

Cat. No. 20-309

# USER GUIDE

## PRO-60 200-Channel Portable Scanner

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Please read before using this equipment.



**Radio Shack**

## Features

The Radio Shack PRO-60 Programmable Scanner lets you in on all the action! This scanner gives you direct access to more than 68,000 frequencies including police, ambulance, ham radio, and transportation services. You can select up to 200 channels to scan, and change your selection at any time. The secret to your scanner's ability to scan so many frequencies is its custom-designed microprocessor - a tiny, built-in computer.

Your scanner includes these special features:

Triple Conversion Superheterodyne Receiver - Virtually eliminates any interference from IF (Intermediate Frequency) images, so you hear only the selected frequency.

Hyperscan - Searches through frequencies at 50 steps per second or scans stored channels at 25 channels per second.

Monitor Memory - Lets you temporarily save up to 10 frequencies you find during a frequency search so you can decide later if you want to store any of them into permanent channels.

Direct Frequency Search - Gives you direct access to every available frequency so you can find interesting broadcasts.

Two-Second Scan Delay - Delays scanning for about 2 seconds before moving to another channel, so you can hear more replies.

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

Liquid-Crystal Display - Shows the selected channel and frequency and the selected functions.

Memory Backup - Keeps the frequencies stored in memory even when you remove the batteries.

Lockout Function - Lets you set your scanner to skip over specified channels.

Keylock - Prevents you from accidentally changing the scanner's programming.

Priority Channel - Lets you designate a channel to be scanned every 2 seconds, so you do not miss important calls.

AM/FM/WFM Mode - Automatically selects the most common reception type for the band you are scanning, and lets you override that selection.

Battery-Saving Circuit - Draws only 40 percent of the normal operating power.

Optional Power Sources - Lets you power the scanner from

internal batteries, standard AC power (with an optional AC adapter), or from your vehicle's battery (with an optional DC auto adapter).

Ni-Cd Battery Charging Circuit - Lets you recharge nickel-cadmium batteries while they are inside the battery compartment.

## Bands and Frequencies

Your PRO-60 scanner can receive all of these bands:

Frequencies (MHz)	Bands
30.00-50.00	VHF Low
50.00-54.00	6-Meter Amateur Radio
54.00-72.00	FM-TV Audio Broadcast, Wide Band
72.00-76.00	Land Mobile Service Band
76.00-87.495	FM-TV Audio Broadcast, Wide Band
87.50-107.95	FM-TV Audio/Radio Broadcast, Wide Band
108-136.975	Aircraft
137-144	U.S. Government
144-148	2-Meter Amateur Radio
148-174	VHF High
174-216	FM/TV Audio broadcast, VHF Wide Band
216-224.995	VHF Hi, 1 1/4 Meter Amateur Radio
225-399.9875	Military Aircraft
400-450	UHF Lo, 70-Centimeter Amateur Radio, Government
450-470	UHF Low
470-512	FM-TV Audio Broadcast, UHF Wide
760-806	UHF-T Band
806-824	Conventional Systems
849-865.9875	Conventional/Trunked
866-869.000	Public Safety
894-999.9875	Trunked

**IMPORTANT:** In some areas, the mobile use of a scanner might be unlawful or require a permit. Check the laws in your area. Radio Shack assumes no responsibility for the improper use of this scanner.

### FCC NOTICE

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

Try to eliminate the interference by:

Moving your scanner away from the receiver

Connecting your scanner to an outlet that is on a different electrical circuit from the receiver

Contacting your local Radio store for help

If you cannot eliminate the interference, the FCC requires that you stop

using your scanner.

This device complies with Part 15 of FCC Rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference that may cause undesired operation.

## Power Sources

You can power your scanner from any of the following:

Internal batteries (not supplied)

Standard AC power (using an optional AC adapter [273-1665])

Your vehicle's battery (using an optional DC auto adapter [270-1560])

### Using Internal Battery Power

You can power your scanner from six AA batteries (not supplied). For the longest battery life, we recommend alkaline batteries (such as Cat. No. 23-552). Or, you can use rechargeable nickel-cadmium batteries (such as Cat. No. 23-125).

1. If the scanner is on, turn VOLUME OFF/MAX counterclockwise to turn it off.
2. Press down OPEN on the center of the battery compartment cover and slide the cover off in the direction of the arrow.
3. Remove the battery holder from the battery compartment.
4. Install six fresh batteries as indicated by the polarity symbols (+ and -) marked on the battery holder and inside the battery compartment.

**CAUTION:** Never mix rechargeable and non-rechargeable batteries.

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

5. Replace the battery holder in the compartment.

**NOTE:** The battery holder fits only one way in the compartment.

6. Replace the battery compartment cover.

When the batteries are low, the display flashes and the scanner beeps. When this happens, replace all six non-rechargeable batteries or recharge all six rechargeable nickel-cadmium batteries (see "Charging Nickel-Cadmium Batteries").

### Important Information about the External Power Jacks

The PWR jack lets you connect an external AC or DC adapter to operate the scanner. Connecting an adapter to the PWR jack disconnects the internal

batteries.

**NOTE:** You can use the PWR jack when either chargeable or non-rechargeable batteries are installed.

The CHG jack lets you connect an external AC or DC adapter to operate the scanner. When you connect an adapter to the CHG jack, the internal batteries remain connected and get recharged.

**WARNING:** Never use the CHG jack when non-chargeable batteries are installed. If you try to recharge non-rechargeable batteries, they could get very hot and might explode or leak acid.

#### CHARGING NICKEL-CADMIUM BATTERIES

The scanner has a built-in charging circuit that lets you recharge nickel-cadmium batteries while they are in the scanner.

To recharge the batteries while they are in the scanner, simply connect an AC or DC adapter into the scanner's CHG jack (see "Using Standard AC Power" or "Using Vehicle Battery Power").

#### Charging Tips

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

Nickel-cadmium batteries last longer and deliver more power if you regularly let them fully discharge. To do this, simply use the scanner until the low battery indicator appears on the display. Then fully charge the batteries.

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

#### Using Standard AC Power

You can power your scanner from a standard AC outlet using an optional AC adapter, such as Cat. No. 273-1665 (not supplied).

**WARNING:** Do not use an AC adapter's polarized plug with an extension cord, receptacle, or other outlet unless the blades can be fully inserted to prevent blade exposure.

**CAUTIONS:** The recommended AC adapter supplies 9 volts and delivers at least 300 milliamps. Also, its center tip is set to negative and its plug properly fits the scanner's PWR and CHR jack. Using an adapter that does not meet these specifications could damage the scanner or the adapter.

Be sure you connect the AC adapter to the scanner before you connect it to a standard AC outlet. Then disconnect the adapter from the AC outlet before you disconnect it from the scanner.

1. Plug the adapter's barrel plug into PWR.

NOTE: If you installed rechargeable nickel-cadmium batteries in the scanner, remove the cap from the CHG jack and connect the AC adapter to the jack. This powers the scanner and recharges the batteries at the same time (see "Charging Nickel-Cadmium Batteries").

2. Connect the adapter's power module to a standard AC outlet.

#### Using Vehicle Battery Power

You can power your scanner from your vehicle's battery power using an optional DC auto adapter, such as Cat. No. 270-1560 (not supplied).

CAUTIONS: The scanner is designed to work in a vehicle that has a 12-volt DC, negative-ground electrical system. If you are not sure about your vehicle, check with your vehicle's dealer.

The recommended DC auto adapter supplies 9 volts and delivers at least 300 milliamps. Also, its center tip is set to negative and its plug properly fits the scanner's PWR and CHR jack. Using an adapter that does not meet these specifications could damage the scanner or the adapter.

To protect your vehicle's electrical system, be sure you connect the adapter to the scanner before you connect it to the cigarette-lighter socket. Then disconnect the adapter from the cigarette-socket before you disconnect it from the scanner.

1. Set the adapter's voltage switch to 9V.
2. Connect the adapter's orange barrel plug to the adapter's cable with the tip set to - (negative).
3. Plug the adapter's barrel plug into PWR.

NOTE: If you installed rechargeable nickel-cadmium batteries in the scanner, remove the cap from the CHG jack and connect the DC auto adapter to the jack. This powers the scanner and recharges the batteries at the same time (see "Charging Nickel-Cadmium Batteries").

4. Plug the other end of the adapter into your vehicle's cigarette-lighter socket.

NOTE: If the scanner does not operate properly with a DC auto adapter connected to your vehicle's cigarette-lighter socket, you might need to unplug the adapter and clean the socket to remove ashes and other debris.

## Preparation

#### CONNECTING THE SUPPLIED ANTENNA

1. Connect the supplied flexible antenna's BNC connector to ANT on top of the scanner.
2. Press down and rotate the base of the antenna clockwise until the antenna locks into place.

#### CONNECTING AN OPTIONAL ANTENNA

The supplied antenna is usually adequate for strong local signals. However, for the best results, you can attach a multi-band outdoor antenna (such as Cat. No. 20-013) to the scanner. If the coaxial cable's connector does not fit the ANT jack, you might also need an adapter. Your local Radio Shack store sells a complete line of outdoor antennas, adapters, and connectors.

For the best performance, consider the following when deciding on an outdoor base antenna and its location:

The location of the antenna should be as high as possible.

The antenna and antenna cable should be as far away as possible from sources of electrical noise (appliances, other radios, and so on).

