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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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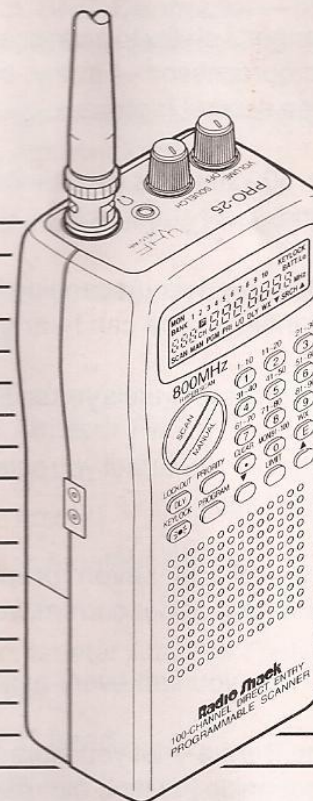
9/94

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

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Printed in the Philippines

PRO-25 100-Channel OWNER'S MANUAL Portable Scanner

Please read before using this equipment.



Cat. No. 20-505

Radio Shack®

INTRODUCTION

Your new Radio Shack PRO-25 100-Channel Portable Scanner lets you in on all the action! This scanner gives you direct access to over 29,000 exciting frequencies that include police and fire departments and ambulance, amateur radio, and transportation services. You can select up to 100 channels to scan and you can change your selection at any time.

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

HyperScan — scans 50 channels per second and searches 100 frequencies per second.

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

Lock-Out Function — keeps channels you select from being scanned.

Priority Channel — checks a channel you select every 2 seconds so you don't miss important calls.

Weather Band Key — scans seven preprogrammed weather frequencies so you can hear about current weather conditions.

Frequency Search — lets you find every available frequency.

Ten Channel-Storage Banks — let you store 10 channels in each of 10 banks to group frequencies so you can easily identify calls.

Monitor Memories — let you temporarily save up to 10 channels you locate during a frequency search.

Display Backlight — makes the scanner easy to read in dimly-lit areas.

Flexible Antenna with BNC Connector — provides excellent reception and is designed to help prevent antenna breakage.

Memory Backup — keeps the channel frequencies stored in memory for up to 1 hour during a power loss.

Your scanner can receive all of these bands:

- 29-29.7 MHz (10-Meter Amateur Radio)
- 29.7-30 MHz (HF Hi)
- 30-50 MHz (VHF Lo)
- 50-54 MHz (6-Meter Amateur Radio)
- 108-136.975 MHz (Aircraft)
- 137-144 MHz (Government)
- 144-148 MHz (2-Meter Amateur Radio)
- 148-174 MHz (VHF Hi)
- 406-450 MHz (70-Centimeter Amateur Radio and Government)
- 450-470 MHz (UHF Lo)
- 470-512 MHz (UHF "T" Band)
- 806-823.9375 MHz (Public Service)
- 851-868.9375 MHz (UHF Hi)
- 896.1125-956 MHz (UHF Hi, 33-Centimeter Amateur Radio)

In addition, your scanner is preprogrammed with these weather service channels:

- 162.400 MHz
- 162.425 MHz
- 162.450 MHz
- 162.475 MHz
- 162.500 MHz
- 162.525 MHz
- 162.550 MHz

This owner's manual also includes the section "Guide to the Action Bands," which helps you target services in your area by giving you frequency ranges to scan.

For your permanent records, we urge you to record your scanner's serial number in the space below. The serial number is located on the scanner's back panel.

Serial Number: 55005330

FCC NOTICE

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

- Move your scanner away from the receiver.
- Connect your scanner to an outlet that is on a different electrical circuit from the receiver.
- Contact your local Radio Shack store for help.

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

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

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PREPARATION

POWER SOURCES

You can power your scanner from any of these power sources:

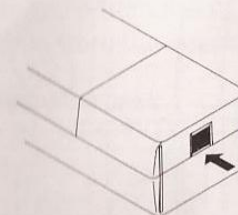
- Internal batteries
- Standard AC power (using an optional AC adapter)
- Vehicle battery power (using an optional DC adapter)

Using Internal Batteries

You can power your scanner with four AA batteries. For the longest operation and best performance, we recommend alkaline batteries, such as Cat. No. 23-552. Or, you can use rechargeable nickel-cadmium batteries (Cat. No. 23-125).

Follow these steps to install or replace batteries.

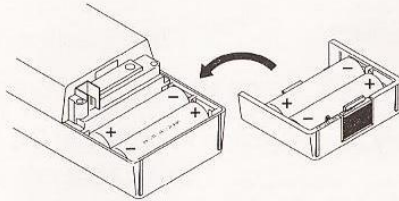
1. If the scanner is on, turn **VOLUME/OFF** fully counterclockwise until it clicks to turn it off.
2. Press down the tab on the battery compartment cover, and lift open the compartment.



3. Remove any old batteries from the compartment and cover.

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

4. Install two batteries in the compartment and two in the cover as indicated by the polarity symbols (+ and -) marked inside the compartment and cover.

