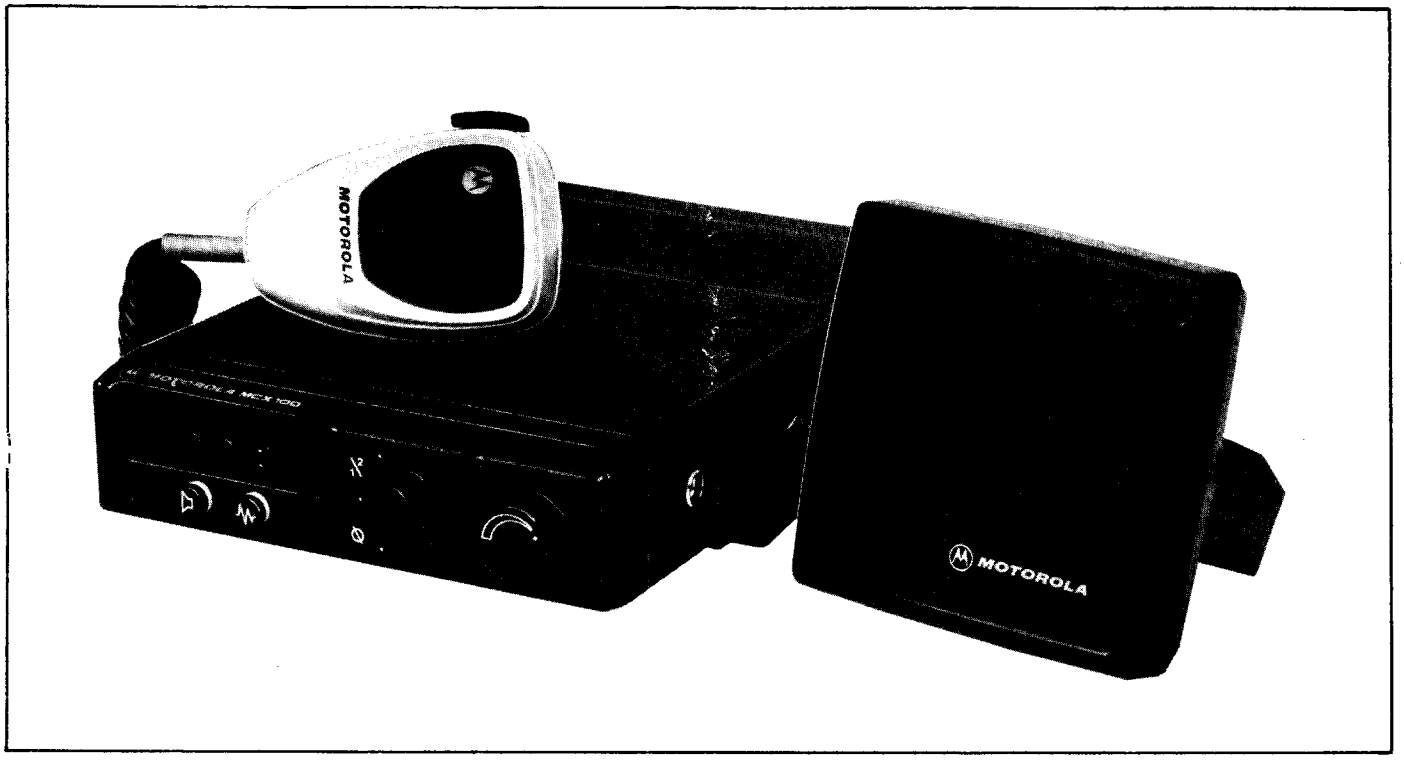
MOTOROLA

DVP™ MCX100™ Two-Way FM Radio

10 W and 30 W RF Power
136-174 MHz

"EXA" SERIES



THIS MANUAL HAS BEEN
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Instruction Manual

68P81063E25-O

MOTOROLA INC.
Communications
Sector

DVP MCX100

TWO-WAY FM RADIO
10 W AND 30 W RF POWER
136-174 MHz

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(Pages v and vi are omitted due to irrelevancy)

PERFORMANCE SPECIFICATIONS

GENERAL

Number of Frequencies	2 to 32 channels, synthesized
Type of Squelch	1000 Series: Carrier Squelch 7000 Series: *Private-Line* and *Digital Private-Line* 9000 Series: *Select 5*
Primary Power	12 V dc nominal, negative ground
Dimensions	10 Watt Front Mount Models: 27.3cm L × 17.9cm W × 5.1cm H (10.7" L × 7" W × 2" H)
	30 Watt Front Mount Models : 32.4cm × 17.9cm W × 5.1cm H (12.8" L × 7" W × 2" H)
	10 Watt Remote Mount Models: 29.8cm L × 17.9cm W × 5.1cm H (11.7" L × 7" W × 2" H)
	30 Watt Remote Mount Models: 34.8cm L × 17.9cm W × 5.1cm H (13.7" L × 7" W × 2" H)
Weight	10 Watt Front Mount Models: 3.3 kg (7.3 lb.)
	30 Watt Front Mount Models: 3.6 kg (7.9 lb.)
	10 Watt Remote Mount Models: 3.9 kg (8.6 lb.)
	30 Watt Remote Mount Models: 4.2 kg (9.3 lb.)

			Typical Battery Current Drain (Less Options)		
Model Series	**Minimum RF Power Output**	**Frequency Range (MHz)**	**Standby @13.8 V**	**Receive at Rated Audio @13.8 V**	**Transmit at Rated Power @13.8 V**
D/T23EXA	10 Watts	136-174	350 mA	1.1A	3.0A
D/T43EXA	30 Watts	136-174	350 mA	1.1A	7.5A

TRANSMITTER

Output Impedance	50 Ohms
Frequency Stability	±0.0005% from −30°C to +60°C (±0.0002% optional) (+25 °C reference)
Spurious and Harmonics	10 Watt Models: 80 dB below carrier 30 Watt Models: 85 dB below carrier (less than 2×10^{-7} watts all models)
Modulation	(16F3) ±5 kHz for 100% @ 1000 Hz (20F3Y) ±4 kHz, coded mode
Audio Sensitivity	80 mV nominal for 60% system deviation
FM Noise	50 dB
Audio Response*	+1/−3 dB from 300 to 3000 Hz +1/−1.5 dB from 400 to 2700 Hz
Audio Distortion*	Less than 3% at 1000 Hz to 60% deviation
Frequency Separation	26 or 28 MHz

RECEIVER

Audio Output	EIA: 5 Watts @ 3% distortion
Input Impedance	50 Ohms
EIA Modulation Acceptance	±7 kHz
Frequency Stability	±0.0005% from −30°C to +60°C ambient (+25°C reference) (±0.0002% optional)
Squelch Sensitivity*	Carrier Squelch: 10 dBq (fixed) PL/DPL: 6 dBq (fixed)
Maximum Frequency Separation	4 MHz or 12 MHz in two 6 MHz "windows" with wide-spaced (dual) front end option B434.
Spurious and Image Rejection	85 dB
Sensitivity*	20 dB Quieting: 0.35 uV EIA SINAD: 0.28 uV
Intermodulation	80 dB
Selectivity	30 kHz Channel Spacing: 90 dB EIA 25 kHz Channel Spacing: 85 dB EIA

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

PERFORMANCE SPECIFICATIONS (Cont'd.)

SECURITY

Scrambler Type	Digital
Coding Method	Multi-Register Non-Linear Combiner
Number of Codes	2.36×10^{21} orthogonal (unique) codes
Synchronization	Self synchronizing (no preamble required)
Code Key Initialization	Random
Code Key Generation	External hand held microprocessor controlled code inserter (Cat. #T3010__X)
Code Storage	Volatile Electronic Memory
Number of Codes Per Radio	One (2nd related code optional)
Analog to Digital Conversion	Continuously Variable Slope Delta Modulation (CVSD)
Voice Sample Rate	12 Kilo Bits/Sec

*Specification applies to clear mode only. Performance in the private mode has been tailored to deliver optimum intelligibility and voice recognition.

