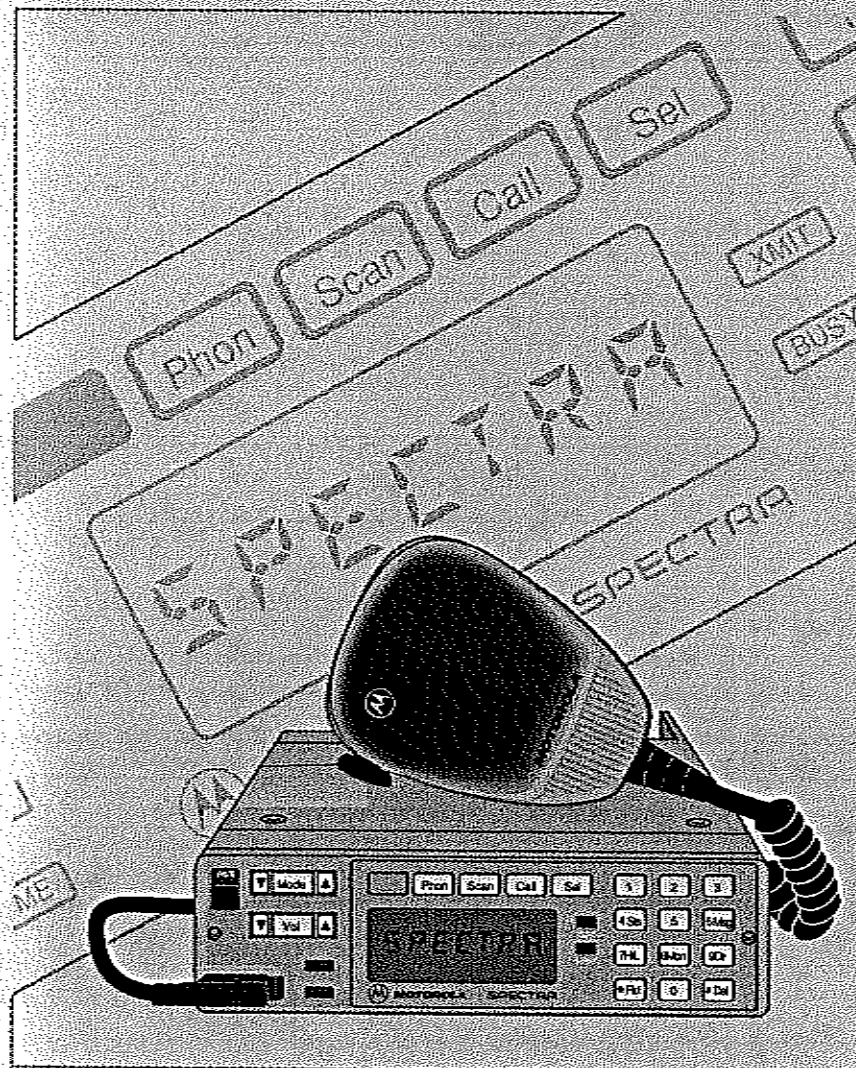


Spectra® Conventional Radio System

operating instructions



FCC Requirements

The FCC (Federal Communications Commission) requires you to obtain a station license for your radio equipment before you transmit on it, but it does not require an operating license or permit. The station licensee is responsible for ensuring that the transmitter power, frequency, and deviation are within the maximum limits allowed by the station license.

The licensee of the station is at all times responsible for the proper operation and maintenance of the equipment. No FCC license is required for personally maintaining the equipment. The frequency and deviation of the transmitter must be checked upon installation, and at least once yearly.

IMPORTANT

FCC regulations state that:

1. The grantee of a license has the responsibility of ensuring that all equipment operated under that license conforms to the specifications of the license.
2. The rf power output of a radio transmitter shall be no more than that required for satisfactory technical operation, considering the area to be covered and local conditions.
3. The frequency, deviation, and power of a radio transmitter must be maintained within specified limits. It is recommended, therefore, that these three parameters be checked before the station is placed in service.

REMEMBER

The efficiency of the equipment depends upon a good installation. Motorola recommends that adjustments to this equipment be made *ONLY* by a certified technician.

Service

To buy a service contract for your Motorola equipment:

Motorola Communications Group
1301 E. Algonquin Road
Schaumburg, Illinois 60196

Service Manuals

Motorola instruction manuals contain complete testing and servicing instructions. You can buy one of these from:

MOTOROLA
Communications Group Parts Dept.
1313 E. Algonquin Road
Schaumburg, Illinois 60196
1-800-422-4210

Spectra® Conventional Radio System

Contents

FCC Requirements	inside front cover
General Safety Information	2
Conventional Radio Systems	3
Alert Tones	4
Introduction	5
Control Head Operation	6
Basic Operating Procedures	8
Channel Scan™	11
Operator-Selectable Channel Scan	13
Telephone Interconnect List	15
Unlimited Telephone Interconnect (A7 Models Only)	17
Push-to-Talk Identification (PTT-ID)	19
Emergency Alarm	20
Status/Message Transmissions (A7 Models Only)	22
Optional External Alarms (Horn and Lights)	23
DTMF Selective Call Encode	25
MDC Selective Calling	28
Talkaround	34
SECURENET™ Operation	35
Conventional Operator-Selectable Multiple Coded Squelch	38
Conventional Operator-Selectable Single Tone™	40
Zone/Mode	42
Time-Out Timer	44
Conventional MDC-1200™ Repeater Access Controller (RAC)	44
Proper Connections and Operating Problem Troubleshooting	45
Field Programming	46
Computer Software Copyrights	47
Commercial Warranty (Standard)	48

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General Safety Information

The Federal Communications Commission (FCC), with its action in the General Docket 79-144, March 13, 1985, has adopted a safety standard for the human exposure to radio frequency (rf) electromagnetic energy emitted by FCC-regulated equipment. Proper operation of this radio will result in user exposure substantially below the FCC recommended limits.

DO NOT operate the transmitter of a mobile radio when someone outside the vehicle is within two feet (0.6 meter) of the antenna.

DO NOT operate the transmitter of a fixed radio (base station, microwave, and rural telephone rf equipment) or marine radio when someone is within two feet (0.6 meter) of the antenna.

DO NOT operate the transmitter of any radio unless all rf connectors are secure and any open connectors are properly terminated.

In addition,

DO NOT operate this equipment near electrical blasting caps or in an explosive atmosphere.

All equipment must be properly grounded according to Motorola installation instructions for safe operation.

All equipment should be serviced only by a qualified technician.

Refer to the appropriate section of the product service manual for additional pertinent safety information.

Conventional Radio Systems

The following will help you understand how your Spectra radio operates in a conventional radio system:

In a conventional radio system, a fixed frequency or set of frequencies is shared with other users. Therefore, each user must monitor the channel before attempting to transmit to ensure that standard two-way radio transmission protocol is observed by not "talking over" someone who is transmitting.

Coded squelch (Private-Line® [PL] or Digital Private-Line™ [DPL]) may be used on conventional channels to make sure the user hears only the messages intended for him by other users in his talk group who share the same coded squelch. Coded squelch is also used to prevent unauthorized use of a conventional repeater.

Your radio has one or more conventional types of operation. Table 1 indicates the types of calls which may be received during each of these call states.

Table 1. Types of Conventional Operation

Operation	Channel Activity Heard
Carrier Squelch	All channel activity that exceeds the preset level of your radio's squelch circuit.
Coded Squelch (On Hang-Up Box)	All channel activity that has the correct PL or DPL code.

Note: When operating in a coded squelch mode, the radio's yellow busy indicator will light to indicate when a signal is received, regardless of squelch code. (The channel is busy; don't try to use it.)

Alert Tones

Volume Set Tone - Sounds, when you press the **Volume** button on a quiet channel to indicate the volume level (Models A5 and A7 only).

Time-Out Timer Alert - Low-pitched continuous tone indicates that your present transmission will soon be disabled.

Mobile Unit Acknowledge - One high-pitched tone followed by four high-pitched tones indicates that an MDC Emergency Alert or status/message transmission has been acknowledged by the base station controller.

Sidetone - High-pitched tone, when you press the microphone's PTT, indicates that the Unit ID, Single Tone, or MDC repeater ID is being sent.

Call Alert™ - Four high-pitched tones indicate that a Call Alert has been received.

Selective Call - Two high-pitched tones indicate that a Selective Call has been received.

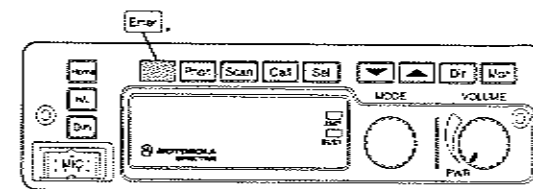
Valid Key Alert - High-pitched alert tone indicates that you pressed a valid key, or you entered a feature configuration state, or you are receiving or transmitting in the clear mode on SECURENET models.

Invalid Key Alert - Low-pitched tone indicates that you tried to make an invalid keypad entry.

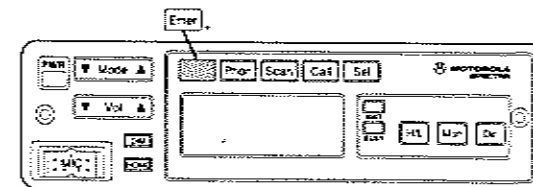
Illegal Mode Alert - Low-pitched tone indicates that you tried to transmit in a receive-only mode.

Introduction

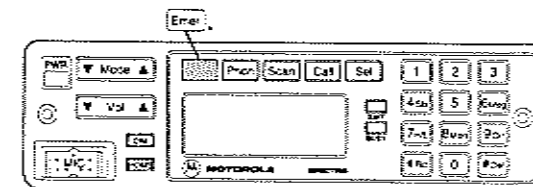
Model A4



Model A5



Model A7



* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED)

Introduction

The Spectra radio is among the most sophisticated two-way radios available. It operates on conventional channels to give maximum communications capability under varying operating conditions.

One of the newest in a long line of quality Motorola products, Spectra radios are smaller, lighter in weight, yet more rugged than comparable radios. Its many features give powerful communications capabilities that can enhance the efficiency of any operation. Such features add up to better, more cost-effective two-way radio communications.

Identifying Your Spectra Radio

Feature operation and radio capability differ by model. Your radio is one of the following [see illustrations]:

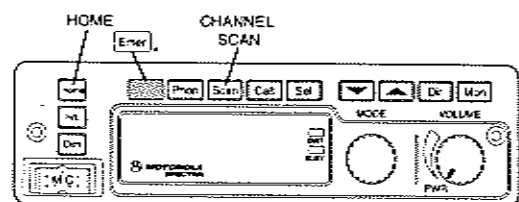
Model A4: Has **Mode** and **Volume** knobs and a limited set of control buttons; no 12-button keypad.

Model A5: Has a limited set of control buttons; no 12-button keypad.

