


Spectra®
Privacy Plus® Radio System
Operating Instructions

6880102W88

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Spectra® Privacy Plus® Radio System



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. Under certain conditions, mobile radios can interfere with blasting operations. When you are in the vicinity of construction work, look for, and observe, signs cautioning against mobile radio transmission. If mobile radio transmission is prohibited, you must not transmit until out of the area. Furthermore, *you must turn off* your mobile radio to prevent any accidental transmission.

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.



General Safety Information



Description

The following will help you understand how your Spectra radio operates in the Motorola trunked radio system.

Communication trunking improves operating efficiency by sharing system resources among the users. Trunking techniques are well established in the communications industry and are used by telephone companies to support the millions of calls they service. Motorola has adapted similar trunking methods to the two-way radio industry.

A trunking radio system allows many users to share a relatively small number of frequencies. When you want to communicate with someone else in the system, a repeater, or communications path, is assigned to you. When your conversation has ended, the repeater is freed for other users. Frequency-sharing, an automatic feature of the Motorola trunked radio system, uses multiple repeaters and a central controller. Trunking simultaneously pools all of the repeater air time to maximize the air time available to any one mobile unit, and to minimize channel congestion.

Some of the key benefits of the Motorola trunked radio system are:

- No channel monitoring required before transmission
- Fast system access
- Automatic channel selection
- Privacy among members of the same group
- Uninterrupted conversations



Trunked Radio Systems

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Call Priority

Your radio includes more than one type of trunked call capability. Table 1 shows the types of calls that may be received during each of these call states.

Table 1. Types of Trunked Operation/Received Calls

Type of Operation	Additional Calls That Can Be Received (See Note)
Subfleet Operation (Mode switch set to trunked subfleet mode)	Private Conversation Calls Call Alerts Fleetwide Calls Systemwide Calls Land-to-Mobile Telephone Calls
Fleetwide Operation (Mode switch set to fleetwide mode)	All Subfleet Calls Fleetwide Calls Systemwide Calls Land-to-Mobile Telephone Calls Private Conversation Calls Call Alerts
Private Conversation™ Operation (Call in process)	Fleetwide Calls Systemwide Calls
Telephone Interconnect Operation (Call in process)	None

Fleetwide and systemwide calls will not interrupt voice traffic; however, when a conversation is ended, a new conversation will not be allowed to occur until the fleetwide or systemwide call is serviced.



Note:



Subfleet/Fleetwide Call Capabilities

In a trunked radio system, a mobile fleet can be segmented into different subfleets. Each subfleet can operate independently from all other subfleets. Subfleet segmentation allows the fleet to be organized into predetermined groups according to function. Members of a specific subfleet hear only those messages intended for them. You select fleet/subfleet combinations with the **Mode** rocker switch on the radio's front panel.

A radio can receive only one subfleet message at a time. Consequently, if the **Mode** rocker switch is set to one subfleet, calls originating from another subfleet are not heard.

With a radio equipped with fleetwide announcement capability, you can make announcements to the entire fleet. Figure 1 illustrates a typical subfleet configuration.

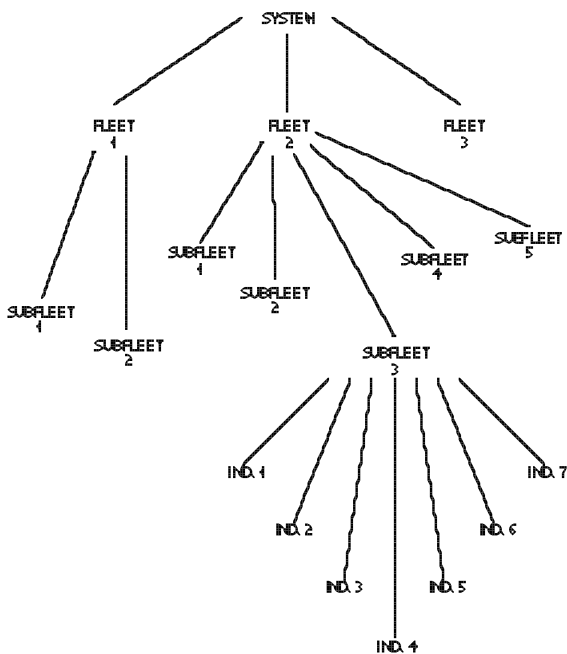
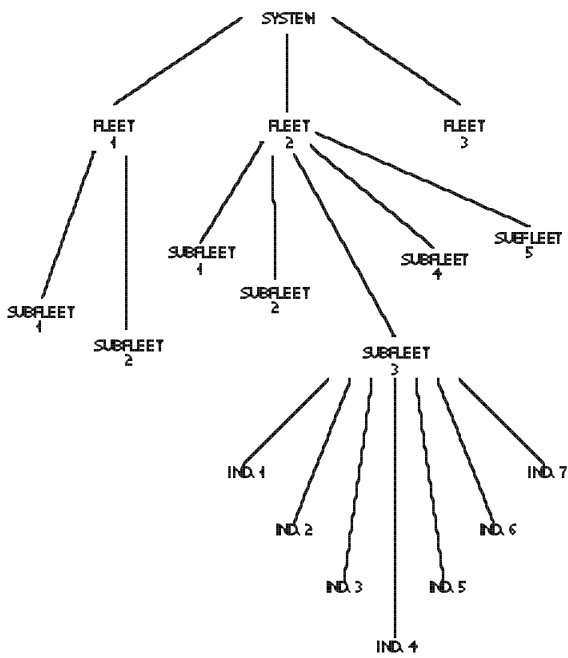


Figure 1. Typical Fleet/Subfleet Configuration



Description

The following explanation will help you understand how your Spectra radio (dual mode) operates in a conventional radio system.

In a conventional radio system, a fixed frequency or set of frequencies is shared with other users without the benefit of a central controller to assign communications paths. 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 others in the same talk group who share the same coded squelch. Coded squelch is also used to prevent unauthorized use of a conventional repeater.

Call Priority

Your radio has one or more conventional types of operation. Table 2 indicates the types of conventional calls that may be received during each of these call states.

Table 2. Types of Conventional Operation

Type of Operation	What You Hear
Carrier Squelch	All channel activity that exceeds the preset level of your radio's squelch circuit.
Coded Squelch (on hang-up clip)	All channel activity that has the correct Private-Line (PL) or Digital Private-Line (DPL) code.

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



Conventional Radio Systems

Note:



-- Two high-pitched tones indicate that a private call has been received.

-- Four high-pitched tones every six seconds indicate that a Call Alert page has been received.

-- A single high-pitched tone indicates that a Call Alert or Private Conversation transmission has been received by the system central controller.

-- Four high-pitched tones indicate that a Call Alert page has been received by the intended unit.

-- When you press the microphone push-to-talk (PTT) button, a sound similar to a telephone busy signal indicates that you cannot transmit because all system radio channels are in use. Release the PTT button and wait for call back.

-- A series of three short high-pitched tones indicate that a channel is now available for your previously requested transmission.

-- Series of three short high-pitched tones (the same as automatic call back) when you press the microphone PTT button indicate that the system is accepting your transmission.

-- Four telephone-type busy tones (after you initiate a phone call) indicate that all interconnect repeaters are busy. If you do not press the **HOME** button to exit phone mode, a dial tone sounds when an interconnect repeater becomes available.

-- A continuous low-pitched tone when you press the microphone's PTT button indicates that you are either out of range of the trunked radio system, or the system is out of service.

-- A single, high-pitched beep every ten seconds in an unmuted receive condition indicates a system central controller failure. The radio reverts from trunked operation to a system similar to conventional radio repeater operation. Other system users may be heard sharing the channel.



Alert Tones

Private Conversation™/Selective Call

Call Alert™

Central Acknowledge

Mobile Unit Acknowledge

System Busy

Automatic Call Back

Talk Permit (optional)

Telephone Interconnect Busy

Talk Prohibit/Out-of-Range

Failsoft





-- A continuous low-pitched tone indicates that you have entered a mode where normal system traffic will be missed, or you are attempting something that is not allowed. For example: you forgot to exit the telephone interconnect mode after a call ended (subfleet calls cannot be received), or you tried to transmit on a receive-only conventional mode.

-- A tone that sounds to indicate the volume level when you press the **Vol** button on a quiet channel.

-- A low-pitched continuous tone indicates that your present transmission will soon be disabled.

-- A single, short, high-pitched alert tone indicates that you pressed a valid key or you entered a feature configuration state.

--A single, short, low-pitched tone indicates that you tried to make an invalid keypad entry, or a Call Alert; emergency alarm was not acknowledged.

--A high-pitched tone that sounds when the microphone PTT button is pressed, indicating the unit ID, Single Tone™, or MDC™ repeater access control (RAC) signal is being sent.





Illegal Mode

Volume Set Tone

Time-Out Timer

Valid Key Alert

Invalid Key Alert

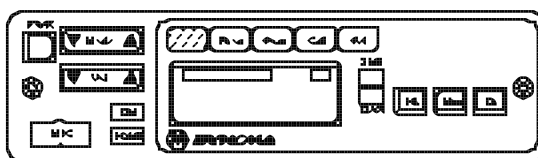
Conventional Sidetone



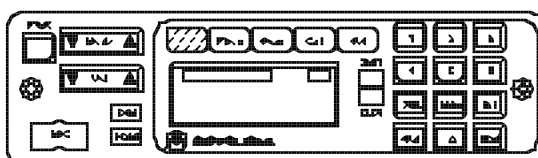
The Spectra radio is one of the most sophisticated two-way radios available. It operates on 800MHz, 900MHz, or uhf channels to give maximum communications capability under a wide variety of operating conditions.

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. The Spectra radio's many features provide powerful communications capabilities that can enhance the efficiency of any operation. Such features add up to better, more cost-effective two-way radio communications.

Model B5



Model B7



Identifying Your Spectra Radio

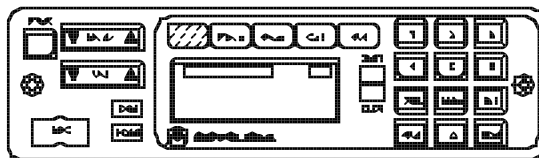
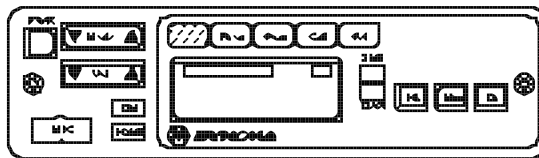
The Spectra radio's capabilities, and the operation of its features, differ with each model. Your radio is one of the following models (see illustrations above):

Model B5: Has a limited set of control buttons, but no 12-button keypad

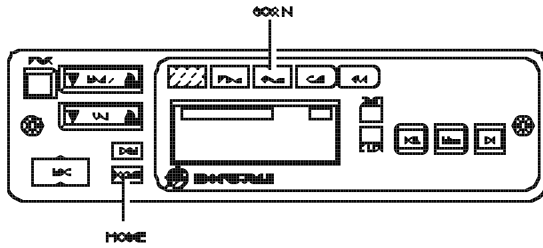
Model B7: Has all the keys the B5 has, plus a full 12-button keypad.