The antenna should be vertical.

Mount the antenna following the instructions supplied with the antenna and its mounting hardware. Then route the antenna cable to the scanner, and connect it to ANT on top of the scanner.

CAUTION: Do not route the cable over sharp edges or moving objects.

NOTE: Always use 50-ohm coaxial cable to connect an outdoor antenna.

For lengths under 50 feet, use RG58 (Cat. No. 278-1314) or RG8/M (Cat. No. 278-1313).

For lengths over 50 feet, use RG-8, low-loss coaxial cable (Cat. No. 278-1312).

#### RESETTING THE SCANNER

When you first install the scanner's batteries, or when they are removed for an extended period of time, the scanner's display might lock-up. If this happens, try resetting the scanner.

CAUTION: Since this procedure clears all the information programmed into the scanner, use it only when you are sure the scanner is not working properly.

Follow these steps to reset the scanner.

1. If the scanner is on, turn VOLUME OFF/MAX counterclockwise until it clicks to turn it off.
2. While you hold down both CLEAR and 0, turn VOLUME OFF/MAX clockwise until it clicks to turn on the scanner.

#### CONNECTING AN EARPHONE

For private listening, you can plug an optional earphone (such as Cat. No. 33-175) into the headphone jack on top of your scanner. Connecting an earphone automatically disconnects the internal speaker.

NOTE: In a noisy area, monaural headphones (such as Cat. No. 20-210) might provide more comfortable listening.

#### Listening Safely

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

Set the volume to the lowest setting before you begin listening. After

you begin listening, adjust the volume to a comfortable level.

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

Once you set the volume, do not increase it. Over time, your ears adapt to the volume level, so a volume level that does not cause discomfort might still damage your hearing.

#### Traffic Safety

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

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

#### CONNECTING AN EXTERNAL SPEAKER

In a noisy area, a properly placed external speaker (such as Cat. No. 21-549) or an amplified speaker (such as Cat. No. 21-541) might make listening easier. Plug the speaker cable's 1/8-inch mini-plug into the scanner's headphone jack.

#### USING THE BELT CLIP

You can use the belt clip for hands-free carrying when you are on the go. Slide the belt clip over your belt or waistband.

#### UNDERSTANDING YOUR SCANNER

##### A LOOK AT THE KEYPAD

A quick look at the scanner's keypad will help you understand each key's function.

Control	Function
KEYLOCK	Disables the keypad (except for the SCAN, MANUAL, and LIGHT keys) to prevent accidental program changes.
SCAN	Starts scanning through the stored channels.
PRI	Turns the priority function on and off.
L/OUT	Turns the selected channel's lockout function on and off.
DELAY	Turns the selected channel's delay function on and off.
LIGHT	Turns the display back light on and off.
MANUAL	Stops scanning and lets you manually enter a channel number or frequency.
LIMIT	Turns on the limit search mode and sets the frequency range.
Up, Down	Selects the direction in the search, program, scan, or manual modes.

MON	Accesses the 10 monitor memories.
Number Keys	Each key has a single-digit label and a range of numbers.  Use the digits on the keys to enter the number for a channel or a frequency.  Use the range of numbers above the key (for example 81-100) to select the channels in a channel-storage bank (see "Understanding Channel Storage Banks").
ENTER	Stores a frequency in a channel.
DIRECT/.	Turns on the direct search mode or enters a decimal point (necessary when programming frequencies).
AM/FM/ WFM	Switches the scanner between the AM, FM, or WFM modes.
PGM	Sets the scanner so you can store frequencies into channels.
CLEAR	Clears an incorrect entry and is used when resetting the scanner.

#### A LOOK AT THE DISPLAY

A look at the scanner's display will help you understand what each indicator means.

Symbol	Appears When
P	The scanner is tuned to a priority channel.
MON	The scanner is tuned to a monitor memory.
BANK	The scanner's memory banks are turned on during the scan mode.
CH	The scanner is tuned to one of the 200 available channels.
FM, AM, or WFM	The scanner is set to the selected mode.

NOTE: The symbol blinks when you manually select the mode.

Up or Down	Shows the search direction in the search mode and the scanning direction in the scan, program, and manual modes.
-L-	The scanner is searching using a limit search.
-d-	The scanner is searching using a direct frequency search.
SRCH	The scanner is searching up or down the frequency bands.
SCAN	The scanner is scanning up or down the channels.
MAN	You manually selected a channel.

PGM                    You are storing frequencies into the scanner's channels.

PRI                    The priority channel function is on.

DLY                    The scanner is monitoring a channel you pre-programmed with the delay function.

L/O                    The scanner is monitoring a channel you locked out of the scan mode.

Lo                     You are programming the lowest frequency for a limit search.

Hi                     You are programming the highest frequency for a limit search.

#### BATTERY-SAVING CIRCUIT

If the scanner does not detect a signal within 5 seconds any time after you manually select a channel or frequency, the scanner enters the battery-saving standby mode.

In the standby mode, the scanner rests for 1 second then checks for a signal for 1/2 second, using only 40 percent of the normal power consumption. The scanner continues this until you press any button or if receives a signal.

#### UNDERSTANDING MEMORY

You can store up to 210 frequencies into your scanner's memory. You can store each frequency into either a permanent memory, called a channel, or a temporary memory, called a monitor memory. Your scanner has 200 channel memories and 10 monitor memories.

#### CHANNEL MEMORIES

To make it easier to group and select channels, they are divided into 10 channel-storage banks of 20 channels each.

You can use each channel-storage bank to group frequencies by similar organizations (see "Guide to the Action Bands"). For example:

Channels	Organization
1-20	Police Department
21-40	Fire Department
41-60	Ambulance Service
61-80	Aircraft

You can also group channels by city or by local area.

#### MONITOR MEMORIES

The scanner also has 10 monitor memories. Use these memories to temporarily store frequencies while you decide whether or not to save them in channels. This is handy for quickly storing an active frequency when you search through an entire frequency band. You can manually select these memories, but you cannot scan them (see "Searching for and

Temporarily Storing Active Frequencies").

## Operation

### SETTING THE VOLUME AND SQUELCH

1. Turn SQUELCH fully clockwise.
2. Turn VOLUME OFF/MAX clockwise to about half way. The scanner turns off.
3. Turn SQUELCH counterclockwise until you hear a hissing noise.
4. Adjust VOLUME OFF/MAX to a comfortable level.
5. Slowly turn SQUELCH clockwise until the hissing noise stops.

NOTES: If squelch is set too low, the scanner can pick up unwanted or weak transmissions. When this happens, slightly turn SQUELCH clockwise to decrease the scanner's sensitivity to weaker signals.

If squelch is set too high, the scanner might not pick up any transmissions. When this happens, slightly turn SQUELCH counterclockwise to increase the scanner's sensitivity.

### SEARCHING FOR AND TEMPORARILY STORING ACTIVE FREQUENCIES

You can set your scanner to search for:

Transmissions within a limited range of specified frequencies (limit search).

Transmissions starting from a designated frequency (direct search).

When the scanner finds an active frequency, you can quickly store it in one of the 10 monitor memories.

NOTE: Your scanner rounds down the entered frequency to the nearest valid frequency. For example, if you try to enter 151.473, the scanner accepts it as 151.470.

During a limit search, the scanner searches upward starting from a selected lower frequency limit, or downward starting from a selected upper frequency limit.

1. Press PGM, then LIMIT. Lo appears on the display.
2. Enter the lowest frequency in the desired frequency search range, then press ENTER.
3. Press LIMIT, Hi appears on the display.
4. Enter the highest frequency in the desired frequency search range, then press ENTER.
5. To search up or down:

One step (5, 12.5, or 50 kHz) at a time - quickly press and release up or down.

Continuously, until the scanner finds an active frequency - press and hold up or down for about a second.

- L - and SRCH appear on the display, an indicator flashes under the next available monitor memory, and the scanner searches through the specified frequency range either upward (from the lowest selected frequency), or downward (from the highest selected frequency).

NOTE: While searching either upward or downward, when the scanner reaches a specified limit (either upper or lower), it automatically skips to the starting frequency and continues searching.

6. When the scanner stops on an active frequency, you can either:  
  
Press MON to store it in the next available monitor memory, or  
  
Press and hold UP or DOWN for about a second to continue the search.
7. To stop continuous searching, while UP or DOWN SRCH appears on the display, press UP or DOWN until the UP or DOWN symbol disappears.

#### DIRECT SEARCH

During a direct search, the scanner searches upward or downward, starting from a specified frequency or stored channel.

NOTE: "PRIORITY" must be turned OFF in order to start a "Direct Search".

1. To start a direct search from a specified frequency:
  - a. Press PGM.
  - b. Enter the desired frequency.

NOTE: Do not omit digits (except the last zeros) after the decimal point. The frequency must be fully entered for the scanner to start the direct search.

- c. Press DIRECT.

To start a direct search from a stored channel:

- a. Press MANUAL or PGM.
  - b. Enter the desired channel number.
  - c. Press MANUAL or PGM again.
  - d. Press DIRECT.

2. To search up or down:

One step (5, 12.5, 25, or 50 kHz) at a time starting from the specified frequency or channel - quickly press and release up or down.

Continuously until the scanner finds an active frequency - press and hold up or down for about a second.

- d - and SRCH appear on the display, an indicator flashes under the next available monitor memory, and the scanner searches either upward or downward starting from the selected frequency.

