

# PRELIMINARY DRAFT

Owner's Manual  
PRO-433 1000-Channel  
Triple Trunking Mobile/Base Scanner

# Features

Your RadioShack 1000-Channel Trunking Scanner is one of a new generation of scanners designed to track Motorola® Type I, Type II, hybrid analog systems, (such as Smartnet® and Privacy Plus®) plus M/A-COM EDACS® and EF Johnson LTR. Those systems are extensively used in many 800 MHz, 900 MHz, and UHF communication systems.

Trunking communications systems let a large group of 2-way radio users (or even different groups of 2-way radio users) efficiently use a set of frequencies. Instead of selecting a specific frequency for a transmission, the user simply selects a talk group. The trunking system automatically transmits the call on the first available frequency, and also sends (on a different frequency called a data channel) a code that uniquely identifies that transmission.

Since the trunking system might send a call and its response on different frequencies, it is difficult to listen to trunked communications using a regular scanner. The scanner lets you select and monitor the data channel frequency sent with a 2-way radio transmission, so you can hear the call and response for that user and more easily “follow” the conversation.

The scanner also lets you scan conventional transmissions, and it is preprogrammed with service banks for convenience. By pressing a single button, you can quickly search those frequencies most commonly used by public service and other agencies, without tedious and complicated programming.

This scanner gives you direct access to over 37,000 exciting frequencies, including police and fire departments, ambulance services, and amateur radio services, and you can change your selection at any time.

Your scanner also has these special features:

**Signal Stalker**—you can set the scanner so it detects and provides information about nearby radio transmissions.

**Triple-Conversion Circuitry** — virtually eliminates any interference from IF (intermediate frequency) images, so you hear only the selected frequency.

**100 Channel-Storage Banks** — you can store up to 100 channels in each of 10 different banks, for a total of 1000 channels, so you can more easily identify calls.

**Ten Scan Lists** — you can store up to 100 trunking talk group IDs in each trunk scanning bank.

**Digital Weather Alert** — uses the digital SAME (specific area message encoding) signal transmitted with weather alerts to identify the type of alert being issued.

**Note:** This scanner does not use the specific area feature of SAME. It responds to all alerts received.

**Two-Second Scan Delay** — delays scanning for about 2 seconds before moving to another channel, so you can hear more replies that are made on the same channel.

**Lock-Out Function** — lets you set your scanner to skip over specified channels or frequencies when scanning or searching, and skip over talk group IDs when tracking trunked systems.

**Priority Channels** — lets you program one channel in each bank (10 in all) and then have the scanner check that channel every 2 seconds while it scans the bank, so you do not miss transmissions on those channels.

**Four Service Banks** — frequencies are preset in separate police (fire/emergency), aircraft, ham, marine to make it easy to locate specific types of calls.

**Weather Banks**— frequencies are preset and allows the scanner to search 7 weather channels (NOAA, weather)

**Dimmer** — lets you select the brightness of the display backlight.

**Simultaneous Trunking Operation** — allows the scanner to trunk three trunking systems, Motorola and EDACS, at the same time, as well as conventional systems.

**Hypersearch™** — lets you set the scanner to search at up to 270 steps per second in frequency bands with 5 kHz steps, compared to the normal search speed of 90 steps per second.

**Hiperscan™** — the scanner automatically scans up to 90 channels per second to help you quickly find interesting broadcasts.

**Memory Lock** — lets you lock the scanner to help prevent accidental changes of the channels and the talk group IDs stored in the memory.

**Data Signal Skip** — lets you set the scanner to skip non-modulated or data signals (such as fax or modem transmissions) during scan and searches. This lets the scanner avoid non-voice signals, making a search faster.

**Disconnect Tone Detect** — the scanner automatically tunes to the trunking data channel when it receives a disconnect transmission. You can turn this off, so you can continuously monitor a channel with a weak transmission where conversations are often disconnected.

**Manual Access** — lets you directly access any channel.

**Liquid-Crystal Display** — makes it easy to view and change programming information.

**Display Backlight** — makes the scanner easy to read in low-light situations.

**Key Backlight** — makes the keys easy to read in low-light situations.

**Flexible Antenna**— provides adequate reception in strong signal areas and is designed to help prevent antenna breakage. Or, you can connect an external antenna for better reception.

**Memory Backup** — keeps the frequencies stored in memory for an extended time if the scanner loses power.

**Wired Programming**— you can connect your scanner to a personal computer and program frequencies into it using an optional interface cable and software.

**Two Power Options** — let you power the scanner using external AC power using the included AC adapter or DC power using an optional DC cigarette-lighter power cable.

**Beep Control**— lets you turn off/on the key touch tone, error tone and confirmation tone.

**Weather Alert Indicator** — your scanner also functions as a severe weather alert monitor.

Your scanner can receive these bands:

Frequency Range (MHz)	Step	Transmission
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29 - 29.995	5 kHz	10 Meter Amateur Band
30 - 49.995	5 kHz	VHF Low Band
50 -54	5 kHz	6 Meter Amateur Band
108 - 136.9875	12.5 kHz	Aircraft Band
137 - 143.995	5 kHz	Military Land Mobile
144 - 147.995	5 kHz	2 Meter Amateur Band
148 – 174	5 kHz	VHF High Band
179.75 - 215.75	6 MHz	VHF TV Band
216 - 224.995	5 kHz	1.25 Meter Amateur Band
225 - 399.9875	12.5 kHz	UHF Aircraft Band
400 - 419.99375	6.25 kHz	Federal Land Mobil
420 - 449.99375	6.25 kHz	70 cm Amateur Band
450 - 469.99375	6.25 kHz	UHF Standard Band
470 – 512	6.25 kHz	UHF TV Band
806 - 823.9875	12.5 kHz	Public Service Band
849.0125 - 868.9875	12.5 kHz	Public Service Band
894.0125 – 956	12.5 kHz	Public Service Band
1240 – 1300	12.5 kHz	25 cm Amateur Band

## What's included

User ' s guide  
 Quick start guide  
 Preprogrammed frequency addendum  
 Application form  
 AC adapter  
 DC cable w/fuse  
 Scanner  
 Antenna  
 Mounting bracket  
 Din sleeve  
 Removal key (2)  
 Rubber foot (4)  
 Knob (2)  
 Lock washer (2)  
 Screw (2)

# The FCC Wants You to Know

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the *FCC Rules*. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult your local RadioShack store or an experienced radio/TV technician for help.
- If you cannot eliminate the interference, the FCC requires that you stop using your scanner.

Changes or modifications not expressly approved by RadioShack may cause interference and void the user's authority to operate the equipment.

You must use shielded interface cables with this equipment.

This device complies with Part 15 of the *FCC Rules*. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## SCANNING LEGALLY

Your scanner covers frequencies used by many different groups including police and fire departments, ambulance services, government agencies, private companies, amateur radio services, military operations, pager services, and wireline (telephone and telegraph) service providers. It is legal to listen to almost every transmission your scanner can receive. However, there are some transmissions you should never intentionally listen to. These include:

- telephone conversations (cellular, cordless, or other private means of telephone signal transmission)
- pager transmissions
- any scrambled or encrypted transmissions

According to the Electronic Communications Privacy Act (ECPA), as amended, you are subject to fines and possible imprisonment for intentionally listening to, using, or divulging the contents of such a transmission unless you have the consent of a party to the communication (unless such activity is otherwise illegal).

This scanner is designed to prevent reception of illegal transmissions, in compliance with the law which requires that scanners be manufactured in such a way as to not be easily modifiable to pick up those transmissions. Do

not open your scanner's case to make any modifications that could allow it to pick up transmissions that it is not legal to listen to. Doing so could subject you to legal penalties.

We encourage responsible, legal scanner use.

## Step 1: install your scanner

These guidelines will help you install and set up your new scanner:

The 20-433 can be placed on a convenient surface in your home as a base station, and connected to a standard outlet that supplies 120V AC, 60Hz. You must use either the supplied antenna or an electrically correct outdoor antenna, properly and safely mounted at your chosen site.

The scanner is also designed to accommodate the DIN-E automotive mounting configurations. A DIN-E sleeve and its removal keys are supplied. The unit can also be placed above or beneath the dash of your vehicle using the supplied bracket and mounting hardware.

- If your scanner receives interference or electrical noise, move the scanner or its antenna away from the source.
- To improve the scanner's reception, use an optional external antenna designed for multi-band coverage. (You can purchase this type of antenna at a local electronics store). If the optional antenna has no cable, use **50 Ω** coaxial cable for lead-in. A mating plug might be necessary for the optional antennas.
- Use an optional mono earphone or mono/stereo headset with proper impedance (32 Ω) for private listening. Read the precautions on the inside front cover of this User's Guide.
- Do not use the scanner in high-moisture environments such as the kitchen or bathroom.
- Avoid placing the scanner in direct sunlight or near heating elements or vents.

### Base Station

This is the simplest approach to let you get started quickly. Decide on a location that is convenient to a nearby wall outlet, has desk space to let you complete your programming worksheets, will safely allow the indoor antenna to be extended, or near a window to use an outdoor antenna.

To secure the radio, by means of the mounting bracket, to a surface, follow the steps below:

1. Attach the four protective rubber feet to the mounting bracket when you casually use the scanner on a flat surface. Should you desire to permanently mount the scanner, remove the feet and use wood screws through the bracket as described in Steps 2 and 3.
2. Use the bracket as a template to mark positions for the two mounting screws.
3. At the marked positions, drill holes slightly smaller than the screws.
4. Align the bracket with the threaded holes on the sides of the radio case so the bracket is beneath the radio. Secure the bracket using the two threaded knobs. Never overtighten the knobs. Once the radio is positioned, connect it to a source of AC power using the supplied **12V, 500 mA** AC adapter. Insert the barrel of the AC adapter to the jack on the rear, upper right side of the radio marked

DC 12V



**WARNING!**

Use only the supplied AC adapter with this scanner.