FCC DESIGNATION

Model Series	Transmitter Power	Applicable Rule of Parts	Emissions Authorized	Type Acceptance Numbers
D/T23EXA	10 Watts	22, 90, 74	15F2, 16F3, 16F9, 20F3Y	ABZ9QBT3646
D/T43EXA	30 Watts			ABZ9QBT3647

Chassis Assembly Breakdown Chart

TLN2324B	Chassis Assembly
TRN4600A	Power Interconnect Board
TRN5365A	Power Interconnect Board
TRN4602A	Transmitter Feedthrough Plate
TRN4603A	Chassis Hardware

DVP VHF *MCX100* MOBILE RADIO

CARRIER AND PL/DPL SQUELCH

EXA SERIES MODELS

FRONT/REMOTE MOUNT

136-174 MHz

R1 = 136-162 MHz
R11 = 146-174 MHz

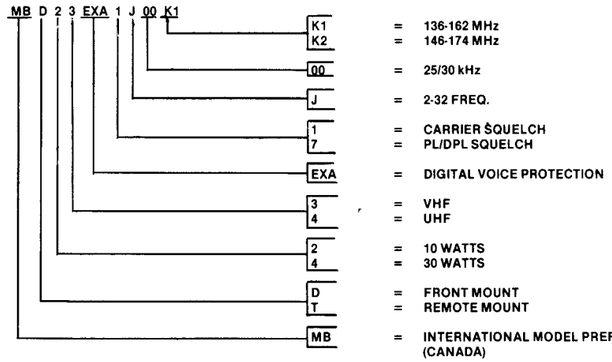
CODE:

● = ONE ITEM SUPPLIED WITH EACH RADIO
○ = ONE ITEM SUPPLIED WITH EVERY FIVE RADIOS
★ = TWO ITEMS SUPPLIED WITH EACH RADIO
⁄ = ONE ITEM SUPPLIED DEPENDENT UPON FREQUENCY

NOTES:

1. REFER TO SEPERATE BREAKDOWN CHART FOR LOW LEVEL KITS.
2. REFER TO ANTENNA INSTRUCTION SECTION 68P81110A47.

NOMENCLATURE:



Item	Note	Description
TAD6111A	2	ANTENNA, 136-144 MHz
TAD6112A	2	ANTENNA, 144-152 MHz
TAD6113A	2	ANTENNA, 152-162 MHz
TAD6114A	2	ANTENNA, 162-174 MHz
		HARMONIC FILTER/ANTENNA SWITCH R1
TFD6431A		HARMONIC FILTER/ANTENNA SWITCH R11
TFD6432A		POWER CABLE
TKN8158B		POWER CABLE, REMOTE RADIO, INT'L.
TKN8173B		POWER CABLE, CONTROL HEAD, INT'L.
TKN8175A		VCO ASSEMBLY, 136-162 MHz
TLD2441A	1	VCO ASSEMBLY, 146-174 MHz
TLD2442A	1	LOW LEVEL AMPLIFIER
TLD9132A		10 W POWER AMPLIFIER, 136-162 MHz
TLD9142A		10 W POWER AMPLIFIER, 146-174 MHz
TLD9143A		CHASSIS ASSEMBLY
TLN2324B	1	30 W PA AND HEAT SINK ASSEMBLY
TLN2334B	1	MICROPHONE, STANDARD
TMN1024A	1	MICROPHONE, SIGNALING
TMN1025A	1	MICROPHONE, STANDARD REMOTE
TMN1026A	1	MICROPHONE, SIGNALING REMOTE
TMN1027A	1	SINGLE FRONT END, 136-162 MHz
TRD6161B		SINGLE FRONT END, 146-174 MHz
TRD6162B		SYNTHESIZER INTERCONNECT BOARD
TRN4601A		BUSY LIGHT KIT
TRN4604A		DISPLAY BOARD, 2-32 FREQ.
TRN4606B		SWITCH BOARD, 2-32 FREQ.
TRN4609A		FRONT PANEL FRAME
TRN4620A		BUTTON PANEL, CARRIER SQUELCH
TRN4623A		BUTTON PANEL, PL/DPL
TRN4624A		LENS, 2-32 FREQ.
TRN4644A		LENS, 2-32 FREQ. W/BUSY LIGHT
TRN4645A		MONITOR SWITCH W/BUTTON
TRN4660A		SINGLE DISPLAY KIT
TRN4661A		PROM KIT
TRN4666A		SYNTHESIZER DIVIDER, IC
TRN4669A		SYNTHESIZER PROM - 32 CHANNEL
TRN4670A		TUNING TOOL KIT
TRN4671A		RADIO SET HARDWARE
TRN4672B		INSTALLATION KIT
TRN4675A		PA INTERCONNECT BOARD, 10 W
TRN4695A		PA INTERCONNECT BOARD, 30 W
TRN4696A		
TRN4767A		REMOTE SWITCH BOARD, 2-32 FREQ.
TRN4772A		REMOTE HARDWARE KIT
TRN5241A		FRONT PANEL INTERCONNECT BOARD, STANDARD
TRN5243A		SYNTHESIZER
TRN5244A		FRONT PANEL INTERCONNECT BOARD, SIGNALING
TRN6777B		*DVP* ENCRYPTION HYBRID
TSN6031A		SPEAKER
VKN4020A		*DVP* CARRIER SQUELCH CABLE
VKN4024A		*DVP* PL CABLE
VKN4030A		*DVP* REMOTE INTERFACE CABLE
VKN4031A		*DVP* REMOTE CABLE (8 FT.)
VLN1009A	1	*DVP* CIRCUIT MODULE
VLN1011A	1	*DVP* BASIC REMOTE INTERFACE BOARD
VLN1024A	1	MULTICODE PL/DPL ASSY
VLN4123A		*DVP* FRONT PANEL
VLN4129A		*DVP* KEY LOADING KIT
VLN4130A		*DVP* TOP COVER
VLN4131A		*DVP* BOTTOM COVER
VLN4132A		*DVP* 10 W NAME PLATE
VLN4136A		*DVP* 30 W NAME PLATE
VLN4147A		*DVP* VOLUME/FREQUENCY SWITCH PANEL
VLN4148A		*DVP* REMOTE INTERCONNECT BOARD
VRN4000A		*DVP* MAIN BOARD, 25/30 kHz

Model	Power (Watts)	Squelch	Mount
MBD23EXA1J00AK	10	CARRIER	FRONT
MBD43EXA1J00AK	30	CARRIER	FRONT
MBD23EXA7J00AK	10	PL/DPL	FRONT
MBD43EXA7J00AK	30	PL/DPL	FRONT
MBT23EXA1J00AK	10	CARRIER	REMOTE
MBT43EXA1J00AK	30	CARRIER	REMOTE
MBT23EXA7J00AK	10	PL/DPL	REMOTE
MBT43EXA7J00AK	30	PL/DPL	REMOTE