NOTES: While searching either upward or downward, when the scanner:

Reaches the end of a band, it automatically skips to the beginning of the next available band.

Reaches the end of the last available band, it automatically skips to the beginning of the first.

3. When the scanner stops on an active frequency, you can:

Press MON to store it in the next available monitor memory, or

Press and hold UP or DOWN for about a second to continue the search.

4. To stop continuous searching, while UP or DOWN SRCH appears on the display, press UP or DOWN until UP or DOWN disappears.

#### LISTENING TO A MONITOR MEMORY

To listen to a monitor memory, press MANUAL, MON, then the number key of the desired monitor memory.

NOTE: You cannot scan monitor memories.

#### STORING FREQUENCIES INTO CHANNELS

Your scanner has 10 channel storage banks, each with 20 storage areas called channels, where you can permanently store a total of 200 frequencies. You can either move a monitor memory to a channel, or you can manually enter a frequency to store it.

Moving a Frequency from a Monitor Memory to a Channel

Follow these steps to move a monitor memory to a channel.

1. Press MANUAL, enter the channel number you want to store frequency in, then press PGM.
2. Press MON, then enter the number of the monitor memory that has the frequency you want to store into the channel.
3. Press ENTER. The scanner stores the frequency into the selected channel.

Manually Storing Frequencies into Channels

Good reference for active frequencies are Radio Shack's "Police Call Radio Guide Including Fire and Emergency Services," "Official Aeronautical Frequency Directory," and "Maritime Frequency Directory." We update these directories every year, so be sure to get a current copy. See also "Guide to the Action Bands" in the manual.

Follow these steps to manually store a frequency into a channel.

1. Press MANUAL. MAN appears on the display.
2. Enter a channel number then press PGM. The selected channel number and PGM appear on the display.
3. To enter a frequency, enter the first digits (up to 3), press symbol, enter the last digits (up to 4) then ENTER.

For example, to enter the frequency 166 MHz:

You Press		You See
MANUAL	(NN) CH	000.0000 MAN
8	(NN) CH	8
PGM	8CH	000,0000
166	8CH	166
[.]	8CH	166.
000	8CH	166.000
ENTER	8CH	166.0000 FM

NOTES: The scanner continuously monitors the most recently stored channel.

ERROR appears on the display when you enter a frequency not within the scanner's bands (see "Specifications"). To erase an error, press CLEAR then repeat Step 3.

4. To program the next channel in sequence, press PGM and repeat Step 3.

NOTE: To change the direction it sequences in, press UP or DOWN before you press PGM.

To program more channels in any sequence, repeat Steps 2 and 3.

#### SCANNING THE STORED CHANNELS

1. Press UP or DOWN to select the scan direction.

NOTE: When you first turn on the scanner, the scan direction is always UP.

2. Press SCAN.

The scanner scans through all non-locked channels in the activated banks (see "Turning Channel-Storage Banks On and Off" and "Locking Out a Channel").

NOTE: If the scanner does not scan, re-adjust SQUELCH.

#### TURNING CHANNEL-STORAGE BANKS ON AND OFF

A more efficient way to scan is to turn off storage banks you do not want to scan. For example, if you wanted to scan only current police activity, you would not want the scanner to scan, find, and waste time monitoring channels in other banks that did not include police frequencies. Instead, you can turn off the other nine channel-storage banks.

While scanning, press the number key for the bank you want to turn on or off. The bank indicator turns on or off.

If the bank indicator is on, the scanner scans all channels within that bank that are not individually locked out (see "Locking Out a Channel"). If the indicator is off, the scanner does not scan any of the 20 channels within that bank.

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

You cannot turn off all banks. At least one bank must always be active.

#### MANUALLY SELECTING A CHANNEL/FREQUENCY

##### Selecting a Channel

You can continuously monitor a specific channel without scanning. This is useful if you want to hear a broadcast on a channel and do not want to miss any details (even though there might be periods of silence) or if you want to monitor a locked-out channel (see "Locking Out a Channel").

If the scanner is stopped at a channel you want to continue listening to, quickly press MANUAL once before it continues scanning again.

NOTES: Pressing MANUAL additional times makes the scanner step through the channels.

To change the channel step direction, press UP or DOWN before you press MANUAL additional times.

If the scanner is scanning:

1. Press MANUAL to stop the scanning.
2. Enter the desired channel number
3. Press MANUAL again.

If the scanner is not scanning, enter the desired channel number then press MANUAL.

##### Selecting a Frequency

You can manually select a desired frequency. This is useful if you want to monitor a frequency you have not stored, or a frequency stored in a locked-out channel (see "Locking Out a Channel").

1. If the scanner is scanning, press MANUAL to stop the scanning.
2. Enter the desired frequency.
3. Press DIRECT. The scanner continuously monitors the selected frequency.

#### USING PRIORITY

The priority feature lets you scan through the programmed channels, and still not miss an important or interesting call on a designated channel. To use the priority feature, you need to designate a stored channel first and then turn the priority feature on.

##### Designating a Channel

1. Press PGM.
2. Enter the desired channel number.

NOTES: You can designate any stored channel as the priority channel, but you can have only one priority channel at a time.

To "undesignate" a priority channel, either designate another

channel or turn the priority feature off.

3. Press PRI.

#### Turning the Priority Feature On/Off

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

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

#### USING DELAY

Many agencies use a two-way radio system that might have a pause between a query and a reply. To avoid missing a reply, you can program a 2-second delay into a channel or a frequency. When your scanner stops on a channel or frequency with a programmed delay, it continues to monitor it for 2 seconds after every transmission before the scanner resumes scanning or searching.

To program a 2-second delay:

If the scanner is in the scan mode and stopped on the desired channel, quickly press DELAY before it continues scanning again. DLY appears on the display.

If the scanner is not stopped on the desired channel, manually select the desired channel, then press DELAY, DLY appears on the display.

If the scanner is in the search mode, press DELAY. DLY appears on the display and the scanner programs a 2-second delay into all the frequencies it finds.

To turn off the 2-second delay on any channel or frequency, press DELAY while the scanner is monitoring the channel or frequency. DLY disappears from the display.

#### LOCKING OUT A CHANNEL

You can scan channels faster by locking out specific channels you do not want to monitor, such as a continuously active weather channel.

1. Press MANUAL. MAN appears on the display.

2. Enter the desired channel number.

3. Press MANUAL again.

4. Press L/OUT so L/O appears on the display.

When it scans, the scanner skips the locked out channel.

NOTES: There must be at least one active channel in each bank. You cannot lock out all channels.

You can still manually select locked-out channels.

To unlock a channel, manually select the channel then press L/OUT so L/O disappears from the display.

## USING THE LIGHT

While the scanner is on, press LIGHT to light the display for 5 seconds. Press any key other than LIGHT while the backlight is on to keep the display lit for another 5 seconds. To turn off the backlight before it automatically turns off, press LIGHT.

## TURNING THE KEY TONE ON/OFF

Each time you press any of the scanner's keys a tone sounds to verify that the scanner has correctly accepted your entry.

To turn the scanner's key tone on or off, first turn off the scanner. Then while you press and hold 2 and ENTER, turn VOLUME OFF/MAX clockwise until the display appears.

## USING THE KEYLOCK

Once you program your scanner, you can protect it from accidental program changes by sliding KEYLOCK to the right.

The only controls that operate in the keylock mode are SCAN, MANUAL, LIGHT, VOLUME, and SQUELCH. When you want to change the scanner's programming, slide KEYLOCK to the left.

## CHANGING THE AM/FM/WFM RECEIVE MODE

The scanner scans in the following modes:

- AM (amplitude modulation) - Used in aircraft bands and amateur radio band.
- FM (narrowband frequency modulation) - Used in action bands such as police, fire, ambulance, amateur radio, etc.
- WFM (wideband frequency modulation) - Used in commercial FM broadcasts and television sound.

The scanner is preset to the most common AM/FM/WFM receive mode for each frequency range. The preset modes are:

FREQUENCY BAND (MHz)	RECEIVE MODE
30.0000 - 87.4950	FM
87.50000 - 107.9500	WFM
108.0000 - 136.9750	AM
137.0000 - 224.9950	FM
225.0000 - 399.9875	AM
400.0000 - 512.000	FM
760.0000 - 999.9875	FM

The preset mode is correct in most cases. However, some ham radio and military aircraft broadcasts do not operate in the preset mode. If you try to listen to a broadcast when the scanner is not set to the correct receive mode, the broadcast might sound weak or distorted.

To change the mode, press AM/FM/WFM. AM, FM, or WFM blinks on the display to indicate that the displayed receive mode has been changed from the preset mode.

NOTES: If you change any frequency band's receive mode during a limit or direct search, the scanner no longer uses any of the preset receive modes. Instead, the scanner searches for frequencies in all the bands in the selected mode.

If you change the band mode to WFM during frequency search, your scanner automatically searches frequencies at 50 kHz steps.

To return to the default settings, press and hold down CLEAR then press AM/FM/WFM.

For more information, see "Specified Intervals" under "A General Guide to Scanning."

#### A GENERAL GUIDE TO SCANNING

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

During the summer months, you might be able to hear stations in the 30-50 MHz range located several hundred or even thousands of miles away. This is because of summer atmosphere conditions. This type of reception is unpredictable but often very interesting!

