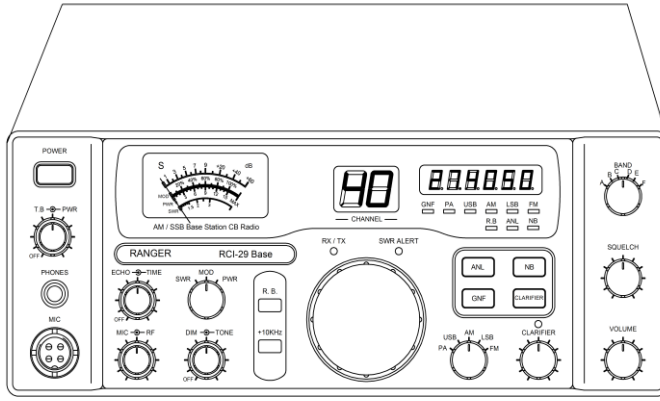
RANGER
Communications, Inc.

RCI-29 Base

AM/FM/SSB
10 Meter
Amateur Base Station



User's Manual

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Chapter 1 Specifications

GENERAL

Model	RCI-29 Base
Frequency Range	28.7650 ~ 29.2050 MHz
Emission	USB, LSB, AM, FM
Frequency Control	Dual Phase-lock-loop Synthesizer
Frequency Tolerance	0.005%
Frequency Stability	0.001%
Operating Temperature Range	-20^{0}C to +50^{0}C
Microphone	Plug-In (4-Pin), 400Ω Dynamic PTT
AC Input Voltage	100VAC ~120VAC (60Hz/50Hz)
AC Power Consumption	300W
Antenna Connectors	Standard SO-239 Type
Antenna Impedance	50 ohm
Meter	RF Power Output/Antenna SWR Signal Strength/AM Modulation

TRANSMITTER

RF Power Output	AM :25W RMS FM :60W AM/USB/LSB :80W PEP
SSB Generation	Dual-Balanced Modulation
AM Modulation	Class B Amplitude Modulation
FM Deviation	±4KHz @ 1KHz 30mV Audio (±5KHz max.)
Clarifier Range	±1 KHz
Harmonic and Spurious Emission	Better than 60 dB
AM/FM Frequency Response	400 to 5000 Hz
SSB Frequency Response	400 to 3000 Hz
Output Impedance	50 Ohms Unbalanced
Output Indicators	RF Meter shows relative RF Output Power

NOTE

Amateur Radio License is required to operate this device. For licensing information within the United States of America, visit http://www.fcc.gov, for residence of Canada, visit http://www.rac.ca

Specifications (Continued)

RECEIVER

Sensitivity	AM/CW : 0.50uV for 10dB S+N/N FM : 0.25uV for 12dB S+N/N USB/LSB : 0.15uV for 10dB S+N/N
AM/FM Selectivity	50dB at 10 KHz
SSB Selectivity	60dB at 4 KHz
Image Rejection	More than 50dB
IF Rejection	More than 80dB
AGC	SSB/FM/AM 80 dB for 50mV for 10 dB Change in Audio Output
Squelch	Adjustable-Threshold less than 0.7 uV
Audio Frequency Response	400 to 2500 Hz
Distortion	Less than 10% at 2Watts Output into 8 Ohms
Adjacent Channel Rejection	>50 dB
Cross Modulation	>50 dB
Intermediate Frequency	10.695MHz (AM-1st, SSB), 455KHz (AM-2nd)
Clarifier Range	±1 KHz
Noise Blanker	IF Single Gate Type
Audio Output Power	More than 3 Watts into 8 Ohms
Built-in Speaker	8 Ohms
External Speaker (Optional)	Disables Internal Speaker when connected

(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.)

Chapter 2 Introduction

Thank you for your confidence in selecting the RCI-29 Base 10m Band Amateur transceiver. We know you will find your transceiver as exciting as it is practical. Many years of valuable experience designing electronic products are behind our communications systems. Only the highest quality components are incorporated into our radios to assure reliability and maximum performance.

Installing and operating your transceiver is not complicated, but the flexibility provided by its numerous operating features may not be fully appreciated until a little time is spent becoming familiar with its controls and connections. It will be to your advantage to save all the packing materials cartons, fillers, cushioning, etc; they will prove valuable preventing damage should you ever have occasion to transport or ship your transceiver to your dealer.

Chapter 3 Installation

A) **Location/Connection**

The transceiver should be placed in a convenient operating location close to an AC power outlet and the antenna lead in cable(s).
The transceiver is attached with the AC power cord set. Proceed as follows to complete all necessary connections to the transceiver.

