RE2000 ALPHA
PORTABLE RACING SCANNER

User's Manual

R.E. RACING ELECTRONICS

REA-00 5-98

PACKING LIST

1 – RE2000 Alpha Scanner Unit
1 – ANT2 Flexible Antenna
1 – REA-03 AC Adapter
1 – RT-00 Earphone
1 – REA-01 Belt Clip
1 – REA-02 Carrying Strap
1 – Instruction Manual (P/N REA-00)

CAUTION
Do NOT operate a damaged scanner.

FCC COMPLIANCE

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

WELCOME

Statistics show that about 80 percent of you will not look at this manual until after you've already taken the scanner out of the box, tried to assemble it, played around with it, and at some point came up with something you didn't understand.

So much for this box over here.

IMPORTANT
To prevent possible damage, read all instructions before operating this scanner.

Even if you are reading this before operating your scanner, you're still not planning on reading all the instructions before you try to listen to your scanner, are you?

Well, just be careful because as our warranty states, Racing Electronics isn't going to cover defects caused by:

- Physical abuse or misuse of the scanner
- Neglect or accident
- Improper use or installation of the scanner
- Repair or alteration by unauthorized personnel

PRODUCT DESCRIPTION

Receiver

- Hand-held racing scanner
- Multiband AM/FM scanning monitor
- Microprocessor controlled
- Double-conversion
- Superheterodyne
- 200 programmable channels

Bands

- Auto racing bands
- CB band
- Aircraft communications band
- 10M, 6M, 2M, and 70 cm amateur (Ham) bands
- Standard and extended UHF public safety and business bands
- Low and high VHF bands
- High VHF and UHF government bands
- 800 MHz band (cellular telephone frequencies not included)
- CB and aircraft communications bands using AM (Amplitude Modulation)
- Other covered bands using FM (Frequency Modulation)

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PREPARATION FOR USE

UNPACKING

Unpack the scanner from the carton and check for damage. If the scanner is damaged, contact the place of purchase as required by the warranty.

BATTERY INSTALLATION

The scanner can be operated with four AA-size rechargeable or nonrechargeable batteries. For nonrechargeable batteries, the alkaline type provide the longest operating life.

The door of the battery compartment is located on the left side of the scanner (see Figure 1). Firmly slide the door down and then swing it up. Remove the battery holder from the compartment by carefully pulling on the tab located on the end of the holder.

Install four AA batteries in the holder, matching the positive (+) and negative (-) ends of the batteries as shown. Slide the holder back into the compartment. You can only slide the holder into the compartment one way. Swing the door down and then slide it up until the door locks in place.

Replace or recharge the batteries when the low battery indicator BATT appears in the display on the scanner. Do not leave dead batteries in the scanner because battery leakage could occur and cause damage. See page 22 for additional battery information.

WARNING

Do **NOT** plug the AC adapter into the scanner unless Ni-Cd rechargeable batteries (such as the optional accessory battery pack) or NO batteries are installed. Regular batteries, such as zinc-carbon or alkaline, may **EXPLODE** if recharging is attempted.

AC ADAPTER USE

The supplied AC adapter provides the necessary 12 VDC with a coaxial-type DC power plug that mates with the external power jack located on the right side of the scanner.

ANTENNA CONNECTION

To install the antenna, place the antenna on the antenna connector (see Figure 1), and turn its base clockwise until the antenna locks in place.

SCANNER VIEWS

Figure 1. Scanner views

CONTROLS AND CONNECTORS

POWER/VOLUME CONTROL (PWR/VOL)

Turn this control clockwise to turn the scanner **ON** and increase the volume level at the speaker or ear jack.

SQUELCH CONTROL (SQL)

Use the squelch control to eliminate background noise and reduce battery drain while not receiving a signal. The scanner must be squelched (turn control counterclockwise until no noise is heard) for proper scan, WX scan, or search operation. Turning the control fully counterclockwise will help eliminate very weak or intermittently received signals.

CHANNEL SELECTOR (CHAN)

Use this rotary control to select channels or tone codes. If turned while the scanner is in scan, WX scan, or search mode, the scanner goes into manual mode. The channel selector is also used to select alpha-numeric characters when programming a channel identifier.

ANTENNA CONNECTOR (ANT)

Although the supplied flexible antenna is normally used, other antennas can be used as long as the antenna is 50 ohms and has a BNC-type connector.

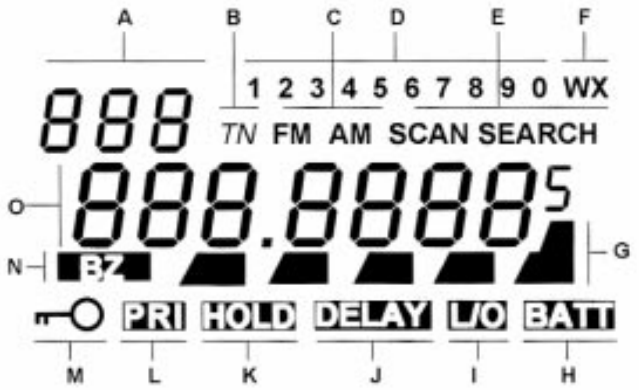
EARPHONE JACK (EAR)

Use the 3.5mm earphone jack for connecting to an earphone (supplied) or external speaker. The impedance of the earphone or external speaker can be 8 ohms or greater. When the earphone jack is used, the internal speaker is disconnected. This jack can also be used for programming the scanner from a computer or cloning the scanner from another scanner.

