



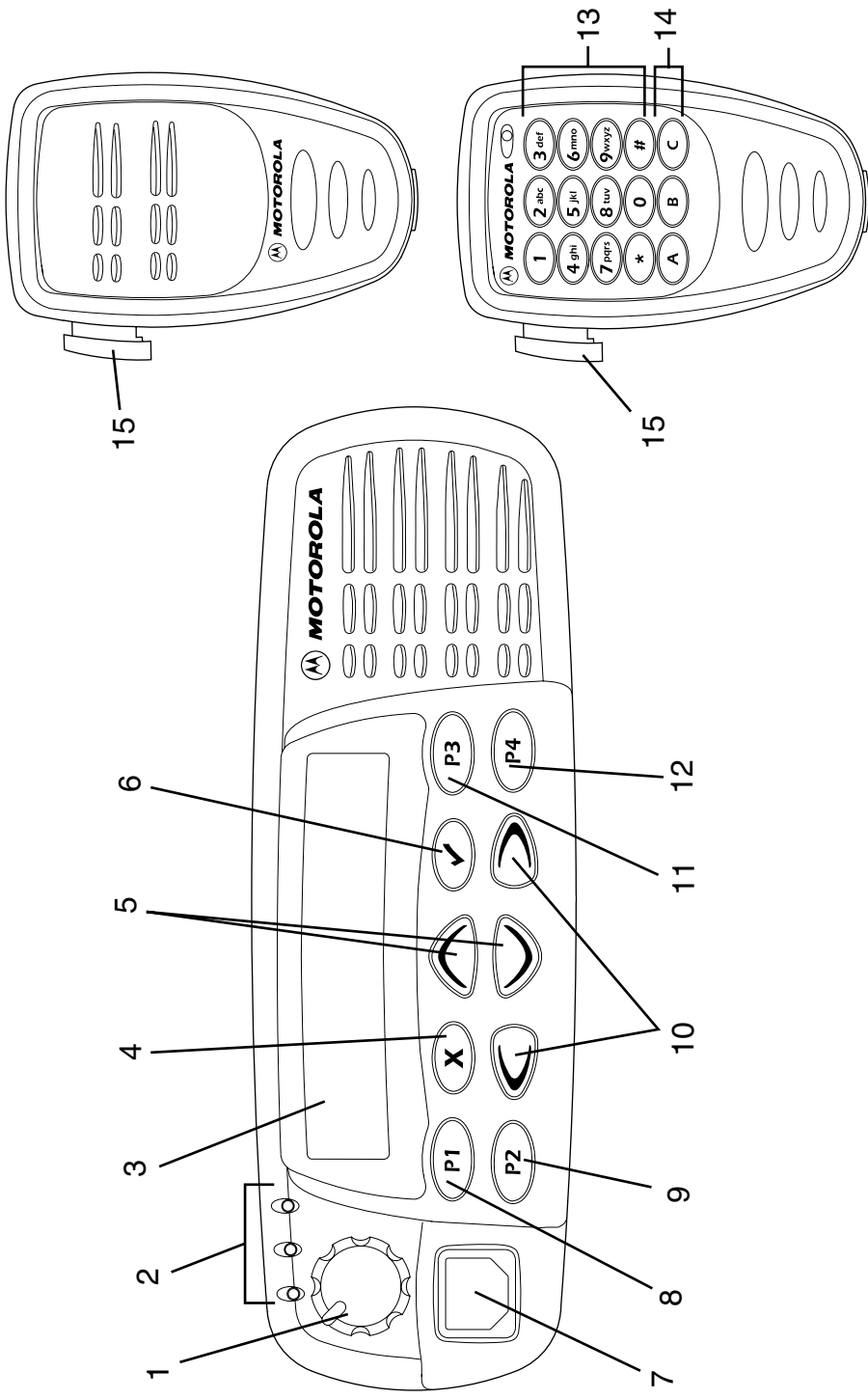
# Professional Radio

## GM660

User Guide

68P64110B92

Issue: July 2000



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
## RADIO OVERVIEW

This user guide covers the operation of the GM660 Professional Mobile Radio.

Please read pages 57 to 60 **before** using this radio

### RADIO CONTROLS




The numbers below refer to the illustrations on the inside front cover.

1. **On-Off / Volume Knob**  
Used to turn the radio on or off, and to adjust the radio's volume.
2. **LED Indicators**  
Indicate current radio operation.
3. **LCD Display (1 Line)**
4. **Menu Exit/Escape Button** 
5. **Channel Selector/Menu Navigation Up/Down**  or   
When in menu mode, used for menu navigation. Used for channel scrolling in conventional mode.
6. **Menu Enter/Select Button** 
7. **Mic Jack**
8. **Programmable Button 1** 

9. **Programmable Button 2** 
10. **Edit Buttons Left/Right**  or 
11. **Programmable Button 3** 
12. **Programmable Button 4** 

### MICROPHONE CONTROLS

(Keypad Microphone)

13. **Keypad**
14. **Programmable Keys**   
15. **Push-to-talk (PTT)**  
Press and hold down this button to talk; release it to listen.

### PROGRAMMABLE BUTTONS







Several of your radio buttons can be programmed (by Customer Programming Software CPS) to activate the radio features.

The following table shows the features that can be assigned to the P1-P4 buttons and the A, B, C buttons on the keypad microphone.

-

Feature	Description
Dedicated Call/Emergency	To make a call to a pre-determined number. This can be an emergency number, effectively activating an Emergency Call.
Personality	Short cut to the personality menu option to select one of sixty (60) radio personalities, (e.g. MPT trunking system or conventional system).
Missed Calls	Short cut to the Missed Call menu option. This is a list of calls received and stored by the radio when you were unable to take the call.
User Absent	To switch the User Absent feature On and Off. This feature is used to indicate to the caller that you are away from your radio and unable to take calls.
External Alarm	To switch the External Alarm feature On and Off.
Car Radio Mute	To switch the Car Radio Mute feature On and Off.
Data Display	To switch the Data Display feature On and Off.
Record/Play-back (Voice Recorder)	To record/play-back incoming calls or memo using voice recorder feature.
Record/Play-back (Voice Message)	To record / play a greetings message using the voice message feature.

## Menu Keys

Exit	Up	Menu/ Select
		
		
Left	Down	Right

### Menu/Select Key

Used to enter the Menu Mode. When you are in the Menu Mode, this key is also used to make menu selections.

**Note:** When the radio is in the IDLE STATE, pressing any of the six menu keys causes the radio to enter the Menu mode.

### Exit Key

Used to move up to the next higher Menu level. When the top level menu is selected this key is used to exit the Menu Mode. Also used to cancel/end calls.

### Up /Down Key /

Up used for scrolling when in Menu Mode.  
Down used for scrolling when in Menu Mode.

### Right Key

Used as More key to provide additional information.

