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

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PRO-37

OWNER'S MANUAL   Programmable Scanner
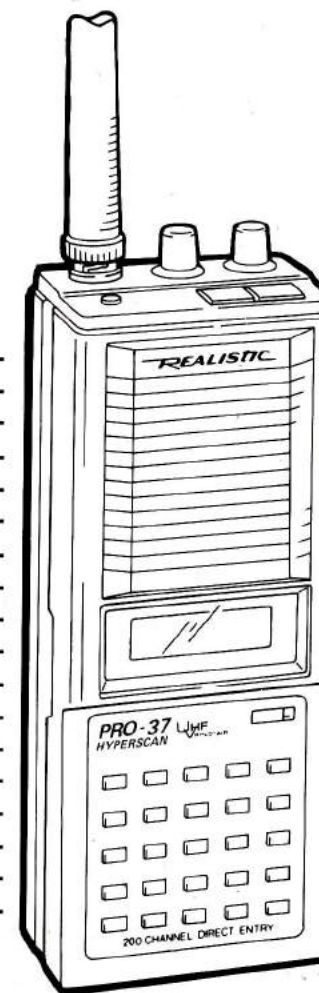
Please read before using this equipment

PRO-37 UHF
HYPERSCAN

200 CHANNEL DIRECT ENTRY

Cat. No. 20-138

REALISTIC ®

INTRODUCTION

Your Realistic PRO-37 Programmable Scanner lets you in on all the action! This scanner gives you direct access to over 31,000 frequencies that include the police department, fire department, ambulance service, amateur radio, and transportation services. You can store frequencies in your scanner's 200 channels and you can change your selections 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's microprocessor also gives your scanner these special features:

Hyperscan — lets you search through frequencies at up to 50 steps per second or scan stored channels at 25 channels/second.

Ten Channel-Storage Banks — let you group your stored frequencies so that you can easily identify calls.

Liquid-Crystal Display — shows the selected channel and frequency.

Two-Second Scan Delay — helps prevent the loss of replies on a channel while you are scanning.

Memory Backup — keeps the channel frequencies stored in your scanner's memory for up to 1 hour without the battery.

Lockout Function — makes your scanner skip over specified channels.

Priority Channel — helps keep you from missing important calls on the selected priority channel.

Monitor Banks — let you save up to ten channels located during a frequency search.

Your PRO-37 covers all these bands:

- 30-50 MHz (VHF Lo)
- 50-54 MHz (6-Meter Ham Band)
- 108-136.975 MHz (Aircraft)
- 137-144 MHz (Government)
- 144-148 MHz (2-Meter Ham Band)
- 148-174 MHz (VHF Hi)
- 380-450 MHz (Ham Radio and Government)
- 450-470 MHz (UHF Lo)
- 470-512 MHz (UHF TV)
- 806-823.9375 MHz (UHF Hi)
- 851.1125-868.9375 MHz (UHF Hi)
- 896.1125-960 MHz (UHF Hi)

CONTENTS

Your scanner might cause radio or TV 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 to eliminate the interference by:

- Moving your scanner away from the receiver

- Contacting your local Radio Shack store for help

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

For your important records, please record your scanner's serial number in the space provided. The serial number is located on the back of the scanner.

Serial Number:_____

PREPARATION

POWER SOURCES

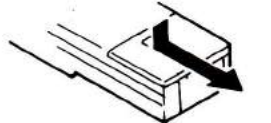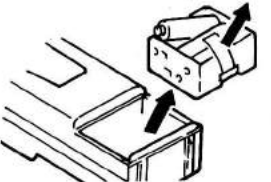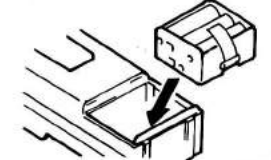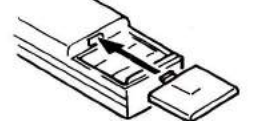You can power your scanner from any of the following three sources:

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

Using Batteries

You can operate your scanner from six AA batteries. 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).

Warning: The scanner has a built-in circuit that lets you recharge nickel-cadmium batteries inside the scanner. However, you must never use this circuit when you have installed non-rechargeable batteries in the scanner. Be sure to read "Important Information about External Adapters" and "Charging Nickel-Cadmium Batteries."