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INTERNAL OPTION TABLE

Option No.	Description	Kits Added	Kits Deleted
		All Models	
B303AA	Dual Code	VLN4124A	VLN4123A
B304AA	Proper Code	None	None
B434AA	Wide-Space Receiver (Dual Front End Range 1)	TLD4778A, TLN2461B	TRD6161B
B434AB	Wide-Space Receiver (Dual Front End Range 2)	TLD2462B, TRN4778A	TRN6162A
B462AA	*Fast-Lok* Synthesizer (Range 1)	TLD2541A, TRN5129A, TRN5218A	TRN4601A, TRN4669A, TLD2441A, TRN5243A
B462AB	*Fast-Lok* Synthesizer (Range 2)	TLD2542A, TRN5129A, TRN5218A	TLD2442A, TRN4601A, TRN4669A, TRN5243A
B310AA	Range 2 to Range 1	TFD6431A, TLD9142A, TLD2441A, TRD6161B	TFD6432A, TLD9143A, TLD2442A, TRD6162B
B310AB	Range 2 to Range 1 (Dual Front End)	TFD6431A, TLD9142A, TLD2441A, TLD2461B	TFD6432A, TLD9143A, TLD2442A, TLD2462B
B310AE	Range 2 to Range 1 (*Fast-Lok*)	TFD6431A, TLD9142A, TLD2541A, TRD6161B	TFD6432A, TLD9143A, TLD2542A, TRD6162B
B310AF	Range 2 to Range 1 (Dual Front End and *Fast-Lok*)	TFD6431A, TLD9142A, TLD2461B, TLD2541A	TFD6432A, TLD9143A, TLD2462B, TLD2542A
		Carrier Squelch Models	
B11AK	Time-Out Timer (60 seconds)	VKN4021A, TRN4615A, TRN5666A	VKN4020A
B287AA	Non-Standard Time-Out Timer	None	None
B313AE	Sel Singletone (Dash Mount)	VKN4026A, VLN1013A, TLN2394B, TRN4659A, TRN4661A, TRN4663A, TRN4666A, TRN5244A	TRN5241A, VKN4020A
B313AF	Sel Singletone (Remote Mount)	VKN4026A, VLN1014A, TLN2394B, TRN4659A, TRN4661A, TRN4663A, TRN4666A, VLN1012A, TRN5244A	VLN1011A, TRN5241A, VKN4020A
B75AA	Omit Time-Out Timer on Single-Tone Models	None	None
		PL/DPL Squelch Models	
B75AA	Omit Time-Out Timer	None	None
B287AA	Non-Standard Time-Out Timer	None	None
B463AJ	Selectable PL 1-10 Codes (Dash)	VLN1013A, TRN4661A, TRN4663A	None
B463AK	Selectable PL 1-10 Codes (Remote)	VLN1014A, TRN4661A, TRN4663A, VLN1012A	VLN1011A
B290AJ	Selectable PL 1-30 Codes (Dash)	VLN1013A, TRN4661A, TRN4664A, TRN4689A	None
B290AK	Selectable PL 1-30 Codes (Remote)	VLN1014A, TRN4661A, TRN4664A, TRN4689A, VLN1012A	VLN1011A
B446AA	Decode Only	None	None
B445AA	Tone Encode Only (Front Mount)	TMN1024A	TMN1025A, TRN4660A, TRN4604A
	Tone Encode Only (Remote Mount)	TMN1026A	TMN1027A, TRN4660A, TRN4604A
		Select 5 Signaling Models	
		Refer to *Select 5* Manual Supplement for *Select 5* Signaling option information.	
		Models with Channel Scan Monitor Option	
		Refer to *Channel Scan* Option Manual for *Channel Scan* Monitor option information.	

EXTERNAL OPTION TABLE

Option No.	Description	Kits Added	Kits Deleted
		Antennas	
B70AM	Omit Antenna	None	TAD6111/2/3/4*
B652AA	1/4 Wave Rooftop (Range 1)	TAD6280A	TAD6111/2/3*
B652AB	1/4 Wave Rooftop (Range 2)	TAD6290A	TAD6112/3/4*
		Installation	
B398AC	Spare Encryption Hybrid	VLN1017A	None
B71AR	Omit Std. Mobile Mic	None	TMN1024A
B71AS	Omit Mobile Sig. Mic	None	TMN1025A
B71AT	Omit Std. Remote Mic	None	TMN1026A
B71AU	Omit Remote Sig. Mic	None	TMN1027A
B87AH	Omit Speaker	None	TSN6031A
B161AY	Omit Bat Cbl	None	TKN8158B
B161BA	Omit Rem Bat Cbl	None	TKN8173B
B65AA	Omit Installation Kit	None	TRN4675A
B90CU	Omit Accessories (CS)	None	TAD6113A, TKN8158B, TMN1024A, TRN4675A, TSN6031A
B90CY	Omit Accessories (CS Remote)	None	TAD6113A, TKN8173B, TMN1026A, TRN4675A, TSN6031A
B90CZ	Omit Accessories (PL/SS Remote)	None	TAD6113A, TKN8173B, TMN1027A, TRN4675A, TSN6031A
B296AA	Mounting Tray W/Latches	TRN4678A	TRN4675A
B297AA	Mounting Tray W/RT Hand Lock	TRN4679A	TRN4675A
B113AD	Ignition Control of PTT (Front Mount)	TKN8160A	None
B113AF	Ignition Control of PTT (Remote Mount)	TKN8197A	None
B654AD	Remote Mounting Kit (17 ft.)	VKN4032A, TSN6032A	VKN4031A, TSN6031A
B654AF	Remote Control Head Cable (17 ft.)	VKN4032A	VKN4031A
B301AA	Alternate Mic Location (Std. Mic)	TMN1024A	TMN1026A
B301AB	Alternate Mic Location (Sig. Mic)	TMN1025A	TMN1027A
B465AA	Base Station Option	TRN4898A	TAD6113A, TKN8159B, TRN4675A, TSN6031A

* Actual kit depends upon radio model.

