ERICSSON

Mobile Communications

PCS™
403-512 MHz
SYNTHESIZED, 16-CHANNEL
SCAN/DTMF PORTABLE RADIO

TABLE OF CONTENTS

Maintenance Manual

TABLE OF CONTENTS

PACKAGE NOMENCLATURE

Digits 1 & 2	Digit 3	Digits 4 & 5	Digit 6
Product Code	Frequency Range	Number of Channels	Package
PC	**3** 403 - 440 MHz	**16** 16 Channels	**S** SCAN
	4 440 - 470 MHz		**D** DTMF
	5 470 - 512 MHz		

SPECIFICATIONS*

FCC FILING DATA

Transmitter/Receiver FCC Identifier	
403-440 MHz	AXA9MZ-PCSU1
440-470MHz	AXA9MZ-PCSU2
470-512 MHz	AXA9MZ-PCSU3
FCC Part Numbers	22, 74, 80, 90, 95

GENERAL

Frequency Range	403-512 MHz
RF Power Range	1-4 Watt
Input Voltage	6.0 to 9.0 Volts
Channel Capacity	16 Channels
Frequency Spread (Full Performance)	
TX	Full Split
RX	20 MHz of Split
Frequency Stability	±5 PPM
Channel Spacing	25 kHz
Dimensions (less antenna) H X W X D	
With 1200 mAh* Battery	7.4 X 2.8 X 1.57 inches (18.8 X 7.11 X 4.0 cm)
With 1700 mAh Battery	8.8 X 2.8 X 1.57 inches (22.35 X 7.11 X 4.0 cm)
Weight	
Radio (less battery)	11 ounces
1200 mAh Battery	9 ounces
1700 mAh Battery	13.5 ounces
Ambient Temperature Range	-30° to +60°C (-22° to +140°F)
Battery Drain (7.5 Vdc)	
Receiver Standby	70 milliamperes
Receiver Full Audio	250 milliamperes
Transmit (@4 Watts)	1.7 amperes
Transmit (@2 Watts)	1.3 amperes

Battery Life (Between Charges)	1200 mAh	1700 mAh
Hi Pwr (5-5-90% duty cycle)	8.0 hours	11.0 hours
Lo Pwr (5-5-90% duty cycle)	9.0 hours	13.0 hours

TRANSMITTER

Power Output	
Hi Power	4 Watts
Lo Power	2 Watts (Adjustable to 1 Watt)
Conducted Spurious	-66 dB (-30 dBm)
Modulation Deviation	±5.0 kHz (maximum)
FM Noise (companion receiver method)	-45 dB
Power Adjust Range	1 to 4 Watts
Distortion	5% (maximum)
Deviation Symmetry	0.1 kHz
RF Load Impedance	50 Ohms
Carrier Attack Time	35 milliseconds
Audio Attach Time	35 milliseconds

RECEIVER

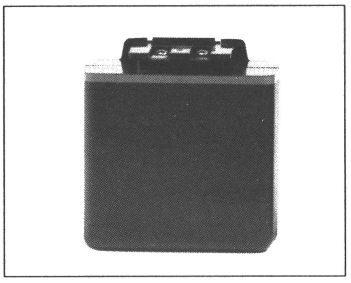
Audio Output (EIA)	0.5 Watts (less than 5% distortion)
Sensitivity	
12 dB SINAD (EIA)	-119 dBm (0.25μ Volts)
Selectivity	
(EIA 2-signal method)	-65 dB @ ±25 kHz
Spurious Response	-70 dB
Intermodulation	-65 dB
Hum and Noise	
Squelched	-80 dB
Unsquelched	-48 dB
Modulation Acceptance	±7 kHz
Frequency Response	Within + 2 dB and -8 dB of a standard 6dB/octave de-emphasis curve from 300 to 3000 Hz (EIA).
RF Input Impedance	50 ohms

*These specifications are intended primarily for use by service personnel. Refer to the appropriate Specification Sheet for complete specifications.

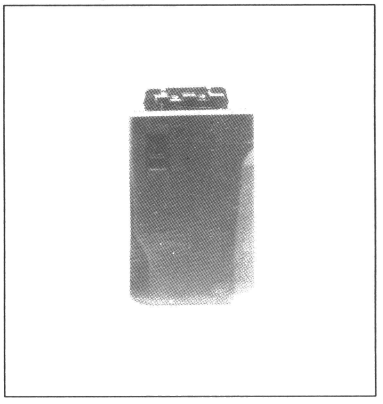
OPTIONS AND ACCESSORIES

BATTERY PACKS

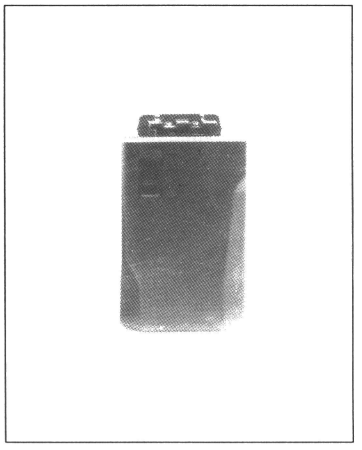
1200mAh
PCPA1J
(19A705293P1)



PCPA1K
(19A705293P2)

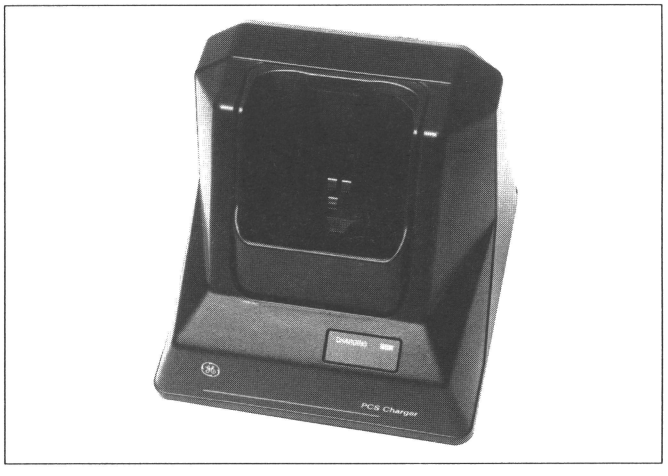


1700 mAh
PCPA1L
(19A705293P3)
Factory Mutual



DESK CHARGERS

Standard
PCPS1E (19A705293P1 60 Hz)
PCPS1F (19A705493P3 50 Hz)

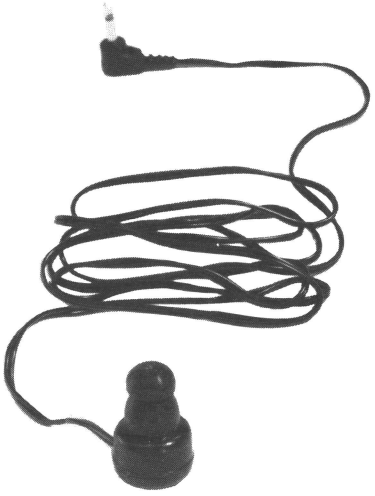


Rapid
PCPS1G (19A705493P2 60 Hz)
PCPS1H (19A705493P4 50 Hz)

ANTENNA (Helical)
PCNC3C 19B801620P1 (403-440 MHz)
PCNC3D 19B801620P2 (440-470 MHz)
PCNC3F 19B801620P3 (470-512 MHz)

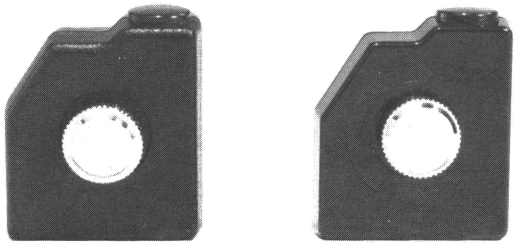
ANTENNA (Flexible Whip)
PCNC3A 19B801621P1 (403-470 MHz)
PCNC3B 19B801621P2 (470-512 MHz)

EARPIECE KIT
PCZM1A (4033570G6)
INCLUDES PCPA1C



SPEAKER MICROPHONE
PCAE1F (19A705581P1)

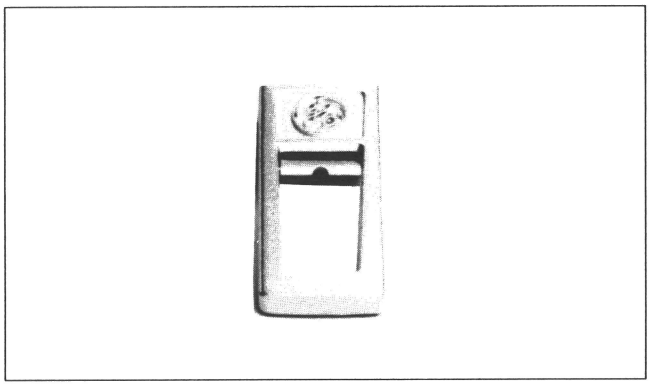
ACCESSORIES CONNECTOR
PCAC1C (19C851752P7)