The higher-numbered model has more feature capabilities than the previous version. Be sure to follow the feature operations described for your specific model version in the following sections of this manual.

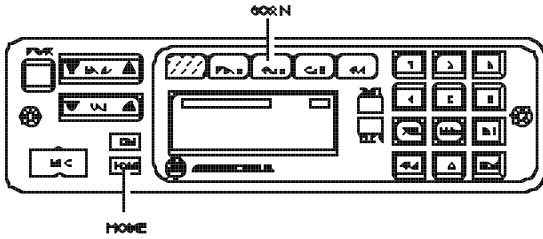
Introduction



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Model B5



Model B7

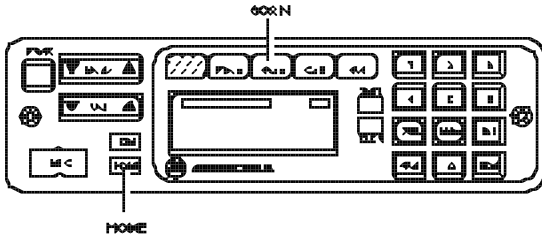
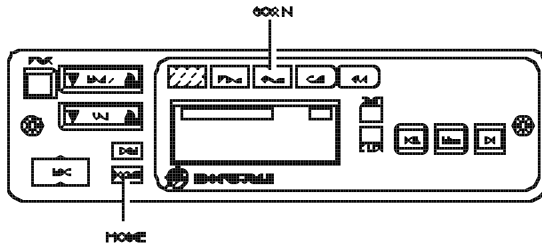
Your Spectra radio's advanced control head is designed for ease of use and flexibility of feature control. Before operating the radio, familiarize yourself with the various operating controls, indicators, and alert tones.

You can select trunked talkgroups (system/fleet/subfleet) or use conventional channels on your Spectra radio by selecting the desired "mode," which is a pre-programmed combination of operating parameters. For trunked modes, this consists of the system/fleet/subfleet combination and a time-out timer value. For conventional channels, a mode consists 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 pre-programmed to automatically give you the proper operation for each 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.

Control Head Operation



Operator-Selectable Operation

Some radio features are operator-selectable depending on the radio model you have. "Operator-selectable" means that you can choose or "configure" the feature to meet your specific needs, independent of the selected mode. With operator-selectable scan, for example, you can select the scan list members you need. The display shows the programming inputs while these features are being configured, 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 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 alter 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.

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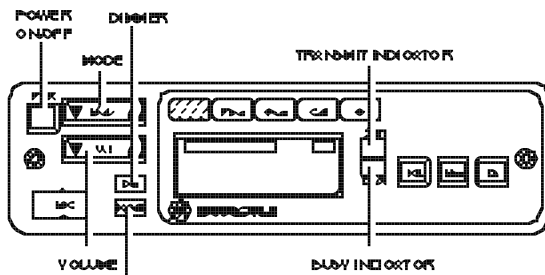
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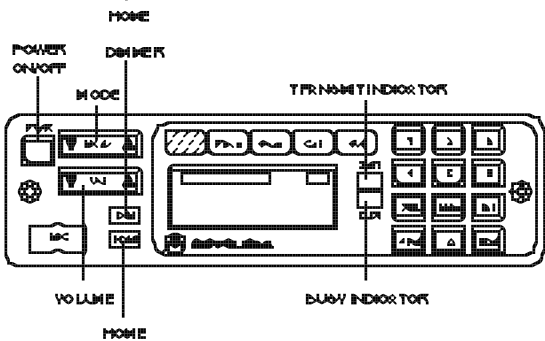
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Model B5



Model B7

Basic operation is identical for all models. Models with additional features are noted.

To Turn On the Radio

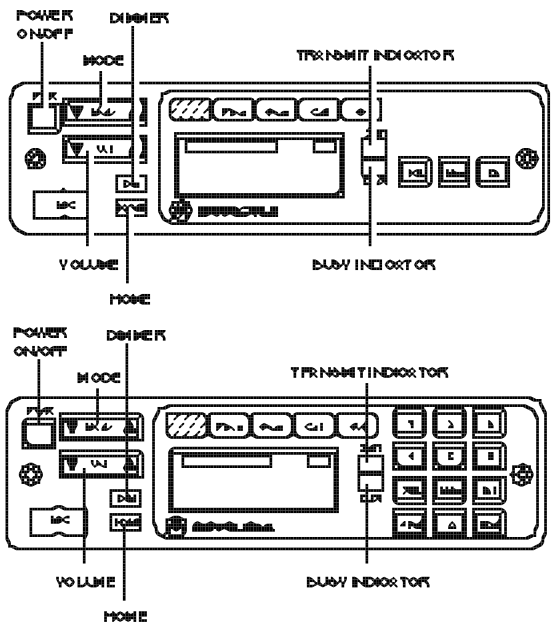
1. Press the power switch in the upper left corner of the unit once. The display and graphics illuminate to indicate that the radio is on.
2. When the radio is first turned on, **"SELF CHK"** appears in the display as the radio checks itself for problems.

If **"FL##/##"** appears in the display when the radio is turned on, the radio will not function until the condition is corrected. If **"ER##/##"** appears, some non-critical data has been changed. If either of these displays appear, if the display goes blank, or if the unit appears to be "locked-up," refer to the Proper Connections and Operational Problem Troubleshooting page.

To Set Volume For Receiving Calls

Press and hold the **Vol** rocker switch; a volume indication (0-15) appears on the display; for example, **"VOL 10."** Hold the button until the sound level increases (or decreases) to the desired level.

Basic Operating Procedures



Note:

To Change Modes

1. Use the **Mode** rocker switch to scroll forward or backward through the list of modes programmed into the radio. The radio will display mode numbers as shipped, or mode names that have been programmed in the field.
2. For fast access to a single pre-programmed home mode, press the **HOME** button momentarily and the radio will immediately go to that mode.

For B7 Models: If you know the desired mode number, select it as follows:

- a. Hold **HOME** until a beep sounds; enter the mode number on the keypad.
- b. Press **HOME** to go to that mode.

To Transmit

Press the **Mode** rocker switch to select the desired mode.

For Trunked Modes:

Lift the microphone off hook and press PTT. Then:

If you hear three quick tones, or if you hear no tone and the red transmit indicator lights steadily, 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.

If you hear a busy tone, all trunked channels are in use. Release the PTT button and wait for three quick call-back tones. When a call back is received, your radio will automatically key up for three seconds so that you can begin talking. During this time, press and hold the PTT button, state your FCC call sign, and proceed with your message. Release the PTT button to receive.

If you hear a continuous low-pitched tone, you are out of the system's range. The red **XMIT** indicator may flash several times as the radio tries to access the system. Release the PTT button and try again when the vehicle is driven within range of the system.

For Conventional Modes:

Lift the microphone off hook and listen for activity on that mode. If you hear no other activity, press and hold the microphone's PTT button.

If you hear a continuous tone when you press the PTT button, the radio is sending your unit ID number. Continue to hold the PTT button and wait until the tone stops before talking.



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Note:





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. The backlight is off at the high level.

To Monitor Conventional Mode Activity

To monitor channel traffic in conventional modes, 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 the 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 when the radio is unsquelched.

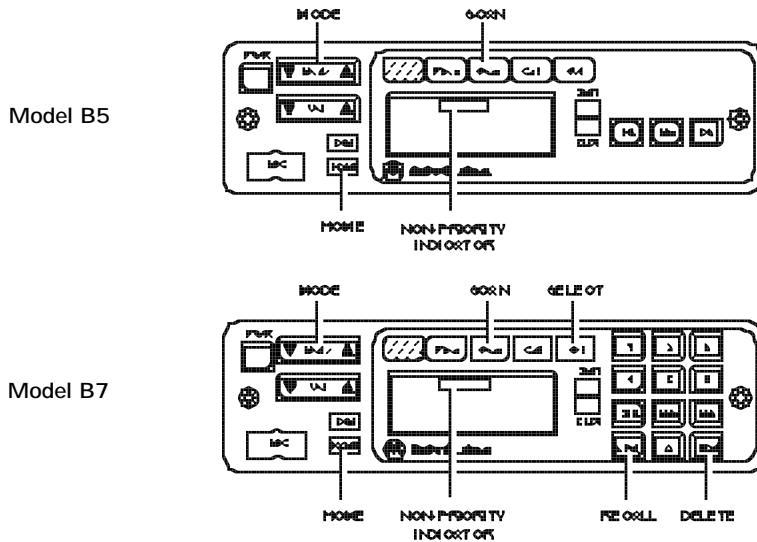
To Adjust Conventional Mode Squelch Level

Press and hold the **Mon** button until a beep sounds and the display indicates the current squelch setting (for example, **"SQL 10"**). Press the **Mode** rocker switch to scroll to the desired squelch level (0-15). Press **HOME** to enter the new selection and return to normal operation.









Both B5 and B7 models are capable of monitoring up to 16 modes (any in the radio). Trunked modes from different systems and conventional modes can be included in the list. Only eight type I trunked modes from the same system are allowed in the list.

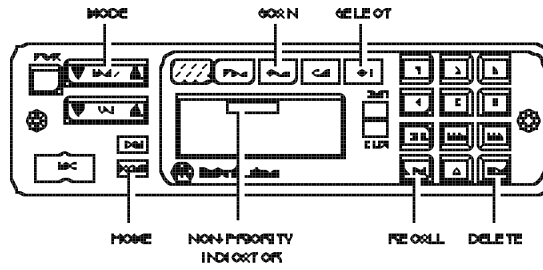
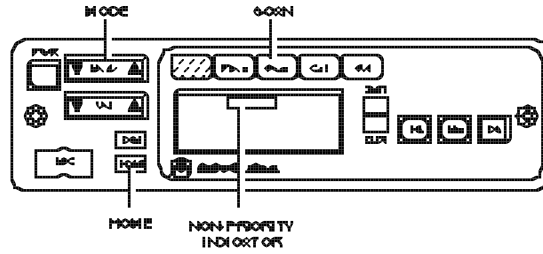
Fixed-list talkgroup scan has pre-programmed fixed scan lists that can be reviewed, but cannot be modified except through field programming.

Operator-selectable talkgroup scan has a scan list that can be changed by the operator as many times as desired. The type of list capability of the radio can be changed with the field programmer.

With operator-selectable scan, there is a scan list for each radio. With fixed-list scan, there is one list per trunked personality (a single system may contain multiple trunked personalities) and one list per conventional mode.

Fixed and operator-selectable scan lists stay in memory when you turn scan off, or turn the radio off, or disconnect the radio from the battery.