## Frequency Guide

### National Weather Frequencies

161.650	162.425	162.500	162.550
161.775	162.450	162.525	163.275
162.400	162.475		

### Birdie Frequencies

Birdie are operating frequencies generated and used inside the scanner's receiver. These operating frequencies could interfere with broadcasts on the same frequencies and make them difficult or impossible to receive.

If you program one of these frequencies, you hear only noise on that frequency. If the interference is not severe, you might be able to turn SQUELCH clockwise to cut out the birdie. The most common birdies to watch for are:

44.5450	178.1800	267.2750	473.3000	781.2000
84.8800	190.0000	284.1750	474.9000	801.8000
89.1000	214.1400	311.8125	486.1000	908.6250
102.9000	215.2000	317.2000	487.7000	910.6250
127.7500	222.725	356.3625	495.7500	912.6250
128.5500	225.900	400.9000	497.3500	
133.6500	244.800	445.4500	504.3000	
151.0250	259.075	460.5000	505.9000	
158.2500	267.2625	462.1000	512.0000	

To find your specific scanner's birdies, begin by disconnecting the antenna

and moving it away from the receiver. Make sure that no other nearby radio or TV sets are tuned on. Use the search function and scan every frequency band from its lowest frequency to the highest. Occasionally, the searching will stop as if it has found a signal, often without any sound. That is a birdie. Make a list of all the birdies in your particular scanner for future reference.

## GUIDE TO THE ACTION BANDS

### United States Broadcast Bands

In the United States, there are several broadcast bands. The standard AM and FM bands are probably the most well known. There are also four television audio broadcasts bands - the lower three transmit on the VHF band and the fourth transmits on the UHF band.

### Typical Band Usage

#### VHF Band (30.0-300.0 MHz)

Low Range	30.00-50.00 MHz
6-Meter Amateur	50.00-54.00 MHz
FM-TV	54.00-72.00 MHz
Land Mobile	72.00-76.00 MHz
FM-TV	76.00-88.00 MHz
FM Radio	88.00-108.00 MHz
Aircraft	108.00-136.975 MHz
U. S. Government	137.00-144.000 MHz
2-Meter Amateur	144.00-148.000 MHz
High Range	148.00-174.000 MHz
FM-TV, VHF Wide	174.00-216.000 MHz
New Mobile, 1 1/4 Meter Amateur	216.00-224.000 MHz

#### UHF Band (300.00 MHz-3.0 GHz)

Military Aircraft	319.00-384.000 MHz
U. S. Government	406.00-420.000 MHz
70 cm Amateur	450.00-470.000 MHz
Low Range	450.00-470.000 MHz
FM-TV Audio Broadcast, Wide Band	470.00-512.000 MHz
800 Band Law Enforcement	806.00-824.000 MHz
Conventional Systems	851.00-856.000 MHz
Trunked Systems	856.00-866.000 MHz

Public Safety 866.00-869.000 MHz

Trunked Private/General 894.00-999.9875 MHz

#### Primary Usage

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

#### VHF Band

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

#### UHF Band

Activities	Frequencies
Land-Mobile Paired Frequencies	450.000-470.000 MHz
Base Station	451.025-459.950 MHz
Mobile Units	456.025-459.950 MHz
Relay/Repeater Units	460.025-464.975 MHz
Remote/Control Station	465.025-469.975 MHz

NOTE: Base stations and repeater units operate at 5 MHz lower than their associated mobile units and control stations.

#### Specified Intervals

Frequencies in different bands are accessible only at specific intervals.

For example:

Band Type	Specified Interval
VHF (Lo and Hi), HAM, and Government	5.0 or 50.0 kHz steps
All Others	12.5 kHz steps
Aircraft	25.0 kHz steps
FM Broadcast	50.0 kHz steps

NOTE: Your scanner rounds down the entered frequency to the nearest valid frequency. For example, if you try to enter 151.473, the scanner accepts it as 151.470.

#### Band Allocation

To help decide which frequency ranges to scan, use the following listing of the typical services that use the frequencies your scanner receives. These frequencies are subject to change, and might vary from area to area.

For a more complete listing, refer to the "Police Call Guide Including Fire and Emergency Services," available at your local Radio Shack store.

Abbreviations

AIR.....Aircraft  
BIFC.....Boise (ID) Interagency  
                    Fire Cache  
BUS.....Business  
CAP.....Civil Air Patrol  
CB.....Citizens Band  
CSB.....Conventional Systems  
CTSB.....Conventional/Trunked System  
FIRE.....Fire Department  
HAM.....Amateur (Ham) Radio  
GOVT.....Federal Government  
GMR.....General Mobile Radio  
GTR.....General Trunked  
IND.....Industrial Services  
                    (Manufacturing, Constructions,  
                    Farming, Forest Products)  
MAR.....Military Amateur Radio  
MARI.....Maritime Limited Coast  
                    (Coast Guard, Marine telephone,  
                    Shipboard Radio, Private stations)  
MARS.....Military Affiliate  
                    Radio System  
MED.....Emergency/Medical Services  
MIL.....U.S. Military  
MOV.....Motion Picture/Video Industry  
NEW.....New Mobile Narrow  
NEWS.....Relay Press  
                    (Newspaper reporters)  
OIL.....Oil/Petroleum Industry  
POL.....Police Department  
PUB.....Public Services  
                    (Public Safety, Local Government  
                    Forestry Conservation  
PSB.....Public Safety



39.020-39.980.....PUB  
 40.000-42.000.....GOVT, MIL, MARI  
 42.020-42.940.....POL  
 42.960-43.180.....IND  
 43.220-43.680.....TELM, IND, PUB  
 43.700-44.600.....TRAN  
 44.620-46.580.....POL, PUB  
 46.600-46.990.....GOVT, TELC  
 47.020-47.400.....PUB  
 47.420.....American Red Cross  
 47.440-49.580.....IND, PUB  
 49.610-49.990.....MIL, TELC

6-Meter Amateur Band-  
 (50-54 MHz)

50.00-54.00.....HAM

Aircraft Band (108-136 MHz)

108.000-121.490.....AIR  
 121.500.....Air Emergency  
 121.510-136.975.....AIR

U.S. Government Band  
 (137-144 MHz)

137.000-144.000.....GOVT, MIL

2-Meter Amateur Band

(144-148 MHz)

144.000-148.000.....HAM

VHF-Hi BAND (148-174 MHz)

148.050-150.345.....CAP, MAR, MIL  
 150.775-150.790.....MED  
 150.815-150.965.....TOW  
 150.980.....Oil Spill Cleanup  
 150.995-151.130.....ROAD  
 151.145-151.475.....POL  
 151.490-151.955.....IND, BUS

151.985.....TELM  
152.0075.....MED  
152.030-152.240.....TELB  
152.270-152.465.....IND. TAXI  
152.480.....BUS  
152.510-152.840.....TELB  
152.870-153.020.....IND, MOV  
153.035-153.725.....IND, OIL, UTIL  
153.740-154.445.....PUB, FIRE  
154.490-154.570.....IND, BUS  
154.585.....Oil Spill Cleanup  
154.600-154.624.....BUS  
154.655-156.240.....MED, ROAD  
POL, PUB  
156.255.....OIL  
156.275-157.425.....MARI  
157.450.....MED  
157.470-157.515.....TOW  
157.530-157.725.....IND, TAXI  
157.740.....BUS  
157.770-158.100.....TELB  
158.130-158.460.....BUS, IND OIL  
TELM, UTIL  
158.490-158.700.....TELB  
158.730-159.465.....POL, PUB,  
ROAD  
159.480.....OIL  
159.495-161.565.....TRAN  
161.580.....OIL  
161.600-162.000.....MARI, RTV  
162.0125-162.35.....GOVT, MIL, USXX  
162.400-162.550.....WTHR  
162.5625-162.6375.....GOVT, MIL,  
USXX

162.6625.....MED

162.6875-163.225.....GOVT, MIL,  
USXX

163.250.....MED

163.275-166.225.....GOVT, MIL,  
USXXS

166.250.....GOVT, RTV, FIRE

166.275-169.400.....GOVT, BIFC

169.445.....Wireless Mikes

169.500.....GOVT

169.505.....Wireless Mikes

169.55-169.9875.....GOVT, RTV,  
USXX

170.000.....BIFC

170.025-170.150.....GOVT, RTV,  
FIRE

170.175-170.225.....GOVT

170.245-170.305.....Wireless Mikes

170.350-170.400.....GOVT, MIL

170.425-170.450.....BIFC

170.475.....PUB

170.4875-173.175.....GOVT, PUB  
Wireless Mikes

173.225-173.375.....MOV, NEWS,  
UTIL

173.3875-173.5375.....MIL

173.5625-173.5875.....MIL  
Medical/Crash Crews

173.60-173.9875.....GOVT

Ultra High Frequency (UHF)-  
(300 MHz-3 GHz)

Military Aircraft Band  
(319.1-383.9 MHz)

380.000-383.900.....Coast Guard

U.S. Government Band  
(406-450 MHz)

406.125-419.975.....GOVT, USXX

70-cm Amateur Band (420-450 MHz)

420.000 - 450.000.....HAM

Low Band (450-470 MHz)

450.050-450.925.....RTV

451.025-452.025.....IND, OIL  
TELM, UTIL

452.0375-453.00.....IND, TAXI  
TRAN TOW, NEWS

453.0125-453.9875.....PUB

454.000.....OIL

454.025-454.975.....TELB

455.050-455.925.....RTV

457.525-457.600.....BUS

458.025-458.175.....MED

460.0125-460.6375.....FIRE, POL,  
PUB

460.650-462.175.....BUS

462.1875-462.450.....BUS, IND

462.4625-462.525.....IND, OIL,  
TELM, UTIL

462.550-462.725.....GMR

462.750-462.925.....BUS

462.9375-463.1875.....MED

463.200-467.925.....BUS

FM-TV Audio Broadcast, UHF Wide Band (470-512 MHz)

(Channels 14 through 69 MHz steps)

475.750.....Channels 14

481.750.....Channels 15

487.750.....Channels 16

493.750.....Channels 17

499.750.....Channels 18

505.750.....Channels 19

511.750.....Channels 20

NOTE: Some cities use the 470-512 MHz band for land/mobil service.