Insert the connector of the supplied indoor telescoping antenna to the **BNC Antenna Connector** and apply moderate pressure to secure it.

**Vehicle Installation**

You can mount your scanner in your vehicle, using either the supplied bracket or the supplied DIN-E sleeve.

***Mounting Using the Bracket***

With the bracket removed from the radio, use the holes in the bracket as a template to initially mark the location you plan to use in your vehicle. Be absolutely certain of what might be behind the mounting surface before making any holes, be it above, or below, or in front of your dash, armrest console, or other location. If you drill carelessly, expensive damage can result. If in doubt, consult your vehicle dealer's service department or a qualified professional installer.

**Important:** AVOID AIRBAG DEPLOYMENT ZONES. Ignoring this installation concern may result in bodily harm and the inability of the airbag to perform properly.

1. Using appropriate screws or other hardware, secure the bracket.
2. Insert the scanner and insert the bracket knobs to lock the scanner in position.
3. Attach the Cigarette Lighter Power Cord (not supplied) to the rear of the scanner and plug the adapter end into a dash mounted 12V DC socket.
4. Attach a suitable mounted mobile antenna to the antenna jack on the back of the scanner.

***Mounting Using the DIN-E Sleeve***

If you are unsure about how to install your scanner in your vehicle using the DIN-E sleeve, consult your automobile manufacturer, dealer, or a qualified installer. Before installing, confirm that your scanner fits in the desired mounting area and you have all the necessary materials to complete the task. Your scanner requires a 2 x 7-1/8 x 5-5/16 inch (50 x 180 x 135 mm) mounting area. Allow an additional 2-3/8 inch (60 mm) space behind the unit for connectors and wires.

1. Remove the bracket if previously attached.
2. Remove the four Philips screws on the rear that secure the outer metal case and pull off the case with care.
3. Install the DIN sleeve into the opening in your dashboard, lip facing out.
4. Push out the top and bottom tabs to hold the sleeve firmly in place.
5. Before inserting the scanner in the sleeve, attach the cable from the previously mounted antenna. Attach the DC Power leads. RED goes to a positive (+) connection on your fuse block while BLACK connects to the vehicles chassis ground (-).
6. Be sure all the connections are routed away from any potentially pinching or slicing sheet metal.
7. Slowly slide the scanner into the sleeve until it locks in place.

8. To remove the unit, see “Removing the Scanner from the DIN-E Sleeve” on Page XX.

**Note:** if you plan to connect an external speaker at a later time, expect to remove the unit for ease of making those connections.

### ***Removing the Scanner from the DIN-E Sleeve***

If you plan to connect other devices or wires to the radio at a later time, you should plan to remove the scanner from the DIN-E sleeve. This is easily done using the provided Removal keys. Refer to the illustration that shows the removal key(s), on Page XX.

Fully insert both Removal keys straight into the slots on the left and the right edges of the radio's dress panel. You cannot remove the radio if only one key is available. Press in fully and the radio will unlock from the sleeve making withdrawal from the sleeve possible. Store the keys in a safe place for future use.

## **Step 2: power your scanner**

### **FROM A WALL OUTLET**

1. Connect the tip of the supplied AC adapter to the DC 12V jack at the rear of your scanner.
2. Plug the AC adapter into your wall outlet.

**Note:**

- You must use a Class 2 power source that supplies 12V DC and delivers at least 500mA. Its center tip must be set to positive and its plug must fit the scanner's **DC 12V** jack. Using an adapter that does not meet these specifications could damage the scanner or the adapter.
- To prevent electric shock, do not use the AC adapter's polarized plug with an extension cord, receptacle, or other outlet unless you can fully insert the blades to prevent blade exposure.

### **THROUGH YOUR VEHICLE'S IGNITION (NEGATIVE GROUND ONLY)**

**Note:** If you are not experienced in connecting accessories to the vehicle fuse box, use a certified installer.

1. Disconnect the cable from the negative (-) terminal of your vehicle's battery.
2. Ground the black wire of the supplied DC power cord to your vehicle's chassis.

**Note:** Be sure the grounding screw makes complete contact with the metal frame of your vehicle.

3. Connect the red wire of the supplied DC power cord to a voltage source that turns on and off with the ignition switch, such as a spare accessory terminal in your vehicle's fuse box.
4. Insert the power cord's barrel plug into the scanner's **DC 12V** jack.

5. Reconnect the cable to the negative (-) terminal of your vehicle's battery.

## FROM YOUR VEHICLE'S SIGARETTE LIGHTER

To power your scanner from a 12V power source in your vehicle, such as a cigarette-lighter socket, you need a 12V, **1A** DC cigarette-lighter adapter (not supplied), available at your local RadioShack store.

1. Insert the adapter's barrel plug into the scanner's **DC 12V** jack.
2. Plug the adapter's other end into your vehicle's cigarette lighter or power socket.

## Step 3: connect your scanner

### CONNECTING THE SUPPLIED ANTENNA

Plug the telescoping antenna into the ANT connector. The antenna length should be as shown below.

<u>Frequency</u>	<u>Antenna Length</u>
25-174 MHz	Extend fully (4 segments)
400-512 MHz	Extend 2 segments
806-1300 MHz	Collapse fully (1 segment)

### CONNECTING AN EXTERNAL ANTENNA

The ANT jack on the back of the scanner makes it easy to use the scanner with a variety of antennas. You will need to connect an external antenna when you mount your scanner in the dashboard of your vehicle. You may also want to connect an external antenna if you use your scanner as a base station.

Your local RadioShack store sells a variety of antennas. Always use 50-ohm coaxial cable, such as RG-58 or RG-8, to connect an outdoor antenna. For lengths exceeding 50 feet, use RG-8 low-loss dielectric coaxial cable. If your coaxial cable does not have a BNC connector, you will also need a BNC adapter (not supplied). When deciding on an antenna and its location, consider the following:

- The location of the antenna should be as high as possible.
- The antenna and antenna cable should be as far as possible from sources of electrical noise (appliances, other radios, and so on).
- The antenna should be vertical for the best performance.

**Note:** Use extreme caution when installing or removing 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, touching 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 EXTERNAL SPEAKER

If you mount the scanner in your dashboard or if you use it in a noisy area, you may want to add an external speaker (available at your local RadioShack store) to improve your ability to hear. Plug the speaker cable's 1/8 inch (3.5 mm) plug into your scanner's EXT SP jack.

**Note:** Connecting an external speaker disconnects the scanner's internal speaker.

## 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 use an earphone or headphones with your scanner when operating a motor vehicle in or near traffic. Doing so can create a traffic hazard and could be illegal in some areas.

If you use an earphone or headphones with your scanner, be very careful. Do not listen to a continuous broadcast. Even though some earphones/headphones let you hear some outside sounds when listening at normal volume levels, they still can present a traffic hazard.

## CONNECTING AN EARPHONE/HEADPHONE

For private listening, you can plug an optional earphone or **mono / stereo** headphones into the jack  on front of your scanner. This automatically disconnects the internal speaker.

## About Your Scanner

We use a few simple terms in this manual to explain the features of the scanner. Familiarize yourself with these terms and the scanner's features, and you can put the scanner to work for you right away. Simply determine the type of communications you want to receive, then set the scanner to scan those communications.

The scanner scans conventional frequencies and **trunked systems**. For more information about trunked transmissions see "Trunking Operation" on Page XX.

A **frequency**, expressed in kHz or MHz, is the tuning location of a station. To find active frequencies, you use the **search** function or refer to a frequency reference such as the included Pre-Programmed Frequency Sheet.

Besides searching within a selected frequency range, you can also search your scanner's **service banks**. Service banks are preset groups of frequencies categorized by the type of services that use those frequencies. For example, many amateur radio frequencies are located in the **HAM** service bank.

When you search and find a desired frequency, you can store it into a programmable memory location called a **channel**. Channels are grouped into channel-storage **banks**. The scanner has 1000 channels in **channel-storage** bank. Each bank is divided into ten 100-channel sets. You can **scan** the channel-storage banks to see if there is activity on the frequencies stored there.

Just keep in mind — you search frequencies and scan channels.

## A LOOK AT THE KEYPAD

Key	Function(s)
HOLD /RESUME	Stops and resumes searching.
SCAN/MANUAL	Scans the stored channels and scan lists; Stops scanning and lets you directly enter a channel number or frequency; manually stores talk group IDs in scan lists.
E/PGM	Stores frequencies into channels; programs the trunking frequency, fleet map, and ID memories.
TRUNK	Turns trunk tracking on and off and stores trunked frequencies.
SRCH	Starts a chain search; searches a specified frequency range for frequencies; searches for another active ID during trunking operation.
6/ALERT	Turns on or off the NWR-SAME weather alert.
PRI	Sets and turns on and off the priority and priority scanning feature; turns on and off
L/O	Lets you lock out selected channels or skip specified frequencies during a search; lets you lock out a selected ID while trunking.
DM/M-LOCK	Lets you select the brightness of the display: locks the memory.
•/CLR /DELAY	Inputs or clear a decimal point during the frequency programming; Clear the error message on the display; Programs a 2-second delay for the selected channel, a chain/direct, search, or each service and weather scan; programs a 5-second delay while trunking.
▼	Searches and scans down through a selected frequency range; selects options during programming; changes the ID location number while trunking.
▲	Searches and scans up through a selected frequency range; selects options during programming; changes the ID location number while trunking.
Number Keys	Each key has a single-digit label and a range of numbers. Single-digit keys enter a channel, a frequency, or an ID number. The range of numbers (1–100, for example) is used to enter the channels of a memory bank.
SVC	Starts a service bank search;

MENU	Lets you enter the menu mode.
1/HAM	Lets you select the ham band in service mode.
2/MRN	Lets you select the marine band in service mode.
3/AIR	Lets you select the air band in service mode.
4/POL	Lets you select the police band in service mode.
WX/ 	Starts weather search and stops it: activates skywarn function.
	Turns the Signal Stalker function on or off.