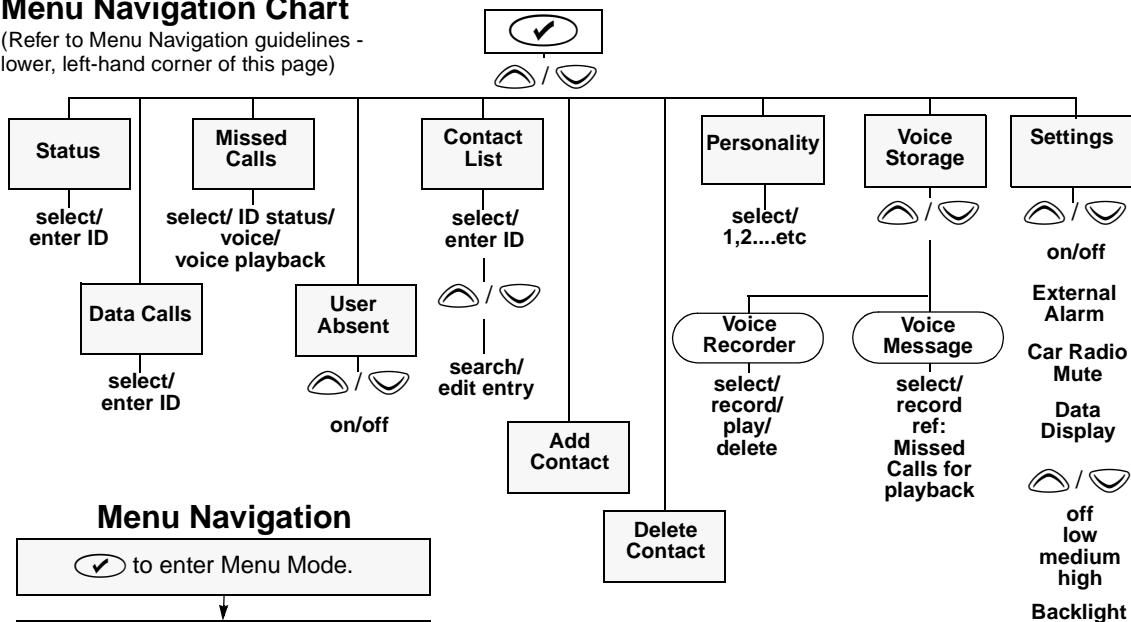
### Left Key

Used as a destructive backspace key when editing.

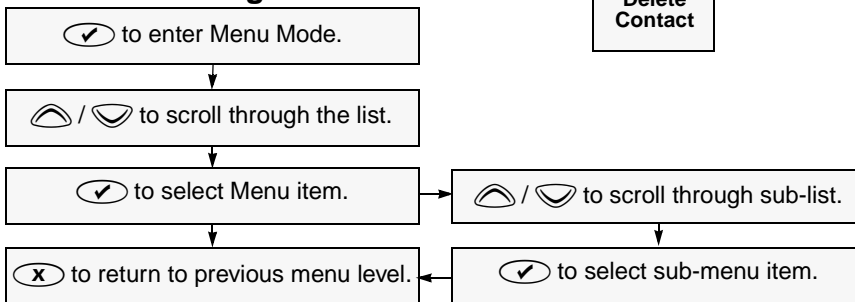
Refer to the menu navigation chart for menu selectable features.

# Menu Navigation Chart

(Refer to Menu Navigation guidelines - lower, left-hand corner of this page)

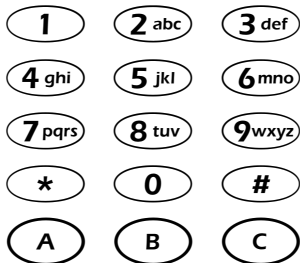


## Menu Navigation





## Keypad Keys (Keypad Microphone)



These keys are used when dialling a phone number, making a radio call or entering information for programming the radio's lists.

Each key can generate several different characters. For example, to enter the character "C", press the **2 abc** key three times.

Pressing **#** will toggle between the upper and lower case of the selected character.

If the next character required is on the same key, press **>** to move the cursor forward one character. If an error is made, press **<** to delete the current character and move cursor back one character.

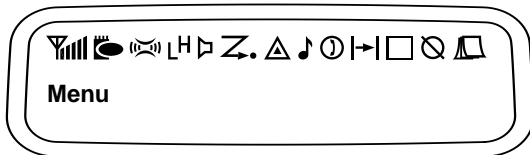
For full character set, refer to the following table.

**A** **B** **C** keys are programmable by your dealer.

## Entering Characters using the Keypad

Key	Number of Times Key is Pressed																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
0	+	-	0	x	*	/	=	>	<	#							
1	.	1	? ¿	!	,	@	-	&	:	“ ( )	‘	%	£	\$			
2 abc	A	B	C	2	Ä	Å	Ą	Á	À	Æ	ß	Ç	Ć				
3 def	D	E	F	3	É	È	Ę	Ê	Ë								
4 ghi	G	H	I	4	ì	í											
5 jkl	J	K	L	5	ı												
6 mno	M	N	O	6	Ñ	Ń	Ö	Ò	Ó								
7 pqrs	P	Q	R	S	7	Ś											
8 tuv	T	U	V	8	Ü	Ù	Ú										
9 wxyz	W	X	Y	Z	9												
*	Space																
#	Use this key to toggle between UPPER CASE and lower case of the selected character																

## LCD Display and Icons





The display indicates personality, menu, and radio status information.

The top screen row above the 1 information line, shows radio status indicator icons or symbols, explained in the table below:

Symbol	Name and Description
	<b>XPAND™ Indicator</b> Indicates that your radio has the companding feature activated.
	<b>Power Level Indicator</b> 'L' lights when your radio is configured to transmit in Low Power. 'H' lights when your radio is configured to transmit in High Power.
	<b>Loudspeaker Indicator</b> Indicates that you have the loudspeaker active.


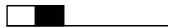





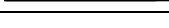



Symbol	Name and Description
	<b>Voice Recorder Indicator</b> Indicates that there are stored messages or memos in the voice recorder.
	<b>Scan Indicator</b> Indicates that you are scanning for a system.
	<b>Emergency</b> Indicates the external feature is enabled.
	<b>Data Calls List Indicator</b> On, indicates a data call in the list Flashing, indicates new unread calls.
	<b>Registered Indicator</b> Indicates that a system has been acquired, and monitor in conventional mode.
	<b>Signal Quality Indicator</b> Shows the radio signal quality. Five bars indicates the best signal.
	<b>Option Board Indicator</b> Indicates that an option board is activated.




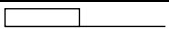





Symbol	Name and Description
	<b>Contact List Edit Indicator</b> Flashing indicates user is editing the contact list.
	<b>Missed Calls Indicator</b> On, indicates there are missed calls in the missed call list. Flashing, indicates new unread calls.

**Note:** At extremely low temperatures, you may experience a slight delay in displaying new information. This is normal and does not affect the function of your radio.

## Audio Signal Tones (Standard)

High pitched tone  Low pitched tone

Tone	Signal	Description
Self test		Power up.
Tone A		Call clear indication.
Tone B		Traffic channel allocated or PTT/ Mic/ Loudspeaker enabled.
Tone C1		System busy.
Tone C2		Unavailable.
Tone C3		Called party busy.
Tone C4		Invalid number.
Tone D		Call set up in progress, wait for further indications.
Tone F		Transaction confirmed, called unit will call back.
Tone G		Look at display for call set up or System information.
Tone H		Invalid entry.