Talkgroup Scan



To Turn Scan On

Press the **Scan** button momentarily to start the scanning. The **Scan** indicator lights and the list is scanned for activity on one of the list members.

If no activity exists, the display shows your selected mode. When a scanned mode becomes active, the display changes to show the active mode name and the radio unmutes. The radio will not begin scanning again until five seconds after the call ends, giving you time to respond. (This time can be changed by field programming.)

For conventional modes: To scan without regard to squelch code, press **Mon** momentarily while scan is on.

While you are scanning for activity, fleetwide, systemwide, incoming telephone interconnect and Private Conversation™/Call Alert™ calls can be received. Respond to these types of calls as you would normally.

When scanning different trunked systems in talkgroup scan, incoming Private Conversation/Call Alert calls may be missed.

To Review A Scan List

1. Press and hold the **Scan** button until the **Scan** indicator blinks and a beep sounds. The radio neither scans nor receives calls while the list is being reviewed.
2. Press the **Mode** rocker switch to scroll up or down through the programmed modes. Displayed modes that are in the scan list are indicated by an **NPRI** indicator.

B7 Model: use the **Rcl** button to review only the modes already in the list.

3. Press the **HOME** button momentarily to return to normal operation. A beep sounds and the radio resumes scanning.



Note:

Note:



To Transmit While Scan is On

If the radio is programmed for talkback scan, then press the microphone's PTT button to transmit on the mode indicated by the display. The radio will not begin scanning again for a predetermined hang time (also field programmable; typically five seconds) after you release the PTT button, allowing the other party to respond. If the other party responds within the hang time, scanning does not resume until five seconds after they have finished speaking, allowing the conversation to be completed.

To transmit on the selected mode if another mode is active, turn scan off first by pressing the **Scan** button momentarily.

To make a telephone interconnect, Call Alert page, or Private Conversation call while scanning, press the **Phon** or **Call** button. The call will be entered on the active mode (or selected mode if there is no activity) and scanning will halt until you exit the call by pressing **HOME**.

If the radio is programmed for non-talkback scan, then press the microphone's PTT button at any time to transmit on the selected mode.

To make a telephone interconnect, Call Alert page, or Private Conversation call while scanning, press the **Phon** or **Call** button. The call will be entered on the selected mode and scanning will halt until you exit the call by pressing **HOME**.

To Select a Scan List (Operator-Selectable Priority Models Only)

Operator-selectable scan operation requires that you first enter a scan list. This list is common to all radio modes and may be changed as many times as you like. The list stays in memory when you turn **Scan**, or the radio, off.

1. The select state may be entered with scan on or off. Press and hold the **Scan** button until its indicator blinks and a beep sounds. You may now enter, modify, or review your existing scan list. (The radio does *NOT* receive calls or scan while you're selecting or reviewing the list.)
2. The display shows "**SEL MODE**" and the **NPRI** indicator lights to indicate that the selected mode will automatically be included in the list at the time scan is turned on.
3. To enter or modify a list, press the **Mode** rocker switch to scroll to the desired mode or (on B7 models) enter the mode number directly from the keypad.

MAEPF-
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MAEPF-
MAEPF-



4. To add the displayed mode to the list, press the **Sel** button once. The **NPRI** indicator lights to indicate that the displayed mode has been added to the list.

If there are already 16 modes in the list or 8 modes from the same type I system, and you try to add another mode from that system, a low-pitched beep sounds and the display shows "*LST FULL.*" Delete a mode from the list before adding another (see step 5).

5. To delete a mode from the list, scroll to the mode to be deleted and press the **Sel** button or (on a B7 model) press the **Del** button. The **NPRI** indicator turns off, indicating that the mode is no longer in the scan list. The selected mode cannot be deleted from the list.

Fleetwide announcement calls for selected talkgroups will also be received. It is not necessary to add the fleetwide mode to the scan list to receive fleetwide calls.

6. Once you have finished modifying your scan list, press the **HOME** button. A beep sounds and the radio resumes scanning.

To Delete Nuisance Modes While Scan is On (B7 Model Only)

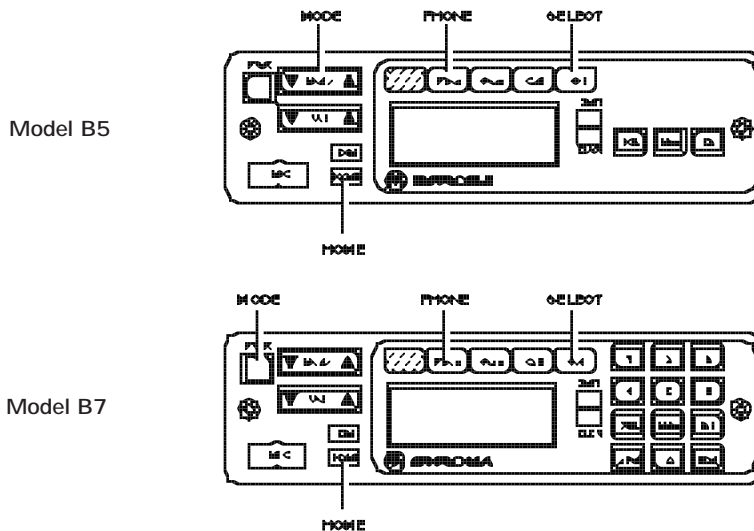
To temporarily delete an undesirable (nuisance) mode, press **Del** once while the mode is active (indicated by the display). Only one mode can be deleted at a time. If a second mode is deleted, the first mode automatically returns to the scan list. The selected mode cannot be deleted. Restore the original list in one of four ways: press **Rcl**; turn scan off and on; change modes; or turn the radio off and on. This feature may be disabled using field programming.



Note:

Note:





With any model, you may initiate and receive telephone calls if your trunked system is properly equipped. The centralized telephone interconnect functions through the system's central controller, and all calls between the mobile operator and the land line are private, regardless of who initiates the call.

The B5 model features phone number list capability through a list of up to nine pre-programmed telephone numbers. Using field programming, a name may be assigned to each number in the list for your convenience. In addition to the nine pre-programmed phone numbers, the B7 model features unlimited dialing capability with its full 12-button telephone keypad.

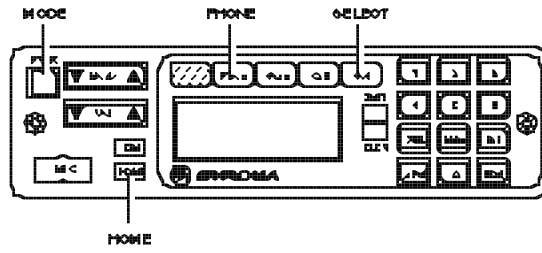
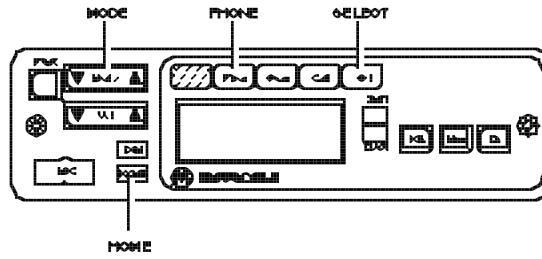
You may also initiate telephone calls in conventional modes if the conventional system is properly equipped.

To Receive a Phone Call (Trunked Modes Only)

1. When a phone call is received, telephone-type ringing sounds and the display shows **"PHONE."**
2. Press the **Phon** button; the phone conversation can begin.
3. When the call is completed, press the **HOME** button to hang up and return to normal operation.

If the unit is equipped with the external alarms feature, see that section for details about its operation.

Telephone Interconnect List



Note:

To Initiate a Telephone Call From the List

1. Press the **Phon** button momentarily to select the phone function; the **phone** indicator will light.
2. The display will:
(*B5 Model*) indicate the first phone number in the prestored list.
(*B7 Model*) indicate "**SCRTPD**," then show the last number dialed.
3. Press the **Mode** rocker switch 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.
4. Press the **Sel** button and the displayed number will be dialed automatically.

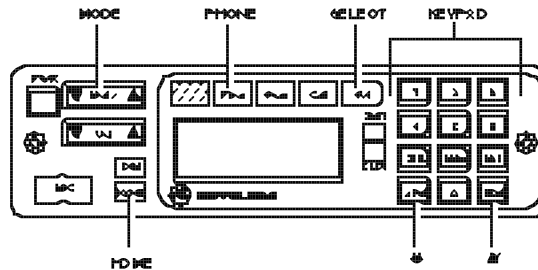
In conventional modes, when initiating a telephone call, an access code is usually required. Press **Sel** and the radio sends a pre-stored access code. After the access code is sent, the radio automatically pauses. When you get a dial tone, press the **Sel** button again to dial the displayed number. If no dial tone sounds, press the **HOME** button to hang up.
5. If the number contains a programmed pause, the dialing will stop when "**P**" is displayed. After the desired pause, press **Sel** to continue dialing.
6. If you are out of range of the trunked system or the phone interconnect is out of service, "**NO SYS**" will be displayed, and a continuous low-pitched tone will sound. Press **HOME** to resume normal operation.
7. If the trunked phone interconnect is in use, a busy tone sounds and the display shows "**PHN BUSY**." Your number will be dialed automatically when the phone interconnect becomes available. If you hang up, you will lose your place in line.
8. When the call is completed, press the **HOME** button to hang up and return to normal operation.



Note:



To Dial a Phone Number Not In the List



1. To dial a number that is not in the pre-stored list, press the **Phon** button momentarily to select the phone function. The **Phone** indicator lights.
2. The display shows "*SCRTPHD*," then the last number dialed.
- 3a. To *autodial*, enter the desired phone number from the keypad. The display will be updated as the numbers are entered. Then:
 - (1) After you get a dial tone, press the **Sel** button to automatically dial the displayed number.

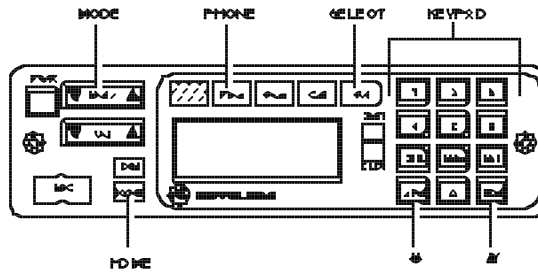
In conventional modes, when initiating a telephone call, an access code is usually required. Press the **Sel** button and the radio automatically sends a pre-stored access code. After the access code is sent, the radio automatically pauses. When you get a dial tone, press the **Sel** button again to dial the displayed number. If no dial tone sounds, press the **HOME** button to hang up.
 - (2) When the call is completed, press the **HOME** button to hang up and return to normal radio operation.
- 3b. To *direct dial*, press the **Mode** rocker switch to scroll to the "*KEYPAD*" display. Then:
 - (1) *In trunked modes*, press **Sel** to enable the keypad. The display shows "*OK DIAL.*"
 - (2) Enter the desired number from the keypad or the DTMF microphone. The numbers will be dialed as they are entered.

