



XPR 4500 / XPR 4550 Mobile Radio

User's Guide

6816817H01

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Product Safety and RF Exposure Compliance



Caution

Before using this product, read the operating instructions for safe usage contained in the Product Safety and RF Exposure booklet enclosed with your radio.

ATTENTION!

This radio is restricted to occupational use only to satisfy FCC RF energy exposure requirements. Before using this product, read the RF energy awareness information and operating instructions in the Product Safety and RF Exposure booklet enclosed with your radio (Motorola Publication part number 6881095C99) to ensure compliance with RF energy exposure limits.

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Notations Used in This Manual

Throughout the text in this publication, you will notice the use of WARNINGS, CAUTIONS, and Notes. These notations are used to emphasize that safety hazards exist, and care that must be taken or observed.




WARNING: An operational procedure, practice, or other condition, which might result in injury or death if not carefully observed.



CAUTION: An operational procedure, practice, or other condition, which might result in damage to the equipment if not carefully observed.

Note: Note: An operational procedure, practice, or other condition, which is essential to emphasize.

The following special notations identify certain items:

<i>Example</i>	<i>Description</i>
Light button or 	Buttons and keys are shown in bold print or as a key symbol.
PHONE	Menu items (softkeys) are similar to the way they appear on the radio's display.

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Introduction

Using Your Radio: The Basics

This chapter gives you the basic knowledge you need in order to use your radio. The following topics are covered:

- Getting Started (page 2)
- Identifying Your Radio (page 3)
- Operating Your Control Head (page 3)
- Turning On the Radio (page 5)
- Setting the Volume (page 6)
- Adjusting the Display Brightness (page 6)
- Display Status (page 8)
- Feature Control (page 8)
- Alert Tones (page 8)

Getting Started

The XPR 4500 / XPR 4550 Mobile Radio is among the most sophisticated two-way radios available. It can operate in the following frequency ranges:

<i>VHF</i>	<i>UHF</i>	
136-174 MHz	403-470 MHz	
	450-527 MHz	

These channels provide maximum communications capability under varying operating conditions.

One of the newest in a long line of quality Motorola products, the XPR 4500 / XPR 4550 Mobile Radio provides improved voice quality across more of your coverage area. The digital process called *embedded signaling* intermixes system signaling information with digital voice, resulting in improved system reliability and the capability of supporting a multitude of advanced features. Such features add up to better, more cost-effective two-way radio communications.

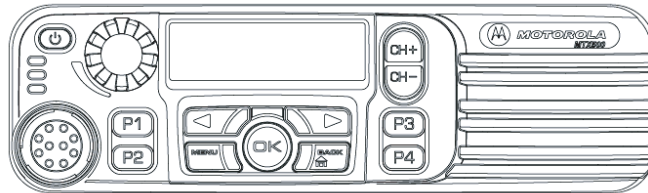
The XPR 4500 / XPR 4550 Mobile radio has two USB ports that can interface with external devices, such as laptop computers.

Identifying Your Radio

The XPR 4500 / XPR 4550 Mobile Radio has two major components: the radio unit installed in your vehicle and the control head that is used to activate various radio features. Keep the foldout page opened for reference as you read this manual. Your radio has the following control head:

Control Head

The control head has the rotary **Volume** knob, 4 programmable menu buttons, menu navigation buttons, menu button, home button, On/Off button, channel buttons and a 2-line dot matrix LCD display.



Note: A "CH MISMATCH" error upon turning on your radio, means that either the Control Head has been connected to a legacy transceiver, or vice versa.

Operating Your Control Head

Your advanced control head is designed for ease of use and flexibility of feature control. Before operating the radio, familiarize yourself with the various controls, indicators, and alert tones.

- On/Off button: To turn the mobile radio On and Off.
- Rocker Up/Down button: To select the desired position/personality from the radio.
- Programmable Buttons: Several of the radio's buttons can be programmed as short-cut buttons for many of the radio's features, P1, P2, P3 and P4.

Introduction

Check with your dealer for a complete list of the functions your radio's programmable buttons support.

- Left and Right navigation Buttons: For navigating through the radio menu.
- Back/Home button: Used to back up one level in the Menu hierarchy (short press); also used to exit the Menu Mode (long press).
- OK button: The "OK" button is used to make Menu selections.
- Menu button: To enter Menu mode.
- Volume Knob: Use to adjust the radio's volume.
Turning the rotary volume knob counter-clockwise shall turn the radio volume to minimum. Turning the rotary volume knob clockwise shall turn the radio volume to maximum.
- Indicators

LED	State	Description
RED	Illuminated	Power ON
YELLOW	Illuminated	Permanent Monitor Mode
		Receiving Private Call
	Blinking	Performing Scan
GREEN	Illuminated	Radio Transmitting
	Blinking	Power UP

Turning On the Radio

Do the following:

- Turn the radio on with a short press of the power button in the upper left corner of the control unit.

After a short time, the red, green and yellow LED's light up, indicating that the radio is powering up.

The radio first performs a selftest to determine its operational capability and then powers on

The display then shows XYZ 2345.

When the radio is fully powered on, the Zone and Channel text and menu items is displayed. The backlight will turn on to the last selected color and dim level.

Note: Pressing the power button anytime after the LED's light up will **TURN OFF** the radio.

The radio then performs a self check.

Note: If FAIL ##/## appears in the display, the radio will not function until the condition has been corrected.

If ERROR ##/## appears, some non-critical data has been changed. If either of these displays appear, if the display goes blank, or if the unit appears to be locked up, refer to the "Troubleshooting" section.

Setting the Volume

Rotate the **Volume** knob clockwise to increase the volume and counterclockwise to decrease the volume.

Adjusting the Display Brightness

The backlight allows the radio's display to be illuminated from the rear to allow you to see the display in any light condition.

Utilities → Radio Settings → Backlight

Select desired brightness from the following options and press the **OK** button:

- Low
 - Medium
 - High
-

Using the navigation key

When accessing a feature on the radio, use the left or right toggles on the navigation key to access further options within the menu.

If you cannot locate a menu item, it may not be programmed, or it may not apply to the radio's current mode setting.

Trunked Modes or Conventional Channels

Depending on how your radio is programmed, you can select conventional channels or trunked talkgroup. Conventional channels consist of a transmit and receive frequency pair, an associated squelch code pair, and a time-out timer value. See “Conventional Radio Features” on page 47.

Trunked modes consist of the system/announcement group/talkgroup combination and a time-out timer value. See “Trunking Operation” on page 61.

Field Programming

Other radio features may be slaved to the selected mode by field programming. This *mode slaving* means that the radio is preprogrammed to automatically give you the proper operation for each mode you select.

You may use the control head to program your own mode names. The names you assign are clearly shown in the alphanumeric display. You can see all the key operating information, including the mode selected or being scanned, and the on/off status of various features. The operating conditions are shown either by the display or by visual/audio indicators, or by both.

Display Status

The control head display indicates your selected mode, or the currently active receive mode when scan is on.

Feature Control

You can turn the various radio features on or off, change modes, and adjust the volume.

To exit a feature, such as phone, press the **HOME** button.

Alert Tones

<i>Tone Type</i>	<i>Name</i>	<i>Description</i>
Two high-pitched tones	Private Conversation™	Indicate that a private call has been received.
Four high-pitched tones every five seconds	Call Alert	Indicate that a Call Alert page has been received.
Single, high-pitched tone	Central Acknowledge	Indicates that a Call Alert, emergency alarm, reprogram request, or status/message transmission has been received by the system's central controller.
Four high-pitched tones	Mobile Unit Acknowledge	Indicate that a Call Alert page has been received by the intended unit, or the emergency alarm, reprogram request, or status/message transmission has been acknowledged by the intended dispatcher.
Sound similar to a telephone busy signal	System Busy	Indicates, when you press the microphone push-to-talk (PTT) button, that you cannot transmit because all system radio channels are in use. Release the PTT button and wait for call back.

<i>Tone Type</i>	<i>Name</i>	<i>Description</i>
A series of two short, high-pitched tones	Automatic Call Back	Indicate that a channel is now available for your previously requested transmission.
A series of two short, high-pitched tones (same as automatic call back)	Talk Permit (optional)	Indicate, when you press the microphone PTT button, that the system is accepting your transmission.
Continuous, low-pitched tone	Talk-Prohibit/ Out-of-Range	Indicates, when you press the microphone PTT button, that either you are out of the range of the trunked radio system, or the system is out of service, or the channel is busy with the Smart PTT feature enabled.
Single, high-pitched tone every nine seconds	Failsoft	In an unmuted receive condition, indicates a trunked system central controller failure. The radio reverts from trunked operation to a system similar to conventional radio repeater operation. Other system users can be heard sharing the channel.
Continuous, low-pitched tone	Illegal Mode	Indicates that you have entered a mode where normal system traffic will be missed, or you are attempting something which is not permitted. Examples include: forgetting to exit the telephone interconnect mode after a call ends (fleet and subfleet calls cannot be received), attempting to transmit on a receive-only conventional mode, attempting to select a dynamic mode where no dynamic ID assignment has been made.
Brief low-pitched tone	Time-Out Timer Warning	Indicates that your present transmission will soon be disabled.

