

# OWNER'S MANUAL

## PRO-34

## Programmable Scanner

PLEASE READ BEFORE USING THIS EQUIPMENT

### RADIO SHACK LIMITED WARRANTY

This product is warranted against defects for 1 year from date of purchase from Radio Shack company-owned stores and authorized Radio Shack franchisees and dealers. Within this period, we will repair it without charge for parts and labor. Simply **bring your Radio Shack sales slip** as proof of purchase date to any Radio Shack store. Warranty does not cover transportation costs. Nor does it cover a product subjected to misuse or accidental damage.

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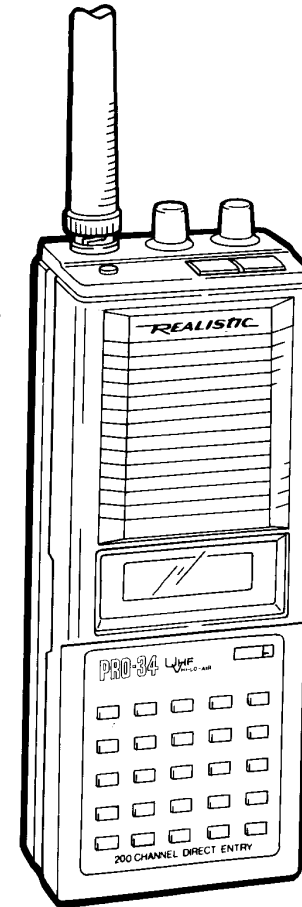
This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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3,961,261  
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4,092,594  
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4,245,348

**RADIO SHACK**  
A Division of Tandy Corporation  
Fort Worth, Texas 76102



Cat. No. 20-135

**REALISTIC®**

# INTRODUCTION

Your new Realistic® PRO-34 Hand-Held Programmable Scanner lets you in on all the action! The PRO-34 gives you direct access to over 32,000 frequencies in eight action packed radio bands including police, fire, ambulance, aircraft, ham radio, and transportation services. You select up to 200 channels for your PRO-34 to scan through, and you can change your selection at any time. So, get ready for a lot of excitement.

The secret of the PRO-34 is a custom-designed microprocessor—a computer-on-a-chip—that allows you to instantly select any frequency without having to change any crystals. The microprocessor also gives your scanner special functions, such as:

**Liquid Crystal Display**—shows the channel number and the frequency you have selected, as well as several other special indications.

**2-Second Scan Delay**—helps to prevent your losing replies on a channel while scanning.

**Memory Backup for Channel Entries**—keeps the channel frequencies for up to one hour without batteries.

**Lockout Function**—lets the PRO-34 skip over a specified channel or group of channels.

**Ten Channel Storage Banks**—allow you to group your stored frequencies so that calls are easier to identify.

**Priority Channel**—can be programmed so that important calls on the selected channel will not be missed.

**Direct Frequency Search**—allows you to scan through every available frequency to find interesting broadcasts.

**Hi Speed Search**—can be selected so that you can search more quickly.

**Monitor Banks**—allow you to save up to ten additional channels located during a frequency search.

Your PRO-34 covers all these bands:

- 30–50 MHz (VHF Lo)
- 50–54 MHz (Ham Radio 6 meter)
- 108–136 MHz (Aircraft)
- 136.005–144 MHz (Government)
- 144–148 MHz (Ham Radio 2 meter)
- 148–174 MHz (VHF Hi)
- 380–450 MHz (Ham Radio and Government)
- 450–470 MHz (UHF Lo)
- 470–512 MHz (UHF TV)
- 806.0000–823.9375 MHz (UHF Hi)
- 851.1125–868.9375 MHz (UHF Hi)
- 896.1125–960.0000 MHz (UHF Hi)