Tone	Signal	Description
Key click		Confidence tone when any key pressed or Speech limitation alert.
Fail tone		Hardware error or Call timed out (conventional mode).
Tone I		Low battery warning.
Tone K1		Voice Storage recording.
Tone K2		Voice Storage warning.
Tone K3		Voice Storage full.
Tone M1		Talkgroup Confirmation.
Tone M2		Talkgroup unavailable.
Tone N1		Out of range alert.
Ring tones	Standard/ English/French/ General	Incoming call, press PTT, then wait for further indications.

## Audio Signal Tones (Alternative)

High to Low pitched tones

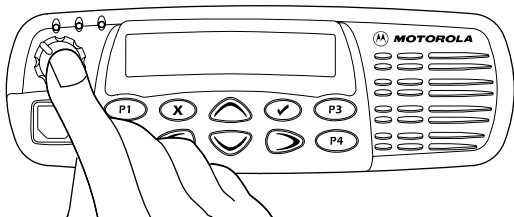


Tone	Signal	Description
Self test		Power up.
Tone A		Call clear indication.
Tone B		Traffic channel allocated or PTT/ Mic/ Loudspeaker enabled.
Tone C1		System busy.
Tone C2		Unavailable.
Tone C3		Called party busy.
Tone C4		Invalid number.
Tone D		Call set up in progress, wait for further indications.
Tone F		Transaction confirmed, called unit will call back.
Tone G		Look at display for call set up or System information.

Tone	Signal	Description
Tone H		Invalid entry.
Key click		Confidence tone when any key pressed or Speech limitation alert.
Fail tone		Hardware error or Call timed out (conventional mode).
Tone I		Low battery warning.
Tone K1		Voice Storage recording.
Tone K2		Voice Storage warning.
Tone K3		Voice Storage full.
Tone M1		Talkgroup Confirmation.
Tone M2		Talkgroup unavailable.
Tone N1		Out of range alert.
Ring tones	Standard/ English/French/ General	Incoming call, press PTT, then wait for further indications.

## GETTING STARTED

### TURNING THE RADIO ON OR OFF



ON	OFF
Push the <b>On/Off/Volume Control</b> knob until you hear a click.	Push and hold the <b>On/Off/Volume Control</b> knob for 2 seconds.

### ADJUSTING THE VOLUME

Turn the **On/Off/Volume Control** knob clockwise to increase the volume, or counterclockwise to decrease the volume.

## RADIO REGISTRATION

When turned on, the radio enters a self test routine during which time the display is activated, the self test tone will sound and the LED will light green. If the radio fails the self test a continuous low tone will sound and the display will show a failure message. e.g.



Synth Lock

until the radio is turned off.


**Note:** If the radio fails the self test routine, consult your dealer.



When the self test is complete the radio will display:

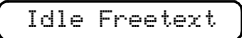


Freetext

This display is for the personality last used. To check the radio personality or select a new personality refer to PERSONALITY - **Personality Selection**.

After this text has been displayed, the radio will scan for system access with the LED on the top of the radio flashing GREEN and the scanning icon  lit.

When a system is acquired, the green LED will go off, the scanning icon  will be replaced by the registered icon  and the display will show:



Idle Freetext



## RADIO CALLS

### Making a Call

The radio is capable of making a variety of calls, including calls to individual radios, groups of radios and calls to private and public telephone systems.

Before you can make a call the radio must be in the IDLE STATE, as displayed above, i.e. a personality has been selected and no call is in progress.




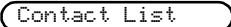

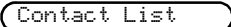



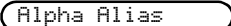





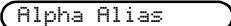



The radio can make calls by using the **Contact List**, **Dedicated Calls** or **Manual Dialling** (using keypad microphone).

### Contact List

When the radio is in the IDLE state, the contact list may be used which allows access to up to 100 preprogrammed numbers accessed via the menu.

Depending on the way your radio is programmed, the radio will display either the alpha alias (name) or the number to be dialled. One of four tones may be tagged to the pre-programmed numbers, which will sound when the radio receives a call from that number.

To access the contact list via the menu:

- 1  to enter Menu Mode.
  - 2   until: 
  - 3  to select: 
  - 4   until:
    -  to display 
    -  to display 
    -  to display 
    -  to return to 
  - 5  or PTT button to make radio call.
- Display shows:   

- 6 After the call is set-up, press PTT button and talk with your mouth 2.5-5 cm from microphone. Release PTT to listen.
  - 7 When finished with call.

## 8 CLEAR BUTTON or

 or 

Tone A sounds



If a contact list number is selected but no call request is sent, the display is held until tone H sounds and then reverts to the IDLE STATE.



When the number is displayed it may be edited as described in the **Keypad Edit** section.

**Modifying the Contact List***(Keypad Microphone only)*

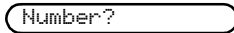
You can modify the Contact List in three ways:

1. Add an entry
2. Delete an entry
3. Edit an existing entry

**Note:** The radio cannot receive any calls while you are modifying the contact list.



**To Add an Entry**1  to enter Menu Mode.2   until: 3  to select: You will see: 

4 Use the keypad to enter the name (see pages 7 and 8). A maximum of 14 characters is allowed, depending on programming.









5  to store the name.You will see: 

6 Use the keypad to enter the number (see pages 7 and 8). A maximum of 20 digits is allowed, depending on programming.











7  to store the number.You will see: 



8 If you make an error, use the  key to delete the last character/digit and the  key to create a space.

## To Delete an Entry

- 1  to enter Menu Mode.
- 2   until:
- 3  to select:   
You will see current entry e.g.:
- 4   until you see the entry you want to delete.  
You will see e.g.:
- 5  to select the entry.  
You will see:
- 6  to delete the selected entry.  
Display returns to:

## To Edit an Entry

- 1  to enter Menu Mode.
- 2   until:
- 3  to select:
- 4   until you see the entry you want to edit.  
You will see e.g.:
- 5  for 2 seconds to enter Edit Alias Mode when display icon  flashes.  
You will see current entry e.g.:
- 6 Use the keypad to edit the alias (see pages 7 and 8) or delete and enter a new alias. Use the  key to delete the last character and the CLEAR key to delete entire entry.
- 7  to store edited/new alias.  
You will see associated number e.g.:

- 8 Use the keypad to edit the number (see pages 7 and 8) or delete and enter a new number. Use the  key to delete the last digit and the CLEAR key to delete entire entry.
- 9  to store the edited entry.

Display returns to:

Alias 3

## To Search for an Entry

When in Contact List or Delete Contact menu, you may search for an alias (name) by entering characters from the keypad.



- 1 Enter up to 3 characters from the keypad e.g.:

Pol

- 2  to start search of list:

Display shows search result e.g.:

Police

- 3  to repeat search using same search criteria
- 4  to cancel search at any time, or  
If search unsuccessful display returns to contact list menu prior to search.






**Note:** The search process is not case sensitive.

## User Absent






User Absent can be selected on your radio when you are unable to take calls. Any calls to your radio will be put into the Missed Calls list automatically and the message 'Will Call Back' is sent to the caller.