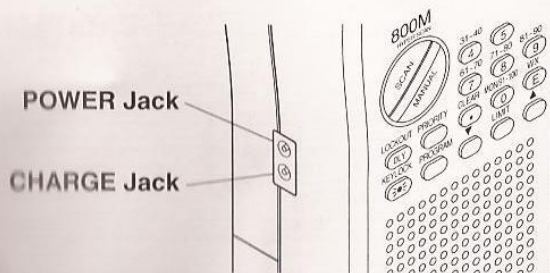


5. Replace the cover.

If **BATT. Lo** flashes on the display, immediately replace or recharge all four batteries. See "Important Information About the External Power Jacks" and "Charging Nickel-Cadmium Batteries."

IMPORTANT INFORMATION ABOUT THE EXTERNAL POWER JACKS

The scanner has two external power jacks — **POWER** and **CHARGE**. It is important that you understand the purpose of each jack before you connect any adapter to the scanner.



The **POWER** jack powers the scanner and disconnects the internal batteries. You can use this jack with either an AC or DC adapter, regardless of the type of batteries you installed.

The **CHARGE** jack powers the scanner and also charges the internal batteries. Use the **CHARGE** jack only when rechargeable nickel-cadmium batteries are installed.

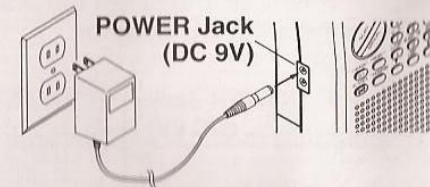
Warning: Never use the **CHARGE** jack with non-rechargeable batteries. If you try to recharge non-rechargeable batteries, they become very hot and could explode.

USING AC POWER

To operate the scanner from AC power, you need an AC adapter such as Radio Shack Cat. No. 20-188.

Cautions:

- You must use an AC adapter that supplies 9 volts and delivers at least 300 milliamps. Its center tip must be set to negative, and its plug must correctly fit the scanner's **POWER** jack. The recommended adapter meets these specifications. Using an adapter that does not meet these specifications could seriously damage the scanner or the adapter.
- Always plug the adapter's barrel plug into the scanner before you plug the adapter's power module into the AC outlet. Always unplug the adapter's power module from the AC outlet before you unplug the adapter's barrel plug from the scanner.



Plug the adapter's barrel plug into the scanner's **POWER** jack. Then plug the adapter's power module into a standard AC outlet.

Note: If you installed rechargeable nickel-cadmium batteries in the scanner, you can connect the AC adapter to the **CHARGE** jack. This powers the scanner and recharges the batteries at the same time. See "Charging Nickel-Cadmium Batteries."

USING VEHICLE BATTERY POWER

You can power the scanner from your vehicle's battery power, using a DC adapter such as Radio Shack DC Universal Adapter, Cat. No. 270-1560A.

Cautions:

- You must use a DC adapter that supplies (regulated) 9-volt power and delivers at least 300 milliamps. Its center tip must be set to negative, and its plug must correctly fit the scanner's **POWER** jack. Using an adapter that does not meet these specifications could seriously damage your scanner or the adapter.
- Your vehicle must have a 12-volt, negative-ground electrical system.
- To protect your vehicle's electrical system, always plug the adapter into the scanner before you plug it into your vehicle's cigarette-lighter socket. Always unplug the adapter from the vehicle's cigarette-lighter socket before you unplug it from the scanner.

Follow these steps to connect the DC adapter.



1. Connect the DC 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 **POWER** jack.
4. Plug the other end of the adapter into your vehicle's cigarette lighter socket.

Note: If the scanner does not operate properly when you 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 while they are in the scanner. To charge the batteries, simply connect an AC or DC adapter to the scanner's **CHARGE** jack.

Warning: Do not connect either adapter to the scanner's **CHARGE** jack if you 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.

Cautions:

- Do not overcharge nickel-cadmium batteries.
- To prevent damaging nickel-cadmium batteries, never charge them in an area where the temperature is above 90°F or below 40°F.

Important: Your scanner is capable of using rechargeable nickel-cadmium batteries. At the end of the batteries' useful life, they must be recycled or disposed of properly. Contact your local, county, or state hazardous waste management authorities for information on recycling or disposal programs in your area. Some options that might be available are: municipal curb-side collection, drop-off boxes at retailers, recycling collection centers, and mail-back programs.

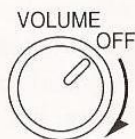
RESETTING THE SCANNER

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

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

1. If the scanner is on, turn **VOLUME/OFF** fully counterclockwise until it clicks to turn it off. Then wait a few seconds.
2. While you press and hold down the **2** and **9** keys, turn on the scanner.

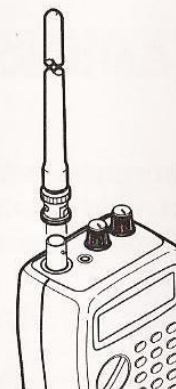
1~10	11~20	21~30
(1)	(2)	(3)
31~40	41~50	51~60
(4)	(5)	(6)
61~70	71~80	81~90
(7)	(8)	(9)



CONNECTING THE ANTENNA

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

1. Align the slots around the antenna's connector with the tabs on the antenna jack.



2. Press the antenna down over the antenna jack and rotate the antenna's base clockwise until it locks into place.

Connecting an Optional Antenna

The scanner's antenna jack lets you use your scanner with a variety of antennas. The supplied antenna provides adequate reception in most areas, but you can connect an optional antenna such as an external mobile antenna or outdoor base antenna. Your local Radio Shack store sells a variety of antennas.