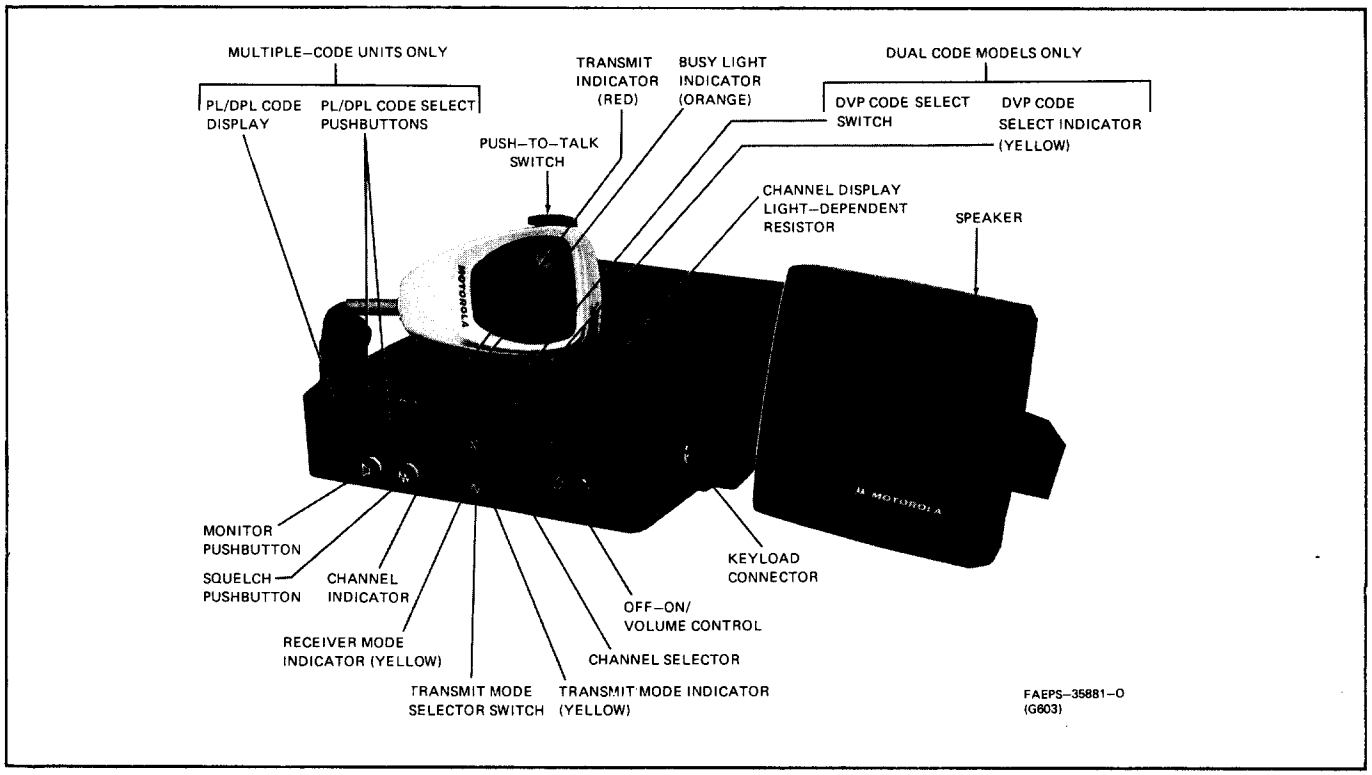


Figure 1.
Typical DVP MCX100 Radio Set Controls and Indicators

1. INTRODUCTION

1.1 The *DVP MCX100* Radio Set has been designed to meet worldwide radio frequency specifications. The radio set operates in the VHF frequency range of 136 to 174 MHz, and, depending on the model used, can provide rf power output of either 10 or 30 watts in systems employing minimum channel spacing of either 25 or 30 kHz. Up to 32 channels are available.

1.2 The extreme flexibility of the *DVP MCX100* radio in various system applications is provided by the availability of microprocessor-based signaling configurations. These are *Private-Line* (PL) tone-coded squelch, *Digital Private-Line* (DPL) coded squelch, and *Select 5* five-tone sequential signaling. Options to these signaling configurations are available to further customize the radio to the individual user.

1.3 Flexibility of the radio is also enhanced by the availability of several mounting configurations and options. Models are available which allow front mounting, either from above or below. Other models allow mounting the radio in a remote location such as the trunk or floor, using a remote control head. Special screws and locking hardware are available for all models to provide increased security from theft.

2. *DVP MCX100* OPTIONS

DVP MCX100 radios can include the following options:

- Time-out-timer to limit transmission duration (standard on PL/DPL and *Select 5* models).
- Dual Code option allows a second *DVP* key capability, with operator selection of either key.
- Proper Code option mutes the receiver audio whenever a *DVP* signal is received which was encrypted with a key different from that of the receiver.
- Special PL/DPL squelch signaling options such as Encode Only and Selectable PL allow special operator functions. Refer to the option chart in this manual for information on manual coverage.
- Special *Select 5* signaling options (refer to *Select 5* signaling manual supplement for details).
- Widespace (dual front end) receiver allows wider receiver overall channel spacing.
- *Fast-Lok* synthesizer allows for fast channel changing (included as part of priority *Channel Scan* option.)
- Ignition push-to-talk control to allow monitoring of radio while preventing unauthorized use of transmitter.
- *Channel Scan* monitor to allow monitoring of several channels simultaneously.
- Locking mounting hardware for greater security in radio installation.
- Base station accessories to allow use of radio as a base station.

Refer to the option chart in this manual for a list of available options and location of servicing information.

3. INSTRUCTION MANUALS

3.1 Installation, operation, and servicing information for the *DVP MCX100* radio is covered in this instruction manual. Service manuals may be ordered at time of equipment purchase, by contacting your Motorola service representative, or by writing to the following address:

Motorola, Incorporated
Communications Group Parts Department
1313 E. Algonquin Road
Schaumburg, Illinois 60196 U.S.A.

The option chart contained in this manual references manuals providing service information on particular options. The following is a brief description of the contents of manuals that may be required by the service technician.

3.2 This service manual contains all schematic diagrams, circuit board details, parts lists, and alignment information for *DVP* standard carrier, tone-coded *Private-Line* squelch, and *Digital Private-Line* squelch radio models, and information on certain options available for these models. Detailed theory of operation and maintenance procedures for the radio set are also contained in this manual.

3.3 The owner's manual packaged with each radio set provides detailed operating procedures.

3.4 All information on *Select 5* signaling is contained in a supplement to this manual. The supplement contains model information, schematic diagrams, circuit board details, parts lists, theory of operation, maintenance, and troubleshooting information for all *Select 5* signaling configurations and options.

3.5 Information on *Channel Scan* monitoring is contained in a supplement to this manual. The supplement contains kit information, schematic diagrams, circuit board details, parts lists, theory of operation, operating instructions, maintenance, and troubleshooting information for all *Channel Scan* monitoring configurations.

4. ELECTRICAL DESCRIPTION

4.1 RECEIVER

The standard *DVP MCX100* radio receiver uses a FET front end for high sensitivity and low noise, crystal filters for i-f selectivity, and integrated circuits for amplification, limiting, and detection. The standard front end provides a receive bandwidth of 4 MHz. An optional widespaced (dual) front end is available to allow a total receive bandwidth of 12 MHz; it provides two 6 MHz "windows" which may be independently tuned anywhere within the 136-to-162 or 146-to-174 MHz bands.

4.2 TRANSMITTER

The transmitter circuitry amplifies the frequency-modulated low level rf output from the frequency synthesizer, and contains power regulation and protection circuitry for the power amplifier. A harmonic filter is used to attenuate spurious radiations, and a non-mechanical PIN diode transmit-receive switch circuit is used for reliability.