In conventional modes, to use the pre-stored access code, before entering the desired number, press the **Sel** button and wait for a dial tone. After you hear the dial tone, enter the desired number from the keypad (or DTMF microphone); the numbers will be dialed as they are entered.

If a different access code is required, do not press **Sel**. Instead, enter the access code directly from the keypad, wait for dial tone, then continue dialing.

- (3) When the call is completed, press the **HOME** button to hang up and return to normal operation.

Unlimited Telephone Interconnect (B7 Model Only)



Note:

Notes:

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To store a Phone Number In the List

1. Press the **Phon** button momentarily to select the Phone function; the **Phone** indicator lights.
2. Press the **Mode** rocker switch 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 switch to scroll to the number you wish to change.
5. Enter the new phone number on the keypad.

If you make an error, press the **#** button twice to backspace over (erase) each incorrect digit. 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.

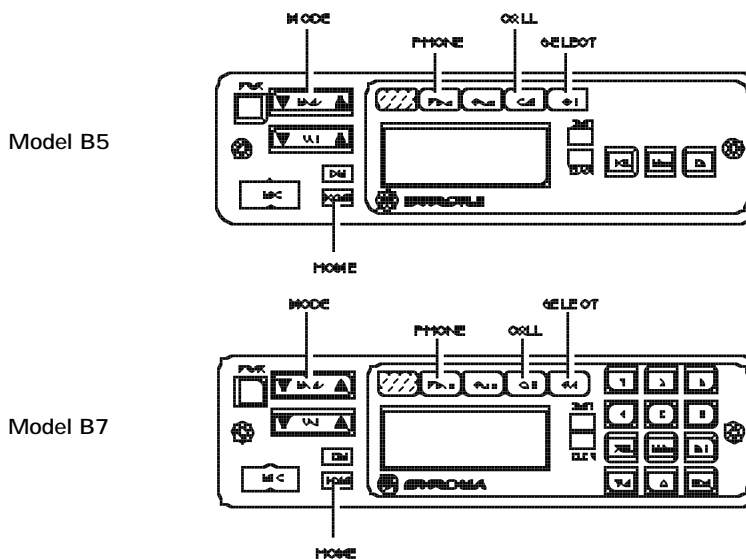
If you press the **Mode** rocker switch before pressing the **Sel** button, the number you just entered will not be stored.
7. Press the **HOME** button to return to normal operation.



Note:

Note:





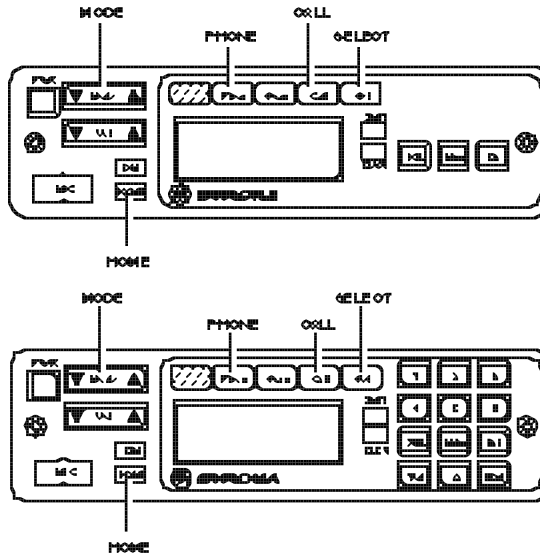
The enhanced Private Conversation feature not only allows you to carry on a conversation that is heard only by the two parties involved, but also enables you to determine whether the unit you are calling is in service. The unit being called can also view the calling unit's ID before answering. You can then choose whether or not to leave your unit ID number (with a Call Alert page) with the unit you are calling so that you may be called back. Enhanced Private Conversation operation is similar to that of telephone interconnect.

All models are capable of responding to a Private Conversation call initiated by another radio. The following further describes each model's capability:

B5 Model: You can respond to or return the call of a unit that calls you.

B7 Model: Features a unique list of up to eight pre-programmed ID numbers for each trunked personality plus unlimited capability using a full 12-button keypad. Using field programming, a name may be assigned to each ID in the list for your convenience.

Trunked Enhanced Private Conversation™ (900MHz and UHF Only)



To Receive a Private Conversation Call

1. When a Private Conversation call is received, two alert tones sound and the display shows "**CALL.**"
2. To answer the call, press the **Call** button within 20 seconds of receiving the call. The display shows "**ID RCVD,**" then shows the ID number of the calling unit. To respond to the call, press the microphone's PTT button and talk.
If you do not press the **Call** button before pressing the PTT button, your conversation will be heard by all members of the talk group.
3. If 20 seconds pass before you press the **Call** button, you will not respond privately to the call just received. Instead, when you press **Call**, you enter the "Initiate a Private Conversation Call" state, as described on the following pages.
4. If the system is busy when you attempt to answer the call, a busy tone sounds and your radio's busy indicator lights. When a channel becomes available, you will receive a call back and your radio will automatically key up for three seconds so that you can begin talking.
5. After completing the Private Conversation, press the **HOME** button to hang up.

To Initiate an Enhanced Private Conversation Call

Select a Unit to Call

1. Press the **Call** button; the Call indicator lights. The display shows:
B5 Model: "**THIS ID,**" then shows your unit ID.
B7 Model: "**SCRTCHPD,**" then shows the last selected unit ID number.
If a Private Conversation or Call Alert page has been received, the display shows "**ID RCVD,**" then shows the unit ID of the caller.
2. Select a unit as follows:
B5 Model: Select "**ID RCVD**" if you wish to call the person with whom you last had a Private Conversation or the person who last paged you using Call Alert.
B7 Model: Do nothing if you wish to call the presently displayed unit ID; or use the pre-stored list by pressing **Mode** to scroll to the name/ID you wish to call; or use unlimited call capability by entering a new unit ID with the keypad.

Place the Call

1. Press the **Sel** button; a telephone-type ringing sounds if the unit you are calling is in service.
2. If the called unit is not in service, no ringing will sound. After six seconds, the display shows "**NO ACK**" and a momentary, low-pitched tone sounds. Try again or press the **HOME** button to return to normal operation.



Note:



Note:



3. If you are out of range of the system, the display shows **"NO SYS,"** and a low-pitched tone sounds. Try again or press **HOME** to return to normal operation.
4. If the system is busy when the called unit attempts to answer your call, the called unit will hear a telephone-type busy tone and both radios' **BUSY** indicators light. When a channel becomes available, the called unit will receive a call back, and will automatically key up for three seconds so that conversation can begin.
5. If the receiving unit answers, identify yourself and begin your Private Conversation.
6. When the conversation is completed, press the **HOME** button to hang up.

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

To Send a Call Alert Page

If the called unit is in service, but fails to respond within 20 seconds, the display shows **"NO ANSWR,"** the ringing stops, and a low-pitched tone sounds. If you do not wish to "leave your number," press **HOME** to return to normal operation; otherwise, press the **Sel** button again to send a Call Alert page. This leaves a **"CALL"** display and your ID on the called unit, indicating that you called. It also triggers external alarms (if enabled) on the called unit. See the Call Alert Page section for more details about its operation.

To See Your Own ID

1. Press **Call** momentarily to select the Private Conversation feature; the **Call** indicator lights. If no call has been received, the display shows:
B5 Model: "THIS ID," then shows your unit ID.
B7 Model: "SCRTCHPD," then shows the last selected unit ID number.
2. If a call has been received, the display shows **"ID RCVD,"** then shows the ID of the calling unit.
3. To see your ID, press the **Mode** rocker switch to scroll to the **"THIS ID"** display, which will alternate with your ID number.

Your ID can be viewed at any time during an enhanced Private Conversation simply by pressing the **Mode** rocker switch to scroll to the **"THIS ID"** display.

MAEPF-
MAEPF-

MAEPF-
MAEPF-

MAEPF-
MAEPF-

MAEPF-
MAEPF-

25



Note:

Note:



To Store a Unit ID Number in the List (B7 Model Only)

1. Press the **Call** button momentarily to select the Private Conversation feature. the call indicator lights.
2. Press the **Mode** rocker switch to scroll to the **"STORE ID"** display.
3. Press **Sel** to select the unit ID store function.
4. Press the **Mode** rocker switch to scroll to the ID you wish to change.
5. Enter the new unit ID number on the keypad.
If you make an error, press the **Del** button to erase each incorrect digit.
6. When digits of the ID are entered, press **Sel** to store the new ID or press **HOME** to store it and exit.
If you press **Mode** before **Sel**, you will advance to the next number, but will not store the number just entered.
7. Repeat Steps 4, 5, and 6 until all the desired ID numbers have been entered. Press **HOME** to exit to normal operation. You must exit the ID storage function and press **Call** again to initiate a Private Conversation call.

The Private Conversation and Call Alert page features share the same pre-stored list of unit ID numbers.

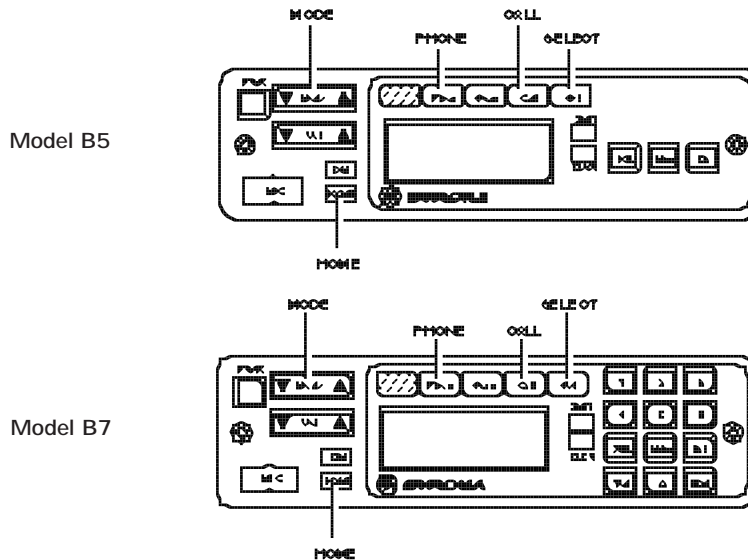


Note:

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The Private Conversation™ feature allows you to carry on a conversation that is heard only by the two parties involved. With Private Conversation II, the unit being called can view the calling unit's ID before answering.

All models are capable of responding to a Private Conversation call initiated by another radio. The following further describes each model's capability:

B5 Model: You can respond to or return the private call of a unit that calls you.

