

Cat. No. 20-514

OWNER'S MANUAL

Please read before using this equipment.

PRO-89

200-Channel Racing Scanner

RadioShack

INTRODUCTION

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Your new RadioShack PRO-89 200-Channel Race Scanner lets you in on all the action in the pits at the big race or on the streets of your home town. This scanner gives you direct access to over 33,500 exciting frequencies, including those used by participants and staff at auto races, police and fire departments, ambulance services, and amateur radio services. You can select up to 200 channels to scan, and you can change your selection at any time.

The secret to your scanner's ability to scan so many frequencies is its custom-designed microprocessor – a tiny, built-in computer. Your scanner also has these special features:

Five Service Banks – lets you search preset frequencies in separate fire/police, air, ham radio, car race, and marine banks, to make it easy to locate specific types of calls.

Two-Second Scan Delay – delays scanning for 2 seconds before moving to another channel, so you can hear more replies.

Ten Channel-Storage Banks – you can store up to 20 channels in each of 10 different banks, to group channels so you can more easily identify calls.

20 Monitor Memories – let you temporarily save up to 20 frequencies you locate during a search, so you can move selected frequencies to channel storage later.

Memory Backup – keeps the channel frequencies stored in memory for about 1 hour during a power loss.

Triple Conversion Superheterodyne Receiver – virtually eliminates any interference from intermediate frequency (IF) images, so you hear only the frequency you select.

HeperSearch™ and HyperScan™ – let you set the scanner to search at up to 50 steps per second and scan at up to 25 channels per second, to help you quickly find interesting transmissions.

Duplicate Frequency Check – automatically notifies you if you are about to store a frequency you have already stored, to help avoid wasting storage space.

Direct Search – lets you search for new and unlisted frequencies starting from a specified frequency.

Priority Channel – lets you designate a channel to be scanned every two seconds so you do not miss important calls.

Weather Band Key – scans 7 pre-programmed weather frequencies to keep you informed about correct weather conditions.

Weather Alert – automatically sounds the alarm tone to advise of hazardous weather conditions when it detects the alert signal on the local NOAA weather channel.

Lock-Out Function – lets you set your scanner to skip over specified channels or frequencies when scanning or searching.

Key Lock – lets you lock the scanner's keys to help prevent accidentally changing the scanner's programming.

Two Supplied Antennas with BNC Connector – lets you select the antenna that best meets your needs. The supplied stub antenna helps your scanner receive strong local signals and makes the scanner easy to carry and use at events. The supplied flexible antenna provides excellent reception and is designed to help prevent antenna breakage.

Liquid Crystal Display – makes it easy to view and change programming information.

Display Backlight – makes the scanner easy to read in low light situations.

Three Power Options – let you power the scanner from internal batteries (non-rechargeable batteries, rechargeable batteries, or external AC power (using optional adapters).

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Hypersearch and Hyperscan are trademarks used by Tandy Corporation.

We recommend you record your scanner's serial number here. This number is on the scanner's back panel.

Serial Number: _____

Your PRO-89 scanner can receive all of these frequencies:

- . 29-54 MHz
- . 108-136.9875 MHz
- . 137-174 MHz
- . 380-512 MHz
- . 806-823.9875 MHz
- . 849-868.9875 MHz
- . 894-960 MHz

This Owner's Manual also includes the section "A General Scanning Guide" to help you target frequency ranges in your service area so you can search for a wide variety of transmissions.

FCC NOTICE

Your scanner **might cause TV or radio interference** even when it is operating properly. To determine whether your scanner is causing the interference, **turn off your scanner**. If the interference goes away, **your scanner is causing the interference**. Try the following methods to eliminate the interference.

- . Move your scanner away from the TV or radio.
- . Connect your scanner to an outlet that is on a different electrical circuit from the TV or radio.
- . Contact your local RadioShack store for help.

If you cannot eliminate the interference, the FCC requires that you stop using your scanner.

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

Note: Mobile use of this scanner is unlawful or requires a permit in some areas. Check the laws in your area.

SCANNING LEGALLY

Scanning is a fun and interesting hobby. You can hear police and fire departments, ambulance services, government agencies, private companies, amateur radio services, aircraft, and military operations. It is legal to listen to almost every transmission your scanner can receive. However, there are some electronic and wire communications that are illegal to intentionally intercept. These include:

- . telephone conversations (cellular, cordless, or other private means of telephone signal transmission)
- . pager transmissions
- . scrambled or encrypted transmissions

According to the *Federal Electronic Communications Privacy Act (ECPA)*, as amended, you could be fined and possibly imprisoned for intentionally listening to, using, or disclosing the contents of such a transmission unless you have the consent of a party to the communication (unless such activity is otherwise illegal). These laws change from time to time and there might be state or local laws that also affect legal scanner usage.

CONTENTS

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PREPARATION

POWER SOURCES

You can power your scanner from any of three sources:

- . internal batteries (not supplied – see “Using Batteries”)
- . standard AC power (with an optional AC adapter – see “Using Standard AC Power” on Page 9)
- . vehicle battery power (with an optional DC adapter – see “Using Vehicle Battery Power” on Page 9)

Notes:

- . Connecting an AC or DC adapter to the scanner disconnects internal batteries when you use the supplied non-rechargeable battery holder, but it does not disconnect internal batteries when you use the supplied rechargeable battery holder.
- . If you install the rechargeable battery holder, you can operate the scanner and recharge the rechargeable batteries at the same time. See “Using Batteries” and “Charging Rechargeable Batteries” on Page 10.
- . If the scanner stops working properly after connecting it to power, try resetting it. See “Resetting/Initializing the Scanner” on Page 54.

Using Batteries

You can power the PRO-89 with four AA batteries. For the longest operation and best performance, we recommend alkaline batteries, available at your local RadioShack store.

You can use either the supplied non-rechargeable black battery holder, or the supplied rechargeable yellow battery holder. If using the rechargeable battery holder, we recommend nickel-cadmium batteries or nickel-metal hydride batteries.

Warning: Never install non-rechargeable batteries in the rechargeable battery holder. Non-rechargeable batteries can get hot or explode if you try to recharge them.

Note: You must charge rechargeable batteries before using either the first time. See "Charging Rechargeable Batteries" on Page 10.

Follow these steps to install batteries.

1. Press down on the battery compartment cover on the rear of the scanner and slide the cover in the direction of the arrow to remove it.

add illustration.

2. Pull up the battery holder out of the battery compartment.

add illustration.

3. If you are installing individual batteries, insert four AA batteries in the battery holder as indicated by the polarity symbols (+ and -) marked on the holder.

Cautions:

- . Use only fresh batteries of the required size and recommended type.
- . Always remove old or weak batteries. Batteries can leak chemicals that destroy electronic circuits.
- . Do not mix old and new batteries, different types of batteries (alkaline or rechargeable), or rechargeable batteries of different capacities.

4. Put the battery holder into the compartment.

add illustration.

Caution: The battery holder fits only one way inside the battery compartment. Do not force it.

5. Replace the cover.

When battery power is low, B appears and the scanner beeps continuously. When battery power is exhausted, the scanner turns itself off. Replace all four non-rechargeable batteries, or recharge the rechargeable batteries. See "Charging Rechargeable Batteries" on Page 10.

Caution: Always dispose of old batteries promptly and properly. Do not bury or burn them.

Using Standard AC Power

To power the scanner from AC power, you need AC adapter (Cat. No. 273-1767)

Warning: Do not use an AC adapter's polarized plug with an extension cord, receptacle, or other outlet unless the blades can be fully inserted to prevent blade exposure.

Cautions:

. You must use an AC adapter that supplies 9 volts and delivers at least 300 milliamps. Its center tip must be set to positive, and its plug must correctly fit the scanner's PWR jack. The recommended adapter meets these specifications. Using an adapter that does not meet these specifications could damage the scanner or the adapter.

. When you finish using the AC adapter, disconnect it from the AC outlet first, then disconnect it from the scanner.

Plug the adapter's 1.75 mm inner diameter/4.8 mm outer diameter barrel plug into the scanner's PWR jack. Then plug the adapter's power module into a standard AC outlet.

add illustration.