## A LOOK AT THE DISPLAY

The display has indicators that show the scanner's current operating status. The display information helps you understand how your scanner operates.

**BANK**— appears with numbers (**1–10**).

The numbers show which channel-storage banks are turned on for scanning and ID list number for Trunking.

**TRUNK** — appears when you select the trunking operation and while you store a trunking frequency into a channel.

 — appears when you select a priority channel and talk group.

**DATA**— appears when the data skip function is active; appears when the disconnect tone detect function is off in the trunking mode.

 — appears when Signal Stalker is active.

**SCAN** — appears when you scan channels.

**LIST** — appears with numbers (**1–5**) during trunking. Numbers with a bar under them show which ID scan list banks are turned on for scanning.

**SRCH** — appears during chain, direct, and ID searches.

**SVC** — appears during Service Search mode.

**PRI** — appears when the priority feature is turned on.

**HOLD** — appears during chain, direct, service, and ID searches, and ID monitor holds; flashes while the scanner is temporarily monitoring a programmed ID.

**DLY** — appears when you select a Dropout Delay option.

**L/O** — appears when you manually select a channel and talk group you locked out.

**M-LOCK**— appears when you select a memory lock option.



— appears when you select Skywarn channel.

**PGM** — appears while you store a frequency into a channel, while you enter a frequency range during a chain search, or when you program trunking frequencies, fleet maps, or ID memories while trunking.

▲ or ▼ — appears during a chain, direct, or service search, and normal and weather scan indicating the search direction.

**ALERT** — appears when the weather alert is turned on, or flashes when the scanner detects an alert coded signal.

**M, E or L** — indicate either a Motorola (M) trunking system, EDACS (E) system or LTR (L) trunking channel.

**CH** — appears with a number to its left to indicate to which channel the scanner is tuned to.

## UNDERSTANDING BANKS

### Service Banks

The scanner is preprogrammed with all the frequencies allocated to the ham, marine, aircraft, and police (fire/emergency) services. This helps you quickly find active frequencies instead of doing a chain search (see “Service Bank Search” on Page XX).

### Channel Storage Banks

To make it easier to identify and select the channels you want to listen to, all the channels are divided into 10 banks of 100 channels. Use each channel-storage bank to group frequencies, such as those for the police department, fire department, ambulance services, or aircraft (see “Guide to the Action Bands” on Page XX).

For example, the police department might use four frequencies in your town while the fire department uses an additional four. You could program the four police frequencies starting with Channel 1 (the first channel in bank 1), and program the fire department frequencies starting with Channel 51 (the first channel in bank 2).

## Operation

### TURNING ON THE SCANNER AND SETTING SQUELCH

**Note:** Make sure the scanner's antenna is connected before you turn it on.

1. Turn **SQUELCH** fully counterclockwise.
2. Turn **VOLUME** clockwise until it clicks and you hear a hissing sound.
3. If the scanner is scanning, press **SCAN/MANUAL** to stop scanning, then turn **SQUELCH** clockwise until the hissing stops.

## STORING KNOWN FREQUENCIES INTO CHANNELS

You can locate and store specific frequencies into channels for later use. To assist you in locating a desired frequency from the scanner's wide range, consider using a frequency guide. Good references for active frequencies are the RadioShack Police Call Guide including Fire and Emergency Services, and Official Aeronautical Frequency Directory. We update these directories every year, so be sure to get a current copy.

**Note:** To store trunked system frequencies, see "Storing Trunked Frequencies" on Page xx.

Follow these steps to store frequencies into channels.

1. Press **E/PGM** to put the scanner in programming mode. **PGM** appears.
2. Use the number keys and **• /CLR /DELAY** to enter the channel number where you want to store a frequency including the decimal point you want to store.
3. Press **MANUAL** to advance the channel.
4. Use the number keys and **• /CLR /DELAY** to enter the frequency you want to store.
5. Press **E/PGM** to store the frequency into the channel.

### Notes:

- If you entered an invalid frequency in Step 4, **Error** appears and the scanner beeps error tone. Enter a valid frequency.
- If you entered the frequency which already exist on other channel in step 4, the scanner beeps error tone and displays that channel. Press **• /CLR /DELAY** to exit the programming mode, or press **E/PGM** to store the frequency to both channels.
- The scanner automatically rounds the entered number to the nearest valid frequency. For example, if you enter 151.473 (MHz), your scanner accepts it as 151.475.

Channel display is automatically set to on. If you want off, press **• /CLR /DELAY** (see "Drop Delay" on Page xx). The scanner stores this setting in the channel.

6. To program the next channel in sequence, press **• /CLR /DELAY** or **MANUAL** and repeat Steps 4 and 5.

## COPY/MOVE CHANNEL

If you want to copy/move a frequency to a channel, follow the steps below:

1. Press and hold **E/PGM** during program mode. Scanner displays copy/move menu.
2. Press **• /CLR /DELAY** or **MANUAL** to select the copy or move, then press **E/PGM** to decide copy or move.

3. Select the bank where you want to copy/move the frequency. The smallest empty channel number and "000.0000" flashes on and off over the frequency you want to store.
4. Press **▲** or **▼** to move to the channel where you wish to store the frequency.
5. Press **E/PGM** to enter the frequency, and return to the program mode.
6. Pressing **• /CLR /DELAY** cancels the programming. If there is no empty channel, the scanner automatically selects the first channel of the bank.

## SEARCHING FOR AND TEMPORARILY STORING ACTIVE FREQUENCIES

If you do not have a reference to frequencies in your area, use a chain, direct, or service search (except weather search) to find a transmission. Also see "Guide to the Action Bands" on Page XX.

**Note:** While doing a chain, direct, or service bank search, press:

- **DELAY** if you want to turn the delay on or off (see "Drop Delay" on Page XX).
- **MENU** if you want the scanner to skip data signals (such as fax or modem signals) and search only for audio (voice) signals, enter the menu mode and turn Data Skip Option to off (see "Skipping Data Signals" on Page XX).

### Chain Search

A chain search lets you search within a specific range of frequencies. **SRCH** appears during a chain search.

1. Press **SRCH**. **SRCH** appears.
2. If you want to add or delete the bank to be searched, press **0 – 9** corresponding the bank.

**Note:** At least one bank needs to be entered. If you disabled all the banks, the error tone beeps.

3. Press **▼** to search down or **▲** to search up.
4. When the scanner stops on a transmission, quickly press either:
  - HOLD/RESUME** to stop searching to listen to the transmission. **HOLD** appears.
  - PGM** to store the displayed frequency into memory.
5. To release the hold and continue searching, press **HOLD/RESUME**.

**Note:** To step through the frequencies while **HOLD** appears, press **▼** or **▲**.

### Direct Search

You can search up or down from the currently displayed frequency using direct search. **SRCH** appears during searching until the scanner stops.

1. Press and hold **SRCH**.

OR

Enter the frequency you want to start from using the number keys, press **.** to enter a decimal point, then press **▼** or **▲** . **SRCH** appears.

**Note:** If you enter an invalid frequency, the scanner displays **Error**. Press **.** /CLR /DELAY.

2. When the scanner stops on a transmission, quickly press either:

**HOLD/RESUME** to stop searching and listen to the transmission. **HOLD** appears.

**PGM** to store the displayed frequency into memory.

3. To release the hold and continue searching, press **HOLD/RESUME** .

**Note:** To step through the frequencies while **HOLD** appears, press **▲** or **▼** .

## Service Bank Search

You can search for ham, marine, aircraft, or police (fire/emergency) transmissions without knowing the specific frequencies used in your area. The scanner is preprogrammed with all the frequencies allocated to these services. To use this feature, press **SVC**. The current service symbol appears and the scanner starts to searching. To select a different service bank, press **1/HAM**, **2/MRN**, **3/AIR** or **4/POL**.

Newly selected service symbol appears. Press **▲** to search down or **▼** to search up.

When the scanner stops on a transmission, quickly press either:

- **HOLD/RESUME** to stop searching and listen to the transmission. **HOLD** appears.

- **PGM** to store the displayed frequency into the memory.

To release the hold and continue searching, press **HOLD/RESUME**.

**Note:** Because there are many different frequencies allocated to fire and police departments, it can take several minutes to search all the service frequencies.

## Weather Search

You can search also for weather transmissions. To start weather search:

1. Press **WX**.  **WX** appears. You can change the search direction by using **▲** or **▼** .

2. If you want to stop the search, press **HOLD/RESUME**. **HOLD** appears.

## Search Skip Memory

You can skip up to 200 specified frequencies during a chain, direct and service search and Signal Stalker .This lets you avoid unwanted frequencies or those already stored in a channel.

**Note:** You cannot skip frequencies during WX service search.

To skip a frequency, press **L/O** when the scanner stops on the frequency during a chain, direct and service search and Signal Stalker. The scanner stores the frequency in memory and automatically resumes the search.

To clear a single frequency from skip memory so the scanner stops on it during a chain, direct and service search and Signal Stalker:

1. Press **HOLD/RESUME** to stop the search.
2. Press **▲** or **▼** to select the frequency. **L/O** appears.
3. Press **L/O**. **L/O** disappears.

