The RX-600 is protected with one 3-amp fuse in the AC input circuits and two 3-amp fuses, one for the right channel and one for the left channel, in the DC output circuits.

Replacing with a fuse of higher rating will not protect the unit any more effectively, rather it may result in a severe damage to the unit.

NOTE: If you live in a country where the line voltage is 220 or 240 volts, the AC Fuse will be 1.5-amp. The DC Fuses will remain the same.

## OPERATION

When all the connections have been made according to the preceding instructions, you may apply power by pushing "IN" the POWER button. Select the speaker system you wish to activate by setting the SPEAKERS knob — set to "1" if you wish to activate the main pair of speakers connected to the SYSTEM-1 speaker terminals; set to "2" if you wish to activate the remote pair of speakers connected to the SYSTEM-2 speaker terminals, and set to "1+2" if wish to activate both the main and remote pairs of speakers simultaneously.

NOTE: If the Dial Board Light or the Function Indicator Light fails to light, remove and check the AC Fuse, and if no sound were heard even when all the buttons and controls are placed at their correct positions, remove and check the DC Fuses. If a Fuse is blown, check for possible reasons for the blow-out (e.g., short at the speaker leads, etc.) and re-check all the component connections and replace the Fuse.

## BASS AND TREBLE CONTROLS

The BASS and TREBLE tone controls on your receiver provide the full range of tonal adjustment necessary for stereo high fidelity listening. They are concentric controls, so you may adjust the Bass and Treble separately for the left and right channels. At the center position, they are for normal listening, but you may freely vary them to suit your personal taste, different music and speaker and component characteristics.

NOTE: If you desire an absolutely flat response, you may push in the TONE button to "DEFEAT" This button defeats the tone control functions of the BASS and TREBLE controls at the circuit level, so that you can be certain that the RX-600 is generating an absolutely flat response throughout the entire frequency range.

## BALANCE CONTROL

The BALANCE control is used to adjust the sound level of each channel in relation to each other. The nature of stereophonic reproduction is such that it requires two matched channel outputs to obtain the optimum stereo effect. As there may be slight differences between the locations of the two speakers with respect to the listener, irregular room acoustics or unmatched components, the BALANCE control is provided to permit proper rebalancing of the overall system even in extreme cases of unbalance. The BALANCE control should be set where the resulting sound from the two speakers appear equally loud when listened to monophonically.

## SPECIFICATIONS

### TUNER SECTION:

FM: ANTENNA IMPEDANCE:	300 ohms balanced, 75 ohms unbalanced.
TUNING RANGE:	88—108 MHz.
SENSITIVITY (IHF):	2.5 $\mu$ V.
HARMONIC DISTORTION:	less than 0.5%.
SIGNAL TO NOISE RATIO:	better than 65 db.
CAPTURE RATIO:	2 db.
IMAGE REJECTION:	better than 60 db.
IF REJECTION:	better than 70 db.
SELECTIVITY:	30 db.
STEREO SEPARATION:	better than 35 db.
SPURIOUS RESPONSE REJECTION:	75 db.
AM: TUNING RANGE:	535—1605 kHz.
SENSITIVITY (IHF):	30 $\mu$ V at 1,000 kHz.
IMAGE REJECTION:	38 db at 1,000 kHz.
SELECTIVITY:	better than 30 db.

### AMPLIFIER SECTION:

TOTAL MUSIC POWER (IHF):	160 watts at 4 ohms, 120 watts at 8 ohms.
CONTINUOUS POWER (RMS):	60 watts/Ch at 4 ohms, 42 watts/Ch at 8 ohms.
DISTORTION, IM:	less than 0.1% at rated output, less than 0.12% at rated output.
HARMONIC:	
FREQUENCY RESPONSE:	9—100,000 Hz.
POWER BANDWIDTH (IHF):	8—85,000 Hz.
INPUT SENSITIVITY:	MAG 1.2 mV, X'TAL 96 mV, AUX 130 mV.
HUM AND NOISE:	PHONO 67 db, AUX 80 db, RESIDUAL 1 mV.
DAMPING FACTOR:	25 at 8 ohms.
SPEAKER IMPEDANCE:	4, 8, 16 ohms.
BASS CONTROL:	+13— -12 db.
TREBLE CONTROL:	+13— -12 db.

### POWER VOLTAGE:

AC 117 V, 50/60 Hz.