BATT flashes on the display and a beep sounds every 3 seconds when the batteries are low. When this happens, replace all six batteries immediately (or recharge the 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 in the holder, observing the polarity (+ and –) as 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 scanner 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 scanner. Improper use of the jacks can damage the scanner and 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 of batteries installed.
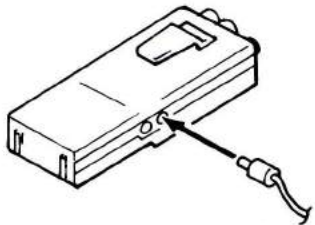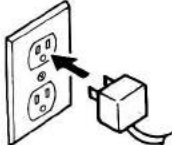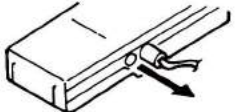
The **CHG** jack supplies power to operate the scanner and also applies power to the internal batteries to charge them. Use the **CHG** jack only when you have installed rechargeable nickel-cadmium batteries.

Warning: Never use the **CHG** jack with non-rechargeable batteries. If you try to recharge non-rechargeable batteries, they become very hot and could even explode.

Using an AC Power Source

To power the scanner from AC power, you need Radio Shack's 9-volt, 300mA AC adapter (Cat. No. 273-1455). Use of an adapter with different ratings could damage your scanner or the adapter.
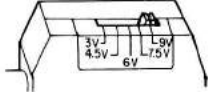
1	Plug the adapter's plug into the scanner's **PWR** jack. **Note:** If you have installed rechargeable nickel-cadmium batteries in your scanner, you can connect the AC adapter to the **CHG** jack. This powers the scanner and recharges the batteries at the same time. See "Charging Nickel-Cadmium Batteries."	
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 scanner 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) or an adapter rated at 9V, minimum 300 mA.

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

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 scanner's **PWR** jack. **Note:** If you have installed rechargeable batteries in the scanner, you can connect the DC adapter to the **CHG** jack. This powers the scanner and recharges the nickel-cadmium 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. **Note:** 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 scanner.	

CHARGING NICKEL-CADMIUM BATTERIES

Your scanner 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."

Warning: 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.**
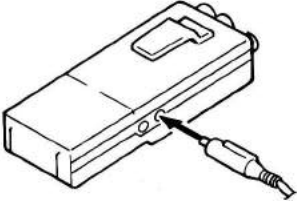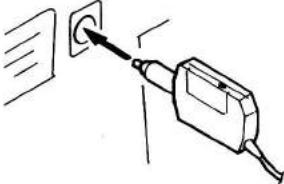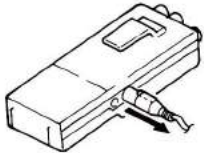
It takes 10 to 18 hours to recharge batteries that are fully discharged. You can operate the scanner while you charge the batteries, but the charging time is longer.

Charging Hints:

- Nickel-cadmium batteries deliver more power if you occasionally let them discharge completely. To do this, use the scanner until reception becomes poor. Then, fully charge the batteries. If you do not do this occasionally, they can temporarily lose the ability to deliver full power.

- To prevent permanent nickel-cadmium battery power loss, never charge your batteries in an area where the temperature is above about 80 degrees Fahrenheit. Also, if you use an external charger, do not overcharge the batteries.

- If you plan to use rechargeable batteries, do not use any adapter other than those specified in "Power Sources." While adapters of the same voltage rating and at least the minimum current rating could power the scanner, other adapters might not work properly with the charging circuit in your scanner, and could permanently damage the batteries or your scanner.

CONNECTING THE ANTENNA

Attach the flexible antenna to the **ANT** (antenna) jack on top of the scanner. Slip the slot in the antenna's connector over the protrusion on the jack.
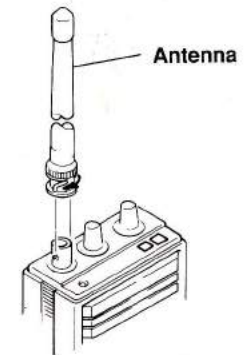
Then, press down and rotate the base of the antenna until it locks into place.

The antenna jack on your scanner makes it easy to use your scanner with a variety of antennas. You can remove the supplied antenna, if you want, and attach a different one, such as an external mobile antenna, telescopic antenna, or outdoor base antenna. Radio Shack stores sell the antenna connector adapters that let you use these antennas.