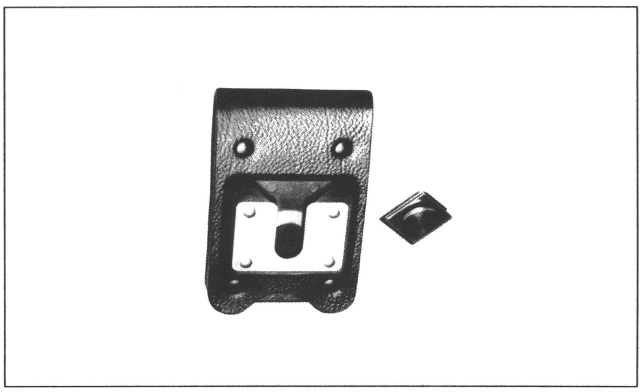
OPTIONS AND ACCESSORIES
(Continued)

CARRYING ACCESSORIES

Belt Clip
PCHC1C
(Option Package 19B233241G1)
(Modification Kit 19A144704G1)



Swivel Plate
PCHC1D
(Belt Loop 19B226627G1)
(Swivel Option 19B233243G1)



CARRYING CASES

PCHC1A
1200 mAh Battery Pack
Full Cover 19D902456P1

PCHC1B
1200 mAh Battery Pack
Retaining Strap 19D902456P2

PCHC3E
1700 mAh Battery Pack
Full Cover 19D902456P3

PCHC3F
1700 mAh Battery Pack
Retaining Strap 19D902456P4

DESCRIPTION

The Ericsson GE PCS™ SCAN/DTMF Portable Radio is a small, ruggedly constructed two-way FM radio, housed in an aluminum and Lexan case. The UHF synthesized radio operates in the 403-512 MHz range, and can be programmed for up to 16 channel operation.

Operating controls for the radio are provided through a rubber keypad on the side and a DTMF keypad on the front. All keypad switches have a good tactile feel, and are sealed to provide weather protection. When turned ON, the radio powers up on the last channel used, and at the last volume setting. The operating controls, UDC connector and battery pack are shown in Figure 1.

All of the PCS SCAN/DTMF radios are equipped with a **U**ser **D**evice **C**onnector (UDC) for connecting external options, and for programming the radios. The radios are programmed using a personal computer and programming interface box that connects to the UDC. The UDC is covered with a rubber cover for improved weather protection.

The PCS uses a BNC antenna connector. The antenna base is overmolded to fit flush against the housing for added weather protection.

The radio battery pack securely latches in place at the bottom of the radio. The radio **ON/OFF** switch is located on the battery pack.

A Liquid Crystal Display (LCD) on the front of the radio shows the selected channel and volume level, the Scan mode (**SCN**), the priority level (**P1**, **P2**, and **S**), a **TX** (transmit) indicator, a low battery voltage indicator (**BAT**) and a Type 99 paging indicator (**PG**). There are eight (8) levels of volume, each bar displayed in the LCD represents two levels. The LCD module is backlighted for night viewing, and is mounted in a rubber seal for weather protection.

The radio is shipped from the factory with the high power level set to 4 watts, and the low power level set to 2 watts.

NOTE

When the battery is low, the low battery indicator (BAT) is displayed on the LCD, and an audio alert is sounded every 7.5 minutes. When the battery is sufficiently low to cause improper operation, the radio microprocessor terminates all operation.

RADIO PROGRAMMING

Each of the radio channels may be programmed for SCAN operation, DTMF dialing, tone or digital Channel Guard, Home Channel or Emergency, Squelch Tail Elimination (STE), Type 99 tone decoding, automatic number identification (ANI), channel busy lockout, and HI/LOW transmit power level. These options may be programmed on a channel to channel basis. Two different T99 tone tables can be programmed into the PCS. Each channel is capable of Individual, Group or Super Group decode.

Other programmable features include **C**arrier **C**ontrol **T**imer (CCT), display backlighting, and alert beep options. These features can be programmed as desired to meet system requirements.

Refer to the Programming Manual TQ3329 for complete programming instructions.

ASSEMBLY

The PCS radio consists of an RF board mounted in the rear assembly, an audio logic board mounted in the front assembly and a control frame assembly.

The RF board contains all transmit, receive and synthesizer circuits. The audio logic board contains all transmit audio and receive audio circuits along with all logic and control circuits. A microprocessor on the audio logic board generates and decodes all tones used in Channel Guard or Type 99 tone signaling.

The control frame assembly mounts in the radio front cover and provides the following functions:

- Audio logic board interface
- Microphone and speaker connections
- Houses the channel up-channel down, volume up-volume down, monitor and PTT switches.
- UDC interface to the outside of the radio for external options and customer programming.
- Houses the LCD module for status display.

Refer to the Interconnection Diagram as listed in the Table of Contents of the Service Section of this manual for all circuit board and control frame connections.

STANDARD FEATURES

In addition to 16 channel dual priority scan, DTMF dialing, Channel Guard, Digital Channel Guard, STE, ANI, Type 99 decode and transmitter power level settings, the PCS radio includes the following standard features:

Monitor

Allows the operator to monitor channel activity before transmitting by disabling either Channel Guard or the squelch circuit.

Carrier Control Timer

Programmable from 15 to 225 seconds in 15 second increments, or can be disabled.

Busy Lockout

Prevents transmitting on a busy channel.

Radio Memory

Remembers the radio status such as the last volume level and channel selected. These settings are stored in memory.

Surveillance Feature

Earphone and Accessory Connector

Talk Around

Standard radio can be programmed for talk around channel.

Audio Alert Beep

Usual alert beeps will not be sounded when this feature is disabled. However, the T-99, P1 priority and ANI end beeps will be sounded, if programmed.

LCD Backlight

Backlight will not be turned on when this feature is disabled.

Control Function

The PCS radio can be programmed in one of two operating modes. In Mode 1 the channel and volume level are selected by pressing the **CHAN**NEL or **VOL**UME Up or Down buttons. In Mode 2, the **CHAN**NEL Up or Down button is pressed (placing the radio in the Channel Change mode), and the channel selected by pressing the **VOL**UME Up or Down buttons.

The **MON**itor and PTT switches operate identically in both modes.

Radio Functions

The PCS radio is equipped with a self-check function which is performed when powering up the unit. A good self-check function is indicated by a series of three beeps, if enabled, followed by the last radio status on the LCD. All of the display segments are turned on during the three beeps. A bad self-check function will cause all display segments to remain on, and no beeps will be heard.

The **BAT** display is turned on any time the battery voltage level drops below the low level (6.3 Volts). **BAT** is displayed and continues to be displayed on the LCD until the battery is charged or a fresh battery pack is connected. An audio alert is also sounded every 7.5 minutes while the **BAT** display is on.

When the battery voltage level goes low while transmitting, **BAT** will be displayed and will continue to be displayed after returning to the receive mode. **BAT** will be turned off after 5 seconds unless the battery voltage level is also low in the receive mode.

Below 6.3 volts, **BAT** will continue to be displayed. End of battery is considered to be 5.8 volts. This level will allow at least one hour of EIA operation. The radio will continue to operate at reduced power levels below 5.8 volts. Below 5 volts, radio operation is completely disabled to prevent corruption of the radio personality.

The simultaneous flashing of the **BAT** indicator and the sounding of alert beeps, if programmed, indicates the radio has failed to lock on frequency. Transmission will be terminated any time the radio is in the transmit mode and the synthesizer fails to lock on frequency.

LCD backlighting is turned on every time a control button is pushed (channel select, volume up, volume down, monitor, and PTT if programmed) and remains on for another 5 seconds after the control button is released. Backlighting is turned on while transmitting, and remains on for 5 seconds after PTT is released.

Radio Memory

The radio status such as volume, channel and Scan status are stored in memory when the radio is turned OFF.

Surveillance Features

Earphone, external microphone input and PTT options are available for use with the radio. These options connect to the UDC connector.

