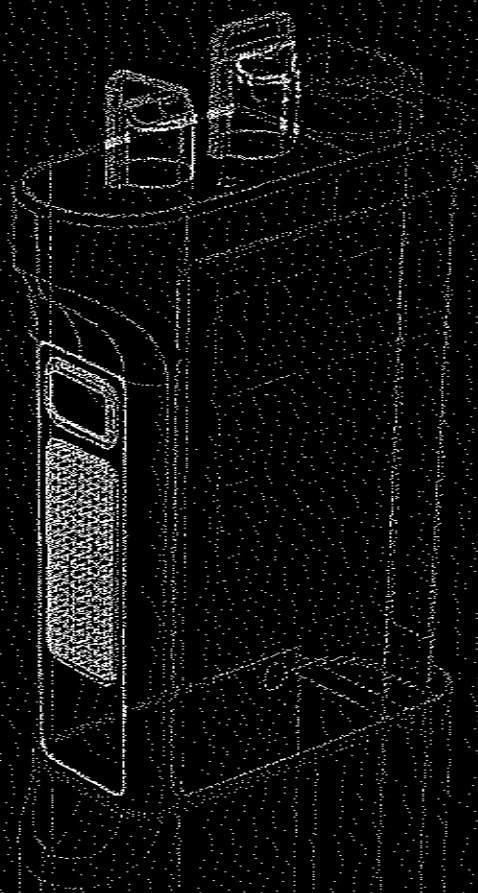# SABER III

SECURENET Operating Instructions
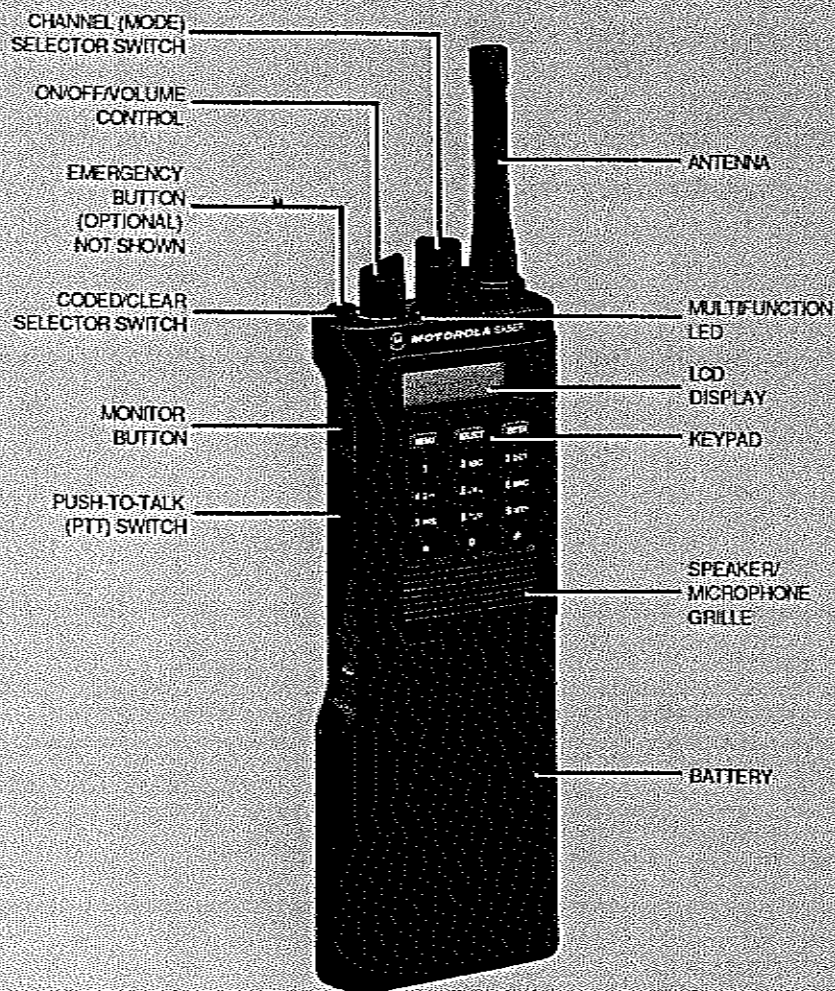

MOTOROLA

The ideal blend of high technology and human engineering has resulted in the world's finest hand-held two-way radio!

- From its inception, SABER has been designed and developed using the latest in computer-aided design systems.

- High-quality goals are achieved through advanced automated assembly techniques using state-of-the-art robotics.

- The combination of ergonomic design, ruggedness, and programmability make SABER a radio for the user.

SABER! A product of advanced technology - from Motorola!

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SPEAKER/
MICROPHONE
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ABOUT YOUR "SABER III" RADIO

INTRODUCTION

The SABER III SECURENET series of "Handie-Talkie" radios provides advanced receiver and transmitter design using state-of-the-art technologies. The microcomputer-controlled SABER III radio is among the most sophisticated two-way radios on the market today. The SABER III utilizes custom integrated circuits which enhance performance and reliability, and reduce the unit's size. Digital frequency synthesis techniques provide up to 120 channels of transceiver capability on the SABER III.

The Motorola MC68HC11 microcomputer is at the heart of the SABER III radio; it provides tremendous flexibility in channel management and signalling schemes. Programming, changing frequencies, re-tuning, and testing can now all be accomplished by a qualified technician without opening the unit.

Mode-select operation is a major feature of the SABER III radio. A "mode" is the grouping of functions performed on a channel. With mode-select, popular auxiliary functions can be "slaved" to the channel (mode) selector switch. These auxiliary functions include:

* transmit and receive frequencies

* PL or DPL or carrier squelch

* I.D. enable or disable

* time-out timer enable or disable

* power level

* coded / clear voice operation

The microcomputer reads the specific channel (mode) information from an electrically-erasable programmable read-only memory (EEPROM). Since the EEPROM is reprogrammable, separate controls and switches are eliminated.

All these features add up to better, more cost-effective two-way communications for you. The newest in a long line of Motorola quality products, the SABER III radio is smaller, lighter, and much more capable than comparable radios. Results of our unparalleled Accelerated Life Testing indicate that the SABER III radio is far more reliable and durable than its predecessors.

SABER III means the quality and reliability you've come to expect from Motorola.
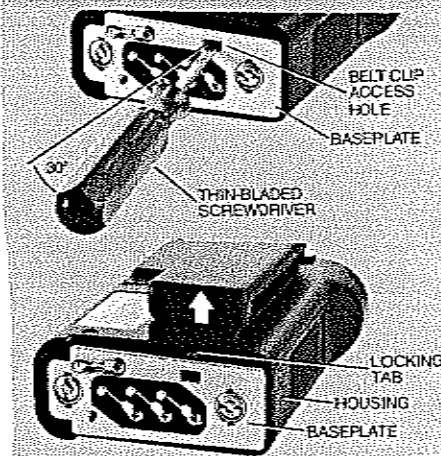
INSPECTION

When you receive your packaged SABER III, inspect the shipping carton for any outward signs of damage. Next, check the contents of the carton against the shipping invoice or bill of materials to be certain that all items ordered have been included. The packaged SABER III should include:

- SABER III radio
- Antenna (heliflex for vhf models or flexible whip for uhf models)
- Nickel-cadmium battery (medium-capacity for low-power models or high-capacity for high-power models)
- Removable belt clip
- Universal Connector Cover
- Case with belt loop
- Nylon "T" strap
- SABER III operating instructions manual

Inspect the equipment thoroughly. If any equipment was damaged during shipment, report the extent of the damage to the transportation company immediately.

BELT CLIP INSTALLATION AND REMOVAL

NOTE
Installation and removal of the belt clip assembly should be done with the *battery removed.*

Installing the Belt Clip

1. Looking at the back of the radio, insert the top (hooked) end of the belt clip assembly into the slot at the top of the radio. Make sure the clip's hook is centered and seated in the slot.

2. Align and center the bottom end of the belt clip in the slot between the radio housing and the baseplate.

3. Press the bottom of the belt clip into the slot until it "clicks" into place. Pull outward on the bottom of the clip to ensure that it is secured to the radio.

