# MOTOROLA
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XTS™ 3000 ASTRO® 25
Digital Portable Radio
Model I
User Guide

## COMMON RADIO FEATURES

Answering an Individual Call:

1a. *For Private Conversation Calls and Call Alert Pages with Private-Conversation* — Press the **Call Response Button.**

— — **OR** — — —

1b. *For Call Alert Pages Only* — Within 20 seconds of receiving the call, press the **PTT Button.** Your conversation will be heard by the entire talkgroup.

2. Converse in the normal manner. Press the **PTT Button** to talk; release the **PTT Button** to listen.

3. To end the call, press the **Call Response Button.**

**FOLD**

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## GENERAL

**Turning the Radio On:** Rotate the **On/Off/Volume Control Knob** clockwise.

**Monitoring (Conventional Channels Only):** Momentarily press the **Monitor Button** and listen for voice activity.

**Transmitting:** Press and hold the **PTT Button.**

**Receiving:** Release the **PTT Button.**

**Selecting a Zone and Channel:**

1. Place the **Zone Switch** (if programmed) to the desired position.

If you would like a different channel than the presently selected channel:

2. Rotate the **16-Position Select Knob** to the desired channel.

To transmit on the selected zone/channel combination, press the **PTT Button.**

**FOLD**

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## XTS™ 3000 ASTRO®
## Model I Portable Radio
## Quick-Reference Card



Concentric Switch

On/Off/ — — — — —
Volume Knob

16-Position Select Knob

Top Button

Top Side (Select) Button

3-Position Switch

Side Button 1 — — — —

Side Button 2 — — — —

Speaker/ Microphone

PTT Button

Write in your radio's programmed features under each programmable button name for easy reference.

## COMMON and SPECIAL RADIO FEATURES

Most of your radio features can be accessed by pressing (or rotating) the **Feature Button/Switch** (if programmed). For more detail, refer to the feature description in your manual.

### LED DESCRIPTION

The LED color indicates the radio's operating status.

| | |
|---|---|
| **Red** | Transmitting |
| **Blinking red** | Channel busy or low battery |
| **Double-blinking red** | Receipt of an encrypted call |
| **Blinking green** | Receipt of an individual call |

FOLD

**Concentric Switch**

**On/Off/ Volume Knob**

**Top Side (Select) Button**

**Side Button 1**

**Side Button 2**

**PTT Button**

**16-Position Select Knob**

**Top Button**

**3-Position Switch**

**Speaker/ Microphone**

Write in your radio's programmed features under each programmable button name for easy reference (consult your service technician).

FOLD

## NOTES

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*XTS*™ *3000 ASTRO*® *25*
*Digital Portable Radio*
*Model I User Guide*

## 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 68P81095C98) to ensure compliance with RF energy exposure limits.**

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# Contents

Contents

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# Introduction

This manual describes how to operate an XTS$^{TM}$ 3000 ASTRO$^{®}$ 25 Digital Type III Model I Portable Radio.

This manual discusses the following:

- General Radio Operation
- Common Radio Features
- Special Radio Features
- Helpful Tips

Use this manual to become familiar with your ASTRO radio.

## 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 the care that must be taken or observed.

| | |
|---|---|
| ⚠️ **WARNING** | **An operational procedure, practice, or condition, etc., which may result in injury or death if not carefully observed.** |
| ⚠️ **Caution** | An operational procedure, practice, or condition, etc., which may result in damage to the equipment if not carefully observed. |

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

The following special notations identify certain items:

| Example | Description |
|---|---|
| **Light button** | Button names are shown in bold print. |

# Your XTS 3000 ASTRO 25 Model I Radio
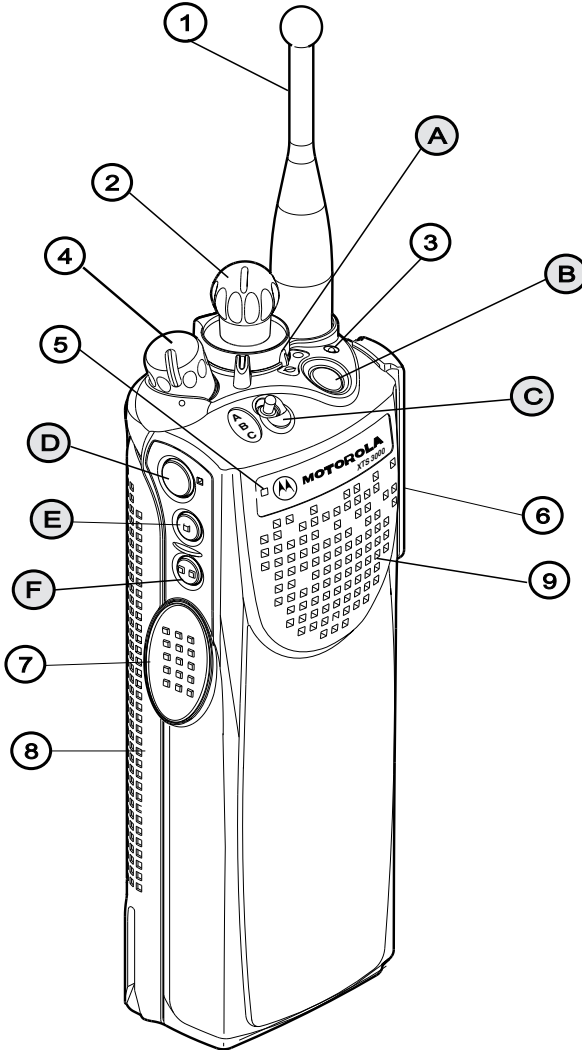


**Note:** Physical features are denoted by number (see Table 2 on page 4). Programmable controls are denoted by alphabet lettering (see Table 2 on page 4).

# Physical Features of the XTS 3000 ASTRO 25 Model I Radio

**Table 1: Physical Features**

| No. | Feature | Page | No. | Feature | Page |
|-----|---------|------|-----|---------|------|
| 1 | Antenna | 12 | 6 | Universal Connector Cover | 17 |
| 2 | 16-Position Select Knob | 22 | 7 | PTT (Push-to-Talk) Button | 22 |
| 3 | LED | 5 | 8 | Battery | 10 |
| 4 | On/Off/Volume Control Knob | 21 | 9 | Speaker | |
| 5 | Microphone | | | | |

# Programmable Controls

The following radio controls can be programmed to activate certain software features.

**Table 2:  Programmable Controls**

| No. | Feature | No. | Feature |
|-----|---------|-----|---------|
| A | 2-Position Concentric Switch | D | Top Side (Select) Button |
| B | Orange Top Button | E | Side Button 1 |
| C | 3-Position A/B/C Switch | F | Side Button 2 |

The features that can be assigned to these controls by a qualified radio technician, and the pages where these features can be found are listed in Table 3 on page 5.