To clear all the skip frequencies at once while searching, press **HOLD/RESUME**, then hold down **L/O** until the scanner beeps twice.

**Notes:**

- If you selected all frequencies to be skipped within the search range, the scanner beeps 3 times and does not search.
- If you select more than 200 frequencies to skip, each new frequency replaces a frequency previously stored, beginning with the first stored frequency.
- Press **▲** or **▼** to select a skipped frequency while **HOLD** appears. **L/O** appears when you select a skipped frequency.

## SCANNING THE STORED CHANNELS

To begin scanning channels, press **SCAN/MANUAL**. The scanner scans through all non-locked channels in the activated banks. (See “Locking Out Channels” on Page XX and “Turning Channel-Storage Banks On and Off” on Page XX). When the scanner finds a transmission, it stops on it. When the transmission ends, the scanner resumes scanning.

**Notes:**

- If you have not stored frequencies into any channels, the scanner does not scan.
- If the scanner picks up unwanted partial, or very weak transmissions, turn **SQUELCH** clockwise to decrease the scanner’s sensitivity to these signals. To listen to a weak or distant station, turn **SQUELCH** counterclockwise.
- To ensure proper scanning, adjust **SQUELCH** until the audio mutes.
- To scan in the trunk scanning mode, see “Trunking Operation” on Page XX.

## MANUALLY SELECTING A CHANNEL

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

Press **E/PGM** to put the scanner in programming mode. **PGM** appears.

Or, during scanning, if the radio stops at a channel you want to listen to, press **HOLD/RESUME**. Press

**HOLD/RESUME** to resume automatic scanning.

## Special Features

### DELAY

Sometimes a user might pause before replying to a transmission. To avoid missing a reply on a specific channel, the scanner automatically program a 2-second delay into any channel or frequency. You can monitor the channel frequency for an additional 2 seconds after the transmission stops before resuming scanning or searching.

Depending on how the scanner is operating, follow one of these steps to program a delay.

- To turn off the 2-second delay, press **•/CLR /DELAY** while the scanner is monitoring a channel, scanning, or searching. **DLY** disappears.
- To turn on the 2-second delay to a channel again, select the channel and press **•/CLR /DELAY**. **DLY** appears.
- To turn on the 2-second delay to search again, press **•/CLR /DELAY** while the scanner is searching. **DLY** appears and the scanner automatically adds a 2-second delay to every frequency it stops on in that band.

Signal Stalker also has a delay feature. It's delay time is 10 seconds. See page XX how to program Signal Stalker Delay.

### 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 100 channels in that bank.

While scanning, press the number key that corresponds to the bank you want to turn on or off. Numbers appear at the top of the display, showing the currently selected banks. The scanner scans all the channels within the displayed banks that are not locked out (see "Locking Out Channels"). The bank number flashes when the scanner scans a channel that belongs to the bank.

#### Notes:

- You can manually select any channel within a bank, even if that bank is turned off.
- One bank must always be active. If you try to turn off all banks, bank 1 remains.

### LOCKING OUT CHANNELS

You can increase the scanning speed by locking out channels that have a continuous transmission, such as a weather channel. To lock out a channel, manually select the channel, then press **L/O**. **L/O** appears.

**Note:** You can still manually select locked-out channels.

To remove the lockout from a channel, manually select the channel, then press **L/O**. **L/O** disappears.

To unlock all channels in the banks that are turned on, press **HOLD/RESUME** to stop scanning, then hold down **L/O** until the scanner beeps twice.

## PRIORITY

The priority feature lets you scan through the channels and still not miss important or interesting calls on specific channels. You can program one stored channel in each bank as a priority channel. If the priority feature is turned on, as the scanner scans the bank, it checks that bank's priority channel for activity every 2 seconds.

The scanner automatically designates each bank's first channel as its priority channel. Follow these steps to select a different channel in a bank as the priority channel.

1. Press **E/PGM**.
2. Enter the channel number you want to select as the priority channel, then press **PRI**.  
**P** appears to the right of the selected channel number.
3. Repeat Steps 1 for the channel in each bank you want to program as a priority channel.

To review all priority channels (in ascending order only), repeatedly press **PRI** to see the numbers of the priority channels.

To turn on the priority feature, press **PRI** during scanning. **PRI** appears. Then the scanner checks the designated priority channel every 2 seconds in each bank. The bank number appears at the top of the display.

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

**Notes:** If you have locked out all priority channels, **CH Loc Out** appears when you activate the priority feature. To unlock any desired priority channels, see "Locking Out Channels" on Page XX.

## USING THE MEMORY LOCK

To protect the scanner from accidental program changes, turn on the memory lock feature. When the scanner is locked, it beeps a error tone if you press **E/PGM** to program a frequency or talk group ID.

To turn on the memory lock, hold down **DM/M-LOCK** until **M-LOCK** appears. To turn it off, hold down **DM/M-LOCK** until **M-LOCK** disappears.

**Note:** Using memory lock does not prevent the scanner from scanning channels.

## WIRED PROGRAMMING

You can transfer programming data to your scanner using your PC and an optional interface cable (Cat. No. 20-289, available at your local RadioShack store) and software (available at your local RadioShack or [www.radioshack.com](http://www.radioshack.com)).

**Note:** If the scanner receives no data from the PC for more than 20 seconds, **T-Err** appears and wired programming stops.

1. Make sure your scanner is turned off.
2. Connect the interface cable to your computer and then connect the other end of the cable to PC/IF on the side of the scanner.

3. Install the software to your computer and run the program.
4. To set up the program, click on Tools, select Configuration, and select PRO-433 (if necessary).
5. Turn the scanner on. The scanner automatically goes into the wired programming mode. **PGM** and **WirEd** appear. Then send the data from the PC. Data frame numbers being received appear.
6. When the scanner has successfully received all data, **End** appears. If the scanner received an error while receiving data, **End**, **d-Err**, and its frame number appear. If the scanner received a communication error while receiving data, **C-Err** indicates the packet number where the error occurred. If the scanner received a checksum error while receiving data, **S-Err** indicates the packet number where the error occurred. If the scanner received a length field error while receiving data, **L-Err** indicates the packet number where the error occurred.

## CLONING YOUR SCANNER

You can clone all the frequencies, trunking talk groups, and fleet maps programmed in your PRO-433 to another PRO-433 or PRO-528 using an optional interface cable and software (available at your local RadioShack or [www.radioshack.com](http://www.radioshack.com)).

1. Make sure the scanners are turned off and then plug the cable into each scanner's PC/IF jack.
2. While you press and hold **E/PGM** on both scanners, turn on both scanners.
3. Determine the scanner which has the frequency data that you want to transfer. This one must be set up as the First Unit, and the other must be set as the Clone Unit
4. On the scanner that is the Clone Unit needs to be set as **CLONE** unit.
5. On the scanner that is the First Unit needs to be set as **FirSt** unit.
6. Press **E/PGM**. The First Unit checks whether the CLONE unit is connected to correctly. When a First Unit receives the response from the CLONE unit, the data transfer starts. During data transfer, **SND** and **REC** flashes.
7. When the data transfer is completed, **donE** appears. If the data transfer is not successful, **Error** appears.

## USING THE DIMMER

You can select the brightness of the display backlight. Repeatedly press **DM** to select **BRIGHT**, **DIMMER** or **OFF**.

## CHANGING SEARCH SPEEDS

**Note:** Hypersearch applies only to the 5 kHz step bands (29–54 MHz, 137–174 MHz, and 216–224.9950 MHz).

The scanner has two search speeds.

Normal Search	Hypersearch
90 steps/second	270 steps/second

## TURNING THE BEEP OFF/ON

When the beep is set to off, any beep (key touch tone, error tone and confirmation tone) doesn't sound.

1. Press **MENU**.
2. Repeatedly press ▲ or ▼ to display **bBEEP**, then press **E/PGM**.
3. Repeatedly press ▲ or ▼ to select **OFF** or **ON**, then press **E/PGM**.
4. Press **MENU** to exit the menu mode.

## SKIPPING DATA SIGNALS

To prevent the scanner from stopping on channels that consist of nonmodulated or data signals (such as fax or modem transmissions) during a search or scan, turn on the data skip feature. When the radio receives a data signal and data skip is selected, the signal is ignored.

To turn on the data skip feature;

1. Turn off the priority feature if it is on (see "Priority" on Page XX).
2. Press **MENU**.
3. Repeatedly press ▲ or ▼ to display **dAtA-S**, then press **E/PGM**.
4. Repeatedly press ▲ or ▼ to select **OFF** or **ON**, then press **E/PGM**.
5. Press **MENU** to exit the menu mode.

**Note:** This feature does not apply to the air band and weather search mode as data signals are not generally found in this service.

## RECEIVING NWR-SAME AND WEATHER ALERT SIGNALS

In 1994, the National Oceanic and Aerospace Administration (NOAA) began broadcasting alerts that include digitally encoded data. Specific Area Message Encoding (SAME) includes information which identifies the severity of the alert. While this scanner does not encode specific geographical data, it does detect SAME signals and decode the alert level. The scanner displays this data as codes corresponding to the levels of severity (L1, L2, and L3).

### Turning On the Digital Weather Alert Feature

1. Press **WX!**  and start weather search. See "Weather Search" on Page XX.
2. Press **6/ALERT**. **ALERT** appears. This mutes the audio until the scanner receives a **SAME**-coded signal.

When the scanner receives a **SAME**-coded signal, **ALERT** flashes and an associated "L" code (which indicates the severity of the alert) and SAME-coded signal appears alternately. The scanner remains on the weather channel and the audio turns on so you can hear the weather broadcast.

The scanner displays one of the following codes to indicate the alert level .