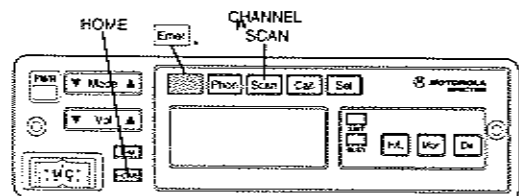
Model A7: Has all the keys the A5 has, plus a 12-button keypad.

The Model A7 radio gives greater feature capabilities than do the A4 and A5. Be sure to follow the feature operations described for your specific model in the following sections of this manual.

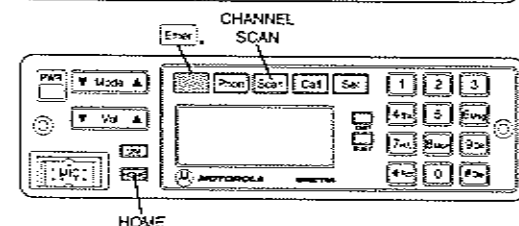
Control Head Operation



Model A4



Model A5



Model A7

* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED)

Spectra Control Head Operation

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

You can select channels on your Spectra radio by selecting the desired "mode," which is a preprogrammed combination of a transmit and receive frequency pair, an associated squelch code pair, and a time-out timer value.

To further simplify operation, other radio features may be "slaved" to the selected mode via field programming. This "mode-slaving" means the radio is preprogrammed to automatically give you the proper operation for each channel, or "mode," you select.

Through field programming, the Spectra control head allows you to program your own mode names. The names you assign are clearly shown in the eight-character, alphanumeric display. At a glance, 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 indicators.

Mode-Slaved/Operator-Selectable Operation

Many of the radio's features are either "mode slaved" or "operator selectable," depending on which model you have. For example, with mode-slaved Channel Scan, you have a preprogrammed scan list for every mode you select. Simply press the **Scan** button, and the radio automatically scans the desired modes. "Operator selectable" means you can choose or "configure" the feature to meet your specific needs, independent of the selected mode. For the scan example above, this means you can select the scan list members you need. The display shows the programming inputs during configuration of these features, guiding you through the selection process.

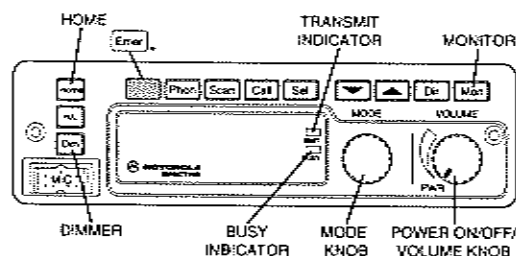
Normal State

At all times, the Spectra control head operates in essentially one of two states: "normal" or "configuration." In the normal state, the control head display indicates your selected mode, or the currently active receive mode when Channel Scan is on. You can turn the various radio features on or off, change modes, and adjust volume.

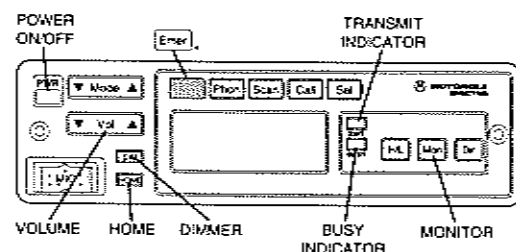
Configuration State

On models with operator-selectable features, you can enter the configuration state and change those features (for example, the Channel Scan list) by holding the **Scan** button until the radio responds by changing the display and sounding a "valid key" alert. Then, after making changes, press the **HOME** button to exit the configuration state. Details of the selection procedure are covered under the appropriate feature.

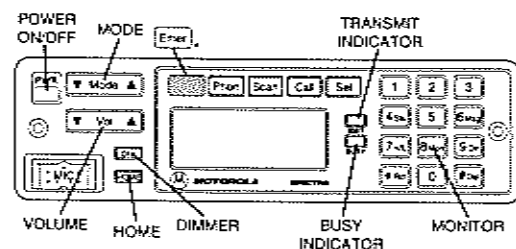
Basic Operating Procedures



Model A4



Model A5



Model A7

* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED)

Basic operation is the same for all radio models. Models with additional features are noted.

To Turn On the Radio

1. Press the power switch in the upper left corner of the control unit once; on A4 models, rotate the Volume knob. The display and graphics illuminate to indicate that the radio is on.
2. When the radio is turned on, **"SELF CHK"** is displayed and your radio checks itself for problems.

Note: If **"FL##/##"** or **"FAIL ###"** appears in the display when the radio is turned on, the radio will not function until the condition has been corrected. If **"ER##/##"** appears, some non-critical data has been changed. Report either condition to service personnel.

To Set Volume for Receiving Calls

- On A4 model radios, rotate the **Volume** knob clockwise to increase the volume and counterclockwise to decrease the volume.
- On A5 and A7 radios, press and hold the **Vol** rocker button. A volume indication (0-15) appears on the display; for example, **"VOL 10."** If the radio is in a quiet mode, a volume-set tone sounds. Hold the button until the sound level increases (or decreases) to the desired level.

To Monitor Channel Activity

To monitor channel traffic, either take the microphone off-hook or press the **Mon** button momentarily. **"MON ON"** on the display indicates that the radio is monitoring. In coded squelch modes, this turns off receive coded squelch operation and allows monitoring of all activity on the channel. The busy indicator will also be illuminated when channel activity is present or the radio is unsquelched.

To Change Modes

1. Turn the **Mode** knob (A4 model) or use the **Mode** rocker switch (A5 and A7 models) to scroll forward or backward through the list of modes programmed into the radio. All radio models are offered with 128 modes standard, and will display mode numbers as shipped or mode names which have been field programmed.
2. For fast access to a single preprogrammed home mode, press the **HOME** button momentarily, and the radio will immediately go to that mode.

Note: For A7 model radios, another method of selecting modes is available if you know the desired mode number. Press and hold the **HOME** button until a beep sounds. Use the numeric keypad to enter the new mode number; then press **HOME** to go to that mode.

To Transmit

1. Turn the **Mode** knob (A4 model) or use the **Mode** rocker switch (A5 and A7 models) to select the desired mode.
2. Lift the microphone off-hook and listen for activity on that mode. If you hear no activity, press and hold the microphone's PTT button.
3. When the red transmit indicator lights steady, hold the microphone about two inches from your lips and speak slowly into the microphone in a normal voice. State your FCC call sign and proceed with your message. Release the PTT button to receive.

Note: If you hear a high-pitched tone when you press the PTT button, the radio is sending your unit ID number. Continue to hold down the PTT button and wait until the tone stops before talking. A continuous low-pitched tone indicates an invalid transmit condition, and you should release the PTT button.

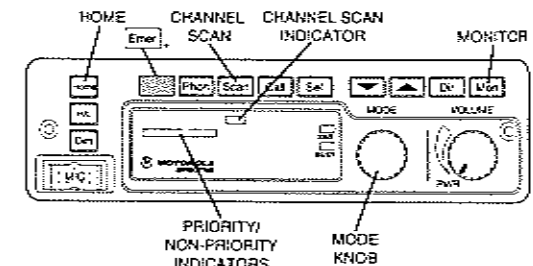
To Adjust Display Brightness

Press the **DIM** button to change the display brightness to one of four levels: from off to high, high to medium, medium to low, or low to off. In off, both display and backlight are off (used for surveillance operations). When the radio is turned on, the dimmer automatically resets to high to ensure that the display will be visible.

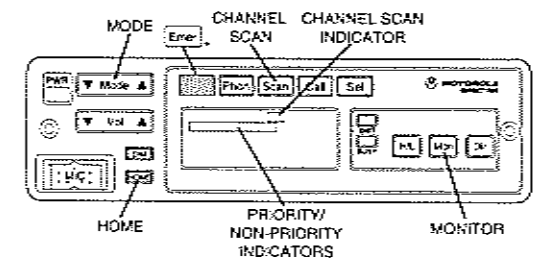
To Adjust Squelch Level

Press and hold the **Mon** button until a beep sounds and the display indicates the current squelch setting. Turn the **Mode** knob (A4 model) or use the **Mode** rocker switch (A5 and A7 models) to scroll to the desired squelch level (0-15). Press **HOME** to enter the new selection and return to normal operation.

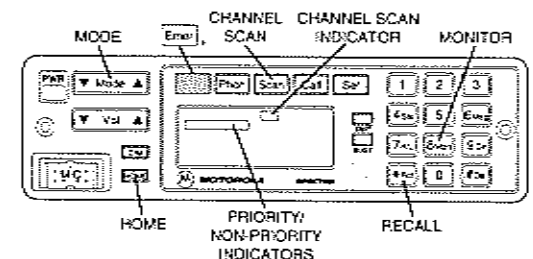
Model A4



Model A5



Model A7



* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED)

All A4, A5, and A7 radio models can scan up to 16 modes, including up to two priority modes. A "first priority" message will be heard, regardless of activity in a "second priority" or "non-priority" mode. Activity in the second priority mode will be heard over all but first priority activity. These models can be configured for mode-slaved operation, which provides a unique scan list for each mode. You can review these lists, but you cannot modify them. These models can also be configured for operator-selectable scan list, which is common to all modes.

To Turn Channel Scan On

Press the **Scan** button momentarily to turn Channel Scan on. The **Scan** indicator lights and a list of modes is scanned for activity.

Note: If no activity exists, the display shows your selected mode. When a scanned mode becomes active, the display shows the active mode and unmutes the radio. To scan in carrier squelch, press **Mon** momentarily while scan is on.

To Review a Channel Scan List

1. Press and hold the **Scan** button until the **Scan** indicator blinks and a valid key alert is heard. (The radio is not scanning while you're reviewing the list.)
2. **A4 and A5 Models:** Turn the **Mode** knob (A4 model) or press the **Mode** rocker button (A5 model) to either step through only the modes that are in the scan list when mode-slaved scan is enabled, or scroll up or down through all the modes in the radio when operator-selectable scan is enabled. Those modes which are in the scan list are indicated by a "non-priority," "priority," or blinking "priority" indicator.

A7 Model: Press the **Mode** rocker button to scroll up or down through all the modes in the radio. Those modes which are in the scan list are indicated by a "non-priority," "priority," or blinking "priority" indicator. Press the **Rcl** button to step through only the modes that are already in the scan list.

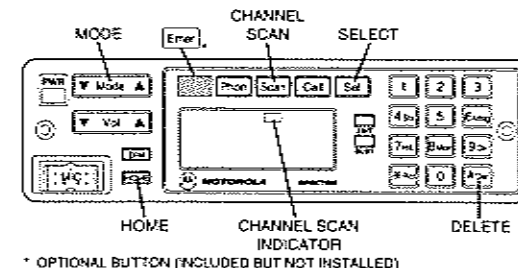
Note:

- A lit non-priority indicator means that the mode is in the list and will be scanned as a non-priority mode.
 - A continuously lit priority indicator means that the mode is in the list and will be scanned as the second priority mode.
 - A blinking priority indicator means the mode is in the list and will be scanned as a first priority mode.
 - **"SEL MODE"** on the display indicates that the selected mode is automatically included in the scan list.
3. Press the **HOME** button momentarily to return to normal operation. A beep sounds and the radio resumes scanning.