User Absent may be switched **on** and **off** directly by pressing the dedicated User Absent button (if programmed).

To switch **on** User Absent via the menu:

- 1  to enter Menu Mode.
- 2  until:
- 3  to select:
- 4  until:
- 5  to select:
- 6 Followed by:   
(held for 10 seconds, then display returns to idle)
- 7 CLEAR button to exit Menu Mode.  
Display shows:

When you are able to take calls, ensure that User Absent is switched **off** by:

- 1  to enter Menu Mode.
- 2  until:
- 3  to select:
- 4  until:
- 5  to select:
- 6 Followed by:   
(held for 10 seconds, then display returns to idle)
- 7 CLEAR button to exit Menu Mode.  
Display shows:

User Absent may be permanently enabled in your radio via programming. With this feature enabled, entry into the user absent mode is automatic and any calls received when you are away from your radio will be put into the

Missed Calls list automatically and the message “Will call back” sent to the caller.

When you return to your radio, check whether tone G sounds every 10 seconds which indicates that your radio is in user absent mode. Press any button to exit user absent mode and return the radio to the idle state for normal operation.

### Dedicated Calls

Dedicated calls can be made from either a preprogrammed dedicated call button or using the speed-dial feature from the keypad.

Press the Dedicated Call button to make a call to the most commonly used pre-programmed number. The selected number and then the alias will be displayed and the conversation can go ahead.

To use the speed-dial feature, hold down one of the keypad keys (0 to 9) for a preset period to make a call to one of ten (1 of 10) preprogrammed numbers which are the first ten entries (1 to 9, 0 = 10) in the contact list. The display will show “Calling”.

### Manual Dialling

(Keypad Microphone only)

To make a call from the keypad (13):

- 1 Enter Telephone Number  
(PSTN calls always start with 0)  
(PABX call numbers depend on the network and radio programming,  
or  
Radio ID  
or  
Group ID)
- 2 PTT button or **#** to make radio call.

Display shows:

Calling

Alias/Number


## Last Number Redial

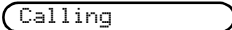
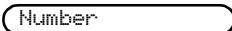
The last number dialled by the radio is stored in the memory of the radio.

Partially entered numbers are also stored.

With the radio in the IDLE STATE:

1 PTT button 

2 PTT button or  to make radio call.

Display shows:   


The number may also be edited, see **Keypad Edit**.


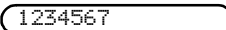
Last number redial does not function when MPT Talkgroup Select personality is selected, see PERSONALITY - **Personality Selection**.



## Keypad Edit

(Keypad Microphone only)



If the radio is displaying a Contact List number, a Keypad Dialed number, Status number or Missed Call number, the last digit may be deleted by:

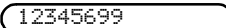
For Contact List numbers:


1  Once   
(to select number)


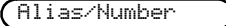
2  Again   
(to delete last digit)

For all other numbers:

3  Once   
(to delete last digit)

4 Enter new numbers 

5 PTT button or  to make radio call.

Display shows:   


**Note:** The edited number is not saved at the end of the call in contact list, but is saved as last number redial.

## Ending a Call

Always end a call by:

- 1 CLEAR BUTTON or

**X** or

**\*** **#**

Tone A sounds

Call Ended

See "Call Progress - Ending a Call".

## Cancelling a Call

At any time while setting up a call it may be cancelled by:

- 1 CLEAR BUTTON or

**X** or

**\*** **#**

Cancelling

See "Call Progress - Cancelling a Call".



## Receiving A Call

There are two types of systems on which the radio may be used, Off Air Call Set Up (OACSU) and Full Off Air Call Set Up (FOACSU).

If you are in doubt about which system you are operating on, please consult your dealer.

### *Receiving a call on an OACSU system*

When the radio is called:

- 1 Tone D sounds Caller ID
- 2 Tone B sounds Call Type

For display Call Type see "**Call Progress - Receiving**"

### *Receiving a call on an FOACSU system*

When the radio is called:

- 1 Ringing tone sounds Caller ID
- 2 PTT button *or* # to accept call.  
(Unless in talkgroup personality, when the radio unmutes automatically for dynamic and fixed group calls.)
- 3 Tone D sounds Caller ID
- 4 Tone B sounds (when conversation is permitted) Call Type

For display Call Type see "**Call Progress - Receiving**"

**Note:** The system may have a limited call time, indicated on the display, and the call may be terminated automatically if this call time is exceeded.

e.g.


Display shows:

Call Type  
00:20

## Missed Calls

If a call remains unanswered, the call will be stored by the radio, provided that missed calls have been programmed via the CPS.

Up to ten calls can be stored. If the same radio calls more than once the call is only stored once. When ten calls have been stored by the radio, depending on the radio programming, the eleventh call received may overwrite the first or not be stored by the radio.

When a call has been stored by the radio, tone G will sound every ten seconds, the Missed Call icon  will flash and the display will show:



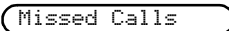

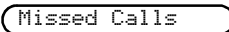
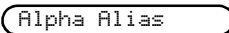

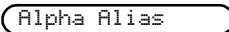
Missed Calls

With the display showing 'Missed Calls', pressing any of the menu buttons provides a quick access into the Missed Calls List.

The Missed Call List can also be entered directly by pressing the Missed Call button (if programmed) when the radio is in the IDLE STATE or via the menu.

If using the Missed Call button, follow the procedures from step 4 below.

To view the calls in the list via the menu:

- 1  to enter Menu Mode.
- 2  until: 
- 3  to select: 
- 4 First call in list 
- 5  to scroll list: 

**Note:** In the Missed Calls list some alpha alias/numbers may contain a suffix S or V. S indicates a status message associated with the call, and V indicates a voice message associated with the call.

## Examples:

- 1 Display shows



where BOB is the alias of the calling unit and V is a voice (answerphone) message associated with the call

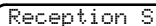


To playback the voice message.



To skip to end of message.

- 2 Display shows



where S is a status message associated with the call



Displays message e.g.



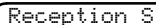

again

Displays status number e.g.




again



Display shows



You can call back to any number in the Missed Call list by:

- 1  until:



- 2 PTT button or  or  to make radio call.

Display shows:




- 3 After the call is set-up, press PTT button and talk with your mouth 2.5-5 cm from microphone. Release PTT to listen.

- 4 CLEAR button or

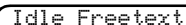
 or


 

Tone A sounds



- 5 Display shows



**Note:** Whilst displaying alias,  will allow number to be displayed and edited.







On a successful call set-up, the entry is automatically deleted from the list together with an associated voice message.

Unanswered calls may be deleted from the Missed Call list at any time by pressing:

- 1 CLEAR button

Display shows:

Delete?

- 2  (or   or CLEAR button) to delete missed call from the list.
- 3  to retain missed call in list.
- 4   deletes the currently selected missed call with no display prompt.

On deletion of the last message in the Missed Calls list, the radio will exit the menu and return to the IDLE STATE.

To exit the Missed Call List:

- 1  button  
or  
MISSED CALL button to exit Menu Mode.

