OWNER'S MANUAL

PRO-51
200-Channel Direct Entry
Programmable Scanner

Please read before using this equipment.

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

11A3
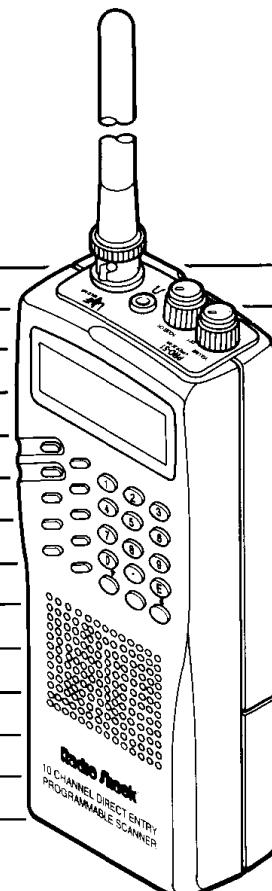
Radio Shack®

INTRODUCTION

Your new Radio Shack PRO-51 200-Channel Direct Entry Programmable Scanner lets you in on all the action! This scanner gives you direct access to over 29,000 exciting frequencies that include the police department, fire department, ambulance services, amateur radio, and transportation services. You can select up to 200 channels for your scanner to scan 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 also has these special features:

Band Search – lets your scanner search the frequencies allocated to the air traffic, fire, marine, or weather services, so you can listen to the services you prefer, even if you do not know the frequencies.

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

Memory Backup – keeps the channel frequencies stored in memory for up to 3 days during power loss.

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

Priority Channel – checks your most important channel every 2 seconds so you don't miss important calls on the channel you specify.

Ten Channel-Storage Banks – lets you store 20 channels in each of 10 banks to group frequencies so you can easily identify calls.

Monitor Memories – let you store up to 10 channels you locate during a frequency search which you can then transfer to permanent memory.

Frequency Search – scans through every available frequency at up to 100 steps per second to find interesting broadcasts.

Your scanner can receive all of these bands:

- 29-29.7 MHz
  (ham radio 10m)
- 29.7-50 MHz (VHF Lo)
- 50-54 MHz (ham radio 6m)
- 108-136.975 MHz (aircraft)
- 137-144 MHz (government)
- 144-148 MHz
  (ham radio 2m)
- 148-174 MHz (VHF Hi)
- 406-450 MHz
  (ham radio and government)

- 450-470 MHz
  (UHF standard)
- 470-512 MHz
  (UHF " T " band)
- 806-823.9375 MHz
  (public service)
- 851-868.9375 MHz
  (UHF Hi)
- 896.1125-956 MHz
  (UHF Hi)

For your permanent records, we urge you to record your scanner's serial number in the space provided below. You will find the serial number on the scanner's back panel.

Serial Number: _____

FCC NOTICE

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
- Connecting your scanner to an outlet that is on a different electrical circuit 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.

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

CONTENTS

PREPARATION

POWER SOURCES

You can power your scanner from any of three sources:

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

See "Using Other Power Sources" to use AC or vehicle battery power, and for information about using and recharging nickel cadmium batteries.

Using Batteries

You can operate your scanner from four AA batteries. For longest operation and best performance, we recommend alkaline batteries (Radio Shack 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 battery compartment. However, you must never use this circuit when you have installed non-rechargeable batteries in the scanner. Be sure to read "Important Information about the External Power Jacks" and "Charging Nickel-Cadmium Batteries."

To install batteries in your scanner, follow these steps.

1. Press open the battery compartment cover on the bottom.
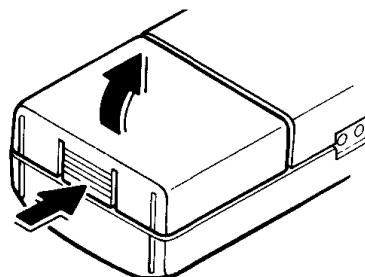
2. Remove any old batteries from the compartment and cover.

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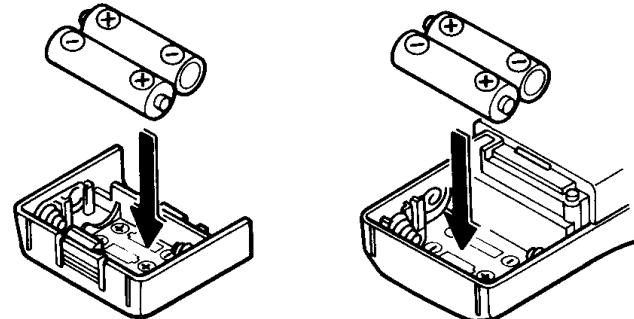
4. Replace the cover.