Conventional Systems Band-  
Locally Assigned

806.0000-855.9875.....CSB

Conventional/Trunked Systems Band-  
Locally Assigned

856.0125-860.9875.....CTSB

Trunked Systems Band -  
Locally Assigned

861.0125-865.9875.....TSB

Public Safety Band -  
Locally Assigned

866.0125-868.9875.....PSB

Private Trunked

894.0000-934.9875.....PTR

935.0000-939.9875.....PTR

General Trunked

940.0125-940.9875.....GTR

FREQUENCY CONVERSION

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

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

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

30.62 MHz x 1000 = 30620 kHz

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

127,800 kHz  
----- = 127.8 MHz  
1000

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

300  
----- = 1.75 meter  
171 MHz

(LB/all-05/24/95)

Pro-60 (200-0309)

Troubleshooting

Faxback Doc. # 15356

Your PRO-60 Programmable Scanner should require very little maintenance. If you have problems, refer to this chart for possible solutions. If you cannot solve the problem, contact your local Radio Shack store for assistance.

Problem	Probable Cause	Solution
Scanner is totally inoperative.	The batteries are dead.	Replace the batteries with

		fresh ones or recharge them.
	The optional AC or DC power adapter is not connected.	Be sure the adapter is fully inserted into the PWR (or CHG) jack.
The scanner's display blinks and the scanner sounds a tone.	The batteries are weak.	Replace the batteries with fresh ones or recharge them.
	The AC or DC adapter used does not provide the required 9 Volts DC.	Be sure the adapter is set to provide no less than 9 VDC.
Poor or no reception.	Improperly connected antenna.	Be sure the antenna is properly connected.
	Programmed frequencies are the same as Birdie frequencies.	Avoid programming frequencies listed under "Birdie Frequencies," or only select them manually.
ERROR appears on the display.	Programming error.	Reprogram the frequency correctly.
Keypad does not work.	The keylock function is activated.	Set KEYLOCK to the left (unlock position).
Keys do not work or display changes at random.	Undetermined error.	Reset the scanner (see "Resetting the Scanner").
Scanner is on but will not scan.	The SQUELCH control is not correctly adjusted.	Adjust the SQUELCH control clock-wise (see "Setting the Volume and Squelch").

## Care and Maintenance

The Radio Shack PRO-60 Programming Scanner is an example of superior design and craftsmanship. The following suggestions will help you care for your scanner so you can enjoy it for years.

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

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

Handle the scanner gently and carefully. Dropping it can damage circuit boards and cases and can cause the scanner to work improperly.

Use and store the scanner only in normal temperature environments. Temperature extremes can shorten the life of electronic devices, damage batteries, and distort or melt plastic parts.

Keep the scanner away from dust and dirt, which can cause premature wear of parts.

Wipe the scanner with a damp cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the scanner.

Modifying or tampering with your scanner's internal components can cause a malfunction and might invalidate the scanner's warranty and void your FCC authorization to operate it. If your scanner is not operating as it should, take it to your local Radio Shack store for assistance.

## Specifications

### Frequency Coverage:

30.0-87.4950 MHz (in 5 kHz steps)  
87.5-107.9500 MHz (in 50 kHz steps)  
108.0-136.9750 MHz (in 25 kHz steps)  
137.0-224.9950 MHz (in 5 kHz steps)  
225.0-399.9875 MHz (in 12.5 kHz steps)  
400.0-512.0000 MHz (in 12.5 kHz steps)  
760.0-824.0000 MHz (in 12.5 MHz steps)  
849.0-869.0000 MHz (in 12.5 kHz steps)  
894.0-999.9875 MHz (in 12.5 kHz steps)

Total Channels:.....210 (20 channels x 10 banks)  
(10 monitor channels)

### Sensitivity:

(FM 20 dB (S+N)/N at 3 kHz deviation):

30-512 MHz:.....1 microV  
760-999.9875 MHz:.....1 microV

(AM 20 dB (S+N)/N at 60 % modulation):

30-512 MHz:.....2 microV  
760-999.9875 MHz:.....2 microV

(WFM 30 dB (S+N)/N at 45 kHz deviation):

30-512 MHz:.....3 microV  
760-999.9875 MHz:.....3 microV

Spurious Rejection: (FM at 328 MHz):.....40 dB

Selectivity:

(FM/AM):

+/-10 kHz, .....-6 dB  
+/-15 kHz, .....-30 dB

(WFM):

+/-100 kHz, .....-6 dB  
+/-200 kHz, .....-50 dB

IF Rejection Ratio:

611.2 MHz at 512 MHz: .....50 dB

Scanning Rate: .....25 channels/sec.  
Search Rate: .....50 steps/sec.  
Priority Sampling: .....2 seconds  
Delay Time: .....2 seconds  
Audio Output Power: .....10% THD 180 mW

IF Frequencies:

1st: .....608.005-611.2 MHz  
2nd: .....45 MHz  
3rd (WFM): .....10.7 MHz  
3rd (FM/AM): .....455 kHz

Squelch Sensitivity:

Threshold (FM/AM): .....Less than 0.5 microV  
Threshold (WFM): .....Less than 3 microV  
Tight (FM/AM): .....(S+N)/N 25 dB  
Tight (WFM): .....(S+N)/N 40 dB

Antenna Impedance: .....50 ohms  
Built-in Speaker: .....1 3/8" (36 mm) 8 ohm, dynamic  
Power Requirement: .....+9 VDC, 6AA Batteries  
or a suitable adapter (negative ground only)

Current Drain (Squelched): .....100 mA  
Operating Temperature: .....+ 14 degrees F to + 140 degrees F  
(-10 degrees C to +60 degrees C)

Residual Noise: .....Volume control, set to its minimum,  
squelled 3 - 5 mV

Channels of Operation: .....Any 200 channels in any band combination

Channels, frequency, and mode display: .....Liquid Crystal Display

Receiving System: .....Direct key entry digital-control synthesizer  
1st IF: 608.005 - 611.2 MHz  
2nd IF: 45 MHz  
3rd IF: 10.7 MHz (WFM), 455 KHz (NFM/AM)

Power Source: .....9VDC negative ground only  
6 AA batteries or a suitable adapter

Jacks: .....Antenna, earphone, external power and charge

Receiving System: .....Direct key entry digital-control synthesizer  
1st IF: 608.005-611.2 MHz  
2nd IF: 45 MHz  
3rd IF: 10.7 MHz (WFM), 455 kHz (NFM/AM)

Dimensions: .....6 5/16 x 2 7/16 x 2 1/8 inches (HWD)  
(160 x 62 x 54 mm)

Weight (without antenna and batteries): .....Approx. 8.8 oz.  
(250 g)

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

# PRO-Series Direct Entry Programmable Scanners

## General Guide To Scanning

### Birdies

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

If the interference is not severe, you might be able to turn SQUELCH clockwise to cut out the birdie. The most common birdies to watch for are listed below.

### Birdie Frequencies:

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

### Reception Notes

Reception of the frequencies covered by your scanner is mainly "line of sight". That means you usually cannot hear stations that are beyond the horizon. During the summer months you may be able to hear stations in the 30-50 MHz range located several hundred or even thousand of miles away. This is because of summer atmospheric conditions. This type of reception is unpredictable but often very interesting!

One very useful service is the National Weather Service's continuous weather broadcast. These broadcasts contain weather forecasts and data for the areas around the station, plus bulletins on any threatening weather conditions. These stations use three frequencies - 162.40, 162.475 or 162.55 MHz. In most areas of the country, you can receive one of these frequencies.

### A Guide To The Action Bands

With the right frequencies programmed into your PRO-Series Scanner, you can monitor exciting events. With a little investigation, you can find active frequencies in your community. We can give you some general pointers, and you can take it from there. Please use caution and common sense when you hear an emergency call. Never go to the scene of an emergency. It could be very dangerous.

Find out if there is a local club that monitors your community's frequencies. Perhaps a local electronics repair shop that works on equipment similar to your scanner can give you frequencies used by local radio services.

A volunteer police department or fire department can also be a good source for this information.

As a general rule on VHF, most activity is concentrated between 153.785 and 155.98 MHz and then again from 158.73 to 159.46 MHz. Here you find local government, police, fire and most such emergency services. If you are near a railroad yard or major railroad tracks, look around 160.0 to 161.9 MHz for signals.

In some larger cities, there has been a move to the UHF bands for

emergency service. Here, most of the activity is between 453.025 and 453.95 MHz and between 456.025 and 467.925 MHz.