### DIMENSIONS:

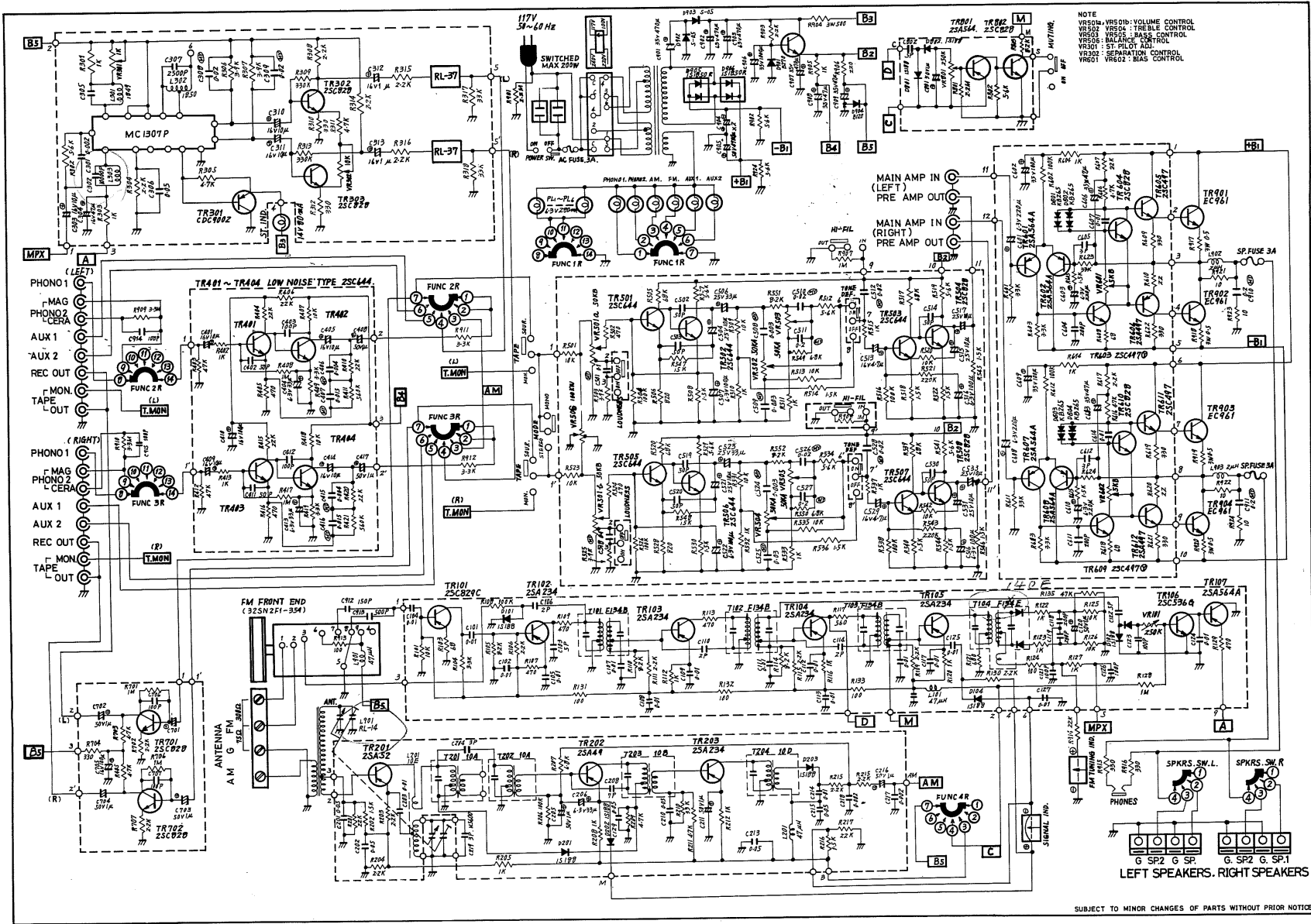
17—11/12" W x 5—1/12" H x 12—1/2" D.

### WEIGHT:

19.6 lbs.



# SCHEMATIC DIAGRAM



SUBJECT TO MINOR CHANGES OF PARTS WITHOUT PRIOR NOTICE



**ROTEL® RX-600**

ROLAND ELECTRONICS CO., LTD. TOKYO — JAPAN

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