Your scanner beeps every 15 seconds when the batteries are low. When this happens, immediately replace or recharge all four batteries.

CONNECTING THE ANTENNA

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

1. Slip the slot in the antenna's connector over the protrusion on the jack.
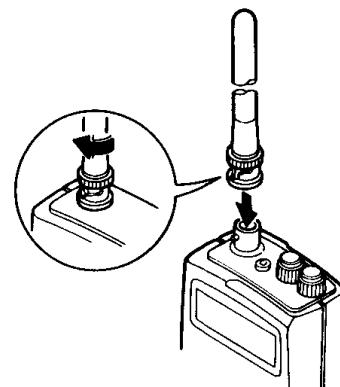
2. Press down and rotate the antenna's base clockwise until it locks into place.

Connecting an Optional Antenna

The antenna connector on your scanner makes it easy to use 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 or outdoor base antenna. Your local Radio Shack store sells a variety of antennas.

Use coaxial cable to connect an outdoor antenna. Always use 50-ohm coaxial cable, such as RG-58 or RG-8. For lengths over 50 feet, use RG-8 low-loss dielectric coaxial cable. You will also need a BNC connector (Cat. No. 278-103 or 278-185) to connect an optional antenna.

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 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 into the ∩ jack on top of your scanner. This automatically disconnects the speaker. We recommend Radio Shack's earphone (Cat. No. 33-175) or mono headset (Cat. No. 20-210).
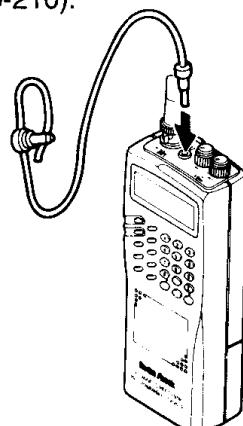
Listening Safely

To protect your hearing, follow these guidelines when you use an earphone/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, positioned in the right place, might provide more comfortable listening. Plug the speaker cable's 1/8-inch mini-plug into the scanner's ∩ jack.

Note: Connecting an extension speaker disconnects the scanner's built-in speaker.
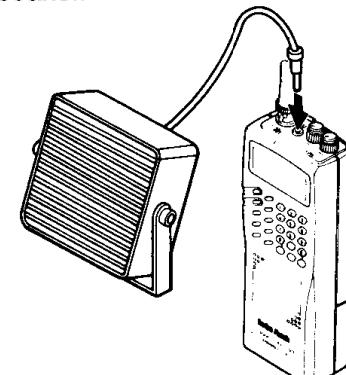
RESETTING THE SCANNER

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 have programmed into the scanner. Use this procedure only when you are sure your scanner is not working properly.
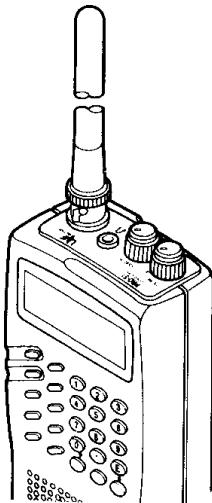
1. Turn off the scanner.
2. While you press and hold down the **2** and **9** keys, turn on the scanner.

USING THE BELT CLIP

You can use the supplied belt clip to make the scanner easier to use 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.
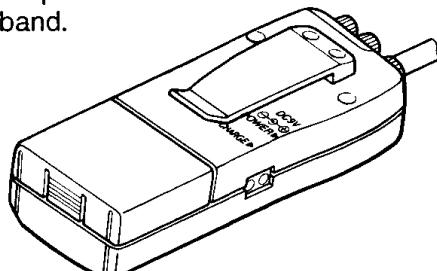
UNDERSTANDING YOUR SCANNER

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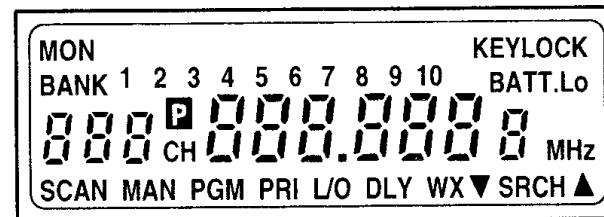
The display has several indicators that show the scanner's current operating mode. A quick look at the display will help you understand how to operate your scanner.

MON – appears during search modes or when you listen to a monitor memory. The number to the right of this indicator shows the current monitor number. See "Listening to Monitor Memories."