In the UHF band, frequencies between 456.025 and 459.95 MHz and between 465.025 and 469.975 MHz are used by mobile units and control stations associated with base and repeater units that operate 5 MHz lower (that is, 451.025 to 454.950 and 460.025 to 464.975 MHz). This means that if you find an active frequency inside one of these spreads, you can look 5 MHz lower (or higher) to find the base station/repeater for that service.

### Typical Band Usage

The following is a brief listing of the typical services that use the bands your scanner can receive. This listing helps you decide which ranges you would like to scan.

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

### Abbreviations:

Affiliate Radio System: .....	Mars
Amateur: .....	Ham
Automobile Emergency: .....	Auto Emer.
Broadcast Remote: .....	BC.R
Bureau of Reclamation: .....	Bur.Recl.
Civil Air Patrol: .....	CAP
Department of Agriculture and Forestry: .....	Agr. And For.
Fire Department: .....	F.D.
Forest Products: .....	For.Prod.
Forestry Conservation: .....	Fors.Cons.
Government: .....	Govt.
Highway Maintenance: .....	Hwy.
Land Transportation: .....	Land Tr.
Local Government: .....	L.Govt.
Manufacturers: .....	Mfg.
Military: .....	MIL
Mobile Telephone : .....	Mob.Tel.
Motion Picture: .....	Mot.P.
Motor Carrier: .....	Buses.Trucks
National Parks: .....	Nat.Park
Petroleum: .....	Pet.
Police: .....	P.D.
Power Utilities: .....	Power
Radio Paging: .....	Page
Railroad: .....	R.R.
Relay Press: .....	Press
State Police: .....	St.P.D.
Special Emergency: .....	Sp.Emer.
Special Industry: .....	Sp.Ind.
Taxicab Radio: .....	Taxi
Telephone Maintenance: .....	Tel.Maint.
U.S. Coastal and Geodetic Survey: .....	U.S.C.G.S.
U.S. Navy: .....	USN
U.S. Weather Bureau: .....	U.S.W.B.

**ATTENTION:** Your scanner may not be able to receive all frequencies and/or modes of reception that are contained within this document. For complete information of your scanner's capabilities, be sure to read your owner's manual completely.

National Weather Frequencies:

- |            |            |             |
|------------|------------|-------------|
| 1) 161.650 | 5) 162.440 | 9) 162.525  |
| 2) 161.775 | 6) 162.450 | 10) 162.550 |
| 3) 162.400 | 7) 162.475 | 11) 163.275 |
| 4) 162.425 | 8) 162.500 |             |

Ham Radio Frequencies

Ham operators often transmit emergency information when other communication methods break down. The following chart shows some of the frequencies that Hams use.

Wavelength (Meters)	Frequency (MHz)
10-meter	28.000-29.700
6-meter	50.000-54.000
2-meter	144.000-148.000
70-cm	420.000-450.000

The following are the channels and frequencies of the Citizens Band:

- |            |            |
|------------|------------|
| 1) 26.965  | 21) 27.215 |
| 2) 26.975  | 22) 27.225 |
| 3) 26.985  | 23) 27.255 |
| 4) 27.005  | 24) 27.235 |
| 5) 27.015  | 25) 27.245 |
| 6) 27.025  | 26) 27.265 |
| 7) 27.035  | 27) 27.275 |
| 8) 27.055  | 28) 27.285 |
| 9) 27.065  | 29) 27.295 |
| 10) 27.075 | 30) 27.305 |
| 11) 27.085 | 31) 27.315 |
| 12) 27.105 | 32) 27.325 |
| 13) 27.115 | 33) 27.335 |
| 14) 27.125 | 34) 27.345 |
| 15) 27.135 | 35) 27.355 |
| 16) 27.155 | 36) 27.365 |
| 17) 27.165 | 37) 27.375 |
| 18) 27.175 | 38) 27.385 |
| 19) 27.185 | 39) 27.395 |
| 20) 27.205 | 40) 27.405 |

Guide To The Action Bands

United States Broadcast Bands

In the United States, there are several broadcast bands. The standard AM and FM bands are probably the most well known. There are also four television audio broadcast bands-the lower three transmit on the VHF band and the fourth transmits on the UHF band.

Frequency Range	Allocation
54.0 - 72.0 MHz .....	VHF Television
76.0 - 88.0 MHz .....	VHF Television
88.0 - 108.0 MHz .....	Standard FM
174.0 - 216.0 MHz .....	VHF Television
470.0 - 805.75 MHz .....	UHF Television

International Broadcast Bands

Several short-wave bands are allocated for international broadcasting because of the nature of propagation of high frequencies. The bands are sometimes identified according to the approximate wavelength of the signals in meters. Your scanner may receive the 11-meter band, from 25.6 - 26.10 MHz.

#### Typical Band Usage

##### HF Band (3.0 - 30.0 MHz):

Mid Range: .....	25.00 - 28.63 MHz
10-Meter Amateur Band: .....	28.00 - 29.70 MHz
High Range: .....	29.70 - 29.90 MHz

##### VHF Band (30.00 - 300.0 MHz):

Low range: .....	30.00 - 50.00 MHz
6-Meter Amateur: .....	50.00 - 54.00 MHz
FM-TV Audio Broadcast, Wide Band: .....	54.00 - 72.00 MHz
FM Radio Broadcast, Wide Band: .....	88.00 - 108.00 MHz
Aircraft: .....	108.00 - 136.00 MHz
U.S. Government: .....	138.00 - 144.00 MHz
2-Meter Amateur: .....	144.00 - 148.00 MHz
High Range: .....	148.00 - 174.00 MHz
New Mobile Narrow Band: .....	220.00 - 222.00 MHz
1.3-Meter Amateur: .....	222.00 - 225.00 MHz
Military Aircraft: .....	225.00 - 287.80 MHz

##### UHF Band (300.00 MHz - 3.0 GHz):

Military Aircraft: .....	311.00 - 384.00 MHz
U.S. Government: .....	406.00 - 470.00 MHz
0.6-Meter Amateur: .....	420.00 - 450.00 MHz
Low Range: .....	450.00 - 470.00 MHz
FM-TV Audio Broadcast, Wide Band: .....	470.00 - 806.00 MHz
Conventional Systems: .....	851.00 - 856.00 MHz
Conventional/Trunked Systems: .....	856.00 - 861.00 MHz
Trunked Systems: .....	861.00 - 866.00 MHz
Public Safety: .....	866.00 - 869.00 MHz
Common Carrier: .....	869.00 - 894.00 MHz
Private Trunked: .....	935.00 - 940.00 MHz
General Trunked: .....	940.00 - 941.00 MHz

#### Primary Usage:

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

##### VHF Band:

2-Meter Amateur Band: .....	144.000 - 148.000 MHz
Government, police, and Fire: .....	153.785 - 155.980 MHz
Emergency Services: .....	158.730 - 159.460 MHz
Railroad: .....	160.000 - 161.900 MHz

##### UHF Band:

.6 cm Amateur Band FM Repeaters: .....	440.000 - 450.000 MHz
Land Mobile "Paired" Frequencies: .....	450.000 - 470.000 MHz
Base Stations: .....	451.025 - 454.950 MHz
Mobile Units: .....	456.025 - 459.950 MHz
Repeater Units: .....	460.025 - 464.975 MHz

Control Stations: ..... 465.025 - 469.975 MHz

NOTE: UHF remote control stations and mobile units typically operate at 5 MHz higher than their associated base and relay repeater units.

### Specified Intervals

Frequencies in different bands are accessible only at specific intervals.

For Example:

VHF, HAM, and Government: ..... 5.0 kHz steps  
All Others: ..... 12.5 kHz steps  
Aircraft: ..... 25.0 kHz steps

Note: Your scanner rounds the entered frequency to the nearest valid frequency. For example, if you try to enter 151.473, the scanner might accept this as 151.470.

### Band Allocation

To help you decide which frequency ranges to search, use the following listing of the typical services that use the frequencies your scanner receives. These frequencies are subject to change, and might vary from area to area. For a more complete listing, refer to the "Police-Call Radio Guide including Fire and Emergency Services", as well as "Beyond Police Call", "Aeronautical Directory", "Nautical Directory" and "Now you're Talking" texts available at your local RadioShack store.

