RadioShack®

PRO-97 1,000 Channel Triple Trunking Hand Held Scanner

Please read this user's guide before installing, setting up and using your new product

Contents

Thank you for purchasing your Pro-97 1,000 channel tripple trunking hand held scanner from RadioShack. Your hand held scanner is one of a new generation of scanners designed to track Motorola® Type I and II (such as Smartnet® and Privacy Plus®) and hybrid analog trunking systems, GE-Ericsson (EDACS®) type systems, and EF Johnson (LTR) type systems which are extensively used in many communication systems.

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your scanner's controls

SCAN/⟡ — scans through the programmed channels, or activates the Signal Stalker II function.

FUNC (function) — lets you use various functions by pressing this key in combination with other keys.

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

TRUNK — stores the trunking ID code or holds the trunking ID while scanning.

WX/☺ — scans through the seven preprogrammed weather channels, or jumps to a Skywarn channel you programmed (997-999).

PRI (Priority) — sets and turns the priority function on or off.

TEXT — lets you input text.

PSE — stops search.

MODE — changes the receive mode (AM, FM, CT, DC, MO, ED, LT).

🔒⊙/☀ — turns on/off the backlight, or when used with **FUNC** locks/unlocks the keypad to prevent accidental entries.

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TUNE — lets you input a frequency and allows you to fine tune a frequency along with ▲ or ▼.

ATT (Attenuate) — turns attenuation on to reduce the scanner's sensitivity and block extremely strong signals, or turns it off to return the sensitivity to normal.

▲ or **▼** — selects the scan or search direction.

SRCH — lets you search the seven search banks.

L/OUT (Lock Out) — lets you lock out a selected channel, skip a specified frequency during search, or lock out a selected ID code.

PGM (Program) — programs frequencies into channels.

ENT — completes the entry of frequencies and text.

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1 — enters a 1, or inputs characters 0 through 9 in text mode.

2/ABC — enters a 2, or inputs characters A, B, or C.

3/DEF — enters a 3, or inputs characters D, E, or F.

4/GHI — enters a 4, or inputs characters G, H, or I.

5/JKL — enters a 5, or inputs characters J, K, or L.

6/MNO — enters a 6, or inputs characters M, N, or O.

7/PQRS — enters a 7, or inputs characters P, Q, R, or S.

8/TUV — enters an 8, or inputs characters T, U, or V.

9/WXYZ — enters a 9, or inputs characters W, X, Y, or Z.

0 — enters a zero, or inputs characters ., -, #, _, @, +, *, &, /, ,, $, %, !, ^, (,), ?, ~, ', or Δ.

CL (Clear) — clears an incorrect entry.

./DELAY — enters a decimal point (necessary when programming frequencies), space, or programs delay time for the selected channel/search bank, or enters a hyphen (in trunking ID setting).

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PWR DC 9V — connect a power source here.

PC/IF — connect an optional PC interface cable here to use the scanner with your computer.

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ANT — connect the supplied antenna or an external antenna here.

🎧 — connect an earphone or headphone here.

OFF VOL/SQ — turn the scanner on or off and adjust the squelch.

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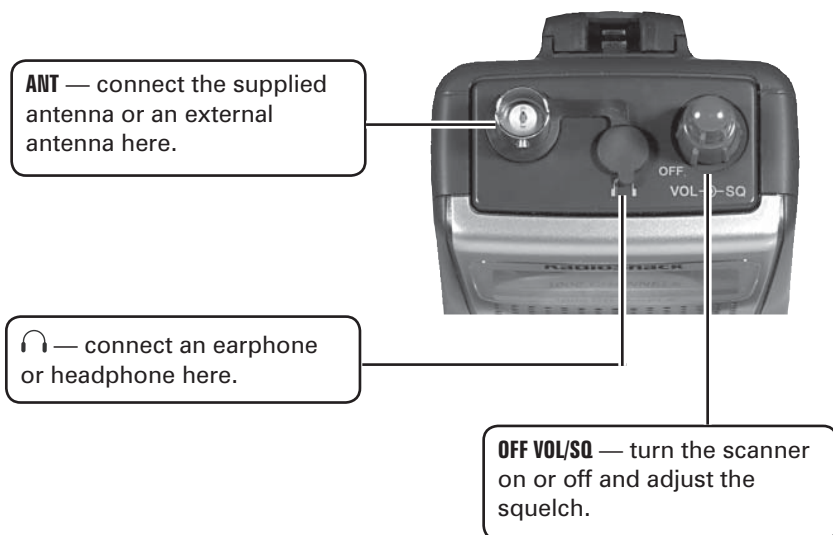
power sources

You can power your scanner from any of these sources:

- internal non-rechargeable batteries or rechargeable batteries (not supplied – see "Using Batteries").

- standard AC power (with an optional AC adapter – see "Using AC Power").

- vehicle power (with an optional DC adapter – see "Using Vehicle Battery Power").

Notes

Connecting an AC or DC adapter to the scanner disconnects internal batteries when you use the supplied non-rechargeable battery holder, but it does not disconnect internal batteries when you use the supplied rechargeable battery holder.

If you install the rechargeable battery holder, you can operate the scanner and recharge the rechargeable batteries at the same time. See "Using Batteries" and "Charging Rechargeable Batteries".

If the scanner stops working properly after connecting it to power, try resetting it. See "Initializing the Scanner".

You must charge rechargeable batteries before you use them the first time. See "Charging Rechargeable Batteries".

using batteries

You can power the scanner with four AA batteries (not supplied). For the longest operation and best performance, we recommend alkaline batteries, available at your local RadioShack store.

You can use either the supplied non-rechargeable battery holder (black), or the supplied rechargeable battery holder (yellow). If you use the rechargeable battery holder, we

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recommend RadioShack nickel-metal hydride (Ni-MH) batteries.

You must charge rechargeable batteries before you use them the first time. See "Charging Rechargeable Batteries".

Warning! *Never install non-rechargeable batteries in the rechargeable yellow battery holder. Non-Rechargeable batteries can get hot or explode if you try to recharge them.*

Notes *The battery holder fits only one way. Do not force it.*

Use only fresh batteries of the required size and recommended type.

Always remove old or weak batteries. Batteries can leak chemicals that destroy electronic circuits.

Do not mix old and new batteries, different types of batteries (alkaline or rechargeable), or rechargeable batteries of different capacities.

If you do not plan to use the scanner with batteries for a month or longer, remove the batteries. Batteries can leak chemicals that can destroy electronic parts.

Follow these steps to install the batteries.

1. Press in on the battery compartment cover on the back of the scanner and slide the cover down to remove it.

2. Pull the battery holder out of the battery compartment.

3. If you are using non-rechargeable batteries, place them into the black holder, as indicated by the polarity symbols (+ and -) marked on the holder.

   If you are using rechargeable batteries, place them into the yellow holder as indicated by the polarity symbols (+ and -) marked on the holder.

4. Place the battery holder into the battery compartment.

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5. Replace the cover.

When battery power is low, *Low battery!* appears and the scanner beeps continuously. When battery power is depleted, the scanner turns itself off. Replace all four non-rechargeable batteries, or recharge the rechargeable batteries. See "Charging Rechargeable Batteries".

Notes *Always dispose of old batteries promptly and properly. Do not bury or burn them.*

If you do not plan to use the scanner with batteries for a month or longer, remove the batteries. Batteries can leak chemicals that can destroy electronic parts.

charging rechargeable batteries

Your scanner has a built-in charging circuit that lets you charge nickel-metal hydride (Ni-MH) or nickel cadmium (Ni-CD) rechargeable batteries (not supplied) while they are in the scanner. To charge rechargeable batteries, connect an appropriate AC or DC adapter to the PWR DC 9V jack. For best results we recommend RadioShack rechargeable nickel-metal hydride (Ni-MH) 1600 mAh batteries.

Notes *The EPA certified RBRC© Battery Recycling Seal on the nickel-cadmium (Ni-Cd) battery indicates RadioShack is voluntarily participating in an industry program to collect and recycle these batteries at the end of their useful life, when taken out of service in the United States or Canada. The RBRC program provides a convenient alternative to placing used Ni-Cd batteries into the trash or the municipal waste stream, which may be illegal in your area. Please call 1-800-THE-SHACK (1-800-843-7422) for information on Ni-Cd battery recycling and disposal bans/restrictions in your area. RadioShack's involvement in this program is part of the company's commitment to preserving our environment and conserving our natural resources.*

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It takes about 16 hours to recharge fully discharged 1600 mAh Ni-MH rechargeable batteries. You can operate the scanner while recharging the rechargeable batteries, but charging takes longer.

Notes *The scanner can also charge Ni-Cd batteries. 600 mAh batteries require 6 hours and 850 mAh batteries require 8 hours to charge.*

When you charge rechargeable batteries, do not overcharge them. Overcharging shortens battery life.

Rechargeable batteries last longer and deliver more power if you let them fully discharge once a month. To do this, use the scanner until Low battery! *appears. Then fully charge the rechargeable batteries.*

using AC power

You can power the scanner using a 9V, 300 mA AC adapter and a size C Adaptaplug (neither supplied). Both are available at your local RadioShack store.

1. Connect the Adaptaplug to the adapter's cord with the tip set to positive.

Notes *You must use a Class 2 power source that supplies 9V DC and delivers at least 300 mA. Its center tip must be set to positive and its plug must fit the scanner's PWR DC 9V jack. Using an adapter that does not meet these specifications could damage the scanner or the adapter.*

2. Plug the adapter's barrel plug into the scanner's PWR DC 9V jack.

3. Plug the adapter's two-prong plug into an AC outlet.

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using vehicle battery power

You can power the scanner from a vehicle's 12V power source (such as cigarette-lighter socket) using a 9V, 300 mA DC adapter and a size C Adaptaplug™ adapter (neither supplied). Both are available at your local RadioShack store.

Notes
You must use a power source that supplies 9V DC and delivers at least 300 mA. Its center tip must be set to positive and its plug must fit the scanner's PWR DC 9V jack. Using an adapter that does not meet these specifications could damage the scanner or the adapter.

1. Connect the Adaptaplug to the adapter's cord with the tip set to positive.

2. Plug the adapter's barrel plug into the scanner's PWR DC 9V jack.

3. Plug the adapter's cigarette-lighter plug into your 12V power source.

Notes
If the scanner does not operate properly when you connect a DC adapter, unplug the DC adapter from the power source and clean the socket, or check the adapter's internal fuse.

connecting an earphone/headphones

For private listening, you can plug an 1/8-inch (3.5 mm) mini-plug earphone or headphones (not supplied), available at your local RadioShack store, in the ⌒ jack on top of your scanner. This automatically disconnects the internal speaker.

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listening safely

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

- Set the volume to zero before putting on headphones. With the headphones on, adjust the volume to a comfortable level.

- Avoid increasing the volume once you set it. Over time, your sensitivity to a volume level decreases, so volume levels that do not cause discomfort might damage your hearing.

- Avoid or limit listening at high volume levels. Prolonged exposure to high volume levels can cause permanent hearing loss.

traffic safety

Do not wear an earphone or headphones while you drive a vehicle or ride a bicycle. This can create a traffic hazard and can be illegal in some areas. Even though some earphones and headphones let you hear some outside sounds when you listen at normal levels, they still can present a traffic hazard.

connecting an extension speaker

In a noisy area, an amplified speaker (not supplied), available at your local RadioShack store, might provide more comfortable listening. Plug the speaker cable's 1/8-inch (3.5 mm) mini-plug into your scanner's ⌒ jack.