BANK – shows which channel-storage banks are turned on for the scan mode. See "Channel-Storage Banks."

KEYLOCK – appears when you lock the keypad.

BATT. Lo – appears when the battery is low.

CH – digits that precede this indicator show which of the 200 channels the scanner is tuned to.

P – appears when you listen to the priority channel.

MHz – digits that precede this indicator 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 you program a selected channel for priority.

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

DLY – appears when you program a channel for a two-second delay before scanning or when you listen to a channel that has been programmed with the delay feature.

b – (1 to 4) – appears during band search to show the corresponding service bands.

WX – appears when the scanner is in the weather band mode.

▲ and ▼ – indicate the search direction.

SRCH – appears during a limit search (−L− also appears) or a direct frequency search (−d− also appears).

A LOOK AT THE KEYBOARD
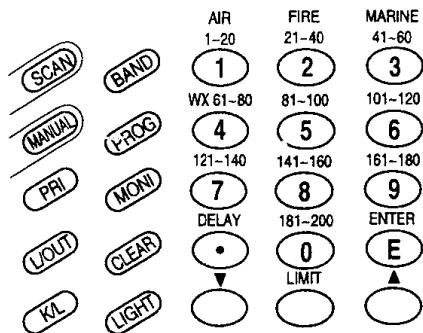
Your scanner's keys might seem confusing at first, but a quick glance at this page should help you understand the key's functions.

SCAN – scans through the programmed channels.

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

PRI – sets and turns on and off priority for a particular channel.

L/OUT – lets you lock out a selected channel.

K/L – locks/unlocks the keypad to prevent accidental entries.

BAND – selects air, fire, marine, and weather bands when used with the corresponding number key.

PROG – programs frequencies into channels.

MONI – accesses the 10 monitor memories. See "Moving a Frequency from a Monitor Memory to a Channel."

CLEAR – clears an incorrect entry.

LIGHT – turns on and off the display light.

• / DELAY – inputs a decimal point when you set a frequency or programs a two-second delay for the selected channel.

LIMIT – turns on the limit search mode and sets the frequency range. See "Searching For and Temporarily Storing Active Frequencies."

▼ and ▲ – select the search direction.

Number Keys – each key has a single digit, followed by a range of numbers printed above it. The single digits refer to the number of a channel or frequency entered. The range of numbers (21-40, for example) indicates the channels that make up a memory bank. See "Searching For and Temporarily Storing Active Frequencies." Also, number keys 1 to 4 are used as AIR, FIRE, MARINE, and WX band keys. See "Using the Band Search Keys."

ENTER – enters the frequency when you program channels.

UNDERSTANDING CHANNEL-STORAGE BANKS

Your scanner 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. This scanner has 200 channel memories and 10 monitor memories.

CHANNEL-STORAGE BANKS

To make it easier to identify and select the channels you want to listen to, channels are divided into 10 channel-storage banks of 20 channels each. Use each channel-storage bank to group frequencies, such as the police department, fire department, ambulance services, or aircraft (see "A Guide to the Action Bands").

For example, the police department might use four frequencies, one for each side of town. You could program the police frequencies starting with Channel 1 (Bank 1) and program the fire department into Channel 21 (Bank 2).

MONITOR MEMORIES

The scanner also has 10 monitor memories. You can use these memories to temporarily store frequencies while you decide whether to save them into channels. This is handy for quickly storing an active frequency when you search through an entire band. See "Searching For and Temporarily Storing Active Frequencies."

When you are in the monitor mode, the 10 numbers at the top of the display indicate the 10 monitor memories. **MON** appears and the number indicates the currently active monitor memory.

When you turn off the scanner, the frequencies stored in the monitor memories are lost.

OPERATION

SETTING VOLUME AND SQUELCH

Follow these steps to set **VOLUME** and **SQUELCH**.

1. Rotate **VOLUME** 1/4 turn clockwise and **SQUELCH** fully clockwise.

2. Slowly turn **SQUELCH** counterclockwise until you hear a hissing sound.

3. Slowly turn **SQUELCH** clockwise until the hissing stops.

Note: If you want to listen to a weak or distant station, turn **SQUELCH** counterclockwise. You might hear hissing between transmissions.

USING THE KEYLOCK

Once you program your scanner, you can protect it from accidental program changes by turning on the key lock feature. In this mode, the only controls that operate are **SCAN, MANUAL, LIGHT, K/L, VOLUME,** and **SQUELCH**.