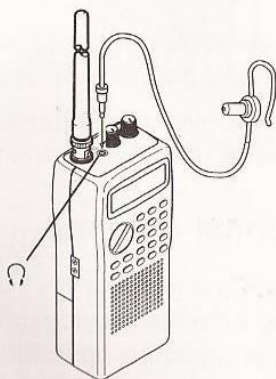
To connect an outdoor antenna, use 50-ohm coaxial cable such as RG-58 or RG-8. For lengths over 50 feet, use RG8 low-loss dielectric coaxial cable. If your antenna's cable does not have a BNC connector, you will also need a BNC adapter (available at your local Radio Shack store).

Caution: Do not run the cable over sharp edges or moving parts.

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

CONNECTING AN EARPHONE/ HEADPHONES

For private listening, plug an earphone or headphones into the $\odot$ jack on top of your scanner. This automatically disconnects the internal speaker. Your local Radio Shack store has a wide selection of earphones and headphones.



Listening Safely

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

- Do not listen at extremely high volume levels. Extended high-volume listening can lead to permanent hearing loss.

- Set the volume to the lowest setting before you begin listening. After you begin listening, adjust the volume to a comfortable level.
- Once you set the volume, do not increase it. Over time, your ears adapt to the volume level, so a volume level that does not cause discomfort might still damage your hearing.

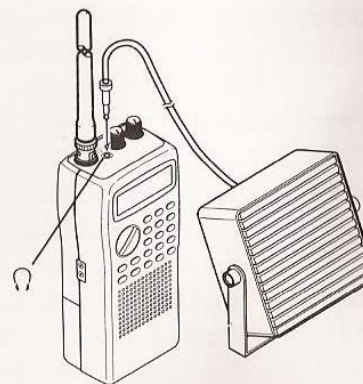
Traffic Safety

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

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

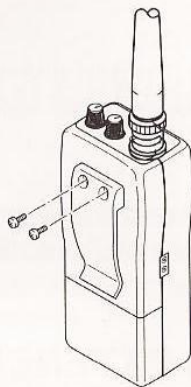
CONNECTING AN EXTENSION SPEAKER

In a noisy area, an extension speaker (such as Radio Shack Cat. No. 21-549) or an amplified speaker (such as Radio Shack Cat. No. 21-541), positioned in the right place, might provide more comfortable listening. Plug the speaker cable's $\frac{1}{8}$ -inch mini-plug into your scanner's $\odot$ jack.



ATTACHING THE BELT CLIP

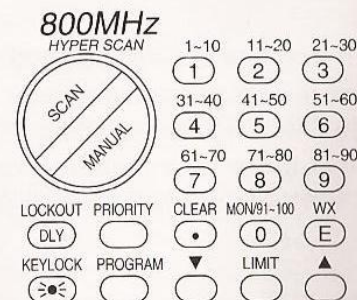
You can attach the supplied belt clip so you can easily use the scanner when you are on the go. Use the two supplied screws to attach the belt clip to the scanner. Then slide the belt clip over your belt or waistband.



UNDERSTANDING YOUR SCANNER

A LOOK AT THE KEYPAD

A quick look at the keys should help you understand the scanner's functions.



SCAN — scans through the programmed channels.

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

LOCKOUT/DLY — locks out a selected channel or programs a two-second delay for the selected channel.

PRIORITY — sets the priority channel and turns it on and off.

CLEAR/. — clears an incorrect entry or enters the decimal point when programming frequencies.

MON/91-100/0 — accesses the 10 monitor memories.

WX/E (enter) — scans through the preprogrammed weather channels or enters frequencies into channels.

KEYLOCK/() — a quick press turns on the display's backlight for 15 seconds, and when held down, it locks/unlocks the keypad to prevent accidental entries.

PROGRAM — programs frequencies into channels.

LIMIT, ▼, and ▲ — searches for active frequencies so you can find ones you want to store.

Number Keys — each key has a single digit on it and a range of numbers printed above it. The single digits refer to the number of a channel or frequency. The range of numbers (21-30, for example) shows the channels that make up a memory bank. In addition, the keypad has different functions in the manual, scan, and program modes.

A LOOK AT THE DISPLAY

A quick look at the display should help you understand what the scanner can do.



MON — appears with a number (1-10) to show which monitor memory you are listening to.

BANK — shows which channel-storage banks are turned on.

KEYLOCK — appears when you lock the keypad.

BATT.Lo — appears when the battery is low.

CH — appears with a digit that shows which of the 100 channels the scanner is tuned to.

P — appears when you listen to the priority channel.

MHz — appears with digits that show which frequency the scanner is tuned to.

SCAN — appears when you scan channels.

MAN — appears when you manually select a channel.

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

PRI — appears when the priority feature is selected.

L/O — appears when you manually select a locked channel.

DLY — appears when you program a 2-second delay for a channel.

WX — appears when you scan the preprogrammed weather channels.

▼ and ▲ — indicate the search direction.

SRCH — appears during a limit search and a direct search.

-L- — appears instead of the channel number during a limit search.

-d- — appears instead of the channel number during a direct search.

Hi — appears with a frequency to show the upper limit of the frequency range to search.

Lo — appears with a frequency to show the lower limit of the frequency range to search.