To Transmit While Scan Is On

Press the microphone PTT button to transmit in the selected mode. A field programming change can be made to allow you to always transmit (talk back) on the currently active mode or on a preset "home" mode.

Operator-Selectable Channel Scan



To Select a Channel Scan List

All A4, A5, and A7 models feature operator-selectable Channel Scan operation, which requires that you first enter a scan list. This list is common to all radio models and may be changed as often as you wish. The list stays in memory when you turn Channel Scan, or the radio, off.

1. The select (configuration) state may be entered with scan on or off. Press and hold the **Scan** button until its indicator blinks and a "valid key" alert sounds. You may now enter, modify, or review your existing scan list. (The radio is not scanning while you're selecting or reviewing the list.)
2. The display shows **"SEL MODE"** and one of the priority indicators lights to indicate that the selected mode is automatically included in the list. The priority of the selected mode may be modified, but it cannot be deleted from the list.
3. To enter or modify a list, turn the **Mode** knob (A4 model) or use the **Mode** rocker switch (A5 and A7 models) to scroll to the desired mode (or you can enter the mode number directly from the keypad on the A7 model).
4. To add the displayed mode to the list, press the **Sel** button once. The non-priority indicator lights to indicate that the mode has been added to the list as a non-priority mode.
5. To add a mode as a second priority, scroll to the desired mode and press the **Sel** button twice. The priority indicator lights to indicate that this mode has been added as the second priority.
6. To add a mode as first priority, scroll to the desired mode and press the **Sel** button three times. The priority indicator blinks to indicate that this mode has been added as the first priority.

Note: If the list is full, you will hear a low-pitched beep and the display will show **"LST FULL."** One of the modes already in the list must be deleted before another mode can be added.

Telephone Interconnect List

7. To delete a mode from the list, scroll to the mode to be deleted and press the **Del** button (on the A7 model only) or press the **Sel** button up to three times until the priority or non-priority indicators turn off, indicating that the mode is no longer in the scan list. The selected mode cannot be deleted from the list.
8. When you have finished modifying your scan list, press the **HOME** button. A beep sounds and the radio resumes scanning.

To Delete Nuisance Modes With Scan On (Model A7 only)

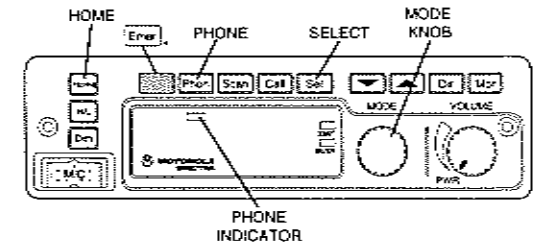
1. To temporarily delete undesirable modes (nuisance modes), press **Del** once while the mode is active (indicated by the display). Only one mode is deleted at a time. If a second mode is deleted, the first mode returns to the scan list. Priority modes cannot be deleted.
2. To restore the original list, either:
 - a. press the **Rel** button,
 - b. turn scan off, then on,
 - c. change modes, or
 - d. turn the radio off, then on.

This feature may be disabled via field programming.

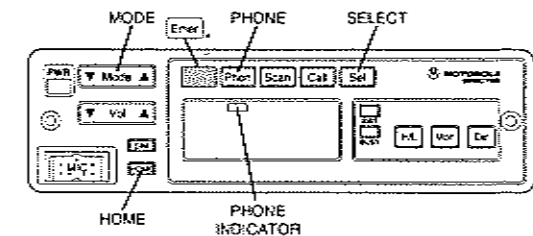
To Change Priorities While Scan Is On

1. This dynamic priority feature allows the priority of a non-priority mode on the scan list to be increased, when active, by pressing the **Sel** button. A non-priority mode becomes second priority, and the previous second priority becomes non-priority. The first priority mode remains unchanged.
2. To restore the original list, either turn scan off, then on, change modes, or turn the radio off, then on.

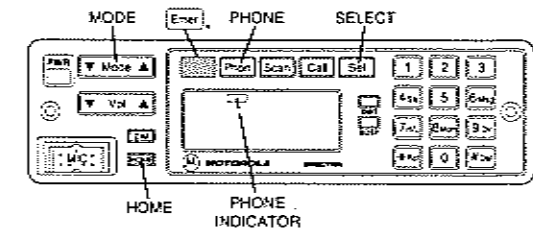
Model A4



Model A5



Model A7



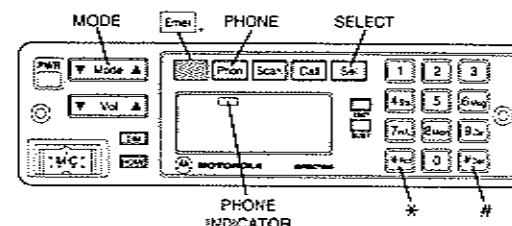
* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED)

With any of the A4, A5, or A7 models you may initiate telephone conversations if your system is properly equipped. The A4 and A5 models feature phone list capability through a list of up to nine preprogrammed phone numbers. With field programming, a name may be assigned to each number in the list for your convenience. In addition to the nine preprogrammed phone numbers, the A7 model features unlimited dialing capability with its full 12-button telephone keypad.

To Autodial a Telephone Number From the List

1. Turn the **Mode** knob [A4 model] or use the **Mode** rocker switch [A5 and A7 models] to scroll to a mode where telephone interconnect is available. Monitor for channel activity.
2. If the channel is clear, press the **Phon** button momentarily to select the phone function; the **Phone** indicator lights.
3. The display will:
[On A4 and A5 Models] Indicate the first phone number in the pre-stored list.
[On A7 Model] Indicate "SCRTCHPD"; then show the last number dialed.
4. Turn the **Mode** knob [A4 model] or use the **Mode** rocker switch [A5 and A7 models] to scroll to the number you wish to call. If a name has been programmed, the display will first show the name, then display the associated number.
5. When initiating a phone call, an access code is usually required. Press **Sel** and the radio automatically sends a pre-stored access code. After the access code is sent, the radio automatically pauses.
Note: If no dial tone sounds, press the **HOME** button to hang up.
6. After you get a dial tone, press the **Sel** button again to dial the displayed number, or dial the desired number with the optional DTMF microphone.
Note: If the number contains a programmed pause, autodialing stops when "P" is displayed. After the desired pause, press **Sel** to continue dialing.
7. When the call is completed, press the **HOME** button to hang up and return to normal radio operation.

Unlimited Telephone Interconnect (A7 Models Only)



To Dial a Phone Number Not In the List

1. Use the **Mode** rocker button to scroll to a mode where telephone interconnect is available. Monitor the radio for channel activity.
2. To dial a number not in the pre-stored list, press the **Phon** button momentarily to select the phone function. The **Phone** indicator lights.
3. The display shows "SCRTCHPD," then the last number dialed.
- 4a. To autodial, enter the desired phone number from the keypad. The display will be updated as the numbers are entered.
 - (1) When initiating a phone call, an access code is usually required. Press the **Sel** button and the radio automatically sends a pre-stored access code. After the access code is sent, the radio automatically pauses.
Note: If no dial tone sounds, press the **HOME** button to hang up.
 - (2) After you get a dial tone, press **Sel** again to automatically dial the displayed number.
 - (3) When the call is completed, press the **HOME** button to hang up and return to normal radio operation.
- 4b. To direct dial, press the **Mode** rocker button to scroll to the "KEYPAD" display.
 - (1) Enter the desired number from the keypad or DTMF microphone. The numbers will be dialed as they are entered.
Note:
 - To use the pre-stored access code, before entering the desired number from the keypad, press the **Sel** button and wait for dial tone. After you hear a dial tone, enter the desired number from the keypad (or DTMF microphone), and the numbers will be dialed as they are entered.
 - If a different access code is required, do not press the **Sel** button. Instead, enter the access code directly from the keypad, wait for a dial tone, then continue dialing.

- [2] When the call is completed, press the **HOME** button to hang up and return to normal radio operation.

To Store a Phone Number In the List

1. Press the **Phon** button momentarily to select the phone function; the **Phone** indicator will light.
2. Press the **Mode** rocker to scroll to the **"STOR PHN"** display.
3. Press the **Sel** button to select the phone number storage function. The first number in the pre-stored list is displayed.
4. Press the **Mode** rocker to scroll to the number you wish to change.
5. Enter the new phone number on the keypad.
Note: If you make an error, press the **#** button twice to backspace over the incorrect entry. Enter a pause by pressing the ***** button, then the **#** button.
6. When the complete number has been entered, press the **Sel** button to store the new number.
Note: If you press the **Mode** rocker before pressing the **Sel** button, the number just entered is not stored.
7. Press the **HOME** button to return to normal radio operation.

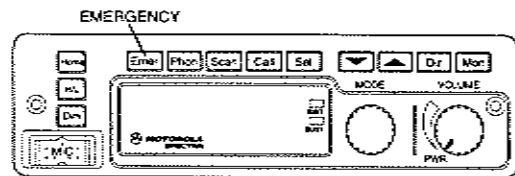
Push-to-Talk Identification (PTT-ID)

Every radio model includes data communications capability, providing automatic PTT unit identification in properly equipped systems. Field Programming is required for PTT-ID to be operational.

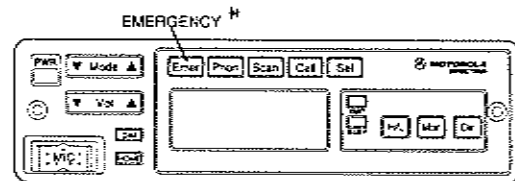
To Send Your Unit Identification

Each time you press the microphone's PTT button while in a mode that has PTT-ID enabled, the radio automatically sends your radio's unit identification code to your dispatcher. You will hear an alert tone when you press the PTT button. Continue to hold down the PTT and wait until the tone stops before you begin talking.

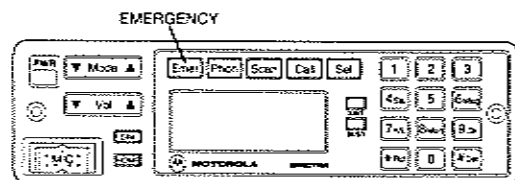
Emergency Alarm



Model A4



Model A5



Model A7

The "emergency alarm" feature allows you to send an emergency data transmission to the dispatcher in an emergency situation. The "emergency" state may be accessed by momentarily activating an optional foot switch, hidden push button, or field-installed **Emer** button. (See the Spectra Service and Installation manuals for more information on the switches.) Emergency must be field programmed to be operational.