Display shows:

Idle Freetext

**Note:** The calls in the stack are not deleted when the radio is turned off. It is not possible to call back status calls.

## Call Diversion (Keypad Microphone only)

Incoming speech calls or status/data calls can be diverted by:

1 \* 4 ghi 1 From your radio

2 \* 4 ghi 4 ghi From another radio

When the radio is in the IDLE STATE, call diversion can be initiated by:

1 \* 4 ghi 1 \* To divert all calls

or

\* 4 ghi 4 ghi \*

2 \* 4 ghi 1 1 \* To divert speech calls only

or

\* 4 ghi 4 ghi 1 \*

3 \* 4 ghi 1 2 abc \* To divert status/data calls only

or

\* 4 ghi 4 ghi 2 abc \*

4 Enter ID of radio to which you are diverting

5 # To complete call diversion

Examples:

1 \* 4 ghi 1 \* 2 abc 3 def 4 ghi #

Will divert all calls **from your** radio to the radio with ID "234"

2 \* 4 ghi 4 ghi \* 2 abc 3 def 4 ghi \*  
4 ghi 3 def 2 abc #

Will redirect all calls **from** the radio with ID "234" **to** the radio with ID "432"

If a call is made to a radio whose calls are currently being diverted:

1 Tone D sounds

Diverting

A call is automatically set up to the radio which is receiving the diverted calls

To cancel Call Diversion:

- 1 To cancel call diversion from your radio

**#** **4** **ghi** **1** followed by **1** or **2** **abc** if necessary and **#**.

- 2 To cancel call diversion from another radio

**#** **4** **ghi** **4** **ghi** followed by **1** or **2** **abc** if necessary and **\*** "ID" (234 in example) **#**.

- 3 To cancel calls redirected to your radio

**#** **4** **ghi** **5** **jkl** followed by **1** or **2** **abc** if necessary and **#**.

## SPECIAL CALLS

### Short Data Messages (SDM)

Short data messages may be set up, sent and received using the keypad microphone and controls.


Outgoing data messages from the keypad are limited to alphanumeric data in any combination of up to 20 characters (which include address information and data selection characters).

### Receiving Short Data Messages

On receiving a Short Data Message:

- 1 Tone G sounds



The data message icon  is lit whenever SDMs are in the data message calls list, i.e. displayable, unless the message display has been turned off (refer to **Displaying Incoming Data**). Note that the data message icon flashes when data messages in the calls list are unread. The icon is lit permanently when a message is read and retained in the calls list.


### Displaying Incoming Data

The short data message display can be switched ON and OFF using the pre-programmed **Data Display** button, or using the keypad microphone or via the menu. Refer to **Settings - Data Display** for details.

The SDM display defaults to ON, however the option setting is retained when the radio is switched off.

**Note:** This feature is important when you are away from your vehicle, to prevent loss of data messages.

### Storing SDMs

Incoming SDMs are stored on receipt in the Short Data Message Calls List. Up to ten SDMs can be stored by the radio. The data message icon  is lit whenever SDMs are in the calls list.

SDMs are not stored when the radio is switched OFF, except for one SDM only which can be saved.











## Interrogating the SDM Calls List

When an SDM call has been stored by the radio, the display will show:

Data Received

With the display showing 'Data Received', pressing any of the menu buttons provides a quick access into the Data Calls List.

To view the calls in the list via the menu:

- 1  to enter Menu Mode.
- 2  until:
- 3  to select:
- 4 First call in list   
or
- 5  to scroll list:   
or
- 6  or  to read selected message:
- 7 At end of message:  or  to return to data calls list.
- 8  to retain message in list and exit from data messages
- 9  again to exit from Menu Mode



To save an SDM to be retained after the radio is switched off.

1 Read the data message in the Data Calls List.

2

You will see:

3  to save selected message.

4  will not save selected message, display will return to Data Calls List.

When the radio is switched off and on again the saved SDM will appear in the Data Calls List.

**Note:** You must exit the data message calls list interrogate mode to put the radio in the idle state in order to make other calls.

## Deleting Messages from the Data Calls List

1 To delete data messages from the data calls list or while viewing data messages.

2 CLEAR button

Display shows:

3  (or  \*  # or CLEAR button) to delete data message from the calls list.

4  to retain data message in the calls list.

5  \*  # deletes the currently selected data message with no display prompt.

6 Radio returns to the data calls list interrogate mode after each deletion until the last message is deleted when the display returns to the idle state and the data message icon  is extinguished.

You can move directly from the Data Calls List to the Missed Calls List by pressing the Missed Calls button. Once in the Missed Calls List the functionality is as detailed in RADIO CALLS - Missed Calls.

## Making an SDM Call

SDM Calls may be initiated in two different ways:

1. Via the keypad using a **Call modifier**
2. Via the **Contact List**



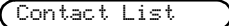

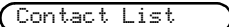

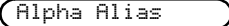

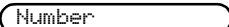

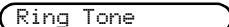







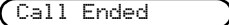
**Note:** The maximum data message size is limited to 20 characters which includes address information and data selection characters. Data entered via the data button or call modifier methods may be alphanumeric characters entered from the keypad. In the contact list method data may consist of alphanumeric characters which are pre-programmed into your radio by your dealer.

To initiate a data call via the **keypad**:

- 1 Part of modifier
- 2 Enter message from keypad in alphanumeric characters (ref pages 7 & 8)
- 3 Final part of modifier
- 4 Enter Called radio address
- 5 Display shows: to scroll message: (where NNN is called radio address.)
- 6 Press PTT button or to make a call to the dialled numbers  
Tone D sounds  
Display shows:
- 7 Press CLEAR button or at any time to delete dialled numbers and return radio to IDLE STATE when tone H sounds

## To initiate a Data call via the **contact list**

In this method data may consist of alphanumeric characters which are pre-programmed into your radio by your dealer.

- 1  to enter Menu Mode.
- 2  until: 
- 3  to select: 
- 4  until:   
 to display   
 to display   
 to return to 
- 5  or PTT button to make radio call.  
 Display shows: 
- 6 When finished with call.
- 7 CLEAR BUTTON or  
 or  
   
 Tone A sounds 

**Note:** The maximum data message size is limited to 20 characters which includes address information and data selection characters.

## Status Calls




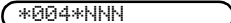
A status is a code for transmitting prearranged messages, e.g. status "04" may indicate "On Break".

### Making a Status Call

Status Calls may be initiated in two different ways:


1. Via the keypad using a **Call modifier**
2. Via the **Menu**

To initiate a status call via the keypad:

- 1  Part of modifier
- 2  Example of status digits in range 1-31
- 3  Final part of modifier
- 4 Enter Called radio address
- 5 Display shows: 

Where NNN is called radio address.