UNDERSTANDING CHANNEL-STORAGE BANKS AND MONITOR MEMORIES

Your scanner can store up to 110 frequencies. You store each frequency in either a permanent memory location, called a channel, or a temporary memory location, called a monitor memory. This scanner has 100 channels and 10 monitor memories.

Channel-Storage Banks

To make it easier to identify and select the channels you listen to most often, channels are divided into 10 channel-storage banks of 10 channels each. Use each channel-storage bank to group frequencies, such as those used by the police department, fire department, ambulance or aircraft services (see "Guide to the Action Bands").

For example, the police might use four frequencies, one for each side of town. You could program the four police frequencies starting with Channel 1 (the first channel in Bank 1), and then program the fire department frequencies starting with Channel 11 (the first channel in Bank 2).

Monitor Memories

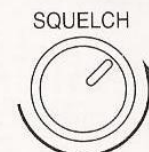
The scanner also has 10 temporary memories called monitor memories. Use these memories to temporarily store frequencies while you decide whether or not to save them into channels. This is handy for quickly storing an active frequency when you are searching through an entire band.

Note: To store frequencies into a monitor memory, you must first perform a limit search or direct search. See "Searching For and Temporarily Storing Active Frequencies."

OPERATION

TURNING ON THE SCANNER AND SETTING SQUELCH

1. Turn **SQUELCH** fully counterclockwise.



2. Turn **VOLUME** clockwise until you hear a hissing sound.



3. Turn **SQUELCH** clockwise, then leave it set to a point just after the hissing sound stops.

The scanner automatically starts scanning channels. Press **MANUAL** to stop scanning.

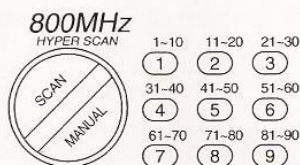
Notes:

- If the scanner picks up unwanted, partial, or very weak transmissions, turn **SQUELCH** clockwise to decrease the scanner's sensitivity to these signals. If you want to listen to a weak or distant station, turn **SQUELCH** counterclockwise.
- If **SQUELCH** is adjusted so you always hear a hissing sound, the scanner will not scan properly.

STORING FREQUENCIES

Follow these steps to store frequencies into channels.

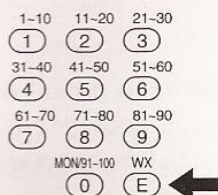
1. Press **MANUAL**. Enter the channel number where you want to store a frequency.



2. Press **PROGRAM**. **PGM** appears on the display.



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



Notes:

- If you made a mistake in Step 3, **Error** appears on the display and the scanner sounds three beeps. To enter a different frequency, start again from Step 3.
- Your scanner automatically rounds the entered frequency up to the nearest valid frequency. For example, if you try to enter 151.473, your scanner accepts it as 151.475.

5. Repeat Steps 1-4 to program more channels. Or, to program the next channel in sequence, repeat Steps 2-4.

To listen to a stored frequency, press **MANUAL**, the channel number, and **MANUAL** again.

SEARCHING FOR AND TEMPORARILY STORING ACTIVE FREQUENCIES

Good references for active frequencies are Radio Shack's "Police Call Radio Guide Including Fire and Emergency Services," "Aeronautical Frequency Directory," and "Maritime Frequency Directory." We update these directories every year, so be sure to get a current copy.

If you do not have a reference to frequencies in your area, or if you want to search for unlisted frequencies, use a limit search or direct search. See also "Guide to the Action Bands" in this manual.

Note: Press **LOCKOUT/DLY** if you want to make the scanner pause 2 seconds after a transmission ends before it proceeds to the next frequency.

Limit Search

A limit search lets you search for active frequencies between lower and upper limits that you set. **-L-** appears on the display during a limit search.

1. Press **PROGRAM**, then **LIMIT**. **Lo** appears on the display.



- Enter the lower limit of the frequency range you want to search.
- Press **WX/E**, then **LIMIT**. **Hi** appears on the display.



Note: If the frequency you entered is not valid, **Error** appears. To enter a different frequency, start again from Step 2.

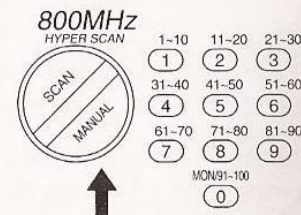
- Enter the upper limit of the frequency range.
- Press **WX/E**.
- Press **▼** to search from the upper to the lower limit or press **▲** to search from the lower to the upper limit. The scanner starts searching, and the number of the next monitor memory flashes at the top of the display.
- When the scanner stops on a transmission you want to save, press **MON/91-100/0** to store the frequency in the flashing monitor memory. The monitor memory number stops flashing.
- Press either **▼** or **▲** to continue the search.

Note: After you store a frequency in the displayed monitor memory, the scanner's display automatically shifts to the next monitor memory. For example, after you store a frequency in monitor memory 1, monitor memory 2 flashes at the top of the display after you resume searching.

Direct Search

When you listen to a channel, you can search up or down from the currently displayed frequency. **-d-** appears on the display during a direct search.

- Press **MANUAL**, the channel number, then **MANUAL** to select a frequency stored in a channel.



- Press **▼** or **▲** to search down or up from the selected frequency.
- When the scanner stops on a transmission, press **MON/91-100/0** to store that frequency in the flashing monitor memory. Or, press **▼** or **▲** to continue the search.