Introduction

<i>Tone Type</i>	<i>Name</i>	<i>Description</i>
Single, short, high-pitched tone	Valid Key	Indicates that you pressed a valid key, or you entered a feature configuration state, or you are receiving or transmitting in the clear mode on secure models (with TX Clear Alert Tones enabled).
Single, low-pitched tone	Invalid Key	Indicates that you tried to make an invalid key press, or that an emergency alarm, reprogram request, or status/message was not acknowledged.
Unique chirping sound	Dynamic Reprogramming	Indicates that a dynamic ID is assigned.

Basic Operating Procedures

Basic Functions

This chapter shows you how to access the radio's basic functions and includes the following topics:

- Selecting the Zone or Mode (page 12)
- Selecting the Home Mode (page 14)
- Transmitting (Conventional Modes Only) (page 15)
- Transmitting (Trunked Modes Only) (page 15)
- Selecting the Transmit Level (page 16)
- Monitoring Conventional Mode Activity (page 16)
- Adjusting the Squelch Level (page 17)

Selecting the Zone or Mode

A zone is a grouping of modes. A mode is a group of characteristics such as transmit/receive frequencies, Private-Line™ codes, radio parameters, and an alphanumeric name.

Note: Your radio supports up to a maximum of 50 zones.

You can select or change zone via the programmable button or via the radio menu.

Selecting or Changing the Zone

Menu→ Zone

- 1 Press the main menu button and scroll to **Zone**.
- 2 Press the OK button to access the zone list.

The display shows the current zone and mode.

- 3 Press the **▶** or **◀** until the desired zone is displayed.
- 4 Press the OK button or **PTT** button to save the displayed zone as the new home (default) zone.

The zone name stops flashing once it is saved.

- 5 Press the **PTT** button to begin transmitting on the displayed zone.
-

Selecting or Changing a Mode in the Current Zone

To access a mode in the current zone, do the following:

- 1 Press MENU button.
- 2 Scroll to Zone Lists and press the OK button.

The display shows the current zone and mode.

- 3 Use the navigation keys until the desired channel in the current zone is displayed.
- 4 Press the **OK** button or **PTT** button to save the displayed channel as the new home (default) channel.

The channel name stops flashing once it is saved.

- 5 Press the **PTT** button to begin transmitting on the displayed zone and mode.
-

Selecting or Changing to a Mode Not in the Current Zone

- 1 To access a mode that is not in the current zone, use the navigation keys to move to the zone containing the mode.

Note: Analog and Digital channels can be mixed in each zone.

- 2 Do one of the following:
 - Select a desired zone (page 12).
 - Select a desired mode in the current zone (page 13).
-

Selecting the Home Mode

This feature must first be enabled by a qualified radio technician.

Press the **HOME** button to select the home mode contained within the home zone, from any other zone and mode in the radio.

Transmitting (Conventional Modes Only)

- 1 Lift the microphone off-hook, and listen for activity on that mode.
 - 2 If you hear no activity, press and hold the microphone **PTT** button.
-

Transmitting (Trunked Modes Only)

- 1 Select a desired zone and mode.
 - 2 Lift the microphone off-hook, and press the microphone **PTT** button to transmit.
Speak clearly into the microphone.
 - 3 Release the PTT button to receive.
-

Selecting the Transmit Power Level

You can select (toggle) the transmit power level via the programmable button.

Press the programmable button.

The display momentarily shows **L** at the power level icon if low power is selected or **H** to indicate high power level is selected.

Monitoring Conventional Mode Activity

This feature allows you to monitor channel traffic on conventional channels by defeating the coded squelch. This feature must first be enabled by a qualified radio technician or system administrator.

Do one of the following:

Take the microphone off hook.

(This is the same as monitor on. You hear all channel traffic.)

OR

- 1** Make sure you are in Home mode where the default zone and mode are being displayed (page 14).
 - 2** Press the ► or ◀ button to scroll to the MON softkey.
 - 3** Pressing MON softkey momentarily toggles between MONITOR ON and MONITOR OFF. MONITOR ON shown on the display indicates that the radio is monitoring.
 - 4** Pressing MON softkey again turns monitor off and you don't hear all channel traffic.
-

Adjusting the Squelch Level

Your radio's ability to transmit or receive signals varies as you move away from or close to your base station. You can adjust your radio's squelch to improve its ability to receive transmissions.

Do the following:

- 1 Press the programmable button.
You can either chose tight or normal for your squelch setting.

Your squelch settings will be remembered upon power down, battery removal or change of channel.

General Radio Features

Often-Used Features

This chapter shows you how to access the most frequently used features. The following topics are covered:

- Emergency Call and Alarm (page 19)
- Scan Operation (page 23)
- Optional External Alarms (Horn and Lights) (page 32)
- Time-Out Timer (page 35)
- Push-To-Talk Identification (PTT-ID) (page 35)
- Telephone Interconnect List (Conventional and Trunking) (page 36)
- Unlimited Telephone Interconnect (page 38)
- Call Alert Page (Conventional and Trunking—Digital Modes Only) (page 43)

Emergency Call and Alarm

The emergency call and alarm features allow you to have priority channel access and/or send an emergency data transmission to the dispatcher in an emergency situation.

The desired type of emergency feature—alarm, call, call and alarm, or silent alarm—can be preprogrammed by a qualified radio technician.

The radio must be turned on to activate any emergency feature.

Emergency Call

Emergency call gives you priority access to a voice channel for all subsequent transmissions after you press the emergency button. The level of priority access is determined by the system manager.

SmartZone Emergency Call Receive Operation

A radio configured for SmartZone[®] operation displays **EMER RECEIVED** whenever it receives an emergency call. The display alternates with the selected-mode display as long as the radio is unmuted to the emergency call.

Initiating an Emergency Alarm

The emergency alarm feature sends a data transmission to alert the dispatcher of your emergency condition and identify your unit ID.

Press the emergency button.

A tone sounds and the display alternates `EMERGENCY` with the current zone/channel.

For trunking modes, a high-pitched tone indicates that the alarm has been received by the trunked system's central controller.

A dispatcher acknowledgment `ACK RECEIVED` display follows.

The radio automatically returns to normal operation. No further action is required.

Initiating an Emergency Call

- 1 Press the emergency button.

A tone sounds and the display alternates `EMERGENCY` with the current zone/channel.

- 2 Press the **PTT** button and announce your emergency.
- 3 After completing the emergency call, press and hold the emergency button until a tone sounds.

The alternating `EMERGENCY` display disappears, and the radio returns to normal operation.

Initiating an Emergency Call and Alarm

If the radio has both emergency call and alarm features, it automatically proceeds to the call mode after the alarm is acknowledged.

- 1 Press the emergency button to activate the emergency call/ alarm feature.

The display begins alternating EMERGENCY with the current zone/channel.

For trunking modes, a high-pitched tone sounds, indicating that the alarm has been received by the trunked system's central controller.

A dispatcher acknowledgment (four high-pitched tones) follows, accompanied by an ACK RCVD display.

- 2 Press the **PTT** button and announce your emergency.
- 3 To exit from the emergency state altogether, press and hold the emergency button until a tone sounds.

The alternating EMERGENCY display disappears, and the radio returns to normal operation.

Note: Turning the radio off also cancels the emergency state.

Initiating a Silent Emergency Alarm

- 1 Press the emergency button to activate the silent alarm feature.

During a silent emergency alarm, there are no display changes, and the receiver audio mutes so that no indication is given that an emergency alarm has been sent.

- 2 To exit the silent alarm mode, press and hold the emergency button until a tone sounds.

Note: If silent emergency alarm is used with emergency call, pressing the **PTT** button exits the silent mode and initiates the emergency call.

Special Considerations for Emergencies

- If you press the emergency button while in a mode that has no emergency capability, a low-pitched tone sounds.
- If the unit is out of the range of the system and/or the emergency alarm is not acknowledged, a tone sounds and the display shows `NO ACKNOWLEDGE`.
- If you press the emergency button, then change to a mode that has no emergency capability, a `NO EMERGENCY` display alternates with the mode name display, and a continuous low-pitched tone sounds until a valid emergency mode is selected or until the emergency is cancelled.
- When an emergency is active, changing to another mode where emergency is enabled (trunked or conventional) causes an emergency alarm and/or emergency call to be active on the new mode.

