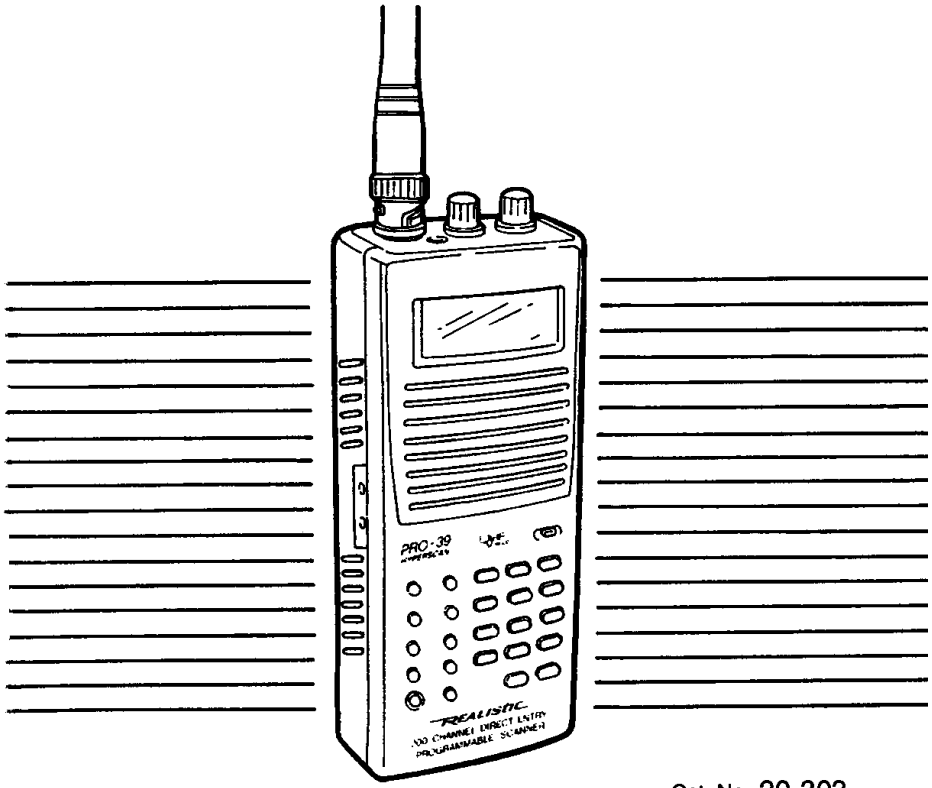
OWNER'S MANUAL

PRO-39
Programmable Scanner

Please read before using this equipment.



Cat. No. 20-303

REALISTIC®

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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We Service What We Sell

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

7A2

Printed in Japan

INTRODUCTION

Your Realistic PRO-39 Programmable Scanner lets you in on all the action! This scanner gives you direct access to over 31,000 frequencies, including those used by the police department, fire department, ambulance services, amateur radio operators, 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 per second.

Ten Channel-Storage Banks – let you group your stored frequencies so 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.

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Your PRO-39 covers the following bands:

30 – 50 MHz	VHF Lo
50 – 54 MHz	6-Meter Ham Band
108 – 136.975 MHz	Aircraft (AM)
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 – 868.9375 MHz	UHF Hi
896 – 960 MHz	UHF Hi

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: _____

CONTENTS

PREPARATION

POWER SOURCES

You can power your scanner from one of the following three sources.

- Internal batteries
- Your vehicle's battery (using an optional DC Adapter)
- Standard AC power (using an optional AC adapter)

Using Internal Batteries

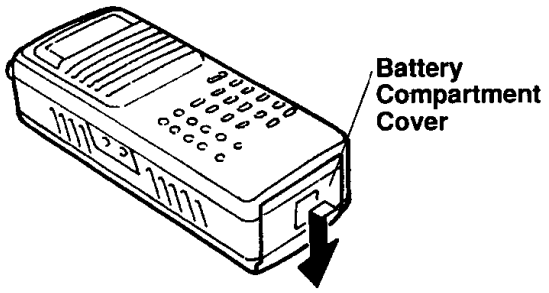
The PRO-39 requires six AA batteries for power. For longest battery life and optimum performance, we recommend alkaline batteries (Cat. No. 23-552). Or you can use rechargeable nickel-cadmium batteries (Cat. No. 23-125). On a single charge, the rechargeable batteries do not last as long as alkaline batteries, but you can use the rechargeable batteries again and again.

