
MTX-900™ Conventional and Trunked Portable Radios

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Features

Description

The Motorola MTX-900 Handie-Talkie® radio is a trunked/conventional system portable radio available in seven versions: The MTX-900 “A3” model (H25FEA51A3_N) and “A4” model (H25HFA51A4_N), which are conventional only, and five dual mode versions: “B0” model (H25HFB51B0_N), “B1” model (H25HFF51B1_N), “B2” model (H25HFF51B2_N), “B3” model (H25HFA51B3_N), and the MTX-900 “B4” model (H25HFA51B4_N). The model configuration chart illustrates the difference between the seven models.

A3 Model Features

- 18 Conventional Channels
- Repeater/Talk-around (unit-to-unit operation)
- Mixed Private-Line (PL), Digital Private-Line (DPL), and Carrier Squelch (CSQ), Transmit and Receive
- Volume Set

A4 Model Features

- 18 Conventional Channels
 - Repeater/Talk-around (unit-to-unit operation)
 - Mixed Private-Line (PL), Digital Private-Line (DPL), and Carrier Squelch (CSQ), Transmit and Receive
 - Volume Set
 - Conventional Phone (Encode)
- “A3” and “A4” Models

MODEL CONFIGURATION

Radio Model	Power Level	Talk Group Select	Trunked System Select	Trunked Telephone Inter-connect	Private Conver. Response	Call Alert Decode	Trunked/Conven. Operation	Max. Conv. Chnls.	Conv. Phone Encode
A3	2W	N/A	N/A	N/A	N/A	N/A	Conv.	18	N/A
A4	2W	N/A	N/A	N/A	N/A	N/A	Conv.	18	•
B0	2W	N/A	N/A	N/A	N/A	•	Trunked	N/A	N/A
B1	2W	3	2	N/A	•	•	•	3	N/A
B2	2W	3	2	•	•	•	•	3	•
B3	2W	3	6	N/A	•	•	•	15	N/A
B4	2W	3	6	•	•	•	•	15	•

B0 Basic Model Features

- One Talk Group
- One System
- Trunked Operation
- Call Alert Decode

B1 Model Features

- Three Talk Group Select
 - Two System Select
 - Trunked and Conventional Operation
 - Call Alert Decode
 - Private Conversation Response
- "B0" Model

B2 Model Features

- Three Talk Group Select
- Two System Select
- Trunked and Conventional Operation
- Call Alert Decode
- Private Conversation Response
- Telephone Interconnect

B3 Model Features

- Three Talk Group Select
 - Six System Select
 - Trunked and Conventional Operation
 - Call Alert Decode
 - Private Conversation Response
- "B1" and "B2" Models

B4 Model Features

- Three Talk Group Select
 - Six System Select
 - Trunked and Conventional Operation
 - Call Alert Decode
 - Private Conversation Response
 - Telephone Interconnect
- "B3" and "B4" Models

SYSTEM CONFIGURATION (B4 models only)

No. of Trunked Systems	No. of Talk Groups	No. of Conventional Channels
1	3 (1 for "B0" Model)	15 (N/A for "B0" Model)
2	6	12
3	9	9
4	12	6
5	15	3
6	18	0

StartSite™ Models

A new series of models (StartSite) is available. Refer to the chart attached and notice that the new models compare to counterpart existing Privacy Plus® models, except that the new models include some additional features. Since these additional features are software driven, the StartSite models appear, and are mechanically identical to their counterpart Privacy Plus models. The three features added to all StartSite models are:

- Push-To-Talk Identification (PTT ID)
- Failsoft
- Select Inhibit

With the PTT ID feature, each time the microphone PTT button is pressed, the radio automatically sends your radio's identification code to your dispatcher.

With the Failsoft feature, if the controller fails and the system is within range, the radio automatically operates on a predetermined frequency in a non-trunked (conventional) manner. The radio remains unmuted on the failsoft channel and a faint beep is emitted every ten seconds to indicate that the radio is in failsoft. In the failsoft mode of operation, press the PTT to transmit and release it to listen.