To turn on the keylock feature, press **K/L** until **KEYLOCK** appears on the display.

To turn it off, press **K/L** until **KEYLOCK** disappears.
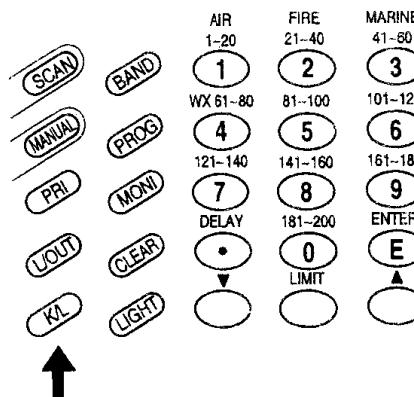
STORING FREQUENCIES

You can store up to 200 frequencies into your scanner's channels. Follow these steps to store frequencies.

1. Press **MANUAL**. Enter the channel number you want to program.

2. Press **PROG**. **PGM** appears on the display to indicate the scanner is in the programming mode.

3. Enter a frequency.

4. Press **ENTER** to store the frequency.

   If you made a mistake in Step 3, **Error** appears on the display and the scanner sounds three beeps. To clear the display, press **CLEAR**. Then proceed again from Step 3.

   Note: If you want to program the next channel in sequence, repeat Steps 2-4.

5. Repeat Steps 1-4 to program more channels.

SEARCHING FOR AND TEMPORARILY STORING ACTIVE FREQUENCIES

Good references for active frequencies are Radio Shack's "Police Call Guide including Fire and Emergency Services," "Official 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, use a limit or direct search to find a transmission. Also see "A Guide to the Action Bands."

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

Limit Search

Limit search lets you search within a specific range of frequencies. −L− appears on the display during a limit search.

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

2. Enter the lower limit of the frequency range you want to search.

3. Press **ENTER**, then **LIMIT**. **Hi** appears on the display.

4. Enter the upper limit of the frequency range.

5. Press **ENTER**.

6. Press ▼ to search from the upper to the lower limit or press ▲ to search from the lower to the upper limit.

7. When the scanner stops on a transmission, press **MONI** to store the frequency into the current monitor memory, or press ▲ or ▼ to continue the search.

Direct Search

Direct Search lets you search up or down from the currently displayed frequency. −d− appears on the display during a direct search.

1. Press **MANUAL**, the channel number and **MANUAL** in sequence to select a frequency stored in a channel.

2. Press ▲ or ▼ to search up or down from the selected frequency.

3. When the scanner stops on a transmission, press **MONI** to store that frequency in the current monitor memory. Or, press ▲ or ▼ to continue the search.

Using the Band Search Keys

You can search for air, fire, marine, or weather transmissions even if you do not know the frequencies being used in your area. The scanner is programmed with all frequency ranges allocated to these services. To use this feature, press **BAND**. Then press the desired service band key (**AIR**, **FIRE**, **MARINE**, or **WX**). The scanner starts searching the band.

When the scanner stops on a transmission, you can store that frequency into the monitor memory by pressing **MONI**.

To continue scanning, press ▲ or ▼.

Notes:

• To make the scanner pause 2 seconds after a transmission before proceeding to the next frequency, press •/**DELAY** until **DLY** appears. See "Delay." The delay feature is programmed band by band in this mode.

• The 800 and 900 MHz bands are allocated to trunked services. This means that the police and fire departments share the frequencies with other services. The scanner might stop on transmissions by other services in these bands.

• Because there are many different frequency ranges allocated to fire and police departments, it takes several minutes to search all frequencies when you scan for these services.

LISTENING TO MONITOR MEMORIES

You can listen to a monitor memory by pressing **MANUAL**, **MONI**, and then the number of the monitor memory you want to listen to.

Note: Turning off the scanner clears the frequencies stored in the monitor memories.

MOVING A FREQUENCY FROM A MONITOR MEMORY TO A CHANNEL

1. Press **MANUAL**.
2. Enter the channel number you want to store the monitor frequency in; then press **PROG**. **PGM** appears on the display.
3. Press **MONI** and enter the monitor memory number that contains the frequency you want to store.
4. Press **ENTER**. The scanner stores the frequency in the selected channel.

SCANNING THE CHANNELS

To begin scanning the channels, 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. (See "Locking Out Channels" and "Turning Channel-Storage Banks On and Off.")

SPECIAL FEATURES

DELAY

Many agencies use a two-way radio system that might have a period of two or more seconds between a query and a reply. To program a delay to keep from missing a reply on a specific channel, select the channel and press **DELAY** so **DLY** appears on the display. The scanner pauses for 2 seconds on a channel programmed with **DELAY**.