Caution: The PRO-39 has a built-in charging 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 scanner. Be sure to read "Using an External Power Sources" and "Charging Nickel-Cadmium Batteries."

Installing Batteries

The scanner uses a removable battery holder to make battery installation easier. Install the batteries in the holder first. You install the holder in the scanner's battery compartment.

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 install six AA batteries, as indicated by the polarity (+ and –) symbols marked on the battery holder.
3. Place the battery holder in the battery compartment so the holder's metal contacts line up with the metal contacts in the battery compartment.
4. Replace the battery compartment cover.

Low Battery Indicator

When the batteries get weak, B flashes on the display and a beep sounds. You should immediately replace all six batteries. Or, if you are using rechargeable nickel-cadmium batteries, you should recharge all six batteries.

Using an External Power Source

Instructions for using an external power source are given in "Using an AC Adapter" and "Using a DC Adapter." But before you connect any adapter to the scanner, it is very important that you understand the purpose of the scanner's PWR and CHG jacks. Improper use of the jacks can damage the scanner and the power adapter.

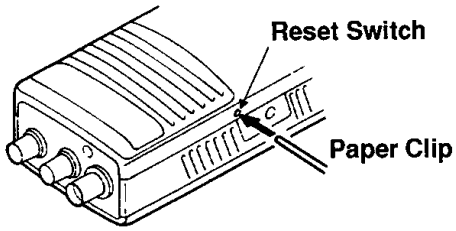
The PWR jack supplies power to operate the scanner and disconnects the internal batteries. You can use this jack with an external power source regardless of what kind of batteries are installed in the scanner.

The CHG jack supplies power to operate the scanner, and it also sends power to the internal batteries to recharge them. Use the CHG jack only when you have installed nickel-cadmium batteries in the scanner.

Warning: Never use the CHG jack when non-rechargeable batteries (standard, extra-life, or alkaline) are installed in the scanner. If you attempt to charge the non-rechargeable batteries, they get hot and can even explode.

RESETTING THE SCANNER

If the scanner's display locks up or does not work properly after you install new batteries or after you connect an external power source, you might have to reset the scanner's display or initialize the scanner.



To reset the display:

1. Turn on the scanner.
2. Press the reset switch at the right of the PWR jack using a pointed object, such as a straightened paper clip. If this is not effective, initialize the scanner as directed below.

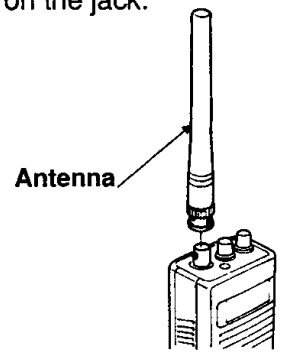
Caution: Use the following procedure only when you are sure the scanner is not working properly. This procedure clears all information you have programmed into the scanner.

To initialize the scanner:

1. Turn on the scanner.
2. Press and hold CLEAR and then press the reset switch at the right of the PWR jack using a pointed object, such as a straightened paper clip. Release CLEAR after the display reappears.

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.

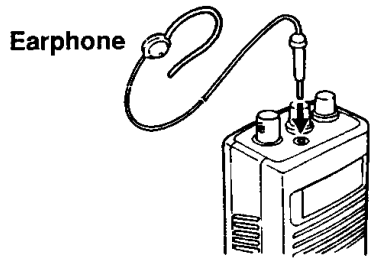
The antenna jack on your scanner makes it easy to use your scanner with a variety of antennas. You can remove the supplied antenna and attach a different one, such as an external mobile antenna, telescoping antenna, or outdoor base antenna. Radio Shack stores sell the antenna connector adapters that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



Listening Safety

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

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

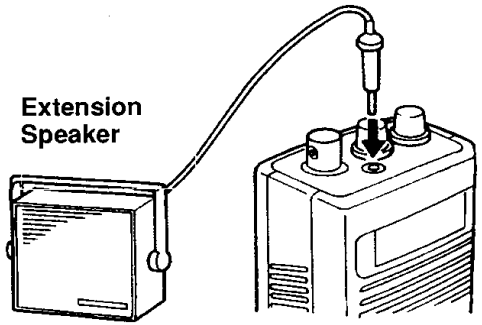
Traffic Safety

Do not wear an earphone or headphones while operating a motor vehicle or riding a bicycle. This can create a traffic hazard and is illegal in some areas.

Even though some earphones or headphones are designed to let you hear some outside sounds when listening at normal volume levels, they still present a traffic hazard.