The Select Inhibit feature gives the base station controller the ability to shut down any radio's operation.

Privacy Plus Models	StartSite Models
MTX-900	MTX-900
H25HFB51B0	H25HFB51G1
H25HFB51B3	H25HFA51G3
H25HFB51B4	H25HFA51G4

Trunked Versus Conventional Radio Operation

Trunked

The MTX-900 trunked portable radio offers you many advantages, including fast system access, enhanced privacy, and ease of operation. In a trunked system there is no need for you to monitor (listen to) a channel before transmitting.

Conventional

In conventional mode, the MTX-900 radio performs like a conventional two-way radio. You must monitor (listen to) the channel before transmitting to make certain that you are not talking over someone who is already transmitting.

General Information

Unpacking

Remove and check the contents of the packing case to be certain that all ordered items have been shipped. Inspect all items thoroughly. If any items have been damaged during transit, report the damage to the shipping company immediately.

Operating Instructions

Help Card /
Radio Information Instruction Sheet

Antenna

Radio

Battery

Packing Carton

Antenna Installation

Screw the threaded end of the antenna into the large threaded antenna bushing located on top of the radio.

Rotate the antenna clockwise until it fits firmly against the bushing.

Battery Installation

Align the notched end of the battery with the grooves in the radio baseplate. Mate the notches and the grooves and slide the battery toward the battery latch until the battery "clicks" into place.

Battery Removal

Remove the battery by holding the battery latch up toward the top of the radio. With the battery latch held up, slide the battery away from the latch until it is clear of the radio baseplate.

Note: The battery is shipped uncharged. Batteries must be charged before use. (See "Battery Information," page 24).

Controls, Indicators, and Connectors

- 1 **Volume Set Button**
("A3", "A4" and "B0" models only)
Press to generate the volume set tone. This tone can be used together with the volume control to adjust the radio receiver volume to a desired listening level. 1

- 2 **Private Conversation Response**
("B1", "B2", "B3", "B4" models)
Used to respond to a private call, a Call Alert (page) or to call back the last person you spoke to in Private Conversation Mode. 2
3

- 3 **Telephone Interconnect Button**
("B2" and "B4" models only) 4
Press to answer and hang up after trunked telephone calls. Press to access the telephone network when a trunked system is selected.

- 4 **Push-to-Talk Switch (PTT)** 5
Press to transmit on the currently selected channel.

- 5 **Keypad**
("A4", "B2" and "B4" models only)
Telephone-type push buttons used in telephone interconnect. ("B2" and "B4" models only). The keypad is also used to access the MRTI phone patch when a conventional channel is selected.

Controls, Indicators, and Connectors (cont.)

"A3" and "A4" Conventional Models

- 1 **Three Position Toggle Switch**
Programmable as a 3-position channel selector, a PL/DPL/CSQ selector, or to select between repeater and talk-around operation. 1
- 2 **External/Accessory Connector** 2
Allows operation with accessories. 3
- 3 **On/Off Switch - Volume Control**
Turns the radio on and off and adjusts the radio volume level.
- 4 **LED Transmit Indicator** 4 5
Lights up when the radio is transmitting.
- 5 **Mode Select Switch**
Six-position rotary type switch; used together with the toggle switch to access channels.

"B0" Trunked Basic Model

- 1 **External/Accessory Connector**
Allows operation with accessories.
- 2 **On/Off Switch - Volume Control** 1
Turns the radio on and off and adjusts the radio volume level. 2
- 3 **LED Transmit Indicator**
Lights up when the radio is transmitting. 3

Controls, Indicators, and Connectors (cont.)