Using Vehicle Battery Power

To power the scanner from your vehicle's cigarette-lighter socket, you need a DC adapter, such as Cat. No. 273-1810.

Cautions:

. You must use a DC adapter that supplies (regulated) 9 volts and delivers at least 300 milliamps. Its center tip must be set to positive, and its plug must correctly fit the scanner's PWR jack. The recommended adapter meets these specifications. Using an adapter that does not meet these specifications could damage the scanner or the adapter.

. To protect your vehicle's electrical system, always plug the adapter into the scanner before you plug it into your vehicle's cigarette-lighter socket. Always unplug the adapter from the vehicle's cigarette-lighter socket before you unplug it from the scanner.

add illustration.

1. Connect the DC adapter's 1.75 mm inner diameter/4.8 mm outer diameter barrel plug to the adapter's cable, with the tip set to positive.
2. Set the adapter's voltage switch to 9V.
3. Insert the barrel plug into the scanner's PWR jack.
4. Plug the other end of the adapter into your vehicle's cigarette-lighter socket.

Note: If the scanner does not operate properly when you connect a DC adapter, unplug the adapter from the cigarette-lighter socket and clean the socket to remove ashes and other debris.

Charging Rechargeable Batteries

Your scanner has a built-in charging circuit that lets you charge rechargeable batteries while it is in the scanner. To charge rechargeable batteries, simply connect an appropriate AC adapter (Cat. No. 273-1767A) to the PWR jack.

It takes between 14-16 hours to recharge rechargeable batteries (Ni-Cd Battery: 700 mAh) that is fully discharged. You can operate the scanner while recharging the rechargeable batteries, but charging takes longer.

Notes:

- . Do not overcharge nickel-cadmium batteries. If you overcharge the Ni-Cd batteries, it will get hot or short the life time.
- . Rechargeable batteries last longer and deliver more power if you occasionally let them fully discharge. To do this, simply use the scanner until B appears on the display. Then fully charge the rechargeable batteries.

Important: At the end of a rechargeable battery's useful life, it must be recycled or disposed of properly. Contact your local, county, or state hazardous waste management authorities for information on recycling or disposal programs in your area. Some options that might be available are: municipal curbside collection, drop-off boxes at retailers such as your local RadioShack store, recycling collection centers, and mail-back programs.

CONNECTING THE ANTENNA

The supplied stub antenna helps your scanner receive most strong transmissions at events and makes the scanner easier to carry and use. The supplied flexible antenna provides slightly better reception and helps your scanner receive strong local signals. You can attach either of the supplied antennas or an optional antenna to the scanner.

Follow these steps to attach the supplied flexible antenna to the antenna jack on the top of your scanner.

add illustration.

1. Align the slots around the antenna's connector with the tabs on the antenna jack.
2. Press the antenna down over the jack and turn the antenna's base clockwise until it locks into place.

Connecting an Optional Antenna

The antenna connector on your scanner makes it easy to use the scanner with a variety of antennas, such as an external mobile antenna or outdoor base station antenna. Your local RadioShack store sells a variety of antennas.

Always use 50-ohm coaxial cable, such as RG-58 or RG-8, to connect an outdoor antenna. For lengths over 50 feet, use RG-8 low-loss dielectric coaxial cable. If your antenna's cable does not have a BNC connector, you will also need a BNC adapter (also available at your local RadioShack store).

Follow the installation instructions supplied with the antenna, route the antenna cable to the scanner, then connect it to the antenna jack.

Warning: Use **extreme** caution when installing or removing an outdoor antenna. If the antenna starts to fall, **let it go!** It could **contact** overhead power lines. If the antenna touches a power line, contact with the antenna, mast, cable or guy wires can cause electrocution and death! Call the power company to remove the antenna. Do not attempt to do so yourself.

CONNECTING AN EARPHONE/HEADPHONES

For private listening, you can plug an earphone or mono/stereo headphones (such as Cat. No. 33-177 or 20-210) into the (headphone symbol) jack on **top** of your scanner. This automatically disconnects the internal speaker.

add illustration.

Listening Safely

To protect your hearing, follow these guidelines when you use an earphone or headphones:

- . Do not listen at extremely high volume levels. Extended high-volume listening can lead to permanent hearing loss.
- . Set the volume to the lowest setting before you begin listening. After you begin listening, adjust the volume to a comfortable level.
- . Once you set the volume, do not increase it. Over time, your ears adapt to the volume level, so a volume level that does not cause discomfort might still damage your hearing.

Traffic Safety

Do not wear an earphone or headphones while you drive a vehicle or ride a bicycle. This can create a traffic hazard and can be illegal in some areas.

Even though some earphones and headphones let you hear some outside sounds when you listen at normal levels, they still can present a traffic hazard.

CONNECTING AN EXTENSION SPEAKER

In a noisy area, an amplified speaker (such as Cat. No. 21-541) might provide more comfortable listening. Plug the speaker cable's 1/8-inch (3.5 mm) mini-plug into your scanner's (headphone symbol) jack.

add illustration.

USING THE BELT CLIP

You can use the belt clip attached to the back of the scanner for hands-free carrying when you are on the go. Simply slide the belt clip over your belt or waistband.

UNDERSTANDING THE PRO-89

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Once you understand a few simple terms used in this manual and familiarize yourself with your scanner's features, you can put the scanner to work for you. You simply determine the type of communications you want to receive, then set the scanner to scan them.

A frequency is the tuning location of a station (expressed in kHz or MHz). To find active frequencies, you can use the search function.

You can also search the service-search banks, which are preset groups of frequencies categorized by type of service.

When you find a frequency, you can store it into a programmable memory location called a channel, which is grouped with your other channels in a channel-storage bank. You can then scan the channel-storage banks to see if there is activity on the frequencies stored there. Each time the scanner finds an active frequency, it stays on that channel until the transmission ends.

A LOOK AT THE KEYPAD

Your scanner's keys might seem confusing at first, but this information should help you understand each key's function.

add illustration.

CAR—lets you store car numbers and frequencies in the scanner's channels, add and delete frequencies from car numbers, display car numbers, and listen to the channel where a car number is stored. Each time CAR key is pressed, the mode will change as follows:

Manual Mode --> Car Number input Mode --> Car Number Display mode -->

Car Number Input Mode --> Manual Mode -->

BAND—lets you search preprogrammed service banks.

PRI/ALERT—turns the priority function on and off, or sets the WX alert mode.

WX—scans through the 7 pre-programmed weather channels.

SCAN—scans through the programmed channels.

MAN—stops scanning and lets you directly enter a channel number.

▲ and **▼**—begins searching up or down for active frequencies or selects the direction when you scan channels.

L/O RVW, L/O—lets you review locked-out frequencies, or lets you lock out selected channels/frequencies so they will not be scanned or searched.

MON/CL—accesses the 20 monitor memories or clears an incorrect entry.

⏏/LIGHT —locks/unlocks the keypad to prevent accidental entries (without **SCAN**, **MAN**, and **LIGHT** key), or turns the display's backlight on or off.

PGM—programs frequencies into channels.

Number Keys—each key has a single-digit label and a range of numbers. Use the digits on the keys to enter the numbers for a channel or a frequency. Use the range of numbers above the key (21-40, for example) to select the channel in a channel-storage bank. See "Understanding Service Banks/Banks/Memories."

DELAY/.—programs a 2-second delay for the selected channel, or enters a decimal point (necessary when programming frequencies).

ENT—enters frequencies into channels.

A LOOK AT THE DISPLAY

The display has indicators that show the scanner's current operation. A quick look at the display will help you understand how to operate your scanner.

add illustration.

⏏ — appears when you lock the keypad.

BANK — appears with numbers (1—10). Bank numbers with a bar under them show which ones are turned on for scanning. See "Understanding Service Banks/Banks/Memories."

MRN — appears when you search the marine service bank.

CAR# — appears when you store car numbers and frequencies in the scanner's channels, add and delete frequencies from car numbers, display car numbers, and move to the channel where a car number is stored.

WX — appears when you scan the weather channels.

FD/PD — appears when you search the fire/police service bank.

AIR – appears when you search the air service bank.