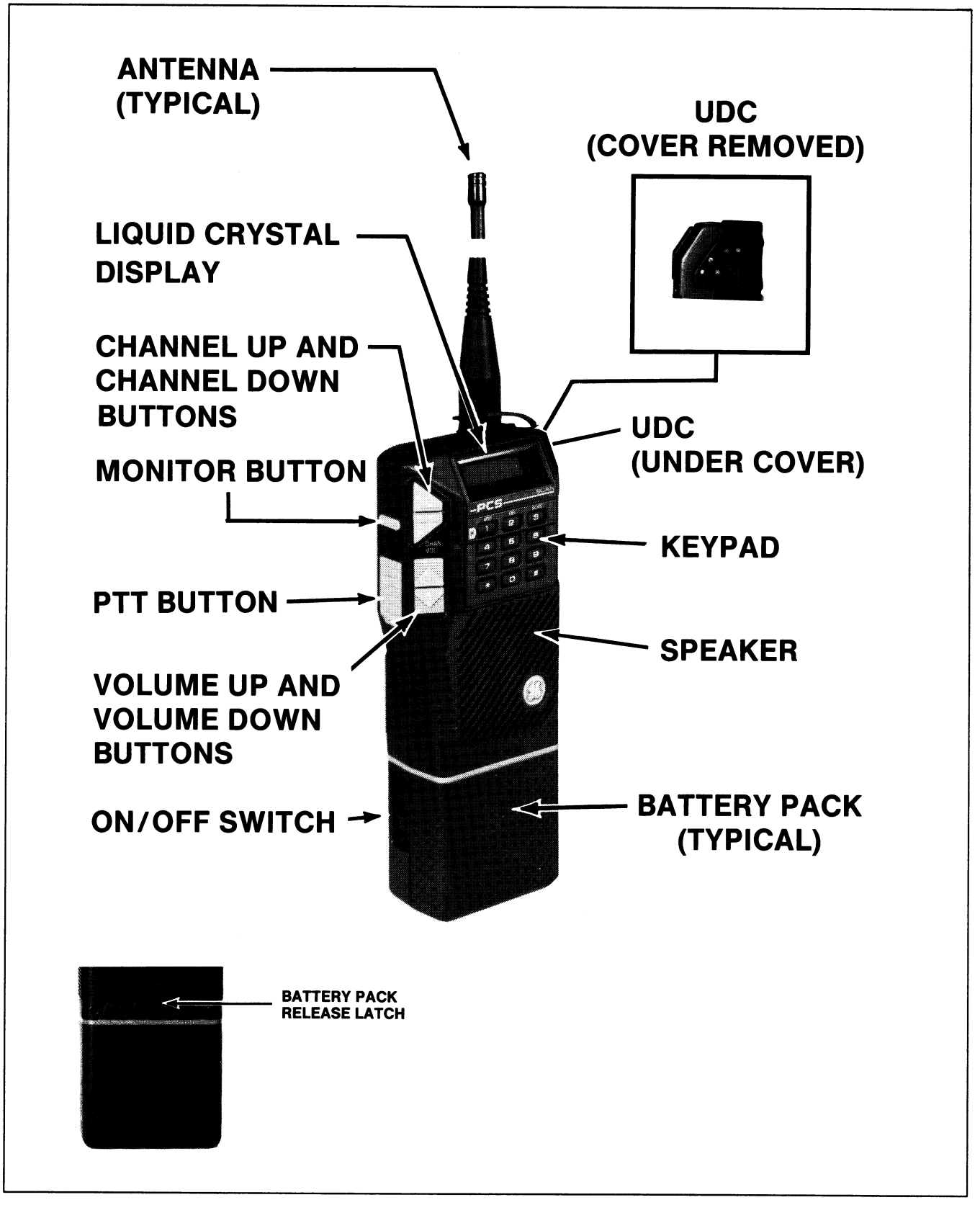


Figure 1 - PCS Operating Controls

CONTROLS AND INDICATORS

CONTROLS

The radio controls consist of an OFF-ON switch, monitor and PTT switch, VOL and CHAN select, SCAN, DELETE, and ADD/HOME controls.

ON/OFF The **ON/OFF** slide switch on the battery pack controls power from the battery pack to the radio. When turned **ON**, an audible click is heard and a light yellow square is shown beneath the switch. The radio assumes the last operating state; i.e., channel, volume. This status will be displayed in the **LCD** window, indicating power is applied. **BE SURE** the power switch is fully **ON** (or fully **OFF**).

MON The Monitor Switch can be programmed for 2 different modes of operation, CG or Squelch.

Mode 1 (Channel Guard)

Receive Channel Guard may be disabled or enabled at any time by momentarily pressing (for less than one second) and releasing the Monitor/Channel Guard switch. The Channel Guard disabled condition is indicated by the flashing Volume Level bars on the display. After holding the switch for more than one second, the switch becomes a true monitor switch and opens the receiver.

Mode 2 (Squelch)

All Channel activity may be monitored by pressing and holding the Monitor switch for up to three seconds. After three seconds, Channel Guard is disabled as indicated by the flashing volume bars on the display.

Common to both the CG and Squelch Modes, Channel Guard Disable reset can also be programmed for either Manual or Auto operation.

1. (Manual): Once the Receive Channel Guard is disabled, it remains disabled in Receive Mode regardless of the Channel change or PTT.
2. (Auto): Receive Channel Guard will automatically be reenabled after PTT is activated.

Channel Guard is always enabled when transmitting regardless of the Channel Guard Switch setting in receive mode.

T99 Reset Function - When the radio is in Type 99 Monitor Mode, pressing and holding the Monitor button for any length of time reverts the radio to Selective Mode. See Type 99 Section for detail description.

PTT

The radio is keyed by pressing and holding the **PTT** switch. Regardless of the Channel Guard Switch setting (disabled or enabled), Channel Guard is always enabled during transmission (see Channel Guard Switch section). This button is also used for selecting the Monitor Mode on T99 Channel (See Type 99 section).

SCAN Switches the Scan Mode on and off. This button must also be pressed while adding or deleting channels from SCAN list (see Add/Home and Del sections).

ADD/HOME

This Control Switch is used for 3 different functions:

While the SCAN button is depressed, pressing the **ADD**/HOME button will add the SELECTED channel to the SCAN list, or increase the channel's priority status in SCAN list (e.g., Non-Scan to Non-Priority, Non-Priority to Priority 2, and Priority 2 to Priority 1). This procedure can only be done when Scan Mode is off.

(Programmed For HOME Operation)

When activated alone, this button is used to revert the SELECTED channel to a preprogrammed HOME channel. If Scan Mode is on prior to pressing this key, Scanning will stop. However, if no additional Control Button activatition (Channel, Volume, or PTT) occurs within 5 seconds, radio will resume scanning.

(Programmed For EMERGENCY Operation)

DEL 

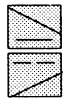
While the **SCAN** button is depressed, activating this button will remove the SELECTED channel from SCAN list.

Radio Status is not affected when this button is activated alone.

The following operating modes of the radio are programmed with a personal computer using the appropriate programming software.

MODE 1

This is the normal control function, (Default Mode)

CHANNEL UP/DOWN 

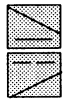
Selects the transmit/receive channel. Communications channels are selected one at a time, or progressively by pressing and holding the **CHAN** UP/DOWN button. The next higher channel is always selected (Channel 1 follows Channel 16). If programmed, a short beep will sound with every channel change, and the channel number will be shown in the LCD display.

VOL 

Sets receive audio to the desired level while pressing the **VOL** Up ▲ or **VOL** Down ▼ button. Changing the volume level while the radio is squelched causes the radio to beep, if programmed, at the new selected level. No beep is sounded when the radio is already unsquelched. The relative volume level is indicated by the number of bars indicated in the LCD. There are eight levels of volume. Pressing and holding the VOL buttons continues to increment the volume in the direction indicated on the button. Note: Short beep indicator on volume change will not be sounded when the speaker is already on.

MODE 2

This mode is programmed when extreme caution in channel selection is desired (Alternate Mode).

CHANNEL UP\DOWN 

When Mode 2 is programmed, pressing the **CHAN** UP/DOWN button only enables the channel change mode. The channel change mode is indicated by the flashing channel indicator in the LCD display. This Mode requires 2 button strokes to change a Channel. First, press either the Channel Up or Channel Down key. This button stroke enables the Channel Change Mode for 30 seconds indicated by the flashing Channel Indicator.

Second, while in the Channel Change Mode, press Volume Up or Volume Down to increment or decrement Channel respectively. When the correct Channel is reached, press either the Channel Down or Channel Up button again to disable the channel Change Mode. The Channel Indicator will stop flashing at this time.

