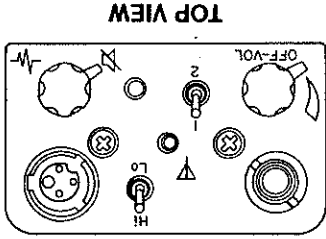


HT50™ Portable Radios

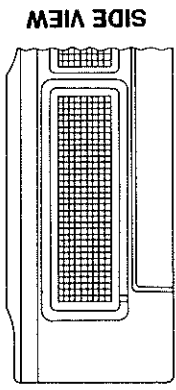
operating instructions



QUICK REFERENCE CARD



CONTROLS



SIDE VIEW

BASIC OPERATING PROCEDURE

TO RECEIVE:

1. Rotate volume control clockwise to turn radio on. Alert tone indicates that radio passes self test of microcomputer.
2. Set channel Selector to the desired channel.
3. For Private-Line ("PL") squelch operation, set the PL/Squelch control to the PL setting (A).
4. For Carrier-Squelch operation, rotate the PL/Squelch control clockwise past the detent until the noise stops (radio squelched).

TO TRANSMIT:

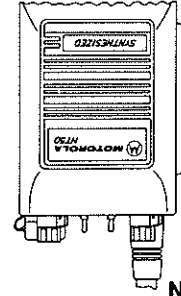
1. Set channel Selector to desired channel.
2. To Monitor the channel rotate the PL/Squelch control clockwise past the detent.
3. When the channel is clear press the PTT switch and speak slowly and clearly into the front speaker grille area. When finished transmitting release the PTT switch to receive.

ON TRANSMISSION:

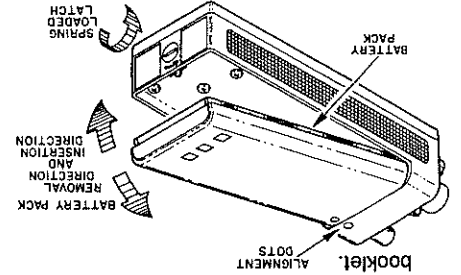
LED will glow continuous red to indicate normal transmission. LED will flash RED to indicate low battery.

4. To turn the radio off, rotate volume control fully counterclockwise.

ANTENNA AND BATTERY



- Fasten the antenna to the radio by screwing the antenna into the antenna receptacle on top of the radio.
- Install the battery pack by first positioning the alignment dots as illustrated. Then, slip the top of the battery pack into the radio housing and snap the bottom of the battery pack into place. Additional battery information is available on page 4 of this booklet.



CUT ALONG DOTTED LINE

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OPTIONAL FEATURES:




TIME-OUT-TIMER

(TOT, 60 SECONDS) – Transmission is limited to 60 seconds. An alert tone indicates that your transmission has been cut off. The alert tone continues until the PTT switch is released.

QUIK CALL II™:

This option provides the user with the alerting feature of a pager.

QUIK CALL II:

If your radio is equipped with the Quik Call II option, rotate the Private-Line (PL) squelch control fully counterclockwise, past the detent, to the Quik Call™ enable () position to set the radio to the paging mode. If your radio is in the Quik Call enable () position when first turned on, rotate the PL/Squelch control clockwise, out of the Quik Call enable () position and then counterclockwise, past the detent, into the Quik Call position to set the radio to the paging mode. Upon receiving a Quik Call (page alert), an interrupted tone will be generated to indicate that a valid page has been detected. The radio will remain in the unsquelched mode for approximately 30 seconds or until the PL/Squelch control is rotated clockwise as described above. If the Quik Call radio has not been manually reset within 30 seconds, the microcomputer will reset the radio back into the Quik Call mode.

Now transmit and receive as described in the basic operating procedure. When the conversation is complete, reset the radio as described above to receive the next page.

If the channel is changed while the radio is set to the paging mode, the radio will return to the carrier squelch mode and the above sequence to reset the radio to the paging mode will have to be performed.