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connecting the supplied antenna

To attach the supplied flexible antenna to the antenna jack on the top of your scanner, align the slots around the antenna's connector with the tabs on the antenna jack. Press the antenna down over the jack and turn the antenna's base clockwise until it locks into place.

connecting an optional external antenna

The antenna connector on your scanner makes it easy to use the scanner with a variety of antennas, such as an external mobile antenna or outdoor base station antenna. 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 over 50 feet, use RG-8 low-loss dielectric coaxial cable. If your antenna's cable does not have a BNC connector, you will also need a BNC adapter (not supplied, available at your local RadioShack store).

Follow the installation instructions supplied with the antenna, route the antenna cable to the scanner, then connect it to the antenna jack.

Warning! *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.*

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using the belt clip

To make your scanner easier to carry when you are on the go, use the supplied belt clip by attaching it to the back of the scanner. To remove the battery clip, slide it upward while pulling the tab toward you.

transferring data to or from another scanner or PC

You can transfer the programmed data to and from another PRO-97 scanner using a connecting cable which has 1/8 -inch phone plugs on both ends (not supplied). Connect the cable between each scanner's PC/IF jacks. See "Cloning the Programmed Data". You can also upload or download the programmed data to or from a PC using an optional PC interface kit available through your local RadioShack store.

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quick start

To help familiarize yourself with the scanner's functions, keypad, and available frequencies, you can utilize one of these four features before you begin programming the scanner.

Signal Stalker II — searches nearby strong signals quickly. See "Signal Stalker II".

Preprogrammed Search Banks — allow you to listen to frequencies and decide which frequencies you want to store when you are ready to program the scanner. See "Searching a Preprogrammed Frequency Range".

Manual Tuning — allows you to manually move through the entire range of available frequencies. (See "Specifications" for a list of the available frequency ranges.)

Weather Radio — allows you to listen to NOAA weather broadcasts without programming. See "Listening to the Weather Band".

understanding your scanner's modes

You can program each channel with any of seven receive modes (AM, FM, CT, DC, MO, ED, and LT).

Each receive mode affects how your scanner operates when scanning and receiving transmissions.

Notes

Trunked modes (MO, ED and LT) can only be selected for frequencies above 137 MHz.

Your scanner's closed mode lets you hear only those trunking talkgroups you specify. For more information, see "Open and Closed Modes".

AM mode

The AM mode sets the scanner to receive transmissions using amplitude modulation (AM), primarily used for aircraft,

military, some amateur radio, and some government transmissions. (Refer to "Specifications" for a list of the frequencies covered.) When the scanner receives a transmission on a channel set to the AM mode, it always stops on the transmission.

FM mode

The FM mode sets the scanner to receive transmissions using frequency modulation (FM), used for most public safety transmissions, as well as broadcast, business, and amateur radio transmissions. When the scanner receives a transmission on a channel set to the FM mode, it always stops on the transmission.

CTCSS (CT) mode

CTCSS mode sets the scanner to receive transmissions using frequency modulation (FM) with Continuous Tone Coded Squelch System (CTCSS) subaudible tone codes. CTCSS allows multiple users to share a single radio frequency without hearing each other's transmissions. In your PRO-97 scanner, the CTCSS feature can be used to block the reception of transmissions on shared channel to only those that use the CTCSS mode also features a Code Search setting that allows you to instantly display and store unknown codes into the channel memory. CTCSS tones can sometimes be heard as a low "hum" in the background of a voice transmission.

DCS (DC) mode

DCS mode sets the scanner to receive transmissions using frequency modulation (FM) with Digital Coded Squelch (DCS) subaudible data signaling. DCS is very similar to CTCSS, except that a digital code is transmitted instead of an audio tone. Like CTCSS, DCS allows multiple users to share a single radio frequency without hearing each other's

transmissions. In your PRO-97 scanner, the DCS feature can be used to block the reception of transmissions on a shared channel to only those that use the DCS tone that you have specified. DCS mode also features a Code Search setting that allows you to instantly display and store unknown codes into the channel memory. DCS data can sometimes be heard as a low "purring" sound in the background of a voice transmission. Some DCS systems transmit a special "turn off code" at the end of each transmission. The turn off code causes a properly equipped receiver to mute before the transmission ends, eliminating the "squelch tail" burst of noise the commonly occurs when the signal is lost.

Motorola mode

You can set your scanner so it decodes the talk group IDs used with Motorola trunking systems. This setting is called the Motorola mode.

Motorola systems are trunking systems used primarily by business and public safety groups to efficiently allocate a small number of frequencies (as few as five) to many groups of users (as many as several thousand). To do this, each group of users in the system is assigned to a specific talk group. For example, the east side patrol officers might all be assigned to talk group 2160. One channel in the system is continuously transmitting data that identifies which talk groups are active on which channel. In addition, this talk group information is also transmitted as subaudible data on each active channel.

When the scanner receives a transmission on a channel set to the Motorola mode, it first decodes the talk group ID data included with the transmission. In the open mode, the scanner stops on the transmission and displays the talk group ID on the bottom line of the display. In the closed mode, the scanner only stops on the transmission if the talk group ID matches a talk group ID that you have stored in the

bank's talk group ID list and have not locked out.

Motorola trunking systems come in three categories: Type I, Type II, and Type I/II Hybrid. Each category displays and uses talk group IDs in slightly different ways.

Motorola Type II IDs are in the form FFF-SS, where;

FFF=Fleet ID

SS=Subfleet ID

Type I systems are usually organized with different user groups assigned to different fleets.

Notes

For example, a valid fleet-subfleet ID identifying all detectives within a police department might be 000-12, where 000 identifies all police users and 12 identifies the Detective division.

Tuning the scanner to an active control channel while in Motorola mode will display the Motorola System. ID and the approximate control channel message decode success rate. This information can help you identify the Motorola trunking system that you are monitoring and the receive quality of the control channel signal.

To properly map the raw Type I data to the correct fleet-subfleet format, you must program the correct fleet map into the scanner. Fleet map information is widely available on the Internet for most Type I systems in use.

Type II system talk groups are identified by a 5-digit number. Valid talk group IDs are divisible by 16. If you try to enter an invalid talk group ID, the scanner rounds the ID down to the next valid ID.

Type I/II hybrid systems use both fleet-subfleet and 5-digit formats for talk group IDs.

Notes

If the scanner decodes control channel data while receiving transmissions from a Motorola trunking system, CNTRL appears on the bottom line of the display.

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EDACS mode

You can set your scanner so it decodes the talk group IDs used with EDACS (GE/Ericsson) trunking systems. This setting is called the EDACS mode.

EDACS systems are trunking systems used primarily by business or private communications service providers, as well as by some public safety organizations. EDACS systems transmit active talk group information only on a dedicated control channel.

EDACS frequencies are organized in a specific order. Each frequency is assigned a Logical Channel Number (LCN). For the scanner to correctly switch to an active frequency, you must program the frequencies in LCN order, starting with Memory 01. EDACS talk group IDs are entered as a 4-digit decimal number from 0001 to 2047 or AFS (Agency Fleet Subfleet) number from 00-001 to 15-157.

When there is activity on an EDACS system, that information is sent out on the control channel. The scanner decodes the ID for the active talk group. In the open mode, the scanner then goes to the transmission and displays the talk group ID on the bottom line of the display. In the closed mode, the scanner only goes to transmissions with IDs that match talk group IDs you have stored in the bank's talk group ID list which are not locked out.

Because EDACS scanning requires clear reception of the control channel at all times, EDACS systems tend to have a smaller usable area. An external antenna can greatly improve EDACS scanning in a fringe area. If you are having trouble scanning an EDACS system, try manually selecting the data channel. If you are getting good reception, the scanner will indicate talk group CTL-01. Try changing your location or using an outdoor antenna to improve reception.

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LTR mode

You can set your scanner so it decodes the talk group IDs used with LTR systems. This setting is called the LTR mode.

LTR frequencies are organized in a specific order. Each frequency is assigned a Home Repeater Number (HR). For the scanner to correctly switch to an active frequency, you must program the frequencies in HR order, starting with Memory X01 in the selected bank.

Your PRO-97 scanner features a new tool to help you determine the correct channel mapping for LTR system frequencies. The scanner's LTR Repeater Finder displays the current Home Repeater when monitoring LTR transmissions in manual mode.

To determine the correct Home Repeater programming, enter the system channels of an LTR system in any order. Be sure to program the mode for each LTR channel to LT. Listen to each channel one at a time in manual mode and watch for the decoded LTR data at the bottom of the scanner's display. When an LTR transmission occurs, you should see the LTR talkgroup information on the bottom line of the display, and a number preceded by "R" in the bottom right hand corner (i.e., R12). The "R" number is the Home Repeater number that the current transmission is occurring on. To correctly program this Home Repeater number into your scanner, be sure that the channel number in the bank is equal to the number that is displayed after the "R". For example, if you see R12 displayed on a particular LTR frequency, that frequency needs to be programmed into Channel 12 of the current bank in order to track the LTR system activity properly.

LTR systems are trunking systems used primarily by business or private communications service providers, such as taxicabs, delivery trucks, and repair services. These systems encode all trunking information as digital subaudible data that accompanies each transmission. Users on an

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LTR system are assigned to specific talk groups, which are identified by the radio as six-digit numbers. These numbers are in the form AHHUUU, where:

A = Area code (0 or 1)

H = Home repeater (01 through 20)

U = User ID (000 through 254)

When the scanner receives a transmission on a channel set to the LTR mode, it first decodes the LTR data included with the transmission. In the open mode, the scanner stops on the transmission and displays the talk group ID on the bottom line of the display. In the closed mode, the scanner only stops on the transmission if the LTR data matches a talk group ID that you have stored in the bank's talk group ID list and have not locked out.

LTR systems are frequently programmed so that each radio has a unique ID code.

open and closed modes

You can set your scanner to change the way it receives signals. These settings, called open mode and closed mode, affect how the scanner receives signals from communications systems that use some type of closed squelch (such as Motorola, EDACS, and LTR systems).

Notes

In open mode, you hear all active talk groups except those you specifically exclude, making it easy to hear everything going on. In closed mode, you hear only those talk groups you specify. This makes it easy to listen only to talk groups you are interested in and exclude others.

When you select a system voice channel manually, any transmission opens squelch, regardless of the current mode.

When no ID code is programmed into the scanner, it receives the signal in MO, ED, or LT mode. In open mode, the scanner stops on any transmission. If the ID is stored, the text tag appears on the display. Otherwise, the talk group ID appears on the display. In closed mode, the scanner only stops on a transmission if the ID is stored.

You can set each of the scanner's channel storage banks to open or closed mode.

In open mode, the scanner scans signals transmitted in all systems. The scanner stops on any ID code and only uses the ID list to look up ID text tags.

In closed mode, the scanner stops only on signals that have an ID code which is found in the ID list for the bank. Also, the scanner scans signals transmitted only under the following conditions:

- When the signals are in the FM, CT, or DC mode.

- When the signals are in the MO, ED, or LT mode and the signal's ID code matches the programmed ID code

You can also select the user or talk groups you want the scanner to receive in closed mode.

When you set a channel storage bank to open mode, + appears under the bank's number while scanning. When you set a channel storage bank to closed mode, - appears under the channel storage bank's number while scanning. *OPEN* or *CLOSED* appears while the scanner is in manual mode or while the scanner is receiving a signal during scanning. See "Changing the Open/Closed Mode" for more information about setting the open and closed modes.