LISTENING TO MONITOR MEMORIES

After you store a frequency into a monitor memory using a direct or limit search, you can listen to the monitor memory by pressing **MANUAL**, **MON/91-100/0**, and then the number of the monitor memory.

MOVING A FREQUENCY FROM A MONITOR MEMORY TO A CHANNEL

A monitor memory is a temporary storage area. Follow these steps to move a frequency stored in a monitor memory to a permanent channel.

- Press **MANUAL**.

2. Enter the channel number where you want to store the monitor frequency.
3. Press **PROGRAM**.
4. Press **MON/91-100/0** then the monitor memory number that has the frequency you want to store. The channel number flashes.



5. Press **WX/E**. The scanner stores the frequency in the selected channel, and the channel number stops flashing.

MANUALLY SELECTING A CHANNEL

You can continuously monitor a specific 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 just want to monitor a specific channel.

Follow these steps to manually select a channel.

1. Press **MANUAL**.
2. Enter the channel number.
3. Press **MANUAL** again.

Or, if your scanner is scanning and stops at the desired channel, press **MANUAL** once.

Note: Pressing **MANUAL** additional times causes your scanner to step through the channels.

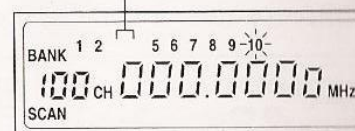
To start automatic scanning after monitoring a specific channel, press **SCAN**.

TURNING CHANNEL-STORAGE BANKS ON AND OFF

You can turn each channel-storage bank on and off. When you turn off a bank, the scanner does not scan any of the 10 channels in that bank.

While scanning, press the number key of 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.

Banks 3 and 4 are off



Notes:

- You can manually select any channel in a bank, even if the bank is turned off.
- You cannot turn off all banks. There must be at least one active bank.

SPECIAL FEATURES

DELAY

Many agencies use a two-way radio system that might have a pause of several seconds between a query and a reply. Your scanner's delay feature lets it wait for 2 seconds after each transmission on a channel or frequency while scanning or searching.

To program a 2-second delay for a channel, press **LOCKOUT/DLY**. **DLY** appears. When your scanner stops on the channel or frequency while scanning or searching, it waits for 2 seconds after each transmission on that channel or frequency before it resumes scanning or searching.

LOCKING OUT CHANNELS

You can increase the scanner's effective scanning speed by locking out channels that you have not yet programmed or that have a continuous transmission, such as a weather channel.

To lock out a channel, manually select the channel and press **LOCKOUT/DLY** until **L/O** appears on the display.



Notes:

- You cannot lock out all channels. There must be at least one active channel in each bank.
- You can manually select locked-out channels.

To remove the lock-out from a channel, manually select the channel and press **LOCKOUT/DLY** until **L/O** disappears from the display.

PRIORITY

You can scan through channels and still not miss an important or interesting call on a specific channel. When a channel is selected as the priority channel and the priority feature is turned on, the scanner checks that channel every 2 seconds, and stays on the channel if there is activity.

To program a channel as the priority channel, press **PROGRAM**, the desired channel number, then **PRIORITY**. **P** appears beside the channel number.



Notes:

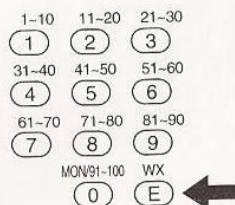
- You can only select one channel as the priority channel.
- Channel 1 is initially set as the priority channel.

To turn on the priority feature, press **PRIORITY** while the scanner is either scanning or in the manual mode. To turn off the priority feature, press **PRIORITY** until **PRI** disappears from the display.

LISTENING TO THE WEATHER BAND

The FCC (Federal Communications Commission) has allocated 11 channels for use by the National Oceanic and Atmospheric Administration (NOAA). NOAA broadcasts your local forecast and regional weather information on one or more of these channels. We have preprogrammed your scanner with seven of the U.S. frequencies available to NOAA.

To scan the preprogrammed weather channels, simply press **WX/E**. The scanner stops on the local weather broadcast.



Note: For a list of all 11 national weather frequencies, see "National Weather Frequencies."

USING THE KEYLOCK

After you program your scanner, you can protect it from accidental program changes by turning on the keylock feature. When the keypad is locked, the only controls that operate are **SCAN**, **MANUAL**, **KEYLOCK/** (), **VOLUME/OFF**, and **SQUELCH**. (However, the scanner continues to scan channels.)

To turn on the keylock, press and hold **KEYLOCK/** () until the scanner beeps and **KEYLOCK** appears on the display. To turn it off, press and hold **KEYLOCK/** () until the scanner beeps and **KEYLOCK** disappears from the display.

KEYLOCK



USING THE DISPLAY BACKLIGHT

You can turn on the display's backlight for easy viewing in dimly-lit areas. Press **KEYLOCK/** () to turn on the display light for 15 seconds. To turn off the light, press **KEYLOCK/** () again.

Note: Do not hold **KEYLOCK/** () down or it will lock up the keypad.

A GENERAL GUIDE TO SCANNING

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

During the 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 because of summer atmospheric conditions. This type of reception is unpredictable but often very interesting!