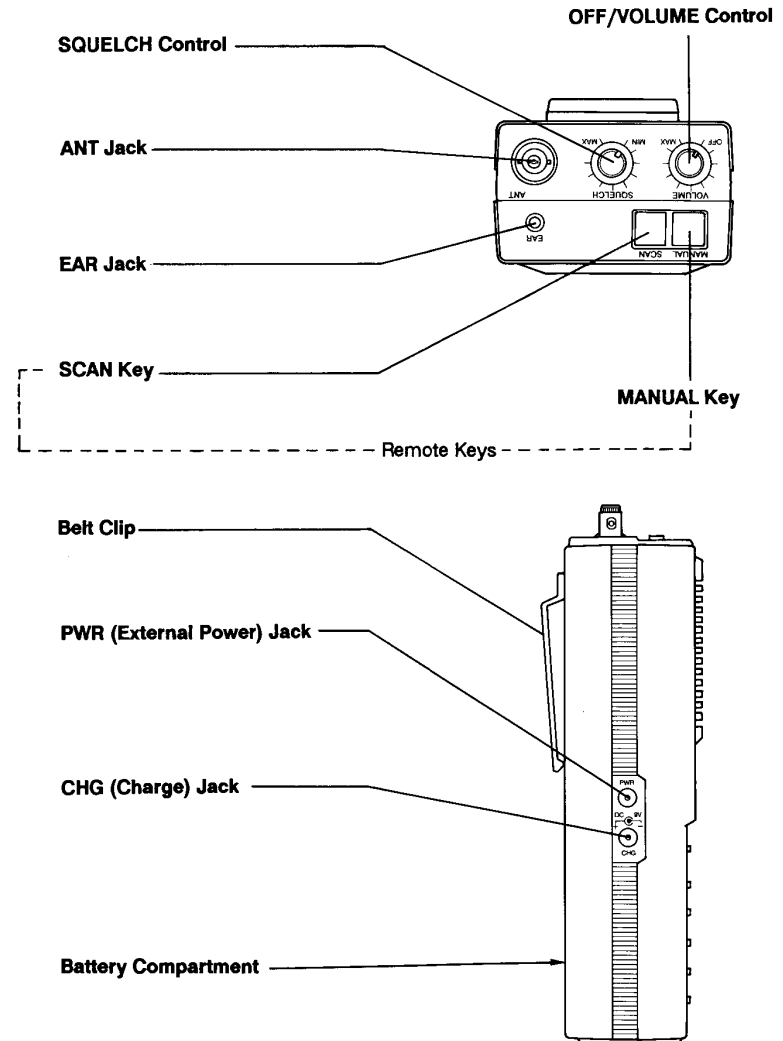
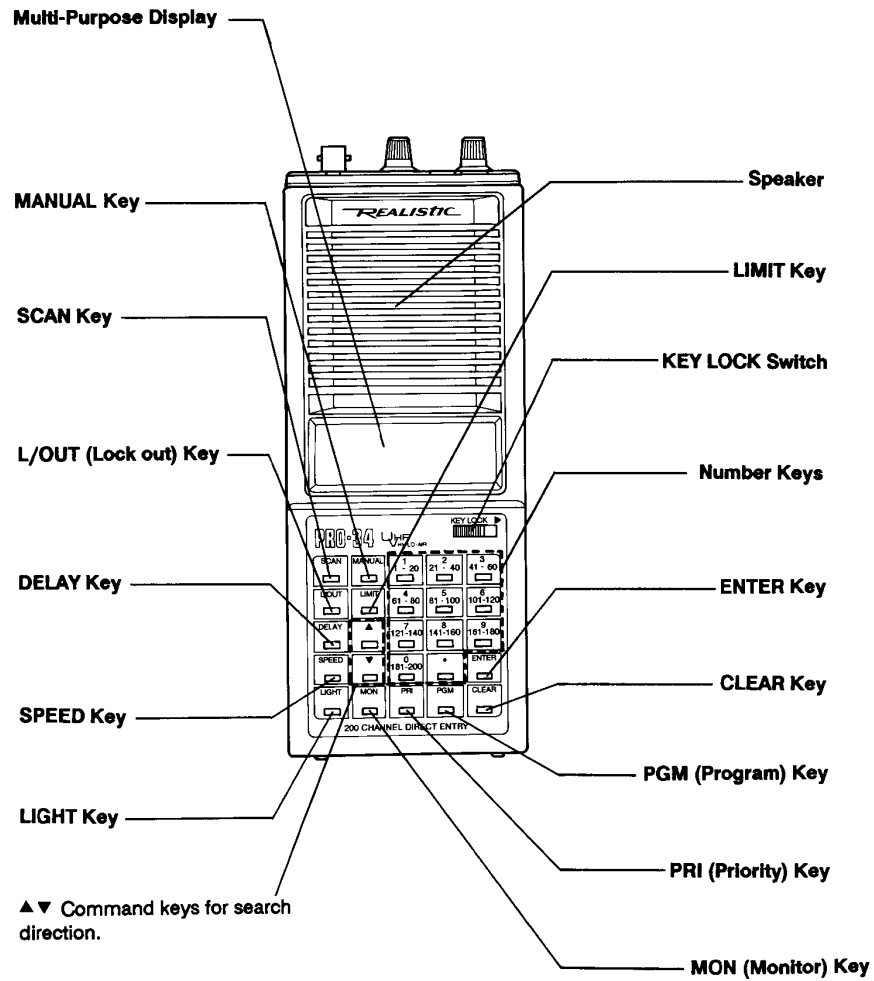
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For your protection, please record your scanner's serial number in the box. The serial number is located on the back of the unit.

Serial Number: _____
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# A QUICK LOOK AT YOUR SCANNER



## PREPARATION

### POWER SOURCES

Your PRO-34 can be powered from the following three sources:

- Internal batteries
- Your vehicle's battery (using an optional DC adapter)
- A standard AC outlet (using an optional AC adapter)

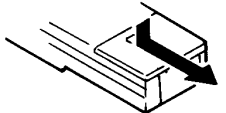
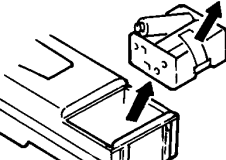
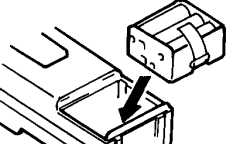
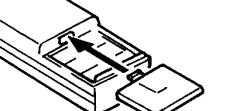
### Installing or Replacing Batteries

Your PRO-34 uses six AA batteries for power. For longest operation and best performance, we recommend alkaline batteries (Cat. No. 23-552). Or, you

can use rechargeable nickel-cadmium batteries (Cat. No. 23-125).

BATT flashes in the display and a beep sounds every three seconds when the batteries are low. When this happens replace all six batteries immediately.

**Caution:** The PRO-34 has a built-in circuit that lets you recharge nickel-cadmium batteries inside the scanner. However, you must not use this circuit when non-rechargeable batteries are installed in the PRO-34. Be sure to read "Important Information about External Adapters" and "Charging Nickel-Cadmium Batteries."

1	Remove the battery compartment cover by pressing down on the arrow and sliding the cover in the direction of the arrow.	
2	Remove the battery holder from the battery compartment and remove any old batteries. Then, install six AA batteries, observing the polarity (+ and -) marked on the battery holder.	
3	Place the battery holder in the compartment so that the holder's metal contacts line up with the metal contacts in the battery compartment.	
4	Replace the battery compartment cover.	

### Important Information about External Adapters

The PRO-34 has two external power jacks—PWR and CHG. It is important that you understand the purpose of each jack before you connect any adapter to the PRO-34. Improper use of the jacks can damage the scanner and/or the power adapter.

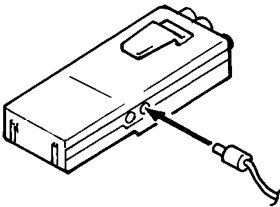
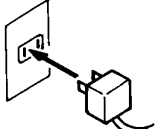
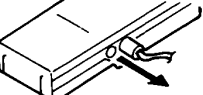
The PWR jack powers the scanner and disconnects the internal batteries. You can use this jack with an external power source regardless of the type batteries installed.

The CHG jack supplies power for operating the scanner and also applies power to the internal batteries to charge them. Use the CHG jack only when you have installed rechargeable nickel-cadmium batteries. **Never use the CHG jack with non-rechargeable batteries. If you attempt to recharge non-rechargeable batteries, they become very hot and could even explode.**

### Using an AC Power Source

To power the PRO-34 from AC power you need Radio Shack's AC adapter (Cat. No. 273-1455).

Use of another adapter could damage your scanner or the adapter.