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setting up your scanner

turning on the scanner and setting squelch

1. To turn on the scanner, turn **VOL** clockwise. *Multi-system Trunking Scanner* appears. After about 3 seconds, you might hear a hissing sound. Then adjust **VOL** to a comfortable level.

2. Turn **SQ** fully counterclockwise, then turn **SQ** clockwise until the hissing sound stops.

3. To turn off the scanner, turn **VOL** counterclockwise to **OFF**.

Notes

The scanner does not scan if there are no frequencies stored in channels. If the scanner does not scan and you have already stored frequencies in channels, turn **SQ** *further clockwise.*

If the scanner picks up unwanted, partial, or very weak transmissions, turn **SQ** *clockwise to decrease the scanner's sensitivity to these signals. If you want to listen to a weak or distant station, turn* **SQ** *counterclockwise.*

If **SQ** *is adjusted so you always hear a hissing sound, the scanner will not scan properly.*

To ensure the scanner operates properly while in the trunking mode, we suggest you set **SQ** *using the steps listed above.*

If **SQ** *is adjusted precisely at the threshold where the hissing sound stops, the radio will be most sensitive to very weak signals. The radio may also receive unwanted noise or signals that are too weak to understand. Most users prefer to position the squelch control a little bit past the point of threshold to avoid receiving noise or signals that are too weak to understand.*

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storing known frequencies into channels

Good references for active frequencies are RadioShack's Police Call, Aeronautical Frequency Directory, and Maritime Frequency Directory. We update these directories every year, so be sure to get a current copy.
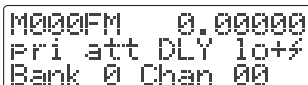
Follow these steps to store frequencies into channels.

Notes *If you are storing frequencies for an EDACS system, you must store them in order, with the first frequency in channel 1 for the current bank. For example, if you want to store frequency of 150.0100, 150.0200, 150.0300, and 150.0400 MHz, you must store them in Channels 1, 2, 3, and 4 respectively.*

When M *appears on the display, you can use* **FUNC** *and the arrow keys to select your desired bank and channel number.*

1. Press **MAN**, enter the bank (0-9) and channel number (00-99) where you want to store a frequency, then press **MAN** again. *M* and the bank and channel number appear at the upper left corner of the display (for example: *M000*).

```
M000FM    0.00000
pri att DLY lo+⚡
Bank 0 Chan 00
```

Notes *Press* **FUNC***. Then press* ▲ *or* ▼*. The bank number moves in the direction of the arrow pressed.*

Press **FUNC***. Then hold down* ▲ *or* ▼*. The bank number moves continuously in the assigned direction.*

Press ▲*. The channel number moves upward one by one. Or, press* ▼*. The channel number moves downward one by one.*

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2. Press **PGM**. *M* changes to *P*.

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

   If you make a mistake, press **CL** to delete a single digit or press and hold **CL** about 2 seconds to delete all digits.

4. Press **ENT** to store the frequency into the channel.

   Notes

   If you made a mistake in Step 3, Invalid Freq. *briefly appears and the scanner beeps when you press* **ENT**. *Start again from Step 3.*

   Your scanner automatically rounds the entered frequency to the nearest valid frequency. For example, if you enter a frequency of 151.553, your scanner accepts it as 151.550.

   All scanners tune by steps. Your RadioShack scanner uses steps consistent with the latest US or worldwide standards. If you enter a non-valid step frequency, any scanner will tune to the next step. Some scanner designs do this without showing the correct step in the display. This scanner will show the actual tuned frequency in the display. Because steps are so close together, the audio quality will not be affected by the offset.

   After a transmission, the scanner automatically pauses for 2 seconds on this channel before proceeding to the next active transmission. Press **./DELAY** *to turn the delay function off or on. See "Using Delay". The scanner stores this setting in the channel.*

5. If necessary, press **MODE** to change the receiving mode.

6. If desired, program a text tag for the channel (see "Assigning a Text Tag to a Channel").

7. The next channel in sequence is ready for programming. Press **PGM** then repeat steps 3 through 6.

CTCSS and DCS

Your PRO-97 scanner features an advanced, DSP based CTCSS and DCS decoder. CTCSS and DCS allow you to program frequencies into your scanner that are used by more than one group in your area and listen only to the group that is of interest to you by specifying the group's specific CTCSS or DCS code. CTCSS and DCS can also help reduce instances where interfering signals cause your scanner to stop on one channel.

There are two ways you can program your scanner to operate with CTCSS and DCS. If you know the CTCSS or DCS code that is used on a particular frequency, you can manually enter the code when you are programming the scanner, or any time afterwards.

You can also set a special search code up that will instantly decode the CTCSS or DCS code on a received transmission. Channels programmed with the search code will receive all traffic on the channel, and will instantly decode and display any CTCSS or DCS code that is found with the transmission. You can then store the found code in the channel memory with one keystroke.

This section of the manual describes the process for configuring a memory channel for CTCSS or DCS operation and manually programming a known code. For more information on using the CTCSS and DCS feature while scanning, see "Using CTCSS and DCS".

To program channel memories for CTCSS or DCS operation, follow these steps:

1. First, enter a conventional frequency. See "Storing Known Frequencies into Channels".

2. Once you have entered the frequency, press **MODE** until the desired mode appears in the upper left hand corner of the display. Use CT for CTCSS, and DC for DCS.

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3. By default, the search code (indicated with *Code Search* in the bottom of the display) is programmed. To program a specific code, press **FUNC**, **MODE**, and then use the arrow keys to scroll to the desired CTCSS or DCS code. You can also use the keypad to enter the code manually. Note that the scanner will automatically fill the code field as you enter the code.

4. Once the desired code is selected, press **ENT** to store the code in the channel memory.

5. It is possible to program memory channels for CTCSS or DCS operation at any time. Simply place the scanner in program mode, navigate to the channel you wish to change, and follow the steps above.

6. When stopped on an active conventional channel while scanning, you can press **MODE** to cycle through the valid modes for that channel, including CTCSS and DCS. This will reset any stored CT or DC code to the search code, allowing you to easily check for other CT or DC codes that may be present on the frequency.

> **Notes** *CTCSS, DCS and digital voice all operate independently of each other. If a channel is configured for CTCSS or DCS, it will not be able to decode digital transmissions. Use the FM mode when mixed analog and digital voice reception is desired.*

CTCSS Code Table:

67.0 Hz	94.8 Hz	131.8 Hz	171.3 Hz	203.5 Hz
69.3 Hz	97.4 Hz	136.5 Hz	173.8 Hz	206.5 Hz
71.9 Hz	100.0 Hz	141.3 Hz	177.3 Hz	210.7 Hz
74.4 Hz	103.5 Hz	146.2 Hz	179.9 Hz	218.1 Hz
77.0 Hz	107.2 Hz	151.4 Hz	183.5 Hz	225.7 Hz
79.7 Hz	110.9 Hz	156.7 Hz	186.2 Hz	229.1 Hz

82.5 Hz	114.8 Hz	159.8 Hz	189.9 Hz	233.6 Hz
85.4 Hz	118.8 Hz	162.2 Hz	192.8 Hz	241.8 Hz
88.5 Hz	123.0 Hz	165.5 Hz	196.6 Hz	250.3 Hz
91.5 Hz	127.3 Hz	167.9 Hz	199.5 Hz	254.1 Hz

DCS Code Table:

006	050	125	174	255	343	445	526	703
007	051	131	205	261	346	446	532	712
015	053	132	212	263	351	452	546	723
017	054	134	214	265	356	454	565	731
021	065	141	223	266	364	455	606	732
023	071	143	225	271	365	462	612	734
025	072	145	226	274	371	464	624	743
026	073	152	243	306	411	465	627	754
031	074	155	244	311	412	466	631	
032	114	156	245	315	413	503	632	
036	115	162	246	325	423	506	654	
043	116	165	251	331	431	516	662	
047	122	172	252	332	432	523	664	

storing trunking frequencies into channels

1. Press **PGM** and **FUNC** then ▲ or ▼ to select the desired bank to program.

2. Press **TRUNK** to enter into trunking mode.

3. Repeatedly press **MODE** to select Motorola, EDACS, or LTR.

4. Press **PGM** and select the channel number using ▲ or ▼.

5. Enter the UHF trunking frequency and press **ENT**.

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6. Repeat Steps 4 and 5 to enter the other trunking group frequencies for EDACS or additional control channel frequencies for Motorola systems.

7. If necessary, press **MODE** to change the receiving mode.

storing text tags

You can customize your scanner by storing text tags (up to 16 characters) for easy identification of channel transmissions, trunk IDs, or banks.

assigning a text tag to a channel

1. Press **MAN**, enter the channel number where you want to enter the text, then press **MAN** again. *M* and the bank and channel number appear at the upper left corner of the display (for example: *M100*).

2. Press **PGM**. *M* changes to *P*.

3. Press **TEXT**. The cursor appears at the third line.

4. Enter the text using the numeral keys (see "Text Input Chart").

Notes *If you make a mistake, press ▲ or ▼ to move to the character you want to change.*

For example, to identify amateur (ham) radio transmissions in the 6 meter range, input "HAM 6m" as follows:

• "H" is the second letter associated with 4 on the keypad. Press **4** then **2**.

• "A" is the first letter associated with 2 on the keypad. Press **2** then **1**.

• "M" is the first letter associated with 6 on the keypad.

Press **6** then **1**.

- A space is entered by pressing **./DELAY**.

- "6" is the sixth number associated with 1 on the keypad. Press **1** then **6**.

- "m" is the first letter associated with 6 on the keypad. Press **6** and **FUNC** (for the lower case set), then press **1**.

5. Press **ENT** to input the text.

assigning a text tag to a group ID

1. Press **PGM**.

2. Press **TRUNK**.

3. Press **FUNC** then ▲ or ▼ to select the desired bank.

4. Press **TRUNK** to select the desired sub-bank.

5. Press or hold down ▲ or ▼ to select the desired group ID.

6. Press **TEXT** then enter the tag using the keypad. (See "Text Input Chart").

7. Press **ENT** to store.

assigning a text tag to a bank

1. Press **PGM**.

2. Press **FUNC** then press bank number. *Bank X (0 through 9) selected. Fn+CLR to delete all frequencies, TEXT to edit tag* appears.

3. Press **TEXT**, then enter the text using the keypad.

4. Press **ENT** to store.

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text input chart

*To access the numbers, after you press **TEXT** (when you assign the text tag to a channel) or you press **FUNC** and bank number (when you assign the text tag to a bank), press **1**. Then press the desired number you want to enter.*

*To enter lowercase character or a character from the second set for the key **0**, press **FUNC** after pressing the first numeral key.*

PRESSED	CHARACTERS
1	0 1 2 3 4 5 6 7 8 9
2	A B C
2 then FUNC	a b c
3	D E F
3 then FUNC	d e f
4	G H I
4 then FUNC	g h I
5	J K L
5 then FUNC	j k l
6	M N O
6 then FUNC	m n o
7	P Q R S
7 then FUNC	p q r s
8	T U V
8 then FUNC	t u v
9	W X Y Z
9 then FUNC	w x y z
0	. - # _ @ + * & / ,
0 then FUNC	$ % ! ^ ( ) ? ~ ' Δ
•/DELAY	Space
CL	Back Space

finding and storing active frequencies

You can search for transmissions in the scanner's preprogrammed search bank. The search bank is divided into seven search bands. You can change the search range of Bank SR6 manually by setting the lower and higher ends of the search range.