12 VDC JACK (DC 12V)

Use the coaxial DC power jack with the supplied AC adapter or any external 12 VDC source capable of supplying 200 mA. *The polarity of the mating connector must be properly matched or the scanner is likely to be damaged.* As noted above the jack, the inner conductor is positive (+) and the outer conductor is negative (–).

LCD DISPLAY DETAILS



A. Indicates channel number (1–200), tone code (0–154) or search limit (Lo or Hi)

B. Displayed when tone (CTCSS or DCS) decode is selected

C. Indicates whether a channel is FM or AM

D. Indicates which bank(s) is activated in scan mode

E. Indicates if scan or search mode has been selected

F. Displayed when weather (WX) scan is selected

G. Indicates relative signal strength (maximum is five bars)

H. Displayed when battery voltage is low

I. Indicates channel is locked out from scan mode

J. Displayed when scan or search delay is selected

K. Displayed when search hold is selected

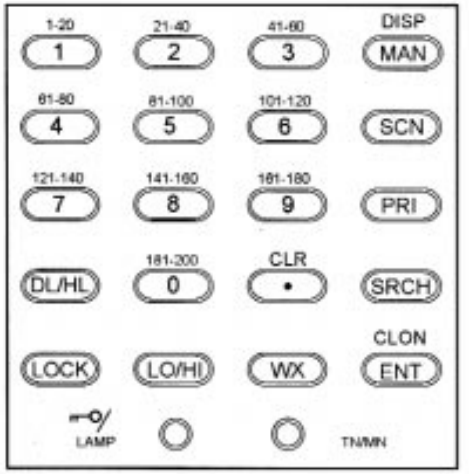
L. Displayed when priority feature is enabled

M. Displayed when the keypad is locked (keys disabled)

N. Indicates displayed channel is receiving a signal

O. Displays channel or search frequencies, channel identifiers, tone frequencies, or DCS codes and various messages such as SCAN or PSCAN

KEYPAD DETAILS



NOTE

The small numbers (such as 1–20 or 21–40) just above the number keys refer to the channels included in the bank that the respective number key selects. For example, the number key **4** selects bank **4**, which includes channels 61–80.

MAN (manual), **SCN** (scan), **SRCH** (search) and **WX** (weather scan) — **Mode Keys**

PRI (priority), **TN/MN** (tone/monitor) and **⊶/LAMP** (keypad lock/display backlight) — **Feature Keys**

LOCK (channel lockout) and **DL/HL** (delay/hold) — **Function Keys**

ENT (enter) and **LO/HI** (low/high search limits) — **Program Keys**

Channel number (001–200), bank number (1–9, 0), frequency (26.00000–960.00000 MHz), and tone code (000–154) — **Number Keys**

DISP (display channel identifiers or access alpha programming) and **CLON** (access cloning function of scanner) — **Special Keys**

•/CLR (decimal point/clear) — **Other Key**

INTRODUCTION

On the RE2000 Alpha Racing Scanner, there are three ways to find a frequency you can listen to:

- Scan for frequencies you have already programmed into the scanner.
- Use the search mode to find new frequencies.
- Press the **WX** key to listen to weather frequencies.

If you don't know which frequency you want to listen to, you can start with search mode on page 18. If you do know which frequencies you want to hear, continue with the programming instructions on the next page.

REMEMBER

To make sure you don't accidently break your scanner, read the directions carefully.

REMINDER

If non-rechargeable-type batteries are installed, do **NOT** plug in the AC adapter or any other external 12 VDC source until after the batteries are removed. Only batteries clearly marked rechargeable Ni-Cd (Nickel-Cadmium) can be left in the scanner when the 12 VDC jack is used.

PROGRAMMING

GENERAL

The scanner has 200 channels available for your choice of frequencies. Programming is done in manual mode. The scanner will emit a tone each time a key is pressed, indicating proper key operation.

CHANNEL FREQUENCY

1. Press **MAN** if the scanner is not already in manual mode.
2. Press the number keys corresponding to the desired frequency. For example, press **16255** for the frequency of 162.5500 MHz.
   - The decimal point does not have to be pressed if three digits have already been entered before the decimal is required.
   - If the frequency is not within one of the specified band ranges, the frequency will be forced to the limit of the nearest band.
   - If you make an error while entering the frequency, press **CLR** *twice* and start over.
3. Press **ENT** (enter). A small bar in the upper left corner of the display will be blinking, which means you can now enter the channel number.
4. Press any number between 1 and 200 to select the channel where you want that frequency to be stored.
5. Press **ENT**. The keyed-in frequency is now entered into the selected channel, and that channel can now receive a signal.
6. If you want to select a tone code, go to Step 7 on the next page.

NOTE

If a channel number is displayed, the frequency has already been programmed for that channel.

NOTE

The first channel in all banks is a priority channel. Channel 1 of bank 1 is the highest priority channel. See page 15 for more details.

NOTE

If the channel does not require a tone code (CTCSS or DCS), go to Step 10. Tone Code 000 requires no tone.