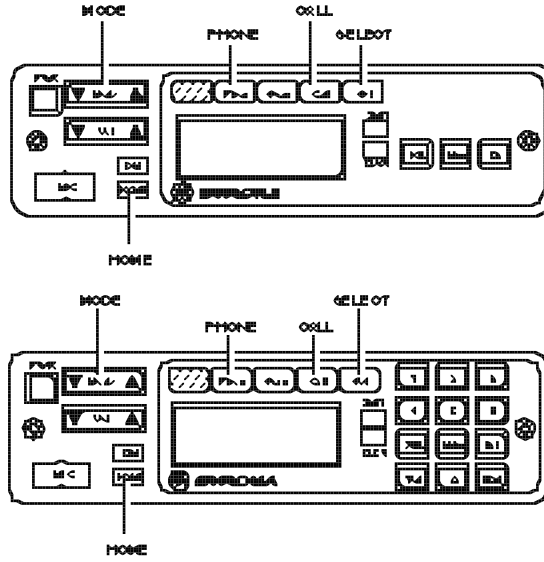
B7 Model: Features a unique list of up to eight pre-programmed ID numbers for each trunked personality, plus unlimited capability using a full 12-button keypad. With field programming, a name may be assigned to each ID in the list for your convenience.

To Receive a Private Conversation Call

1. When a Private Conversation call is received, two alert tones sound, the display shows "CALL," and you will hear the caller. If your external alarms are enabled, they will be triggered.
2. To answer the call, press the **Call** button. The display shows "ID RCVD," then shows the ID number of the calling unit. To respond to the call, press the microphone's PTT button and talk.

If you do not press the **Call** button before pressing the PTT button, your conversation will be heard by all members of the talk group.

Trunked Private Conversation™ I and II (800 MHz Only)



Note:

3. If the system is busy when you attempt to answer the call, a busy tone sounds and your radio's **BUSY** indicator is illuminated. When a channel becomes available, you will receive a call back and your radio will automatically key up for three seconds so that you can begin talking.
4. After completing the Private Conversation, press the **HOME** button to hang up.

To Initiate a Private Conversation Call

Select a Unit to Call

1. Press the **Call** button; the **Call** indicator lights. The display shows:
B5 Model: "SUPRVISR" if Private Conversation I; "THIS ID," then shows your unit ID if Private Conversation II.
B7 Model: "SCRTCHPD," then shows the last-selected unit ID number.
If a unit ID has been received from a Private Conversation or Call Alert page, the display shows **"ID RCVD."** With trunking type II, the display then shows the unit ID of the caller.
2. Select a unit as follows:
B5 Model: Select "SUPRVISR" if Private Conversation I to call your supervisor. Select "ID RCVD" if Private Conversation II to call the last person with whom you had a Private Conversation or who paged you using Call Alert.
*B7 Model: Do nothing if you wish to call the presently displayed unit ID; use the pre-stored list by pressing the **Mode** rocker switch to scroll to the name/ID you wish to call; or use unlimited call capability by entering a new unit ID with the keypad.*

Place the Call

1. Press the PTT button to initiate the call. Pause for a second to allow the alert tone to sound in the receiving unit, then begin the conversation.
2. When the conversation is completed or the unit does not respond, press the **HOME** button to hang up.
If you do not press **HOME** to hang up, your unit will remain in the Private Conversation state with the other unit. You will miss all subfleet traffic and incoming phone calls.
3. If the unit does not respond, then the **Sel** button may be pressed to send a Call Alert page to the called unit. See the Call Alert page section for details about its operation.



Note:

Note:



To See Your Own ID

1. Press the **Call** button momentarily to select the Private Conversation feature. If no unit ID has been received, the display shows:
B5 Model: "SUPRVISR" if Private Conversation I; "THIS ID," then shows your unit ID if Private Conversation II.
B7 Model: "SCRTCHPD," then shows the last-selected unit ID number.
2. If a unit ID has been received from a Private Conversation or Call Alert page, the display shows **"ID RCVD,"** then shows the ID of the calling unit.
3. To see your ID, press the **Mode** rocker switch to scroll to the **"THIS ID"** display, which will alternate with your ID number.

With Private Conversation I, the unit ID shown is the unit's Call Alert page ID, not its Private Conversation ID.

To Store a Unit ID Number in the List (B7 Model Only)

1. Press the **Call** button momentarily to select the Private Conversation feature.
2. Press the **Mode** rocker switch to scroll to the **"STORE ID"** display.
3. Press **Sel** to select the unit ID store function.
4. Press the **Mode** rocker switch to scroll to the ID you wish to change.
5. Enter the new unit ID number on the keypad.
If you make an error, press the **Del** button to erase each incorrect digit.
6. When all digits of the ID are entered, press **Sel** to store the new ID, or press **HOME** to store it and exit.
If you press **Mode** before **Sel**, you will advance to the next number, but will not store the number just entered.
7. Repeat Steps 4, 5, and 6 until all the desired ID numbers have been entered. Press **HOME** to exit to normal operation. You must exit the ID storage function and press **Call** again to initiate a Private Conversation call.

The Private Conversation and Call Alert page features share the same pre-stored list of unit ID numbers.



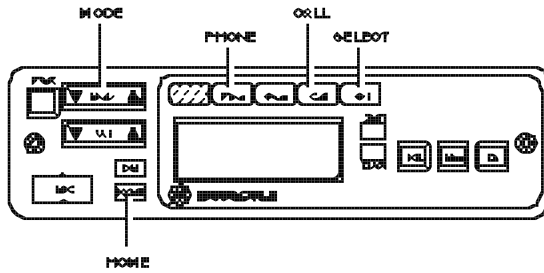
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Note:

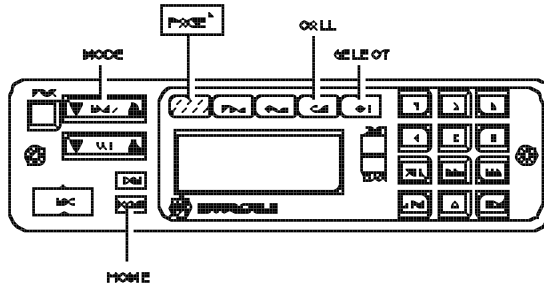
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Note:





Model B5



Model B7

^ Optional Button (included but not installed)

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

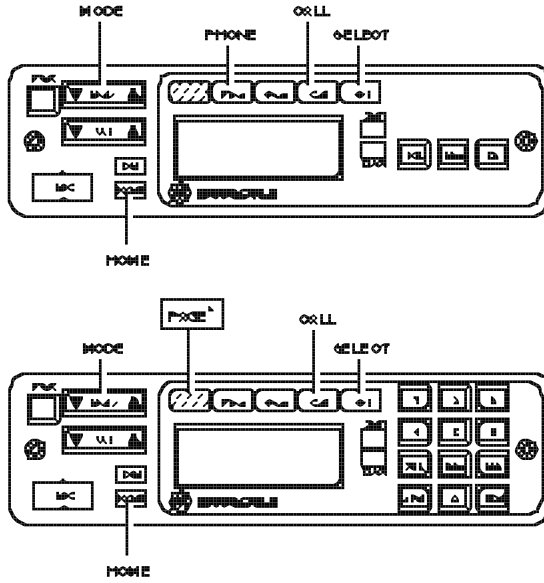
All models are capable of responding to a Call Alert initiated by another radio. The following paragraphs further describe each model's capability:

B5 Model: You can only respond to a Call Alert page; you cannot initiate a page.

B7 Model: Features a unique list of up to eight pre-programmed ID numbers for each trunked personality, plus unlimited capability using a full 12-button keypad. Using field programming, a name may be assigned to each ID in the list for your convenience.



Trunked Call Alert™ Page



^ Optional Button (included but not installed).

To Send a Call Alert Page (B7 Model Only)

Select a Unit to Call

1. Press the **Call** or **Page** button; the **Call** indicator lights. The display shows "**SCRTCHPD**," then shows the last-selected unit ID number.

If a unit ID has been received from a Private Conversation or Call Alert page, the display shows "**ID RCVD**." With trunking type II, the display then shows the unit ID of the caller.

2. Do nothing if you wish to call the presently displayed unit ID; or use the pre-stored list by pressing the **Mode** rocker switch to scroll to the name/ID you wish to call; or use unlimited call capability by entering a new unit ID with the keypad.

To Place the Call Alert Page

1. Press the **Sel** button; the display changes to "**PLS WAIT**."
2. If you are out of range of the system, the display shows "**NO SYS**," and a low-pitched tone sounds. Try again or press **HOME** to return to normal operation.

If the Call Alert page feature was entered from the **Call** button, and the radio is equipped with enhanced Private Conversation, the **Sel** button must be pressed twice. The first press initiates an enhanced Private Conversation; the second press sends the Call Alert page.

3. If you are in range of the system, a single beep sounds when the page is received by the trunked central controller.
4. When the called unit acknowledges the page, four additional beeps sound and the display changes to "**ID ALRTD**." The radio returns to normal operation.
5. If, after six seconds, the called unit fails to acknowledge the alert, a low-pitched tone sounds and the display changes, first to "**NO ACK**," then to the selected ID. Try again or press **HOME** to exit.



Note:

Note:



To Respond to a Call Alert Page

If you have been out of your vehicle, a caller may have sent you a Call Alert page to leave a **"CALL"** message and his or her ID, and triggered any external alarms you enabled before you left your vehicle. If so, your radio display will show **"CALL,"** four beeps will repeat every five seconds.

To respond with a normal dispatch call, press PTT and inquire about the page.

With trunking type II, you may instead respond with a Private Conversation. Press **Call**. The display changes to **"ID RCVD,"** followed by the unit ID of the caller. Press **Sel** to initiate an enhanced Private Conversation (900 MHz and uhf only) or PTT to initiate a Private Conversation I or II call (800 MHz only) to the caller.

Pressing the PTT button, changing systems, or pressing **Call** or **Page** clears the **"CALL"** display. The original **"ID RCVD"** is retained until another Call Alert or Private Conversation call is received.

To See Your Own ID

Press the **Call** or **Page** button momentarily to select the Private Conversation or Call Alert page feature.

To see your ID, press the **Mode** rocker switch to scroll to the **"THIS ID"** display, which will alternate with your ID number.

To Store a Unit ID Number in the List (B7 Model Only)

1. Press the **Call** or **Page** button momentarily to select the Private Conversation or Call Alert page feature.
2. Press the **Mode** rocker switch to scroll to the **"STORE ID"** display.
3. Press the **Sel** button to select the unit ID store function.
4. Press the **Mode** rocker switch to scroll to the ID you wish to change.
5. Enter the new unit ID number on the keypad.

If you make an error, press the **Del** button to erase each incorrect digit.

6. When all digits of the ID are entered, press the **Sel** button to store the new ID, or press **HOME** to store it and exit.

If you press **Mode** before **Sel**, you will advance to the next number, but will not store the number just entered.

7. Repeat Steps 4, 5, and 6 until all the desired ID numbers have been entered. Press **HOME** to exit to normal operation. You must exit the ID storage function and press **Call** or **Page** again to initiate a Call Alert page.

The Private Conversation and Call Alert page features share the same pre-stored list of unit ID numbers.