**Note:** Any references in this manual to controls that are preprogrammed mean that a qualified radio technician must use the radio's programming software to assign a feature to a control. Contact your system administrator for details.

**Table 3: Programmable Features**

| Feature | Page | Feature | Page | Feature | Page |
|---------|------|---------|------|---------|------|
| Call Response | 30 | Nuisance Delete | 33 | Site Lock/ Unlock | 42 |
| Channel | 22 | PL Defeat | 31 | Site Search | 42 |
| Dynamic Priority | 34 | Repeater/Direct | 32 | Volume Set | 21 |
| Emergency | 27 | Reprogram Request | 38 | Zone | 22 |
| Light/Backlight | 5 | Scan On/Off | 32 | | |
| Monitor | 22 | Secure/Clear | 39 | | |

# Backlight

If poor light conditions make the channel numbers (around the **16-Position Select knob**) difficult to read, turn on the radio's backlight by pressing the preprogrammed **Light button** if applicable.

These lights remain on for a preprogrammed time before they turn off automatically, or you can turn them off immediately by pressing the **Light button** again.

# LED Indicators

The LED on top of the radio indicates the radio's operating status:

**Table 4: LED Indicators**

| LED Indicator | What it Means |
|---------------|---------------|
| Red | Radio transmitting |
| Flashing red | Channel busy, or Low battery (while transmitting) |
| Double flashing red | Receiving encrypted audio |
| Flashing green | Receiving an individual call |

# Alert Tones

An alert tone is a sound or group of sounds. Your radio uses alert tones to inform you of your radio's conditions. The following table lists these tones and when they occur.

| Sound | Tone Name | Occurs: |
|---|---|---|
| **Short, Low-Pitched Tone** | Invalid Key-Press | When the wrong key is pressed. |
| | Radio Self-Test Fail | When the radio fails its power-up self test. |
| | No ACK Received | When the radio fails to receive an acknowledgement from the dispatcher. |
| | Reject | When an unauthorized request is made. |
| | Time-Out Timer Warning | Four seconds before time out. |
| **Continuous, Low-Pitched Tone** | Time-Out Timer Timed Out | After time out. |
| | Talk Prohibit/ PTT Inhibit | When the **PTT button** is pressed and transmissions are not allowed. |
| | Out-of-Range | When the **PTT button** is pressed and the radio is out of range of the system. |
| | Invalid Mode | When the radio is on a channel that is not programmed. |
| | Individual Call Warning Tone | When the radio is in an individual call for greater than six seconds without any activity. |
| **A Group of Low-Pitched Tones (Busy Tone)** | Busy | When a channel, phone line, or system is unavailable due to high traffic volume. |

| Sound | Tone Name | Occurs: |
|---|---|---|
| *Short, Medium-Pitched Tone* | Valid Key-Press | When the correct key is pressed. |
| | Radio Self-Test Pass | When radio passes its power-up self test. |
| | Clear Voice | At the beginning of a non-coded communication. |
| | Priority Channel Received | Upon receipt of activity on a priority channel. |
| | Emergency Alarm Entry | Upon entering emergency state. |
| | Central Echo | When the central controller has received a request from a radio. |
| *Continuous, Medium-Pitched Tone* | Volume Set | Sounds when volume level is adjusted on a quiet channel. |
| | Emergency Exit | Upon exiting emergency state |
| | PTT Sidetone | When data is sent by pressing the **PTT button**, but the user must wait to talk. |

| Sound | Tone Name | Occurs: |
|:---:|:---:|:---|
| *A Group of Medium-Pitched Tones* | Failsoft | When system fails. |
| | Automatic Call Back | When voice channel becomes available in response to a previous request. |
| | Talk Permit | Upon pressing the **PTT button**; verifying system accepting transmissions. |
| | Dispatcher-Interrupter | Upon receipt of a dispatcher-interrupt call. |
| | Keyfail | When an encryption key has been lost. |
| | Console Acknowledge | When a status, message, emergency alarm, or reprogram request ACK is received. |
| | Received Individual Call | When a Call Alert or Private Conversation call is received. |
| | Call Alert Sent | When a Call Alert is received by the target radio. |
| *Short, High-Pitched Tone (Chirp)* | Low-Battery Chirp | When battery level is below preset threshold value |
| | Phone Dekey Chirp | When switching from radio to phone line upon releasing the **PTT button**. |
| *Continuous, High-Pitched Tone* | Quik-Call™ Group Call | When a Quik-Call group call is received |
| *A Group of High-Pitched Tones* | Quik-Call Individual Call | When a Quik-Call individual call is received |

| Sound | Tone Name | Occurs: |
|-------|-----------|---------|
| **Ringing** | Phone Ringing | When a phone call is received |
| | Enhanced Call Received | When originator receives ACK from an enhanced private call |
| **Gurgle** | Dynamic Regrouping/ Over-The-Air Programming | When a dynamic ID has been received and the **PTT button** is pressed and the reprogrammed group has not been selected and when the radio is successfully re-keyed |

# Standard Accessories

## Battery

| | |
|---|---|
| **WARNING** | **To avoid a possible explosion:**<br><br>• **DO NOT replace the battery in any area labeled "hazardous atmosphere."**<br><br>• **DO NOT discard batteries in a fire.** |

| | |
|---|---|
| **Caution** | If your radio is programmed with volatile-key retention (consult your service technician), encryption keys are retained for approximately 30 seconds after battery removal. |

### Battery Life

Battery life is determined by several factors. Among the more critical are the regular overcharge of batteries and the average depth of discharge with each cycle. Typically, the greater the overcharge and the deeper the average discharge, the fewer cycles a battery will last. For example, a battery which is overcharged and discharged 100% several times a day, lasts fewer cycles than a battery that receives less of an overcharge and is discharged to 50% per day. Further, a battery which receives minimal overcharging and averages only 25% discharge, lasts even longer.

| | |
|---|---|
| **WARNING** | **Care should be taken to avoid external short circuiting of the battery. A sustained high-rate discharge (for example, a paper clip placed accidentally across the battery contacts) may permanently damage the battery, void the battery warranty, and create a burn or fire hazard.** |

## Charging the Battery

Motorola batteries are designed specifically to be used with a Motorola charger and vice versa. Charging in non-Motorola equipment may lead to battery damage and void the battery warranty.

The battery should be at about 77°F (25°C) (room temperature), whenever possible. Charging a cold battery (below 50° F [10°C]) may result in leakage of electrolyte and ultimately in failure of the battery. Charging a hot battery (above 95°F [35°C]) results in reduced discharge capacity, affecting the performance of the radio. Motorola rapid-rate battery chargers contain a temperature-sensing circuit to ensure that batteries are charged within the temperature limits stated above.