GO

See Tables 1 and 2 on pages 24–25 for tone codes vs. CTCSS tone frequencies and DCS codes.

7. Press **ENT** again. A small digit (usually a 0) will be blinking in the upper left corner of the display.
8. You can select the tone code in two different ways:
   - Press any number between 1 and 154.
   - Use the channel selector to select the tone code:

     Rotate the knob until the desired code and/or tone frequency or DCS code is displayed.
9. Press **ENT**. The keyed-in frequency and its associated tone code are now entered into the selected channel.
10. To program another channel, go back to Step 2.

Frequencies with the same purpose, such as police or fire, should be entered into channels that are in the same bank. For example, channels 1–20 (bank 1) could be used for police frequencies; channels 21–40 (bank 2) could be used for emergency or fire frequencies. This way, a group (bank) of related frequencies can be quickly scanned by itself.

TIP

Use the blank forms on pages 26–28 to plan and/or record the channel information for your scanner.

CHANNEL IDENTIFIER

Up to seven alphanumeric characters can be assigned to each channel to help identify its purpose, location, etc. The characters (referred to as alpha) can be selected to make a name, such as *WALTRIP*, *ARCA*, and *SAFETY 1*.

NOTE

These same characters are also available when the scanner is programmed by a computer.

The following characters are available for use:

All 26 letters of the alphabet (UPPER CASE)

13 lower case letters: a b c d e h i m n o r t u

14 special symbols: – ? = _ * / \ > < ' $ ↓ ↑ ▩

10 numbers: 0–9

1 space

To program a channel identifier, follow these eight steps:

1. Press **MAN** if the scanner is not already in manual mode.
2. Select the channel to be programmed by performing one of the following three steps:
   - Turn the channel selector knob until the desired channel is reached.
   - Repeatedly press **MAN** until the desired channel is shown.
   - Press the desired channel number (01–200), and then press **MAN**.
3. Press and hold **DISP** (**MAN**) until you hear four tones: one beep (high tone), one boop (low tone), and then two boops. The scanner is now in alpha programming mode. The display will no longer be showing the frequency.

NOTE

The alpha programming mode can be activated for only one channel at a time. For each channel to be programmed with alpha, repeat this procedure starting with Step 2 above.

4. If the channel has not been previously programmed with alpha characters, the frequency area of the display will be blank. If the channel has already been programmed with alpha characters, the display will now show the current channel name with the first character (left end) slowly blinking.

   - Rotate the channel selector knob clockwise to select one of the 39 alpha or 14 special characters.

   - Rotate the channel selector knob counterclockwise to select one of the 10 numbers (0–9).

5. After the desired character is displayed, press **DISP** to enter the character and advance to the next character to be selected. A beep will signify this entry. If you make a selection error and you already pressed **DISP**, press **CLR** and go back to Step 2 on the previous page.

6. Repeat steps 4 and 5 until the desired name (1–7 characters) is programmed.

7. Press **ENT** to store the name in the alpha memory of the channel. This key press will also remove the scanner from the alpha programming mode. Go back to Step 2 on the previous page if you want to program another channel with alpha.

NOTE

A space is the first character shown if the channel was not previously programmed with alpha. Otherwise, the space is located between 9 and A.

OTHER PROGRAMMING METHODS

The scanner can be programmed with the desired frequencies, tones, and identifiers by two other methods. One method uses a computer with a serial port operating under Windows 95® and Racing Electronics programming software. The software and the necessary interface cable are included in the optional accessory, Programming Kit RE2000-PCKIT.

The other programming method is cloning, which is the transfer of the programmed information of one scanner into another scanner. If several scanners are to be identically programmed, only one scanner (called the master) needs to be programmed. Then the program on the master can be transferred to the other scanners (called slaves). An optional accessory, Cloning Kit RE2000-CC, provides the cloning cable and instructions. The special key **CLON** is used for this method.

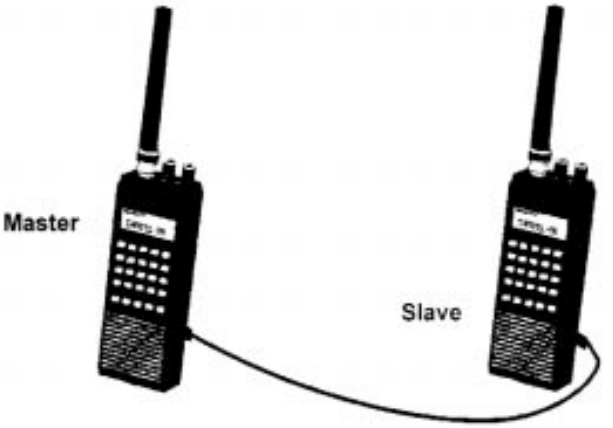


Figure 2. Cloning a scanner

GENERAL

After you have programmed the channels with the frequencies of your choice, you can operate the scanner in one of its two major modes, manual or scan.

Adjust the volume by turning the **PWR/VOL** control knob to increase or decrease the audio output. If necessary, first turn the squelch control knob (**SQL**) clockwise until "noise" is heard. Then set the volume control to a comfortable listening level.

> **TIP**
>
> Battery life is maximized if the scanner is squelched when not actually receiving a signal.