Removing the Belt Clip

1. Looking at the back of the radio, insert a thin, flat-bladed screwdriver into the belt clip access hole in the baseplate at an angle of about 30°, and engage the locking tab on the belt clip.

2. Push firmly inward and upward on the locking tab until it is disengaged from the access hole.

3. Continue pushing on the tab until it can be seen between the radio housing and the baseplate. If necessary, reposition the screwdriver and push on the tab again to free it from the hole.

4. Lift the belt clip up and away from the radio.

BATTERY INSTALLATION OR REPLACEMENT

WARNING
To avoid a possible explosion:
Do Not replace the battery in a hazardous atmosphere!
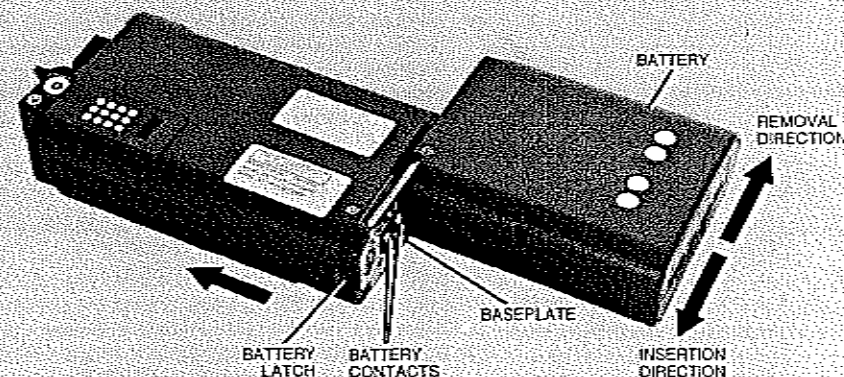**Do Not** discard used batteries in a fire!

CAUTION
To avoid loss of the encryption key:
Do Not attempt to change the battery without first turning the radio off.
Do Not wait longer than 30 seconds between removing the
old battery and installing the new battery.

1. Make sure that your radio is turned off.

2. Hold the SABER III radio in your hand and slide the battery latch toward the top of the radio with your thumb.

3. While holding the battery latch, slide the battery pack away from you until it clears the SABER III.

4. To replace the battery, hold the SABER III radio in one hand. With the other hand, slide the battery onto the radio baseplate and toward the latch until it "clicks" into place.
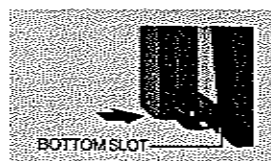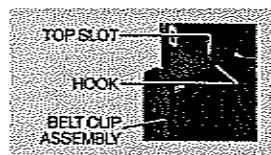
CONTROLS, SWITCHES, INDICATORS, AND CONNECTORS
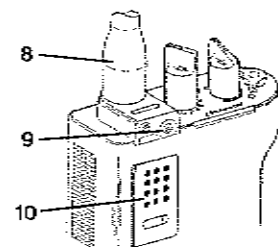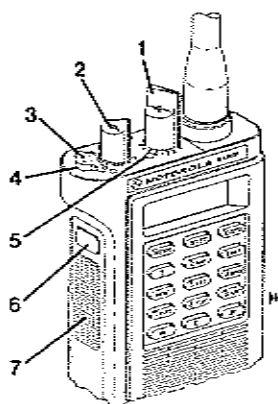
1. **On/Off/Volume Control** – Turns the radio on/off and adjusts the audio output level.
2. **Channel (Mode) Selector Switch** – Selects the transmit and receive frequencies, and any operating parameters "slaved" to each channel position.
3. **Emergency Button (Optional)** – Transmits a pre-programmed 2- to 7-tone code, followed by a predefined emergency tone. Transmission can be steered to a pre-programmed channel.
4. **Coded/Clear Selector Switch** – Selects whether the radio is sending coded (digitally-encrypted) or clear (not encrypted) voice transmissions.
5. **Multifunction Light-Emitting Diode (LED)** – Indicates normal transmission (continuous red) and channel busy (blinking red).
6. **Monitor Button** – Tap to momentarily monitor a channel for voice communications. Press and hold to put the radio in the open squelch (monitor) mode. Tap to return to normal operation.
7. **PTT (Push-to-Talk) Switch** – Engages the transmitter/encoder. Pressing the PTT switch also resets the radio's alert tones and transmits the unit I.D. code. The receiver operates when the PTT switch is released.
8. **Antenna** – Heliflex or flexible whip; with threaded base.
9. **RF Connector** – Allows connection of an external antenna or radio test equipment.
10. **Universal Connector** – Provides access to the radio for programming and testing; also allows for connection to remote accessories, such as the public safety microphone.

KEYPAD

The keypad allows you to use the different features (via menus) available within your SABER III. The keypad consists of three control keys, **MENU, SELECT,** and **ENTER,** and a 3 × 4 numeric keypad arranged similar to a standard telephone keypad.
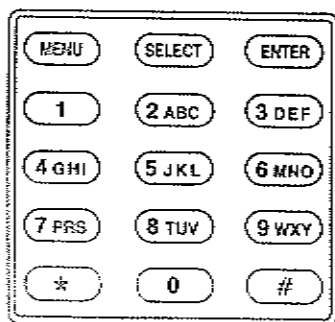
Control Keys

- **MENU key.** Use this key to scroll the display, in a pre-defined sequence, through a list of the various menus available within the radio. Once you are using a menu (see SELECT key), you can use the MENU key to exit the menu and return to the default display.
- **SELECT key.** When the desired menu header appears on the display, press the SELECT key to activate the menu and display the current status of the feature. Within a menu, use the SELECT key to scroll through the contents of the menu.
- **ENTER key.** While a menu is active (see SELECT key), press the ENTER key to store the displayed information into the radio's memory. In most cases, stored information will remain in memory after the radio is turned off. Press the ENTER key while the radio is in the default mode (when no menu is active) to turn on the display's backlighting.

8
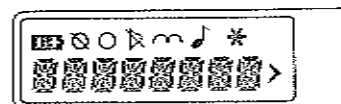
DISPLAY

The SABER III has a two-row liquid-crystal display (LCD). The upper row contains six status symbols and a menu annunciator. The lower row displays alphanumeric messages (up to eight characters long), and contains an additional menu annunciator.

If poor light conditions make the display difficult to read, press the ENTER key when no menu is active to turn on the display's built-in backlight.

## Status Symbols

Indicate the status of certain SABER functions:

- Battery Status (▇▇). When the radio is transmitting, indicates the charge state of a rechargeable (Ni-Cd) battery (not valid for non-rechargeable batteries):
  - ON = FULLY OR PARTIALLY CHARGED; DOES NOT NEED RECHARGING
  - BLINKING = ALMOST EMPTY; RECHARGE BEFORE USING

- Coded Voice (◌). With coded voice mode selected, this symbol will be displayed. With clear voice mode selected, this symbol blinks when a coded voice message is received.
  - ON = RADIO IN CODED MODE
  - OFF = RADIO IN CLEAR MODE
  - BLINKING = RECEIVING CODED VOICE WHILE IN CLEAR MODE

- Clear Voice (○). With clear voice mode selected, this symbol will be displayed. With coded voice mode selected, this symbol blinks when a clear voice message is received.
  - ON = RADIO IN CLEAR MODE
  - OFF = RADIO IN CODED MODE
  - BLINKING = RECEIVING CLEAR VOICE WHILE IN CODED MODE

- PL/DPL Squelch (▷). Indicates the type of receive squelch that is in effect for the active channel.
  - ON = PL/DPL SQUELCH
  - OFF = CARRIER SQUELCH

- Repeater Channel (∿). Indicates whether the current channel is simplex (transmit frequency = receive frequency; therefore, not used with a repeater), or semiduplex (different transmit and receive frequencies; therefore, used with a repeater).
  - ON = SEMIDUPLEX CHANNEL
  - OFF = SIMPLEX CHANNEL

Menu Annunciators

The menu annunciators appear during menu operation. They provide information to help guide you in using a menu.