GUIDE TO FREQUENCIES

National Weather Frequencies

161.650	162.425	162.475	162.550
161.775	162.440	162.500	163.275
162.400	162.450	162.525	

Ham Radio Frequencies

Ham radio operators often broadcast emergency information when other means of communication break down.

The following chart shows the voice frequencies that you can monitor.

Wavelength Meters	Voice (MHz)
10-meter	28.300 - 29.700
6-meter	50.100 - 54.000
2-meter	144.100 - 148.000
70-cm	420.000 - 450.000
33-cm	902.000 - 928.000

Note: Your scanner cannot receive some types of transmissions on these bands.

Birdie Frequencies

Birdies are frequencies your scanner uses when it operates. These operating frequencies might interfere with broadcasts on the same frequencies. If you program one of these frequencies, you hear only noise on that frequency.

If the interference is not severe, you might be able to turn **SQUELCH** clockwise to cut out the birdie.

The most common birdies to watch for are:

31.05 MHz	124.20 MHz
41.40 MHz	134.55 MHz
51.75 MHz	144.90 MHz
113.85 MHz	155.25 MHz

GUIDE TO THE ACTION BANDS

United States Broadcast Bands

In the United States, there are several broadcast bands. The standard AM and FM bands are probably the most well known. There are also four television audio broadcast bands, and you can monitor part of the UHF band.

Frequency Range	Allocation
470.0-512.0 MHz	UHF Television

Typical Band Usage

HF Band (3.00-30.0 MHz)

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

VHF Band (30.00-300.0 MHz)

Low Range	(30.00-50.00 MHz)
6-Meter Amateur	(50.00-54.00 MHz)
Aircraft	(108.00-136.97 MHz)
U.S. Government	(137.00-144.00 MHz)
2-Meter Amateur	(144.00-148.00 MHz)
High Range	(148.00-174.00 MHz)

UHF Band (300.00 MHz-3.0 GHz)

U. S. Government	(406.00-450.00 MHz)
70-Centimeter Amateur	(420.00-450.00 MHz)
Low Range	(450.00-470.00 MHz)
FM-TV Audio Broadcast, Wide Band	(470.00-512.00 MHz)
Public Service	(806.00-823.93 MHz)
Conventional Systems	(851.00-856.00 MHz)
Conventional/Trunked Systems	(856.00-861.00 MHz)
Trunked Systems	(861.00-866.00 MHz)
Public Safety	(866.00-868.93 MHz)
High Range	(896.11-902.00 MHz)
33-Centimeter Amateur	(902.00-928.00 MHz)
Private Trunked	(935.00-940.00 MHz)
General Trunked	(940.00-941.00 MHz)
Fixed Services	(941.00-944.00 MHz)
Studio-to-Transmitter Broadcast Links	(944.00-952.00 MHz)
Private Fixed Services, Paging	(952.00-956.00 MHz)

Primary Usage

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

VHF Band

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

UHF Band

Activities	Frequencies
Land-Mobile <i>Paired</i> Frequencies	450.000 - 470.000 MHz
Base Stations	451.025 - 454.950 MHz
Mobile Units	456.025 - 459.950 MHz
Relay Repeater Units	460.025 - 464.975 MHz
Remote Control Stations	465.025 - 469.975 MHz

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

Specified Intervals

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

Band Type	Specified Interval
VHF, HAM, and Government	5.0 kHz steps
All Others	12.5 kHz steps
Aircraft	25.0 kHz steps

Note: Your scanner automatically rounds the entered frequency up to the closest valid frequency. For example, if you try to enter 151.473, your scanner accepts it as 151.475.

BAND ALLOCATION

To help decide which frequency ranges to scan, see this list of the typical services that use the frequencies your scanner receives. These frequencies are subject to change, and might vary from area to area. For a more complete listing, refer to the "Police Call Radio Guide including Fire and Emergency Services," available at your local Radio Shack store.

Abbreviations

AIR	Aircraft	PSB	Public Safety
BIFC	Boise (ID) Interagency Fire Cache	PTR	Private Trunked
BUS	Business	ROAD	Road & Highway Maintenance
CAP	Civil Air Patrol	RTV	Radio/TV Remote Broadcast Pickup
CB	Citizens Band	TAXI	Taxi Services
CCA	Common Carrier	TELB	Mobile Telephone
CBB	Conventional Systems		(Aircraft, Radio Common
CTSB	Conventional/Trunked Systems		Carrier, Landline companies)
FIRE	Fire Department	TELC	Cordless Phones
HAM	Amateur (Ham) Radio	TELM	Telephone Maintenance
GOVT	Federal Government	TOW	Tow Trucks
GMR	General Mobile Radio	TRAN	Transportation Services
GTR	General Trunked		(Trucks, Tow Trucks,
IND	Industrial Services		Buses, Railroad, Other)
	(Manufacturing, Construction,	TSB	Trunked Systems
	Farming, Forest Products)	TVn	FM-TV Audio Broadcast
MAR	Military Amateur Radio	USXX	Government Classified
MARI	Maritime Limited Coast	UTIL	Power & Water Utilities
	(Coast Guard, Marine telephone,	WTHR	Weather
	Shipboard Radio, Private stations)		
MARS	Military Affiliate Radio System	High Frequency (HF) (3 MHz-30 MHz)	
MED	Emergency/Medical Services	10-Meter Amateur Band — (28.0-29.7 MHz)	
MIL	U.S. Military	29.000 - 29.700 HAM	
MOV	Motion Picture/Video Industry	Very High Frequency (VHF) — (30 MHz-300 MHz)	
NEW	New Mobile Narrow		
NEWS	Relay Press (Newspaper reporters)		
OIL	Oil/Petroleum Industry		
POL	Police Department		
PUB	Public Services		
	(Public Safety, Local Government,		
	Forestry Conservation)		