Turn the squelch knob counterclockwise until noise is no longer heard. The scanner is now squelched. While in scan or search mode, the squelch control might need to be turned slightly more counterclockwise to a setting that permits proper scanning or searching operation.

Tone Decoder

A tone code allows your scanner to receive only selected frequencies on a channel so you only have to hear the people who know your tone code. To use the built-in CTCSS and DCS decoder, press **TN/MN** on the bottom of the keypad. A small TN will appear on the top of the display when the decoder is enabled. The tone decoder is operational only in manual and scan modes.

When the scanner is using tone decode, no audio will be heard if a signal with a non-matching or improper tone (CTCSS or DCS) is received. In manual mode, even though the signal strength indicator shows any or all bars and BZ is displayed, no audio will be heard unless the correct tone is on the signal. To hear the audio, press the **TN/MN** key again to disable the tone decoder. A channel with tone code 000 does not need a tone for proper reception at any time.

In scan mode, the scanner will not stop on the frequency (or channel) unless the proper tone is on the signal.

Alpha Display Function

To enable the alpha display function, press and hold **DISP** for approximately 1 second or until two beeps are heard. The channel identifier (if programmed) will be displayed continuously when in manual mode and only while stopped on a channel when in scan mode. To disable the alpha display function, press and hold **DISP** for approximately 1 second or until a beep and a boop are heard.

Lamp Function

Press and release the **O/LAMP** key on the bottom of the keypad to illuminate the display and keypad. Each time you press this key, the light will remain on for approximately 3 seconds. If you press any other key during this time, the 3-second duration starts again.

Keypad Lock Function

To prevent accidently changing the channel, you can lock the keypad. Press and hold the **O/LAMP** key for approximately 2 seconds until two beeps are heard. The display will show a small O, indicating the keypad is now locked. No response (no beeps) will be heard when any of the keys are pressed. With the keypad locked, no changes can be made to the current operational status of the scanner from the keypad.

You can switch modes with the keypad locked by turning the channel selector knob. If the knob is turned only one position, the scanner will remain on the channel that the scanner has stopped on. If the knob is turned several positions, the displayed channel will be some channel in sequence after the scan channel. Turn the knob clockwise for higher frequencies and counterclockwise for lower frequencies.

Rotate the channel selector to switch from scan, search, or weather modes to manual mode.

To unlock the keypad and return to the original mode (scan, search, or WX scan), press and hold the **O/LAMP** key until two boops are heard. The keypad is now unlocked, and you can select the mode you want next.

MANUAL MODE

General

To monitor one channel continuously, press **MAN**. The channel can then be selected in one of three ways:

1. Press **MAN** repeatedly.
2. Turn the channel selector until the channel number (and frequency or identifier) appears in the display.
3. Enter the channel number, and then press **MAN** again.

A channel selected in manual mode that had been previously locked out during the scan operation will show L/O in the display. You can press **LOCK** to change its status for later scanning.

Delete a Channel

To delete a channel (remove or erase from memory), select the channel while in manual mode and then press **CLR**. The display will show "dEL. chP" for approximately 1 second. During this time, press **ENT** (YES), and the channel will then be deleted from the memory. A priority channel cannot be deleted if the priority feature is enabled.

Review a Channel Tone Code

To review the tone code (CTCSS or DCS) programmed for a channel, select the desired channel while in manual mode. Press **ENT**, and the tone code and actual CTCSS tone or DCS code will be displayed. Press **ENT** again or **MAN** and the display will show the channel number and frequency.

Priority Feature Enabled

The first channel of all banks is a priority channel. Channel 1 of bank 1 is the highest priority and will override the other priority channels (21, 41, 61, etc.) if Channel 1 becomes active (signal present).

To enable the priority feature, press **PRI**. The display will show PRI. When a channel other than a priority channel is manually selected (in manual mode), the scanner will sample the priority channels approximately every 2 seconds. If any activity is found on a priority channel, the scanner will stay on that channel and monitor its transmission. After the transmission is completed, the scanner will remain on the priority channel for approximately 2 seconds and then return to the nonpriority channel. To disable the priority feature, press **PRI** again.

Battery Saver Feature

With the scanner in manual mode and not receiving a signal, battery saver conserves battery power by reducing the normal standby 65 mA current drain. Out of every 600 milliseconds, the current is automatically reduced to 11 mA for 300 milliseconds. Thus, the average current drain is reduced to approximately 38 mA.

SCAN MODE

General

To scan for the channels that are programmed into the scanner, press **SCN**. The display will show SCAN and "SCAN" until an active channel is found. The scanner will stay on that channel until activity stops.

If ALL channels in all banks are locked out, the display will momentarily show "no CHn " and then the last channel selected in manual mode. The scanner will NOT scan unless at least one channel is enabled or not locked out.

To select the bank(s) to be scanned, press **SCN** and the number key of the bank. The number of each selected bank will be displayed in small numbers on the top of the display. A bank can also be deselected at this time by pressing the number of the bank again. If all banks are deselected, bank 1 will automatically remain enabled (selected).

A channel can be locked out while the scanner is in scan mode whenever a signal is found on the channel and scanning has stopped. Press **LOCK** and the scanning will instantly resume and bypass the channel thereafter.