> **Do not attempt to change or charge the battery in a hazardous atmosphere.**
>
> **WARNING**

To charge the battery, place the battery (with or without the radio) in a Motorola-approved charger. The charger's LED indicates the charging progress; see your charger user guide for details.

## Attach  the Battery

To attach the battery:

**1**  Turn off the radio and hold it with the back of the radio facing upward.

**2**  Align the three slots at the top of the battery with the three tabs on the back of the radio.

**3**  Push the battery down toward the radio until the battery clicks into place.
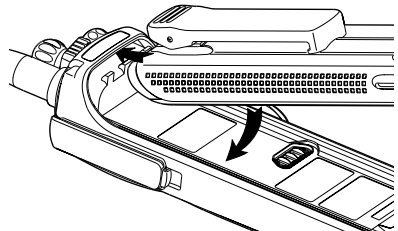
**Remove the Battery**

To remove the battery:

**1**   Turn the radio off.

**2**   Hold the radio with the back of
the radio facing upward.

**3**   To release the battery from the
radio, push the battery release
button located on the bottom of
the battery.

**4**   Lift the battery away from the
radio and remove.
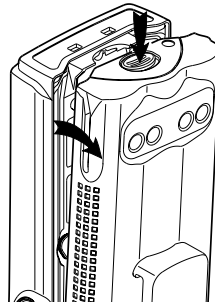
**Note:**   If your radio is programmed with volatile-key retention,
encryption keys are retained for approximately 30 seconds
after battery removal. Consult a qualified radio technician for
details.

# Antenna

## Radio Operating Frequencies

Before installing the antenna, ensure that the antenna you have can
be used with your radio. Your radio's model number is on a label
attached to the back of your radio. A typical model number might be
H09UCC9PW5AN. The fourth position of the model number (in this
example, U) identifies the operating-frequency band of the radio. The
following table lists all fourth-position alpha characters and
corresponding frequency band.

| Radio Operating-Frequency Table | | | |
|---|---|---|---|
| Fourth Position | Operating Frequency | Fourth Position | Operating Frequency |
| K | 136-178MHz | R | 403-470MHz |
| S | 450-512MHz | U | 806-870MHz |

Antennas are frequency sensitive and are color coded according to the frequency range of the antenna. The color code indicator is in the center of the base of the antenna. The following illustrations and table helps identify the antenna, antenna frequency range, and corresponding color code.

VHF
Wide Band
Helical

800 MHz
Dipole

VHF
Helical

UHF
800 MHz
Whip

800 MHz
Stubby

UHF
Helical
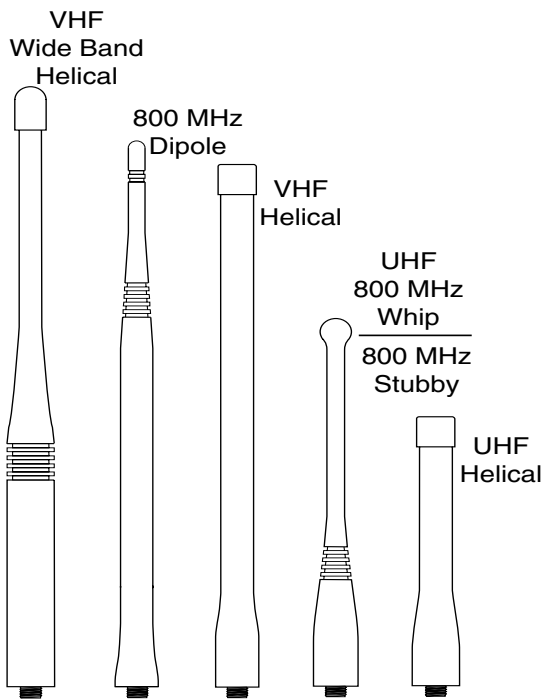
| Antenna Identification Table | | | | |
|---|---|---|---|---|
| Antenna Type | Approx. Length | | Insulator Color Code | Frequency Range | Antenna Kit No. |
| | in. | mm | | | |
| VHF Wide Band Helical | 8.1 | 203 | RED | 136-174MHz | NAD6563 |
| VHF Helical | 7.8 7.3 6.9 | 195 183 172 | YELLOW BLACK BLUE | 136-151MHz 151-162MHz 162-174MHz | NAD6566 NAD6567 NAD6568 |
| UHF Helical | 3.3 3.2 3.2 | 83 80 79 | RED GREEN BLACK | 403-435 MHz 435-470MHz 470-512MHz | NAE6546 NAE6547 NAE6548 |
| UHF Wide Band Whip | 5.2 | 130 | GREY | 403-512MHz | NAE6549 |
| 800MHz Whip | 7 | 175 | RED | 806-870MHz | NAF5037 |
| 800MHz Dipole | 8 | 200 | RED | 806-870MHz | NAF5039 |
| 800MHz Stubby, Quarterwave | 3.3 | 83 | WHITE | 806-870MHz | NAF5042 |

### Attach the Antenna

With the radio turned off, turn the antenna clockwise to attach it to the radio.
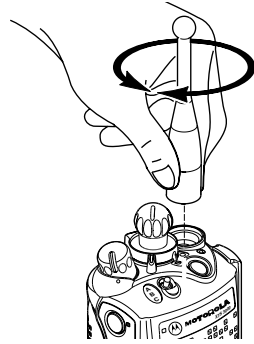
### Remove the Antenna

With the radio turned off, turn the antenna counter-clockwise to remove it from the radio.
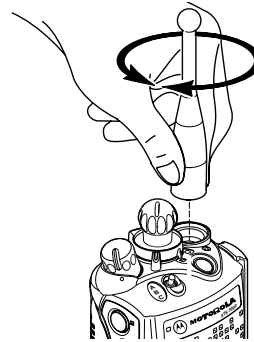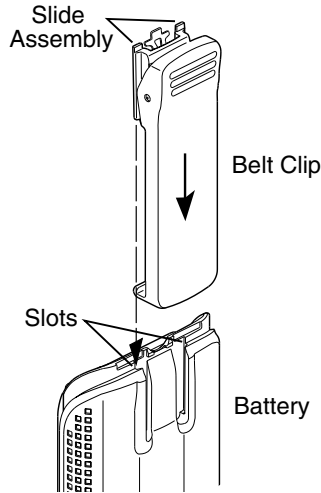
# Belt Clip

**Note:** The battery must be removed from the radio before the belt clip can be installed or removed.

### Attach the Belt Clip

**1** Holding the battery in one hand so that the top of the battery faces upward and the back of the battery faces you, hold the belt clip in the other hand with its top facing upward.

**2** Align the slide assembly on the front of the belt clip with the slots on the back of the battery. Slide the belt clip downward toward the bottom of the battery until the belt clip clicks in place.

### Remove the Belt Clip

**1** Hold the battery in one hand so that the top of the battery faces upward, and the front (radio side) of the battery faces you.