Notes

You can use the scanner's delay feature while searching the search bank. See "Using Delay".

The scanner does not search locked-out frequencies while searching ranges. See "Locking Out Channels or Frequencies".

searching a preprogrammed frequency range

The scanner contains these preprogrammed search ranges, stored in the search bank (SR0-SR6).

Bank	Band
SR0	Marine
SR1	CB
SR2	FRS/GMRS/MURS
SR3	Police/Fire
SR4	Aircraft
SR5	Amateur Bands
SR6	Limit search (User changeable)

Follow these steps to select preprogrammed search bands and search them for active frequencies:

1. Repeatedly press **SRCH** to select your desired search bank (SR0, SR1, SR2, SR3, SR4, SR5, or SR6).

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```
SR0 FM 156.80000
pri att DLY lo ⚡
Channel 16   MAN
Marine Band
```

2. In the marine, CB, and FRS/GMRS/MURS bands, you can directly select a channel or search through the band. When *MAN* appears at the right of the third line, you can directly select a channel (refer to "Band Charts"). Press the desired channel number while *MAN* appears to select it. You can also change the channels by pressing ▲ or ▼.

3. Press **FUNC** then **SRCH** while *MAN* appears. *MAN* changes to *SRCH* and now you can search through the band. Press **FUNC** then **SRCH** again to return to the previous mode.

4. Rotate **SQ** clockwise and leave it set to a point just after the rushing sound stops. After 2 seconds (if the delay feature is on), the scanner starts searching.

5. When the scanner finds an active frequency, it stops searching.

band charts

search bank: SR0 marine band

Notes ▸ *Two frequencies are assigned in one channel in some Marine frequencies. For example, 157.000 and 161.600 are assigned in Channel 20.*

Receive mode: FM

Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
01	156.0500	05	156.2500
06	156.3000	07	156.3500

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08	156.4000	09	156.4500
10	156.5000	11	156.5500
12	156.6000	13	156.6500
14	156.7000	15	156.7500
16	156.8000	17	156.8500
18	156.9000	19	156.9500
20	157.0000 161.6000	21	157.0500
22	157.1000	23	157.1500
24	157.2000 161.8000	25	157.2500 161.8500
26	157.3000 161.9000	27	157.3500 161.9500
28	157.4000 162.0000	63	157.1750
64	156.2250 160.8250	65	156.2750
66	156.3250	67	156.3750
68	156.4250	69	156.4750
70	156.5250	71	156.5750
72	156.6250	73	156.6750
74	156.7250	77	156.8750
78	156.9250	79	156.9750
80	157.0250	81	157.0750
82	157.1250	83	157.1750
84	157.2250 161.8250	85	157.2750 161.8750
86	157.3250 161.9250	87	157.3750 161.9750
88	157.4250		

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search bank: SR1 CB band
Receive mode: AM

Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
01	26.9650	02	26.9750
03	26.9850	04	27.0050
05	27.0150	06	27.0250
07	27.0350	08	27.0550
09	27.0650	10	27.0750
11	27.0850	12	27.1050
13	27.1150	14	27.1250
15	27.1350	16	27.1550
17	27.1650	18	27.1750
19	27.1850	20	27.2050
21	27.2150	22	27.2250
23	27.2550	24	27.2350
25	27.2450	26	27.2650
27	27.2750	28	27.2850
29	27.2950	30	27.3050
31	27.3150	32	27.3250
33	27.3350	34	27.3450
35	27.3550	36	27.3650
37	27.3750	38	27.3850
39	27.3950	40	27.4050

search bank: SR2 FRS/GMRS/MURS band
Receive Mode: FM

Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
01	462.5625	02	462.5875

03	462.6125	04	462.6375
05	462.6625	06	462.6875
07	462.7125	08	467.5625
09	467.5875	10	467.6125
11	467.6375	12	467.6625
13	467.6875	14	467.7125
15	462.5500	16	462.5750
17	462.6000	18	462.6250
19	462.6500	20	462.6750
21	462.7000	22	462.7250
23	151.8200	24	151.8800
25	151.9400	26	154.5700
27	154.6000		

search bank: SR3 police/fire band

Receive Mode: FM

Group	Frequency (MHz)	Step (kHz)
0	33.420 – 33.980	20
	37.020 – 37.420	20
	39.020 – 39.980	20
	42.020 – 42.940	20
	44.620 – 45.860	40
	45.880	
	45.900	
	45.940 – 46.060	40
	46.080 – 46.500	20

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1	153.770 – 154.130	60
	154.145 – 154.445	15
	154.650 – 154.950	15
	155.010 – 155.370	60
	155.415 – 155.700	15
	155.730 – 156.210	60
	158.730 – 159.210	60
	166.250	
	170.150	
2	453.0375 – 453.9625	12.5
	458.0375 – 458.9625	12.5
	460.0125 – 460.6375	12.5
	465.0125 – 465.6375	12.5
3	851.0125 – 860.9875	25
	866.0125 – 868.9875	12.5

search bank: SR4 aircraft

Receive mode: AM

Frequency (MHz)	Step (kHz)
108.000 – 136.99166	8.33

Notes

All scanners tune by steps. Your RadioShack scanner uses steps consistent with the latest US or worldwide standards. If you enter a non-valid step frequency, any scanner will tune to the next step. Some scanner designs do this without showing the correct step in the display. This scanner will show the actual tuned frequency in the display. Because steps are so close together, the audio quality will not be affected by the offset.

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search bank: SR5 amateur band

Receive mode: FM

Group	Frequency (MHz)	Step (kHz)
0	28.0000 – 29.7000	5
1	50.0000 – 54.0000	5
2	144.0000 – 148.0000	5
3	222.0000 – 225.0000	5
4	420.0000 – 450.0000	12.5
5	1240.0000 – 1300.0000	6.25

search bank: SR6 programmable limit search

Receive mode: FM (Default setting)

searching active frequencies in a range

You can program the desired frequency range for a search.

1. Repeatedly press **SRCH** to select SR6.

2. Press **PGM** then **SRCH**. *Enter SR6 Search Range Limits:* appears and the cursor blinks *L* on the third line for the lower-end limit frequency.

3. Use the number keys and **./DELAY** to enter the desired lower-end limit frequency (including the decimal point).

4. Press **ENT** to set the frequency. The cursor moves to *U*. If the entered frequency is incorrect, *Invalid Freq.* briefly appears.

5. Enter your desired upper-end frequency and press **ENT**.

6. Press **SRCH** to start searching.

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7. Rotate **SQ** clockwise and leave it set to a point just after the rushing sound stops. When the scanner finds an active frequency, it stops searching.

> **Notes**
>
> *You can copy and save a frequency into a specified bank, channel, or priority channel when the scanner finds an active frequency. See "Using Frequency Copy" to save the frequency. The frequency copy works only in search banks 1 through 6.*
>
> *While the scanner is searching, you can use the seek search by pressing **FUNC** then **7**. Seek Search ON. appears on the bottom line. The scanner stops at an active frequency for five seconds and restarts searching automatically. The scanner repeats this operation.*

You can set Zeromatic on or off by pressing **FUNC** then **0**. Press **FUNC** then **0** again to reverse the Zeromatic setting. Whenever this feature is turned on, *Zeromatic ON.* briefly appears then *ZM* appears at the right of the second line and the scanner stops at the correct frequency. When you turn this feature off, *ZM* changes to small caps (*zm*) and the scanner stops when it detects an active signal. Zeromatic functions only in search banks 3, 4, 5 and 6.

There are several group banks in SR3 Police/Fire and SR5 Amateur bands. You can turn off or on the groups by pressing the group numbers. For example to turn off 0, press **0**.

In the Air and Limit search bands, press **FUNC** then press ▲ to start searching up from the lowest frequency or press ▼ to start searching down from the highest frequency.

> **Notes**
>
> *If you press **PSE** while searching, the scanner stops searching and *** PAUSED *** appears. Press **PSE** again, and the scanner resumes searching.*

manually tuning a frequency

You can manually set the scanner to move through all receivable frequencies, or select a specific frequency as a starting point.

1. Press **TUNE**. The currently-tuned frequency , *** *PAUSED* ***, and *Fine Tune Mode* appear.

2. Use the number keys to enter the frequency where you want the scanner to start.

3. Press **ENT**.

4. Press **PSE**. The scanner starts the tune operation. To change the tune direction, press ▲ or ▼ to tune up or down. When the scanner finds an active frequency, it stops on the frequency.

5. You can press **FUNC TUNE** while the scanner is stopped on a frequency in MANUAL mode to begin the TUNE function from that frequency. For example, if the scanner is stopped in MANUAL mode on channel 144 with frequency 145.31000 MHz, pressing **FUNC TUNE** will enter TUNE mode and automatically set the TUNE frequency for 145.31000 MHz.

listening to the weather band

The FCC (Federal Communications Commission) has allocated channels for use by the National Oceanic and Atmospheric Administration (NOAA). Regulatory agencies in other countries have also allocated channels for use by their weather reporting authorities.

NOAA and your local weather reporting authority broadcast your local forecast and regional weather information on one or more of these channels.

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listening to a weather channel

To hear your local forecast and regional weather information, press **WX**. Your scanner scans through the weather band then stops within a few seconds on the next available weather broadcast.

SAME standby mode

The National Weather Service precedes each weather alert with a digitally encoded SAME (Specific Area Message Encoding) signal, then a 1050 Hz tone. The SAME signal includes a FIPS (Federal Information Processing Standard) area code, and an event code that corresponds with the type of alert being sent. You can configure your scanner to operate in SAME Standby mode, where it monitors a selected weather radio station for SAME alerts for areas you specify. You can program your scanner with up to 10 FIPS codes for the areas you desire. The National Weather Service maintains a current list of FIPS codes at http://www.nws.noaa.gov/nwr/.

To configure your scanner for SAME Standby mode, follow these steps:

1. Press **WX** until you identify the weather station with the strongest signal for your location.

2. Press **FUNC**, and then **PGM** to access the FIPS code entry table.

3. Use the ▲ or ▼ keys to select the desired FIPS code storage location.

4. Use the numeric keys to enter the desired FIPS code, and then press **ENT** to store the code. Press **TEXT** to label the code entry with an alphanumeric text table if desired. Repeat this process for all the FIPS codes that you wish to store.

5. Press **L/OUT** to lock out or enable specific FIPS entries.

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6. Press **WX** to exit the FIPS code entry table.

*Press **WX** then a number key to quickly review stored FIPS codes. Press **L/OUT** to toggle lockout status.*

Your scanner can also detect the 1050 Hz weather alert tone when a weather channel is set as the priority channel and weather priority operation is enabled. (see "Priority"). In this mode all alerts are received. FIPS settings are ignored.

The scanner sounds an alert or beep when it receives the SAME code. If you do not stop the alert (or beep) for five minutes, the alert stops and the scanner beeps every ten seconds. If the scanner receives a new message after five minutes, it sounds the alert or beep. To stop the sound and ready the scanner to receive a new alert signal before the five minute time out, press any key except ☼.

7. Press **FUNC**, and then **WX** to initiate SAME standby. The scanner will monitor the selected weather radio station for alerts with FIPS codes that match the codes you entered in the FIPS entry table. To exit SAME standby, press **FUNC**, and then **WX**.

WX Alert and beep tone confirmation

1. To test the WX alert, press **WX** for more than 2 seconds while *SAME Standby* appears.

   The display indicates the type of message, and the scanner sounds an alert or series of beeps. The beeps automatically change every 3 seconds.

2. Press any key except ☼ to stop test sound mode.

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Skywarn

Many areas of the country have amateur radio repeaters that have been designated as "Skywarn" repeaters. During times of severe weather, these repeaters are used to relay reports of severe weather directly to meteorologists at a local National Weather Service (NWS) forecast office. Using the Skywarn feature in your scanner, you can easily jump to one of three Skywarn repeater frequencies and monitor these reports, in many cases hearing about severe weather in your area instantly as it occurs.

This function lets you quickly move to the skywarn channels (channels 997 through 999) from any mode except SAME standby by pressing and holding WX about 1 second. The scanner displays Skywarn-1 in the fourth line. The scanner has 3 Skywarn channels. Press ▲ or ▼ to select different Skywarn channels.

Notes *To activate this function, you must program your desired Skywarn frequencies into the Skywarn channels.*

using frequency copy

You can copy a frequency into a specified channel, a vacant channel in a specified bank, or a priority channel. However, you cannot copy a frequency from the Marine search band.

copying a frequency into a specified channel

You can copy a frequency into a specified channel when the scanner stops on that frequency during search mode or manual tuning.

1. Press **FUNC** then **PGM** when you find a frequency. *Store in ChXXX ?* appears on the bottom line. After about 1 second, the frequency to be copied flashes.

2. Press the desired bank and the channel number where you want to store the frequency. The display indicates the bank and channel number. After about 1 second, the frequency to be copied flashes.

3. Press **ENT**. All the conditions such as receive mode and delay condition are copied onto the channel. *Channel Stored!* briefly appears. The scanner automatically returns to search mode.

If you try to copy a frequency which is already stored, the scanner sounds the notice tone 3 times after you press **ENT**. *Dupl.Freq. ChXXX* appears. If you want to copy the duplicate frequency anyway, press **ENT**, or if not, press **CL** to cancel.

copying a frequency into an empty channel within a bank

You can copy a frequency into a vacant channel in a specified bank when the scanner stops on the frequency during search or tune mode.

1. Press **FUNC** then **ENT** when you find a frequency you want to copy. *Bank 9 Store?* appears.

2. If you want to copy the frequency into bank 9, press **ENT**. It is stored in the first available vacant channel in the bank. Or, press your desired bank number to store, then press **ENT**. *Channel Stored!* appears for 2 seconds. All the conditions such as receiving mode and delay condition are copied on the channel. After about 2 seconds, the scanner automatically returns to search mode.

3. If you try to copy a frequency which is already stored, the scanner sounds the notice tone 3 times after you press **ENT**. *Dupl.Freq. ChXXX* appears on the third line. If you want to copy the duplicate frequency anyway, press **ENT**, or if not, press **CL** to cancel.

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copying a frequency into the priority channel

You can copy a frequency into the priority channel (see "Priority") when the scanner stops on the frequency during Search, Scan, Manual, Tune, or WX mode.

Press **FUNC** then **PRI** when the frequency appears. The display flashes twice and the frequency is copied to the priority channel.

Signal Stalker II

Your scanner's Signal Stalker II feature provides a powerful new tool for you to rapidly detect, monitor and store frequencies for nearby radio transmissions. The Signal Stalker II feature is similar in functionality to portable frequency counters that cost much more than your scanner, but provides many advantages over typical portable frequency counters. For example:

The Signal Stalker II allows you to sweep the entire range of your scanner's design frequencies, or you can specify those frequency ranges that you wish to sweep and exclude ranges that you do not want to sweep. This allows you to omit frequency ranges with constant strong frequency activity, such as those with paging or broadcast transmitters. Many portable frequency counters will remain locked to a nearby constant signal, such as a paging or broadcast transmitter, and will not function properly until you have left the vicinity of the transmitter.

The Signal Stalker II feature is more sensitive than portable frequency counters and will detect transmissions at a greater distance. You can activate the Attenuator to reduce the sensitivity if desired.

Once an active frequency is found, the transmission is played through your scanner's speaker, and you can quickly store it in any of your scanner's memory locations.

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using Signal Stalker II

Your scanner's Signal Stalker II functions when you press and hold ✤ for approximately 1 second. The Signal Stalker II function can be set to watch for activity on all band frequencies or Police/Fire frequencies only. To change the all bands to police/fire or vice versa, press **FUNC** then ✤.

You can also turn on/off frequency sub-bands using the corresponding number keys while Signal Stalker II is active.

Notes *Priority mode is not available while using the Signal Stalker II.*

Press **FUNC** then ▲ or ▼, you can change the normal Signal Stalker II operation to the Special Signal Stalker II operation. In the Special Stalker operation, *Sp. Stalker* appears and the frequency range is divided by 1 MHz segment. If you lock out 5 frequencies within a 1 MHz segment, the scanner will skip that segment in subsequent sweeps. See "Using Signal Stalker II with Lockout" below.

using Signal Stalker II with lockout

The scanner's lock out feature can be used to bypass unwanted transmissions while using the Signal Stalker II. Press **L/OUT** when the scanner is stopped on an undesired transmission. Press **FUNC L/OUT** to review or clear locked out frequencies in the Signal Stalker II. You can lock out 150 frequencies while searching all bands and 50 frequencies while searching Police/Fire frequencies.

Signal Stalker II functions by rapidly sweeping through the RF spectrum in 1 MHz segments. If RF signal energy is detected in a 1 MHz segment, Signal Stalker II will sweep through the 1MHz segment in finer steps until the source of the RF signal energy is found.

Certain segments of RF spectrum are used by high power transmitters, such as paging transmitters. The Signal Stalker II can detect these transmitters easily, even at great distances

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due to their high transmitter output power. You can press **L/OUT** when the Signal Stalker II stops on these undesired transmissions to prevent the Signal Stalker II from stopping on them in future sweeps, however, the Signal Stalker II will still see their RF signal energy when sweeping through the 1 MHz segment. This will cause the Signal Stalker II to execute another fine step search of the 1 MHz segment. Of course, if you have locked out the undesired transmissions, the Signal Stalker II will not stop on them again, however, the overall sweep performance of the Signal Stalker II will be impacted.

Signal Stalker II features a special lockout mode that causes the scanner to skip a 1 MHz segment if five or more lockouts exist in that 1 MHz segment. To activate this mode, press **FUNC ▲** while in the Signal Stalker II mode. If a 1 MHz segment contains 5 or more lockouts it will be skipped entirely while Signal Stalker II is sweeping. Use **FUNC L/O** to review or clear locked Signal Stalker II frequencies.

To clear a locked-out frequency, select that frequency, then press **CL**.

scanning the channels

To begin scanning channels or to start scanning again after monitoring a specific channel, press **SCAN**.

Notes ▶ *You must store frequencies into channels before the scanner can scan them. The scanner does not scan through empty channels.*

To change the scanning direction, press ▲ or ▼.

The scanner scans through all channels (except those you have locked out) in the active banks (see "Turning Channel-Storage Banks Off and On"and "Locking Out Channels or Frequencies").

turning channel-storage banks off and on
To turn off banks while scanning, press the bank's number

key so the bank's number disappears. For example, to turn off bank 1, press **1**. The scanner does not scan any of the channels within the banks you turned off.

