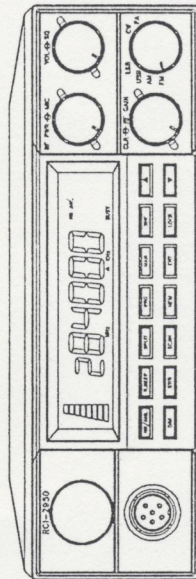


REV. B

DOC-2950-E92
MAY, 1992



MODEL RCI-2950/2970
AM/FM/SSB/CW
AMATEUR 10 METER
MOBILE TRANSCEIVER



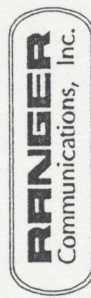
OWNER'S MANUAL

PRINTED IN TAIWAN
AT2950013A

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3377 Carmel Mtn. Rd. • San Diego, CA 92121

SPECIFICATIONS

GENERAL

RCI-2950/RCI-2970*

Frequency Range
Tuning Steps
Emission Types

Frequency Control

Freq. Tolerance

Freq. Stability

Oper. Temp. Range

Antenna Impedance

Speaker Impedance

Microphone

Display

Power Requirements

TRANSMITTER

RF Output Power

USB/LSB 25W [100W]

CW/25W [50W]

AM/FM 8W [50W]

-50dB

-50dB

UHF 50Ω

USB, LSB, CW, AM, FM

RECEIVER

Sensitivity for 10dB SINAD

AM .5uV (50% MOD.)

USB/LSB/CW 0.3uV

FM .5uV

FM .25uV

65dB

SSB/CW/AM 80dB for 50mV for

10dB Change in Audio Output

2.5W

Audio Output Power

@ 10% THD

*Note: RCI-2970 values appear in [].

INTRODUCTION

Congratulations on your purchase of an RCI-2950/2970 10 meter amateur radio. Your RCI-2950/2970 is designed to provide trouble-free service and state-of-the-art communications, incorporating many useful features and functions on the 10 meter band. To ensure proper performance, please read this manual thoroughly.

IMPORTANT: To operate this radio, you must possess an amateur radio operator's license issued by the FCC. Operation of this unit without proper licensing is ILLEGAL and can result in severe penalties.

UNPACKING

The following items are included with your RCI-2950/2970. Carefully remove and examine all materials from the packing carton. If any items are missing or appear damaged, please contact your dealer immediately. Each unit should include:

1. RCI-2950/2970 Transceiver
2. Dynamic Microphone w/Frequency Adjustment
3. Power Cord
4. Mounting Bracket & Hardware
5. Installation Hardware
6. Owner's Manual
7. Warranty Registration Card

It is recommended that you save the packing materials for future storage or shipping.

15. **DIM BUTTON (DIM):** This button adjusts the display backlighting in four different steps to best match the ambient light.

16. **SWR BUTTON (SWR):** This control is used to check SWR.

17. **SCAN BUTTON (SCAN):** This is used to scan frequencies in each band segment. The OPERATION segment of this manual provides detailed information on using the SCAN control.

18. **MEMORY BUTTON (MEM):** This button is used to program memory channels. Detailed information on how to use this control is provided in the OPERATION section of this manual.

19. **ENTER BUTTON (ENT):** This is used to program frequencies in memory. See the OPERATION section of this manual for more information on using this control.

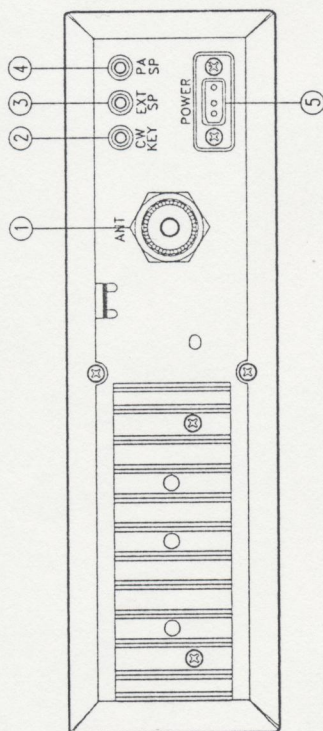
20. **LOCK BUTTON (LOCK):** This button is used to lock a selected frequency. Press it to activate the switch. In this position, it disables the Frequency Selector Control, up/down buttons on the front control panel, or remote up/down buttons on the microphone. Repressing the switch will unlock the frequency.