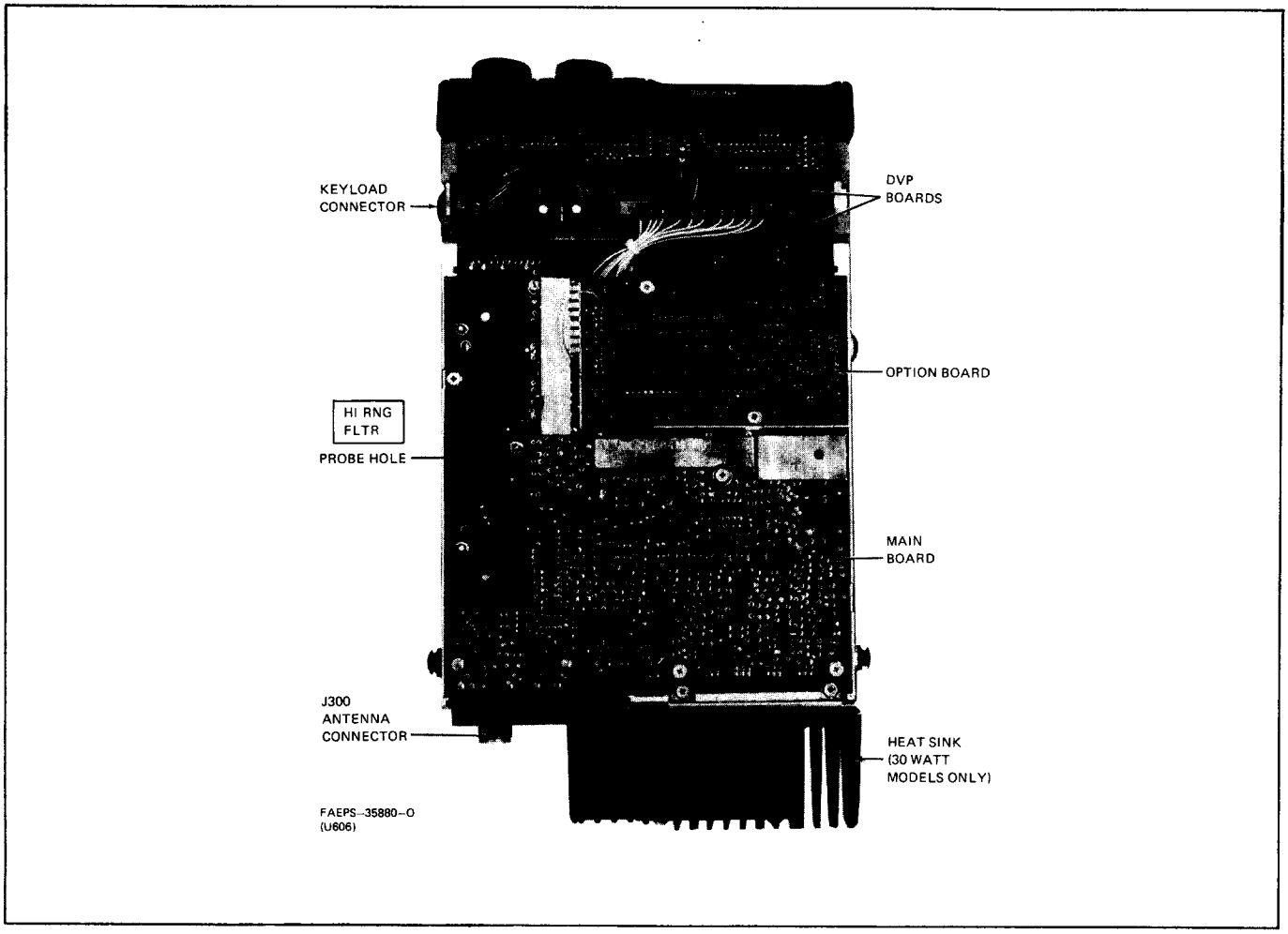


Figure 2.
***DVP MCX100** Radio Top View with Cover Removed*

4.3 FREQUENCY SYNTHESIZER

4.3.1 In the receive mode the digital frequency synthesizer generates the low side injection signal that is applied to the mixer. During transmission the synthesizer generates the low level frequency modulated signal that is applied to the transmitter low level amplifier stage.

4.3.2 The frequency synthesizer includes a reference oscillator, a frequency modulated (in transmit mode) voltage controlled oscillator (VCO), and frequency selecting logic circuitry. The logic circuitry controls the operating frequency of the phase-locked VCO. Frequency select data from the binary-coded front panel frequency switch is applied to the programmable read-only memory (PROM) integrated circuit on the synthesizer board. The PROM is programmed with customer-specified data which determines the transmit and receive frequencies for each position.

5. PHYSICAL CHARACTERISTICS

(Refer to Figures 1, 2 and 3)

5.1 The radio set is constructed in a rugged cast metal chassis with separate top and bottom covers. The front of the radio housing contains the control knobs, buttons, and indicators. The back of the radio housing contains the connectors for external power, microphone, antenna, and external option connections. 30 Watt models also have a heat sink on the back of the radio chassis for power transistor cooling.

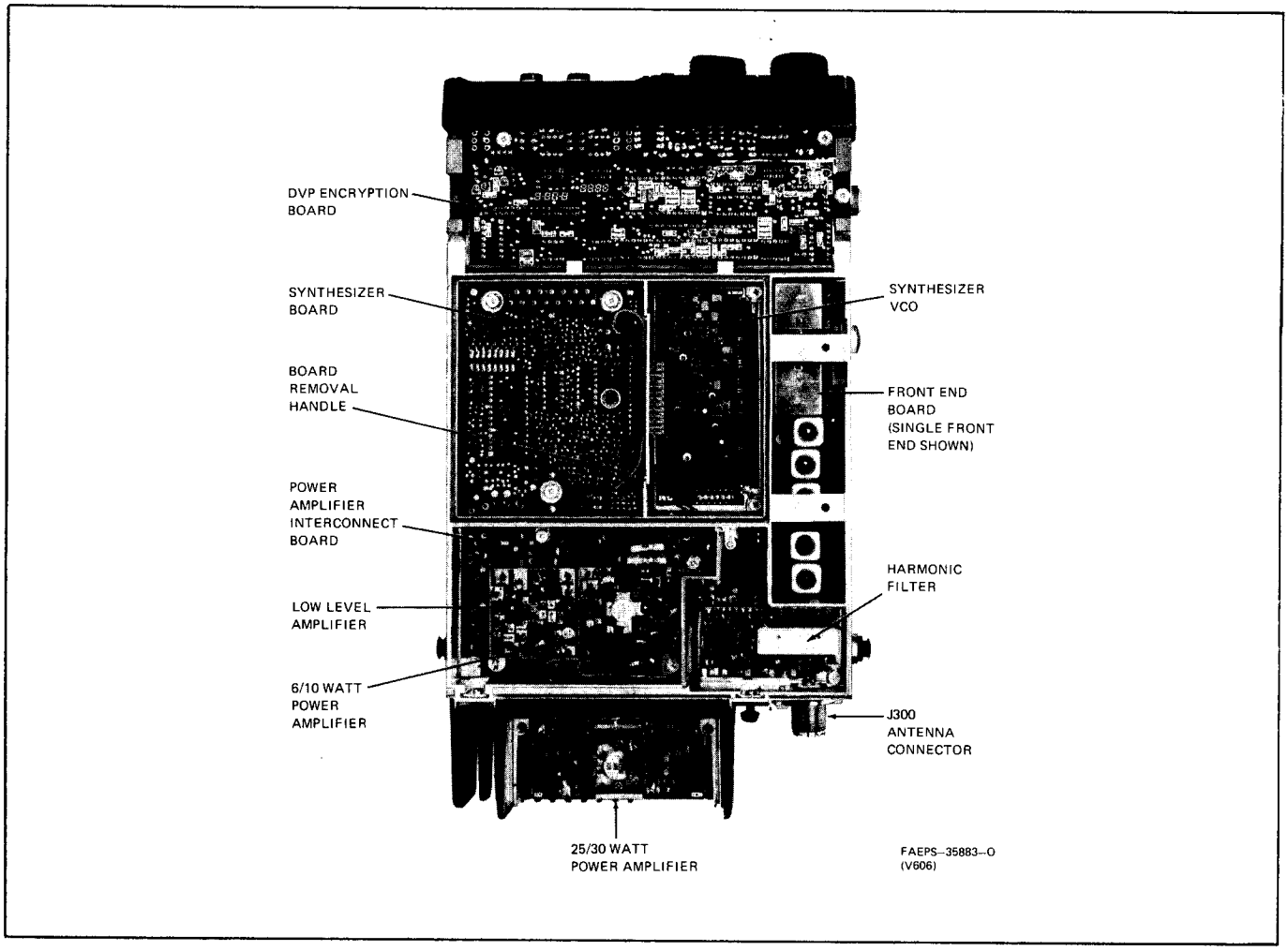


Figure 3.
***DVP MCX100** Radio Bottom View with Cover Removed*

5.2 Compartments inside the chassis isolate the PA, receiver front end, frequency synthesizer, option area, and main board from each other. Additional shields are mounted over sensitive components on the main board, and compartment shields are used over the synthesizer and power amplifier compartments.

5.3 The top and bottom covers are easily removed for service access. Most boards are connected to other radio circuitry with plug-in connectors, and may easily be removed from the radio for service or replacement by removing securing screws and pulling from the radio.

5.4 The front panel, switch, display, and circuit board assembly may easily be removed for service and testing without removing any circuit boards from the chassis.

6. SERVICE

Should you wish to purchase a service contract for your Motorola equipment, contact your Motorola service representative.

1. INTRODUCTION

This section of the manual describes the installation procedures for a front-mount and a remote-mount radio set. Procedures common to both radios are found under the heading ALL MODELS.

2. PREINSTALLATION TESTS

All *DVP MCX100* radio sets are thoroughly tested and inspected before shipment to customers. It is, however, suggested that the transmitter frequency, deviation, and power output be checked at the time of installation, after servicing, and periodically as required by applicable law. It is the license holder's responsibility that the operating parameters of his station comply with applicable laws governing radio communication equipment.

3. FRONT-MOUNT RADIO SETS

Step 1. Depending on the option ordered, front-mount radios may be mounted using either standard or optional trays. (Refer to Figure 1.)