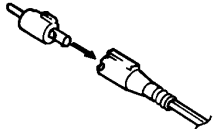
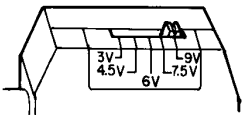
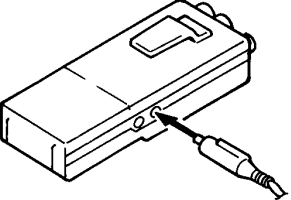
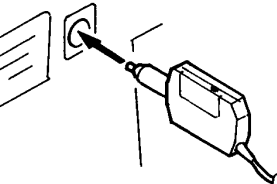
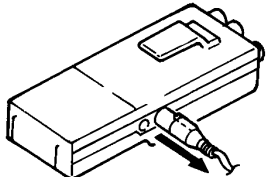
1	Plug the adapter's plug into the PRO-34's PWR jack. <b>Note:</b> If you have installed rechargeable nickel-cadmium batteries in your PRO-34, you can connect the AC adapter to the CHG jack. This powers the scanner and recharges the batteries at the same time. See "Charging Nickel-Cadmium Batteries."	
2	Plug the adapter power module into a standard AC outlet.	
3	When you finish using the AC adapter, disconnect it from the AC outlet. Then, disconnect it from the PWR jack.	

## Using a DC Adapter

You can power the PRO-34 from your vehicle's cigarette lighter socket, provided the vehicle has a 12-volt, negative-ground electrical system. To do so, you need Radio Shack's Universal DC Adapter (Cat. No. 270-1560).

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

Use of a DC adapter other than the one we recommend could damage the scanner or the adapter.

1	Connect the adapter's green barrel plug to the adapter's power cable with the tip set to NEG (negative).	
2	Set the adapter's voltage switch to 9V.	
3	Insert the adapter's barrel plug into the PRO-34's PWR jack. <b>Note:</b> If you have installed rechargeable batteries in the PRO-34, you can connect the DC adapter to the CHG jack. This powers the scanner and recharges the batteries at the same time. See "Charging Nickel-Cadmium Batteries."	
4	Plug the other end of the adapter into your vehicle's cigarette lighter socket. <b>Note:</b> If the scanner does not operate properly when you use a DC adapter, unplug the adapter from the lighter socket and clean the socket to remove ashes and other debris.	
5	When you finish using the DC adapter, disconnect it from the cigarette lighter. Then, disconnect it from the PRO-34.	

## CHARGING NICKEL-CADMIUM BATTERIES

The PRO-34 has a built-in circuit that recharges nickel-cadmium batteries. To charge the batteries, simply connect an AC or DC adapter to the CHG jack as explained in "Power Sources."

**Caution:** Do not connect either adapter to the CHG jack if you have not installed rechargeable batteries. **Non-rechargeable batteries can become hot and even explode if you try to recharge them.**

It takes 10 to 18 hours to recharge batteries that are fully discharged. You can operate the PRO-34 while recharging nickel-cadmium batteries, but the charging time is lengthened.

### Charging Hints:

Rechargeable lead-acid batteries, such as your car battery, work best and last longest when you keep them fully charged. Nickel-cadmium batteries, like those you use in this unit, react opposite of this. They last longer and deliver more power if you occasionally let them discharge completely. To do this, simply use the scanner until "BATT" appears and the unit begins to beep. Then, fully charge the batteries.

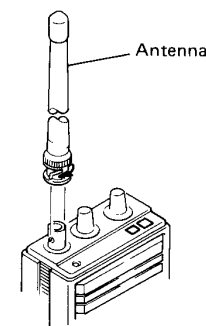
If you do not let nickel-cadmium batteries discharge, they lose the ability to use their full capacity.

**Note:** The first time you use a set of nickel-cadmium batteries, you need to

charge them at least 24 hours to bring them to a full charge.

## CONNECTING THE ANTENNA

Attach the flexible antenna to the ANT (antenna) jack on top of your PRO-34. Slip the slot in the antenna's connector over the protrusion on the ANT jack, and rotate the antenna's connector until it locks into place.

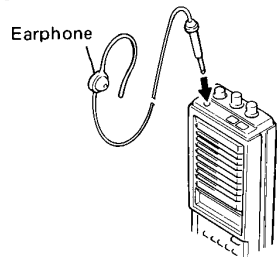


The ANT jack on your PRO-34 makes it easy to use your scanner with a variety of antennas. The supplied antenna can be removed if you wish to try a different one. You can attach an external mobile antenna or outdoor base antenna.

Use coaxial cable to connect an outdoor antenna. Always use 50 ohm coaxial cable. For lengths over 50 feet, use RG8 low-loss dielectric coaxial cable.

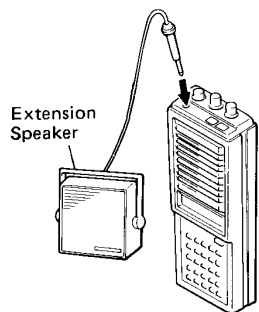
## CONNECTING AN EARPHONE

For private listening, plug an earphone into the EAR jack on top of your PRO-34. This automatically disconnects the speaker. We recommend Radio Shack's earphone, Cat. No. 33-175. In a noisy environment, mono headphones (Cat. No. 20-210) make listening easier.



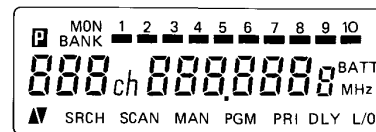
## CONNECTING AN EXTENSION SPEAKER

In a noisy area, an extension speaker such as Radio Shack's Cat. No. 21-549, positioned in the right place, might provide more comfortable listening. Plug the speaker cable's 1/8-inch mini-plug into the PRO-34's EAR jack.



## UNDERSTANDING YOUR PRO-34

### A LOOK AT THE DISPLAY



The display has several abbreviated indicators that show the scanner's current operating mode. A quick look at the display will help you understand the operation of your scanner.

The above illustration shows the display of the PRO-34 with all indicators activated. The following is a brief explanation of each indicator.

**BANK**—bars to the right of this indicator show which memory banks are currently activated for the scan mode. See "Understanding Channel Storage Banks."

**SCAN**—comes on when the scanner is in the scan mode.

**DLY**—appears when the scanner is on a channel that has been programmed with the delay feature. See "Using the Delay Feature."