1. Your transceiver has a standard type SO-239 antenna connectors located on the rear panel for easy connection to standard PL-259 coax plugs. If the coax antenna cable must be made longer, use coax cable with impedance of 50 ohms and use only enough cable to suit your needs. This will insure a proper impedance match and maximum power transfer from the transmitter to the antenna.

2. **AC Power Operation**: 100～120 VAC (60Hz/50Hz) power input.

B) **Noise Interference**

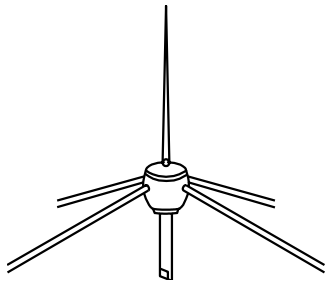
There are several kinds of noise interference you may encounter in fixed operation. Some of these noise sources are; fluorescent buzz, nearby commercial broadcast, electrical appliance, lawnmower, and electrical storms, etc. Commercial products are available to reduce interference from these sources. Consult your dealer or professional amateur radio supply shops.

C) **Antennas**

For best transmission and reception, you should use an antenna especially cut for a frequency 28-30 MHz (10 meter bands). Antennas are purchased separately and include installation instructions. Numerous types of antennas are available in that range from simple verticals and dipoles to directional beams or quads, which provide gain and directivity. Often the difference in performance between antennas can make quite a difference in receiving and transmitting performance.

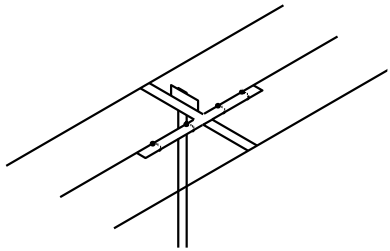
Installation (Continued)

1. **Vertical Ground Plane Antenna**: These omni-directional antennas can provide optimum performance for DX work due to their low angle of radiation.



Ground Plane

2. **Directional Beam Antenna**: Concentrates power in a narrower beam thereby providing gain and directivity.



Directional Beam Antenna

D) **Remote Speaker**

The external speaker jack (EXT. SP.) on the rear panel is used for remote receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 3 watts. When the external speaker is plugged in, the internal speaker is disconnected.

NOTE

The PHONE jack on the front panel overrides both external and internal speakers. When the plug from a headphone is plugged to the PHONE jack, both internal and external speakers are silenced simultaneously.

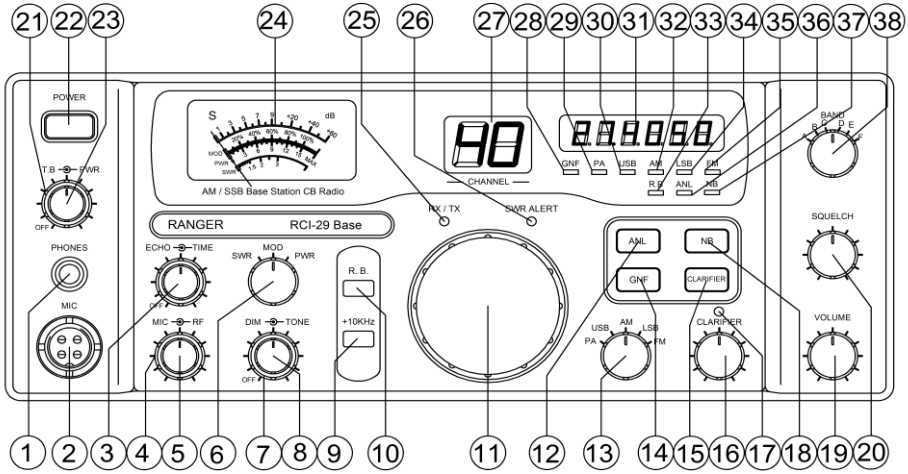
E) **Public address**

An external 8 Ohms, 4W speaker must be connected to the PA jack located on the rear panel when the transceiver is used as a public address system. The speaker should be directed away from the microphone to prevent acoustic feedback. Physical separation or isolation of the microphone and speaker is important when operating the PA at high output levels.

Chapter 4 Operation

A) Controls and Indicators

i) Front Panel



1. **PHONE JACK:** Used to connect headphones for listening.

2. **MICROPHONE JACK:** Used to connect microphone for voice source.

3. **ECHO/TIME CONTROL:** The ECHO control is used for echo effect. The TIME control is used to control the intervals of the echo sound.