CONNECTING AN EXTENSION SPEAKER

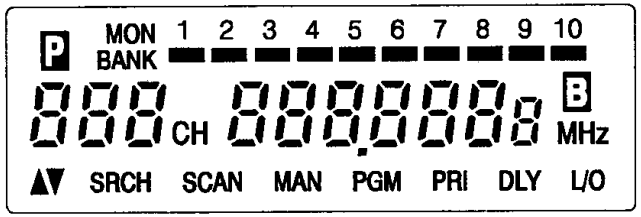
In a noisy area, an extension speaker such as Radio Shack Cat. No. 21-549, positioned in the right place, might provide more comfortable listening. Plug the speaker cable's 1/8-inch mini-plug into the scanner's earphone jack ∩. You can also use a Cat. No. 21-541 amplified speaker in your vehicle.



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 manually select 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 listen 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.

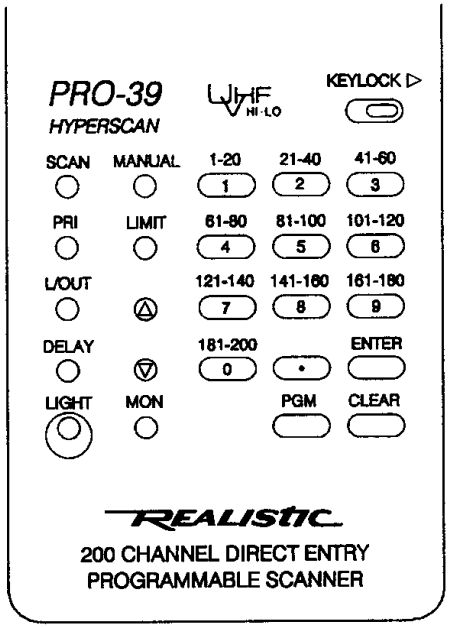
B – flashes every 3 seconds when the batteries need to be replaced or recharged.

P – appears when you listen to the priority channel.

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

A LOOK AT THE KEYBOARD

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 has 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.

MANUAL – stops scanning and lets you directly enter a channel number.

CLEAR – press to clear an incorrect entry.

KEYLOCK – disables the keypad to prevent accidental program changes. Does not lock out the **SCAN** and **MANUAL** keys.

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.

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 when you program frequencies into 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). 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 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

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 transmission, rotate **SQUELCH** clockwise to decrease the scanner's sensitivity to these signals.

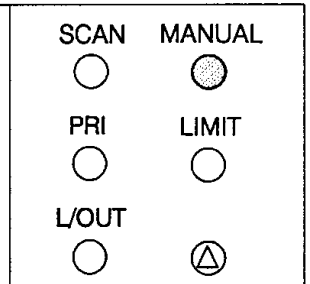
USING THE KEYLOCK

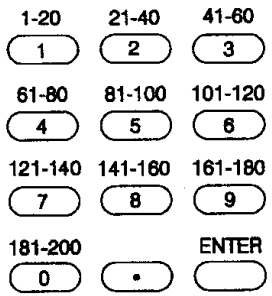
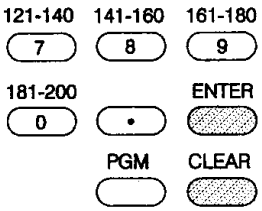
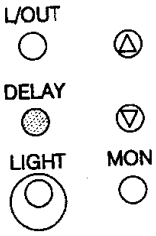
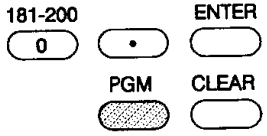
Once you program your scanner, you can protect it from accidental program changes by setting **KEYLOCK** to **LOCK**. In this position, the only controls that operate are **SCAN, MANUAL, LIGHT, VOLUME,** and **SQUELCH**.

When you want to change the scanner's programming, set **KEYLOCK** 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 that the scanner is in the programming mode.	

2	Enter a frequency. Good references for active frequencies are Radio Shack's *Police Call frequency guides* and *Official Aeronautical Frequency Directory*. We update these directories 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** until **DLY** appears on 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.	

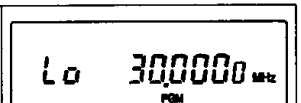
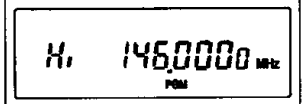
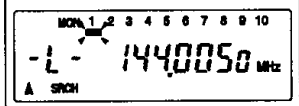
SEARCHING FOR ACTIVE FREQUENCIES

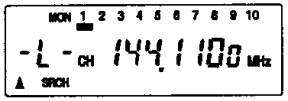
Use these procedures to search for a transmission. This is helpful if you do not have a reference to frequencies in your area. See also "Guide to the Action Bands" in this manual.