To transmit, first monitor the channel by rotating the PL/Squelch control clockwise. When the channel is clear, rotate the PL/Squelch control clockwise as described in Step 6 of the TO RECEIVE section. Transmit and receive as described in the basic operating procedure. When the conversation is complete, rotate the PL/Squelch control fully counterclockwise past the detent, to reset the radio for the next page.

INTRODUCTION

To insure optimum performance of this radio, THIS OPERATING INSTRUCTIONS MANUAL MUST BE READ CAREFULLY AND COMPLETELY.

SAFETY INFORMATION

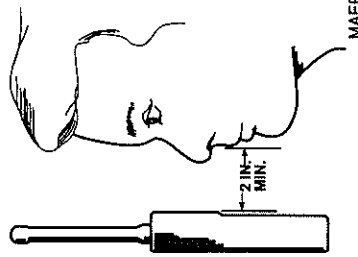
The Federal Communications Commission (FCC), with its action in General Docket 79-144, March 13, 1985, has adopted a safety standard for the human exposure to radio frequency (rf) electromagnetic energy emitted by FCC regulated equipment. Proper operation of this radio will result in user exposure substantially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

DO NOT hold the radio such that the antenna is 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 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 a portable transmitter near unshielded electrical blasting caps or in an explosive atmosphere unless it is a type especially qualified for such use.



FCC REGULATIONS

Because this radio operates in FCC-regulated frequency bands, **ALL RADIOS MUST BE LICENSED BY THE FCC BEFORE USE.**

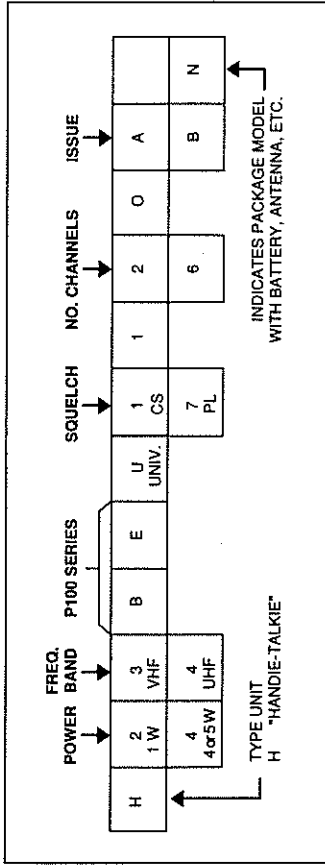
Because this radio contains a transmitter, Federal Law prohibits unauthorized personnel from adjusting or maintaining it.

INSPECTION AND MODEL INFORMATION

INSPECTION

- Remove and check the contents of the packing case to be sure that all items ordered have been included.
- Inspect the equipment thoroughly as soon as possible after delivery. If any part appears to be damaged in transit, report the extent of the damage to the transportation company immediately.

RADIO MODEL NUMBER: Example H23BEU7120AN

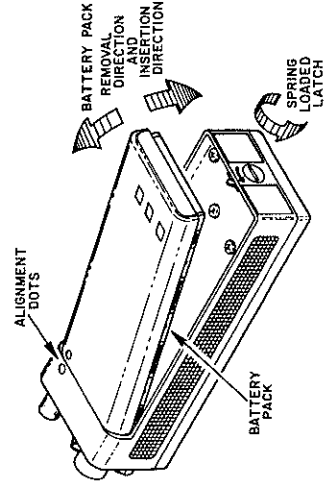


- The model number, serial number, and Motorola FCC designation number are all on a label attached to the bottom of your radio. The rf output power, frequency band, universal capability, type of squelch, and number of channels can be determined from the model number, as illustrated above.

- The specific frequency(s) that your radio is capable of transmitting and receiving is listed on a label located on the radio housing beneath the battery pack.

ANTENNA AND BATTERY PACK INSTALLATION

- Fasten the antenna to the radio by screwing the antenna into the antenna receptacle on top of the radio.
- Install the battery pack by first positioning the alignment dots as illustrated. Then, slip the top of the battery pack into the radio housing and snap the bottom of the battery pack into place. Additional battery information is available on page 4 of this booklet.