**L1:** Warning

**L2:** Watch

**L3:** Advisory

**WXA:** Weather Alert

## Testing Digital Weather Alert Tone

To hear and test the tones for the three alert levels, press **WX/**  to select the weather service, then hold down **ALERT** for about 1 second. The tones sound in the order L3, L2, then L1, and **TEST** flashes. Each alert code appears as its tone sounds. Press any key to end the test sequence.

## Programming a FIPS Code

To specify a county, SAME uses a standard established by the US Census bureau, called FIPS. The format of a FIPS code is:

PSSCCC, where...

P = area subdivision (0=entire area)

SS = State code (00=all states)

CCC = County code (000=all counties)

For example, the FIPS code for Tarrant County, Texas is:  
048439 (48=Texas; 439=Tarrant County).

Some counties are further subdivided, in which cases, the first digit will be 0 for all subdivisions in the county and each subdivision will be labeled 1-9.

To program your scanner to alert you when the weather service issues an alert, you must set the scanner to the alert mode, and then leave the scanner monitoring the weather service. You cannot scan frequencies and monitor for weather alerts at the same time.

To limit weather alerts to a specific area, you must also program in the FIPS code(s) for the area(s) you want to receive alerts. The scanner can be set to either, alert for all areas, or only the areas you have programmed.

## programming FIPS

During weather scan hold mode, press **E/PGM**. The scanner sends itself into FIPS programming mode. If the scanner is set to alert for all FIPS, **ALLFIPS** appears on the display.

If the scanner is set to alert only the area you have programmed, **F1** appears.

press  or  to change the displayed FIPS code from **F1** to **F15**.  
If a FIPS code is not programmed, ----- appears.

Use the keypad to enter the FIPS code. Press **• /CLR /DELAY** to cancel an inputted FIPS code. Press **E/PGM** to store the FIPS code. Press **0** then **E/PGM** to clear a FIPS code. ----- appears. If an invalid value has been inputted, the FIPS code is cleared.

To set the scanner so it alerts you when you receive any FIPS code, press  or  to move **ALLFIPS**. Then press **E/PGM**. Then go to WX hold mode.

To set to alert only the area you have programmed, press ▲ or ▼ to move **F1** to **F15**. Then press **E/PGM**. Then go to WX hold.

## Skywarn

The Skywarn function lets you jump directly to the last channel in memory (Channel 1000)

from any mode by press and holding . The scanner goes into scan hold mode and starts receiving transmissions in the last channel. If no frequency is programmed in the last channel, **No Prog** appears and the scanner sounds an error tone.

### About Skywarn

Skywarn is an organized group of trained weather observers. A Skywarn group exists in virtually every US county with a significant population. During inclement weather, reports made by Skywarn observers include information about:

- pea-sized and larger hail
  - wind and wind gusts 40 MPH and greater
  - heavy rainfall
  - lightning (cloud-to-cloud and especially cloud-to-ground)
  - wall clouds seen in severe thunderstorms (which spawn tornadoes)
  - severe lowering of a wall cloud
  - turbulence in a wall cloud
  - funnel clouds
  - tornadoes
  - high water areas
  - downed power lines
  - other emergency conditions that affect life or property
- Listening to Skywarn broadcasts makes it easy to quickly find out about and prepare for inclement weather conditions in your immediate area, even before your local NOAA weather broadcast and local TV or radio station can announce them. Enter the local Skywarn frequency for your area into Channel 1000 on your scanner. Then, listen to Skywarn first when severe weather threatens. Listen to NOAA: for weather alerts Listen to Skywarn to hear trained observers in your vicinity call in official reports to a net control station which relays those reports to NOAA and other emergency agencies. Most importantly, you get Skywarn reports directly from trained observers - that means you get them several minutes before they can be relayed for broadcast by NOAA and as much as 5 or 10 minutes sooner than you will hear them on local TV or radio! Those few minutes can be worth a lot when it comes to deciding if your family needs to take cover.

**Note:** If you tune to a Skywarn frequency when the Skywarn net is not active, you may hear nothing, or you may hear amateur radio operators talking on a local repeater system.

## Signal Stalker

Your scanner's Signal Stalker feature lets you set the scanner so it detects and then displays the frequency of a nearby strong radio transmission. You can set the scanner so Signal Stalker works "in the background" while you are scanning other frequencies; turn off normal scanning while Signal Stalker works; or turn off Signal Stalker and use the scanner normally. You can set the scanner so it alerts you when Signal Stalker finds a frequency. You can also set the frequency band where you want the scanner to look for transmissions. You can also turn on the pager screening feature so the scanner ignores common pager frequencies.

**Note:**

- Signal Stalker works well for locating the source of strong local transmissions, such as mobile and handheld two way radios in areas with no other strong transmission sources; however, if you are in an area with many transmission sources (such as pager radio transmitters, multiuse radio towers, traffic control devices, etc.), Signal Stalker might not find the transmission you are searching for, or it might find a transmission other than the one you are searching for. You can screen unwanted transmissions by pressing **L/O** to lock them out. See "Frequency Skip" for more information.
- Signal Stalker cannot detect satellite dishes or any transmitter with a frequency above or below the frequency ranges listed under "Setting the Signal Stalker Options".
- Signal Stalker works better with some types of transmissions than others. It might not correctly display frequency information for transmitters using a highly directive antenna (such as an amateur radio beam antenna), if there are many transmitters operating at the same time in the same area, or if the transmitter is a broadcast television station.

## Setting the signal stalker options

1. Press **MENU**.
2. Repeatedly press **▲** or **▼** to select **Sig-St.**, then press **E/PGM**. One of the following signal stalker options appears:

**S-S.bnd**: Lets you select the signal stalker band.

**S-S.ALt**: Lets you select the signal stalker alert settings.

**S-S.Lit** : Lets you select the signal stalker back light settings.

**S-S.PS**: Lets you select the pager screen settings.

**S-S.Only**: Lets you select the signal stalker mode settings.

**S-S.Int** : Lets you select the signal stalker voice interrupt settings.

When this option is on, scanner checks signal stalker function during the voice conversation.

**S-S.LOG**: Lets you select the signal stalker logging settings.

When this option is on, scanner checks log channel along with user programmed channels.

3. Repeatedly press **▲** or **▼** to select the option you want, then press **E/PGM**.

**[S-S.bnd]**

If you selected **S-S.bnd**, one of the following band names appears:

**29-54**

**108-137**

**137-174**

**179-320**  
**320-512**  
**800-956**

Repeatedly press ▲ or ▼ to select the band you want to set, then press **E/PGM**.

**[Other than S-S.band]**

Proceed to Step 4.

4. Repeatedly press ▲ or ▼ to select **ON** or **OFF**, then press **E/PGM**.
5. When you select the option, press **• /CLR /DELAY** to exit the option mode.

**Using signal stalker**

To turn on Signal Stalker, turn SQL fully clockwise, then press  except in WX search, program search range, or program mode.  appears. Every 2 seconds, the scanner searches for frequencies in the range you specified in “Setting the Signal Stalker Options.”

When the scanner finds a frequency, it sounds the alert you specified in “Setting the Signal Stalker Options”, and **Found** flashes. Press any key to confirm the displayed frequency. Press  to resume scanning.

To turn on Signal Stalker and turn off normal scanning, turn **S-S.Only** of signal stalker options to on . Flashes. See “Setting the signal stalker options on page XX.”

To turn off Signal Stalker and turn on normal scanning, press  and  disappears.

**Using signal stalker logging**

The scanner temporarily saves the last 10 of received signal stalkers to log channel and includes them when it scans. The frequencies in the log channels are deleted when scanner is turned off.

The log channels can be locked out. If log channel is locked out, the scanner does not check the frequency during signal stalker search.

Signal stalker logging option

When you turn on this option, the scanner scans the last 10 of received Signal stalker (10 log channels).

**Signal Stalker voice interrupt**

When Voice interrupt is set to on:

While the Signal Stalker is on and the scanner is receiving audio in other mode, the scanner checks Signal Stalker every 2 seconds and the audio breaks up at the moment of it.

When Voice interrupt is set to off:

If you feel uncomfortable the break, set the Signal Stalker voice interrupt to off. The scanner doesn't check the Signal Stalker during receiving the audio, so the audio is not interrupted. The scanner resumes checking the Signal Stalker when the signal ends.

## Trunking Operation

The scanner tracks transmissions that use the Motorola Type I, Type II, hybrid, and EDACS and LTR analog trunking systems. The frequencies for many of the 800 MHz, 900 MHz, and EDACS and LTR public safety systems are listed in the separate National Public Safety Trunked System Frequency Guide included with your scanner.

### SETTING THE SCANNER TO THE TRUNKING MODE

#### Simultaneous Trunking

The scanner allows you to track up to 10 systems at a time. You can trunk scan or search and scan conventional frequencies at the same time. You can also program conventional frequencies in the same bank as trunking systems.

After the scanner is finished checking activity in the trunked system, it scans other conventional frequencies in the bank. (Only trunking frequencies are programmed in trunk mode.)

If a system is inactive for 1 second and there are no conventional channels in the bank, the scanner starts scanning the next selected trunk bank. If you turned DELAY on, the scanner starts scanning the next trunk bank after about 2 seconds.

To scan both trunking and conventional banks, select the banks you wish to be active with trunking off, then press **TRUNK**. The scanner begins scanning. To return to conventional scanning, press **TRUNK** again.

### SETTING SQUELCH FOR THE TRUNKING MODE

For trunked reception, a good squelch setting is in the center of the range with the white marker pointing up. If it is set too high, it could prevent your scanner from locking on the control channel reliably. If it is set too low, it will slightly delay finding the control channel. The best setting is the same as for conventional reception and is critical for monitoring trunked systems.

