

# owner's manual

*Quality. Uncompromised*

## ROTEL RT-870

AM/FM STEREO TUNER

## RT-870L

MW/LW/FM STEREO TUNER

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**WARNING**

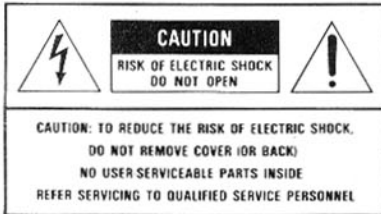
**TO PREVENT FIRE OR SHOCK HAZARD,  
DO NOT EXPOSE THIS APPLIANCE TO  
RAIN OR MOISTURE**

Write your SERIAL NUMBER here.

The number is located near the name plate on the rear panel.

# SAFETY INSTRUCTIONS

**Warning:** To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.



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.

## \*\*Note to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.\*\*

- 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.

## PORTABLE CART WARNING



S3125A

- 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.
- 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.

**Power Lines** — An outdoor antenna should be located away from power lines.

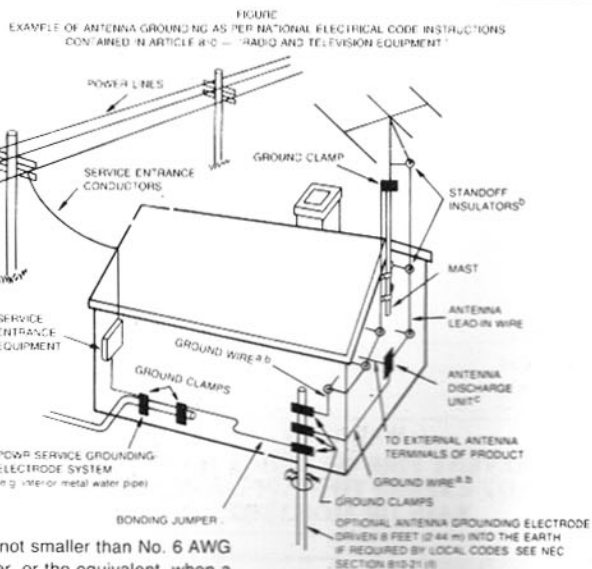
**Outdoor Antenna Grounding** — If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure.

<sup>a</sup>Use No. 10 AWG (5.3 mm<sup>2</sup>) copper, No. 8 AWG (8.4 mm<sup>2</sup>) aluminum, No. 17 AWG (1.0 mm<sup>2</sup>) copper-clad steel or bronze wire, or larger, as a ground wire.

<sup>b</sup>Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4-6 feet (1.22-1.83 m) apart.

<sup>c</sup>Mount antenna discharge unit as close as possible to where lead-in enters house.

<sup>d</sup>Use jumper wire not smaller than No. 6 AWG (13.3 mm<sup>2</sup>) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC Section 810-21 (j).



FOR U.S.A. ONLY

# ENGLISH

AM/FM STEREO TUNER RT-870

MW/LW/FM STEREO TUNER RT-870L

## 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.

## INSTALLATION

Be sure to place the unit in a level and flat place where it is free from humidity, vibration, high temperature and 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.

## POWER SUPPLY CONNECTION

For power the unit requires the normal house electrical current (AC). You may simply plug the unit into a wall outlet, or into your amplifier's (or receiver's) convenience AC outlet.

**CAUTION:** Do not apply power without first making sure the proper connections are completed. If you live in U.K. and your unit comes with 2-core cord without a plug, be sure to read the exclusive caution for U.K.

### 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 coloured BROWN or RED.

### CAUTION:

To prevent electric shock do not use this (polarized) outlet unless the blades can be fully inserted to prevent blade exposure.

## ANTENNA INSTALLATION AND CONNECTION

### ■ FM Antenna

Proper installation of antenna is the key to smooth signal reception. To install the attached T-shape indoor antenna, stretch it taut and secure horizontally along a wall or the like in a location where signal reception is optimal. Securely connect the antenna to FM antenna terminals marked "300Ω" on the rear panel if outdoor type FM antenna is installed, the T-shape antenna is not necessary. For proper use of your outdoor FM antenna, follow the instructions below.