"B1" and "B2" Trunked/Conventional Models

- 1 **Talk Group Select Switch**
Three position toggle-type switch, allows selection of 3 trunked talk groups, announcement groups, or conventional channels.
- 2 **External/Accessory Connector** 1
Allows operation with accessories. 2
- 3 **On/Off Switch - Volume Control** 3
Turns the radio on and off and adjusts the radio volume level.
- 4 **LED Transmit Indicator**
Lights up when the radio is transmitting. 4 5
- 5 **System Select Switch**
Two-position rotary type switch; allows selection of trunked systems and/or conventional channels.

"B3" and "B4" Trunked/Conventional Models

- 1 **Talk Group Select Switch**
Three position toggle-type switch, allows selection of 3 trunked talk groups, announcement groups, or conventional channels.
- 2 **External/Accessory Connector** 1
Allows operation with accessories. 2
- 3 **On/Off Switch - Volume Control** 3
Turns the radio on and off and adjusts the radio volume level.
- 4 **LED Transmit Indicator**
Lights up when the radio is transmitting. 4 5
- 5 **System Select Switch**
Six-position rotary type switch; allows selection of trunked systems and/or conventional channels.

Alert Tones

The MTX-900 radio generates the following audible tones to indicate radio operating conditions:

Illegal Mode	A low-pitched " <i>baaaah</i> " tone is heard when an invalid or unprogrammed operation is attempted, for example: <ol style="list-style-type: none">1) the rotary and toggle switches are set to an unprogrammed position2) the phone button is pressed but the radio is not authorized to access the telephone network (trunked models).
Low Battery	A cricket-like " <i>chirp-chirp</i> " heard when the PTT is released indicates that the battery charge is getting low. This tone will also sound every two minutes when the radio is idle.
Time-Out-Timer	A low-pitched " <i>baaaah</i> " tone heard while transmitting indicates that the present transmission will be cut off in four seconds. Quickly release the PTT and press it again to cancel the tone and finish transmitting your message.
Valid Key	A " <i>chirp</i> " tone is heard when the keypad buttons are pressed to indicate the key press is accepted.
Invalid Key	A " <i>bonk</i> " tone is heard when the keypad buttons are pressed to indicate the key press is rejected.
Volume Set	A tone is heard when the volume set button is pressed. This tone can be used together with the volume control to adjust the radio receiver volume level. The tone continues for one second after the button is released.

Trunked Systems Only

Talk Permit	A high-pitched " <i>dih-dih-dit</i> " tone heard when the PTT is pressed indicates that a channel grant has been received from the trunking controller and the radio can transmit.
Dispatch Busy	A continuous " <i>bah-bah-bah</i> " tone heard when the PTT is pressed indicates that the system is busy (no voice channels are available). Release the PTT and wait for a Call Back tone.
Call Back	This is the same as the Talk Permit tone. It is heard following a Dispatch Busy when a voice channel becomes available. When the Call Back tone is heard, press the PTT to transmit.
Talk Prohibit/ Out-of-Range	A continuous " <i>baaaah</i> " tone heard when the PTT is pressed indicates that there is no response from the trunking controller; transmission is not possible. The radio may be out-of-range or not authorized to access the trunked system.

Alert Tones (cont.)

Call Alert (Page) Decode	Four "beep" tones indicate that a Call Alert (page) is being received. These tones will repeat every six seconds until the page is acknowledged.
Private Conversation Response (B1, B2, B3 and B4 models only)	Two "beep" tones announce an incoming private call. After 20 seconds the MTX-900 radio will stop signalling and forget the ID of the calling radio.
Phone Ring	A telephone-type "ring" is heard when the radio receives a phone call.
Phone Busy (B2 & B4 models only)	If a "bah-bah-bah" tone is heard when the telephone interconnect button is pressed, the trunking controller is busy. Your request for a telephone line will be granted when a channel becomes available.
Failsoft	A faint "beep" tone heard every ten seconds when the radio is idle indicates that the trunking controller has failed. Transmission is still possible, but will be as in conventional operation.