```
01234··789 Pri--
+++--:·+++
Scanning up...
Bank 0
```

To turn on banks while scanning, press the number key until the bank's number appears. For example to turn bank 1 on again, press **1**.

Notes

You cannot turn off all banks. There must be at least one active bank.

You can manually select any channel in a bank, even if the bank is turned off.

monitoring a single channel/power save circuit

You can monitor a single channel with your scanner by navigating to that channel while in manual mode. The scanner will receive traffic on the selected frequency.

Your scanner features a power save circuit that is automatically activated any time you manually select a channel. The power save mode works by allowing the receiver to "sleep" briefly while waiting for a call on the selected channel. The power save circuit is disabled when the scanner is tuned to a channel in program mode.

using CTCSS and DCS

Your scanner's advanced, DSP-based CTCSS and DCS decoder allows you to listen only to the group that is of interest to you by specifying the group's specific CTCSS or DCS code for a certain frequency. CTCSS and DCS can also help reduce instances where interfering signals cause your

scanner to stop on one channel.

When your scanner stops on a conventional frequency that is configured for CTCSS or DCS, it checks for a match between the transmitted and stored codes match, the scanner stops on the transmission and allows the audio to pass to the speaker. If the codes do not match, the scanner resumes scan operation. If the special "search" code is in use, the scanner will instantly display any detected CTCSS code if programmed for CTCSS mode, or DCS code if programmed for DCS code. You can store the detected code into the channel memory by pressing **ENT** while the code is displayed.

For more information about your scanner's receive modes, including CTCSS and DCS, see "Understanding Your Scanner's Modes". For more information on programming memory channels for CTCSS or DCS operation, see "CTCSS and DCS".

deleting frequencies from channels

1. Press **MAN**.

2. Use the number keys to enter the channel with the frequency you want to delete.

3. Press **MAN** again.

4. Press **PGM** to enter the program mode. *M* changes to *P*.

5. Press **FUNC**.

6. Press **CL**. The frequency number changes and *0.0000* appears.

deleting all frequencies in a channel bank

1. Press **PGM**.

2. Press **FUNC** then the bank number you want to clear. *Bank X selected. Fn+CLR to delete all frequencies. TEXT to edit tag* appears.

3. Press **FUNC** then **CL**. *Clear entire bank? Press 1 to clear all, any other key aborts* appears.

4. Press **1** to clear the selected bank's all channel memory. *please stand by.* appears while the scanner clears all channel memory. Press any other than **1** to cancel clear.

using delay

Many conversations might have a pause of several seconds between a query and a reply. To avoid missing a reply, you can program a 2-second delay into any of your scanner's channels. Then, when the scanner stops on the channel, *DLY* appears and the scanner continues to monitor the channel for 2 seconds after the transmission stops before it resumes scanning. The delay feature is also available while searching.

Notes
Delay is automatically set as the default for each channel when you turn on the scanner.

To turn delay on or off, press **./DELAY**. *DLY* (delay on) or *dly* (delay off) appears on the display.

locking out channels or frequencies

You can scan existing channels or search frequencies faster by locking out channels or frequencies that have a continuous transmission, such as a weather channel.

locking out channels

To lock out a channel while scanning, press **L/OUT** when the scanner stops on the channel. To lock out a channel manually, select the channel then press **L/OUT** so *lo* changes to *LO* on the display.

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Notes *You can still manually select locked-out channels.*

To remove the lockout from a channel, manually select the channel and press **L/OUT** so *LO* changes to *lo*.

reviewing locked-out channels

To review all locked out channels, press **MAN**. Then repeatedly alternate between pressing **FUNC** and then **L/OUT** to view each locked-out channel. When you finish reviewing locked-out channels, press **MAN**.

locking out frequencies

To lock out a frequency during a search, press **L/OUT** when the scanner stops on that frequency. The scanner locks out the frequency, then continues searching.

Notes *The scanner does not store locked out frequencies during a search.*

You can lock out as many as 50 frequencies in each bank. If you try to lock out more, L/O Memory Full! *appears.*

If you lock out all frequencies in one search bank and only this search bank is activated, All ranges Locked out! *appears and the scanner does not search.*

reviewing locked-out frequencies

To review the frequencies within a search bank that you locked out:

1. Press **SRCH** to set search mode.

2. Press **FUNC** then **L/OUT**. The locked-out frequency and *Lockout list* appear. Press ▲ or ▼ to review the list. The locked-out number and the total locked-out number also appears as *Lockout XX of YY*. (The tenth of thirty locked out number would appear as *Lockout 10 of 30*). If the search bank has no locked-out frequencies, *No Lockout* appears. Press **FUNC** then

L/OUT again to cancel reviewing locked-out frequencies.