**2** At the top of the battery, press down on the belt clip's metal tab and slide the belt clip upward. Continue to slide the belt clip upward until it is free from the battery.
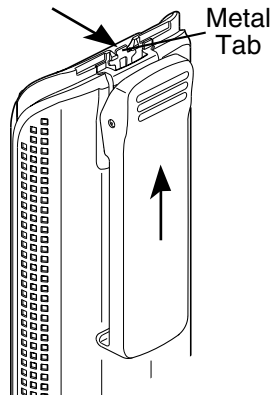
## Universal Connector Cover

The universal connector is located on the antenna side of the radio. It is used to connect accessories to the radio.
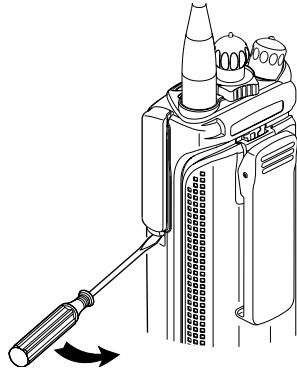
### Remove the Connector Cover

> ⚠ When the Universal Connector is not in use, keep it covered with the Universal Connector cover to prevent damage.
>
> **C a u t i o n**

**1**   Turn the radio off.

**2**   *While holding the cover's top (flat) end in place with your thumb*, pry upward on the cover's lower end until it disengages from the radio.

## Attach the Connector Cover

**1** Turn the radio off.

**2** Insert the top, hooked end of the cover into the top of the connector slot.

**3** While holding the top end, swing the rounded end into place at the bottom of the connector. Press firmly until it snaps into place.
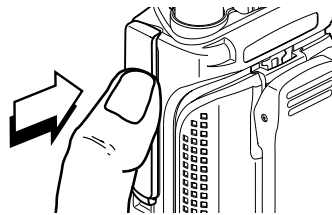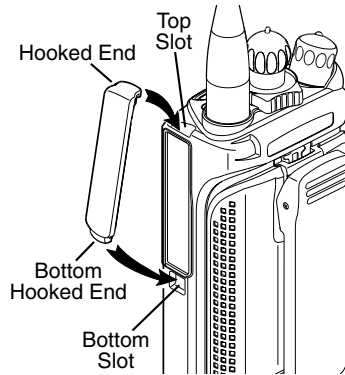
# XTS 3000 R Radios Only

**Note:** In XTS 3000 R radios, the "R" signifies the radio is a **R**ugged-type radio designed to withstand adverse field conditions such as being submersed in water.

| | |
|---|---|
| ⚠️<br>**C a u t i o n** | • The XTS 3000 ASTRO 25 radio casting has a vent hole that allows for pressure equalization in the radio. Never poke this vent with any objects, such as needles, tweezers or screwdrivers. This creates a leak path into the radio and the radio's submersibility is lost.<br><br>• The pressure equalization vent is located on the chassis, just below the battery contact. Never obstruct or cover the two slots with any object, including a label. Ensure that no oily substances come in contact with this vent.<br><br>• The XTS 3000 ASTRO 25 radio is designed to be submersed to a maximum depth of 6 feet and a maximum submersion time of 4 hours. Exceeding either maximum limit may result in damage to the radio. |

**Note:**

1   If the radio has been submersed in water, shake the radio well to remove any water that may be trapped inside the speaker grille and microphone port. Otherwise, the water could cause decreased audio capabilities.

2   If the radio's battery contact area has been exposed to water, dry the battery contacts (both on the radio and the battery) before attaching the battery to the radio. Otherwise, the water could short-circuit the radio.

3   If the radio has been submersed in a corrosive medium (such as salt water), rinse the radio and battery in fresh water and dry the radio and battery.

**4**  To clean the exterior surfaces of the radio, use a diluted solution of mild dish washing detergent and fresh water (one teaspoon of detergent to one gallon of water).

**5**  Do not disassemble the radio. This could damage radio seals and result in leak paths into the radio. Radio maintenance should be performed only by a qualified service person.

**6**  Elastomer technology materials used for seals in rugged portable radios can age with time and environmental exposure. Therefore, Motorola recommends that rugged radios be checked annually to assure the water-tight integrity of the radio. Radio disassembly and reassembly procedures and information regarding test equipment necessary to inspect, maintain and troubleshoot radio seals can be found in the XTS 3000 ASTRO 25 Basic Service manual.

# General Radio Operations

Your radio is ready for use after a fully-charged battery and an antenna have been connected to the radio. Refer to pages 4 and 5 to ensure a complete understanding of the radio's controls and indicators.

## Turning the Radio On and Off

### Radio On
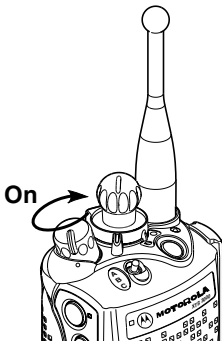
Turn the radio on by rotating the **On/Off/ Volume Control Knob** *clockwise*. The radio goes through a power-up self test. When the radio passes the self test, a medium-pitched tone sounds. This tone is programmable by your system manager or radio technician using radio service software from Motorola.

If the radio fails the self test, a low-pitched tone will sound. Turn the radio off, check the battery, and turn the radio back on. If the radio still does not pass its self test, contact your system manager or authorized service technician.

### Radio Off
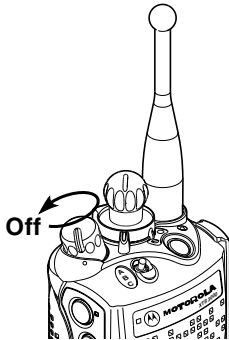
Turn the radio off by rotating the **On/Off/ Volume Control Knob** *counterclockwise* until you hear a click.

# Selecting a Zone and Channel

A *zone* is a grouping of channels. A *channel* is a group of radio characteristics such as transmit/receive frequency pairs. After you turn your radio on, select the desired zone and channel.

## Zone Selection

**1**  Place the pre-programmed **Zone Switch** (if programmed, see page 4) in the desired position.

- If the selected zone is not programmed, you will hear a continuous, low-pitched tone (invalid-mode tone) until a valid programmed zone is selected. This does not mean your radio is not programmed, only that the zone you selected is not programmed.

- *If you would like to select a different channel within the current zone*, see "Channel Selection" below.

**2**  To transmit on the selected zone/channel combination, press the **PTT Button**.

## Channel Selection

**1**  Once you have a desired zone, *rotate* the **16-Position Select Knob** to the desired channel.
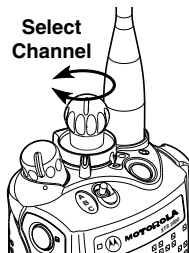


Select
Channel

If the selected channel is not programmed, you will hear a continuous, low-pitched tone (invalid-mode tone) until a valid programmed channel is selected. This does not mean your radio is not programmed, only that the channel you selected is not programmed.