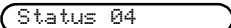

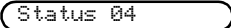


Make the call by:

- 1 Press PTT button or  to make a call to the dialled numbers

Display shows:



To initiate a status call via the menu:

- 1  to enter Menu Mode.
- 2  to select: 
- 3  until:   
 
- 4  to select: 
- 5 Display shows for 10 seconds 
- 6  to display: Current entry in contact list

7  until:   
(required name or number)

8 Alternatively, a valid number can be dialled from the keypad. e.g.

9  or PTT button or  # to make a call to the dialled numbers

Display shows:

**Note:**  only functions when in contact list menu mode.

## Receiving a Status Call

Your radio receives a Status Call when:

1 Tone G sounds

2 Display shows:

or

Where Status message “04” / “On Break” is example status message. Note that status number (04) only will be displayed if associated message is not programmed into your radio. Alias/Number is the name or number of the calling radio.

## Emergency Calls

An emergency call allows you the highest form of priority calling and normally takes precedence over all other calls.

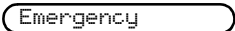
Your radio can be programmed to give you a one-button quick access to call a particular radio or centre (predefined by your dealer) in emergency situations.

Conversely you can dial the number, prefixing it with \* 9 \* (keypad microphone only).

To initiate an emergency call:

- 1 Press the **Emergency** button  
or
- 2  followed by the radio number and PTT or .

Tone D will sound and  
Display shows:



or

- 3 Press the **Footswitch** (if programmed as emergency button)
  - With radio OFF**
    - a. Press footswitch to turn radio ON
    - b. Press footswitch again to send emergency call.
  - With radio ON**
    - a. Press footswitch once to send emergency call.

Emergency can be stopped by one of the following:

1. Switching the radio **Off** and **On** again.
2. Pressing the CLEAR button.
3. The emergency time duration is reached.

**Note:** The emergency time duration is programmed into your radio by your dealer.

Your radio may receive an emergency call when:

Tone D or Ringing  
Tone will sound and  
Display shows:



**Priority Calls** (Keypad Microphone only)

A priority call allows you to gain priority over other users of the system when requesting a call.

To initiate a priority call:

1 \* 8<sup>tuv</sup> \* followed by the number and PTT or #.

Tone D will sound and  
Display shows:

Priority

See " **Call Progress - Sending**".

**Broadcast Calls** (Keypad Microphone only)

A broadcast call allows you to make calls to groups of radios. Note that on a broadcast call only the calling radio can talk and there is no indication that any radios in the group have received the call.

To initiate a broadcast call:

1 \* 1 1 \* followed by the group number and PTT or #.

Tone D will sound and  
Display shows e.g. :

\*11\*90

**DTMF** (Keypad Microphone only)

DTMF means Dual Tone Multi Frequency and is used when the radio is required to operate in a radio system with an interface to telephone systems.

An access code, which is system dependent, is normally needed for DTMF, please contact your dealer or network manager for further information.

To initiate a DTMF call:

- 1 Enter Access code
- 2 Press and hold PTT
- 3 Enter desired number



## PERSONALITY

The personalities described below are programmed into your radio by your dealer and are accessible either via the personality button or via the menu.

A radio personality contains data such as frequencies, display text, alert tones, permitted calls etc. which determines the mode of operation of your radio. Your radio may be programmed with up to 4 different personalities, selected from MPT, Talkgroup and Conventional.

### MPT

This personality permits the radio to operate in a trunked mode. Incoming and outgoing calls are set up using a defined set of rules or protocol between your radio and a controller in a similar manner to your home telephone. Your radio 'registers' onto an MPT trunked system as described in GETTING STARTED - **Radio Registration**.

### Talkgroup

Talkgroup is an MPT personality following the same rules or protocol, but is primarily for talkgroup calls. In talkgroup personality, talkgroups are contained in a Talkgroup list, similar to the Contact list, which is scrolled and selected using the Up/Down keys (5). On selection of a talkgroup, you may send and receive calls as described below.

#### *Fixed and Dynamic Groups*

These groups form part of the **Talkgroup Personality**, such that when this personality is selected your talkgroup list shows only these groups.

A **fixed** group is a group of users, the address (number/alias) of which is preprogrammed into your radio by your dealer.

A **dynamic** group is a group of users, the address (number) of which is sent to your radio 'over air' at any time via the system controller.

Therefore at any time you may become a member of a dynamic group, able to receive calls and (depending on how your radio is programmed) send calls to that group.

Incoming calls to fixed and dynamic group numbers are detailed in **Receiving a Call** and displayed under **Call Progress - Receiving**.

To make an outgoing call to a selected talkgroup, press the PTT to set-up the call. Press PTT and speak after the confidence tone.

Calls are cleared in the normal manner.

If the system is busy an engaged tone will be heard, release the PTT and wait for the confidence tone. You may then proceed with the call by pressing the PTT.

When in Talkgroup personality, you can still make an individual or status call using the keypad or entering the Contact List via the menu as detailed in RADIO CALLS - **Contact List**.

## Conventional Mode

In the conventional mode your radio operates as a standard two-way radio.


Select the personality "Conventional" as described in **Personality Selection**, the display shows:



Channel xx

where xx is the channel number. Use the Up/Down keys (5) to display and select the desired channel.

Prior to transmission always make sure that the channel is free (red LED not flashing). Press the PTT to transmit, release to listen. The red LED lights while the radio transmits and flashes if the channel is busy.

Some channels may be monitored for activity by pressing the clear button. The  icon will be displayed until the channel is changed or the clear button is pressed again.








In the conventional mode, the radio is equipped with a time out timer. A speech limitation alert tone will sound a few seconds before the transmitter in your radio is switched off. The call timed out tone will sound and continue until the PTT is released.

To generate DTMF tones, press and hold the PTT while entering the desired number.

## Personality Selection

Personality selection may be entered directly by pressing the Personality button. You may then scroll and select a personality as described from step 6 below.

To select a personality via the menu:

- 1 Ensure radio is in IDLE STATE.
- 2  to enter Menu Mode.
- 3   until:
- 4  to select:
- 5 Display shows current personality e.g.:
- 6   until desired personality e.g.:
- 7  to select:

- 8 The display will be held for 2 seconds while your radio retunes to the new personality.

Your radio will return to the idle state:

Freetext

# FEATURES



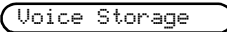

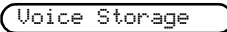

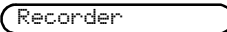

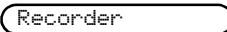
## VOICE STORAGE

Voice storage allows you to perform various voice related tasks which include voice recorder and voice message facilities.

## Voice Recorder

You can record and playback incoming calls or make a memo using the voice recorder feature, which allows up to 2 minutes of recording.



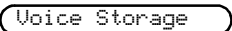

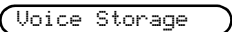

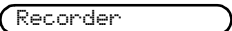

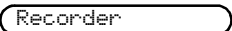

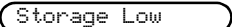
To **record** an incoming call:

- 1  to enter Menu Mode.
- 2  until: 
- 3  to select: 
- 4  until: 
- 5  to select: 
- 6 Press and hold the Record/Playback button, the Voice Storage Recording alert sounds momentarily.
- 7 Record the call or part of the call.
- 8 The Voice Storage Warning alert sounds when the memory is nearly full.
- 9 The Voice Storage Full alert sounds when the memory is full and recording ceases.

- 10 Release the Record/Playback button at any time to stop recording.
- 11 Subsequent messages can be stored by repeating steps 6 to 10.