4. **RF GAIN:** This control is used primarily to improve reception in strong signal areas. Under normal operating conditions, the control should be turned fully clockwise. When strong overloading or distorted signals are received**,** rotate this control counterclockwise to reduce gain.

5. **MICROPHONE GAIN:** Experiment with this control for the setting that will provide you with best transmit audio quality. Avoid over modulation, which causes interference and “splatter”. In the Public Address(PA) mode, the control functions as the volume control.

Operation (Continued)

6. **SWR/MOD/PWR SWITCH:** This switch controls the function of the meter during the transmit mode. In the "SWR" position, the meter indicates the Standing Wave Ratio (SWR) of your antenna(accurate at maximum power output). There are no adjustments because the SWR circuit in this radio calibrates itself automatically. When the switch is in the "MOD" position, the green scale on the meter indicates your percentage of modulation. It is most accurate when testing at maximum power output. This operates in AM only, not in SSB. When this switch is in "PWR" position, the meter indicates your power output.

7. **TONE CONTROL:** This control changes tone quality in receive only. In clockwise rotation, treble is increased and in counter clockwise rotation, bass is increased.

8. **DIMMER CONTROL:** This Knob controls the level of brightness for the meter lamp , counter display and channel display.

9. **+10KHz SWITCH :** In the +10KHz position, the transmit and receive frequency is shifted 10KHz up.

10. **ROGER BEEP SWITCH:** In the Roger Beep position, the radio transmits an audio tone at the end of your transmission to indicates that transmission has ended. As a courtesy to other, use the Roger Beep only when necessary.

11. **CHANNEL SELECTOR:** This control is used to select a desired transmit and receive channel.

NOTE

The Squelch Control may require readjustment with reduced RF Gain control.

Operation (Continued)

12. **ANL/OFF SWITCH:** In the "ANL" position, the Automatic Noise Limiter is activated.

13. **MODE SWITCH**: This control allows you to select one of the following operating modes: AM/FM/USB/LSB/PA.

14. **GNF/OFF SWITCH:** This filter de-emphasizes audio high frequency response in order to increase the signal-to-noise ratio of weak signals. While you will notice a dramatic reduction in the "rushing" sound when this filter is active, it does not have much effect on the signal-to-noise ratio of strong signals

15. **CLARIFIER/OFF SWITCH:** Pushing this switch turns the Clarifier on and off.

16. **CLARIFIER CONTROL:** When activated allows of the receive frequency above or below the channel frequency by up to 800Hz.Although this control is intended primarily to tune in SSB signals, it may be used to optimize AM signals as well. When transmit and clarifier switch off, transmit frequency will function.

17. **CLARIFIER LED:** This LED light when the clarifier is on.

18. **NB/OFF:** In the "NB" position, the Noise Blanker is activated. The Noise Blanker is very effective in eliminating repetitive impulse noise such as ignition interference.

19. **VOLUME CONTROL:** Turn clockwise to set the desired listening level.

20. **SQUELCH CONTROL:** This switch is used to eliminate background noise being heard through the receiver which can be disturbing when no transmission are being heard through the received. To use this feature, turn the switch fully counterclockwise and then turn clockwise slowly until the background noise is just eliminated. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signal will be heard at a maximum clockwise setting.

Operation (Continued)

21. **PWR CONTROL:** This control allow the user to adjust RF power output.

22. **POWER ON/OFF CONTROL:** Pushing this switch to apply power to the unit.

23. **TALKBACK CONTROL:** Turn clockwise to activate Talkback circuit. Adjust this knob for desired volume of Talkback. This is used to monitor your own voice. For example, you could use this feature to compare different microphone.

24. **FRONT PANEL METER:** The Front Panel Meter allows the user to monitor signal strength, RF output power, SWR level and AM Modulation level.

25. **TX/RX LED:** The red LED indicates the unit is in the transmit mode. The blue LED indicates the unit is in the receive mode.

26. **SWR ALERT LED:** This LED lights red when your SWR is higher than about 3:1. This is not an exact indicator of 3:1 SWR, but it is an indication that you should check your SWR reading.

27. **CHANNEL DISPLAY:** The channel display indicates the current selected channel.

28. **GNF LED:** This LED lights red when GNF is on.

29. **PA LED:** This LED lights red when GNF is on.

30. **USB LED:** This LED light red when USB is on.

31. **FREQUENCY COUNTER:** This display indicates the frequency of the selected channel.