21. **UP/DOWN SELECTORS (▲▼):** These buttons are used to move frequency upward or downward to select a desired frequency.

REAR PANEL CONNECTIONS

1. **ANTENNA:** This jack accepts 50Ω coaxial cable with a PL259 type plug.

2. **CW KEY:** This is used for Morse Code operation. To operate this mode, connect a CW key to this jack and place the MODE switch in the CW position.



3. **EXTERNAL SPEAKER:** This jack accepts 4 to 8Ω 5W external speaker. When the external speaker is connected to this jack, the built-in speaker will be disabled.

4. **PA SPEAKER:** An 8Ω 4W PA speaker may be connected to this jack for PA operation. Place MODE selector in PA position for this operation.

5. **POWER:** This accepts 13.8VDC power cable with built-in fuse. The power cord provided with the radio has a black and red wire. The black goes to negative and the red goes to positive.

MICROPHONE

1. **PTT SWITCH:** Use the Push-to-Talk switch to control the transmit and receive of the radio. Push to transmit and release to receive.

2. **REMOTE UP/DOWN SWITCH:** An operating frequency can be stepped up or down simply by pushing either of these buttons.

INSTALLATION

The RCI-2950/2970 is easy to install. All necessary parts (less the antenna and cable) have been included to facilitate installation.

TRANSCIVER MOUNTING

Choose a suitable location for the transceiver that will allow easy access to the front panel as well as proper air circulation to the back of the unit. If you are installing the unit in a vehicle, attach the mounting bracket first, then attach the transceiver to the mounting bracket using the hardware provided. Before making any electrical connection, ensure that the transceiver is turned off.

POWER CONNECTION

The transceiver operates off of any regulated 13.5V DC negative or positive ground source.

NOTE: The condition of a vehicle's electrical system can affect the operation of your RCI-2950/2970. A Low battery, worn generator/alternator, or poor voltage regulator will impair performance of the unit as well as the vehicle. (High noise generation or low voltage delivery can result from these conditions.)

If an AC power supply is used with your radio, make certain it is regulated and rated for at least 7 amps. Low voltage while under load will reduce receiver gain and transmitter output.

CAUTION: Voltage above 15V DC will damage the unit. Be sure to check the source voltage before connecting the power cord.

RCI-2950/2970 OPERATION

FREQUENCY SELECTION

Frequency selection for the RCI-2950/2970 is simple: select a desired operating frequency by rotating the Frequency Selector, or using the up/down buttons on the front panel of the microphone. Press the LOCK button to lock into the selected frequency. This will disable the Frequency Selector and the up/down buttons on the front panel of the microphone. Repressing the LOCK button unlocks the frequency.

Use the SHF button to set the step frequency to either 100kHz, 1kHz, 10kHz, 100kHz or 1MHz increments. The frequency step is indicated by a small triangle directly under the corresponding digit on the frequency display.

MODE SELECTION

To select an operating mode on your RCI-2950/2970, simply rotate the MODE selector and place it in the desired operating mode position. The PTT switch on the microphone controls the transmit and receive of your radio.

FM/AM/USB or LSB mode is for your voice communications. At CW position, you can transmit CW if you have connected an external key to the accessory plug provided on the back of the radio. At PA position, the radio can be used as a PA amplifier. Before operating in PA mode, you must first connect a PA speaker (8Ω 4W) to the jack provided on the back of the radio.

RF POWER CONTROL

This feature allows the adjustment of the RF output power continuously over the range of 1W through 25W (AM: 1W to 10W; SSB: 10W to 25W).

PROGRAMMING

FREQUENCY SELECTION

Frequency selection in the RCI-2950/2970 can be accomplished using three of the following methods:

1. The first method of frequency selection is through the use of the **SHF** (Shift) key and the Up and Down arrows. To accomplish this, press the **SHF** button until the cursor arrow is positioned under the digit of the frequency that is to be changed. Then use the Up arrow to increase the number. If a decrease in frequency is desired, press the Down arrow. Perform the steps described above for each digit of the frequency until the desired frequency is displayed in the LCD display window.
2. The second method of frequency selection is accomplished using the **SHF** button and the frequency select knob located above the microphone jack. Use the **SHF** button in the manner described above to select the digit to be changed. Then proceed to rotate the frequency select knob clockwise to increase the frequency. Rotate the frequency select knob counterclockwise to decrease the frequency.
3. The third method of selecting the operating frequency of the radio is through the use of the **SHF** button and the channel Up and Down button located on the microphone. Frequency selection by this method is accomplished in the same manner as with the Up and down arrows on the key pad. The only difference is that the channel Up and Down buttons on the microphone are used.