BATTERY INFORMATION

REPLACEMENT – With a screwdriver or coin, turn the spring-loaded latch on the bottom of the radio 1/8 turn in a counterclockwise direction and lift the battery pack from the radio housing. To install the new battery pack, position the alignment dots and slip the top of the battery pack into the radio housing. Snap the bottom of the battery pack into place.

NICKEL-CADMIUM BATTERIES (RECHARGEABLE) – Your Motorola nickel-cadmium rechargeable battery is a safe, dependable power source specifically designed for use in your high quality, high performance Motorola communications products. Proper care of your battery will insure its effectiveness allowing peak performance of your Motorola portable radio.

1. **RECHARGE BEFORE USING** – To insure optimum capacity and performance, your Motorola nickel-cadmium battery should always be charged before using. Your battery is designed to be used with a high quality Motorola charger. Charging in non-Motorola approved equipment may lead to permanent charger or battery damage and will void your warranty.
NOTE: To insure your battery attains a full charge in the allotted charge time (18 hours for standard charge or 3 hours for fast charge) the radio must be turned off. The radio may be turned off by rotating the ON—OFF/VOLUME CONTROL to the extreme counterclockwise position past the detent as shown on page 6.

2. **CHARGING TEMPERATURE** – Battery charging should occur, whenever possible, with your battery at about 77° F, room temperature. Charging a cold battery (below 45° F) may result in leakage of electrolyte, and ultimately, in failure of the battery. Charging of a hot or warm battery (above 95° F) will result in reduced discharge capacity, affecting performance of the radio.

3. **SHORT CIRCUITS** – Care should be taken to avoid external short circuiting. Sustained high rate discharge (i.e., a paper clip placed accidentally across the contacts) will damage the battery and may create a burn or fire hazard.

4. **MEMORY EFFECT** – A nickel-cadmium battery may exhibit a memory effect (reduced charge capacity) due to long continuous overcharge or repetitive shallow cycling.

Long Continuous Overcharge – If your battery is lightly or infrequently used, and it is allowed to charge over a long period (30 - 60 days), it may develop memory effect. That is, voltage may be sufficiently depressed on the first charging cycle to reduce the effectiveness of your radio transmission.

Repetitive Shallow Cycling – A more common type of memory effect is induced by uniform shallow cycling. For example, if you call on your battery to repeatedly deliver 50% of its capacity, the remaining 50% can temporarily become inactive, and when called upon to deliver, may show a sharp decrease in its ability to deliver terminal voltage.

Any nickel-cadmium battery which shows early signs of reduced capacity should be checked for memory effect before being returned or discarded.

If your battery is exhibiting memory effect, memory can be easily eliminated by completely discharging the battery using an unswitched radio, followed by a normal recharge. One or two deep cycles are usually sufficient.

5. **ADDITIONAL INFORMATION** – For additional information on Motorola's nickel-cadmium batteries, write to:

MOTOROLA INC.
 BATTERY MARKETING DEPARTMENT
 8000 W. SUNRISE BOULEVARD
 FORT LAUDERDALE, FLORIDA 33322-9947

ACCESSORIES

REQUIRED ACCESSORIES

All antennas of a given type meet the same mechanical and electrical specifications. Therefore, slight variations in physical appearance and length will not degrade the electrical performance of a given antenna.

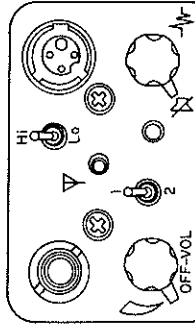
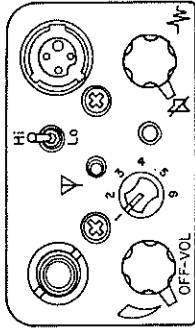
ITEM NO.	DESCRIPTION	MODEL APPLICATION
NAD6502	Antenna, Helical (150.8-162.0MHz)	VHF only
NAE6483	Antenna, Flexible (450.0-470.0MHz)	UHF only
NTN5453	Nickel-Cadmium Battery	All
NTN4865	Urethane Carrying Holder	All
NTN4881	Compact Battery Charger	All

OPTIONAL ACCESSORIES

Motorola offers several accessories to increase your communications efficiency. Consult your Motorola sales representative for a complete list of equipment. Various accessories are listed below.