Glossary

Squelch	A radio circuit mutes the speaker when no transmitted signal is present.
CSQ	Carrier Squelch. Radio channels with carrier squelch will unmute (unsquelch) the radio only when a carrier (voice transmission) is detected. The noise normally heard in "open squelch" is eliminated.
PL	Private-Line tone coded squelch. A continuous sub-audible tone is transmitted along with the carrier. Radios in this system will unsquelch to receive voice communication only if the correct PL tone is detected along with the carrier.
DPL	Digital Private-Line coded squelch. A continuous sub-audible data signal is transmitted along with the carrier. Radios in this system will unsquelch to receive voice communication only if the correct DPL tone is detected along with the carrier.
MRTI	Motorola Radio-Telephone Interconnect. A Motorola system (conventional operation only) that provides repeater connection to the telephone network. The MRTI allows the radio to access the telephone network when the proper access code is received.

Operating Procedures

After a fully charged battery and an antenna have been connected to the radio, you may begin operating your radio. If necessary, review the preliminary information to be sure you understand the radio's features, controls, and indicators.

To Turn the Radio On and Off

Turn the on/off switch in a clockwise direction. If the radio is not already turned on, the knob will click as it is turned.

To turn the radio off, turn the switch counterclockwise until it clicks.

To Set the Volume Level

The Volume set button ("A3", "A4", and "BØ" models only) allows you to adjust the radio receiver volume before a transmission is received. Press the volume set button on the side of the radio. You will hear the volume set tone.

To increase the volume level, turn the volume control knob clockwise. To decrease the volume level, turn the knob counterclockwise.

Selecting Channels

To select a desired channel, adjust the rotary and the toggle switches to the desired channel position. The indicator mark on the rotary switch designates the currently selected position.

Trunked Operation

Making Trunked Dispatch Calls

Select the desired talk group using the rotary and toggle switches.

Press the PTT to talk. If the LED is lit, you are transmitting normally (the channel is clear to use). If a dispatch busy tone is heard, release the PTT and wait for a call back tone. When the call back tone is heard, press the PTT and transmit normally. If a continuous talk prohibit tone is heard while the PTT is pressed, transmission is not possible. The radio may be out-of-range or not authorized to access the trunked system.

When you have finished talking (transmitting), release the PTT switch to listen (receive).

Receiving Trunked Dispatch Calls

Voice Traffic is heard through the radio's speaker when a dispatch call is received. Press the PTT to transmit a response and release it to listen for replies. Voice traffic cannot be received while the PTT is pressed.

Note: If the radio is set on an announcement group, a bad key chirp ("bonk") will be heard every six seconds. This tone is a warning that talk group traffic will be missed. You must leave the announcement group to monitor talk group traffic. (See page 20 for more discussion of talkgroups and announcement groups).

Proper Transmit Techniques

When transmitting, speak carefully and clearly in a normal voice. Shouting will not make a message easier to understand. Make each transmission as brief as possible.

- Hold the radio upright with the antenna in a vertical position.
- Keep the antenna away from the face while transmitting.
- With the radio two to three inches from the lips, press the PTT and speak into the radio grille area.
- Release the PTT to receive any replies.

Making Trunked Telephone Calls

Note: In order to make a telephone call from your radio, it must be authorized to access the telephone network on the trunked system selected.

To make a telephone call from a trunked system, press the telephone interconnect button; listen for a dial tone.

Note: If a busy tone is heard when the telephone interconnect button is pressed, all telephone channels are busy. You are placed in queue for an available channel. When you hear a dial tone, proceed normally.

*Bah-
bah-bah*

Dial the desired telephone number using the keypad. When the person answers, transmit normally.

Note: Tell the person answering that you are talking from a radio and, that, they should wait to hear the “beep” after you speak before replying. Otherwise, if they talk while you are transmitting, you won't be able to hear what they are saying.

When your call is complete, press the telephone interconnect button again to hang up.

Note: If an invalid key tone is heard when the telephone interconnect button is pressed, the telephone interconnect option has not been enabled. Telephone calls cannot be made.