**2** To transmit on the selected zone/channel combination, press the **PTT Button**.

# Receiving/Transmitting

After you have turned your radio on and selected the desired zone and channel, you can receive (listen) or transmit (send) communications as follows:

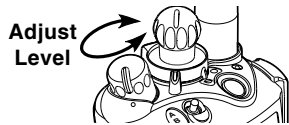**1** Listen until you hear a transmission.

**OR**

Press the **Volume Set Button** (if programmed, see page 4) to hear the volume set tone.

**OR**

Press the **Monitor Button** (if programmed, see page 4) to listen for activity. See note below.

**2** Adjust the **Volume Control Knob** until volume is at a comfortable listening level.

Adjust
Level

**3**   To transmit, *press and hold*
the **PTT Button** and (with
your mouth 1 to 2 inches away
from the radio) speak clearly
into the microphone. The LED
will continuously light red
while the radio is transmitting.
When you have finished
talking (transmitting), *release*
the **PTT Button** to listen
(receive).
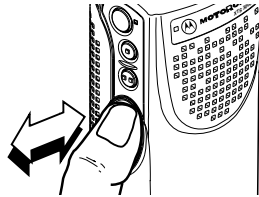
If you try to transmit on a channel that is programmed for receive
only, an invalid tone will sound until you release the **PTT Button**.

**Note:**   *For Conventional Mode* — If the channel on which you are
transmitting is programmed to receive Private-Line® (PL),
ensure that the channel is not in use by momentarily pressing
the **Monitor Button** (if programmed, see page 4) to listen for
activity. To put the radio in permanent monitor operation
(squelch defeat), press and hold the **Monitor Button** for five
seconds (time programmable through radio service software).
To return the radio to its original squelch state, tap the
**Monitor Button** again or press the **PTT Button**.

# General Radio Features

## Time-Out Timer

The new ASTRO portable radio is equipped with a programmable time-out timer which, upon expiration, will turn off the transmitter. This timer is programmable by your system manager or service technician using radio service software, and can be set from 0 seconds (off) to 7.75 minutes (465 seconds) at 15-second increments. The ASTRO radios have been programmed at shipment with a time-out timer duration of 60 seconds.

• A time-out timer warning occurs approximately four seconds before the allocated time-out timer expires. The warning is a short, low-pitched tone.

• If the **PTT Button** is held down longer than the time-out timer's allotted time, a continuous, low-pitched tone will sound and the LED will stop lighting red, indicating that your transmission has been cut off. This tone will continue to sound until the **PTT Button** is released.

   1. Release the **PTT Button**.

   2. To transmit another message, press the **PTT Button**.

## Low-Battery Indication

If the battery voltage falls below the low-voltage level, a short, high-pitched chirping tone (low-battery chirp) will sound.

**Note:** If a low-battery indication occurs, replace the battery.

Programmable battery status options include the following:

- When the **PTT Button** is pressed, the bicolor LED will blink red to indicate a low-battery condition.

- When the **PTT Button** is released following a transmission, a short, high-pitched tone (chirp) will sound to indicate a low-battery condition.

- When the radio is in the standby mode and a low-battery condition occurs, an alert tone will sound from 30 to 930 seconds (programmable through radio service software) at 30-second increments.

# Common Radio Features

## Emergency

For radios programmed with the emergency feature, pressing the **Emergency Button** (if programmed, see page 4) will send out an emergency signal that takes precedence over any other signalling activity in progress on the selected channel. There are two types of emergency signals:

- **Emergency Alarm** sends a data transmission to alert the dispatcher to an emergency condition and identify the radio sending the emergency signal.

- **Emergency Call** is a type of dispatch operation that gives your radio priority access to channels in trunked radios.

**Note:** "Emergency" signals a critical situation. It should never be used for any other reason.

### Entering the Emergency State

Press and hold the **Emergency Button** (if programmed, see page 4).

**Emergency Alarm**

During a non-silent emergency alarm state:

- the LED will light,

- a short, medium-pitched tone will be heard, and

- when the emergency alarm is acknowledged by the dispatcher, the radio sounds four beeps and the alarm ends.
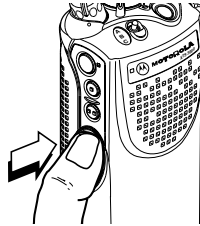
**Silent-Emergency Alarm**

During a silent-emergency state:

- the LED will not light,

- tones will not be heard, and

- the audio will be muted (turned off) and will remain so until you exit emergency alarm state.

The silent-emergency state will continue until you press the **PTT Button**.

**Emergency Call**

To send an Emergency Call, press
the **PTT Button**.

**Notes:**

- **For all types of emergency signals** — If you change channels
  during emergency operation, the emergency alarm or call will be
  moved to, and continue on, the new channel if the new channel is
  also programmed for emergency operation. If the new channel is
  not programmed for emergency operation, an invalid-mode tone
  will sound until the radio exits the emergency state or you change
  to a channel programmed for emergency operation.

- **For emergency-alarm with emergency-call signals** — After an
  acknowledgment is received from the dispatcher, your radio will
  enter emergency call state.

- **For emergency-call signals** — While your radio is in
  emergency-call state, it operates in the usual dispatch manner.

  **OR**

  Your radio will return to one of the following operations if
  programmed to do so:

  *Tactical/Non-Revert Operation* — You talk on the channel you
  selected before entering the emergency state.

  *Non-Tactical/Revert Operation* — You talk on a preprogrammed
  emergency channel, and the emergency alarm will also be sent to
  this preprogrammed emergency channel.

## Exiting the Emergency State

It is important that you exit emergency state when you no longer need to stay in that state. There are four ways to exit emergency state:

1  Press the **Emergency Button** for approximately one second (this time is programmable through radio service software). A medium-pitched, emergency-exit tone sounds until the button is released and the radio returns to normal operation.

2  *Radios programmed with emergency alarm* — Press the **PTT Button**. The alarm will be canceled (without an emergency-exit tone), and you may begin transmitting your voice call.

3  *On radios equipped with emergency alarm with call* — Press the **PTT Button** while the radio is in emergency-alarm operation to place the radio in emergency-call operation.

4  *Radios programmed with emergency alarm only* — The radio automatically exits emergency state on receiving an acknowledgment from the dispatcher or if the alarms are exhausted when no acknowledgment is received. This method applies to non-silent emergency alarm radios.

**Note:**  If you have a silent-emergency alarm radio, use method 1, 2, or 3 to exit the emergency alarm state.

## Emergency Keep-Alive

When this feature is enabled, moving the **On/Off Control Knob** to the OFF position will not turn your radio off if it is in emergency state. Your radio will continue normal emergency operation as if the power is on. The radio will not turn power off until it exits emergency state.