Unless the Channel Change Mode is disabled manually as described above, Channel Change Mode will be disabled automatically at the end of the 30 second period.

VOL 

While the channel indicator is **NOT** flashing, pressing the **VOL** Up ▲ button increases the volume one level each time the **VOL** UP▲ button is pressed until the highest volume level is reached. This function may be done progressively by pressing and holding the key. A short beep (if programmed) is sounded at every volume level change. Press the **VOL** Down▼ button to decrease the volume level as described above.

NOTE

The short beep with each volume change will not be sounded when the speaker is already on.

The channel change mode automatically times out at the end of 30 seconds. The radio then reverts to normal operation for the volume buttons.

Table 1 - PCS Function Guide

FUNCTION	PROGRAMMING	DESCRIPTION
MONITOR Button	Programmed for Channel Guard	Momentary: DIS/ENABLE CG; Hold Down: MONITOR
	Programmed for SQUELCH	Momentary: MONITOR; Hold Down: DIS/EN CG
Channel Guard Enable	MANUAL	Must re-enable CG with MON button after transmitting
	AUTO	PTT will re-enable CG
ANI	FRONT	Sent at front of message
	END	Sent at end of message (after PTT release)
	ANI SIDE TONE	YES/NO: tells operator when it's OK to talk. (Only happens when front of message programmed Independent of alert beep.)
	DELAY	(Delay for repeater to decode CG)
SCAN	SCAN FOR CG	YES/NO:
	Tx Chan in SCAN	Sel Chan (Tx on selected channel) Rx Chan (Tx on received channel)
	SCAN HANGTIME	Time receiver remains locked on channel after carrier drops
	HANG AFTER PTT RELEASE	YES/NO: If yes, receiver stays on channel for programmed Hang Time before scan resumes
	BEEP ON P1	YES/NO: Short beep after receiving P1 call. (Independent of audio alert beep)
	SCAN PROG MODE	Front - all channels programmed from keypad Fixed - P1 fixed by PC. Other channels keypad programmed Selected - P1 follows selected channel. Other channels keypad programmed
T-99	ALERT BEEP	YES/NO - Alert after rec PG
	ALERT BEEP VOL	VOL MAX
DTMF AUTO DIAL TABLE	NUMBER START GAP DIGIT LENGTH GAP LENGTH	Number to be dialed with or without* Delay between * and number Length of digits Gap between lengths

INDICATORS

The LCD displays the Scan mode, P1, P2, S Scan list indicators, channel, volume level, battery condition, Type 99 tone status and transmit indicator (see Figure 2). The LCD is backlit anytime the channel select, volume up/down, monitor button, Scan, add, and delete buttons are pressed, and remains on for another 5 seconds after releasing. Backlighting is turned ON during transmit, and remains on for 5 seconds after PTT is released, if programmed.

The LCD indicators are shown below in the transmit and receive mode.

TRANSMIT MODE: DIGIT (1 TO 16)

TX TX Indicates transmit mode when the PTT button is pressed.

BAT Indicates battery voltage is low and battery pack requires charging. When the battery pack voltage reaches the low level while in the transmit mode, **BAT** is displayed and stays on for another five (5) seconds after the radio is returned to the receive mode. **BAT** is turned off after five seconds unless the battery pack level is also low in the receive mode.

RECEIVE MODE: DIGIT (1 to 16)

VOL 4 bars, indicates level settings of volume (eight levels).

PG Indicates selected channel programmed to receive Type 99 calls. Upon receipt of a Type 99 call, the **PG** flag flashes until the Type 99 decoder is reset.

SCN If Scan is on.

P1 If Priority 1 is enabled.

P2 If Priority 2 is enabled.

S If Non-Priority is enabled.

CHANNEL The transmit/receive channel is indicated by a number in the LCD.

BAT If battery voltage is low.

ALERT TONES

Series of 3 beeps: Self test OK on power up.

Single beep: Channel or Volume change.

Series of beeps:

- Synthesizer out of lock.
- No transmit frequency when trying to transmit.
- Expired CCT.
- Channel Busy indicator when option is enabled.
- T99 decode alert. (Service Note: this is a change from standard radios.)

SELF CHECK A self-check function performed each time the radio is turned ON. A good self-check function will be indicated by three beeps, if programmed, followed by the last radio status, channel number and volume level displayed in the LCD. All of the displays are shown during the three beeps. If the self-check fails, no beeps will be heard.

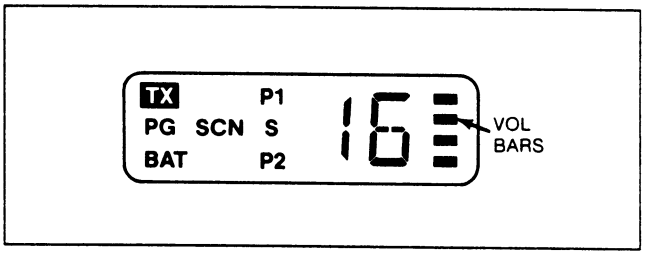


Figure 2 - Liquid Crystal Display (LCD)

BAT/ALERT Simultaneous flashing of **BAT** in the LCD display and sounding of alert beeps, if programmed, indicates failure of the synthesizer to lock on frequency. If this happens during the transmit mode, the transmitter is inhibited and no transmission is made. The operator should select another channel, recharge the battery pack, or have the unit checked.

RADIO OPERATION

The PCS radio can be programmed to operate in one of two operating modes.

In Mode 1, the channel and volume level are selected by pressing the **CHAN** or **VOL** Up or Down buttons. Mode 1 is the normal operating mode, and is the mode used in the procedures discussed in the following paragraphs.

In Mode 2, the **CHAN** Up/Down button is pressed, and the channel selected by pressing the **VOL** Up/ Down buttons. The **MON**itor and PTT switches operate identically in both modes. Mode 2 is used when careful channel selection is required.

Refer to the OPERATOR'S MANUAL (LBI-38629) for complete operating instructions.

TO RECEIVE A MESSAGE:

1. To turn the radio on, slide the ON/OFF switch on the battery pack to the ON position. A YELLOW area will be visible.

2. After the radio has passed the SELF-CHECK test, press and hold the VOLUME Up ▲ or VOLUME Down ▼ button while listening to the beeps (if this feature is programmed). Watch the LCD display for the volume level indicators (eight bar lines) to select the desired listening level.

3. Press the CHANNEL Up ▲ or Down ▼ button to select the operating channel.

4. The radio is now ready to receive messages.

TO SEND A MESSAGE:

1. Turn the radio ON and select the operating channel as instructed in TO RECEIVE A MESSAGE. The current status of the radio is displayed in the LCD.

2. Press the MONitor button to determine if the channel is in use. NEVER interrupt another conversation.

3. While holding the radio so that the antenna is vertical, press the PTT switch and speak directly into the grill or across the face of the radio or external microphone. Speak in a normal voice. Release the PTT switch as soon as the message is finished. Messages cannot be received when the PTT switch is pressed.

4. When transmission is desired on a paging channel, the PTT switch must be pressed twice. Press the PTT switch the first time to take the radio out of the paging mode. Press the PTT switch the second time for normal PTT operation. Remember that a PG flag flashes in the LCD and the radio beeps on the first press of the PTT switch.

The radio may be placed back in the Type 99 paging mode by pressing the MONitor button.

TO PLACE A DTMF CALL

Specific procedures for placing a telephone call from a PCS SCAN/DTMF radio are determined by the operating system where the radio is used. Consult a system representstive for the exact operating procedures for the system.

The keyboard on the PCS SCAN/DTMF radio is **not** active until the PTT switch is operated. Therefore, the PTT switch must be operated at all times when operating any switch on the DTMF keypad.

Placing A Manually Dialed Call

1. Select a channel in your radio system that has telephone interconnect capability. The radio should be programmed for DTMF operation on this channel.

2. Press and hold the PTT switch to key the transmitter.

3. While holding the PTT switch, press either the "*" key or the "#" key as required by the radio system to obtain a telephone line. The radio will transmit the selected tone.

4. Release the PTT switch and listen for a dial tone.

5. When the dial tone is received, press and hold the PTT Switch and dial the desired telephone number. As you dial each number, the DTMF sidetone will be heard in the speaker as the radio transmits the DTMF tone.

6. Release the PTT switch when the dial sequence is complete.

7. When the called party answers, press the PTT switch each time you wish to talk (transmit) and release it when you wish to listen (receive).

8. At the completion of the call, press and hold the PTT switch and then press the "#" or "*" key as the telephone interconnect system requires. Release the PTT switch.