LOCKING OUT CHANNELS

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

To remove the lock-out from a channel, manually select the channel and press **L/OUT** so **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 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 20 channels in that 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.

Note: You cannot turn off all banks. One bank is always active.

PRIORITY

You can scan through the programmed channels and still not miss an important or interesting call on a specific channel. To program a stored channel as the priority channel, press **PROG**, the desired channel number, and then **PRI**. **P** appears beside the channel number.

Note: You can only select one channel as the priority channel.

To turn on the priority feature, press **PRI** during scanning. The scanner now checks the priority channel every 2 seconds, and stays on the channel if there is activity. **PRI** appears on the display whenever the scanner is set to the priority channel.

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

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 want to monitor a specific channel.

To manually select a channel, press **MANUAL**. Enter the channel number, and press **MANUAL** again. Or, if your scanner is scanning and stops at the desired channel, press **MANUAL** one time. Pressing **MANUAL** additional times causes your scanner to step through the channels.

USING THE LCD BACK LIGHT

You can turn on the display light for easy viewing at night. Press **LIGHT** to turn on the display light for 15 seconds. To turn off the light before 15 seconds elapse, press the button again.

A GENERAL GUIDE TO SCANNING

BIRDIES

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 listed below.

Birdie Frequencies

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

RECEPTION NOTES

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 hundreds or even thousands of miles away. This is due to summer atmospheric conditions. This type of reception is unpredictable but often very interesting!

A GUIDE TO THE ACTION BANDS

With a little investigation, you can find the active frequencies in your community. We can give you some general pointers on finding these frequencies 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 very dangerous.

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 department or fire department employee can also be a good source for this information.

As a general rule on VHF, most activity concentrates 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 major railroad tracks, listen between 160.0 to 161.9 for signals.

In some larger 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, mobile units operate between 456.025 and 459.95 MHz and between 465.025 and 469.975 MHz. A repeater picks up the mobile unit's transmissions on one frequency, then re-broadcasts (or repeats) the transmission 5 MHz lower, but at a higher power level, than the mobile units (that is, 451.025 - 454.95 MHz and 460.025 - 464.975 MHz). This means that if you find an active frequency inside one of the mobile unit's frequency spreads, you can look 5 MHz lower to find the repeater frequency.

A system called trunked radio lets several services use the same set of frequencies in the 800 MHz band without interference. Several frequencies are allocated to two or more services (like fire, police, and water departments). As each service transmits, a separate control signal activates other radios in the same service, so only that service hears the transmission. The frequency is selected as soon as the unit begins to transmit, and could be any one of the allocated frequencies.

One very useful service is the National Weather Service's continuous weather broadcasts. These broadcasts contain weather forecasts and data for the area around the station, plus bulletins on any threatening weather conditions. These stations use seven frequencies – 162.40, 162.425, 162.450, 162.475, 162.500, 162.525, and 162.550 MHz. In most areas of the country, you can receive one or more of these frequencies using the band search feature.

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 to the nearest valid frequency. For example, if you try to enter 151.473, the scanner accepts this as 151.475 MHz.

TYPICAL BAND USAGE

The following is a brief listing of the services typical of the channels received by your scanner. This listing can help you decide which ranges you would like to scan.