- Menu Annunciator (✳). The asterisk menu annunciator indicates whether numeric input from the keypad is currently possible.
  - ON = NUMERIC INPUT POSSIBLE
  - OFF = NUMERIC INPUT NOT POSSIBLE

- Menu Annunciator (>). The arrow menu annunciator indicates when more information is available in a menu, or more steps are required to complete a keypad sequence.
  - ON = MORE INFORMATION OR STEPS
  - OFF = NO MORE INFORMATION OR STEPS

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BASIC OPERATION OF YOUR "SABER III" RADIO
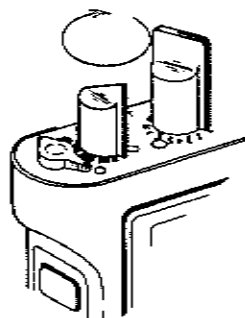
RADIO ON/OFF

1. Turn the radio on by rotating the volume control clockwise until you hear a click.
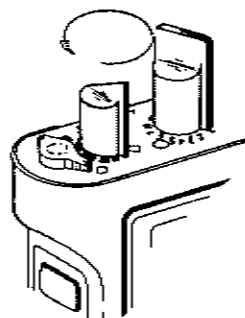
2. Turn the radio off by rotating the volume control fully counterclockwise until you hear a click.

LOADING THE KEY

For secure operation of the SABER SECURENET radio, an encryption key must be loaded from a key loader into the radio's memory. To load the key, connect the key loader cable (TKN8506A) to the universal connector on the back of the radio; the display will show "KEY LOAD." Refer to the key loader's instruction manual for the loading procedure.

SABER SECURENET radios are designed to quickly destroy the key if the battery is removed while the radio is turned on. Removing the battery with the radio turned off guarantees that you will have approximately 30 seconds to replace the battery before the key will be destroyed. If the key is destroyed, the display will show "KEY FAIL," and the key will have to be reloaded as described above.
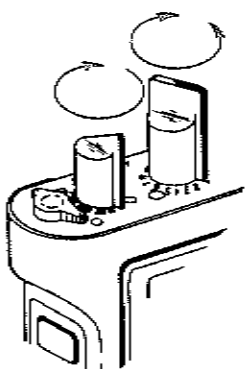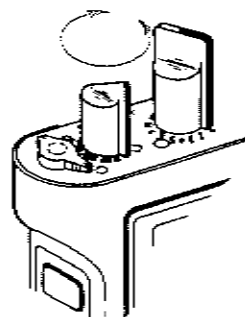
RECEIVING A CALL

1. Turn the radio on and set the channel select switch to the desired position (1, 2, 3, ...).

NOTE
SABER SECURENET radios automatically determine whether a coded or clear message is being received. This allows you to receive either coded or clear voice messages without having to reset the coded/clear selector switch.

2. Listen until you hear a transmission, then adjust the volume control for a comfortable listening level.
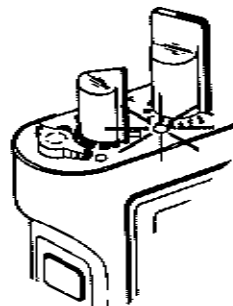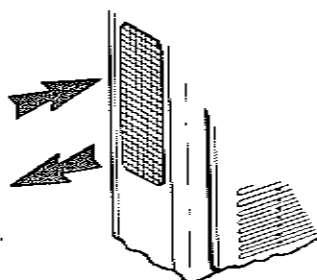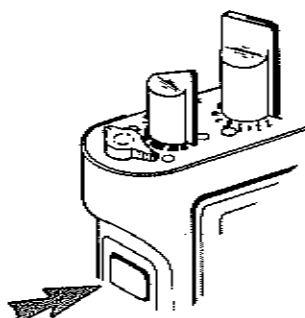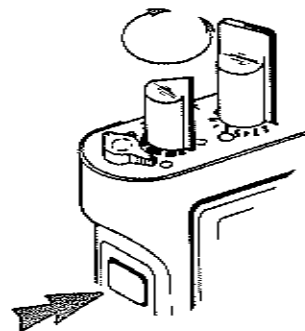
3. If you don't hear a transmission, press and hold the monitor button to unsquelch the radio, then adjust the volume control until the background noise is at a comfortable level.

NOTE
All SABER III radios have the squelch control located inside the radio housing. The squelch level has been pre-set at the factory and is not a user-operated control.

4. For PL/DPL operation, the radio remains squelched until the correct PL/DPL coded call is received. Press and hold the monitor button to monitor the channel, then adjust the volume control.

5. Your radio is now set to receive calls on your frequency.

TRANSMITTING

1. Follow the procedures under "RECEIVING A CALL."

2. Turn the coded/clear selector switch to the desired position:

   $\otimes$ – Coded voice transmission
   $\bigcirc$ – Clear voice transmission

   Your selection will be indicated by a status symbol on the display.

3. Hold the radio in a vertical position with the speaker/microphone grille two to three inches from your mouth.

4. Tap the monitor button to monitor the channel for activity. To avoid interrupting another user, make sure the channel is open before you begin transmitting.

5. When the channel is open, press and hold down the push-to-talk (PTT) switch on the side of the radio, and speak slowly and clearly into the grille area. When you have finished talking (transmitting), release the PTT switch to listen (receive).

NOTE
If your radio is set for clear voice transmission and you press the PTT switch to transmit, you will hear a short alert tone ("beep"), indicating that you are sending a non-coded transmission.

NOTE
Standard radios are equipped with a transmit-indicator light-emitting diode (LED). This red indicator should be on continuously while the PTT switch is being pressed and the radio is transmitting.

IN CASE OF OPERATING PROBLEMS

If you experience operating difficulties with your SABER III radio:

1. Review the appropriate steps in the operating procedures.
2. Be sure that the channel select switch is set to the correct position.
3. Be sure that the coded/clear switch is in the correct position.
4. Be sure that the correct encryption key has been loaded into the radio.
5. Make sure that your radio's battery is charged.
6. If the quality of the transmitted or received signal is poor, check the antenna. It must be undamaged and held in an upright position for maximum range.
7. Try several different operating locations, especially when using the radio inside buildings.
8. Check the transmitter by transmitting to an alternate portable radio or communications receiver.

ALERT TONE INDICATIONS

- **60-Second Time-Out Timer (TOT)**
  If your radio has the "60-second time-out timer" (H251) option, transmission time is limited to 60 seconds. If you hold down the PTT switch longer than 60 seconds, you will hear an alert tone, indicating that your transmission has been cut off. The alert will continue until the PTT switch is released.

- **Non-Standard Time-Out Timer (TOT)**
  If your radio has the "non-standard time-out timer" (H901) option, transmission time is limited to a pre-set value between 1 and 255 seconds. If you hold down the PTT switch longer than the pre-set value, you will hear an alert tone, indicating that your transmission has been cut off. The alert will continue until the PTT switch is released.

- **Transmit On Receive-Only Channel**
  If you press the PTT switch while tuned to a "receive-only" channel, you will hear an alert tone, indicating that no transmission is possible on this channel. The tone will continue until the PTT switch is released.

- **PTT Transmit-Inhibit Alert**
  If your radio has the "transmit-inhibit on busy channel" (H365) option, pressing the PTT switch when the channel is busy will generate an alert tone, indicating that no transmission is possible on this channel. The tone will continue until the PTT switch is released.

- **Clear Mode Alert Tone on Transmit**
  Pressing the PTT switch when the radio is in the clear voice mode will generate a short alert tone (beep), indicating that you are sending a clear voice (not encrypted) transmission. The tone will be heard following any unit I.D. tones, and will precede the transmitted voice.

- **Invalid Switch Position Tone**
  If a radio equipped with a coded/clear selector switch has clear voice or coded voice slaved to a channel, and the position of the switch does not agree with the voice mode slaved to that channel, a tone will be generated. The tone will continue until the coded/clear selector switch is placed in the position that matches the voice mode of the channel.

- **Transmit Mode Switching**
  If the position of the coded/clear selector switch is changed while the PTT switch is being pressed, an alert tone will be generated. The tone will continue until the PTT switch is released.