Placing An Automatically Dialed Call (Number Programmed With A Preceding "*")

1. Select a channel in your radio system that has telephone interconnect capability. The radio should be programmed for DTMF operation on this channel.

2. Press and hold the PTT switch and then press one of the channel buttons (CHANNEL UP or CHANNEL DOWN). The radio will transmit for a minimum of five (5) seconds. The PTT switch may be released after one of the channel buttons is pressed.

3. Press the button ("1", "2" or "3") corresponding to the location (1, 2 or 3) of the number you wish to dial. The DTMF sidetones will be heard in the speaker as the radio transmits the DTMF tones. It is not necessary to hold the PTT switch while the radio is automatically dialling the number.

4. When the called party answers, press the PTT switch each time you wish to talk (transmit) and release it when you wish to listen (receive).

5. At the completion of the call, press and hold the PTT switch and then press the "#" or "*" key as the telephone interconnect system requires. Release the PTT switch.

Placing An Automatically Dialed Call (Number Not Programmed With A Preceding "*")

1. Select a channel in your radio system that has telephone interconnect capability. The radio should be programmed for DTMF operation on this channel.

2. Press and hold the PTT switch and then press the "*" key. Release the PTT switch and listen for a dial tone.

3. After the dial tone is received, press and hold the PTT switch and then press one of the channel buttons (CHANNEL UP or CHANNEL DOWN). This action causes the radio to transmit for a minimum of five (5) seconds. The PTT switch may be released after a channel button is pressed.

4. Press the button ("1", "2" or "3") corresponding to the location(1, 2 or 3) of the number you wish to dial. The DTMF sidetones will be heard in the speaker as the radio transmits the DTMF tones. It is not necessary to hold the PTT switch while the radio is automatically dialling the number.

5. When the called party answers, press the PTT switch each time you wish to talk (transmit) and release it when you wish to listen (receive).

6. At the completion of the call, press and hold the PTT switch and then press the "#" or "*" key as the telephone interconnect system requires. Release the PTT switch.

OPERATIONAL FEATURES

The radio is PC programmable to power up in either Selective (Paging) or Monitor Mode for channels programmed for paging.

When Selective Mode option is selected, the radio operates as a tone and voice receiver, and allows only those calls that are tone coded for the radio to be heard. Selecting Monitor Mode Option allows all calls with the correct Channel Guard (if programmed) on the channel to be heard.

In either Mode, when a correct T99 and Channel Guard (if programmed and enabled) have been decoded, a series of intermittent beeps will be heard to alert the operator of incoming call. A slow flashing PG will be on the display at this time to indicate that a call has been received. When Selective Mode option is selected, the radio switches automatically to Monitor Mode at this time.

At the end of the message, if Selective Mode is desired, press and release the MONitor button to reset the TYPE 99 Function. The PG pixel on the display will stop flashing at this time.

While in Selective Mode, the radio may be put in Monitor Mode by pressing and releasing the PTT switch. A series of beeps is sounded while PTT is pressed to indicate that no transmission has occured, and the Monitor Mode has been selected as indicated by flashing **PG** indicator. However, any additional PTT activations will key the transmitter.

The radio is programmable to decode any GE or MOTOROLA decode combinations from any one of two T99 Tone Tables on a per channel basis. TX and/or RX Channel Guard may be programmed to any channel with T-99.

Type 99 Receive Channel Guard (if programmed) can be disabled any time by the procedure explained in Monitor/Channel Guard Section. The Volume Level will flash at this time indicating that channel guard has been disabled.

NOTE

Resetting Type 99 from Monitor Mode to Selective Mode does not affect the Channel Guard Switch setting.

Automatic Number Identification (ANI):

Automatic Number Identification (GESTAR) is a 320-millisecond burst of code that is generated at the beginning of each transmission to identify the PCS radio to the base. If programmed, a beep is sounded at the end of ANI transmission to indicate when conversation may begin as the microphone is disabled until the ANI transmission is completed.

Systems with Channel Guard require the ANI be delayed long enough for the system to respond before ANI can be decoded. A programmable delay (0 to 2 seconds) is provided to meet this requirement. A delay of 350 milliseconds, for example, requires the operator to wait for 670 milliseconds after pressing the PTT switch before conversation can be started. The ID message may be programmed to be sent at the end of a transmission, if desired.

ANI is enabled on per channel basis.

In summary, ANI variables are:
- –ID Number (0 to 8192)
- –Start Delay (0 to 2 seconds in 100 msec increment)
- –Beginning or end of transmission
- –Alert beep ON/OFF
- –Per Channel basis selection (Channel 1 to 16)
- –Emergency ID.

Type 99 Tone:

1. Select the appropriate channel to receive Type 99 tone signaling. The **PG** flag will be displayed on this channel.

2. When receiving a Type 99 call, answer in one of the following two ways:

   a. **To reply to a message** - After hearing the Type 99 paging tone, press the PTT switch and answer the call. After completing the communication, press the MONitor button to reset the radio for the next call.

   b. **To avoid listening to nuisance call** - After hearing the Type 99 paging tone, press the MONitor button to reset the radio for the next call.

3. Type 99 operation may be disabled by pressing the PTT switch when the radio is in the Select mode. While the switch is pressed, the radio beeps to indicate that no transmission is occurring.

   After releasing the PTT switch, the PG flag flashes in the LCD to indicate that the radio is now in a monitor mode (CG or squelch operation only). Pressing the PTT switch results in a normal transmission.

NOTE

If a Type 99 channel is in the Scan List and Scan is enabled, the Type 99 tones are ignored. Scanning is provided on a carrier and Channel Guard basis only!

If the Scan List includes a Type 99 channel and Scan enabled, the Type 99 tones will be ignored. Scan operates on a carrier and Channel Guard basis only.

Busy Lock-Out

This feature is programmable on a per channel basis. If programmed, the transmit function is inhibited if a carrier is being received with the incorrect channel guard. If the correct channel guard is being received, transmission will be allowed. If channel guard is disabled and a carrier with incorrect channel guard is received, the message will be heard but transmisssion will still be inhibited. If no channel guard is programmed, busy lock-out is made on carrier presence only.

SCAN OPERATION

The SCAN function allows monitoring of up to 16 receive channels. The scanned channels may be any frequency within the frequency band limits of the radio and may be Channel Guard protected (tone or digital).

Any channel may be scanned with or without a priority level. One channel may be programmed for Priority 1 (P1) and another for Priority 2 (P2) with any or all remaining channels programmed as non-priorities.

SCAN VOCABULARY

The following are terms frequently used in describing SCAN:

Simple Scan - Condition when there is no activity on any channel in the SCAN list.

Priority Scan- Condition where the SCAN locks on a non-priority channel while sampling the Priority channels.

Channel Guard Scan -This is the scanning condition where tone or digital Channel Guard must also be detected before locking to any channel.

Selected Channel - The channel that the operator last selects with the Channel Select buttons. The channel selection may be done either with Scan active or inactive. This channel is also shown on the display in Scan Mode unless an activity is detected on another channel being scanned.

Received Channel - A channel that has been identified to have the correct carrier and correct Channel Guard (if enabled). The Received Channel number is shown on the display.

Home Channel - A High Priority channel that may be PC programmed for easy access. This **Home** Channel is selected by pressing the Add/**Home** button. Pressing the Add/**Home** button changes the Selected channel to the **Home** Channel irregardless of the current Selected channel. Pressing any of the pushbuttons turns Scan off. However, if no Control Button is pressed (Channel, Volume or PTT) within 5 seconds, scanning will resume.

Scan List - An internal list that is made up of channel numbers with their status that will be scanned when Scan Mode is turned on. This list is selected by the process explained in Pre-Scan Operation section below.

Non-Scan Channel - A channel that is not in The ScaN list determined by the operator. This channel is not normally scanned.

Non-Priority Channel - A channel that is selected by the operator to be included in Scan list. Activity on this channel will be interrupted by activity on either the Priority 1 (P1) or Priority 2 (P2) channel.

Priority 2 Channel - A channel that is selected by the operator to be included in Scan list. Activity on this channel will only be interrupted by activity on Priority 1 channel.

Priority 1 Channel - A channel that is selected by the operator to be included in Scan list. Activity on this channel will supersede any other channel activity.

Channel Activity - The presence of a carrier modulated with a correct channel guard (if programmed).

Hang Time - The time interval that the channel remains locked to a channel even though no channel activity is present. This condition arises after channel activity has stopped, or the PTT switch has been released. This time interval is programmable from 0.3 to 5.0 seconds.