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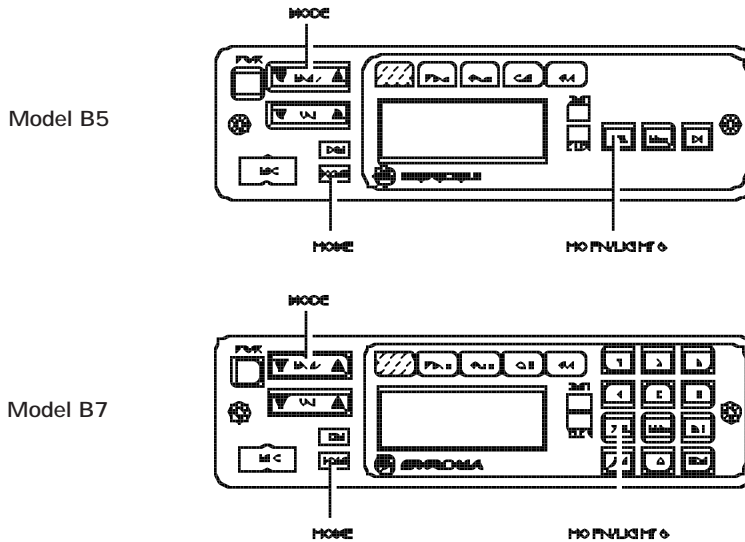


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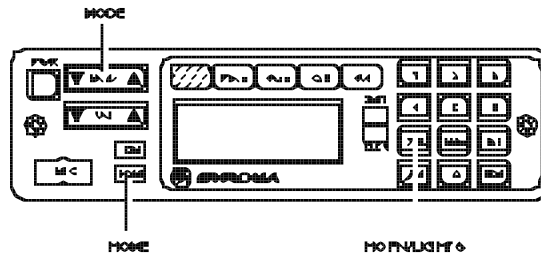
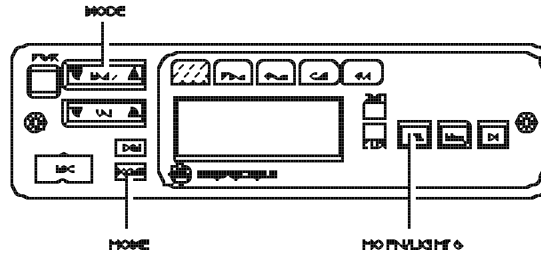


All models can be equipped for external alarms (horn and lights) that are activated by received telephone interconnect calls, Call Alert pages, or Private Conversation I or II calls. These features are useful when you must leave the vehicle, but need to receive any incoming messages. See the Spectra 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 alarms are enabled and the display alternately shows the enabled alarms, then the selected mode. Press the **H/L** button a second time to turn off the alarms.

Optional External Alarms (Horn and Lights)



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. Press the **Mode** rocker switch 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 is Received And Alarms Are Turned On

When a call is received, the vehicle's horn sounds for four seconds, and/or the car lights will turn on for 60 seconds. (This time may be changed with the field programmer.) The display will alternate between the type of call received ("**CALL**" or "**PHONE**") and the selected mode name.

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

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. Responding to a call also automatically disables the alarms; press the **H/L** button again to reactivate.



Note:





Each model includes data communications capability, providing automatic PTT unit identification in properly equipped trunked systems. Trunked PTT-ID can be specified at the time the unit is ordered, or field-programmed.

To Send Your Unit Identification

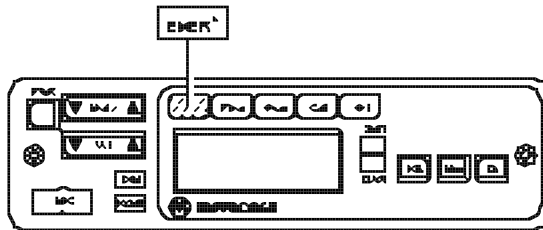
Each time you press the microphone's PTT button on a mode that has PTT-ID enabled, the radio automatically sends your radio's unit ID code to your dispatcher.





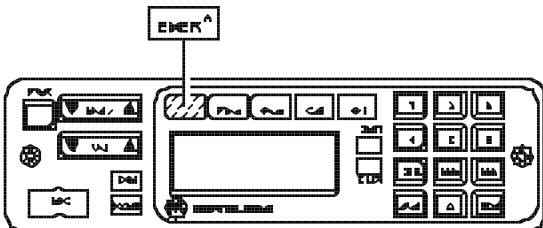
Trunked Push-To-Talk Identification (PTT-ID)





Model B5

* Optional button (included but not installed).



Model B7

* Optional button (included but not installed).

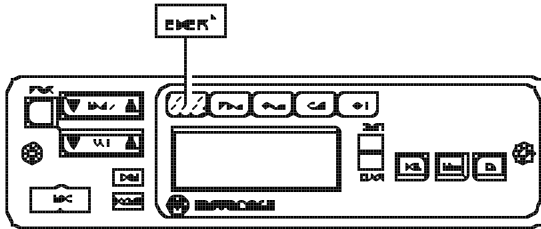
The B5 and B7 models add data communications capability to your Spectra radio, providing automatic PTT unit ID and emergency alert capability in properly equipped conventional systems. Both features require field programming before they are operational. Emergency alert capability also requires an optional foot switch or a hidden push button (see the Spectra service and installation manuals) or installation of an emergency (Emer) button.

To Send Your Unit Identification

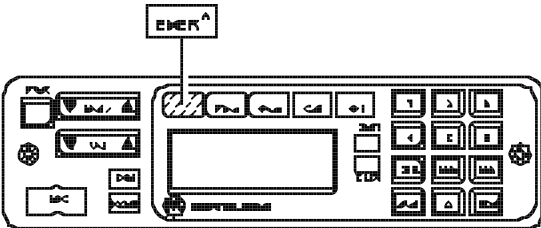
Each time you press the microphone's PTT button, the radio automatically sends your radio's unit identification code to your dispatcher. You will hear a continuous alert tone as soon as you press the PTT button. Continue to hold the PTT button and wait until the tone stops before you begin talking.



Conventional MDC-1200™ PTT-ID and Emergency Alert



^ Optional button (included but not installed).



^ Optional button (included but not installed).

To Send an Emergency Alert

1. To send an emergency alert, momentarily press the optional foot switch, hidden emergency push button, or **Emer** button. The radio automatically sends an emergency alert data packet, including your unit identification, to your dispatcher. A beep will sound when the dispatcher acknowledges.

If the silent emergency feature is enabled, no indication will be given that an emergency data packet has been sent or acknowledged. No incoming calls will be heard.

2. After the emergency alert is sent and acknowledged, the radio returns to normal voice operation, unless the silent emergency feature is enabled, in which case the radio remains muted until the microphone's PTT button is pressed.

If the emergency alert is not acknowledged, your radio will continue to transmit the alert up to 20 times. If none of these are acknowledged, you will hear a low-pitched beep and **"NO ACK"** will be displayed. (No indication is given for silent emergency operation.)

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MAEPF-

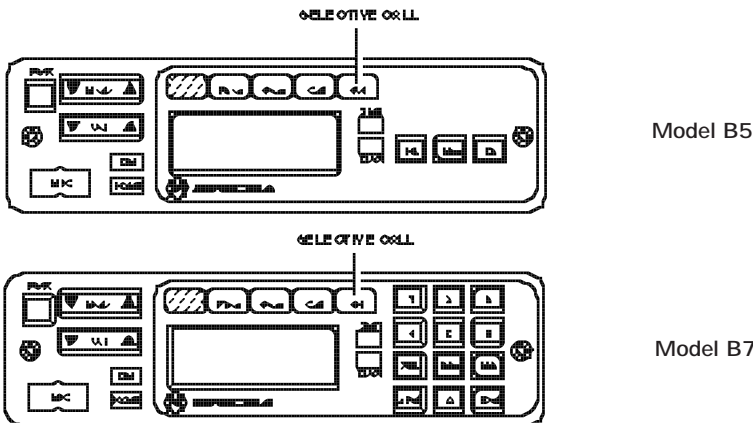
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MDC-1200 selective calling is a set of conventional features that allows the dispatcher or a mobile radio unit to communicate with one or more mobile radio units with a certain degree of privacy. The different types of selective calling features currently 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.

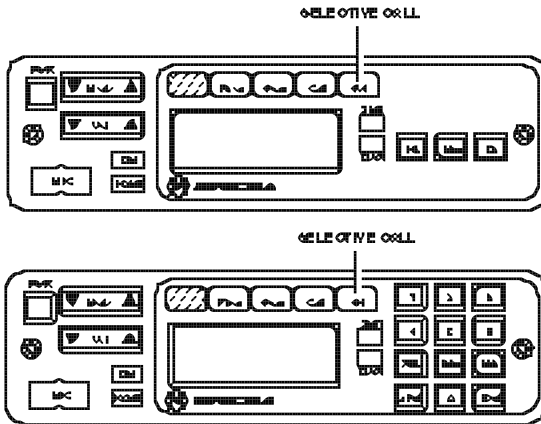
Call Alert (also known as "page") allows one mobile unit to leave its ID with one other mobile unit. Groupwide and fleetwide Call Alerts are not allowed. Upon receiving the initiating unit's ID, the target unit will begin sounding alert tones, and its display will indicate that a Call Alert has been 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, then press the microphone's PTT button and talk.



Conventional MDC-1200 Selective Calling



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To Initiate an Enhanced Selective Call

Select a Unit to 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) "**SCRTPHD**," then shows the last selected unit ID number.

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 pressing the **Mode** rocker switch 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 pressing the **Mode** rocker switch to scroll to the name/ID you wish to call; or use "unlimited call" capability by entering a new unit from the keypad.

To Place the Call

1. 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**."

2. If the receiving unit answers, identify yourself and begin your enhanced selective call.
3. When the conversation is completed, press the **HOME** button to hang up.

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.



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Note:

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Note:



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, then press the microphone's PTT button and talk.

To Initiate an Automatic Selective Call

Select a Unit to 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.

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 pressing the **Mode** rocker switch 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 pressing the **Mode** rocker switch to scroll to the name/ID that you wish to call; or use "unlimited call" capability by entering a new unit from the keypad.

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

To Place the Call

1. Place the call by pressing the PTT button.
2. Identify yourself and begin your conversation.
3. When the conversation is completed, press the **HOME** button.

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



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Note:

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Note:



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

Select a Unit to Call

Select a unit to call by following the *Select a Unit to Call* steps 1 and 2 of either the "enhanced selective call" or "automatic selective call" sections, above.

To Place the Call Alert

1. 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.

2. The display will show "**PLS WAIT**" while the radio is attempting to Call Alert the selected unit.
3. *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, press the **Mode** rocker switch to scroll to the "**THIS ID**" display, which will alternate with your ID number.

Your ID can be viewed at any time while in the call state simply by pressing the **Mode** rocker switch to scroll to the "**THIS ID**" display.