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.

Warning: When installing or removing an outdoor antenna, use extreme caution. If the antenna starts to fall, let it go! It could contact overhead power lines. If the antenna touches the 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

For private listening, plug an earphone into the **EAR** jack on top of your scanner. 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.

Always set volume to its minimum position before you plug in earphones or headphones. Then, adjust the volume to a confortable listening level.

Warning: Do not listen at extremely high volume levels, especially when using an earphone. Extended high-volume listening can lead to permanent hearing loss.

CONNECTING AN EXTENSION SPEAKER

In a noisy area, an extension speaker such as Radio Shack 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 scanner's **EAR** jack.
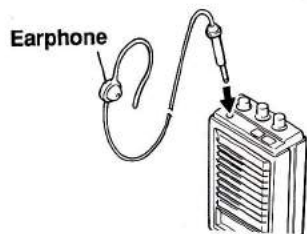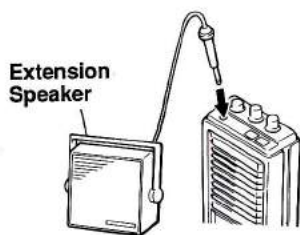
UNDERSTANDING YOUR SCANNER

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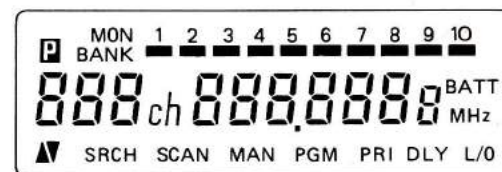
The display has several indicators that show the scanner's current operating mode. A quick look at the display will help you understand your scanner's operation.

The above illustration shows all your scanner's indicators. The following is a brief explanation of each indicator.

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

SCAN — comes on when you are scanning channels.

DLY — appears when the scanner is set to a channel that you have 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 you have manually selected a channel.

ch — digits that precede this indicator show which of the 200 channels you have tuned the scanner to.

MHz — digits that precede this indicator show which of the 31,000 possible frequencies you have tuned the scanner to.

MON — appears when you are listening to a monitor memory.

PRI — appears when you have turned on the priority channel feature.

PGM — appears when you are programming frequencies into the scanner's channels.

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

P — appears when you listen to the priority channel.

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

8

9

A LOOK AT THE KEYBOARD

```
PRO-37  UHF          KEY LOCK ▶
HYPERSCAN  VHF-LO-AIR  ▯▮▮▮▮▮▯

SCAN  MANUAL   1      2       3
 ▭     ▭     1-20   21-40   41-60
                ▭     ▭       ▭

L/OUT  LIMIT    4      5       6
 ▭     ▭     61-80  81-100  101-120
                ▭     ▭       ▭

DELAY   ▲       7      8       9
 ▭     ▭    121-140 141-160 161-180
                ▭     ▭       ▭

SPEED   ▼       0      •     ENTER
 ▭     ▭    181-200
                ▭     ▭       ▭

LIGHT  MON    PRI    PGM    CLEAR
 ▭     ▭      ▭      ▭       ▭

        200 CHANNEL DIRECT ENTRY
```

Your scanner's keys might seem confusing 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. The single digit is the number entered when you enter a channel number or a frequency. The range of numbers (21-40, for example) indicates the channels that make up a channel storage bank. See "Understanding Channel Storage Banks."

SCAN — makes the scanner scan through the programmed channels. This button is repeated on the top of your scanner.

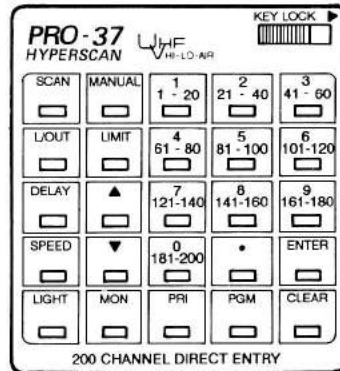**MANUAL** — stops scanning and lets you directly enter a channel number. This button is repeated on the top of your scanner.

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 — turns the lockout function on and off for the selected channel.

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

SPEED — changes the scanning and search speed.

LIGHT — turns on the display light.