Note: With the radio turned off, you can still send emergency alarms if you use the external device (foot switch or push button) to activate it (main battery power must, of course, be connected). In this case, the radio automatically turns itself on, sends the emergency alarm, and then turns itself off after the acknowledgement. All alert tones sound (except for silent alarm) but no displays occur.

The radio must be turned on from the control head's **Volume** knob (A4 models) or **PWR** button (A5 and A7 models) before sending alarms using the field-installed **Emer** button on the control head.

Emergency Alarm

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

1. Press the emergency button; an alert tone (beep) sounds and the display flashes **"EMERGENCY."**
2. A "base station acknowledgement" tone (5 beeps) sounds indicating that the alarm was received by the base station, and the display shows **"ACK RCVD."** The radio then automatically returns to normal operation. No further action is required.

Silent Emergency Alarm

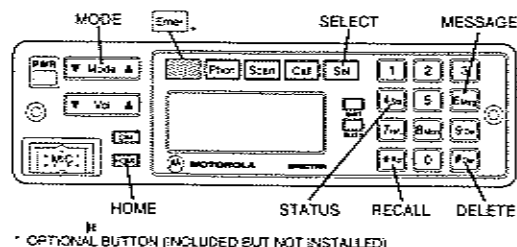
Press the emergency button to activate the "silent alarm" feature. During a silent emergency alarm, there are no display changes and the receiver audio mutes so that no indication is given that an emergency alarm has been sent.

To exit the silent alarm mode, press the PTT button or press and hold the emergency button until an alert tone sounds.

Special Considerations

- If you press the emergency button while in a mode which has no emergency capability, an "invalid key" tone sounds. If the emergency alarm is not acknowledged, a tone sounds and the display shows **"NO ACK."**
- If you press the emergency button, then change to a mode which has no emergency capability, a **"NO EMERG"** display alternates with the mode name display 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 will cause an emergency alarm to be sent.

Status/Message Transmissions (A7 Models Only)



Radio *status* transmissions are used to inform the dispatcher of the present state of the mobile unit, while *message* transmissions indicate a temporary condition and/or a response to a dispatcher's query. For example, a status might be **"ENROUTE"** or **"AT SITE,"** and a message might be **"PLS CALL"** or **"10 4."** Status and message names are field programmable. Each radio may have up to eight separate statuses and eight separate messages.

To Send a Status or Message Transmission

1. Press the **Sts** or **Msg** button. The last acknowledged status or message name is displayed. (If no status or message has been acknowledged previously, **"NO STS"** or **"NO MSG"** is displayed.)
2. Use the **Mode** button to scroll through the list of status or message names, or use the keypad to enter the number of the status or message you wish to send. If a keypad numeric button is pressed, the display will change to **"STS X"** OR **"MSG X,"** where **"X"** is the number you pressed.

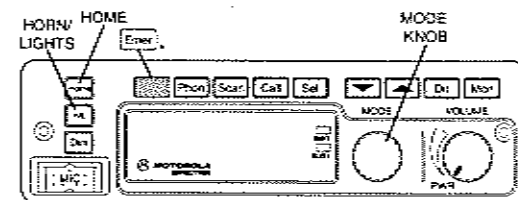
*Alternatively, use the **Rec** button to recall the last acknowledged status/message.*
3. With the desired status/message name or number displayed, press the **Sel** button to send the transmission.

The radio display flashes the selected status/message name until the transmission is received and acknowledged. A tone (beep, pause, beep-beep-beep) sounds when the status/message is received by the controller, and the display shows **"ACK RCVD."** The radio then returns to normal operation.

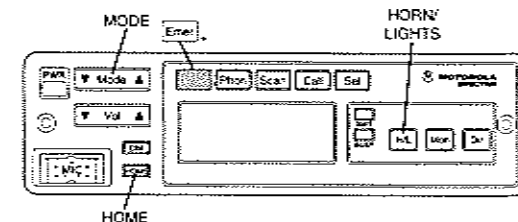
Note: If no acknowledgement is received, the display shows **"NO ACK"** and an "illegal key" tone sounds. The display changes back to the last acknowledged status/message. You now have the choice of sending the desired status/message again by pressing the **Sel** button, or exiting by pressing the **HOME** or **Del** button.

Optional External Alarms (Horn and Lights)

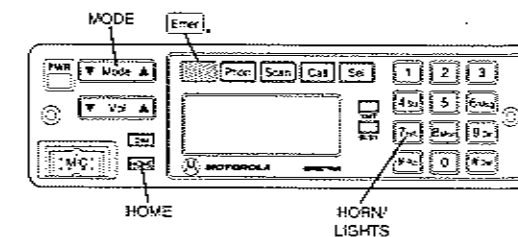
Model A4



Model A5



Model A7



The external alarm feature is used when you must leave the vehicle but you need to receive any incoming Call Alerts. See the Spectra service and installation manuals for the optional relays needed for these features.

To Turn External Alarms On

Press the **H/L** button momentarily. The last selected alarm[s] are enabled, and the display alternately shows the enabled alarm[s], then the selected mode. Press the **H/L** button a second time to turn off the alarms.

DTMF Selective Call Encode

To Change the Selected Alarms

1. Press and hold the **H/L** button until a beep sounds and the display indicates the currently selected alarm.
2. Turn the **Mode** knob (A4 model) or press the **Mode** rocker switch (A5 and A7 models) to scroll through the choices: "**HORN ON**," "**LITES ON**," and "**H/L ON**" (both horn and lights), until the desired alarm is displayed.
3. Press the **HOME** button to select the desired alarm and return to normal operation.

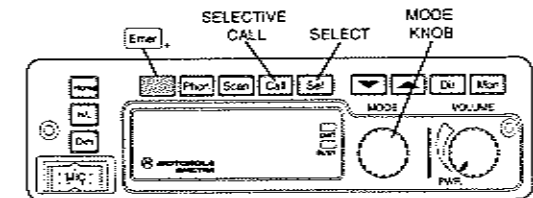
When a Call Alert Is Received While Alarms Are Turned On

When alarms have been turned on and a Call Alert is received, the vehicle's horn sounds for four seconds, and/or the car lights turn on for sixty seconds. (This time interval may be changed with the field programmer.) The display alternates between "**CALL**" and the selected mode name.

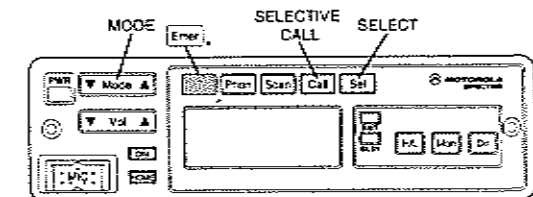
To turn the alarms off, press the **H/L** button or any other control head button.

Note: After returning to the vehicle, disable the external alarms feature by pressing the **H/L** button momentarily. To reactivate the alarms, press the **H/L** button a second time. Cancelling a Call Alert also automatically disables the alarm(s); press the **H/L** button again to reactivate them.

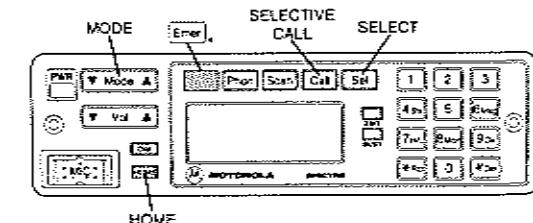
Model A4



Model A5



Model A7



* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED)

Dual-tone, multiple-frequency (DTMF) selective call allows you to direct a conversation to another distinct unit.

To Make a DTMF Selective Call From a Pre-Stored List (Models A4, A5, and A7)

1. Turn the **Mode** knob (A4 model) or use the **Mode** rocker switch (A5 and A7 models) to scroll to a mode which has DTMF selective call enabled.
2. Press the **Call** button to enter the call mode.
3. Turn the **Mode** knob (A4 model) or use the **Mode** rocker switch (A5 and A7 models) to scroll through the pre-stored list. (If you scroll through the list at a slow enough rate, the ID number alternates with the associated name.)

4. When the ID you want to call is displayed, monitor for channel activity. Press the **Sel** button to call this unit when a channel is free.

Note: If the called unit does not answer, you may send your unit ID as a "call-back number," which will appear on the called unit's display. If you wish to leave your number, go to step 5; if not, go to step 6.

5. Press the **Sel** button to send your call-back number.
6. Press the **HOME** button to exit the call mode and go back to normal operation.

To Make a DTMF Selective Call From the Scratchpad (Model A7 Only)

1. Use the **Mode** rocker to scroll to a mode which has DTMF selective call enabled.
2. Press the **Call** button to enter the call mode. The display will show "**SCRTPD.**"
3. Use the keypad buttons to enter the unit ID of the mobile radio to be called. The digits entered are shown on the display.
4. When the ID you want to call is displayed, monitor for channel activity. Press the **Sel** button to call this unit when a channel is free.
5. Press the **HOME** button to exit the call mode and go back to normal operation.

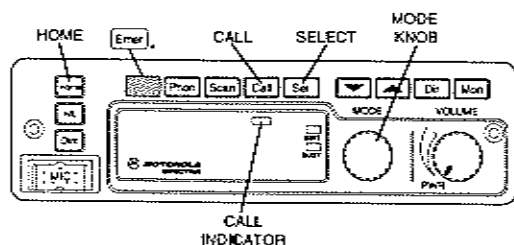
To Make a DTMF Selective Call From the Keypad (Model A7 Only)

1. Use the **Mode** rocker to scroll to a mode which has DTMF selective call enabled.
2. Press the **Call** button to enter the call mode.
3. Press the **Mode** button until the display shows "**KEYPAD.**"
4. Monitor for channel activity, then press the appropriate keypad buttons to send out the desired ID. (In this mode, each digit is transmitted as the keypad button is pressed.)
5. If you receive no acknowledgement, press the **Sel** button to send your call-back number, or press the **HOME** button to exit the call mode and go back to normal operation.

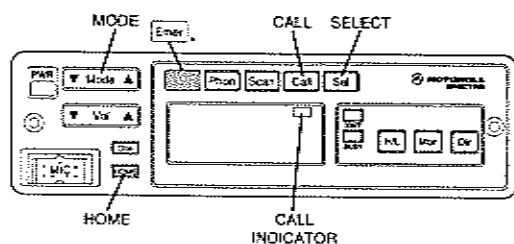
To Store a DTMF Selective Call ID (Model A7 Only)

1. Use the **Mode** rocker to scroll to a mode which has DTMF selective call enabled.
2. Press the **Call** button to enter the call mode.
3. Press the **Mode** rocker until the display shows "**STORE ID.**"
4. Press the **Sel** button to enter the store mode.
5. Press the **Mode** rocker to scroll to the unit ID to be changed.
6. Use the keypad to enter the desired ID number and press **Sel** when the number is complete.
7. Press **HOME** to save this number, exit the call mode, and go back to normal radio operation.