```
Review Lockouts
Police/Fire      ⌁
SR-3   458.25000
Lockout 04 of 08
```

clearing a locked-out frequency

To clear a locked-out frequency, select that frequency (see "Reviewing Locked-Out Frequencies"), then press CL.

If all locked-out frequencies are cleared within a bank, *No Lockout* appears.

clearing all locked-out frequencies in a search bank

1. Press SRCH.

2. Select the search bank in which you want to clear all locked-out frequencies.

3. Press FUNC then press L/OUT. *Lockout list* appears.

4. Press FUNC then 6. *Clear entire list ? Press 1 to clear all, any other key aborts* appears. Press 1 to clear all locked-out frequencies. *List cleared.* appears for about 2 seconds. Press any key other than 1 to cancel clear.

priority

In addition to the 1,000 programmable memory channels, the scanner has one priority channel.

With the priority feature, you can scan through programmed channels and still not miss an important or interesting transmission on a specific channel. When priority is turned

on, the scanner checks that channel every 2 seconds, and stays on the channel if there is activity until the activity stops.

Notes *The priority feature does not operate while the scanner receives a trunking voice channel or during trunking delay time. Therefore, the priority check seems random during peak hours.*

If you program a weather channel as the priority channel, the scanner stays in the priority channel only when the scanner detects the weather alert tone.

This scanner cannot set a channel as the priority channel if the channel's receive mode is MOT, ED, or LTR.

*If you press **PSE** while the scanner receives the priority channel, the scanner displays *** PAUSED *** and stays on the priority channel even after the transmission finished.*

To program a frequency in the priority channel:

1. Press **MAN**.

2. Use the number keys to enter the channel number which contains the frequency you want to program as the priority channel. Then press **MAN** again.

3. Press **FUNC** then **PRI**. The display blinks.

To program the priority channel directly:

1. Press **PGM**.

2. Press **PRI**.

3. Enter the frequency you want to enter into the priority channel, then press **ENT**.

To program a weather channel as the priority channel:

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1. Press **WX**.

2. Select the weather channel you want to program as the priority channel.

3. Press **FUNC** then **PRI**. The display flashes two times.

To turn on the priority feature, press **PRI** so *pri* changes *PRI* on the display while scanning. If the scanner detects activity on the priority channel, *Priority Channel* appears. Or if the scanner detects a weather alert tone in Priority WX mode, *Priority Channel!* appears for 3 seconds then changes to *Weather ALERT* and the scanner sounds an alert tone.

Notes

Priority WX is only for receiving a weather alert.

When the scanner detects a 1050 Hz alert tone, priority WX activates and you receive a weather alert.

If you program a weather frequency into the priority channel and the scanner detects a weather alert tone on that frequency, the scanner sounds the alert tone.

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

changing the receive mode

The scanner is preset to the most common AM or FM receive mode for each frequency range. The preset mode is correct in most cases. However, some amateur radio transmissions and trunked systems do not operate in the preset mode. If you try to listen to a transmission when the scanner is not set to the correct receive mode, the transmission might sound weak or distorted.

If you want to listen to trunking transmissions in closed mode, you might have to change the receive mode.

To change the receive mode, repeatedly press **MODE**. The receive mode changes as follows:

AM – accesses the AM mode

FM – accesses the FM mode

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CT – accesses the FM mode, CTCSS System

DC – accesses the FM mode, DCS System

MO – accesses the FM Mode, Motorola Trunking System (with 4- or 5-digit ID code)

ED – accesses the FM Mode, EDACS Trunking System (with 4-digit decimal ID code or 5-digit AFS code)

LT – accesses the FM mode, LTR Trunking System (with 6-digit ID code)

Notes *MO (MOT), ED, and LT modes are not available when the scanner tunes up or down through the frequency ranges in which the trunking operation is not used.*

using the attenuator

To reduce interference or noise caused by strong signals, you can reduce the scanner's sensitivity to these signals.

There are two attenuator modes in your scanner. One is normal attenuator mode in which you set the attenuator in each channel or each band/group in the search and tune mode. The other is global mode in which you set the attenuator only once. This setting is applied all the time in every mode.

Press **ATT** to turn on or off the attenuator while the channel number is indicated or while the scanner is searching through bands/groups. When the attenuator is on, *att* changes to *ATT*.

When you turn it off, *ATT* changes to *att*. You cannot set the attenuator while the scanner is scanning.

Press **FUNC** and then **ATT** to set the attenuator to its global mode. *Global ATT.* appears for 2 seconds at the bottom line and *atg* appears. Press **ATT** to turn the attenuator on or off. *ATG* or *atg* appears on the second line.

Press **FUNC** and then **ATT** again to turn off the global attenuation

mode. *Normal ATT.* appears on the bottom line for about 2 seconds.

> **Notes** *If you turn on the attenuator, the scanner might not receive weak signals.*

turning the key tone on and off

Each time you press any of the scanner's keys, the scanner sounds a tone. To turn the scanner's key tone off or on:

1. If the scanner is on, turn **OFF/VOL** counterclockwise until it clicks to turn the scanner off.

2. Turn **OFF/VOL** clockwise to turn the scanner on. *Multi-system Trunking Scanner* appears.

3. While *Multi-system Trunking Scanner* appears, press **1** to turn on the key tone or **2** to turn it off.

using the display/key backlight

Your PRO-97 features a backlit keypad and display for easy viewing and use in dark environments. There are three backlight modes you can choose from to control backlight activation, Normal mode, Keypress mode, and first keypress Ignore mode.

With Normal mode, simply press ☼ to activate the backlight. The backlight will activate and remain on for the factory default setting of 5 seconds. The backlight continues to remain on while you are operating the keypad. To turn off the backlight before it automatically turns off, press ☼ again.

With Keypress mode, the backlight will light automatically when you press any key on the keypad, and function as described above in Normal mode. This mode is useful if you want the backlight to come on automatically when you perform an operation using the keypad.

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With Ignore mode, the backlight functions as described in Keypress mode, except that the scanner ignores the first keypress. This mode is useful when you wish to quickly illuminate the display and keypad without having to search for the ☼ key. The first keypress is ignored, and the scanner sounds the low pitched error beep to remind you that the first key pressed to activate the backlight is ignored by the scanner.

In any backlight mode, you can press and hold ☼ for about 1 second to force the backlight on full time. Press ☼ while the backlight is on to turn it off.

Follow these steps to change the backlight mode and duration:

1. If the scanner is on, turn it off and back on again. *Multi-System Trunking Scanner* appears in the scanner's display.

2. While *Multi-System Trunking Scanner* appears, press ☼.

3. Press ▲ or ▼ to select the desired backlight mode and duration. Selecting 3, 5, 10, or 20 sets the backlight mode for normal operation for the selected duration. Selecting K3, K5, K10, or K20 sets the backlight mode for Keypress operation for the selected duration. Selecting I3, I5, I10, or I20 sets the backlight mode for Ignore operation for the selected duration. Press **ENT** to store your selection.

using the keylock

Once you program your scanner, you can protect it from accidental program changes by turning on the key lock feature. When the keypad is locked, the only controls that operate are **FUNC**, ⊶/☼, **SQ**, and **VOL**.

You cannot activate the keylock while you are entering a frequency into a channel.

To turn on the keylock, press **FUNC** then ⊶/☼. *Key locked.* appears for about 1 second. *Key locked.* appears when you press any key after locking the keypad.

To turn off the keylock, press **FUNC** then ⊶/☼. The scanner beeps three times and *Key unlocked.* appears.

changing the display contrast

1. Press **MAN**.

2. Press **FUNC** then **9**. *Use Up/Down keys to set contrast, ENTER key saves.* appears.

3. Press ▲ or ▼ to select the contrast.

4. Press **ENT** to set the display contrast.

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cloning the programmed data

You can transfer the programmed data to and from another PRO-97 scanner using an optional connecting cable with 1/8-inch (3.5 mm) phone plugs on both ends (not supplied, available at your local RadioShack store).

Notes "CLONE MODE" Incorrect Model *appears if the scanner receives data from another scanner other than a PRO-97.*

Follow these steps to clone the data.

1. Turn on both scanners.

2. Connect the connecting cable to each scanner's PC/IF jack. ***CLONE MODE** Press UP to send Remove cable to exit.* appears.

3. Press ▲. *Confirm to send data? 1 -> YES Press other key for NO.* appears.

4. Press **1** to send the data to the other unit or press any other key to cancel the operation.

The scanner sends the data. To exit the clone mode, remove the cable.

trunking

how trunking works

The scanner tracks transmissions that use the Motorola Type I and Type II (such as Smartnet and Privacy Plus) and hybrid analog trunking systems, plus GE/ Ericsson (EDACS) and EF Johnson (LTR) type systems extensively used in many communication systems.

Trunking systems allocate a few frequencies to many different users. When the mobile unit transmits a signal, one frequency is chosen from among the allocated frequencies in that trunking system. The user's ID talk group is sent with the signal.

To receive trunking signals, you must store all the trunking control frequencies for Motorola systems or all the trunking group frequencies for EDACS and LTR in one bank (see "Storing Known Frequencies into Channels") and input ID codes in the ID memory (see "Storing Talk Group IDs").

Your PRO-97 automatically calculates Motorola voice channel frequencies when it decodes the control channel. This eliminates the need to enter all the Motorola group frequencies.

The control channels are subject to change depending on the day. Therefore enter all the control frequencies in the same bank. If you do not know which is the control channel, it is better to enter all the system frequencies into the same bank.

When the scanner decodes the Motorola control channel and finds the voice channel, the scanner displays the control channel memory location on the top line, the received frequency with VC (voice channel) on the second line, the bank and control channel memory location number on the third line and the Motorola ID number on the bottom line.

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To listen to the transmission, the mode of the programmed channel must be the same as that of the trunking channel (MO, ED, or LT).

When an ID code is received, the ID list for the bank is searched, and if found, the text name stored for the ID appears. If not found, scanning resumes immediately unless the bank is in open trunking mode.

There might be more than one talk group transmitting at a time in some Motorola trunking systems. If you set the scanner to manually tune in Motorola trunking mode, you will hear the talk group on that channel, but the display will alternate between all active IDs.

Frequency fleet map and talk group information are also widely available on the Internet (for example, at www. trunkscanner.com*).*

In the past, groups that transmit frequently, such as police departments, could transmit on only a few frequencies. This resulted in heavy traffic and often required 2-way radio users to wait for a specific frequency to clear before transmitting. Trunked systems allow more groups of 2-way radio users to use fewer frequencies. Instead of selecting a specific frequency to transmit on, a trunked system chooses one of several frequencies when the 2-way radio user transmits. The system automatically transmits the call on that frequency, and also sends a code that identifies that 2-way radio user's transmission on a control channel.

Your scanner lets you easily hear both the call and response transmissions for that 2-way radio user and therefore follow the conversation. For EDACS and Motorola (above 406 MHz range), the scanner monitors the control channel between each transmission to identify talk groups. For some Motorola (under 512 MHz range) and LTR systems, the scanner uses the subaudible data sent with each transmission to identify talk groups.

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setting squelch for trunking mode

Your scanner automatically mutes the audio during trunk scanning when it decodes control channel data. However, we recommend you turn **SQ** clockwise and leave it set to a point just after the rushing sound stops. This lets the scanner quickly acquire the data channel.

programming trunking frequencies

You program trunking frequencies the same as non-trunked frequencies, except that you must store the appropriate mode (MO, ED, or LT) with each frequency.

Notes
You can scan only one type of trunked frequency, either EDACS, Motorola, or LTR in a bank at one time. You can, however, mix conventional channels and frequencies in a bank.

If you are programming trunked frequencies for Motorola Type I and hybrid systems, you must first program the fleet map (see "Programming Fleet Maps").

If you are programming frequencies for an EDACS system you must store them in the Logical Channel Number order (usually listed as LCN#). For example, LCN1 would go into channel 01 for the current bank, and LCN2 would go into channel 02.

If you are programming frequencies for an LTR system you must store them in the home repeater order. For example, home repeater order 1 would go into channel 01 for the current bank, and home repeater order 2 would go into channel 02.

Follow these steps to program trunked frequencies:

1. Press **PGM** and select the bank.

Notes
*To move through the bank selection faster, press **PGM** then* **FUNC** *and hold down ▲ or ▼. To move through the banks*

one at a time, repeat the sequence of **PGM**, **FUNC** *then* ▲ *or* ▼ *until you reach the desired bank.*

2. Press **TRUNK** to enter the ID program mode.

3. Repeatedly press **MODE** to select Motorola, EDACS (GE/Ericsson), or LTR (EF Johnson) system to scan. This sets the talk group ID decoding method to be used for the bank.