1. Be sure to select the most appropriate type of antenna for the signal reception conditions in your area.

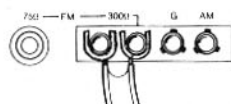
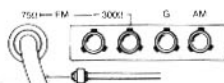
2. A 75-ohm coaxial cable is recommended in connecting the antenna to the unit.

3. Set the antenna in a position as high as possible if buildings, mountains or other obstructions nearby affect reception.

4. The 75-ohm coaxial antenna cable should be properly hooked up to the designated antenna terminals on the rear panel: Locate the terminals labeled "75Ω"

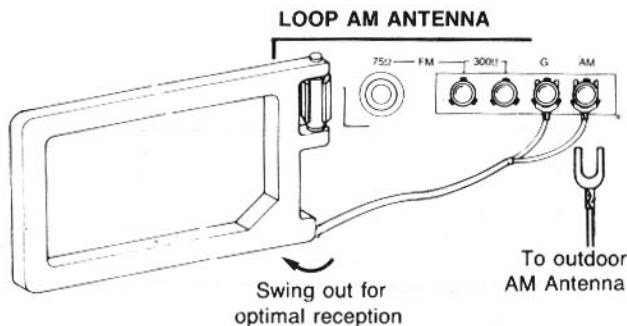
### 75Ω COAXIAL ANTENNA

### 300Ω T-SHAPE ANTENNA



### ■ AM Antenna

The loop antenna is provided for optimum AM reception. Attach the loop antenna onto the antenna holder on the rear panel, and connect the lead wires to the antenna screw terminals marked "G" and "AM". If an outdoor antenna is desired for better reception due to difficult reception area, connect such antenna to the same screw terminals as the loop antenna. Please note that the loop antenna should be left connected to the terminals even when the external antenna is connected.



## CONNECTION TO INTEGRATED AMPLIFIER

Using RCA pin cords, securely connect the OUTPUT terminals on the rear panel of the unit to the TUNER (or AUX) terminals of amplifier. Make absolutely sure that RIGHT terminal of one unit is connected to the RIGHT terminal of the other, and LEFT to LEFT

## SWITCHES AND CONTROLS

### (1) Power Button

This button turns on the unit. The LED indicator above it will glow when the power is on. Press the button a second time to turn off the power.

#### CAUTION

As long as the power cord is plugged into an AC outlet, power is supplied to the unit regardless of the setting of the Power Button.

### (2) Signal Strength Indicator

A tuning condition is indicated by the digital display from "0" to "5". The higher the number, better the reception. "5" indicates an optimal reception. "0" is on usually between station.

### (3) Stereo Indicator

Glow when stereo broadcasting signal is tuned in. Note that when stereo signal is very weak, the unit will not give stereo reproduction, and the indicator will not light up.

### (4) Frequency Display

Indicates frequency currently tuned in, along with notation "FM" and "MHZ" in FM reception, or "AM" and "KHZ" in AM reception. The word "MEMO" will appear when Memory Program button is pressed.

### (5) Station Buttons

These buttons are used to tune in to desired preset stations, or to preset given station frequencies in unit's memory. Each station selected will be indicated by LED.

### (6) Tuning Button, UP

Used when tuning in a station whose frequency is higher than the reading on the frequency display.

### (7) Tuning Button, DOWN

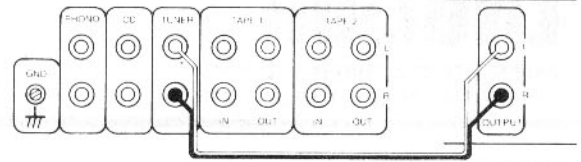
Used when tuning in a station whose frequency is lower than the reading on the frequency display

### (8) Memory Button

To enter a given station frequency into the unit's memory circuit, press this button first, and then tap the desired station button.

## AMPLIFIER

## RT-870



### (9) FM Auto Tuning Button

Depressing this button changes FM tuning mode from manual to automatic. This button has no effect on AM tuning, which can be done in manual mode only.

### (10) FM Wide Button

Push this button on to WIDE for a wider bandwidth to enjoy better FM sound. If there is too much hiss or noise from neighbouring stations, etc., push the button to the off position for a normal bandwidth to cut off such noise as much as possible.

### (11) RF ATT Button

This button is used only when you have a strong signal station nearby which gives too much noise at reception. The button when activated will attenuate the RF gain by 6 dB to reduce such noise.