MON — used to access the 10 monitor memories. See "Moving a Frequency from Monitor Memory to a Channel."

PRI — turns the priority feature on and off.

PGM — used when you program frequencies into channels.

ENTER — used to enter the frequencies when you are programming channels.

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

UNDERSTANDING CHANNEL STORAGE BANKS

You can store up to 210 frequencies into your scanner's memory. You store each frequency into either a permanent memory, called a channel, or a temporary memory, called a monitor. There are 200 available channels and 10 available monitor memories.

To make it easier to identify and select the channels you want to listen to, channels are divided into 10 groups of 20 channels each. Each group of channels is called a channel storage bank. Perhaps the best way to explain the use of channel storage banks is through a practical example.

Suppose you want to monitor four different agencies: police, fire, ambulance, and aircraft. As a rule, each agency uses several different frequencies 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 want to listen to only fire calls in Bank 2, you can turn off all of the other banks. You could also use this feature to group channels by city or by county.

The scanner also has 10 monitor memories. You use these memories to temporarily store frequencies while you decide whether to save them in channels. This is handy for quickly storing an active frequency when you search through an entire band. You can manually select these memories, but you cannot scan them. See "Searching for Active Frequencies."

When you are in the monitor mode, the 10 numbers at the top of the display indicate the 10 monitor memories. The bar indicates the current monitor memory.

OPERATION

USING THE RESET BUTTON

Before using the scanner the first time, we recommend you reset the scanner to remove any random frequencies that might be stored in its channels. Also, the scanner's display might lock up the first time you connect power to it, or if there are no batteries installed for an extended period.

Battery Holder

Reset Button
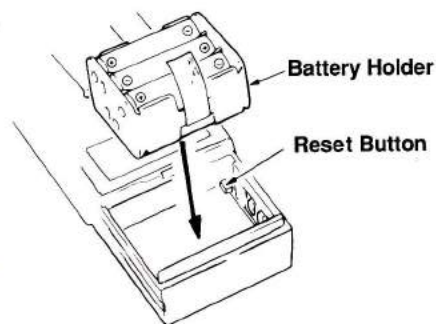
To reset the scanner, turn on the scanner, hold down **CLEAR** and use a ball-point pen or similar object to press the **RESET** switch in the battery compartment. This clears all programmed channels from the scanner. Use this procedure only when you are certain the scanner is not working properly.

SETTING THE VOLUME AND SQUELCH CONTROLS

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 signals.

USING THE KEY LOCK

Once you program your scanner, you can protect it from accidental program changes by moving **KEY LOCK** to **LOCK**. In this position, the only controls that operate are **LIGHT**, **VOLUME**, **SQUELCH**, and **MANUAL** and **SCAN** on top of the scanner.

When you want to change the scanner's programming, move the switch to **KEY**.

PROGRAMMING THE SCANNER

Follow these steps to store frequencies in channels.

1	Select a channel to program by pressing **MANUAL**, entering the channel number you want to program, and pressing **PGM**. PGM appears on the display to indicate the scanner is in the programming mode.	
2	Enter a frequency. A good reference for active frequencies is Radio Shack's *Police Call Directory including Fire and Emergency Services*. We update this directory every year, so be sure to get a current copy. Also, refer to "Reception Notes" and "Searching for Active Frequencies" in this manual.	
3	Press **ENTER** to store the frequency. If you made a mistake in Step 2, **Error** appears on the display. Press **CLEAR** and repeat Step 2.	
4	If you want the scanner to pause 2 seconds after each transmission before scanning to the next channel, press **DELAY** so that **DLY** appears in the display. See "Using the Delay Feature."	
5	Repeat Steps 1-4 to program more channels. If you want to program the next channel in sequence, press **PGM** and repeat Steps 2-4.	

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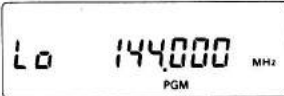
Use these procedures to search for a transmission. This is helpful if you do not have a reference to frequencies in your area. See also "Guide to the Action Bands" in this manual.

Limit Search

This procedure lets you search within a range of frequencies. -L- appears on the display during a limit search.

Notes:
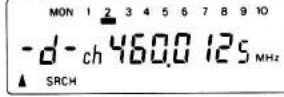
- Pressing **SPEED** switches between the 8 steps per second and 50 steps per second search speed.