PRE-SCAN OPERATION

A Scan list must be created before Scan can be used. The Scan list can be created in 3 different ways. Service Note: The radio will **not** go into the Scan mode when no Scan channels are programmed.

NOTE

The selected channel is automatically added to the scan list whenever the **Scan** button is pressed. However, this channel will not be shown in the display.

1. **Front Programmable Option** - When programmed, this option allows the operator to modify the Scan list from the front panel of the radio.

   SCAN+ADD keys: When scan is off, holding the **SCAN** button down and pressing the **ADD** button increases the priority status in the Scan list for the displayed channel. This means that a previous Non-Scan channel will become a Non-priority channel, a Non-priority channel will become a Priority 2 channel and Priority 2 channel will become a Priority 1 channel. Changing the SCAN status of any channel to Priority (P1 or P2) status removes the previous channel with that status to a Non-Priority status.

   SCAN+DEL keys: When Scan is off, holding down the **SCAN** button and pressing the **DEL** button removes the selected channel from the Scan list regardless of the priority level of the channel.

2. **Field Programmable Option**

   When selected, this option allows the operator to determine only the Non-Priority and Priority 2 channels as described above. The Priority 1 channel can only be selected with the PC Programmer.

3. **Selected Channel Option**

   When selected, this option allows the operator to determine the Non-Priority and Priority 2 channels as above. The P1 channel becomes whatever channel is selected.

SCAN OPERATING MODES

Simple Scan

Once Scan is activated, the radio will perform a Simple Scan routine. This routine is performed when there is no activity on any of the channels that are in the Scan list.

The following scanning order is done when there are more than 4 channels in the Scan list.

np6. . .np5. . .np4. . .np3. . .P1 . . .P2. . .np2. . .
np1. . .np6. . .np5. . .P1. . .P2. . .np4. . .np3. . .
np2. . .np1. . .p1. . .p2,etc.

(np indicates a Non-Priority channel, and P1 and P2 indicate Priority 1 and Priority 2 chanels respectively.)

The following scanning order is done when less than 4 channels exist in the Scan list.

np3. . .np2. . .np1. . .P1. . .P2. . .np3. . .np2. . .
np1. . .P1. . .P2,etc.

The above scanning orders assume that Priority 1 and Priority 2 channels exist. If they do not exist, their positions in the scanning order are eliminated.

PTT: Pressing the **PTT** switch causes the radio to transmit on the Selected Channel frequency, and to stop the scanning routine. A programmable hang timer (0.3 to 5.0 sec) will start as soon as the PTT switch is released. Scanning will resume at the end of the hang time. The hang time is a PC programmable option, and can also be enabled or disabled.

Channel Change: Any channel change will change the Selected Channel and show it on the display. A channel change will also stop the scanning routine for a fixed 2 second hang time. If no activity is detected on this new Selected Channel during this 2 second hang time, scanning is then resumed.

ADD/HOME: Pressing this button will revert the radio (Selected Channel) to a preprogrammed Home Channel and stop the scanning routine automatically.

NOTE

Priority channels are still scanned during hang time.

Priority Scan

As soon as any activity is detected on a channel, the radio will change the scanning mode from Simple Scan to Priority Scan. The new receive channel will appear on the display.

If the receive channel is a Non-Priority channel, both Priority 1 and Priority 2 channels will be sampled every 500 milliseconds in the following order:

P1...P1...P2...P1...P1...P2...P1...P1...P2...etc.

If a Priority 1 channel does not exist, the radio will only break away to sample Priority 2 channel every 1.0 second.

- If a Priority 2 channel does not exist, the radio will still break away to sample Priority 1 channel every 500 milliseconds.
- If neither a Priority 1 nor Priority 2 channel exists, the radio will lock on this channel until activity on this channel goes away.
- When the receive channel is a Priority 2 channel, the radio only samples Priority 1 channel every 500 milliseconds.
- When the receive channel is Priority 1 channel, no other channels will be scanned.

Once activity on the receive channel goes away, a programmable hang timer (0.3 to 5.0 sec) is started. Scanning will resume at the end of hang timer if there is no activity on that channel. The Selected Channel will appear now on the display. Note that Priority Channels will continue being scanned during Hang Time.

To alert the operator of receiving Priority 1 Channel, an option is available to sound a beep upon receiving Priority 1 Channel.

Scanning for Channel Guard

The Scanning for channel guard option may be selected if in addition to carrier activity alone, a correct channel guard is also required to lock to a channel when scanning. This option is selected on a radio basis.

Scanning Priority channels with wrong channel guard will change the scanning rate as follows:

Priority 1 with wrong channel guard:
Change Priority 1 sample rate from 0.5 sec to 2.5 sec, but still sample Priority 2 every 1.0 second.

Priority 2 with wrong channel guard:
Change Priority 2 sample rate from 1.0 sec to 5.0 sec, but still sample Priority 1 channel every 500 milliseconds.

PTT: The operator has two PC programmable options to select from in regard to what channel to transmit on. The operator may choose to transmit on the Selected Channel or on the receive channel. The transmit channel will be shown on the display. Releasing the **PTT** switch will unkey the transmitter and start the programmable hang timer (0.3 to 5.0 sec), if enabled. Scanning will resume again at the end of hang timer unless there is an activity on that channel.

Channel Change: Any channel change will change the Selected Channel. The receive channel, if any, will stop being displayed/heard and replaced by the new Selected Channel. The scanning routine is temporarily stopped for a fixed 2 seconds and will resume again if there is no activity on the Selected Channel.

ADD/HOME: Pressing this button will revert the radio (Selected Channel) to the preprogrammed Home Channel and stop the scanning routine automatically.

TONE PROGRAMMING

Any IBM compatible Personal Computer using **MS DOS** and a General Electric Programmer Interface Box plus the proper programming software is used to program the PCS Type 99 tones, Channel Guard tones and digital codes. The Programmer Interface Box connects between the Universal Device Connector (UDC) on the side of the PCS radio and the back of the Personal Computer. Refer to the applicable Programming Guide (TQ-3329) for details.

Two sets of Type 99 tones may be programmed to the **PCS** radio. Any channel can be programmed to decode any call or calls based on any one of the two tone sets. Individual, group and super group paging can all be used. MOTOROLA formats are also acceptable.

PG is displayed on any channel that has been programmed to receive Type 99 calls. Both receive and transmit Channel Guards may also be programmed to any channel with Type 99 Tone.

An intermittent beep is sounded to alert the operator of an incoming call.

Upon receiving a call, the radio will open the audio and flash the **PG** indicator until it is reset by momentarily pressing the **MONITOR** button.

NOTE

If a Type 99 Channel is in the Scan List and Scan is enabled, Type 99 tones are ignored. Scanning is done on a Carrier and Channel Guard basis only.

The optional Type 99 programming provides individual, group and super group call decode. The Motorola formatted two-tone sequential signaling schemes can also be decoded.

In Type 99 tone systems, calls will not be heard from the receiver until the proper two tones are detected. When the second tone is decoded and recognized as correct, an alert tone sounds during the remaining portion of the second tone. The receiver audio path opens and remains open to receive messages until the decoder is reset. The **PG** indicator will also flash to show a call has been received.

The **PCS** radio can be **PC** programmed with up to two separate tables of tones. Either the GE Type 99 format or the Motorola format can be assigned to each tone table. The tone decoder (Individual, Group and Super Group for the GE format or Individual, Group and Quick Call for the Motorola format) can be enabled individually for each channel. Once enabled, one of the two tone tables can be selected for each channel.

The Group Call format allows communication with all radios within a subgroup. The Super Group Call (in GE tone systems) or Quick-Call (in Motorola tone systems) allows communications between all radios in a system.

GE TYPE 99 FORMAT

Tone frequencies in the GE tone system fall within the range of 517.5 to 997.5 Hz.

In the GE tone format, the first tone may be from tone group **A** (for Individual or Group calls) or from tone group **C** (for Super Group calls). The second tone may be from tone group **B** (for Individual calls) or from tone group **D** (for Group and Super Group calls). The GE tone format is illustrated as follows:

INDIVIDUAL CALL FORMAT

<...1.0 SEC...>	<...200 MS...>	<...1.0 SEC...>
±20%	±25%	+300%, -0%
TONE A	GAP	TONE B

GROUP CALL FORMAT

<...1.0 SEC...>	<...200 MS...>	<...1.0 SEC...>
±20%	±25%	+300%, -0%
TONE A	GAP	TONE D

SUPER GROUP CALL FORMAT

<...1.0 SEC...>	<...200 MS...>	<...1.0 SEC...>
±20%	±25%	+300%, -0%
TONE C	GAP	TONE D

For example, assume the paging number to be 123. The first digit of the paging number is a 1. Look in Table 2 and read down the column labeled **"100's Digit"** to a 1. Read horizontally across the column labeled **"10's Digit"**. The tone group is **B**. The second digit of the paging number is a 2. The tone number is **B2**. Look in Table 2 and down the column labeled **"Tone Designator"** to find **B2**. Read horizontally across the column labeled **"Tone Frequency"**. The first tone frequency is 787.5 Hz.