NTN1032	Standard Urethane Carry-Case
NTN1033	Urethane Carry-Case, Detachable Swivel Type
NTN5241	Urethane T-Strap
NTN5242	Leather 2.5-inch Swivel Belt Loop
NTN5243	Carry Strap, Black
NTN4864	Single-Unit, Rapid Rate Battery Charger (117 VAC)
NTN5196	Multi-Unit, Rapid Rate Battery Charger (117/230 VAC)
NTN5244	Wall Mount, Multi-Unit Battery Charger
NTN5245	Rack Mount, Multi-Unit Battery Charger
NTN4849	Remote Microphone

CONNECTORS, CONTROLS, INDICATORS, AND SWITCHES



Antenna

Heliflex or whip with threaded base.



On-Off/Volume Control
Turns the radio on and off and adjusts the volume level.



Antenna Receptacle
Attaches the antenna to the radio.



LED Indicator

A light-emitting diode (LED) indicates normal transmission (continuous red), or low battery (flashing red).



Push-To-Talk (PTT) Switch

When depressed and held, engages the transmitter / encoder and puts radio in the transmit mode. When released, the radio operates in the receive mode.



Frequency Select Switch
Selects the operating channel.



ALERT TONES/INDICATORS

CONDITION	DEFINITION
Power Up	1640Hz for 0.5 seconds if the self check is OK and Good Radio Alert enabled.
Synthesizer Unlock (Rx)	1640Hz continuous if the self check is OK and Good Radio Alert enabled.
Synthesizer Unlock (Tx)	1640Hz interrupted if the self check is OK and Good Radio Alert enabled.
TOT	820Hz continuous until release of PTT.
Quik Call II	1640Hz, 142ms on/off for duration of Tone B.
Blank Tx Channel	820Hz continuous until release of PTT.
Low Battery	LED flashing 142ms on/off until release of PTT.
Transmit Indicator	LED continuous until release of PTT, unless the LED has been disabled.

BASIC OPERATING PROCEDURE

TO RECEIVE: (steps 1 through 8)

1. Rotate the volume control one-half turn clockwise to turn on the radio. A power-up alert tone is generated for approximately one-half second to indicate that the radio has passed a self test of the microphone.
2. Set the frequency select switch/knob to the desired channel position.
3. For PL squelch operation, proceed to step 8.
4. For carrier squelch operation (carrier squelch and PL models), rotate the (A) PL/squelch control to the fully counterclockwise position, before detent.
5. Listen for channel activity and set the volume control to a comfortable listening level.
6. When the channel is clear, slowly rotate the (A) PL/squelch control in a clockwise direction until the noise just stops (radio squelched). Do not adjust this control further. Excessive squelch reduces the radio sensitivity.
7. Your radio is now set to receive all calls on your frequency.
8. For PL operation (Private-Line models only), rotate the (A) PL/squelch control fully counterclockwise, past detent, to the PL on (A) position. Your radio is now set to receive only those calls coded for the radio.

TO TRANSMIT: (Steps 9 through 12)

9. Set the frequency select switch/knob to the desired channel position.
10. Do not interrupt another user. Listen for activity on your channel. If your radio is a Private-Line model, momentarily turn the PL/squelch switch clockwise (off detent-carrier squelch operation) to monitor the channel. The channel must be clear before transmitting.

NOTE

PL models - After monitoring the channel, remember to return the PL/squelch switch fully counterclockwise, past detent (PL on), to receive only PL coded messages.