HAM – appears when you search the ham radio service bank.

▲ or ▼ – indicates the search or scan direction.

M – flashes with a number (1-20) to show which monitor memory you are listening to.

CH – the digits that precede this indicator (1-200 and P) show which channel the scanner is tuned to.

B – appears when the batteries are low.

L/O – appears when you manually select a channel you locked-out while scanning or you review a locked out frequency.

SRCH – appears during service bank and direct frequency searches.

SCAN – appears when you scan channels.

MAN – appears when you manually select a channel.

PGM – appears while you program frequencies into the scanner's channels.

PRI – appears when you turn on the priority feature.

DLY – appears when you program a 2-second delay.

Error – appears when you make an entry error.

-dUPL- – appears when you try to store a frequency that is already stored in another channel.

-d- – appears during a direct frequency search.

-b- – appears during a service bank frequency search.

CAr – appears when you listen to the car race service bank.

CAr No. _ _ _ – appears when you input the car number.

Ch-FULL – appear when you try to enter a frequency during a search when all channels are full.

F L-out – appears when you start direct search from a locked out frequency.

FLo -FULL – appears when you try to lockout a frequency during a search when 50 frequencies are already locked out.

L-r – appears when you review the locked-out frequencies.

dFAULT – appears when you remove all the lock out tag from the service bank frequencies.

FLo ALL-CL – appears when you remove all the locked-out frequencies during a service bank/direct search.

P – when the scanner is tuned to a priority channel.

ALERT – appears when the scanner is watching the WX alert tone.

On Air – appears when you turn on the on air programming mode.

WirEd – appears when you turn on the wired programming mode.

StArt – appears when the scanner starts wired or on air programming.

C-Error – appears when the scanner received check sum error during wired or on air programming.

D-Error – appears when the scanner finds data error during wired or on air programming.

End – appears when the scanner finishes wired or on air programming.

oFF tonE – appears when you set the key tone off.

on tonE – appears when you set the key tone on.

on P.-SA – appears when you set the power save function on.

oFF P.-SA – appears when you set the power save functin off.

UNDERSTANDING SERVICE BANKS/BANKS/MEMORIES

Service Bank

This scanner is preprogrammed with the frequencies allocated by fire/police, aircraft, ham radio, car race, and marine services. In these service banks, you can search through the frequencies and store them in channels for fire/police, aircraft, ham radio, and car race banks. This is handy for quickly finding active frequencies instead of searching through an entire band.

Note: The frequencies in the scanner's service bank are preset. You cannot change them.

Fire/Police

Group	Frequency range (MHz)	Step (kHz)
1	33.420-33.980	20
	37.020-37.420	20
	39.020-39.980	20
	42.020-42.940	20
	44.620-45.860	40
	45.880	
	45.900	
	45.940-46.060	40
	46.080-46.500	20
2	153.770-154.130	60
	154.145-154.445	15
	154.650-154.950	15

	155.010-155.370	60
	155.415-155.700	15
	155.730-156.210	60
	158.730-159.210	60
	166.250	
	170.150	
3	453.0375-453.9625	12.5
	458.0375-458.9625	12.5
	460.0125-460.6375	12.5
	465.0125-465.6375	12.5
4	856.2125-860.9875	25
	866.0125-868.9875	12.5

Air

Frequency range (MHz)	Step (kHz)
108.000-136.9875	12.5

Amateur Radio

Group	Frequency range (MHz)	Step (kHz)
1	29.000-29.700	5
2	50.000-54.000	5
3	144.000-148.000	5
4	420.000-450.000	12.5

Car

Group	Frequency range (MHz)	Step (kHz)
1	150.995-151.995	5
	152.870-153.725	5
	154.490-154.625	5
2	460.000-470.000	12.5
3	851.0375	
	851.6625	
	852.0375	
	852.1875	
	853.1625	
	853.2625	

853.4875
 854.2625
 854.2875
 854.7875
 855.0375
 855.2875
 855.5125
 855.5625
 855.5875
 855.7375
 855.7875
 856.7875
 856.9125
 857.8375
 858.7375
 858.7875
 858.8375
 859.8375
 865.6125
 865.6625
 865.7125
 936.2125
 937.1500
 937.2000
 937.2875

Marine

Channel	Frequency (MHz)
06	156.3000
07	156.3500
08	156.4000
09	156.4500
10	156.5000
11	156.5500
12	156.6000
13	156.6500

14	156.7000
15	156.7500
16	156.8000
17	156.8500
18	156.9000
19	156.9500
20	157.0000/161.6000
21	157.0500
22	157.1000
23	157.1500
24	157.2000/161.8000
25	157.2500/161.8500
26	157.3000/161.9000
27	157.3500/161.9500
28	157.4000/162.0000
64	156.2250
65	156.2750
66	156.3250
67	156.3750
68	156.4250
69	156.4750
70	156.5250
71	156.5750
72	156.6250
73	156.6750
74	156.7250
77	156.8750
78	156.9250
79	156.9750
80	157.0250
81	157.0750
82	157.1250
83	157.1750
84	157.2250/161.8250
85	157.2750/161.8750
86	157.3250/161.9250

87	157.3750/161.9750
88	157.4250

Channel-Storage Banks

To make it easier to identify and select the channels you want to listen to, channels are divided into 10 banks of 20 channels each. Use each channel-storage bank to group frequencies, such as those used by the police department, fire department, ambulance services, or aircraft (see "Guide to the Action Bands" on Page 44). For example, the police department might use four frequencies, one for each side of town. You could program the police frequencies starting with Channel 1 (the first channel in bank 1) and program the fire department frequencies starting with Channel 21 (the first channel in bank 2).

Monitor Memories

The scanner also has 20 monitor memories that you can use to temporarily store frequencies while you decide whether to save them into channels. This is handy for quickly storing an active frequency when you are searching through an entire band. You can store a frequency into a monitor memory during a service bank, or direct search. See "Finding and Storing Active Frequencies."

You can select monitor memories manually, but you cannot scan them. See "Listening to Monitor Memories."

OPERATION

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TURNING ON THE SCANNER/SETTING VOLUME AND SQUELCH

1. Turn SQUELCH fully counterclockwise until the indicator points to MIN before you turn on the scanner.

add illustration.

2. To turn on the scanner, turn VOLUME clockwise until you hear a hissing sound.

3. Turn SQUELCH clockwise, just until the hissing sound stops.

Notes:

. To listen to a weak or distant station, turn SQUELCH counterclockwise. If reception is poor, turn SQUELCH clockwise to cut out weak transmissions.

. If SQUELCH is adjusted so you always hear a hissing sound, the scanner does not scan or search properly.

4. To turn off the scanner when you finish, turn VOLUME counterclockwise to OFF.

STORING KNOWN FREQUENCIES INTO CHANNELS

Good references for active frequencies are the RadioShack Police Call, Aeronautical Frequency Directory, and Maritime Frequency Directory. We update these directories every year, so be sure to get a current copy.

Follow these steps to store frequencies into channels.

1. Press PGM, enter the channel number (1—200) where you want to store a frequency, then press PGM again. The channel number appears.

2. Use the number keys and **.** to enter the frequency (including the decimal point) you want to store.

add illustration.

3. Press **ENT** to store the frequency into the channel.

Notes:

. If you made a mistake in Step 2, **Error** appears and the scanner beeps when you press **ENT**. Simply start again from Step 2.

. Your scanner automatically rounds the entered frequency down to the closest valid frequency. For example, if you enter a frequency for 151.473, your scanner accepts it as 151.470.

. If you entered a frequency that is already stored in another channel, the scanner beeps three times and displays the lowest channel number where the frequency is already stored, and **-dUPL-** flashes. After 3 seconds, the frequency flashes. If you want to store the frequency anyway, press **ENT** again. Press **MON/CL** to clear this entry.

. Press **/DELAY** if you want the scanner to pause 2 seconds on this channel after a transmission ends before it proceeds to the next channel (see "Delay" on Page 37). The scanner also stores this setting in the channel.