**L/O**—appears when the channel you are listening to is locked out of the scan mode. See "Locking Out Channels."

**MAN**—comes on when the scanner is in the manual channel selection mode.

**ch**—digits preceding this indicator show which channel the scanner is currently tuned to.

**MHz**—digits preceding this indicator show the frequency the scanner is currently tuned to.

**MON**—appears when the scanner is in the monitor mode. See "Moving a Frequency from Monitor Memory to a Channel."

**PRI**—appears when the priority channel feature is activated.

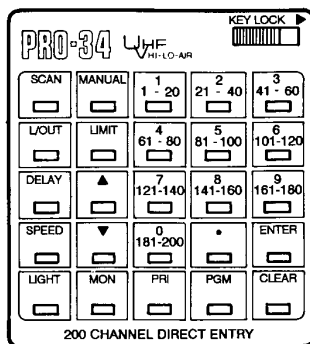
**PGM**—appears when the scanner is ready for programming.

**BATT**—flashes every three seconds when the batteries need to be replaced or recharged.

**P**—appears when you are listening to the priority channel.

**SRCH**—appears during a limit search ("L-" is displayed) or a direct frequency search ("d-" is displayed). "▲" and "▼" also appear in the display to indicate the direction of the search.

## A LOOK AT THE KEYBOARD



The keys on your PRO-34 might seem cryptic at first, but a quick glance at this page should help you understand each key's function.

**Number Keys**—each have a single digit, followed by a range of numbers printed below it. The single digit is the number entered when you are entering a channel number or a frequency. The range of numbers (21-40, for example) indicates the channels that make up a memory bank. See "Understanding Channel Storage Banks."

**SCAN**—causes the PRO-34 to scan through the programmed channels. This button is repeated on the top of the PRO-34.

**MANUAL**—stops scanning, and allows you to directly enter a channel number. This button is also repeated on top of your PRO-34.

**CLEAR**—press to clear an incorrect entry.

**KEY LOCK**—disables the keypad to prevent accidental program changes. Does not lock out [SCAN] and [MANUAL] on top of the scanner.

**L/OUT**—activates the lockout function. See "Locking Out Channels."

**DELAY**—turns the delay feature on or off for the current channel.

**SPEED**—changes the scanning and search speed.

**LIGHT**—turns on the display light.

**MON**—used to access the monitor memories. See "Moving a Frequency from Monitor Memory to a Channel."

**PRI**—activates the priority channel.

**PGM**—used when programming frequencies into channels.

**ENTER**—used to enter the frequency when programming channels.

**LIMIT, ▲, and ▼**—used during frequency searching. See "Searching for Active Frequencies."

## UNDERSTANDING CHANNEL STORAGE BANKS

Your PRO-34 has the ability to store up to 210 frequencies. Each frequency is stored in either a permanent memory, called a *channel*, or a temporary memory, called a *monitor*. There are 200 available channels, and ten monitor memories.

To make it easier to identify and select the channels you want to listen to, channels are divided into ten groups of 20 channels. Each group of channels is called a *bank*. Perhaps the best way to explain the use of memory banks is through a practical example.

Suppose you wish to monitor four different agencies: police, fire, ambulance, and aircraft. As a rule, each agency has several different frequencies they use for different purposes. The police might have four frequencies, one for each side of town. To make it easier to quickly determine which agency you are listening to, you could program the police frequencies starting with Channel 1 (Bank 1). Then, start the fire department on Channel 21 (Bank 2), ambulance service on Channel 41 (Bank 3), and aircraft frequencies on Channel 61 (Bank 4).

Now, when you wish to listen to only fire calls, it is simple to turn off Banks 1, 3, and 4 and remaining banks 5 to 10 so that only Bank 2 is scanned. You could also use this feature to group the channels by city or by county. Simply press the number corresponding to

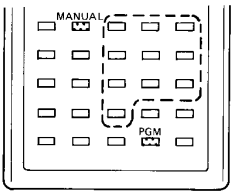
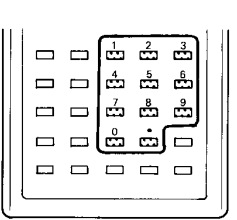
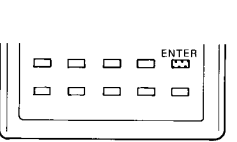
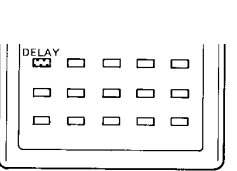
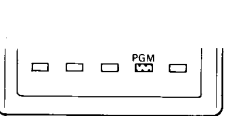
the bank you want to turn on (or off). The bar below the number in the display indicates that that bank is on.

The PRO-34 also has ten temporary monitor memories. You use these memories to store frequencies temporarily, while you decide whether to save them in one of the permanent channels. This is handy for quickly storing an active frequency when you are searching through an entire band. See "Searching for Active Frequencies."

When you are in the monitor mode, the ten numbers at the top of the display indicate the ten monitor memories. The bar indicates the current monitor memory.

# OPERATION

## PROGRAMMING THE PRO-34

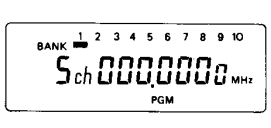
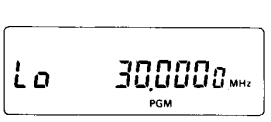
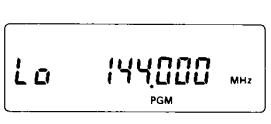



1	<p>Select a channel to program by pressing [MANUAL], entering the channel number you want to program, then pressing [PGM].</p> <p>"PGM" appears in the display to indicate the PRO-34 is in the programming mode.</p>	
2	<p>Enter a frequency.</p> <p>A good reference for active frequencies is Radio Shack's <i>Police Call Directory including Fire and Emergency Services</i>. This is updated yearly, so be sure to get a current one. Also, refer to "Reception Notes" and "Searching for Active Frequencies" in this manual.</p>	
3	<p>Press [ENTER].</p> <p>The frequency is entered. If you made a mistake in Step 2, the display shows "Error" and a beep sounds. Press [CLEAR] and proceed again from Step 2.</p>	
4	<p>Press [DELAY].</p> <p>If you want the PRO-34 to pause after each transmission before scanning to the next channel, press [DELAY] so that "DLY" appears in the display. If you do not want the PRO-34 to pause, ensure "DLY" is not in the display.</p>	
5	<p>Repeat Steps 1-4 to program more channels.</p> <p>Note that if you want to program the next channel in sequence, just press [PGM] and proceed to Step 2.</p>	

## SEARCHING FOR ACTIVE FREQUENCIES

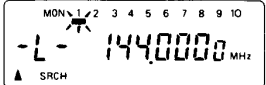
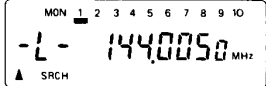
Use these procedures to search for a transmission. This is helpful if you do not have a reference to frequencies in your area. See also "Guide to the Action Bands" in this manual.