- Press **DLY** to make the scanner pause 2 seconds after a transmission before proceeding to the next frequency.

1	Press **PGM**. Then, press **LIMIT**.	Lo 30.000 0 MHz PGM
2	Enter the lower limit of the frequency range.	Lo 144.000 MHz PGM
3	Press **ENTER**. Then, press **LIMIT**.	Hi 960.000 0 MHz PGM
4	Enter the upper limit of the frequency range.	Hi 146.000 MHz PGM
5	Press **ENTER**.	Hi 146.000 0 MHz PGM

6	Press ▼ to search down from the upper limit. Or, press ▲ to search up from the lower limit.	MON 1 2 3 4 5 6 7 8 9 10 -L- 144.000 0 MHz ▲ SRCH
7	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 flashing. Or, press ▼ or ▲ to continue the search.	MON 1 2 3 4 5 6 7 8 9 10 -L- 144.005 0 MHz ▲ SRCH
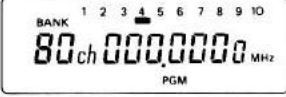
Direct Frequency Search

When you are listening to a channel, you can search up or down from the current frequency. -d- appears in the display during a direct frequency search.

1	Press **MANUAL** and the channel number to select a channel in which you have programmed a frequency. Then, press either **MANUAL** or **PGM**.	BANK 1 2 3 4 5 6 7 8 9 10 50 ch 460.000 0 MHz MAN
2	Press ▲ to search up from the channel's frequency or press ▼ to search down.	MON 1 2 3 4 5 6 7 8 9 10 -d- ch 460.0 12 5 MHz ▲ SRCH
3	When the scanner stops on a transmission, you can store that frequency in the current monitor memory by pressing **MON**. 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**, and then the number for the monitor memory you want to listen to.	MON 1 2 3 4 5 6 7 8 9 10 -d- ch 460.0 12 5 MHz ▲ SRCH

MOVING A FREQUENCY FROM MONITOR MEMORY TO A CHANNEL

To move a frequency from a monitor memory to a channel memory, follow these steps.

1	Press **MANUAL**, enter the channel number you want to store the monitor frequency in, and press **PGM**.	BANK 1 2 3 4 5 6 7 8 9 10 80ch 000.0000 MHz PGM
2	Press **MON** and enter the monitor memory number that has the frequency you want to store.	MON 1 2 3 4 5 6 7 8 9 10 452.662s MHz PGM
3	Press **ENTER**. The scanner stores the monitor frequency in the channel. If you want to return to a limit search after this procedure, press **LIMIT**, and either ▲ or ▼ to continue.	BANK 1 2 3 4 5 6 7 8 9 10 80ch 452.662s MHz PGM

SCANNING THE CHANNELS

To begin scanning, press **SCAN**. The scanner scans through all non-locked channels in the activated banks. You must set **SQUELCH** so that you do not hear the hissing sound between transmissions. Be sure to read the following sections to get the full benefit from all of your scanner's special features.

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 operating this way.

To program a delay, select the channel and press **DELAY** so that **DLY** appears on the display. Now, when your scanner pauses at an active channel when scanning, it waits for 2 seconds after the completion of each transmission on that channel before it resumes 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 have 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 scanner has two different scanning speeds — 8 channels/second and 25 channels/second. To switch between the two scanning speeds, press **SPEED** during scanning.

Locking Out Channels

You can increase the effective scanning speed by locking out channels that you have not programmed. Manually select the channel and press **L/OUT** so that **L/O** appears on the display. This is also handy for locking out channels that have a continuous transmission. You can still manually select locked-out channels.

To unlock a channel, manually select the channel and press **L/OUT** so that **L/O** disappears from the display.

Note: There must be at least one active channel in each bank. You cannot lockout all channels.

Turning Banks On and Off

As explained in "Understanding Channel Storage Banks" the scanner splits the 200 channels into ten banks of 20 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. When you turn off a bank, the scanner does not scan any channel in the bank. While scanning, 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 the scanner scans all channels within that bank that are not locked out. If the indicator is off, the scanner does not scan any of the channels within that bank.

You can still manually select any channel in a bank, even if the bank is turned off. You cannot turn off all banks. One bank is always active.