Abbreviations

Aerospace	Aero.	29.80 - 30.00	Aero.
Affiliate Radio System	MARS	30.01 - 30.56	Govt
Amateur	Ham	30.56 - 30.62	Sp. Ind.
Automobile Emergency	Auto Emer.	30.66 - 31.24	Ind. (Pet., For. Cons., Bus., For. Prod
Broadcast Remote	BC.R.		
Bureau of Reclamation	Bur. Recl.	31.26 -31.98	Sp. Ind., For. Cons.
Business	Bus.	32.00 - 33.00	Govt.
Civil Air Patrol	CAP	33.02 - 33.16	Hwy., Sp. Emer., Bus.
Department of Agriculture		33.18 - 33.38	Pet.
and Forestry	Agr. and For.	33.42 - 33.98	F.D.
Fire Department	F.D.	34.00 - 35.00	Govt.
Forest Products	For. Prod.	35.02 - 35.18	Bus.
Forestry Conservation	Fors. Cons.	35.22 - 35.66	Mob. Tel & Page
Government	Govt.	35.70 - 35.72	Bus.
Highway Maintenance	Hwy.	35.74 - 35.98	Sp. Ind & Bus.
Land Transportation	Land Tr.	36.00 - 37.00	Govt.
Local Government	L. Govt.	37.02 - 37.44	P.D. & L. Govt.
Manufacturers	Mfg.	37.46 - 37.86	Power
Military	MIL	37.90 - 37.98	Hwy. & Sp. Emer.
Mobile Telephone	Mob. Tel.	38.00 - 39.00	Govt.
Motion Picture	Mot. P.	39.02 - 39.98	P.D., L. Govt.
Motor Carrier	Mot. Carrier	40.00 - 42.00	Govt.
National Parks	Nat. Park	42.02 - 42.94	St. P.D.
Petroleum	Pet	42.96 - 43.18	Sp. Ind. & Bus.
Police	P.D.	43.22 - 43.68	Mob. Tel. Page
Power	Pwr.	43.70 - 44.60	Trucks. Bus.
Power Utilities	Power	44.62 - 45.06	St. P.D., For. Cons.
Radio Paging	Page	45.08 - 45.66	P.D.
Railroad	R.R.	45.68 - 46.04	P.D. Hwy., Sp. Emer.
Relay Press	Press	46.06 - 46.50	F.D.
Remote Broadcast	Remote Br.	46.52 - 46.58	L.Govt.
State Police	St. P.D.	46.60 - 47.00	Govt.
Special Industry	Sp. Ind.	47.02 - 47.40	St. Hwy.
Special Emergency	Sp. Emer.	47.42	Red Cross
Taxicab Radio	Taxi	47.44 - 47.68	Sp.Ind. Sp. Emer.
Telephone Maintenance	Tel. Maint.	47.70 - 48.54	Power
U.S. Coastal and Geodetic Survey	U.S.C.G.S.	48.56 - 49.58	For. Prod., Pet.
U.S. Navy	USN	49.60 - 50.00	Govt.
U.S. Weather Bureau	U.S.W.B.	50.00 - 54.0 0	6-Meter Amateur (Ham) Band
Utilitions	Util.		

29 - 54 MHz Band

29.00 - 29.70	10-meter HAM		
29.70 - 29.80	For. Prod.		

108 - 136.975 MHz Band

108.000 - 118.000	Air Navigation
118.000 - 136.975	Aircraft

137 - 174 MHz Band

137.000 - 144.000	Govt.
144.000 - 148.000	2-Meter HAM
148.010	MARS
148.150	CAP
148.155 - 148.250	MIL
148.290 - 150.750	USN
150.815 - 150.995	Bus.
151.010 - 151.130	HWY
151.145 - 151.475	For. Cons.
151.505 - 151.595	Sp. Ind.
151.625 - 151.955	Bus.
151.985 - 152.240	Mob. Tel. (RCC)
152.270 - 152.450	Taxi
152.480 - 152.840	Mob. Tel. Page
152.870 - 153.020	Sp. Ind. Mot. P.
153.050 - 153.440	Pet., For. Prod.
153.470 - 153.710	Power
153.740 - 154.115	L.Govt
154.130 - 154.445	F.D.
154.450 - 154.600	Sp. Ind., Pet., Bus.
154.655 - 155.145	P.D., L.Govt., St.P.D.
155.160 - 155.400	Sp. Emer., P.D.
155.415 - 156.030	P.D.,L. Govt.
156.045 - 156.240	Hwy., P.D.
156.275 - 157.425	Marine
157.456 - 157.500	Auto Emer.
157.530 - 157.710	Taxi
157.740 - 158 .100	Mob. Tel., Page
158.130 - 158.460	Power, For. Prod., Pet.
158.490 - 158.700	Mob. Tel. (RCC)
158.730 - 158.970	P.D., L. Govt.
158.985 - 159.210	P.D. Hwy.
159.225 - 159.465	For. Cons.
159.510 - 160.200	Trucks
160.215 - 161.565	R.R.
161.600 - 162.000	Marine
162.026 - 162.175	Bur. Recl.
162.400	U.S.W.B.
162.550	U.S.W.B.
163.125	Indian Affairs
163.175	Bur. Recl
163.275	U.S.W.B.
163.388 - 163.538	MIL
163.825 - 163.975	Govt.
164.025 - 1 64.075	U.S.C.G.S.
164.175 - 165.188	Bur. Recl. Nat. Park. Govt., Agr. & For.
169.300	F.A.A.
169.450 - 169.725	Ind., Data
170.150	F.D., BC. R.
170.200 - 170.220	U.S.C.G.S.
170.225 - 170.325	Ind., Land Tr.
170.425 - 170.575	For. Cons.
170.975 - 171.250	Govt. Ind., Land Tr.
171.388 - 172.725	Bur.Recl., For. Cons., Ind., Dept. Agr. & For., Govt.
172.775	Nat. Park.
137.025	U.S.W.B.
173.075	U.S.C.G.S.
173.204	Mot. P., Pet., Bur. Recl. Press Relay.