### Abbreviations

AIR: ..... Aircraft  
BIFC: ..... Boise (ID) Interagency Fire Cache  
BUS: ..... Business  
CAP: ..... Civil Air Patrol  
CB: ..... Citizens Band  
CCA: ..... Common Carrier  
CSB: ..... Conventional Systems  
CTSB: ..... Conventional/Trunked Systems  
FIRE: ..... Fire Department  
HAM: ..... Amateur (HAM) Radio  
GOVT: ..... Federal Government  
GMR: ..... General Mobile Radio  
GTR: ..... General Trunked  
IND: ..... Industrial Services  
MARI: ..... Maritime Limited Coast  
MARS: ..... Military Affiliate Radio System  
MED: ..... Emergency/Medical Services  
MIL: ..... U.S. Military  
MOV: ..... Motion Picture/Video Industry  
NEW: ..... New Mobile Narrow  
NEWS: ..... Relay Press  
OIL: ..... Oil/Petroleum Industry  
POL: ..... Police Department  
PUB: ..... Public Services  
PSB: ..... Public Safety  
PTR: ..... Private Trunked  
ROAD: ..... Road & Highway Maintenance  
RTV: ..... Radio/TV Remote Broadcast Pickup  
TAXI: ..... Taxi Services  
TELBL: ..... Mobile Telephone  
TELC: ..... Cordless Telephones  
TELM: ..... Telephone Maintenance

TOW: ..... Tow Trucks  
TRAN: ..... Transportation Services  
TSB: ..... Trunked Systems  
TVn: ..... FM-TV Audio Broadcast  
USXX: ..... Government Classified  
UTIL: ..... Power & Water Utilities  
WTHR: ..... Weather

High Frequency (HF)-(3 - 30 MHz):  
High Band - (25.00 - 27.36 MHz):

25.020 - 25.320: ..... IND  
25.870 - 26.470: ..... RTV  
26.62: ..... CAP  
26.966 - 27.405: ..... CB  
27.430 - 27.630: ..... BUS

10-Meter Amateur Band - (28.0 - 29.7 MHz):

28.000 - 29.700: ..... HAM

Very High Frequency (VHF) - (30 - 300 MHz):

Low Band - (29.7 - 50 MHz - in 5 kHz steps):

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

6-METER Amateur Band (50-54 MHz):

50.00 - 54.00: ..... HAM

FM-TV Audio Broadcast, Wide Band (54-72 MHz):

59.750: ..... TV2  
65.750: ..... TV3  
71.750: ..... TV4

Land Mobile Service Band (72-76 MHz):

FM-TV Audio Broadcast, Wide Band (76-88 MHz):

81.750: ..... TV5  
87.750: ..... TV6

FM Radio Broadcast, Wide Band (88-108 MHz):

Aircraft Band (108-136 MHz):

108.000 - 121.490: ..... AIR  
121.500: ..... AIR emergency  
121.510 - 136.000: ..... AIR

U.S. GOVERNMENT BAND (138-144 MHz):

137.000 - 144.000: ..... GOVT, MIL

VHF-Hi BAND (148-174 MHz):

148.050 - 150.345: ..... CAP, MARS, MIL  
150.775 - 150.790: ..... MED  
150.815 - 150.965: ..... TOW  
150.980: ..... Oil spill clean up  
150.995 - 151.130: ..... ROAD  
151.145 - 151.475: ..... POL  
151.490 - 151.955: ..... IND, BUS  
151.985: ..... TELM  
152.030 - 152.240: ..... TELB  
152.270 - 152.465: ..... IND, TAXI  
152.480: ..... BUS  
152.510 - 152.840: ..... TELB  
152.870 - 153.020: ..... IND, MOV  
153.035 - 153.175: ..... IND, OIL, UTIL  
153.740 - 154.445: ..... PUB, FIRE  
154.490 - 154.570: ..... IND, BUS  
154.585: ..... Oil spill clean up  
154.600 - 154.625: ..... BUS  
154.665 - 156.240: ..... MED, ROAD, POL, PUB  
165.255: ..... OIL  
156.275 - 157.425: ..... MARI  
157.450: ..... MED  
157.470 - 157.515: ..... TOW  
157.530 - 157.725: ..... IND, TAXI  
157.740: ..... BUS  
157.770 - 158.100: ..... TELB  
158.130 - 158.460: ..... BUS, IND, OIL, TELM, UTIL  
158.490 - 158.700: ..... TELB  
158.730 - 159.465: ..... POL, PUB, ROAD  
159.480: ..... OIL  
159.495 - 161.565: ..... TRAN  
161.580: ..... OIL  
161.600 - 162.000: ..... MARI, RTV  
162.0125 - 162.35: ..... GOVT, MIL, USXX  
162.400 - 162.550: ..... WTHR  
162.5625 - 162.6375: ..... GOVT, MIL, USXX  
162.6625: ..... MED  
162.6875 - 163.225: ..... GOVT, MIL, USXX  
163.250: ..... MED  
163.275 - 166.225: ..... GOVT, MIL, USXX  
166.250: ..... GOVT, RTV, FIRE  
166.275 - 169.400: ..... GOVT, BIFC  
169.445: ..... WIRELESS MIKES  
169.500: ..... GOVT  
169.505: ..... WIRELESS MIKES

169.55 - 169.9875: ..... GOVT, MIL, USXX  
170.000: ..... BIFC  
170.025 - 170.150: ..... GOVT, RTV, FIRE  
170.175 - 170.225: ..... GOVT  
170.245 - 170.305: ..... WIRELESS MIKES  
170.350 - 170.400: ..... GOVT, MIL  
170.425 - 170.450: ..... BIFC  
170.475: ..... PUB  
170.4875 - 173.175: ..... GOVT, PUB, WIRELESS MIKES  
173.225 - 173.375: ..... MOV, NEWS, UTIL  
173.3875 - 178.5375: ..... MIL  
173.5625 - 173.5875: ..... MIL Medical/Crash Crews  
173.60 - 173.9875: ..... GOVT

FM-TV Audio Broadcast, VHF Wide Band (174-216 MHz):

179.750: ..... TV7  
185.750: ..... TV8  
191.750: ..... TV9  
197.750: ..... TV10  
203.750: ..... TV11  
209.750: ..... TV12  
215.750: ..... TV13

New Mobil Narrow Band (220-222 MHz):

220.000 - 222.000: ..... NEW

1.3-Meter Amateur Band (222-225 MHz):

222.000 - 225.000: ..... HAM

MILITARY AIRCRAFT BAND (237.9-287.8 MHz):

237.900: ..... Coast Guard Search & Rescue  
239.800: ..... FAA Weather  
241.000: ..... ARMY  
243.000: ..... EMERGENCY  
255.400: ..... FAA FLIGHT SERVICE  
257.800: ..... CIVILIAN TOWERS  
287.800: ..... Coast Guard Air/Sea  
Rescue

Ultra High Frequency (UHF)-(300 MHz-3 GHz)

Military Aircraft Band (319.1 - 383.9 MHz):

319.100: ..... FAA Traffic Control  
321.000 - 336.600: ..... Air Force  
342.500 - 344.600: ..... FAA Weather  
346.400 - 364.200: ..... Air Force Traffic Control  
381.800 - 383.900: ..... Coast Guard

U.S. Government Band (406-420 MHz):

406.125 - 419.975: ..... GOVT, USXX

70-cm Amateur Band (420-450 MHz):

420.000 - 450.000: ..... HAM

Low Band (450-470 MHz):

450.050 - 450.925: ..... RTV  
 451.025 - 452.025: ..... IND, OIL, TELM, UTIL  
 452.0375 - 453.00: ..... IND, TAXI, TRAN, TOW, NEWS  
 453.0125 - 453.9875: ..... PUB  
 454.000: ..... OIL  
 454.025 - 454.975: ..... TELB  
 455.050 - 455.925: ..... RTV  
 457.525 - 457.600: ..... BUS  
 458.025 - 458.175: ..... MED  
 460.0125 - 460.6375: ..... FIRE, POL, PUB  
 460.650 - 462.175: ..... BUS  
 462.1875 - 462.450: ..... BUS, IND  
 462.4625 - 462.525: ..... IND, OIL, TELM, UTIL  
 462.550 - 462.725: ..... GMR  
 462.750 - 462.925: ..... BUS  
 462.9375 - 463.1875: ..... MED  
 463.200 - 467.925: ..... BUS

FM-TV Audio Broadcast, UHF Wide Band (470-512 MHz):  
 (Channels 14-69 in 6 MHz steps):

475.750: ..... Channel 14  
 481.750: ..... Channel 15  
 487.750: ..... Channel 16  
 805.750: ..... Channel 69

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

Conventional Systems Band - Locally Assigned

851.0125 - 855.9875: ..... CSB

Conventional/Trunked Systems Band - Locally Assigned

856.0125 - 860.9875: ..... CTSB

Trunked Systems Band - Locally Assigned

861.0125 - 865.9875: ..... TSB

Public Safety Band - Locally Assigned

866.0125 - 868.9875: ..... PSB

Common Carrier

869.010 - 894.000: ..... CCA

Private Trunked

935.0125 - 939.9875: ..... PTR

General Trunked

940.0125 - 940.9875: ..... GTR

Frequency Conversion

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

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

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

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

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

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

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

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

#### A Note on Image Reception

Radios work by simple mathematics. For example, most tune to a frequency by mixing that frequency with another (local oscillator) frequency which is slightly different. This mixing process primarily gives us the two original frequencies, their sum, and their difference. Well, the radio's Intermediate Frequency (I.F.) filter normally passes either the sum or difference frequency, and this is then processed into the sound we hear. Because nothing is perfect, certain "harmonics" will also get through if they are strong enough. For example, if a radio's I.F. is 10.7 MHz, we might be able to tune to a frequency 21.4 MHz (2 x I.F.) above (or below, depending on the radio's design) a strong signal and hear it! This is more evident in a double-conversion radio than a triple-conversion radio, because the triple-conversion radio's 1st intermediate frequency is quite high. This causes the image to be so far off frequency that it is easy to effectively filter it out.

So remember that just because a radio doesn't receive something which another does is not necessarily an indication of a problem. The one radio may simply not be "tricked" into picking up an image! This rejection of undesired signals is one reason that a triple-conversion receiver costs more than a similar dual-conversion model.