**Note:** All recorded messages are retained when changing between personalities, with the exception of conventional personalities where the voice storage feature is not available. However all recorded messages are deleted on selection of the voice message feature.

**To record a memo:**

- 1 Ensure radio is in IDLE STATE.
- 2  to enter Menu Mode.
- 3  until: 
- 4  to select: 
- 5  until: 
- 6  to select: 
- 7 Press and hold the Record/Playback button, the Voice Storage Recording alert sounds momentarily.  
You will see: 
- 8 Speak clearly into the radio microphone to record your memo.
- 9 The Voice Storage Warning alert sounds when the memory is nearly full.  
You will see: 













- 10 The Voice Storage Full alert sounds when the memory is full and recording ceases.


You will see:



- 11 Release the Record/Playback button at any time to stop recording.

To **playback** a recorded call or memo:

- 1 Ensure radio is in IDLE STATE.
- 2  to enter Menu Mode.
- 3   until:
- 4  to select:
- 5   until:
- 6  to select:
- 7  to select:
- 8   to select message: e.g.
- 9  to play selected message.
- 10 After playing message display shows:
- 11  display shows next message without deleting current message.

- 12  current message deleted. Display shows next message.

**Alternatively, with radio in IDLE STATE**

- 1 Press the Record/Playback button to playback the first recorded call or memo.  
You will see:
- 2 Press the Record/Playback button again to skip to the next message to be played back.

To **delete** a recorded call or memo:



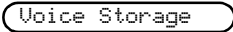

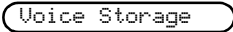




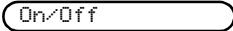

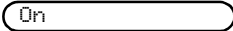

- 1 Playback message as described in above in **alternative** procedure.
- 2 Press the Clear button to delete the message currently being played back.

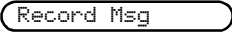




## Voice Message

You must pre-record a greetings message to be played to a caller automatically when you are absent and the voice message facility is selected. Your radio will auto-record messages from callers in your absence as long as you have selected the voice message facility **and** pre-recorded a greetings message.





To **pre-record** a greetings message:

- 1 Ensure radio is in IDLE STATE.
- 2  to enter Menu Mode.
- 3  until: 
- 4  to select: 
- 5  until: 
- 6  to select: 
- 7 You will see: 
- 8  to select: 
- 9 You will see (for 10 seconds): 

- 10 You will see: 
- 11 Press and hold the Record/Playback button, the Voice Storage Recording alert sounds momentarily.  
You will see: 
- 12 Speak clearly into the radio microphone to record your message.
- 13 Ensure that your greetings message is as short as possible to enable maximum incoming messages to be recorded.
- 14 Release the Record/Playback button at any time to stop recording.
- 15 Press the Record/Playback button to playback the greetings message.  
You will see: 
- 16 You can change the message at any time by repeating the above procedure.

**Note:** If you select the voice recorder feature, or change personality you will have to record a new greetings message.

To **playback** a message from callers:

- 1 Enter the Missed Calls list as detailed in RADIO CALLS - **Missed Calls**.
- 2 Any calls having a V suffix have an associated voice message e.g. Bob V.
- 3  until: 
- 4  to playback the message.
- 4  again to skip to end of message.
- 5 The message is automatically deleted when the associated missed call is answered or deleted.

## SETTINGS

The settings described below are programmed into your radio by your dealer and are accessible either via a programmable button or via the menu.

## EXTERNAL ALARM

The external alarm feature activates the vehicle horn and/or lights to inform you of an incoming call when you are away from your vehicle.



**Note:** This feature will not operate when in a conventional personality.

When the alarm is activated it can be cancelled by:











1. Answering the call.
2. Calling party terminates the call.
3. The call is placed in the Missed Calls list.
4. The call times out.

You can switch **On** or **Off** the External Alarm by using a pre-programmed **External Alarm** button when the radio is in the IDLE STATE or via the menu.

## Using the External Alarm Button

1. Press the **External Alarm** button to switch **on** External Alarm, when the feature enable alert will sound and the  icon will be illuminated.
2. Press the **External Alarm** button again to switch **off** External Alarm when the feature disable alert will sound and the  icon will be extinguished.

## Using the Menu

- 1 Ensure radio is in IDLE STATE.
- 2  to enter Menu Mode.
- 3  or  until:
- 4  to select
- 5  or  until:
- 6  to select
- Display shows current status e.g. :
- 7  or  until:
- 8  to select
- Display shows:  
(for 2 seconds)
- 9 Radio exits menu and returns to IDLE STATE

## CAR RADIO MUTE

This feature allows you to switch on and off the car radio mute feature. The Car Radio Mute automatically mutes your in-car audio entertainment system to allow you to hear incoming calls or to stop audio interference when you are making a call.



















**Note:** This feature will not operate when in a conventional personality.

You can switch **On** or **Off** the Car Radio Mute by using a pre-programmed **Car Radio Mute** button when the radio is in the IDLE STATE or via the menu.

### Using the Car Radio Mute Button

1. Press the **Car Radio Mute** button to switch **on** Car Radio Mute, when the feature enable alert will sound.
2. Press the **Car Radio Mute** button again to switch **off** Car Radio Mute when the feature disable alert will sound.

### Using the Menu

- 1 Ensure radio is in IDLE STATE.
- 2  to enter Menu Mode.
- 3  or  until: 
- 4  to select 
- 5  or  until: 
- 6  to select   
Display shows current status e.g. : 
- 7  or  until: 
- 8  to select   
Display shows:  
(for 2 seconds) 
- 9 Radio exits menu and returns to IDLE STATE

## DATA DISPLAY

This feature allows you to switch on and off the data display. This is important when you are away from your vehicle, to prevent loss of data messages. Refer to **Special Calls** -Short Data Messages for a detailed description of this feature.

You can switch **On** or **Off** the Data Display by using a pre-programmed **Data Display** button when the radio is in the IDLE STATE, or using the keypad or via the menu.

### Using the Data Display Button

1. Press the **Data Display** button to switch **on** the Data Display, when the feature enable alert will sound.
2. Press the **Data Display** button again to switch **off** Data Display when the feature disable alert will sound.

### Using the Keypad (Keypad Microphone only):

1. Enter  to turn OFF the incoming short data display.
2. Enter  to turn ON the incoming short data display.

## Using the Menu











1. Ensure radio is in IDLE STATE.
  2.  to enter Menu Mode.
  3.  or  until:
  4.  to select
  5.  or  until:
  6.  to select
- Display shows current status e.g. :
- 
7.  or  until:
  8.  to select
- Display shows:  
(for 2 seconds)
9. Radio exits menu and returns to IDLE STATE

## BACKLIGHT

This feature allows you to alter the brightness of the radio display to suit conditions.

You can set the display backlight brightness to **Off**, **Low**, **Medium** or **High** via the menu.