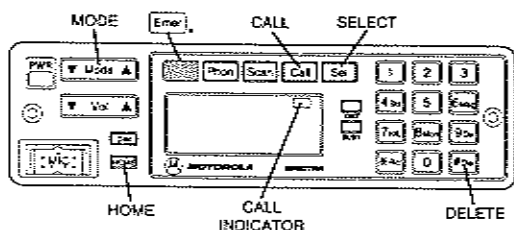
MDC Selective Calling



Model A4



Model A5



Model A7

* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED)

MDC-1200™ selective calling is a set of conventional features that allows the dispatcher or a mobile radio unit to communicate with one or more mobile radio units with a certain degree of privacy. The different types of selective calling features currently available are enhanced select call, automatic select call, and Call Alert.

Enhanced select call (private call) allows one mobile unit to selectively place a call to one other mobile unit. Group-wide and fleet-wide enhanced select calls are not allowed. This type of selective calling is termed "polite" because the target unit has the option of accepting or cancelling the incoming call.

- Automatic select call allows one mobile unit to selectively direct communications to one other mobile unit, or to a group or fleet of mobile units. The target unit(s) automatically unmute to the automatic select call. This type of selective calling is termed "impolite" because the target unit cannot disregard the incoming call.
- Call Alert (also known as "page") allows one mobile unit to leave its ID with one other mobile unit. Group-wide and fleet-wide Call Alerts are not allowed. Upon receiving the initiating unit's ID, the target unit will begin sounding alert tones, and its display will indicate that a Call Alert has been received. The target unit will also activate external alarms (horn and/or lights) if they are enabled. The operator can then cancel the display and alarms and retrieve the ID if desired.

To Receive an Enhanced Selective Call

When an enhanced selective call is received from the dispatcher, two alert tones sound and the display shows **"CALL"** for two seconds. To respond to the call, first press the **Call** button and then press the microphone PTT button and talk.

To Initiate an Enhanced Selective Call

1. Press the **Call** button; the **Call** indicator lights. The display shows:
 - (If "list only/response only" is enabled) **"THIS ID,"** then shows your unit ID.
 - (If "unlimited calling" is enabled) **"SCRTCHPD,"** then shows the last selected unit ID number.

Note: If an enhanced selective call or Call Alert page has been received, the display shows **"ID RCVD,"** then shows the unit ID of the caller. Units programmed for "response only" can only call **"ID RCVD."**

2. Select a unit to call as follows:

- Select **"ID RCVD"** if you wish to call the person with whom you last had an enhanced selective call, or the person who last Call Alert paged you.
- If "list only" is enabled: Use the pre-stored list by turning the **Mode** knob (A4 model) or pressing the **Mode** button (A5 and A7 models) to scroll to the name/ID you wish to call. (You cannot send a call to **"THIS ID."**)
- If "unlimited calling" is enabled: Do nothing if you wish to call the presently displayed unit ID; or use the pre-stored list by turning the **Mode** knob (A4 model) or pressing the **Mode** button (A5 and A7 models) to scroll to the name/ID you wish to call; or use "unlimited call" capability by entering a new unit from the keypad.

3. Place the call by pressing the **Sel** button; the display shows **"PLS WAIT"** while the radio is attempting to call the selected unit.

- If the unit you are calling is in service, a telephone-type ringing sounds, and the display shows **"ACK RCVD"** for two seconds, followed by the ID of the unit you are calling.
- If the called unit is *not* in service, no ringing sounds. After 20 seconds, the display shows **"NO ACK,"** and a momentary low-pitched tone sounds. Try again or press the **HOME** button to return to normal radio operation.
- If the called unit is *in* service, but the operator does not answer within 20 seconds, the ringing stops and the display shows **"NO ANSWR."**

4. If the receiving unit answers, identify yourself and begin your enhanced selective call.

5. When the conversation is completed, press the **HOME** button to hang up.

Note: If you do not press the **HOME** button to hang up, your unit will remain in the enhanced selective call state with the other unit.

To Receive an Automatic Selective Call

When an automatic selective call is received from the dispatcher, two alert tones sound, and the display shows **"CALL"** for two seconds. To respond to the call, first press the **Call** button and then press the microphone PTT button and talk.

To Initiate an Automatic Selective Call

1. Press the **Call** button; the **Call** indicator lights. The display shows:

- (If "list only" is enabled) **"THIS ID,"** then shows your unit ID.
- (If "unlimited calling" is enabled) **"SCRTCHPD,"** then shows the last selected unit ID number.

Note: If an automatic selective call or Call Alert page has been received, the display shows **"ID RCVD,"** then shows the unit ID of the caller.

2. Select a unit to call as follows:

- Select **"ID RCVD"** if you wish to call the person with whom you last had an automatic selective call or the person who last Call Alert paged you.
- (If "list only" is enabled) Use the pre-stored list by turning the **Mode** knob (A4 model) or pressing the **Mode** button (A5 and A7 models) to scroll to the name/ID you wish to call. (You cannot send a call to **"THIS ID."**)
- (If "unlimited calling" is enabled) Do nothing if you wish to call the presently displayed unit ID; or use the pre-stored list by turning the **Mode** knob (A4 model) or pressing the **Mode** button (A5 and A7 models) to scroll to the name/ID you wish to call; or use "unlimited call" capability by entering a new unit from the keypad.

Note: **"GRP CALL"** and **"FLT CALL"** are available with automatic selective call to allow you to call multiple units at the same time.

3. Place the call by pressing the PTT button.

4. Identify yourself and begin your conversation.

5. When the conversation is completed, press the **HOME** button.

Note: Until you press the **HOME** button after a conversation has been completed, your unit remains in the automatic selective call state with the other unit(s).

To Receive a Call Alert

When a Call Alert is received, four alert tones sound and the display alternates between **"CALL"** and the normal radio display until you clear the Call Alert state. If you enabled external alarms before leaving your vehicle, those alarms will engage when the alert is received (see the "Optional External Alarms (Horn and Lights)" section). Press either the microphone's PTT button or the **Call** button to clear the Call Alert state.

To Send a Call Alert

1. Select a unit to call by following steps 1 and 2 of either the "enhanced selective call" or "automatic selective call" sections, above.
2. Place the Call Alert in one of three ways:
 - [With "enhanced selective call" enabled] Press the **Sel** button once to send the enhanced selective call; press the **Sel** button again to send the alert.
 - [With "automatic selective call" enabled] Press the **Sel** button once to send the alert.
 - [With "Call Alert only" enabled] Press the **Sel** button once to send the alert.
3. The display will show **"PLS WAIT"** while the radio is attempting to Call Alert the selected unit.
4. If the called unit responds, your display will show **"ACK RCVD,"** and five alert tones will sound, indicating that the called unit successfully received your Call Alert. After sending a successful alert, your unit automatically exits the Call Alert mode; you need not press the **HOME** button to exit this state.

If the called unit does not respond after about 20 seconds, your display will show **"NO ACK,"** and a momentary low-pitched tone will sound. Try again, or press the **HOME** button to return to normal radio operation.

To See Your Own ID

1. Press the **Call** button momentarily; the **Call** indicator lights.
2. To see your ID, turn the **Mode** knob (A4 model) or press the **Mode** button (A5 and A7 models) to scroll to the **"THIS ID"** display, which will alternate with your ID number.

Note: Your ID can be viewed at any time while in the call state simply by turning the **Mode** knob or pressing the **Mode** button to scroll to the **"THIS ID"** display.

To Store a Unit ID Number In the List ("Unlimited Calling" Enabled)

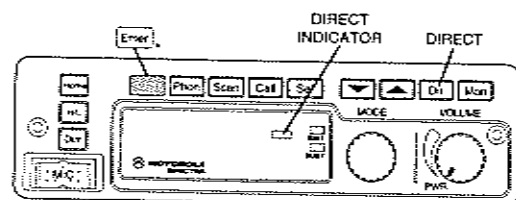
1. Press the **Call** button momentarily; the **Call** indicator lights.
2. Turn the **Mode** knob (A4 model) or press the **Mode** button (A5 and A7 models) to scroll to the **"STORE ID"** display.
3. Press the **Sel** button to select the "unit ID store" function.
4. Turn the **Mode** knob (A4 model) or press the **Mode** button (A5 and A7 models) to scroll to the ID you wish to change.
5. Enter the new unit ID number on the keypad.

Note: If you make an error, press the **Del** button to erase each incorrect digit.
6. When digits of the ID are entered, press the **Sel** button to store the new ID or press the **HOME** button to store it and exit.

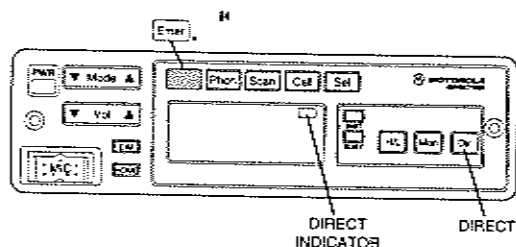
Note: If you turn the **Mode** knob (A4 model) or press the **Mode** button (A5 and A7 models) before pressing the **Sel** button, you will advance to the next number, but will not store the number just entered.
7. Repeat steps 4, 5, and 6 until all desired IDs have been entered. Press the **HOME** button to exit to normal radio operation. You must exit the ID storage function and press the **Call** button again to initiate a call to another unit.

Note: There is only one list of unit IDs that is shared by all MDC-1200 selective calling features.

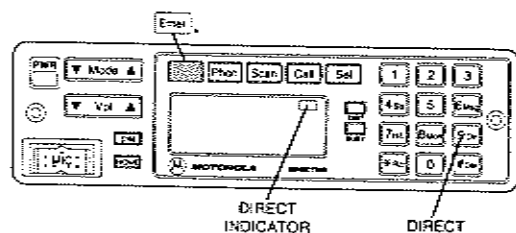
Talkaround



Model A4



Model A5



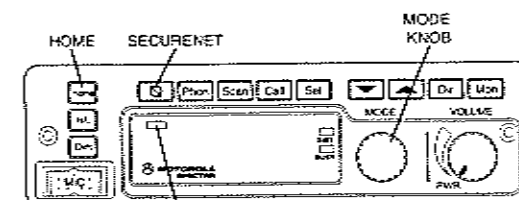
Model A7

* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED)

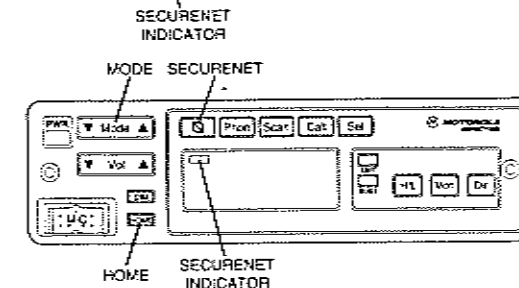
To Talk Direct (Mobile-to-Mobile)

Press the **Dir** button momentarily; the **Dir** indicator lights, indicating that the radio will now transmit directly to another unit without going through the repeater system. This is useful when you are close to other mobiles with whom you wish to talk, or are outside the range of your repeater system. To return to repeater operation, press the **Dir** button a second time.