To unlock or restore a channel into the scanning sequence, press **MAN**. Then either repeatedly press **MAN** or turn the channel selector until the desired channel is in the display, or enter the channel number and press **MAN** again. Press **LOCK** and then **SCN** to return to scan mode.

The scan list (channels programmed and not locked out) can be reviewed by two methods. One method is to turn the channel selector slowly and observe if LO is displayed or not. Another method is to open squelch (turn squelch control fully clockwise) and observe which channels are displayed as you repeatedly press **SCN**.

Delay

When a proper signal is received on a channel, the scanning will stop and the audio of that channel will be heard. After activity ceases (signal no longer present) on the channel, the scanner will stay on that channel for approximately 1/2 second if delay is not selected, or 2 seconds if delay is selected. Then the scanning will resume. Press **DL/HL** to enable scan delay. The display will then show DELAY. To disable scan delay, press **DL/HL** while the scanner is in scan mode.

Priority Feature Enabled

To enable the priority feature, press **PRI**. The display will show PRI. While scanning, PSCAN will be displayed.

Channel 1, even if locked out, will always be included in the scan list if priority is enabled and will be sampled for a signal approximately every 2 seconds whenever the scanner has stopped on another channel.

The other priority channels can be locked out from the scan list and thus also from priority sampling. In addition, if the respective bank of the other priority channels is not selected for scanning, the channels will not be sampled even though not locked out as a channel. Think of these priority channels as a secondary-type priority channel. If you want to check a channel periodically for a signal, use Channel 1 and press **PRI**.

The sequence of sampling priority channels always starts with Channel 1. If no signal is present, then Channel 21 is checked for a signal. If none is on Channel 21, then Channel 41 is checked and so on, providing you selected their banks to be scanned. This sequence continues until the first channel of the current bank is checked. Then if no signals are found, the scanner returns to the nonpriority channel it had stopped on.

SEARCH MODE

General

The scanner includes a search function so you can find new frequencies in addition to those you already know. The search function can locate active frequencies anywhere within a band. These active frequencies, if desired, can then be assigned to a regular channel for manual or scan operation.

The following frequency increments (steps) are used in search mode:

- 5 kHz 26.0–54.0 MHz & 136.0–174.0 MHz
- 25 kHz 118.0–136.0 MHz
- 12.5 kHz 406.0–520.0 MHz & 806.0–960.0 MHz

Programming Search Limits

Two frequencies are used in search mode. One frequency is called the low (or start) search limit, and the other frequency is the high (or end) search limit. The scanner searches for any active frequency within these two limits. The search automatically starts over again after the high limit is reached. The limits do not have to be in the same band, but the overall search time will be reduced if they are. See the frequency ranges for each band on the Specifications page (page 23).

NOTE

If the high limit is lower in frequency than the low limit, "Error" will appear in the display when **SRCH** is pressed. If this happens, press **LO/HI** *once* and key in a new low limit, or press **LO/HI** *twice* and key in a new high limit. Press **ENT** after either one of these actions to store the new limit.

To program the limits of a band, press **LO/HI**. The scanner can be in any mode. The display will show "Lo" in the upper left corner. In addition, the display will show a frequency (if previously programmed) or "___.____" with the first bar blinking. Key in the low limit frequency and press **ENT**, which will store the low limit in memory.

Press **LO/HI** again. This time, "Hi" will appear in the upper left corner of the display. Key in the high limit frequency and press **ENT** to store the high limit in memory.

After the search limits have been properly programmed, press **SRCH** and SEARCH will appear in the display. The scanner will start to search for any active frequencies within the defined limits. When an active frequency is found, the scanner will stop searching, display the frequency, and reproduce any audio associated with it.

After finding an active frequency, the scanner will resume searching:

- Any time **SRCH** is pressed again
- Approximately 2 seconds after the activity stops on that frequency when DELAY is in the display
- Only after **SRCH** is pressed when HOLD is in the display

Delay/hold can be selected anytime while in search mode, except when programming the limits. Press **DL/HL** to toggle from delay to hold or vice versa.

While the scanner has stopped on an active signal, that frequency can be assigned to any one of the 200 possible channels. Press **ENT** and the display will prompt (a blinking bar in upper left corner of the display) for a channel number.

Key in a channel number (1–200) and press **ENT** again. The scanner will then immediately resume searching, starting with the next frequency in sequence.

Birdies

While searching, the scanner might stop on a frequency that does not have any audio but is almost always present. In most cases, this frequency is a "birdie." A birdie can be the result of internally generated signals and/or externally generated signals that mix and appear to be a proper signal (but without any modulation). Some sources of externally generated signals are TV stations, TV receivers, home computers, and other nearby radios. Because these frequencies usually vary from location to location, they are impossible to list or predict.

To reduce or eliminate the effect of birdie frequencies, a special lockout function is provided for the search mode. Whenever the scanner stops on one of these frequencies, press **LOCK** and that frequency will no longer be part of the current search sequence. Up to 100 frequencies can be locked out. When the birdie list or memory is full (100 frequencies locked out), the display will show "FULL " and no more frequencies can be locked out.

Proper signals can also be locked out. This option can be helpful, for example, if some highly active frequencies keep stopping the search operation.