### Limit Search

This procedure allows you to search within a range of frequencies. "-L-" appears in the display during a limit search.

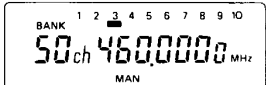
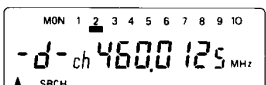
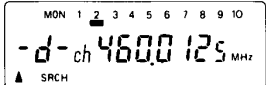
1	Press [PGM].	
2	Press [LIMIT].	
3	Enter the lower limit of the frequency range.	
4	Press [ENTER]. Then press [LIMIT].	
5	Enter the upper limit of the frequency range.	
6	Press [ENTER].	



7	Press [▼] to search from the upper limit down to the lower limit. Or, press [▲] to search upward starting from the lower limit.	
8	When the scanner stops on a transmission, press [MON] to store the frequency in the current monitor memory. The bar under the memory number stops flickering. Or press [▼] or [▲] to continue the search.	
<b>Notes:</b> <ul style="list-style-type: none"> <li>● Pressing [SPEED] speeds up or slows down the search.</li> <li>● Press [DLY] to make the scanner pause 2 seconds after a transmission before proceeding to the next frequency.</li> </ul>		

### Direct Frequency Search

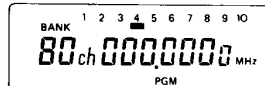
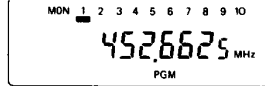
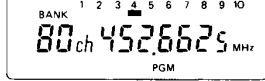
When you are in the program or manual listening mode, you can search up or down from the current frequency. "-d-" appears in the display during a direct frequency search.

1	Select a currently programmed channel by pressing [MANUAL], the channel number, then either [MANUAL] or [PGM].	
2	Press [▲] to search through higher frequencies or [▼] to search through lower frequencies.	
3	When the scanner stops on a transmission, you can store that frequency into a monitor memory by pressing [MON].	

### MOVING A FREQUENCY FROM MONITOR MEMORY TO A CHANNEL

As you store frequencies in monitor memories, the bar under the memory number indicates the current monitor memory. You can listen to monitor memories by pressing [MANUAL], [MON], then the number of the monitor memory you wish to listen to.

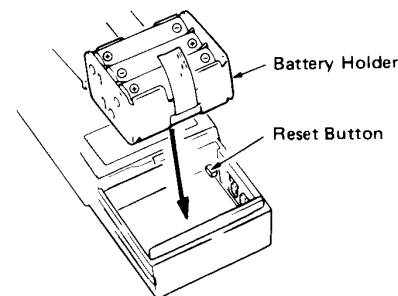
If there is a frequency you wish to store in a channel, follow this procedure to move it from the monitor memory:

1	Press [MANUAL], the channel number you wish the frequency to be stored in, then [PGM].	
2	Press [MON], then the monitor memory number you wish to move.	
3	Press [ENTER]. The frequency is stored in the channel.	

If you want to return to a limit search after this procedure, press [LIMIT], then either the [▲] or [▼] button to continue.

### USING THE RESET BUTTON

The scanner's display might lock up the first time you connect power to it, or if the batteries are left out for an extended period of time. If this occurs, hold down [CLEAR] and use a sharp instrument to press the reset switch in the battery compartment while power is on. This procedure clears any information you have programmed into the scanner. Use this procedure only when you are certain the unit is not working properly.



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## SETTING THE VOLUME AND SQUELCH

Rotate VOLUME clockwise and SQUELCH counterclockwise until you hear a hissing sound. Then, slowly rotate SQUELCH clockwise until the noise stops. Leave VOLUME set to a comfortable level.

If the scanner picks up unwanted weak transmissions, rotate SQUELCH clockwise to decrease the scanner's sensitivity to these signals.

## USING THE KEY LOCK

Once you have finished programming your PRO-34, you can protect it from accidental program changes by moving KEY LOCK to LOCK. In this position, only controls that work are [LIGHT], [MANUAL] and [SCAN] on top of the scanner, VOLUME, and SQUELCH. All other controls are locked, so that entries are not possible.

When you want to change the programming of your PRO-34, just move the switch to KEY.

## SCANNING THE CHANNELS

To begin scanning, just press [SCAN]. The PRO-34 scans through all channels in the activated banks that are not locked out. SQUELCH must be set so that the hissing sound is not heard between transmissions. Be sure to read all of the following sections to get the full benefit from all of the special features of your scanner.

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## USING THE DELAY FEATURE

Many agencies use a two-way radio system that might have a period of several seconds between a query and a reply. To keep from missing a reply, program a delay on the channels you identify as having this type of operation. Just manually select the channel, and press [DELAY] so that "DLY" appears in the display. Now, when you are scanning through channels, the PRO-34 pauses for two seconds after the completion of each transmission on that channel before resuming scanning.

Some radio systems, notably those above 800 MHz, use a special "trunked" system. In these systems, the transmitter selects an available frequency each time the operator keys the radio. It is therefore possible that the query can be on one frequency and the reply on another. To ensure the best possibility of hearing the full reply, you want the scanner to begin scanning immediately when the first transmission ends. In this case, manually select the channel and ensure that "DLY" is not in the display. If it is, press [DELAY] to turn off this feature for that channel.

## SETTING THE SCANNING SPEED

The PRO-34 has two different scanning speeds—4 channels/second and 8 channels/second. To switch between the two scanning speeds, press [SPEED] during scanning.

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## LOCKING OUT CHANNELS

You can increase the effective scanning speed by locking out channels that are not programmed. Manually select the channel, and press [L/OUT], so that "L/O" appears in the display. This is also handy for locking out channels that have a continuous transmission, such as a weather channel. You can still manually select locked-out channels for listening.

To disable the lockout function, manually select the channel and press [L/OUT].

**Note:** You can lock out as many channels as you like. But there must be at least one channel that is not locked out in each bank.