Step 2. Mount the tray securely by means of the four (10×3/4") screws provided.

Step 3. Install the radio into the mounting tray using either the two mounting screws or the latches (depending on the type of tray ordered).

4. REMOTE-MOUNT RADIO SETS

Step 1. Mount the control head on the desired spot, using the mounting bracket provided.

Step 2. Install the transceiver mounting tray at the desired location, using the four (10×3/4") screws provided.

Step 3. Install the remote transceiver into the mounting tray, using either the mounting screws or latches (depending on the tray ordered).

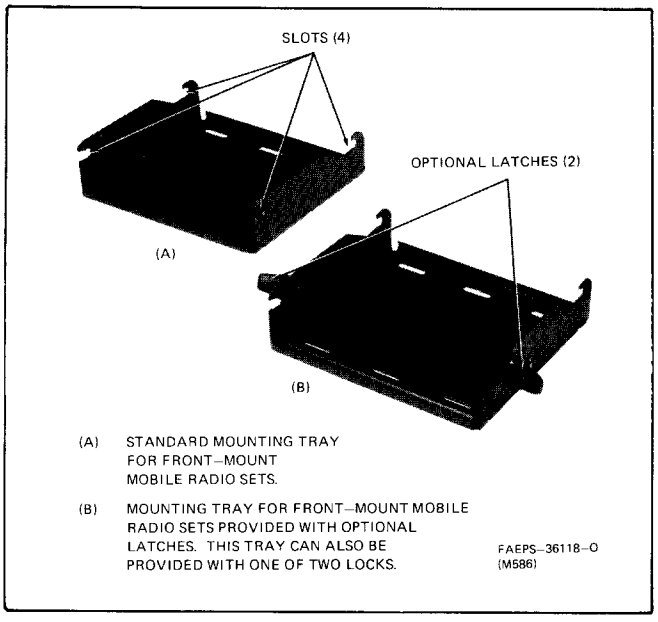


Figure 1. Mounting Trays

Step 4. You may change the orientation of the cable at the control head end by removing the four screws, rotating the plastic assembly as required, and replacing the screws.

Step 5. Route the cable assembly from the control head to the transceiver; insert the cable connector into the mating connector on the transceiver and hold it in place by inserting the retaining clips through the slot in the protective connector shield on the transceiver.

5. ALL MODELS

Step 1. Install the loudspeaker in the desired location and connect it to the transceiver.

Step 2. For mobile units, mount the microphone hangup clip at the selected position. If the alternative

microphone option or remote mount model has been ordered the microphone can be connected to the transceiver rather than to the remote-mount control head. For base station applications, the base microphone should be directly connected to the rear of the unit.

Step 3. Mount the antenna and route the coaxial cable to the radio set.

Step 4. Install the dc power cable in accordance with the instructions provided in Figures 2 through 4. MBB113 is the ignition control of PTT option.

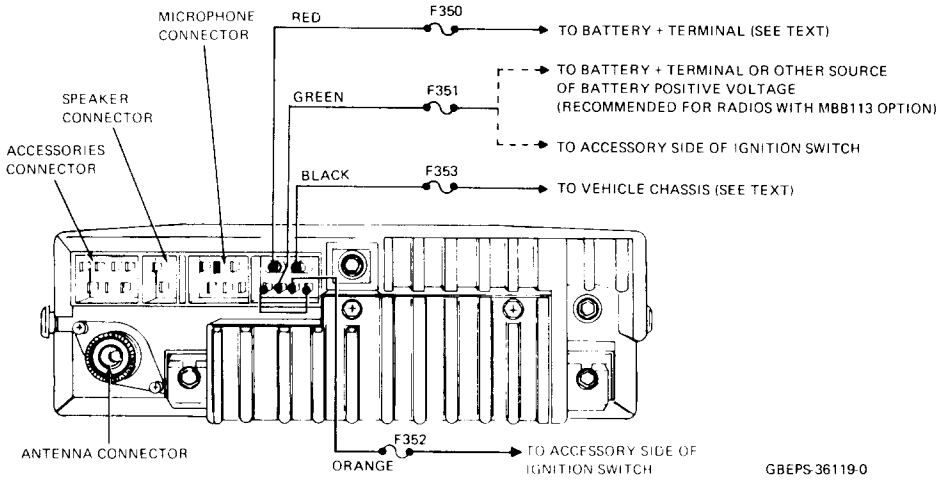


Figure 2. Power Lead Connections for Front Mount Mobile Radios

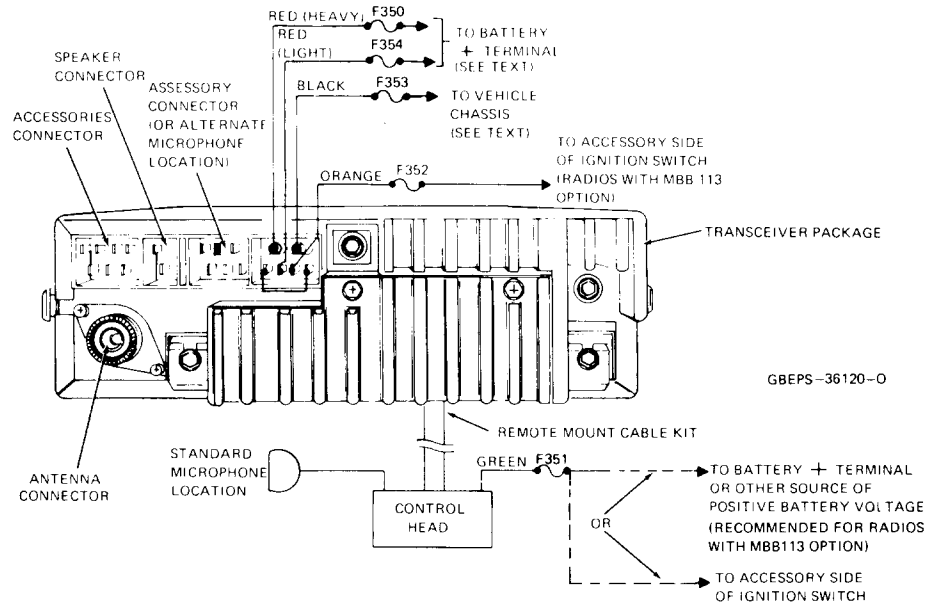


Figure 3. Power Lead Connections for Remote-Mount Radios

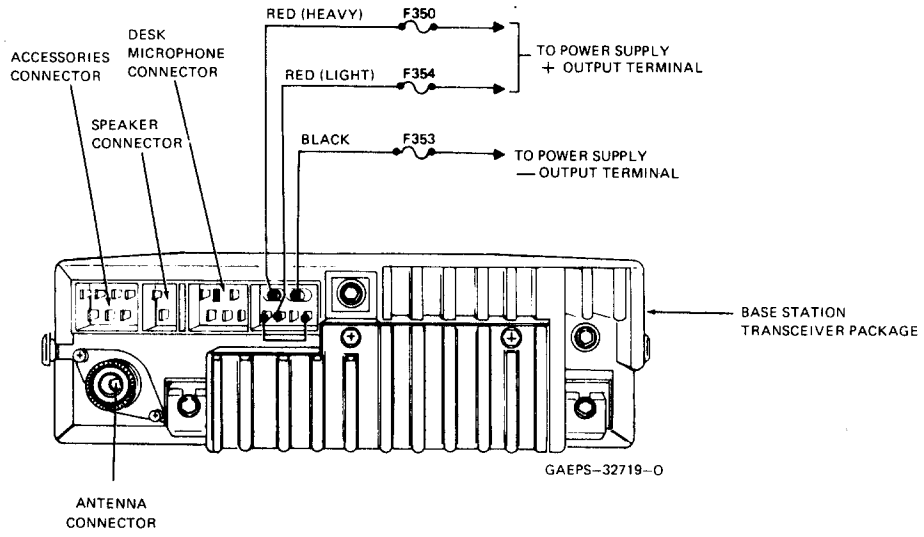


Figure 4. Power Lead Connections for Base Station Applications

OPERATING INSTRUCTIONS

1. INTRODUCTION

The *DVP MCX100* FM Two-Way Radio is available in front-mount, remote-mount, and base station models.