4. To program the next channel in sequence, press **PGM** and repeat Steps 2 and 3.

FINDING AND STORING ACTIVE FREQUENCIES

Searching the Service Banks

Your scanner contains groups of preset frequencies called **service banks**. Each service bank is associated with a specific activity (see "Service Bank" on Page 17). You can search for fire/police, air, ham, car race, and marine transmissions even if you do not know the specific frequencies that are used in your area. Then you can store the frequencies you found into the scanner's channels or monitor memories.

Notes:

. You can use the scanner's delay feature while searching the service banks, see "Delay" on Page 37.

. This procedure uses HAM, FD/PD, CAR, and AIR service banks. If you want to listen to marine bank, see "Listening to a Marine Bank."

1. Press **BAND**. The last selected band name (such as HAM), SRCH, frequency and the group number (if any) appear on the display.

2. To select a different band, repeatedly press **BAND** until the desired band name appears on the display. After about 2 seconds, the scanner begins searching rapidly in that band for an active frequency.

Notes:

. To reverse the search direction at any time, hold down (UP key) or (DN key) for about 1 second.

. To search the band up or down in small increments (see "Service Bank" on Page 17 for frequency steps), repeatedly press and release (UP key) or (DN key).

. To pause the search while receiving a signal press and release (UP key) or (DN key). To continue the search, hold down (UP key) or (DN key).

. To quickly move upward or downward through the frequencies, press and hold down (UP key) or (DN key). The scanner tunes through the frequencies until you release (UP key) or (DN key).

3. If needed, select your desired search group using number keys.

4. When the scanner finds an active frequency, it stops searching and displays the frequency's number. To store the displayed frequency in the lowest available channel, press **PGM** then press **ENT**. The channel and frequency flash twice, and the scanner stores the displayed frequency. The scanner then continues to search for frequencies.

Notes:

. If there is no empty channel, Ch-FULL appears after **PGM** pressed. To store more frequencies, you must clear some channels. See "Clearing a Stored Channel" on Page 29. To continue searching after Ch-FULL appears, press and hold down (UP key) or (DN key).

. If you entered a frequency that is already stored in another channel, -dUPL- (duplicate) and the lowest-numbered channel containing the duplicate frequency flash on the display for about 3 seconds. If you want to store the frequency anyway, press **ENT** again. You can then delete the frequency later. See "Clearing a Stored Channel" on Page 29.

To store the displayed frequency in the channel which you select, press PGM, press channel number you wish to enter the channel, then press PGM. The channel number flashes. If this channel programmed already, channel number and programmed frequency appears about 2 seconds. Then, the channel number flashes and new frequency appears. Press ENT to program new frequency, or press CL/MON to cancel. If you press ENT, the channel and frequency flash twice, and the scanner stores the displayed frequency. The scanner continues to search for frequencies.

5. To store the displayed frequency in the monitor memory, press MON/CL. The monitor memory number, M and the frequency flash twice.

6. To search for another active frequency in the selected band, hold down (UP key) or (DN key) for about 1 second. To select a different band and search for another active frequency, repeat Steps 2-6.

Using Direct Search

During a direct search, the scanner searches up or down, starting from a frequency you specify. Follow these steps to use direct search.

Note: You can use the scanner's delay feature while using direct search.

1. Press MAN or PGM, then enter the frequency you want to use as a starting point for the search.

Note: To start from a frequency already stored in one of your scanner's channels, press MAN or PGM, enter the desired channel number, then press MAN or PGM again.

Hold down (UP key) or (DN key) for about 1 second to search up or down. --d--, SRCH, and (UP) or (DN) appear on the display.

add illustration.

Notes:

- . To reverse the rapid search direction at any time, hold down (UP key) or (DN key) for about 1 second.
- . To search up or down in small increments (in steps 5, 12.5, or 25 kHz), press and release (UP key) or (DN key).
- . To pause the search, press and release (UP key) or (DN key). To continue the search, hold down (UP key) or (DN key) for about 1 second.
- . To quickly move upward or downward through the frequencies, press and hold down (UP key) or (DN key). The scanner tunes through the frequencies until you release (UP key) or (DN key).

2. When the scanner finds an active frequency, it stops searching and displays the frequency's number. To store the displayed frequency in the lowest available channel, press PGM then press ENT. The channel and frequency flash twice, and the scanner stores the displayed frequency. Then the scanner continues to search for frequencies.

Notes:

- . If there is no empty channel, Ch-FULL appears. To store more frequencies, you must clear some channels. See "Clearing a Stored Channel" on Page 29. To continue searching after Ch-FULL appears, press and hold down (UP key) or (DN key) for about 1 second.
- . If you entered a frequency that is already stored in another channel, -dUPL- (duplicate) and the lowest-numbered channel containing the duplicate frequency flash on the display for about 3 seconds. If you want to store the frequency anyway, press ENT again.

To store the displayed frequency in the channel which you select, press PGM, press channel number you wish to enter the channel, then press PGM. The channel number flashes. If this channel was programmed already, channel number and programmed frequency appears about 2 seconds. Then, the channel number flashes and new frequency appears. Press ENT to program new frequency, or press CL/MON to cancel. If you press ENT, the channel and frequency flash twice, and the scanner stores the displayed frequency. The scanner continues to search for frequencies.

3. To store the displayed frequency in the monitor memory, press MON/CL. M, the monitor memory number, and the frequency flash twice.

4. To search for another active frequency, hold down (UP key) or (DN key) for about 1 second.

USING THE MONITOR MEMORY

Listening to the Monitor Memory

To recall a frequency stored in the monitor memory, press **MAN** then **MON/CL**. **M**, monitor memory number, and **CH** flash and the current monitor memory frequency appears on the display. To select other monitor memories, enter the desired monitor memory's number (1—20), then press **MON/CL** again. The selected monitor memory's frequency appears.

add illustration.

Moving a Frequency from the Monitor Memory to a Channel

1. Press **PGM**, enter the channel number where you want to store the frequency, then press **PGM**. **PGM** and the selected channel number appear on the display.
2. Press **MON/CL**. **M**, a monitor memory number, and **CH** flash, and the monitor memory frequency appear on the display.
3. Enter the desired monitor memory's number (1—20), then press **MON/CL** again. The selected monitor memory's frequency appears.
4. Press **ENT**. The scanner stores the frequency in the selected channel.
5. To move another monitor memory frequency to the next channel, press **PGM** and repeat Steps 2—4.

SCANNING THE STORED CHANNELS

To set the **scanner** to continuously scan through all channels with stored frequencies, simply press **SCAN**. **SCAN** and **(UP)** appear on the display, and the scanner begins to rapidly scan up until it finds an active frequency.

add illustration.

If the scanner finds an active frequency, it stops and displays that channel and frequency number, then it automatically begins scanning again when the transmission ends on that frequency.

Notes:

- . To reverse the scanning direction, press **(UP key)** or **(DN key)**.
- . To set the scanner to remain on the current channel for 2 seconds after the transmission ends, see "Delay" on Page 37.
- . To set the scanner to remain on the current channel, even after the transmission stops, press **MAN** at any time during the transmission so **MAN** appears and **SCAN** disappears from the display (see "Monitoring a Stored Channel" on Page 29).
- . To lock out channels so the scanner does not stop for a transmission on those channels, see "Locking out Channels and Frequencies" on Page 37.

TURNING CHANNEL-STORAGE BANKS OFF AND ON

To turn off a channel-storage bank (1—10), press **SCAN** to see which banks are currently on. Storage banks are on when they have a bar underneath them and off when no bar appears underneath them. Press the bank's number key so the bar under the bank's number disappears.

Note: The scanner does not scan any of the channels within the banks you have turned off.

To turn on a channel-storage bank (1—10), press **SCAN**, and then press the bank's number key so a bar appears under the bank's number.

Notes:

- . You cannot turn off all banks. There must be at least one active bank.
- . You can manually select any channel in a bank, even if the bank is turned off.
- . When you turn on the bank while scanning, the scanner moves to the selected bank's channel and continues scanning.

MONITORING A STORED CHANNEL

You can continuously monitor a specific channel without scanning. This is useful if you hear an emergency transmission on a channel and do not want to miss any details – even though there might be periods of silence – or if you simply want to monitor that channel.

Follow these steps to manually select a channel.

1. Press MAN.
2. Enter the channel number (1—200).
3. Press MAN again.

CLEARING A STORED CHANNEL

If you no longer want a frequency stored in a channel (and you do not want to replace that frequency with a different one), follow these steps to clear the stored frequency.

1. Press MAN to stop frequency search or scanning.
2. To select the desired channel number, use the number keys to enter that channel number (1—200), then press MAN.
3. Press PGM. PGM appears.
4. Press 0, then press ENT. The frequency number changes to 000.0000 on the display to indicate the channel is cleared.

5. To clear another channel, use the number keys to enter **that** channel number (1—200), then press PGM again. Or, repeatedly press PGM until the desired channel number appears. Then repeat Step 4.

LISTENING TO THE MARINE BANK

To listen to the marine bank, repeatedly press **BAND** until **MRN** appears on the display.

To change the channel manually, press and release (**UP** key) or (**DN** key).

Press and hold (**UP** key) or (**DN** key) about 2 seconds, the scanner scans through the marine bank. **MAN** disappears and **SCAN** appears on the display. To change the scanning direction, press (**UP** key) or (**DN** key).

To continue changing the channel manually, press and hold (**UP** key) or (**DN** key) about 2 seconds. You press two digits number keys (see page 19, **Marine service bank**), the scanner moves to selected marine channel within marine manual mode.

LISTENING TO THE WEATHER BAND

To hear your local forecast and regional weather information, press **WX**. Your scanner begins to scan through the weather band.

Your scanner should stop within a few seconds on your local weather broadcast. If the broadcast is weak, you can press **WX** again to resume scanning.

Weather

Channel	Frequency (MHz)
1	162.400
2	162.425
3	162.450
4	162.475
5	162.500
6	162.525
7	162.550

WX Alert Feature

This scanner can detect the weather alert tone. The WX alert warns you of serious weather conditions by sounding an alarm if the weather service broadcasts the weather alert tone. To listen to the alert tone, press **PRI/ALERT** while you are listening to the WX channel. **ALERT** appears on the display. If the scanner detects the weather alert, it sounds an alarm. Press any key to mute the alarm. To cancel the weather alert operation, press **PRI/ALERT** again.

USING THE PRO-89 AT THE RACE

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The PRO-89 is specially designed to help you listen to communications at auto races. Drivers and their pit crews and corner watchers, pace car drivers, security officers, emergency personnel, track officials, and representatives of governing organizations such as NASCAR, SCCA, and NHRA all use radios to communicate with each other during a race. You might also hear transmissions from the news media and reporters, local police departments, and paramedics and doctors at the local hospital. You can even listen to transmissions by parking lot employees at the track, so you can find the best possible parking place when you arrive.

This scanner stores a car number and frequency in each of the scanner's channels, associate one or more frequencies stored in channels with a car number, and recall any frequencies associated with that car number by entering the number. You can store one car number by itself, one car number and frequency, or one frequency by itself in each channel (for up to 200 car numbers and frequencies).

For example, if you want to listen to communications between the driver of car number 24 and that driver's pit crew, find all the frequencies used by the driver's team by using the steps in "Searching the Service Banks" on Page 23, using the supplied frequency guide, "Using Direct Search" on Page 25, or using frequencies you already know, then store a car number and the frequencies associated with that car number in the scanner's channels. Then, you can display the car number as you scan those frequencies by using the information in "Scanning by Car Number" on Page 35.

STORING A CAR NUMBER AND FREQUENCY

You can store a car number and frequency in each of the scanner's channels, and you can recall any frequencies associated with the car number by entering the number. You can store one car number in each channel (for up to 200 car numbers).

Note: After you store a car number and a frequency, you can store additional frequencies then associate those frequencies with the same car number. See "Adding Frequencies to a Car Number" on Page 33.

Follow these steps to store a car number and frequency.

1. Press **CAR**. **CAR#** and **CAr No. ---** appears.
2. Enter **the car number**. If the number is one or two digits, enter the number, then press **CAR**. If the number is three digits, enter the number only. **The car number and ---.---** appear.

Notes:

. If you add one or more leading zeros to a single-digit car number, your scanner recognizes them as different car numbers. For example, you can enter 5 for one car number, 05 for another car number, and 005 for another car number.

. To clear the display, press **CL/MON** before you press **CAR**.

3. Enter the frequency (including the decimal point) you want to associate with the car number by using the number keys and **./DELAY**.

4. Press **ENT** to store the frequency. The car number and frequency are stored in the first available channel.

Adding Frequencies to a Car Number

Follow these steps to select a car number then associate additional frequencies with that car number.

1. Press **CAR**. **CAR#** and **CAr No. ___** appears.
2. Enter the car number. If the number is one or two digits, enter the number, then press **CAR**. If the number is three digits, just enter the number. **The car number and the first frequency associated with that number** appears.
3. Repeatedly press **(UP)** or **(DN)** until **____.---** appears.
4. Enter the frequency (including the decimal point) you want to associate with the displayed car number by using the number keys and **./DELAY**.

5. Press ENT to store the frequency. The frequency is associated with the car number you entered.

Adding a Car Number to the Channel

You can assign the car number after you program the frequency into the channel.

1. Select channel you want to store the car number with MAN and number keys.
2. Press CAR twice. CAR# appears on the display.
3. Hold down PGM then CAR. --- flashes.
4. Enter the car number.
5. Press ENT to program the car number.

Changing the Stored Car Number

1. Select channel you want to change the car number with MAN and number keys.
2. Press CAR twice.
3. Hold down PGM then CAR. The car number flashes.
4. Enter the car number.
5. Press ENT to program the car number.

Viewing Frequencies Associated with a Car Number

After you store a car number and associate frequencies with that number, you can view all frequencies associated with the number.

1. Press MAN then CAR. CAR# and CAR No. _ _ _ appears.

2. Enter the car number. If the number is one or two digits, enter the number, then press CAR. If the number is three digits, just enter the number. One of the frequencies associated with the car number appears.

3. Repeatedly press (UP) or (DN) to view each of the frequencies associated with the car number you entered.

Deleting a Frequency from a Car Number

1. Recall the car number.

2. Repeatedly press (UP) or (DN) until the frequency you want to delete appears.

3. Press PGM.

4. Press 0 then press ENT.

SACANNING BY CAR NUMBER

Once you store car numbers into channels, you can set the scanner so it displays the car numbers you assigned to the channels as it scans them.

To scan by car number, repeatedly press CAR until BANK and CAR# appear, then press SCAN. As the scanner scans channels, the car numbers you stored appear in the order you stored them into their channels, from the lowest to the highest channel.

Notes:

. If no car number is assigned to a channel, --- appears instead of the car number.

. If SQUELCH is adjusted so you always hear a hissing sound, the scanner does not scan properly.

FINDING WHAT CAR NUMBERS ARE IN WHAT CHANNELS

If you are listening to a channel and want to know what car number you are hearing, simply press CAR twice. If a car number has been associated with this frequency, the car number and frequency appear. Press CAR twice to return to normal channel listening.

To see what car numbers are stored, press MAN then CAR, then repeatedly press ENT. The car numbers (from lowest channel number to highest) show.

SPECIAL FEATURES

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DELAY

Many agencies use a two-way radio system that has a period of several seconds between a query and a reply. To avoid missing a reply, you can program a 2-second delay into any channel or frequency. When your scanner stops into any channel or frequency with a programmed delay, DLY appears and the scanner continues to monitor that frequency for 2 seconds after the transmission stops before resuming scanning or searching.

You can program a 2-second delay in any of these ways:

- . If the scanner is scanning and stops on an active channel, quickly press ./DELAY before it continues scanning again.
- . If the desired channel is not selected, manually select the channel, then press ./DELAY.
- . If the scanner is searching, press ./DELAY. DLY appears and the scanner automatically adds a 2-second delay to every transmission it stops on in that band.

To turn off the 2-second delay, press ./DELAY while the scanner is monitoring the channel or frequency. DLY disappears from the display.