- **Key Fail Alert**
  If the encryption key has failed or been lost, and the radio is in the coded (encrypted) voice mode, an alert tone will be generated every five seconds. If the PTT switch is pressed, the alert tone will be continuously generated until the switch is released. The radio will not transmit in the coded mode, or receive a coded transmission, without the encryption key.

MULTIFUNCTION LED INDICATIONS

When the PTT switch is pressed, the multifunction LED indicates the radio operating condition:

- Continuous red light -- Normal transmission.
- LED not lighted -- No rf power is being sent to the antenna.
- Blinking red light -- Channel busy (radio in receive mode).

THE "SABER III" MENU OPTIONS

BASIC MENU OPERATION

The SABER III menus let you select and use many of the SABER III radio's programmed options and standard features. Each menu is a series of steps that guides you through the necessary procedure for using a particular feature/option. The general menu procedure shown below is the same for every menu; the details for individual menus vary. Refer to the menu pages for detailed instructions for using a particular menu.

Entering a Menu

1. Press the MENU key until the desired menu header appears.
2. Press the SELECT key to activate the menu. This lets you use the selected menu.

Scrolling Through a Menu

When instructed by the menu pages, use the SELECT key to view the contents of the menu. You can either:

- Press and release the SELECT key to view one item at a time (manual scroll), or
- Press and hold the SELECT key down to view items in succession (automatic scroll). Release the key when you see the item you want.

Storing Information

- When instructed by the menu pages, press the ENTER key to store the displayed information in the radio's memory.

Exiting a Menu

You can exit a SABER III menu in several different ways. In each case, exiting a menu returns you to the default display. Exit a menu at any time by:

- Pressing the MENU key.
- Pressing the PTT switch (unless instructed to do so by the menu pages) when using any menu except "manual interconnect" or "autodial execute."

NOTE
The keypad keys will not function while the PTT switch is being pressed.

- Not pressing any key for a period of 20 seconds.
- Changing the position of the channel selector switch.

Failure to Store a Menu Item

If you are unable to store a menu item (by pressing the ENTER key) due to failure of the SABER III's memory, the message "NO STORE" will appear on the display, and an error tone will be heard. "NO STORE" will remain on the display for two seconds, then the menu will be exited (except for the "keypad mute" and keypad inadvertent lock" menus), and the default display will be automatically shown. Any further attempts to store (ENTER) information will again cause "NO STORE" to be displayed.

NOTE
The "NO STORE" message is a warning that the SABER III's memory has failed in some way and needs attention by an authorized service representative. While "NO STORE" is being displayed, and after it has appeared, your SABER III will still be operational.
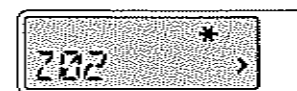
ZONE MENU

The zone menu lets you use the keypad to choose any of the preprogrammed zones. The selector switch on the top of the radio is used to select a specific channel within a zone.

Entering the Menu

1. Press the MENU key until the menu header "ZONE" appears on the display.
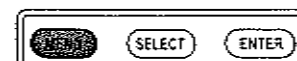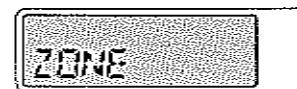
2. Tap the SELECT key. The currently active zone will appear on the display, along with the "*" and ">" annunciators. You can now either use the numeric keypad to directly select the desired zone (see "Directly Selecting a Zone"), or scroll through the menu until you find the zone you want (see step 3).

3. Each time the SELECT key is pressed and released, the display changes (scrolls) to show the next zone in the menu. Scroll through the menu until you find the zone you want, then store the zone as described in "Storing a Zone."
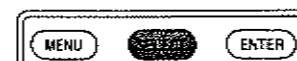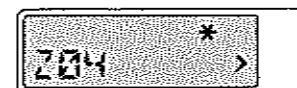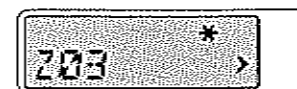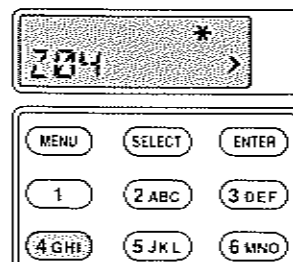
NOTE
Some of the zones in your radio may have been pre-programmed with names as well as numeric designations. Access these zones the same way as the numbered zones. For example to access zone 6, which has the assigned name of "WST," either scroll through the display until "WST" is displayed, or directly select the zone by pressing key 6 (or 06). With direct zone selection, "Z06" will show for one second, then the assigned name will replace it.
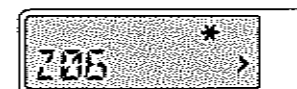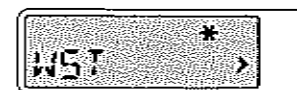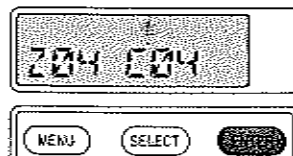
Directly Selecting a Zone

- Press the numeric (0 through 9) key or keys which correspond to the number of the desired zone. The display shows the number you have entered. The selected zone is ready to be stored.

NOTE

If your radio has 10 or more zones, zones "1" through "9" must be addressed as "01" through "09"; for example, when selecting zone 6, press keys "0" and "6."

Storing a Zone

- Press the ENTER key. The displayed zone information is stored in the radio's memory. The "*" and ">" annunciators disappear, and the active channel information returns to the display, indicating that the radio has exited from the zone menu.
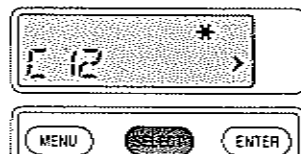
CHANNEL MENU

On SABER III radios with the "channel menu option," only the keypad is used to select a channel. The channel selector switch on top of the radio is disabled and cannot be used.
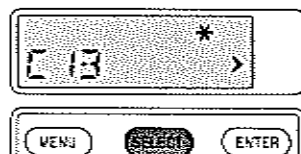
Entering the Menu

1. Press the MENU key until the menu header "CHANNEL" appears on the display.

```
CHANNEL
(MENU) (SELECT) (ENTER)
```
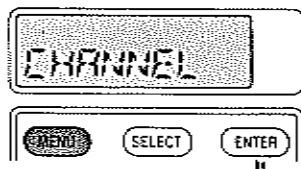
2. Tap the SELECT key. The currently active channel will appear on the display, along with the ">" and "*" annunciators. You can now either use the numeric keypad to directly select the desired channel (see "Directly Selecting a Channel"), or scroll through the menu to find the channel you want (see step 3).

```
C 12  *  >
(MENU) (SELECT) (ENTER)
```

3. Each time the SELECT key is pressed and released, the display changes (scrolls) to show the next channel in the menu. Scroll through the menu until the channel that you want is showing on the display, then store the channel as described in "Storing a Channel."

```
C 13  *  >
(MENU) (SELECT) (ENTER)
```

```
C 14  *  >
(MENU) (SELECT) (ENTER)
```

```
LAKESIDE  *  >
```

```
C 06  *  >
```

NOTE
Some of the channels in your radio may have been pre-programmed with names as well as numeric designations. Access these channels the same way as the numbered channels. For example, to access channel 6, which has the assigned name of "LAKESIDE," either scroll through the display until "LAKESIDE" is displayed, or directly select the channel by pressing key 6 (or 06). When the channel is directly selected, "C 06" will show for one second, then the assigned name will replace it.

Directly Selecting a Channel

• Press the numeric (0 through 9) key or keys which correspond to the number of the desired channel. The display shows the number you have entered. The selected channel is ready to be stored.

```
C 14  *  >
(MENU) (SELECT) (ENTER)
(1) (2 ABC) (3 DEF)
(4 GHI) (5 JKL) (6 MNO)
```
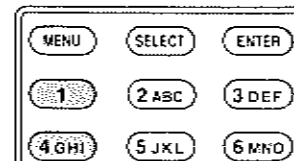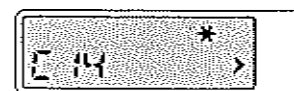
NOTE
If your radio has from 10 to 99 channels, channels "1" through "9" must be addressed as "01" through "09"; for example, when selecting channel 6, press keys "0" and "6." Similarly, if your radio has 100 or more channels, address channels "1" through "9" as "001" through "009."

Storing a Channel

• Press the ENTER key. The displayed channel information is stored in the radio's memory, and the "*" and ">" annunciators disappear. The radio has exited from the channel menu.

```
C 14
(MENU) (SELECT) (ENTER)
```
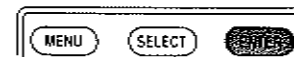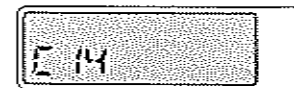
MANUAL INTERCONNECT MENU

The manual interconnect menu lets you use the keypad to make telephone calls from your SABER III radio. The menu includes "last number redial" and "scratchpad" features.

Entering the Menu

1. Press the MENU key until the menu header "*PHONE*" appears on the display.

PHONE

MENU SELECT ENTER

2. Tap the SELECT key. "*PHONE*" is replaced by "*ACCESS*" and the ">" annunciator.

ACCESS >

MENU SELECT ENTER

3. Tap the ENTER key. The pre-programmed access code is transmitted. If you hear a dial tone, the access was successful; you can now make a telephone call. If you don't hear a dial tone (access unsuccessful), use the SELECT key to scroll through the menu until "*ACCESS*" AND ">" are again showing (step 2).

MENU SELECT ENTER

Making a Telephone Call

1. If no phone number has been dialed since the radio was turned on, the display will be blank, except for the "*" and ">" annunciators. If this is the case, go to step 3.

*
>

2. If a phone number has been dialed since the radio was turned on, the number and the "*" and ">" annunciators will be displayed. To redial this number, tap the PTT switch, then go to step 4.

4759747 *>

3. If no number is displayed, or if you want to dial a number other than the one shown on the display, just press the sequence of keys as you would on a telephone. The tones are transmitted as the keys are pressed, and the digits of the number are displayed from left to right.

7558420 *>

4. When you have finished dialing and have reached the desired party, use the PTT switch to carry on with your conversation. Press and hold down the PTT switch to talk; release the switch to listen.

Hanging Up

1. When you are finished conversing or storing a number in the scratchpad, or if you did not reach the party you were calling, press the SELECT key. The display changes to show "*HANG UP*" and the ">" annunciator.

HANG UP >

MENU SELECT ENTER

2. From this point, you can either store a number in the scratchpad (see "Storing a Number in the Scratchpad") before hanging up, or hang up immediately.

18

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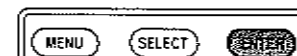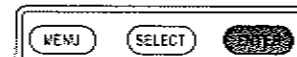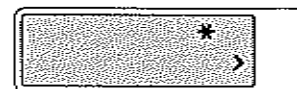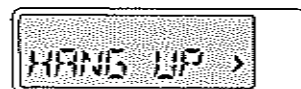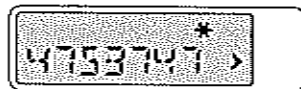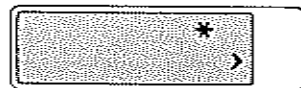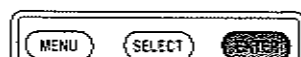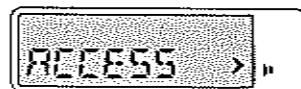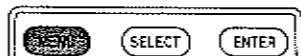
3. To hang up, press the ENTER key. The pre-programmed hang-up code is transmitted, and "*HANG UP*" and ">" are replaced by "*ACCESS*" and ">."

ACCESS >

MENU SELECT ENTER

4. If you want to dial a new number, or redial the last number called, press the ENTER key and follow the procedure described under "Making a Telephone Call."

MENU SELECT ENTER

Storing a Number in the Scratchpad

The scratchpad feature lets you enter a number which the radio will treat as though it were the last number dialed. The number will remain in memory until the radio is turned off, a new number is stored in the scratchpad, or a new number is dialed.

1. Press the SELECT key while "*HANG UP*" and ">" are displayed. "*HANG UP*" is replaced by "*NEW NBR*." The radio is now in the scratchpad mode.

NEW NBR >

MENU SELECT ENTER

2. Press the ENTER key to clear the display. "*NEW NBR*" disappears, the "*" annunciator appears, and the ">" annunciator remains.

*
>

MENU SELECT ENTER

3. Enter the telephone number to be stored by pressing the sequence of keys as you would on a telephone; the ">" annunciator disappears. The digits are displayed from left to right, but no tones are transmitted.

5562000 *>

4. Press the ENTER key to store the number in the scratchpad. The "*" annunciator disappears, the phone number remains, and the ">" annunciator reappears.

5562000 >

MENU SELECT ENTER

5. Go to "Hanging Up," on preceding page.

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AUTODIAL EXECUTE MENU

The autodial execute menu lets your SABER III automatically dial a pre-programmed telephone number. This number is selected from a directory of up to nine numbers which have been programmed into the SABER III with the optional field programmer. The telephone number listing can appear on the display as a number (*4756737*), a name (*JOHN*), a location (*AREA 4*), or any other convenient short term or phrase.

NOTE
Be sure the radio is in the clear mode (○ symbol showing on the display) before dialing a telephone number. Once you have dialed the number, you can place the radio in the coded mode (Q symbol showing on the display) if you desire.

Entering the Menu

1. Press the MENU key until the menu header *"AUTODIAL"* appears on the display.

2. Tap the SELECT key. The first pre-programmed listing will appear on the display, along with the "*" and ">" annunciators. You can now either use the numeric keypad to directly select the desired listing (see "Directly Selecting a Listing"), or scroll through the menu until you find the listing you want (see step 3).

3. Each time the SELECT key is pressed and released, the display changes (scrolls) to show the next listing in the menu. Scroll through the menu until you find the listing you want, then dial the number as described in "Dialing a Telephone Number."
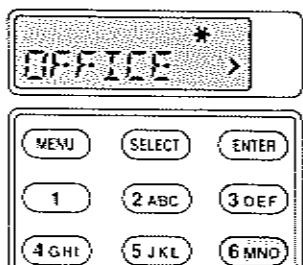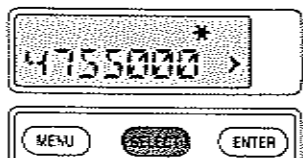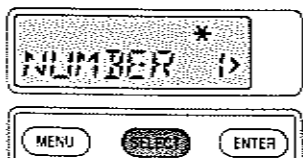
Directly Selecting a Listing

- Using the numeric (1 through 9) keys, enter the number of the listing's directory position; for example, to call up the sixth listing in the directory, press the 6 key. The display shows the listing associated with the number you have entered. The selected listing is ready to be dialed.

Dialing a Telephone Number

1. Press the ENTER key. This changes your radio's frequency to that of the channel assigned to the selected number, and allows you to use the monitor button to monitor the channel for activity. After monitoring the channel, press the ENTER key again to send out the pre-programmed access code.

2. If the access is successful, you will hear a dial tone and the "*" annunciator will disappear from the display. If you don't hear a dial tone (access unsuccessful), you can either retransmit the access code by pressing the ENTER key again, or go to "Hanging Up."

3. Tap the PTT switch to transmit the phone number associated with the listing shown on the display.

4. When the called party answers, press and hold down the PTT switch to talk; release the switch to listen.
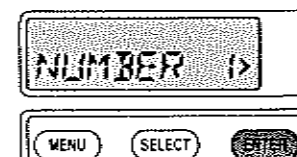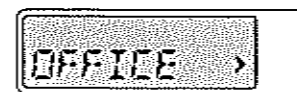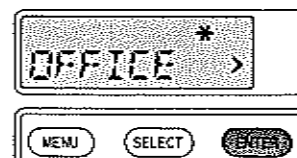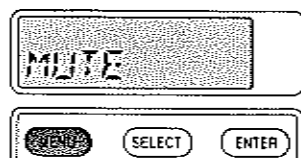
Hanging Up

1. When you have completed your conversation, press the SELECT key. The displayed listing is replaced by "*HANG UP*" and the ">" annunciator.