Using the Priority Feature

You can scan through the programmed channels, and still not miss an important or interesting call on a specific channel. Just program the channel as the priority channel and turn on the priority feature by pressing **PRI** during scanning. The scanner now checks the priority channel every 2 seconds, and stays on the channel if there is activity.

To program a channel as the priority channel, press **PGM**, the desired channel number, and then press **PRI**. **P** appears in the upper left corner of the display whenever the scanner is set to the priority channel. You can only select one channel as the priority channel.

MANUALLY SELECTING A CHANNEL

You can monitor a channel without scanning. This is useful if you hear an emergency broadcast on a channel and do not want to miss any details — even though there might be periods of silence — or if you want to monitor a locked-out channel.

To select a channel, just press **MAN-UAL**, enter the channel number, and press **MANUAL** again. Or, if the scanner is scanning and stops at the desired channel, just press **MANUAL** one time. Pressing **MANUAL** addi-

tional times makes the scanner step through the channels.

BATTERY-SAVING FEATURE

Your scanner has a special battery-saving feature. When you have manually selected a channel, if the scanner does not detect a signal within 5 seconds and you do not press a key, the scanner enters the standby mode. In this mode the scanner rests for 1 second, then checks for a signal for 1/2 second. The scanner continues doing this until you press a button or it receives a signal.

During standby, the scanner uses only 40 percent of the normal power consumption.

BIRDIES

Birdies are frequencies that your scanner generates internally that interfere with broadcasts on the same frequencies. This makes it difficult or impossible to hear transmissions on these frequencies. If you program one of these frequencies, you hear only noise on the channel.

If the interference is not severe, you might be able to turn **SQUELCH** clockwise to cut out the interference. The most common birdies to watch for are listed below.

Birdie Frequencies

32.0000 MHz	147.2000 MHz
32.1100	147.6200
33.1000	to
37.1300	147.7000
38.1300	148.5700
38.4000	152.7600
39.1300	153.6000
40.2000	158.7900
40.9800	160.0000
43.1500	160.8000
44.8000	164.8200
47.1950	166.4000
48.2000	172.8000
51.2000	384.4500
51.2250	407.5500
52.2150	433.3500
108.4500	453.8750
108.8000	457.2450
115.2000	458.4250
121.6000	465.4500
123.2000	467.3250
124.4750	469.4250
125.6250	474.9625
126.7250	477.3750
128.0000	484.0000
128.4750	492.8000
134.4000	494.0375
136.5650	498.0500
140.7000	510.1000
140.8000	512.0000
144.6000	

RECEPTION NOTES

Reception on the frequencies covered on your scanner is mainly line of sight. That means that 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 Oceanic Atmospheric Administration (NOAA) Weather Radio'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, and 162.55 MHz. In most areas of the country, you can receive one or more of these frequencies.

GUIDE TO THE ACTION BANDS

With the right frequencies programmed into your scanner, 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 for 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 emergency services. If you are near a railroad or major railroad tracks, look around 160.0 to 161.9 for signals.

In some large cities, there has been a move to the UHF bands for emergency services. Here, most of the activity is between 453.025 and 453.95 MHz and between 456.025 and 467.925 MHz.

In the UHF band, frequencies between 456.025 and 459.95 MHz and between 465.025 and 469.975 MHz are used by mobile units and control stations associated with base and repeater units that operate 5 MHz lower (that is, 451.025 to 454.95 MHz and 460.025 to 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) to find the base station/repeater for that service.

A newer technology is now available that uses the 800 MHz band for many services. Trunked radio, introduced to business systems in 1979, is now used by some public safety agencies. With up to twenty channels available, the transmitter automatically selects an unused frequency each time it is activated. Several agencies can share such a system without interfering, and the system can 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 scanner rounds the entered frequency down to the nearest valid frequency. For example, if you try to enter 151.473, the scanner accepts this as 151.470 MHz.

Typical Band Usage

The following is a brief listing of the typical services using the bands your scanner 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

Government Agencies:

UAF	Air Force
UAR	Army
UBW	International Boundary & Water Commission
UCE	Environmental Research Laboratories
UCF	Maritime Fisheries Service
UCG	Coast Guard
UCM	Maritime Administration

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 and Emergency Service* and for aircraft, *Official Aeronautical Frequency Directory* available at your local Radio Shack store.