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Note:



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

1. Press the **Call** button momentarily; the **Call** indicator lights.
2. Press the **Mode** rocker switch to scroll to the "**STORE ID**" display.
3. Press the **Sel** button to select the "unit ID store" function.
4. Press the **Mode** rocker switch to scroll to the ID you wish to change.
5. Enter the new unit ID number on the keypad.
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.
If you press the **Mode** rocker switch 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.

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



Note:

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Note:



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

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

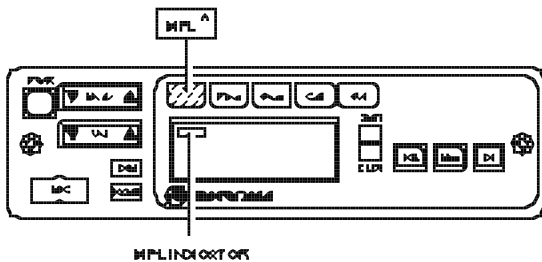
Each time that you press the microphone's PTT button while in a mode that has the RAC enabled, the radio automatically sends repeater access data with the mode-slaved repeater ID. You will hear an alert tone when you press the PTT button. Continue to hold down the PTT button and wait until the tone stops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



Conventional MDC-1200 Repeater Access Controller (RAC)

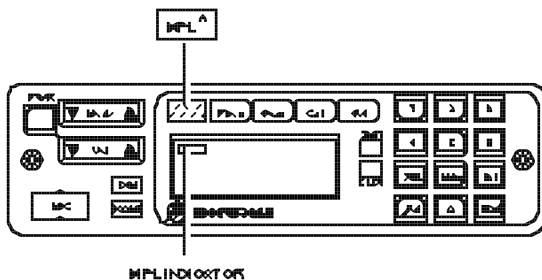
Note:





Model B5

^ Optional button (included but not installed).



Model B7

^ Optional button (included but not installed).

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-selectable Private-Line® (PL), Digital Private-Line™ (DPL), and carrier-squelched systems.

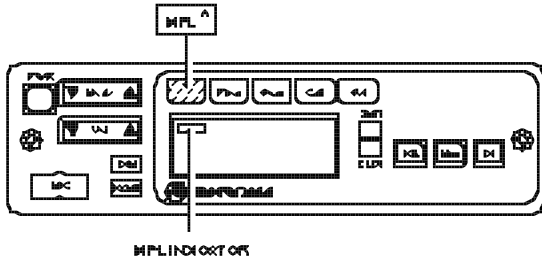
Through programming, this option can be restricted to operate on transmit-only mode or receive-only mode, or it can be disabled.

To Activate Multiple Coded Squelch (MPL)

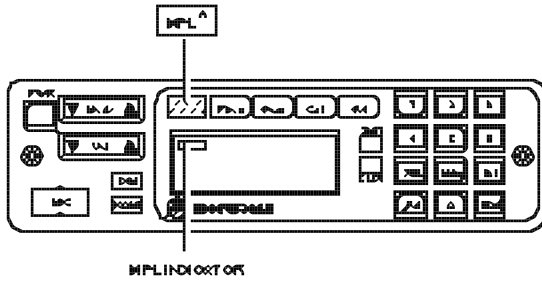
1. Press the **MPL** button; the **MPL** indicator is illuminated and the last operator-selected value is activated and momentarily displayed.
2. To select another squelch scheme, hold the **MPL** button down; a beep sounds and the **MPL** indicator flashes. The radio is now in a "configuration state."
3. To select a new value, use the **Mode** rocker switch to scroll through the selections, or use the keypad (on B7 models) to directly enter the value.
4. Press the **HOME** button to store and activate the new selection, and return the radio to normal operation.



Conventional Operator-Selectable Multiple Coded Squelch

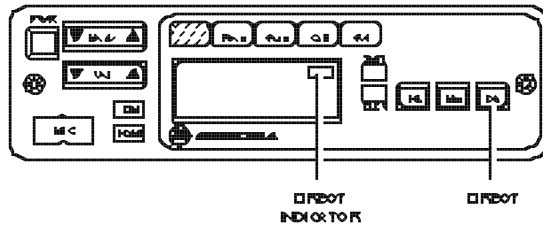


^ Optional button (included but not installed).

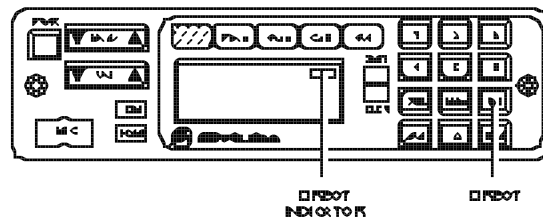


^ Optional button (included but not installed).

Model B5



Model B7

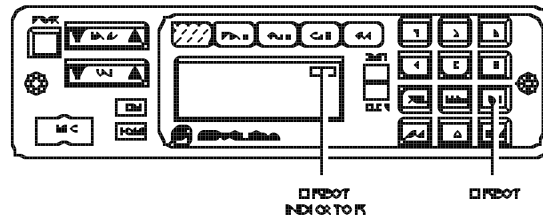
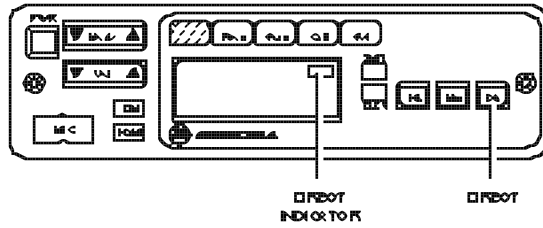


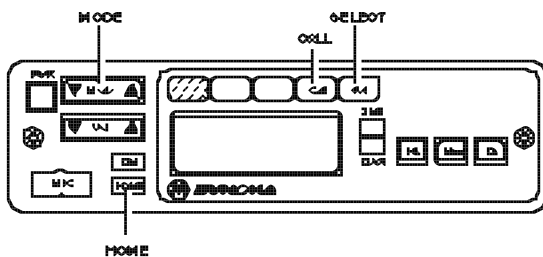
To Talk Direct (Mobile-To-Mobile)

Press the **Dir** button momentarily; the **Dir** indicator lights to indicate that the radio will now transmit directly to another unit without going through the conventional 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.

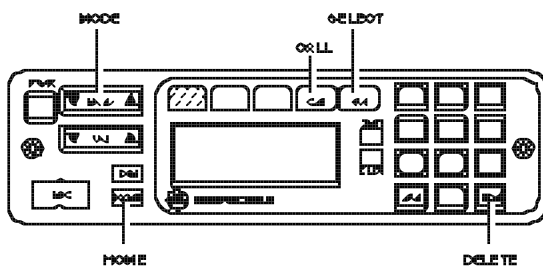
To return to repeater operation, press the **Dir** button again; the **Dir** light goes out.

Conventional Talkaround





Model B5



Model B7

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

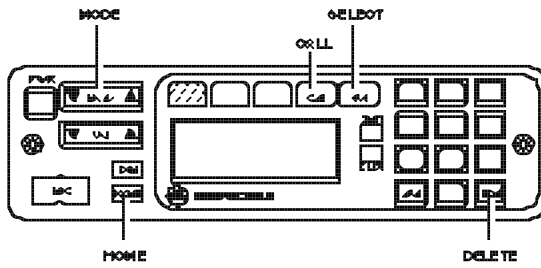
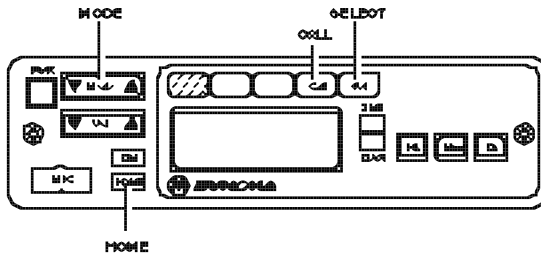
To Make a DTMF Selective Call From a Pre-Stored List

1. Use the **Mode** rocker switch to scroll to a mode which has DTMF selective call enabled.
2. Press the **Call** button to enter the call mode.
3. Use the **Mode** rocker switch 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.

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.

Conventional DTMF Selective Call Encode



Note:

To Make a DTMF Selective Call From the Scratchpad (Model B7 Only)

1. Use the **Mode** rocker switch 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 "*SCRTPAD.*"
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 B7 Only)

1. Use the **Mode** rocker switch 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 B7 Only)

1. Use the **Mode** rocker switch 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 switch until the display shows "*STORE ID.*"
4. Press the **Sel** button to enter the store mode.
5. Press the **Mode** rocker switch 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.

MAEPF-
MAEPF-

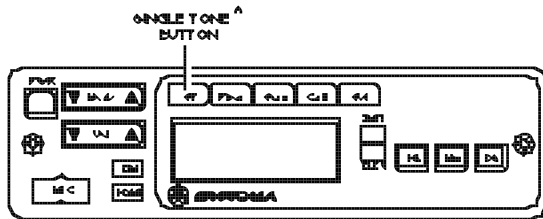
MAEPF-
MAEPF-

MAEPF-
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MAEPF-
MAEPF-

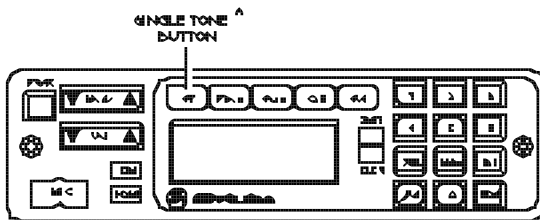






Model B5

^ Optional button (included when Single Tone is ordered, but not installed).



Model B7

^ Optional button (included when Single Tone is ordered, but not installed).

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.

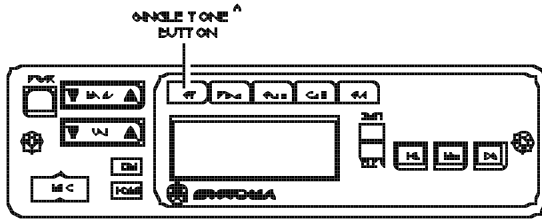
Repeater access and other system uses are enhanced by allowing a single radio to operate on many combinations of operator-selected Single Tones.

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.

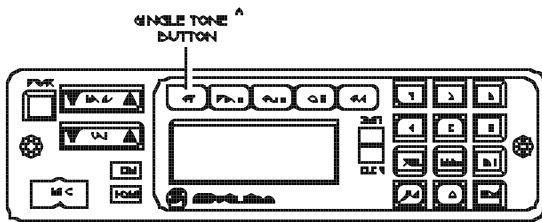
A Single Tone is normally transmitted with a side tone. The side tone is programmable and may be enabled or disabled. When a Single Tone is being transmitted, its (programmable) name is displayed.



Conventional Operator-Selectable Single Tone™



^ Optional button (included when Single Tone is ordered but not installed).



^ Optional button (included when Single Tone is ordered but not installed).