29.700 - 29.790	IND
29.900 - 30.550	GOVT, MIL
30.580 - 31.980	IND, PUB
32.000 - 32.990	GOVT, MIL
33.020 - 33.980	BUS, IND, PUB
34.010 - 34.990	GOVT, MIL
35.020 - 35.980	BUS, PUB, IND, TELM
36.000 - 36.230	GOVT, MIL
36.250	Oil Spill Clean up
36.270 - 36.990	GOVT, MIL
37.020 - 37.980	PUB, IND
38.000 - 39.000	GOVT, MIL
39.020 - 39.980	PUB
40.000 - 42.000	GOVT, MIL, MARI
42.020 - 42.940	POL
42.960 - 43.180	IND
43.220 - 43.680	TELM, IND, PUB
43.700 - 44.600	TRAN
44.620 - 46.580	POL, PUB
46.600 - 46.990	GOVT, TELC
47.020 - 47.400	PUB
47.420	American Red Cross
47.440 - 49.580	IND, PUB
49.610 - 49.990	MIL, TELC

50.00 - 54.00 HAM

108.000 - 121.490	AIR
121.500	AIR Emergency
121.510 - 136.000	AIR

137,000 - 144,000 GOVT, MIL

144.000 - 148.000 HAM

148.050 - 150.345	CAP, MAR, MIL
150.775 - 150.790	MED
150.815 - 150.965	TOW
150.980	Oil Spill Clean up
150.995 - 151.130	ROAD
151.145 - 151.475	POL
151.490 - 151.955	IND, BUS
151.985	TELM
152.000	MED
152.030 - 152.240	TELB
152.270 - 152.465	IND, TAXI

152.480	BUS
152.510 - 152.840	TELB
152.870 - 153.020	IND, MOV
153.035 - 153.725	IND, OIL, UTIL
153.740 - 154.445	PUB, FIRE
154.490 - 154.570	IND, BUS
154.585	Oil Spill Clean up
154.600 - 154.625	BUS
154.655 - 156.240	MED, ROAD, POL, PUB
156.255	OIL
156.275 - 157.425	MARI
157.450	MED
157.470 - 157.515	TOW
157.530 - 157.725	IND, TAXI
157.740	BUS
157.770 - 158.100	TELB
158.130 - 158.460	BUS, IND, OIL, TELM, UTIL
158.490 - 158.700	TELB
158.730 - 159.465	POL, PUB, ROAD
159.480	OIL
159.495 - 161.565	TRAN
161.580	OIL
161.600 - 162.000	MARI, RTV
162.0125 - 162.35	GOV'T, MIL, USXX
162.400 - 162.550	WTHR
162.5625-162.6375	GOV'T, MIL, USXX
162.6625	MED
162.6875-163.225	GOV'T, MIL, USXX
163.250	MED
163.275 - 166.225	GOV'T, MIL, USXX
166.250	GOV'T, RTV, FIRE
166.275 - 169.400	GOV'T, BIFC
169.445	Wireless Mikes
169.500	GOV'T
169.505	Wireless Mikes
169.55 - 169.9875	GOV'T, MIL, USXX
170.000	BIFC
170.025 - 170.150	GOV'T, RTV, FIRE
170.175 - 170.225	GOV'T
170.245 - 170.305	Wireless Mikes
170.350 - 170.400	GOV'T, MIL
170.425 - 170.450	BIFC
170.475	PUB
170.4875-173.175	GOV'T, PUB, Wireless Mikes
173.225 - 173.375	MOV, NEWS, UTIL
173.3875 - 173.5375	MIL
173.5625 - 173.5875	MIL Medical/Crash Crews
173.60 - 173.9875	GOV'T

406.125 - 419.975 GOVT. USXX

420.000 - 450.000	HAM
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450.050 - 450.925 RTV

451.025 - 452.025	IND, OIL, TELM, UTIL
452.0375 - 453.00	IND, TAXI, TRAN TOW,
	NEWS
453.0125 - 453.9875	PUB
454.000	OIL
454.025 - 454.975	TELB
455.050 - 455.925	RTV
457.525 - 457.600	BUS
458.025 - 458.175	MED
460.0125 - 460.6375	FIRE, POL, PUB
460.650 - 462.175	BUS
462.1875 - 462.450	BUS, IND
462.4625 - 462.525	IND, OIL, TELM, UTIL
462.550 - 462.725	GMR
462.750 - 462.925	BUS
462.9375 - 463.1875	MED
463.200 - 467.925	BUS

(470-512 MHz)

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475.750 ..... Channel 14

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487.750	Channel 14
487.750	Channel 15
487.750	Channel 16
618.000	Channel 20

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

851.0125 - 855.9875 CSB

856.0125 - 860.9875 CTSB

861.0125 - 865.9875 TSB

866.0125 - 868.9875 PSB

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902.0000 - 928.0000 ..... HAM

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935.0125 - 939.9875 PTR

940.0125 - 940.9875 GTR

AVOIDING IMAGE FREQUENCIES

You might discover one of your regular stations on another frequency that is not listed. It might be what is known as an image frequency.