### (12) FM Mute Off/Mono Button

When this button is pressed to ON, any FM broadcast is received monaurally. Be sure to leave the button in the released (OFF) position during normal stereo FM reception. In the OFF position, interstation noise generated when tuning in an FM station will be reduced.

### (13) Hi-Blend Button

Allows you to reduce annoying noise mixed in with signal. This switch, however, should not be always left at OFF position unless it is necessary.

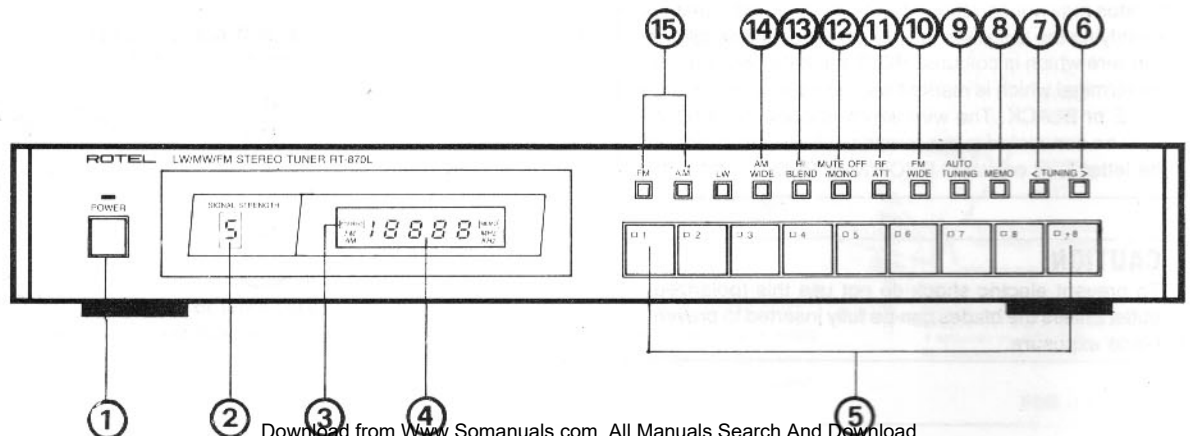
### (14) AM Wide Button

Push this button on to WIDE for a wider bandwidth to enjoy better AM sound. If there is too much hiss or noise from neighbouring stations, etc., push the button to the off position for a normal bandwidth to cut off such noise as much as possible.

### (15) AM/FM Selector

Press AM button for AM signal reception, and FM button for FM signal reception.

RT-870L gives AM reception in either MW or LW mode. Depress MW button for middle-wave reception, and LW button for long-wave reception.



## OPERATION

- The RT-870 (RT-870L) employs a quartz PLL synthesizer for easy and accurate tuning. Tuning frequency is visible on the digital readout, and you can tune in to the desired station accurately. With the unit's memory circuit, you can preset memory tuning. This is a feature only a synthesized tuner can offer, letting you recall a stored station frequency instantly with a single tap of a button.

- One station button can store one AM or one FM station in its memory. The RT-870 permits a total of 16 stations to be stored, be each station AM or an FM. For example, you could store 12 FM and 4 AM station randomly.

- The power source of the unit's memory circuit is the capacitor back-up type. If power cord is unplugged, or if there is a power failure, the electrical energy accumulated in the capacitor while the unit was ON will retain the frequencies stored in the memory circuit for three days. (The memory is retained as long as the power cord is plugged into an AC outlet, regardless of the position of the POWER button.) If you leave the power cord unplugged for over three days, the stored frequencies will be lost.

- Before commencing operation, check to make sure all antenna, amplifier and power connections are properly made.

1. Set the volume control on the amplifier to minimum position, and amplifier function switch to TUNER position (or to AUX position if the tuner is connected to AUX terminal).

2. Turn on the amplifier and press the POWER button on the tuner.

3. Depress FM or AM button of the tuner function selector. On RT-870L select among FM, MW, and LW buttons.

4. Tune in to the desired station by means of tuning or station buttons. (See section on "Tuning".)

5. Raise the volume to the desired level, and enjoy listening.

## Tuning

The unit is designed to permit three modes of tuning: auto tuning, manual tuning, and preset memory tuning.