To Activate Single Tone (ST)

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

When a transmission is initiated with Single Tone, a short tone burst (side tone) is sent at the beginning of the transmission.



MAEPF-
MAEPF-

MAEPF-
MAEPF-

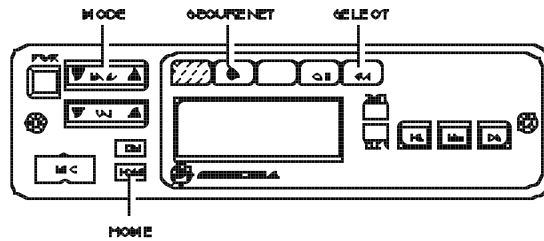
MAEPF-
MAEPF-

MAEPF-
MAEPF-

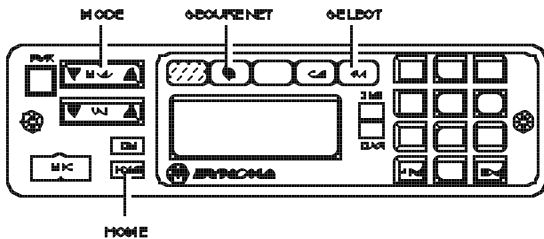


Note:





Model B5



Model B7

To Receive

1. Select a mode with the **Mode** rocker switch . 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.

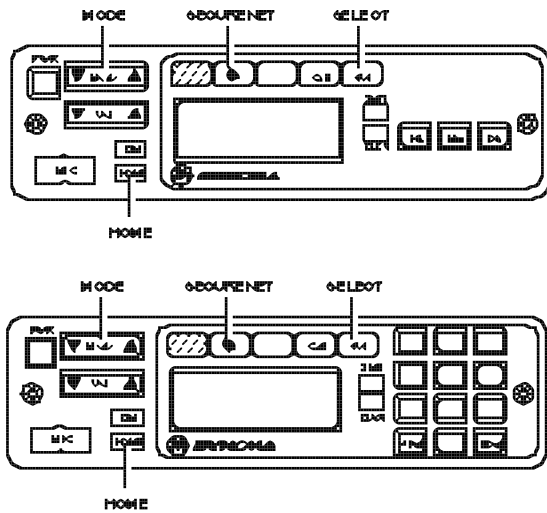
Private messages encrypted with a different key will unmute the radio, but will only produce noise in the speaker (the “proper code” option eliminates this noise). In PL modes and on models equipped with the “proper code” option, you can monitor the channel continuously by removing the microphone from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

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






SECURENET™ Operation





Note:



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.

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** rocker switch 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.





Note:








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.


Multiple Key Selection (Advanced SECURENET Only)

Advanced SECURENET radios are capable of multiple-key operation. Up to 16 keys are possible. A default key, "**DEF KEY**," is included and is associated with the current mode. The keys are strapped to a given mode, or operator-selectable, and may be indexed into groups of keys (for example, 16 keys may be indexed into two groups of eight keys).

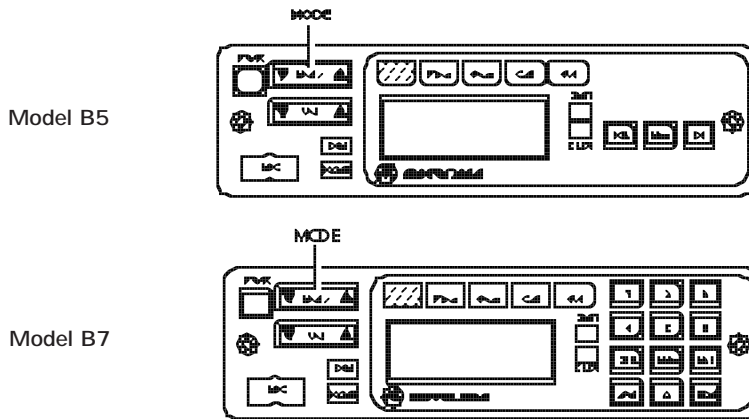
To Change the SECURENET Index

1. Press and hold down the  button until a beep sounds. If indexing has been enabled, the radio will display the key index that the radio is currently operating with.
2. Use the **Mode** rocker switch to scroll to the desired index.
3. Press the **Sel** button to enter the desired index. The display shows the currently selected key.
4. Press **HOME** to return to normal radio operation.

To Change the SECURENET Keys

1. Press and hold down the  button until a beep sounds.
 - a. If indexing is *disabled*, the radio will display the key that the radio is currently operating with. Go directly to step 2.
 - b. If indexing has been *enabled*, the radio will display the key index that the radio is currently operating with. Use the **Mode** rocker switch to scroll to the desired key index, then press the **Sel** button.
2. Use the **Mode** rocker switch to scroll to the desired key.
3. Press the **Sel** button to enter the selected key.
4. Press **HOME** to return to normal radio operation.





Fleetwide announcement capability allows the user to make announcements to the entire fleet, as well as monitor subfleet calls and other fleetwide announcements.

To Initiate a Fleetwide Announcement

If your radio has been programmed to allow fleetwide announcement calls, press the **Mode** rocker switch to scroll to the fleetwide mode.

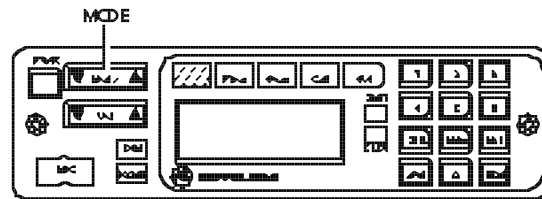
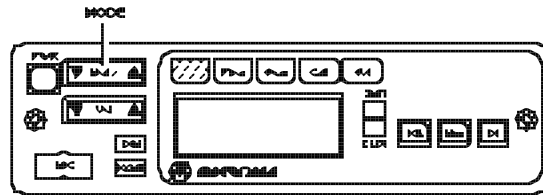
Press the microphone's PTT button to initiate the announcement. If there are any associated subfleet conversations taking place on other channels, you will hear a busy tone, followed by a Call Back when those conversations end. You can then make your announcement to the fleet.

Fleetwide Monitoring

While receiving in the fleetwide mode, subfleet and fleetwide traffic (for that fleet) will be heard on a first-come, first-served basis.

For type II personalities, up to 15 subfleets per fleet can be monitored. The list of subfleets can be changed by field programming; the default list (as shipped from the factory) will be up to the first 15 subfleets associated with the fleet, including the fleetwide talkgroup.

Trunked Fleetwide Announcement





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

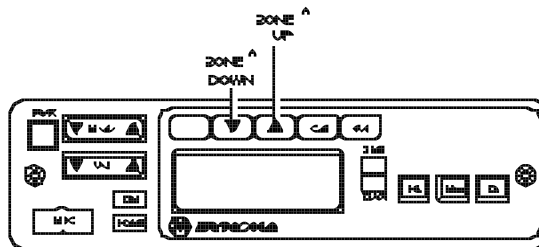




Time-Out Timer

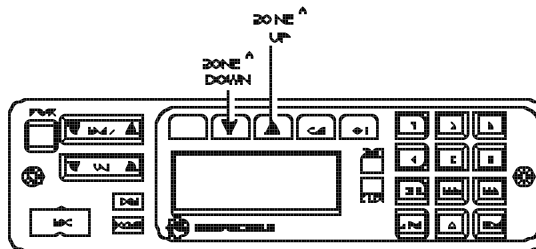


Model B5



^ Optional button included with radio when zone/mode is ordered, but not installed in the factory.

Model B7



^ Optional button included with radio when zone/mode is ordered, but not installed in the factory.

All B5 and B7 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 ▲ and a zone down ▼ button to the B5 and B7 models.

To Select or Change Zones

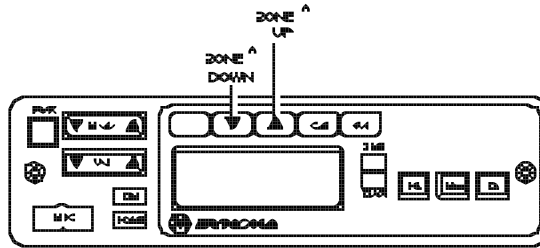
To change zones in a radio programmed for zone/mode operation, press the zone up ▲ or zone down ▼ button.

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

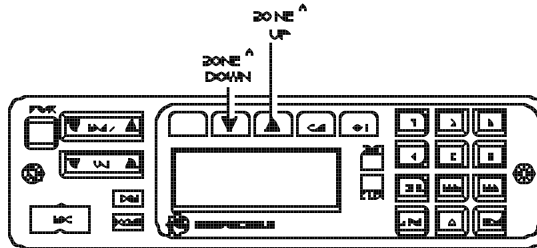
The radio can be programmed to temporarily display the current zone's name when the zone up ▲ or zone down ▼ button is momentarily pressed. If the zone up ▲ or zone down ▼ button is pressed again while the zone name is displayed, the zone will change.

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

Zone/Mode Operation



[^] Optional button included with radio when zone mode is ordered, but not installed in the factory.



[^] Optional button included with radio when zone mode is ordered, but not installed in the factory.

Note:



To Select or Change Modes

1. To access a mode that is within the current zone, press the mode rocker switch until the desired mode name is displayed.
2. To access a mode that is not in the current zone, press the zone up ▲ or zone down ▼ button to move to the zone containing the mode. Then, use **Mode** rocker switch until the desired mode name is displayed.

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.





When the trunked system's central controller fails, for any reason, the radio goes into failsoft. In this condition, the radio transmits and receives on a pre-determined frequency in a conventional (although conventional features such as Private-Line are not available), as opposed to trunked, type of operation. Failsoft ensures that you will have communications capability at all times. Radios may be programmed so that units which normally communicate on the same trunked mode will be assigned to the same failsoft repeater frequency.

The **Mode** rocker switch can be used to change to different repeater frequencies during failsoft in order to communicate with other talkgroups.

The failsoft condition is indicated by a faint beeping tone every ten seconds (radio unscelched). When the trunking system returns to normal operation, that beeping stops.

Since the normal trunking features do not operate during failsoft, much of the privacy of trunked systems is lost. You will have to share the channel with other users until the failure is corrected.

Press the PTT button to talk; release it to listen.

If a system that is in failsoft is accessed while in scan, the radio freezes scan and will remain on the failsoft frequency for a period of six seconds. (This time can be changed through field programming.) This allows the operator to monitor the failsoft frequency for activity before resuming scanning. On B7 models, the nuisance-delete feature can be used to temporarily delete the system in failsoft from the scan list, if desired.



Failsoft (Trunking Only)

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

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 reads "**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 to 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.





Proper Connections and Operational Problems Troubleshooting

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.



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 following items, available through Motorola Worldwide Parts Division, are required when programming a Spectra radio:

Description	Part Number
Computer.....	IBM PC, PC-XT, or PC-AT
Radio Interface Box (RIB).....	01_80353A74
Cable—Radio to RIB.....	30_80369B73
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



Field Programming





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