406 - 512 MHz Band

406.000 - 420.000	Govt.
420.000 - 450.000	HAM
450.050 - 450.950	Remote Br.
451.000 - 451.150	Util.
451.175 - 451.750	For. Prod., Pet., Power., Tel. Maint.
451.775 - 451.975	Spec. Ind.
452.000 - 452.500	Taxi, Mot. Carrier, R.R.
452.525 - 452.600	Auto Club
452.625 - 452.975	Motor Carr., R.R.
453.000 - 453.975	L. Govt., P.D., F.D.
454.000 - 454.975	Mob. Tel.
455.000 - 455.975	Remote Br.
456.000 - 458.975	P.D., F.D., Ind., Land. Tr.
459.000 - 459.975	Domestic public
460.000 - 460.625	P.D., F.D.
460.650 - 462.175	Bus.
462.200 - 462.450	Taxi
462.750 - 462.975	Bus.
463.000 - 463.175	Medical
463.200 - 464.975	Bus.
465.000 - 467.500	P.D., F.D., Ind., Land Tr.
467.750 - 467.925	Bus.
467.7375 - 469.975	Pub. Safety. Ind., Land Tr.

TV Bands for Special Communications

470 - 476 T.V. Channel 14
476 - 482 T.V. Channel 15
482 - 488 T.V. Channel 16
488 - 494 T.V. Channel 17
494 - 500 T.V. Channel 18
500 - 506 T.V. Channel 19
506 - 512 T.V. Channel 20

Example: 6 MHz allocated for Channel 14

470.0125 - 470.2875	Domestic Public, (Base, Mob)
470.3125 - 471.1375	Public Safety
471.1625 - 471.2875	Reserve Pool A
471.3125 - 471.4125	Pwr., Tel. Maint.
471.4375 - 471.6375	Spec. Ind.
471.6625 - 471.7875	Reserve Pool B
471.8125 - 472.3375	Bus.
472.3625 - 472.4375	Taxi
472.4675 - 472.7875	R.R., Motor Carrier, Auto Emer.
472.8125 - 472.9875	Pet., For. Prod., Mfg.
473.0125 - 473.2875	Domestic Public
473.3125 - 474.1375	Public Safety
474.1625 - 474.2875	Reserve Pool A
474.3125 - 474.4125	Pwr., Tel. Maint.
474.4375 - 474.6375	Spec. Ind. (Mobile)
474.6625 - 474.7875	Reserve Pool B
474.8125 - 475.3375	Bus.
475.3625 - 475.4375	Taxi
475.4625 - 475.7875	R.R., Motor Carrier, Auto Emer
475.8125 - 475.9876	Pet., For. Prod. Mfg

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

IMAGES

You might discover one of your regular stations on a frequency that is not listed. This could be what is known as an image. For example, if you suddenly find you hear the same broadcasts on 453.275 as you hear on 474.875, do a little math to see if it is an image. Take this unit's intermediate frequency of 10.8 MHz and double it. Then subtract it from the new frequency. If the answer is the regular frequency, you have tuned to an image. Occasionally, you might get interference on a weak or distant channel from a strong broadcast 21.6 MHz (10.8 MHz × 2) below the tuned frequency. This is rare, and the image signal is usually cleared whenever a broadcast on the actual frequency is in progress.

USING OTHER POWER SOURCES

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 an external power source (AC or DC adapter) regardless of the type of batteries you install.

The **CHARGE** jack supplies power to operate the scanner and also charges the internal batteries. Use the **CHARGE** jack only when you install rechargeable nickel-cadmium batteries.

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 AN AC POWER SOURCE

To power the scanner from AC power, you need an AC adapter such as Radio Shack Cat. No. 20-188. Plug the adapter's barrel plug into the scanner's **POWER** jack. Then plug the adapter's power module into a standard AC outlet.
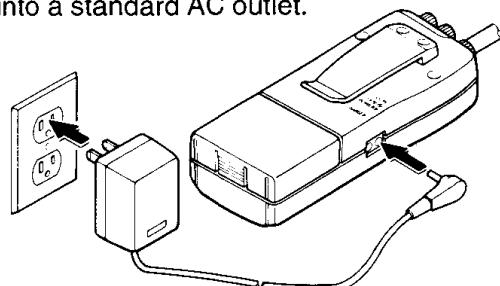
Caution: You must use an AC adapter that supplies 9 volts with the center tip set to negative. It must deliver at least 300 milliamps, and its plug must properly fit the scanner's **POWER** jack. Using an adapter that does not meet these specifications could damage the scanner or the adapter.