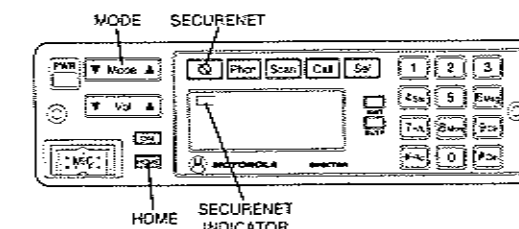
SECURENET™ Operation



Model A4



Model A5



Model A7


To Receive



1. Select a mode with the **Mode** knob (A4 model) or **Mode** rocker (A5 and A7 models). Adjust the volume to a comfortable listening level.
2. When the radio is receiving a private message, the **BUSY** light blinks and the radio unmutes.

Private messages encrypted with a different key will unmute the radio, but will only produce noise in the speaker (the "proper code" option eliminates this noise). In PL modes and on models equipped with the "proper code" option, you can monitor the channel continuously by removing the microphone from the hang-up box or turning the monitor on. An alert tone can be enabled to sound at the beginning of a clear reception.

Note: The SECURENET on/off state does not affect received messages. The radio will automatically receive coded or clear messages.

To Transmit


1. Press the  button to turn on SECURENET. Some radio modes may have SECURENET automatically set *on* or *off* if the "mode-strapped SECURENET" feature is enabled. The current code is displayed if "dual code" and/or "dual hybrid" has been enabled.

Note: If private (encrypted) mode is selected, the  indicator is *on*. If standard (clear) mode is selected, the  indicator is *off*. An alert tone sounds when transmitting in the standard mode.

2. Monitor the mode to be sure it is not in use. Then, press and hold the PTT button to transmit. The **XMIT** indicator lights, and the display shows the current code selected when transmitting in private mode, if "dual code" or "dual hybrid" has been enabled.
3. Hold the microphone about two inches from your lips and speak slowly and clearly. Proceed with your message.


To Select Code Type

The mode-strapped code option must be disabled, and either the "dual code" or the "dual hybrid" option must be enabled to enter the code configuration state.

1. Press and hold the  button to enter the configuration state. A "valid key" alert will sound.
2. Use the **Mode** knob (A4 model) or **Mode** rocker (A5 and A7 models) to scroll through all available codes and stop on the desired code.
3. Press the **HOME** button to exit the configuration, and save only the changes that may have been made.

Key Insertion

Perform the following steps to load an encryption key into your radio system.


1. Turn on the radio and set the volume. The position of the  button is not important.
2. Connect the cable from the key variable loader to the microphone connector on the radio.
3. Push the push-to-transfer switch on the side of the key variable loader. When the transfer is complete, a pure tone sounds in the speaker, and the message **"PASS"** appears on the inserter's display. The key transfer was unsuccessful if **"FAIL"** appears on the display, and the key variable loader emits a series of short beeps.

Loss Indication

If you press the PTT button while in the private mode with SECURENET on, and the encryption hybrid *does not* contain a valid key, bursts of alert tones sound in the speaker until you release the PTT button. The display shows **"NO KEY"** for approximately three seconds after the PTT button is pressed.

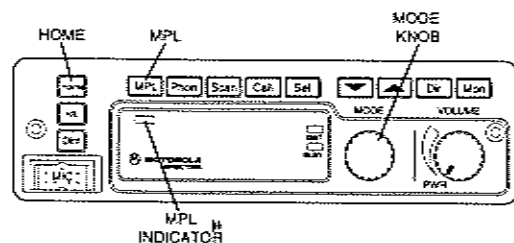
Over the Air Rekeying (OTAR) (Advanced SECURENET option only)

Advanced SECURENET radios are capable of OTAR operation. To request a rekey:

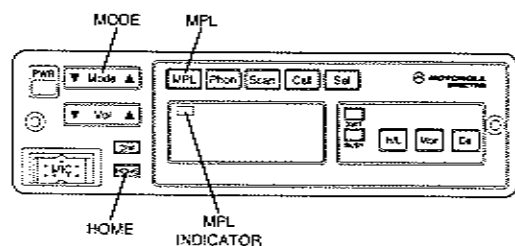
1. Press and hold down the  button until a beep sounds.
2. Use the **Mode** knob (A4 model) or **Mode** rocker (A5 and A7 models) to scroll through all available codes until **"RGST KEY"** is displayed.
3. Press the **Set** button. The display shows **"PLS WAIT."**
4. If an acknowledgement is received, a "good" beep will sound, and the display will show **"PENDING."** When rekeying occurs, four "good" beeps will sound, and **"REKEYED"** will be displayed for three seconds, then the radio will leave the configuration state.

If an acknowledgement is not received or the rekey request is denied, then the display will show **"NO ACK"** or **"DENIED"** respectively, for three seconds. Then, the radio will return to the **"RGST KEY"** menu. The **HOME** button may be pressed at any time to exit the configuration state.

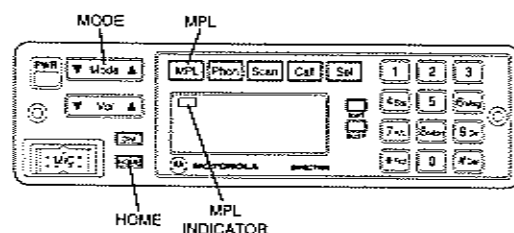
Conventional Operator-Selectable Multiple Coded Squelch



Model A4



Model A5



Model A7

This option adds an **MPL** (multiple coded squelch) button to the control head; this button will enable the operator to override mode-slaved coded squelch. Up to 16 selections are allowed; each selection can be programmed with a user-defined name.

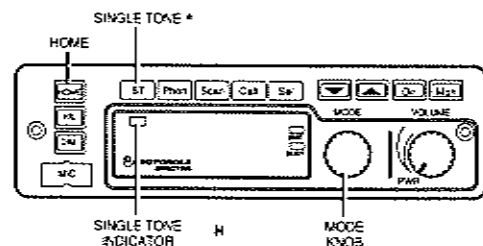
Repeater access and other system uses are enhanced by allowing a single radio to operate on many combinations of operator-selected Private-Line™, Digital Private-Line™, and carrier-squelched systems.

Through programming, this option can be restricted, by mode, to operate on transmit-only or receive-only, or it can be disabled.

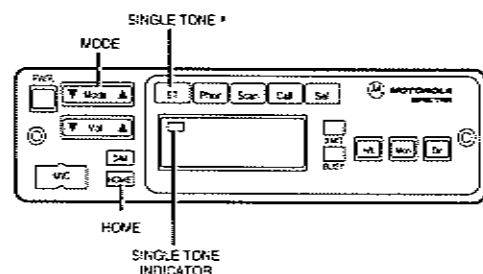
To Activate Multiple Coded Squelch (MPL)

1. Press the **MPL** button; the **MPL** indicator lights and the last operator-selected value is activated and momentarily displayed.
2. To select another squelch scheme, hold the **MPL** button down; a beep sounds and the **MPL** indicator flashes. The radio is now in a "configuration state."
3. To select a new value, use the **Mode** knob (A4 model) or **Mode** rocker (A5 and A7 models) to scroll through the selections, or use the keypad (A7 model) to directly enter the value.
4. Press the **HOME** button. This stores and activates the new selection and returns the radio to normal operation.

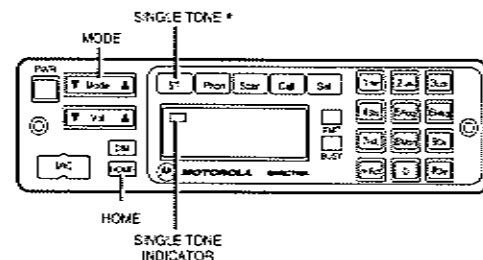
Conventional Operator-Selectable Single Tone™



Model A4



Model A5



Model A7

* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED).

A Single Tone is normally transmitted with a sidetone. The sidetone is programmable and may be enabled or disabled. When a Single Tone is being transmitted, its (programmable) name is displayed.

To Activate Single Tone (ST)

1. Press the **ST** button; the **ST** indicator lights and the last operator-selected value is activated.
2. To select another Single Tone, hold the **ST** button down; a beep sounds and the **ST** indicator flashes. The radio is now in a "configuration state."
3. To select a new value, use the **Mode** knob (A4 model) or **Mode** rocker switch (A5 and A7 models) to scroll through the selections.
4. Press the **HOME** button. This stores and activates the new selection and returns the radio to normal operation.

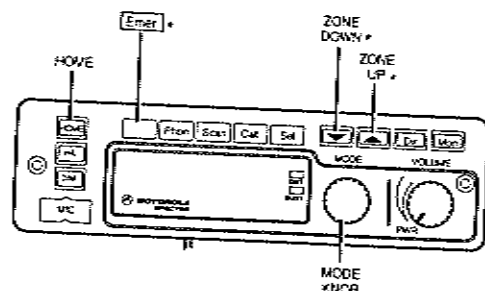
Note: When a transmission is initiated with Single Tone, a short tone burst is sent at the beginning of the transmission.

The Single Tone option is a transmit-only feature. Radios with this option enabled will send a Single Tone frequency automatically. This option adds an **ST** (Single Tone) button to the control head. This button will allow the operator to enable or disable the Single Tone option and enter the Single Tone selection mode. Up to 16 selections are allowed; each selection can be programmed with a unique user-defined name.

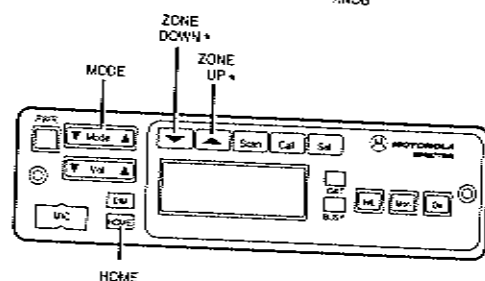
Repeater access and other system uses are enhanced by allowing a single radio to operate on many combinations of operator-selected Single Tones.

Through programming, this option can be restricted, by radio, to operate automatically on transmit (only when the user has enabled the Single Tone option), or it can be disabled.

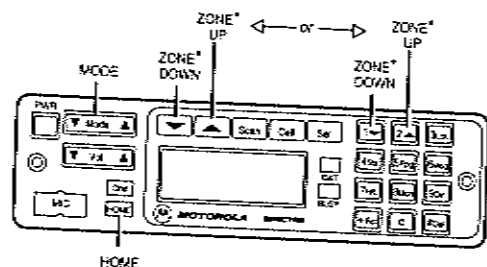
Zone/Mode



Model A4



Model A5



Model A7

* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED).

All A4, A5, and A7 radio models can have up to 25 zones. 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.

The "zone/mode" option adds a zone up ▲ button and a zone down ▼ button to the A5 and A7 models; these buttons are already in place on the A4 model.

To Select or Change Zones

To change zones in a radio programmed for zone/mode operation, press the zone up ▲ button or zone down ▼ button.