To clear the birdie list, reprogram the search limits.

Priority Feature Enabled

To enable the priority feature, press **PRI**. The display will show PRI . The scanner will sample the priority channel approximately every 2 seconds. If activity (signal present) is found, the scanner will stay on that priority channel until 2 seconds after the activity ceases and then the scanner will resume searching.

WEATHER (WX) SCAN MODE

The National Weather Service (NWS) provides a 24-hour broadcast of local area weather conditions. These weather messages are repeated until the next updated report is issued. The NWS has broadcast facilities in most areas of the country, especially around metropolitan areas.

The scanner has a set of eight preprogrammed channels (frequencies) reserved exclusively for scanning for these weather messages. The Canadian Weather frequency (161.650 MHz) is also included. To have the scanner automatically scan the frequencies of the NWS, press **WX**. The display will briefly show SCAN and WX in the upper right corner.

The scanner will stop at every weather frequency that is strong enough in your area. In some areas of the country, more than one of the eight possible frequencies might be received. Press **WX** again to see if the scanner stops on a different frequency.

If you do receive more than one frequency, find out which frequency is the closest to your location. The number of relative signal-strength bars (5 maximum) should indicate which signal is strongest and therefore the nearest facility. For example, a signal that has four or five bars displayed is stronger than one with three bars displayed. Note the frequency of the stronger signal for future reference.

NOTE

The WX frequencies cannot be locked out, which is why you need to note the frequency of the nearest facility if more than one frequency can be received. If you are still not sure which frequency covers your area, the local police or radio/TV station can provide the information.

Priority Feature Enabled

To enable the priority feature, press **PRI**. The display will show PRI . The scanner will sample the priority channel approximately every 2 seconds. If activity (signal present) is found, the scanner will stay on that priority channel until 2 seconds after the activity ceases and then return to WX scan.

RECHARGEABLE BATTERY INFORMATION

GENERAL

Rechargeable Ni-Cd batteries (such as the Racing Electronics optional battery pack) are usually shipped not fully charged. Charge the battery as soon as possible after installation. The AC adapter (or external 12 VDC supply) will fully charge the 4 AA rechargeable cells in 14–16 hours.

FOR BEST PERFORMANCE

1. Charge the batteries to full capacity. Allow 14–16 hours with the AC adapter.
2. Use the batteries as soon as possible and use as much of their capacity as possible. Typically 3–5 charge–discharge cycles are required to bring new batteries up to their rated capacity.
3. Store and charge batteries at a room temperature of 65°F–75°F (18°C–24°C).
4. If you repeatedly charge the batteries without fully discharging them, the batteries could end up with a reduced capacity. If you suspect such a condition, use the batteries until BATT is displayed, and then fully recharge and fully discharge the batteries again. After you repeat this cycle 3–5 times, full capacity should then be available.

NOTE

The rechargeable batteries are automatically charged when the AC adapter is plugged in the scanner.

IMPORTANT

Ni-Cd batteries must be recycled or disposed of properly.

SPECIFICATIONS

(Subject to change without notice)

Number of Channels	200
Number of Banks	10; 20 Channels per Bank
Band Frequency Range	
CB (AM)	**26.000– 28.995 MHz**
10 M Amateur	**29.000– 29.700 MHz**
Low VHF	**29.700– 50.000 MHz**
6 M Amateur	**50.000– 54.000 MHz**
Aircraft Communications (AM)	**118.000– 137.000 MHz**
Government (Military)	**137.005– 144.000 MHz**
2 M Amateur	**144.000– 148.000 MHz**
High VHF (including weather)	**148.000– 174.000 MHz**
UHF Government	**406.000– 420.000 MHz**
70 cm Amateur	**420.000– 450.000 MHz**
UHF – Standard	**450.000– 470.000 MHz**
UHF – Extended	**470.000– 520.000 MHz**
800 MHz	**806.000– 824.0375 MHz**
	848.975– 869.0375 MHz
	893.975– 960.0000 MHz
Sensitivity (12 dB SINAD)	
26.0 – 29.0 MHz	0.5 µV, Max. (10 dB S/N)
29.0 – 54.0 MHz	0.5 µV, Max.
118.0 – 137.0 MHz	0.7 µV, Max. (10 dB S/N)
137.0 – 174.0 MHz	0.5 µV, Max.
406.0 – 520.0 MHz	0.5 µV, Max.
806.0 – 960.0 MHz	0.5 µV, Max.
Selectivity (Adjacent Channel)	-50 dB, Min.
Audio Output @ 10% THD	300 mW, Min.; w/Batteries
	450 mW, Min.; w/Adapter
Scan Speed	Up to 100 Chan./Sec.
Search Speed	100 Increments/Sec.
Search Lockouts	100 Frequencies
Priority Sampling Rate	Once every two seconds
Earphone Impedance	8 Ohms, Min.
Antenna Impedance	50 Ohms; BNC Connector
Power Requirements	
Internal	6 VDC; 4 AA pencell batteries
External	12 VDC; AC Adapter
Current – Standby (w/o BATT Saver)	65 mA; Typically; w/Batteries
– Standby (w/BATT Saver)	38 mA; Typically; w/Batteries
– Max. Audio	170 mA; Typically; w/Batteries
– Charge (for Ni-Cd only)	60 mA; Typically; w/Adapter
FCC Certified	Part 15