## TURNING BANKS ON AND OFF

As explained in "Understanding Channel Storage Banks" the PRO-34 splits the 200 channels into ten banks of twenty channels each. The small bars under the numbers at the top of the display are the bank indicators. You can turn each bank on and off, so that all of the channels in a bank are either scanned or locked out. In scan mode, press the number key corresponding to the bank you want to turn on or off. If the memory bank indicator is on, the bank is turned on and all channels within that bank that are not locked out are scanned. If the indicator is off, none of the channels within that bank are scanned. You can still manually select any channel in a bank, even if the bank is turned off. You cannot turn off all banks—one must be on.

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## USING THE PRIORITY FEATURE

You can scan through all of your programmed channels, and still not miss an important or interesting call on a specific channel. Simply program the channel as the priority channel, then turn on the priority feature by pressing [PRI] during scanning. The scanner now checks the priority channel every two seconds, and stays on the channel if there is activity.

To program a priority channel, simply press [PGM], the desired channel number, then [PRI]. "P" appears in the upper left corner of the display whenever the scanner is set to the priority channel. Only one channel can be programmed as the priority channel.

## MANUALLY SELECTING A CHANNEL

You can continuously monitor a single channel without scanning. This is useful if you hear an emergency broadcast on a channel and do not want to miss any of the details—even though there might be periods of silence—or if you want to monitor a channel that has been locked out. To select a channel, just press [MANUAL], enter the channel number, then press [MANUAL] again. Or, if the PRO-34 is scanning and has stopped at the desired channel, just press [MANUAL] one time. Pressing [MANUAL] additional times causes the PRO-34 to step through the channels one at a time.

## A GENERAL GUIDE TO SCANNING

### BIRDIES

Birdies are the products of internally generated signals that make some frequencies difficult or impossible to receive. 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 rotate SQUELCH clockwise to cut out the birdie. The most common birdies to watch out for are listed below.

#### Birdie Frequencies

30.370 MHz	115.200 MHz
31.625	121.600
31.880	126.225
32.000	to
32.095	126.300
to	128.000
32.120	130.000
34.135	134.400
34.945	140.000
to	140.800
34.975	147.200
38.400	147.620
41.965	to
to	147.700
41.995	149.960
44.800	153.600
46.350	154.960
to	160.000
46.385	166.400
50.200	171.250
51.100	172.800
51.200	384.000
51.540	422.400
to	510.650
51.575	808.600
108.800	

### RECEPTION NOTES

Reception on the frequencies covered by your PRO-34 is mainly "line of sight." That means you usually cannot hear stations at your listening location that are located beyond the horizon.

During summer months, you might be able to hear stations in the 30-50 MHz range located several hundred or even thousands of miles away. This is due to summer atmospheric conditions. This type of reception is unpredictable, but often very interesting!

One very useful service is the National Weather Service's continuous weather broadcasts. These broadcasts contain weather forecasts and data for the area around the station, plus bulletins on any threatening weather conditions. These stations use three frequencies—162.40, 162.475, or 162.55 MHz. In most areas of the country, you can receive one of these frequencies.

### BATTERY SAVING FEATURE

Your PRO-34 has a special battery-saving feature. When you have placed the scanner in the manual mode, if no signal is received and no key is pressed within five seconds the scanner enter the standby mode. In this mode, the PRO-34 resets for one second, then checks for a signal for 1/2 second. The scanner continues doing this until you press a button, or it received a signal. During standby, the PRO-34 uses only 40 percent of the normal power consumption.

### GUIDE TO THE ACTION BANDS

With the right frequencies programmed into your PRO-34, you can monitor exciting events. With a little investigation, you can find active frequencies in your community. We can give you some general pointers, and you can take it from there. Please use caution and common sense when you hear an emergency call. Never go to the scene of an emergency—it could be the most dangerous thing you could ever do.

Find out if there is a local club that monitors your community's frequencies. Perhaps, a local electronics repair shop that works on equipment similar to your scanner can give you channel frequencies used by local radio services. A volunteer police or fire employee can also be a good source of this information.

As a general rule on VHF, most activity is concentrated between 153.785 and 155.98 MHz and then again from 158.73 to 159.46 MHz. Here you find local government, police, fire, and most such emergency services. If you are near a railroad yard or major railroad tracks, look around 160.0 to 161.9 for signals.

In some larger cities there has been a move to the UHF bands for these emergency services. Here, most of the activity is in a spread of 453.025-453.95 MHz and again between 456.025-459.95 MHz.

In the UHF band, the overall spreads of 456.025-459.95 and 465.025-469.975 are used by mobile units and control stations associated with base and repeater units that operate 5 MHz lower (that is, 451.025-454.95 and 460.025-464.975 MHz). This means that if you find an active frequency inside one of these spreads, you can look 5 MHz lower (or higher, as the case may be) to find the major base station/repeater for that radio service.

A newer technology is now available that allows the use of the 800 MHz band for many services. *Trunked radio*, introduced to business systems in 1979, is now being used by some public safety agencies. With as many as twenty channels available, the transmitter automatically selects an unused one each time it is activated. Several agencies can share such a system without causing interference, and it can be programmed to provide secure communications for selected units, with unselected units unable to hear the message.

Frequencies in different bands are accessible only at specific intervals. In the VHF-Lo, Ham, Government, and VHF-Hi bands, frequencies are available in 5 kHz steps, and in the aircraft band, frequencies are available in 25 kHz steps. In all other bands, frequencies are available in 12.5 kHz steps. Your PRO-34 automatically rounds the entered frequency down to the nearest valid frequency. For example, if you try to enter a frequency of 151.473, the PRO-34 accepts this entry as 151.470.

## Typical Band Usage

The following is a brief listing of the typical services using the bands your PRO-34 can receive. This listing can help you decide which ranges you would like to scan.