### • Auto Tuning (for FM Reception Only)

Set FM Auto Tuning button to the depressed position. Press Tuning button, UP or DOWN. Automatic scanning of FM band begins. Scanning stops when it reaches a point where the input signal exceeds a certain acceptable level. To tune in to another station, press DOWN or UP button according to the frequency of the desired station.

### • Manual Tuning

Set FM Auto Tuning button to the released position. A tap of the tuning button, DOWN or UP, will shift the tuning frequency in specified increments. If you keep the button pressed down, the frequency will change continuously. Release the button to stop frequency change.

### • Preset Memory Tuning

Tune in to the desired station in either auto or manual tuning mode. Press the Memory Program button. Then, press any station button, 1 through 16, to enter the frequency into the memory circuit. Thereafter, you may recall the same frequency any time simply by pressing the same button.

**Note:** that once the Memory Program button is pressed, you must press the appropriate station button within several seconds to enter the station frequency. If more time elapses before you press the station button, entry cannot be made. In that case start again, following the above procedures. The above procedures should also be followed to change the station preset for a given station button.

**Note:** If you have turned off the unit, and turn it on again, the unit will tune in to the station frequency to which it was tuned immediately before turn-off.

## HUM AND NOISE

Hum often accompanies activation of power supply. If hum is generated, try replugging the power cord into the wall outlet, reversing the plug this time. Other possible causes of hum include improper routing of connecting cords (try changing cord position), or incorrect pin-plug insertion. Check all connections if hum persists.

If noise is introduced, it is usually caused by improper positioning of antenna cable or improper antenna installation. Use a 75-ohm cable for outdoor FM antenna and minimize multipath to obtain optimal signal reception. Note that during signal reception the unit may pick up noise from other household electric appliances (as when switching power on or off). In that case, check the relative location of the appliances and keep them away from the unit, or vice versa, as necessary.

**Note 1:** In a location near a broadcasting station, very strong signals may cause noise or distortion, depending on the type of antenna used. In that case, install an attenuator between the antenna and the tuner.

**Note 2:** Inside a concrete building, FM signals are weakened and satisfactory reception may be difficult. An outdoor FM antenna will best remedy such a situation.

## 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.

# SPECIFICATIONS

## FM TUNER SECTION

Usable Sensitivity.....	10.8dBf/0.95 $\mu$ V(75 ohms)
50dB Quieting Sensitivity:	
Mono.....	14.8dBf/1.5 $\mu$ V(75 ohms)
Stereo.....	37.2dBf/20 $\mu$ V(75 ohms)
Signal-to-Noise Ratio(at 65dBf):	
Mono.....	80dB
Stereo.....	75dB
Harmonic Distortion(at 65dBf):	
1 kHz.....	0.07%(mono), 0.25%(stereo)
Frequency Response.....	30 to 15,000 Hz, +0.5dB, -0.5dB
Capture Ratio.....	1.0dB
Alternate Channel Selectivity	
Wide/Narrow.....	60dB/80dB
Adjacent Channel Selectivity.....	15dB (Narrow)
Spurious Response Ratio.....	100dB
Image Response Ratio.....	70dB
IF Response Ratio.....	95dB
AM Suppression Ratio.....	58dB
Stereo Separation:	
100Hz/1kHz/10kHz.....	43dB/48dB/38dB
Subcarrier Product Ratio.....	55dB
SCA Rejection Ratio.....	70dB
Antenna Input.....	75 ohms unbalanced, 300 ohms balanced

## AM TUNER SECTION

	MW	LW (RT-870L)
Sensitivity.....	350 $\mu$ V/m	750 $\mu$ V/m
Selectivity (Wide/Narrow).....	27dB/42dB	25dB/40dB
Signal-to-Noise Ratio.....	52dB	52dB
Image Response Ratio.....	40dB	40dB
IF Response Ratio.....	40dB	40dB
Antenna.....	Loop antenna	

## MISCELLANEOUS

Power Requirement.....	120V/60 Hz, 220V/50 Hz, 240V/50 Hz, or 120, 220, 240V/50-60 Hz (switchable) (depending on destinations)
Power consumption.....	10 watts
Dimensions (overall).....	444W x 66H x 327D mm 17 $\frac{1}{2}$ " x 2 $\frac{1}{16}$ " x 12 $\frac{7}{8}$ "
Weight (net).....	3.9kg/8.58 lbs

- Specifications and design subject to possible modification without notice.

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