11. Hold the radio in a vertical position with the speaker-microphone grille two to three inches from your mouth and speak in a normal tone of voice.
12. Press the PTT switch on the side of the radio and speak slowly and clearly into the grille area. When finished transmitting, release the PTT switch to receive. Remember, if you transmit while the other party is talking, you will not be heard.
13. To turn the radio off, rotate the volume control counterclockwise until a click is heard and the mechanical stop is reached.

NOTE

The radio operates with an internal speaker-microphone or a remote speaker-microphone. With the remote speaker-microphone attached, the PTT switch on the remote microphone is used instead of the lever on the side of the radio. Operation is as previously described in the basic operating instructions.

OPTIONS OPERATION

QUIK CALL II OPTION

Radios equipped with this option provide the user with the talk-back features of a pager.

STANDARD OPERATION

When the radio is turned on, a short power-up alert tone will be heard. The radio is in the carrier squelch mode and operates as described in the basic operating procedure.

QUIK CALL II (PAGING) MODE

If your radio is equipped with the Quik Call II option, rotate the Private-Line (PL) squelch control fully counterclockwise, past the detent, to the Quik Call enable (A) position to set the radio to the paging mode. If your radio is in the Quik Call enable (A) position when first turned on, rotate the PL/squelch control clockwise, out of the Quik Call enable (A) position and then counterclockwise, past the detent, into the Quik Call position to set the radio to the paging mode. Upon receiving a Quik Call (page alert), an interrupted tone will be generated to indicate that a valid page has been detected. The radio will remain in the unsquelched mode for approximately 30 seconds or until the PL/squelch control is rotated clockwise as described above. If the Quik Call radio has not been manually reset within 30 seconds, the microcomputer will reset the Quik Call radio back into the Quik Call mode.

Now, transmit and receive as described in the basic operating procedure. When the conversation is complete, reset the radio as described above to receive the next page.

If the channel is changed while the radio is set to the paging mode, the radio will return to the carrier squelch mode and the above sequence to reset the radio to the paging mode will have to be performed.

To transmit, first monitor the channel by rotating the PL/squelch control clockwise. When the channel is clear, rotate the PL/squelch control clockwise as described in Step 6 of the **TO RECEIVE** section. Transmit and receive as described in the basic operating procedure. When the conversation is complete, rotate the PL/squelch control fully counterclockwise, past the detent, to reset the radio for the next page.

TIME-OUT-TIMER

Radios equipped with this option limit a single transmission to sixty seconds. The transmitter emits an audible alert tone, signalling the operator that the sixty-second limit has been exceeded. The user can again key-up for the next transmission once the PTT switch has been released.

TOUCH-CODE DUAL TONE MULTIPLE FREQUENCY (DTMF)

Radios equipped with this option have a 3X4-inch keypad on the front of the radio. Turn the radio on, depress and hold the PTT switch down, and press the appropriate Touch-Code button.

GENERAL RADIO CARE

1. Avoid physical abuse of your radio such as carrying it by the antenna or remote microphone.
2. Wipe the battery contacts with a lint-free cloth to remove dirt, grease, or other material which may prevent good electrical connections.
3. The antenna jack is fitted with a protective cap which should be left in place when the jack is not being used.
4. When not in use, keep the universal jack covered with the protective cap.
5. Clean the radio exterior using a cloth moistened with water. See **CAUTION**.

CAUTION

Use of chemicals such as detergents, alcohol, aerosol sprays, and/or petroleum products may be harmful and damage the radio housing and cover.

IF YOU EXPERIENCE DIFFICULTY:

Check the following items before requesting service.

1. Review steps in Basic Operating Procedure.
2. Be sure the frequency selector switch is set to the correct channel.
3. If you cannot receive in fringe areas, check the squelch control setting. It must be set to threshold position as described in the basic operating instructions.
4. If operation is poor, check the antenna. It must be undamaged and operated in the vertical position for maximum range.
5. Try several different operating locations.
6. Replace or recharge the battery.

COMPUTER SOFTWARE COPYRIGHTS

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

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