Note: If an illegal mode tone is heard when the telephone interconnect button is pressed, the radio may be out-of-range of the system or not authorized to access telephone interconnect. Telephone calls cannot be made.

Receiving Trunked Telephone Calls

A telephone-like ring is heard when a telephone call is received.

To answer the call, press the telephone interconnect button, press the PTT to speak, then release it to listen.

Ring-Ring

When the conversation is finished, press the telephone interconnect button to hang up.

Receiving a Call Alert (Page)

When a Call Alert (page) is received, four "beep" tones will be heard. These tones will continue every six seconds until the page is acknowledged.

"Beep
Beep
Beep
Beep"

To answer the page, press the "Private Response" button and speak normally. When the Private Conversation is finished, press the "Private Response" button to receive normal dispatch calls.

To answer the page in normal dispatch mode, press the PTT and speak normally.

To answer the page in Private Conversation mode, press the "Private Response" button and speak normally. To exit the Private Conversation mode when the Private Conversation is finished, press the "Private Response" button. The radio will return to normal dispatch operation.

Failsoft Operation

In the event of a trunked system failure, radio communication is still possible in the failsoft mode. When the trunking controller fails and the system is within range, the radio will automatically enter failsoft.

"Beep"

While in failsoft, the radio operates on a pre-determined frequency in a non-trunked (conventional) manner.

The radio will remain unmuted on the failsoft channel and a faint beep will be heard every ten seconds to indicate the radio is in failsoft. Press the PTT to transmit in failsoft mode, and release it to listen for a response.

When the trunked system returns to normal operation, the radio will automatically leave failsoft and the failsoft tone will stop. The radio will resume normal trunked operation.

In order to receive pages, Private Conversation calls, and telephone calls, radios must be turned on, currently on the same trunked system as the caller, and not

How a Trunked System Operates

A trunked system uses repeater channels to create a communications path. Each system contains up to 20 repeater channels, depending on system requirements. The trunking controller, the main control unit of the system, uses one of the channels as a dedicated control channel. This channel is the link between the trunking controller and radios in the system. The trunking controller continuously transmits information to all radios. This information consists of timing signals to keep radios synchronized to the trunking controller and identification signals to identify the control channel. All radios automatically monitor the control channel when there is no voice traffic and are silent until summoned by the trunking controller.

A typical system might consist of a certain number of radio units operating within an organized group, known as an announcement group. Each announcement group can be segmented into independent talk groups. Subfleet segmentation allows the fleet to be organized into predetermined groups according to function. Members of a talk group hear only those messages intended for the talk group.

When a user presses the PTT to begin communication, the following events occur, all in less than one second:

- A voice channel request is automatically sent to the trunking controller via the control channel.
- The trunking controller decodes this request, identifies the user, and determines which talk group is being called.

- The trunking controller acknowledges the request via the control channel and begins searching for a clear voice channel.
- The requesting radio alerts the user to go ahead if a voice channel has been assigned, or to stand by for a talk permit if all voice channels are busy.

Once a voice channel has been assigned, the trunking controller assigns the same voice channel to all talk group members. This allows other members of the talk group to join communication already in progress.

If the trunking controller receives a voice channel request from a radio in another talk group, it assigns that radio and its talk group to an unoccupied voice channel. This action will not affect or disrupt communication already in progress on other occupied voice channels.

Advantages of a Trunked System

Trunked operation has one main goal: to improve a system's efficiency by sharing its resources among many users. Although trunking has been used for many years by telephone companies, Motorola has pioneered its use in the two-way radio industry. Trunked operation offers the user many advantages over conventional, non-trunked radio operation:

- The trunking controller automatically selects and assigns communication channels, making operations simple, reliable, and efficient.
- Channel assignment is restricted to one group at a time, eliminating interference and ensuring privacy.
- One attempt is required to access the communication system. If all channels are busy, the trunking controller will automatically assign the next available channel to the user.

Conventional Operation

Making Conventional Dispatch Calls

Select a conventional channel using the toggle and rotary select switches.