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

Note: If you have 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 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 battery power, provided the vehicle has a 12-volt, negative ground electrical system. To do so, you need a DC adapter such as Radio Shack DC Universal Adapter, Cat. No. 270-1560A.
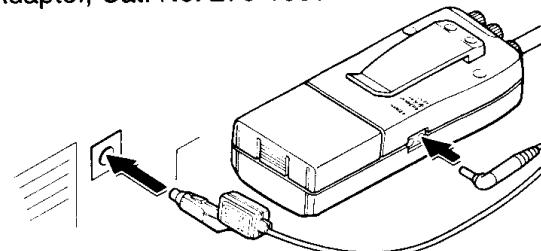
Cautions:

- You must use a DC adapter that supplies 9 volts with the center tip set to negative. It must deliver at least 300 milliamps, and its plug must properly fit the receiver's **POWER** jack. Using an adapter that does not meet these specifications could damage the receiver or the adapter.

- Your vehicle must have a 12-volt DC, negative-ground electrical system.

- To protect your vehicle's electrical system, be sure the adapter is connected to the cigarette-lighter socket only when it is also connected to the receiver.

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 **POWER** 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.

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 (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 Universal Adapter (Cat. No. 270-1560A) to the scanner's **CHARGE** jack.

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

Fully discharged batteries take about 10 to 18 hours to recharge. You can operate the scanner while recharging nickel-cadmium batteries, but the charging time is lengthened.

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

Charging Tip

Nickel-cadmium batteries 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 on the display. Then fully charge the batteries.

TROUBLESHOOTING

If you have problems, here are some suggestions which might help.

PROBLEM	POSSIBLE CAUSE	REMEDY
Scanner is totally inoperative.	No power.	Check the batteries, or see that you plugged the scanner into a working AC or DC outlet.
Scanner is on but will not scan.	The **SQUELCH** control is not correctly adjusted.	Adjust the **SQUELCH** control clockwise.
In the scan mode, the scanner locks on frequencies that have an unclear transmission.	"Birdies."	Avoid programming frequencies listed on Page 22, or only listen to them manually.

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

CARE AND MAINTENANCE

Your PRO-51 200-Channel Direct Entry Programmable Scanner is an example of superior design and craftsmanship. The following suggestions will help you care for the PRO-51 so you can enjoy it for years.

Keep the scanner dry. If it gets 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 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:
Ham .... 29-29.7 MHz (in 5 kHz steps)
VHF-Lo .... 29.7-50 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)
Government .... 406-420 MHz (in 12.5 kHz steps)
Ham .... 420-450 MHz (in 12.5 kHz steps)
UHF Standard .... 450-470 MHz (in 12.5 kHz steps)
UHF " T " Band .... 470-512 MHz (in 12.5 kHz steps)
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)
Channels of Operation .... Any 200 Channels in Any Band
            Combinations. (20 channels × 10 banks)
            and 10 monitor channels.
Sensitivity: (20 dB S/N with 60% modulation for AM: 3 kHz deviation for FM):
29-54 MHz .... 0.5 µV
108-136.975 MHz .... 1.3 µV
137-174 MHz .... 0.6 µV
406-512 MHz .... 0.5 µV
806-956 MHz .... 0.7 µV
Direct Search Speed/Limit Search Speed/
Band Search Speed .... 100 Steps/Sec.
Scan Speed .... 50 Channels/Sec.
Priority Sampling .... 2 Seconds
Delay Time .... 2 Seconds
IF Frequencies .... 10.8 MHz and 450 kHz
Audio Power .... 250 mW Maximum
Built-in Speaker .... 1 7/16-inch (36mm) 8-Ohm, Dynamic Type
Maximum Current Drain .... 130 mA
Power Requirement .... +6 VDC, 4 AA batteries, or a suitable
            9-volt DC adapter
Dimensions .... 6 1/16 × 2 7/16 × 1 11/16 Inches (HWD)
            (154 × 62 x 42.5 mm)
Weight .... 8.11 oz (230 g)

Features and specifications are of typical units and are subject to change for improvement without notice.

NOTES