For example, you might find a service that regularly uses a frequency of 432.585 also on 454.185 or 433.485.

To see if it is an image, do a little math.

The scanner's intermediate frequencies (IF) are:

10.80 MHz .450 MHz

Note the new frequency where you find the service:

454.185 MHz 433.485 MHz

Double the IF of this unit and subtract it from the new frequency

- 21.60 MHz -.900 MHz

If the answer is the regular frequency, then the new frequency is an image frequency.

432.585 MHz 432.585 MHz

Occasionally you might get interference on a weak or distant channel from a strong broadcast 21.60 MHz below the tuned frequency. This is rare, and the image signal is usually cleared whenever there is a broadcast on the actual frequency.

FREQUENCY CONVERSION

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

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

To convert MHz to kHz, multiply by 1,000:

$$9.62 \text{ MHz} \times 1000 = 9620 \text{ kHz}$$

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

$$\frac{2780 \text{ kHz}}{1000} = 2.780 \text{ MHz}$$

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

$$\frac{300}{7.1 \text{ MHz}} = 42.25 \text{ meters}$$

TROUBLESHOOTING

If you have problems operating your scanner, here are some suggestions that might help. If the scanner still does not operate properly, contact your local Radio Shack store for assistance.

Symptom	Suggestion
• Scanner is on but will not scan. • Scanner scans continuously and never stops on a transmission. • Scanner produces a constant hissing sound.	• If SQUELCH is adjusted so you always hear a hissing sound, the scanner will not scan properly. Be sure SQUELCH is adjusted properly (see "Turning On the Scanner and Setting Squelch"). • Check the antenna (indoor or outdoor). • Signals might be blocked from being received by the scanner due to metal frames or material in the building. Change the scanner's location and try again.
• Scanner receives stations poorly or not at all.	• Check the antenna (indoor or outdoor).
• Scanner does not work at all.	• Make sure the scanner is connected to a working power source.
• Scanner locks on frequencies that have an unclear transmission.	• The scanner is tuned to a "birdie" frequency. Avoid programming frequencies listed on Page 32, or only listen to them manually. • Broadcaster is transmitting a signal type that the scanner cannot receive. Choose another frequency.

CARE AND MAINTENANCE

Your Radio Shack PRO-25 100-Channel Portable Scanner is an example of superior design and craftsmanship. The following suggestions will help you care for your PRO-25 so you can enjoy it for years.



Keep the scanner dry. If it gets wet, wipe it dry immediately. Liquids can contain minerals that corrode the 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.



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

Modifying or tampering with the scanner's internal components can cause a malfunction and might invalidate the scanner's warranty and 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.

SPECIFICATIONS

Frequency Coverage:

HF Hi	29.7 – 30 MHz (in 5 kHz steps)
VHF Lo	30 – 50 MHz (in 5 kHz steps)
Amateur Radio	29 – 29.7 MHz (in 5 kHz steps)
	50 – 54 MHz (in 5 kHz steps)
	144 – 148 MHz (in 5 kHz steps)
Amateur Radio/Government	420 – 450 MHz (in 12.5 kHz steps)
Aircraft	108 – 136.975 MHz (in 12.5 kHz steps)
Government	137 – 144 MHz (in 5 kHz steps)
	406 – 420 MHz (in 12.5 kHz steps)
VHF Hi	148 – 174 MHz (in 5 kHz steps)
UHF Standard	450 – 470 MHz (in 12.5 kHz steps)
UHF "T"	470 – 512 MHz (in 12.5 kHz steps)
UHF Public Service	806.0000 – 823.9375 MHz (in 12.5 kHz steps)
	851.0000 – 868.9375 MHz (in 12.5 kHz steps)
	896.1125 – 956 MHz (in 12.5 kHz steps)

General:

Channels of Operation	100 Channels in Any Band Combinations (10 channels per bank, 10 banks) and 10 monitor memories
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Sensitivity (AM and FM):

20 dB S/N with 60% modulation, 3 kHz deviation for FM:

29-54 MHz	0.5 μ V
108-136.975 MHz	1.3 μ V
137-174 MHz	0.6 μ V
406-512 MHz	0.5 μ V
806-956 MHz	0.7 μ V

Limit/Band Search Speed

100 steps/second

Scan Speed

50 channels/second

Priority Sampling

2 seconds

Delay Time

2 seconds

Intermediate Frequencies (IF):

1st	10.8 MHz
2nd	450 kHz

Audio Power:

FM	230 mW Maximum
AM	250 mW Maximum

Built-in Speaker

1⁷/₁₆ Inches (36 mm) 8 Ohms, dynamic

Power Requirements

+6 VDC (4 AA alkaline batteries,
4 AA rechargeable nickel-cadmium batteries,
AC adapter (Cat. No. 20-188),
or DC universal adapter (Cat. No. 270-1560A))

Dimensions

6¹/₈ x 2⁷/₁₆ x 1¹¹/₁₆ Inches HWD
(155.6 x 61.9 x 42.9 mm)

Weight

8.11 Ounces (230 g)

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