Scan Operation

The scan feature allows you to monitor activity on different conventional or trunked modes by scanning a *scan list* of modes. The modes to be scanned in a scan list are programmed by a qualified radio technician. You can select the modes to be scanned in a scan list if *operator-selectable scan* is enabled.

There are three types of scan lists available:

- Conventional—Comprises up to 15 different conventional-only modes
- Trunked Priority Monitor—Comprises up to 15 modes that are all from the same trunked system
- Talkgroup Scan—Comprises up to 10 combined conventional modes and modes from one trunking system

The radio supports both priority and non-priority scanning. With priority scanning enabled, a scan list can have one mode assigned as the first-priority mode and a second as the second-priority mode.

The XPR 4500 / XPR 4550 Mobile Radio supports automatic scanning (autoscan), which can be programmed into the radio by a qualified radio technician. With this feature, the radio begins scanning whenever you select a mode to which a scan list is assigned.



Note: You cannot turn scan off on a mode that has autoscan enabled.

If multiple scan types are enabled in the radio, the type of scan that is activated depends on the personality of the mode selected when the **SCAN** softkey is pressed. For all types of scan, the selected mode is, by default, a member of its own scan list.

Scan lists stay in memory when you turn scan off, turn the radio off, or disconnect the radio from the battery.

Turning On Scan

Do the following:

- 1 Press the  button to scroll to the **SCAN** softkey.
- 2 Press the  button below **SCAN**.

The **Scan** indicator lights and a list of modes is scanned for activity. The text display area will indicate **SCAN ON** if scan is currently enabled or **SCAN OFF** if scan is just been turned off.

When a scanned mode becomes active, the display changes to show the active mode name, the appropriate priority indicator lights, and the radio unmutes.

The radio will not begin scanning again for a predetermined *hang time* after the call ends, giving you time to respond. The hang time is typically three seconds (by default), but can be changed by a qualified radio technician.



Note: A lit **N PRI** (non-priority) indicator means that the active mode is a non-priority member of the scan list (for all scan types).

A solidly-lit **PRI** (priority) indicator means that the active mode is the priority 2 member of the scan list (Trunking Priority Monitor and Conventional scan types only).

A blinking **PRI** indicator means that the active mode is the priority 1 member of the scan list (Trunking Priority Monitor and Conventional scan types only).

Turning Scan On While Disregarding the Squelch Code (Conventional Modes Only)

Do the following:

- 1 Press the  button to scroll to the MON softkey.
- 2 Press the  button below MON.
- 3 The brief MONITOR ON display indicates that the radio is disregarding the squelch code.



Note: While scanning for activity, you can still receive fleetwide, system-wide, dynamic regrouping, incoming telephone interconnect and Private Conversation/Call Alert calls.

Respond to these types of calls as you would normally on the selected mode. However, when scanning different modes while in talkgroup scan, incoming Private Conversation/Call Alert calls may be missed.

Viewing a Scan List

- 1 Press and hold the **SCAN** softkey until the **Scan** indicator blinks and a beep is heard.

The radio suspends scanning while a scan list is being reviewed.

- 2 Press the **▶** button to scroll to the **VIEW** softkey.
- 3 Press the  button below **VIEW**.
- 4 Press the **▶** button to scroll to the **SCAN** softkey.
- 5 Press the  button below **SCAN**. The radio suspends scanning while a scan list is being reviewed.
- 6 Press the **▶** or **◀** button to scroll through the preprogrammed scan list.
- 7 Those modes that are in the scan list are indicated by **N PRI**, **PRI** or blinking **PRI** indicator (indicating the mode's assigned priority as previously described).
- 8 Press **RCL** softkey to review only modes that are already in the scan list.

Press the **HOME** button momentarily to exit the scan list and resume scanning.

Transmitting While Scan Is On

Radio Programmed for Talkback Scan

Press the microphone **PTT** button to transmit on the mode indicated by the display.

The radio does not begin scanning again for a predetermined hang time (programmable by a qualified radio technician) after you release the **PTT** button, allowing the other party to respond.

If the other party responds within the hang time, scanning does not resume until the full hang time expires after they have finished speaking, allowing the conversation to be completed.

Note: To transmit on the selected channel if another channel is active, first turn scan off by pressing the **SCAN** softkey momentarily.

Radio Programmed for Non-Talkback Scan

In selected mode or fixed mode, press the microphone **PTT** button at any time to transmit on the selected mode or fixed mode.

Note: To make a Call Alert page, or Private Conversation call while scanning, press either the **PAGE** or **CALL** softkey. The call is entered on the selected mode and scanning is halted until the call is exited by pressing the **HOME** button or pressing either the **PAGE** or **CALL** softkey.

Temporarily Deleting a Nuisance Mode with Scan On

To temporarily delete a mode that you do not wish to hear (nuisance mode), press the **NUIS** softkey by searching for it with the help of **▶** or **◀**.

You can delete undesired modes.

Note: Priority modes, the selected mode, and the designated transmit mode cannot be deleted.

Restoring a Nuisance Mode

To restore the original scan list, do one of the following:

- Turn scan off, then on.
- Change modes.
- Turn off the radio, and then turn it back on.

Note: Nuisance mode delete can be disabled by the system administrator.

Changing Mode Priorities While Scan Is On

When active, this dynamic priority feature allows you to change the priority of a non-priority mode in the scan list to priority 2.

- 1** Press **DYNP** softkey to change the priority of a non-priority channel in the scan list to priority 2.
- 2** Press the **HOME** button momentarily to exit the scan list and resume scanning.

Note: You cannot alter the status of the priority 1 member.

Restoring Mode Priorities in a Scan List



To restore the original mode priorities in a scan list, do one of the following:

- Press **RCL** softkey.
 - Turn scan off, then on.
 - Change modes.
 - Turn off the radio, and then turn it back on.
-

Programming a Scan List

To program a scan list, operator-selectable scan list members first must be enabled in the radio programming by a qualified radio technician.

Adding a Channel to the Scan List

- 1 Press the **▶** button to scroll to the **PROG** softkey.
- 2 Press the  button below **PROG**.
- 3 Press the **▶** button to scroll to the **SCAN** softkey.
- 4 Press the  button below **SCAN**. The scan indicator blinks and a good-key chirp is heard.
- 5 Press the **▶** or **◀** button to scroll through the preprogrammed scan list.

Press the **SEL** softkey to add the channel.

Scroll through of the available priority choices, and press the **SEL** softkey to choose one.



The new channel becomes a member of the scan list assigned to the selected channel when scan list programming was entered.

Note: If a scan list is full, you will hear a bad-key chirp each time you press **SEL** softkey, and the desired channel will not be assigned to the list.

Press the **HOME** button to exit scan list programming and return to normal scan operation.

Deleting a Channel from the Scan List

Do the following:

- 1 Press the **▶** button to scroll to the **PROG** softkey.
- 2 Press the  button below **PROG**.
- 3 Press the **▶** button to scroll to the **SCAN** softkey.
- 4 Press  button below **SCAN**. The scan indicator blinks and a good-key chirp is heard.
- 5 Press the **▶** or **◀** button or **Mode** knob to locate the channel to be deleted.

Press the **SEL** softkey momentarily to scroll through the available priority choices until the priority choice disappears.

This indicates that the channel is no longer a member of the scan list that was assigned to the selected channel.

OR

Press the **RCL** softkey momentarily to scroll through just the scan list members.

OR

Delete a channel from a scan list by pressing the **DEL** softkey.

Note: If you delete all members of a scan list, and scan is subsequently turned on, you will hear a continuous low-pitched tone, and the display will change to **EMPTY LIST**

You cannot delete the designated transmit mode, the selected mode, or the fixed scan list members. The selected mode, by default, is always scanned when scan is turned on, regardless of whether or not it is explicitly programmed as a scan list member.

Press the **HOME** button to exit scan list programming and return to normal scan operation.

Hang Up Box (HUB)

To temporarily suspend Scan Mode operation, remove the microphone from the Hang Up Box (HUB). You are allowed to use the microphone while scan is suspended. Priority Member scanning is **not** suspended, however. This feature applies to all Scan Lists and Scan Types. Scan is resumed once the microphone is returned to the holding clip and the preprogrammed hang time has elapsed.

Note: Priority Scan List members are continuously scanned only when the Scan List, **Designated Tx Member** field is set to "Talkback" in the radio programming. Otherwise, all scan mode operation is suspended.

Optional External Alarms (Horn and Lights)

All control heads can be equipped for external alarms (horn and lights) that are activated when a Call Alert page, Private Conversation call, or phone call is received.

These features are useful when you must leave the vehicle, but need to receive any incoming messages.

The radio always powers up with the horn and lights feature enabled.