To determine the second tone frequency look in Table 1 and as before, find the first digit of the paging number (1).

The second tone group is **A**. The third digit of the paging number is a 3 and the tone Designator is **A3**. In Table 2 read down the column labeled **"Tone Designator"** and find **A3**. Read horizontally across the column labeled **"Tone Frequency"**. The second tone frequency is 802.5 Hz.

For different paging numbers, locate the first digit in the **"100's Digit"** column and determine the tone frequencies as described in the example.

Tone D is the diagonal tone used (in GE tone systems only) when the first and second tone frequencies are the same. The standard frequency for **Tone D** is 742.5 Hz, but may be programmed with any tone frequency.

Table 2 - GE Tone Groups

100's Digit	10's Digit	1's Digit
	For First Tone	For Second Tone
0	A	A
1	B	A
2	B	B
3	A	B
4	C	C
5	C	A
6	C	B
7	A	C
8	B	C
9	NOT USED	

Table 3 - GE Tone Generator Frequencies

TONE GROUP	TONE DESIGNATOR	TONE FREQUENCY
	A0	682.5 Hz
	A1	592.5 Hz
	A2	757.5 Hz
	A3	802.5 Hz
A	A4	847.5 Hz
	A5	892.5 Hz
	A6	937.5 Hz
	A7	547.5 Hz
	A8	727.5 Hz
	A9	637.5 Hz
	B0	652.2 Hz
	B1	607.5 Hz
	B2	787.5 Hz
	B3	832.5 Hz
B	B4	877.5 Hz
	B5	922.5 Hz
	B6	967.5 Hz
	B7	517.5 Hz
	B8	562.5 Hz
	B9	697.5 Hz
	CO	667.5 Hz
	C1	712.5 Hz
	C2	772.5 Hz
	C3	817.5 Hz
C	C4	862.5 Hz
	C5	907.5 Hz
	C6	952.5 Hz
	C7	532.5 Hz
	C8	577.5 Hz
	C9	622.5 Hz
DIAGONAL TONE		742.5 Hz

MOTOROLA FORMAT

Tone frequencies in the Motorola tone system is within the range of 288.5 to 1433.4 Hz. In the Motorola tone format, the first tone may be one of three tones: **A** for Individual Call, **B** for Quick Call and **C** for Group Call. The second or final tone is **B** in all cases.

NOTE

The **PCS** radio is able to recognize the **A, B** and **C** tones. Individual, Group and Quick Call formats may be used simultaneously.

The Motorola tone format is illustrated as follows:

INDIVIDUAL CALL FORMAT

<...1.0 SEC...>	<...NONE...>	<...3.0 SEC...>
(Minimum)		(Minimum)
TONE A	GAP	TONE B

GROUP CALL FORMAT

<...1.0 SEC...>	<...NONE...>	<...3.0 SEC...>
(Minimum)		(Minimum)
TONE C	GAP	TONE B

SUPER GROUP CALL FORMAT

<.....8 SEC..... >
TONE B

A. Individual Call

Tables 3 and 5 may also be used to determine the tone frequencies. The first digit of the code determines the tone group used in the code (see Table 3). Then Table 4 is used to determine the actual tone frequencies. For a code of 124, the tone groups used are shown in Table 3. **Tone A** and **Tone B** are both located in tone group 1 and **Tone B** is tone number 4. Refer to the following examples for additional information.

Example 1 - Code 098:

The digit "0" in Table 3 (First Digit of Code) shows that **Tone A** is in Tone Group 4 and **Tone B** is in Tone Group 2 (see Table 4).

Tone number 9 in Tone group 4 is 524.6 Hz.

Tone number 8 in Tone Group 2 is 879.0 Hz.

Example 2 - Code 265:

The digit "2" in Table 4 shows that both **Tone A** and **Tone B** are both in Tone Group 2.

Tone number 6 is 788.5 Hz.

Tone number 5 is 746.8 Hz.

Table 4 - Motorola Type Code Numbers

First Digit Of Code	Group From Which Tone A Is Selcted	Group From Which Tone B Is Selected
1	1	1
2	2	2
3	1	2
4	4	4
5	5	5
6	2	1
7	4	5
8	5	4
9	2	4
0	4	2
A	3	3

B. Group Call (Quick-Call Format)

In Group Call applications, the Tone Group is determined by Table 5, while the frequency is determined by Table 4. Refer to the following examples.

NOTE

Group Call code numbers range from 00 to 99. However, there are several Group Calls with the same Tone B frequency. This limits the total number of Group Calls to 40.

Table 5 - Motorola Type Code Numbers

TONE NO.	TONE GROUP 1	TONE GROUP 2	TONE GROUP 3	TONE GROUP 4	TONE GROUP 5	TONE GROUP 6
1	349.0 Hz	600.9 Hz	288.5 Hz	339.6 Hz	584.8 Hz	1153.4 Hz
2	368.5 Hz	634.5 Hz	296.5 Hz	358.6 Hz	617.4 Hz	1185.2 Hz
3	389.0 Hz	669.9 Hz	304.7 Hz	378.6 Hz	651.9 Hz	1217.8 Hz
4	410.8 Hz	707.3 Hz	313.0 Hz	399.8 Hz	688.3 Hz	1251.4 Hz
5	433.7 Hz	746.8 Hz	953.7 Hz	422.1 Hz	726.8 Hz	1285.8 Hz
6	457.9 Hz	788.5 Hz	979.9 Hz	445.7 Hz	767.4 Hz	1321.2 Hz
7	483.5 Hz	832.5 Hz	1006.9 Hz	470.5 Hz	810.2 Hz	1357.6 Hz
8	510.5 Hz	879.0 Hz	1034.7 Hz	496.8 Hz	855.5 Hz	1395.0 Hz
9	539.0 Hz	928.1 Hz	1063.2 Hz	524.6 Hz	903.2 Hz	1433.4 Hz
0	330.5 Hz	569.1 Hz	1092.4 Hz	321.7 Hz	553.9 Hz	1122.5 Hz

Example 1 - Group Call Code 07 (also code 27 and 37):

The digit "0" in Table 5 shows that **Tone B** is in Tone Group 2 along with 20 to 29 and 30 to 39. Tone number 7 in Tone Group 2 is 832.5 Hz (see Table 4).

Example 2 - Group Call 98 (Also code 48 and 88):

The digit "9" in Table 5 shows that **Tone B** is in Tone Group 4 along with 40 to 49 and 80 to 89. Tone number 8 in Tone Group 4 is 496.8 Hz.

Table 6 - Motorola group Call Tone Groups (TG)

GROUP CALL CODE NUMBER	TONE GROUP (TONE B)
00 - 09	TG2
10 - 19	TG1
20 - 29	TG2
30 - 39	TG2
40 - 49	TG4
50 - 59	TG5
60 - 69	TG1
70 - 79	TG5
80 - 89	TG4
90 - 99	TG4

CHANNEL GUARD ENCODE/DECODE

The radio can be programmed for Channel Guard (CTTCSS) encode/decode tone frequencies of 67 Hz to 210.7 Hz, including all of the standard EIA frequencies. Each channel may be programmed for encode/decode, encode only, decode only, or for no Channel Guard frequency.

A list of the standard tone frequencies is shown in Table 6. A list of digital Channel Guard codes and their equivalents are shown in Table 7.