# Individual Calls – Receive Only (Only in Trunking Modes)

Individual calls are defined as follows:

- **Telephone Calls** — Similar to standard telephone calls, except you use your radio. These calls can be landline-to-radio or radio-to-landline calls.

- **Enhanced Private Conversation Calls** (Enhanced Private Calls, Trunked Radios Only) — The radio automatically verifies that the target radio is active on the system.

- **Call Alert™ Pages** — Your radio functions like a pager (beeper); Call Alert Pages provide a means for other radio users to signal you that they wish to get in touch with you (even if you are away from your radio or in a noisy environment). Call Alert Pages also allow users to verify that the radio they are calling is active on the system.

## Answering an Individual Call

**1** When an individual call is being received, you will hear and/or see:

- a telephone-type ringing if it is a telephone call in a trunked radio,

- two alert tones if it is a Private Conversation Call,

- a continuous cycle of four tones if it is a Call Alert Page, and

- a blinking green signal on the LED.

**2** *Telephone Calls Only* — Press the programmed **Call Response Button**.

*Private Conversation Calls* — Within 20 seconds of receiving the call, press the **Call Response Button**.

*Call Alert Pages Only* — Press the **PTT Button**. Your conversation will be heard by the entire talkgroup.
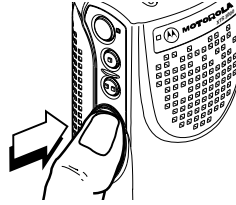
**3** Converse in the normal manner. Press the **PTT Button** to talk; release the **PTT Button** to listen.
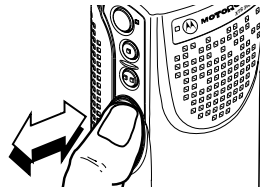
**4** *For Telephone Calls and Private Calls Only* — When you have finished your conversation, press the preprogrammed **Call Response Button** to end the call.

# PL Defeat

The PL defeat feature allows you to override any coded squelch (DPL, PL, or network ID) that may be programmed to a channel. To activate this feature, place the **PL Defeat Switch** (if programmed, see page 4) in the PL defeat position. You will then be able to hear any activity on the channel; if no activity is present, the radio is muted.

# Repeater/Direct

The repeater/direct feature allows you to bypass the repeater and talk directly to another radio. This is known as DIRECT operation or talkaround operation. The transmit frequency is the same as the receive frequency.

In REPEATER operation, you talk through the repeater, which increases the radio's operating range. The transmit frequency is not the same as the receive frequency.

## Selecting Repeater or Direct Operation

Place the **Repeater/Direct Switch** (if programmed, see page 4) in the "repeater" position or the "direct" position, as appropriate.

# Scan

The scan feature allows you to monitor activity on different channels by scanning a "scan list." Each radio can have up to 20 different scan lists. The channels to be scanned can be programmed by your system manager or radio technician using radio service software.

Three types of scan lists are available (consult your service technician for additional information):

- **Trunking Priority Monitor** — Comprises channels that are all from the same trunking system (10 different channels maximum). This feature will work only on those systems that support it.

- **Conventional** — Comprises only conventional channels (15 different channels maximum).

- **Talkgroup Scan** — Comprises conventional and trunked channels from one trunking system (10 different channels maximum). Priority operation is not available in this type of list.

There are also several types of scanning available:

- **Priority-One Scanning** — With priority-one scanning enabled, one member of the scan list is chosen as the priority-one member. Any activity on the priority-one channel will be heard on the speaker even if another channel in the scan list has activity on it.

- **Priority-Two and Non-Priority Scanning** — In addition to the priority-one channel being the number one priority, a second channel can be assigned as a priority-two channel, if desired. The remaining members in the scan list can be programmed as non-priority members of the scan list.

- **Automatic Scanning (Autoscan)** — With this feature, the radio begins scanning whenever you select a channel to which a scan list is assigned (strapped). The radio will continue auto scanning until you select a channel that does not have autoscan enabled.

- **Operator-Selectable Scan** — Scan can be programmed by your system manager or service technician to be activated by a **Scan On/Off Switch** (if programmed, see page 4).

## Turning Scan On and Off

Place the **Scan On/Off Switch** (if programmed, see page 4) in the "scan on" position or the "scan off" position, as needed.

## Deleting Nuisance Channels

When the radio scans a channel that you do not wish to hear (nuisance channel), you can temporarily delete the channel from the scan list.

When the radio is locked onto the channel to be deleted, press the **Nuisance-Delete Button** (if programmed, see page 4). Repeat this step to delete additional nuisance channels.

**Note:** Priority channels, the designated transmit channel, and the selected channel cannot be deleted using the nuisance-delete feature.

The radio continues scanning the remaining channels in the list. To resume scanning the deleted channel, you can change channels, or exit and re-enter scan operation.

## Dynamic Priority Change (Conventional Operation Only)

While the radio is scanning, the dynamic priority change feature lets you temporarily change any channel in a scan list (except the priority-one channel) to the priority-two channel. The present priority-two channel becomes a non-priority channel. This change remains in effect until scan is turned off, scanning then reverts back to the preprogrammed state.

To change a channel to a priority-two channel:

Press the **Dynamic Priority Button** (if programmed, see page 4) when the radio is locked onto the channel to be designated as priority-two.

**Note:** The priority-one channel cannot be changed to a priority-two channel.

The radio continues scanning the remaining channels in the list. To resume scanning the preprogrammed priority-two channel, you must exit and re-enter scan operation.

## Viewing or Programming a Scan List

A scan list can be viewed and programmed if the radio was configured by your system manager or service technician to have scan list programming on one of its switch positions.

To view or program a particular scan list:

**1** Select the zone/channel whose scan list you want to view or program.

**2** Put the **Scan List Programming Switch** (if programmed, see page 4) in the "scan list programming" position.

   The radio's bicolor LED (if programmed, see page 4) indicates the priority status of the selected zone/channel. (Refer to the following table.)

| *Bicolor LED* | *Priority Status* |
|---|---|
| A *steady green* LED | Selected zone/channel is a non-priority member of the scan list. |
| A *steady red* LED | Selected zone/channel is a priority-two member of the scan list. |
| A *flashing red* LED | Selected zone/channel is a priority-one member of the scan list. |
| An *unlit* LED | Selected zone/channel is not a member of the scan list. |

**3**  Select zones/channels whose status you wish to view in the same manner as you would select zones/channels when not in scan list programming mode.

To change the status of a zone/channel whose current status is being viewed, press the **Select (Top Side) Button**. Repeatedly press the button to scroll through the four possible settings.

**Note:**  Depending on how the radio was configured by the RSS, it may not be possible to toggle through some or all of the four status settings.