Activating the External Alarm(s)

Non-Permanent Horn and Lights

- 1 Press the **H/L** softkey momentarily.
If necessary use the **▶** or **◀** buttons to access other options within the menu.

The last selected alarm(s) are enabled, and the display alternately shows the enabled alarm(s), then the selected mode.

- 2 Press the **H/L** softkey a second time to turn off the alarm(s).
-

Permanent Horn and Lights

- 1 Press the **H/L** softkey momentarily.

The last selected alarm(s) are enabled.

The display briefly shows the enabled alarms, and then reverts back to the selected mode.

- 2 Press the **H/L** softkey a second time to turn off the alarm(s).
-

Changing the Selected Alarms

- 1 Press and hold the **H/L** softkey until a tone sounds and the display indicates the currently selected alarm.
 - 2 Press the appropriate softkey right below the menu to review the choices until the display shows the desired alarm:
 - **H/L** softkey - **HORN/LITES ON** (both horn and lights)
 - **LGTS** softkey - **LIGHTS ON**
 - **HORN** softkey - **HORN ON**
 - 3 Press the **H/L** softkey to select the desired alarm and return to normal operation.
-

Receiving a Call While Alarms Are Turned On

When a call is received, the vehicle's horn sounds for four seconds, and/or the car lights turn on for 60 seconds. The time interval can be modified by a qualified radio technician.

The display alternates between the type of call received (**CALL**, **PAGE**, or **PHONE**) and the selected mode name.

Turning Off Non-Rearmable External Alarm

- 1 To turn off the external alarm(s), press the **PTT** button or any control-head button.

Note: Pressing the **CALL**, **PAGE** or **PHON** softkey will turn off the external alarm(s) and place you directly in that feature.

The **Volume** knob and the **DIM** button have no effect on the state of the external alarm(s).

- 2 To rearm the horn and lights feature, press the **H/L** softkey momentarily.

Turning Off Rearmable External Alarms

To turn off the external alarm(s), press the **PTT** button or any control head softkey or button other than the **H/L** softkey.

Pressing **CALL**, **PAGE**, or **PHON** softkey turns off the external alarm(s) and places you directly in that feature. When the external alarm(s) are turned off, they will be automatically rearmed.

Note: Pressing the **H/L** softkey turns off the external alarm(s) and exits the horn and lights feature. To re-arm the feature, press the **H/L** softkey momentarily.

The **Volume** knob and the **DIM** button have no effect on the state of the external alarms.

Time-Out Timer

Your XPR 4500 / XPR 4550 Mobile Radio provides a time-out timer function that prevents locking up a repeater or channel by prolonged keying of the transmitter. You cannot transmit longer than the preset timer setting. If you attempt to do so, the radio automatically stops your transmission, and you hear a talk-prohibit tone.

Note: You will hear a brief, low-pitched, warning tone four seconds before the transmission times out.

The timer is set for 60 seconds at the factory, but it can be reprogrammed by a qualified radio technician for between 15 and 465 seconds (7.75 minutes), in 15-second intervals, or it can be disabled entirely for each radio mode.

Push-To-Talk Identification (PTT-ID)

When you press the PTT button to send a message, your radio ID number is transmitted as part of each voice message. This PTT-ID number is then shown on the receiving radio's display.

For the digital mode, the display shows up to eight right-justified digits.

Pressing the **CALL** softkey erases the PTT-ID from the display.

The display conditions of PTT-ID must be programmed by a qualified radio technician.

Telephone Interconnect List (Conventional and Trunking)

With any of the control heads, you can initiate and receive telephone calls if the system is properly equipped. All calls between the mobile operator and the land line are private, regardless of who initiates the call.

All control heads feature a phone list capability of up to 100 preprogrammed phone numbers. The radios can be programmed by a qualified radio technician so that a name can be assigned to each number in the list.

Answering a Phone Call

When a phone call is received, telephone-type ringing sounds and the display shows `PHONE CALL`.

- 1 Press the **PHON** softkey.
 - 2 Press the **PTT** button to talk; release it to listen.
 - 3 When the call is completed, press the **HOME** button or **PHON** softkey to hang up and return to normal operation.
-

Initiating a Telephone Call from the List

- 1 Press the **PHON** softkey momentarily to select the phone function.

A valid-key chirp is heard.

The display shows the last number dialed or a blank scratchpad appearing as a series of dashes.

- 2 Press the **▶** or **◀** button to locate the number you want to call.

The display first shows the name, and then the number.

- 3 Press the **PTT** button.

The display shows the number that is automatically dialed.

Note: If the number contains a programmed pause, the dialing pauses briefly when the display shows **F**. After the brief pause, the rest of the numbers are dialed.

If you are out of range of the trunked system, the display shows **NO PHONE**, and a continuous low-pitched tone sounds. Press the **PHON** softkey to resume normal operation.

If the trunked phone interconnect is in use or the phone interconnect is out of service, a telephone-type busy tone sounds, and the display shows **PHONE BUSY**. Your number is automatically dialed when the phone interconnect becomes available. If you hang up, you lose your place in the queue.

If the display shows **PHONE BUSY** with a low-pitched tone rather than a telephone-type busy tone, the call is not queued. You must hang up and try again.

- 4 When your party answers, press the **PTT** button to talk, and release it to listen.
 - 5 When the call is completed, press the **PHON** softkey to hang up and return to normal operation.
-

Unlimited Telephone Interconnect

Calling a Phone Number Not in the List

- 1 Press the **▶** or **◀** button to access the **PHON** feature.

Press the softkey under the phone feature.

- 2 Enter the desired phone number from the optional keypad mic.

The display updates as the numbers are entered.

- 3 Press **Enter** on the keypad mic to make the call
- 4 When your party answers, press the **PTT** button to talk, and release it to listen.

Note: If you are out of range of the trunked system, the display shows **NO PHONE**, and a continuous low-pitched tone sounds. Press the **HOME** button or the **PHON** softkey to resume normal operation.

If your radio is programmed for *live over dial*, every digit pressed after the phone call is established is sent to the telephone system.

If your radio is programmed for *buffer over dial*, the digits pressed are entered into the radio's memory, and they are all sent together when the **PTT** button is next pressed. You cannot send digits and talk on the same **PTT** button press. If you press the **PTT** button to send the digits, you must release the **PTT** button and press it again to transmit.

- 5 When the call is completed, press the **HOME** button or the **PHON** softkey to hang up and return to normal operation.
-

Storing a Number in the List

- 1 Press and hold the **PHON** softkey to select the phone programming function.
- 2 Use the navigation keys, **▶** or **◀** to locate the number you want to change.
- 3 Press the **SEL** softkey to edit the number in the display.
- 4 Enter the new phone number on the keypad.

Note: To backspace, press the **#** button twice or the **Mode** down **▼** button once. Enter a pause by pressing the ***** button, then the **#** button.

- 5 Press the **SEL** softkey to store the new number.
 - 6 Do one of the following:
 - Press the **HOME** button to return to normal radio operation.

OR

 - Press the **PHON** softkey to return to normal phone operation.
-

Editing a Name in the List

- 1 Press and hold the **PHON** softkey to enter the phone ID list programming.

The **Phon** indicator flashes and a high-pitched tone sounds.

- 2 Use the navigation keys, **▶** or **◀** to locate the list member you want to change.

OR

Use the numbered keys to go immediately to the location of a member in the list. For example, press **2** to go to the second member in the list; press **1** and **0** to go to the tenth member in the list, and so on.

- 3 Change the characters or numbers using any of the numeric keys (**0** through **9**) and special function keys (*****, **#**).

Note: The maximum number of characters permitted in a text line is **14**. If you try to add too many characters, you will hear a low-pitched tone.

To edit, do any or all of the following:

- To enter a character at the blinking cursor, refer to the table on page 42.

Press the key of the desired character the number of times shown in the table. For example, to enter the character **C**, press the **2** key three times.

- To leave a space in the text, press the **Mode up ▲** rocker switch to move the blinking cursor to the next character position, and then enter the character.

- To delete characters, press the **Mode** down ▼ rocker switch to move backwards over existing characters.

When the last character on the display has been erased, press the **Mode** down ▼ rocker switch again to leave the name-edit mode, without making any changes, and begin the procedure again at step 2.

- 4 To save the changes, press and hold the **SEL** softkey.

Note: Press the **SEL** softkey momentarily to confirm changes to a number in the list.

- 5 Repeat steps 2 through 4 until you have modified all the desired names,

OR

Do one of the following:

- Press the **HOME** button to return to normal radio operation.

OR

- Press the **PHON** softkey to return to normal phone operation.