Table 1. Tone Codes vs. CTCSS* Tones

Code #	TONE (Hz)	Code #	TONE (Hz)	Code #	TONE (Hz)
000	No Tone	017	118.8	034	218.1
001	67.0	018	123.0	035	225.7
002	71.9	019	127.3	036	233.6
003	74.4	020	131.8	037	241.8
004	77.0	021	136.5	038	250.3
005	79.7	022	141.3	039	69.4
006	82.5	023	146.2	040	159.8
007	85.4	024	151.4	041	165.5
008	88.5	025	156.7	042	171.3
009	91.5	026	162.2	043	177.3
010	94.8	027	167.9	044	183.5
011	97.4	028	173.8	045	189.9
012	100.0	029	179.9	046	196.6
013	103.5	030	186.2	047	199.5
014	107.2	031	192.8	048	206.5
015	110.9	032	203.5	049	229.1
016	114.8	033	210.7	050	254.1

*Continuous Tone Coded Squelch System.

Table 2. Tone Codes vs. DCS* Codes

STD Tone Code	DCS Code		INV Tone Code
	STD	INV	
051	023	047	058
052	025	244	090
053	026	464	127
054	031	627	141
055	032	051	059
056	036	172	082
057	043	445	121
058	047	023	051
059	051	032	055
060	053	452	123
061	054	413	117
062	065	271	100
063	071	306	102
064	072	245	091
065	073	506	131

*Digital Coded Squelch. The frequency could use a Standard (STD) or Inverted (INV) DCS code. Select the appropriate tone code as indicated.

Table 2. Tone Codes vs. DCS* Codes (cont)

STD Tone Code	DCS Code		INV Tone Code
	STD	INV	
066	074	174	083
067	114	712	148
068	115	152	077
069	116	754	154
070	122	225	087
071	125	365	113
072	131	364	112
073	132	546	136
074	134	223	086
075	143	412	116
076	145	274	101
077	152	115	068
078	155	731	050
079	156	265	098
080	162	503	130
081	165	251	093
082	172	036	056
083	174	074	066
084	205	263	097
085	212	358	111
086	223	134	074
087	225	122	070
088	226	411	115
089	243	351	110
090	244	025	052
091	245	072	064
092	246	523	133
093	251	165	081
094	252	462	126
095	255	446	122
096	261	732	151
097	263	205	084
098	265	156	079
099	266	454	124
100	271	065	062
101	274	145	076
102	306	071	063
103	311	664	146
104	315	423	118
105	325	526	134
106	331	465	128
107	332	455	125
108	343	532	135
109	346	612	139
110	351	243	089

STD Tone Code	DCS Code		INV Tone Code
	STD	INV	
111	356	212	085
112	364	131	072
113	365	125	071
114	371	734	152
115	411	226	088
116	412	143	075
117	413	054	061
118	423	315	104
119	431	723	149
120	432	516	132
121	445	043	057
122	446	255	095
123	452	053	060
124	454	266	099
125	455	332	107
126	462	252	094
127	464	026	053
128	465	331	106
129	466	662	145
130	503	162	080
131	506	073	065
132	516	432	120
133	523	246	092
134	526	325	105
135	532	343	108
136	546	132	073
137	565	703	147
138	606	631	142
139	612	346	109
140	624	632	143
141	627	031	054
142	631	606	138
143	632	624	140
144	654	743	153
145	662	466	129
146	664	311	103
147	703	565	137
148	712	114	067
149	723	431	119
150	731	155	078
151	732	261	096
152	734	371	114
153	743	654	144
154	754	116	069

PROGRAM INFORMATION

Use this form to record the programmed information of the scanner.

Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
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Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___

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PROGRAM INFORMATION

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Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
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Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___
Ch. ___	Frequency ___ Tone or Code ___	Ch. ___	Frequency ___ Tone or Code ___

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OWNER'S FREQUENCY LIST

Use this form to make your own frequency list.

FREQUENCY	SERVICE	FREQUENCY	SERVICE

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DEFINITIONS and ACRONYMS

Alpha Program Mode	The mode from which you enter letters and numbers into the scanner display
AC	Alternating Current
AM	Amplitude Modulation
Beep	A short high-frequency tone
Birdie	A signal that appears to be a proper signal but has no modulation
Boop	A short low-frequency tone
BX	Busy
Channel Identifier	Alphanumeric name you choose for a channel
CLON	Clone
CTCSS	Continuous Tone Coded Squelch System
dB	Decibel, unit for expressing the relative intensity of a sound
DL	Delay
DC	Direct Current
DCS	Digital Coded Squelch
DISP	Display
ENT	Enter
FCC	Federal Communications Commission
FM	Frequency Modulation
HL	Hold
INV	Inverted
LCD	Liquid Crystal Display
MAN	Manual
Manual Mode	The mode from which you program the scanner
MHz	Megahertz, a unit of frequency
MN	Monitor

DEFINITIONS and ACRONYMS

A variation of the amplitude, frequency, or phase of a signal	Modulation
Nickel-Cadmium	Ni-Cd
Unit of electrical resistance	Ohm
Priority	PRI
A channel more important than others, ex., Police, Fire	Priority Channel
The mode from which you scan programmed channels	Scan Mode
Scan	SCN
The mode from which you search for unprogrammed channels	Search Mode
Search	SRCH
The control that eliminates background noise	Squelch
Standard	STD
Tone	TN
A subaudible tone for selective listening	Tone Code
Volts Direct Current	VDC
Weather	WX

TROUBLESHOOTING GUIDE

NOTE: Please perform the following simple checks before returning the scanner for service.