### Abbreviations:

BA.....	Remote Broadcast (Radio & TV)
CA.....	General Mobile (Radio)
CAP.....	Civil Air Patrol
IB.....	Business
IF.....	Forest Products
IM.....	Motion Picture Industry
IP.....	Petroleum Industry
IS.....	Special Industrial (Construction, farming, etc.)
IT.....	Telephone Maintenance
IW.....	Power and Water Utilities
IX.....	Manufacturers
IY.....	Relay Press (newspaper reporters)
LA.....	Automotive Emergency (tow trucks)
LJ.....	Motor Carrier, Trucks
LR.....	Railroad
LU.....	Motor Carrier, Buses
LX.....	Taxi
MC.....	Maritime Limited Coast (private stations)
MG.....	Maritime Government (Coast Guard)
MP.....	Maritime Public Coast (marine telephone)
MS.....	Maritime Shipboard
PF.....	Fire
PH.....	Highway Maintenance
PL.....	Local Government
PM.....	Medical Services
PO.....	Forestry Conservation
PP.....	Police
PS.....	Special Emergency
RA.....	Mobile Telephone (aircraft)
RC.....	Mobile Telephone (radio common carrier)
RT.....	Mobile Telephone (landline companies)
BIFC.....	Boise Interagency Fire Cache
<b>Government Agencies:</b>	
UAF.....	Air Force
UAR.....	Army
UBW.....	International Boundary & Water Commission
UCE.....	Environmental Research Laboratories
UCF.....	Maritime Fisheries Service
UCG.....	Coast Guard

These frequencies are subject to change, and might vary some from area to area. For a more complete listing, refer to the "Police Call Radio Guide Including Fire & Emergency Services," at your local Radio Shack.

UCM.....	Maritime Administration
UCO.....	Ocean Survey
UCP.....	National Capitol Police
UCW.....	National Weather Service
UCX.....	Department of Commerce
UEP.....	Environmental Protection Agency
UER.....	Department of Energy
UFA.....	Federal Aviation Administration
UFC.....	Federal Communications Commission
UGC.....	Soil Conservation Service
UGF.....	Forest Service
UGS.....	General Services Administration
UGX.....	Department of Agriculture
UHW.....	Dept. of Health and Human Services
UIB.....	Bonneville Power Administration
UIF.....	Bureau of Sport Fisheries and Wildlife
UIG.....	Geological Survey
UIL.....	Bureau of Indian Affairs
UIL.....	Bureau of Land Management
UIM.....	Bureau of Mines
UIP.....	National Park Service
UIR.....	Bureau of Reclamation
UIS.....	Southwestern Power Administration
UIX.....	Department of the Interior
UNO.....	United Nations
UNS.....	NASA
UPO.....	Postal Service
USA.....	Federal Govt. Misc.
USD.....	State Department
USN.....	Navy
UTC.....	Bureau of Customs
UTM.....	Bureau of the Mint
UTR.....	Department of Transportation
UTV.....	Tennessee Valley Authority
UTX.....	Treasury Department
UVA.....	Veterans Administration
UXX.....	Classified

## Band Usage:

### 30 – 50 MHz:

30.00 – 30.55.....	USA, UAR, USN, UCG, UAF
30.58 – 31.98.....	IS, IP, IB, LU, PO
32.00 – 32.99.....	USA, UAR, USN, UCG, UGX, UAF, UIR
33.02 – 33.98.....	PS, PH, IS, IB, IP, PF
34.01 – 34.99.....	UCG, UER, USA, UAR, UAF, USN, UGX, UIP, UIF
35.02 – 35.98.....	IB, IT, RC, RT, IS, PS
36.01 – 36.99.....	UIX, UER, USA, UAR, USN, UTR, UCO, IP, UHW, UGF, UGX, UAF
37.02 – 37.98.....	PP, PL, IW, PH, PS
38.27 – 38.99.....	USA, USN, UGX, UGF, UAR, UAF, UIX, UTV, UVA
39.02 – 39.98.....	PP, PL
40.01 – 41.99.....	UIA, UAR, UIP, UAF, USA, UVA, UER, USN, UIF, UIR, UTV, UIM, IP, UIX, UEP, UCG, UIL, BIFC, UHW, UTX
42.02 – 42.94.....	PP
42.96 – 43.68.....	IB, IS, IT, RC, RT, PS
43.70 – 44.60.....	LU, LJ
44.62 – 46.58.....	PP, PO, PL, PH, PF, PS
46.61 – 46.99.....	USA, UIL, BIFC, UAF, UAR, UGX, UGF
47.02 – 49.58.....	PH, PS, IS, IW, IF, IP
49.61 – 49.99.....	UIL, UAR, UGC, UAF, UAR, UGX, UGF, USA

### 150 – 173 MHz

150.775 – 151.985.....	PM, LA, IF, PH, PO, IS, IB
152.0075 – 152.84.....	PM, RC, LX, IF, IB, RT
152.87 – 153.725.....	IM, IS, IP, IX, IF, IW
153.74 – 156.24.....	PL, PF, IS, IB, PP, PM, PH
156.255 – 157.45.....	IP, MC, MS, MG, MP, PM
157.47 – 158.70.....	LA, LX, IF, IS, IB, RT, IW, IP, IX, IT, RC
158.73 – 159.48.....	PP, PL, PH, PO, IP
159.495 – 161.565.....	LR, LJ
161.58 – 162.00.....	IP, MC, BA, MP
162.025 – 173.9875.....	Misc. Govt. Agencies

### 406 – 512 MHz

406.125 – 419.975.....	Misc. Govt. Agencies
450.05 – 450.925.....	BA
451.00 – 451.70.....	IW, IF, IP, IT, IX
451.725 – 452.175.....	IS, IF, IP, LX
452.20 – 452.95.....	LX, LJ, LR, LA
452.975 – 453.975.....	IY, PL, PH, PF, PO, PP
454.00 – 457.6.....	IP, RC, RT, RA, BA, IB
458.025 – 467.925.....	PM, PP, IB, IX, IF, IP, IT, IW, GM
482.00 – 508.9875.....	Mixed Public Safety

Unlike the lower bands, frequencies in the 800 MHz band are not allocated by the FCC to specific services such as Police, Fire, Ambulance, and so on. In each area, the channels are licensed on a first come, first served basis. There are two categories for licensing: Public Safety and Industrial. Systems using one to five channels are conventional. Five channel systems might use trunking, but all systems with more than five channels must use trunking.