Table 7 - CG Tone Frequencies

Standard Tone Frequencies Hz			
67.0	97.4	136.5	192.8
71.9	100.0	141.3	203.5
74.4	103.5	146.2	210.7
77.0	107.2	151.4	
79.7	110.9	156.7	
82.5	114.8	162.2	
85.4	118.8	167.9	
88.5	123.0	173.8	
91.5	127.3	179.9	
94.8	131.8	186.2	

Table 8 - Primary & Equivalent Digital Codes (OCTAL)

PRIMARY CODE	EQUIVALENT CODE	PRIMARY CODE	EQUIVALENT CODE	PRIMARY CODE	EQUIVALENT CODE
023	340,766	132	605, 634, 714	237	464, 642, 772
025		133	413, 620	243	267, 342
026	566	134	273	245	370, 554
031	374, 643	135	205, 610	246	542, 653
032		136	502, 712	252	661
036	137	142	174, 270	254	314, 612, 706
037	560, 627	143	333	255	425
043	355	144	466, 666	262	316, 431, 730
047	375, 707	145	525	266	655
051	520, 771	147	303, 306, 761	271	427, 510, 762
053		150	256, 703	274	652
054	405, 675	152	366, 415	276	326, 432
056	465, 656	153	606, 630	307	362, 565
057	172	155	233, 660	311	330, 456, 561
060	116, 737	156	517, 741	312	515, 663, 743
065	301	157	322, 503	315	321, 673
066	734	161	345, 532	317	546, 614, 751
067	516, 720	162	416	324	343, 570
071	603, 717, 746	163	460, 607, 654	325	550, 626
072	470, 701	164	207, 732	331	372, 507
073	640	165	354	332	433, 552
074	360, 721	171	265, 426	344	471, 664, 715
075	501, 624	176	244, 417	346	616, 635, 724
076	203, 754	212	253	351	353, 435
104	226, 557	213	263, 736	356	521
107	365	217	371, 453, 530	363	436, 443, 444, 662
114	327, 615	222	445, 457, 575	446	467, 511, 672
115	534, 674	223	350, 475, 750	447	473, 474, 731, 744
117	411, 756	224	313, 506, 574	452	524, 765
122	535	225	536	454	513, 545, 564
123	632, 657	227	261, 567	455	533, 551
125	173	231	504, 631, 636, 745	462	472, 623, 725
127	412, 441, 711	234	423, 563, 621, 713	523	647, 726
130	364, 641	235	611, 671, 723	526	562, 645
131	572, 702	236	251, 704, 742		

REPLACEMENT OF BATTERY PACK

CAUTION

The battery pack used with the PCS Personal Radio must be as supllied by General Electric and shown under **OPTIONS AND ACCESSORIES** listed in the **TABLE OF CONTENTS** of this manual

To remove The Battery Pack From The Radio (refer to Figure 3):

1. Turn the radio **OFF** by sliding the **ON/OFF** slide switch on the battery pack to the **OFF** position.

2. Press down on the battery release latch and slide the battery pack out in the direction of the release latch.

Figure 3 - Removing Battery Pack

To Re-Connect The Battery Pack to The Radio (see Figure 4):

1. Be sure the **ON/OFF** slide switch on the battery pack is in the **OFF** position.

2. Align the battery pack with the grooves in the back of the radio and slide the battery pack toward the front of the radio.

3. Insert the battery pack into the grooves until the battery release latch clicks into place.

RECHARGING THE BATTERY PACKS

The radio is equipped with a battery voltage level indicator which is displayed in the LCD when the battery pack voltage reaches a low level and the battery pack requires charging.

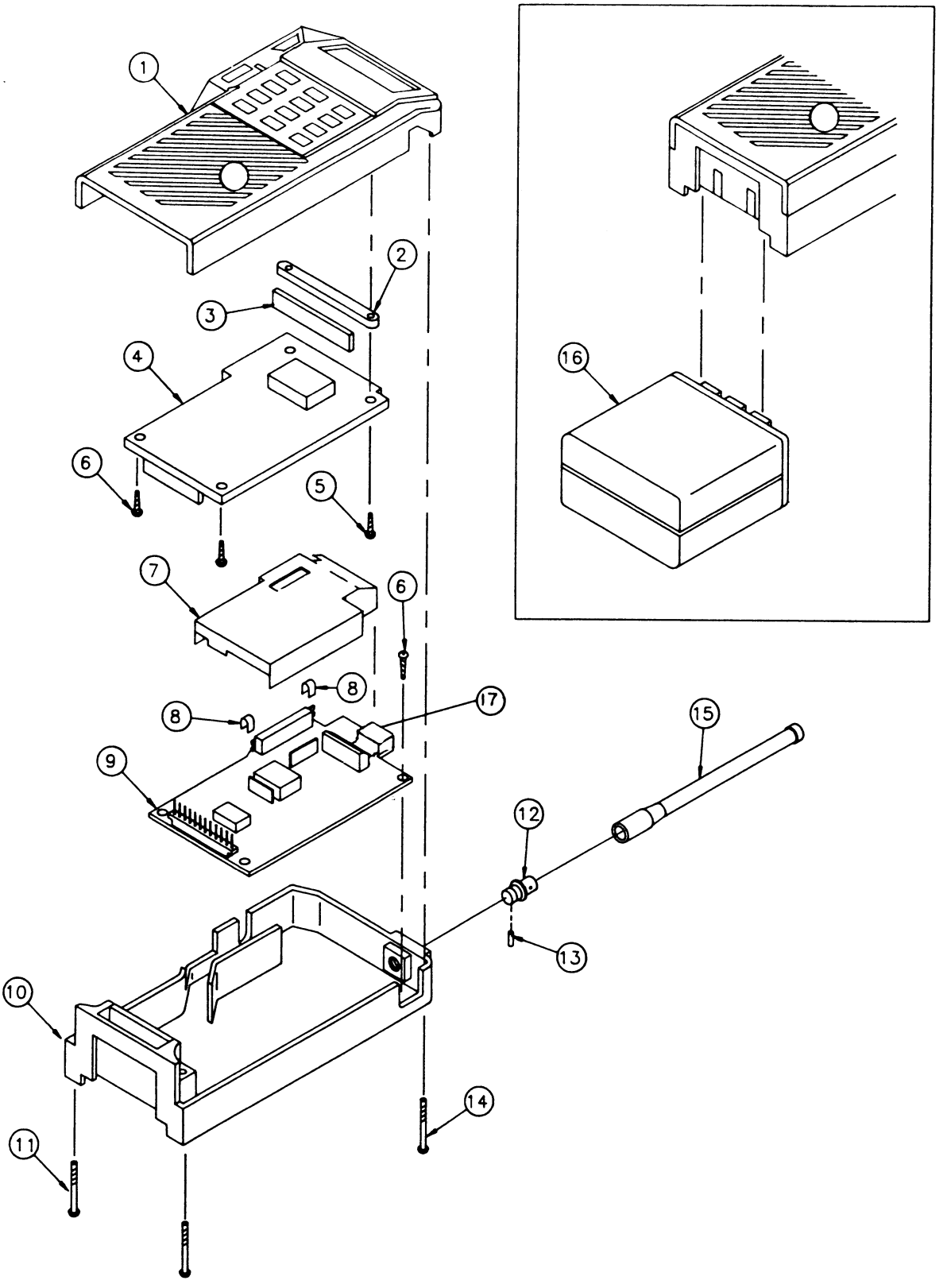
There are several chargers and charge rates available of charging the **PCS** battery packs. The battery pack may be charged while connected to the radio or removed for charging. For specific instructions, refer to the applicable charger Operator's Manual.

Figure 4 - Installing Battery Pack

ERICSSON

Ericsson GE Mobile Communications Inc.
Mountain View Road • Lynchburg, Virginia 24502

Printed in U.S.A.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

LBI 38693

MECHANICAL PARTS
PCS UHF SCAN/DTMF
(Refer to Mechanical Breakdown)

SYMBOL	GE PART NO.	DESCRIPTION
1	19D902180G3	Front Cap Assembly (A3).
2	19B801570P2	P901 Connector Holder.
3	19A705662P1	P901 Connector "MOE".
4	19D902631G1	Audio/Logic Board, 16 Freq., (A2).
5	19A702364P310	Machine screw: M3 - 0.5 x 10. (Quantity 2).
6	19A702364P304	Machine screw: M3 - 0.5 x 4. (Quantity 7).
7	19B801572G1	RF Shield.
8	19B801492P2	Power Module mounting clip. (Quantity 2).
9	19D438262G1 19D438262G2 19D438262G3	Transmit/Receive Board, 403-440 MHz (A1). Transmit/Receive Board, 440-470 MHz (A1). Transmit/Receive Board, 470-512 MHz (A1)
10	19D902174G1	Rear Cover Assembly. (Includes items 12 & 13).
11	19A705732P333	Machine screw: M3 - 0.5 x 33. (Quantity 2).
12	12A702270P2	BNC Antenna Connector.
13	19A143453P1	Setscrew: #3 - 48 x .125 inch.
14	19A705732P329	Machine screw: M3 - 0.5 x 29. (Quantity 2).
15	19B801621P1,2 19B801620P1-3	Antenna, Flex (UHF). Antenna, Helical (UHF).
16	19A705293P1 P3	Battery: 7.5V.
17	19B801671P1	Connector Shield.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES