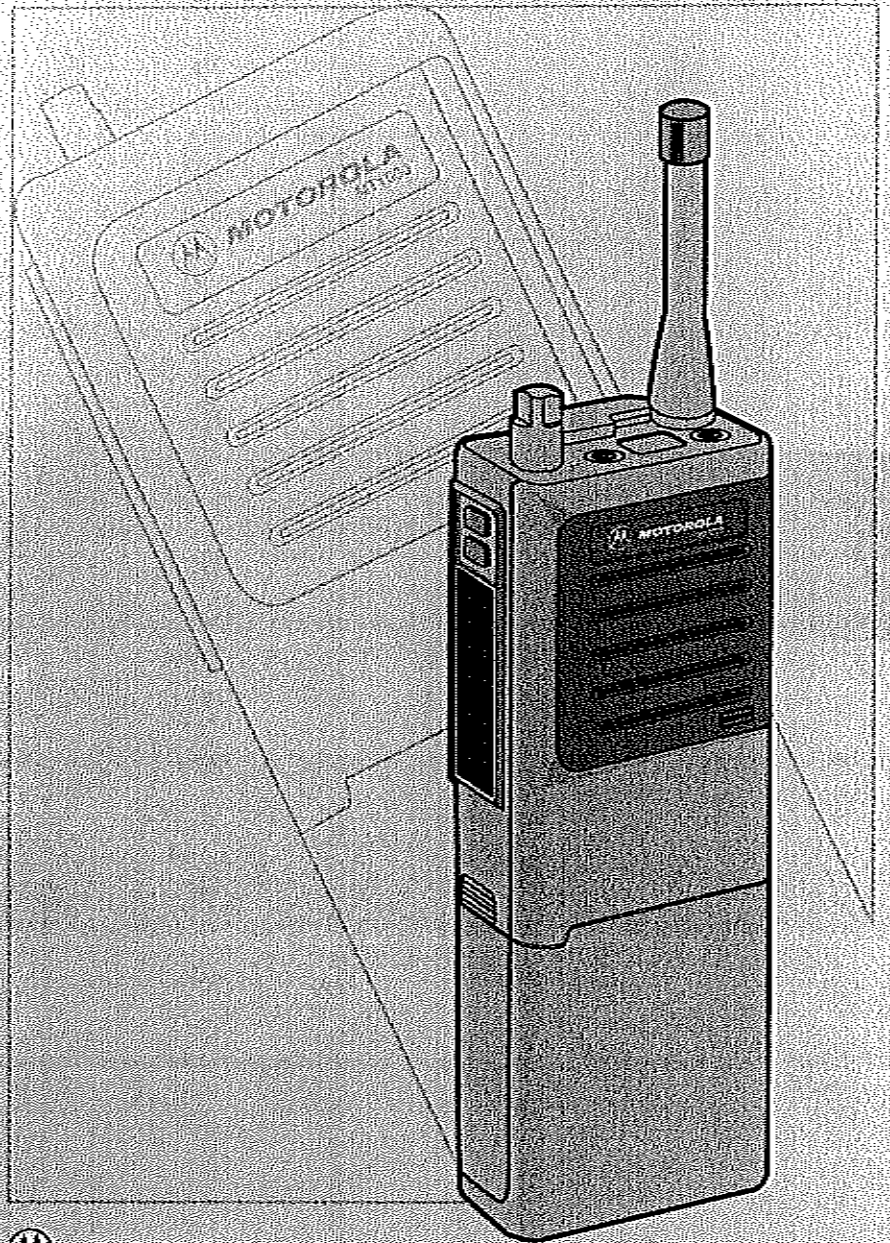


MT1000™ Portable Radios

operating instructions



In case of difficulty, review the operating instructions to ensure that all directions are clearly understood and closely followed. If difficulties persist, please check the following items before requesting service.

1. Check the antenna; it must be undamaged and seated firmly against the antenna bushing.

2. Make sure the antenna is held in a vertical position while operating. Performance may be improved by trying different operating positions and locations, especially if you are inside a building. Communication range will be greatly reduced if the unit is operated at waist level and close to the body. The Public Safety Remote Speaker Microphone with Antenna will improve performance for UHF radios under these conditions.

3. Check the transmit LED. Transmitter performance may be measured by the LED; it should glow brightly while transmitting. A flashing red LED may indicate a discharged battery or transmitter fault condition.

4. Check the rotary and toggle switch settings. Programmed channels are specified on the Radio Information Instruction Sheet.

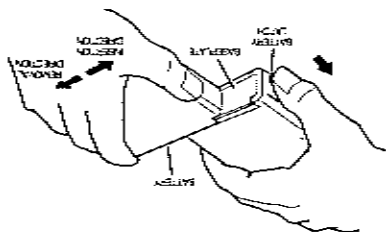
c. Check the battery and replace it if weak or damaged. Charge the battery if necessary.

HOURS Mon.-Fri.
1-800-523-4007 (USA only)
1-305-475-6170 (elsewhere)
Eastern Time

Top of



- Install battery by making notch end of battery with groove baseplate on radio. Then slide battery forward battery latch until engaged.
- Remove battery by disengaging battery latch (push and hold latch toward top of radio) and slide battery away from latch.



MT1000™ Portable Radios

Contents

Introduction	1
Motorola MT1000 Radio	2
General Information	3
Unpacking	4
Packaged Model Contents	4
Controls, Switches, Indicators and Connectors	6
Alert Tone Indicators	7
Multifunction LED Indicators	8
Radio Model Information	9
Operating Procedures - Standard Radio	10
Antenna Installation	10
Battery Installation or Replacement	11
Radio On/Off, Power-Up	11
Receiving a Call	11
Transmitting	12
Operating Procedures - Radio with Options	13
PAC•RT® Transmit Only	13
Channel Scan	17
Quik-Call II™	18
Single Tone™ Signalling	19
Touch-Code™ Dual-Tone Multiple-Frequency (DTMF)	21
Touch-Code DTMF Encode/Decode	23
Transmit Inhibit on Busy Channel	23
MDC Signalling	25
Time-Out-Timer, 60-Second	25
Omit Alert Tones	25
LED Disable	25
Battery Saver	26
Battery Information	26
Recharging Batteries	27
Memory Effect	27
General Radio Care	27
Cleaning	27
Handling	27
Administration and Regulations	28
FCC Safety Standards	28
Hazardous Atmosphere Operation	29
Restrictions	30
Service	30
Operating Hints	31
Accessories	31
Computer Software Copyrights	34

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Contents
MT1000™ Portable Radio

Basic Operating Procedure Radio On/Off

1. Turn radio on by rotating volume control clockwise.
2. Turn radio off by rotating volume control counterclockwise.

To Receive:

1. Turn radio on and select desired channel using rotary switch (rotary radios), or channel selector controls (up/down buttons) and LCD display (display radios).
- 2a. For "Private-Line" (PL) squelch operation, place mode select switch in PL position (⌘). With Channel Busy Option, green LED flashes if operating channel is busy.
- 2b. For carrier squelch operation, place mode select switch in carrier squelch position (⌘).

To Transmit:

1. Turn radio on and select desired channel using rotary switch (rotary radios), or channel selector controls (up/down buttons) and LCD display (display radios).
2. Monitor channel for activity.
3. When channel is clear, press PTT switch and speak slowly and clearly into speaker grille area. When finished transmitting, release PTT switch to receive.
Note: LED indicates continuous red/orange for normal transmission. LED flashes red/orange to indicate low battery.

Programming Channel Scan: Since there is not an LCD on rotary radios to review the scan list, when entering the scan program mode (rotary radios), the entire stored scan list is erased when a channel is programmed in the scan list.

1. Turn radio on and enter scan program mode by pressing and holding the "LCD Backlight/Channel Scan" program button (L/S button), and placing mode select switch in scan (⌘) position. A continuous alert tone is generated until the L/S program button is released. While the radio is in program mode, all transmit and receive functions are inhibited.
2. Assign channels (one at a time) to program positions (max. eight) as follows:

Display Radios

- Press and release L/S program button until "00" (unprogrammed position) is displayed on LCD. Release L/S program button. **Note:** If all eight positions are already programmed, refer to "revise the scan list".
- Using channel selector controls, select the channel to be assigned to this program position.
- Program this channel into the scan list by pressing PTT switch. A momentary alert tone indicates the scan program accepted the entry.

Rotary Radios

One at a time, each of the eight scan program positions can be assigned a channel. To do this:

- Select the channel to be scanned by rotating the channel selector switch to the channel number desired. Program this channel into the scan list by pressing the PTT switch. A momentary alert tone will be generated to indicate that the scan program accepted the entry.
- 3. Repeat step 2 until all desired channel scan positions are programmed into the scan list. A maximum of eight channel scan positions are available.

Exit the program mode by placing mode select switch in either carrier squelch (⌘) or PL squelch (⌘) position. A momentary alert tone indicates the scan program mode was exited.

To revise the scan list: On rotary radios, the entire scan list is erased each time a new channel is programmed. A new list must be entered. For display radios, revise the scan list as follows:

- Enter program mode as described in step 1.
- Press and release L/S program button until channel to be changed is displayed.
- Remove channel from the scan list by pressing PTT switch. A momentary alert tone alerts and LCD displays "00". Program a new channel in this position as described in step 2.
- Exit program mode by placing mode select switch in either carrier squelch (⌘) or PL squelch (⌘) position.

Quik-Call II

To enter the Quik-Call II (paging) mode, set the mode select switch to the enable position (⌘), then momentarily depress the monitor button. When paged, an interrupted (individual call) or continuous (group call) alert tone is generated, the radio unsquelches, and the caller's message is heard. If no transmission is made, the radio automatically resets to the Quik-Call II (paging) mode. To initiate a transmission (radio not paged), set the mode select switch to the carrier squelch (⌘) position. Transmit and receive as described in the basic operating procedure. The radio does not automatically reset to the paging mode at the end of the conversation. To reset the radio to the paging mode, set the mode select switch to the enable (⌘) position and then momentarily depress the monitor button.

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 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 2 to 3 inches away from the lips and the radio is vertical.

DO NOT hold the transmit (PTT) switch on 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 especially qualified for such use.



Introduction

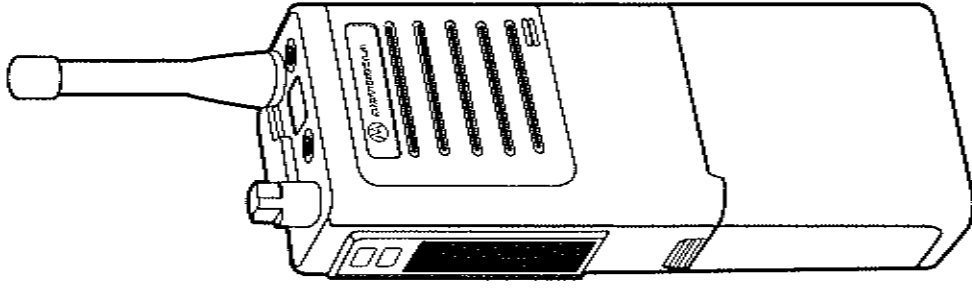
Motorola MT1000 Portable Radio

The MT1000 Handie-Talkie® Portable Radio is a sophisticated state-of-the-art unit. It incorporates the latest technology available in two-way radio communications.

The use of microcomputer technology makes changing radio characteristics such as operating frequencies and squelch codes both economical and fast. Any computer-equipped authorized service facility can easily reprogram your radio's operating characteristics, or your radio can be "cloned" from a radio already programmed to your desired frequencies and codes.

The MT1000 radio meets tough environmental demands while providing cost effective, reliable communications. It meets the U.S. Government Military Standards 810C and 810D for low pressure, high pressure, low temperature, temperature shock, solar radiation, rain, humidity, salt fog, dust, vibration, and shock. The MT1000 radio meets the Electronic Industry Association RS316B electrical and mechanical specifications. The radio also meets extensive laboratory testing provided by Motorola, the Accelerated Life Test (ALT), which includes tough specifications for mechanical and electrical stress, temperature cycling (hot and cold), drop tests, and more. The Motorola Accelerated Life Test assures that possible failures brought on by field stress and abuse are identified and designed out of your radio before it reaches your hands.

All of these features provide for better, yet more cost effective communications for you.

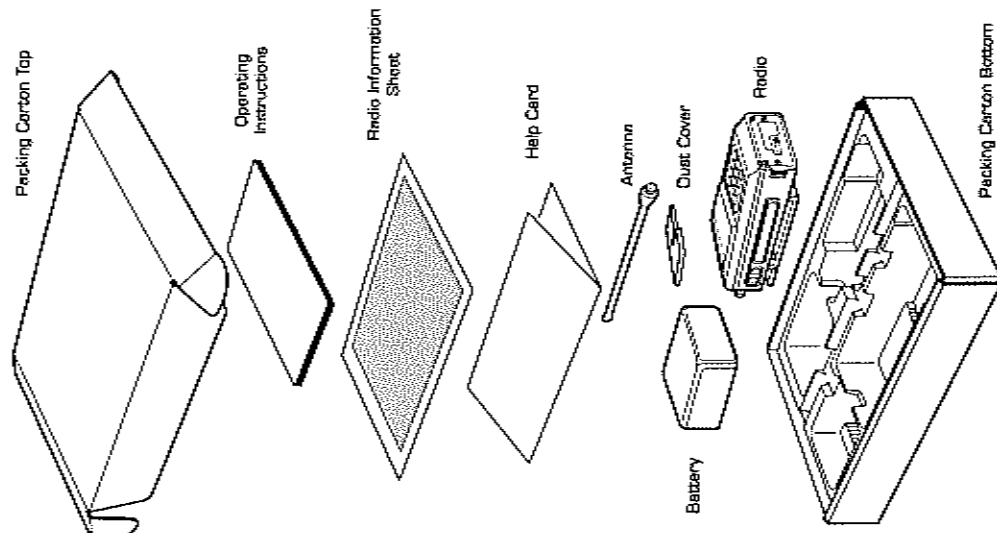


General Information

Unpacking

When you receive your packaged MT1000 radio, inspect the shipping carton for any signs of damage. Next, remove and check the contents of the packing case to be certain that all items ordered have been included. Contents of the packing case may be different from those listed if optional accessories were ordered.

Inspect the equipment thoroughly. If any part of the equipment has been damaged in transit, report the extent of the damage to the transportation company immediately.



Packaged Model Contents

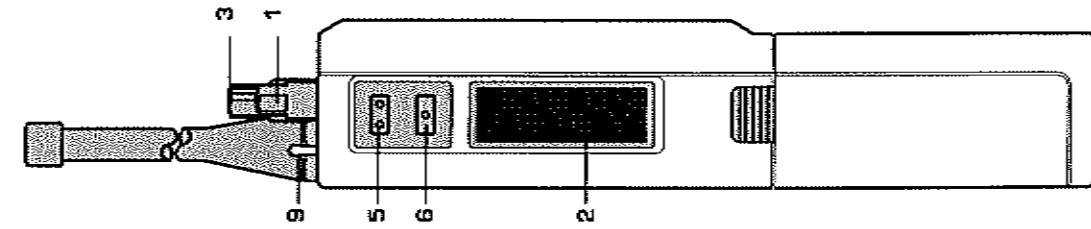
- MT1000 Portable Radio
- Heliflex Antenna (VHF and Lowband Models) or Flexible Whip Antenna (UHF Models)
- Nickel-Cadmium Battery (dual-rate charge, medium capacity for low power models; dual rate high capacity for high power models)
- Three-Inch Belt Clip (attached to back of radio)
- Operating Instructions Manual
- Radio Packing Card (Not Shown)

To ensure cosmetic integrity, the MT1000 radio ships from the factory with the escutcheon (top of radio) and the front cover label protected by a "peel-off" clear plastic covering. The clear plastic may be in place when delivered to the end user. Remove the protective covering if desired.

The MT1000 radio ships from the factory with a dust cover to protect the universal connector (on top of the radio). Whenever the universal connector is not being used, attach the protective dust cover with screw.

Controls, Switches, Indicators, and Connectors

- 1 **On-Off/Volume Control**
Turns the radio on and off and adjusts the volume level.
- 2 **Push-To-Talk (PTT) Switch**
When depressed, puts the radio in the transmit mode. When released, the radio operates in the receive mode. This switch is also used with the Channel Scan Option (see Channel Scan Option, programming).
- 3 **Channel Selector Controls**
Selects the operating channel. On rotary radios, a rotary switch is used for channel selection. On display radios, two buttons are used to cycle up or down through the available channels programmed into the radio. The right button (as viewed from the front), increments the channels. The left button decrements the channels. Holding the button depressed for more than two seconds will cause the radio to cycle through the channels at an increasing speed.
- 4 **LCD Display**
All display radios feature a 2-digit numeric liquid crystal display (LCD), which gives a clear indication of the operating channel. The display also has two annunciators (letters **S** and **PL**), which are used by radios equipped with the Channel Scan Option. The 2-digit display can be inverted so as to be right side up and easily readable when the radio is worn on the belt. The inverted display is accomplished by holding down the two channel selector buttons (up/down) simultaneously for approximately two seconds (radio turned on, mode select switch not in the scan position). Return the display to its normal state by again holding down the two channel selector buttons simultaneously for approximately two seconds. Also, each time the radio is turned off and back on, the display is reset to its normal state.
- 5 **Monitor Button**
When depressed, places the radio in the unsquelched mode, that is, noise will be heard from the radio, monitoring the channel.



- 6 **LCD Backlight/Channel Scan Program Button/Single Tone Button (L/S)**
This button is used with the Channel Scan Option (see Channel Scan Option, Programming) on both display and rotary radios. On display radios, when the button is depressed the LCD display illuminates. This button is also used with the Single tone Option (see Single Tone Signalling Option).

- 7 **LED Indicators**
On rotary radios, a single bi-color light emitting diode (LED) is provided. On display radios, two LEDs are provided. On both model radios, a red/orange LED indicates normal transmission (continuous red/orange), or low battery (flashing red/orange). The green LED is active on PL receive channels with the Channel Busy option, and indicates channel busy (flashing green).

Note: The LED(s) may be disabled via factory or field-programmed options.

- 8 **Antenna Connector**

Threaded antenna bushing.

- 9 **Mode Select Switch**

This is a three-position switch used to select the receive mode of operation, carrier squelch (Δ), or PL/DPL squelch (Σ) in standard models, and scanning (Σ) in models equipped with a Channel Scan Option. On non-channel scan radios, with the mode switch in the scan (Σ) position, the radio operates carrier squelch. When equipped with the PAC-RT option, this switch selects portable-to-base operation in the PL (Δ) position, or portable-to-portable operation in the carrier squelch (Δ) position. When equipped with the Quick-Call II option(s), the switch enables Quick-Call II operation in the PL (Δ) position or enables carrier squelch operation in the carrier squelch (Δ) position.

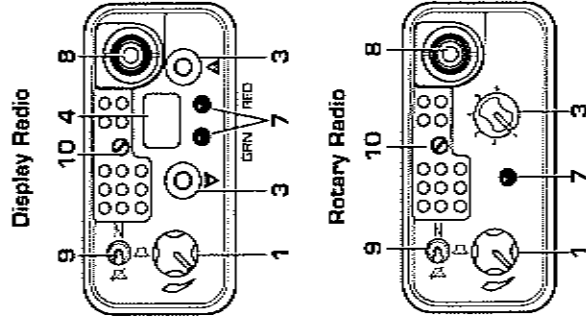
- 10 **Universal Connector**

Provides accessibility for programming and testing the radio; also allows for connection to remote accessories such as a remote speaker-microphone. The universal connector is fitted with a protective cap which should be left in place when the connector is not being used.

- 11 **Program Button (DTMF Option Radios - see page 16 for visual details)**

When depressed and held, this programs and stores telephone numbers in memory locations (1-9). The procedure for programming varies depending on the type of DTMF option. Refer to page 16 for detailed instructions.

Note: The Continuous Tone DTMF option has no memory storage; DTMF ANI option requires the programming tool (D180358A59) to press the program button.



Alert Tone Indicators

Note: Alert tones may be disabled via factory or field-programmed options. Two options are available: a field option to disable only the power-up alert, and a factory or field option to disable all alert tones except Quik-Call II alerts and MDC tones.

Power-Up

Each time the radio is turned on, a microcomputer self-test occurs. An alert tone is generated for approximately 1/2 second to indicate that the microcomputer and synthesizer are functioning properly. Radios with MDC signalling generate two short beeps, after the standard 1/2 second power-up alert, to indicate that the MDC microcomputer is functioning properly.

Transmit on Receive-Only Channel

Depressing the PTT switch while tuned to a **receive-only** channel will cause an alert tone. The tone will continue as long as the PTT switch is depressed. The radio transmitter is not enabled.

Transmit Inhibit on Busy Channel (optional)

Depressing the PTT switch during a "busy channel" condition generates a continuous alert tone that lasts as long as the switch is depressed.

Transmit on Radios with MDC Signalling

When the PTT switch is depressed, a side tone will be heard as the Unit I.D. code is being transmitted. When the tone ends, start your voice message in the standard manner.

Omit MDC Sidetones

With this option, all signalling sidetones will be disabled.

Note: On MDC radios with Unit I.D. and Emergency, an alert tone is transmitted if the PTT switch is inadvertently depressed at the same time the emergency button is depressed. This tone cannot be disabled.

Time-Out-Timer (optional)

Transmission time is limited to a preset length, normally 60 seconds. At the end of this time an alert tone indicates that your transmission has been cut off. The alert will continue as long as the PTT switch is depressed. Time-Out-Timer is available on a per-channel or per-radio basis.

Quik-Call II

An alert tone is generated whenever a page is received. The radio unsquelches, and the caller's message is heard. Quik-Call II is available as an individual call with an interrupted alert tone, group call (long tone B) with a continuous alert tone, or dual call.

Multifunction LED Indicators

Transmit Mode (PTT Switch Depressed)

- Continuous red/orange light - Normal Transmission
- Flashing red/orange light - Low Battery

Receive Mode (PTT Switch Not Depressed)

- Flashing green - Channel Busy LED (optional), indicates the presence of activity on the operating channel when the radio is in the PL squelch (S) mode and programmed for Private-Line or Quik-Call II operation.

Operating Procedures, Standard Radio

Radio Model Information

Radio Model Number (Example: H33GCU7100BN)

Type of Unit	TX Power	Freq.	Model Series	Type of Model	Squelch	Channel Spacing	Channel Capability	Model Variation	Issue	Unique Model Variation
H	3 2W	3 VHF	GC	U Universal	7 Coded (PL/DPL)	1 20/25/30 KHz	O T16/R16	O Universal	B	N
	4 5W LB 5W VHF 4W UHF	4 UHF		J Display			3 T32/R32		C	
							6 T6/R6			
							8 T8/R8			
							9 T99/R99			

H = Hand Held
Handie-Talkie
Portable

N = Package Model with
Battery, Antenna, Etc.

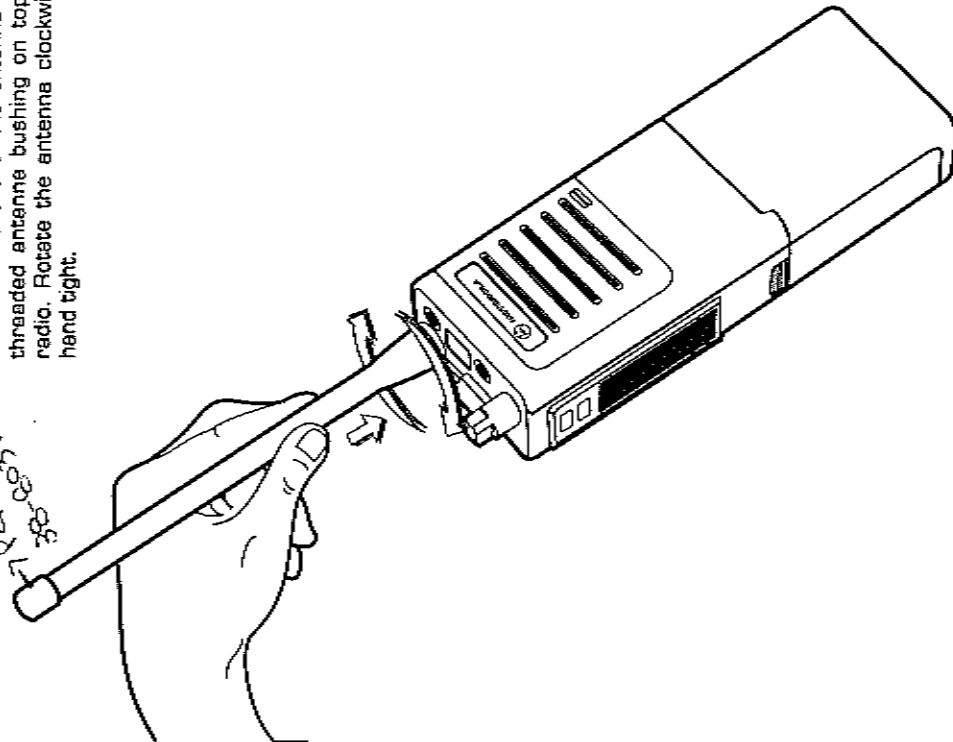
The model number, serial number, and Motorola FCC designation number are all on a label attached to the back of your radio. The rf output power, frequency band, type of squelch, and number of channels can be determined from the model number, as illustrated.

The MT1000 radio is available in two configurations: rotary or display. Both versions are synthesized units that come standard with tone Private-Line® (PL) or Digital Private-Line™ (DPL) coded squelch, which may be enabled/disabled on a per channel basis at time of order. Programming changes can be made by your local Motorola service shop. All models include a medium capacity dual rate nickel-cadmium battery (high power models), antenna, and a three-inch belt clip.

The MT1000 lowband radio, model numbers H41GCU7160_N (6W, 6-channel) and H41GCU7130_N (6W, 32-channel), operates in the 30-36MHz, 36-42MHz, and 42-50MHz frequency range. The rotary model is capable of 6-channel operation; the display model is capable of 32-channel operation. All MT1000 features, options, and accessories with the exception of the S.M.A. remote microphone are compatible.

Antenna Installation

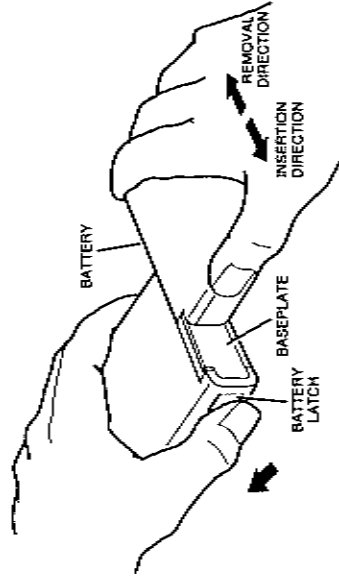
Fasten the antenna to the radio by placing the threaded end of the antenna into the threaded antenna bushing on top of the radio. Rotate the antenna clockwise until hand tight.



Battery Installation or Replacement

1. To install the new or freshly charged battery, mate the notched end of the battery with the grooved base plate, and slide the battery, from right to left, onto the baseplate until engaged by the battery latch.
2. To replace the battery, turn off the radio and hold it in the left hand with the front of the radio facing up.
3. Disengage the battery latch from the battery by pushing and holding the latch towards the top of the radio.
4. With the battery latch disengaged, slide the battery from left to right to remove it from the baseplate on the bottom of the radio housing.

Note: Nickel-cadmium batteries should be fully charged before using.



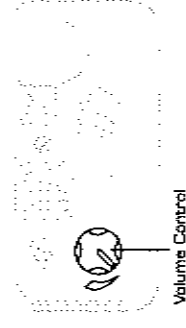
Radio On/Off Power-Up

1. Turn the radio on by rotating the volume control 1/2 turn clockwise. A power-up alert tone is generated for approximately one half second to indicate that the radio has passed a self-test of the microcomputer.

Note: A power-up alert tone is not generated if the alert tone option has been enabled.

If the short, power-up alert tone is not generated (indicating a malfunction), turn the radio off, check the battery (charge or replace if necessary), and turn the radio back on. If the power-up alert tone is still not generated, a fault exists in the radio. Contact your nearest Motorola Service Shop.

2. Turn the radio off by rotating the volume control fully counterclockwise.



Receiving a Call

1. Turn the radio on and set the channel selector control to the desired channel position.
2. Listen for a transmission and adjust the volume control for a comfortable listening level. If no transmission is heard, depress and hold the monitor button to unsquelch the radio, and adjust the background noise to a comfortable listening level.

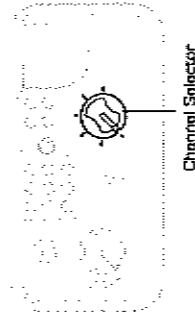
Note: All MT1000 radios have an internal squelch setting which is adjusted at the factory. The squelch level setting is not a user-operated control; however, it may be reprogrammed at an authorized service facility.

3. Your radio is now set to receive calls on the selected frequency.
4. For PL receive operation, place the mode select switch in the PL (N) position, and the unit will respond to only those calls with the proper PL code.

Note: Channel Busy LED only operates on channels programmed for PL receive when the mode select switch is in the PL (N) position.

Transmitting

1. Turn the radio on and set the channel selector control to the desired channel position.
2. Listen for a transmission and adjust the volume control for a comfortable listening level. If no transmission is heard, depress and **hold** the monitor button to unsquelch the radio, and adjust the background noise to a comfortable listening level.
3. Do not interrupt another user. If the channel on which you are transmitting is programmed to receive PL, ensure that the channel is not in use by:
 - placing the mode select switch in the carrier squelch (D) position to listen for activity, or
 - depressing the monitor button on the side of the radio to listen for activity.
4. Hold the radio in a vertical position with the speaker/microphone grille 2 to 3 inches from your mouth.



5. When the channel is clear, depress and hold down the 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: When the push-to-talk switch is depressed, the red/orange LED turns on, remains on for the entire length of the transmission, and turns off when the PTT switch is released.

Low Battery Check- When the PTT switch is depressed, and as long as the PTT switch remains depressed, the battery voltage is automatically monitored. If the battery condition is found low, the red/orange LED flashes (unless the omit LED option is enabled).

Receive Only Channel Alert- If the channel selected is a receive only channel (no transmitter frequency assigned), when the push-to-talk switch is depressed, a continuous alert tone is generated (unless an omit alert tone option is enabled).

Operating Procedures, Radio with Options

A number of options can be ordered to enhance the operation of your MT1000 Handie-Talkie® portable radio. These options are described for you in this section.

PAC•RT® Transmit Only

Radios equipped with this option are used with the PAC•RT Portable/Mobile Vehicular Repeater System. When the mode select switch is in the PL (P) position, the radio operates in the portable-to-base mode. This results in all messages from the portable radio being transmitted through the PAC•RT Vehicular Repeater (at a greatly increased power level) to the base station. When the mode select switch is in the carrier squelch (D) position, the radio operates in the portable-to-portable mode and does not activate the PAC•RT Vehicular Repeater.

Channel Scan

This option allows you to monitor a number of channels; the receiver checks each channel in a continuous cycle for activity. The channels to be scanned are user programmable. Channel scan is offered in two modes of operation, non-priority and priority scan. Both modes of channel scan are available with PL.

The scan option is available for both display and rotary radio models, and scan operation is a little different for the two radios. The rotary model has a rotary switch for scanning selection, and the display model has up/down buttons and display for scanning selection.

Note: Both model radios use the same procedure for entering the program scan mode, but because there is no display on rotary radios to review the scan list, when entering a new scan channel (rotary radios), the entire previously stored scan list is erased and a new list must be entered.

All scan alert tones will be disabled if the omit alert tone option is enabled.

• Non-Priority Channel Scan

With this type of scan operation, up to eight channels can be scanned. No one scan channel has priority over another. The scanner stops on the first scan channel with activity, and when the activity is over and a 3-second "hang time" has expired, proceeds to the next scan channel. The hang time is programmable through the Radio Service Software available at your local Motorola Service Shop.

• Priority Channel Scan

Any one of the radio's programmed channels may be designated as the priority channel, allowing a maximum of nine (one priority and eight non-priority) scan channels. Whenever activity occurs on the priority channel, the scanner will automatically stop there, even if the radio had been locked onto a non-priority scan channel signal.

• PL Channel Scan

Private-Line operation is offered with priority and non-priority channel scan. With this mode of scanning operation, the scanner stops on only those scan channels coded with the proper PL tone. However, on a priority channel scan radio, the priority channel is scanned for carrier activity only.

- **Talk-Back Scan**

This is a standard feature of the channel scan options listed above. When transmit or receive activity ceases on a scan channel, a "hang time" of approximately three seconds occurs prior to the radio resuming scan for other channel activity. This "hang time" gives you time to receive or respond to a call before scanning resumes. The hang time is programmable through the Radio Service Software available at your local Motorola Service Shop.

Note: If the monitor button is depressed (while scanning), the channel displayed by the LCD prior to entering the channel scan mode will be monitored and displayed by the LCD.

- **Disable Talk-Back Scan**

This option disables the talkback feature on priority, non-priority, and PL channel scan. When disabled, pressing the PTT switch allows you to transmit on the channel selected when in the scan mode.

- **Fixed Priority/Home Channel**

This option enables:

- a fixed priority channel on Priority Channel Scan
- a fixed transmit channel on Priority or Non-Priority Channel Scan when ordered with the Disable Talk-Back option.
- a designated "home" channel on display models (a toggle of the mode select switch brings the user to a pre-programmed "home" channel).

The procedure for **programming channel scan** is as follows:

1. Turn the radio on.
2. To enter the program mode, press and hold the "LCD Backlight/Channel Scan" program button (L/S button), and while keeping this button depressed, place the mode select switch (3-position switch) in the scan (≡) position. A continuous alert tone will be generated and remain alerting until the L/S program button is released. This alert tone indicates that the radio is in the program mode and that transmit and receive functions are inhibited.

3A. Display Radios (rotary radios, go to step 3B). One at a time, each of the channel scan positions can now be assigned a channel. To do this:

- Locate a blank (unprogrammed) scan position (LCD display "00") by pressing and releasing the L/S program button a number of times until "00" is displayed. Release the L/S program button.

Note: If all scan positions have a channel assigned, i.e., there are no blank ("00") scan positions, refer to "revise the scan list" section.

- Select the desired channel to be assigned at this program position using the channel selector controls, cycling through the channels (up or down), and stopping when the desired channel is displayed on the LCD.

- Program this channel into the scan list by pressing the PTT switch. A momentary alert tone will be generated to indicate that the scan program accepted the entry.

3B. (Rotary Radios)

Note: The radio will **not** erase the stored scan list when you are entering the scan program mode unless a new channel is programmed.

One at a time, each of the eight scan program positions can now be assigned a channel. To do this:

- Select the channel to be scanned by rotating the channel selector switch to the channel number desired.
- Program this channel into the scan list by pressing the PTT switch. A momentary alert tone will be generated to indicate that the scan program accepted the entry.

4. Repeat step 3A or 3B until all desired channel scan positions are programmed into the scan list. A maximum of eight channel scan positions are available.

Note: MT1000 radios ordered with the scan option are not shipped programmed with scan channels. The scan list is programmed by the user. The user programming feature may be disabled and programming allowed through the radio service software.

Exit from the channel scan program mode by placing the mode select switch in either the carrier squelch (⌂) or the PL squelch (⌂) position. A momentary alert tone will be generated to indicate that the scan program mode has been exited.

To revise the scan list: On rotary radios, the entire scan list is erased each time a new scan channel is programmed. A new list must be entered. For display radios, revise the scan list as follows:

- Enter the program mode as described in step 2 (programming channel scan).
- Press the L/S program button and monitor the LCD display. Each time the L/S program button is depressed, the channel stored in that position will be displayed (a maximum of eight different channels). Select the channel to be removed or changed.
- Remove the channel from the scan list by pressing the PTT switch. A momentary alert tone will be generated and the LCD will display "00". Program a new channel in this position as described in step 3A (programming channel scan).
- Exit the program mode by placing the mode select switch in either the carrier squelch (⌂) or the PL squelch (⌂) position.

Non-priority channel scan operation is initiated by turning the radio on and placing the mode select switch in the scan () position. The LCD (display radios) will display "S - -". Scanning will stop when activity on one of the scan channels is detected. The LCD will display "S" and the active channel number. When activity on this channel ceases, scanning restarts and the LCD again displays "S - -". Depressing the PTT switch (transmitting) when in the channel scan mode transmits on:

1. the channel displayed by the LCD prior to entering the scan mode (display radios), or the channel selected by the position of the channel selector switch (rotary radios), if the radio is scanning.
2. the channel locked on to (displayed by the LCD), if the radio is active on a scan channel.
3. the designated fixed transmit channel, if radio has Fixed Priority/Home Channel option enabled.

Priority channel scan operation is the same as non-priority channel scan operation, except that one of the radio's programmed channels may be designated as the priority channel, making a total of nine (maximum) scan channels, one priority channel and eight non-priority channels. The priority channel is designated as the channel displayed by the LCD (display radios) or the channel selected by the rotary channel selector switch (rotary radios) and can be changed using the channel selector controls. The priority channel may be fixed to a designated channel when Fixed Priority/Home Channel option is enabled. The Fixed Priority/Home Channel option requires a channel scan option. Scanning operation differs, such that the priority channel takes precedence over the non-priority channels. If the radio is locked on a non-priority channel and activity is detected on the priority channel, a momentary alert tone will be generated and the radio will lock onto the priority channel. The LCD will display "S" and "P" (indicating priority call) and the priority channel number. Transmitting is the same as that described for non-priority channel scan operation.

Note: If the monitor button is depressed (while scanning), the priority channel will be monitored and displayed by the LCD.

PL channel scan operation is the same as that described for priority and non-priority channel scan operation, except that the radio will only lock onto a channel and unsquelch if the signal carries the correct PL tone. However, on a priority channel scan radio, the **priority channel is scanned for carrier activity only**.

Quik-Call II

Quik-Call II is available as Individual Call and Group Call (Long Tone B). This option provides the user with the talk-back pager feature. As in a standard radio, when the unit is turned on, a short power-up alert is generated. The radio then operates in the carrier squelch mode as described in the basic operating procedure.

To put the radio in the Quik-Call II (paging) mode, set the mode select switch to the enable () position, then momentarily depress the monitor button. When paged, an interrupted (individual call) or continuous (group call) alert tone is generated, the radio is put in the carrier squelch mode, and the caller's message is heard. The radio will remain in the carrier squelch mode for ten seconds after the loss of carrier. If the carrier is lost, but for less than ten seconds, an auto timer will reset, which permits normal transmit and receive operation as described in the basic operating procedure. If no transmission is made within ten seconds, the radio will automatically revert to the Quik-Call II (paging) mode.

Note: The ten second reset feature can be disabled (using the radio service software). The radio remains in the carrier squelch mode indefinitely and reverts to Quik-Call II mode only when the monitor button is momentarily depressed.

To initiate a transmission (radio not paged), set the mode select switch to the carrier squelch () position. Then transmit and receive as described in the basic operating procedure. The radio does not automatically reset to the paging mode at the end of the conversation. To reset the radio to the paging mode, set the mode select switch to the enable () position and then momentarily depress the monitor button.

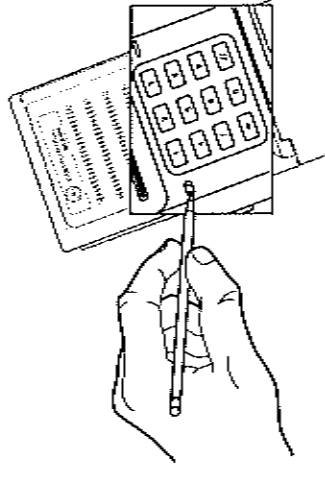
Note: Even in the carrier squelch mode the Quik-Call II decoder is active and will respond to a valid Quik-Call II code. The radio will emit an interrupted (individual call) or continuous (group call) alert tone on receiving a valid code.

Single Tone* Signalling

Radios equipped with this option will send a single tone frequency at the touch of a button. Single-tone operation is entered by pressing and holding the single-tone button (lower of the two small buttons on the side of the radio; see Controls, Switches, Indicators, and Connectors, item 6), which puts the keypad in the single-tone mode. Then, pressing one of the keys on the keypad will cause the radio to go into the transmit mode and send a tone (single-tone) corresponding to the key pressed. The single-tone signal will last either as long as the keypad key is depressed or for a time period which has been preset into the radio's memory.

Note: Single Tone is an "encode-only" feature.

Single-tone Sidetone is a Single Tone Option which, when enabled, emits an audible tone during the single-tone transmission time, to alert the user that the single-tone is being transmitted.



Touch-Code™ Dual-Tone Multiple-Frequency (DTMF)

Manual Dialing (Encoding)

Turn the radio on, depress and hold the PTT switch down for at least one second, and press the appropriate Touch-Code key buttons. The duration of the tones is set at the factory for 150 milliseconds. This duration can be increased to 450 milliseconds (a service shop procedure). On radios with continuous-tone DTMF, the tone duration is determined by the length of time the key buttons are held down by the user.

Storage of Touch-Code Numbers in Memory (Program Mode)

Press and hold the program button firmly (see detail); on an ANI radio, the program button must be pressed using the programming tool (0180358A59). For MDC radios, depress the LCD backlight/scan program button located on the side of the radio just above the PTT switch. On MDC radios with ANI, memory locations 1 and 2 may only be programmed by the radio service software. While holding down the appropriate program button, push the Touch-Code key buttons that correspond to the numbers to be stored. A beep tone should be heard with each keystroke. After the entire number sequence to be stored has been entered, press the " * " key button followed by the number of the memory location (1-9). Continue to hold down the program button for at least one second after the memory location has been entered to allow time for memory storage. A maximum of sixteen characters can be stored in each memory location. The connect and disconnect tones corresponding to a specific billing number may be programmed in the memory locations for use in common carrier systems.

Note: To store and dial the Touch-Code tones for " * " or " # " in memory, the corresponding button (" * " or " # ") must be pushed twice (" * * " or " # # ").

It is necessary to hold the program button for at least one second after the storage command, otherwise an error may occur.

Last Number Radial Memory

This feature automatically stores the numbers last entered in the manual dial, program mode, or scratchpad memory. To automatically dial this number, depress and hold the PTT switch down for at least one second and press ***, then 0.

To erase the contents of the last number radial memory (models with MDC signalling only), depress the LCD backlight/scan program button, then depress *** and release the LCD button.

Note: The last number radial memory will be altered by pushing "Touch-Code" key buttons whenever the radio is on.

Scratchpad Memory

This feature gives you the ability to store a number in the last number radial memory or in standard memory while receiving someone else on the radio. For example, you are communicating with John (portable to portable) and he gives you a telephone number to call later. Scratchpad memory lets you store the number immediately by simply entering the numbers from the keypad. When the telephone number is entered, it is automatically stored in the last number radial memory (location 0). To store the number in another location, press the program button and press *** followed by the desired memory location. After entering the storage command, hold down the program button for one second and then release.

To Automatically Dial Numbers Stored in Memory

Depress and hold the PTT switch for at least one second and press *** followed by the number corresponding to the desired memory location (0-9). For example, to dial the number stored in location 5, depress and hold the PTT switch for at least one second, press ***, then press 5. Release the PTT switch after the last tone is heard.

IMPORTANT

Numbers in memory will be erased (except on MDC radios) if the battery is removed from the radio and left off for more than two minutes.

Indefinite Pause

May be programmed in memory to allow for storage of more than one number sequence per memory location. For example, if you want to store a repeater access code and telephone number in the same memory location, depress and hold the program button while you do the following:

1. Enter the access code
2. Press ***
3. Press "#"
4. Enter the telephone number
5. Press *** and the desired memory location (1-9)

To dial this sequence, depress and hold the PTT switch down for at least one second, press **, then press the proper memory location (1-9). The access code will be transmitted followed by a pause. The pause gives the system time to check the access code and send out a dial tone. After you receive the dial tone, the telephone number may be dialed by holding the PTT switch down again and pressing any digit (not ** or #).

Continuous-Tone Radios

The continuous tone radio has no memory storage and no last number radial feature. The tone duration is determined by the length of time the key buttons are held down by the user.

Manual Dialing (Encoding)

Turn the radio on, depress and hold the PTT switch for at least one second, and press the appropriate Touch-Code key buttons.

Note: Radios with MDC signalling offer automatic PTT operation through the radio service software. This feature allows the user to transmit DTMF without continuously holding down the PTT switch. To dial a DTMF sequence with this feature, depress the PTT switch and then depress the first digit of the dialing sequence. Release the PTT switch and depress in order, the rest of the dialing sequence with less than two-second increments between any two of the digits. If two seconds or longer elapse between any two digits of the dialing sequence, the radio dekeys and the PTT switch must be depressed again (dialing sequence repeated).

Touch-Code DTMF Encode/Decode

Description

The NTN5697A Dual-Tone Multi Frequency (DTMF) Encode/Decode Option is compatible with MT1000 "B" model and "C" model radios, and is capable of encoding and decoding standard DTMF tones. Encode is a continuous tone with no memory.

The DTMF section is capable of decoding one to three number sequences of one to seven digits in length. The number sequences are classified as follows:

- Sequence 1: Unit ID
- Sequence 2: Group Call I
- Sequence 3: Group Call II

The decode sequences are programmable via the front cover keypad. A memory lockout function incorporating a "Hall Effect Device" is available to those users who do not want others to modify the memory content. This memory lockout option is

enabled by removing R920; a programming tool must now be used to program the option (part no. 01R80358A59).

The decoder responds to a correct Unit ID by emitting five sequential alert tones (1640Hz) of 150 ms in length. The option then automatically keys up the radio and sends out an acknowledge alert. The decoder responds to a correct Group Call I sequence by emitting two sequential alert tones (1640Hz); there is no auto acknowledge. A correct Group Call II sequence results in a single alert tone of 1.5 sec. in length; again, there is no auto acknowledge.

The DTMF decoder is enabled on a per channel basis by the field programmer by enabling the Unit ID feature in the per channel options menu. Pressing and releasing the monitor button will mute the radio's receive audio path until a correct sequence is decoded or the PTT switch is pressed. The decoder will still be active even if the monitor button is not pressed; this allows users to monitor channel activity as desired.

Operation

The programming button must be pressed at all times during programming. Pressing the programming button followed by pressing the "# " key one time causes all memory locations to be erased once the programming button is released. The programming tool must be used if memory lockout is enabled.

To program decode sequences, press the programming button and enter the numbers on the keypad; each sequence can be from one to seven numbers in length. If you want to enter a "# " in your decode sequence, the "# " key has to be pressed twice. A Unit ID is stored in location 1; to store your number in location 1, enter the number followed by "# 1". Group Call I sequences are loaded into location 2; to store your sequence in location 2, use the command "#2 ". Group Call II sequences are stored in location 3 in the same manner (#3). Memory location 4 is used to enable and disable the auto acknowledge alert; a 0 in location 4 disables and a 1 enables. To encode DTMF, press the PTT switch and enter the numbers on the keypad. To squelch the receiver, press and release the monitor button.

Transmit Inhibit on Busy Channel

The mode select switch and monitor button are non-functional. Depression of the PTT switch when the channel is busy generates a continuous alert tone that lasts as long as the switch remains depressed, and transmission is not possible. Transmitting is enabled on a channel if no carrier is being received, or if the carrier being received is modulated with the correct PL tone (as programmed for that PL channel).

MDC Signalling

Unit ID

This option is available in MDC-600™ or MDC-1200™ signalling formats and can be disabled on a per channel basis. When on a channel enabled with this feature, the radio transmits an identification code (unit ID) to the base station, indicating which portable is in operation. This code will be sent whenever the PTT switch is depressed. A sidetone will be heard as the unit ID code is being transmitted; when the tone ends, start your voice message in the standard manner. Radios with MDC signalling generate two short beeps after the standard 1/2-second power-up alert tone to indicate that the MDC microcomputer is functioning properly.

Note: You cannot transmit a voice message while the ID code is being sent.

Unit ID with Emergency

This option is available in MDC-600 or MDC-1200 signalling formats and includes both unit ID and emergency operation. The unit ID code is transmitted each time the PTT switch is depressed (see above for details). **The unit ID operation may be disabled on a per channel basis. This does not disable the emergency function on those channels. Radios with emergency cannot have any receive only channels.** If receive only channels are desired in the same radio, you must order unit ID with Emergency Revert (see below).

The emergency button is located on top of the protruding portion of the front cover (near the antenna). Depressing this button causes the radio to transmit repeatedly an alarm code which includes the unit ID code. While the emergency sequence is being transmitted, the transmit LED and sidetone are disabled. Pressing the PTT switch during the emergency sequence cancels the emergency function and the radio reverts to standard operation. Whenever the emergency button is depressed, this option will override the "Transmit Inhibit on Busy Channel" option. If the PTT switch is inadvertently depressed while the emergency button is also depressed, an alert tone will be heard indicating that no emergency code has been transmitted. This alert tone cannot be disabled.

Unit ID with Emergency Revert

This option functions the same as the unit ID and emergency option except that when the emergency button is depressed, no matter what channel is selected, the radio will revert to a preassigned emergency channel. The unit ID and emergency code will then be transmitted on that channel. **The radio will remain on the revert channel and can only be changed by turning the radio off.** (Pressing the PTT switch while on the revert channel will generate a short alert tone indicating that the radio is not transmitting on the channel selected before emergency revert.)

Note: The preassigned emergency revert channel cannot be a receive-only channel. There can only be one emergency revert channel assigned per radio.

Omit MDC Sidetones

With this option, all signalling sidetones will be disabled on a per radio basis.

Audible Emergency

This option enables the transmit LED and sidetone while the emergency sequence is being transmitted.

Silent Emergency

This option disables the receive audio after the emergency button is engaged. All receive audio is muted until the PTT switch is depressed.

Voice to Follow

In a radio with the voice to follow option, after the emergency sequence has transmitted for a preset period of time (software programmable from 1 to 300 seconds), the radio's microphone is automatically activated. The emergency sequence time period is set at the factory for 60 seconds.

Man Down

A radio with Man Down includes unit ID the emergency. The man down feature provides the capability to initiate the transmitting of an emergency alarm sequence (including the ID code) when the radio is tipped more than 60 degrees from its vertical axis. The time between when the radio is tipped more than 60 degrees from its vertical axis to when the emergency sequence actually begins (delay time) is preset at the factory for ten seconds (field programmable from 5 to 100 seconds in 5 second steps) of delay time. While in the man down state, a warning tone is heard 2.6 seconds prior to the initiation of the emergency sequence. This pulsed 820 Hz tone indicates that there is approximately 2 seconds of the delay time remaining prior to the initiation of the emergency sequence. At any time during the man down delay time, if the radio is returned upright, the emergency sequence will not be transmitted.

Once the man down emergency sequence is initiated, this emergency sequence is repeated until the radio is returned to the upright position and the PTT is depressed. If the radio is returned upright and the PTT is not depressed, the emergency sequence will terminate automatically after completion of all its police, impolice and the live mic transmissions. Depressing the PTT during the delay time

will restart the delay time count down sequence. The emergency button can be used to activate the emergency transmission while the radio is in the vertical position, or during the delay time.

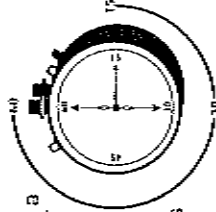
The unit ID operation may be disabled on a per channel basis, and does not effect the emergency feature or the man down feature on those channels. Radios with man down can not have any receive-only channels.

Silent emergency does not disable the man down warning tone. The warning tone must be independently disabled on a per radio basis.

The man down warning tones will be disabled when priority scan is enabled.

Time-Out-Timer, 60-Second

The Time-Out-Timer (T.O.T.) option disables the transmitter if a single transmission (uninterrupted depression of the PTT switch) exceeds a predetermined period of time, 60 seconds. This minimizes channel occupancy and battery drain. The radio reverts to the receive mode, even with the PTT switch remaining depressed. After the time-out period, a continuous alert tone is generated that lasts until the PTT switch is released.



Another transmission may be initiated immediately after releasing the PTT switch by depressing the PTT switch again. If the PTT switch is released before the predetermined time out, the radio operates as normal (reverts to the receive mode with no alert tone).

The Time-Out-Timer is available on a per channel or per radio basis.

Non-Standard

Radios with this option function exactly the same as radios with the 60-second T.O.T. option, except that the 60-second single transmission limitation can be set anywhere between 1 and 255 seconds.

Omit Alert Tones

Transmit and receive functions are normal. All alert tones, except the Quick-Call II and MDC alerts, can be disabled. The power-up alert tone can be disabled separately.

LED Disable

Transmit and receive functions are normal, except that the "low battery" and "normal transmission" LED indications are disabled.

Battery Saver

This option, when enabled, conserves battery life by powering down the receiver and synthesizer when no carrier is present.

Note: Performance will degrade PL attack times 500 milliseconds and squelch sensitivity by 2dB.

Battery Information

The MT1000 radio is powered by a (10.0Vdc) rechargeable nickel-cadmium battery. The battery is a safe, dependable power source designed specifically for your radio. Proper care of the battery will ensure its effectiveness and allow peak performance of the radio.

Recharging Batteries

WARNING: 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.

The battery should be fully charged before use to ensure optimum capacity and performance. The first time the battery is charged or after prolonged storage, a minimum of 14 hours of slow charge time is required. If the battery is charged at the rapid rate, the indicator will show complete after approximately one hour. The additional charge time at the slow rate is required during this initial charge to ensure that full charge capacity is reached. Subsequent charges can be at the rapid rate or the slow charge rate depending on the type of charger being used.

Charging temperature of the battery should be at about 77°F (room temperature) whenever possible. Charging a cold battery (below 50°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. MT1000 rapid rate battery chargers contain a temperature sensing circuit to ensure the battery is charged with these temperature limits. For additional information on batteries and battery charging, refer to the relevant battery charger manual.

Memory Effect

A nickel-cadmium 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.

Due to the latest cell technology, materials used, and processing methods in battery manufacturing, today's **Motorola batteries are virtually free of "memory effect"** and the reduced capacity and performance that may have been experienced in some earlier batteries.

General Radio Care

Cleaning

Clean external surfaces of the radio with a mild detergent and a stiff, non-metallic, short-bristled brush. A suitable detergent solution may be mixed by adding one teaspoon of mild dishwashing detergent to one gallon of water (0.5% solution). Apply the detergent solution sparingly with the brush, being careful not to allow excess detergent to remain entrapped near connectors and controls or in cracks and crevices. Do not submerge the radio in the detergent solution. Dry the radio thoroughly with a soft, lint-free cloth.

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

Handling

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



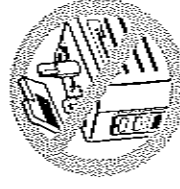
Avoid subjecting the radio to an excess of liquids. Never allow the radio to become submersed.



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



Caution: Clean the radio with the recommended solution only. Cleaning the radio with solvents or spirits may be harmful and permanently damage the radio housing.



Do not disassemble the radio in any way. Keep the connector cover in place until ready to use the accessory connector. Replace the cover immediately after the accessory has been disconnected.

Administration and Regulations

FCC Safety Standards

The Federal Communications Commission (FCC), with its action in General Docket 79-144, March 13, 1985, has adopted a safety standard for human exposure to radio frequency electromagnetic energy emitted by FCC regulated equipment. Motorola subscribes to the same safety standard for the use of its products. Proper operation of this radio will result in user exposure substantially below 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. Hold the radio in a vertical position with the microphone two to three inches away from the lips.
- Do not hold the transmit switch (PTT) on when not actually desiring to transmit.
- Do not allow children to play with any radio equipment containing a transmitter.
- Do not operate radio transmitters near explosive blasting caps. The transmitted radio energy may trigger a blasting cap and cause an explosion.
- Do not operate radio transmitters in an explosive atmosphere unless it is a type especially qualified for such use. An explosion may result.
- Do not replace or charge batteries in a hazardous atmosphere. Contact sparking may occur while installing or removing batteries and cause an explosion.
- Do not dispose of batteries in fire. Batteries may explode when subjected to extremely high temperatures.
- Do not short circuit the radio. An accidental short circuit, such as a paper clip dropped across the battery terminals, may generate enough heat to spark a fire.
- Turn radio off when removing or installing a battery.

Hazardous Atmosphere Operation

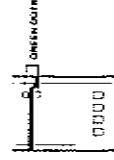
Anyone intending to use a radio in a hazardous area is advised to become familiar with the subject of intrinsic safety and with Section 70 of the National Fire Code, which is commonly referred to as Article 500 of the National Electric Code. Use of anything but factory supplied components may affect the approval and safety of the radio. Likewise, it is advised that servicing should be performed only by qualified personnel who adhere to the following FM required warning:

WARNING: Modification of FM approved intrinsically safe radios will negate FMRC approval.

Hazardous Atmosphere Operation (cont.)

Certain MT1000 radios and batteries have been declared intrinsically safe by FMRC of Norwood, Massachusetts, for use in hazardous atmospheres. FM approved radios are identified by attached certification labels and by matching green dots found on the backs of radios and batteries. The intrinsically safe rating by Factory Mutual states that electrical equipment is incapable of releasing sufficient electrical or thermal energy, under normal or abnormal operating conditions, to cause ignition of a specific hazardous atmosphere. This means the MT1000 radio has been thoroughly tested by Factory Mutual and carries its certification for operation in the hazardous atmospheres designated on the radio label. **Radios must ship from the Motorola factory with the hazardous atmosphere options and cannot be modified in the field.** Failure to use the radio with the approved battery will negate the approval. MT1000 radios that are approved by Factory Mutual can be used in those applications requiring reliable two-way hand-held radios in the listed specific hazardous atmospheres. Motorola approved equipment and accessories, along with competitive equipment approvals, are listed in the yearly approval guide published by Factory Mutual Research Corporation. This guide can be ordered from the following address:

Resource Center for Loss Control Management
Factory Mutual Research Corp.,
1151 Boston-Providence Turnpike
P.O. Box 688, Norwood, MA 02062



Certain MT1000 radios, accessories, and batteries have been declared intrinsically safe by the Mine Safety and Health Administration (MSHA) for use in hazardous atmospheres. MSHA approved radios are identified with a MSHA approval number (98-198-U) on a special label which is attached to the back of the radio. A radio with the MSHA label means that the radio has been thoroughly tested by MSHA for intrinsic safety in methane/air mixtures only, and is approved for use in hazardous atmospheres. **Radios must ship from the Motorola factory with the hazardous atmosphere option and cannot be modified in the field.** Failure to use the radio with the approved battery will negate the approval. Also, when charging batteries, charge in clean fresh air only.

Restrictions

Because this radio contains a transmitter, federal law prohibits unauthorized, non-licensed personnel from adjusting or maintaining it. If any operational difficulties should arise while using this product, report them to authorized service personnel as soon as possible.

Service

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

Motorola's National Service Organization is the largest service organization specializing in mobile communications. It includes over 900 authorized or company-owned stations. In addition, our products are serviced throughout the world by a wide network of company or authorized independent distributor service organizations.

For contract service requirements, please contact the nearest Motorola service representative.

Operating Hints and Warranty Procedure

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

1. Radio Checks

- Be sure the radio is turned on and channel selector is in the proper position.
- Replace or recharge the battery. New batteries must be charged a minimum of 16 hours initially.
- Antenna must be screwed on properly, base flush against radio top.
- Be sure the Mode Select Switch is in the proper position.
- Could your radio(s) problem be caused by accessories improperly connected?

2. Radio Order

If your radios' problems are common to each other, check to ensure that the ordering information (frequencies, options, etc.) was correct.

3. Environment or Situation Dependent

If your radios' problems are exhibited on only a portion of your units, is this condition due to any unique operating condition (for example, 5 of 10 radios exhibit poor range and are used indoors with remote speaker microphones), is your problem possibly system related? If you are unsure, call customer service.

4. Operating Instructions

Review your operating instructions to ensure proper radio use.

5. Problem(s) Not Solved

After following steps 1 through 4, if your radio(s) still exhibit a problem, take the radio(s) to your local area service shop for evaluation or call:

Motorola Customer Services HOURS Mon. - Fri.
1-800-523-4007 (USA only) 8:00 - 4:30
1-305-475-6170 (elsewhere) Eastern Time

Accessories

Motorola offers several accessories to increase communications efficiency. Many of the accessories available are listed below, but for a complete list, consult your Motorola sales representative. Also, for MSHA and Factory Mutual approved items, refer to the note at the end of the accessories list.

Antennas:

RAB4Q22A Heliflex (30-50MHz)

MT1000 Lowband Radio antennas are available in two different forms:

- **precut** antenna with radio order. The antenna is precut to a specific customer frequency.
- replacement **uncut** antenna as a separate item. Replacement antenna includes an uncut antenna, antenna cap, and cut chart information, which describes what length to cut the antenna for a specific customer frequency. (RAB4Q22A)

NAD6282 *

Heliflex (138-150.799MHz)

NAD6283 *

Heliflex (150.8-161.999MHz)

NAD6284 *

Heliflex (162-174MHz)

NAE5131 *

Speaker Mic. Antenna (403-433MHz)

NAE5132 *

Speaker Mic. Antenna (440-470MHz)

NAE5133 *

Speaker Mic. Antenna (470-512MHz)

NAE5231 *

Heliflex (403-437.999MHz)

NAE5232 *

Heliflex (438-469.999MHz)

NAE5233 *

Heliflex (470-512MHz)

NAE5350 *

Flexible Whip (403-512MHz)

Batteries:

NTN4822

Nickel-Cadmium Medium Capacity, Dual Charge

NTN4823 *

Nickel-Cadmium Medium Capacity, Intrinsically Safe/

Factory Mutual Approved

NTN5447

Nickel-Cadmium High Capacity, Dual Charge

NTN5448 *

Nickel-Cadmium High Capacity, Dual Charge

Intrinsically Safe/Factory Mutual Approved

NTN7046

Nickel-Cadmium High Capacity, Dual Charge

Intrinsically Safe/MSHA Approved

Nickel-Cadmium Battery Chargers:

NTN4633

Single-Unit Desk-Top (Rapid Rate 117V)

NTN4634

Single-Unit Desk-Top (Rapid Rate 220V) with European Plug

NTN4635

Single-Unit Desk-Top (Standard Rate 117V)

NTN4636

Single-Unit Desk-Top (Standard Rate 220V) with European Plug

NTN4656

Compact (117V)

NTN4657

Compact (220V) with European Plug

NTN4668

Multi-Unit Desk-Top (Rapid Rate 117V)

NTN4922

Multi-Unit Desk-Top (Rapid Rate 220V / 240V)

NLN7967

Wall Mount for Multi-Unit Desk-Top

NLN7968

Rack Mount for Multi-Unit Desk-Top

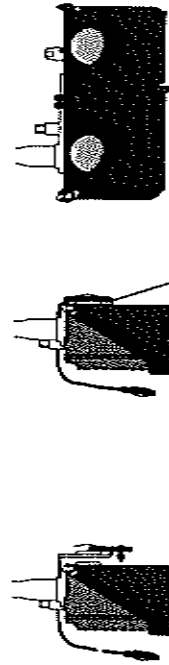
Carrying Accessories:

NTN4365	Swivel Belt Loop, 3"
NTN4529	Swivel Belt Loop, 2 1/2"
NTN5461	Leather Swivel Case with T-Strap
NTN5463	Leather Case with T-Strap
NTN4813	2" Belt Clip
NTN4814	Urethane Carry Holder (2.5" belt capable back clip)
NTN4879	T-Strap (nylon) for Leather Cases
NTN4916	Belt Clip, 2 1/2"
NTN4924	Belt Clip, 3"
NTN4998	T-Strap (nylon) for Carry Holder
NTN4999	Spacer for Carry Cases (spare)
NTN5457	Button Back Cover Kit
NTN5602	Public Safety Size Belt Clip (fits 3" belt)
NTN5450 **	Leather Swivel Case with T-Strap and DTMF Access
NTN5827	Urethane Carry Holder (3" Public Safety Clip)
NTN5883 **	Leather Swivel Case with T-Strap and 3" Swivel Belt Loop
NTN5884 **	Leather Swivel Case with T-Strap, DTMF Access and 3" Swivel Belt Loop
NTN6042	Belt, Black
NTN6349	Carrying Strap

** Carry Cases include Spacer (NTN4999) for use with medium capacity batteries.

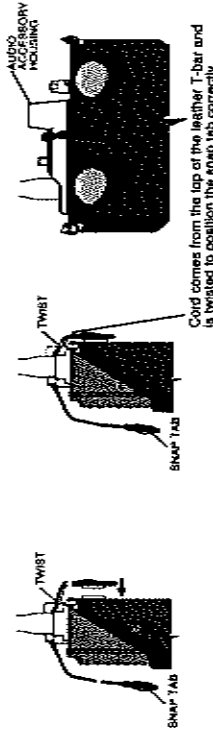
The following T-Strap Assembly Detail applies to carry cases with snaps, as opposed to VELCRO.

Style A. Radio Without Audio Accessory



Cord comes from the bottom of the leather T-bar and is routed between the case and T-bar (not twisted).

Style B. Radio With Audio Accessory



Cord comes from the top of the leather T-bar and is twisted to position the snap tab correctly.

Audio Accessories:

NMN6145*	Remote Speaker Microphone with Belt Clip, Coil Cord, and 2.5mm Jack
NMN6155*	Remote Speaker Microphone with VELCRO patch and Coil Cord (requires NLNB410A VELCRO Patch Pin Attachment)
NNM6156*	Remote Speaker Microphone with Belt Clip and Coil Cord
NTN5050*	Public Safety Remote Speaker/Microphone with VELCRO patch (requires NLNB410A VELCRO Patch Pin Attachment and Speaker Mic Antenna)(not available with Lowband)
NTN5493*	Public Safety Remote Speaker/Microphone with Belt Clip (not available with Lowband)

Surveillance Accessories:

NTN5075*	Hirose Adapter, Radio to Mic/Audio Accessories
NTN5598*	B+ Hirose Adapter
ZMN6032*	Earpiece Speaker/Microphone PTT Assembly (requires NTN5075 Hirose Adapter)

Miscellaneous Accessories:

NKN6376*	Cloning Cable
NKN6408	Mobile Antenna to RF Adapter Interface Cable (requires antenna), allows remote antenna adapter to interface with UHF connector
NLNB410	Velcro Patch Pin Attachment
NSN6011*	2.5mm Earpiece with Volume Control
NSN6038	2.5mm Earpiece without Volume Control
NTN4812*	3.5mm Earpiece Adapter
NTN5043*	3.5mm Earpiece with Volume Control
NTN5368	Remote Antenna RF Adapter

Approval Notes:

- Accessories denoted with an asterisk (*) are approved as intrinsically safe by Factory Mutual. Refer to the radio label for intrinsic safety ratings and required batteries. Only these accessories and antennas may be used on approved radios.
- MSHA approved accessories are:
 - only the NTN7046 Nickel-Cadmium Battery
 - all of the antennas, all of the nickel-cadmium battery chargers, all of the carrying accessories, and all of the audio accessories listed
 - all of the surveillance accessories and miscellaneous accessories except for the NTN5598 Hirose Adapter, the NKN6408 Interface Cable, and the NTN5368 Antenna Adapter

OPERATING INSTRUCTIONS QUESTIONNAIRE

We believe that reports from users provide valuable information for producing quality operating instructions. Your comments and answers to the following questions will aid us in preparing manuals that contain accurate and complete information of maximum benefit to you.

In reference to Manual No. 68P81061C35-D

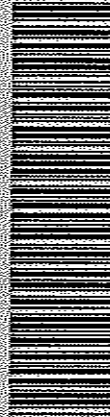
MT1000 Portable Radios

1. Please check all the appropriate boxes;

[illegible]

2. For illustrating procedures, do you prefer:
☐ photographs ☐ line drawings ☐ no preference
3. How would you rate the overall organization of this manual?
☐ excellent ☐ very good ☐ good ☐ fair ☐ poor
- 4a. If this manual has a "Quick Reference Card", do you use it?
☐ yes ☐ no
- 4b. If yes, how useful is it to you?
☐ extremely ☐ very ☐ somewhat ☐ not very
5. How do you rate this manual overall?
☐ excellent ☐ very good ☐ good ☐ fair ☐ poor
6. Comments/Recommendations for improving operating instructions.

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