# Selecting Squelch Operation

Tone Private-Line® (PL), Digital Private-Line™ (DPL), network ID, and carrier squelch operations are all available in your radio and can be programmed by your system manager or service technician for each channel.

**Note:**  Network ID is only available on ASTRO 25 "digital" channels (consult your service technician).

When in carrier squelch operation, all traffic on the channel is heard. When in PL, DPL, or network ID operation, your radio responds only to those messages intended for you. PL, DPL, network ID, and carrier squelch can be programmed for each channel.

Your radio's squelch level can be reprogrammed at an authorized service facility.

# Smart PTT (Conventional Only)

Smart PTT is a per-channel, programmable feature used in conventional radio systems to keep radio users from interrupting other radio conversations. When Smart PTT is enabled in your radio, you will not be able to transmit on an active channel. If you try to transmit (press the **PTT Button**) on an active Smart PTT channel, an alert tone will be generated and the transmission will be inhibited. The LED will also blink red to indicate that the channel is busy.

Three radio-wide variations of Smart PTT are available:

- **Transmit Inhibit on Busy Channel with Carrier** — When this feature is enabled, you will be prevented from transmitting if any activity is detected on the channel.

- **Transmit Inhibit on Busy Channel with Wrong Squelch Code** — When this feature is enabled, you will be prevented from transmitting on an active channel with a squelch code or (if secure-equipped) encryption key other than your own. If the PL code is the same as yours, the transmission will not be prevented.

- **Quick-Key Override** — This feature can work in conjunction with either of the two above variations. When this feature is enabled, you will be able to override the transmit-inhibit state by quick-keying the radio; that is, two **PTT Button** presses within the time programmed through the radio service software for **Smart PTT Quick-Key Timer** (default value is 1/2 a second).

# Special Radio Features

## Dynamic Regrouping
## (Trunking APCO Project 25 Operation Only)

The dynamic regrouping feature allows the dispatcher to temporarily reassign selected radios to a single special channel so that they can communicate with each other. This feature, enabled in each radio by your system manager or service technician, is typically used during special operations. You will not notice whether your radio has this feature enabled until a dynamic regrouping command is sent by the dispatcher.

**Note:** If you select the dynamic-regrouping zone/channel using radio controls without being dynamically regrouped, an invalid tone will be heard.

When your radio has been dynamically regrouped, you will hear a "gurgle" tone and your radio will be automatically switched to the dynamic-regrouping channel.

**Note:** When you use a radio control knob or switch to select the zone or channel, you will not be able to scan or initiate a Private Conversation Call until you select the correct dynamic-regrouping position. You will also hear a "gurgle" tone each time you press the **PTT Button**. This is a reminder to you that you are transmitting on the dynamic-regrouping channel, not the zone or channel indicated by the position of the radio control.

However, in some cases, the dispatcher may classify regrouped units into one of two categories: "select enabled" or "select disabled." See "Select Enable/Disable" on page 38 for details.

Talk and listen as usual.

Your radio will automatically return to the present knob/switch zone and/or channel position when the dynamic regrouping is canceled by the dispatcher.

# Reprogram Request

This feature allows you to notify the dispatcher that you want a new dynamic-regrouping assignment.

**1**  Press the **Reprogram Request Button** (if programmed, see page 4).

The reprogram request is automatically sent to the dispatcher.

**2**  If you hear one beep, press the **PTT Button** to resend the reprogram request.

**OR**

If you hear five beeps, the reprogram request was acknowledged by the dispatcher.

**Note:**  If the dispatcher fails to acknowledge the reprogram request within six seconds, a low-pitched alert tone sounds. Try again.

# Select Enable/Disable

The dispatcher may classify regrouped radios into either of two categories: select enabled or select disabled.

- Select-enabled radios are free to make channel changes to any available channel, including the dynamic-regrouping channel, once the user has selected the dynamic-regrouping position.

- Select-disabled radios cannot change channels since the dispatcher has specifically chosen to force the radio to remain on the dynamic-regrouping channel.

    **Note:**  You cannot use the scan and private conversation call features when your radio is select disabled.

# PTT-ID Transmit

The PTT-ID transmit feature is a per channel feature where your radio's ID number is automatically sent every time the **PTT Button** is pressed. Depending upon how your radio was programmed, your radio's ID can be transmitted at the beginning of a transmission, at the end of a transmission, or at the beginning and ending of a transmission. For digital voice transmissions, your radio's ID is sent during the voice message.

# Secure Operation

Secure operation provides the highest level of commercially available voice security on trunked or conventional channels. Unlike other forms of security, Motorola digital encryption provides signalling that makes it virtually impossible for others to decode any part of an encrypted message.

## Selecting Secure or Clear Transmissions

Use the **Secure/Clear Switch** (if programmed, see page 4) to select secure or clear operation of the radio before initiating a transmission using the **PTT Button**. This selection cannot be made when a transmission is in progress.

- *If a channel is programmed for secure-only operation*, and the **Secure/Clear Switch** is in the clear (○) position, when the **PTT Button** is pressed, an invalid-mode tone will sound, and the radio will not transmit until the **Secure/Clear Switch** is set to the secure (⊘) position.

- *If a channel is programmed for clear-only operation*, and the **Secure/Clear Switch** is in the secure (⊘) position, when the **PTT Button** is pressed, an invalid-mode tone will sound, and the radio will not transmit until the **Secure/Clear Switch** is set to the clear (○) position.

**Note:** This is not the case when the radio is programmed using the RSS to "Ignore TMSS on Sec/Clr Strapped Channel."

# Managing Encryption

### KEY Loading

To add encryption keys into the radio:

**1** Set up the radio and equipment as specified in the key-variable loader (KVL) manual.

> **Note:** When the KVL is attached to your radio, all radio functions (except for power down, backlight, and volume) will be locked out.

**2** Press the KVL's **PTT Button** to load the encryption keys into your radio. When the key has been loaded successfully, the radio will sound a short tone for single-key radios and an alternating tone for multikey radios.

### KEY Erasure (All KEYS Erased)

With the radio on, press and hold the **Top Side Button**. While holding this button down, press the **Emergency Button**.

**Note:** DO NOT press the **Emergency Button** before pressing the **Top Side Button** unless you are in an emergency situation; this would send an emergency alarm.

### MultiKEY

The multikey feature allows your radio to be equipped with as many as 16 different encryption keys and supports up to two different encryption algorithms simultaneously (for example, DVP-XL™ and DES-XL, or DVP™ and DVP-XL).

- **Conventional Multikey** — The encryption keys can be tied (strapped) on a one-per-channel basis through radio service software.

- **Trunked Multikey** — If you use your radio for both conventional and trunked applications, you will have to strap your encryption keys for trunking on a per-talkgroup or announcement-group basis. In addition, you may strap a different key to other features (for example, dynamic regrouping, failsoft, or emergency talkgroup).