The radio will always temporarily display the name of the new zone as the zone changes.

The radio can be programmed to temporarily display the current zone's name when the zone up ▲ or zone down ▼ button is momentarily pressed. If the zone up ▲ or zone down ▼ button is pressed again while the zone name is displayed, the zone will change.

Note: The Spectra radio is factory programmed (default setting) to change zones on ANY press (momentary or continuous) of the zone up ▲ button or zone down ▼ button.

To Select or Change Modes

1. Press the zone up ▲ button or zone down ▼ button to scroll through all modes within the current zone.
2. To access a mode within the current zone, turn the **Mode knob** (A4 model) or press the **Mode rocker switch** (A5 and A7 models) until the desired mode name is displayed.
3. To access a mode that is not in the current zone, press the zone up ▲ button or zone down ▼ button to move to the zone containing the mode. Then use the **Mode knob** (A4 model) or **Mode rocker switch** (A5 and A7 models) to select the desired mode.

Scan Lists in Radios with Zone/Mode

In a radio with zone/mode operation enabled, each zone will have its own scan list. Programming of the scan lists is exactly the same as programming a scan list in a non-zone/mode radio.

To Select the Home Mode

The **HOME** button can be used to select the home mode, contained within the home zone, from any other zone and mode in the radio.

Time-Out Timer

Spectra models provide a time-out timer function to prevent locking up a repeater or channel by prolonged keying of the transmitter. You may not transmit longer than the preset timer setting. If you attempt to do so, the radio automatically stops your transmission. You will hear a low-pitched, continuous warning tone four seconds before the call times-out. As shipped from the factory, this timer is programmed for 60 seconds, but it may be field reprogrammed for 30, 60, 90, 120, 150, 180, or 210 seconds (or be disabled entirely) per radio mode.

■

Conventional MDC-1200 Repeater Access Controller (RAC)

The MDC-1200 repeater access controller feature allows selective repeater access in properly equipped systems. Field programming is required for RAC to be operational.

Note: Use the field programmer to assign a repeater ID to each mode.

Each time you press the microphone's PTT button while in a mode that has the RAC enabled, the radio automatically sends repeater access data with the mode slaved repeater ID. You will hear an alert tone when you press the PTT button. Continue to hold down the PTT button and wait until the tone stops before you begin talking.

Proper Connections and Operating Problem Troubleshooting

The following are suggestions to assist you in making proper electrical connections to your Spectra radio and troubleshooting possible operating problems.

CAUTION

The cables which connect to the rear of the radio may have live voltage on some of their pins. Be careful not to short the pins to a grounded surface during installation. A blown fuse could result.

When connecting the cables to the radio, always plug in the large multi-pin connector first. Otherwise, the radio may begin transmitting an emergency alarm (even if the unit is turned off).

If your radio is "locked up" or the display shows **"FL 01/90,"** turn it off and then back on. If this does not correct the condition, check both power line fuses, then turn the radio off and carefully remove and reconnect the cables at the rear of the unit in the sequence specified above.

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

If symptoms persist or if your unit exhibits other problems, contact service personnel.

Field Programming

The Spectra radio uses an electrically-erasable, programmable read-only memory (EEPROM) device to store information on frequencies, squelch codes, signalling codes, time-out timer durations, and other parameters.

The Spectra radio can be programmed in the field any number of times without ever removing the EEPROM from the radio. To program, an IBM PC*, PC-XT*, or PC-AT* computer is connected to the radio through the rear accessory connector. Once the computer is connected to the radio, the prompts provided by the user-friendly software can be followed.

The following items, available through C & E Parts Department, are required when programming a Spectra radio.

Description	Type or Part Number
Computer	IBM PC, PC-XT, or PC-AT
Radio Interface Box (RIB)	01_80353A74
Cable—Spectra Low- and Mid-Power Radio to RIB	30_80369B73
Cable—Spectra High-Power Radio to RIB	01_80300B10
Cable—IBM Computer to RIB: IBM PC or PC-XT	30_80369B71
IBM PC-AT	30_80369B72
Software Programming Package (Includes Manual): 5-1/4 Floppy Disk	RVN4001
3-1/2 Floppy Disk	RVN4000

Computer Software Copyrights

The Motorola products described in this instruction manual may include copyrighted Motorola computer programs stored in semiconductor memories or other mediums. Laws in the United States and other countries preserve for Motorola certain exclusive rights for copyrighted computer programs, including the exclusive right to copy or reproduce in any form the copyrighted computer program. Accordingly, any copyrighted Motorola computer programs contained in the Motorola products described in this instruction manual may not be copied or reproduced in any manner without the express written permission of Motorola. Furthermore, the purchase of Motorola products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents, or patent applications of Motorola, except for the normal non-exclusive, royalty free license to use that arises by operation of law in the sale of a product.

Commercial Warranty (Standard)

Motorola radio communications products are warranted to be free from defects in material and workmanship for a period of ONE (1) YEAR, (except for crystals and channel elements which are warranted for a period of ten (10) years) from the date of shipment. Parts, including crystals and channel elements, will be replaced free of charge for the full warranty period, but the labor to replace defective parts will only be provided for one-hundred-twenty (120) days from the date of shipment. Thereafter, purchaser must pay for the labor involved in repairing the product or replacing the parts at the prevailing rates together with any transportation charges to or from the place where warranty service is provided. This express warranty is extended by Motorola Communications and Electronics, Inc., 1301 E. Algonquin Road, Schaumburg, Illinois 60196, to the original purchaser only, and only to those purchasing for purpose of leasing or solely for commercial, industrial, or governmental use.

THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED WHICH ARE SPECIFICALLY EXCLUDED, INCLUDING WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL MOTOROLA BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES TO THE FULL EXTENT SUCH MAY BE DISCLAIMED BY LAW.

In the event of a defect, malfunction, or failure to conform to specifications established by seller, or if appropriate, to specifications accepted by seller in writing, during the period shown, Motorola, at its option, will either repair or replace the product or refund the purchase price thereof, and such action on the part of Motorola shall be the full extent of Motorola's liability hereunder.

This warranty is void if:

- a. the product is used in other than its normal and customary manner;
- b. the product has been subject to misuse, accident, neglect, or damage;
- c. unauthorized alterations or repairs have been made, or unapproved parts used in the equipment.

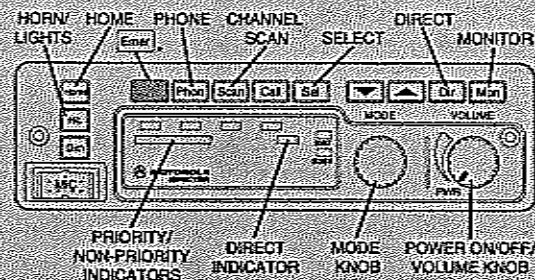
This warranty extends only to individual products, batteries are excluded, but carry their own separate limited warranty. Because each radio system is unique, Motorola disclaims liability for range, coverage, or operation of the system as a whole under this warranty except by a separate written agreement signed by an officer of Motorola.

Non-Motorola manufactured products are excluded from this warranty, but subject to the warranty provided by their manufacturers, a copy of which will be supplied to you on specific written request.

In order to obtain performance of this warranty, purchaser must contact its Motorola salesperson or Motorola at the address first above shown, attention Quality Assurance Department.

This warranty applies only within the United States.

Spectra® MODEL A4 CONVENTIONAL TWO-WAY RADIO



* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED)

Display and Light Indicators:

Amber BUSY Light On	Mode displayed has activity on it
Red XMIT Light On	Indicates you are transmitting in mode shown on the display
PRI Indicator Blinks	Mode displayed is first priority
PRI Indicator Lights	Mode displayed is second priority
NPRI Indicator Lights	Mode displayed is non-priority
"P" Displayed	Programmed pause in phone number; press Sel to resume dialing

To Turn on the Radio: Rotate the **Volume** knob clockwise.

To Set Volume and Squelch: Turn the **Volume** knob clockwise to increase volume and counterclockwise to decrease volume. The radio is ready to receive calls. On channels with Private-Line® or Digital Private-Line™, press **Mon** or remove the microphone from the hang-up clip to defeat the coded squelch. Press **Mon** again to return the radio to coded squelch operation. To adjust squelch level, hold **Mon** button until a beep sounds; use **Mode** knob to select squelch level. Press **HOME**.

To Change Modes: Turn the **Mode** knob to select desired channel. You can also press **HOME** to go to a pre-assigned "home" mode directly.

To Talk Mobile-To-Mobile: Press **Dir**; the "Dir" indicator lights to indicate "direct" (mobile-to-mobile) operation. Press **Dir** again to return to repeater operation.

To Activate Channel Scan™: Press **Scan** to begin Channel Scan operation. The radio scans a preselected list of channels for activity. If no activity exists, the display shows your selected channel. When a scanned channel becomes active, the display shows the active channel name. The priority and non-priority indicators show priority.

To Select a Channel Scan List:

Select Scan List—Press and hold **Scan** until a beep sounds and the **Scan** indicator blinks. Then,

1. Use the **Mode** knob to select the mode you want to add.
2. Press **Sel** to add the displayed mode to the Channel Scan list. Repeat these two steps to add or change the list as desired. Then press **HOME**.

Select Priority—When creating a Channel Scan list you may designate two of the modes as priorities by pressing the **Sel** button as indicated below. When priorities are set, press **HOME** to end scan list selection.

Press Sel Button	Assign a Mode to	Indication
1 time	Non-Priority	NPRI Lights
2 times	Second Priority	PRI Lights
3 times	First Priority	PRI Blinks
4 times	Off List	None

To Make Phone Calls: Press **Phon** to select the "phone" function. The display shows the first phone number in the pre-stored list. Turn the **Mode** knob to scroll to the number/name you want to call. Press **Sel** and wait for a dial tone; then press **Sel** again to dial the displayed number. To hang up, press **HOME**.

To Make DTMF Selective Calls: Press **Call** to select the "call" function. The display shows the first ID in the list. Use the **Mode** knob to select the desired ID you want to call. Press **Sel** to make the call. Press **Sel** again if you wish to leave a call-back number. Press **HOME** to go back to normal operation.

To Receive an Auto Selective Call: Two high-pitched tones sound, and the display shows "CALL" to indicate that you are receiving an auto selective call. To respond, press the microphone **PTT** and talk.

To Receive a Call Alert™: Four high-pitched tones sound, and the display shows "CALL" to indicate that you have received a Call Alert. Press either the microphone **PTT** or the **Call** button to clear the Call Alert state.

To Enable External Alarms (Optional): Press the **H/L** button momentarily. Press again to disable.