2. CONTROLS AND INDICATORS

Figures 1, 2, and 3 show the various controls that are available on the *DVP MCX100* radio sets. Your particular radio may differ, depending on the model and options that have been ordered.

3. OPERATION

3.1 TO TURN RADIO SET ON

Turn the Off-on/Volume control clockwise until a click is heard. (In certain mobile installations, you may also be required to turn on the ignition switch of your vehicle.)

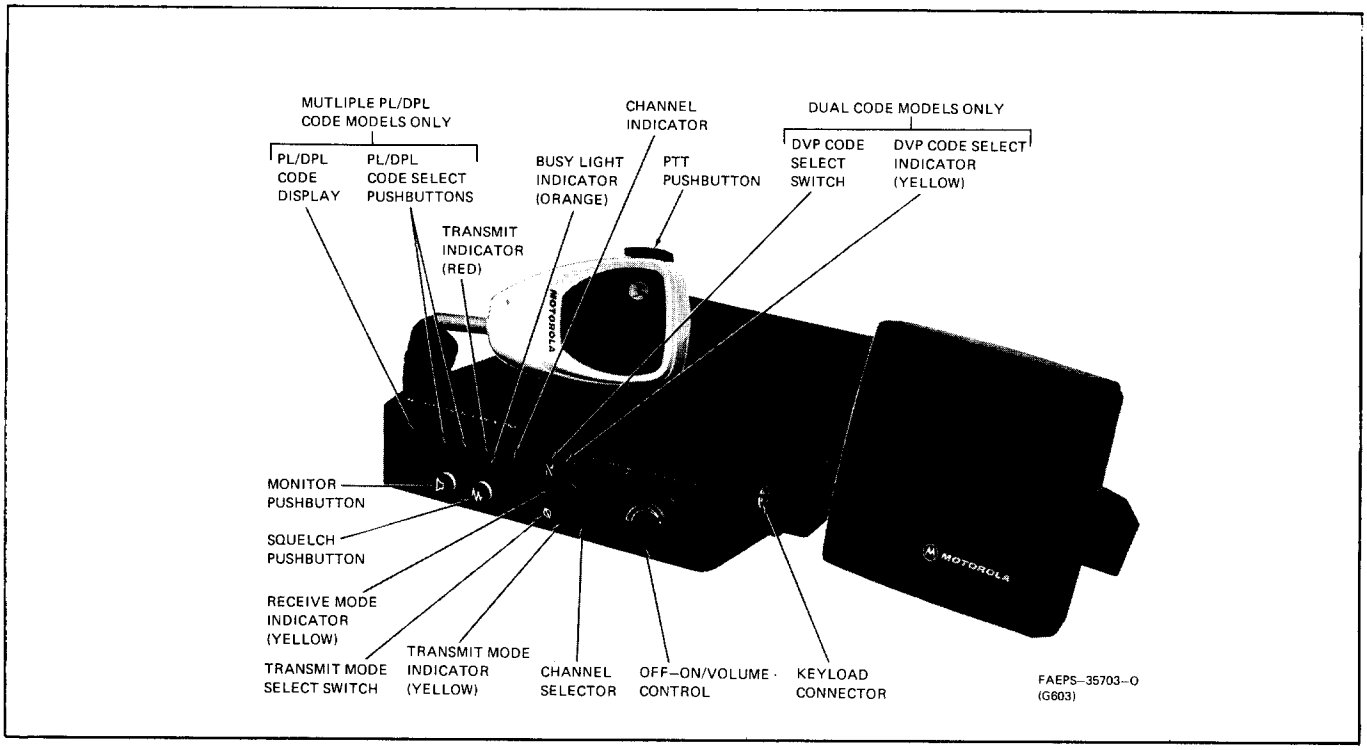


Figure 1. Front-Mount Radio Controls and Indicators (Typical)

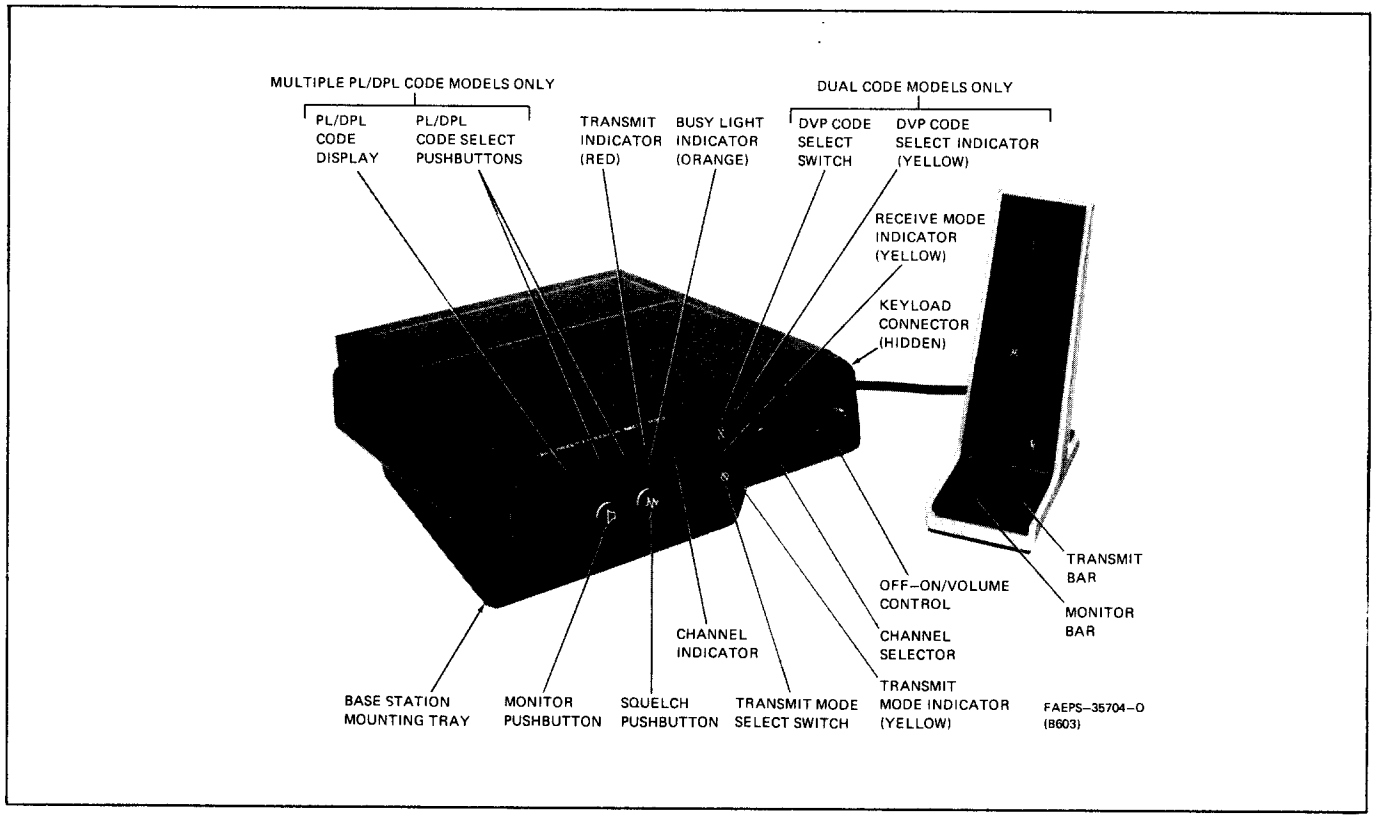
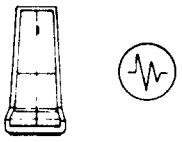
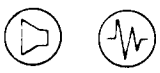


Figure 2. Base Station Radio Controls and Indicators (Typical)

PUSHBUTTON CONTROL SYMBOLS

Radio Type	Base Station Models	Carrier Squelch Models	*Private-Line* Squelch or *Digital Private-Line* Squelch Models
Pushbutton Symbol			

3.2 TO RECEIVE

Use the following sequence to set the Off-on/Volume control of your radio to a comfortable listening level.