2. Press the ENTER key to transmit the pre-programmed hang-up code. "*HANG UP*" is replaced by the first pre-programmed directory listing and the "*" annunciator (step 2 of "Entering the Menu"); the ">" annunciator remains.
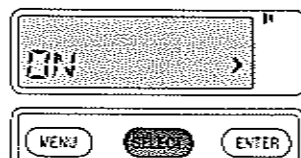
KEYPAD MUTE MENU

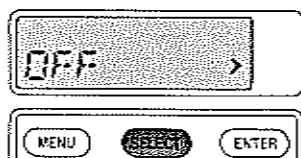The keypad mute menu lets you turn off/on the tones heard each time a keypad key is pressed.

Entering the Menu

1. Press the MENU key until the menu header 'MUTE' appears on the display.

Changing the Mute State

1. To change the mute state, tap the SELECT key. The display changes to show the opposite mute state; that is, if the displayed mute state was ON, it will change to OFF.

2. To change the mute state back, tap the SELECT key again. Each time the SELECT key is pressed, the display will change to show the opposite mute state.

3. When the desired mute state is shown on the display, it is ready to be stored.
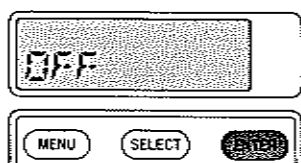
Storing a Mute State

• Press the ENTER key. The ">" annunciator disappears, indicating that the displayed mute state has been stored in memory. The stored mute state will be retained in memory after the radio has been turned off; it will remain in effect until changed as described above.

    NOTES

    • If you don't store the mute state (by pressing the ENTER key), it will remain in effect only while the radio is turned on.

    • You can reactivate the keypad mute menu after the mute state has been stored if you press the SELECT key before the radio's pre-programmed time-out period has elapsed.

2. Tap the SELECT key. The current mute state (keypad tones ON or keypad tones OFF) appears on the display, along with the ">" annunciator.

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KEYPAD INADVERTENT LOCK MENU

To protect against inadvertent keypresses, the keypad inadvertent lock menu lets you temporarily prohibit access to any other menu, and the use of the numeric (0 to 9), "*," and "#" keys. You will still be able to access this menu.

Entering the Menu

1. Press the MENU key until the menu header 'LOCK' appears on the display.

Changing the Keypad Lock State

1. To change the keypad lock state, tap the SELECT key. The display changes to show the opposite keypad lock state; that is, if the displayed lock state was UNLOCKED, it will change to LOCKED.

2. To change the keypad lock state back, tap the SELECT key again. Each time the SELECT key is pressed, the display will change to show the opposite lock state.

3. When the desired keypad lock state is shown on the display, it is ready to be stored.
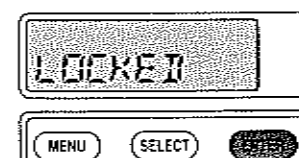
Storing the Keypad Lock State

• Press the ENTER key. The ">" annunciator disappears, indicating that the displayed keypad lock state has been stored in memory. The stored lock state will be retained in memory after the radio has been turned off; it will remain in effect until changed as described above.

    NOTES

    • If you don't store the lock state (by pressing the ENTER key), it will remain in effect only while the radio is turned on.

    • You can reactivate this menu after the lock state has been stored if you press the SELECT key before the radio's pre-programmed time-out period has elapsed.

2. Tap the SELECT key. The current keypad lock state (keypad LOCKED or keypad UNLOCKED) appears on the display, along with the ">" annunciator.

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KEYPAD SECURITY LOCK MENU

The keypad security lock menu allows you to temporarily "lock" your SABER III to protect it from unauthorized use. While the radio is "locked," access to all other menus will be disabled. The other menus will not be enabled until the radio is "unlocked." To lock or unlock the radio, a password, previously created using the password menu, must be entered.
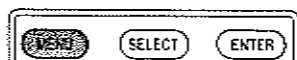
Entering the Menu

1. Press the MENU key until the menu header "*SECURITY*" appears on the display.
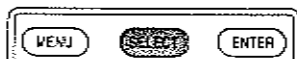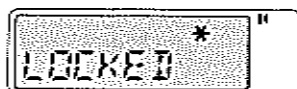
2. Tap the SELECT key. The current keypad lock state (keypad *LOCKED* or keypad *UNLOCKED*) and the "*" annunciator are displayed.

   NOTES
   - If no password has been created, the keypad lock state will be *UNLOCKED*.
   - If you press the SELECT key again, you will hear an error tone. This occurs because the ">" menu annunciator is absent and no additional information within the menu is available.

Changing and Storing the Keypad Lock State

1. To change the keypad lock state, use the keypad to enter the current keypad security lock password. In this example, the password is "156." The display will not change while you are entering the password.

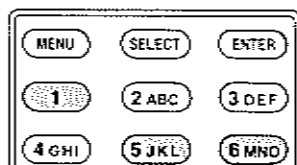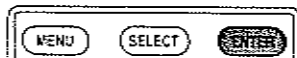2. When you have finished entering the password, press the ENTER key. If a valid password has been entered, the "*" annunciator will disappear, and the new keypad lock state will be displayed and stored in memory. The displayed state will be the opposite of the previous state.

   NOTES
   - If you press the ENTER key again, you will hear an error tone. This occurs because the lock state shown on the display has already been stored in memory.
   - If you wish to change the keypad lock state again at this point, press the SELECT key again and follow the "Changing and Storing the Keypad Lock State" procedure above.
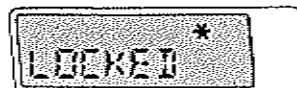
RADIO LOCK MENU

The optional radio lock menu completely disables the operation of your SABER III whenever it is first turned on. All transmit controls, receive functions, and alert tones will be disabled. To unlock and use the radio, you must enter a pre-defined password from the keypad each time you turn the radio on.

NOTES
- You will not be able to transmit or receive until the radio is unlocked.
- Pressing the MENU, SELECT, or any of the numeric (0 - 9), "#," or "*" keys will have no effect on the display.

Unlocking the Radio

1. When the SABER III is first turned on, it automatically goes into a locked state. The display shows "*LOCKED*," and the "*" annunciator.

2. To unlock the radio, the radio lock password must first be entered. SABER III radios that are factory-equipped with the radio lock option are shipped pre-programmed with a null radio lock password (no password). Until a new password has been programmed (via the password menu) into the radio, skip the rest of this step and go directly to step 3.
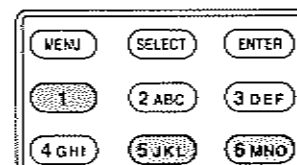
   If a new password has been programmed into the radio, enter the password from the keypad to unlock the radio. In this example, the pre-programmed password is "156." The display will not change while you are entering the password.

   NOTE
   If you make a mistake while entering the password digits, press the SELECT key and enter the entire password again.
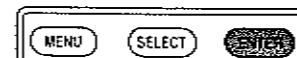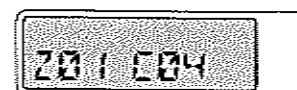
3. When you are done entering the password (or if the radio has a null password), press the ENTER key. If a valid password has been entered, the "*" annunciator disappears from the display, and the default or active state display (channel, or zone and channel) is shown. The radio is now unlocked, and will remain unlocked until it is turned off.

   NOTE
   If the ENTER key is pressed after an invalid password has been entered, the SABER III will remain in the locked state, and you will have to re-enter the password.

PASSWORD MENU

The password menu lets you create, or change, the passwords which are used to alter the lock states in the radio lock and keypad security lock menus. Radios that are factory-equipped with the radio lock or keypad security lock options are shipped with null (unprogrammed) passwords. These passwords will have to be programmed by you. A password can be from one to eight characters long; it may include any combination of numerical digits (0 through 9), #, and *

Entering the Menu

1. Press the MENU key until the menu header "PASSWORD" appears on the display.

2. If your radio has either the radio lock option or the keypad security lock option, but not both, press the SELECT key. On the display, "PASSWORD" is replaced by "OLD PWD." You can now create or change a password. Go directly to "Creating or Changing a Password."
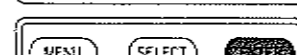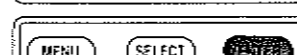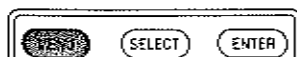
   If your radio has both the radio lock and keypad security lock options, you must first select the type of password to be created or changed.