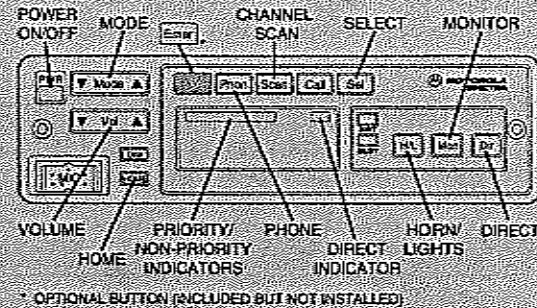
To Select Zone/Mode (Optional): Press the zone up ▲ button or zone down ▼ button to scroll to the desired zone. Then use the **Mode** knob to select the mode you wish to use.

To Select the Home Zone/Home Mode: Press the **HOME** button.

To Activate Single Tone™ (Optional): Press the **ST** button; the **ST** indicator lights and the last operator-selected value is activated.

To Select a Single Tone (Optional): Hold the **ST** button down; a beep sounds and the **ST** indicator flashes. Use the **Mode** knob to select the desired Single Tone. Then press the **HOME** button.

Spectra® MODEL A5 CONVENTIONAL TWO-WAY RADIO



Display and Light Indicators:

Amber BUSY Light On	Mode displayed has activity on it
Red XMIT Light On	Indicates you are transmitting in mode shown on the display
PRI Indicator Blinks	Mode displayed is first priority
PRI Indicator Lights	Mode displayed is second priority
NPRI Indicator Lights	Mode displayed is non-priority
"P" Displayed	Programmed pause in phone number; press Sel to resume dialing

To Turn on the Radio: Press the **PWR** button once.

To Set Volume and Squelch: Press and hold the **Volume** rocker switch and listen for the "adjust" tone. Hold button down to increase or decrease volume; release when volume is at desired level. The display indicates the volume levels from **0** to **15**. The radio is ready to receive calls. On channels with Private-Line® or Digital Private-Line™, press **Mon** or remove the microphone from the hang-up clip to defeat the coded squelch. Press **Mon** again to return the radio to coded squelch operation. To adjust squelch level, hold **Mon** button until a beep sounds; use **Mode** rocker to select squelch level. Press **HOME**.

To Change Modes: Press the **Mode** rocker to select desired channel. You can also press **HOME** to go to a pre-assigned "home" mode directly.

To Talk Mobile-To-Mobile: Press **Dir**; the **"Dir"** indicator lights to indicate "direct" (mobile-to-mobile) operation. Press **Dir** again to return to repeater operation.

To Activate Channel Scan™: Press **Scan** to begin Channel Scan operation. The radio scans a preselected list of channels for activity. If no activity exists, the display shows your selected channel. When a scanned channel becomes active, the display shows the active channel name. The priority and non-priority indicators show priority.

To Select a Channel Scan List:

Select Scan List—Press and hold **Scan** until a beep sounds and the **Scan** indicator blinks. Then,

1. Use the **Mode** rocker to select the mode you want to add.
2. Press **Sel** to add the displayed mode to the Channel Scan list. Repeat these two steps to add or change the list as desired. Then press **HOME**.

Select Priority—When creating a Channel Scan list, you may designate two of the modes as priorities by pressing the **Sel** button as indicated below. When priorities are set, press **HOME** to end scan list selection.

Press Sel Button	Assign a Mode to	Indication
1 time	Non-Priority	NPRI Lights
2 times	Second Priority	PRI Lights
3 times	First Priority	PRI Blinks
4 times	Off List	None

To Make Phone Calls: Press **Phon** to select the "phone" function. The display shows the first phone number in the pre-stored list. Press the **Mode** rocker to scroll to the number/name you want to call. Press **Sel** and wait for a dial tone; then press **Sel** again to dial the displayed number. To hang up, press **HOME**.

To Make DTMF Selective Calls: Press **Call** to select the "call" function. The display shows the first ID in the list. Use the **Mode** rocker to select the desired ID you want to call. Press **Sel** to make the call. Press **Sel** again if you wish to leave a call-back number. Press **HOME** to go back to normal operation.

To Receive an Auto Selective Call: Two high-pitched tones sound, and the display shows "CALL" to indicate that you are receiving an auto selective call. To respond, press the microphone PTT and talk.

To Receive a Call Alert™: Four high-pitched tones sound, and the display shows "CALL" to indicate that you have received a Call Alert. Press either the microphone PTT or the **Call** button to clear the Call Alert state.

To Enable External Alarms (Optional): Press the **H/L** button momentarily. Press again to disable.

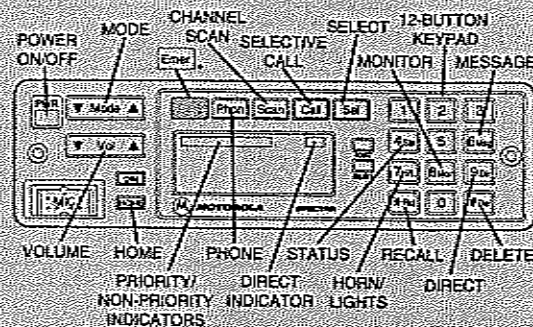
To Select Zone/Mode (Optional): Press the zone up ▲ button or zone down ▼ button to scroll to the desired zone. Then use the **Mode** rocker switch to select the mode you wish to use.

To Select the Home Zone/Home Mode: Press the **HOME** button.

To Activate Single Tone™ (Optional): Press the **ST** button; the **ST** indicator lights and the last operator-selected value is activated.

To Select a Single Tone (Optional): Hold the **ST** button down; a beep sounds and the **ST** indicator flashes. Use the **Mode** rocker switch to select the desired Single Tone. Then press the **HOME** button.

Spectra® MODEL A7 CONVENTIONAL TWO-WAY RADIO



* OPTIONAL BUTTON (INCLUDED BUT NOT INSTALLED)

Display and Light Indicators:

Amber BUSY Light On	Mode displayed has activity on it
Red XMIT Light On	Indicates you are transmitting in mode shown on the display
PRI Indicator Blinks	Mode displayed is first priority
PRI Indicator Lights	Mode displayed is second priority
NPRI Indicator Lights	Mode displayed is non-priority
"P" Displayed	Programmed pause in phone number; press Sel to resume dialing
"NO ACK" Displayed	Emergency alarm or status/message not acknowledged by dispatcher

To Turn on the Radio: Press the **PWR** button once.

To Set Volume and Squelch: Press and hold the **Volume** rocker switch and listen for the "adjust" tone. Hold button down to increase or decrease volume; release when volume is at desired level. The display indicates the volume levels from 0 to 15. The radio is ready to receive calls. On channels with Private-Line® or Digital Private-Line™, press **Mon** or remove the microphone from the hang-up clip to defeat the coded squelch. Press **Mon** again to return the radio to coded squelch operation. To adjust squelch level, hold **Mon** button until a beep sounds; use **Mode** rocker to select squelch level. Press **HOME**.

To Change Modes: Press the **Mode** rocker to select desired channel, or hold **HOME** down until a beep sounds, then use the keypad to enter the mode number you want; press **HOME** again.

To Talk Mobile-To-Mobile: Press **Dir**; the "Dir" indicator lights to indicate "direct" [mobile-to-mobile] operation. Press **Dir** again to return to repeater operation.

To Send a Status or Message: Press **Sts** or **Msg**. The last acknowledged status or message name is displayed. Use the **Mode** rocker to select the desired status or message. Press **Sel** to send the transmission. After receiving an acknowledgement, the radio sounds five high-pitched beeps, and the display shows "ACK RCVD." The radio then returns to normal operation.

To Receive a Call Alert™: Four high-pitched tones sound, and the display shows "CALL" to indicate that you have received a Call Alert. Press either the microphone PTT or the **Call** button to clear the Call Alert state.

To Make DTMF Selective Calls: Press **Call** to select the "call" function. The display shows "SCRTPAD," then the last ID number called.

Redial the Last Number—Press **Sel** to automatically transmit the displayed unit ID number.

Select ID From the Prestored List—Press the **Mode** rocker to scroll to the ID/name you want to call. Press **Sel** to transmit the ID number.

Select a New ID—Enter the number into the scratchpad from the keypad. Press **Sel**.

Select an ID With the Keypad—Press **Mode** to scroll to the **"KEYPAD"** display. Enter the desired ID number from the keypad.

Send Call-Back ID Number—Press **Sel** after receiving no acknowledgement from a called unit. Press **HOME** to exit the "call" function.

To Receive an Automatic Selective Call: Two high-pitched tones sound and the display shows **"CALL"** to indicate that you are receiving an automatic selective call. To respond, press the microphone PTT and talk.

To Enable External Alarms (Optional): Press the H/L button momentarily. Press again to disable. *To Make Phone Calls*: Press **Phon** to select the "phone" function. The display shows **"SCRTPD"**, then the last number dialed.

To Select Zone/Mode (Optional): Press the zone up **▲** button or zone down **▼** button to scroll to the desired zone. Then use the **Mode** rocker switch to select the mode you wish to use.

To Select the Home Zone/Home Mode: Press the **HOME** button.

To Activate Single Tone™ (Optional): Press the **ST** button; the **ST** indicator lights and the last operator-selected value is activated.

To Select a Single Tone (Optional): Hold the **ST** button down; a beep sounds and the **ST** indicator flashes. Use the **Mode** rocker switch to select the desired Single Tone. Then press the **HOME** button.

To Make Phone Calls: Press **Phon** to select the "phone" function. The display shows **"SCRTPD"**, then the last number dialed.

Redial the Last Number—Press **Sel** and wait for a dial tone; then, press **Sel** again to dial the displayed number.

Dial From Prestored List—Press the **Mode** rocker to scroll to the number/name you want to call. Press **Sel** and wait for a dial tone; then, press **Sel** again to dial the displayed number. To hang up, press **HOME**.

Dial a New Number—Enter the digits into the scratchpad memory from the keypad. Then, dial as above.

Direct Dial—Press **Mode** to scroll to the **"KEYPAD"** display. Press **Sel** and wait for a dial tone; then, enter the desired number from the keypad.

To Activate Channel Scan™: Press **Scan** to begin Channel Scan operation. The radio scans a preselected list of channels for activity. If no activity exists, the display shows your selected channel. When a scanned channel becomes active, the display shows the active channel name. The priority and non-priority indicators show priority.

To Select a Channel Scan List:

Select Scan List—Press and hold **Scan** until a beep sounds and the **Scan** indicator blinks. Then,

1. Use the **Rcl** button to scroll through the list of channels previously sent.
2. Use the **Mode** rocker (or the keypad) to select the mode you want to add.
3. Press **Sel** to add the displayed mode to the Channel Scan list. Repeat these three steps to add or change the list as desired. Then press **HOME**.

Select Priority—When creating a Channel Scan list, you may designate two of the modes as priorities by pressing the **Sel** button as indicated below. When priorities are set, press **HOME** to end scan list selection.

Press Sel Button	Assign a Mode to	Indication
1 time	Non-Priority	NPRI Lights
2 times	Second Priority	PRI Lights
3 times	First Priority	PRI Blinks
4 times	Off List	None

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SPECTRA CONVEN OPERATOR M



6881071C55



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