Press the PTT to talk. If the red LED is lit, you are transmitting normally (the channel is clear to use). If you hear someone else talking while the PTT is held, the channel is in use. Release the PTT and try your call again later.

When you have finished talking (transmitting) release the PTT switch to listen (receive).

Making Conventional Telephone Calls

Select a conventional channel using the toggle and rotary select switches.

Press and hold the PTT and dial the telephone MRTI access code. Release the PTT and listen for a dialtone. Press and hold the PTT while dialing the desired telephone number using the keypad. If the telephoned party responds, transmit normally. To hang up, press and hold the PTT while dialing the MRTI deaccess code.

The telephoned party should be informed that the caller is using a radio and that replies should be made only after the radio party has finished transmitting. The telephoned party will hear a "chirp" tone when the radio party has finished transmitting and is ready to listen for a reply. Otherwise, the telephoned party may attempt to speak while the radio party is transmitting, and the resulting confusion will severely restrict communication.

Note: When transmitting, remember to check if the channel is in use as in conventional dispatch.

Receiving a Private Conversation Call

Two “beeps” announce an incoming private call. The tone will continue for 20 seconds or until there is a response.

Push the “Private Response” button, followed by the PTT to answer a private conversation. Release the PTT to receive any replies.

When the private conversation is finished, press the “Private Response” button to receive normal dispatch calls.

Note: If you leave the radio in “Private Conversation” mode for one minute with no activity, a bad key chirp (“bonk”) will be heard every six seconds. After an additional minute, the radio will replace the bad key chirp with the illegal mode tone. To stop these alert tones, return the radio to dispatch mode by pressing the “Private Response” button again.

“Beep-
Beep”

Private Conversation Call Back

Push the “Private Response” button to call back the last person you spoke to in Private Conversation mode, or the last person that Call Alerted (paged) you.

If the called radio is turned on, and accepted, you will hear a telephone-type ringing until your private call is answered. If your private call does not get through, you will hear an illegal mode tone. Press the PTT to try the call again, or press the “Private Response” button to clear the tone and exit to dispatch operation.

When the called party responds, press the PTT to talk; release it to listen.

You may hear a ring followed by a busy tone. Your call got through, but the system is temporarily busy and the called radio is in queue for an available channel.

When the Private Conversation is finished, press the “Private Response” button to receive normal dispatch calls.

Battery Information

Charging

The MTX-900 Handie-Talkie radio uses rechargeable nickel-cadmium batteries. When properly used, they provide a safe and dependable power source necessary for peak radio performance.

To ensure peak radio performance, batteries should be fully charged before use and periodically thereafter. When the battery charge falls to an unacceptable level, a low battery alert tone is heard, indicating that the battery needs to be recharged.

WARNING: IMPROPER USE OF BATTERIES MAY CREATE FIRE AND/OR EXPLOSION HAZARDS.

Batteries should be charged at about 77°F. Charging in cold temperatures (below 45°F) may result in electrolyte leakage and destroy the battery. Charging in hot temperatures (above 95°F) will not damage the battery, but reduced charge capacity will result.

Battery Warnings

The following precautions should be observed while charging and handling batteries:

Batteries should not be replaced or charged in a hazardous atmosphere. Contact sparking while installing or removing batteries from radios and chargers may trigger an explosion.

Do not dispose of batteries in fire; disposing of batteries in fire will create an explosion hazard.

Avoid short-circuiting the battery. A short circuit, such as a paper clip dropped accidentally across the battery terminal, will permanently damage the battery, void the warranty, and create a fire hazard.

Charge batteries with the appropriate Motorola chargers only. (Refer to the Accessories section of this manual.) Charging batteries in any other equipment may lead to battery damage and will void the battery warranty.

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 submerged.

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.

Operating Hints

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. 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
1-800-523-4007 (U.S.A. only)
1-305-475-6175 (elsewhere)
Hours:
Mon. - Fri.
8:00 a.m. - 6:30 p.m. E.S.T.