TROUBLE	CHECK
No display, no sound	Turn PWR/VOL control clockwise. Charge or replace batteries. Plug in AC adapter properly.
Display OK, no sound	Turn volume control setting clockwise.
No reception (no stations heard)	Check antenna connection. Re-enter correct frequencies. Stations are too far away.
Weak or poor reception	Turn squelch control fully clockwise and then counterclockwise until the "noise" just disappears. Stations are too far away.
Does not scan	Turn squelch control fully clockwise and then counterclockwise until SCAN appears in the display. Check to see if channels are locked out.
Does not search	Turn squelch control fully clockwise and then counterclockwise until displayed frequency rapidly increments. Check to see if search limits are correct.
Search stops on frequencies without stations	Birdies — See page 20.
Keypad buttons don't work	Disable the Keypad Lock — See page 13.
Unit doesn't operate very long with rechargeable-type batteries	Batteries should be charged at least 14–16 hours for proper service life — See page 22.

NOTE

For in-warranty service information, read the Racing Electronics warranty statement on the inside back cover.

For service, in or out of warranty, contact

Customer Service Department
Racing Electronics
1-800-272-7111

For future reference, record the serial number and date purchased below.

Serial No. _____ Date Purchased _____

Dealer _____

WARRANTY

RACING ELECTRONICS
1 YEAR LIMITED WARRANTY

Racing Electronics and its subsidiaries warrant to the original purchaser that should Racing Electronic's products, within the periods specified below, prove to be defective by reason of improper workmanship and/or material, Racing Electronics will, at its option, repair or replace any defective product, or refund the purchase price of the product, for a period of one (1) year from the date of purchase as shown on the original purchaser's sales receipt. For the full year of the warranty period, labor to perform warranty service will be provided without charge. Thereafter, the purchaser must pay for labor at the prevailing rates of the Authorized Warranty Repair Center or Racing Electronics. Parts necessary to provide warranty service will be provided at no charge for the entire warranty period. Any product that is repaired or replaced under this warranty will be warranted to be free of defects in material and workmanship for the remainder of the original warranty period.

1. To obtain warranty service, bring the following to the retailer from whom you purchased the product:
   - The defective product
   - Proof of purchase (your sales receipt or other documents showing the date of purchase)

   Costs of transportation, removal, reinstallation or similar costs must be paid by the purchaser.

2. This warranty does not cover defects caused by
   - physical abuse or misuse of the product,
   - neglect or accident,
   - improper use or installation of the product, or
   - repair or alteration by unauthorized personnel

3. ANY EXPRESS WARRANTY NOT PROVIDED HEREIN, AND ANY REMEDY FOR BREACH OF CONTRACT WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION OR OPERATION OF LAW, IS HEREBY EXCLUDED AND DISCLAIMED.

4. ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR ANY PARTICULAR PURPOSE, ARE HEREBY EXCLUDED AND DISCLAIMED.

5. UNDER NO CIRCUMSTANCES SHALL RACING ELECTRONICS BE LIABLE TO PURCHASER OR ANY OTHER PERSON FOR ANY OTHER BREACH OF WARRANTY, BREACH OF CONTRACT, OR OTHERWISE, OR FOR ANY INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES.

6. Equipment and accessory items not manufactured by Racing Electronics are excluded from this warranty.

7. This warranty applies only to Racing Electronics products sold by dealers within the United States and used exclusively in the United States.

8. Racing Electronics reserves the right to modify or change the equipment in whole or in part at any time prior to delivery in order to include refinements deemed appropriate by Racing Electronics, but without incurring any liability to (i) modify or change any equipment previously delivered, or (ii) supply new equipment in accordance with earlier specifications.

9. This written warranty constitutes the final, complete and exclusive statement of warranty terms and no person is authorized to make any other warranties or representations on behalf of Racing Electronics.

FEATURES

Automatic Scanning

Any combination of 2 to 20 channels within a bank and up to 10 banks of channels can be scanned automatically.

Manual Mode

Any single channel can be monitored continuously.

Weather Channels

The weather can be monitored by the press of a single button.

Search Function

The search function helps locate unknown frequencies within any of the included bands.

Search Hold or Delay

This function can be selected for holding or delaying the resumption of searching after an active frequency is found.

Illumination

This feature lights up the display and keypad for nighttime viewing.

Liquid Crystal Display (LCD)

The LCD provides useful information such as:

- Mode
- Channel number
- Channel frequency, channel identifier (alphanumeric label)
- Bank(s) selected for scanning
- Signal strength

Other Features

The RE2000 Alpha Scanner also includes:

- One priority channel per bank
- Scan delay
- Channel lockout
- Birdie lockout
- Keypad lock
- Tone (CTCSS and DCS) decode
- Battery saver
- Direct channel access