### PROGRAMMING TRUNKED FREQUENCIES

Follow these steps to select, program, and store trunked frequencies.

1. If you are not in conventional programming mode, press **E/PGM** beforehand. Press **TRUNK**. Your scanner beeps a tone. Then **TRUNK** appears and one or more bank numbers flash.
2. Press the number key (**1-9** and **0**) of the desired target storage bank.

Select one of the trunk systems by repeatedly pressing  or  to select a trunking system type, then press **E/PGM**.

**Note:** You can select from the following six systems:

You See	Trunk System
E1	Motorola Type I, and Hybrid
Ed	EDACS Wide Band: 9600 baud
E2 – 800	Motorola Type II, 800 MHz frequencies
E2 – 900	Motorola Type II, 900 MHz frequencies
E2 – Hi	Motorola Type II, VHF(136-174 MHz) frequencies
E2 – UHF	Motorola Type II, UHF (400-512 MHz) frequencies
Ed – Sct	EDACS Scat
Lt	LTR

3. **PROG F** appears, then press **E/PGM**. The scanner automatically selects the first channel in the selected banks.

4. Use the number keys to enter a valid frequency within the trunk system, then press **E/PGM**. The bank number, the channel number, and **E** (EDACS) ,**M** (Motorola) or **L** (LTR) appears depending upon the trunk system selected.

**Notes:**

- If you enter an invalid frequency (outside the selected range), the scanner beeps, the channel number flashes and **Error** appears. If this happens, press **• /CLR /DELAY** to clear the frequency, then repeat the entry.
- For EDACS and LTR systems, you must enter the frequencies in logical channel number (LCN) order.
- If you try to enter a duplicate frequency in a bank, the scanner beeps and the channel which was previously stored appears.

5. Press **▲** or **▼** to select the next channel in the bank.

6. Repeatedly press **• /CLR /DELAY** to return back to Step 2. Repeat Steps 2 and 5 until all frequencies have been entered.

7. Press **SRCH** to begin searching for the trunk's data channel and scan conventional frequencies at the same time.

As the scanner looks through the frequencies, you see them on the display.  
When the scanner finds the controlling data channel, the scanner begins trunking.

## SEARCHING A TRUNKED BANK

Once the data channel is acquired, the scanner begins a trunk search.  
With the search function, you will be able to find all the active talk groups within the trunked system.  
Press **SCAN/MANUAL**. You can switch to the trunk scan mode from the trunk search mode.  
See "Scanning the Talk Group ID Lists" on Page XX.

While scanning conventional frequencies, follow the steps below to switch to the trunk mode after the scanner finds the data channel.

1. Press **TRUNK**. The scanner begins scanning both trunking and conventional banks.
2. Hold down **TRUNK** for about 1 second. The scanner switches to the trunk scan mode.
3. Hold down **TRUNK** for about 1 second again. The scanner switches to the trunk search mode.

**Hint:** While searching, you may not know exactly to whom the talk group IDs are assigned until you listen awhile. To locate talk group ID lists for your local police, fire, and other agencies, refer to frequency guides available at your local RadioShack store or on internet sites such as [www.trunkscanner.com](http://www.trunkscanner.com). You can also determine the type of agency you are listening to after a short while, be it a police, fire, or emergency medical 2-way radio user. Once you have identified the type of service, note the associated talk group ID of that unit for future programming. See "Identifying a Trunked Frequency" on Page XX. Determining the service associated with a talk group ID might take awhile, but discovering the ID owner of each signal is half the fun of trunk scanning!

## Turning a Trunked Bank On or Off

Press and hold **SCAN/MAUNAL** during trunk scanning. The selected trunked banks appear. Press the bank number (0–9), to turn the desired bank on or off.

## Skipping a Trunked Bank

You can scan conventional frequencies programmed in the same bank by holding down  about 1 second. If there is no conventional frequency, the scanner scans the next bank.

## Turning the Status Bit Ignore (S-Bit) On or Off

You can set how your scanner works with **status bits** (also called S-Bits), letting you control how the scanner interprets and displays talk group IDs.

The last four bits of a Motorola Type II talk group ID (a binary 16-bit code) are the status bits. In some systems, status bits identify special situations (such as an emergency status).

Your scanner is preset to assume that the status bits in a talk group ID are set to 0 and ignores them. For example, when the scanner receives the talk group ID 010111001110 **0011**, it reads the ID as 010111001110 **0000** and converts the first 12 bits of the ID to 23776 (the talk group ID). However, since the status bit value is 3 (0011 converted to decimal equals 3), the ID is actually 23779.

If you are scanning a Motorola Type I system and do not have a fleet map for that system, you might have to turn off status bit ignore in order to determine the proper fleet map.

**Important:** If you are scanning any system other than a Motorola Type I system, be sure status bit ignore is set to **ON** or you will miss some transmissions.

Follow these steps to turn status bit ignore on or off.

1. If you are not in conventional programming mode, press **E/PGM** beforehand. Press **TRUNK**.
2. Repeatedly press  or  to select Motorola Type and Type , then press **E/PGM**.
3. Repeatedly press  or  to select **S-bit**, then press **E/PGM**.

## Identifying a Trunked Frequency

While ID scanning (looking for IDs within a trunked system) or performing an ID search, press  to see the current trunked frequency. (The frequency flashes twice.) Then hold down

▼ until a confirmation tone sounds and the ID and the frequency alternately appear.  
To return to normal operation, press ▼ .

## Selecting the EDACS Talk Group ID Format

Your scanner can also enter or display EDACS talk groups in decimal format (0-2047).

1. Select the trunking programming mode and the bank you want to change.
2. Press ▲ or ▼ to select EDACS, then press **E/PGM**.
3. Press ▲ or ▼ to select AFS, then press **E/PGM**.
4. Press ▲ or ▼ to select AFS ON or AFS OFF, then press **E/PGM**.

You can use this feature to translate decimal talk group lists to the much more powerful AFS format. It is very easy to use. Be sure to become familiar with AFS partial entry, and your scanning will become far more flexible and efficient.

## EDACS Talk Group ID Range Search

When your scanner searches EDACS talk group IDs, the scanner can search within a range you set for agency or fleet listings. For example, if you want to search within the 01 agency, while in hold mode press **0, 1, •/CLR /DELAY** then **SRCH**. Or if you want to search within the 01 agency and 01 fleet, while trunking press **0, 1, •/CLR /DELAY, 0, 1**, then **SRCH**.

To stop the ID range search, press **e** while the talk group is deactivated.

## Using HOLD to Monitor an Active Talk Group ID

Follow these steps to stop scanning and keep the scanner tuned to a desired ID.

1. Press **HOLD/RESUME**. **HOLD** appears and the scanner stays on the current ID.
2. If you want to listen to (and hold) a different ID, use the number keys to enter that ID.
3. Press ▼ . **HOLD** flashes, then the scanner monitors the ID.
4. Press **SRCH** to resume searching for a data channel (trunk scanning).

## Locking Out Talk Group IDs

Many municipal and commercial services use trunk systems to transmit signals from such devices as water meter transmitters, door alarms, and traffic signals. Some signals are encrypted, as well, and most are not voice signals. Since all these are assigned IDs just like other users, you may want to lock out reception of these ID signals. You can lock out up to 100 IDs at one time.

**Note:** If you lock out an ID while searching, it is also locked out of the scan list(s).  
See "Using Talk Group ID Lists" on Page XX.

To lock out an ID, press **L/O** when the ID appears. The ID is locked out, and the next active ID appears.

## Unlocking a Single Talk Group ID

You can check all IDs already locked out.

1. Select the trunking programming mode and the bank you want to review.
2. When the selected trunked system is displayed, press **E/PGM**.
3. Use ▲ or ▼ to choose **Id Lout**, and press **E/PGM**.
4. Press **L/O**, the ID is unlocked and the next locked ID displays.
5. If you unlocked all locked IDs, the scanner displays **Lo Non**.

## Unlocking All Talk Group IDs

Hold down **L/O** while searching until you hear two short beeps. The scanner beeps twice. Press **SRCH** to resume the search.

## Using Trunk Scanning Scan Delay

Sometimes a user might pause before replying to a transmission. You can set the scanner to hold on an ID for 2 seconds to wait for a reply. That way, the scanner continues to monitor the ID for 2 seconds after the transmission stops before resuming scanning.

Press **• /CLR /DELAY** to turn trunk scanning scan delay on or off. **DLY** appears when the scan delay is set to on.

**Note:** If you consistently miss responses even with scan delay turned on, change the default system type or the fleet map being used. See “Scanning Type I and Hybrid Trunked Systems” on Page XX.

## Monitoring Talk Group IDs

You can use your scanner’s display to monitor the frequencies/talk group IDs of a trunked system for activity. While you cannot hear conversations in this mode, it is an excellent way to determine which talk group IDs are the most active. To set the scanner to monitor IDs, hold down **SRCH** until you hear two short beeps, and **SRCH** begins to flashing. All active group IDs appear in quick succession.

To stop monitoring IDs, press ▲ again.

**Note:** When you monitor IDs, any IDs you have locked out also appear.

## USING TALK GROUP ID LISTS

When you program trunked frequencies into a bank (see “Storing Trunked Frequencies” on Page XX), your scanner sets up ten scan lists for that one bank in which you can store your favorite IDs. Each list can contain up to 10 IDs, for a total of 100 IDs for each trunk scanning bank. If you use all the banks as trunking banks, you can store 1000 IDs.