Table 1: Entering Characters Using the Keypad

Key	Number of times the key is pressed								
	1	2	3	4	5	6	7	8	9
0	0								
1	1								
2	A	B	C	2	a	b	c		
3	D	E	F	3	d	e	f		
4	G	H	I	4	g	h	i		
5	J	K	L	5	j	k	l		
6	M	N	O	6	m	n	o		
7	P	Q	R	S	7	p	q	r	s
8	T	U	V	8	t	u	v		
9	W	X	Y	Z	9	w	x	y	z
*	*	/	+	-					
#	#								

Call Alert Page (Conventional and Trunking— Digital Modes Only)

The Call Alert feature allows a radio to selectively alert another radio, and to determine whether or not that radio received the alert. A Call Alert page can be initiated after an unsuccessful Private Conversation call or as a separate feature.

The Controller Head is capable of responding to a Call Alert initiated by another radio. It features a unique list of up to 100 preprogrammed ID numbers. A name can be assigned to each ID in the list for your convenience.

Sending a Call Alert Page

- 1 Press the **PAGE** softkey.

The **Page** indicator lights and a valid-key chirp sounds.

The display shows the last transmitted/received unit ID number.

- 2 Select a radio in one of the following ways:

- **From the ID number list:**

- Do nothing if you want to call the unit ID currently displayed.

OR

- Use the prestored list by using the navigation keys to locate the name/ID you want to call.

OR

- Enter, using the keypad or keypad mic, the ID of the desired unit.

Note: Using the keypad to enter the ID of another unit can only be accomplished from the first display shown when **Page** was entered. If the list has been entered, scroll to the first display.

- 3 Press the **SEL** softkey or the microphone **PTT** button.

The display changes to **PLEASE WAIT**.

4 Choose one of the following:

- When the called radio acknowledges the page, four additional tones sound and the display changes to **ACK RCVD.**

The radio returns to normal operation.

- If you are out of the range of the system, a low-pitched tone sounds.

Try again by pressing the **PTT** button or the **SEL** softkey,

OR

Press the **HOME** button or the **PAGE** softkey to return to normal operation.

- If, after six seconds, the called unit fails to acknowledge the alert, a low-pitched tone sounds and the display changes to **NO ACK.**

Try again by pressing the **PTT** button or the **SEL** softkey,

OR

Press the **HOME** button or the **PAGE** softkey to exit.

Notes

Conventional Radio Features

Features Used in Conventional Operation

This chapter shows you how to access features available in conventional operation. The following topics are covered:

- Status Calls (Digital Modes Only) (page 48)
- Smart PTT (page 50)
- Conventional Talkgroup Calls (page 50)
- Conventional Talkaround (page 52)
- Selective Calls (Digital Modes Only) (page 52)

Status Calls (Digital Modes Only)

Radio status calls are used to inform the dispatcher of the present state of the mobile unit. For example, a status might be **ENROUTE** or **AT SITE**.

Status names are field programmable. Each radio can have up to 8 separate statuses.

Sending a Status Call

- 1 Press the **STS** softkey, and the display shows the last-acknowledged status name.
- 2 Press the **▶** or **◀** button to review the list of status names, or use the keypad mic to enter the number of the status you wish to send.

Note: If no button is pressed for a period of time, an inactivity warning will sound.

- 3 The display shows the desired status name or number, press the **PTT** button to send the transmission.

One of the following conditions occurs:

- The radio display shows **PLEASE WAIT** until the transmission is received and acknowledged.

When the dispatcher acknowledges the status, four high-pitched tones sound, and the display shows **ACK RECEIVED**.

The radio then returns to normal dispatch operation.

- If the status is **not acknowledged** after approximately six seconds, the display alternates between **NO ACKNOWLEDGE** and the associated status name. A low-pitched tone also sounds continuously.

- If there is no acknowledgment, do one of the following:

Press the microphone **PTT** button to resend the status transmission.

OR

Press the **HOME** button to return to normal dispatch operation.

Smart PTT

Smart PTT is a per-mode feature that gives the system manager better control of radio operations. When smart PTT is enabled in your radio, you will not be able to transmit on an active mode. If you try to transmit (press the **PTT** button) on a busy or active smart PTT channel, a continuous tone sounds until you release the **PTT** button, and the transmission is inhibited.

The yellow **BUSY** LED lights when the radio is receiving to indicate that the mode is busy.

Three radio-wide variations of smart PTT can be enabled on your radio:

Transmit Inhibit on Busy Mode with Carrier	You will not be able to transmit if any activity is detected on the mode.
Transmit Inhibit on Busy Mode with Wrong Squelch Code	You will not be able to transmit on an active mode that has a squelch code other than your own.
Quick-Key Override	You can override either of the two previous transmit-inhibit states by quick-keying the radio (two quick PTT button presses).

Conventional Talkgroup Calls

Digital Modes Only

This feature allows you to define talkgroups for your conventional system. Talkgroups, combined with selective squelch operation, allow groups of users to transparently share a conventional channel. Talkgroups can be slaved to a personality through programming, or you can select them.

Encryption keys are slaved to talkgroups. When conventional talkgroups are enabled, encryption keys are changed by changing the active talkgroup.

Selecting a Conventional Talkgroup

The *Talkgroup Select* feature allows you to manually select any one of the available talkgroups.

- 1 Press the **TGRP** softkey.
The display changes to show the last-selected talkgroup.
- 2 Rotate the **Mode** knob to choose a different talkgroup.
- 3 Press the **SEL** softkey to save the talkgroup.

The radio returns to the home display.

Note: To select the default talkgroup, press the **SEL** softkey while the radio displays **PRESET**.

Selecting the **PSET** softkey causes the radio to return to its preprogrammed talkgroup.

To abort the talkgroup menu, press the **HOME** button or the **PTT** button:

- Pressing **HOME** exits the talkgroup select menu without saving the selected talkgroup choice.
- Pressing the **PTT** button exits the menu without saving the selected talkgroup and allows the radio to transmit.

Note: If the encryption key slaved to the new talkgroup is erased, the display shows **KEY FAIL** and a momentary tone is generated. If the encryption key that is slaved to the new talkgroup is not allowed, the display shows **ILLEGAL KEY** and a momentary tone is generated.

Conventional Talkaround

Talk Direct (Mobile-To-Mobile)

To talk directly to another unit without going through the conventional repeater system:

- 1 Press the **DIR** softkey momentarily.

The **Dir** indicator lights, indicating that the radio is now transmitting directly to another unit.

- 2 To return to repeater operation, press the **DIR** softkey again.

The **Dir** indicator goes out.

Note: A conventional personality can be configured to always transmit on the direct mobile-to-mobile frequency. In this case, the **Dir** indicator is lit continuously while the mode is selected.

Selective Calls (Digital Modes Only)

The Selective Call feature not only allows you to carry on a conversation that is heard only by the two parties involved, but also enables you to determine whether the unit you are calling is in service.

The Control Head is capable of responding to a Selective Call initiated by another radio. It features a unique list of preprogrammed ID numbers. A name may be assigned to each ID in the list for your convenience.

Answering a Selective Call

When a Selective Call is received, two high-pitched tones sound and the display alternates between `CALL RECEIVED` and the home display.

- 1 Press the `CALL` softkey within 20 seconds of receiving the call. (This time is programmable by a qualified radio technician.)

The display shows the ID number of the calling unit.

- 2 To respond to the call, press the `PTT` button and talk.

If 20 seconds pass before you press the `CALL` softkey, you will not respond privately to the call just received. Instead, when you press the `CALL` softkey, you enter the *Selective Call* state, as described in “Selective Calls (Digital Modes Only)” on page 52.

If the system is busy when you attempt to answer the call, a telephone-type busy tone sounds and your radio's **BUSY** indicator lights. When a channel becomes available, you receive a call back, and your radio automatically keys up for three seconds so that you can begin talking.

Note: If you do not press the `CALL` softkey before pressing the `PTT` button, your conversation will be heard by all members of the talk group.

Initiating a Selective Call

To initiate a Selective Call, select a unit to call, then place the call.

- 1 Press the **CALL** softkey.

The **Call** indicator lights, and the display shows the last transmitted/received unit ID number.

- 2 Select a unit in one of the following ways:

- **From the ID number list:**

- Do nothing if you want to call the unit ID currently displayed.

OR

- Use the prestored list by using the navigation keys to locate the name/ID you want to call.

OR

- Enter, using the keypad, the ID of the desired unit.

Note: Using the keypad to enter the ID of another unit can only be accomplished from the first display shown when **CALL** was entered. If the list has been entered, scroll to the first display.

- 3 Press the microphone **PTT** button.

A telephone-type ringing sounds if the unit you are calling is in service. The display shows **PLEASE WAIT**.

4 Choose one of the following conditions that applies to your current call:

- If the receiving unit answers, identify yourself and begin your Selective Call.
- If, after a programmable time period, you are not connected, the display shows **NO ACKNOWLEDGE** and a momentary, low-pitched tone sounds.