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

Limit Search

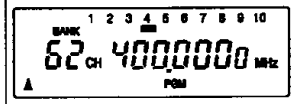
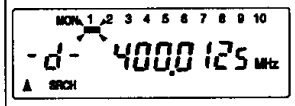
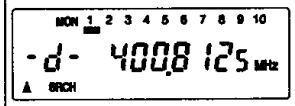
This procedure lets you search within a range of frequencies. `-L-` appears on the display during a limit search.

1	Press **PGM**. Then press **LIMIT**.	
2	Enter the lower limit of the frequency range.	
3	Press **ENTER**. Then press **LIMIT**.	
4	Enter the upper limit of the frequency range.	
5	Press **ENTER**.	
6	Press ▼ to search down from the upper limit. Or, press ▲ to search up from the lower limit.	

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.	

Direct Search

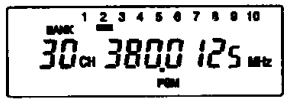
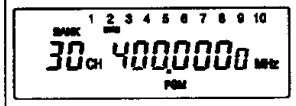
When you are listening to a channel, you can search up or down from the current displayed frequency. -d- appears in the display during a direct search.

1	Press **MANUAL** and the channel number to select a channel in which you have programmed a frequency. Then press **MANUAL** or **PGM**.	
2	Press ▲ to search up from the channel's frequency or press ▼ to search down.	
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.

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 then press **PGM**.	
2	Press **MON** and enter the monitor memory number that has the frequency you want to store.	
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.	

SCANNING THE CHANNELS

To begin scanning, press **SCAN**. The scanner scans through all non-locked channels in the activated banks. Set **SQUELCH** so you do not hear the hissing sound between transmissions.

Be sure to read the following sections to get the full benefits 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** until **DLY** appears on the display. Now, when your scanner pauses at an active channel when scanning, it waits for two 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.

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** until **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** until **L/O** disappears from the display.

Note: There must be at least one active channel in each bank. You cannot lock out 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 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 and 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 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.

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

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, press **MANUAL**, enter the channel number, and press **MANUAL** again. Or, if the scanner is scanning and stops at the desired channel, press **MANUAL** one time. Pressing **MANUAL** additional 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 and then checks for a signal for ¼ second. The scanner continues doing this until you press a button or it receives a signal. During standby, the scanner uses only 30 percent of the normal power consumption.

A GENERAL GUIDE TO SCANNING

BIRDIES

Birdies are the products of internally generated signals that make some frequencies difficult to receive. 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:

30.7350 MHz	120.6000 MHz	147.2000 MHz	386.0000 MHz	475.8500 MHz
32.0000	121.6000	147.7600	390.4000	478.2750
32.1600	122.7750	148.7100	391.3125	479.8500
33.1650	123.1500	149.7150	395.4875	480.0000
36.2300	124.4750	150.7200	402.0750	486.4000
38.2400	125.6250	151.7850	403.2000	487.8125
38.4000	128.0000	152.7600	407.1000	489.2500
40.2050	134.4000	153.6000	407.3875	491.9375
41.2200	134.8500	153.7650	409.6000	492.8000
44.2400	138.7150	154.8000	422.4000	493.9500
44.8000	139.7200	155.8050	423.4750	499.2250
48.2400	140.7000	156.8100	426.2000	501.4000
50.2700	140.8000	158.8200	456.8750	502.7000
51.2000	141.7050	160.0000	462.3750	503.1625
52.2500	142.7100	161.8350	464.3875	505.6000
108.8000	143.7400	163.8400	468.4125	509.3375
111.6000	144.7400	164.8500	471.7250	510.6500
115.2000	145.7250	384.0000	473.1500	512.0000
115.5750	146.7500			

RECEPTION NOTES

Reception on the frequencies covered on your scanner is mainly *line-of-sight.* That means you usually won't be able to 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 hundreds or even thousands of miles away. This type of reception is unpredictable, but often very interesting.

One very useful service is the National Oceanic Atmospheric Administration (NOAA). Their 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

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 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 service. 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.

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 that use the bands your scanner can receive. This listing helps you decide which ranges you would like to scan.

These frequencies are subject to change, and might vary from area to area. For a more complete listing, refer to the *Police Call Radio Guide* available at your local Radio Shack store.

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
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

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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 . . . . . Coventional 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.

USING AN OPTIONAL ADAPTER

Caution: Use only the recommended AC and DC adapters.

USING AN AC ADAPTER

To power the scanner from AC power you need Radio Shack's AC adapter (Cat. No. 20-188). Plug the adapter's barrel plug into the PRO-39's **PWR** jack. Then plug the adapter's power module into a standard AC outlet.

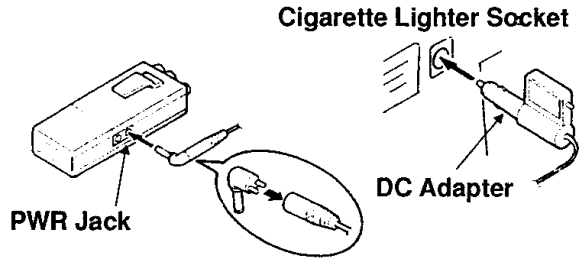
When you finish using the AC adapter, disconnect it from the AC outlet first. Then disconnect it from the scanner.

Note: If you have installed rechargeable nickel-cadmium batteries in the 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."

USING A DC ADAPTER

Note: Mobile use of a scanner may be unlawful or require a permit in some areas. Check the laws in your area.

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. 270-1560A).



1. Connect the adapter's orange barrel plug to the adapter's cable with the tip set to — (negative).
2. Set the adapter's voltage switch to 9V.
3. Insert the barrel plug into the scanner's **PWR** jack.
4. Plug the other end of the adapter into your vehicle's cigarette lighter socket.

When you finish using the DC adapter, disconnect it from the cigarette lighter first. Then disconnect it from the scanner.

Notes:

- If you have installed rechargeable nickel-cadmium batteries in the scanner, 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" and the warning below.
- 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.

CHARGING NICKEL-CADMIUM BATTERIES

The scanner has a built-in charging circuit that lets you recharge nickel-cadmium batteries (Cat. No. 23-125) while they are in the scanner. To charge the batteries, simply connect an AC adapter (Cat. No. 20-188) or a DC adapter (Cat. No. 270-1560A) to the scanner's **CHG** jack.

Warning: Do not connect either adapter to the scanner's **CHG** jack if you have installed non-rechargeable batteries (standard, extra-life, or alkaline). Non-rechargeable batteries become hot and can even explode if you try to recharge them.

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

Charging Tips

Rechargeable lead-acid batteries, such as your car battery, work better and last longer if you keep them fully charged all the time. However, nickel-cadmium batteries, such as those you use in this scanner, react in the opposite way. They last longer and deliver more power if you occasionally let them fully discharge. To do this, simply use the scanner until the low battery indicator appears in the display. Then fully charge the batteries.

CARE AND MAINTENANCE

Your PRO-39 Programmable Scanner is an example of superior design and craftsmanship. The following suggestions will help you care for your scanner so 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 and 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 damp 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 for assistance.

TROUBLESHOOTING

If you have problems with your scanner, consult the following chart.

Problem	Check
Does not function.	Batteries correctly installed? Batteries are good?
No or poor reception.	Antenna correctly installed? Poor reception environment? Frequencies correctly programmed?
`Error` appears on the display.	Programming error — confirm procedure.
Keyboard does not work.	KEYLOCK set to LOCK?
Keys do not work or random display.	Reset the scanner. See "Resetting the Scanner."

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 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 – 823.9375 MHz (in 12.5 kHz steps)
  851 – 868.9375 MHz (in 12.5 kHz steps)
  896 – 960 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 ..... 25 channels/sec.
Search Rate ..... 50 steps/sec.
Priority Sampling ..... 2 seconds
Delay Time ..... 2 seconds

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 3/8" (36 m/m) 8ohm, dynamic type
Power Requirement ..... +9 VDC, 6AA batteries, or a suitable adapter (negative ground only)
Current Drain: (Squelched) ..... 40 mA
Operating Temperature ..... 14°F to +140°F (–10°C to +60°C)
Storage Temperature ..... –40°F to +160°F (–20°C to +71°C)
Dimensions ..... 5 3/4 x 2 3/4 x 1 5/8 inches (HWD) (145 x 58 x 42 mm)
Weight ..... Approx. 8.8 oz. (250 g) without antenna and batteries

US PATENT NUMBERS.

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

NOTES