You might be interested in finding more out about radio. One good location to start looking is your local public library. You might also wish to contact the A.R.R.L., as they are an excellent source of informative texts on the subject.

#### Contact:

Amateur Radio Relay League  
225 Main St.,  
Newington, CT 06111-1494  
USA

#### PRO60 200CH PORT SCANNER

To order parts call 1-800-843-7422 or visit your local RadioShack store.

Reference #	Cat.No.	Description	NP Part #
	11318532	DIODE 1N4002 RECT 600V.1A	1N4002
Q115	10511228	XSTR 2SC2712 SI NPN LO PW	1TD0011
Q305	10513117	XSTR 2SC4215(0) SI HI FRE	1TD0432
	10513117	CASE STYLE SC70	1TD0432
Q116	10514107	XSTR 2SK209GR FET N-CH	1TD0553

		10514107	FIELD EFFECT TRANSISTOR	1TD0553
Q104 Q105 Q106 Q107		10514404	XSTR 2SC4226(R24) SI NPN	1TD0585
Q108 Q109 Q110 Q112		10514404		1TD0585
Q308 Q309 Q310		10516847	XSTR DTC363EK PRE-BIASED	1TD0832
		10516847	CASE STYLE SC-70	1TD0832
Q304 Q101		10516854	XSTR DTA143ZUA PNP	1TD0833
		10516854	CASE STYLE SC70	1TD0833
Q114		10516870	XSTR DTC114YUA SI PRE-BIA	1TD0835
Q302 Q303 Q306 Q1 Q111		10516870	CASE STYLE SC70	1TD0835
Q102 Q103		11271541	XSTR UMA9N MARKED A9 PNP	1TD0858
Q307 Q311		11449626	XSTR 2SC4116 SI LO PWR AM	1TD0885
		11449626	CASE STYLE SC70	1TD0885
Q301		11451762	XSTR 2SC4116Y SI LO PWR A	1TD0886
		11451762	NPN SC70 CASE STYLE	1TD0886
		10539476	ANTENNA,RUBBER 15.8CM	A0337
			USE B2300873PK	B2300557PK
IC304		11433455	IC,BA10358FT1 8 PIN	BA10358FT1
		11433455	MOUNT BIPOLAR	BA10358FT1
TC101		10554343	CAP,TRIMMER 6PF	C0083
TC102		10554392	CAP,TRIMMER 30PF	C0106
L119 L125		10559532	COIL,BAND PASS FILTER	CA1219
L303		10562445	COIL,CHOKE 5 PIN 100UH	CA3134
L304 L129 L130		10562544	COIL,CHOKE/EMISUPPRESSION	CA3167
L116 L126		10563625	COIL,BAND PASS FILTER	CA3683
L301 L101		10563633	COIL,CHOKE 1UH	CA3684
L120		10563658	COIL,RADIO FREQUENCY	CA3691
T102 T103		10563666	COIL,INTERMEDIATE	CA3692
		10563666	FREQUENCY	CA3692
T101		10563674	COIL,FILTER HELICAL	CA3693
XF301		11272325	FILTER,CRYSTAL 45MHZ	CB0512
L1		10569903	FILTER,ELECTROMAGNETIC	CB0543
		10569903		CB0543
CF301		10570166	FILTER,CERAMIC 455KHZ	CB0600
X301		11272739	CRYSTAL,44.545MHZ	CX0299
		11272739	SMALL	CX0299
X302		11272747	CRYSTAL,34.3MHZ	CX0318
		11272747	34.300 LARGE	CX0318
X101		11272754	CRYSTAL,12.8MHZ	CX0319
CX1		10596146	RESONATOR,CERAMIC 4.19MHZ	CX1198
		10873859	CASE STYLE 24 PIN SMD	CX20111
		10610822	COVER,BATTERY	DB1011
		10617611	DIODE MA121 SI 6 PIN	DD0118
D116 D117 D118 D119		10617728	DIODE HVU306A5 SI	DD0170
D121		10617736	DIODE HVU308-1 VAR SI	DD0171
D3		10617744	DIODE SC 1SS272 4 PIN	DD0173
D1 D2		10617983	USE DD0118	DD0206
		10617983	CASE STYLE S06 SILICON	DD0206
D101 D106 D113 D114		10618445	DIODE HSM2693A SI	DD0255
D115		10618627	DIODE SK BARRIER SI	DD0274
		10618627		DD0274
D120		10619260	DIODE VAR HVU12-3 SILICON	DD0340
		10619286	USE DX0114	DD0342
D103 D104 D105 D107		11273612	DIODE HSU277TRF SI FAST R	DX0114
D108 D109 D110 D111		11273612		DX0114
D112 D302 D303 D306		11273612		DX0114
D102		11273612		DX0114
		10622298	REPLACED BY 1N4002	DX0206
D301 D304 D305		10625317	DIODE DA227 MULTI ARRAY	DX1385
		10625317	ARRAY	DX1385
		10657013	HOLDER,BATTERY CASE	HB1081
		11274453	REFLECTOR,LCD	HC1101
		11454378	CAP,CHARGE JACK RUBBER	HC2026
12		11840253	INTERCONNECTOR,LCD	HJ90042

	11274966	CLIP,BELT (FOR SCREWS 117	HL0256
	11275179	SCREW 3X5 BH QTY 2	HW2000309
J301	10720209	JACK,ANTENNA	J0085
	10729432	JACK,3.5MM HEADPHONE	J1304
	10729432		J1304
J302 J303	10731495	JACK,POWER/CHARGE	J1811
	10734796	TERMINAL,BATTERY +/-	JA0186
CN301	10746808	CONNECTOR,5 PIN MALE	JE2124
CN302	10746816	CONNECTOR,10 PIN FEMALE	JE2125
CN3	10746824	CONNECTOR,10 PIN MALE	JE2126
CN103	10746832	CONNECTOR,5 PIN FEMALE	JE2127
CN101	10747418	CONNECTOR,(6 PIN MALE)	JE2193
CN303	10747426	CONNECTOR,(2 PIN FEMALE)	JE2194
CN4 CN3	10747442	CONNECTOR,(2 PIN MALE)	JE2196
	11275773	KEYTOP,RUBBER KEYPAD	K2452
	10773398	KNOB,KEY LOCK	K3453
	10784635	KNOB,VOLUME/SQUELCH	K4676
LED1 LED2	10793933	LED	L0467
LCD1	11276219	LCD	L0509
	11276722	MANUAL SERVICE 20-309	MS2000309
	11277647	XEROX COPY	MU2000309
	10873859	SURFACE MOUNT	MX0839
IC304	10879575	USE BA10358FT1	MX1750
	10879575	REPLACED BY BA10358FT1	MX1750
IC305	11279809	IC,TC7W139F BIPOLAR SO 8	MX2010
	11279809	MOUNT	MX2010
IC1	11279817	IC,GRE-9409 8 BIT 80 PIN	MX2011
	11279817	STYLE SURFACE MOUNT	MX2011
IC2 IC3	11279825	IC,XL93LC66RF CMOS MEMO S	MX2041
	11279825	8 PIN	MX2041
IC5	11279833	IC,S80746AL-EA LOW-BATT	MX2050
	11279833	SO T 89/SC62 (S)	MX2050
IC307	10891836	IC,S-81250HG-RD-T	MX3525
	10891836	VOLTAGE REGULATOR	MX3525
	10894061		MX3907
IC301	10905263	IC TA31136FN SO16 S IFAMP	MX6227
	10905263	TYPE 16 PIN	MX6227
IC308	10912517	IC,TK11806M BIPOL DC-DC C	MX7813
	10912517	CASE STYLE SURFACE MOUNT	MX7813
IC309	10914752	IC	MX8048
	10914752	SURFACE MOUNT	MX8048
IC4	10914786	IC,S80737AL-A1 CMOS	MX8051
	10914786	SURFACE MOUNT	MX8051
IC5	10914794	IC,S80744AL-A8 CMOS	MX8052
	10914794	AFTER DATE CODE 3A5	MX8052
IC101	10914802	IC,CXA1356N BIPOLAR	MX8053
	10914802	SURFACE MOUNT	MX8053
IC102	10914810	IC,MB1512PFV-G CMOS	MX8054
	10914810	SURFACE MOUNT	MX8054
IC303	12107181	IC TC74HC4066AFS	MX90643
	12107181	SWITCHING/ZEROMATIC	MX90643
RA1 RA2 RA3 RA6 RA7	10958916	RES,ARRAY 1KX4 1/16W +-5	NY0667
RA8 RA9 RA10	10958916		NY0667
RA5	10958973	RES,ARRAY 470X4 1/16W +-5	NY0673
VR301	10967917	POT ASSY SQUELCH 10KC ROT	P1210
	10967917	NUT 7M/M	P1210
VR302	10983344	POT ASSY,W/SWITCH VOLUME	PC0019
	10983344	NUT 7M/M 50KOHM	PC0019
SW1	11070794	SWITCH,SLIDE KEY LOCK	SA0481
	11083383	SPEAKER,8 OHM 300MW	SP0228
	11085594	USE SP0228	SP0486
	12235875	8ohm 500mw	SP90240
		270-1560	W0000X

	BOARDS.		XB0000X
11282522	DISCRIMINATOR		XB0966
11283645	HIMELON		Z1682
11283652	LABEL MODEL		Z1683
11283660	ESCUTCHEON, TOP		Z1684