Try again, or press the **HOME** button to return to normal operation.

- If you are out of the system's range, a low-pitched tone sounds.

Try again, or press the **HOME** button to return to normal operation.

- If the system is busy when you attempt to make a call, the radio you are calling hears a telephone-type busy tone. When a channel becomes available, the called radio receives a call back and automatically keys up for three seconds so that conversation can begin.

5 To return to normal operation, press the **HOME** button.

Note: If you do not press **HOME** to hang up, your unit will remain in the Selective Call state with the other unit. You will miss all subfleet traffic and incoming phone calls.

Viewing Your Unit ID Number

- 1 Press the **CALL** softkey momentarily to select the Selective Call feature.

The **Call** indicator lights.

- 2 Do one of the following:
 - Use the **left** navigation key to locate the **MY ID** display.

The display will alternate between **MY ID** and your ID number.

- 3 To return to normal operation, press the **HOME** button. .
-

Storing a Unit ID Number in the List

The Selective and Call Alert page features share the same prestored list of units' IDs.

- 1 Press and hold the **CALL** softkey to review the **Call** ID list.

The **Call** indicator flashes and a high-pitched tone sounds.

- 2 Use the navigation keys to locate the list member you want to change.
- 3 Press the **NAME** softkey to store a name

OR

press the **NUM** softkey to store a number.

- 4 Use the keypad mic to update the entry.
- 5 When all the digits are entered, press the **SAVE** softkey to store the new ID.
- 6 Repeat steps 2 through 5 until all the desired IDs have been entered.

OR

Do one of the following:

- Press the **HOME** button to return to normal radio operation.

OR

- Press **PTT** to exit the feature.

Note: The maximum number of characters permitted in a text line is **14**.

Editing a Name in the List

The Selective Call and Call Alert page features share the same prestored list of unit IDs.

- 1 Press and hold the **CALL** or **PAGE** softkey to enter the **Call** ID list.

The **Call** indicator flashes and a high-pitched tone sounds.

- 2 Use the navigation keys to locate the list member you want to change.

OR

Use the numbered keys to go immediately to the location of a member in the list. For example, press **2** to go to the second member in the list; press **1** and **0** to go to the tenth member in the list, and so on.

- 3 Press and hold the **SEL** button to select the name-editing function.
- 4 Change the characters or numbers using any of the numeric keys (**0** through **9**) and special function keys (*****, **#**) with the keypad mic.

Note: The maximum number of characters permitted in a text line is **14**. If you try to add too many characters, you will hear a low-pitched tone.

To edit, do any or all of the following:

- To enter a character at the blinking cursor, refer to the table on page 42.

Press the key of the desired character the number of times shown in the table. For example, to enter the character **C**, press the **2** key three times.

- To leave a space in the text, press the up **▲** navigation key to move the blinking cursor to the next character position, and then enter the next character.

- To delete characters, press the down ▼ navigation key to move backwards over existing characters.

When the last character on the display has been erased, press the down ▼ navigation key again to leave the name-edit mode, without making any changes, and begin the procedure again at step 2.

5 To save the changes, press and hold the **SEL** softkey.

Note: Press the **SEL** softkey momentarily to confirm changes to a number in the list.

6 Repeat steps 2 through 5 until you have modified all the desired names.

OR

Do one of the following:

- Press the **HOME** button to return to normal radio operation.

OR

- Press **PTT** to exit the feature.

Notes

Troubleshooting

The following are suggestions to assist you in troubleshooting possible operating problems.



CAUTION

The cables that connect to the rear of the radio could have live voltage on some of their pins. Do not remove or reconnect these cables. Only a qualified radio technician should perform this task. Service performed by unauthorized personnel may cause the radio to transmit an emergency alarm even if the unit is turned off.

If your radio is locked up or the display shows `FAIL 01/90`, turn the radio off and then back on. If this does not correct the condition, take the radio to a qualified radio technician for service.

If radio operation is intermittent, check with other persons using the system for similar problems before taking the radio in for service. Similar problems indicate a system malfunction rather than a radio failure.

If symptoms persist or, if your unit exhibits other problems, contact a qualified radio technician.

Troubleshooting

Accessories

Motorola provides the following approved accessories to improve the productivity of your XPR 4500 / XPR 4550 mobile two-way radio.

For a list of Motorola-approved antennas and other accessories, visit the following web site:

<http://www.motorola.com/governmentandenterprise>

Antennas

Part No.	Description
HAE4002_	UHF 403- 430 MHz, 1/ 4 Wave Roof Mount Mini U
HAE4003_	UHF 450- 470 MHz, 1/ 4 Wave Roof Mount Mini U
HAE4010_	UHF 406- 420 MHz, 3.5dB Gain Roof Mount Mini U
HAE4011_	UHF 450- 470 MHz, 3.5dB Gain Roof Mount Mini U
RAE4004_RB	UHF 445-470 MHz, 5.0dB Gain Roof Mount Mini U

Cables

Part No.	Description
RKN4135_	15ft Speaker Cable (for Public Address Speaker)
RKN4136_	Ignition Switch Cable
HKN4137_	Power Cable (to Battery) - 10 Ft.
HKN4192_	Power Cable (to Battery) - 20 Ft.

Desktop

Part No.	Description
GLN7318_	Desktop Tray without Speaker
RSN4005_	Desktop Tray with Speaker
HPN4001_	Power Supply 14V 10 Amp 117/240 VAC (25-60W)
GPN6145_	Switchmode Power Supply (CE Marked for EMEA)
GKN6266_	Power Supply Cable (PS to desktop mobile cable for GPN6145)
NTN7373_R	US Linecord (3060665A04) - PS power cable
NTN7374_R	Euro Linecord (3060665A05) - PS power cable
NTN7375_R	UK Linecord (300212F02) - PS power cable
NTN9246_	Argentina Linecord (3085801L01) - PS power cable
HKN9088_	Adapter Cable for Control Station - 8 Foot

Microphones

Part No.	Description
RMN5052_	Core Compact Mic
RMN5065_	Smart Keypad Mic
RMN5053_	Smart Heavy Duty Mic
RMN5050_	Core Desktop Mic
RMN5054_	Smart Visor Mic

Miscellaneous

Part No.	Description
RLN5926_	Push Button PTT
RLN5929_	Emergency Footswitch
HLN9073_	Mic Hang Up Clip
HLN9414_	Mic Hang-up clip (no installation required)
HKN9557_	PL259/Mini-U Antenna Adapter - 8" cable

Mounting Kits

Part No.	Description
GLN7324_	Low Profile Mounting bracket
GLN7317_	High Profile Mounting bracket
RLN4779_	Key Lock Mt
RLN5933_	DIN Mount

Speakers

Part No.	Description
RSN4002_	13 Watt External Loudspeaker
RSN4003_	7.5 Watt External Speaker
RSN4004_	5 Watt External Speaker
HSN1000_	6-Watt Public Address Speaker (weather resistant)

Glossary

ACK	Acknowledgment of communication.
Channel	A group of characteristics, such as transmit/receive frequency pairs, radio parameters, and encryption encoding.
Coded Squelch	Tone Private-Line™ or Digital Private-Line. Used on conventional channels to make sure you hear only the communication meant for you.
Control Channel	In a trunking system, one of the channels that is used to provide a continuous, two-way/data communications path between the central controller and all radios on the system.
Conventional	Typically refers to radio-to-radio communications, sometimes through a repeater. You share a frequency, or frequencies, with other users without the aid of a central controller to assign communication channels. Therefore, you should monitor each channel before transmitting to avoid interfering with another user who may be transmitting.
Cursor	A visual tracking marker (a blinking line) that indicates a location on the display.
Digital Private-Line (DPL) Coded Squelch	A continuous, sub-audible data signal, transmitted with the carrier.
Dispatcher	An individual who has radio system management duties.
Failsoft	A back-up system allowing you to communicate in a non-trunked, conventional mode should the trunked system fail.
FCC	Federal Communications Commission.

Hang Up	Disconnect.
Home Display	The first display information after the radio completes its self test.
LCD	Liquid-Crystal Display.
Mode	A programmed combination of operating parameters; for example, a channel or talkgroup.
Mode-Slaving	Radio programmed to automatically give the proper operation for a given mode you have selected.
Monitoring (Conventional Operation)	Press a programmed monitor button to listen to another user active on the channel. This way, you may be prevented from talking over someone else's conversation.
Page	A one-way alert, with audio and/or display messages.
Push-To-Talk (PTT) button	The PTT button engages the transmitter and puts the radio in transmit (send) operation when pressed. Press this button to transmit; release it to receive.
Repeater	A conventional radio feature, in which you talk through a receive/transmit facility (repeater) that re-transmits received signals in order to improve communications range and coverage.
RF	Radio Frequency. A part of the general frequency spectrum between the audio and infrared light regions (about 10 kHz to 10,000,000 MHz).
RSSI	R eceived S ignal S trength I ndicator.