```
ID Bank 0-0  ON
Motorola TGID#00
MOT: none
```

Notes *If you select conventional mode instead of Motorola, EDACS, or LTR, the scanner does not scan trunked frequencies.* Trunking mode not selected, press Mode key. *appears.*

```
ID Bank 0
Trunking mode
not selected,
Press Mode key.
```

4. Press **PGM** to enter the program mode.

```
P000FM    0.00000
Pri att DLY lo+↯
Bank 0 Chan 00
Bank 0
```

5. Enter the desired trunking frequency then press **ENT** to store.

```
P000FM 866.38750
pri att DLY lo+⌁
Bank 0 Chan 00
Bank 0
```

6. To enter additional trunking frequencies as subsequent channels in the same bank, press **PGM** or ▲ to access the next open channel then enter the frequencies. (See "Storing Known Frequencies into Channels").

```
P001FM    0.00000
pri att DLY lo+
Bank 0 Chan 01
Bank 0
```

7. Press **SCAN** to start scanning.

> **Notes**
>
> *If you enter a frequency that has already been entered, the scanner sounds an error tone and displays* Dupl. Freq. *and the channel number that has been duplicated. If the dual entry is an error press* **CL** *and enter the correct frequency. If the dual entry is intentional press* **ENT** *to accept.*
>
> *You may replace any frequency by selecting the bank and channel, pressing* **PGM** *and entering the new frequency.*

If you make an error in the entry process, press **CL** as often as needed to erase the incorrect data.

programming Motorola trunking systems (UHF-Lo)

You can program the scanner to receive transmissions in the UHF-Lo band (406-512 MHz) of the Motorola trunking system. You can receive these transmissions by checking the trunking system's control channel. You must program the system's base frequency and offset frequency to do this.

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Base and offset frequencies vary for each type of trunking system. You can get information about these frequencies for the trunking system you want to scan using www. trunkscanner.com, *other Internet sources, or locally published guidebooks.*

If you try to program an offset frequency in the UHF-Hi bands (806-960 MHz), the scanner ignores the entry.

Follow these steps to program Motorola trunking frequencies in the UHF-Lo band:

1. Press **PGM** then **TRUNK** to enter the ID program mode.

2. Press **FUNC** and press (or hold) ▲ or ▼ to select the bank.

3. Press **MODE** and select *MOT*.

4. Press **FUNC** then **2**. The display indicates *Custom Range 1/3* on first line, *Base: 406.0000* on the second line, *Offset: 380* on the third line and *Step:25.0kHz* on the bottom line.

5. While *B* in *Base* blinks, if necessary, press the desired Base frequency with the number keys and press **ENT**. Confirm the entry. If it is incorrect, press the number keys again to set the base frequency. After you confirm the input, press **ENT** again.

6. While *O* in *Offset* blinks, if necessary, enter the offset number and press **ENT**. Confirm the entry. If it is incorrect, then press the number keys again to set the frequency. After you confirm the input, press **ENT** again.

7. While *S* in *Step* blinks, repeatedly press ▲ or ▼ to select the step number, 5.0, 6.25, 10.0, 12.5, 15.0, 18.75, 20.0, 25.0, 30.0, 31.25, 35.0, 37.5, 40.0, 43.75, or 50.0 kHz, then press **ENT**.

8. Press **PGM** to enter the program mode. Store the trunking IDs into the sub-bank in the same bank.

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programming Motorola trunking systems (800 MHz)

Follow these steps to program 800 MHz band Motorola trunking.

Notes
> *On the 800 MHz trunking band, you can select a base frequency (normal or offset).*
>
> *On the 900 MHz trunking band, you do not need to set the base frequency (base, offset, step).*

1. Press **PGM** then **TRUNK** to enter the ID program mode.

2. Press **FUNC** then ▲ or ▼ to select the desired bank.

3. Press **MODE** and select Motorola trunking mode.

4. Press **FUNC** then **3**. *Use Up/Down keys to set 800MHz Motorola ch plan NORMAL* appears.

5. Press ▲ or ▼ to select *NORMAL* or *SPLINTER* and press **ENT**.

• If you are uncertain about the base frequency, use the default setting. The default setting is normal.

• If you cannot receive with the normal setting, change to OFFset. The base frequency in normal is 851.0125 MHz. The base frequency in OFFset is 851.0000 MHz.

programming fleet maps

You must set the fleet map if you want to receive a Motorola Type I system. Fleet maps are included along with other information about Motorola Type I systems at www.trunkscanner.com.

Follow these steps to program a fleet map.

1. Press **PGM** then **TRUNK**.

2. For each bank you want to program, repeatedly press **FUNC**. Then ▲ or ▼ to select the bank.

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3. Press **FUNC**. Then press **8**. *Size Code Setting* appears.

```
SizeCode Setting
Use Code 15 for
Type II Blocks
Block 0 SC=00
```

4. Enter the size code supplied with the Type I system information, referring to the instruction that appears on the display. If the information was not supplied, try the following common fleet maps.

Block	Size Code							
	1	2	3	4	5	6	7	8
0	S11	S4	S4	S12	S4	S3	S10	S1
1	S11	S4	S4	—	S4	S10	S10	S1
2	S11	S4	S4	S4	S12	S4	S11	S2
3	S11	S4	S4	S4	—	S4	S4	S2
4	S11	S4	S4	S4	S4	S12	S4	S3
5	S11	S4	S4	S4	S4	—	S4	S3
6	S11	S4	S12	S4	S4	S12	S4	S4
7	S11	S4	—	S4	S4	—	S4	S4

Block	Size Code							
	9	10	11	12	13	14	15	16
0	S4	S0	S4	S0	S3	S4	S4	S3
1	S4	S0	S0	S0	S3	S3	S4	S10
2	S0	S0	S0	S0	S11	S10	S4	S10
3	S0	S0	S0	S0	S4	S4	S11	S11
4	S0	S0	S0	S0	S4	S4	S11	S0
5	S0	S0	S0	S0	S0	S4	S0	S0
6	S0	S4	S0	S0	S0	S12	S12	S12
7	S0	S4	S0	S4	S0	—	—	—

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5. Press **ENT** for each entry. If you make a mistake, press **CL** and enter the correct size code.

The default setting of the bank is for Motorola Type II. However, if you set Type I and you want to return to Type II, enter 15 at Step 4.

To confirm the input, repeat Steps 1-5 and press **ENT***. Each time you press* **ENT***, you confirm the size code. If you find an error, press* **CL** *and begin again at Step 1.*

6. Press **SCAN** to start scanning.

talk group IDs

There are 10 talk group ID banks and each ID bank has 5 sub-banks. Each sub-bank has 30 ID locations. You can program up to 150 talk group IDs in each bank, so you can program up to 1,500 talk group IDs in 10 banks. When the scanner stops on a transmission in the Motorola, EDACS, or LTR mode, it checks to see if the ID has been stored. In the closed mode, the scanner only stops on the transmission and displays its text tag if you have stored and not locked out the ID. In the open mode, the scanner always stops on a transmission, but it displays the ID's text tag if you have stored the ID.

storing talk group IDs

To store a talk group ID, press **TRUNK** when the scanner stops on a voice channel transmission or when a talk group ID is indicated in the manual mode. The bottom line indicates where the ID was stored (as *ID save X-XX*), then it changes to *ID#XXXX*.

The first *X* in *ID save X-XX* is the sub-bank number (0-4) in the bank. *XX* is the number of IDs from (00-29) in each sub-bank.

If the ID has already been stored when you press **TRUNK**, *ID was saved* appears.

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When you try to store more than 150 talk group IDs in a bank, Memory Full! *appears. Clear some talk group IDs in order to store new ones (see "Clearing Talk Group IDs").*

Follow these steps to manually store talk group IDs or to edit a stored ID.

1. Press **PGM**.

2. Press **TRUNK**.

3. To select the bank where you want to store the ID, repeatedly press **FUNC** then ▲ or ▼ until you reach the desired bank.

```
ID Bank 0-0  ON
Motorola TGID#00
MOT: none
```

4. Press **MODE** to select *MOT*, *ED*, or *LTR*.

5. Repeatedly press **TRUNK** to select the sub-bank.

6. Press ▲ or ▼ to select the location where you desire to store the ID number.

7. Enter the talk group ID and press **ENT**. If necessary, use the decimal point for a hyphen.

```
ID Bank 0-0   ON
Motorola TGID#00
MOT: 02992    lo
ID#  02992
```

8. If you want to tag the ID, press **TEXT**, enter the desired text tag for the ID. Then press **ENT** (see "Text Input Chart").

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9. To store the next ID memory in sequence, press ▲ and repeat Step 7.

```
ID Bank 0-0  ON
Motorola TGID#01
MOT: none
```

10. Press **SCAN** to start scanning.

Notes

   If you made a mistake in Step 4, Invalid ID value *appears and the scanner beeps when you press* **ENT**. *Start again at Step 3.*

   You can enter either a decimal or AFS code for ED (EDACS) IDs. The default setting is decimal ID entry. When you press **FUNC** *then* **2**, *AFS Format appears for about 2 seconds. Now you can enter the ID code with AFS format.*

If you entered an ID code that is already stored in another ID channel, *Dupl. ID of X-XX* appears. If you want to store the ID code, press **ENT**. To cancel the operation, press **CL**.