LOCKING OUT CHANNELS AND FREQUENCIES

You can increase the effective scanning or search speed by locking out individual channels or frequencies that have a continuous transmission, such as a weather channel (See "US Weather Frequencies" on Page 43) or birdie frequency (see "Birdie Frequencies" on Page 43).

Locking Out Channels

To lock out a channel while scanning, press and release L/O/L/O RVW when the scanner stops on the channel.

To lock out a channel manually, select the channel then press and release L/O/L/O RVW until L/O appears on the display.

To remove the lock out from a channel, manually select that channel again, then press L/O/L/O RVW so L/O disappears from the display.

Notes:

- . Your scanner automatically locks out empty channels.
- . You can still manually select locked-out channels.
- . Marine service bank uses channel lock out.

Locking Out Frequencies

To lock out a frequency during a service bank, or a direct search, press L/O/L/O RVW when the scanner stops on the frequency. The scanner locks out the frequency then continues searching. You can lock out frequencies in both direct search and service bank searches.

Note: You can lock out as many as 50 frequencies during a search. If you try to lock out more, FLo -FULL appears on the display (see "Reviewing Locked-Out Frequencies" and "Removing All Lockout Tags From Frequencies").

Follow these steps to remove the lock out tag from a frequency.

1. Start a service bank or direct search.
2. Press L/O/L/O RVW. L-r appears on the display.
3. Repeatedly press (UP) or (DN) until the frequency you want to remove the lock out from is displayed.
4. Press L/O/L/O RVW. The frequency you want to remove the lock out from disappears.

If there is another locked-out frequency, it appears on the display. If there are no more locked-out frequencies, L-r 000.0000 appears on the display.

Reviewing Locked-Out Frequencies

To review the frequencies you locked-out, hold down L/O/L/O RVW at least 2 seconds during a search. L-r appears. As you press (UP key) or (DN key), the scanner displays all locked-out frequencies. When you reach the highest frequency, the scanner beeps twice and returns to the lowest locked-out frequency.

Removing All Locked-Out Tags From Frequencies

1. Start a service bank or direct search. See "Using Direct Search" on Page 25.
2. To review the frequencies you locked-out, hold down L/O/L/O RVW for about 2 seconds during the search. L-r appears on the display.
3. Hold down MON/CL then L/O/L/O RVW. FLo ALL-CL appears on the display.
4. Press ENT to clear all the lock out frequencies. The frequency clears and 000.0000 appears. If you do not want to clear lock out tags, press MON/CL to continue reviewing all the lockout frequencies.

Removing All Lockout Tags from Frequencies in All Service Banks

1. Start a service bank or direct search. See "Using Direct Search" on Page 25.
2. To review the frequencies you locked-out, hold down L/O/L/O RVW for about 2 seconds during the search. L-r appears on the display.
3. Hold down MON/CL then press BAND. dEFAULT appears on the display.
4. Press ENT to clear the locked-out frequencies in all the service banks (except marine bank). If you do not want to clear the lock out tags, press MON/CL to continue reviewing the lockout frequencies in the service banks.

USING PRIORITY

Using the priority feature, you can scan through the programmed channels and still not miss an important or interesting call on a specific channel.

Follow these steps to program a priority channel as follows:

1. Press PGM, then press PRI/ALERT. PCH appears on the display
2. Enter the frequency with numeral keys.
3. Press ENT.

If you listen to a channel or frequency and you want to move this frequency to the priority channel, hold ENT then PRI/ALERT. PCH and frequency flash twice. (If the scanner displays PGM, this function does not operate.)

To turn on the priority feature, press PRI/ALERT during scanning. PRI appears on the display. The scanner checks the priority channel every two seconds and stays on the channel if there is activity. PCH appears on the display whenever the scanner is set to the priority channel.

To turn off the priority feature, press PRI. PRI disappears from the display.

If you program the WX frequency into the priority channel, the scanner can detect the WX alert tone while priority feature is on. When the scanner detects the WX alert tone, ALERt flashes on the display. To cancel the alert tone, press any key, and the scanner watches the WX channel.

POWER-SAVING CIRCUIT

If the scanner does not detect a signal within 5 seconds after you manually select a channel, the scanner enters the power-saving standby mode. P.-SA appears on the display. In the standby mode, the scanner rests for 1 second then checks for a signal for 1/2 second, using only 40 percent of the normal power consumption. The scanner continues this until you press any button or it receives a signal.

Turning the Power-Saving Mode On and Off

Follow these steps to turn the scanner's power-saving mode off or on.

1. If the scanner is on, turn VOLUME counterclockwise until it clicks to turn it off.
2. While you press and hold down the 3 and ENT keys, turn on the scanner.
3. The display shows on P.-SA or oFF P.-SA then release 3 and ENT.

USING THE DISPLAY BACKLIGHT

You can turn on the display's backlight for easy viewing in the dark. Press and release LIGHT to turn on the display light for 5 seconds. To turn off the light before it automatically turns off, press LIGHT again.

TURNING THE KEY TONE ON AND OFF

The scanner is preset to sound a tone each time you press one of its keys (except LIGHT). You can turn the key tone off or back on.

1. If the scanner is on, turn VOLUME counterclockwise until it clicks to turn it off.
2. While you hold down 2 and ENT, turn on the scanner.
3. The display shows oFF tonE or on tonE, then release 2 and ENT.

USING THE KEY LOCK

Once you program your scanner, you can protect it from accidental program changes by turning on the keylock feature. When the keypad is locked, the only controls that operate are SCAN, MANUAL, LIGHT, VOLUME, and SQUELCH.

Note: The keylock does not prevent the scanner from scanning channels or monitoring a single channel, whichever feature you last selected.

To turn on the keylock, hold down (key symbol key)/LIGHT for about 3 seconds until the scanner beeps three times and (key symbol) appears on the display. To turn it off, hold down (key symbol key)/LIGHT for about 3 seconds until the scanner beeps three times and (key symbol) disappears from the display.

CONNECTING A DATA LINK TO THE SCANNER

A data interface kit (not supplied) lets you program the scanner with frequencies stored in a computer program. Contact your local RadioShack store for more information.

A GENERAL SCANNING GUIDE

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Reception of the frequencies covered by your scanner is mainly "line-of-sight." This means you usually cannot hear stations that are beyond the horizon.

GUIDE TO FREQUENCIES

US Weather Frequencies

162.400	162.425	162.450	162.475
162.500	162.525	162.550	

Ham Radio Frequencies

Ham radio operators often transmit emergency information when other means of communication break down. The following chart shows the frequencies this scanner receives that ham radio operators normally use:

Wavelength	Frequency (MHz)
10 meters	29.000-29.700
6 meters	50.000-54.000
2 meters	144.000-148.000
70 cm	420.000-450.000
33 cm	902.000-928.000

Note: Your scanner cannot receive AM transmissions on these bands.

Birdie Frequencies

Every scanner has birdie frequencies – signals created inside the scanner's receiver, which might interfere with transmissions on the same frequencies. If you program one of these frequencies, you hear only noise on that frequency. If the interference is not severe, you might be able to turn SQUELCH clockwise to cut out the birdie.

To find the birdies in your scanner:

- . Disconnect the antenna and move it away from the receiver. Make sure that no other nearby radio or TV sets are turned on near the scanner.
- . Search in each frequency band from its lowest frequency to the highest. Occasionally, the searching will stop as if it had found a signal, often without any sound. That is a birdie.
- . Make a list of all the birdies in your particular scanner for future reference.

The birdie frequencies to watch for on the PRO-79 are:

birdie frequencies will add

GUIDE TO THE ACTION BANDS

United States Broadcast Bands

In the United States, there are several broadcast bands. The standard AM and FM bands are probably the most well known. There are also four television audio broadcast bands – the lower three transmit on the VHF band and the fourth transmits on the UHF band.