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.
3. Check the transmit LED. Transmitter performance may be measured by the LED; it should glow brightly while transmitting. A dim or blank LED may indicate a discharged battery or transmitter fault condition.
4. Check the rotary and toggle switch settings. Programmed systems / talk groups and conventional zones/channels are specified on the Radio Information Instruction Sheet.
5. Check the battery and replace it if weak or damaged. Charge the battery if necessary.

Accessories

Motorola offers a wide variety of accessories to increase communications efficiency and effectiveness. Contact a Motorola sales representative for complete information on the entire line of available accessories.

Accessories designed for use with the MTX-900 radio include:

Batteries

NTN4822	Medium capacity rapid rate nickel-cadmium
NTN4823	Medium capacity FM approved nickel-cadmium
NTN5447	High capacity rapid rate nickel-cadmium
NTN5448	High capacity approved nickel-cadmium

Battery Chargers

NTN4635	Standard rate single-unit charger, 117 volt
NTN4636	Standard rate single-unit charger, 220 volt
NTN4633	Rapid rate single-unit charger, 117 volt
NTN4634	Rapid rate single-unit charger, 220 volt
NTN4666	Compact charger, 117 volt
NTN4667	Compact charger, 220 volt
NTN4668	Multi-Unit charger, 117 volt
NTN4922	Multi-unit charger, 220 volt

Carry Accessories

NTN4916	2 1/2" belt clip (fits 1.5" belt)
NTN4924	3" belt clip (fits 2.5" belt)
NTN4814	Belt clip carry holder
NTN4998	Urethane strap (included in NTN4814 Holder Kit)
NLN4529	2 1/2" belt loop, swivel
NLN4365	3" belt loop, swivel
NTN4879	Leather T-strap (Nylone T-strap fits leather carry case)
NTN4758	Leather case and T-strap, medium
NTN4655	Swivel case and T-strap, medium

Audio Accessories

NMN6145	Remote Speaker/Microphone, w/clip 2.5mm Audio Jack
NMN6155	Remote Speaker/Microphone with Velcro
NMN6156	Remote Speaker/Microphone, coiled cord
NTN5043	Earpiece and Volume Control (3.5mm) (requires NTN4812)
NTN4812	Earphone Jack adapter (3.5mm)
NTN5075	Audio Accessory Jack
ZMN6031	Earpiece Speaker/Microphone/Push-To-Talk Assembly 3-wire microphone and PTT separated (requires NTN5075)
ZMN6032	Earpiece Speaker/Microphone/Push-To-Talk (2-wire) Assembly Microphone and PTT combined (requires NTN5075)
NSN6011	2.5mm Earpiece with Volume Control
NSN6038	2.5mm Earpiece without Volume Control

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.

Safety Guidelines

- 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.

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 FM APPROVAL.

Hazardous Atmosphere Operation (cont.)

Certain MTX-900 radios and batteries have been declared intrinsically safe by Factory Mutual Research Corp. (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 MTX-900 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. MTX-900 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

Intrinsically Safe Models and Accessories

The following radios and accessories are approved as Intrinsically Safe by Factory Mutual. Refer to the radio label for intrinsic safety ratings and required batteries. Only the accessories and antennas listed below may be used on approved radios.

Models:

H25HFA51A3BN
H25HFA51A4BN
H25HFA51B3BN
H25HFA51B4BN
H25HFB51B0BN
H25HFF51B1BN
H25HFF51B2BN

Intrinsically Safe Models and Accessories (cont.)

Kit Number	Description
NMN6156A	Remote Speaker/Microphone
NTN5043A	Earpiece w/Volume Control
NTN4812A	Adapter
NTN5075A, B	Audio Accessory Jack
NAF4070A	Dipole Antenna
NAF4050A	Whip Antenna
NMN6145A	Remote Speaker Microphone w/earphone jack
NMN6155A	Remote Speaker Microphone w/Velcro
NAF5010A	Flex Antenna

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.

Computer Software Copyrights

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