```
ID Bank 0-0  ON
Motorola TGID#01
MOT: 02992
Dupl. ID of 0-00
```

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talk group ID hold

You can set your scanner to follow a trunking signal that you want to track during scanning. While the scanner is stopped on a voice channel (*VC* appears), hold down **TRUNK** until *ID hold ON*. appears.

When ID hold is activated and the scanner receives a voice channel, the scan indication *S* at the first digit in the top line changes to *H*.

To release ID hold, press **SCAN** or **TRUNK**.

turning an ID sub-bank on or off

Follow these steps to turn the ID sub-bank on or off during the program mode:

1. Press **TRUNK** repeatedly to select the desired sub-bank.

2. Press **FUNC** then **1** to turn the sub-bank on if it is off or off if it is on.

Follow these steps to turn the ID sub-bank on or off during the scan mode:

1. Press **FUNC** while the scanner is stopped on a voice channel transmission.

2. Press **TRUNK**. The display indicates which sub-bank is turned on or off, and the active sub-bank number flashes.

3. Press **FUNC** and the number of the sub-bank you desire to turn on or off. For example to turn sub-bank 4 on or off, press **FUNC**. Then press **4**.

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locking out talk group IDs

1. Press **PGM**.

You can only lock out talk group IDs when the scanner is in the closed mode (see "Open and Closed Modes").

2. Press **TRUNK**.

3. Press **FUNC**, ▲ or ▼ to move to the desired bank.

4. Press ▲ or ▼ to select the ID memory.

5. Press **L/OUT** to lock out the ID. *lo* changes to *LO*.

6. To remove the lockout from a trunking ID, manually select the ID memory, and press **L/OUT**. *LO* changes to *lo*.

You can confirm the ID code while the scanner shows the text when the received signal is a voice channel.

1. Press **TEXT** while the scanner is receiving the voice channel and indicating the text name. The ID code appears as *MOT: XXXXX*, etc.

2. Press **TEXT** again to cancel.

delay function in ID indication mode
You can set the ID delay function separate from the channel delay.

1. Press **FUNC** then **./DELAY** while you are programming the trunked ID. *Use Up/Down keys to set ID Delay. ENTER key saves. 2.0 seconds* appears.

2. Press ▲ or ▼ to select None, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, or 4.0 seconds.

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3. Press **ENT**.

> **Notes** *When activated, ID delay watches the control channel command for the delay time when the signal disappears from the voice channel.*

reviewing locked-out talk group IDs

You cannot clear all lockouts from a talk group at the same time.

1. Press **PGM** then **TRUNK**.

2. Press **FUNC**. Then **L/OUT**. The locked out ID appears. If the ID memory bank has no locked-out ID, you hear the low beep tone.

clearing talk group IDs

1. Press **PGM** then **TRUNK**.

2. Press **FUNC**, ▲ or ▼ to select ID memory.

3. Press **FUNC** then **CL**.

clearing all talk group IDs in a single bank

You can clear all talk group IDs within a bank. This lets you quickly delete all talk group IDs from a bank if you want to use the bank to store different data (such as a new set of talk group IDs).

1. Press **PGM**.

2. Press **TRUNK** to enter a talk group ID memory mode.

3. Select a talk group ID bank using **FUNC**, ▲ or ▼.

4. Press **FUNC** then **6**. *Clear entire list ? Press 1 to clear all, any other key aborts* appears.

5. Press **1** to clear all talk group IDs within a bank. *List cleared.*

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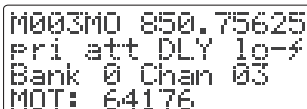
appears.

To cancel the deletion, press any key except **1**. The scanner returns to the talk group ID memory mode.

changing the open/closed mode

1. Press **MAN**.

2. Press **FUNC** then ▲ or ▼ to select the channel storage bank.

3. Press **FUNC** then **./DELAY**. *Bank OPEN*. or *Bank CLOSED*. appears. After that message disappears, the fifteenth digit on the second line of the display changes from + to − or vice versa.

```
M003MO 850.75625
pri att DLY lo-ź
Bank 0 Chan 03
MOT: 64176
```

4. Repeat Steps 2 and 3 for each bank.

care

Keep the scanner dry; if it gets wet, wipe it dry immediately. Use and store the scanner only in normal temperature environments. Handle the scanner carefully; do not drop it. Keep the scanner away from dust and dirt, and wipe it with a damp cloth occasionally to keep it looking new.

service and repair

If your scanner is not performing as it should, take it to your local RadioShack store for assistance. To locate your nearest RadioShack, use the store locator feature on RadioShack's website (www.radioshack.com), or call 1-800-The Shack (800-843-7422) and follow the menu options. Modifying or tampering with the scanner's internal components can cause a malfunction and might invalidate its warranty and void your FCC authorization to operate it.

birdie frequencies

Every scanner has birdie frequencies. Birdies are signals created inside the scanner's receiver. These operating frequencies might interfere with transmissions 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 **SQ** clockwise to omit the birdie.

To find the birdies in your scanner, begin by disconnecting the antenna and moving it away from the scanner. Make sure that no other nearby radio or TV sets are turned on near the scanner. Use the search function and scan every frequency range from its lowest frequency to the hghest. Occasionally, the searching will stop as if it had found a signal, often without any sound. This is a birdie. Make a list of all the birdies in your scanner for future reference.

specifications

Frequency Coverage:

25–54 MHz .... (in 5 kHz steps)

108–136.99166 MHz .... (in 8.33 kHz steps)

137–174 MHz .... (in 5, 6.25, 7.5, or 12.5 kHz steps)

216.0025–225.0000 MHz .... (in 5 kHz steps)

225.025–405.975 MHz .... (in 25 kHz steps)

406–512 MHz ....(in 6.25 kHz steps)

806–823.9875 MHz .... (in 6.25 kHz steps)

849–868.9875 MHz .... (in 6.25 kHz steps)

894– 960 MHz .... (in 6.25 kHz steps)

1240–1300 MHz .... (in 6.25 kHz steps)

Memory channels 1000

Channel memory banks 10

Number of memory channels per bank 100

Talk group ID memories 1,500

ID memory banks 10

Sub-banks per bank 5

Number of memory IDs per sub-bank 30

Sensitivity (20 dB S/N):

FM:

25–54 MHz .... 0.3 μV

108 –136.99166 MHz .... 0.3 μV

137–174 MHz .... 0.5 μV

216–225 MHz .... 1 μV

406–512 MHz .... 0.5 μV

806–960 MHz .... 0.7 μV

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Beyond the Basics

1240–1300 MHz .... 0.7 μV

AM:

25–54 MHz .... 1 μV

108–136.99166 MHz .... 1 μV

137–174 MHz .... 1.5 μV

216–225 MHz .... 3 μV

406–512 MHz .... 2 μV

806–960 MHz .... 2 μV

1240–1300 MHz .... 3 μV

Selectivity:

25 – 27.995 MHz at AM mode

–6 dB .... ±5 kHz

–50 dB .... ±6 kHz

All frequencies at AM and FM mode except 25 – 27.995 MHz at AM

–6 dB .... ±10 kHz

–50 dB .... ±18 kHz

Spurious Rejection (at 154.1 MHz FM) .... 40 dB

Scanning Rate .... Up to 60 Channels per Second

Search Rate .... Up to 75 Steps per Second

Delay Time .... 2 seconds

Intermediate Frequencies (IF):

1st .... 380.8 MHz

2nd .... 21.4 MHz

3rd .... 455 kHz

Priority Sampling .... 2 seconds

Operating Temperature .... –14 to 140° F

IF Rejection:

380.8 MHz at 154.1 MHz .... 60 dB

Beyond the Basics

21.4 MHz at 154.1 MHz .... 100 dB

Squelch Sensitivity:

Threshold (FM and AM) ....0.5 μV

Tight (FM) .... 25 dB

Tight (AM) .... 20 dB

Antenna Impedance ....50 Ohms

Audio Output Power (10% THD) .... 170 mW

Built-in Speaker .... 1 3/8 Inches (36 mm)

.... (8-ohm, Dynamic Type)

Power Requirements:

Batteries .... 4 AA Alkaline Batteries

External Power ....9V DC

Current Drain (Squelched) .... 90 mA

Battery Charge Current .... 150 mA

Dimensions (HWD)........... 5 3/4 x 2 9/16 x 1 5/8 Inches (145 x 65 x 42 mm)

Weight (without antenna and batteries) ....8.5 oz. (240 g)

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

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initializing your scanner

If the scanner's display locks up or does not work properly after you connect a power source or install batteries, you might need to initialize it.

Notes
This procedure clears all information you stored in the scanner's memory. Initialize the scanner only when you are sure the scanner is not working properly.

1. Turn off the scanner, then turn it on again. *Multi-system Trunking Scanner* appears.

2. Press **0** while *Multi-system Trunking Scanner* appears.

3. Press **1**.

4. Press **ENT**. *Initializing please stand by.* appears for about 5 seconds.

Notes
Do not turn off the scanner until the initalization is complete. When the initialization is complete, M000 appears *on the top line of the display.* Bank 0 Ch 00 *appears on the third line.*

The FCC wants you to know

This equipment has been tested and found to comply with the limits for a scanning receiver, 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.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

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), 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 has been designed to prevent reception of illegal transmissions. This is done to comply with the legal requirement that scanners be manufactured so 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 are illegal to monitor. Doing so could subject you to legal penalties.

In some areas, mobile use of this scanner is unlawful or requires a permit. Check the laws in your area. It is also illegal in many areas to interfere with the duties of public safety officials by traveling to the scene of an incident without authorization.

We encourage responsible, safe and legal scanner use.

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glossary

Frequency — the receiving signal location (expressed in MHz). To find active frequencies, you can use frequency guides available from your local RadioShack store, frequency listings posted on the Internet, or the built-in search function.

Channels — programmable memory locations for the frequencies you want to monitor. Each time the scanner finds an active frequency, it stops and monitors the radio traffic on that channel until the transmission ends, then resumes scanning.

Channel Storage Banks — a storage area for a group of channels. Channels are storage areas for frequencies. Whereas a channel can only contain one frequency, a bank can hold numerous channels.

Talkgroup IDs — each channel storage bank has an associated talkgroup ID list, for a total of 10 talkgroup ID lists. Each ID list has 5 sub-banks. Each sub-bank has 30 ID locations. You can program up to 150 talkgroup IDs in each bank, so you can program up to 1500 talkgroup IDs in 10 banks. When the scanner stops on a transmission in the Motorola or EDACS mode, it checks to see if the ID has been stored in the associated ID list. In the Closed Mode, the scanner only stops on the transmission and displays its text tag if you have stored and not locked out the ID. In the Open Mode, the scanner always stops on all transmissions except those you specifically exclude, and diplays the ID's text tag if you have stored the ID. For a detailed description of Open and Closed Mode operation, see "Open and Closed Mode Operation".

FAQs (Frequently Asked Questions)

The scanner is not working at all. What's wrong?

The AC or DC adapter might not be connected. Be sure the adapter's barrel plug is fully inserted into the PWR DC 9V jack. The center tip of the adapter's barrel plug must be set to positive. The batteries might be dead or need to be recharged. Recharge the rechargeable batteries or replace the standard batteries.

The scanner does not receive any stations or reception is poor. What's wrong?

The scanner might need to be initialized. Turn the scanner off then on again, or initialize the scanner (see "Initializing the Scaner").

The scanner is on but does not scan. What's wrong?

The squelch might not be adjusted correctly. Turn **SQ** clockwise. There might only be one channel or no channels stored in the scanner. Store frequencies into more than one channel. The keylock might be turned on. Turn off keylock.

While scanning, the scanner lcoks on frequencies that have an unclear transmission. What's wrong?

Some frequencies programmed into the scanner might be the same as "birdie" frequencies. Avoid programming "Birdie Frequencies" or only listen to them manually.

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limited one-year warranty

This product is warranted by RadioShack against manufacturing defects in material and workmanship under normal use for one (1) year from the date of purchase from RadioShack company-owned stores and authorized RadioShack franchisees and dealers. For complete warranty details and exclusions, check with your local RadioShack store.

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