Typical Band Usage

HF Band (3.00—30.0 MHz)

10-Meter Amateur	29.00-29.70 MHz
High Range	29.70-29.90 MHz

VHF Band (30.00—300.00 MHz)

Low Range	30.00-50.00 MHz
6-Meter Amateur	50.00-54.00 MHz
U.S. Government	137.00-144.00 MHz
2-Meter Amateur	144.00-148.00 MHz
High Range	148.00-174.00 MHz

UHF Band (300.00 MHz—3.0 GHz)

Military Aircraft	380.00-384.00 MHz
U.S. Government	406.00-420.00 MHz
70-Centimeter Amateur	420.00-450.00 MHz

Low Range	450.00-470.00 MHz
FM-TV Audio Broadcast, Wide Band	470.00-512.00 MHz
800 Band Law Enforcement	806.00-824.00 MHz
Conventional Systems	851.00-856.00 MHz
Conventional/Trunked Systems	856.00-861.00 MHz
Public Safety	866.00-869.00 MHz
Trunked Private/General	894.00-960.00 MHz

Primary Usage

As a general rule, most of the radio activity is concentrated on the following frequencies:

VHF Band

Activities	Frequencies (MHz)
Government, Police, and Fire	153.785—155.980
Emergency Services	158.730—159.460
Railroad	160.000—161.900

UHF Band

Activities	Frequencies (MHz)
Land-Mobile "Paired" Frequencies	450.000—470.000
Base Station	451.0125—454.950
Mobile Units	456.025—459.950
Relay Repeater Units	460.025—464.975
Remote Control Stations	465.025—469.975

Note: Remote control stations and mobile units operate at 5 MHz higher than their associated base stations and relay repeater units.

Specified Intervals

Frequencies in different bands are accessible only at specific intervals. For example:

Frequency Range(s)	Specified Interval
29–54 MHz and 137–174 MHz	5.0 kHz Steps
108–136.9875, 380–512 and 806–960 MHz	12.5 kHz Steps

Note: In service bank search, the frequency interval is not the same as specified above. See "Service Banks" on Page XX.

BAND ALLOCATION

To help decide which frequency ranges to scan, use the following listing of the typical services that use the frequencies your scanner receives. These frequencies are subject to change, and might vary from area to area. For a more complete listing, refer to Police Call, available at your local RadoShack store.

Abbreviations	Services
AIR	Aircraft
BIFC	Boise (ID) Interagency Fire Cache
BUS	Business
CAP	Civil Air Patrol
CCA	Common Carrier
CSB	Conventional Systems
CTSB	Conventional/Trunked Systems
FIRE	Fire Department
HAM	Amateur (Ham) Radio
GOVT	Federal Government
GMR	General Mobile Radio
GTR	General Trunked
IND	Industrial Services (Manufacturing, Construction, Farming, Forest Products)
MAR	Military Amateur Radio
MARI	Maritime Limited Coast (Coast Guard, Marine Telephone, Shipboard Radio, Private Stations)
MARS	Military Affiliate Radio Systems
MED	Emergency/Medical Services
MIL	U.S. Military

MOV	Motion Picture/Video Industry
NEW	New Mobile Narrow
NEWS	Relay Press (Newspaper Reporters)
OIL	Oil/Petroleum Industry
POL	Police Department
PUB	Public Services (Public Safety, Local Govt., Forestry Conservation)
PSB	Public Safety
PTR	Private Trunked
ROAD	Road & Highway Maintenance
RTV	Radio/TV Remote Broadcast Pickup
TAXI	Taxi Services
TELB	Mobile Telephone (Aircraft, Radio Common Carrier, Landline Companies)
TELC	Cordless Phones
TELM	Telephone Maintenance
TOW	Tow Trucks
TRAN	Transportation Services (Trucks, Tow Trucks, Buses, Railroad, Other)
TSB	Trunked Systems
TVn	FM-TV Audio Broadcast
USXX	Government Classified
UTIL	Power & Water Utilities
WTHR	Weather

High Frequency (HF) Hi – (3 MHz—30 MHz)

10-Meter Amateur Band – (28.0-29.7 MHz)

29.000-29.700 HAM

Very High Frequency (VHF) – (30 MHz—300 MHz)

Low Band – (29.7—50 MHz – in 5 kHz steps)

29.700-29.790 IND

29.900-30.550 GOVT, MIL

30.580-31.980 IND, PUB

32.000-32.990	GOVT, MIL
33.020-33.980	BUS, IND, PUB
34.010-34.990	GOVT, MIL
35.020-35.980	BUS, PUB, IND, TELM
36.000-36.230	GOVT, MIL
36.250	Oil Spill Clean-Up
36.270-36.990	GOVT, MIL
37.020-37.980	PUB, IND
38.000-39.000	GOVT, MIL
39.020-39.980	PUB
40.000-42.000	GOVT, MIL, MARI
42.020-42.940	POL
42.960-43.180	IND
43.220-43.680	TELM, IND, PUB
43.700-44.600	TRAN
44.620-46.580	POL, PUB
46.600-46.990	GOVT, TELC
47.020-47.400	PUB
47.420	American Red Cross
47.440-49.580	IND, PUB
49.610-49.990	MIL, TELC

6—Meter Amateur Band – (50—54 MHz)

50.00-54.00	HAM
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Aircraft Band – (108—136 MHz)

108.000-121.490	AIR
121.500	AIR Emergency
121.510-136.975	AIR

U.S. Government Band (138—144 MHz)

137.000-144.000	GOVT, MIL
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2—Meter Amateur Band – (144—148 MHz)

144.000-148.000	HAM
-----------------	-----

VHF-Hi Band (148—174 MHz)

148.050-150.345	CAP, MAR, MIL
150.775-150.790	MED
150.815-150.965	TOW
150.980	Oil Spill Clean-Up
150.995-151.130	ROAD
151.145-151.475	POL
151.490-151.955	IND, BUS
151.985	TELM
152.0075	MED
152.030-152.240	TELB
152.270-152.465	IND, TAXI
152.480	BUS
152.510-152.840	TELB
152.870-153.020	IND, MOV
153.035-153.725	IND, OIL, UTIL
153.740-154.445	PUB, FIRE
154.490-154.570	IND, BUS
154.585	Oil Spill Clean-Up
154.600-154.625	BUS
154.655-156.240	MED, ROAD, POL, PUB
156.255	OIL
156.275-157.425	MARI
157.450	MED
157.470-157.515	TOW
157.530-157.725	IND, TAXI
157.740	BUS
157.770-158.100	TELB
158.130-158.460	BUS, IND, OIL, TELM, UTIL
158.490-158.700	TELB
158.730-159.465	POL, PUB, ROAD
159.480	OIL
159.495-161.565	TRAN
161.580	OIL
161.600-162.000	MARI, RTV
162.0125-162.35	GOVT, MIL, USXX

162.400-162.550	WTHR
162.5625-162.6375	GOVT, MIL, USXX
162.6625	MED
162.6875-163.225	GOVT, MIL, USXX
163.250	MED
163.275-166.225	GOVT, MIL, USXX
166.250	GOVT, RTV, FIRE
166.275-169.400	GOVT, BIFC
169.445	Wireless Mics
169.500	GOVT
169.505	Wireless Mics
169.55-169.9875	GOVT, MIL, USXX
170.000	BIFC
170.025-170.150	GOVT, RTV, FIRE
170.175-170.225	GOVT
170.245-170.305	Wireless Mics
170.350-170.400	GOVT, MIL
170.425-170.450	BIFC
170.475	PUB
170.4875-173.175	GOVT, PUB, Wireless Mics
173.225-173.375	MOV, NEWS, UTIL
173.3875-173.5375	MIL
173.5625-173.5875	MIL, Medical/Crash Crews
173.60-173.9875	GOVT

Ultra High Frequency (UHF) (300 MHz—3 GHz)

Military Aircraft Band (319.1—383.9 MHz)

380.000-383.900 Coast Guard

U.S. Government Band (406—450 MHz)

406.125-419.975 GOVT, USXX

70-cm Amateur Band (420—450 MHz)

420.000-450.000 HAM

Low Band (450-470 MHz)

450.050-450.925	RTV
451.025-452.025	IND, OIL, TELM, UTIL
452.0375-453.000	IND, TAXI, TRAN, TOW, NEWS
453.0125-453.9875	PUB
454.000	OIL
454.025-454.975	TELB
455.050-455.925	RTV
457.525-457.600	BUS
458.025-458.175	MED
460.0125-460.6375	FIRE, POL, PUB
460.650-462.175	BUS
462.1875-462.450	BUS, IND
462.4625-462.525	IND, OIL, TELM, UTIL
462.550-462.725	GMR
462.750-462.925	BUS
462.9375-463.1875	MED
463.200-467.925	BUS

FM-TV Audio Broadcast, UHF Wide Band (470—512 MHz)

(Channels 14 through 20 in 6 MHz steps)

475.750	Channel 14
481.750	Channel 15
487.750	Channel 16
493.750	Channel 17
499.750	Channel 18
505.750	Channel 19
511.750	Channel 20

Note: Some cities use the 470—512 MHz band for land/mobile service.