Glossary

Squelch	The muting of audio circuits when received signal levels fall below a pre-determined threshold. With carrier squelch, you hear all channel activity which exceeds the radio's preset squelch level.
Standby	An operating condition whereby the radio's speaker is muted but still continues to receive data.
Talkgroup	An organization (or group) of radio users who communicate with each other, using the same communication path.
Tone Private-Line (PL) Coded Squelch	A continuous sub-audible tone transmitted with the carrier.
Trunking	The automatic sharing of communications paths between a large number of users (see Conventional). Allows radio users to share a smaller number of frequencies because a repeater, or communications path, is assigned to a talkgroup for the length of a conversation.
Zone	A grouping of channels or talkgroups.

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Commercial Warranty and Service

Limited Warranty

MOTOROLA COMMUNICATION PRODUCTS

I. WHAT THIS WARRANTY COVERS AND FOR HOW LONG:

MOTOROLA INC. (“MOTOROLA”) warrants the MOTOROLA manufactured Communication Products listed below (“Product”) against defects in material and workmanship under normal use and service for a period of time from the date of purchase as scheduled below:

XPR 4500 / XPR 4550 Mobile Radio	Two (2) Years
Product Accessories	One (1) Year

Motorola, at its option, will at no charge either repair the Product (with new or reconditioned parts), replace it (with a new or reconditioned Product), or refund the purchase price of the Product during the warranty period provided it is returned in accordance with the terms of this warranty. Replaced parts or boards are warranted for the balance of the original applicable warranty period. All replaced parts of Product shall become the property of MOTOROLA.

This express limited warranty is extended by MOTOROLA to the original end user purchaser only and is not assignable or transferable to any other party. This is the complete warranty for the Product manufactured by MOTOROLA. MOTOROLA assumes no obligations or liability for additions or modifications to this warranty unless made in writing and signed by an officer of MOTOROLA. Unless made in a separate agreement between MOTOROLA and the original end user purchaser, MOTOROLA does not warrant the installation, maintenance or service of the Product.

MOTOROLA cannot be responsible in any way for any ancillary equipment not furnished by MOTOROLA which is attached to or used in connection with the Product, or for operation of the Product with any ancillary equipment, and all such equipment is expressly excluded from this warranty. Because each system which may use the Product is unique, MOTOROLA disclaims liability for range, coverage, or operation of the system as a whole under this warranty.

XPR 4500 / XPR 4550 Mobile Radio

II. GENERAL PROVISIONS:

This warranty sets forth the full extent of MOTOROLA'S responsibilities regarding the Product. Repair, replacement or refund of the purchase price, at MOTOROLA's option, is the exclusive remedy. THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER EXPRESS WARRANTIES. IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. IN NO EVENT SHALL MOTOROLA BE LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, FOR ANY LOSS OF USE, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOST PROFITS OR SAVINGS OR OTHER INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE SUCH PRODUCT, TO THE FULL EXTENT SUCH MAY BE DISCLAIMED BY LAW.

III. STATE LAW RIGHTS:

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION OR EXCLUSIONS MAY NOT APPLY.

This warranty gives specific legal rights, and there may be other rights which may vary from state to state.

IV. HOW TO GET WARRANTY SERVICE:

You must provide proof of purchase (bearing the date of purchase and Product item serial number) in order to receive warranty service and, also, deliver or send the Product item, transportation and insurance prepaid, to an authorized warranty service location.

Warranty service will be provided by Motorola through one of its authorized warranty service locations. If you first contact the company which sold you the Product, it can facilitate your obtaining warranty service. You can also call Motorola at 1-888-567-7347 US/Canada.

V. WHAT THIS WARRANTY DOES NOT COVER:

- A) Defects or damage resulting from use of the Product in other than its normal and customary manner.
- B) Defects or damage from misuse, accident, water, or neglect.
- C) Defects or damage from improper testing, operation, maintenance, installation, alteration, modification, or adjustment.
- D) Breakage or damage to antennas unless caused directly by defects in material workmanship.
- E) A Product subjected to unauthorized Product modifications, disassemblies or repairs (including, without limitation, the addition to the Product of non-Motorola supplied equipment) which adversely affect performance of the Product or interfere with Motorola's normal warranty inspection and testing of the Product to verify any warranty claim.
- F) Product which has had the serial number removed or made illegible.
- G) Rechargeable batteries if:
 - any of the seals on the battery enclosure of cells are broken or show evidence of tampering.
 - the damage or defect is caused by charging or using the battery in equipment or service other than the Product for which it is specified.
- H) Freight costs to the repair depot.
- I) A Product which, due to illegal or unauthorized alteration of the software/firmware in the Product, does not function in accordance with MOTOROLA's published specifications or the FCC type acceptance labeling in effect for the Product at the time the Product was initially distributed from MOTOROLA.

- J) Scratches or other cosmetic damage to Product surfaces that does not affect the operation of the Product.
- K) Normal and customary wear and tear.

VI. PATENT AND SOFTWARE PROVISIONS:

MOTOROLA will defend, at its own expense, any suit brought against the end user purchaser to the extent that it is based on a claim that the Product or parts infringe a United States patent, and MOTOROLA will pay those costs and damages finally awarded against the end user purchaser in any such suit which are attributable to any such claim, but such defense and payments are conditioned on the following:

- A) that MOTOROLA will be notified promptly in writing by such purchaser of any notice of such claim;
- B) that MOTOROLA will have sole control of the defense of such suit and all negotiations for its settlement or compromise; and
- C) should the Product or parts become, or in MOTOROLA's opinion be likely to become, the subject of a claim of infringement of a United States patent, that such purchaser will permit MOTOROLA, at its option and expense, either to procure for such purchaser the right to continue using the Product or parts or to replace or modify the same so that it becomes non-infringing or to grant such purchaser a credit for the Product or parts as depreciated and accept its return. The depreciation will be an equal amount per year over the lifetime of the Product or parts as established by MOTOROLA.

MOTOROLA will have no liability with respect to any claim of patent infringement which is based upon the combination of the Product or parts furnished hereunder with software, apparatus or devices not furnished by MOTOROLA, nor will MOTOROLA have any liability for the use of ancillary equipment or software not furnished by MOTOROLA which is attached to or used in connection with the

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VII. GOVERNING LAW:

This Warranty is governed by the laws of the State of Illinois, USA.

Service

Proper repair and maintenance procedures will assure efficient operation and long life for this product. A Motorola maintenance agreement will provide expert service to keep this and all other communication equipment in perfect operating condition. A nationwide service organization is provided by Motorola to support maintenance services. Through its maintenance and installation program, Motorola makes available the finest service to those desiring reliable, continuous communications on a contract basis. For a contract service agreement, please contact your nearest Motorola service or sales representative, or an authorized Motorola dealer.

Express Service Plus (ESP) is an optional extended service coverage plan, which provides for the repair of this product for a period of three years from the date of shipment from the factory, or the date of delivery if purchased from an authorized Motorola two-way radio dealer. For more information about ESP, contact the Motorola Radio Support Center, 2204 Galvin Drive, Elgin, IL 60123, 1-800-227-6772.

Notes

XPR 4500 / XPR 4550 Mobile Radio with Control Head Quick Reference Card

Product Safety and RF Exposure Compliance



Before using this product, read the operating instructions for safe usage contained in the Product Safety and RF Exposure booklet enclosed with your radio.

ATTENTION!

This radio is restricted to occupational use only to satisfy FCC RF energy exposure requirements. Before using this product, read the RF energy awareness information and operating instructions in the Product Safety and RF Exposure booklet enclosed with your radio (Motorola Publication part number 6881095C99) to ensure compliance with RF energy exposure limits.



BASIC OPERATION

Turning the Radio On and Off

Press the **Pwr** button once.

Setting the Volume and Squelch

- 1 Turn the **Vol** knob clockwise to increase volume or counterclockwise to decrease volume as desired.
- 2 On conventional modes with Private-Line or Digital Private-Line, press **MON** softkey to defeat the coded squelch.
- 3 Press **MON** softkey again to return to coded-squelch operation.
- 4 To adjust squelch level, hold **MON** softkey until a tone sounds.
- 5 Rotate the **Mode** knob clockwise to increase squelch level or counterclockwise to decrease squelch level.
- 6 Press **Home** button to save the squelch level.

Changing Modes

Rotate the **Mode** knob to select the desired mode.

OR

Press **Home** button to access the preprogrammed Home mode.