While in receive mode, once a signal has been detected on a particular frequency, it may be necessary to slightly change the frequency to provide the best audio through the speaker. This can be accomplished by rotating the clarifier control to vary the frequency by ± 0.5 kHz. After this fine tuning has been accomplished, press the **LOCK** button to lock in the frequency at the point of best reception.

RECEIVE SCANNING

The receive scanning allows you to find active frequencies in the entire band segment. To begin scanning, slowly turn the Squelch control clockwise until the receiver noise disappears. Press the Scan button. The unit should start scanning from the lower to the higher frequencies. Pressing the Scan button again will change the direction of scanning. Each time you press the Scan button, "SCAN + " or "SCAN-" will be displayed on the LCD display. The scan will stop on any active frequency for an entire duration of the transmission. When the transmission stops, the RCI-2950/2970 will wait approximately 2 seconds before it resumes scanning. If you want to deactivate Scan mode while it's scanning, press the MAN (manual) button or turn the Squelch control counter-clockwise until you hear the receiver noise. The Manual button will disable the Scan function.

SPLIT FUNCTION

This function enables you to split the transmit and receive frequencies for FM repeater operation. To split frequencies, press the MAN button and the Split button to select + split frequency. If you want -split frequency, press the Split button again. If + split is selected, the transmit frequency will be higher than the receiver frequency. If -split is selected, it will be lower than the receiver frequency. (See OFFSET FREQUENCY OPERATION, p14, for more information.)

MEMORY FUNCTION

The RCI-2950/2970 can store up to 10 most frequently used channels (from 0 to 9). To program a frequency into memory, follow the procedure described below:

1. Press the MAN button.
2. Press the PRG button.

3. Press the MEM button ("MEMORY" and "0" should appear on the left-hand side of the LCD display.) Pressing the MEM button will advance the channel number from "0" to "9."
4. Select the desired frequency you wish to store in memory.
5. Press the ENT button.
6. Repeat the same procedure to program other memory channels.

MEMORY CHANNEL SCANNING

You can scan and select any of these 10 pre-set frequencies by following the procedure described below:

1. Press the MAN button.
2. Press the MEM button.
3. Slowly turn the Squelch knob clockwise until the receiver noise disappears.
4. Press the Scan button. The unit will scan from lower to higher frequencies. When you press the button again, it will scan from higher to lower frequencies.
5. To stop scanning a certain channel, press the MAN button, or turn the Squelch knob counterclockwise until you hear the receiver noise.

METERING

The meter built into your RCI-2950/2970 on the left hand side of the LCD display provides the following instructions:

1. S/R/F Meter: In transmit mode, it provides a visual indication of transmit output power, and received signal strength on the receive mode.

2. SWR Meter: This enables you to check SWR. To use this mode, push the SWR button on the front panel, and the PTT switch on the microphone. A bar on the meter is an indication of the antenna matching. If there is no bar, it indicates that your antenna system is perfectly matched. The less bar, the better matched. If several bars appear, your antenna needs adjusting.

FREQUENCY SCANNING

Frequency scanning can be achieved using one of two methods: the first method involves the scanning of pre-programmed memory channels; the second method will permit the user to scan all frequencies between a pre-set upper and lower scan limit. Both methods of frequency scanning follow.

ALL- FREQUENCY SCANNING

To allow All Frequency Scanning, one must first program the upper and lower scanning limits. The scan limits are simply the highest and lowest frequencies that will be scanned to program these limits, perform the following steps:

1. Press the PRG (Program) key.
2. Press the SCAN key. ("PRG SCAN + " should appear in the lower right corner of the display window.)
3. Using the SHF key and the Up and Down arrows, select the upper scan limit, then press ENT.
4. Press the SCAN key again. ("SCAN - " should appear in the display window.)
5. Using the SHF key and the Up and Down arrows, select the lower scan limit, then press ENT.

The upper and lower scan limits have now been programmed. To activate the scan feature, return the radio to manual operation and press the **SCAN** button. If the display shows "**SCAN +**", the radio will scan from the lower limit to the upper limit. If "**SCAN -**" is displayed, the unit will scan from the upper limit to the lower limit. To change from **SCAN +** to **SCAN -** or vice versa, press **SCAN**.