Conventional Systems band – Locally Assigned

851.0125-855.9875	CSB
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Conventional/Trunked Systems Band – Locally Assigned

856.0125-860.9875	CTSB
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Trunked System Band – Locally Assigned
861.0125-865.9875 TSB

Public Safety Band – Locally Assigned
866.0125-868.9875 PSB

33-Centimeter Amateur Band (902-928 MHz)
902.000-928.000 HAM

Private Trunked band
935.0125-939.9875 PTR

General Trunked Band
940.0125-940.9875 GTR

FREQUENCY CONVERSION

The tuning location of a station can be expressed in frequency (kHz or MHz) or in wavelength (meters). The following information can help you make the necessary conversions.

1 MHz (million) = 1,000 kHz (thousand)

To convert MHz to kHz, multiply the number of MHz by 1,000:

$$30.62 \text{ MHz} \times 1000 = 30,620 \text{ kHz}$$

To convert from kHz to MHz, divide the number of kHz by 1,000.

$$127,800 \text{ kHz} / 1000 = 127.8 \text{ MHz}$$

To convert MHz to meters, divide 300 by the number of MHz.

$$300 / 50 \text{ MHz} = 6 \text{ meters}$$

TROUBLESHOOTING

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If your scanner is not working as it should, these suggestions might help you eliminate the problem. If the scanner still does not operate properly, take it to your local RadioShack store for assistance.

PROBLEM	POSSIBLE CAUSES	REMEDIES
Scanner is totally inoperative.	The batteries are dead.	Replace the batteries with fresh ones, or recharge the rechargeable batteries.
	The optional AC or DC power adapter is not connected.	Be sure the adapter is fully inserted into the PWR jack.
Poor or no reception.	Improperly connected antenna.	Be sure the antenna is properly connected.
	Programming frequencies are the same as birdie frequencies.	Avoid programming frequencies listed under "Birdie Frequencies" on Page 43 or only select them manually.
Error appears on the display.	Programming error	Reprogram the frequency correctly.
Keypad does not work.	Keylock is turned on.	Turn off keylock.
Keys do not work or display changes.	Undetermined error.	Turn the scanner off then on again, or reset the scanner (see "Resetting/Initializing the Scanner" on Page 54).

Scanner is on but will not scan.	SQUELCH is not correctly adjusted.	Adjust SQUELCH clockwise (see "Turning on the Scanner/Setting Volume and Squelch" on Page 22).
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In the scan mode, the scanner locks on frequencies that have an unclear transmission.	Birdies.	Avoid programming frequencies listed under "Birdie Frequencies" on Page 43 or only listen to them manually.
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RESETTING/INITIALIZING THE SCANNER

If the scanner's display locks up or does not work properly after you connect a power source, you might need to reset or initialize the scanner.

Important: If you have problems, first try to reset the scanner (see "Resetting the Scanner"). If that does not work, you can initialize the scanner (see "Initializing the Scanner" on Page 55); however, this clears all information stored in your scanner's memory.

Resetting the Scanner

1. Turn off the scanner, then turn it on again.
2. Insert a pointed object, such as a straightened paper clip, into the reset opening on the side of the scanner (as shown) and gently press then release the reset button inside the opening.

add illustration.

Note: If the scanner still does not work properly, you might need to initialize the scanner (see "Initializing the Scanner").

Initializing the Scanner

Important: This procedure clears all information you stored in the scanner's memory. Initialize the scanner only when you are sure the scanner is not working properly.

1. Turn off the scanner, then turn it on again.
2. Hold down MON/CL.
3. While holding down MON/CL, insert a pointed object, such as a straightened paper clip, into the reset opening on the side of the scanner and gently press then release the reset button inside the opening. The display should clear.
4. When the display reappears, release MON/CL.

Note: You must release the reset button before releasing MON/CL, otherwise the memory might not clear.

CARE AND MAINTENANCE

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Your RadioShack PRO-89 200-Channel Portable Race Scanner is an example of superior design and craftsmanship. The following suggestions will help you care for your PRO-89 so you can enjoy it for years.

Keep the PRO-89 dry. If it gets wet, wipe it dry immediately. Liquids might contain minerals that can corrode the electronic circuits.

Use and store the PRO-89 only in normal temperature environments. Temperature extremes can shorten the life of electronic devices, damage batteries, and distort or melt plastic parts.

Keep the PRO-89 away from dust and dirt, which can cause premature wear of parts.

Handle the PRO-89 gently and carefully. Dropping it can damage circuit boards and cases and can cause the PRO-89 to work improperly.

Use only fresh batteries of the required size and recommended type. Batteries can leak chemicals that damage your PRO-89's electronic parts.

Wipe the PRO-89 with a damp cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the PRO-89.

Modifying or tampering with the scanner's internal components can cause a malfunction and might invalidate its warranty and void your FCC authorization to operate it. If your scanner is not performing as it should, take it to your local RadioShack store for assistance.

SPECIFICATIONS

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Frequency Coverage:

Ham	29-29.7 MHz (5.0 kHz Steps)
VHF Lo	29.7-50 MHz (5.0 kHz Steps)
Ham	50-54 MHz (5.0 kHz Steps)
Air	108-136.9875 MHz (12.5 kHz Steps)
Government	137-144 MHz (5 kHz Steps)
Ham	144-148 MHz (5 kHz Steps)
VHF Hi	148-174 MHz (5 kHz Steps)
Ham/Government	380-450 MHz (12.5 kHz Steps)
UHF Lo	450-470 MHz (12.5 kHz Steps)
UHF T	470-512 MHz (12.5 kHz Steps)
UHF Hi	806-823.9875 MHz (12.5 kHz Steps)
	849-868.9875 MHz (12.5 kHz Steps)
	894-960 MHz (12.5 kHz Steps)

Channels of Operation 200 Channels and 20 Monitor Memories

Sensitivity (20 dB S/N):

29-54 MHz	0.3 μ V
108-136.9875 MHz	1.0 μ V
137-174 MHz	0.5 μ V
380-512 MHz	0.5 μ V
806-960 MHz	0.5 μ V

Selectivity:

+/-10 kHz	-6 dB
+/-18 kHz	-50 dB

Spurious Rejection 40 dB (FM at 154 MHz)

Scanning Rate Up to 25 Channels/Second

Search Rate Up to 50 Steps/Second

Delay Time 2 Seconds

Intermediate Frequencies (IF):

1 st	257.5 MHz
2 nd	21.4 MHz
3 rd	455 kHz

IF Interference Ratio (257.5 MHz)	60 dB at 154 MHz
Squelch Sensitivity:	
Threshold	Less than 0.3 μ V
Tight (FM)	(S+N)/N 30 dB
Tight (AM)	(S+N)/N 20 dB
Antenna impedance	50 Ohms
Audio Output Power (10% THD)	190 mW Nominal (battery use) 240 mW Nominal (external AC power use)
Built-in Speaker	1 3/8 inch (38 mm) 8-ohm, Dynamic Type
Power Requirements	+6 V DC, 4 AA Batteries AC Adapter (Cat. No. 273-1767A)
Current Drain (Squelched)	75 mA
Operating Temperature	+14F to +140F (-10C to +60C)
Dimensions (HWD)	5 11/16 x 2 1/2 x 1 3/8 inches (145 x 63 x 34 mm)
Weight	Approx. 7.8 oz. (220 g) without Antenna
Supplied Accessories	2 kinds Antenna, Battery Holder Rechargeable Battery Holder Frequency Guide

Specifications are typical; individual units might vary. Specifications are subject to change and improvement without notice.