32. **AM LIGHT:** This LED light red when AM is on.

33. **RB LIGHT:** This LED light red when RB is on.

Operation (Continued)

34. **LSB LIGHT:** This LED light red when LSB is on.

35. **FM LIGHT:** This LED light red when FM is on.

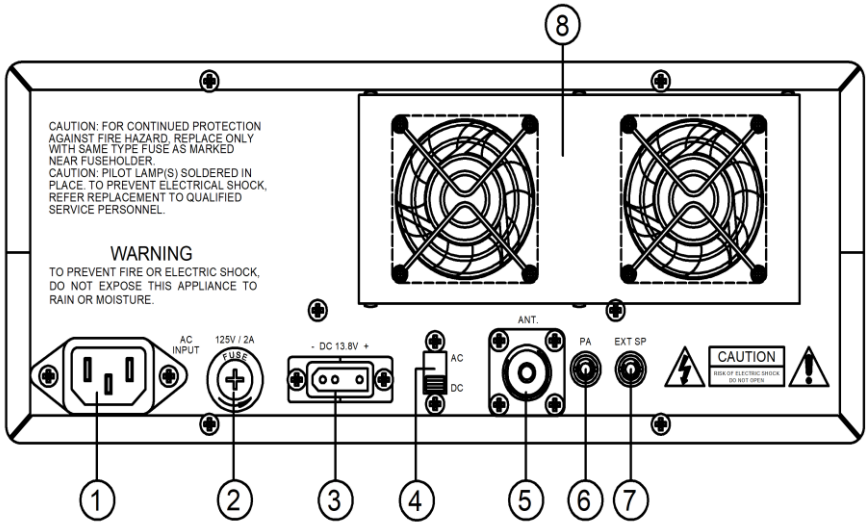
36. **ANL LIGHT:** This LED light red when ANL is on.

37. **NB LIGHT:** This LED light red when NB is on.

38. **BAND:** This switch is used to select the band.

Operation (Continued)

ii) **Rear Panel Connectors**



1. **AC POWER CORD:** Connect to AC power outlet for ac main supply.
   - Reminder: The internal switching power supply's default AC input voltage setting is 110/120Vac. If the input voltage is 220/240Vac, you need to switch it to 220Vac on the switching power supply before plugging it into the 220～240Vac source.

2. **FUSE:** Accommodates a fuse for AC input circuit protection. Use 125V 2A fuse for replacement.

3. **DC POWER:** This accepts 13.8V DC power cable with built-in 20A fuse. The power cord provided with the radio has a black and red wire. The black goes to negative and red goes to positive.

4. **AC/DC POWER SELECTOR:** This control is used to select a desired power supply of AC power or DC power.

5. **ANTENNA:** This jack accepts 50 ohms coaxial cable with a PL-259 type plug.

Operation (Continued)

6. **PA JACK:** This jack is for PA operation. Before operating, you must first connect a PA speaker (8 ohms, 4W) to this jack.

7. **EXT. SP:** This jack accept 4 to 8 ohms, 5 watt external speaker. When the external speaker is connected to this jack, the built-in speaker will be disabled.

8. **FAN:** The fan will start rotating after the device is powered on, enabling it to maintain high efficiency performance.

NOTE

Before replacing the fuse, see your dealer to check and find out the reason why the fuse was blown. Replacing without checking the cause may only blow the fuse again.

Operation (Continued)

B) **Microphone**

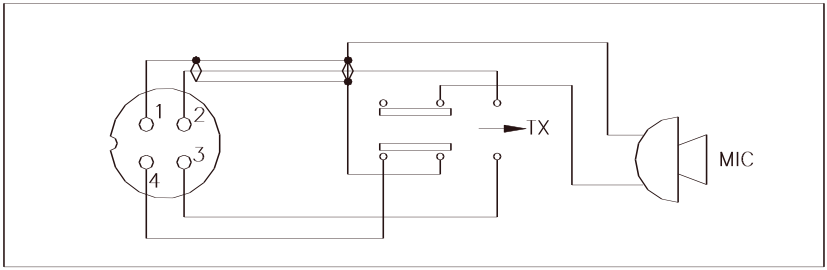
The receiver and transmitter are controlled by the push-to-talk switch on the microphone. Press the switch and the transmitter is activated, release switch to receive. When transmitting hold the microphone two inches from the mouth and speak clearly in a normal “voice”. This transceiver comes complete with a low-impedance dynamic microphone.

For best results, the user should select a low-impedance dynamic type microphone or a transistorized microphone.