Step 1. Turn the Channel Selector to the desired channel as indicated by the Channel Indicator.

Step 2. Depress (push in) the Squelch and Monitor pushbuttons, depending on the model used (see Figures 1, 2, 3).

Step 3. Adjust the Off-on/Volume control until the background noise is at the desired level.

Step 4. After setting the volume level, push and release the pushbuttons to place them in the "out" position (white color showing). For a base station, you should release the Monitor pushbutton .

NOTE

When a private message is received, the Receive Mode Indicator should light and the speaker unmute. if the incoming message was encrypted with a key that is different from the radio key, noise will be heard from the speaker. In radios equipped with the Proper Code option, this noise will not be heard unless the microphone is off-hook or the Monitor pushbutton is depressed (pushed in).

3.3 TO TRANSMIT

NOTE

For mobile radios equipped with the ignition control of PTT option, the transmitter cannot be operated unless the vehicle ignition switch is turned on.

Step 1. Press the Transmit Mode Select switch to choose the private or standard mode. The Transmit Mode Indicator will light when the private mode is selected. On models with the Dual Code option, select the desired code for transmitting by pressing the *DVP* Code Select switch . The *DVP* Code Select Indicator will light when you have selected code 2.

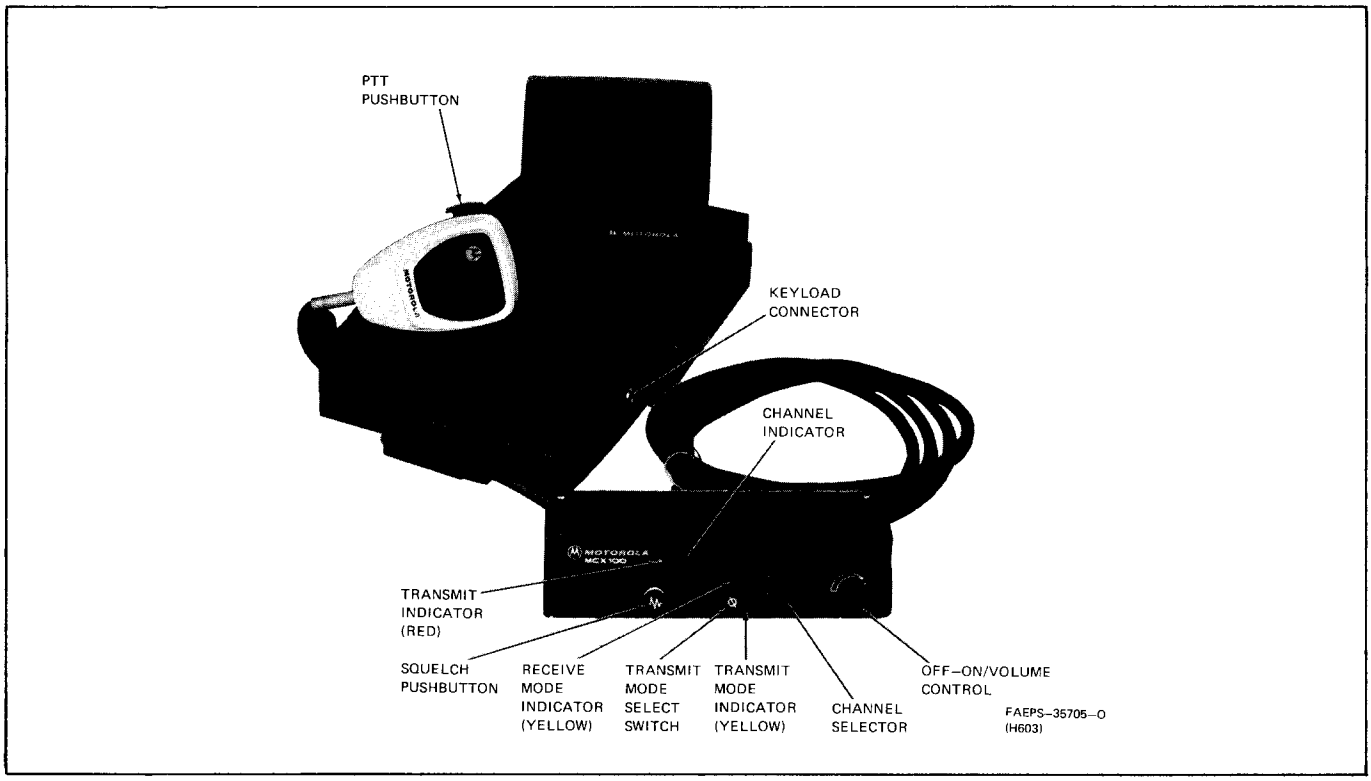


Figure 3. Remote-Mount Radio Controls and Indicators (Typical)

Step 2. Before starting transmission, monitor all traffic on the selected channel to ensure that it is not in use.

Step 3. To monitor on units with *Private-Line* and *Digital Private-Line* squelch, remove the mobile microphone from its hangup clip or depress the Monitor bar on the base station microphone. If the channel is clear, you may transmit your message.

Step 4. (For Single Tone models equipped with Call pushbutton only.) Before starting voice transmission, depress the Call pushbutton .

Step 5. Hold the microphone approximately 2 inches from your mouth, depress and hold the push-to-talk (PTT) pushbutton (or Transmit bar on base stations), and speak into the microphone. The Transmit Indicator lights. The transmitted audio will be either encrypted or non-encrypted, depending upon the mode setting. If the transmitted audio is non-encrypted, a short tone or "beep" will be heard immediately after the microphone is keyed. After finishing your message, release the PTT pushbutton to receive a reply.

Step 6. (Mobile units only.) After completing the call, place the microphone in the microphone hangup clip.

3.4 TO TURN RADIO SET OFF

Turn the Off-on/Volume control completely counterclockwise until a click is heard. (In certain mobile unit installations, the radio may also be turned off by turning off the vehicle ignition switch.)

4. ELECTRONIC ENCRYPTION KEY TRANSFER

Step 1. Turn the radio on and set the Off-on/Volume control to a comfortable listening level.

Step 2. Connect the cable from the Code Inserter to the Keyload Connector.

Step 3. Press the push-to-transfer switch on the side of the Code Inserter. The transfer is completed when a tone is heard from the speaker, and the message bEEP? appears on the Code Inserter display.

5. SELECTABLE SIGNALING OPTIONS

SELECTABLE *PRIVATE-LINE* (PL) OR *DIGITAL PRIVATE-LINE* (DPL) TONE-CODED SQUELCH OPTION (Applicable to *Private-Line* tone-coded or *Digital Private-Line* binary-coded squelch models only). Depending on the options ordered, the user may change the operating PL/DPL code (encode, decode, or both) of the radio set to permit its use in systems having different PL/DPL operating codes. The appropriate PL/DPL code is selected by using the PL/DPL Code Select pushbutton or pushbuttons and is indicated by the PL/DPL Code Display.

SELECTABLE SINGLE TONE ENCODER (Units with Single-Tone Encoder Option Only.) The Single Tone Select pushbutton is used to select the desired frequency of the encoder tone (10 tones are available). The Single Tone Display indicates the selected tone by means of a single digit (0 through 9). The encoder tone is transmitted with each activation of the Call pushbutton .