NOTE: When programmed, the upper and lower scan limits will also act as the upper and lower operating limits of the radio. The radio cannot now be programmed to operate above or below the scan limits.

MEMORY SCANNING

The RCI-2950/2970 has 10 non-volatile (i.e., memory resident) memory locations which can be programmed with any available frequency within the operating band of the radio. The scan function of the unit can be programmed to scan these memory channels. The radio will then scan only those memory channels which have been programmed.

The first step in utilizing the memory scan function is programming the desired frequencies into the radio memory. This can be accomplished by performing the following steps:

1. With the radio operating in the manual mode, press the **PRG** (Program) key.
2. Press the **MEM** (Memory) key. "**PRG**" should be displayed in the lower right-hand corner of the LCD display window. In the upper left portion of the display, "**MEMORY**" should be displayed. Directly below **MEMORY**, a number between 0 and 9 will be displayed. This number represents the memory location currently being displayed. Pressing the **MEM** key will increase the memory counter to the next memory location and the contents of that memory location will be displayed.
3. Using the **SHF** key and the Up and Down arrows, enter the frequency to be stored in the memory location displayed. After the desired frequency has been entered, press **ENT**.

4. Repeat steps 2 and 3 for all of the memory locations to be programmed.

5. After all desired memory locations have been programmed with frequencies, return the unit to the manual mode of operation by pressing the **MAN** key.

6. To initiate memory scanning, press **MEM** and then press **SCAN**. As previously discussed, the display will show "**SCAN +**" or "**SCAN -**" to indicate whether the radio is scanning from the lowest to the highest memory location or vice versa. To return the radio to normal (non-scanning) operation, press the **MAN** key.

OFFSET FREQUENCY OPERATION

The RCI-2950/2970 has an offset or split frequency feature that will permit the radio to be operated in a half-duplex mode. This will allow the user to talk on FM repeaters operating in the 10 Meter band. (NOTE: The FM repeaters may require a sub-audible (CTCSS) tone be transmitted to gain access to the repeater. The RCI-2950/2970 is not factory-equipped with a CTCSS encoder/decoder.) The split frequency function offsets the transmitter frequency either above or below the receive frequency by a user programmable amount. In the following example, programming of a 100kHz offset will be described. Before attempting to program the offset frequency, ensure that the radio is operating in the manual mode by pressing the **MAN** key.

1. Press the **PRG** (Program) key.
2. Press the **SPLIT** key. The LCD display window will display "00000" with "**PRG**" and "**SPLIT**" being displayed in the lower left-hand corner.
3. Using the **SHF** key and the Up and Down arrows as described earlier, program the display to read "01000."
4. Press **ENT**. A 100kHz offset has now been programmed into the radio.

5. Return the radio to manual operation by pressing the **MAN** key.
6. Using the **SHF** key and the Up and Down arrows as described previously, set the radio for the desired receive frequency.
7. Press **SPLIT**. In the lower right corner of the display, either "**SPLIT +**" or "**SPLIT -**" will be displayed. If **SPLIT +** is displayed, the transmitter will be offset 100kHz above the receive frequency when keyed. If **SPLIT -** is displayed, the transmitter will be offset 100kHz below the receive frequency.

NOTE: When the transmitter is keyed, the frequency display will change to show the frequency being transmitted.

LIMITED WARRANTY

RANGER Communications, Inc. warrants that your RANGER product is free of defects in material and workmanship for a period of 12 (twelve) months after initial retail purchase. RANGER will, in this period, repair or replace, at its option, any RANGER product returned to its warranty repair station **FREIGHT PREPAID**. Additionally, RANGER will, for a period of 12 (twelve) months after initial retail purchase, provide required repair parts for any RANGER product returned to its warranty repair station. A return authorization number must be obtained from RANGER Customer Service before any returns can be accepted.

The RANGER warranty covers repair or replacement of the product **ONLY**. RANGER is not responsible for costs of removal, reinstallation or shipping to the place of repair. RANGER does not extend or modify the warranty period as a result of repair or replacement.

RANGER reserves the right to void a warranty or make reasonable charges for repair of a product which displays evidence of misuse, abuse or alteration of basic design.

RANGER is not responsible for damage to any other equipment or property, or any other consequential or incidental damages of any kind, whether based on contract, negligence, or strict liability. Maximum liability shall not in any case exceed the purchase price of the unit.

Warranties give you (the buyer) specific legal rights. You may also have other rights which vary from state to state. This warranty is extended only to RANGER products purchased in the United States of America or its possessions.