The microphone should provide the functions shown in schematic below.

4 WIRE MIC CABLE

Pin Number	***Mic Cable Lead***
1	Audio Shield
2	Audio Lead
3	Transmit Control
4	Receive Control



Microphone Schematic Diagram

C) Operating Procedure (Receive Mode)

1. Turn the unit on by setting the POWER SWITCH to ON position. The meters, Frequency Indicator, and Function Indicators will illuminate.
2. Set the MODE SELECTOR switch to desired mode.
3. Set the SQUELCH CONTROL in fully counterclockwise position and adjust the VOLUME control for a comfortable listening level.
4. Set the CLARIFIER to the center (12 o'clock) position.

IMPORTANT:
Make sure that the ANTENNA and MICROPHONE are connected before you operate.

D) Operating Procedure To Transmit

1. Select the desired operating frequency.
2. If the frequency is clear, depress the Push-to-Talk switch on the microphone. Speak in a normal tone of voice.

E) **Microphone Gain Control**

Start at the 12 o'clock position. Experiment with the control for a setting that provides best transmit audio as reported by other stations. Turning the Mic Gain up too high will cause unnecessary transmit audio distortion, splatter and interference to stations on adjacent frequencies.

F) **Public Address Operation**

To use this feature, a speaker having a voice coil impedance of 8 to 16 Ohms and a power handling capability of at least 3 Watts should be connected to the PA SP jack on the rear panel. Be sure that there is physical separation between the microphone and the PA speaker itself. If the PA speaker is located very close to the microphone, acoustic feedback will result when the PA amplifier is operated at high volume (or when PA is used indoors). Adjustment of PA volume is made with MIC GAIN control.

G) SWR Measurement

This feature is necessary for proper antenna tuning. A properly cut antenna provides the proper impedance match to the transceiver. A well-matched antenna, as evidenced by low SWR, increases your output power and allows the final amplifier to run cooler and last longer. To measure your antenna's SWR:

1. Turn the unit ON.
2. Set the Mode switch to AM position.
3. Set the MIC GAIN CONTROL to minimum.
4. Set the RF POWER CONTROL to maximum.
5. Ensure frequency is clear.
6. Press the Push-to-Talk switch on the microphone and turn the Calibrate Control clockwise (out of detent position) so that the SWR meter pointer exactly coincides with the set mark on the scale. Release the Push-to-Talk switch.
7. Activate the SWR button. Press the Push-to-Talk switch again. The SWR of your antenna is read directly on the scale.

NOTE

An SWR below 2 or less is desired as this indicates that over 95% of the applied power is being radiated into the air and not dissipated as heat.

Memo

Memo

Ranger Communication, Inc. (Ranger) warrants to the original purchaser only this product against defects in material or workmanship, as noted below.

Effective December 1, 2001, Ranger Communications, Inc.'s Amateur and CB radio products are covered by a one (1) year limited warranty:

The above products are warranted for the specified period from the original date of purchase as shown on the original purchaser's bill of sale, receipted invoice, or other proof of purchase. After this period, the original purchaser must pay for any labor at the prevailing rate either at an authorized Ranger warranty repair facility or at the factory.

In the event of a defect during the warranty period, Ranger shall, at its option, repair or replace the defective product. Such action shall constitute the purchaser's exclusive remedy under this warranty.

A Return Authorization Number must be obtained from the Ranger Customer Service Department before any returns for warranty repair will be accepted. Send the defective product postage-paid, along with proof of the date of purchase (photocopy of the original invoice or receipt). Please contact RCI for Return Authorization at:

Ranger Communications, Inc.
867 Bowsprit Road
Chula Vista, CA 91914
E-mail: sales@rangerusa.com

This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, improper installation, UNAUTHORIZED MODIFICATION, or any action in violation of the product's instruction manual. This warranty is valid only in the U. S. A.

1. "Limited" means that we will repair problems that are caused by factory defects, only for the above-mentioned products and time limit, at no charge. Work performed by qualified technicians who did not cause any damage to the radio will not void the warranty. Problems or damage caused by unqualified or misinformed technicians, operator abuse or other miscellaneous actions may be able to be repaired, but there will be a charge. This warranty is limited to the radio only.

2. Generally, if the warranty sticker is removed or cut, the radio is considered "Void of Warranty". However, our policy is to be as lenient as we can, and to take this into consideration. We will usually repair the radio - under warranty - if no abuse or misuse is found. Radios that have parts removed cut or clipped; or the PCB has been damaged, will not be repaired under warranty.

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