# Selectable Power Level

This feature allows you to select the power level at which your radio will transmit messages. Place the **TX Power-Level Switch** (if programmed, see page 4) in the "high-power" position or the "low-power" position, as appropriate.

- *High Power* — longer transmitting distance; lessens battery life
- *Low Power* — shorter transmitting distance; conserves battery life

**Note:** When the radio is powered on, it will default to the setting programmed through radio service software.

# Trunking System Controls

## Failsoft

If a trunking system experiences a complete failure, the radio will revert to failsoft operation and automatically switch to its failsoft channel. During failsoft, the trunking repeaters will transmit a medium-pitched tone every 10 seconds. When the trunking system returns to normal operation, your radio will automatically exit failsoft operation and return to trunked operation.

## Out of Range

If you go out of range of the system and can no longer lock onto a control channel, the radio will sound a low-pitched tone. Your radio will remain in this out-of-range condition until it (1) locks onto a control channel, (2) locks onto a failsoft channel, or (3) is turned off.

## Site Lock

This feature allows your radio to lock onto a specific site and not roam among wide-area talkgroup sites. This feature should be used with caution since it inhibits roaming to another site in a wide-area system.

Press the **Site Lock/Unlock Button** (if programmed, see page 4) to lock on to or unlock from a specific site.

## Site Change

To change from the current site to a different one:

Press and hold down the **Site Search Button** (if programmed, see page 4) to manually force the radio to change to a new site.

You will hear a tone while the radio scans for a new site. When a new site is found, the tone will stop.

# Helpful Hints

## Troubleshooting

If you suspect a radio problem, check the following items before requesting service:

### Radio Checks

- Be sure the radio is turned on and the **16-Position Select Knob** is in the proper position.

- Replace or recharge the battery. The first time a new battery is used, it should charge a minimum of 16 hours.

- The antenna must be screwed on properly, with its base flush against the top of the radio.

- Could your radio problem be caused by accessories improperly connected?

- Try operating the radio from several different locations, especially when using the radio inside buildings.

- Check the transmitter by transmitting to an alternate portable radio.

### Operating Instructions

Review your operating instructions and ensure that you are using the radio properly.

### Problem Not Solved

If, after checking your radio and the operating instructions, your radio still has a problem, contact your system manager, or review your service agreement and call the applicable Motorola service representative, as applicable. If you do not have a service agreement on your radio, contact your nearest authorized Motorola service shop for guidance toward a prompt and expedient evaluation and/or repair.

# Radio Care

## Handling

- Avoid physical abuse; do not pound, drop, or throw the radio unnecessarily. Do not carry the radio by the antenna.

- Avoid subjecting the radio to an excess of liquids. Never allow the radio to become submersed.

- Avoid subjecting the radio to corrosives, solvents, or spirits.

- Do not disassemble the radio in any way.

- Keep the accessory-connector cover in place until ready to use the accessory connector. Replace the cover immediately after the accessory has been disconnected.

## Cleaning

Clean external surfaces of your radio with the following solution: one teaspoon of mild dishwashing detergent to one gallon of water (0.5% solution).

> ⚠️ Do not use solvents to clean your radio; spirits may be harmful and permanently damage the radio housing.
>
> **C a u t i o n**

Apply the detergent solution sparingly with a stiff, non-metallic, short-bristled brush, being careful not to allow excess detergent to remain entrapped near connectors and controls or in cracks and crevices. Do not submerse the radio in the detergent solution. Dry the radio thoroughly with a soft, lint-free cloth.

Clean all battery contacts with a lint-free cloth to remove dirt, grease, or other foreign material that may prevent good electrical connections.

# Battery Charging and Disposal

## Charging Batteries

This product is powered by a nickel-cadmium (Ni-Cd), nickel-metal-hydride (NiMH), or lithium-ion rechargeable battery. Charge the battery before use to ensure optimum capacity and performance. The battery was designed specifically to be used with a Motorola charger. Charging in non-Motorola equipment may lead to battery damage and void the battery warranty.

**Note:** When charging a battery attached to a radio, turn the radio off to ensure a full charge.

The battery should be at about 77°F (25°C) (room temperature), whenever possible. Charging a cold battery (below 50° F [10°C]) may result in leakage of electrolyte and ultimately in failure of the battery. Charging a hot battery (above 95°F [35°C]) results in reduced discharge capacity, affecting the performance of the radio. Motorola rapid-rate battery chargers contain a temperature-sensing circuit to ensure that batteries are charged within the temperature limits stated above.

## Recycling Batteries

Batteries may be recycled. However, recycling facilities may not be available in all areas. Under various U.S. state laws and the laws of several other countries, batteries must be recycled or disposed of properly and cannot be disposed of in landfills or incinerators.

Contact your local waste management agency for specific requirements and information in your area.

Motorola fully endorses and encourages the recycling of batteries. In the U.S. and Canada, Motorola participates in the nationwide Rechargeable Battery Recycling Corporation (RBRC) program for battery collection and recycling. Many retailers and dealers participate in this program.

For the location of the drop-off facility closest to you, access RBRC's Internet website at www.rbrc.com or call 1-800-8-BATTERY. This internet site and telephone number also provide other useful information concerning recycling options for consumers, businesses, and governmental agencies.

# Glossary

| | |
|---|---|
| **ACK** | Acknowledgment of communication |
| **APCO** | Association of Public Safety Communication Officers |
| **Channel** | A group of characteristics such as transmit/receive frequency pairs, radio parameters, and encryption encoding |
| **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; does not use a trunking (controller) system (See Trunking) |
| **Dispatcher** | An individual who has radio system management duties |
| **FCC** | Federal Communications Commission |
| **Hang Up** | Disconnect |
| **Page** | A one-way alert, with audio and/or display messages |
| **PTT** | Push-To-Talk — The **PTT Button** engages the transmitter and puts the radio in transmit (send) operation when pressed |
| **Repeater** | A conventional radio feature, where you talk through a receive/transmit facility (repeater), that retransmits received signals in order to improve communications range and coverage |
| **RF** | Radio Frequency |
| **Squelch** | The muting of audio circuits when received signal levels fall below a predetermined threshold |
| **Standby** | An operating condition whereby the radio's speaker is muted but still continues to receive data |
| **Talkgroup** | An organization of radio users who communicate with each other |
| **Trunking** | The automatic sharing of communications paths among a large number of users (See Conventional) |
| **Zone** | A grouping of channels |

# **Notes**

# Commercial Warranty

**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:

| | |
|---|---|
| XTS 3000 ASTRO 25 Portable Units | One (1) Year |
| 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.

## 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 Product. The foregoing states the entire liability of MOTOROLA with respect to infringement of patents by the Product or any parts thereof.

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## VII. GOVERNING LAW:

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

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# Notes

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