851.0125 – 855.9875.....	Conventional Systems
856.0125 – 860.9875.....	Conventional or Trunked
861.0125 – 865.9875.....	Trunked Systems
866.000 – 869.9999.....	Reserved – Satellite

You might discover some of your regular stations on another frequency that is not listed. It might be what is known as an "image." For example, you suddenly find 453.2750 also being heard on 474.8750. To see if it is an image, do a little math. Take the intermediate frequency of 10.7 MHz and double it. Then, subtract it from the "new" frequency. If the answer is the regular frequency, you have tuned to an image. Occasionally you might get interference on a weak or distant channel from a strong broadcast 21.4 MHz below the tuned frequency. This is rare, and the image signal is usually cleared whenever a broadcast on the actual frequency is in progress.

## CARE AND MAINTENANCE

Your PRO-34 is an example of superior design and craftsmanship. The following suggestions will help you care for the PRO-34 so that you can enjoy it for years.



Keep the PRO-34 dry. If it does get wet, wipe it dry immediately. Liquids can contain minerals that can corrode the electronic circuits.



Use only fresh batteries of the recommended size and type. Always remove old or weak batteries. They can leak chemicals that destroy electronic circuits.



Handle the PRO-34 gently and carefully. Dropping it can damage circuit boards and cases and can cause the PRO-34 to work improperly.



Use and store the PRO-34 only in normal temperature environments. High temperatures can shorten the life of electronic devices, damage batteries, and distort or melt plastic parts.



Keep the PRO-34 away from dust and dirt, which can cause premature wear of parts.



Wipe the PRO-34 with a dampened cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the PRO-34.

Modifying or tampering with the PRO-34's internal components can cause a malfunction and might invalidate the PRO-34's warranty. If your PRO-34 is not performing as it should, first refer to "Troubleshooting" in this manual. If you still cannot identify the problem, take the scanner to your local Radio Shack store. Our personnel can assist you and arrange for service, if needed.

## TROUBLESHOOTING

### BEFORE YOU CALL FOR HELP

The frequencies stored in the PRO-34 memory are held for approximately one hour without AA batteries or adapter power. Check memory contents after replacing batteries.

### IF YOU HAVE PROBLEMS...

We hope you don't - but here are some suggestions.

TROUBLE	CHECK
<ul style="list-style-type: none"> <li>• Unit does not function.</li> </ul>	<ul style="list-style-type: none"> <li>• Batteries are not correctly installed – Check to be sure the + and – terminals are properly aligned.</li> <li>• Batteries are dead – replace with new ones.</li> </ul>
<ul style="list-style-type: none"> <li>• No reception / poor reception</li> </ul>	<ul style="list-style-type: none"> <li>• Antenna is not correctly installed – Check connector.</li> <li>• Environment is not suitable for scanner – Relocate unit and try again</li> <li>• Frequencies are not properly programmed – Check and reprogram.</li> </ul>
<ul style="list-style-type: none"> <li>• Error appears on the display</li> </ul>	<ul style="list-style-type: none"> <li>• Programming error – check frequency and try again</li> </ul>
<ul style="list-style-type: none"> <li>• Keyboard does not work / cannot program</li> </ul>	<ul style="list-style-type: none"> <li>• Key-Lock switch is set to Lock. Slide switch to Key.</li> </ul>
<ul style="list-style-type: none"> <li>• Keys are inoperative / LCD display is random.</li> </ul>	<ul style="list-style-type: none"> <li>• Press RESET switch.</li> </ul>

If none of these suggested remedies solves the problem, take your scanner

to your nearby Radio Shack for assistance.

## SPECIFICATIONS

### FREQUENCY COVERAGE:

#### VHF-Lo

30 – 54 MHz (in 5 kHz steps)

#### Ham

50 – 54 MHz (in 5 kHz steps)

#### Aircraft

108 – 136 MHz (in 25 kHz steps)

#### Government

136.005 – 144 MHz (in 5 kHz steps)

#### Ham

144 – 148 MHz (in 5 kHz steps)

#### VHF-Hi

148 – 174 MHz (in 5 kHz steps)

#### Ham/Government

380 – 450 MHz (in 12.5 kHz steps)

#### UHF-Lo

450 – 470 MHz (in 12.5 kHz steps)

#### UHF-TV

470 – 512 MHz (in 12.5 kHz steps)

#### UHF-Hi

806.0000 – 823.9375 MHz

(in 12.5 kHz steps)

851.1125 – 868.9375 MHz

(in 12.5 kHz steps)

896.1125 – 960.0000 MHz

(in 12.5 kHz steps)

### Channels of operation:

Any 200 channels in any band combinations. (20 channels × 10 banks) and 10 Monitor channels.

### SENSITIVITY:

20 dB Signal-to-Noise ratio

30 – 54 MHz 1.0  $\mu$ V

108 – 136 MHz 2.0  $\mu$ V

136.005 – 174 MHz 1.0  $\mu$ V

380 – 512 MHz 1.0  $\mu$ V

806 – 960 MHz 2.0  $\mu$ V

### SPURIOUS REJECTION:

30 – 54 MHz 50 dB at 40 MHz

108 – 136 MHz 50 dB at 124 MHz

136.005 – 174 MHz 50 dB at 154 MHz

380 – 512 MHz Not specified

806 – 960 MHz Not specified

### SELECTIVITY:

$\pm$  10 kHz, –6 dB

$\pm$  20 kHz, –50 dB

### IF REJECTION:

10.7 MHz 50 dB at 154 MHz

### SCANNING RATE:

Fast 8 channels/sec.

Slow 4 channels/sec.

### SEARCH RATE:

Fast 16 steps/sec.

Slow 8 steps/sec.

### PRIORITY SAMPLING:

2 seconds

### DELAY TIME:

2 seconds

### MODULATION ACCEPTANCE:

$\pm$  8 kHz

### IF FREQUENCIES:

10.7 MHz and 455 kHz

### FILTERS:

1 crystal filter, 1 ceramic filter

### SQUELCH SENSITIVITY:

Threshold Less than 1.0  $\mu$ V

Tight (S + N)/N 25 dB

### ANTENNA IMPEDANCE:

50 ohms

### AUDIO POWER:

200 mW nominal

### BUILT-IN SPEAKER:

1-3/4" (45 mm) 8 ohm, dynamic type

### POWER REQUIREMENT:

+9 V DC, 6 AA batteries, or a suitable adapter (negative ground only)

### CURRENT DRAIN:

55 mA (squelched)

### DIMENSIONS:

6-1/2" (165 mm) × 2-3/4" (69 mm) ×

1-13/16" (46 mm) HWD

### WEIGHT:

14 oz. (400 g)