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
UII	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

Abbreviations used by permission of the publishers of *Police Call Radio Guide,* Copyright Hollins Radio Data.

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
454.00–457.60	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. 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 one 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 453.275 also on 474.675. To see if it is an image, do a little math. Double the intermediate frequency of 10.7 MHz and subtract that number (21.4) from the *new* frequency. If the answer is the regular frequency, then 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 there is a broadcast on the actual frequency.

CARE AND MAINTENANCE

Your PRO-37 Programmable Scanner is an example of superior design and craftsmanship. The following suggestions will help you care for your scanner so that you can enjoy it for years.
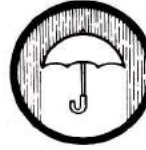
Keep the scanner dry. If it does get wet, wipe it dry immediately. Liquids can contain minerals that can corrode the electronic circuits.

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 scanner gently and carefully. Dropping it can damage circuit boards and cases and can cause the scanner to work improperly.

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

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

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

Modifying or tampering with your scanner's internal components can invalidate the scanner's warranty and might void your FCC authorization to operate it. If your scanner is not operating as it should, take it to your local Radio Shack store. Our personnel can assist you and arrange for service, if needed.

TROUBLESHOOTING

IF YOU HAVE PROBLEMS...

We hope you don't, but here are some suggestions,

Trouble	Check
Does not function.	• Batteries correctly installed? • Batteries are good?
No or poor reception.	• Antenna correctly installed? • Poor reception environment (metal building, etc.)? • Frequencies correctly programmed?
Error appears on the display.	• Programming error—confirm procedure.
Keyboard does not work.	• **KEYLOCK** set to **LOCK**?
Keys do not work and random display.	• Hold **CLEAR** and press **RESET**.

If none of the above suggestions help, take your scanner to your local Radio Shack store for assistance.

SPECIFICATIONS

Frequency Coverage:
VHF-Lo .... 30-50 MHz (in 5 kHz steps)
Ham .... 50-54 MHz (in 5 kHz steps)
Aircraft .... 108-136.975 MHz (in 25 kHz steps)
Government .... 137-144 MHz (in 5 kHz steps)
Ham .... 144-148 MHz (in 5 kHz steps)
VHF Hi .... 148-174 MHz (in 5kHz 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 x 10 banks) and 10 Monitor channels.

Sensitivity (20 dB Signal-to-Noise ratio):
30-54 MHz .... 1.0 µV
108-136.975 MHz .... 2.0 µV
137-174 MHz .... 1.0 µV
380-512 MHz .... 1.0 µV
806-960 MHz .... 2.0 µV

Spurious Rejection:
30-54 MHz ....50 dB at 40 MHz
108-136.975 MHz ....50 dB at 124 MHz
137-174 MHz ....50 dB at 154 MHz
380-512 MHz ....Not specified
806-960 MHz ....Not specified

Selectivity:
±10 kHz..−6 dB
±20 kHz..−50 dB

IF Rejection:
10.7 MHz ....50 dB at 154 MHz

Scanning Rate:
Fast..25 channels/sec
Slow ....8 channels/sec

Search Rate:
Fast...50 steps/sec
Slow...8 steps/sec

Priority Sampling .... 2 seconds

Delay Time.. 2 seconds

Modulation Acceptance ....±8 kHz

IF Frequencies.. 10.7 MHz and 455 kHz

Filters.. 1 Crystal filter, 1 Ceramic filter

Squelch Sensitivity:
Threshold..Less than 1.0 µV
Tight (VHF Lo, Hi, UHF) .... (S + N)/N 25 dB
Tight (Aircraft) .... (S + N)/N 20 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 VDC, 6AA batteries, or a suitable adapter
(negative ground only)

Current Drain:
Squelched.. 40 mA
Max. Audio Power...160 mA

Dimensions..6 1/2 x 2 3/4 x 1 13/16 inches (HWD)
(165 x 69 x 46 mm)
Weight ....14 oz. (400 g)

U.S. PATENT NUMBERS.

3,794,925	4,027,251	4,123,715
3,961,261	4,092,594	4,245,348
3,962,644		

NOTES