Selecting the Password Type

1. Press the SELECT key. The radio lock password is selected. On the display, "PASSWORD" and "*" are replaced by "RADIO" and ">." If you wish to change this password, skip the next step and go directly to step 3, below.

2. Press the SELECT key again. The keypad security lock password is selected. On the display, "RADIO" is replaced by "KEYPAD." From this point, you can either press the SELECT key again to go back to the radio lock password in step 1, above, or change the keypad security lock password by going on to step 3.

3. Press the ENTER key. The display shows "OLD PWD," and the "*" annunciator. You can now create or change the password.

Creating or Changing a Password

1. Whether you are creating a password for the first time, or changing an existing one, you must first input the password that is currently stored in the radio.

   • If you are creating a password for the first time, simply press the ENTER key; the null password stored in the radio is automatically input.

   • If you are changing an existing password, input the password at the keypad, then press the ENTER key.

   In either case, on the display the "*" is replaced by the ">."

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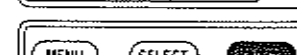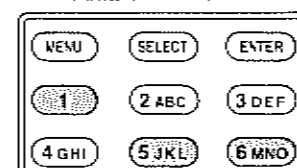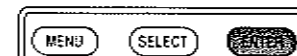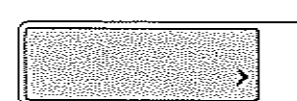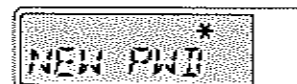
2. Two seconds later, "OLD PWD" and ">" are replaced by "NEW PWD" and "*." You must now choose between entering a null password (no password) (steps 3 and 6), or a new password (steps 4 through 6).

3. To enter a null password, simply press the ENTER key. "NEW PWD" and "*" are replaced by ">." Skip steps 4 and 5 and go directly to step 6.

4. To enter a new password, input in the new password number from the keypad. The new password can be from one to eight digits long, and may include any combination of 0 through 9, #, and *. The "#" will appear on the display as a "+." The first numeric key pressed causes "NEW PWD" on the display to be replaced by the value of that key. Subsequent keypresses are displayed from left to right.

   NOTES
   • If you enter a ninth digit, it will appear at the leftmost position of the display and all previously entered values will disappear.
   • If you wish to re-enter the password, tap the SELECT key before going on to step 5. "NEW PWD" will reappear on the display.

5. When you have finished entering the new password, press the ENTER key. The "*" annunciator on the display is replaced by ">."

6. Two seconds later, the display changes to show "COMPLETE," and the ">" disappears. The password has been stored.

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BATTERIES

The SABER III radio gets its power (7.5Vdc) from a Motorola rechargeable nickel-cadmium (Ni-Cd) battery, or non-rechargeable mercury battery. This safe, dependable power source is designed specifically for use in the SABER radios. Proper care of the battery will ensure its effectiveness and allow peak performance of the radio.

Take care to avoid external short-circuiting of the battery. A sustained high-rate of discharge (for example, a paper clip placed accidentally across the battery terminals or contacts) could permanently damage the battery, void the battery warranty, and create a burn or fire hazard.

WARNING

Do Not dispose of battery in fire or incinerator;
this may cause an explosion.

Do Not attempt to charge a mercury battery.

RECHARGING BATTERIES

The battery should be fully charged before use to ensure optimum capacity and performance. The battery was designed to be charged only in a Motorola battery charger. Charging in non-Motorola equipment may lead to battery damage and voids the battery warranty. If a battery is being charged for the first time, or if it has been stored for a prolonged period of time, a minimum charge time of 14 hours will be required. Subsequent charges will require about one hour of charge time.

Charging temperature of the battery should be at about 77°F (room temperature) whenever possible. Charging a cold battery (below 45°F) may result in leakage of electrolyte, and, ultimately, in failure of the battery. Charging a hot battery (above 95°F) results in reduced discharge capacity, affecting performance of the radio. SABER battery chargers contain a temperature sensing circuit to ensure the battery is charged within these temperature limits. For additional information on batteries and battery charging, refer to battery charger manual 68P81106C65 (single-unit charger) or 68P81106C66 (multiple-unit charger).

Memory Effect. An Ni-Cd battery may exhibit a phenomenon known as "memory effect" (reduced capacity). This is caused by either continuous overcharge for long periods, or repetitive shallow cycling.

If the battery is lightly or infrequently used, and is allowed to charge over a long period of time (30-60 days), it may develop memory effect; that is, the voltage may be sufficiently lowered on the first discharging cycle to reduce the battery's useful service hours.

A more common type of memory effect is induced by uniform shallow cycling. For example, if the battery is operated so that it repeatedly delivers 50% of its full capacity, it can temporarily become inactive, and, when current demand is increased, it may show a sharp decrease in its ability to deliver full capacity.

Any Ni-Cd battery which shows early signs of reduced capacity should be checked for memory effect before it is returned under warranty or is discarded. If the battery is exhibiting memory effect, an effective reconditioning method is a complete discharging of the battery (deep discharge), followed by a recharge. One or two deep-discharge/charge cycles are usually sufficient to restore the battery. A deep-discharge cycle involves switching the radio on and allowing the battery to completely discharge overnight.

For additional information on Motorola's nickel-cadmium batteries, write to:

Motorola, Inc.
Battery Marketing Department
8000 W. Sunrise Blvd.
Ft. Lauderdale, FL 33322
Telex: 441464

ACCESSORIES
LIST OF ACCESSORIES

| MODEL NO.	DESCRIPTION
NAD6471A	ANTENNA, HELIFLEX (136-150.8MHz)
NAD6472A	ANTENNA, HELIFLEX (146-162MHz)
NAD6473A	ANTENNA, HELIFLEX (157-174MHz)
NAE6131A	ANTENNA FOR PUBLIC SAFETY MICROPHONE (403-433MHz)
NAE6132A	ANTENNA FOR PUBLIC SAFETY MICROPHONE (440-470MHz)
NAE6133A	ANTENNA FOR PUBLIC SAFETY MICROPHONE (470-512MHz)
NAE6431A	ANTENNA, HELIFLEX (403-433MHz)
NAE6432A	ANTENNA, HELIFLEX (440-470MHz)
NAE6434A	ANTENNA, HELIFLEX (470-512MHz)
NAE6440A	ANTENNA, WHIP (403-512MHz)
NLN4529A	BELT LOOP, 2½ IN. SWIVEL
NLN4530A	BELT LOOP, 3 IN. SWIVEL
NMN6128A	MICROPHONE, REMOTE
NMN6129A	MICROPHONE, PUBLIC SAFETY
NTN4592A	BATTERY, NICKEL-CADMIUM, LIGHT-CAPACITY
NTN4593A	BATTERY, NICKEL-CADMIUM, MEDIUM-CAPACITY
NTN4595A	BATTERY, NICKEL-CADMIUM, ULTRA-HIGH-CAPACITY
NTN4675A	CASE, SWIVEL, LIGHT-CAPACITY BATTERY
NTN4676A	CASE, SWIVEL, MEDIUM-CAPACITY BATTERY
NTN4677A	CASE, SWIVEL, HIGH-CAPACITY BATTERY
NTN4678A	CASE WITH LOOP, LIGHT-CAPACITY BATTERY
NTN4679A	CASE WITH LOOP, MEDIUM-CAPACITY BATTERY
NTN4680A	CASE WITH LOOP, HIGH-CAPACITY BATTERY
NTN4734A	CHARGER, SINGLE-UNIT, 110V WITH DOMESTIC LINE CORD (RAPID RATE)
NTN4788A	BELT CLIP ATTACHMENT
NTN4796A	CHARGER, MULTI-UNIT, 110V WITH DOMESTIC LINE CORD (RAPID RATE)
NTN4797A	CHARGER, MULTI-UNIT, 220-240V WITH DOMESTIC LINE CORD (RAPID RATE)
NTN5003A	T-STRAP, NYLON
NTN5025A	COVER, UNIVERSAL CONNECTOR
NTN5212A	SURVEILLANCE ADAPTER, THREE WIRE
NTN5213A	SURVEILLANCE ADAPTER, TWO WIRE

UNIVERSAL CONNECTOR COVER INSTRUCTIONS

The universal connector cover protects the universal connector. The cover should be installed whenever the radio is not being used with an accessory.