## Using the Menu

- 1 Ensure radio is in IDLE STATE.
- 2  to enter Menu Mode.
- 3  or  until:
- 4  to select
- 5  or  until:
- 6  to select
- Display shows current status e.g. :
- 7  or  until e.g.:
- 8  to select
- Display shows:   
(for 2 seconds)
- 9 Radio exits menu and returns to IDLE STATE



## CALL PROGRESS

When in operation, your radio monitors each step in setting up a call whether sending or receiving. These steps are displayed to provide you with call progress and indicate call types.

### Call Progress - Sending

Tone	Display	Comment
D	Calling	Trying to connect call
D	Priority	Priority call sent, modifier *8* used
D	Emergency	Emergency call sent, modifier *9* used
D	Sending Status	Status call sent, modifier *0xx* used (xx is status message number)
D	Sending Data	SDM call sent, modifier *2* used
G/D	Queued	Call queued on system
D	Diverting	Calls to called unit have been diverted

C2	Unobtainable	Call unobtainable
C2	Unavailable	Unit unavailable
C4	Invalid Number	Unit number invalid
C1	System Busy	System busy, try again
D	Alerting	Alerting called unit
C3	Engaged	Called unit is busy
F	Will Call Back	User absent, called unit will call back
C2	Call Fail	Call failed, try again
C2	Timeout	Call request timed out. Check service is available
H	Scanning	System access lost, try again

## Call Progress - Receiving

Tone	Display	Comment
<b>D</b>	Alerted Caller ID	A call is being received on <b>OACSU</b>
<b>Ring Tone</b>	Alerted Caller ID	A call is being received on <b>FOACSU</b> . Press PTT or '#' to accept the call
<b>D/ Ring Tone</b>	Emergency	Emergency call being received
<b>B</b>	Alias/Number	Call from radio in your fleet
<b>B</b>	Interfleet	Call from radio in another fleet
<b>B</b>	Telephone	Calls from public telephone system
<b>B</b>	PABX	Calls from private telephone system
<b>B</b>	Unknown Party	Call identity unknown to the system
<b>B</b>	Talkgroup NN	Talkgroup call received (NN is list number)

<b>B</b>	Dynamic NN	Dynamic group call received (may be alias or number - NN)
<b>B</b>	Group NN	Fixed group call received (may be alias or number - NN)
<b>B</b>	System Wide	Call to all radios in use on the system
<b>B</b>	Broadcast	Broadcast call received, user reply not permitted
<b>G</b>	Status XX	Receiving status message (xx is status message number)
<b>G</b>	Data Received	Receiving data message

## Call Progress - Cancelling/Ending a call

Tone	Display	Comment
<b>D/G</b>	Cancelling	Call successfully cancelled by user
<b>A</b>	Call Ended	Call ended, another call can now be made

## SAFETY INFORMATION

### Safe and Efficient Operation of Motorola Two-Way Radios

This section provides information and instructions for the safe and efficient operation of Motorola Mobile Two-Way Radios.

For information regarding radio use in hazardous areas, please refer to the Factory Mutual (FM) approval manual supplement or Instruction Card which is included with radio models that offer this capability.

### *Exposure To Radio Frequency Energy*

National and International Standards and Guidelines

Your Motorola Two-Way Radio, which generates and radiates radio frequency (RF) electromagnetic energy (EME) is designed to comply with the following National and International Standards and Guidelines regarding exposure of human beings to radio frequency electromagnetic energy:

- Federal Communications Commission Report and Order No. FCC 96-326 (August 1996)
- American National Standards Institute (C95.1 - 1992)

- National Council on Radiation Protection and Measurements (NCRP - 1986)
- International Commission on Non-Ionizing Radiation Protection (ICNRP - 1986)
- European Committee for Electrotechnical Standardisation (CENELEC):
  - ENV. 50166-1 1995 E Human Exposure to Electromagnetic Fields Low Frequency (0Hz to 10kHz)
  - ENV. 50166-2 1995 E Human Exposure to Electromagnetic Fields High Frequency (10kHz to 300GHz)
  - Proceedings of SC211/8 1996 Safety Considerations for Human Exposure to E.M.F.s from Mobile Telecommunications Equipment (M.T.E.) in the Frequency Range 30MHz - 6 GHz (E.M.F. - Electromagnetic Fields)

To assure optimal radio performance and that human exposure to radio frequency electromagnetic energy is within the guidelines set forth in the above standards, always adhere to the following procedures:

## Electromagnetic Interference/Compatibility

**Note:** Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed or otherwise configured for electromagnetic compatibility.

To avoid electromagnetic interference and/or compatibility conflicts, turn off your radio in any facility where posted notices instruct you to do so. Hospitals or health care facilities may be using equipment that is sensitive to external RF energy. When instructed to do so, turn off your radio when on board an aircraft. Any use of a radio must be in accordance with airline regulations or crew instructions.

## Operational Warnings

### *Vehicles Equipped with Airbags*

An airbag inflates with great force. DO NOT place objects, including communication equipment, in the area over the airbag or in the airbag deployment area. If the communication equipment is improperly placed and the airbag inflates, this could cause serious injury.



**WARNING**

## Potentially Explosive Atmospheres

Turn off your two-way radio when you are in any area with a potentially explosive atmosphere.

Sparks in a potentially explosive atmosphere can cause an explosion or fire resulting in bodily injury or even death.

### *Blasting Caps and Areas*

To avoid possible interference with blasting operations, turn off your radio when you are near electrical blasting caps, in a blasting area, or in areas posted: "Turn off two-way radio." Obey all signs and instructions.

#### **Note:**

The areas with potentially explosive atmospheres referred to above include fueling areas such as: below decks on boats; fuel or chemical transfer or storage facilities; areas where the air contains chemicals or particles, such as grain, dust or metal powders; and any other area where you would normally be advised to turn off your vehicle engine. Areas with potentially explosive atmospheres are often but not always posted.

## Mobile Radio Operation and EME Exposure

To assure optimal radio performance and that human exposure to radio frequency electromagnetic energy is within the guidelines referenced earlier in this document, transmit only when people inside and outside the vehicle are at least the minimum distance away from a properly installed, externally mounted antenna.

Table 1 lists the minimum distance for several different ranges of radiated power.

Table 1: Radiated Power and Distance

<b>Radiated Power of Vehicle-installed Mobile Two-way Radio</b>	<b>Minimum Distance From Transmitting Antenna</b>
7 to 15 Watts	30.5 cm(1 Foot)
16 to 50 Watts	61 cm (2 Feet)
More than 50 Watts	91.5 cm (3 Feet)

## Mobile Antenna Installation

Install the vehicle antenna *external* to the vehicle and in accordance with:

- The requirements of the antenna manufacturer/ supplier
- Instructions in the Radio Installation Manual

## Control Station Operation

When radio equipment is used to operate as a control station, it is important that the antenna be installed outside the building and away from places where people may be in close proximity. Refer to Table 1 for rated power and minimum distant values for transmitting antennas.

## General Radio Care



Caution

- The use of chemicals such as detergents, alcohol, aerosol sprays, and/or petroleum products may be harmful to and damage the radio housing.
- Avoid physical abuse of the radio.
- Clean the radio exterior using a cloth moistened with clean water and a mild dishwashing liquid.
- The use of non-approved radio accessories may damage the radio and invalidate warranty.

## NOTES