Talk group ID lists help you to organize trunking system users into categories. For example,

you might use List 1 for police IDs, List 2 for fire department IDs, List 3 for emergency medical service IDs, and so on. Once you store all the IDs in a list, you can scan them just as you scan conventional channels. You can program IDs into talk group ID lists manually, during a search, or automatically.

## Manually Storing Talk Group IDs in Talk Group ID Lists

1. Select the trunking programming mode and the bank you want to change.
2. Use ▲ or ▼ to choose trunk system, and press **E/PGM**.
3. Use ▲ or ▼ to choose **Prog id**, and press **E/PGM**.
4. Press ▲ or ▼ to select the scan list location.
5. Enter the talk group IDs for each trunk system.

## Motorola talk groups

To enter a Type 2 Talk Group ID:

1. Enter the ID you want to store by using the keypad.
2. Press **E/PGM**.

To enter a Type 1 ID:

For a Type 1 ID, enter the block number, fleet number and subfleet number to form the talk group ID number. For more information, see User Defined Fleet Maps.

1. Enter the ID you want to store by using the keypad (ID = Block number + Fleet number + **.CLR** + Subfleet number).
2. Press **E/PGM**.

## EDACS talk groups

To enter a Full EDACS ID:

1. Enter the Agency number.
2. Press **.CLR** to enter the dash.
3. Enter the fleet number and subfleet number.
4. Press **E/PGM**.

To enter a Partial EDACS ID:

1. Enter the agency number you want to store. Press **.CLR** to enter the dash.
2. Press **E/PGM**.

Or you can program all the talk group numbers for one fleet of an agency.

1. Enter the agency number.
2. Press **/CLR** to enter the dash.
3. Enter the fleet number.
4. Press **E/PGM**.

**Note:** Remember the AFS format allows you to enter full or partial EDACS IDs for powerful flexibility in all modes. Be sure to read the section “An EDACS Trunked System” to learn how this works. The scanner defaults to AFS talk group displays for EDACS only.

## Entering EDACS Partial Talk Groups

You can enter partial group numbers in an EDACS talk group. By entering only the desired portion of a group, you can select either 128, 8, or 1 talk group. For example, you might program every talk group in a police department by pressing just four keys.

**Note:** You cannot use partial talk groups in decimal mode. (See “Selecting the EDACS Talk Group ID Format” on Page XX.)

You can program a specific talk group such as 01-011 into the scan list memory. In AFS mode, you can program the talk groups for an entire agency by pressing corresponding keys.

For example:

You Press	To Scan
01 . E	all 01 groups
01 . 01 E	all 01 talk groups within the 01 agency

To enter a Partial EDACS ID:

1. Enter the agency number you want to store. Press **• /CLR /DELAY** to enter the dash.
2. Press **E/PGM**.

Or you can program all the talk group numbers for one fleet of an agency.

1. Enter the agency number.
2. Press **• /CLR /DELAY** to enter the dash.
3. Enter the fleet number.
4. Press **E/PGM**.

Remember the AFS format allows you to enter full or partial EDACS IDs for powerful flexibility in all modes. Be sure to read the section. An EDACS Trunked System to learn how this works. The scanner defaults to “AFS talk group displays for EDACS only.

### LTR talk groups

To enter an LTR ID:

For a LTR ID, the area code, home repeater number and ID make up the talk group ID. See “LTR Tracking for more information.

1. Enter the area code.
2. Enter the home repeater number.
3. Enter the ID you want to store.
4. Press **E/PGM**.

**Note:** To clear a stored ID while entering an ID, press **0** and **E** successively, and start over.

## Scanning the Talk Group ID Lists

Press **SCAN/MANUAL** to begin scanning the lists you have stored.

**Note:** If one or more of the IDs you stored are incorrect, **Error** flashes twice and the scanner beeps several times, then the scan list numbers appear at the top of the display. To correct the entry, delete at least one of the incorrect IDs (see “Deleting a Stored Talk Group ID List”).

To remove a scan list from active scanning, use the number keys to enter the scan list’s number. The scan list number turns off, and the IDs in that list are not scanned.

**Note:** One of the ten scan lists must always be active. You cannot remove all of them.

To restore a scan list to active scanning, use the number keys to enter the number of the list again.

Press **SRCH** to return to the previously selected function.

## Priority Talk Group ID Scanning

You can assign a priority to a favorite ID so during scanning the scanner checks that ID more frequently than the others in the list. Each of the ten memory locations reserved for storing lists (see “Using Talk Group ID Lists” on Page XX) can have only one priority ID, and the ID assigned that priority in List 1 has the highest priority of all.

To assign a priority to an ID, press and hold **PRI**. **P** appears.

To turn priority ID scanning on or off, repeatedly press **PRI** during ID scanning or manual operation. **PRI** appears when priority scanning is turned on.

**Note:** Priority ID scanning does not operate when priority IDs are locked out. See “Locking Out Talk Group IDs” on Page XX.

## SCANNING TYPE I AND HYBRID TRUNKED SYSTEMS

Your scanner is preset to scan Type II system IDs. When you scan trunked frequencies, each Type II user ID you see appears as an even number without a dash (example 2160). Your scanner can also scan Type I trunked systems. Each Type I ID appears as a three- or four-digit number, followed by a hyphen, followed by a one- or two-digit number (example 200-14).

If you notice a mix of odd- and even-user IDs (examples 6477, 2160, 6481, 6144, and 1167), then you are

probably monitoring either a Type I or hybrid (a combination of Type I and Type II user IDs) system with the S-Bit function turned off (see “Types of Trunking Systems” on Page XX and “Turning the Status Bit Ignore (S-Bit) On or Off” on Page XX).

Subfleet information is included with the frequency list for a Type I system. To enter the provided map, see “Programming a Fleet Map” on Page XX.

**Note:** To locate suitable fleet map information, review the contents of website [www.trunkscanner.com](http://www.trunkscanner.com).

If you do not already know the size codes used, you will have to guess. Since you do not have to figure out all the blocks at one time, this is not as hard as it might seem.

Select a size code for a block, then press **SRCH** and listen to the conversations. If you are receiving most of the replies, then you have probably selected the right size code and can program the next block of the map. There are 16 preset fleet maps to choose from, and it is best to start with these when setting up a Type I or hybrid trunk scanning bank. If none of the following preset fleet maps allow you to follow complete conversations, then you probably need to program your own fleet map (see “Programming a Fleet Map” on Page XX).

E1P1		E1P2		E1P3	
Block	Size Code	Block	Size Code	Block	Size Code
0	S11	0	S4	0	S4
1	S11	1	S4	1	S4
2	S11	2	S4	2	S4
3	S11	3	S4	3	S4
4	S11	4	S4	4	S4
5	S11	5	S4	5	S4
6	S11	6	S4	6	S12
7	S11	7	S4	7	(S12)
E1P4		E1P5		E1P6	

Block	Size Code	Block	Size Code	Block	Size Code
0	S12	0	S4	0	S3
1	(S12)	1	S4	1	S10
2	S4	2	S12	2	S4
3	S4	3	(S12)	3	S4
4	S4	4	S4	4	S12
5	S4	5	S4	5	(S12)
6	S4	6	S4	6	S12
7	S4	7	S4	7	(S12)

E1P7		E1P8		E1P9	
Block	Size Code	Block	Size Code	Block	Size Code
0	S10	0	S1	0	S4
1	S10	1	S1	1	S4
2	S11	2	S2	2	S0
3	S4	3	S2	3	S0
4	S4	4	S3	4	S0
5	S4	5	S3	5	S0
6	S4	6	S4	6	S0
7	S4	7	S4	7	S0

E1P10		E1P11		E1P12	
-------	--	-------	--	-------	--

Block	Size Code	Block	Size Code	Block	Size Code
0	S0	0	S4	0	S0
1	S0	1	S0	1	S0
2	S0	2	S0	2	S0
3	S0	3	S0	3	S0
4	S0	4	S0	4	S0
5	S0	5	S0	5	S0
6	S4	6	S0	6	S0
7	S4	7	S0	7	S4

#### E1P13

Block	Size Code
0	S3
1	S3
2	S11
3	S4
4	S4
5	S0
6	S0
7	S0

#### E1P14

Block	Size Code
0	S4
1	S3
2	S10
3	S4
4	S4
5	S4
6	S12
7	(S12)

#### E1P15

Block	Size Code
0	S4
1	S4
2	S4
3	S11
4	S11
5	S0
6	S12
7	(S12)

#### E1P16

Block	Size Code
0	S3
1	S10
2	S10
3	S11
4	S0
5	S0
6	S12
7	(S12)

### Selecting a Preset Fleet Map

1. Set the scanner for conventional scanning and press **TRUNK** to select the trunking programming mode and the bank you want to change.
2. Repeatedly press  or  to select TYPE 1 SYSTEM (**E1**), then press **E/PGM**.
3. Repeatedly press  or  to select **FLEEt**, then press **E/PGM**.
4. Repeatedly press  or  to select the name of the desired map (example **E1P7**).  
The preprogrammed fleet map appears.
5. Press **E/PGM** . The scanner return to fleet map list item.

**Note:** When the scanner searches for transmissions, you see Type I fleet and subfleet IDs such as **100-12**, **100-9**, **000-12**, or **400-8**.

How do you know if the preset map you selected is correct?  
Listen to find out if you are following complete conversations. If not, try another preset map.

## Programming a Fleet Map

1. Select the trunking programming mode and the bank you want to change.
2. Repeatedly press ▲ or ▼ to select Type 1 System (**E1**), then press **E/PGM**.
3. Repeatedly press ▲ or ▼ to select **FLEEt**, then press **E/PGM**.  
A preprogrammed fleet map appears.
4. Repeatedly press ▲ or ▼ until **USr** appears. Then press **E/PGM**.
5. Repeatedly press ▲ or ▼ to select the size code for the first block, then press **E/PGM**. The next available block appears.
6. Repeat Step 5 until you have selected a size code for each desired block.
7. Press **SRCH**. The scanner exits the trunking programming mode, tunes the data channel, then searches using the map you programmed.