Removing The Cover

1. Loosen the screw on the cover.
2. Lift the cover up and away from the radio and store it in a convenient place.

Installing The Cover

1. Looking at the back of the radio, insert the tab on the cover into the slot just below the universal connector.
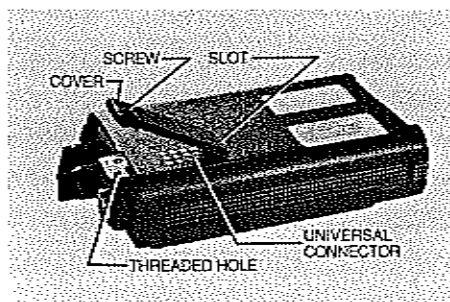
2. Pivot the cover toward the radio until the connector is completely covered and the screw on the cover mates with the threaded hole on the connector.
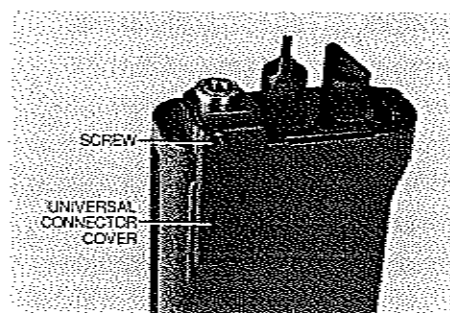
3. Snugly tighten the screw (0.3 in. lb.) to hold the cover in place. **DO NOT OVERTIGHTEN THE SCREW.**

CONNECTING AN ACCESSORY

CAUTION

Although the accessory connectors used with other Motorola radios are similar in appearance to the ones designed for the "SABER III," they are incompatible with the SABER III's universal connector. If you try to use them with your SABER III radio, it will not operate properly.

Remote and Public Safety Microphones

These units are connected by a cable and accessory connector to the universal connector on the back of the radio. To attach the accessory connector to the universal connector, refer to the accessory's instruction manual:

Remote Microphone	— 68P81106C67
Public Safety Microphone	— 68P81106C68

GENERAL
CLEANING PROCEDURES

The external surfaces of the SABER III radio, including the housing and battery case, may be cleaned when necessary. The only cleaning agent recommended for these external surfaces is a 0.5% solution of a mild dishwashing detergent in water (one teaspoon of detergent per gallon of water). The detergent/water solution should be applied sparingly with a stiff, non-metallic, short-bristled brush to work all loose dirt away from the radio. A soft, absorbent, lintless cloth or tissue should then be used to remove the solution and dry the radio. Make sure that no water remains entrapped near the connectors, cracks, or crevices.

OTHER "SABER III" OPTIONS

A number of options can be ordered to enhance the operation of your SABER III, or custom-tailor it to fit your particular needs. Some of these options are listed below.

- **Transmit Inhibit on Busy Channel:** If a radio is equipped with the H365 "transmit inhibit on busy channel" option, pressing the PTT switch while carrier is present and an incorrect PL/DPL code is detected will cause all transmitter functions to be disabled, and a warning tone to be generated. The transmitter will also be disabled if a secure coded signal is detected. The monitor button is disabled with this option.

  NOTE
  This option is operational only on channels that have PL/DPL selected.

- **MDC Unit I.D. Options:** Radios equipped with these options automatically transmit an identifying code (unit I.D.) to the base station which tells the operator which radio is "on-the air." Depending on your system's requirements, the unit I.D. will be sent whenever the PTT switch is pressed, released, or both. The unit I.D. tones will be heard as they are being transmitted; when the tones end, start your voice message in the normal manner.

  NOTE
  You cannot transmit a voice message while the I.D. tones are being sent.

  There are several MDC unit I.D. options available:

  - **Unit I.D.:** With the H958 (MDC 600) or H959 (MDC 1200) "unit I.D." option, the unit I.D. tone is transmitted each time the PTT switch is pressed. This feature can be disabled on a per channel basis.

  - **Unit I.D. with Emergency:** With the H961 (MDC 600) or H962 (MDC 1200) "unit I.D. with emergency" option, the unit I.D. tone is transmitted every time the PTT switch is pressed. This feature can be disabled on a per channel basis.

    This option also adds an emergency button to the top of radio. Pressing this button causes the radio to repeatedly transmit an alarm code which includes the unit I.D. tone. While the emergency sequence is being transmitted, the transmit LED and tone are disabled. Whenever the emergency button is pressed, this option will override the "transmit inhibit on busy channel" option (H365), if the radio is equipped with it.

  - **Unit I.D. with Audible Emergency Alarm:** With the H963 (MDC 600) or H967 (MDC 1200) "unit I.D. with emergency alarm" option, the unit I.D. tone is transmitted every time the PTT switch is pressed. This feature can be disabled on a per channel basis.

    This option also adds an emergency button to the top of the radio. Pressing this button causes the radio to repeatedly transmit an audible alarm code which includes the I.D. tone. While the emergency sequence is being transmitted, the transmit LED and tone are enabled. Whenever the emergency button is pressed, this option will override the "transmit inhibit on busy channel" option (H365), if the radio is equipped with it.

- Unit I.D. with Emergency Revert: With the H923 (MDC 600) or H946 (MDC 1200) "unit I.D. with emergency revert" option, the unit I.D. tone is transmitted every time the PTT switch is released. This feature can be disabled on a per channel basis.

  This option also adds an emergency button to the top of the radio. Pressing this button causes the radio to repeatedly transmit an alarm code which includes the unit I.D. tone. The alarm code is transmitted on a pre-assigned channel (one per zone on zone/channel radios, or one per radio on channel-only radios). While the emergency sequence is being transmitted, the transmit LED and tone are disabled. Whenever the emergency button is pressed, this option will override the "transmit inhibit on busy channel" option (H365), if the radio is equipped with it.

- Omit MDC Side Tones: When a radio is equipped with the H619 option, MDC tones are not heard.

- Display Name Options: The display name options allow you to assign alphanumeric names to SABER III's zones, or channels, or both. If you decide to have both zone and channel display names in your radio, zone names will be limited to three alphanumeric characters; you will be able to assign up to five characters to channel names. If you have a "channel only" radio, you may use all eight display characters for channel names. On the display, no blank spaces will appear between zone and channel designators unless specified when the order is written up. Two display name options are available:

  - Zone Display Names: The H346 option allows you to assign alphanumeric names to your radio's zones.

  - Channel Display Names: The H380 option allows you to assign alphanumeric names to your radio's channels.

- Omit Alert Tones: When a radio is equipped with the H153 "omit alert tones" option, all alert tones are permanently disabled. This option is enabled for every channel in the radio.

- Channel Busy LED: With the H359 "channel busy LED" option, a visual indication of the receive channel's state is automatically provided; no manual interrogation is required. A flashing red LED indicates that carrier is present on the receive channel; absence of the LED indication signifies that the channel is open.

SAFETY INFORMATION

The Federal Communications Commission (FCC), with its action in 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* hold the radio with the antenna very close to, or touching, exposed parts of the body, especially the face or eyes, while transmitting. The radio will perform best if the microphone is two or three inches away from the lips and the radio is vertical.

- *DO NOT* hold the transmit (PTT) switch down when not actually desiring to transmit.
- *DO NOT* allow children to play with any radio equipment containing a transmitter.
- *DO NOT* operate a transmitter near unshielded electrical blasting caps or in an explosive atmosphere unless it is a type qualified for such use.

SERVICE INFORMATION

If any operational difficulties should arise, report them to authorized maintenance personnel. Proper repair and maintenance procedures will assure efficient operation and long life for this radio. A Motorola maintenance agreement will provide this at minimum cost. Motorola will provide expertly trained personnel to keep all your two-way radio equipment in perfect operating condition.

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