Transmitting

- 1 Press and hold the microphone **PTT** button.
- 2 When the transmit light comes on solid and no alert tones sound (or a talk-permit tone or ID sidetone sounds), speak into the microphone in a normal voice.
- 3 State your FCC call sign at the beginning of each transmission.

Transmitting (Conventional Modes)

- 1 Press **Dir** (Direct) softkey. The **Dir** indicator lights.
- 2 Press **Dir** softkey again to return to repeater operation.

Activating Scan

- 1 Press **Scan** softkey to start a scan. If no activity exists, the display shows your selected mode. When a scanned channel or talkgroup becomes active, the display shows the active mode name. The **PRI** and **NPRI** indicators show priority.
- 2 Press **Scan** softkey again to stop scanning.

Programming a Scan List

- 1 Press **Prog** softkey followed by **Scan** softkey until the scan list is being displayed and the scan indicator blinks.
- 2 Use the navigation keys to select the mode you want to program.
- 3 Press the **Sel** softkey as indicated in the table below to add or remove the displayed mode from the scan list.
- 4 Repeat the previous steps to continue editing the list.
- 5 Press **Home** button to exit.

Press Sel	Mode	Indicator
One time	Non-Priority	NPRI lit
Two times	Second Priority	PRI lit
Three times	First Priority	PRI blinks
Four times	Delete from List	No indicator

Selecting Scan Mode Priority

- 1 Press the **Sel** softkey as indicated in the table above to designate up to two modes as priorities.
- 2 Press **Home** or **Scan** to end scan list selection.

Sending an Emergency Alarm or Call

Press the emergency actuator (**Emer** button, footswitch, hidden pushbutton) to begin an emergency transmission.

For conventional modes, a silent or non-silent emergency alarm data transmission is sent.

For trunked modes, emergency call (priority access to a voice channel), silent or non-silent emergency alarm, or emergency alarm and call are entered.

Depending on your radio's programming, one of the emergency sequences described in the table below occur.

Alarm Type	Indications/Actions
Non-Silent	A tone sounds and the display alternates between EMERGENCY and the zone/channel. When acknowledged, four more tones sound and the display shows RICK RECEIVED , then the radio returns to normal operation.
Silent	The audio is muted and no display changes take place during the alarm. Press the PTT button, or press and hold the emergency button to stop the emergency condition and unmute the radio.
Call (Trunked Modes only)	A tone sounds and the display alternates between EMERGENCY and the zone/channel. Press the PTT button and talk. After completing the call, press and hold the emergency actuator until a tone sounds to return to normal operation.

Alarm Type	Indications/Actions
Alarm and Call	After RICK RECEIVED (see Non-Silent Alarm above) is displayed, the radio has priority voice-channel access. Press the PTT button and talk. After completing the call, press and hold the emergency actuator until a tone sounds to return to normal operation.

Sending a Status Transmission

- 1 Press **Sts** softkey. The display shows the last acknowledged status or first status name.
- 2 Use the navigation keys to select other statuses.
- 3 Press the **PTT** button to send the transmission. The display flashes the selected status/message name until the dispatcher acknowledges, at which time alert tones sound and the display shows **RICK RECEIVED**. The radio then returns to normal operation.

Sending a Direct-Entry Enhanced Private Conversation Call

- 1 Press the **PTT** button. A single tone sounds and the display changes to **PLEASE WAIT**, followed by telephone-type ringing if the receiving unit is in service.
- 2 If the receiving unit answers, press the **PTT** button to identify yourself and proceed with your call.

OR

 If the called unit does not respond, press **Sel** or the **PTT** button again to leave a Call Alert page message and your ID. A single tone followed by four tones sounds if the called unit acknowledges the page.

Initiating a Call Alert Page

- 1 Press the **Page** softkey.
- 2 Follow the instructions for initiating a Private Conversation to select a unit ID.
- 3 Press **Sel** or the **PTT** button to send a Call Alert page to the displayed ID.

OR

 To send a Call Alert page following an Enhanced Private Conversation attempt, follow the instructions for sending a direct-entry Enhanced Private Conversation call.

Answering a Call Alert Page

- Four tones sound and **PAGE RCV** flashes on the display. The tone and display repeat every five seconds.
- 1 Press the **PTT** button,

OR

 Initiate an Enhanced Private Conversation call to the caller.

Selecting a Zone/Mode (Optional)

- 1 Press the **Zone** softkey and then the arrow key **►** or **◀** to scroll to the desired zone.
 - 2 Rotate the **Mode** knob to select the mode.
- Selecting a Home Zone/Home Mode**
- Press the **Home** button.

Selecting Secure Mode

Press and release the **SEC** softkey. The  indicator lights up.

Selecting an Encryption Key

- 1 Press and hold the **SEC** softkey until a tone sounds.
- 2 Use the navigation keys to scroll to **KEY SEL**.
- 3 Press **Sel** to enter the Key Selection Menu.
- 4 Use the navigation keys to select desired key.
- 5 Press **Sel** to select key.
- 6 Press **Home** or the **PTT** button to quit.

Selecting a Key Index

- 1 Press and hold the **SEC** softkey until a tone sounds..
- 2 Use the navigation keys to scroll to **INDEX SEL**.
- 3 Press **Sel** to enter the Index Selection Menu.
- 4 Use the navigation keys to select desired index.
- 5 Press **Sel** to select index.
- 6 Press **Home** or the **PTT** button to quit.

Erasing an Encryption Key

- 1 Press and hold the **SEC** softkey until a tone sounds.
- 2 Use the navigation keys to scroll to **ERASE KEY**.
- 3 Press **Sel** to enter the Key Erase Menu.
- 4 Use the navigation keys to select desired index.
- 5 Press **Sel** to select index.
- 6 Press **Home** or the **PTT** button to quit.

DISPLAY AND LIGHT INDICATORS

<i>Display/Light</i>	<i>Meaning</i>
BUSY light on	Displayed conventional mode has activity on it, or selected trunked system is currently busy. Wait for callback.
XMIT light on	Indicates you are transmitting.
Dir indicator lit	Radio is in direct (mobile-to-mobile) operation.
PRI, NPRI indicators lit	Display shows a mode in the scan list with the indicated priority level.
F displayed	Telephone dialing pause. Press Sel softkey to continue the dialing.
NO ACKNOWLEDGE displayed	Unit being called with the Enhanced Private Conversation or Call Alert Page feature is not in service, or emergency alarm or status/message transmission is not acknowledged by dispatcher.
PHONE BUSY displayed	Trunked phone interconnect is busy.
NO ANSWER displayed	Unit being called with Enhanced Private Conversation or Call Alert Page does not respond, but is operational.
EMERGENCY displayed	Radio is in emergency alarm or call state.
NO EMERGENCY displayed	A mode incapable of emergency transmission has been selected.
OUT OF RANGE displayed	Radio is out of range of the trunking system.

ALERT TONES

Type of Tone	Name	Explanation
1 Low-Pitched Tone	Invalid Key Alert	Feature button pressed is not valid in selected mode, or a Call Alert or emergency alarm was not acknowledged.
1 High-Pitched Tone	Central Acknowledge or Valid Key	Central controller has received request for Call Alert or emergency alarm transmission. You pressed a valid key.
4 High-Pitched Tones	Dispatcher or Mobile Unit Acknowledge	Dispatcher is acknowledging your emergency transmission. Mobile unit has received your Call Alert.
5 High-Pitched Tones		The above two acknowledge tones, heard in tandem.
2 High-Pitched Tones	Private Conversation	You have an incoming call. Press Call , then the PTT button, then talk.
4 High-Pitched Tones every 6 seconds	Call Alert Page	Call Alert page has been received.
Phone-Type Busy Tone (when pressing the PTT button)	System Busy	All system radio channels in use. Release the PTT button, and wait for callback.

ALERT TONES (Continued)

Type of Tone	Name	Explanation
2 Short High-Tones (after requesting a busy channel) upon pressing the PTT button)	Automatic Call Back or Talk Permit	Channel is available for previously requested transmission. System is accepting your transmission.
Low-Pitched Tone (upon pressing the PTT button during Transmit (Operation Error))	Talk Prohibit/ Out-of-Range or Time-Out Timer or Illegal Mode	Out of trunked radio system range or system is out of service. Present transmission will soon be disabled. You have entered a mode where normal system traffic will be missed, or you attempted something that is not allowed. (See examples below.)
High-Pitched Tone every 10 seconds in unmuted receive condition	Failsoft	System central controller failure. The radio reverts from trunked operation to a conventional operation similar to a repeater. Others may share the channel.

Examples: Not exiting phone mode after a call (radio cannot receive fleet or subfleet calls), transmitting in receive-only conventional mode, trying to select a dynamic mode when no dynamic ID assignment has been made.



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6816817H01

Draft 2 - 8th of Mar 2006