**Note:** If you select size code S-12, S-13, or S-14, these restrictions apply:

- S-12 can only be assigned to Blocks 0, 2, 4, or 6
- S-13 can only be assigned to Blocks 0 and 4
- S-14 can only be assigned to Block 0

Since these size codes require multiple blocks, you will be prompted for the next available block when you program a fleet map. For example, if you assign Block 0 as S-12, the scanner prompts you for **b2**, the next block available, instead of b1. If you assign Block 0 as S-14, you would not see another prompt because S-14 uses all available blocks.

## Programming the Base and Offset Frequencies

To properly track Motorola VHF and UHF trunked systems, you must program the applicable base and offset frequencies for each system.

For a list of these frequencies and other scanner information, go to [www.trunkscanner.com](http://www.trunkscanner.com) and other similar frequency resources.

1. Set the scanner for conventional scanning. Select the trunking programming mode.
2. Press the number key of the bank where you want to store the base frequency.
3. Repeatedly press ▲ or ▼ to select Motorola Type UHF or VHF system, then press **E/PGM**.
4. Repeatedly press ▲ or ▼ to select **bASE**, then press **E/PGM**.
5. Press the configuration Block Number (1-3) .

6. Press the number keys to enter a new base frequency, then press **E/PGM**.
7. press  . The display changes to the spacing frequency entering mode.
8. Enter the frequency using the number keys according to the following guide, Then press **E/PGM**.
  - For Motorola Type II VHF, (E2-VHF Hi band) use 5kHz steps between 5 kHz – 100 kHz.
  - For Motorola Type II UHF, (E2-UHF band) use 12.5kHz steps between 12.5 kHz – 100 kHz.
9. Press  . The display changes to the offset channel entering mode.
10. Enter a offset channel using the number keys, then press **E/PGM**.
 

**Note:** You can only input the frequency between 380 – 759.
11. Press **•/CLR/DELAY**. The scanner returns to previous screen. Repeat the step 5 to 10 if you want to program other configuration.

## Programming a Hybrid System

A hybrid system is simply a Type I system with some of its blocks designated as Type II blocks. To program a hybrid system, follow the steps listed in “Programming a Fleet Map” on Page XX.

However, if you want a block to be Type II, instead of pressing  or  to select the size block (Step 7), enter size code **S-0** instead.

## Turning On/Off the Motorola Disconnect Tone Detect Function

When this function is disabled, the radio looks for squelch before returning to the control channel instead of waiting for the disconnect tone. Only in rare instances will you need to adjust the default settings. The condition to return to control channels depends on whether the signal is present or not.

1. Select the trunking programming mode and the bank you want to change.
2. Press  or  to select Motorola Type 2 or Motorola Type 1, then press **E/PGM**.
3. Press  or  to select **Eot**, then press **E/PGM**.
4. Press  or  to select **Eot ON** or **Eot OFF**, then press **E/PGM**.

**Note:** If you set the squelch so you hear a hissing sound, the scanner will remain on the voice channel, even when a disconnect tone is transmitted or there is no signal at all.

## Troubleshooting

If your scanner is not working as it should, these suggestions might help you eliminate the problem. If the scanner still does not operate properly, take it to your local RadioShack store for assistance.

Problem	Possible Cause	Remedy
Scanner is on but will not scan.	<b>SQUELCH</b> is not adjusted correctly.	Adjust <b>SQUELCH</b> .
	Only one channel or no channels are stored.	Store frequencies into more than one channel.
Scanner is totally inoperative.	No power.	Make sure the AC adapter or DC adapter is connected properly.
	The AC adapter or DC adapter is not connected.	Be sure the adapter's barrel plug is fully plugged into the 9V 300 mA jack.
The scanner's display dims.	The brightness of the display backlight is set to <b>DIMMER</b> or <b>OFF</b> .	Turn the brightness of the display to <b>BRIGHT</b> (see "Using Dimmer" on Page XX).
Poor or no reception.	An antenna is not connected or is connected incorrectly.	Make sure an antenna is connected to the scanner.
<b>Error</b> appears. The scanner locks on frequencies that have an unclear transmission.	Programming error.	Re-enter the frequency correctly, including the decimal point.
	Stored frequencies are the same as "birdie" frequencies.	Avoid storing frequencies listed under "Birdie Frequencies" on Page XX, or only listen to them manually.
The scanner does not track a trunked system.	The transmission might not use a system that can be tracked by your scanner.	Scan another transmission.
	The data frequency is missing.	Find the data frequency (see "Storing Trunked Frequencies" on Page XX).
Scanner is set to receive Type I trunked frequencies, but does not scan them. Scanner does not acquire a data channel.	The system you are trying to track is a Type I system, and the scanner is set to scan Type II systems.	Set the scanner to receive Type I trunked frequencies. See "Scanning Type I and Hybrid Trunked Systems" on Page XX.
	The fleet map you have selected or entered might be incorrect.	Check the fleet map and correct it if necessary (see "Scanning Type I and Hybrid Trunked Systems" on Page XX and "Programming a Fleet Map" on Page XX).
	<b>SQUELCH</b> is not correctly adjusted for trunk scanning.	Adjust squelch for trunk scanning. See "Setting Squelch for the Trunking Mode" on Page XX.
	The frequency used for the data channel is missing.	Press <b>SRCH</b> to search for the data channel (see "Storing Trunked Frequencies" on Page XX).
Missing replies to conversations.	The system you are trying to track is a Type I system, and the scanner is set to scan Type II systems.	Set the scanner to receive Type I trunked frequencies. See "Scanning Type I and Hybrid Trunked Systems" on Page XX.
	The selected fleet map is incorrect.	Try another preset fleet map or program your own fleet map (see "Scanning Type I and Hybrid Trunked Systems" on Page XX).

## RESETTING THE SCANNER

If the scanner's display locks up or stops operating properly, you might need to reset the scanner.

**Caution:** This procedure clears all the information you have stored in the scanner. Before you reset the scanner, try turning it off and on to see if it begins working properly. Reset the scanner only when you are sure it is not working properly.

1. Turn off the scanner.
2. While holding down **2**, **9** and **HOLD**, turn on the scanner. **CLEAR** flashes for about 5 seconds as the scanner clears its memory.

**Note:** Do not turn off the scanner again until **CLEAR** stops flashing. Otherwise, the scanner might not clear its memory properly.

Follow these steps to restore the 150 preprogrammed frequencies stored in the private bank.

1. Make sure your scanner is turned off.
2. While holding down **3** and **E/PGM**, turn on the scanner. After several seconds, the scanner restores the frequencies.

## Specifications

Frequency Coverage: .....

29–54 MHz (in 5 kHz steps)  
108–136.9875 MHz (in 12.5 kHz steps)  
137–174 MHz (in 5 kHz steps)  
179.7500–215.7500 (in 6MHz steps)  
216–224.995 MHz (in 5 kHz steps)  
225–399.9875 (in 12.5kHz steps)  
400–512 MHz (in 6.25 kHz steps)  
806.0000–823.9875 MHz (in 12.5 kHz steps)  
849.0125–868.9875 MHz (in 12.5 kHz steps)  
894.0125–956.0000 MHz (in 12.5 kHz steps)  
1240.0000–1300.0000 MHz (in 12.5 kHz steps)

Number of Banks ..... 10

Sensitivity (AM/FM/WFM):

FM ..... 20 dB S/N at 3 kHz deviation)  
29–54 MHz ..... 0.4  $\mu$ V  
137–174 MHz ..... 0.5  $\mu$ V  
216–225 MHz ..... 0.5  $\mu$ V  
400–512 MHz ..... 0.4  $\mu$ V  
806–956 MHz ..... 0.6  $\mu$ V  
1240–1300 MHz ..... 1.0  $\mu$ V  
AM ..... 20 dB S/N at 60% modulation)  
108–136.9875 MHz ..... 1.6  $\mu$ V  
225–400 MHz ..... 1.5  $\mu$ V  
WFM ..... 20 dB S/N at 22.5 kHz deviation)  
179.750–215.750 MHz ..... 2.0  $\mu$ V  
Spurious Rejection (at 40.84 MHz) ..... 50 dB

IF Rejection (at 162.4 MHz) ..... 80 dB  
 Channels ..... 1000  
 Operating Temperature  
     Normal                    -4° to 140°F (-20° to 60°C)  
     Signal Stalker           14° to 140°F (-10° to 60°C)  
 Scan Speed ..... 90 Channels/Second  
 Search Speed:  
 Normal ..... 90 Steps/Second  
 Hypersearch ..... 250 Steps/Second  
 Priority Sampling ..... 2 Seconds  
 Delay Time ..... 2 Seconds  
 IF Frequencies ..... 265.55/380.75 MHz, 10.85 MHz, 450 kHz  
 Antenna Impedance ..... 50Ω  
 Audio Output ..... 2W maximum  
 Built-in Speaker ..... 3 Inches (77 mm)  
 8Ω Dynamic Type  
 Power Requirements:  
 Supplied AC Adapter (12V DC, 500 mA) or Optional DC Adapter  
 Current Drain:  
     Squelched ..... 105 mA  
     Full Output ..... 460 mA  
 Dimensions (HWD) ..... 2 1/4 x 7 1/4 x 6  
 (56 x 184 x 152 mm)  
 Weight (without case) ..... 37 oz (1.05 kg)  
     (with case) ..... 53 oz (1.5 kg)

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

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